

Flora of India
Series 3

**FLORA OF YAVATMAL DISTRICT
MAHARASHTRA**

**S. KARTHIKEYAN
&
ANAND KUMAR**



BOTANICAL SURVEY OF INDIA

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FOREWORD

The district of Yavatmal is situated in Maharashtra and is part of the region popularly called as *Vidharba*. This region includes other districts like, Akola, Amaravati, Bhandara, Buldana, Chandrapur, Gadchiroli, Nagpur and Wardha. This region as a whole lacks a proper floristic account except for account of forests of Berar (of which Yavatmal is a part) by Witt (1908). Keeping this in view, the Botanical Survey of India organised intensive exploration to study the flora of this area. This has resulted in the publication of floristic accounts of Bhandara, Chandrapur, Gadchiroli including the publication of flora of Akola district by the Botanical Survey of India.

The present work on the Flora of Yavatmal is published as a part of our Flora of India series III. The total forest area in this district is about 23%. The natural forests are found to occur almost throughout the district intermingled with teak plantations. The pure patches of teak forests are luxuriant on the banks of river Penganga in Kharbi range. In all, there are about 579 taxa of angiosperms under 365 genera and 98 families. The district is rich in economically important species, which yield fibre, essential oils, dyes, tannins, etc. apart from a number of timber yielding plants. The flora also includes about 126 locally used medicinal herbs.

About 12 species have been recorded for the first time from Yavatmal district for Maharashtra state.

It is hoped that this pioneer work will be useful to the students, nature lovers, environmentalists, foresters and others interested in identification, conservation and utilisation of plant resources of this district.

Botanical Survey of India
P-8, Brabourne Road,
Calcutta 700 001.
July 30, 1993.

B.D. Sharma
Director

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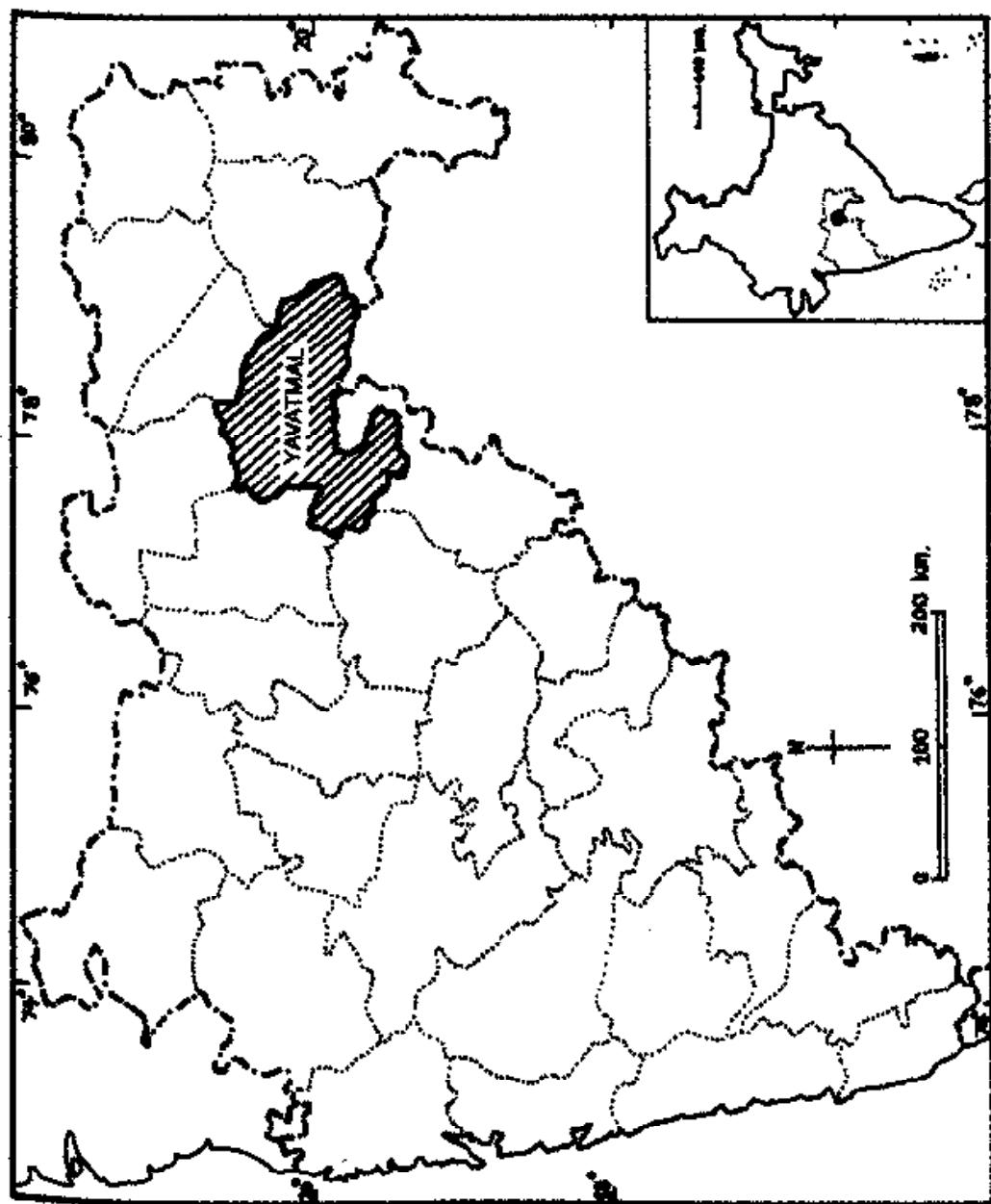
Botanical Survey of India,
Western Circle, Pune.
November, 1993.

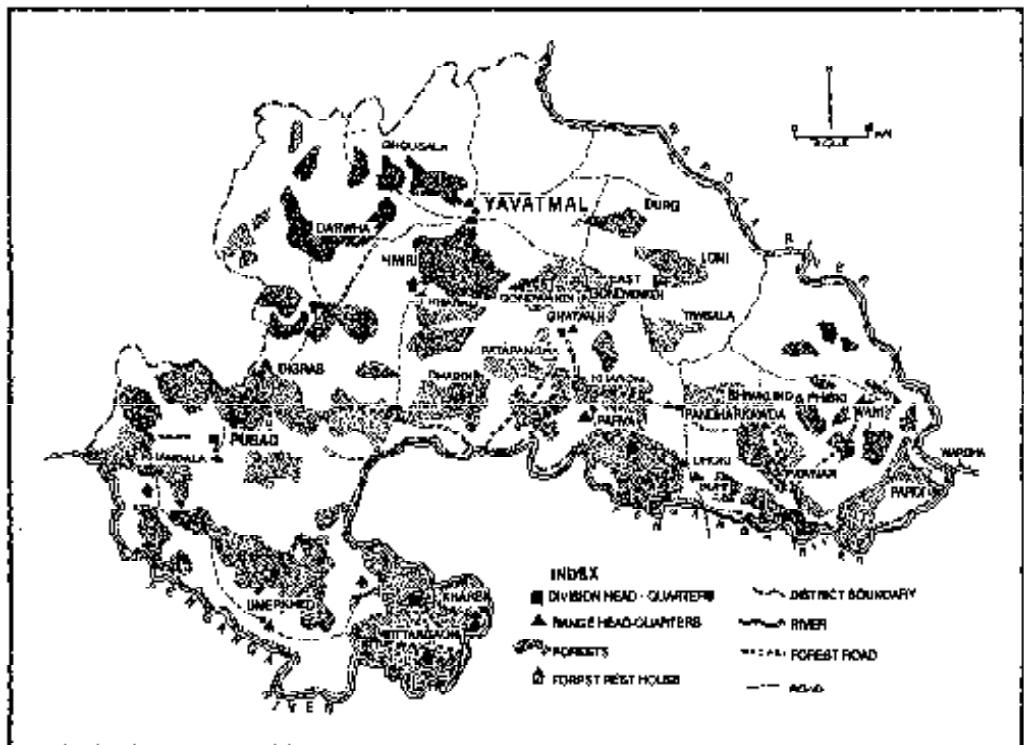
S. Karthikeyan
&
Anand Kumar

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MAP 1 : MAP SHOWING LOCATION OF YAVATMAL DISTRICT IN MAHARASHTRA (INSET : INDIA)





MAP 2 : MAP OF YAVATMAL DISTRICT



A view of south dry mixed deciduous forests on the rich alluvial soil on the banks of Penganga river, Kharbi R.F. – *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn., *Madhuca longifolia* var. *latifolia* (Roxb.) Chev., *Tectona grandis* L.f. etc.



Terminalia arjuna (Roxb. ex DC.) Wight & Arn. on the banks of Tipeshwar nadhi.



Boswellia serrata
Roxb. ex Colebr.



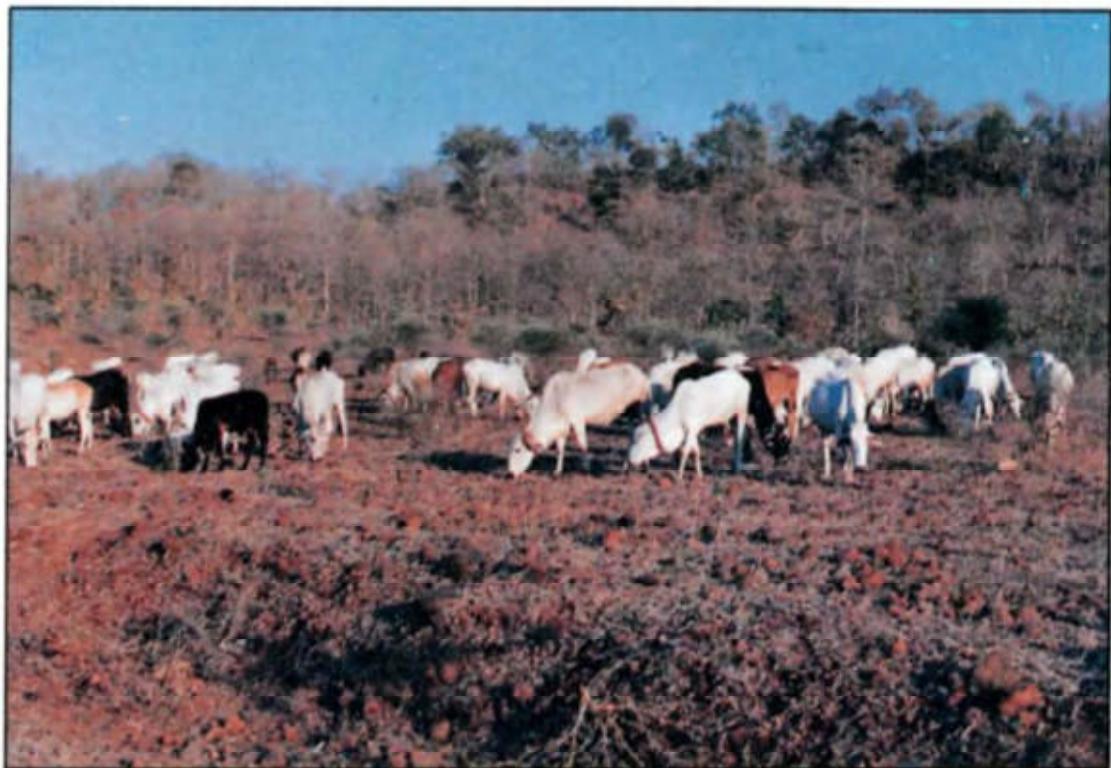
Homonoia retusa (Grah. ex Wight) Muell. Arg. – on the edges of Penganga river, Kharbi R.F.



Coix lacryma-jobi L. – in marshes near Aruna river, Hiwri R.F.



Flowering of *Rotula aquatica* Lour. occurring in rock crevices along Penganga river banks, Kharbi R.F.



Cattle are grazing in open forest land



Tectona trees cut and being transported

INTRODUCTION

GENERAL NOTE

The district Yavatmal is situated in the eastern part of Maharashtra between north latitudes $19^{\circ} 28'$ and $20^{\circ} 48'$ and longitudes $77^{\circ} 19'$ and $79^{\circ} 07'$. It occupies an area of about 13,517.21 sq. km. The district is bounded on its north-west by Washim, Mangrul Pir and Murtazapur tahsils of Akola district, on the north by the Amravati and Chandur tahsils of Amravati districts, on the north-east by Warora, Chanda and Rajura tahsils of Chandrapur district. On the south, it is bounded by the Kalamnuri tahsils of Parbhani district, Hadgaon and Kinwat tahsils of Nanded district and by the northern tahsils of Adilabad district of Andhra Pradesh (MAP 1).

The Wardha river in the north-east forms the boundary between Yavatmal and Wardha districts and Penganga in the south-east demarcates the boundary of this district with Chandrapur district and Andhra Pradesh. With the re-organisation of States in 1956, the district was transferred to the then Bombay State from Madhya Pradesh. The district forms the south-central portion of Vidarbha region of Maharashtra State. Administratively, the district is divided into five tahsils viz., Darwha, Kelapur, Pusad, Wani and Yavatmal. The total population according to 1961 census is 1,098,470.

The forest areas occupy 23% of the total area of the district. They are divided into two divisions-East Yavatmal with its headquarters at Yavatmal and West Yavatmal with the headquarters at Pusad. The forests have been grouped into various ranges for easy administration. The ranges under the east Yavatmal Division are Ghatanji, Hiwri, Jodmoha, Mukutban, Pandharakawada, Parwa, Patanbori, Umari, Wani and Yavatmal. The ranges under west Yavatmal division are Arni, Bittergaon, Darwha, Digras, Kharbi, Pusad and Umerkhed (MAP 2).

Agriculture is the main source of livelihood of the people of this district. The irrigation is through rivers, tanks and wells. There are various major and minor irrigation projects throughout the district.

The soils of the district can be classified as red soils, brownish sandy soils and black cotton soils. The latter supports agriculture.

The following crops are being cultivated in the district.

(i) *Cereals*: *Echinochloa stagnina* (*Banti*), *Eleusine coracana* (*Ragi*), *Eragrostis pilosa* (*Little millets or kutaki*), *Hordeum vulgare* (*Barley*), *Oryza sativa* (*Rice*), *Panicum miliaceum* (*Vari*), *P. sumatrense* (*Sava*), *Pennisetum americanum* (*Bajri*), *Setaria Italica* (*Italian*

millets), Sorghum spp. (Jowar), Triticum spp. (Wheat) and Zea mays (Maize).

(ii) *Pulses : Cajanus cajan (Tur), Cicer arietinum (Gram), Dolichos lablab (Val), Lathyrus sativus (Lakh), Lens culinaris (Masur), Macrotyloma uniflorum (Horse gram), Pisum sativum (Watana), Vigna aconitifolia (Math), V. mungo (Black gram) and V. radiata (Green gram).*

(iii) *Oil seeds : Arachis hypogaea (Groundnut), Brassica nigra (Mustard), Brassica spp., (Rape), Carthamus tinctorius (Safflower), Guizotia abyssinica (Nigerseed), Linum usitatissimum (Linseed), Ricinus communis (Castor) and Sesamum indicum (Til).*

(iv) *Fibres : Crotalaria juncea (Sunn-Hemp) and Gossypium spp. (Cotton).*

(v) *Condiments and spices : Allium sativum (Garlic), Capsicum annuum var. acuminatum (Chillies), Coriandrum sativum (Coriander), Cuminum cyminum (Cumin), Curcuma longa (Turmeric) and Trigonella foenum-graecum (Fenugreek).*

(vi) *Drugs and narcotics : Nicotiana tabacum (Tobacco) and Piper betle (Betel leaves).*

(vii) *Fruits : Ananas comosus (Pine-apple), Annona reticulata (Ramphal), A. squamosa (Custard-apple) Carica papaya (Papaya), Citrus aurantium (Lime), C. reticulata (Orange), Cucumis melo (Kharbuji), Ficus carica (Fig), Mangifera indica (Mango), Musa spp. (Banana), Psidium guajava (Guava), Punica granatum (Pomegranate) and Vitis vinifera (Grapes).*

(viii) *Vegetables : Abelmoschus esculentus (Bhendi), Allium cepa (Onion), Amorphophallus paeoniifolius (Suran), Brassica oleracea var. capitata (Cabbage), Daucus carota (Carrot), Dioscorea spp. (Yam), Ipomoea batatas (Sweet potato), Lycopersicon lycopersicum (Tomato), Raphanus sativus (Radish), Solanum melongena (Brinjal) and S. tuberosum (Potato).*

(ix) *Saccharum officinarum (Sugarcane) is also largely cultivated in the district.*

The forest products can be classified into (a) major and (b) minor. The major forest products are timber and firewood.

The minor forest products are *Madhuca longifolia* var. *latifolia* (*Mahua*) flowers; fruits and leaves of *Buchanania lanzan* (*Char*), *Diospyros melanoxylon* (*Tendu*), *Mangifera indica* (*Amba*) *Semecarpus anacardium* (*Biba*), *Tamarindus indica* (*Jmli*), *Ziziphus mauritiana*

(*Bor*) etc., tubers of *Dioscorea* spp., honey, wax, hides and horns, roots, fruits, bark and leaves of *Anogeissus latifolia* and *Terminalia bellirica*; leaves, flowers and bark of *Barringtonia acutangula*, *Butea monosperma*, *Lannea coromandelica* and mesocarp of *Balanites aegyptiaca* which is used for fish poisoning.

Yavatmal district is served by a meter gauge railway route from Yavatmal to Murtazapur on the Bombay-Nagpur-Howrah line. However, the Yavatmal town is connected by good highways to almost all the important places in Vidarbha region.

There are quite a few large and small scale industries in the district. They are cotton ginning and pressing, dal mills, saw mills, oil mills, bidi making and mining for coal and lime.

The important cottage industries in the district include Handloom, Khadi and Village Industries, Handicrafts, Cane and Bamboo works, oil crushing, brick making, pottery, leather tanning, carpentry and smithy. The khadi and village Industries in the district comprise various industries such as oil, pottery, soap, lime-stone, leather, *khadi*, *tad-gul* etc.

There is no forest based industry other than some saw mills.

HISTORICAL NOTE

Since no archaeological excavations have so far been made in any part of the Yavatmal district, it is not possible to throw light on the pre-historic period (Anonymous, 1974).

According to available literature, when the Aryans penetrated to the Deccan, the whole region was covered by a thick jungle, which extended southwards from Central India.

In course of time a large kingdom was founded north of the Godavari by Vidarbha, the son of Rishabadeva. His capital was Kundinapura in the adjoining Amravati district. The 'country' has since then become known by the name of Vidarbha.

Later this area was included in Berar and under Moghal rule after the treaty of Ahmednagar around 1596-97 AD. The name has been derived thus: *Yot*: being the Urdu or Persian corruption *Yevata*, the original name of the town. The suffix 'mal' is a corruption of *mahal* (*pargana-town*).

Subsequently, Berar came under the rule of Nizams of Hyderabad and ultimately passed on to the hands of British. Wani district-which

later became Yavatmal-was formed in 1864. In 1903, Berar was added to Central Provinces by Lord Curzon. Thus the Central Provinces and Berar came into existence under the British rule.

Since independence in 1947 to 1956, the district Yavatmal along with the other districts of Vidarbha region (Akola, Amravati, Bhandara, Buldhana, Chandrapur, Gadchiroli, Nagpur and Wardha) continued to form part of Central Provinces. With the re-organisation of States in 1956, Yavatmal along with other districts of Vidarbha was transferred to the bilingual State of Bombay which came into existence in that year. In 1960 with the formation of State of Maharashtra it formed part of that newly created State.

IMPORTANCE OF THE PROJECT UNDERTAKEN

In consonance with the objectives of the re-organised Botanical Survey of India, intensive and extensive botanical explorations have been conducted vigorously in various parts of India, by this organisation since 1954. Under the auspices of the Western Circle of Botanical Survey of India various areas in Maharashtra have been botanically explored.

From the fundamental point of view, a floristic account is not available for this district as also for the whole of *Vidarbha*. Consequently, the floral wealth could not be efficiently used by the people at large. It was important to intensively explore and identify the economically and medicinally important plants in these areas. Further, the knowledge about the plants in any region is essential with the increasing consciousness of people about the environment and its impact on living organisms in general. It is needless to point out how important it is to take stock of the dwindling forests and their components. An inventory of floristic components help in assessing the trends in the degradation and depletion of natural resources. This will enable us to initiate suitable remedial measures to reverse the trend. In areas like Yavatmal district the need becomes all the more greater since the natural forests are being cleared to plant teak, which has a great commercial potentiality.

Further, one of the aims of Botanical Survey of India, Western Circle is to prepare a comprehensive flora of the State of Maharashtra. The existing flora – Cooke's *Flora of the Presidency of Bombay* (1901-1908) though a very fine one of its kind, is inadequate in certain respects. Primarily the flora in the area covered by the present day Maharashtra has not been accounted for by Cooke – the areas under Marathwada and Vidarbha regions have not found place in his work as they were not in the political boundary of the then Bombay Presidency.

Therefore, studying the flora of Yavatmal district has gained importance and the same has been done to fill up the gap in our knowledge of the present day Maharashtra and to properly assess the natural wealth of this State. The present study reveals that Yavatmal district harbours numerous medicinally and economically important plant species. A judicious utilisation of this forest wealth, replantation and propagation efforts will uplift the economy of the area by way of employment and providing indigenous raw materials for various industries.

It cannot be over emphasised that no meaningful effort can be made to fully utilise the plant resources of any area without the basic data on their availability. From this angle, the present Flora of Yavatmal district acquires importance as it is a pioneer attempt in cataloguing the plants of this part of Vidarbha region. The information presented here will help nature lovers, naturalists, teachers, students, foresters and professionals alike who are concerned with the botany of the area.

PAST AND PRESENT WORK

PAST WORK :

Witt (1908) listed the plants found in the Berar forest circle of the Central Provinces. The list contains 333 species of which 159 are from Yavatmal. Other than this no other floristic work has been published covering the forest areas of this district excepting for a few plants which have been listed in the working plans that have been published from time to time.

PRESENT WORK :

The present work had been undertaken to provide an up-to-date flora of the district. There is a great need for such a work as the floristics of this district has not yet been catalogued.

The plant exploration work was initiated in the month of December, 1976. A number of tours were carried out covering all the seasons to collect plants from all the areas of the district. A total of 577 species, 1 subspecies and 1 variety comprising 365 genera and 98 families have been collected. The dicotyledones are represented by 79 families, 271 genera, 418 species, 1 subspecies and 1 variety; the monocotyledones by 19 families, 94 genera and 159 species.

MATERIALS AND METHODS

Field Study

The forest areas of the district have been divided into two divisions East Yavatmal division and West Yavatmal division. The east Yavatmal division is subdivided into ten ranges and the West Yavatmal division into seven.

The plant exploration tours were conducted during various seasons such as pre-and post-monsoon, winter and summer. Camping was in P.W.D. or Forest Rest Houses as close to the forest areas as possible. The advantage being availability of more time to spend in collection of plants and to observe the flora in detail.

While the plants were collected, the essential field data such as the local names of plants, their uses if any, the height of the plant, the associated species, the details regarding habitat, colour of young shoots and leaves, colour and smell of the flower and fruits, whether latex present or not, etc. have been noted. In short, all the details of a plant which cannot be observed in a herbarium specimen were observed and recorded in the field book with the hope that they would aid in the proper understanding and identification of the species.

For collection of plants assorted size of polythene bags were used. Each collection usually 6 specimens of a plant in flowering and\or, fruiting condition were taken and they were given a field number and tied together and put in a small polythene bag which prevented the leaves from shrivelling. All such small bags were put in a large and thick polythene bag which was easy to carry in the field. These bags are preferable to a traditional vasculum made of metal which is too heavy and tend to convey heat to the plants within.

In case of herbs, complete plants were collected to show their root system or underground parts, if any. Especially in grasses the root system had to be collected to study any special feature if there were rhizomes and to decide their duration. In case of parasitic plants their host plants have also been collected to document the parasite host relationship.

In the case of climbers, shrubs and trees, convenient size of representative specimens were collected. It was kept in mind that selection of specimens for mounting should be done in the field itself. The leaves were carefully checked to avoid insect eaten or fungi infected ones. If the leaves or inflorescence or fruits were too large for the mounting board they were trimmed suitably. When a leaf had to be removed for want of space the petiole was left on the specimen itself to show the phyllotaxy.

The drying of the specimens was done in the conventional method using blotters, news papers, wire presses, etc. The fresh specimens were immersed in a solution of rectified spirit with mercuric chloride (Fosberg & Sachet, 1965), to kill any insect that might be there in the specimen. The process also helps the plants to dry quickly. If any specimen was found to be difficult to identify with the help of local flora in the field the flowers were preserved in 4% formalin to be studied in detail later at the headquarters.

Herbarium Study : After returning to the headquarters at Pune, the dried and processed specimens were mounted on the mounting board and sorted family-wise. After confirming the field identification with the help of various floras, monographs and revisions, if available, they were compared with the already identified and incorporated herbarium specimens and their correct identity was thus confirmed. Afterwards their nomenclature was checked and updated, the herbarium labels were written and the specimens have been incorporated in the herbarium at Botanical Survey of India, Western Circle, Pune (BSI).

PLAN OF THE FLORA

The 'flora' starts with an introduction and a key to the families. The classification of Bentham & Hooker (1862 - 1883) has been followed in the arrangement of families with a slight modification to accommodate some family concepts of the later authors given in the notes wherever necessary.

Dichotomous keys have been constructed, based usually on easily observable macroscopic characters and salient features of the species. Such keys have been provided to genera, species and varieties wherever needed to identify easily the plants of the area. The generic key for the family Poaceae has been adopted with necessary modifications from 'Synopses of awned and unawned grasses of former Madras Presidency (Karthikeyan, 1972, 1980).

The genera within a family and species under genera have been arranged alphabetically for the sake of convenience of the user.

The nomenclature has been brought up-to-date as far as possible, in consonance with the International Code of Botanical Nomenclature (Stafleu et al. 1978, Voss & Greuter, 1981). The correct name is followed by basionym and synonyms, if any, to connect the name with the Flora of British India or the regional flora. Wherever latest taxonomic work is available for any species such as revisions or dealing with

nomenclature, it has been cited. Invariably reference to J.D. Hooker's *Flora of British India*, Cooke's *Flora of the Presidency of Bombay* and Witt's *Forest Flora of the Berar Circle* have been given. The local (Marathi) name if available, has been appended at the end of the citation.

The diagnostic or prominent features of a species have been provided in brief. The characters reflected in the key have not been repeated in the description. This has been followed by the phenological details, illustrations, if available, distribution of the species in the district and any other available relevant field data. The localities have been arranged alphabetically and collection numbers have been provided wherever necessary. The numbers are S. Karthikeyan's. Critical comments regarding the nomenclature or other aspects have been placed at the end. Cultivated plants have been mentioned at the end of the family account.

Metric system has been used for giving measurements. Conventional abbreviations have been used throughout the work.

TOPOGRAPHY & GENERAL FEATURES

The district consists of hilly tracts broken by broad valleys and interspersed with gently sloping plains. The district belongs to the Ajanta ranges and the plateaus on its top and the northern sections form part of the Payanghat or the Berar plains. Most of the land of the district is a higher level plateau at average elevations of 350 to 450 m.

The plateau is drained by the Pus, the Adan-Arunavati, the Waghadi and the Khuni rivers, all of which are tributaries of the Penganga. These rivers drain in south-easterly and easterly directions along the general dip of the plateau and have carved broad open valleys, resulting in the plateau being divided into a series of alternating broad parallel valleys separated by flat topped, divided with escarpments overlooking the rivers. Thus, the whole plateau falls broadly into three physical divisions from north-east to south-west; the Waghadi-Khuni valleys and the Yavatmal plateau; the Adan-Arunavati basin and the Pus valley.

Drainage : The main rivers of the district are Wardha and Penganga, both of them forming the district boundaries. The district is well drained by a large number of tributaries of the two rivers, such as the Bambla nadi, the Pus, the Adan-Arunavati, the Waghadi, the Khuni, the Vaidharba and the Nirguda (Anonymous, 1974).

Geology : The major part of the district is covered with volcanic

flows of the Deccan Trap, excepting a few isolated exposures of older rocks in the southern and south-eastern parts. The oldest rocks, named the Archaean group, comprise basic and altered basic rocks, granites and granite gneiss. These are overlain, in south-eastern part close to the Penganga valley, by dolomitic limestone and shale of later Precambrian age which are called the Penganga beds. These are directly overlain by sandy and clayey rocks constituting the Gondwana supergroup, comprising Talchir boulder bed, sand stone and shales, Barakar sand stone and shale and Kamthi sandstones.

The volcanic flows occupy the entire district except for the small stretch along the Penganga river. These constitute the Deccan Trap and comprise seventeen basaltic flows in a vertical column.

The flows are both of *pahoehoe* and *aa* type and vary in thickness. Limestone interbedded with chert, shale and red hole beds occur at the contact of some flows and are called inter-trappean beds.

Along the banks of Penganga and the Wardha rivers alluvium is seen varying in thickness from a few metres to as much as 25 metres. The alluvial deposits are mainly constituted of gravels, sand, silts and clays.

Limestone is the only mineral of economic importance found in this district. Its chief deposits are at the following places:

- 1) *The Chanaka - Bhiwkund belt* : It is located at 25 km south-west of Pandharkawada. The limestone is of cement grade.
- 2) *The Mukutban Bhilampur block*: It is composed of limestone and dolomite.
- 3) *The Sindola Chankh-Pandoh belt* : This is near Khandala. Cement grade limestone is available here.
- 4) *The Rajur belt* : Here both cement grade and flux grade limestone is available.

Building stone: Hard, compact and dense parts of the basaltic flows yield good construction materials which can be used as road metal, concrete aggregates and blocks. Kamthi sandstone showing rich unvariegated colour and close beedings can be used as blocks and ornamentation stones.

Climate : The climate of this district is characterised by a hot summer and general dryness except during the south-west monsoon. The cold season from December to February is followed by the hot season from March to May. The south-west monsoon visits the district

from June to September and October-November forms the post-monsoon period.

Rainfall : The average annual rainfall in this area based on the rainfall figures for the years 1964-1982 is 1016 mm. The rainfall generally increases from the north-west towards the south-east. Ner, near the north-western border of the district gets annually 896.3 mm while Pandharkawada near the south-east border gets 1122.2 mm. The central region comprising Yavatmal taluk gets 1099.5 mm. The rainfall during the south-west monsoon season constitutes about 86% of the annual rainfall. August is usually the雨iest month.

On an average there were 54 rainy days i.e. days with rainfall of 2.5 mm or more in a year in the district.

The rainfall during the other seasons is uncertain.

Temperature : Temperature rises rapidly after February till May which is the hottest month of the year. In May the mean daily maximum temperature at Yavatmal is 41.8°C and the mean daily minimum is 28.3°C. The heat in summer is intense and on some days in May and June the maximum temperature may rise upto about 46°C. Sometimes there are thundershowers in the afternoon. With the arrival of the south-west monsoon, by about the middle of June, there is appreciable drop in day temperatures and the weather becomes cool. After the end of September, when the south-west monsoon withdraws, the day temperature increases slightly. But the night temperature decreases progressively after September. After October, both day and night temperatures decrease rapidly. December is usually the coldest month with 28.4°C mean daily maximum temperature and 15.1°C the mean daily minimum. In association with western disturbances which move across north India, cold waves affect the district and the minimum temperature may occasionally go down to about 8.0°C.

Humidity : The humidity is high during the south-west monsoon season; in August it is as much as 87%, otherwise the air is generally dry. The summer months are driest, the relative humidity in April in afternoons being about 25%.

Winds : Winds are generally light to moderate. They become stronger during May to August. In the post-monsoon and cold seasons the winds generally blow from the east or north-east. By March south-westerlies and westerlies start blowing. In the rest of the summer and the south-west monsoon seasons winds are mostly from directions between south-west and north-west (Anonymous, 1974).

WILD LIFE

In most of the areas except rabbit or fox, no other animals have been found; however wherever the forests are dense and thick, some wild animals and birds of different categories are found.

The following are some of the animals and birds that inhabit the forests of this district.

A. Mammals :

Tiger (Wagh) *Panthera tigris* : They usually favour Kinwat reserve along the river Penganga and Kharad, Gondwakadi and Tipeshwar blocks.

Panther (Bibalya Wagh) *Panthera pardus* : They occupy a wider area than tigers.

Sloth Bear (Aswal) *Melursus ursinus* : This is rare and confined to Bittergaon block.

Blue Bull (Nilgai) *Boselaphus tragocamelus* : Generally found in the open forests.

Sambar (Sambar) *Cervus unicolor* : They are found in small numbers in Tipeshwar and Kharbi Blocks.

Indian Gazelle (Chinkara) *Gazella bennetti* : This is commonly found in the scrub forests.

Spotted deer (Chital) - *Axis axis* : It is met with especially in Tipeshwar, Gondwakadi, Bittergaon and Kharbi Blocks.

Wild boar (Randukkar) - *Sus scrofa* : Commonly occurs throughout the district.

Hare are commonly found throughout the district.

B. Birds : The following species of birds occur here :

Peafowl (Mor), *Pavo cristatus*, Blue Rock Pigeon (Kabutar), *Columba livia*, Grey Partridge (Titar), *Frandolinus pondicerianus* and Indian Yellow Legged Button quail-*Turnix Tanki*.

C. Snakes : The following are the poisonous and non poisonous snakes that are found in the district. The non poisonous snakes are the following:

***Coluber ventromaculatus* (Pandhra Nag), *Dryophis nasutus* (Chilti**

shelati), Eryx conicus (Mahadol), *Goiga trigonata* (Shelkya), *Lycodon aulicus* (Kawdya), *Natrix piscator* (Parad), *Obigodon venustus*, *Psammophis longifrons*, *Ptyas mucosus* (Dhaman), *Python molurus* (Ajgar), *Typholus braminus* (Kadu), *Uropeltis* sp. etc.

The poisonous snakes are *Bungaru caeruleus* (Dandekar, Ghoda karayat), *Callophis melanurus* (Raat), *Echis carinatus* (Fefrut, Phoorsa), *Naja naja* (Nag), *Trimeresurus gramineus*, and *Vipera russellii* (Russel's viper, Agya Mahadol, Ghonas).

GENERAL VEGETATION

The forest vegetation is considered as the product of the combined influence of all site factors viz., climatic, edaphic, biotic and other factors like availability of species, their characteristics, dispersal, chance etc. According to Champion & Seth (1968) " ... a forest type may be defined as a unit of vegetation which possesses characteristics in physiognomy and structure sufficiently pronounced to permit of its differentiation from other such units. This is irrespective of physiographic, edaphic or biotic factors. It is selected in the first place subjectively from the ever-varying cover of vegetation, with boundaries arbitrarily imposed on what are in fact gradual changes"

As per Champion & Seth (*op.cit.*) the forests occurring in the district can be broadly classified as "Tropical dry deciduous forests" (Group 5) and sub-group "Southern Tropical dry deciduous forests" (Sub-group 5 A). The climax types under the sub-group 5A occurring in the district are "Dry teak bearing forests" (C-1) and "Southern dry mixed deciduous forests" (C-3). The forests of the district occur on the soil derived from trap and are characterised by the presence of teak of varying quality. Again it depends upon the configuration of the ground and the depth of soil, which has accumulated. Teak is found in abundance ie. 43.54% of the area, sometimes practically pure. The forests are very open and of poor quality.

(1) *Southern Tropical dry deciduous forests* (5A) : This type is found along Aruna river banks, on Yavatmal - Arni road, Kharad, near Kharad talao, Hiwri R.F. near Hiwri talao, Bhansari, Arni R.F., Jamwadi talao surroundings, near Jodmoha on Pandharakawada Yavatmal road, Karanji R.F., Koregaon near Penganga river, Kharbi R.F., Akambagaon, Kharbi R. F., Gadinala, Kharbi R.F., Sonadavi, Kharbi R.F., on way from Pusad to Khandala, Khandala R.F., Bhiwkund R.F., on way from Mohroli to Wani, Mukutban R.F., Pandharakawada, way to Tipeshwar R.F., from Pandharakawada, on way from Yavatmal

to Pandharakawada, on way from Pandharakawada to Bori, Bori R. F., on way from Pandharakawada to Sibla, near Mandar Talao, on way from Wani to Pardi, Wani to Mukutban, Wani R.F. and Yavatmal R.F.

In this type the common tree species are *Acacia leucophloea*, *Aegle marmelos*, *Anogeissus latifolia*, *Bombax ceiba*, *Boswellia serrata*, *Bridelia retusa*, *Buchanania lanzan*, *Diospyros melanoxylon*, *Emblica officinalis*, *Lagerstroemia parviflora*, *Madhuca longifolia* var. *latifolia*, *Mitragyna parvifolia*, *Nyctanthes arbor-tristis*, *Semecarpus anacardium*, *Soymida febrifuga*, *Tectona grandis*, *Terminalia alata*, *T. arjuna* and *T. bellirica*.

Small trees such as *Acacia pennata*, *Bauhinia purpurea*, *Butea monosperma*, *Cassia fistula*, *Cassine glauca*, *Chloroxylon swietenia*, *Eriolaena hookeriana*, *Morinda pubescens*, *Wrightia tinctoria* ssp. *rothii*, *Ziziphus mauritiana*, *Z. xylopyrus* etc. commonly occur.

Shrubs and undershrubs such as *Abutilon indicum*, *Aeschynomene indica*, *Baliospermum montanum*, *Barleria prionitis*, *Calotropis gigantea*, *Crotalaria hirta*, *Dichrostachys cinerea*, *Echinops echinatus*, *Grewia abutilifolia*, *G. hirsuta*, *Maytenus emarginata*, *Mimosa hamata*, *Peristrophe paniculata* and *Sida mysorensis* are often met with in this type.

Climbers, both shrubby and herbaceous are quite common in these areas. They consist of *Basella rubra*, *Butea superba*, *Cajanus platycarpus*, *Canavalia virosa*, *Capparis zeylanica*, *Cardiospermum halicacabum*, *Cayratia trifolia*, *Cissus vitiginea*, *Clitoria ternatea*, *Coccinia grandis*, *Cocculus hirsutus*, *Ctenolepis garcinii*, *Dioscorea bulbifera*, *Diplocyclos palmatus*, *Gloriosa superba*, *Hemidesmus indicus*, *Ipomoea hederifolia*, *I. obscura*, *I. pes-tigridis*, *Jacquemontia paniculata*, *Momordica dioica*, *Mucuna pruriens*, *Mukia maderaspatana*, *Paracalyx scariosa*, *Pergularia daemia*, *Rivea hypocrateriformis*, *Teramnus labialis*, *Tinospora cordifolia*, *Trichosanthes cucumerina* and *Vigna aconitifolius*.

The herbs which occur frequently are *Acalypha malabarica*, *Ammannia multiflora*, *Andrographis paniculata*, *Biophytum sensitivum*, *Boerhavia diffusa*, *Caesulia axillaris*, *Cyathocline purpurea*, *Desmodium gangeticum*, *Dicliptera verticillata*, *Emilia sonchifolia*, *Evolvulus alsinoides*, *Exacum pedunculatum*, *Fimbristylis complanata*, *Indigofera cordifolia*, *Polygonum glabrum*, *Rungia elegans*, *Sida spp.*, *Tridax procumbens*, *Vicoa indica*, etc. The species such as *Neanotis lancifolia*, *N. montholoni* and *Orthosiphon pallidus* occur sparsely.

Grasses are very common in this type of forests either as

undergrowth or in the open places wherever a little moisture is available. Some of the common species are *Alloteropsis cimicina*, *Andropogon pumilus*, *Apluda mutica*, *Aristida redacta*, *Arthraxon hispidus*, *Brachiaria eruciformis*, *B. reptans*, *Chionachne koenigii*, *Chloris virgata*, *Chrysopogon fulvus*, *C. polyphyllus*, *Coix lacryma-jobi*, *Cymbopogon martinii*, *Cynodon dactylon*, *Dactyloctenium aegyptium*, *Dichanthium annulatum*, *D. aristatum*, *D. pertusum*, *Digitaria ciliaris*, *D. stricta*, *Eragrostis japonica*, *E. pilosa*, *E. tenella*, *Heteropogon contortus*, *Ischaemum pilosum*, *I. rugosum*, *Iseilema anthephoroides*, *I. laxum*, *Melanocenchrus jacquemonti*, *Oryza rufipogon*, *Panicum psilopodium*, *Paspalidium flavidum*, *Sehima nervosum*, *S. sulcatum*, *Setaria intermedia*, *S. pumila*, *Sorghum halepense*, *Sporobolus capillaris*, *S. coromandelianus*, *S. indicus* var. *diander*, *Thelepogon elegans*, *Themeda laxa*, *Tragus roxburghii*, *Urochloa panicoides* and *Vetiveria zizanioides*.

The most common parasite found in these areas is *Cuscuta reflexa*.

1.1. *Dry Teak-bearing forest (5A/C-1)* : This type of forest consists of teak and other dry deciduous elements mixed.

Though they are found sporadically throughout the district the following areas possess pockets of this type:- Bhiwkund, Bori, Durg, Durg Camp, East Gondwakadi, Parwa, Bittergaon, Morchandi, Korat, Patapangra, Penganga felling series and Tipeshwar.

The trees which commonly occur in these areas are *Anogeissus latifolia*, *Bridelia retusa*, *Cleistanthus collinus*, *Emblica officinalis*, *Ficus amplissima*, *F. hispida*, *Gardenia latifolia*, *Kydia calycina*, *Lagerstroemia parviflora*, *Mallotus philippensis*, *Moringa concanensis*, *Pterocarpus marsupium*, *Semecarpus anacardium*, *Strychnos potatorum*, *Tectona grandis*, *Terminalia alata*, *T. arjuna* etc.

The second storey is formed by *Acacia chundra*, *Antidesma acidum*, *Bauhinia racemosa*, *Bridelia retusa*, *Butea monosperma*, *Cassia fistula*, *Ceriscoides turgida*, *Diospyros chloroxylon*, *Ixora arborea*, *Piliostigma malabaricum*, *Sterculia urens*, etc.

Some of the common shrubs and undershrubs are *Anisomeles indica*, *Cassia tora*, *Cissus woodrowii*, *Desmodium velutinum*, *Dichrostachys cinerea*, *Grewia hirsuta*, *Helicteres isora*, *Indigofera cassioides*, *Leea macrophylla*, *Maytenus emarginata*, *Woodfordia fruticosa* etc.

Some of the most commonly occurring herbs are *Acalypha lanceolata*, *Andrographis echinoides*, *Barleria cristata*, *Blumea eriantha*,

B. membranacea, Canscora decussata, Cassia pumila, Chrozophora rottleri, Chrysanthellum indicum, Colocasia esculenta, Commelina attenuata, C. hasskarlii, Crotalaria pusilla, Curculigo orchioides, Curcuma pseudomontana, Cyperus alulatus, C. pygmaeus, Desmodium triflorum, Elytraria acaulis, Enicostema axillare, Eriocaulon dianae, Fimbristylis ovata, Flemingia nana, Goniogyna hirta, Iphigenia indica, Justicia simplex, Knoxia sumatrensis, Kohautia nagporenis, Leucas cephalotes, Orthosiphon pallidus, O. rubicundus, Rungia pectinata, Sauromatum pedatum, Scilla hyacinthina, Thecagonum ovatifolium, Tylophora fasciculata, Uraria alopecuroides, U. rufescens, Vicoa indica, etc.

Some of the common grasses are *Brachiaria remota, B. reptans, Chrysopogon polyphyllus, Dichanthium huegelii, Echinochloa colonum, Eragrostiella bifaria, Eragrostis gangetica, E. unioloides, Hackelochloa granularis, Hemarthria compressa, Ophiuros exaltatus, Oplismenus burmannii, Rottboellia cochinchinensis, Saccharum spontaneum*, etc.

Some of the climbers found in this type of forest are *Ampelocissus latifolia, A. tomentosa, Aspidopterys cordata, Dioscorea wallichii, Luffa acutangula* var. *amara*, *Olax scandens, Rhynchosia minima, Trichosanthes tricuspidata, Ventilago denticulata*, etc.

The only parasite encountered in this type is *Cassytha filiformis* climbing on *Anogeissus latifolia*.

The only epiphytic orchid available in this type is *Vanda tessellata*. The terrestrial orchid commonly found is *Peristylus plantagineus*. The bamboo, *Dendrocalamus strictus* occurs in abundance in patches.

1.2. *South dry mixed deciduous forests (5A/C3)* : There is a concentration of thorny species in this type. Availability of grasses and plants useful as fodder is more and consequently grazing is heavy.

This type in patches has been predominantly found in Bhiwkund R.F., Bori R.F., Chandni forest, Dhabdi forest, Durg R.F., Durg camp and talao surroundings, East Gondwakadi, Banks of Waghadi nadi, Yelabara, around Hiwri temple in Hiwri R.F., near Jamwadi tank, Yavatmal, Karanji R.F., Jholapur-Pardi forest, Mohroli, Mukutban, Parwa, Patanbori R.F., Phiski, Dhansala on Pusad-Washim road, Khandala slopes, Tipeshwar R.F., Umarkhed, Datatri temple surroundings, Punwat, Wani R.F., and on banks of Nirguda river, Wani R.F.

The common trees of this type include *Acacia farnesiana, A. tomentosa, Aegle marmelos, Ailanthus excelsa, Albizia odoratissima*,

Boswellia serrata, *Dolichandrone falcata*, *Lannea coromandelica*, *Schrebera swietenioides*, *Soymida febrifuga*, etc.

The small trees found sparsely are *Acacia torta*, *Balanites aegyptiaca*, *Bauhinia racemosa*, *Butea monosperma*, *Catunaregam spinosa*, etc.

The common shrubs and undershrubs include *Anisomeles indica*, *Dodonaea viscosa*, *Hyptis suaveolens*, *Kirganelia reticulata*, *Maytenus emarginata*, *Petalidium barlerioides*, *Triumfetta rotundifolia*, *Ziziphus nummularia*, etc.

Herbs abound in this type. Some of the common herbs are *Alysicarpus hamosus*, *Argemone mexicana*, *Blainvillea acmella*, *Borreria articulata*, *Caesulia axillaris*, *Commelina benghalensis*, *Cyathocline purpurea*, *Desmodium gangeticum*, *Eranthemum roseum*, *Eriocaulon quinquangulare*, *Exacum pedunculatum*, *Fuirena wallichiana*, *Glossocardia bosvallea*, *Goniocaulon indicum*, *Goniogyna hirta*, *Ipomoea eriocarpa*, *Justicia prostrata*, *Mollugo pentaphylla*, *Orthosiphon rubicundus*, *Phyla nodiflora*, *Rungia pectinata*, *Sclerocarpus africanus*, *Sopubia delphiniifolia*, *Tribulus terrestris*, *Xenostegia tridentata*, *Zornia gibbosa*, etc.

Some of the common grasses are *Aristida setacea*, *Arthraxon lancifolius*, *Brachiaria ramosa*, *B. reptans*, *Chloris dolichostachya*, *Chrysopogon fulvus*, *Cynodon dactylon*, *Dichanthium kuntzeana*, *D. pertusum*, *Dinebra retroflexa*, *Eragrostiella brachyphylla*, *Eragrostis aspera*, *E. coarctata*, *E. tenella*, *E. tremula*, *E. viscosa*, *Eremopogon foveolatus*, *Ophiuros exaltatus*, *Opismenus burmannii*, *Perotis indica*, *Setaria verticillata*, *Sporobolus capillaris*, *Themeda quadrivalvis*, etc.

A few of the climbers are *Celastrus paniculatus*, *Combretum albidum*, *Cryptolepis buchananii*, *Dioscorea hispida*, *Jasminum auriculatum*, *Oxystelma secamone*, *Rhynchosia aurea*, *Tragia pluhenetii*, *Wattakaka volubilis*, etc.

Only *Dendrophthoe falcata* has been observed to be a parasite.

The orchids have been found to be only terrestrial species in this type such as *Habenaria digitata*, *H. roxburghii*, *Peristylus plantagineus*, and *Zeuxine strateumatica*.

Weed Flora : Perennial weeds reach into every dimension of the agro-ecosystem and pose a threat to human welfare. A lot of time and manpower is spent on removing weeds. A weed is described as an unwanted and undesirable plant which interferes with utilization of human resources and thus adversely affects human welfare. The weeds cause a substantial loss to the agricultural production.

In Maharashtra there is a lot of scope to work on weeds, their biology and eradication measures that should be adopted. However, the basic need is an up-to-date inventory of weeds of Maharashtra to help understand them and initiate control measures. In this direction to start with a list of weeds of Yavatmal district has been made.

The following weeds have been collected from the cultivated fields, along roadsides and waste places :

Acalypha indica, Achyranthes aspera, Aerva lanata, Alysicarpus rugosus, Amaranthus roxburghianus, A. spinosus, Amberboa ramosa, Anagallis arvensis, Andropogon pumilus, Aristida adscensionis, Biophytum sensitivum, Blumea lacera, Boerhavia diffusa, Borreria articularis, Brachiaria eruciformis, B. ramosa, B. reptans, Cardiospermum halicacabum, Cassia occidentalis, Celosia argentea, Chenopodium album, Cleome gynandra, C. viscosa, Convolvulus arvensis, Corechorus aestuans, C. fascicularis, C. trilocularis, Crotalaria hirta, C. retusa, Cyanotis fasciculata, Cyperus rotundus, Datura stramonium, Desmodium dichotomum, Dichanthium aristatum, Digera muricata, Digitaria ternata, Dinebra retroflexa, Echinochloa colonum, Eleusine indica, Eragrostiella brachyphylla, Eragrostis aspera, E. pilosa, E. tenella, Eriocaulon dianae, Euphorbia hirta, E. parviflora, E. perbracteata, E. prostrata, Gomphrena celosioides, Hyptis suaveolens, Indigofera glabra, I. glandulosa, I. linifolia, I. trifoliata, I. trita, Ipomoea eriocarpa, Ischaemum pilosum, Justicia prostrata, Kohautia aspera, Lagascea mollis, Launaea procumbens, Lavandula bipinnata, Lepidagathis cristata, Leucas aspera, L. cephalotes, L. stricta, Lindernia multiflora, L. parviflora, Melilotus indica, Melochia corchorifolia, Mollugo pentaphylla, Neanotis lancifolia, Ocimum americanum, Oxalis corniculata, Panicum trypheron, Pennisetum pedicellatum, Peristrophe paniculata, Phyllanthus debilis, P. maderaspatensis, Physalis minima, Polygala arvensis, Portulaca oleracea, P. quadrifida, Psoralea corylifolia, Rungia repens, Saccharum spontaneum, Setaria intermedia, S. verticillata, Sida acuta, Solanum nigrum, S. surattense, Sonchus oleraceus, Sporobolus capillaris, Tonnina axillaris, Trianthema portulacastrum, Tribulus terrestris, Trichodesma zeylanicum, Vaccaria pyramidata, Vernonia cinerea and Vigna trilobata.

Aquatic Vegetation : " Aquatic vegetation has profound influence on the nutrient budget of the aquatic eco-systems and their hydrological balance. The excessive growth of aquatic vegetation particularly in tropical and subtropical areas causes loss of water resources, which adversely affects the economy of the countries in the region " (Varshney & Rozoska, 1976).

In Yavatmal district, there are a number of tanks and rivulets in addition to the Penganga river, where a lot of aquatic vegetation has been observed. The fresh water ponds, the notable being, Jamwadi tank near Yavatmal, Mukutban tank in Wani range, tanks at Kalamb, Khandala (on Pusad Washim road), way to Bhiwkund Pandharakawada and marshy areas on way to Tipeshwar R.F. are quite rich in aquatic vegetation.

The aquatic vegetation can be broadly classified into the following categories adapted with modification after Maheshwari (1960).

(1) *Free floating hydrophytes* : These are in contact with water and air only. They are represented by *Lemna perpusilla*, *Pistia stratiotes*, *Spirodela polyrhiza* and *Trapa natans* var. *bispinosa*.

(2) *Attached submerged hydrophytes* : These are entirely or at least to the most part, in contact with soil and water only. Sometimes the vegetative shoots may be under water but the flowers are above the water level. The species coming under this group are *Hydrilla verticillata*, *Lagarosiphon alternifolia*, *Limnophyton obtusifolium*, *Nymphaea nouchali*, *N. pubescens*, *Sagittaria guayanensis* ssp. *lappula*, *Tenagogcharis latifolia*, *Utricularia stellaris* and *Vallisneria spiralis*.

(3) *Attached hydrophytes with floating leaves*: These species are in contact with soil, water as well as air. The species coming under this category are *Aponogeton natans*, *Nymphoides cristata*, *Ottelia alismoides*, *Oxystelma secamone*, *Paspalidium flavidum* and *P. geminatum*.

(4) *Emergent or amphibious hydrophytes* : The root, the lower part of the stem and in some cases, even the lower leaves of these hydrophytes are usually submerged under water. The members belonging to this type are *Ischaemum rugosum*, *Oryza rufipogon*, *Sacciolepis myosuroides*, *Schoenoplectus articulatus* and *Sesbania bispinosa*.

(5) *Wetland hydrophytes* : These are rooted in the soil, that is usually saturated with water, at least in the early part of their life. The species that are usually found on river banks and edges of tanks and in wet rice fields and other marshy places are listed here. They are *Aeschynomene indica*, *Alternanthera sessilis*, *Ammannia baccifera* ssp. *baccifera* & ssp. *aegyptiaca*, *A. multiflora*, *Bacopa monnieri*, *Brachiaria reptans*, *Caesulia axillaris*, *Canscora decurrens*, *Chrozophora prostrata*, *C. rotitleri*, *Coix lacryma-jobi*, *Commelina benghalensis*, *C. hasskarlii*, *Crinum defixum*, *Cyathocline purpurea*, *Cyperus alulatus*, *C. compressus*, *C. exaltatus*, *C. nutans* var. *eleusinoides*, *C. pygmaeus*,

C. squarrosus, *C. triceps*, *Desmodium dichotomum*, *Dopatrium junceum*, *Echinochloa colonum*, *Eclipta prostrata*, *Eleocharis geniculata*, *Eragrostis gangetica*, *E. japonica*, *E. unioloides*, *Eriocaulon dianae*, *E. quinquangulare*, *Eriochloa procera*, *Exacum pedunculatum*, *Fimbristylis bis-umbellata*, *F. complanata*, *F. dichotoma*, *F. ovata*, *F. schoenoides*, *F. sieberiana*, *F. tetragona*, *Fuirena wallichiana*, *Glinus lotoides*, *Glossostigma diandrum*, *Gomphrena celosioides*, *Heliotropium supinum*, *Hygrophila auriculata*, *Iseilema laxum*, *Justicia quinqueangularis* var. *peploides*, *Lindernia crustacea*, *Ludwigia adscendens*, *L. perennis*, *Monochoria vaginalis*, *Murdannia nudiflora*, *Paspalum serobiculatum*, *Phyla nudiflora*, *Polygonum glabrum*, *P. plebeium*, *Rotala indica*, *Saccharum spontaneum*, *Schoenoplectus litoralis*, *S. squarrosus*, *Sopubia delphinifolia*, *Sphaeranthus indicus*, *Stemodia viscosa*, *Sutera dissecta*, *Tonningia axillaris*, *T. cucullata*, *Typha angustifolia* and *Utricularia caerulea*.

The aquatic vegetation on the margins of the Penganga river is conspicuous by the abundant presence of *Barringtonia acutangula*, *Homonoia retusa*, *H. riparia*, *Rotula aquatica* and *Tamarix ericoides*.

FLORISTIC ANALYSIS

This flora deals with a total of 577 species, 1 sub-species and 1 variety belonging to 365 genera comprising 98 families. The break up of the Dicotyledones and Monocotyledones is shown below:

Divisions	Families	Genera	Species	Sub-species	Variety
Dicotyledones	79	271	418	1	1
Monocotyledones	19	94	159	—	—
Total	98	365	577	1	1

An analysis shows that 40 families are monotypic; 10 families are represented by a single genus and two species only; 41 families have genera ranging from 1 to 8 and species ranging from 2 to 26 and the remaining 7 families have genera ranging from 10 to 51 and species from 13 to 87. The later category is as follows :

Name of the family	Genera	Species
Scrophulariaceae	10	13
Euphorbiaceae	13	31
Rubiaceae	14	18
Acanthaceae	16	25
Asteraceae	25	27
Fabaceae	38	87
Poaceae	51	87

PLANTS OF ECONOMIC, MEDICINAL AND FODDER VALUE

The forests in Yavatmal district abound in economically and medicinally important plants, some of which are being exploited by the local people. Quite a few fodder species have also been found here which solve the grazing problem of cattle.

i) *Plants of economic importance* : Some of the economically viable plants for their known uses are enumerated below to help the local people in using them profitably.

The floss of *Calotropis gigantea* and *Cochlospermum religiosum* are used in stuffing pillows and mattresses.

The fibres of the following plants can be used for rope making : *Abutilon indicum*, *Agave americana*, *Butea superba*, *Crotalaria juncea*, *C. retusa*, *C. spectabilis*, *Cryptolepis buchananii*, *Helicteres isora*, *Sida rhombifolia* and *Wattakaka volubilis*.

The pith of *Aeschynomene indica* has been traditionally in use in making topis.

From *Borassus flabellifer* toddy is extracted; the fruits are also edible.

The species such as *Blumea eriantha*, *B. lacera*, *Cymbopogon martinii* and *Santalum album* possess essential oils.

The plants yielding gum are *Acacia leucophloea*, *A. nilotica* ssp. *indica* and *Boswellia serrata*.

The leaves, bark or pods of the following species are used in tanning industry : *Acacia farnesiana*, *A. leucophloea*, *A. nilotica* ssp. *indica*, *A. pinnata*, *Albizia lebbeck*, *Anogeissus latifolia*, *Bridelia retusa*, *Casearia elliptica*, *Cassia fistula*, *Terminalia arjuna*, *T. bellirica* and *Woodfordia fruticosa*.

The seeds of *Cassia tora* are used in Indigo dyeing.

There are many species whose wood is used in making agricultural implements, structural work, packing cases, construction work, cabinet making or cheap furniture making, etc. They are *Acacia leucophloea*, *A. nilotica* ssp. *indica*, *Ailanthus excelsa*, *Alangium salvifolium*, *Albizia procera*, *Barringtonia acutangula*, *Bauhinia purpurea*, *Bridelia retusa*, *Buchanania lanzae*, *Butea monosperma*, *Cassia fistula*, *Cleistanthus collinus*, *Cordia macleodii*, *Dodonaea viscosa* and *Eriolaena hookeriana*.

Many tree species have the potentiality of good timber value apart from *Tectona grandis* which is widely occurring in these forests. Some such species are *Albizia lebbeck*, *Anogeissus latifolia*, *Antidesma acidum*, *Boswellia serrata*, *Ceriscoides turgida*, *Chloroxylon swietenia*, *Dalbergia latifolia*, *D. sissoo*, *Gardenia latifolia*, *Kydia calycina*, *Lagerstroemia parviflora*, *Mitragyna parvifolia*, *Pterocarpus marsupium*, *Sapindus emarginata*, *Schrebera swietenioides*, *Semecarpus anacardium*, *Soymida febrifuga*, *Sterculia urens*, *Terminalia alata*, *T. arjuna* and *T. bellirica*.

For making brooms *Aristida setacea* is very useful. The stems of *Combretum albidum* are used in making baskets. The leaves of *Diospyros melanoxylon* are used in bidi making. Incidentally, the Forest Department's income from auctioning 'Tendu' leaves is sizable.

The edible fruits of *Trapa natans* var. *bispinosa* are collected by local people to sell in the market.

There is scope to exploit in a better way the fruits of *Emblica officinalis* which is available in abundance during the fruiting season.

ii) *Plants of medicinal importance* : Species which are known to possess medicinal properties (Anonymous, 1948-1976) in their leaves, stems and roots are abundant in these forests. Some of them are *Abutilon indicum*, *Acalypha indica*, *Achyranthes aspera*, *Aerva lanata*, *Ageratum conyzoides*, *Amberboa ramosa*, *Ammannia baccifera*, *Amorphophallus sylvaticus*, *Andrographis paniculata*, *Anisomeles indica*, *A. malabarica*, *Argemone mexicana*, *Bacopa monnieri*, *Baliospermum montanum*, *Barleria prionitis*, *Biophytum sensitivum*, *Boerhavia diffusa*, *Canscora decussata*, *Cardiospermum halicacabum*, *Cassia absus*, *Cassytha filiformis*, *Cayratia trifolia*, *Celastrus paniculatus*, *Chrozophora prostrata*, *C. rotteieri*, *Clerodendrum serratum*, *Clitoria ternatea*, *Cocculus hirsutus*, *Crinum asiaticum*, *C. defixum*, *Crotalaria medicaginea*, *Curculigo orchiooides*, *Cuscuta reflexa*, *Datura stramonium*, *Dendrophthoe falcata*, *Desmodium gangeticum*, *Dioscorea bulbifera*, *Dipteracanthus prostratus*, *Dolichandrone falcata*, *Echinops echinatus*, *Elytraria acaulis*, *Emilia sonchifolia*, *Eranthemum roseum*, *Eupatorium triplinerve*, *Euphorbia dracunculoides*, *E. hirta*, *E. neriifolia*, *E. thymifolia*, *Evolvulus alsinoides*, *Exacum pedunculatum*, *Glinus lotoides*, *Gloriosa superba*, *Haplanthodes verticillata*, *Hemidesmus indicus*, *Homonoia riparia*, *Hoppea dichotoma*, *Hybanthus enneaspermus*, *Hyptis suaveolens*, *Impatiens balsamina*, *Indigofera linifolia*, *I. linnaei*, *I. tinctoria*, *Iphigenia indica*, *Ipomoea obscura*, *Ixora arborea*, *Leea asiatica*, *L. macrophylla*, *Leonotis nepetifolia*, *Leucas aspera*, *L. cephalotes*, *Lindernia crustacea*, *Ludwigia perennis*, *Malvastrum*

coromandelianum, *Martynia annua*, *Mollugo pentaphylla*, *Moringa concanensis*, *Nyctanthes arbor-tristis*, *Nymphaea nouchali*, *Olax scandens*, *Oxystelma secamone*, *Pergularia daemia*, *Phyllanthus fraternus*, *P. maderaspatensis*, *P. urinaria*, *Physalis minima*, *Pistia stratiotes*, *Polygala arvensis*, *Polygonum glabrum*, *P. plebeium*, *Portulaca oleracea*, *P. quadrifida*, *Psoralea corylifolia*, *Rotula aquatica*, *Rungia pectinata*, *R. repens*, *Salvia plebeia*, *Scilla hyacinthina*, *Sida acuta*, *Solanum nigrum*, *S. surattense*, *Sonchus oleraceus*, *Sphaeranthus indicus*, *Stemodia viscosa*, *Strychnos potatorum*, *Tamarix ericoides*, *Tephrosia purpurea*, *Teramnus labialis*, *Tragia plukenetii*, *Trianthema portulacastrum*, *Tribulus terrestris*, *Trichodesma indicum*, *T. zeylanicum*, *Tridax procumbens*, *Triumfetta rotundifolia*, *Uraria picta*, *U. rufescens*, *Utricularia caerulea*, *Vallisneria spiralis*, *Vanda tessellata*, *Ventilago denticulata*, *Vernonia cinerea*, *Vicoa indica*, *Wrightia tinctoria* ssp. *rothii*, *Xanthium strumarium* and *Xenostegia tridentata*.

iii) *Plants of fodder value* : The people living around forests require fodder to feed their cattle. There are a number of grass species growing in the forests and especially in the Jodmoha grass farm. In addition, a few herbs and leaves and young shoots of some tree species are also used as fodder.

The common grasses of fodder value are *Andropogon pumilus*, *Brachiaria eruciformis*, *B. ramosa*, *Chloris dolichostachya*, *Cynodon dactylon*, *Dactyloctenium aegyptium*, *Dichanthium annulatum*, *D. pertusum*, *Dinebra retroflexa*, *Eleusine indica*, *Eragrostiella bifaria*, *Eragrostis tenella*, *E. tremula*, *E. unioloides*, *E. viscosa*, *Eremopogon foveolatus*, *Eriochloa procera*, *Hackelochloa granularis*, *Heteropogon contortus*, *Ischaemum rugosum*, *Iseilema anthephoroidea*, *I. laxum*, *Oplismenus burmannii*, *Panicum psilopodium*, *Paspalidium flavidum*, *P. geminatum*, *Pennisetum pedicellatum*, *Perotis indica*, *Sehima nervosum*, *S. sulcatum*, *Setaria pumila*, *Sporobolus indicus* var. *diander* and *Urochloa panicoides*.

Some of the herbs and the trees whose young shoots and leaves are used as fodder are *Acacia nilotica* ssp. *indica*, *Achyranthes aspera*, *Albizia lebbeck*, *Alysicarpus rugosus*, *A. vaginalis*, *Butea monosperma*, *Cassia occidentalis*, *Cyanotis cristata*, *Desmodium dichotomum*, *D. triflorum*, *Dichrostachys cinerea*, *Diospyros chloroxylon*, *Emblica officinalis*, *Ficus benghalensis*, *Indigofera cordifolia*, *I. glandulosa*, *Ipomoea aquatica*, *I. eriocarpa*, *I. pes-tigridis*, *Kydia calycina*, *Lagerstroemia parviflora*, *Lepidagathis cristata*, *Melia azedarach*, *Melilotus indica*, *Rhynchosia minima*, *Tinospora cordifolia*, *Vigna trilobata*, *Ziziphus mauritiana*, etc.

INTERESTING PLANTS OF BOTANICAL VALUE

It has been observed that about 11 species have not been recorded from any part of Maharashtra. In addition, 2 species have been collected after a lapse of 4 to 14 decades (Karthikeyan & Anand Kumar, 1983). They are as follows :

1. *Ampelocissus tomentosa* : This has been recorded earlier from Dharwar, Belgaum and North Kanara only. This is the first record for Maharashtra.
2. *Amorphophallus sylvaticus* : This has been collected after 38 years of McCann's collection from Bombay. Cooke (*op. cit.*) doubted its availability in erstwhile Bombay Presidency.
3. *Brachiaria remota* : This is an addition to the flora of Maharashtra. So far this has been reported from Orissa and Tamil Nadu only (Bor, 1960).
4. *Bridelia montana* : First report for Maharashtra. Cooke (*op. cit.*) had not reported this.
5. *Chrysanthellum indicum* : So far this species has been recorded for Western India from Gujarat only. For the first time this is being recorded from Maharashtra.
6. *Eragrostis coarctata* : Reported from Maharashtra for the first time.
7. *Fimbristylis sieberiana* : This has been collected for the first time from Maharashtra. Cooke (*op. cit.*) had not reported this species.
8. *Flemingia nana* : This rare species has been reported so far only from North Kanara (Cooke, *op. cit.*). This has been collected for the first time from Maharashtra.
9. *Orthosiphon rubicundus* : First report for Maharashtra. So far this has been reported from south of Maharashtra only (Mukherjee, 1940).
10. *Schoenoplectus litoralis* : This is being reported for the first time from Maharashtra.
11. *Scleria parvula* : This is the first record for Maharashtra. This is often confused with *S. tessellata* Willd.
12. *Themeda laxa* : It is an addition to the flora of Maharashtra. Previously this has been reported only from Madhya Pradesh (Bor, 1960).

13. *Theriophonum minutum* : This has been collected after 14 decades of Graham's collection. It is surprising to note that though Graham (Cat. Bombay Pl. 228, 1839) has reported this, Cooke (*op. cit.*) had not included in his Flora.

CONCLUDING REMARKS

The knowledge of the flora of Yavatmal district is little or next to nil. A floristic account worth the name for the area is yet to appear. Hence an attempt has been made to compile a flora for the district. As already noted, a total of 577 species, 1 subspecies and 1 variety comprising 365 genera and 98 families have been collected.

It is expected that with the help of such information meaningful efforts can be made to use the natural resources to the betterment and upliftment of the rural population, a majority of which is languishing in poverty for want of employment. It is fervently hoped and desired that the public at large will be benefitted by getting to know about the vast potential of economic and medicinal plants which are still available in our fast depleting forest areas.

From the fundamental scientific point of view the flora of 'Vidarbha' of which Yavatmal district is one of the components-is also not known fully. So the floristic account of Yavatmal district will help to understand the floristics of 'Vidarbha' as a whole and consequently will help in compilation of the Maharashtra State Flora too.

It need not be overemphasised that no meaningful efforts can be made to fully utilise the plant resources without possessing data on their availability in any particular area. Hence, an up-to-date flora of Yavatmal district assumes importance.

It is sincerely hoped that the effort will be fruitful if such gaining of knowledge may awaken the people as well as Government and prevent them from wantonly destroying and vandalising the small areas under already shrinking natural forests with a short sighted view for a few gains which will prove counter-productive, highly expensive and fatal in the long run. We owe to the posterity to leave at least a small portion of virgin forests which is a legacy we have inherited from our ancestors.

KEY TO FAMILIES

1. Leaves usually with reticulate venation; flowers usually tetramerous or pentamerous; cotyledons usually 2:
2. Perianth usually biserrate or multiseriate :
 3. Petals usually free; stamens often many :
 4. Calyx lobes usually free; stamens hypogynous :
 5. Sepals usually imbricate in bud, if valvate, then sepals free :
 6. Sepals usually free; if united below, then petals dissimilar :
 7. Stamens usually more than 12, if fewer, then sepals and petals 4 with a 2-valved capsule or berry :
 8. Sepals 2-3 :
 9. Leaves entire; sap colourless; sepals 2, petals 4-5 ... PORTULACACEAE
 9. Leaves lobed; sap yellow; sepals 2 and petals 4 or sepals 3 and petals 6 ... PAPAVERACEAE
 8. Sepals 4-5:
 10. Aquatic plants ; petals many seriate ... NYMPHAEACEAE
 10. Terrestrial plants; petals 1-2-seriate :
 11. Sepals 4; ovary and fruit borne on a long gynophore ... CAPPARACEAE
 11. Sepals 5; ovary and fruit sessile :
 12. Plants usually thorny; petals absent ... FLACOURTIACEAE
 12. Plants not thorny; petals present ... COCHLOSPERMACEAE
 7. Stamens upto 10:
 13. Flowers 3-merous ... MENISPERMACAE
 13. Flowers 4-5-merous :
 14. Ovary 1-celled :

15. Leaves minute, scaly	...	TAMARICACEAE
15. Leaves well developed :		
16. Stamens as many as the sepals; placentas parietal	...	VIOLACEAE
16. Stamens twice as many as the sepals; placentas free central	...	CARYOPHYLLACEAE
14. Ovary 2 or more celled, if 1-celled, then distinctly stipitate :		
17. Filaments more or less united; leaves simple	...	POLYGALACEAE
17. Filaments usually free, if united at base, then leaves compound or deeply palmately lobed :		
18. Trees, shrubs or climbers	...	SAPINDACEAE
18. Herbs :		
19. Leaves compound, opposite; stamens 10, free	...	ZYGOPHYLLACEAE
19. Leaves simple, if compound, then alternate; stamens 5-10, often united at base :		
20. Flowers irregular; stamens 5	...	BALSAMINACEAE
20. Flowers regular; stamens 8-10	...	OXALIDACEAE
6. Sepals more or less united at base :		
21. Leaves pellucid gland-dotted	...	RUTACEAE
21. Leaves not gland-dotted :		
22. Leaves opposite	...	MALPIGHIACEAE
22. Leaves alternate :		
23. Carpels syncarpous	...	MORINGACEAE
23. Carpels syncarpous and septate or apocarpous :		
24. Stamens alternate with the petals :		
25. Ovules and seeds pendulous, if horizontal, then filaments united into a tube :		
26. Filaments free	...	SIMAROURACEAE
26. Filaments united into a tube	...	MELIACEAE
25. Ovules and seeds erect or ascending :		
27. Ovary 3-5-celled; leaves simple	...	CELASTRACEAE
27. Ovary 1-celled, if 2-5-celled, then leaves compound	...	ANACARDIACEAE
24. Stamens opposite the petals :		
28. Leaves exstipulate; ovules and seeds pendulous	...	OLACACEAE

28. Leaves stipulate; ovules and seeds
erect or ascending :
29. Scandent herbs or shrubs, rarely erect,
usually tendrillar; ovary 2-celled ... VITACEAE
29. Erect shrubs, without tendrils;
ovary 3-6-celled ... LECACEAE
5. Sepals usually valvate in bud, if imbricate, then petals
valvate or 3-merous :
30. Flowers 3-merous; sepals free, rarely united;
leaves simple ... ANNONACEAE
30. Flowers 4-6-merous, if 3-merous, then leaves
compound or petals 5; sepals usually united;
leaves simple or compound :
31. Filaments united into a column or cup :
32. Stamens usually 15, sometimes few
in a column or cup around the style
or if stamens numerous, then petals
absent ... STERCULIACEAE
32. Stamens numerous, rarely few in a
column around the style with only
short free filaments or dividing into
groups opposite the petals :
33. Leaves simple; epicalyx usually
present ... MALVACEAE
33. Leaves digitately compound;
epicalyx absent ... BOMBACACEAE
31. Filaments free, rarely connate at base :
34. Leaves imparipinnate ... EUPHORBIACEAE
34. Leaves simple :
35. Stamens as many as and
usually adnate to the base
of the petals ... RHAMNACEAE
35. Stamens numerous or at least
twice as many as and free from
the petals ... TILIACEAE
4. Calyx lobes united; stamens epigynous or perigynous :
36. Stems fleshy, flat, articulated, spiny ... CACTACEAE
36. Stems herbaceous or woody, if fleshy, then not flattened
or articulated :
37. Ovules pendulous from the apex of carpels or cells :
38. Ovules 2-many in each cell ... COMBRETACEAE
38. Ovule 1 in each cell ... ALANGIACEAE

37. Ovules attached to the inner angles or the bases of the carpels or cells, if to the apex, then ovules many :
 39. Carpels solitary; styles terminal; leaves usually stipulate; ovules on the inner angle of carpels ... FABACEAE
39. Carpels many or if solitary, then styles not terminal or ovules at the base of the carpels and leaves exstipulate :
 40. Flowers unisexual ... CUCURBITACEAE
 40. Flowers usually bisexual, if polygamous, then petals absent :
 41. Carpels free or if ultimately united, at least the styles free :
 42. Stipules membranous, fugacious; stamens 3-5 ... MOLLUGINACEAE
 42. Stipules absent; stamens 5-20 ... AZOACEAE
 41. Carpels and styles united throughout :
 43. Calyx lobes valvate :
 44. Ovary free from the calyx tube ... LYTHRACEAE
 44. Ovary completely or half adnate to the calyx tube :
 45. Leaves dimorphic ... TRAPACEAE
 45. Leaves uniform ... ONAGRACEAE
 43. Calyx lobes imbricate, or if valvate then trees with flowers in long, pendulous racemes and fruit a berry :
 46. Leaves opposite, usually gland-dotted ... MYRTACEAE
 46. Leaves alternate, not gland-dotted :
 47. Flowers in spikes ... LECYTHIDACEAE
 47. Flowers in racemes ... BARRINGTONIACEAE
3. Petals united; stamens usually less than 12 :
 48. Ovary inferior; stamens as many as, rarely less than and always alternate with the corolla lobes :
 49. Leaves opposite or whorled, usually stipulate; anthers free; ovary 2-10-celled ... RUBIACEAE
 49. Leaves usually alternate, exstipulate; anthers united into a tube; ovary 1-celled ... ASTERACEAE
 48. Ovary superior or if inferior, then stamens many or if semi-inferior, then stamens opposite the corolla lobes :
 50. Ovary 1-celled; placentation free central :
 51. Corolla 2-lipped; stamens 2 ... LENTIBULARIACEAE

51. Corolla regular; stamens as many as the corolla lobes ...	PRIMULACEAE
50. Ovary 2-many-celled, placentation axile or if 1-celled, then placentation parietal :	
52. Stamens free from the corolla ...	EBENACEAE
52. Stamens inserted on the corolla :	
53. Ovary 3 or more carpelled ...	SAPOTACEAE
53. Ovary 2-carpelled or if 3-5-carpelled, then stamens as many as and alternate with the corolla lobes or fewer :	
54. Corolla regular or slightly oblique; stamens as many as and alternate with the corolla lobes or if corolla oblique or irregular and stamens fewer than the lobes, then corolla limb plicate or subcontorted or stamens 2 and alternate with carpels :	
55. Leaves usually alternate, if opposite or subopposite, then ovary 4-celled :	
56. Ovules many in each cell ...	SOLANACEAE
56. Ovules usually 2, rarely 1-4 in each cell :	
57. Corolla lobes imbricate or contorted ...	BORAGINACEAE
57. Corolla lobes usually plicate :	
58. Leafless, parasitic climbers ...	CUSCUTACEAE
58. Leafy, non parasitic herbs or shrubs ...	CONVOLVULACEAE
55. Leaves opposite or whorled; ovary 1-2-celled :	
59. Stamens 2 ...	OLEACEAE
59. Stamens 4 or more :	
60. Carpels free, styles united; or if carpels also united, then corolla lobes contorted and twisted clockwise :	
61. Pollens aggregated into pollinia ...	ASCLEPIADACEAE
61. Pollens not aggregated into pollinia ...	APOCYNACEAE
60. Carpels and styles always connate :	
62. Stipules present or reduced to a transverse line ...	LOGANIACEAE
62. Stipules absent :	
63. Aquatic herbs; leaves floating, orbicular-cordate ...	MENYANTHACEAE
63. Terrestrial herbs; leaves various, never orbicular ...	GENTIANACEAE

64. Corolla irregular or distantly oblique, lobes overlapping or if regular and cells of ovary 1-2-ovuled, then embryo with inferior radicle :
64. Carpels usually 1-ovuled, if 2-ovuled, then ovules collateral, not superposed and fruits indehiscent :
65. Ovary usually lobed with 2 axillary ovules in each cell; stigma usually entire; fruits usually drupaceous ... VERBENACEAE
65. Ovary usually entire, if lobed, then with one basal ovule in each cell; stigma usually 2-lobed; fruits usually nutlets ... LAMIACEAE
64. Carpels 2-more ovuled or if only 2-ovuled, then ovules superposed or if collateral, then fruits 2-valved :
66. Fruits opening elastically from the apex of 2-loculicidal valves ... ACANTHACEAE
66. Fruits not opening as above :
67. Leaves compound; seeds winged ... BIGNONIACEAE
67. Leaves simple; seeds not winged :
68. Ovules many on placentas attached to the middle of the septum ... SCROPHULARIACEAE
68. Ovules many, 1-seriate under the leaves of a projecting parietal 2-bladed placentas :
69. Flowers solitary; fruit a pyrene with two hooks at apex ... MARTYNIACEAE
69. Flowers in racemes; fruit a capsule ... PEDALIACEAE
2. Perianth absent or 1-seriate :
70. Flowers often bisexual or if unisexual, then embryo peripheric annular or the ovule not distinguishable from the carpillary tissue and the seeds without testa or perianth lobes 2-seriate and anthers opening by valves; perianth usually single, if double, then the outer whorl small; seeds without testa and stamens opposite the inner perianth lobes :
71. Ovary inferior :
72. Trees, root parasitic; ovules 2-4, pendulous from a free central column ... SANTALACEAE
72. Shrubs, stem parasitic; ovule solitary, erect ... LORANTHACEAE
71. Ovary superior :
73. Seeds usually with copious albumen, if albumen absent or scanty, then embryo curved :
74. Leaves stipulate ... POLYGONACEAE
74. Leaves exstipulate :
75. Perianth tubular ... NYCTAGINACEAE
75. Perianth lobes connate only at base :

76. Leaves membranous; perianth scarious ... AMARANTHACEAE
76. Leaves fleshy; perianth not scarious :
77. Stems twining to the right; bracteoles adnate to the perianth ... BASELLACEAE
77. Stems not twining; bracteoles not adnate to the perianth ... CHENOPODIACEAE
78. Seeds usually exaluminous, if albuminous, then embryo straight :
78. Leafless parasitic herbs ... CASSYTHACEAE
78. Leafy non parasitic trees ... LAURACEAE
79. Flowers usually unisexual, if bisexual, then perianth absent; perianth when present, single or if double, then the outer whorl conspicuous with the stamens either all central or the outer whorl of stamens alternate with the inner perianth lobes; or if the stamens of the outer whorl opposite the inner perianth lobes, then the seed with a testa and the plant not parasitic; anthers never opening by valves :
79. Ovary usually 2-more-celled, rarely 1-celled with 2 ovules in each cell; or if ovary 1-celled, 1-ovuled, then stamens numerous ... EUPHORBIACEAE
79. Ovary 1-celled, 1-ovuled; stamens 1 or 2 (rarely 3-6) ... MORACEAE
1. Leaves usually with parallel venation; flowers usually 3-merous; cotyledon 1:
80. Perianth 2-seriate, usually both corolline or if only the inner series corolline, then the perianth lobes much larger than those of the outer series, or if perianth 1-seriate, then ovary 1-celled and scapigerous herbs :
81. Seeds minute, exaluminous :
82. Flowers usually unisexual; outer perianth lobes calycine, inner corolline or absent; all perianth lobes similar ... HYDROCHARITACEAE
82. Flowers bisexual; perianth lobes of both series corolline; one petal dissimilar ... ORCHIDACEAE
81. Seeds conspicuous, albuminous :
83. Ovary superior :
84. Outer perianth lobes calycine, inner corolline ... COMMELINACEAE
84. Both perianth series corolline :
85. Plants aquatic ... PONTEDERIACEAE
85. Plants terrestrial ... LILIACEAE
83. Ovary inferior :
86. Flowers irregular ... ZINGIBERACEAE
86. Flowers almost regular :
87. Climbers ... DIOSCOREACEAE
87. Erect herbs :

88. Rootstock tuberous; leaves distinctly nerved; perianth not showy ... HYPoxidaceae
88. Rootstock bulbous; leaves not distinctly nerved; perianth large, showy ... AMARYLLIDACEAE
80. Perianth 2-seriate, usually both calycine or if inner series corolline, then its lobes not larger than those of the outer ones, or if the perianth 1-seriate, then calycine; either terrestrial or aquatic herbs with 1-carpelled or apocarpous ovary or perianth reduced to scales or bristles or wanting or if perianth lobes of inner series corolline and larger than those of the outer one, then aquatic herbs with apocarpous ovary :
89. Perianth 2-seriate :
90. Both perianth series calycine, rigid or herbaceous; ovary syncarpous; albumen copious ... ARECACEAE
90. Outer perianth lobes herbaceous; inner corolline; ovary apocarpous; albumen absent :
 91. Flowers bisexual; fruits dehiscent ... LIMNOCHARITACEAE
 91. Flowers unisexual or polygamous; fruits indehiscent ... ALISMATACEAE
89. Perianth absent or reduced to scales or bristles or if present, then plants aquatic :
92. Inflorescence of spadices or spikes, or if flowers solitary, then not in the axils of modified glumaceous bracts :
 93. Terrestrial plants; flowers on a spadix subtended and usually covered by modified spathe ... ARACEAE
 93. Aquatic or marshy plants, sometimes free floating; flowers not on a spadix or if so, then not covered by a spathe :
 94. Free floating herbs ... LEMNACEAE
 94. Fixed herbs with creeping rootstock and floating or submerged stems :
 95. Perianth of filiform bristles; ovary borne on a gynophore ... TYPHACEAE
 95. Perianth not filiform, 3-lobed; ovary sessile ... APONOGETONACEAE
92. Inflorescence of head or spikelets composed of solitary flowers in the axils of glumaceous bracts :
 96. Flowers in heads, always unisexual; perianth lobes 3-6, membranous ... ERIOCaulaceae
 96. Flowers in spikelets with imbricating glumes, unisexual or bisexual, rarely dioecious; perianth absent or reduced to scales or bristles :
 97. Stems solid; leaf sheaths rarely ligulate, closed in front; fruit a nut with free seed within ... CYPERACEAE
 97. Stems usually hollow except at nodes; leaf sheaths usually ligulate, split in front; fruit a grain with seed coat adhering to the pericarp ... POACEAE

ANNONACEAE

- | | | |
|--|-----|---------|
| 1. Anther cells concealed by the overlapping connectives | ... | ANNONA |
| 1. Anther cells not concealed by the overlapping connectives | ... | MILIUSA |

ANNONA L.

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.); Witt, List. 1. 1908. *Sitaphal*.

Trees, c. 4 m high; bark brownish, smooth. Leaves 2.5–6.5 x 1.0–2.0 cm, alternate, petiolate, oblong. Flowers pale yellow, solitary or fascicled on short leaf-opposed peduncles; petals fleshy, puberulous. Fruits green, ovoid. Seeds black, smooth.

Fls. & Frts. : July–January.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 27, f. 17. 1909.

Distrib. : Commonly planted near habitations and temples. Karanji village, Mahur.

Notes : The fruits are edible.

MILIUSA Leschen. ex A. DC.

- | | | |
|---|-----|---------------------|
| 1. Inner petals flat, or if a little pouched then glabrous; ovules 1–2; leaves glabrous | ... | <i>M. velutina</i> |
| 1. Inner petals pouched at base, pubescent on both surfaces; ovules 6 or more; leaves tomentose | ... | <i>M. tomentosa</i> |

Miliusa tomentosa (Roxb.) Sinclair in Gard. Bull. Straits Settlem. 14: 378. 1955; Sant. in Bull. Bot. Surv. India 3: 20. (1961) 1962. *Uvaria tomentosa* Roxb. Pl. Cor. 1: 31, t. 35. 1795. *Saccopetalum tomentosum* 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.); Witt, List. 1. 1908. *Homba, Um*.

Trees, large, bark dark brown. Leaves elliptic. Flowers greenish-yellow. Fruits purple when ripe.

Fls. & Frts. : March–June.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 30, f. 21. 1909 (*Saccopetalum tomentosum*).

Notes : This plant has been reported here on the authority of Witt, *op. cit.*

M. velutina (Dunal) Hook. f. & Thoms. Fl. Ind. 151. 1855 & in Hook. f. Fl. Brit. India 1: 87. 1872; Witt, List. 1. 1908. *Uvaria velutina* Dunal, Anon. 91. 1817. *Karai, Kari*.

Trees, c 10 m high, young branches tomentose. Leaves c 8 x 5 cm, ovate, acute or obtuse at apex, shining. Flowers yellow, few, in leaf-opposed cymes. Fruitlets sub-globose, purple.

Fls. & Frts. : April-July.

Illus. : Bedd. Fl. Sylv. t. 37. 1870; King in Ann. Roy. Bot. Gard. Calcutta 4: t. 206. 1893.

Notes : This plant has been reported on the authority of Witt, *op. cit.*

MENISPERMACEAE

1. Leaves deeply cordate at base	...	TINOSPORA
1. Leaves obtuse at base	...	COCCLUS

COCCLUS DC.

Cocculus hirsutus (L.) Theob. in Mason, Burma ed. Theob. 2: 657. 1883; Mabberley in Taxon 34: 155. 1985. *Menispermum hirsutum* L. Sp. Pl. 341. 1753. *Cocculus villosus* DC. Syst. 1: 525. 1818; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 101. 1872; Cooke, Fl. Pres. Bombay 1: 22. 1958 (Repr. ed.); Witt, List. 1. 1908. *Vasan-Vel*.

Climbers, herbaceous. Leaves c 6 x 4 cm, ovate, mucronulate, pubescent beneath. Male flowers green in panicles; anthers yellow; female flowers green in axillary clusters. Drupes green, drying dark purple, 0.3 x 0.4 cm, transversely rugose.

Fls. & Frts. : December-March.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 42, f. 26. 1909; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 13. 1982.

Distrib. : Common; observed usually to climb on *Acacia* spp., *Lantana camara* var. *aculeata* and *Maytenus emarginata*. Dhabdi forest, E. Gondwakadi forest, Mukutban.

Notes : So far this combination had been attributed to Diels (in

Engl. Pflanzenr. 46: 236. 1910). Mabberley (*op. cit.*) has unearthed William Theobald's combination which has been made in his edition of Mason's *The natural products of Burmah* (1883).

TINOSPORA Miers

Tinospora cordifolia (Willd.) Hook. f. & Thoms. Fl. Ind. 1: 184. 1855 & in Hook. f. Fl. Brit. India 1: 97. 1872; Cooke, Fl. Pres. Bombay 1: 20. 1958 (Repr. ed.); Witt, List. 2. 1908; Forman in Kew Bull. 36: 375. 1981. *Menispermum cordifolium* Willd. Sp. Pl. 4: 826. 1806. *Gulvel.*

Climbers, shrubby, bark white, corky, lenticelled. Leaves c 4 x 5 cm, petiolate. Male flowers yellow, in c 10 cm long racemes in axils of fallen leaves. Drupes green, ovoid.

Fls. & Frts. : February–August.

Illus. : Wight, Ic. tt. 485–6. 1841 (*Cocculus cordifolius* DC. Syst. 1: 518. 1824); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 19. 1982.

Distrib. : Not common; observed to climb on *Aegle marmelos* and *Ziziphus mauritiana*. The sap is milky white and sticky. Pandharkawada–Bori Road.

Notes : Nicolson & Suresh (1986) have discussed in detail about the nomenclatural status of the genus *Tinospora*. The genus *Tinospora* has been described by Miers in Ann. Mag. Nat. Hist. 2, 7: 35, 38. 1851. Loureiro has described *Campylus* in his Fl. Cochinch. 113. 1790. Since their types are regarded as congeneric, under the revised Art. 10.1 and 10.2 of the ICBN and according to the principle of priority, *Campylus* Lour. (1790) must replace *Tinospora* Miers (1851). Nicolson & Suresh have argued in favour of conservation of *Tinospora*.

NYMPHAEACEAE

NYMPHAEA L.

- | | | |
|---|-----|---------------------|
| 1. Leaves entire or sinuate, glabrous on both sides | ... | <i>N. nouchali</i> |
| 1. Leaves sharply sinuate-toothed, densely brownish pubescent beneath | ... | <i>N. pubescens</i> |

Nymphaea nouchali Burm. f. Fl. Ind. 120. 1768; Back. & Bakh. f. Fl. Java 1: 149. 1963. *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.). *Uplia Kamal.*

Herbs, aquatic, rooted in mud. Leaves c 15 x 12 cm, floating, green above, dark coppery brown beneath, elliptic-oblong to orbicular. Flowers 5-7 cm across, outer perianth green without, whitish within, inner perianth pale bluish, fragrant; filaments yellow, anthers purple. Fruits globose. Seeds longitudinally striate, pale chocolate-coloured.

Fls. & Frts. : October-May.

Illus. : Subram. Aq. Ang. f. 113. 1962; Matthew, *Illus. Fl. Tamilnadu Carnatic 2*: t. 22. 1982.

Distrib. : Not common; found to grow in association with *Ludwigia adscendens*, *Nymphoides cristatum*, *Ottelia alismoides* and *Vallisneria spiralis*. Mukutban talao.

Notes : Maheshwari (1980) has discussed about the synonymies of *Nymphaea nouchali* and *N. pubescens* Willd. along with their notable taxonomic features.

N. pubescens Willd. Sp. Pl. 2: 1154. 1799; Back. & Bakh. f. Fl. Java 1: 148. 1963. *N. lotus* Hook. f. & Thoms. Fl. Ind. 241. 1855 & in Hook. f. Fl. Brit. India 1: 114. 1872. *N. lotus* var. *pubescens* (Willd.) Hook. f. & Thoms. Fl. Ind. 241. 1855; Cooke, Fl. Pres. Bombay 1: 27. 1958 (Repr. ed.). *Kamal*.

Herbs, aquatic, rooted in mud. Leaves c 20 x 15 cm, floating, orbicular. Flowers c 11 cm across, white; stamens yellow. Fruits globose, c 7.5 cm in diam. Seeds red.

Fls. & Frts. : October-January.

Illus. : Subram. Aq. Ang. 114, f. 2. 1962.

Distrib. : Common; associated with *Ipomoea aquatica* and the other taxa as the last species. Kayar village on Wani-Mukutban road, Mukutban talao.

Maheshwari (1980) informs that this species has been introduced into England from India in 1803.

PAPAVERACEAE

ARGEMONE L.

Argemone mexicana L. Sp. Pl. 508. 1753; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 117. 1872; Cooke, Fl. Pres. Bombay 1: 29. 1958 (Repr. ed.); Ownbey in Brittonia 13: 103. 1961. *Pivala-dhotara*.

Herbs, c 1 m high, prickly, glaucous. Leaves c 15 x 5 cm, pinnatifid, lower petioled, upper sessile, clasping the stems, veins white. Flowers yellow, c 4 cm across; filaments white, anthers yellow; stigma pink. Capsules c 4 x 2 cm, erect. Seeds black, reticulately veined.

Fls. & Frts. : Throughout the year.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 23. 1982.

Distrib. : A common weed in waste places throughout the district. Junnagaon, Khandala, Mukutban.

Flowers have an unpleasant odour. Originally from Tropical America, naturalised in many parts of India.

CAPPARACEAE

1. Herbs	...	CLEOME
1. Shrubs or small trees :-		
2. Stamens inserted on the middle of gynophore	...	CADABA
2. Stamens inserted at the base of gynophore	...	CAPPARIS

CADABA Forssk.

Cadaba fruticosa (L.) Druce in Bot. Exch. Cl. Soc. Brit. Is. 3: 415. 1914; Sant. & Wagh in Bull. Bot. Surv. India 5: 105. 1964. *Cleome fruticosa* L. Sp. Pl. 671. 1753. *Cadaba indica* Lam. Encycl. 1: 544. 1785; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 172. 1872; Cooke, Fl. Pres. Bombay 1: 45. 1958 (Repr. ed.); Witt, List. 2. 1908. *C. farinosa* Forssk. Fl. Aeg.-Arab. 68. 1775; Hook. f. op. cit. 173.

Shrubs, much branched, straggling. Leaves more or less fleshy. Flowers yellowish-white; stamens 4. Fruits cylindric. Seeds surrounded by an orange aril (Witt).

Fls. & Frts. : November-June.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 50. f. 31. 1909.

Notes : This plant has been included on the authority of Witt, o.p. cit. and Brandis, Indian Tr. 32. 1921 (Fourth Impr.) from Berar.

CAPPARIS L.

1. Flowers in solitary corymba	...	<i>C. grandis</i>
1. Flowers in supra-axillary rows	...	<i>C. zeylanica</i>

Capparis grandis L. f. Suppl. 263. 1781; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 176. 1872; Cooke, Fl. Pres. Bombay 1: 50. 1958 (Repr. ed.); Witt, List. 3. 1908; Jacobs in Blumea 12: 456. 1965. *Pachunda*.

Trees, small, bark corky. Leaves c 9.0 x 5.5 cm, elliptic-obovate; apex obtuse (sometimes mucronate). Flowers white. Fruits globose, purple.

Fls. & Frts. : October.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 59, f. 38. 1909.

Notes : Reported on the authority of Witt, *op. cit.*

C. zeylanica L. Sp. Pl. ed. 2. 720. 1762 (*non* Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 174. 1872); Cooke, Fl. Pres. Bombay 1: 47. 1958 (Repr. ed.); Jacobs in Blumea 12: 505. 1965. *C. horrida* L. f. Suppl. 264. 1781; Hook. f. & Thoms. in Hook. f. *op. cit.* 178. *Pachwa, Waghoti*.

Shrubs, climbing, spiny. Leaves c 4.0 x 2.5 cm, alternate, elliptic-ovate, apex obtuse or acute. Flowers creamish with a pinkish tinge; filaments pinkish, anthers grey; style pinkish red, stigma green. Fruits ovoid, bright scarlet.

Fls. & Frts. : January–April.

Illus. : Wight, Ic. t. 173. 1839 (*C. horrida*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 32. 1982.

Distrib. : Not common. Yavatmal.

Notes : Flowers scented.

CLEOME L.

1. Ovary inserted on a gynophore	...	<i>C. gynandra</i>
1. Ovary sessile, on the disc :		
2. Leaves simple	...	<i>C. simplicifolia</i>
2. Leaves 3–5 (-6) foliolate	...	<i>C. viscosa</i>

Cleome gynandra L. Sp. Pl. 671. 1753; Iltis in Brittonia 12: 279. 1960; Sant. & Wagh in Bull. Bot. Surv. India 5: 106. 1964. *C. pentaphylla* L. Sp. Pl. ed. 2: 938. 1763, based on *C. gynandra* L. *Gynandropsis pentaphylla* (L.) DC. Prodr. 1: 238. 1824; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 171. 1872; Cooke, Fl. Pres. Bombay 1: 42. 1958 (Repr. ed.). *Pandri-tilwan*.

Herbs, c 0.75 m high, glandular hairy. Leaves 3–5 (–7)–foliolate; leaflets c 4 x 3 cm, obovate, apex acute, base cuneate, margins obscurely crenulate. Flowers white; gynandrophore and filaments brown, anthers grey; stigma brown. Capsules green c 9.0 x 0.4 cm, glandular hairy. Seeds black with many superficial concentric ribs with irregular cross ribs.

Fls. & Frts. : July–December.

Illus. : Mahesh. Illus. Fl. Delhi f. 10. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 34. 1982.

Distrib. : A weed in waste places. Karanji village, Majra village, Bhiwkund.

C. simplicifolia Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 169. 1872; Cooke, Fl. Pres. Bombay 1: 40. 1958 (Repr. ed.).

Herbs, spreading, scabrid. Leaves c. 3.5 x 1.6 cm, alternate, broadly elliptic-oblong below, becoming linear above, apex obtuse, base cuneate. Flowers pink; filaments pink, anthers grey. Capsules c 2.5 x 0.15 cm, beaked, green. Seeds subglobose, transversely ridged.

Fls. & Frts. : July–September.

Distrib. : A weed along roadsides and in grasslands. Katliborgaon on Pandharkawada–Sibla road, 12 km point; Pandharkawada–Bhiwkund road, 3 km point; Sunna–Tipeshwar road, 1 km point, Bori range.

C. viscosa L. Sp. Pl. 672. 1753; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 170. 1872; Cooke, Fl. Pres. Bombay 1: 41. 1958 (Repr. ed.); Jacobs in Steenis, Fl. Males. 1, 6: 103, f. 32, c–d. 1960. *Pivli-tilwan*.

Herbs, c 1 m tall, glandular-viscid. Leaflets c 5x3 cm, becoming smaller above, obovate to oblanceolate, apex acute or obtuse. Flowers yellow; anthers greyish-black. Capsules c 6.0 x 0.3 cm. Seeds subglobose, brown, finely transversely striate.

Fls. & Frts. : August–June.

Illus. : Wight, Ic. t. 2. 1838; Mahesh. Illus. Fl. Delhi f. 9. 1966.

Distrib. : A common weed in wastelands on banks of tanks, cultivated fields and roadsides. Durg tank; Jamwadi tank, Yavatmal; Majra village, Patan bori range.

VIOLACEAE

HYBANTHUS Jacq.

Hybanthus enneaspermus (L.) F. v. Muell. *Fragsm.* 10: 81. 1876; Tennant in *Kew Bull.* 16: 431. 1963; Grey-Wilson, *Ibid.* 36: 103, f. 1. 1981; Banerjee & Pramanik in *Fasc. Fl. India* 12: 2, f. 1. 1983. *Viola enneasperma* L. *Sp. Pl.* 937. 1753. *Ionidium suffruticosum* (L.) R. & S. *Syst. Veg.* 5: 394. 1819; Hook. f. & Thoms. in Hook. f. *Fl. Brit. India* 1: 185. 1872. *I. heterophyllum* Vent. *Jard. Malm.* in addn. subt. 27. 1803; Cooke, *Fl. Pres. Bombay* 1: 55. 1958 (Repr. ed.). *Ratan-paras.*

Herbs, suffrutescent. Leaves c 3.0 x 0.6 cm, alternate, linear-lanceolate, apex mucronate, margins serrate. Flowers purple. Capsules green, c 0.5 cm long, subglobose. Seeds pale yellow, ovoid, acute, longitudinally striate.

Fls. & Frts. : July–November.

Illus. : Wight, *Ic. t.* 308. 1840 (*Ionidium suffruticosum*); Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 37. 1982.

Distrib. : Not common. Usually found in sandy soil on river banks among grasses. Karegaon, near Penganga river; Bori range; Nirguda river banks, Punwat village, Wani range; Penganga felling series, Kharbi range.

COCHLOSPERMACEAE

COCHLOSPERMUM Kunth

Cochlospermum religiosum (L.) Alst. in *Trim. Handb. Fl. Ceylon* 6: 14. 1931. *Bombax religiosum* L. *Sp. Pl.* 552. 1753. *Cochlospermum gossypium* DC. *Prodr.* 1: 527. 1824; Hook. f. & Thoms. in *Hook. f. Fl. Brit. India* 1: 190. 1872; Cooke, *Fl. Pres. Bombay* 1: 56. 1958 (Repr. ed.); Witt, *List. 4.* 1908. *Ganer.*

Trees, c 15 m high. Leaves c 10–20 cm across, palmately 5-lobed, glabrous above, white tomentose beneath. Flowers golden yellow, 6.5–8.0 cm across. Capsules c 8 x 5 cm, obovoid. Seeds covered by a brown wool.

Fls. & Frts. : March–April.

Illus. : Bedd. *Fl. Sylv.* t. 171. 1872; Talb. *For. Fl. Bombay Pres. & Sind* 1: 71, f. 45. 1909 (*C. gossypium*); Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 39. 1982.

Distrib. : Not common. Khandala forest.

FLACOURTIACEAE

1. Leaves hairy	...	CASEARIA
1. Leaves glabrous	...	FLACOURTIA

CASEARIA Jacq.

Casearia elliptica Willd. Sp. Pl. ed. 2. 628. 1800. *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.); Witt, List. 42. 1908. *Chilla*.

Trees, c 10 m high. Leaves c 16 x 6 cm, elliptic-oblong, puberulous above, pubescent beneath, apex acute or shortly acuminate, base unequally rounded, margins crenate. Flowers green in axillary fascicles. Fruits c 2 cm long, ellipsoid, bright yellow. Seeds arillate.

Fls. & Frts. : January–March.

Illus. : Wight, Ic. t. 1849. 1852; Icon. Roxb. Fasc. 7, Pl. 25. 1976 (Repr. ed.); Talb. For. Fl. Bombay Pres. & Sind 2: 71, f. 330. 1911 (*C. tomentosa*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 40. 1982.

Distrib. : Not common. Found in dry deciduous forests along with *Butea monosperma*, *Ficus amplissima* and *Tectona grandis* Kharbi.

FLACOURTIA Comm. ex L. 'Her.

Flacourtia indica (Burm. f.) Merr. Interpr. Rumph. Herb. Amb. 377. 1917; Sleumer in Blumea 30: 241. 1985. *Gmelina indica* Burm. f. Fl. Ind. 132, t. 39, f. 5. 1768. *Flacourtia ramontchi* L'Her. Strip. Nov. 3: 59, t. 30 & 30b. 1785; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 193. 1872; Cooke, Fl. Pres. Bombay 1: 59. 1958 (Repr. ed.); Witt, List. 4. 1908. *F. sepiaria* Roxb. Pl. Cor. t. 68. 1796; Hook. f. & Thoms. in Hook. f. *op. cit.* 194. *Kakai*.

Trees, c 5 m high, usually thorny. Leaves c 10 x 5 cm, ovate to obovate, apex acute or acuminate, margins crenate-serrate. Flowers yellow in axillary racemose clusters on thorns. Berries deep red, globose.

Fls. & Frts. : February–August.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 41. 1982 (*F. ramontchi*).

Notes : Common in dry scrub jungle (Witt, *op. cit.*).

POLYGALACEAE

POLYGALA L.

Polygala arvensis Willd. Sp. Pl. 3: 2: 876. 1802; Burtt in Notes R.B.G. Edinb. 32: 404. 1973. *P. chinensis* auct. non L. 1753; A.W. Bennett in Hook. f. Fl. Brit. India 1: 204. 1872; Cooke, Fl. Pres. Bombay 1: 64. 1958 (Repr. ed.); Adema in Blumea 14: 269, f. 15 (a-r). 1966. *Phutani*.

Herbs, erect or diffuse. Leaves c. 2.0 x 1.5 cm, elliptic, oblong or obovate-oblong, apex acute or mucronulate, base cuneate. Flowers yellow in leaf-opposed racemes. Capsules c. 0.4 x 0.3 cm, orbicular-oblong, slightly ciliate at margins. Seeds black, obovate-oblong with short, white, patent hairs; caruncle short, hood-shaped with 3 membranous appendages half as long as the seed.

Fls. & Frts. : August–February.

Illus. : Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dt. 411, f. 81, (B & Ba). 1976; Chandrab. & Nair in Proc. Indian Acad. Sci. (Plant Sci.) 90: 118, f. 41–45. 1981 (*P. chinensis*).

Distrib. : Common throughout in waste places, cultivated fields and sometimes as forest undergrowth. E. Gondwakadi forest; Hiwri R.F.; Jodmoha–Yelabara road, 2 km point; Karanji; Umerkhed.

CARYOPHYLLACEAE

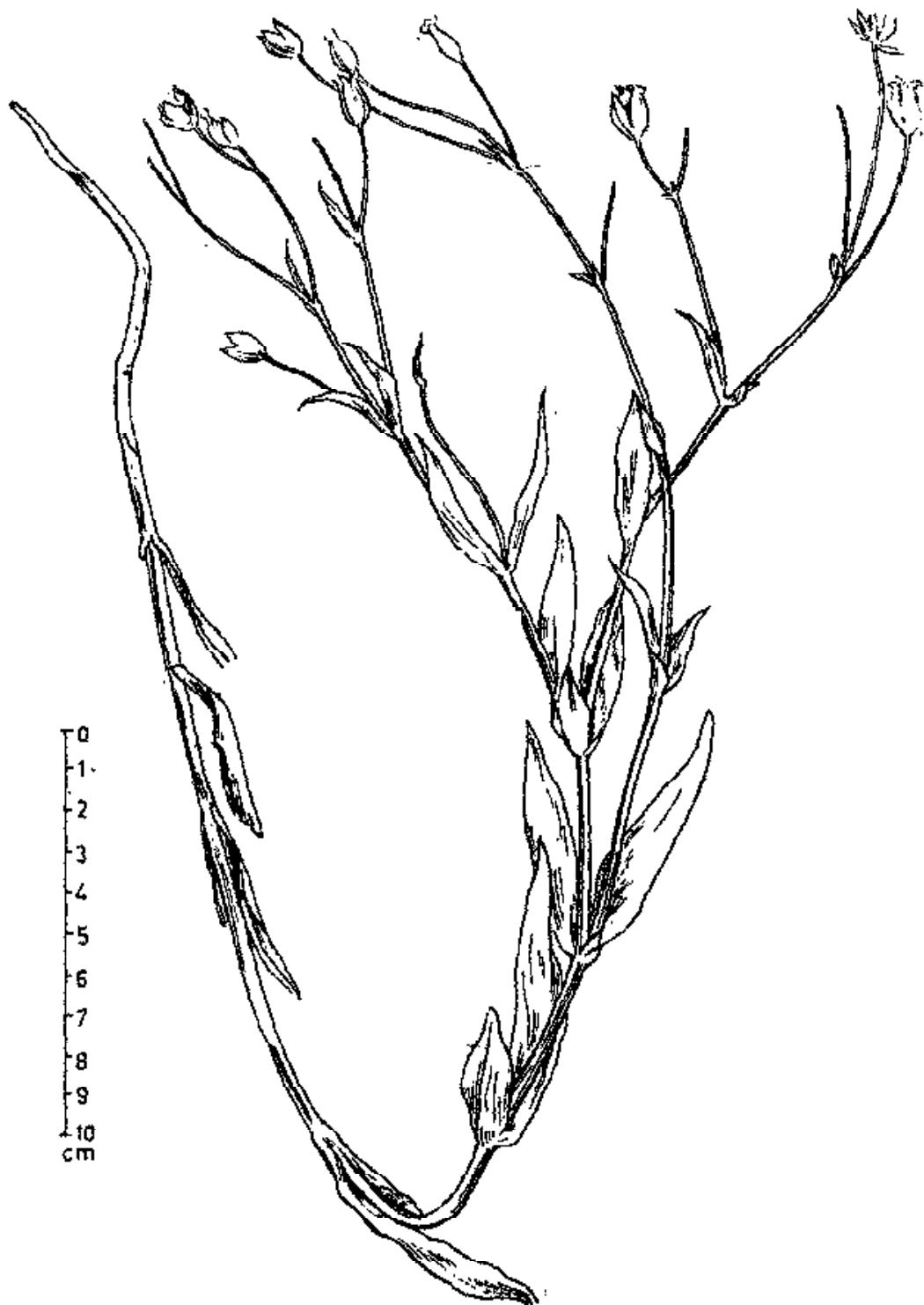
VACCARIA Medic.

Vaccaria pyramidata Medic. Phil. Bot. 1: 96. 1789; Cufodontis in Bull. Jard. Bot. Brux. Suppl. 23: 104. 1953. *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.

Herbs, c. 0.5 m high. Leaves c. 8.5 x 2.0 cm, opposite, sessile, linear-lanceolate, apex acute, base clasping the stem. Flowers purple in dichotomous cymes; calyx tubular with 5 green nerves; petals 5, clawed, erose. Capsules broadly ovoid, 4-toothed. Seeds globose, granular.

Fls. & Frts. : February–March.

Distrib. : Occasional. Found as a weed in wheat fields during winter season. Near Aruna river, Kharad.



***Vaccaria pyramidata* Medic.**

PORTULACACEAE

PORTULACA L.

- | | | |
|------------------------|-----|----------------------|
| 1. Nodes with hairs | ... | <i>P. quadrifida</i> |
| 1. Nodes without hairs | ... | <i>P. oleracea</i> |

Portulaca oleracea L. Sp. Pl. 445. 1753; Dyer in Hook. f. Fl. Brit. India 1: 246. 1874; Cooke, Fl. Pres. Bombay 1: 72. 1958 (Repr. ed.); Witt, List. 4. 1908; Geesink in Blumea 17: 292. 1969. *Ghol.*

Herbs, prostrate, succulent. Leaves c 1.5 x 0.7 cm, alternate, opposite or whorled, cuneiform, apex subtruncate, base cuneate. Flowers yellow in terminal clusters. Capsules circumscissile. Seeds black, muriculate.

Fls. & Frts. : Throughout the year.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 49. 1982.

Distrib. : A common weed in cultivated fields and waste places. Karanji; Umarda forest nursery, Yavatmal.

P. quadrifida L. Mant. 1: 73. 1767; Dyer in Hook. f. Fl. Brit. India 1: 247. 1874; Cooke, Fl. Pres. Bombay 1: 72. 1958 (Repr. ed.); Geesink in Blumea 17: 290. 1969.

Herbs, prostrate, spreading, succulent, rooting at nodes. Leaves c 0.4 x 0.2 cm, elliptic-ovate, apex acute. Flowers yellow, drying pink. Fruits conical. Seeds tubercled.

Fls. & Frts. : Throughout the year.

Distrib. : A weed in cultivated fields, Agriculture Farm, Yavatmal (weed in *Spinacea oleracea* fields); Aruna river banks, Mangrul village.

TAMARICACEAE

TAMARIX L.

- | | | |
|--|-----|---------------------|
| 1. Young twigs covered by amplexicaul leaf sheaths | ... | <i>T. troupii</i> |
| 1. Young twigs covered by cylindric leaf sheaths | ... | <i>T. ericoides</i> |

Tamarix ericoides Rottl. in Gesel. Naturf. Fr. Berl. Neue Schr. 4: 214. 1803; Dyer in Hook. f. Fl. Brit. India 1: 249. 1874; Cooke, Fl. Pres. Bombay 1: 76. 1958 (Repr. ed.); Witt, List. 5. 1908. *Jhau, Kadsherni, Sarub.*

Shrubs, c. 2 m high. Leaves minute, scale-like, ovate-lanceolate, apex acuminate. Flowers rose coloured, c. 0.6 cm long, in terminal racemes. Capsules dull yellowish-white. Plume of the seeds with a very long axis, feathered with dirty white hairs.

Fls. & Frts. : August–March.

Illus. : Wight, Ic. t. 22. 1838; Talb. For. Fl. Bombay Pres. & Sind 1: 87, f. 56. 1909.

Distrib. : Abundant along the river banks of Penganga river. Found to grow in loamy soil. Penganga river, Bori.

T. troupii Hole in Indian Forester 45: 248. 1919. *T. gallica* Dyer in Hook. f. Fl. Brit. India 1: 248. 1874, non L. 1753; Witt, List. 4. 1908. *T. gallica* var. *indica* (Willd.) Cooke, Fl. Pres. Bombay 1: 87. 1902 (1: 75. 1958 (Repr. ed.). *Jhau, Jhaurajhad, Lai*.

Shrubs. Leaves subulate-acute from a triangular semi-amplexicaul base. Flowers pink, crowded in slender lateral and terminal panicled spike-like racemes. Capsules 3-valved. Seeds with a plume of white hairs.

Fls. & Frts. : August–March.

Notes : 'Gregarious in river beds in Berar' (Witt, *op. cit.*).

MALVACEAE

1. Carpels separating from the axis at maturity :

 2. Bracteoles 3 ... **MALVASTRUM**
 2. Bracteoles absent :
 3. Carpels dehiscing by a central line forming a flat-topped fruit with radiating points ... **ABUTILON**
 3. Carpels bursting irregularly, points not spreading ... **SIDA**
 1. Carpels not separating :
 4. Bracteoles persistent and forming spreading, dry spathulate wings in the fruit ... **KYDIA**
 4. Bracteoles not spreading :
 5. Calyx spathaceous, splitting down one side and falling off at flowering time; seeds striated ... **ABELMOSCHUS**
 5. Calyx with 5 distinct teeth and persistent in flower; seeds glabrous or hairy ... **HIBISCUS**

ABELMOSCHUS Medic.

- | | | |
|---|-----|---------------------|
| 1. Bracteoles linear, more than 6 | ... | <i>A. moschatus</i> |
| 1. Bracteoles ovate-lanceolate, 4-6 or absent | ... | <i>A. ficulneus</i> |

Abelmoschus ficulneus (L.) Wight & Arn. ex Wight, Cat. 14. 1833; Borss. in Blumea 14: 101. 1966. *Hibiscus ficulneus* L. Sp. Pl. 695. 1753; Masters in Hook. f. Fl. Brit. India 1: 340. 1874; Cooke, Fl. Pres. Bombay 1: 117. 1958 (Repr. ed.); Witt, List. 6. 1908. *Jangli Bhendi*.

Herbs, c. 0.5 m high, prickly. Leaves c. 8 x 9 cm, suborbicular, shallowly or deeply 3-5-palmately lobed, apex acute, margins serrate, base cordate. Flowers white, pinkish at the base within, in terminal racemes. Capsules 3.0-3.5 cm long, ovoid, 5-angular, obtuse or shortly acuminate at apex, tomentose. Seeds globular, glabrous to tomentose with minute stellate hairs.

Fls. & Frts. : August-December.

Illus. Wight, Ic. t. 154. 1839 (*Hibiscus ficulneus*).

Distrib. : Scarce. E. Gondwakadi forest.

A. moschatus Medic. Malv. 46. 1787 *ampl.* Hochr. in Candollea 2: 86. 1924; Borss. in Blumea 14: 90. 1966. *Hibiscus abelmoschus* L. Sp. Pl. 696. 1753; Masters in Hook. f. Fl. Brit. India 1: 342. 1874; Cooke, Fl. Pres. Bombay 1: 118. 1958 (Repr. ed.). *Kasturi Bhendi*.

Undershrubs, c. 0.75 m high, prickly. Leaves polymorphic; upper ones c. 12x16 cm, usually deltoid-ovate in outline, palmately 3-7 lobed, divided nearly to the base; lobes acute, margins coarsely serrate to dentate, occasionally entire. Flowers yellow with a purple centre. Capsules c. 5.0 x 2.5 cm, ovate-oblong, acuminate at apex, densely hispid. Seeds sub-reniform, usually glabrous, rarely stellate hairy.

Fls. & Frts. : August-December.

Distrib. : Scarce. In humus soil, found as a forest undergrowth. Bhiwkund R.F.

ABUTILON Mill.

- | | | |
|----------------------|-----|--------------------|
| 1. Carpels mucronate | ... | <i>A. indicum</i> |
| 1. Carpels obtuse | ... | <i>A. pannosum</i> |

Abutilon indicum (L.) Sweet, Hort. Brit. 54. 1826; 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. *Mudra, Petari*.

Shrubs, c 2 m high, grey tomentose. Leaves ovate to orbicular, margins coarsely crenate to dentate, apex acuminate, base cordate. Flowers yellow, solitary, axillary. Mericarps c 0.12 x 0.7 cm, dorsally sparsely covered with stellate hairs. Seeds glabrous or sparsely and minutely stellate-hairy.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 12. 1838.

Distrib. : Common. Found in waste places along with *Cassia occidentalis*, *Datura innoxia*, *Physalis peruviana* etc. Mukutban.

A. pannosum (Forst. f.) Schlect. in Bot. Zeit. 9: 828. 1851. *Sida pannosa* Forst. f. in Comm. Phys. Soc. Reg. Goetting. 1787: 62. 1789. *Abutilon muticum* (DC.) Sweet, Hort. Brit. ed. 2. 65. 1830; Masters in Hook. f. Fl. Brit. India 1: 327. 1874; Cooke, Fl. Pres. Bombay 1: 102. 1958 (Repr. ed.). *Karandi, Kasili*.

Shrubs, c 3 m high, velvety tomentose. Leaves c 7x8 cm, ovate-orbicular, margins coarsely serrate, base deeply cordate, apex subacuminate; stipules reflexed. Flowers yellow, axillary, solitary or fascicled. Mericarps c 1x2 cm, silky tomentose, depressed above. Seeds black, subreniform, minutely ciliate.

Fls. & Frts. : September–February.

Distrib. : Common. Found along cultivated fields and road sides. Mangrul village, near Aruna river (weed along wheat fields); Pandharkawada-Bori road.

HIBISCUS L.

- | | |
|---|-----------------------------|
| 1. Seeds densely velvety, with short stiff adpressed or spreading hairs | ... <i>H. panduriformis</i> |
| 1. Seeds glabrous : | |
| 2. Seeds smooth with a few, small tubercles | ... <i>H. cannabinus</i> |
| 2. Seeds uniformly tubercled | ... <i>H. lobatus</i> |

Hibiscus cannabinus L. Syst. Nat. ed. 10. 2: 1149. 1759; Masters in Hook. f. Fl. Brit. India 1: 339. 1874; Cooke, Fl. Pres. Bombay 1: 116. 1958 (Repr. ed.); Witt, List. 5. 1908; Borss. in Blumea 14: 63. 1966; Rakshit & Kundu in Bull. Bot. Surv. India 12: 164. 1972. *Ambari*.

Shrubs, c 3 m tall, prickly. Leaves deeply palmately 3–5-lobed, lobes linear-lanceolate or elliptic-lanceolate, margins distantly serrate. Flowers pale yellow, crimson in the centre, solitary, axillary, sessile or subsessile. Capsules ovoid, beaked, hairy. Seeds reniform, 3-angled, dotted with minute stellate scales.

Fls. & Frts. : August–November.

Notes : This is a fibre yielding plant, largely cultivated throughout the district.

H. lobatus (J.A.Murr.) O.Ktze. Rev. Gen. Pl. 3: 19. 1898; Borss. in Blumea 14: 77. 1966; Rakshit & Kundu in Bull. Bot. Surv. India 12: 169. 1972. *Solandra lobata* J.A. Murr. in Comm. Soc. Reg. Sc. Goetting. 6: 20, t. 1. 1785. *Hibiscus solandra* L' Her. Stirp. Nov. 1: 103, t. 49. 1788; Masters in Hook. f. Fl. Brit. India 1: 336. 1874; Cooke, Fl. Pres. Bombay 1: 114. 1958 (Repr. ed.).

Herbs, c 0.5 m high, pubescent. Lower leaves c 7x5 cm, ovate-cordate, margins dentate, upper palmately 3-lobed, dentate serrate, lobes c 9 x 3 cm, apex subacuminate. Flowers white, solitary, axillary. Capsules ovoid, c 1.0 x 0.4 cm, rostrate, hairy. Seeds tetragonous.

Fls. & Frts. : July–October.

Distrib. : Rather common. Found as a forest undergrowth in shade in moist places. Bhiwkund R.F.; Durg tank; Hiwri R.F.

H. panduriformis Burm. f. Fl. Ind. 151, t. 47, f. 2. 1768; Masters in Hook. f. Fl. Brit. India 1: 338. 1874; Cooke, Fl. Pres. Bombay 1: 115. 1958 (Repr. ed.); Borss. in Blumea 14: 79. 1966; Rakshit & Kundu in Bull. Bot. Surv. India 12: 172. 1972.

Herbs, c 1 m high, stellately and simply tomentose. Leaves c 6.5 x 5.0 cm, alternate, ovate to broadly ovate, occasionally shallowly 3-lobed, margins crenate, base cordate, apex acute. Flowers yellow, axillary, solitary. Capsules ovoid, c 1.1 x 0.9 cm, velutinous. Seeds sub-reniform, angular.

Fls. & Frts. : November–March.

Distrib. : A scarce weed. Usually observed on the bunds of wheat fields. Umarkhed.

KYDIA Roxb.

Kydia calycina Roxb. Pl. Cor. 3: 12, t. 215. 1811; Masters in Hook. f. Fl. Brit. India 1: 348. 1874; Cooke, Fl. Pres. Bombay 1: 100. 1958 (Repr. ed.); Witt, List. 6. 1908. *Bhoti, Dhaman, Pandhar Dhaman, Varang.*

Trees, c 12 m high, bark smooth, white or brown; young branches pubescent. Leaves c 18 x 17 cm, alternate, broadly ovate to orbicular, 3–5–angled, sparsely stellate hairy above, hoary-tomentose beneath, palmately 5–7–nerved, margins distantly crenate. Flowers white in axillary or terminal panicles with dense tomentum. Capsules 3–celled, loculicidal, depressed globose, woolly. Seeds reniform with faint longitudinal lines.

Fls. & Frts. : September–December.

Illus. : Icon. Roxb. Fasc. 2: Pl. 6. 1968 (Repr. ed.); Wight, Ic. tt. 879–880. 1844–45; Bedd. Fl. Sylv. t. 3. 1869; Talb. For. Fl. Bombay Pres. & Sind 1: 128, f. 78. 1909 (*K. roxburghiana* Wight Ic. t. 881. 1844–45); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 63. 1982.

Distrib. : Scarce. Found to grow under the shade of *Gardenia latifolia*, *Pterocarpus marsupium* and *Tectona grandis* in humus soil in rocky crevices. Bittergaon felling series; Morchandi felling series, Bittergaon range.

MALVASTRUM A. Gray s.s.

Malvastrum coromandelianum (L.) Garcke in Bonplandia 5: 295. 1857; Borss. in Blumea 14: 152. 1966; Hill in Rhedora 84: 324, ff. 63 & 64. 1982. *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.

Herbs, c 0.75 m high, erect or spreading, stem and petioles strigosely hairy. Leaves c 5.0 x 3.5 cm, ovate to ovate-lanceolate, margins coarsely serrate to dentate, scattered, appressed simple hairy above, appressed simple hairy beneath with 4–armed, stellate hairs on the nerves. Flowers pale yellow, axillary, solitary or clustered. Mericarps 10–14, strongly curved, with an awn in the apex, dorsally 2–awned, hairy above the middle, hairy to glabrous below. Seeds reniform.

Fls. & Frts. : June–March.

Illus. Mahesh. Illus. Fl. Delhi, f. 26. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 65. 1982.

Distrib. : A frequent weed in cultivated fields. Agriculture farm, Yavatmal; Umarda forest Nursery.

SIDA L.

- | | | |
|--|-----|-----------------------|
| 1. Carpels 5–10; leaves cuneate at base : | | |
| 2. Leaves nearly glabrous; peduncle equal to the petiole | ... | <i>S. acuta</i> |
| 2. Leaves hoary-pubescent; peduncle longer than the petiole | ... | <i>S. rhombifolia</i> |
| 1. Carpels 5; leaves cordate at base : | | |
| 3. Stems erect; leaves and stoutish branches glutinous | ... | <i>S. mysorensis</i> |
| 3. Stems trailing; leaves and slender branches sparingly hispid, not glutinous | ... | <i>S. cordata</i> |

Sida acuta Burm. f. Fl. Ind. 147. 1768, *emend.* K. Sch. Fl. Bras. 12(3): 326. 1891; Cooke, Fl. Pres. Bombay 1: 98. 1958 (Repr. ed.); Borss. in Blumea 14: 186. 1966. *S. carpinifolia* Masters in Hook. f. Fl. Brit. India 1: 323. 1874. *Bala, Jungle Methi, Lahan Chikna.*

Herbs, c. 0.5 m high, bushy. Leaves c. 5.5 x 2.0 cm, alternate, elliptic-lanceolate, apex acute, margins serrate; stipules linear to lanceolate in pairs. Flowers pale yellow, solitary, axillary. Mericarps 5–7, reticulately veined, 2-awned. Seeds triangular ovoid.

Fls. & Frts. : September–February.

Illus. : Wight, Ic. t. 95. 1838; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 68. 1982.

Distrib. : A common weed along road sides and wheat fields. Aruna river banks, Kharad (weed in wheat fields); Karanji; Umardha (on bunds of cultivated fields).

S. cordata (Burm. f.) Borss. in Blumea 14: 182. 1966. *Melochia cordata* Burm. f. Fl. Ind. 143. 1768. *Sida humilis* Cav. Diss. 5: 277, t. 136, f. 2. 1788; Masters in Hook. f. Fl. Brit. India 1: 322. 1874. *S. veronicifolia* Lam. Encycl. 1: 5. 1783; Cooke, Fl. Pres. Bombay 1: 97. 1958 (Repr. ed.).

Herbs, c. 0.3 m high, young stems, pedicels, petioles patently hairy. Leaves alternate, orbicular-ovate, apex acuminate, margins crenate; stipules linear. Flowers pale yellow, mostly solitary, terminal or axillary. Seeds ovoid.

Fls. & Frts. : August–November.

Distrib. : Scarce. Found under the shade in humus and loamy soil. Banks of Kharad talao, Hiwri R.F.

S. mysorensis Wight & Arn. Prodr. 59. 1834; Masters in Hook. f. Fl. Brit. India 1: 322. 1874; Borss. in Blumea 14: 180. 1966. *S. glutinosa* Roxb. Fl. Ind. 172. 1832 non Commers. ex Cav. 1785; Cooke, Fl. Pres. Bombay 1: 97. 1958 (Repr. ed.).

Undershrubs, c 1 m high. Leaves c 5.0 x 3.5 cm, alternate, ovate, apex subacute, margins serrate, palmately 5-7-veined. Flowers yellow in axillary and terminal panicles. Mericarps 5. Seeds ovoid, faintly trigonous, smooth, greyish.

Fls. & Frts. : November–January.

Distrib. : Scarce. Aruna river bank, Hiwri R.F., Yavatmal.

Notes : Borssum (*op. cit.*) states that *S. mysorensis* is endemic to Tropical Asia. *S. glutinosa* Commers. ex Cav. with which the former species is often confused, is a native of Tropical America. However, it appears, it has been introduced in S.E. Asia. It is preferable to place Indian specimens under the name *S. mysorensis* if they possess palmately veined leaves.

S. rhombifolia L. Sp. Pl. 684. 1753 *emend.* Masters in Hook. f. Fl. Brit. India 1: 323. 1874; Borss. in Blumea 14: 193, f. 21, a-d. 1966.

Undershrubs, c 0.5 m high, woody. Leaves c 4.0 x 3.2 cm, variable, usually rhomboid, occasionally oblong, elliptic, ovate or obovate, apex acute, margins crenate, tomentose below; stipules filiform, c 0.5 cm long. Flowers yellow, solitary or in clusters, axillary and terminal. Mericarps 5, trigonous with 2 mucros. Seeds black.

Fls. & Frts. : September–October.

Distrib. : Scarce. Karanji.

Notes : This species has not been reported by Cooke (1901–1908).

Cultivated species :

Various races of *Gossypium herbaceum* L. constitute the cultivated cottons (*Kapas, Kapus*) of the district.

BOMBACACEAE

BOMBAX L.

Bombax ceiba L. Sp. Pl. 511. 1753; Robyns in Taxon 10: 157.

1961 & Bull. Jard. Bot. Bruxelles 33: 88, photo 7. 1963. *B. malabaricum* DC. Prodr. 1: 479. 1824; Masters in Hook. f. Fl. Brit. India 1: 349. 1874; Cooke, Fl. Pres. Bombay 1: 127. 1958 (Repr. ed.); Witt, List. 6. 1908. *Kate-saveri, Savar, Semal.*

Trees, c 18 m tall, deciduous, stems and branches prickly. Leaves 5–8 foliolate, digitate; leaflets c 16 x 7 cm, elliptic to elliptic-oblong, apex caudate-acuminate, base more or less decurrent. Flowers bright-red, c 7 cm across, numerous near the ends of branches, leafless during flowering. Capsules oblong, c 15 cm long, 5-valved. Seeds numerous with silky hairs.

Fls. & Frts. : February–May.

Illus. : Bedd. Fl. Sylv. t. 82. 1871; Talb. For. Fl. Bombay Pres. & Sind 1: 130–131, ff. 79 & 80. 1909 (*Bombax malabaricum*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 71. 1982.

Distrib. : Scarce. Kharbi; Umarda.

Notes : The typification of this genus has been discussed in detail by Chatterjee & Raizada (1954), Furtado (1939), Robyns (1961, 1963) and Nicolson (1979).

STERCULIACEAE

1. Flowers unisexual; petals wanting	...	STERCULIA
1. Flowers bisexual; petals present, often deciduous :		
2. Staminal tube adnate to the gynophore, forming a more or less elongated stalk	...	HELICTERES
2. Staminal tube distinct from the carpels and enclosing them :		
3. Staminal tube elongate, bearing the stamens on its outer surface in a cone	...	ERIOLAENA
3. Staminal tube short, divided into 5 teeth bearing the anthers	...	MELOCHIA

ERIOLAENA DC.

Eriolaena hookeriana Wight & Arn. Prodr. 70. 1834; Masters in Hook. f. Fl. Brit. India 1: 370. 1874; Cooke, Fl. Pres. Bombay 1: 139. 1958 (Repr. ed.); Witt, List. 8. 1908. *Arang, Bhondra, Dhaman.*

Small trees, c 3 m high, young branches, petioles and pedicels stellate hairy. Leaves c 12.0 x 11.5 cm, alternate, ovate-orbicular; upper surface sparsely stellate-hairy, lower stellate-tomentose, apex

acuminate, base cordate, margins irregularly crenate-dentate. Flowers in axillary cymes, yellow, bracts laciniate. Capsules ovoid, c 1.5 x 1.0 cm, 10-valved, valves unevenly warty, tomentose, acute at apex.

Fls. & Frts. : August–November.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 73. 1982.

Distrib. : Not common. Usually found along with *Butea monosperma* and *Cerisoides turgida*. Karanji; Khandala forest; Tipeshwar R.F.

HELICTERES L.

Helicteres isora L. Sp. Pl. 963. 1753; Masters in Hook. f. Fl. Brit. India 1: 365. 1874; Cooke, Fl. Pres. Bombay 1: 136. 1958 (Repr. ed.);.. Witt, List. 7. 1908. *Murad-sing.*

Shrubs, c 2 m high, young branches, petioles, pedicels and buds stellate-pubescent. Leaves c 18.5 x 15.0 cm, alternate, distichous, broadly ovate-oblong, scabrid above, stellate-tomentose beneath, apex acuminate, base oblique to cordate, margins irregularly crenate. Flowers red in axillary clusters. Follicles grey, spirally twisted, beaked.

Fls. & Frts. : August–March.

Illus. : Wight, Ic. t. 180. 1839; Talb. For. Fl. Bombay Pres. & Sind 1: 146, f. 89. 1909; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 76. 1982.

Distrib. : Scarce. Usually found along the edges of streams. Penganga felling series, Kharbi range.

Notes : Maheshwari c.s. (1985) while studying the ethnobotany of the tribe Tharus of Kheri district, Uttar Pradesh have found that this species is extensively used by the tribals for fibre, drugs, craft and fuel materials.

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.).

Herbs, spreading, woody below. Leaves c 1.8 x 1.0 cm, ovate or oblong, apex acute, base acute or rounded, margins serrate. Flowers pink, clustered, axillary and terminal; bracts ciliate. Capsules globose, 5-valved, hispid. Seeds black, mottled.

Fls. & Frts. : November–February.

Illus. : Mahesh. Illus. Fl. Delhi f. 30. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 80. 1982.

Distrib. : A weed in *Gossypium* fields. Mukutban.

STERCULIA L.

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.); Witt, List. 7. 1908. *Karai, Kulu*.

Trees, c 20 m high, bark smooth, peeling off in flakes, young branches rusty tomentose. Leaves c 50 cm broad, crowded at the ends of branches, broadly ovate-orbicular, palmately 5-lobed, glabrescent above, velvety and orange-glandular beneath, lobes caudate-acuminate. Flowers greenish-yellow in terminal panicles; calyx yellow, pubescent within. Follicles red, covered with stinging bristles. Seeds black, oblong.

Fls. & Frts. : December–April.

Illus. Talb. For. Fl. Bombay Pres. & Sind 1: 137, f. 83. 1909, only fruits.

Distrib. : Not common. Khandala forest, Penganga felling series, Kharbi range.

TILIACEAE

- | | | |
|--|-----|------------|
| 1. Fruit a 2-4-parted or lobed or entire drupe containing 1 or several pyrenes | ... | GREWIA |
| 1. Fruit a capsule : | | |
| 2. Capsules brownish, hooked bristly | ... | TRIUMFETTA |
| 2. Capsules siliquose, unarmed | ... | CORCHORUS |

CORCHORUS L.

- | | | |
|---|-----|------------------------|
| 1. Capsules ending in 3 radiating points, 3-4-valved | ... | <i>C. aestuans</i> |
| 1. Capsules single beaked, lobed at the tip : | | |
| 2. Capsules upto 1.25 cm long, cylindric, pubescent at least when young, 3-valved | ... | <i>C. fascicularis</i> |
| 2. Capsules upto 7.5 cm long, ribbed or angled, glabrous or scabrid : | | |

3. Capsules 10-ribbed, 5-valved, glabrous	...	<i>C. olitorius</i>
3. Capsules 3-4-angled, 3-4-valved, more or less pubescent	...	<i>C. trilocularis</i>

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

Herbs, c 0.5 m high, hairy. Leaves c 6.5 x 4.0 cm, alternate, ovate to ovate-lanceolate, acute to sub-acuminate at apex, rounded at base, margins serrate to double-serrate, lower serrations occasionally developed into filiform structures, pilose on both sides; stipules linear-lanceolate, finely acuminate. Flowers yellow, 1-3, in axillary peduncles. Capsules c 2.5 cm long, 6 angled, 3 angles winged, the tips prolonged beyond the capsule, spreading or recurved, bifid at apex. Seeds truncate.

Fls. & Frts. : August—October.

Illus. : Wight, Ic. t. 739. 1844 (*C. acutangulus*).

Distrib. : Common. Usually found in moist places under shade; sometimes found as a weed in wheat fields. Dhausala (in cultivated fields); Hiwri temple, Hiwri R.F.; Karegaon, near Penganga river, Bori range.

***C. fascicularis* Lam.** Encycl. 2: 104. 1786; Masters in Hook. f. Fl. Brit. India 1: 398. 1874; Cooke, Fl. Pres. Bombay 1: 159. 1958 (Repr. ed.). *Bahaphalli*.

Herbs, woody, much branched, branches spreading, more or less glabrous. Leaves c 3.0 x 0.8 cm, alternate, oblong to elliptic-oblong, apex sub-acute, base unequal, margins serrate to double serrate, scabrid; stipules linear-lanceolate, acuminate. Flowers yellow, 3 in extra-axillary fascicles. Seeds black, angled.

Fls. & Frts. : September—February.

Distrib. : Occasional weed in wheat fields. Umarkhed.

***C. 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.); Witt, List. 10. 1908. *Banpat*.

Herbs, c 1 m high, erect. Leaves c 9 x 4 cm, alternate, ovate to ovate-lanceolate, apex sub acuminate, margins serrate, double serrate towards the apex, the basal two serrations produced into filiform appendages; stipules lanceolate, caudate-acuminate. Flowers yellow,

extra axillary. Capsules green, c 4.5 cm long. Seeds black, angled, scabrid.

Fls. & Frts. : August–October.

Illus. : Mahesh. Illus. Fl. Delhi f. 33. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 85. 1982.

Distrib. : Found frequently in moist places. Aruna river bank, Mangrul village; Karegaon, near Penganga river, Bori range.

Notes : Jute (fibre) is obtained from this plant.

C. trilocularis L. Mant. 77. 1767; Masters in Hook. f. Fl. Brit. India 1: 397. 1874; Cooke, Fl. Pres. Bombay 1: 158. 1958 (Repr. ed.). *Kadu-chinch*.

Herbs, c 0.5 m high. Leaves c 6.0 x 3.5 cm, alternate, ovate-oblong, apex subacute, margins crenate-serrate, lowest serratures occasionally tailed, more or less glabrous on both surfaces; stipules lanceolate, acute. Flowers yellow, in short cymes. Capsules c 6.5 cm long, linear. Seeds black, angular, truncate at both ends.

Fls. & Frts. : September–February.

Illus. : Mahesh. Illus. Fl. Delhi f. 34. 1966.

Distrib. : Commonly found as a weed in wheat fields. Mangrul village, near Aruna river; Umalkhed.

GREWIA L.

1. Leaves 5-ribbed, ovate or orbicular; peduncles axillary, much longer than the petioles or if shorter as in *G. tiliifolia* then stipules strongly sagittate; fruits globose :
 2. Peduncles shorter than the petioles ... *G. tiliifolia*
 2. Peduncles longer than the petioles ... *G. subinaequalis*
1. Leaves 3- or 5-ribbed; peduncles longer or shorter than the petioles; fruits lobed or parted :
 3. Fruits 2-parted ... *G. damine*
 3. Fruits 1-4-lobed :
 4. Leaves ovate-orbicular, 5-ribbed ... *G. abutilifolia*
 4. Leaves various, 3-5-ribbed :
 5. Buds ovoid ... *G. hirsuta*
 5. Buds cylindric ... *G. flavescens*

Grewia abutilifolia Vent. ex Juss. in Ann. Mus. Paris 4: 92. 1804; Masters in Hook. f. Fl. Brit. India 1: 390. 1874, p.p.; Cooke, Fl. Pres. Bombay 1: 152. 1958 (Repr.ed.); Witt, List. 10. 1908.

Shrubs, scandent, young parts stellate-tomentose. Leaves c 15.0 x 13.5 cm, alternate, shallowly 5-lobed above the middle, base subcordate, margins unevenly serrate, scabrous above, stellate pubescent beneath. Flowers white, in short axillary or extra axillary cymes; calyx pale green, hirsute without, whitish with a yellowish tinge within. Drupes c 0.8 cm across, 2-4-lobed, wrinkled when dry.

Fls. & Frts. : February-December.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 165, f. 102. 1909; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 86. 1982.

Distrib. : Common. Usually found in humus soil under shade along streams. Bhiwkund forest; Pandharkawada-Bori road.

G. damine Gaertn. Fruct. 2: 113. 1791. *G. salvifolia* Heyne ex Roth, Nov. Pl. Sp. 239. 1821; Masters in Hook. f. Fl. Brit. India 1: 386. 1874; Cooke, Fl. Pres. Bombay 1: 149. 1958 (Repr.ed.); Witt, List. 8. 1908.

Shrubs, c 2.5 m high, hairy. Leaves c 6.0 x 0.25 cm, ovate-oblong, margins minutely serrate, upper surface sparsely hairy, lower hoary tomentose. Flowers yellow in axillary umbellate cymes. Drupes green when young, deep reddish-yellow when ripe.

Fls. & Frts. : July-October.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 159, f. 97. 1909 (*G. salvifolia*).

Notes : This species is included on the authority of Witt, *op. cit.*

G. flavescens Juss. in Ann. Mus. Paris 4: 91. 1804. *G. pilosa* Wight & Arn. Prodr. 1: 78. 1834, non Lam. 1789; Masters in Hook. f. Fl. Brit. India 1: 388. 1874; Cooke, Fl. Pres. Bombay 1: 151. 1958 (Repr. ed.); Witt, List. 8. 1908. *Ghor-dhaman, Khata Khati*.

Trees, c 4 m tall. Leaves c 7x3 cm, alternate, ovate-oblong, apex acute, base rounded or sub-cordate, margins irregularly stellately pubescent. Flowers yellow in axillary or extra-axillary umbellate cymes. Drupes stellately hairy, orange when ripe. Seeds muricate.

Fls. & Frts. : August-November.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 162, f. 99. 1909.

Notes : Report based on Witt, *op. cit.* from Berar.

G. hirsuta Vahl, Symb. Bot. 1: 34. 1790; Masters in Hook. f. Fl. Brit. India 1: 391. 1874; Cooke, Fl. Pres. Bombay 1: 153. 1958 (Repr. ed.); Witt, List. 10. 1908.

Shrubs, c 2.5 m high, young parts densely hairy. Leaves c 11 x 4 cm, more or less distichous, oblong or ovate to ovate-lanceolate, apex acute, base oblique rounded, margins serrate, upper surface sparsely stellate hairy, scabrid, lower densely villous. Flowers white in axillary umbellate cymes. Drupes orange when ripe, fleshy, hairy.

Fls. & Frts. : August–December.

Illus. : Wight, Ic. t. 76. 1838.

Distrib. : Common. Found in various habitats, along the edges of forest under shade among grasses in grasslands; in open, in loamy soil along with *Ziziphus oenoplia* or on bunds of cultivated fields. Jodmoha grassland; Karegaon, near Penganga river, Bori range; Majra felling series, Patan bori range; Penganga felling series; Phiski; Yavatmal–Yelabara road.

G. subinaequalis DC. Prodr. 1: 511. 1824; Narayanaw. & Rolla Rao in J. Ind. bot. Soc. 29: 183, t. 3c. 1950. *G. asiatica* Masters in Hook. f. Fl. Brit. India 1: 386. 1874, *non* L. 1767; Cooke, Fl. Pres. Bombay 1: 150. 1958 (Repr. ed.); Witt, List. 9. 1908. *Dhaman, Phalsa*.

Trees, small, c 5 m tall, young parts stellate tomentose. Leaves c 15 x 9 cm, alternate, apex acute to subacute, base subcordate, margins irregularly serrate, sparsely stellate hairy above, hoary tomentose beneath. Flowers yellow in umbellate cymes. Drupes c 0.5 cm across, purple or black when fully ripe.

Fls. & Frts. : March–July.

Illus. : Narayanaw. & Rolla Rao, *op. cit.*

Notes : Extensively cultivated in gardens (Witt, *op. cit.*). Fruits edible.

G. tiliaefolia Vahl, Symb. Bot. 1: 35. 1790; Masters in Hook. f. Fl. Brit. India 1: 386. 1874, *p.p.*; Cooke, Fl. Pres. Bombay 1: 150. 1958 (Repr. ed.); Witt, List. 9. 1908. *Dhaman, Thadsal*.

Trees, c 10 m tall. Leaves c 15 x 11 cm, apex acute to subacute, base obliquely cordate, margins crenate-dentate, sparsely stellately pubescent above, hoary-tomentose beneath when young, glabrous at length. Flowers yellow in axillary or extra-axillary cymes. Drupes c 0.6 cm across, sparsely hairy, black at maturity.

Fls. & Frts. : March–July.

Illus. : Bedd. Fl. Sylv. t. 108. 1871; Talb. For. Fl. Bombay Pres. & Sind 1: 161, f. 98. 1909.

Notes : Reported on the authority of Witt, *op. cit.*

TRIUMFETTA L.

Triumfetta rotundifolia Lam. Encycl. 3: 421. 1792; Masters in Hook. f. Fl. Brit. India 1: 395. 1874; Cooke, Fl. Pres. Bombay 1: 157. 1958 (Repr. ed.); Witt, List. 10. 1908.

Undershrubs, c 1.5 m tall. Leaves c 2.5 x 2.7 cm, alternate, orbicular, margins irregularly toothed, base rounded, stellate hairy above, tomentose beneath. Flowers yellow in interrupted, c 30 cm long racemes. Fruits ovoid, c 0.4 cm across, tomentose.

Fls. & Frts. : August–March.

Distrib. : Common. Usually found along roadsides, river banks and sometimes on outskirts of deciduous forests. Aruna river bank, Mangrul village; Karanji.

MALPIGHIACEAE

ASPIDOPTERYX A. Juss.

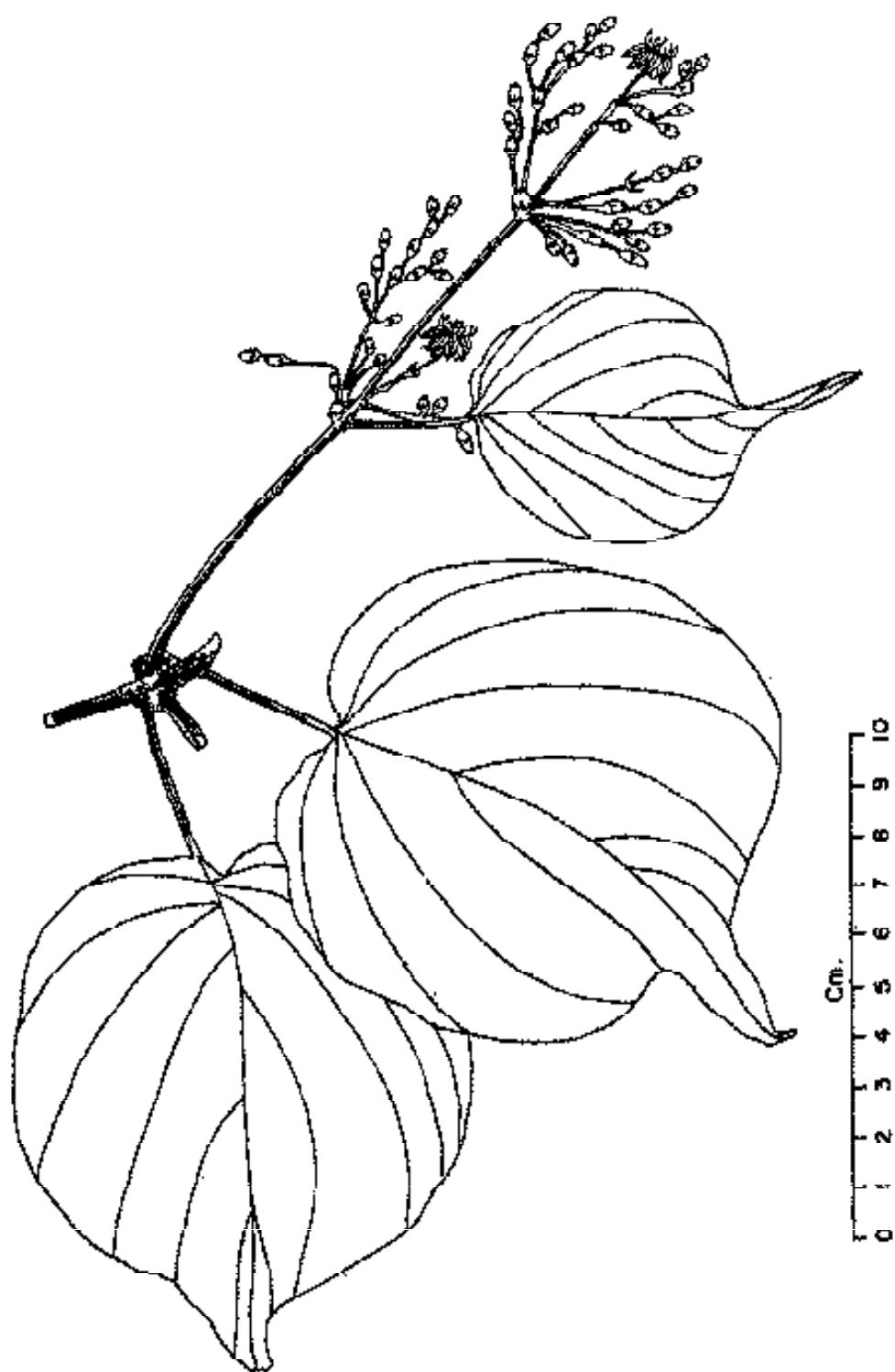
Aspidopteryx cordata (Heyne ex Wall.) A. Juss. in Ann. Sci. Nat. Bot. 2, 13: 267. 1840; Hook. f. Fl. Brit. India 1: 421. 1874; Cooke, Fl. Pres. Bombay 1: 168. 1958 (Repr. ed.). *Hiraea cordata* Heyne ex Wall. Pl. As. Rar. 1: 13. 1829. *Buryel*, *Kutkivel*.

Climbers, moderately stout, densely hairy. Leaves c 12 x 9 cm, opposite, broadly ovate to suborbicular, apex abruptly caudate-acuminate, base rounded, subcordate, sparsely hairy above, silvery tomentose below, petiole rusty-tomentose. Flowers creamish-white in axillary and terminal tomentose panicles. Samara c 2 cm across, orbicular, finely reticulate.

Fls. & Frts. : September–January.

Distrib. : Scarce. Found in disturbed teak plantations. Tipeshwar R.F.

Notes : Flowers fragrant.



Aspidopteryx cordata (Heyne ex Wall.) A. Juss.

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.); Witt, List. II. 1908. *Gokhru, Sarata*.

Herbs, prostrate, spreading, woody at base, young branches yellow, silky villous, glabrous at length. Leaves compound, paripinnate, opposite, unequal, pinnae c 1.5 x 0.5 cm, upto 6 pairs, linear-oblong, unequal, markedly so at the base, apex acute, base rounded, puberulous above, ribs hairy, silky-villous below. Flowers yellow, solitary, axillary or leaf-opposed. Fruits globose, muriculate, hairy, consisting of 5 woody cocci, each with a pair of spines. Seeds many.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 98. 1838 (*T. lanuginosus* L. Sp. Pl. 387. 1753); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 93. 1982.

Distrib. : Common weed on road sides. Karanji.

Notes : Supposed to be a medicinal plant.

OXALIDACEAE

- | | | |
|---|-----|-----------|
| 1. Leaves digitately 3-foliate; capsule valves cohering with the axis | ... | OXALIS |
| 1. Leaves abruptly pinnate; capsule valves detaching from the axis | ... | BIOPHYTUM |

BIOPHYTUM DC.

Biophytum sensitivum (L.) DC. Prodr. 1: 690. 1824; Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1: 436. 1874, p.p.; Cooke, Fl. Pres. Bombay 1: 177. 1958 (Repr. ed.). *Oxalis sensitiva* L. Sp. Pl. 434. 1753.

Herbs, c 12 cm high, woody at base. Leaves in a rosette on the tip of the stem; leaflets c 1.1 x 0.6 cm, opposite, gradually diminishing in size towards the base, oblong, apex minutely apiculate, base rounded, more or less glabrous. Flowers yellow, in terminal umbels on peduncles reaching c 13 cm. Capsules ovoid, apiculate. Seeds ovoid, transversely ridged, brown.

Fls. & Frts. : August–February.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 97. 1982.

Distrib. : Common; found in humus soil as undergrowth in teak plantations or in edges of cultivated fields or as a weed in wheat fields. Aruna river bank, Kharad (weed in wheat fields); Khandala forest; Majra felling series, Patan bori range; Tipeshwar.

OXALIS L.

Oxalis corniculata L. Sp. Pl. 435. 1753; Edgew. & Hook. f. in Hook. f. Fl. Brit. India 1: 436. 1874; Cooke, Fl. Pres. Bombay 1: 177. 1958 (Repr. ed.); Eiten in Taxon 4: 99. 1955. *Ambusi*.

Herbs, spreading, rooting at nodes, hairy. Petioles c 5.5 cm long; leaflets c 1.0 x 1.2 cm, obcordate, base cuneate, sparsely appressed hairy. Flowers yellow, few, in clusters on axillary c 5 cm long peduncles. Capsules c 1.5 cm long, linear-oblong, beaked, hairy. Seeds broadly ovoid, acute, transversely ridged, brown.

Fls. & Frts. : January–April.

Illus. : Wight, Ic. t. 18. 1838; Mahesh. Illus. Fl. Delhi f. 41. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 97. 1982.

Distrib. : Found as a weed. Agriculture farm, Yavatmal.

BALSAMINACEAE

IMPATIENS L.

Impatiens balsamina L. Sp. Pl. 938. 1753; Hook. f. Fl. Brit. India 1: 453. 1874; Cooke, Fl. Pres. Bombay 1: 184. 1958 (Repr. ed.).

Herbs, annual, flaccid. Leaves c 12.0 x 2.5 cm, alternate, lanceolate to oblanceolate, apex acuminate, base decurrent with a few glands, margins serrate, lower surface occasionally punctate. Flowers pink, 1–3, axillary, pedicels pubescent. Capsules ovoid, acuminate, tomentose. Seeds globular, brown, more or less wrinkled.

Fls. & Frts. : August–November.

Distrib. : Abundant. Found in wet humus soil near streams, under shade. Sondavi, Kharbi R.F.

RUTACEAE

- | | | |
|--|-----|-------------|
| 1. Leaves pinnate; fruits dehiscent, capsular | ... | CHLOROXYLON |
| 1. Leaves 3-foliate; fruits indehiscent, a berry | ... | AEGLE |

AEGLE Corr. ex Koen. *nom. cons.*

Aegle marmelos (L.) Corr. in Trans. Linn. Soc. London 5: 223. 1800; Hook. f. Fl. Brit. India 1: 516. 1875; Cooke, Fl. Pres. Bombay 1: 204. 1958 (Repr. ed.); Witt, List. 12. 1908. *Crateva marmelos* L. Sp. Pl. 444. 1753. *Bel.*

Trees, c 10 m high, thorny. Leaflets c 7.5 x 4.5 cm, ovate to elliptic-ovate, apex subacute. Flowers greenish-white, in axillary panicles. Berries c 8 cm across, yellow at maturity.

Fls. & Frts. : August–March.

Illus. : Wight, Ic. t. 16. 1838; Bedd. Fl. Sylv. t. 161. 1871; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 101. 1982.

Distrib. : This species is commonly met with in deciduous forests of the area. Jholapur–Pardi forest, Karanji.

Notes : Leaves considered to be sacred. Pulp edible. Roy & Singh (1980) have investigated the chemistry, medicinal properties, morphology, propagation, harvesting, packing and storage of the pulp, which has the possibilities of being commercially exploited.

Cultivated species :

Feronia limonia (L.) Swingle is being cultivated for its edible fruits. *Murraya koenigii* (L.) Spr. is cultivated in gardens for its aromatic leaves which are used in cooking.

CHLOROXYLON DC.

Chloroxylon 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.); Witt, List. 14. 1908. *Bhirra, Billu, Halda*.

Trees, small, c 8 m high, bark soft, corky. Leaves c 16 cm long, clustered towards the apex; leaflets c 3.0 x 1.5 cm, about 12 pairs, subopposite or alternate, oblong, apex obtuse, base markedly unequal. Flowers white in branched many flowered, axillary and terminal panicles. Capsules ovoid c 2.5 cm long, 3-locular. Seeds winged above.

Fls. & Frts. : March–August.

Illus. : Bedd. Fl. Sylv. t. 11. 1869; Talb. For. Fl. Bombay Pres. & Sind 1: 251, f. 150. 1909; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 103. 1982.

Distrib. : Mukutban R.F.

Notes : Bentham & Hooker treated this genus under Meliaceae on the basis of capsular fruits and winged seeds. Some authors (Airy Shaw, 1973, Santapau & Henry, 1973) treat this genus under *Flindersiaceae*. However Cronquist (1968) treats this as a genus of Rutaceae which view has been followed here.

SIMAROUBACEAE

- | | | |
|--|-----|-----------|
| 1. Trees, armed; leaves 2-foliolate; fruit a large drupe | ... | BALANITES |
| 1. Trees, unarmed; leaves pinnate; fruit a samara | ... | AILANTHUS |

AILANTHUS Desf.

Ailanthus excelsa Roxb. Pl. Cor. 1: t. 23. 1795; A.W.Bennett in Hook. f. Fl. Brit. India 1: 518. 1875; Cooke, Fl. Pres. Bombay 1: 205. 1958 (Repr. ed.); Witt, List. 12. 1908. *Maharukh*.

Trees, c 12 m high, resinous, bark grey, smooth; wood soft; young parts pubescent. Leaves c 80 cm long; leaflets c 15 x 6 cm, subopposite or alternate, c 13 pairs, ovate-lanceolate, puberulous above, apex acuminate, base unequal, irregularly toothed or sublobate, densely pubescent below, at length glabrous. Flowers greenish-yellow in terminal and axillary lax panicles. Samara c 5 x 1 cm, elliptic-oblong, reticulately veined in the middle. Seed solitary.

Fls. & Frts. : December–March.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 207, f. 126 & 127. 1909; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 115. 1982.

Distrib. : Appears to have been planted along road sides. Khandala.

BALANITES Del.

Balanites aegyptiaca (L.) Del. in Descr. Egypt. Hist. Nat. 2: 221, t. 28, f. 1. 1813; Basak in Fasc. Fl. India 4: 20. 1980. *Ximenia aegyptiaca* L. Sp. Pl. 1194. 1753. *Balanites roxburghii* Planch. in Ann.

Sci. Nat. 4, 2: 258. 1854; A.W.Bennett in Hook. f. Fl. Brit. India 1: 522. 1875; Cooke, Fl. Pres. Bombay 1: 207. 1958 (Repr. ed.); Witt, List. 12. 1908. *Hingan*.

Trees, small, c 5 m high; young parts pubescent. Petioles and petiolules short; leaflets c 4 x 2 cm, elliptic-oblong, apex subacute or mucronate, puberulous. Flowers green in axillary fascicles; sepals tomentose without, more or less glabrous within; petals spreading, glabrous without, hirsute within. Drupes c 3.5 x 3.0 cm, ovoid, angular, 5-grooved.

Fls. & Frts. : December-June.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 211, f. 128. 1909; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 116. 1982 (*B. roxburghii*).

Distrib. : Commonly found in dry deciduous forests. Kharbi; Phiski.

Notes : Flowers scented.

Amalraj (1985) opines that the species occurring in India should be named as *Balanites roxburghii* instead of merging it with African *B. aegyptiaca*. However the characters on which he bases his argument are quantitative rather than qualitative, such as length of petioles, hairiness of petals and lengthening of the ovary and size, weight and pulp content of the fruits. Hence his view is not acceptable.

The roots and fruits of this plant yield diosgenin which is the starting material for the production of corticosteroid sex hormones, oral contraceptives and anabolic agents (Amalraj & Jayaraman, 1979).

BURSERACEAE

BOSWELLIA Roxb. ex Coleb.

Boswellia serrata Roxb. ex Coleb. in Asiat. Res. 9: 379, t. 5. 1807; A.W.Bennett in Hook. f. Fl. Brit. India 1: 528. 1875; Cooke, Fl. Pres. Bombay 1: 210. 1958 (Repr. ed.); Witt, List. 12. 1908. *Silai*.

Trees, c 20 m high, bark scaly, peeling off in flakes, shining, ash coloured. Leaves c 30 cm long, pinnate, at the ends of branchlets; leaflets c 6.5 x 2.6 cm, c 11 pairs, sessile, oblong-lanceolate, apex obtuse, base unequal, margins crenate-serrate, more or less glaucous. Flowers creamish in racemes, crowded at the ends of branches. Drupes trigonous, ovoid.

Fls. & Frts. : January–March.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 216, f. 130. 1909.

Distrib. : Common throughout the range. Jholapur–Pardi forest, Karanji; Mangrul village, banks of Aruna river.

MELIACEAE

SOYMIDA A. Juss.

Soymida febrifuga (Roxb.) A. Juss. in Mem. Mus. 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.); Witt, List. 14. 1908; Mabberley in Taxon 31: 66. 1982. *Swietenia febrifuga* Roxb. Bot. Descr. Swietenia 1. 1793 & in Med. Facts Obs. 6: 129. 1795 & Pl. Cor. 1: 18, t. 17. 1795. *Rohan, Rohin.*

Trees, c 15 m high, bark black or grey, smooth or rough. Leaves c 25 cm long, crowded towards the tips of the branches, pinnate; leaflets c 11.0 x 6.5 cm, 7–11, opposite to subopposite, oblong or oblong-lanceolate, apex obtuse, sometimes becoming emarginate, base unequal. Flowers pale greenish-white in axillary and terminal panicles. Capsules 6.0 x 3.5 cm, obovoid, 5-celled. Seeds winged.

Fls. & Frts. : February–June.

Illus. : Bedd. Fl. Sylv. t. 8. 1869; Talb. For. Fl. Bombay Pres. & Sind 1: 248, f. 146. 1909; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 129. 1982.

Distrib. : Common. This tree was found usually in association with *Anogeissus latifolia*, *Boswellia serrata*, *Tectona grandis* and *Terminalia alata*. E. Gondwakadi forest; Khandala; Kharbi.

Notes : The flowers are agreeably scented.

Cultivated species :

Azadirachta indica A. Juss. and *Melia azedarach* L. are planted on roadsides and near habitations.

OLACACEAE

OLAX L.

Olax scandens Roxb. Pl. Cor. 2: 2, t. 102. 1799; Masters in Hook.

f. Fl. Brit. India 1: 575. 1875; Cooke, Fl. Pres. Bombay 1: 234. 1958 (Repr. ed.); Witt, List. 14. 1908. *Harduli*.

Shrubs, scandent, old wood thorny, branches, petioles and inflorescence axis pubescent. Leaves c 8.0 x 3.8 cm, alternate, oblong or elliptic-oblong, apex obtuse or subacute, glabrous above, puberulous below. Flowers white in axillary, short racemes; calyx truncate, ciliate in buds, glabrous in fruits. Drupes globose, apiculate, more or less covered by the accrescent calyx, ripening orange.

Fls. & Frts. : July–March.

Distrib. : Common. Found to be clinging on *Terminalia alata*. Mohroli; Penganga felling series, Kharbi range.

Notes : Flowers are fragrant.

CELASTRACEAE

1. Fruit indehiscent	...	CASSINE
1. Fruit a dehiscent capsule :		
2. Climbing unarmed shrubs; inflorescence a pendulous panicle	...	CELASTRUS
2. Erect armed shrubs; inflorescence of axillary cymes	...	MAYTENUS

CASSINE L.

Cassine glauca (Rottb.) O. Ktze. Rev. Gen. Pl. 1: 114. 1891; Ding Hou in Steenis, Fl. Males. 1, 6: 286. 1962. *Mangifera glauca* Rottb. in Nye Saml. Kongel. Norske Vidensk. Selsk. Skr. 2: 534, t. 4, f. 1. 1783. *Elaeodendron glaucum* (Rottb.) Pers. Syn. Pl. 1: 241. 1805; Lawson in Hook. f. Fl. Brit. India 1: 623. 1875 p.p.; Cooke, Fl. Pres. Bombay 1: 248. 1958 (Repr. ed.); Witt, List. 15. 1908. *Aran*, *Bhutkes*, *Tamruj*.

Trees, c 10 m high, bark white, smooth. Leaves c 13.0 x 6.5 cm, opposite or subopposite, elliptic-ovate, margins crenate, apex acuminate, often folded. Flowers pale green in dichasioid corymbose cymes, axillary or terminal; calyx unequally lobed, lobes with membranous margins. Drupes obovoid, c 1.5 cm long.

Fls. & Frts. : August–March.

Illus. : Bedd. Fl. Sylv. t. 148. 1871 (*Elaeodendron roxburghii* Wight & Arn. Prodr. 157. 1834); Talb. For. Fl. Bombay Pres. & Sind 1: 275, f. 162. 1909 (*E. glaucum*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 141. 1982.

Distrib. : Common. In deciduous forests found along with *Acacia* spp., *Emblica officinalis*, *Maytenus emarginata* and *Tectona grandis*. Durg R.F.; Wani-Mohroli road.

CELASTRUS L.

Celastrus paniculatus Willd. Sp. Pl. 1: 1125. 1797; Lawson in Hook. f. Fl. Brit. India 1: 617. 1875; Cooke, Fl. Pres. Bombay 1: 245. 1958 (Repr. ed.); Witt, List. 15. 1908. *Karad-kangani, Mal-kongoni*.

Leaves c 14 x 8 cm, alternate, ovate or obovate, margins crenate, apex acuminate. Flowers white in terminal panicles; sepals ciliate. Capsules 1-3-celled, loculicidal, ovoid, yellow. Seeds brown, covered with a scarlet aril.

Fls. & Frts. : April-June.

Illus. : Wight, Ic. t. 158. 1839; Talb. For. Fl. Bombay Pres. & Sind 1: 277, f. 163. 1909; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 142. 1982.

Distrib. : Not common. Hiwri temple surroundings, Hiwri R.F.

MAYTENUS Molina

Maytenus emarginata (Willd.) Ding Hou in Steenis, Fl. Males. 1, 6: 241. 1962. *Celastrus emarginatus* Willd. Sp. Pl. 1: 1128. 1798. *Gymnosporia montana* (Roth) Bth. Fl. Austral. 1: 400. 1863; Lawson in Hook. f. Fl. Brit. India 1: 621. 1875; Cooke, Fl. Pres. Bombay 1: 247. 1958 (Repr. ed.); Witt, List. 15. 1908. *G. emarginata* (Willd.) Thw. Enum. 409. 1864; Lawson in Hook. f. op. cit. Bharati, Hekel.

Shrubs, 1-6 m, bushy, bark brown. Leaves c 8.5 x 6.5 cm, alternate, coriaceous, obovate, apex obtuse or emarginate, margins crenulate, base slightly attenuate. Flowers greenish-white. Capsules green with a reddish tinge, obcordate, 3-valved. Seeds brown, aril embracing the seed.

Fls. & Frts. : November-March.

Illus. : Wight, Ic. t. 382. 1840 (*Celastrus montanus*); Talb. For. Fl. Bombay Pres. & Sind 1: 281, f. 166. 1909 (*Gymnosporia emarginata*).

Distrib. : Common throughout. Usually found in association with *Butea monosperma*, *Catunaregam spinosa*, *Ixora arborea* and *Terminalia alata*. Aruna river banks, Hiwri R.F.; Khandala; Penganga felling series, Kharbi; Wani-Mukutban road.

RHAMNACEAE

- | | |
|--|-----------|
| 1. Unarmed climbing shrubs; fruits 1-seeded, winged ... | VENTILAGO |
| 1. Armed shrubs or small trees (<i>Ziziphus xylopyra</i>) usually unarmed; fruits 1-4-seeded, not winged ... | ZIZIPHUS |

VENTILAGO Gaertn.

Ventilago denticulata Willd. in Ges. Naturf. Fr. Neue. Schr. 3: 417. 1801; Banerjee & P.K. Mukh. in Indian Forester 96: 203. 1970. *V. calyculata* Tul. in Ann. Sci. Nat. 4, 8: 124. 1857; Lawson in Hook. f. Fl. Brit. India 1: 631. 1875; Cooke, Fl. Pres. Bombay 1: 254. 1958 (Repr. ed.). *V. madraspatana* non Gaertn. 1788; Witt, List. 15. 1908. *Keoti*, *Sakavel*.

Climbers, large, branchlets puberulous. Leaves c 11.5 x 8.0 cm, alternate, ovate or elliptic-ovate, margins crenate-serrate, apex obtuse, base unequally rounded, puberulous. Flowers greenish in densely pubescent paniculate spikes. Nut and wings yellow-pubescent; wings c 5.0 x 1.1 cm.

Fls. & Frts. : September-February.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 292, f. 174. 1909 (*V. calyculata*).

Distrib. : Common. This climber is found usually along the water courses. Durg R.F.; Penganga felling series, Kharbi R.F.; Phiski.

ZIZIPHUS Mill.

- | | |
|--|----------------------|
| 1. Flowers in pedunculate, axillary cymes; styles 3 ... | <i>Z. xylopyra</i> |
| 1. Flowers in fascicles or subsessile cymes; styles 2: | |
| 2. Climbing or straggling shrubs ... | <i>Z. oenoplia</i> |
| 2. Erect shrubs or trees : | |
| 3. Small trees; leaves fuscous-tomentose beneath ... | <i>Z. mauritiana</i> |
| 3. Low shrubs; leaves grey-pubescent on either surface ... | <i>Z. nummularia</i> |

Ziziphus mauritiana Lam. Encycl. 3: 319. 1789; Sant. in J. Bombay nat. Hist. Soc. 51: 803. 1953. *Z. jujuba* Lam. Encycl. 3: 318. 1789, non Mill. 1768; Lawson in Hook. f. Fl. Brit. India 1: 632. 1875; Cooke, Fl. Pres. Bombay 1: 256. 1958 (Repr. ed.); Witt, List. 15. 1908. *Ber*, *Bor*.

Branches armed with curved spines, branchlets pubescent. Leaves c 2.7 x 2.9 cm, alternate, ovate-elliptic, margins denticulate, apex apiculate, base occasionally slightly inequilateral; stipular spines in pairs, one antrorse, the other retrorse. Flowers green in axillary fascicles. Drupes globose or oblong, ripening yellowish red.

Fls. & Frts. : September-February.

Illus. : Wight, Ic. t. 99. 1838 (*Z. jujuba*).

Distrib. : Throughout the district. Aruna river bank, Mangrul village.

Notes : Fruits edible and normally sour, occasionally sweet.

Z. nummularia (Burm. f.) Wight & Arn. Prod. 162. 1834; Lawson in Hook. f. Fl. Brit. India 1: 633. 1875; Witt, List. 16. 1908. *Rhamnus nummularius* Burm. f. Fl. Ind. 61. 1768 (*nummularia*). *Ziziphus rotundifolia* Lam. Encycl. 3: 319. 1789; Cooke, Fl. Pres. Bombay 1: 257. 1958 (Repr. ed.). *Gangr, Jangra*.

Shrubs, c 1 m high, spiny, branches pinkish-brown tomentose. Leaves c 2.5 x 1.5 cm, alternate, ovate-elliptic, margins spinous-dentate, apex rounded; stipular spines paired, one long and straight, the other small and recurved. Flowers greenish yellow in axillary cymes. Drupes globose, ripening deep red.

Fls. & Frts. : September-April.

Illus. : Mahesh. Illus. Fl. Delhi, f. 45. 1966.

Distrib. : Not common. Mukutban forest.

Z. oenoplia (L.) Mill. Gard. Dict. ed. 8. 3. 1768; Lawson in Hook. f. Fl. Brit. India 1: 634. 1875; Cooke, Fl. Pres. Bombay 1: 257. 1958 (Repr. ed.); Witt, List. 16. 1908. *Rhamnus oenoplia* L. Sp. Pl. 194. 1753. *Burgi, Iran*.

Shrubs, c 6 m high, young branches and inflorescence axis rusty-brown tomentose. Leaves c 5.0 x 2.7 cm, alternate, ovate or ovate-lanceolate, apex apiculate, base oblique, puberulous; stipular prickle one, short, recurved. Flowers green in axillary dichotomous cymes. Drupes globose, ripening black.

Fls. & Frts. : August-December.

Illus. Talb. For. Fl. Bombay Pres. & Sind 1: 297, f. 176. 1909.

Distrib. : Common. Durg R.F.

Notes : Fruits edible.

Z. xylopyra (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.); Witt, List. 16. 1908. *Rhamnus xylopyrus* Retz. Obs. Bot. 2: 11. 1781. *Ghat-Bor, Ghoti.*

Shrubs or small trees, 3–8 m high, usually unarmed. Leaves c 9.2 x 6.3 cm, alternate, ovate, apex rounded, base oblique, margins crenate-serrate, puberulous above, pubescent below, puberulous at length. Flowers creamish-white. Drupes globose, grey tomentose or nearly glabrous, occasionally acute at apex.

Fls. & Frts. : April–December.

Distrib. : Common throughout. Usually found along with *Bridelia retusa*, *Emblica officinalis*, *Maytenus emarginata* etc. Chandni forest; E. Gondwakadi forest; Khandala forest; Tipeshwar forest.

VITACEAE

- | | | |
|---|-----|--------------|
| 1. Flowers polygamo-monoecious; tendrils on the peduncle | ... | AMPELOCISSUS |
| 1. Flowers hermaphrodite; tendrils leaf-opposed (nil) in
<i>Cissus woodrowii</i>) : | | |
| 2. Berries usually 1-seeded; leaves usually simple,
occasionally 3-foliate or digitate | ... | CRASTUS |
| 2. Berries 2–4-seeded; leaves pedately 3-foliate | ... | CAYRATIA |

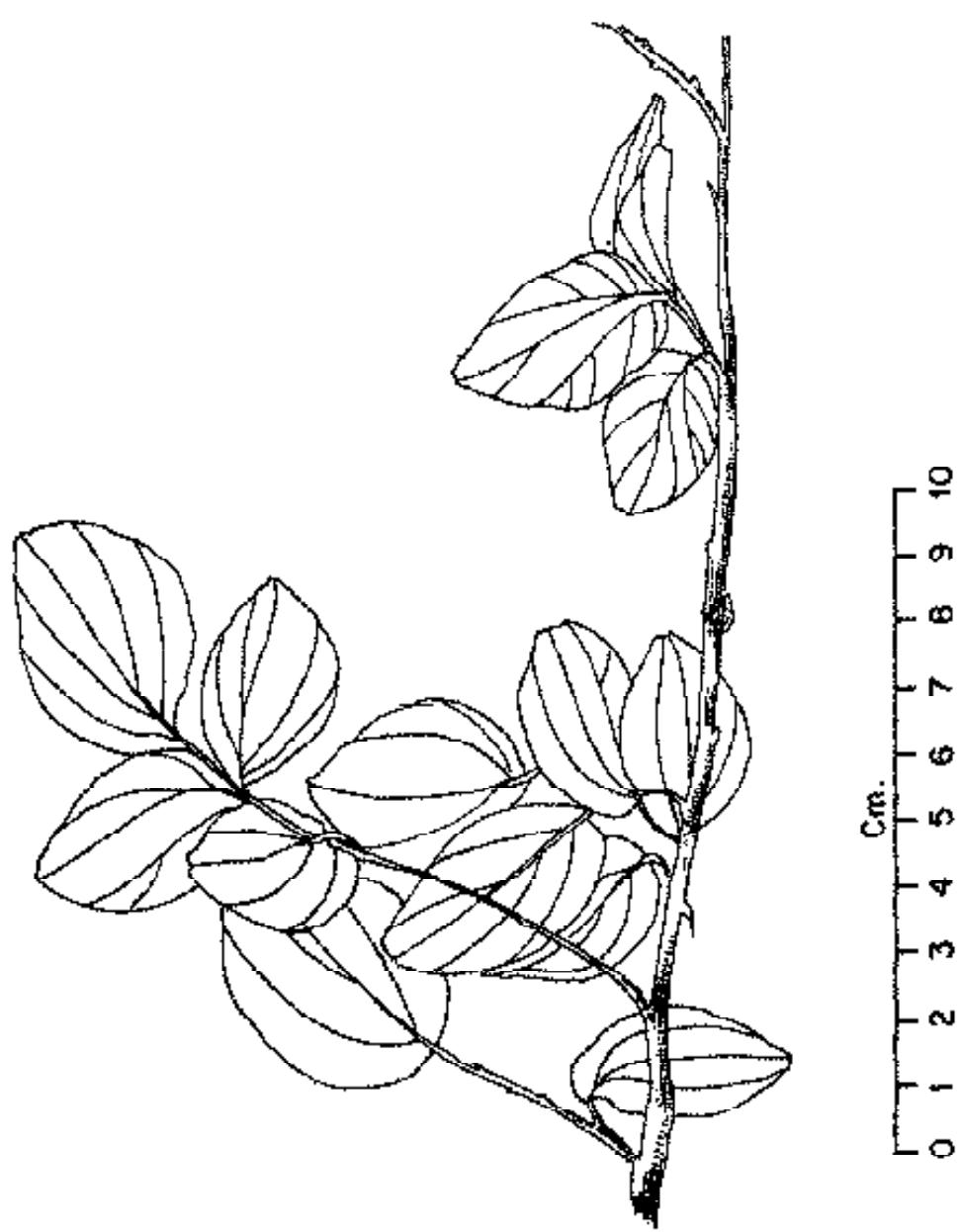
AMPELOCISSUS Planch.

- | | | |
|----------------------------|-----|---------------------|
| 1. Disc thick, 5-furrowed | ... | <i>A. latifolia</i> |
| 1. Disc thin, not furrowed | ... | <i>A. tomentosa</i> |

Ampelocissus latifolia (Roxb.) Planch. in J. Vigne, Amer. 374. 1884 & in DC. Monogr. Phan. 5(2): 370. 1887. *Vitis latifolia* Roxb. Fl. Ind. 1: 661. 1820; Lawson in Hook. f. Fl. Brit. India 1: 652. 1875; Cooke, Fl. Pres. Bombay 1: 269. 1958 (Repr. ed.); Witt, List. 17. 1908. *Kandbal, Nadena.*

Climbers, stems brownish-green, young shoots and inflorescence pubescent; tendrils forked. Leaves c 17 x 23 cm, alternate, variable, orbicular or cordate, rounded or 3–5-angled or lobed, lobes acuminate, margins sharply and irregularly toothed; petioles c 10.5 cm long. Flowers brick-red in small, compact, puberulous, thyrsoid cymes. Berries globose, black when ripe. Seeds oblong, crenate on the margins.

Fls. & Frts. : August–October.



Ziziphus xylopyra (Retz.) Willd.

Illus. : Ieon. Roxb. Fasc. 3: pl. 5. 1969 (*Vitis latifolia*).

Distrib. : Not common. Usually found to climb on *Butea monosperma*. Majra felling series, Patan bori range; Penganga felling series, Kharbi range.

A. tomentosa (Heyne ex Roth) Planch. in J. Vigne, Amer. 374. 1884. *Vitis tomentosa* Heyne ex Roth, Nov. Pl. Sp. 157. 1821; Lawson in Hook. f. Fl. Brit. India 1: 650. 1875; Cooke, Fl. Pres. Bombay 1: 268. 1958 (Repr. ed.). *Shend-vel*.

Climbers, shrubby, all parts cinnamomeous woolly; tendrils forked. Leaves c 15 x 21 cm, alternate, orbicular-cordate, 3-5-shallowly or deeply lobed, margins distantly serrate, tomentose below. Flowers brown in tomentose panicles; filaments, ovary and style red; anthers yellow. Berries black.

Fls. & Frts. : May–October.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 315, f. 186. 1909; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 155. 1982.

Distrib. : Not common. It was found to be climbing on *Tectona grandis*. Durg R.F.; Khandala forest.

CAYRATIA A.L. Juss.

Cayratia trifolia (L.) Domin in Biblioth. Bot. 89: 371. 1927; Suesseng. in Engl. & Prantl, Pflanzenfam. ed. 2. 20d: 280. 1953. *Vitis trifolia* L. Sp. Pl. 203. 1753; Cooke, Fl. Pres. Bombay 1: 271. 1958 (Repr. ed.). *V. carnosia* (Lam.) Wall. ex Wight & Arn. Prodr. 127. 1834; Lawson in Hook. f. Fl. Brit. India 1: 654. 1875; Witt, List. 17. 1908. *Ambat-vel*.

Climbers, young parts pubescent. Leaves alternate; petioles c 7 cm long; leaflets c 6.5 x 4.8 cm, usually the middle one the largest, elliptic-ovate, apex sub-acute, base slightly unequal, margins serrate-dentate. Flowers greenish-yellow in branched cymes, peduncles c 8.5 cm long. Berries ovoid, c 0.7 cm across, ripening black.

Fls. & Frts. : August–October.

Illus. : Wight, Ic. t. 171. 1839 (*Vitis carnosia*).

Distrib. : Common throughout the district. Found to be climbing on fences near habitations and on *Acacia* spp. and *Butea monosperma* in the forest. Aruna river bank, Mangrul village; Karanji; Morchandi.

CISSUS L.

- | | | |
|---|-----|---------------------|
| 1. Erect undershrubs; tendrils nil | ... | <i>C. woodrowii</i> |
| 1. Scandent shrubs; tendrils leaf-opposed | ... | <i>C. vitiginea</i> |

Cissus vitiginea L. Sp. Pl. 117. 1753. *Vitis linnei* Wall. ex Wight & Arn. Prodr. 126. 1834; Lawson in Hook. f. Fl. Brit. India 1: 649. 1875; Cooke, Fl. Pres. Bombay 1: 268. 1958 (Repr. ed.); Witt, List. 16. 1908. *Dakavela, Jugbel*.

Shrubs, grey pubescent all over; tendrils simple. Leaves c 9.0 x 10.5 cm, broadly ovate, usually palmately 3-lobed, base shallowly or deeply cordate, margins irregularly dentate, grey tomentose beneath, puberulous above. Flowers yellow in pedunculate cymes. Berries blue at maturity, pyriform with apiculate tip, pedicels recurved in fruiting.

Fls. & Frts. : August–October.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 158. 1982.

Distrib. : Common throughout. Usually found on hedges along border of cultivated fields. Aruna river bank, Mangrul village; Jodmoha grassland; Karanji; Tipeshwar R.F.

C. woodrowii (Stapf ex Cooke) Sant. in Kew Bull. 1948: 276. 1948. *Vitis woodrowii* Stapf ex Cooke, Fl. Pres. Bombay 1: 248. 1902 (1: 264. 1958 (Repr. ed.). *Girnul*.

Leaves c 19.5 x 18.5 cm, ovate, obscurely 5-lobed, apex acute, base subcordate to cordate, margins repand-crenate. Flowers pale yellow in compound umbels. Berries coppery red, obovoid with apiculate tip.

Fls. & Frts. : July–August.

Distrib. : Rare. Found to be growing in humus soil, under shade in dry deciduous forests. Bittergaon felling series, Bittergaon range, 160042.

LEEACEAE

LEEA van Royen ex L.

- | | | |
|---------------------|-----|-----------------------|
| 1. Leaves simple | ... | <i>L. macrophylla</i> |
| 1. Leaves 1-pinnate | ... | <i>L. asiatica</i> |

Leea asiatica (L.) Ridsd. in Manilal, Bot. & Hist. Hort. Malab. 189. 1980. *Phytolacca asiatica* L. Sp. Pl. 474. 1753. *Leea crispa* van Royen ex L. Syst. Nat. ed. 12. 2: 627. 1767 & Mant. 1: 124. 1767; Lawson in Hook. f. Fl. Brit. India 1: 665. 1875; Cooke, Fl. Pres. Bombay 1: 276. 1958 (Repr. ed.); Ridsd. in Blumea 22: 88. 1974. *L. aspera* Edgew. in Trans. Linn. Soc. 20: 36. 1846 non Wall. ex G. Don, 1831; Lawson in Hook. f. op. cit.; Cooke, op. cit. 277; Witt, List. 18. 1908.

Shrubs, spreading. Leaflets 5–7, c 17.0 x 7.8 cm, elliptic or elliptic-oblong, apex acuminate, margins serrate. Flowers green in leaf-opposed corymbose cymes. Berries c 0.7 cm across, globular, c 6-lobed.

Fls. & Frts. : August–September.

Illus. : Saldanha in Saldanha & Nicolson, Fl. Hassan Dist. 355, f. 69A. 1976 (*L. crispa*).

Distrib. : Common throughout, usually as a forest undergrowth and sometimes in grasslands. Bhiwkund R.F.; E. Gondwakadi forest; Jodmoha grass farm; Majra felling series, Patan bori range.

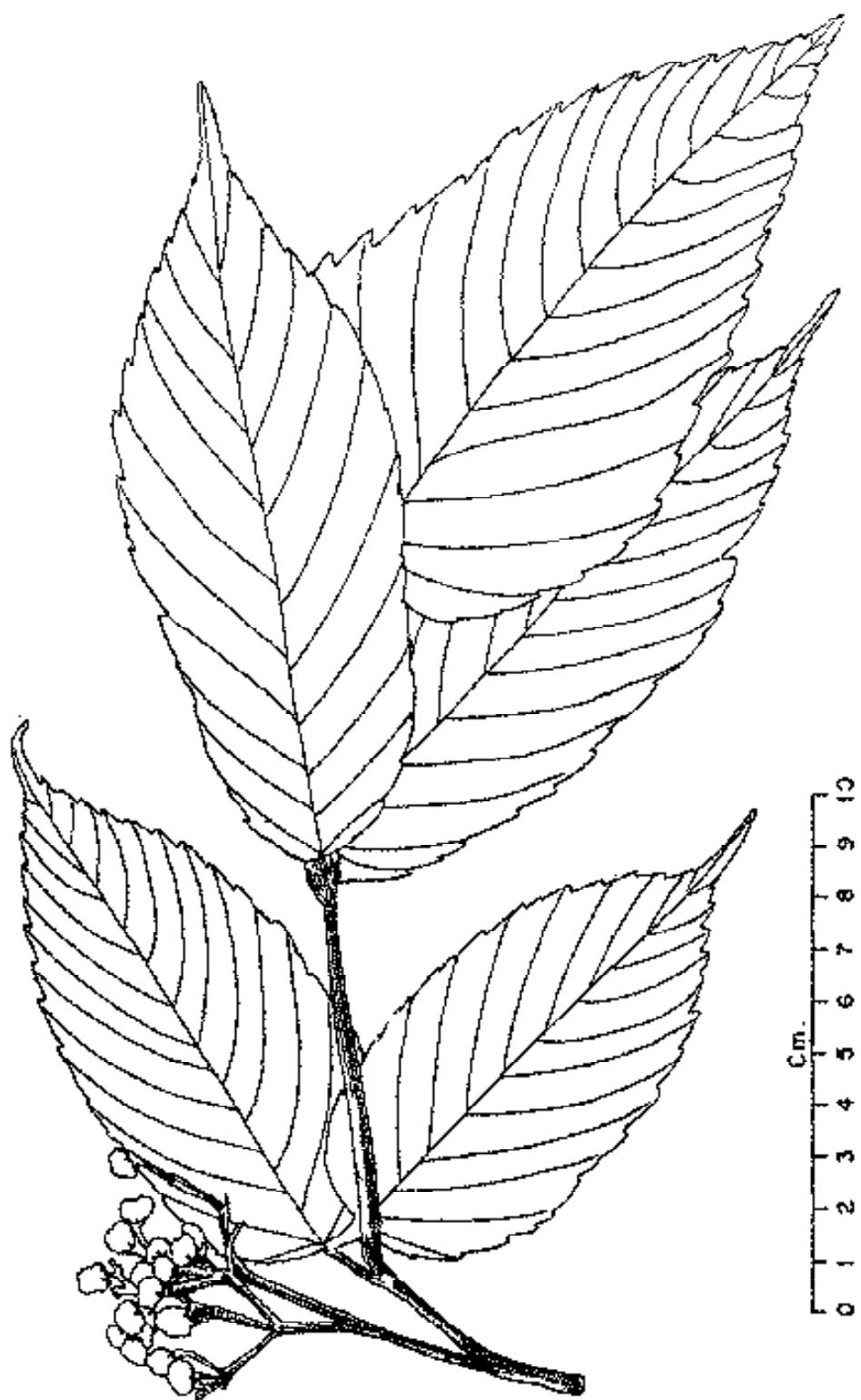
Notes : Ridsdale (1980) found that Linnaeus based his description of *Phytolacca asiatica* on the plate of *Nalugu* Rheede, Hort. Malab. 2: 43–44, t. 26. 1679. Hence the new combination has become necessary.

L. macrophylla Roxb. ex Hornem. Hort. Hafn. 1: 231. 1813; Lawson in Hook. f. Fl. Brit. India 1: 664. 1875; Cooke, Fl. Pres. Bombay 1: 276. 1958 (Repr. ed.); Ridsd. in Blumea 22: 85. 1974. *L. integrifolia* Roxb. Fl. Ind. 2: 472. 1824; Lawson in Hook. f. op. cit. 667. *L. robusta* Roxb. op. cit. 468; Lawson in Hook. f. op. cit. 667, p.p.; Cooke, op. cit. 278. *L. cinerea* Lawson in Hook. f. op. cit. 665. *L. coriacea* Lawson in Hook. f. op. cit. *L. diffusa* Lawson in Hook. f. op. cit. 667. *L. angustifolia* Lawson in Hook. f. op. cit. 665. *L. parallela* Wall. ex Lawson in Hook. f. op. cit. 666. *L. latifolia* Wall. ex Kurz in J. As. Soc. Beng. 2, 44: 178. 1875; Cooke, op. cit. 277. *Dinda*.

Shrubs Leaves c 50 x 20 cm, broadly ovate, occasionally 3–5-lobed, apex acute or acuminate, margins crenate or irregularly serrate, glabrous above, pubescent beneath. Flowers green in terminal much branched cymes; peduncles grooved, puberulous; stamens dark purple. Berries c 0.8 cm across, 6-lobed.

Fls. & Frts. : August–October.

Illus. : Wight, Ic. t. 1154. 1846.



Lees asiatica (L.) Ridl.

Distrib. : Rare. Found in humus soil as an undergrowth in deciduous forests. Penganga felling series, Kharbi range. 156710, 160018.

SAPINDACEAE

1. Climbers	...	CARDIOSPERMUM
1. Trees or shrubs :		
2. Fruit dry, crustaceous, indehiscent	...	SCHLEICHERA
2. Fruit a membranous, 2-winged capsule	...	DODONAEA

CARDIOSPERMUM L.

Cardiospermum halicacabum L. Sp. Pl. 366. 1753; Hiern in Hook. f. Fl. Brit. India 1: 670. 1875; Cooke, Fl. Pres. Bombay 1: 280. 1958 (Repr. ed.); Witt, List. 19. 1908. Tijovati, Wasan.

Climbers, herbaceous, slender, stem striate; young parts pubescent. Leaves biternate; petioles c 4 cm long; leaflets c 2.3 x 1.5 cm, lanceolate-oblong to ovate, apex acute or acuminate, margins inciso-serrate, pubescent when young, glabrescent at length. Flowers white on axillary peduncles, bearing 3-racemiform branches at apex; peduncles c 7 cm long with 2 opposite, circinate tendrils below the apex. Capsules trigonous, inflated, green with a coppery-brown tinge. Seeds black, arillate; aril white.

Fls. & Frts. : August–March.

Illus. : Wight, Ic. t. 508. 1841; Mahesh. Illus. Fl. Delhi f. 47. 1966.

Distrib. : Common throughout, in cultivated fields, waste lands, hedges and border of forests. Aruna river banks, Hiwri R.F., Yavatmal; Karanji (weed in wheat fields); Mukutban.

DODONAEA P. Mill.

Dodonaea viscosa Jacq. Enum. Syst. Pl. 19. 1760; Hiern in Hook. f. Fl. Brit. India 1: 697. 1875; Cooke, Fl. Pres. Bombay 1: 287. 1958 (Repr. ed.); Witt, List. 18. 1908; Leenhouts in Blumea 28: 285. 1983. *Jakhmi, Lahan lokhandi, Sanatha.*

Shrubs, c 2 m high, evergreen. Leaves c 10.0 x 1.9 cm, subsessile, oblanceolate, apex subacute, base tapering, shining. Flowers greenish-yellow in few flowered axillary racemes. Capsules c 1.0 x 1.9 cm, pale greenish-yellow. Seeds black, sub-orbicular.

Fls. & Frts. : July—January.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 342, f. 202. 1909;
Croat in Ann. Missouri Bot. Gard. 63: 447, f. 5. 1976.

Distrib. : Usually planted as a hedge plant. In wild, plant was found to grow in sandy soil, in open situations in scrub jungles. Datatri temple surroundings, Punwat village, Wani range.

SCHLEICHERA Willd. *nom. cons.*

Schleichera oleosa (Lour.) Oken, Allg. Naturgesch. 3(2): 1341. 1841. *Pistacia oleosa* Lour. Fl. Cochinch. 615. 1790. *Schleichera trijuga* Willd. Sp. Pl. 4: 1096. 1805; Hiern in Hook. f. Fl. Brit. India 1: 681. 1875; Cooke, Fl. Pres. Bombay 1: 283. 1958 (Repr. ed.); Witt, List. 18. 1908. *Kusam*, *Kusumb*.

Trees, large. Leaves pinnate, bright red when young; leaflets oblong-lanceolate, base truncate, coriaceous. Flowers yellow, fascicled on interrupted axillary or extra-axillary racemes or panicles. Fruits ovoid, apiculate, smooth or echinate.

Fls. & Frts. : March—May.

Illus. : Bedd. Fl. Sylv. t. 119. 1871; Talb. For. Fl. Bombay Pres. & Sind 1: 336, f. 198. 1909 (*S. trijuga*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 168. 1982.

Notes : This plant has been included on the authority of Witt, *op. cit.*

Cultivated species :

Sapindus emarginata Vahl and *S. laurifolius* Vahl are often planted near houses in some villages.

ANACARDIACEAE

1. Leaves imparipinnate	...	LANNEA
1. Leaves simple :		
2. Styles lateral	...	BUCHANANIA
2. Styles apical	...	SEMECARPUS

BUCHANANIA Spreng.

Buchanania lanza Spreng. in J. Bot. (Schrader) 2: 234. 1800;

Cooke, Fl. Pres. Bombay 1: 293. 1958 (Repr. ed.). *B. latifolia* Roxb. Fl. Ind. 2: 385. 1832; Hook. f. Fl. Brit. India 2: 23. 1876; Witt, List. 19. 1908. *Char.*

Trees, c 20 m high, bark black, young branches rusty pubescent. Leaves c 20.0 x 8.7 cm, coriaceous, elliptic-oblong, apex obtuse, occasionally emarginate, pubescent beneath; petioles c 1.5 cm, silky-pubescent. Flowers pale white or greenish-white, sessile, in terminal and axillary pubescent panicles. Drupes globose, 1-seeded.

Fls. & Frts. : January–April.

Illus. : Bedd. Fl. Sylv. t. 165. 1871; Ic. Roxb. Fasc. 4: pl. 24. 1970 (*B. latifolia*).

Distrib. : Common throughout. It is usually found in dry deciduous forests and among teak plantations along with *Butea monosperma*, *Emblica officinalis*, *Madhuca longifolia* var. *latifolia*, *Terminalia alata* etc. Bhansara, Arni range; Khandala; Penganga felling series, Kharbi.

Notes : Flowers are faintly scented.

LANNEA A. Rich. *nom. cons.*

Lannea coromandelica (Houtt.) Merr. in J. Arnold Arbor. 19: 353. 1939. *Dialium coromandelicum* Houtt. Nat. Hist. 2, 2: 39, t. 5, f. 2. 1774. *Odina wodier* Roxb. Fl. Ind. 2: 293. 1832; Hook. f. Fl. Brit. India 2: 29. 1876; Cooke, Fl. Pres. Bombay 1: 296. 1958 (Repr. ed.); Witt, List. 19. 1908. *Moyen*.

Trees, c 20 m high; bark white or greyish, flaky; stems resinous. Leaves c 23 cm long, clustered at the ends of branches, alternate; leaflets c 11 in number, c 12.4 x 5.2 cm, ovate or ovate-oblong apex acuminate, base rounded or oblique, puberulous beneath. Flowers in terminal fascicled racemes; inflorescence axis stellate hairy; corolla red without, green within. Drupes c 1 cm long, reniform.

Fls. & Frts. : December–May.

Illus. : Wight, Ic. t. 60. 1838; Ic. Roxb. Fasc. 4: pl. 25. 1970 (*Odina wodier*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 172. 1982.

Distrib. : Commonly found in dry deciduous forests along with *Anogeissus latifolia* and *Tectona grandis*. E. Gondwakadi forest; Khandala; Phiski.

Notes : The plant flowers when it is leafless. Flowers fragrant.

SEMECARPUS L.f.

Semecarpus anacardium L. f. Suppl. 182. 1781; Hook. f. Fl. Brit. India 2: 30. 1876; Cooke, Fl. Pres. Bombay 1: 296. 1958 (Repr. ed); Witt, List. 20. 1908. *Bibba*.

Trees, c 6 m high. Leaves c 30 x 15 cm, coriaceous, obovate-oblong, apex usually rounded, sometimes emarginate, base rounded or cordate, pubescent beneath; petioles c 3.7 cm long, pubescent. Flowers yellow, in terminal pubescent panicles. Drupes c 2.0 x 2.2 cm, ovoid, straight or oblique, situated on receptacle.

Fls. & Frts. : July-December.

Illus. : Wight, Ic. t. 558. 1842; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 176. 1982.

Distrib. : Commonly found in association with *Butea monosperma* and *Maytenus emarginata*. Hiwri R.F.; Jholapur-Pardi forest, Karanji; Khandala; Penganga felling series, Kharbi range.

Cultivated species :

Mangifera indica L. is planted everywhere in the district for its edible fruits.

MORINGACEAE

MORINGA Adans.

Moringa concanensis Nimmo ex Dalz. & Gibbs. Bombay Fl. 311. 1861; Hook. f. Fl. Brit. India 2: 45. 1876; Cooke, Fl. Pres.-Bombay 1: 301. 1958 (Repr. ed.); Verdc. in Kew Bull. 40: 12. 1985.

Trees, c 12 m high, bark greyish-black. Leaves 2-pinnate, leaflets 5-11 in number, c 2.5 x 2.2 cm, shape variable, oblong, elliptic, obovate or suborbicular, apex obtuse, mucronate or retuse, pale beneath. Panicles pubescent; buds tomentose; calyx white, tomentose; corolla lobes white, reddish at base. Capsules c 50 cm long, triquetrous. Seeds 3-winged.

Fls. & Frts. : November-January.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 178. 1982.

Distrib. : Rare. Bori forest, 148505.

Notes : Flowers fragrant.

Cultivated species :

Moringa oleifera Lam. is usually planted near houses for its edible fruits.

FABACEAE (LEGUMINOSAE)

- | | | |
|--|-----|------------------|
| 1. Flowers actinomorphic; calyx and corolla valvate in bud | ... | MIMOSOIDEAE |
| 1. Flowers zygomorphic; calyx and corolla predominantly imbricate in bud : | | |
| 2. Corolla papilionaceous; stamens usually united | ... | PAPILIONOIDEAE |
| 2. Corolla not papilionaceous; stamens usually free | ... | CAESALPINIOIDEAE |

PAPILIONOIDEAE

- | | | |
|--|-----|-------------|
| 1. Trees : | | |
| 2. Leaves pinnately 3-foliolate : | | |
| 3. Flowers in axillary or terminal panicles | ... | BUTEA |
| 3. Flowers in axillary or terminal racemes or on old wood: | | |
| 4. Branches prickly; pods torulose | ... | ERYTHRINA |
| 4. Branches not prickly; pods linear, elongate | ... | OUGEINIA |
| 2. Leaves imparipinnate : | | |
| 5. Leaflets opposite | ... | DERRUS |
| 5. Leaflets alternate : | | |
| 6. Anthers terminal; pods oblong or linear | ... | DALBERGIA |
| 6. Anthers versatile; pods suborbicular | ... | PTEROCARPUS |
| 1. Shrubs or herbs : | | |
| 7. Plants erect : | | |
| 8. Pods indehiscent, 1-seeded | ... | PSORALEA |
| 8. Pods various, not as above : | | |
| 9. Stamens monadelphous : | | |
| 10. Leaves 2-foliolate, gland dotted; pod a compressed lomentum of few with retrorsely scabrous bristly, 1-seeded joints ... | | ZORNIA |
| 10. Leaves simple or 3-foliolate, not gland-dotted; pods turgid or inflated, glabrous or simple hairy | ... | CROTALARIA |
| 9. Stamens diadelphous : | | |

11. Lomentum of 2-6 small, turgid, 1-seeded, indehiscent joints folded within the calyx ... **URARIA**
11. Pods various, not folded within the calyx :
 12. Leaves imparipinnate :
 13. Pod a long stipitate lomentum with 2-10-flattened, 1-seeded easily separating joints ... **AESCHYNOMENE**
 13. Pods continuous, not jointed :
 14. Anthers apiculate; pods linear-cylindric or oblong or torulose ... **INDIGOFERA**
 14. Anthers obtuse; pods linear, flattened ... **TEPHROSIA**
 12. Leaves simple or pinnately or digitately 1-3-foliolate :
 15. Petioles winged ... **FLEMINGIA**
 15. Petioles not winged :
 16. Bracts scarious ... **ALYSICARPUS**
 16. Bracts not scarious :
 17. Main nerve of the leaflets excurrent as marginal teeth ... **MELLLOTUS**
 17. Main nerve of the leaf not excurrent :
 18. Leaflets glandular beneath ... **CAJANUS**
 18. Leaflets not glandular beneath :
 19. Pods of several 1-seeded joints ... **DESMODIUM**
 19. Pods continuous, septate between the seeds :
 20. Leaves simple or 3-foliolate ... **INDIGOFERA**
 20. Leaves pinnate ... **SESSANIA**
7. Plants prostrate, trailing, twining or climbing :
 21. Climbers or twiners :
 22. Stamens 9; rhachis ending in a tendril ... **ABRUS**
 22. Stamens 10; rhachis not ending in a tendril :
 23. Flowers concealed by prominent accrescent calyx ... **PARACALYX**
 23. Flowers not concealed by accrescent calyx :
 24. Leaflets gland-dotted beneath ... **ATYLOSLIA**
 24. Leaflets not gland-dotted beneath :
 25. Stamens monadelphous :

26. Climbers; nodes of racemes swollen	...	CANAVALIA
26. Twiners; nodes of racemes not swollen	...	TERAMNUIS
25. Stamens diadelphous :		
27. Pods covered by fine, brittle, needle-like irritant bristles	...	MUCUNA
27. Pods not covered by irritant bristles :		
28. Climbing shrubs	...	BUTEA
28. Climbing herbs :		
29. Stipules peltate, produced below the insertion; flowers yellow; stigma oblique	...	VIGNA
29. Stipules basifixed; flowers blue; stigma terminal	...	CLITORIA
21. Trailing or prostrate herbs :		
30. Leaves pinnately or sub-digitately 3-foliate; flowers in racemes	...	Rhynchosia
30. Leaves simple; flowers solitary	...	GONIOGYNA

ABRUS Adans.

Abrus precatorius L. Syst. Nat. ed. 12. 472. 1767; Baker in Hook. f. Fl. Brit. India 2: 175. 1876; Cooke, Fl. Pres. Bombay 1: 382. 1958 (Repr. ed.); Witt, List. 24. 1908; Breteler in Blumea 10: 617. 1960; Verde. in Kew Bull. 24: 240. 1970. *Gunchi, Gunj.*

Climbers, slender. Leaves paripinnate, rhachis c 10 cm long; leaflets 10–20 pairs, c 1.5 x 0.5 cm, oblong or elliptic-oblong, glabrous above, appressed-hairy beneath. Inflorescence a raceme, shorter than leaves; flowers pink. Pods c 4.0 x 1.5 cm, oblong, turgid, pubescent. Seeds scarlet with a black spot.

Fls. & Frts. : September–January.

Illus. : Mahesh. Illus. Fl. Delhi f. 71. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 179. 1982.

Notes : According to Witt, *op. cit.* this plant is common in hedges.

AESCHYNOMENE L.

Aeschynomene indica L. Sp. Pl. 713. 1753; Baker in Hook. f. Fl. Brit. India 2: 151. 1876; Cooke, Fl. Pres. Bombay 1: 363. 1958 (Repr. ed.); Witt, List. 23. 1908; Rudd in Reinwardtia 5: 30. 1959.

Undershrubs, c 1 m high; stem hollow, warty. Leaflets many, sub-opposite, sub-sessile, c 0.5×0.2 cm, oblong, apex mucronate, base oblique; stipules lanceolate, tip sub-acuminate, base auricled. Flowers creamy-yellow, 1–4 in small terminal racemes on axillary branches; standard pale rusty without. Pods c 4.5×0.3 cm, straight or curved, muriculate above the seeds. Seeds brownish-black, shining, reniform.

Fls. & Frts. : August–November.

Illus. : Wight, Ic. t. 405. 1840; Mahesh, Illus. Fl. Delhi f. 65. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 180. 1982.

Distrib. : The plant is commonly found in marshy places, along roadside ditches and margins of ponds, in association with various species of *Cyperus* and *Echinochloa colonum*. Khandala forest; Mukutban talao; Patri, near Umari village on Yavatmal–Pandharkawada road; Sunna–Tipeshwar road, 1 km point, Bori range.

ALYSICARPUS Desv. nom. cons.

1. Calyx shorter or very slightly longer than the first joint of the pod :
 2. Stem glabrescent; pods occasionally moniliform; joints turgid, tetragonous, glabrous or so ... *A. vaginalis*
 2. Stem bristly hairy; pods not moniliform; joints flattened, straight and hooked hairy ... *A. hamosus*
1. Calyx much longer than the first joint of the pod :
 3. Joints smooth ... *A. bupleurifolius*
 3. Joints strongly and closely transversely ribbed :
 4. Pods 4-angled ... *A. tetragonolobus*
 4. Pods two edged :
 5. Diffuse herbs ... *A. scariosus*
 5. Erect herbs :
 6. Upper leaflets obovate-oblong; calyx teeth glabrous or ciliate ... *A. heyneanus*
 6. Upper leaflets linear-oblong; calyx teeth ciliate ... *A. rugosus*

Alysicarpus bupleurifolius (L.) DC. Prodr. 2: 352. 1825; Baker in Hook. f. Fl. Brit. India 2: 158. 1876; Cooke, Fl. Pres. Bombay 1: 370. 1958 (Repr. ed.). *Hedysarum bupleurifolium* L. Sp. Pl. 745. 1753.

Herbs, decumbent or erect. Lower leaves c 1.5 x 1.0 cm, suborbicular or broadly elliptic, upper leaves c 5.0 x 0.6 cm, linear-lanceolate or oblong, acute. Flowers purple, in axillary and terminal, lax, spicate racemes. Pods c 1 cm long, joints 4-7, apiculate.

Fls. & Frts. : August–November.

Illus. : Mahesh. Illus. Fl. Delhi f. 70. 1966.

Distrib. : Not common. Pusad–Yavatmal road, 15 km point.

A. hamosus Edgew. in J. As. Soc. Beng. 21: 171. 1853; Baker in Hook. f. Fl. Brit. India 2: 157. 1876; Cooke, Fl. Pres. Bombay 1: 368. 1958 (Repr. ed.).

Herbs, prostrate. Leaves c 2.8 x 2.4 cm, sub-orbicular, apex obtuse, base sub-cordate, appressed-hairy, densely so beneath. Flowers purple, few, lax, in axillary, hairy racemes. Pods c 1.5 x 0.3 cm, falcate, compressed, upto 7-jointed, reticulately veined. Seeds brown, oblong.

Fls. & Frts. : August - October.

Distrib. : Not common. Usually found in moist soil along grasses on edges of tanks. Durg tank.

A. heyneanus Wight & Arn. Prodr. 1: 234. 1834. **A. rugosus** (Willd.) DC. var. *heyneanus* (Wight & Arn.) Baker in Hook. f. Fl. Brit. India 2: 159. 1876; Cooke, Fl. Pres. Bombay 1: 371. 1958 (Repr. ed.).

Herbs, c 1 m high, erect, densely pubescent. Leaves c 3.3 x 2.0 cm, apex obtuse, appressed-pubescent beneath. Flowers lax, terminal and axillary in c 18 cm long racemes; standard whitish without, pale saffron within; wings pink; keels greenish below, pinkish above. Pods c 1x3 cm, apiculate, 2-5-jointed. Seeds deep yellow, shining, ellipsoid-oblong.

Fls. & Frts. : August - March.

Distrib. : Common usually found as a weed in cultivated fields. Junnagaon, Khandala; Karanji; Kharad.

A. rugosus (Willd.) DC. Prodr. 2 : 353. 1825; Baker in Hook. f. Fl. Brit. India 2: 159, 1876 (excl. vars.) ; Cooke, Fl. Pres. Bombay 1 : 371. 1958 (Repr. ed.) (excl. vars.) *Hedysarum rugosum* Willd. Sp. Pl. 3: 1172. 1802.

Herbs, c 1 m high, ascending. Leaves c 3.4x2.0 cm, apex obtuse or apiculate, sparsely appressed-pubescent beneath. flowers in dense, c 4 cm long racemes; standard white without, pale saffron within; wings

pink; keels greenish below, pinkish above. Pods c 1.1x0.22cm apiculate, 2-5-jointed. Seeds yellow, smooth, sub-orbicular.

Fls. & Frts. : September–February.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 183. 1982.

Distrib. : Not common; usually found in humus soil among grasses, also found on banks of ponds. Khandala forest; Kharad talao banks, Hiwri R.F.; Pandharkawada–Bori road.

A. scariosus (Rottl. ex Spreng.) Grah. ex Thw. Enum. Pl. Zeyl. 88. 1858; Ali in Biologia 12: 32. 1966. *Hedysarum scariosum* Rottl. ex Spreng. Syst. Veg. 3: 319. 1826. *Alysicarpus rugosus* (Willd.) DC. var. *styracifolius* Baker in Hook. f. Fl. Brit. India 2: 159. 1876; Cooke, Fl. Pres. Bombay 1: 371. 1958 (Repr. ed.).

Herbs, c 23 cm long; stems finely pubescent. Leaves c 2.0 x 1.2 cm, elliptic–oblong or obovate, apex obtuse or apiculate, appressed hairy beneath; upper leaflets linear–lanceolate. Flowers purple in axillary, compact, c 2 cm long racemes; calyx white with reddish tinge, villous on the back, margins ciliate. Pods c 0.5 x 0.2 cm, apiculate, upto 4 jointed. Seeds brown, smooth, oblong.

Fls. & Frts. : November–February.

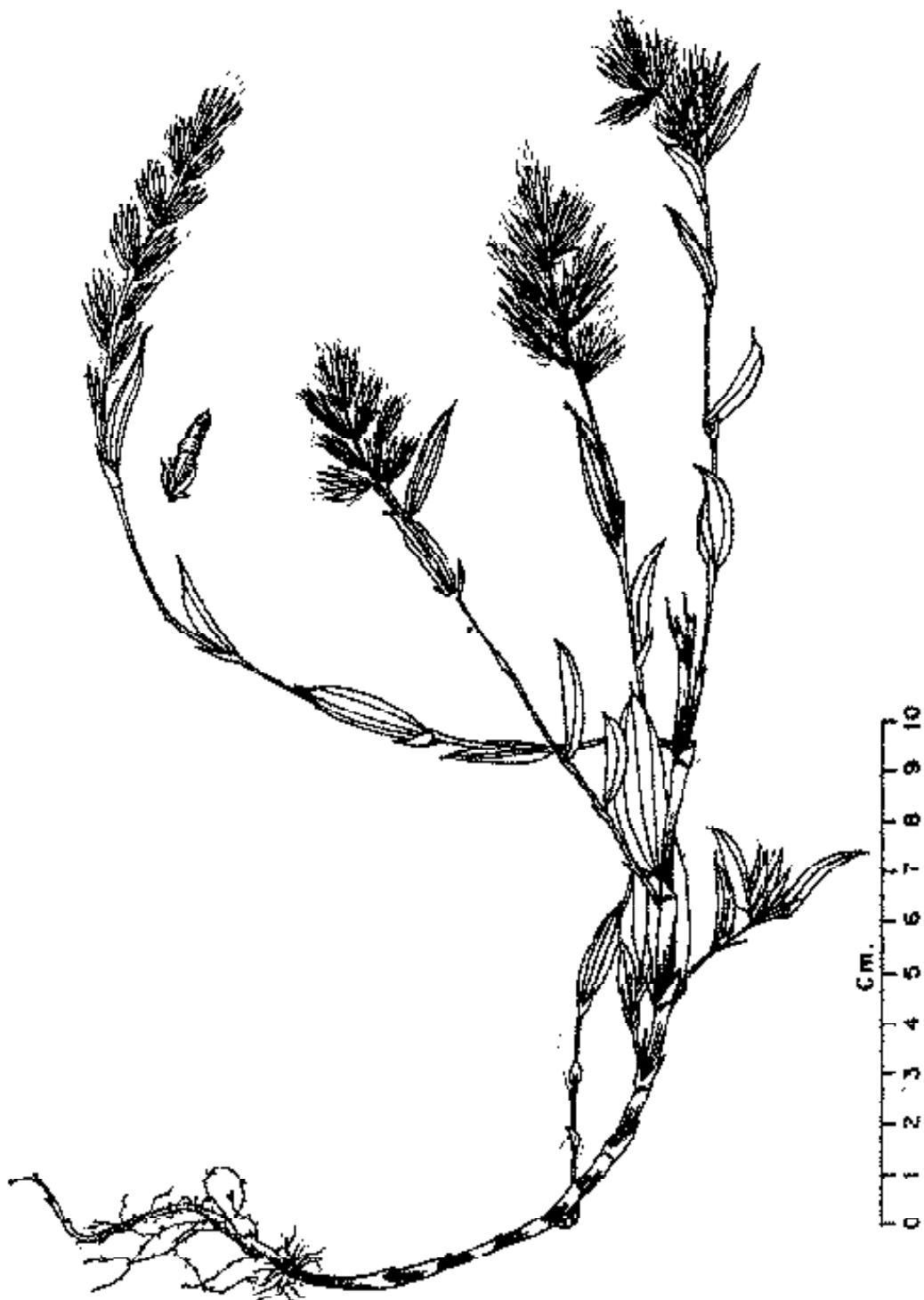
Distrib. : Not common; usually found as a weed along road sides and along river banks among grasses and other herbs. Mohroli forest; Pandharkawada–Bori road.

A. tetragonolobus Edgew. in J. As. Soc. Beng. 21: 169. 1853; Baker in Hook. f. Fl. Brit. India 2: 159. 1876; Cooke, Fl. Pres. Bombay 1: 372. 1958 (Repr. ed.).

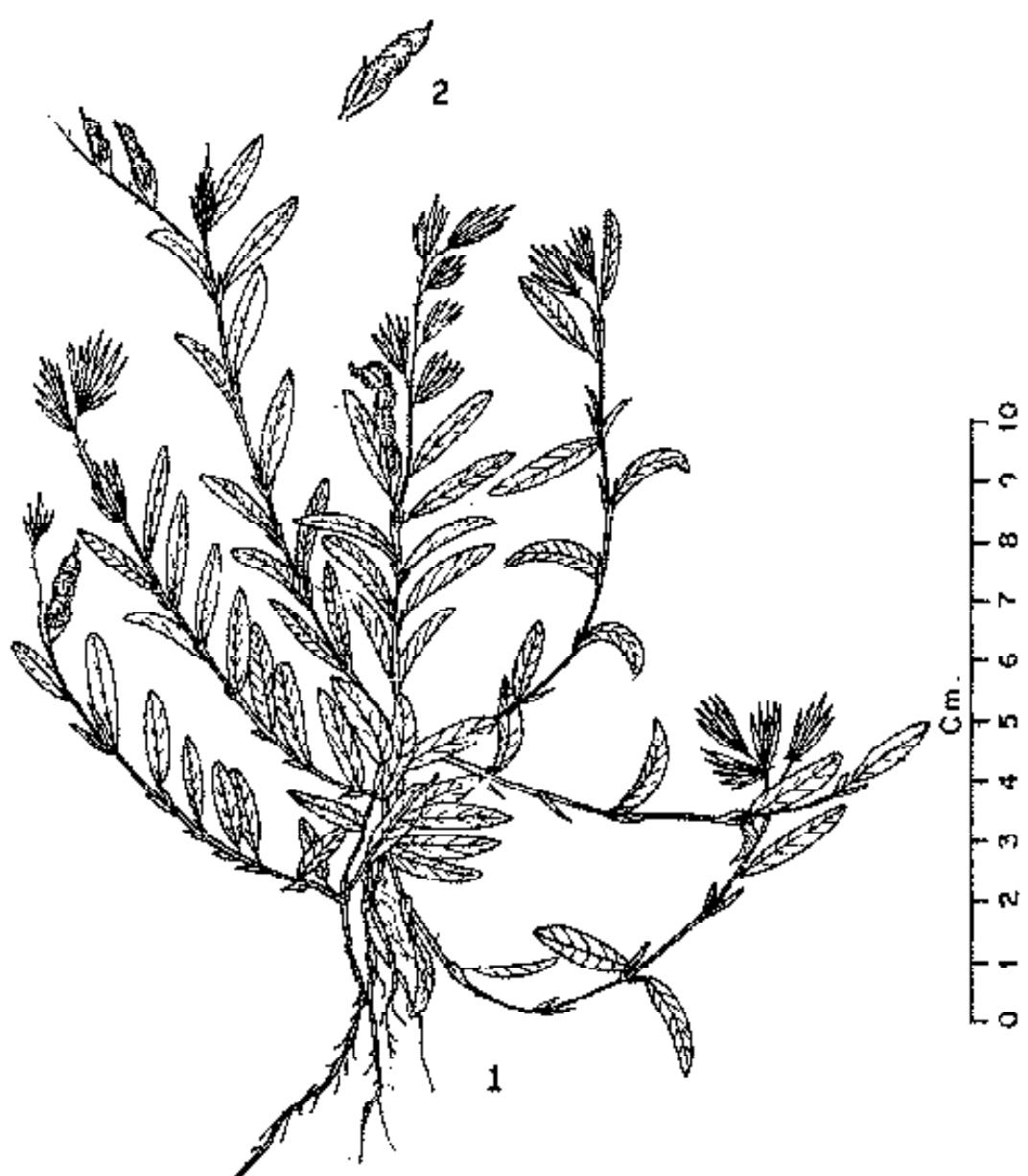
Herbs, diffuse, stems with a line of hairs. Leaves c 2.1 x 0.6 cm, linear to linear–oblong or elliptic–oblong, apex obtuse or sub–acute, glabrous above, pubescent beneath. Flowers lax, in axillary and terminal, c 9 cm long racemes; calyx pubescent without, lobes ciliate at margins; standard pale pink; wings and keels deep pink. Pods c 1 cm long, 2–5-jointed, tip apiculate. Seeds deep yellow, shining, ellipsoid–oblong.

Fls. & Frts. : August–October.

Distrib. : Common; usually found among grasses in wet places along road sides and banks of ponds. Durg; Pusad–Yavatmal road, 15 km point.



Alysicarpus scariosus (Rottl. ex Spreng.) Grah. ex Thw.



Alysicarpus tetragonolobus Edgew.
1. Habit 2. Fruit

A. 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 vaginalis* L. Sp. Pl. 746. 1753. *Alysicarpus vaginalis* var. *nummularifolius* Miq. Fl. Ind. Bat. 1: 232. 1855; Baker in Hook. f. op. cit.; Cooke, op. cit.

Herbs, prostrate. Leaves c. 3.6 x 1.8 cm, lanceolate, oblong, obovate or sub-orbicular, apex obtuse or mucronate, base sub-cordate, hairy on nerves beneath. Flowers purple in axillary and terminal lax, c. 5.5 cm long racemes. Pods c. 2.0 x 0.2 cm, slightly curved, apiculate, joints upto 8, reticulately veined. Seeds light brown, oblong, shining.

Fls. & Frts. : August–October.

Illus. : Mahesh. Illus. Fl. Delhi f. 69. 1966.

Distrib. : Rare. It was found growing among grasses along the banks of Durg tank in humus soil. Durg tank, 149297 B.

BUTEA Roxb. ex Willd. nom. cons.

- | | |
|--------------------|--------------------------|
| 1. Erect trees | ... <i>B. monosperma</i> |
| 1. Climbing shrubs | ... <i>B. superba</i> |

Butea monosperma (Lam.) Taub. in Engl. & Prantl, Pflanzenfam. 3(3) : 366. 1894. *Erythrina monosperma* Lam. Encycl. 1: 391. 1785. *Butea frondosa* Koen. ex Roxb. in As. Res. 3: 369. 1792; Baker in Hook. f. Fl. Brit. India 2: 194. 1876; Cooke, Fl. Pres. Bombay 1: 395. 1958 (Repr. ed.); Witt, List. 25. 1908. *Butea frondosa* var. *lutea* Witt, op. cit. *B. monosperma* var. *lutea* (Witt) Mahesh. in Bull. Bot. Surv. India 3: 92. 1962. *Palas*.

Trees, small, 2–6 m high, young parts tomentose; bark grey, coarse. Leaves 3-foliate, petiolules pubescent; terminal leaflet c. 10.5 x 11.1 cm, obovate, apex retuse, base cuneate, pubescent beneath; lateral leaflets c. 10.5 x 8.5 cm, inequilateral, apex obtuse or retuse, base obliquely rounded, pubescent beneath. Inflorescence on leafless branches; calyx grey tomentose; corolla red, whitish with silky hairs without. Pods c. 19 x 5 cm, oblong, densely hairy, one seeded.

Fls. & Frts. : February–May.

Illus. : Mahesh. Illus. Fl. Delhi f. 74. 1966; Icon. Roxb. Fasc. 5: Pl. 25. 1971; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 184. 1982.

Distrib. : Common throughout. Mangrul village, on the banks of Aruna river.

Notes : Flowers are showy and fragrant. As the colour variant which is supposed to have yellow, canary-yellow or pale-yellow flower is intermingling with the type species, the same is proposed to be merged with the type species.

B. superba Roxb. Pl. Cor. 1: 23, t. 22. 1795; Baker in Hook. f. Fl. Brit. India 2: 195. 1876; Cooke, Fl. Pres. Bombay 1: 396. 1958 (Repr. ed.); Witt, List. 25. 1908. *Palasvel*.

Climbers, stout. Leaves trifoliolate; petiolules pubescent; terminal leaflets c 25.5 x 28.0 cm, ovate-rhomboid, apex emarginate, pubescent beneath; lateral leaflets c 22.2 x 17.1 cm, inequilateral, apex obtuse, pubescent beneath. Flowers orange coloured. Pods as in *B. monosperma*.

Fls. & Frts. : March–August.

Illus. : Icon. Roxb. Fasc. 5: pl. 24. 1971.

Distrib. : Rare. Tipeshwar R.F., 156615.

CAJANUS DC.

- | | |
|--|-----------------------------|
| 1. Leaflets elliptic or elliptic-obovate; flowers 2–6; pods with deep lines between the seeds | ... <i>C. scarabaeoides</i> |
| 1. Leaflets sub-orbicular; flowers solitary or in pairs; pods without deep lines between the seeds | ... <i>C. platycarpus</i> |

Cajanus platycarpus (Benth.) van der Maesen in Agrie. Univ. Wageningen Papers 85(4): 160. 1985. *Atylosia platycarpa* Benth. in Miq. Pl. Jungh. 243. 1852; Baker in Hook. f. Fl. Brit. India 2: 216. 1876; Cooke, Fl. Pres. Bombay 1: 410. 1958 (Repr. ed.).

Climbers, slender; stem, petiole and petiolules covered with grey, spreading hairs. Leaves trifoliolate; petioles c 8.5 cm long, grooved; leaflets c 6.3 x 5.6 cm, apex acuminate, pilose; lateral leaflets inequilateral. Flowers yellow. Pods c 3.5 x 1.2 cm, flat, hairy, beaked. Seeds c 0.5 x 0.35 cm, brownish-black, broadly oblong, rounded at ends, smooth.

Fls. & Frts. : August–September.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 412, f. 233. 1909.

Distrib. : Rare. Tipeshwar R.F., 156617.

C. scarabaeoides (L.) du Petit-Thouars, Dict. Sc. Nat. 6: 617. 1817 ('*Cajan scarabaeoide*'); van der Maesen in Agric. Univ. Wageningen Papers 85 (4): 189. 1985. *Dolichos scarabaeoides* L. Sp. Pl. 726. 1753. *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.); Witt, List. 26. 1908. *Rantur*.

Herbs, erect or twining, whole plant densely pubescent. Leaves trifoliate; petioles c 1.6 cm; leaflets c 2.8 x 1.6 cm, apex obtuse or sub-acute, tomentose or pubescent on both surfaces; lateral leaflets inequilateral. Flowers yellow, on axillary peduncles. Pods c 2.2 x 0.8 cm, brownish-hairy, apiculate, constricted between the seeds. Seeds c 0.35 x 0.2 cm, broadly oblong, black with a white strophiole.

Fls. & Frts. : July–February.

Distrib. : Common. Usually found as a weed in cultivated fields and climbing over hedges. Jodmoha grass farm; Khandala (weed in *Cicer arietinum* fields).

CANAVALIA DC. *nom. cons.*

Canavalia africana Dunn in Pipers & Dunn. in Bull. Misc. Inf. Kew 1922: 135. 1922; Verdc. in Kew Bull. 42: 658. 1987; Sanjappa, Leg. India 107. 1992. *C. virosa* (Roxb.) Wight & Arn. Prodr. 253. 1834; Chatterjee in J. Indian Bot. Soc. 28: 93. 1949; Sauer in Brittonia 16: 152. 1964. *Dolichos virosus* Roxb. Fl. Ind. 3: 301. 1832, excl. 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.).

Stems pubescent. Leaves trifoliate, leaflets c 5.2 x 4.5 cm, elliptic, ovate or orbicular, apex acute or acuminate, puberulous beneath. Flowers pink, few in terminal and axillary racemes; calyx pubescent without. Incipient pods appressed-pubescent; mature pods c 11.5 x 2.9 cm, each valve having sutural ribs and an extra rib parallel to it. Seeds c 1.8 x 1.1 cm, dark brown, oblong, smooth, shining, hilum c 1.1 cm long.

Fls. & Frts. : October–March.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 187. 1982.

Distrib. : Rare. It was found along river banks, climbing on *Clerodendrum multiflorum*, *Dichrostachys cinerea* and *Lantana camara* var. *aculeata*. Aruna river banks, Hiwri R.F., Yavatmal, 148319, 149072.

CLITORIA L.

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.); Witt, List. 25. 1908. *Gokran, Supli.*

Twiners, slender, glabrescent. Leaves imparipinnate; rhachis c 6.4 cm; leaflets usually 5, elliptic, elliptic-ovate or oblong, apex obtuse or retuse. Flowers solitary, axillary; bract small, linear; bracteoles c 0.75 x 0.65 cm, sub-orbicular, reticulately veined; calyx reticulately veined, lobes acuminate at apex, margins ciliate; corolla c 4.4 cm long; standard pale green in centre. Pods c 9.0 x 0.85 cm, flat, linear-oblong, appressed pubescent, beaked. Seeds c 0.6 x 0.45 cm, broadly oblong, sub-reniform, reddish-brown.

Fls. & Frts. : August–November.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 188. 1982.

Distrib. : Common. Usually found on hedges and on shrubs and small trees. Aruna river banks, Mangrul village; Nirguda river banks, Punwat vilage, Wani range.

CROTALARIA L.

1. Leaves petiolate, trifoliolate :
 2. Pods subglobose, sessile, pubescent, 2-seeded ... *C. medicaginea*
 2. Pods oblong, stalked, glabrescent, many seeded ... *C. orixensis*
1. Leaves subsessile, unifoliolate :
 3. Ovary and pod pubescent ... *C. pusilla*
 3. Ovary and pod glabrous :
 4. Stipules prominent, ovate-lanceolate :
 5. Stem appressed pubescent or glabrous ... *C. spectabilis*
 5. Stem with spreading hairs ... *C. hirta*
 4. Stipules minute or absent :
 6. Pods longer than calyx ... *C. retusa*
 6. Pods as long as or shorter than calyx :
 7. Calyx upto 0.8 cm long; upper two lobes connate except at tip; pods globose ... *C. linifolia*
 7. Calyx upto 2.5 cm long; lobes connate at base only; pods oblong ... *C. calycina*

Crotalaria calycina Schrank, Pl. Rar. Hort. Monac. t. 12. 1817; Baker in Hook. f. Fl. Brit. India 2: 72. 1876; Cooke, Fl. Pres. Bombay 1: 317. 1958 (Repr. ed.); Munk in Reinwardtia 6: 202. 1962.

Herbs, erect, c 55 cm high, simple, appressed brownish hairy. Leaves c 5.5 x 0.7 cm, alternate, linear, apex mucronate, appressed hairy beneath. Flowers few in terminal racemes; bracts and bracteoles long hairy; pedicels c 0.7 cm long, hairy; calyx lobes lanceolate, with long brownish hairs; corolla yellow, standard villous on back. Pods c 2 cm long, sessile, enclosed by calyx. Seeds yellowish-white, subreniform.

Fls. & Frts. : September–November.

Distrib. : Rare. Jodmoha grass farm, 156747.

C. hirta Willd. in Ges. Naturf. Freunde Berlin Neue Schriften 4: 217. 1803; Baker in Hook. f. Fl. Brit. India 2: 70. 1876; Pataskar & Moorthy in M.V.M. Patrika 5: 25, f. 1–3. 1970.

Herbs, spreading or undershrubs, c 1 m high, usually much branched from the base. Leaves c 5.0 x 1.3 cm, alternate, oblong or oblanceolate, apex obtuse or mucronate, glabrescent above, hairy beneath. Flowers in terminal, 2–8-flowered racemes; calyx c 1 cm long, linear, densely hairy; corolla yellow, c 1.3 cm long. Pods c 1.4 cm long, oblong. Seeds many, reddish, shining, subreniform.

Fls. & Frts. : August–April.

Illus. : Pataskar & Moorthy *op. cit.*

Distrib. : Common. Aruna river banks (weed in *Gossypium* fields); Hiwri R.F., Yavatmal, (weed in wheat fields); Karanji (weed in wheat fields); Khandala; Kharad talao, Hiwri R.F.

C. 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.); Munk in Reinwardtia 6: 207. 1962.

Herbs, erect, c 45 cm high, branches appressed silky hairy. Leaves c 3.5 x 1.5 cm, alternate, oblong or oblanceolate, apex mucronate, sparsely appressed pubescent above, densely so beneath. Flowers in terminal c 1.3 cm long racemes; calyx densely brown-silky hairy without; corolla yellow. Pods c 0.55 x 0.3 cm, beaked. Seeds few, brown, shining, reniform.

Fls. & Frts. : August–November.

Distrib. : Rare; among grasses. Jodmoha grass farm, 156534.

C. medicaginea Lam. Encyl. 2: 201. 1786; Baker in Hook. f. Fl. Brit. India 2: 81. 1876 (incl. var.); Cooke, Fl. Pres. Bombay 1: 322. 1958 (Repr. ed.); Munk in Reinwardtia 6: 208. 1962.

Herbs, erect, c 50 cm high; branches appressed pubescent. Leaflets c 2.5 x 0.9 cm, oblanceolate, apex retusely mucronate, appressed-pubescent beneath. Flowers in terminal and leaf-opposed, c 9 cm long racemes; calyx silky-pubescent without; corolla yellow. Pods c 0.5 cm across, beaked. Seeds brown, sub-reniform.

Fls. & Frts. : August–November.

Illus. : Mahesh. Illus. Fl. Delhi f. 49. 1966.

Distrib. : Rare; among grasses. Dhansala, Washim–Pusad road, Rolla Rao 90993.

C. orixensis Willd. in Ges. Naturf. Freunde Berlin Neue Schriften 4: 217. 1803; Baker in Hook. f. Fl. Brit. India 2: 83. 1876; Cooke, Fl. Pres. Bombay 1: 323. 1958 (Repr.-ed.); Munk in Reinwardtia 6: 211. 1962. *Andabel*, *Jensru*.

Herbs, diffuse, branches and petioles with spreading hairs. Leaflets c 1.4 x 0.9 cm, elliptic-obovate, apex mucronate, punctate above, appressed pubescent beneath. Flowers in terminal and axillary, lax, c 0.7 cm long racemes; bracts deflexed, c 0.3 x 0.15 cm, ovate, acuminate, margins ciliate; calyx densely silky hairy without; corolla pale yellow. Pods green with brownish-yellow tinge, c 1.5 x 0.6 cm. Seeds dark brown, 8–10, shining, reniform.

Fls. & Frts. : August–October.

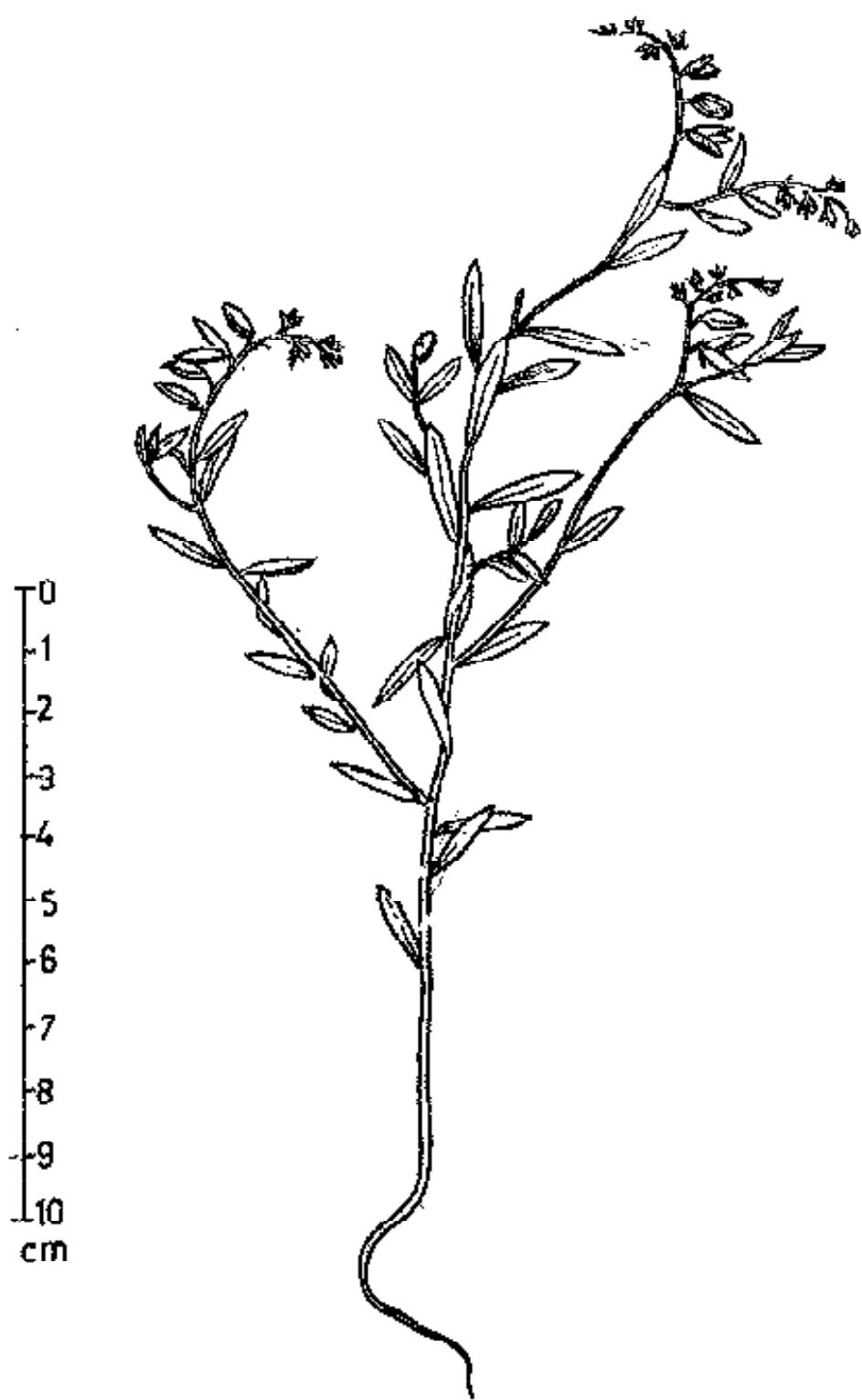
Distrib. : Common; usually found in open situations and sometimes as forest undergrowth. Kharad talao, Hiwri R.F.

C. pusilla Heyne ex DC. Prodr. 2: 128. 1825; Baker in Hook. f. Fl. Brit. India 2: 70. 1876; Cooke, Fl. Pres. Bombay 1: 315. 1958 (Repr. ed.).

Herbs, c 17 cm high, branches appressed pubescent. Leaves c 1.9 x 1.3 cm, linear-oblong or linear-oblanceolate, apex sub-acute, appressed pubescent. Racemes terminal and lateral, c 3 cm long; calyx densely silky hairy without; corolla yellow. Pods c 0.6 x 0.2 cm, linear-oblong. Seeds usually 8, yellowish-brown, subreniform trigonous.

Fls. & Frts. : August–October.

Distrib. : Rare; the plant was found to be growing among grasses on edges of teak plantations. Bhiwkund, 156589.



Crotalaria pusilla Heyne ex DC.

C. 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.); Munk in Reinwardtia 6: 212. 1962. *Dingala*.

Undershrubs, c 50 cm high; stems striate, glabrescent. Leaves c 7.2 x 2.7 cm, oblanceolate or obovate, apex obtuse, mucronate or emarginate, base cuneate, appressed pubescent beneath; stipules minute, filiform. Flowers in terminal racemes; calyx sparsely appressed pubescent without; corolla yellow with a pale reddish tinge. Pods c 3.0 x 1.2 cm, green with a brownish tinge, oblong-oblanceolate, beaked. Seeds many, dark brown, sub reniform.

Fls. & Frts. : January–April.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 377, f. 215. 1909.

Distrib. : Common; usually found to be growing as a weed in cultivated fields. Aruna river banks, Kharad (weed in wheat fields); Karanji.

C. spectabilis Roth, Nov. Pl. Sp. 341. 1821; Ali in Biologia 12 (2): 26. 1966. *C. sericea* Retz. Obs. Bot. 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.). *Jangli san*.

Undershrubs, c 1 m high; stems and branches striate. Leaves c 14.5 x 7.4 cm, oblanceolate to obovate, apex mucronate, appressed pubescent beneath; stipules leafy, base cordate. Flowers in terminal and axillary c 32 cm long racemes; bracts leafy, cordate at base; bracteoles 2, small, subulate; standard and keel yellow; wings brown. Pods c 4.2 x 1.9 cm, oblong. Seeds many, dark brown or black, shining, sub reniform.

Fls. & Frts. : November–January.

Distrib. : Rather rare. Umarda forest nursery premises, Yavatmal, 148409.

Cultivated species :

C. juncea L. (*Witt, op. cit.*) is cultivated for its fibre.

DALBERGIA L.f.

Dalbergia lanceolaria L.f. ssp. *paniculata* (Roxb.) Thoth. in Bull. Bot. Surv. India 25: 171. 1985; Sanjappa, Leg. India 137. 1992. *D. paniculata* Roxb. Pl. Cor. 2: 8, t. 114. 1799; Prain in Ann. Roy. Bot. Gard. Calcutta 10: 87, t. 68. 1905; Baker in Hook. f. Fl. Brit. India 2:

236. 1876; Cooke, Fl. Pres. Bombay 1: 426. 1958 (Repr. ed.); Witt, List. 27. 1908. *Padri, Phansi.*

Trees, c 16 m high, young branches pubescent. Leaves c 15 cm long, leaflets obovate, oblong or elliptic, apex obtuse or emarginate. Flowers bluish white in sub-cymose panicles. Pods narrowed at both ends, reticulate veined. Seeds 1-2.

Fls. & Frts. : April-December.

Distrib. : Occasional. Bittergaon; Dhansala, Pusad-Washim road; Jodmoha grass farm.

Cultivated species :

D. latifolia Roxb. Pl. Cor. 2: 7, t. 113. 1799; Baker in Hook. f. Fl. Brit. India 2: 231. 1876; Cooke, Fl. Pres. Bombay 1: 422. 1958 (Repr. ed.); Witt, List. 27. 1908; Prain in Ann. Roy. Bot. Gard. Calcutta 10: 80, t. 62. 1905. *Biti, Botbiola, Shisham, Sissu.*

Trees, c 30 m high. Leaves imparipinnate; leaflets 5-7, broadly ovate or sub-orbicular, apex rounded, occasionally emarginate. Flowers in axillary or extra-axillary panicles, greenish or yellowish white. Seeds 1-3 (-4).

Fls. & Frts. : August-November.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 424, f. 239. 1909.

Notes : Black wood or rose wood tree providing a valuable timber.

D. sissoo Roxb. Fl. Ind. 3: 223. 1832; Baker in Hook. f. Fl. Brit. India 2: 231. 1876; Cooke, Fl. Pres. Bombay 1: 421. 1958 (Repr. ed.); Witt, List. 27. 1908. *Sissu, Sisvi.*

Trees, c 20 m high, branches spreading. Leaves imparipinnate; leaflets 3-5, sub orbicular, abruptly acuminate, puberulous when young, glabrescent at length. Flowers pale yellow in axillary panicles. Seeds 1-4.

Fls. & Frts. : March-December.

Distrib. : Planted. Chandni village.

Notes : Wood valuable in making carts and furniture.

DESMODIUM Desv.

- | | | |
|----------------------------------|-----|---------------------|
| 1. Flowers in axillary fascicles | ... | <i>D. triflorum</i> |
|----------------------------------|-----|---------------------|

1. Flowers in elongated racemes :
2. Stipules broad, amplexicaul, auricled; pods deeply indented on the dorsal suture as on the ventral, 5-6-jointed, hispid with hooked hairs ... *D. dichotomum*
2. Stipules subulate with a broad base; pods straight or slightly indented on the dorsal suture :
 3. Stems angular; leaflets ovate or lanceolate, acute or sub-acuminate, glabrescent on upper surface, membranous; joints of pods sparsely pubescent with hooked hairs, reticulate ... *D. gangeticum*
 3. Stems rounded, fulvous-hairy; leaflets broadly ovate, sub orbicular or deltoid, repand, coriaceous, obtuse, sub acute or mucronate, pubescent; joints of pod densely pubescent with hooked hairs ... *D. velutinum*

Desmodium dichotomum (Willd.) DC. Prodr. 2: 336. 1825;
 Knaap-van Meeuwen in Reinwardtia 6: 248. 1962. *Hedysarum dichotomum* Willd. Sp. Pl. 3: 1180. 1802. *Desmodium diffusum* (Willd.) DC. in Ann. Sci. Nat. (Paris) 1, 4: 100. 1825; Baker in Hook. f. Fl. Brit. India 2: 169. 1876; Cooke, Fl. Pres. Bombay 1: 377. 1958 (Repr. ed.). *Chikta*.

Herbs, c 1 m high, stems hairy. Leaves 3-foliolate, petioles densely hairy; stipules foliaceous; leaflets 3-8 x 1-5 cm, ovate-oblong, elliptic oblong or obovate, the terminal being the largest, obtuse, apiculate, base more or less rounded, hairy on either surface. Flowers in terminal and axillary racemes or lax panicles. Pods as broad as long, faintly reticulately veined.

Fls. & Frts. : November-March.

Illus. : Wight, Ic. t. 208. 1839 (*D. diffusum*).

Distrib. : Common. Found often as a weed in wheat fields or along bunds of water tanks. Aruna river banks, Kharad (weed in wheat fields); Jamwadi tank banks, Yavatmal; Karanji.

D. gangeticum (L.) DC. Prodr. 2: 327. 1825; Knaap-van Meeuwen in Reinwardtia 6: 249. 1962; Baker in Hook. f. Fl. Brit. India 2: 168. 1876 (incl. var. *maculatum* (L.) Baker); Cooke, Fl. Pres. Bombay 1: 379. 1958 (Repr. ed.). *Hedysarum gangeticum* L. Sp. Pl. 746. 1753.

Undershrubs, c 1.5 m high, young branches hairy. Leaves unifoliolate; stipules scarious; leaflets 8-12 x 2.5-7.0 cm, base rounded, truncate or sub-cordate, appressed hairy below. Flowers pale blue in terminal and axillary racemes. Pods subfalcate, 6-8-jointed, longer than broad.

Fls. & Frts. : September–March.

Illus. : Mahesh. Illus. Fl. Delhi f. 68. 1966.

Distrib. : Common. Usually found as an undergrowth in the edges of dry deciduous forests. Durg R.F.; Pandharkawada–Bori road; Pusad–Yavatmal road, 15 km point; Yelabara, E. Gondwakadi R.F.

D. triflorum (L.) DC. Prodr. 2: 334. 1825; Knaap–van Meeuwen in Reinwardtia 6: 261. 1962; 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*.

Herbs, trailing, rooting at nodes, sparsely hairy. Leaves trifoliolate, occasionally the lower leaves reduced to 1 leaflet; stipules ovate, acuminate; leaflets membranous, obovate, base cuneate or truncate, apex emarginate, glabrous above, hairy beneath. Flowers pink or white. Pods 3–5-jointed, as broad as long, reticulately veined, puberulous.

Fls. & Frts. : August–October.

Illus. : Wight, Ic. t. 292. 1840 (*D. triflorum* var. *minus* Wight & Arn. Prodr. 229. 1834).

Distrib. : Common. Undergrowth in dry deciduous forests. E. Gondwakadi R.F.

D. velutinum (Willd.) DC. Prodr. 2: 228. 1825; Knaap–van Meeuwen in Reinwardtia 6: 264. 1962. *Hedysarum velutinum* Willd. Sp. Pl. 3: 117. 1803. *Desmodium latifolium* (Roxb.) DC. Prodr. 2: 327. 1825; Baker in Hook. f. Fl. Brit. India 2: 168. 1876; Cooke, Fl. Pres. Bombay 1: 380. 1958 (Repr. ed.); Witt, List. 23. 1908. *Lapti*.

Undershrubs, erect, c 2 m high; branches fulvous tomentose. Leaves 1-foliolate; petioles densely fulvous tomentose; stipules cordate ovate, long acuminate, hairy; leaflets 4–10 x 3.5–9.0 cm, base cordate or truncate. Flowers purple in terminal and axillary racemes. Pods 4–6-jointed, about as broad as long.

Fls. & Frts. : July–September.

Illus. : Ic. Roxb. Fasc. 5: pl. 5. 1971 (*D. velutinum*); Wight, Ic. t. 270. 1840 (*D. latifolium*).

Distrib. : Occasional. Majra felling series, Patanbora range.

ERYTHRINA L.

Erythrina variegata L. in Stickm. Herb. Amboin. 10. 1754 & Amoen. Acad. 4: 122. 1759; Bullock in Kew Bull. 20: 294. 1966; Kruckoff in J. Arnold Arbor. 53: 132. 1972. *E. indica* Lam. Encycl. 2: 391. 1786; Baker in Hook. f. Fl. Brit. India 2: 188. 1876; Cooke, Fl. Pres. Bombay 1: 390. 1958 (Repr. ed.); Witt, List. 24. 1908. *Pangara*.

Trees, c 20 m high; bark smooth, armed with small, conical, dark coloured prickles. Leaves trifoliolate, deciduous; leaflets 10–15 x 8–13 cm, membranous, broadly rhomboid-ovate, apex acute to sub acuminate, stellately pubescent when young, glabrescent at maturity, base subtruncate. Flowers bright red, appearing before the leaves, 1–3, clustered. Pods subcylindric, 12–30 cm long, glabrescent. Seeds 4–8, sub-reniform, brown.

Fls. & Frts. : March–June.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 401, f. 225. 1909 (*E. indica*).

Notes : Cultivated; useful as a shade tree.

FLEMINGIA Roxb. ex W.T.Ait.

Flemingia nana Roxb. ex W.T.Ait. Hort. Kew. ed. 2. 4: 350. 1812; Cooke, Fl. Pres. Bombay 1: 417. 1958 (Repr. ed.). *F. congesta* Roxb. var. *nana* (Roxb. ex W.T.Ait.) Baker in Hook. f. Fl. Brit. India 2: 229. 1876. *Maughania nana* (Roxb. ex W.T.Ait.) Mukerjee in Bull. Bot. Soc. Beng. 6: 20. 1952.

Herbs, suffruticose, 15–20 cm high. Leaves trifoliolate; leaflets c 8 x 2 cm, terminal obovate, lateral obliquely elliptic, base rounded, apex acute, hairy; petioles c 8 cm long; stipules linear-lanceolate. Flowers pinkish in axillary racemes, solitary or fascicled; pedicels and calyx glandular. Pods turgid, hairy, viscid, reddish glandular. Seeds 2.

Fls. & Frts. : December–April.

Illus. : Ic. Roxb. Fasc. 6: 6, pl. 3. 1973; Talb. For. Fl. Bombay Pres. & Sind 1: 419, f. 237. 1909.

Distrib. : Observed only in Bittergaon range and Majra felling series. Morchandi felling series, Bittergaon range, 148538.

Notes : Cooke (op.cit.) observes that, this is a very rare plant in Bombay Presidency and apparently it has been collected from N. Kanara only, by Talbot. The present collection indicates an extended

distribution of the species to Maharashtra (Karthikeyan & Anandkumar, 1983).

GONIOGYNIA DC.

Goniogyna hirta (Willd.) Ali in Taxon 16: 463. 1967. *Hallia hirta* Willd. Sp. Pl. 3(2): 1169. 1803. *Heylandia latebrosa* DC. Mem. Leg. 6: 201. 1825; Baker in Hook. f. Fl. Brit. India 2: 65. 1876; Cooke, Fl. Pres. Bombay 1: 310. 1958 (Repr. ed.). *Godhadi*.

Herbs, prostrate; branches many, wiry, long hairy. Leaves sub sessile, ovate, sub acute, base obliquely cordate, hairy. Flowers yellow, axillary, subsessile. Pods flattened, calyx persistent.

Fls. & Frts. : July–December.

Distrib. Common. Dhansala, Washim–Pusad road; Morehandi felling series, Bittergaon range; Pusad–Yavatmal road, 15 km point.

INDIGOFERA L.

- 1. Leaves simple :
 - 2. Leaves cordate; pods 2-seeded ... *I. cordifolia*
 - 2. Leaves linear or ovate; pods 1-seeded ... *I. linifolia*
- 1. Leaves pinnate :
 - 3. Racemes subcapitate; pods (1-) 2-seeded :
 - 4. Leaves trifoliolate; leaflets upto 2.5 cm or more long, black glandular beneath; pods densely winged on suturea ... *I. glandulosa*
 - 4. Leaves 7-9 (-11) foliolate; leaflets upto 1.25 cm long, not glandular; pods not winged ... *I. linnaei*
 - 3. Racemes more or less elongate, not capitate; pods many seeded :
 - 5. Leaves trifoliolate, usually glandular beneath :
 - 6. Pubescence brownish; terminal leaflet sessile ... *I. trifoliata*
 - 6. Pubescence white; terminal leaflet stalked ... *I. trita*
 - 5. Leaves 5-many-foliate :
 - 7. Leaflets 3-7 ... *I. glabra*
 - 7. Leaflets 7-many :
 - 8. Pods pubescent ... *I. hirsuta*
 - 8. Pods glabrous :

9. Pods slightly torulose; leaflets 9–13	...	<i>I. tinctoria</i>
9. Pods straight; leaflets 13–21	...	<i>I. cassioides</i>

Indigofera cassioides Rottl. ex DC. Prodr. 2: 225. 1825; Ali in Bot. Notis. 3: 569. 1958; de Kort & Thijssse in Blumea 30: 114. 1984. *I. leptostachya* DC. Prodr. 2: 225. 1825; Baker in Hook. f. Fl. Brit. India 2: 100. 1876. *I. pulchella* Roxb. Fl. Ind. 3: 382. 1832; Baker in Hook. f. op. cit. 101; Cooke, Fl. Pres. Bombay 1: 341. 1958 (Repr. ed.); Witt, List. 22. 1908. *Baroli, Birkul.*

Shrubs, young branches pubescent. Leaves c 15 cm long; leaflets c 2.8 x 1.5 cm, elliptic-oblong, apex truncate or emarginate, mucronate, appressed hairy. Flowers pink in axillary, c 20 cm long racemes. Pods c 3 cm long, cylindric. Seeds c 12, elliptic.

Fls. & Frts. : November–February.

Illus. : Ic. Roxb. Fasc. 4: pl. 12. 1970; Wight, Ic. t. 367. 1840; Talb. For. Fl. Bombay Pres. & Sind 1: 383, f. 217. 1909 (*I. pulchella*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 204. 1982.

Distrib. : Not common. Found growing in humus soil under the shade of *Bridelia retusa*, *Tectona grandis* and *Ziziphus xylopyra*. Mathni felling series, Parva R.F.

I. 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.); Gillet in Kew Bull. Addl. ser. 1: 35. 1958; de Kort & Thijssse in Blumea 30: 116. 1984. *Bechka, Godadi.*

Herbs diffuse, branches clothed with long hairs. Leaves c 1.0 x 0.75 cm, alternate, subsessile, apex sub-obtuse, mucronate, hairy on both surfaces, densely so beneath. Flowers deep pink in axillary, short racemes. Pods c 0.4 cm long, oblong, beaked, densely white hairy. Seeds brown.

Fls. & Frts. : August–December.

Distrib. : Common; usually found along banks of water tanks. Dhansala, Pusad–Washim road; Durg tank; Jamwadi tank, Yavatmal.

I. glabra L. Sp. Pl. 751. 1753; Cooke, Fl. Pres. Bombay 1: 337. 1958 (Repr. ed.); de Kort & Thijssse in Blumea 30: 119. 1984. *I. pentaphylla* Murr. Syst. Veg. ed. 13. 564. 1774; Baker in Hook. f. Fl. Brit. India 2: 95. 1876.

Herbs, branches covered by spreading hairs. Leaflets c 1.2 x 0.8

cm, elliptic to obovate, apex mucronate; appressed hairy on either side, densely so beneath; young leaflets gland-tipped. Flowers pale pink in axillary, c 2.2 cm long racemes. Pods pale brownish coppery, c 2.5 cm long, cylindric, obscurely 4-angled, apex shortly beaked. Seeds 10-12, yellow, oblong, 4-angled.

Fls. & Frts. : December-March.

Illus. : Wight, Ic. t. 385. 1840 (*I. pentaphylla*).

Distrib. : Rare. Mukutban, 149149.

Notes : Cooke (*op. cit.*) reported it as a rare species from Badami (now) in Karnataka State. Malhotra and Moorthy (1971) reported it from Chandrapur district. This is the subsequent report of the species. This has been found to grow as a weed in *Gossypium* fields.

I. glandulosa Wendl. Bot. Boeb. 55. 1798; Baker in Hook. f. Fl. Brit. India 2: 94. 1876; Cooke, Fl. Pres. Bombay 1: 332. 1958 (Repr. ed.); Witt, List. 21. 1908; de Kort & Thijssen in Blumea 30: 119. 1984. *Barbada*.

Herbs, c 0.5 m high; stem hairy. Leaflets oblanceolate, obtuse or sub-retuse, mucronulate, pubescent above, densely so beneath. Flowers reddish pink in axillary, c 1 cm long racemes. Pods c 0.6 cm long, oblong, villous. Seeds 1-2.

Fls. & Frts. : September-March.

Distrib. : Common; usually found as a weed in wheat and jowar fields or in waste places. Dhansala, Washim-Pusad road; Karanji (weed in wheat fields); Pusad-Khandala road; Pusa-Yavatmal road, 15 km point; Yelebara.

Notes : This species is usually attributed to Roxb. ex Willd. Sp. Pl. 3: 1227. 1803.

I. hirsuta L. Sp. Pl. 751. 1753; Baker in Hook. f. Fl. Brit. India 2: 98. 1876; Cooke, Fl. Pres. Bombay 1: 339. 1958 (Repr. ed.); Ali in Bot. Notis. 3: 559. 1958; de Kort & Thijssen in Blumea 30: 121. 1984.

Herbs, woody c 0.5 cm tall; stems and branches with spreading hairs. Leaflets 5-11, elliptic-oblong or obovate, apex mucronate, obtuse or retuse, appressed pubescent on both surfaces, densely so beneath. Flowers pale pink, dense in axillary racemes, axis reaching upto 16 cm long in fruiting. Pods c 1.8 x 0.25 cm, deflexed, tetragonal, beaked. Seeds 4-8, rectangular, pitted.

Fls. & Frts. : February–September.

Illus. : Mahesh. Illus. Fl. Delhi f. 59. 1966 (*I. hirsuta* auct. pl. non. L. 1753).

Distrib. : Common. Durg camp; Yelabara.

I. linifolia (L.f.) Retz. Obs. Bot. 4: 29. 1786; Baker in Hook. f. Fl. Brit. India 2: 92. 1876; Cooke, Fl. Pres. Bombay 1: 330. 1958 (Repr. ed.); Gillett in Kew Bull. Addl. ser. 1: 35. 1958; Ali in Bot. Notis. 3: 546. 1958; de Kort & Thijssse in Blumea 30: 123. 1984. *Hedysarum linifolium* L. f. Suppl. 331. 1781. *Pandar phalli*.

Herbs, diffuse, base woody; whole plant silvery-canescens. Leaves c 1.9 x 0.5 cm, alternate, subsessile, apex mucronulate, appressed silvery hairy. Flowers pink in axillary c 1.5 cm long racemes. Pods globose, appressed silvery hairy, mucronulate. Seeds smooth, occasionally mottled.

Fls. & Frts. : August–March.

Illus. : Wight, Ic. t. 313. 1840; Mahesh. Illus. Fl. Delhi f. 54. 1966.

Distrib. Common; usually found as an undergrowth in teak plantations; also found as a weed in cultivated fields or along roadsides. E. Gondwakadi R.F.; Karanji; Khandala.

I. linnaei Ali in Bot. Notis. 3: 549. 1958; Baker & Bakh. f. Fl. Java 1: 591. 1963; de Kort & Thijssse in Blumea 30: 125. 1984. *I. enneaphylla* L. Mant. Alt. 272, 571. 1771; Baker in Hook. f. Fl. Brit. India 2: 94. 1876; Cooke, Fl. Pres. Bombay 1: 332. 1958 (Repr. ed.). *Bhuiguli*.

Herbs, prostrate, woody at base, branches pubescent. Leaflets oblanceolate to obovate, apex obtuse or retuse, appressed white-hairy. Flowers pink in axillary c 0.75 cm long racemes. Pods c 0.5 cm long, oblong, mucronate, appressed hairy. Seeds 1–2.

Fls. & Frts. : November–March.

Illus. : Mahesh. Illus. Fl. Delhi f. 56. 1966; Wight, Ic. t. 403. 1840 (*I. enneaphylla*).

Distrib. : Rather rare. Found as an undergrowth on the edges of forests. Pandharkawada-Bori road, 149217.

Notes : Linnaeus in Mantissa 1: 102. 1767 described *Hedysarum prostratum*. Again in Mantissa 2: 272 & App. 571. 1771 he described *Indigofera enneaphylla*. Both names have been given to the same species thus rendering the latter name superfluous and illegitimate.

The epithet *prostrata* of *Hedysarum* could not be transferred to *Indigofera* as it has been preoccupied by *I. prostrata* Willd. 1805, *I. prostrata* Perr. ex DC. 1825, *I. prostrata* Roxb. 1832 and *I. prostrata* Klein ex Wight & Arn. 1834. So, Ali has proposed the new name, *I. linnaei*.

I. tinctoria L. Sp. Pl. 751. 1753; Baker in Hook. f. Fl. Brit. India 2: 99. 1876 p.p.; Cooke, Fl. Pres. Bombay 1: 339. 1958 (Repr. ed.); Witt, List. 21. 1908; Gillett in Kew Bull. Addl. ser. 1: 106. 1958; de Kort & Thijssen in Blumea 30: 136. 1984. *Guli, Nil.*

Undershrubs, c 1 m high, branches appressed hairy. Leaflets c 1.5 x 0.6 cm, oblanceolate or obovate, apex rounded or sub-truncate, appressed hairy. Flowers greenish pink in axillary c 6 cm long racemes. Pods c 3 cm long, linear, slightly curved, deflexed, appressed hairy. Seeds 8–12.

Fls. & Frts. : October–January.

Illus. : Wight, Ic. t. 365. 1840.

Distrib. : Not common. Probably an escape. Durg camp.

I. trifoliata L. in Turner, Cent. Pl. 2: 29. 1756; Baker in Hook. f. Fl. Brit. India 2: 96. 1876 p.p.; Cooke, Fl. Pres. Bombay 1: 335. 1958 (Repr. ed.) p.p.; de Kort & Thijssen in Blumea 30: 137. 1984.

Herbs, c 28 cm high; young branches appressed hairy. Leaflets c 1.6 x 0.8 cm, oblanceolate–obovate, apex rounded or emarginate, mucronulate, glabrous above, appressed pubescent and punctate beneath. Flowers pinkish-red in axillary, congested c 1.1 cm long racemes. Pods c 1.1 cm long, deflexed, sparsely hairy. Seeds upto 6.

Fls. & Frts. : October–February.

Illus. : Wight, Ic. t. 314. 1840.

Distrib. : Not common. Found to be growing as a weed in wheat fields. Aruna river banks, Kharad; Pusad–Yavatmal road, 15 km point.

I. trita L. f. Suppl. 335. 1781; Baker in Hook. f. Fl. Brit. India 2: 96. 1876; Cooke, Fl. Pres. Bombay 1: 335. 1958 (Repr. ed.); Witt, List. 21. 1908; de Kort & Thijssen in Blumea 30: 139. 1984; Sanjappa in Bull. Bot. Surv. India 26: 115. 1984.

Herbs, c 40 cm high, woody, whole plant appressed pubescent. Leaflets c 4.1 x 2.2 cm, oblong or oblong–elliptic, apex rounded or emarginate, mucronulate. Flowers pink in axillary c 2.5 cm long

acemes. Pods c 3 cm long, deflexed, tetragonal, straight, stiff, spine-pointed. Seeds upto 8, oblong, yellowish-green.

Fls. & Frts. : August–February.

Illus. : Wight, Ic. tt. 315 & 386. 1840; Mahesh. Illus. Fl. Delhi f. 58. 1966.

Distrib. : Common; usually found on bunds of wheat fields and along nallahs. E. Gondwakadi R.F.; Umarkhed.

MELILOTUS Mill.

Melilotus indica (L.) All. Pl. Pedem. 1: 308. 1785; Cooke, Fl. Pres. Bombay 1: 325. 1958 (Repr. ed.). *Trifolium indicum* L. Sp. Pl. 765. 1753. *Melilotus parviflora* Desf. Fl. Atl. 2: 192. 1798; Baker in Hook. f. Fl. Brit. India 2: 89. 1876. *Ran methi*, *Van metika*.

Herbs, c 0.5 m high; young branches and inflorescence axis sparsely hairy. Leaves trifoliate; petioles c 2.2 cm long; leaflets c 1.2 x 0.75 cm, oblanceolate to obovate, base cuneate, margins serrate, glabrescent below. Flowers yellow in axillary c 3.2 cm long racemes. Pods c 0.4 cm long, oblong-ellipsoid, apiculate. Seed 1, compressed.

Fls. & Frts. : February–April.

Illus. : Mahesh. Illus. Fl. Delhi f. 53. 1966.

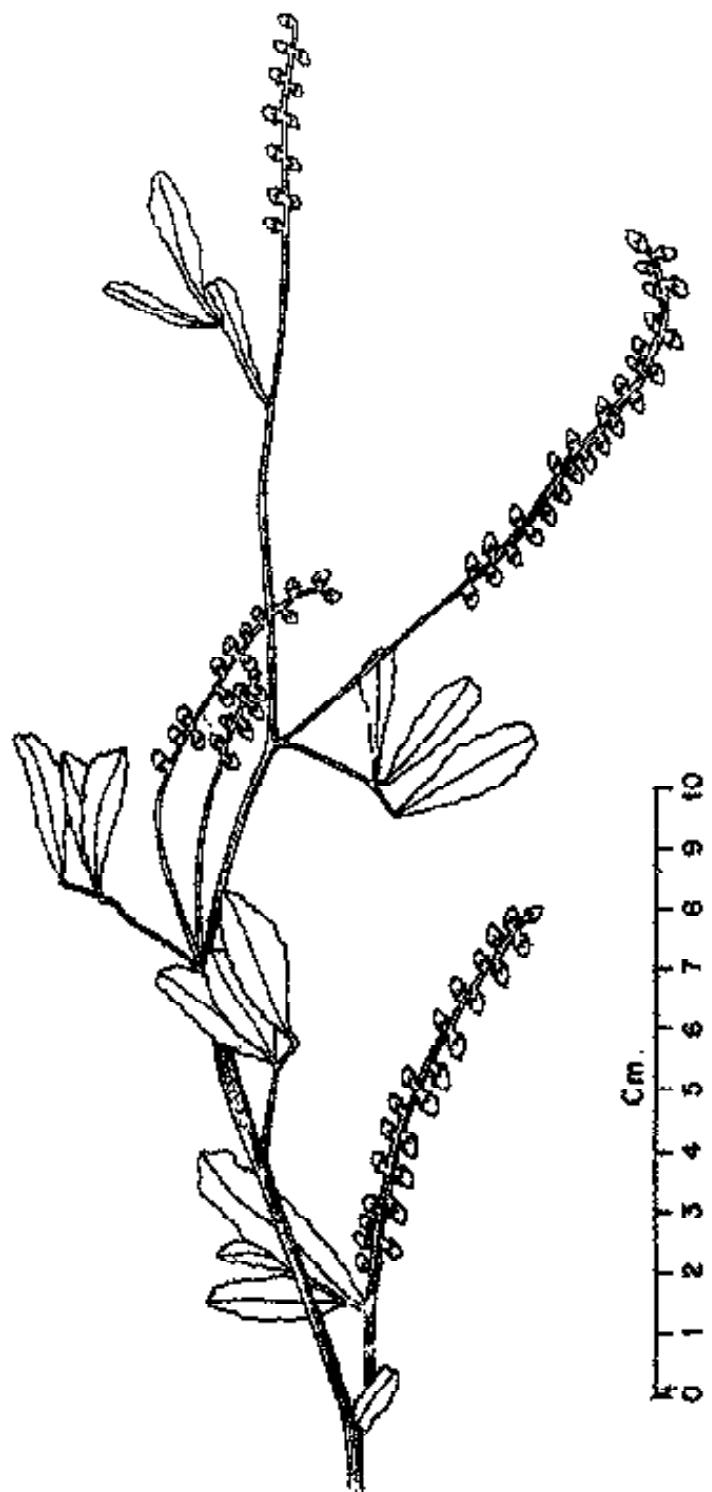
Distrib. Not common; found to occur as a weed in wheat fields. Aruna river banks, Kharad.

MUCUNA Adans.

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.); Witt, List. 24. 1908; Wilmot-Dear in Kew Bull. 39: 61. 1984. *Dolichos pruriens* L. in Stickman, Diss. Herb. Amb. 23. 1754. *Kanchkuri*, *Kiwanch*.

Twiners, herbaceous, hairy. Leaves trifoliate; petioles c 8 cm long; leaflets c 11.5 x 9.0 cm, terminal leaflets ovate-rhombose, lateral ones ovate-triangular, markedly inaequilateral, apex mucronate, margins undulate, downy with white hairs, more so on the lower surface. Flowers deep purple, in axillary, pendulous c 22 cm long racemes. Pods c 5.5 x 1.0 cm, falcate. Seeds 5–6, c 0.9 x 0.6 cm, black, hilum white.

Fls. & Frts. : September–February.



Melilotus indica (L.) All.

Illus. : Mahesh. Illus. Fl. Delhi f. 73. 1966. (*M. prurita* Hook. Bot. Misc. 2: 348. 1830—31); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 207. 1982.

Distrib. : Common. Karanji, Tipeshwar R.F.

OUGEINIA Benth.

Ougeinia oojeinensis (Roxb.) Hochr. in Bull. Soc. Bot. Geneve 13 & 14: 51. 1909 ('*oojeinensis*') *Dalbergia oojeinensis* Roxb. Fl. Ind. 3: 320. 1832. *Ougeinia dalbergioides* Benth. in Miq. Pl. Jungh. 216. 1852; Baker in Hook. f. Fl. Brit. India 2: 161. 1876; Cooke, Fl. Pres. Bombay 1: 376. 1958 (Repr. ed.); Witt, List. 23. 1908. *Kala palas*, *Tiwas*.

Trees, c 15 m high. Leaves pinnate, trifoliolate; leaflets coriaceous, terminal c 15 x 10 cm, broadly elliptic; lateral leaflets c 10 x 8 cm, obliquely ovate, base cordate, margins distantly and shallowly crenate. Flowers white in short fascicled racemes, leafless during flowering. Pods c 6.0 x 1.5 cm, reticulately veined.

Fls. & Frts. : February—April.

Illus. : Wight, Ic. t. 391. 1840 (*Dalbergia oojeinensis*).

Notes : This species is reported on the authority of Witt (*op. cit.*).

PARACALYX Ali

Paracalyx scariosa (Roxb.) Ali in Univ. Studies, Karachi 5(3): 95. 1968. *Cylista scariosa* Roxb. Pl. Cor. 1: 64, t. 92. 1798; Baker in Hook. f. Fl. Brit. India 2: 219. 1876; Cooke, Fl. Pres. Bombay 1: 412. 1958 (Repr. ed.); Witt, List. 26. 1908. *Ran ghevda*.

Twining, stems hairy. Leaves trifoliolate; leaflets c 6.5 x 4.0 cm, terminal rhomboid-ovate, lateral obliquely ovate, puberulous above, densely pubescent below. Flowers yellow; calyx green with a pale reddish tinge. Pods oblique, downy, enclosed in accrescent, scarious calyx. Seed 1.

Fls. & Frts. : January—April.

Illus. : Wight, Ic. t. 1597. 1850 (*Cylista scariosa*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 211. 1982.

Distrib. : Not common; usually found to twine around *Acacia* spp., *Aegle marmelos* and *Grewia abutilifolia*. Pandharkawada-Bori road.

Notes : Aiton (1789) published *Cylista* with the type species *C. villosa*. However, it was the same as *Rhynchosia hirta* (Andr.) Meikle & Verde. in Taxon 16: 462. 1967. Thus it has been found that *Cylista* antedates *Rhynchosia* Lour. (1790). To avoid adopting *Cylista* for the large genus *Rhynchosia* (c 300 species) and the resultant new combinations, Ali (1967) has proposed to conserve *Cylista* with the type species of *C. scariosa* Roxb. However, it was not accepted by the committee for Spermatophyta. As *Cylista* is synonymous to *Rhynchosia* and is not available, Ali proposed *Paracalyx* to accommodate the species *C. scariosa* Roxb.

PONGAMIA Vent.

Pongamia pinnata (L.) Pierre, Fl. For. Cochinch. sub t. 385. 1899; Thoth. in Bull. Bot. Surv. India 3: 418, t. 1. 1962. *Cytisus pinnatus* L. Sp. Pl. 741. 1753. *Pongamia glabra* Vent. Jard. Mal. t. 28. 1803; Baker in Hook. f. Fl. Brit. India 2: 240. 1876; Cooke, Fl. Pres. Bombay 1: 429. 1958 (Repr. ed.); Witt, List. 28. 1908. *Karanji*.

Trees, c 15 m high. Leaves imparipinnate; leaflets upto 9, c 12 x 8 cm, elliptic or ovate, coriaceous, apex sub acuminate. Flowers white in axillary, drooping racemes. Pods c 6 x 3 cm, elliptic-oblong, compressed with a shortly recurved mucro at apex. Seeds oblong or subreniform, rugose.

Fls. & Frts. : March-June.

Illus. : Wight, Ic. t. 59. 1838.

Distrib. : Cultivated at Wani rest house.

Notes : Bennet (1971) reduced the genus *Pongamia* as a section under *Derris* as in his opinion wingless nature of the pod which was used to distinguish the genus *Pongamia* from *Derris* was not very distinct.

However, Verdcourt (1977) is of the opinion that there seemed to him little to be gained from sinking *Pongamia* into *Derris*, but still having to keep it as a separate section.

PSORALEA L.

Psoralea corylifolia L. Sp. Pl. 764. 1753; Baker in Hook. f. Fl. Brit. India 2: 103. 1876; Cooke, Fl. Pres. Bombay 1: 341. 1958 (Repr. ed.). *Bavchi*.

Herbs, c 1 m high, woody at base, whole plant white hairy and

glandular. Leaves c 6.0 x 4.5 cm, alternate, ovate-elliptic or ovate-orbicular, apex obtuse or acute, margins sub entire, shallowly crenate or distantly serrate, upper surface appressed white hairy or glabrous, lower hairy on the nerves. Flowers purple, dense in axillary, solitary racemes on c 5 cm long peduncles. Pods c 0.5 x 0.25 cm, ovoid-oblong, pitted, drying black. Seeds adhering to the mericarp, brown, oblong.

Fls. & Frts. : October-March.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 215. 1982.

Distrib. : Common; usually found to occur as a weed in *Sorghum* or wheat fields. Durg camp (weed in *Sorghum* fields); Karanji (weed in wheat fields); Umarkhed.

PTEROCARPUS Jacq.

Pterocarpus marsupium Roxb. Pl. Cor. 2: 9, t. 116. 1799; Baker in Hook. f. Fl. Brit. India 2: 239. 1876; Cooke, Fl. Pres. Bombay 1: 427. 1958 (Repr. ed.); Witt, List. 28. 1908. *Bibla*, *Dhorbiola*.

Trees, c 15 m high. Leaves imparipinnate, rhachis c 15 cm long; leaflets 5-7 (-19), c 9.5 x 5.5 cm, alternate, elliptic-ovate or ovate, coriaceous, apex obtuse, emarginate or sub acuminate, puberulous beneath, veins prominent. Flowers yellow in terminal and axillary panicles. Pods c 4.6 cm across, indehiscent, winged. Seed 1, black.

Fls. & Frts. : September-February.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 431, f. 242. 1909; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 216. 1982.

Distrib. : Rare; found in dry deciduous forests along with *Tectona grandis* and *Terminalia alata*. Khandala R.F., 148559; Korat felling series, Kharbi, 148539.

RHYNCHOSIA Lour. nom. cons.

- | | | |
|--|-----|------------------|
| 1. Peduncles shorter than leaves; seeds strophiolate | ... | <i>R. aurea</i> |
| 1. Peduncles longer than leaves; seeds estrophiolate | ... | <i>R. minima</i> |

***Rhynchosia aurea* (Willd.) DC.** Prodr. 2: 386. 1825; Baker in Hook. f. Fl. Brit. India 2: 221. 1876; Cooke, Fl. Pres. Bombay 1: 413. 1958 (Repr. ed.). *Glycine aurea* Willd. in Nov. Act. Ber. 3: 18. 1803.

Herbs, trailing, stem covered with spreading hairs. Leaves trifoliolate; leaflets c 3.4 x 3.7 cm, punctate; terminal leaflet rhomboid-ovate, apex obtuse or sub-acute, sparsely hairy; lateral leaflets obliquely rhomboid-ovate; petioles c 7.5 cm long. Flowers yellow in axillary, capitate racemes; peduncles c 3 cm long. Pods c 1.3 x 1.1 cm, suborbicular, transversely ribbed, mucronate, covered with long tubercle-based hairs. Seeds 2, c 0.5 x 0.3 cm, oblong, brown.

Fls. & Frts. : August–October.

Illus. : Mahesh. Illus. Fl. Delhi f. 77. 1966. (*Rhynchosia capitata* DC. *op. cit.*).

Distrib. : Not common. Bhiwkund R.F.

R. minima (L.) DC. Prodr. 2: 385. 1825; Baker in Hook. f. Fl. Brit. India 2: 223. 1876; Cooke, Fl. Pres. Bombay 1: 414. 1958 (Repr. ed.); Witt. List. 26. 1908; Nooteb. in Reinwardtia 5: 439. 1961; Verdc. in Kew Bull. 25: 102. 1971. *Dalichos minimus* L. Sp. Pl. 726. 1753.

Herbs, twining or trailing; stem pubescent when young. Leaves trifoliolate; terminal leaflets c 2.3 x 2.7 cm, rhomboid ovate, apex obtuse or sub-acute, base cuneate, glabrescent, punctate beneath; lateral leaflets c 2.2 x 1.9 cm, obliquely rhomboid ovate, glabrescent, punctate beneath; petioles c 2.7 cm long. Flowers yellow in axillary, lax c 15 cm long racemes. Pods c 1.3 x 0.5 cm, obliquely oblong, pubescent. Seeds 1–2, sub reniform, yellow with black spots.

Fls. & Frts. : August–March.

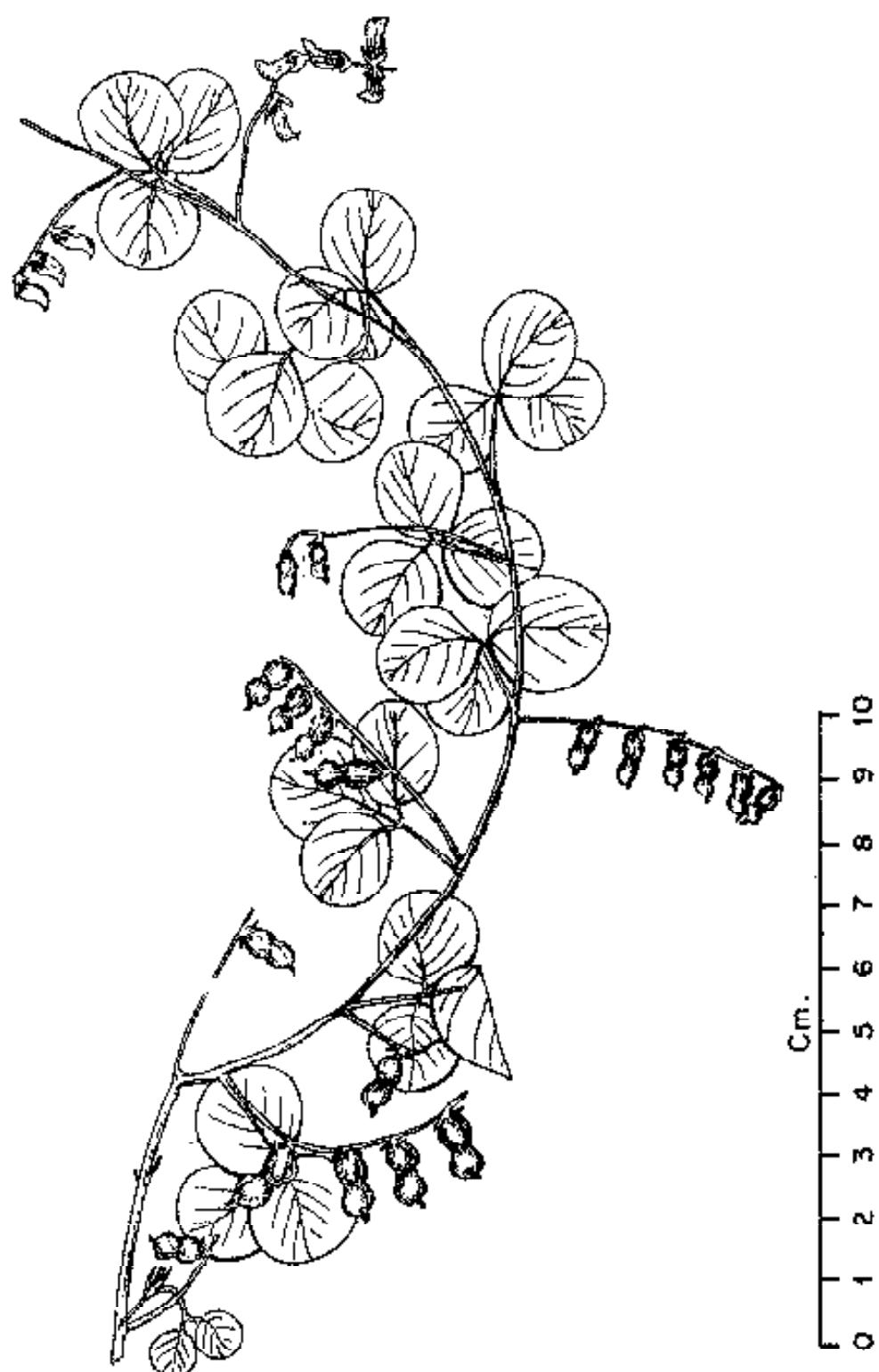
Illus. : Mahesh. Illus. Fl. Delhi f. 76. 1966.

Distrib. : Common. Found both as an undergrowth in the edges of forest and along the bunds of wheat fields. Tipeshwar R.F.; Umarkhed.

SESBANIA Adans. *nom. cons.*

Sesbania bispinosa (Jacq.) W.F.Wight in U.S.Dept. Agr. Bur. Pl. Ind. Bull. 137: 15. 1909; Gillett in Kew Bull. 17: 129. 1963. *Aeschynomene bispinosa* Jacq. Ic. Pl. Rar. 3: 13, t. 564. 1793. *Sesbania aculeata* (Willd.) Poir. in Lam. Encycl. 7: 128. 1806 ('*Sesban aculeatus*'); Baker in Hook. f. Fl. Brit. India 2: 114. 1876 (excl. vars.); Cooke, Fl. Pres. Bombay 1: 350. 1958 (Repr. ed.). *Chuncha, Ran sevari*.

Undershrubs, reaching c 2 m, branches, peduncles and leaf rhachises minutely prickly. Leaves c 25 cm long; leaflets c 35 pairs, c 1.2 x 0.25 cm, linear-oblong, mucronate. Flowers yellow in lax, axillary,



***Rhynchosia minima* (L.) DC.**

drooping racemes on c 7.5 cm long peduncles. Pods c 20 cm long, torulose, beaked. Seeds upto 30, c 0.4 cm long, oblong, pale yellowish green.

Fls. & Frts. : September-January.

Distrib. : Common; found near water sources. Durg camp; Jamwadi tank, Yavatmal.

Cultivated species :

Sesbania sesban (L.) Merr. is occasionally cultivated near habitations as a hedge plant (Witt, op. cit.).

TEPHROSIA Pers. *nom. cons.*

- | | | |
|--|-----|--------------------|
| 1. Claw of standard more than one third as long as the limb;
style in fruit deflexed; pods less than 2.5 cm long | ... | <i>T. strigosa</i> |
| 1. Claw of standard less than one third as long as the limb;
style in fruit recurved or ascending; pods more than 2.5
cm long: | | |
| 2. Pods densely villous tomentose | ... | <i>T. villosa</i> |
| 2. Pods pilose or glabrescent | ... | <i>T. purpurea</i> |

Tephrosia purpurea (L.) Pers. Syn. Pl. 2: 329. 1807; Baker in Hook. f. Fl. Brit. India 2: 112. 1876 p.p.; Cooke, Fl. Pres. Bombay 1: 346. 1958 (Repr. ed.); Witt, List. 22. 1908; Bosman & de Haas in Blumea 28: 464. 1983. *Cracca purpuera* L. Sp. Pl. 752. 1753. *Sarpunka*, *Unhali*.

Undershrubs, c 1 m high; branches and peduncles softly spreading hairy, stem glabrescent. Leaves c 7.5 cm long, leaflets upto 15, c 2.1 x 1.0 cm, oblanceolate, apex rounded or retuse, mucronate, appressed pubescent beneath. Flowers pink in terminal and extra axillary, c 13.5 cm long racemes. Pods c 4.5 x 0.4 cm, straight or slightly recurved, mucronate. Seeds upto 7, c 0.45 x 0.3 cm, oblong, brown.

Fls. & Frts. : Throughout the year.

Illus. : Mahesh. Illus. Fl. Delhi f. 63. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 225. 1982.

Distrib. : Found commonly throughout the district along roadsides, river banks and hill slopes. Aruna river banks, Mangrul village; Durg R.F.; Khandala R.F.; Sunna-Tipeshwar road, Bori range; Yelabara.

T. strigosa (Dalz.) Sant. & Mahesh. in J. Bombay nat. Hist. Soc. 54: 804. 1957. *Macropyx strigosus* Dalz. in Hook. Kew. J. Bot. 2: 35.

1850. *Tephrosia tenuis* Wall. ex Dalz. & Gibbs. *Bomb. Fl.* 61. 1861; Baker in *Hook. f. Fl. Brit. India* 2: 111. 1876; Cooke, *Fl. Pres. Bombay* 1: 344. 1958 (Repr. ed.).

Herbs, much branched, c 20 cm high, young stem appressed hairy. Leaves c 3.3 x 0.4 cm, linear-lanceolate, apex rounded, mucronate, appressed hairy beneath, densely so on the veins. Flowers bluish, solitary or geminate, pedicels elongate in fruit. Pods linear-oblong, shortly appressed hairy. Seeds upto 6, sub-orbicular, dark brown, shining.

Fls. & Frts. : August-September.

Illus. : Mahesh. *Illus. Fl. Delhi* f. 61. 1966.

Distrib. : Rare; usually found among grasses. Karegaon, Penganga river banks, Bori range, 156630.

T. villosa (L.) Pers. *Syn. Pl.* 2: 329. 1807; Baker in *Hook. f. Fl. Brit. India* 2: 113. 1876; Cooke, *Fl. Pres. Bombay* 1: 347. 1958 (Repr. ed.); Bosman & de Haas in *Blumea* 28: 476. 1983. *Cracca villosa* L. Sp. *Pl.* 752. 1753.

Herbs, bushy, c 0.5 m high; stem, branches and peduncles appressed tomentose. Leaves c 7.5 cm long; leaflets upto 17, c 2.0 x 0.6 cm, oblanceolate, apex rounded or emarginate, mucronulate, puberulous above, densely appressed white hairy beneath. Flowers pale pink in lax, terminal c 10 cm long racemes; calyx persistent, densely villous without, puberulous within. Pods c 3.5 x 0.5 cm, sub-falcate upwards. Seeds upto 9, c 0.3 x 0.2 cm, oblong, wrinkled, more or less reticulate, yellowish.

Fls. & Frts. : July-February.

Illus. : Mahesh. *Illus. Fl. Delhi* f. 62. 1966.

Distrib. : Occasional; found as a weed in cultivated fields or on roadsides. Mukutban (in cultivated fields).

TERAMNUS P. Br.

- | | | |
|--|-----|--------------------|
| 1. Leaflets and racemes nearly glabrous; pods glabrous
but for a few acicular hairs | ... | <i>T. labialis</i> |
| 1. Leaflets strigously hairy; racemes and pods villous with
tawny, spreading hairs | ... | <i>T. mollis</i> |

Teramnus labialis (L.f.) Spreng. *Syst. 3:* 235. 1826; Baker in

Hook. f. Fl. Brit. India 2: 184. 1876; Cooke, Fl. Pres. Bombay 1: 387. 1958 (Repr. ed.); Verde, in Kew Bull. 24: 266. 1970. *Glycine labialis* L. f. Suppl. 325. 1781. *Ran-udid*.

Herbs, woody at base, young branches appressed hairy. Leaves trifoliolate, c 4.5 x 3.0 cm, elliptic ovate, apex sub-acute or emarginate, hairy below when young, glabrescent at length. Flowers white in axillary, lax racemes. Pods c 4.5 x 0.3 cm, apex curved. Seeds upto 7, oblong, truncate at both ends, brown.

Fls. & Frts. : November–February.

Illus. : Wight, Ic. t. 168. 1839 (*Glycine labialis*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 226. 1982.

Distrib. : Common; usually found along river banks or climbing over hedges. Aruna river banks, Kharad.

T. mollis Benth. in J. Linn. Soc. Bot. 8: 265. 1865 non *Glycine mollis* Wight & Arn. Prodr. Fl. Ind. Or. 209. 1834; Verde, in Kew Bull. 24: 276. 1970. *T. labialis* var. *mollis* Baker in Hook. f. Fl. Brit. India 2: 184. 1876; Cooke, Fl. Pres. Bombay 1: 387. 1958 (Repr. ed.).

Twiners, slender; stem, inflorescence axis branches patently hairy. Leaves trifoliolate; leaflets c 7.5x4.7 cm, elliptic or elliptic-oblong, apex mucronulate. Flowers purple in lax, axillary c 9 cm long racemes. Pods c 5 cm long, tip curved.

Fls. & Frts. : August–October.

Distrib. : Rare. Tipeshwar R.F., 156622.

URARIA Desv.

- | | | |
|---|-----|-------------------------|
| 1. Leaves 5–9-foliolate | ... | <i>U. picta</i> |
| 1. Leaves 1–3-foliolate : | | |
| 2. Inflorescence of racemes upto 10 cm long; lomentum usually 2-jointed, glabrous | ... | <i>U. alopecuroides</i> |
| 2. Inflorescence of panicles upto 25 cm long; lomentum 4–6-jointed, minutely hispid | ... | <i>U. rufescens</i> |

Uraria alopecuroides (Roxb.) Wight, Ic. t. 290. 1840. *Doodia alopecuroides* Roxb. Fl. Ind. 3: 368. 1832. *Uraria lagopus* Baker in Hook. f. Fl. Brit. India 2: 156. 1876.

Herbs, woody at base, stem covered with hooked hairs. Leaflets c

7 x 5 cm, ovate, elliptic or oblong, base acute or sub cordate, apex mucronate, puberulous with hooked hairs. Flowers pink, dense in axillary or terminal racemes; bracts rounded at base, long cuspidate at apex, villous. Seeds 2, pale greenish yellow.

Fls. & Frts. : July—September.

Illus. : Wight, *op. cit.*

Distrib. : Rare. Found as an undergrowth in deciduous forests in humus soil. E. Gondwakadi R.F., 156515.

Notes : Malhotra and Moorthy (1978) reported this from Chandrapur district which is adjoining Yavatmal district. This is the subsequent report for the Flora of Maharashtra.

U. 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.); van Meeuwen in Reinwardtia 5: 452. 1961. *Hedysarum pictum* Jacq. Coll. Bot. 2: 262. 1788. *Pithvan*, *Prishnaparni*.

Undershrubs, c 0.75 m high, hairy. Leaflets c 12.5 x 2.8 cm, linear-lanceolate to linear-oblong, sub coriaceous, base rounded, apex mucronate, whitish along the veins above, hairy below. Flowers pale purple in close fascicles which in turn are arranged in c 30 cm long racemes; rhachis and pedicels hooked hairy; bracts ovate-acuminate, scarious, ciliate. Joints of pods 3–6, placed one above the other, prominently reticulate, pedicels curved above in the fruits.

Fls. & Frts. : August—October.

Distrib. : Rare. This was found to grow in open grasslands. Jodmoha grass farm, 156537.

U. rufescens (DC.) Schindl. in Fedde Report. 21: 14. 1925; van Meeuwen in Reinwardtia 5: 453. 1961. *Desmodium rufescens* DC. in Ann. Sci. Nat. Hist. Paris 4: 101. 1825. *Uraria hamosa* (Roxb.) Wight & Arn. Prodr. 222. 1834.

Herbs, c 0.5 m high, woody at base; stems brownish hairy. Leaflets c 9.0 x 5.5 cm, broadly elliptic to elliptic-ovate, base obtuse, sub cordate, apex mucronate, hairy beneath. Flowers purple. Joints of pod one above the other, reticulate, glandular hairy.

Fls. & Frts. : September—November.

Illus. : Ic. Roxb. Fasc. 5: pl. 3. 1971 (*Doodia hamosa* Roxb. Fl. Ind. 3: 367. 1832).

Distrib. : Rare; found as an undergrowth in dry deciduous forests along with *Flemingia nana* and *Knoxia sumatrensis*. Morchandi felling series, Bittergaon range, 156730.

VIGNA Savi

- | | | |
|--|-----|-------------------------|
| 1. Stipules ovate or oblong; bracteoles ovate; leaflets 3-lobed,
the lobes various in shape | ... | <i>V. trilobata</i> |
| 1. Stipules and bracteoles lanceolate; leaflets deeply 3-lobed,
the lobes again variously cut | ... | <i>V. aconitifolius</i> |

Vigna aconitifolius (Jacq.) Marechal in Bull. Jard. Bot. Nat. Belg. 39: 160. 1960; Verdc. in Kew Bull. 23: 469. 1969. *Phaseolus aconitifolius* Jacq. Obs. Bot. 3: 2, t. 52. 1768; Baker in Hook. f. Fl. Brit. India 2: 202. 1876; Cooke, Fl. Pres. Bombay 1: 403. 1958 (Repr. ed.). *Matki*.

Climbers, herbaceous, branches slender, patently to reflexed bristly hairy. Leaves trifoliolate; leaflets hairy. Flowers in condensed, capitate racemes on top of c 13 cm long peduncles. Pods c 5 cm long. Seeds 3-8, brown.

Fls. & Frts. : August–November.

Distrib. : Occasional escape. Karanji.

V. trilobata (L.) Verdc. in Taxon 17: 172. 1968 & in Kew Bull. 24: 560. 1970. *Dolichos trilobatus* L. Mant. 1: 101. 1767. *Phaseolus trilobus* Ait. Hort. Kew. ed. 1. 3: 30. 1811 non *Dolichos trilobus* L. 1753; Baker in Hook. f. Fl. Brit. India 2: 201. 1876; Cooke, Fl. Pres. Bombay 1: 401. 1958 (Repr. ed.). *Jangli math, Mukni*.

Herbs, downy with white hairs. Leaves trifoliolate; leaflets c 2.0 x 1.8 cm, sub-orbicular, base cuneate, apex of lobes obtuse, sparsely hairy. Flowers in dense racemes on c 10 cm long peduncles. Pods c 4 cm long, puberulous. Seeds brown, smooth.

Fls. & Frts. : September–February.

Illus. : Wight, Ic. t. 94. 1838 (*Phaseolus trilobus*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 227. 1982.

Distrib. : Common; usually found on the bunds of cultivated fields and tanks. Durg tank; Khandala R.F.; Umrikhed (on bunds of wheat fields).

ZORNIA J.F. Gmel.

Zornia gibbosa Span. in Linnaea 15: 192. 1841; Mohlenbrock in Webbia 16: 112. 1961; Wagh in J. Bombay nat. Hist. Soc. 61: 214. 1964; Ravi in Bull. Bot. Surv. India 21: 199. 1981. *Z. diphylla* auct. plur. non Pers. 1807; Baker in Hook. f. Fl. Brit. India 2: 147. 1876 p.p.; Cooke, Fl. Pres. Bombay 1: 355. 1958 (Repr. ed.). *Landgi*.

Herbs, diffuse, annual, glabrescent. Leaflets c 1.6 x 0.5 cm, lanceolate, apex acute, base oblique and rounded, black dotted beneath. Flowers yellow in c 5 cm long racemes; bracts foliaceous, attached a little above the base, black dotted. Pods upto 6-jointed, c 1.5 cm long; joints echinate.

Fls. & Frts. : August–January.

Illus. : Mahesh. Illus. Fl. Delhi f. 64. 1966.

Distrib. : Common; usually found along roadsides and in sandy places. Hiwri temple surroundings; Mukutban.

CAESALPINIOIDEAE

1. Leaves pinnate or bipinnate :

 2. Leaves bipinnate; stamens uniform; anthers dehiscing longitudinally; ovary 1–2-ovuled ... **CAESALPINIA**
 2. Leaves pinnate; usually the uppermost 3–5 stamens wanting or reduced to staminodes, rarely all perfect and equal, often anthers of the 3-lowermost stamens longest, all dehiscing by terminal pores; ovary many ovuled ... **CASSIA**
 1. Leaves of 2-leaflets, free or more often adnate into one entire leaf, more or less, deeply cleft at the apex and palmately ribbed :
 3. Lianas ... **PHANERA**
 3. Trees :
 4. Buds fusiform; calyx spathaceous ... **BAUHINIA**
 4. Buds ellipsoid; calyx not spathaceous ... **Piliostigma**

BAUHINIA L.

Bauhinia racemosa Lam. Encycl. 1: 390. 1785; Baker in Hook. f. Fl. Brit. India 2: 276. 1878; Cooke, Fl. Pres. Bombay 1: 459. 1958 (Repr. ed.); Witt, List. 32. 1908. *Apta*, *Bhosa*, *Vanu raja*.

Trees small, c 6 m high, bark black; young branches, petioles and

inflorescence axis white tomentose. Leaves broader than long, c 8.0 x 10.5 cm, young leaves velvety beneath, glabrous at length. Flowers yellow in terminal and extra-axillary racemes. Pods c 25 x 3 cm, slightly turgid, ashy.

Fls. & Frts. : Throughout the year.

Illus. : Bedd. Fl. Sylv. t. 182. 1872; Talb. For. Fl. Bombay Pres. & Sind 1: 462, f. 262 & 263. 1909; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 229. 1982.

Distrib. : Common; found in dry deciduous forests along with *Acacia* spp., *Anogeissus latifolia*, *Lagerstroemia parviflora* and *Tectona grandis*. Majra felling series, Patanbori range; Phiski forest.

Cultivated species :

B. 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.); Witt, List. 33. 1908; de Wit in Reinwardtia 3: 406. 1956; K.K.N.Nair in J. Bombay nat. Hist. Soc. 81: 532. 1984. *Deva kanchan*, *Kanchan*, *Rakta-kanchan*.

Trees, c 8 m high. Leaves c 8.0 x 8.5 cm, sub-orbicular, lobes obtuse at both ends; base cordate, minutely puberulous beneath. Flowers rose in terminal tomentose racemes. Pods c 20.0 x 1.5 cm, flat, reticulate, glabrescent.

Fls. & Frts. : October–February.

Distrib. : The tree is planted along roadsides for its beautiful flowers. Yavatmal.

CAESALPINIA L.

Caesalpinia bonduc (L.) Roxb. Fl. Ind. 2: 362. 1832 *emend.* Dandy & Exell in J. Bot. 76: 175. 1938; Hattink in Reinwardtia 9: 17. 1974. *Guilandina bonduc* L. Sp. Pl. 381. 1753 non 1762. *Caesalpinia bonducella* (L.) Fleming in Asiat. Res. 11: 159. 1810; Baker in Hook. f. Fl. Brit. India 2: 254. 1878; Cooke, Fl. Pres. Bombay 1: 437. 1958 (Repr. ed.); Witt, List. 28. 1908. *Gaja*, *Sagargotta*.

Shrubs, scandent, tomentose, armed with hooked and straight prickles. Leaves c 50 cm long; pinnae upto 7 pairs, c 10 cm long; leaflets 4–7 pairs, c 2 x 1 cm, elliptic-oblong, apex mucronate, sides inequilateral, base rounded or sub-truncate, hairy along the midrib and margins above, puberulous below. Flowers yellow in c 15 cm long

supra-axillary racemes. Pods c. 7.5 x 4.0 cm, oblong, prickly. Seeds 1-2, oblong, lead-coloured.

Fls. & Frts. : March-August.

Illus. : Matthew, *Illus. Fl. Tamilnadu Carnatic 2*: t. 230. 1982.

Distrib. : Rare. Karanji, 149177.

Cultivated species :

C. decapetala (Roth) Alst. is often planted as a hedge plant.

CASSIA L.

1. Sepals broad, obtuse :
 2. Stamens all antheriferous; pods indehiscent ... *C. fistula*
 2. Stamens 6-7 antheriferous, the rest reduced to staminodes; pods usually dehiscent :
 3. Leaves with subulate glands between the leaflets :
 4. Leaflets 3 pairs; stipules narrow, caducous; pods subtetragonal ... *C. tora*
 4. Leaflets 8-12 pairs; stipules large, obliquely cordate, persistent; pods flat ... *C. auriculata*
 3. Leaves with 1 gland just above the base of the petiole, none between the leaflets :
 5. Leaflets 3-5 pairs, elliptic to elliptic-ovate; pods flat ... *C. occidentalis*
 5. Leaflets 5-10 pairs, oblong-lanceolate; pods more or less turgid ... *C. sophera*
 1. Sepals narrow, acute :
 6. Leaflets 2 pairs ... *C. absus*
 6. Leaflets 20-40 pairs ... *C. pumila*

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.); de Wit in Webbia 11: 279. 1955. *Chakan, Chimar.*

Herbs, glandular hairy. Leaflets c. 1.8 x 1.5 cm, elliptic-obovate, apex obtuse or slightly emarginate or mucronate, base slightly oblique, glabrescent above, pubescent beneath. Flowers pink in terminal and leaf opposed c. 4 cm long racemes. Pods c. 3.0 x 0.6 cm, oblong, oblique, bristly-hairy. Seeds upto 4.

Fls. & Frts. : August–October.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 231. 1982.

Distrib. : Not common; usually found to occur on edges of tanks in humus soil. Durg tank.

C. auriculata L. Sp. Pl. 379. 1753; Baker in Hook. f. Fl. Brit. India 2: 263. 1878; Cooke, Fl. Pres. Bombay 1: 448. 1958 (Repr. ed.); Witt, List. 32. 1908. *Tarota, Tarwar*.

Shrubs, c 2 m high. Leaves c 9 cm long, rhachis fulvous-pubescent; leaflets c 2.5 x 1.2 cm, oblong-ovate, apex obtuse, emarginate or mucronate, base rounded, pubescent beneath. Flowers yellow with orange veins, in terminal and axillary racemes. Pods c 12.0 x 1.5 cm, oblong, beaked, depressed between the seeds.

Fls. & Frts. : January–July.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 450, f. 254. 1909.

Notes : Report of this species is based on Witt (*op. cit.*).

C. fistula L. Sp. Pl. 377. 1753; Baker in Hook. f. Fl. Brit. India 2: 261. 1878; Cooke, Fl. Pres. Bombay 1: 444. 1958 (Repr. ed.); Witt, List. 31. 1908. *Bahawa, Garmal*.

Trees small, c 6 m high, bark grey. Leaves c 30 cm long; leaflets 3–5 pairs, c 12.5 x 6.5 cm, elliptic-ovate, coriaceous, apex obtuse or slightly emarginate, puberulous beneath. Flowers golden yellow in lax, pendulous racemes. Pods c 40 cm long, cylindrical, pendulous. Seeds flat, many, immersed in pulp.

Fls. : March–May. *Frts.* : June–February.

Illus. : Wight, Ic. t. 269. 1840 (*C. rhombifolia* Roxb. Fl. Ind. 3: 334. 1832); Talb. For. Fl. Bombay Pres. & Sind 1: 449, f. 253. 1909.

Distrib. : Common; found in dry deciduous forests along with *Emblica officinalis*, *Tectona grandis*, *Terminalia alata* and *Ziziphus oenoplia*. Chandni forest; Hiwri temple surroundings, Hiwri R.F.; Khandala R.F.

C. occidentalis L. Sp. Pl. 377. 1753; Baker in Hook. f. Fl. Brit. India 2: 262. 1878; Cooke, Fl. Pres. Bombay 1: 445. 1958 (Repr. ed.); Witt, List. 31. 1908; de Wit in Webbia 11: 256. 1955. *Chakaor, Kasivda, Ran takla*.

Undershrubs, c 1 m high. Rhachis c 10.5 cm long, glabrescent;

leaflets c 6.5 x 2.1 cm, apex acuminate, base oblique, margins ciliate. Flowers yellow in terminal and axillary c 15 cm long racemes. Pods c 11.0 x 0.8 cm, green, pinkish in the middle, linear, slightly curved, septate between the seeds. Seeds many, black.

Fls. & Frts. : Throughout the year.

Distrib. : Common; usually found on roadsides, banks of ponds and in waste places. Mukutban; Pandharkawada; Wani-Mohroli road.

C. 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.); de Wit in Webbia 11: 288. 1955. *Sarmal*.

Herbs, stem pubescent. Leaves c 2.5 cm long, petioles with a peltate gland; leaflets c 0.7 x 0.15 cm, oblong, slightly curved upwards, apex mucronate, base inequilateral, margins ciliate, dotted below. Flowers yellow, supra-axillary. Pods c 3.0 x 0.4 cm, flat, oblong, hairy. Seeds upto 9.

Fls. & Frts. : August–October.

Distrib. : Common; usually found in marshy soil during rainy season. Hiwri temple surroundings, Hiwri R.F.; Khandala R.F.; Pusad-Yavatmal road, 15 km point.

C. sophera L. Sp. Pl. 379. 1753; Baker in Hook. f. Fl. Brit. India 2: 262. 1878; Cooke, Fl. Pres. Bombay 1: 446. 1958 (Repr. ed.); Witt, List. 31. 1908; de Wit in Webbia 11: 265. 1955. *Bara chakaor, Jangli takla*.

Undershrubs, c 3 m high. Leaves c 20 cm long, rhachis grooved, gland conical; leaflets upto 5 cm long, apex sub-acuminate, glaucous. Flowers yellow in axillary, short racemes. Pods c 10.0 x 0.8 cm, linear-oblong, slightly curved, septate between the seeds. Seeds upto 40, dark brown, ovoid, compressed.

Fls. & Frts. : August–December.

Notes : Given on the authority of Witt (*op. cit.*) who reported it from Berar.

C. tora L. Sp. Pl. 376. 1753; Baker in Hook. f. Fl. Brit. India 2: 263. 1878, *p.p.*; Cooke, Fl. Pres. Bombay 1: 447. 1958 (Repr. ed.); Witt, List. 31. 1908; de Wit in Webbia 11: 276. 1955; Brenan in Kew Bull. 13: 248. 1958. *Takla, Tarota*.

Undershrubs, c 1 m high, sparsely hairy. Leaves c 6.5 cm long; leaflets c 4.5 x 2.5 cm, obovate, apex emarginate, mucronate, base

unequal, sparsely appressed hairy. Flowers yellow, 1–2, axillary. Pods c 15 cm long, linear, beaked.

Fls. & Frts. : August–January.

Distrib. : Common; weed along roadsides, in waste places and along river banks. Aruna river banks, Mangrul village; Durg R.F.; Khandala R.F.

PHANERA Lour.

Phanera integrifolia (Roxb.) Benth. in Miq. Pl. Jungh. 263. 1852; de Wit in Reinwardtia 3: 478. 1956. *Bauhinia integrifolia* Roxb. Fl. Ind. 2: 331. 1832. *B. vahlii* Wight & Arn. Prod. 297. 1834; Baker in Hook. f. Fl. Brit. India 2: 279. 1878; Cooke, Fl. Pres. Bombay 1: 461. 1958 (Repr. ed.); Witt, List. 33. 1908. *Chambul*, *Mahul*.

Lianas, extensive, young parts rusty tomentose. Leaves c 25 x 24 cm, sub-orbicular, occasionally broader than long, divided 1/3 from above into 2 obtuse lobes, base cordate, tomentose beneath. Flowers white in long peduncled, terminal corymbose racemes. Pods c 30 x 5 cm, flat, rusty downy, finally splitting open. Seeds upto 12, c 3 x 2 cm, dark brown.

Fls. & Frts. : April–July.

Notes. : This is reported on the basis of Witt (*op. cit.*)

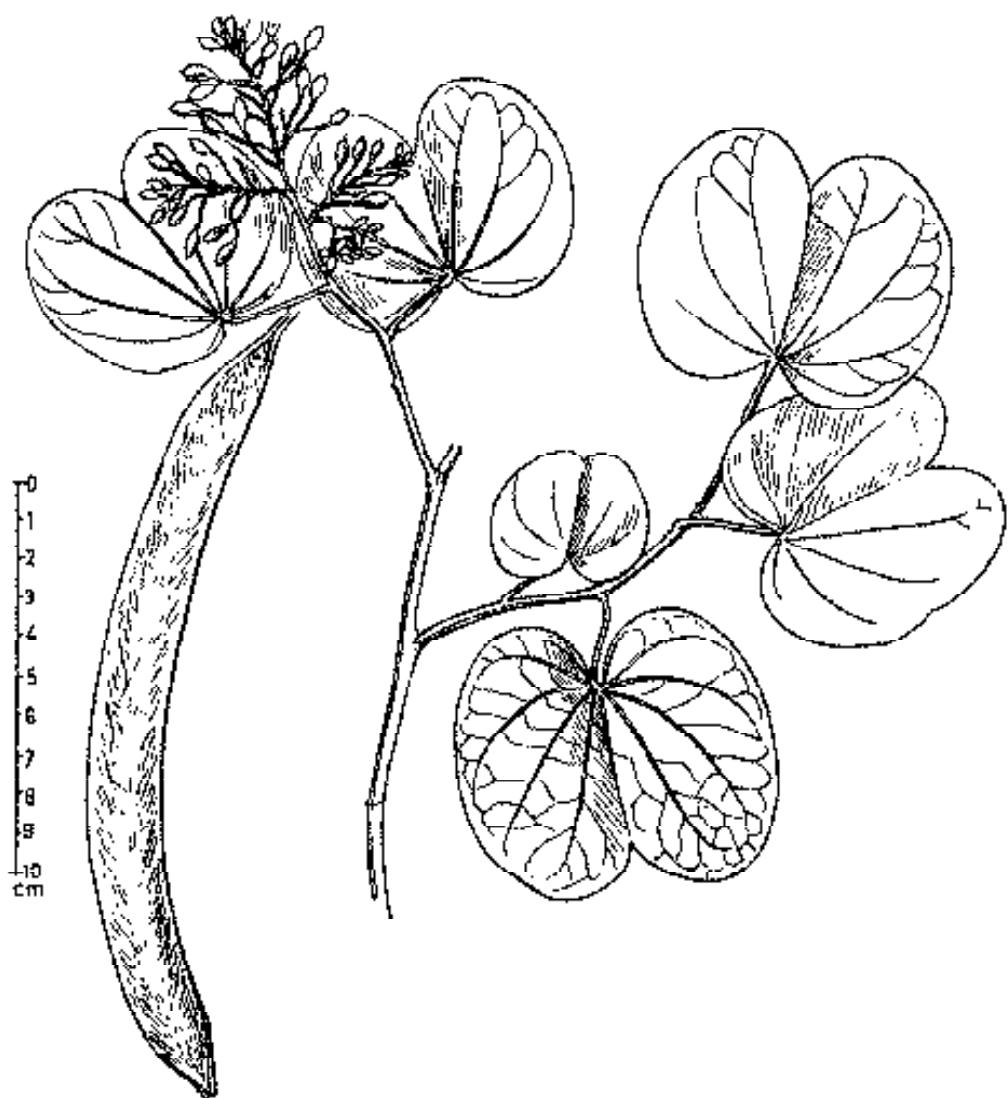
PILOSTIGMA Hochst.

Piliostigma malabaricum (Roxb.) Benth. in Miq. Pl. Jungh. 261. 1852; de Wit in Reinwardtia 3: 531. 1956. *Bauhinia malabarica* Roxb. Fl. Ind. 3: 321. 1832; Baker in Hook. f. Fl. Brit. India 2: 277. 1878; Cooke, Fl. Pres. Bombay 1: 460. 1958 (Repr. ed.); Witt, List. 32. 1908. *Amlí*.

Trees, c 20 m high. Leaves c 6.5 x 7.0 cm, broader than long, bilobed, lobes upto 1/5 down the leaf, lobes obtuse, base cordate, whitish beneath. Flowers in axillary, subsessile racemes. Pods c 25 x 2 cm, sub-turgid, linear-oblong, sub-falcate, reticulately veined, with a persistent style base. Seeds many, dark brown. -

Fls. & Frts. : September–February.

Distrib. : Rare; found on the river banks along with *Buchanania lanza*, *Madhuca longifolia* var. *latifolia*, *Mitragyna parvifolia* and *Tectona grandis*. Penganga felling series, Kharbi, 149045.



***Piliostigma malabaricum* (Roxb.) Benth.**

Cultivated species :

Delonix regia and *Parkinsonia aculeata* are planted along roadsides for ornamental purposes. *Tamarindus indica* L. is cultivated for its fruits.

MIMOSOIDEAE

1. Stamens definite :			
2. Flowers 4-merous	...		MIMOSA
2. Flowers 5-merous :			
3. Pods turgid, straight; leaflets distant	...		PROSOPIS
3. Pods thin, twisted; leaflets minute, contiguous	...		DICROSTACHYS
1. Stamens indefinite :			
4. Stamens united below	...		ALBIZIA
4. Stamens free	...		ACACIA

ACACIA Mill.

1. Erect shrubs or trees with stipular spines and without prickles :			
2. Flowers in globose heads; peduncles 2-bracteate :			
3. Heads in terminal panicles	...		<i>A. leucophloea</i>
3. Heads on axillary peduncles :			
4. Pods cylindric, turgid, usually curved	...		<i>A. farnesiana</i>
4. Pods flattened, straight or curved :			
5. Leaves glabrous	...		<i>A. eburnea</i>
5. Leaves pubescent	...		<i>A. tomentosa</i>
2. Flowers in elongate spikes; peduncles usually 1-bracteate; bracts and bracteoles early caducous :			
6. Leaflets 10-20 pairs, oblong, glaucous; calyx glabrous or minutely white pubescent	...		<i>A. ferruginea</i>
6. Leaflets 20-40 pairs, linear-oblong, glabrous; calyx glabrous	...		<i>A. chundra</i>
1. Climbing shrubs with prickles on stems and leaf rachises; stipular spines absent :			
7. Leaflets closely set, overlapping; flowers pedicelled	...		<i>A. pennata</i>
7. Leaflets more or less distant, not overlapping; flowers sessile	...		<i>A. torta</i>

Acacia chundra Willd. Sp. Pl. 4: 1078. 1806. Sanjappa, Leg. India 39. 1992. *Acacia sundra* (Roxb. ex Rottl.) DC. Prodr. 2: 458. 1825; Baker in Hook. f. Fl. Brit. India 2: 295. 1878. *A. catechu* Willd. var. *sundra* (Roxb.) Prain in J. As. Soc. Beng. 66: 508. 1898; Cooke, Fl. Pres. Bombay 1: 477. 1958 (Repr. ed.). *Khair*, *Lal khair*.

Trees, small, branches glabrescent, bark greyish white. Leaves bipinnate, c 12.5 cm long, pinnae upto 20 pairs, c 3 cm long; leaflets c 0.3 cm long, subsessile; stipular spines curved. Flowers pale green in axillary c 8 cm long spikes, axis hairy. Pods c 6.5 x 2.0 cm, brownish-green, flat, oblong-lanceolate, stalked, prominently veined, depressed between the seeds. Seeds 1-4, brown.

Fls. & Frts. : August-December.

Illus. : Roxb. Pl. Cor. t. 225. 1811; Bedd. Fl. Sylv. t. 50. 1870 (*A. sundra*).

Distrib. : Common. Durg R.F.; Sunna-Tipeshwar road, 1 km point, Bori range.

A. eburnea (L.f.) Willd. Sp. Pl. 4: 1081. 1806; Baker in Hook. f. Fl. Brit. India 2: 293. 1878; Cooke, Fl. Pres. Bombay 1: 474. 1958 (Repr. ed.); Witt, List. 35. 1908. *Mimosa eburnea* L. f. Suppl. 437. 1781. *Murmati*.

Trees, small; young branches purplish brown. Leaves c 2.5 cm long, pinnae upto 7 pairs, c 1.5 cm long; leaflets 5-8 pairs, c 0.4 cm long, linear, subobtuse; stipular spines straight. Flowers bright yellow. Pods c 15 x 1 cm, slightly curved, longitudinally veined. Seeds 6-10.

Fls. & Frts. : November-February.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 483, f. 274. 1909.

Notes : The report of the species is based on Witt (op. cit.).

A. farnesiana (L.) Willd. Sp. Pl. 4: 1083. 1806; Baker in Hook. f. Fl. Brit. India 2: 292. 1878; Cooke, Fl. Pres. Bombay 1: 473. 1958 (Repr. ed.); Witt, List. 34. 1908. *Mimosa farnesiana* L. Sp. Pl. 521. 1753. *Devbabhal*, *Kankri*.

Trees, small, c 5 m high. Leaves bipinnate, c 5 cm long, rhachis pubescent; pinnae 4-8 pairs, c 3.5 cm long; leaflets upto 20 pairs, c 0.5 cm long, linear-oblong, apex acute, base rounded; stipular spines straight. Flowers yellow; peduncles c 2.5 cm long, pubescent. Pods c 8 cm long, striate. Seeds biseriate, 14-20, convex on one side, concave on the other.

Fls. & Frts. : November–March.

Illus. : Wight, Ic. t. 300. 1840 (*Vachellia farnesiana* (L.) Wight & Arn. Prodr. 272. 1834); Talb. For. Fl. Bombay Pres. & Sind 1: 479, f. 271. 1909.

Distrib. : Found on roadsides near habitations. Umalkhed.

A. ferruginea DC. Prodr. 2: 458. 1825; Baker in Hook. f. Fl. Brit. India 2: 295. 1878; Cooke, Fl. Pres. Bombay 1: 477. 1958 (Repr. ed.); Witt, List. 35. 1908. *Pandhara Khair, Safed Khair*.

Trees, medium sized, bark rough, dark, occasionally prickles absent. Leaves bipinnate, c 10 cm long; pinnae 3–6 pairs, c 8 cm long; leaflets c 1 cm long, obtuse; stipular spines hooked, in pairs. Flowers pale yellow in axillary, c 10 cm long spikes. Pods c 13.0 x 2.5 cm, flat, straight, reticulately veined. Seeds 4–8.

Fls. & Frts. : April–October.

Illus. : Bedd. Fl. Sylv. t. 51. 1870.

Notes : The report of this species is based on Witt (*op. cit.*).

A. leucophloea (Roxb.) Willd. Sp. Pl. 4: 1083. 1806; Baker in Hook. f. Fl. Brit. India 2: 294. 1878; Cooke, Fl. Pres. Bombay 1: 475. 1958 (Repr. ed.); Witt, List. 35. 1908. *Mimosa leucophloea* Roxb. Pl. Cor. 2: 27, t. 150. 1800. *Hiwar*.

Trees, c 10 m high, bark smooth, greyish black, young branches pubescent. Leaves bipinnate, c 5.5 cm long, rhachis tomentose; pinnae upto 10 pairs, c 0.6 cm long, linear-oblong, apex obtuse, puberulous beneath, stipular spines straight. Heads pale yellow in tomentose c 25 cm long panicles. Pods c 15 x 1 cm, linear-oblong, flat, tomentose. Seeds upto 15, brown, oblong.

Fls. & Frts. : November–February.

Illus. : Bedd. Fl. Sylv. t. 48. 1870; Mahesh. Illus. Fl. Delhi f. 80. 1966.

Distrib. : Common. Aruna river banks, Yavatmal road, Dhabdi forest; Kharbi.

A. pennata (L.) Willd. Sp. Pl. 4: 1090. 1806; Baker in Hook. f. Fl. Brit. India 2: 297. 1878, p.p.; Cooke, Fl. Pres. Bombay 1: 480. 1958 (Repr. ed.); Witt, List. 36. 1908. *Mimosa pennata* L. Sp. Pl. 522. 1753. *Shembati, Shemdi*.

Shrubs, scandent, c 5 m high; young branches puberulous. Leaves

bipinnate, c 15 cm long, rhachis puberulous, prickly, with a large gland in the middle of the rhachis and one between each of the 2–4 upper pairs of pinnae; pinnae upto 18 pairs, c 4.5 cm long; leaflets upto 30 pairs, c 0.4 cm long, linear-oblong. Flowers pale yellow in heads, paniculate. Pods c 14 x 3 cm, flat, thin. Seeds upto 14.

Fls. & Frts. : August–March.

Distrib. : Common; usually found on the edges of dried up nala or in disturbed forest areas along with *Butea monosperma*, *Maytenus emarginata* and *Terminalia bellirica*. Karanji R.F.; Khandala R.F.

A. tomentosa 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.). *Anjar*.

Trees, c 5 m high, young parts tomentose. Leaves bipinnate, c 4 cm long, rhachis densely pubescent; pinnae upto 10 pairs, c 1.5 cm long; leaflets upto 30 pairs, c 0.3 cm long, linear-oblong. Heads deep red; peduncles c 1.5 cm long; bracts about the middle of the peduncle forming an involucre. Pods c 15.0 x 1.5 cm, falcate. Seeds upto 8.

Fls. & Frts. : November–March.

Illus. : Bedd. Fl. Sylv. t. 95. 1871.

Distrib. : Rare. Phiski, 148489.

A. 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.). *Chilhar*.

Shrubs, scandent, grooved; young parts tomentose. Leaves bipinnate, c 20 cm long; rhachis and rhachilla pubescent; rhachis with recurved prickles; pinnae upto 13 pairs, c 11 cm long; leaflets upto 40 pairs, c 0.5 cm long, linear-oblong, inequilateral, base subtruncate, pubescent. Heads creamy-yellow in terminal panicles. Pods c 16.0 x 2.5 cm, flat, sub-falcate, rusty brown. Seeds upto 12.

Fls. & Frts. : October–February.

Distrib. : Rare. E. Gondwakadi R.F., 149119.

Cultivated species :

A. 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. 1806; Baker in Hook. f. Fl. Brit. India 2: 293. 1878; Cooke, Fl. Pres. Bombay 1: 472. 1958 (Repr. ed.); Witt, List. 35. 1908. *Babhal*.

Trees, c 12 m high, bark brownish black, young branches glabrescent. Leaves bipinnate, c 6 cm long, rhachises hairy; pinnae upto 6 pairs; leaflets upto 20 pairs, c 0.4 cm long, linear-oblong, slightly inequilateral; stipular spines variable, 0.2–3.5 cm long, whitish. Peduncles c 1.5 cm; calyx and corolla pale green; filaments pale yellow, anthers orange-yellow, making the head look yellow. Pods c 18 cm long. Seeds upto 14.

Fls. & Frts. : August–March.

Illus. : Bedd. Fl. Sylv. t. 47. 1870; Talb. For. Fl. Bombay Pres. & Sind 1: 480, f. 272. 1909 (*A. arabica*).

Distrib. : Common; extensively planted as avenue trees. Near Penganga river, Kharbi; Sunna–Tipeshwar road, Bori range.

ALBIZIA Durazz.

- | | |
|---|----------------------------|
| 1. Leaflets obliquely ovate, broad and rounded at base on the upper side, narrower and attenuate on the lower side of the midrib, slightly villous beneath; calyx tubular | ... <i>A. procera</i> |
| 1. Leaflets oblong, curved upwards, broadest on the lower side of the midrib, rounded or sub-cordate at base, pubescent beneath; calyx campanulate | ... <i>A. odoratissima</i> |

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.); Witt, List. 37. 1908; Nielsen in Adansonia 19: 225. 1979. *Mimosa odoratissima* L. f. Suppl. 437. 1781. *Chichva, Kala siris*.

Trees, c 15 m high, young branches and rhachises pubescent. Leaves bipinnate; rhachis c 11 cm long; pinnae 2–4 pairs, c 15 cm long; leaflets upto 7–9 (–15) pairs, c 3.0 x 1.5 cm. Flowers white in heads; heads solitary or 2–4 together in terminal panicles. Pods c 25 x 4 cm, elliptic-oblong, puberulous, margins wavy. Seeds 5–8 (–12), ovoid, dark brown.

Fls. & Frts. : June–March.

Illus. : Bedd. Fl. Sylv. t. 54. 1870; Talb. For. Fl. Bombay Pres. & Sind 1: 498, f. 283. 1909.

Distrib. : Abundant; usually found along roadsides near habitations along with *Tectona grandis* and *Terminalia alata* which might have been planted for its wood. Khandala.

A. 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.); Witt, List. 37. 1908; Nielsen in Adansonia 19: 223. 1979. *Mimosa procera* Roxb. Pl. Cor. 2: 12, t. 121. 1799. *Kinhi*, *Safed siris*.

Trees, c 8 m high. Leaves bipinnate, rhachis c 24 cm long; pinnae 3–4 (–6) pairs, c 15.5 cm long; leaflets 5–7 (–12) pairs, c 3.5 x 1.8 cm. Heads many, peduncled, 3–5, fascicled in terminal panicles. Pods c 12.5 x 2.1 cm, coppery-brown, oblong, reticulately veined above the seeds. Seeds 7–9 (–12), pale brown, ovate, foveolate.

Fls. & Frts. : June–February.

Illus. : Ic. Roxb. Fasc. 6, pl. 15. 1973.

Distrib. : Not common; found to be growing in dry deciduous forests along with *Acacia* spp. Also planted as an avenue tree. Karanji.

Cultivated species :

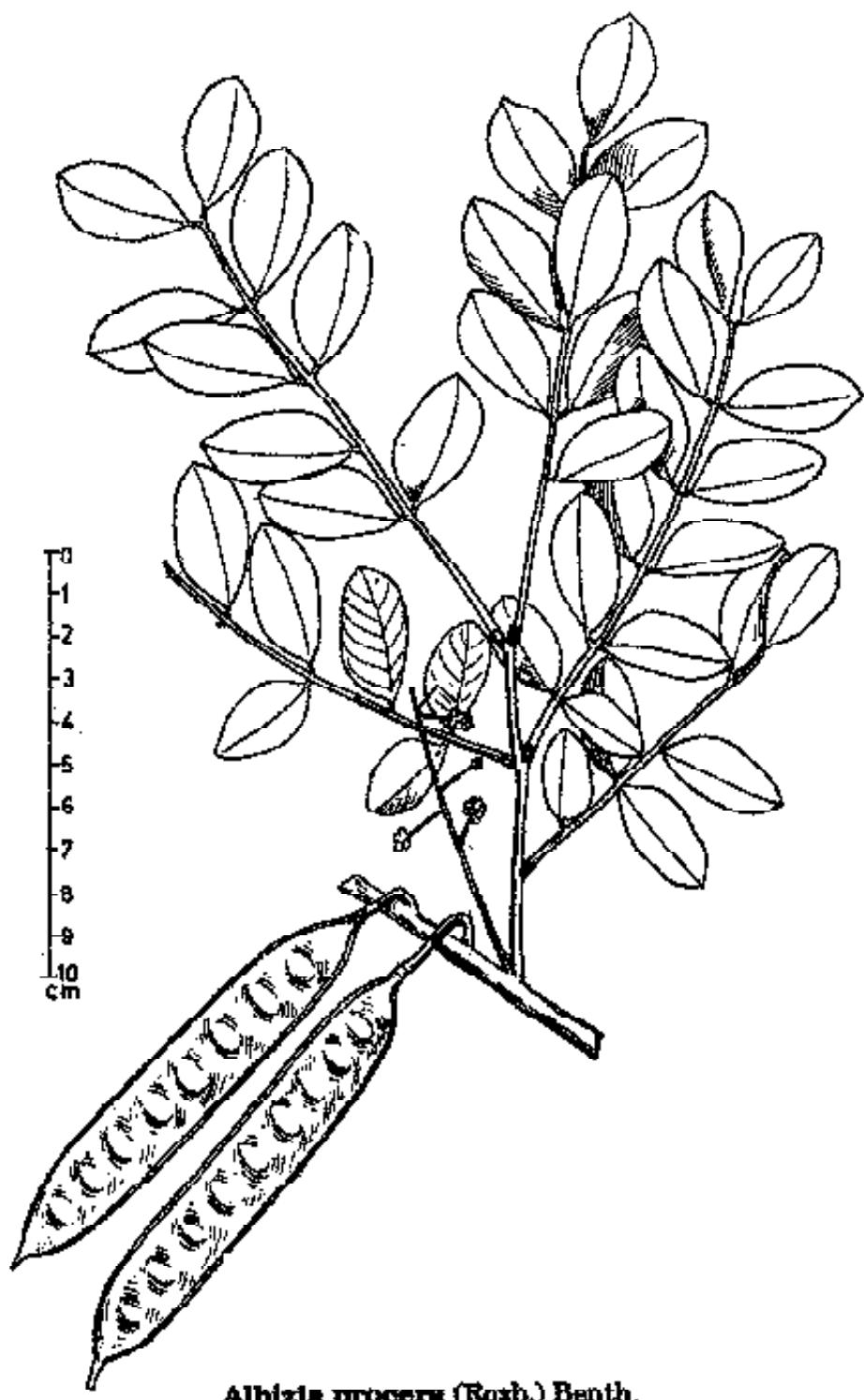
A. lebbeck (L.) Benth. in Hook. London J. Bot. 3: 87. 1844; Baker in Hook. f. Fl. Brit. India 2: 298. 1878; Cooke, Fl. Pres. Bombay 1: 481. 1958 (Repr. ed.); Witt, List. 37. 1908; Nielsen in Adansonia 19: 220. 1979. *Mimosa lebbeck* L. Sp. Pl. 1: 516. 1753. *Chichola*, *Kinhi*.

Trees, c 20 m high; bark light black, more or less smooth. Leaves bipinnate; rhachis c 7 cm long; pinnae 1–2 pairs, c 6 cm long; leaflets 3–5 (–9) pairs, c 3.5 x 1.5 cm, lateral leaflets oblong, terminal pairs oblong-obovate, apex obtuse, inequilateral, base obliquely sub-acute, puberulous below. Flowers white in umbellate heads, solitary or 2–3 in the axils of upper leaves. Pods c 23 x 5 cm, elliptic-oblong, reticulately veined, prominently so above the seeds. Seeds 9–11, oblong-obvoid, brown, foveolate.

Fls. & Frts. : July–January.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 495, f. 280. 1909; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 241. 1982.

Distrib. : Usually planted as avenue trees. Patapangra.



Albizia procera (Roxb.) Benth.

DICHROSTACHYS (A. DC.) Wight & Arn.

Dichrostachys cinerea (L.) Wight & Arn. Prodri. 271. 1834; Baker in Hook. f. Fl. Brit. India 2: 288. 1878; Cooke, Fl. Pres. Bombay 1: 468. 1958 (Repr. ed.); Witt, List. 33. 1908. *Mimosa cinerea* L. Sp. Pl. 517. 1753. *Sigam Rati, Yelati.*

Shrubs, thorny, 1.5–6.0 m high, branchlets ending in spines; young branches, rhachis, rhachilla, inflorescence axis pubescent. Leaves bipinnate; rhachis c 4.5 cm long, pinnae 4–8 (–14) pairs, c 2.75 cm long; leaflets 10–25 pairs, oblong, inequilateral, c 0.25 cm long, apex sub-acute, base sub-truncate, margins ciliate. Flowers in axillary or extra-axillary c 7 cm long spikes, from base to middle pink and from middle to tip yellow. Pods c 6.0 x 0.6 cm, linear-oblong, sub-falcate, puberulous. Seeds upto 12.

Fls. & Frts. : October–January.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 474, f. 269. 1909; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 242. 1982.

Distrib. : Commonly found in scrub jungles, sometimes under shade of bamboos and *Acacia* spp. Aruna river banks, Hiwri R.F., Yavatmal; Mathni felling series, Parwa.

MIMOSA L.

- | | | |
|---|-----|----------------------|
| 1. Rhachis and sutures of the pod prickly | ... | <i>M. hamata</i> |
| 1. Rhachis and sutures of the pod not prickly | ... | <i>M. rubicaulis</i> |

Mimosa hamata Willd. Sp. Pl. 4: 1033. 1806; Baker in Hook. f. Fl. Brit. India 2: 291. 1878; Cooke, Fl. Pres. Bombay 1: 471. 1958 (Repr. ed.); Witt, List. 34. 1908. *Arati, Chilati.*

Shrubs, c 1 m high; stem pubescent and with recurved prickles. Leaves bipinnate, rhachis c 6.5 cm long; pinnae 3–7 pairs, c 3 cm long; leaflets 6–10 pairs, c 0.7 x 0.2 cm, linear-oblong, inequilateral, apex mucronate, base obliquely rounded, pubescent beneath when young, glabrous at maturity. Flowers pinkish in heads in axils of terminal leaves; peduncles c 2.5 cm long, geminate, pubescent. Pods c 7.5 x 1.5 cm, green with coppery tinge, falcate, 2–7-jointed, joints breaking at maturity, pubescent. Seeds 2–7, dark brown, suborbicular.

Fls. & Frts. : August–December.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 477, f. 270. 1909; Ahesh. Illus. Fl. Delhi, f. 79. 1966.

Distrib. : Common. Aruna river banks, Hiwri R.F., Yayatmal; Khandala R.F.; Sunna-Tipeshwar road, Bori range.

M. rubicaulis Lam. Encycl. 1: 20. 1783; Baker in Hook. f. Fl. Brit. India 2: 291. 1878; Cooke, Fl. Pres. Bombay 1: 470. 1958 (Repr. ed.); Witt, List. 34. 1908. *Ail, Arai, Chilati*.

Shrubs, straggling; branches armed with hooked prickles. Leaves bipinnate, c 15 cm long; pinnae 5–11 pairs, c 6.5 cm long, rhachis devoid of prickles; leaflets 8–15 pairs, c 0.8 x 0.3 cm, linear-oblong, inequilateral, apex obtuse, mucronate, base rounded or truncate, puberulous beneath. Flowers in axillary and terminal, globose heads, axis pubescent. Pods c 10.0 x 1.5 cm, flat, falcate, 4–10-jointed.

Fls. & Frts. : August–November.

Notes : This species has been reported here on the authority of Witt (*op. cit.*).

PROSOPIS L.

Prosopis cineraria (L.) Druce in Rep. Bot. Soc. Exch. Cl. Brit. Is. 3: 422. 1914; Burkart in J. Arnold Arbor. 57: 450. 1976. *Mimosa cineraria* L. Sp. Pl. ed. 2, 2: 1500. 1763 excl. ref. Brown. **Prosopis spicigera** L. Mant. 68. 1767; Baker in Hook. f. Fl. Brit. India 2: 288. 1878; Cooke, Fl. Pres. Bombay 1: 467. 1958 (Repr. ed.); Witt, List. 33. 1908. *Saundar*.

Trees, c 15 m high, armed. Leaves bipinnate, rhachis c 3.5 cm long, glabrous or puberulous; pinnae 2 pairs, c 7.5 cm long; leaflets upto 12 pairs, c 1.0 x 0.4 cm, oblong, apex obliquely rounded and mucronate, base markedly inequilateral. Flowers yellow in axillary, c 10 cm long, simple or branched spikes. Pods c 20 cm long, sub-tornilose. Seeds upto 15.

Fls. & Frts. : October–June.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 1: 472, f. 267. 1909 (*P. spicigera*).

Notes : Not common (Witt, *op. cit.*)

Cultivated species :

Pithecellobium dulce (Roxb.) Benth. in Hook. London J. Bot. 3: 213. 1844; Baker in Hook. f. Fl. Brit. India 2: 302. 1878; Cooke, Fl. Pres. Bombay 1: 485. 1958 (Repr. ed.); Witt, List. 38. 1908; Nielsen in

Adansonia 2, 19: 34. 1979. *Mimosa dulcis* Roxb. Pl. Cor. 1: 67, t. 99. 1798. *Vilayati chinch.*

Trees, c 10 m high, armed; young branches, rhachises and inflorescence axes pubescent, stem lenticelled. Leaves bipinnate, rhachis c 0.4 cm long; leaflets in 2 pairs, terminating the rhachis, c 5.5 x 2.5 cm, oblong to ovate-elliptic, inequilateral, apex obtuse, base oblique. Flowers pale green in heads arranged in terminal and axillary panicles. Pods c 12 x 1 cm, spirally twisted, reticulately veined, puberulous. Seeds upto 10, black, enclosed by a white aril.

Fls. & Frts. : December-April.

Illus. : Wight, Ic. t. 198. 1839 (*Inga dulcis* (Roxb.) Willd. Sp. Pl. 4: 1005. 1806); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 249. 1982.

Distrib. : Aruna river banks, Hiwri R.F., Yavatmal.

Notes : The tree is cultivated for the edible aril.

COMBRETACEAE

1. Climbing shrubs; petals 4	...	COMBRETUM
1. Trees; petals absent :		
2. Flowers in spikes	...	TERMINALIA
2. Flowers in capitate heads	...	ANOGEISSUS

ANOGEISSUS (DC.) Guill. & Perr.

Anogeissus latifolia (Roxb. ex DC.) Wall. ex Guill. & Perr. Fl. Seneg. Tent. 1: 280. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 2: 450. 1878; Cooke, Fl. Pres. Bombay 1: 512. 1958 (Repr. ed.); Witt, List. 40. 1908; Scott in Kew Bull. 33: 560. 1979. *Conocarpus latifolia* Roxb. ex DC. Prodr. 3: 16. 1828. *Dhamora*, *Dhaora*.

Trees, c 10 m high; bark grey or white. Leaves alternate and sub-opposite, c 9.5 x 5.5 cm, elliptic, ovate or obovate, apex obtuse or emarginate, base rounded or acute. Flowers greenish yellow. Fruits two winged, beaked, yellowish.

Fls. & Frts. : September-December.

Illus. : Wight, Ic. t. 994. 1845 (*Conocarpus latifolia*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 261. 1982.

Distrib. : Commonly found throughout, sometimes along the edges of streams. Hiwri R.F., Yavatmal; Khandala R.F.; Mohroli, Wani range.

COMBRETUM Loefl.

Combretum albidum G. Don in Trans. Linn. Soc. London 15: 429. 1824. *C. 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.); Witt, List. 39. 1908. *Madbel, Zellusi*.

Climbers, extensive; young branches red. Leaves drying red, opposite, c 10 x 7 cm, ovate-elliptic or elliptic-obovate, apex sub-acuminate, base rounded or cuneate. Flowers white, sessile in panicled axillary and terminal spikes. Fruits suborbicular, 4-winged.

Fls. & Frts. : February-April.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 26, f. 303. 1911; Ic. Roxb. Fasc. 7: pl. 5. 1976; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 263. 1982.

Distrib. : Not common; found to be climbing on *Acacia* spp., *Azadirachta indica* and *Terminalia alata* at forest edges. Yelabara.

TERMINALIA L. nom. cons.

- | | | |
|--|-----|---------------------|
| 1. Leaves clustered at ends of branches; glands absent on leaves; fruits not winged | ... | <i>T. bellirica</i> |
| 1. Leaves uniformly distributed; stalked glands present on the midrib below; fruits winged : | | |
| 2. Leaves tomentose beneath | ... | <i>T. alata</i> |
| 2. Leaves glabrous beneath | ... | <i>T. arjuna</i> |

Terminalia alata Heyne ex Roth, Nov. Pl. Sp. 379. 1821; Rau in Bull. Bot. Surv. India 10 (Suppl. 2) : 33. 1969. *T. tomentosa* (DC.) Wight & Arn. Prodr. 314. 1834 p.p.; C.B.Cl. in Hook. f. Fl. Brit. India 2: 447. 1878; Cooke, Fl. Pres. Bombay 1: 510. 1958 (Repr. ed.) p.p.; Witt, List. 39. 1908. *Ain, Sadra*.

Trees, c 20 m high; bark greyish black, rough, young parts tomentose. Leaves sub-opposite and alternate, c 26 x 11 cm, oblong, ovate-oblong or elliptic-ovate, apex obtuse or sub-acute, base unequal, margins more or less crenulate. Flowers pale yellow in terminal panicles. Fruits 5-winged, wings horizontally striated.

Fls. & Frts. : July-March.

Illus. : Bedd. Fl. Sylv. t. 17. 1869; Talb. For. Fl. Bombay Pres. & Sind 2: 18, f. 297. 1911 (*T. tomentosa*).

Distrib. : Common. Hiwri R.F., Yavatmal; Jholapur-Pardi forest, Karanji; Khandala R.F.; Penganga felling series, Kharbi range.

T. arjuna (Roxb. ex DC.) 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.); Witt, List. 38. 1908. *Pentaptera arjuna* Roxb. ex DC. Prodr. 3: 14. 1828. *Arjuna, Kahu*.

Trees, c 30 m high; bark white, smooth, young parts puberulous. Leaves c 11.5 x 6.0 cm, sub-opposite, elliptic-oblong or elliptic-obovate, apex obtuse or subacute, base acute or sub-cordate, occasionally unequal, margins shallowly crenate-serrate. Flowers pale yellow in short axillary spikes and terminal panicles. Fruits 5-winged, wings with striations curving upwards.

Fls. & Frts. : April-December.

Illus. : Bedd. Fl. Sylv. t. 28. 1869; Talb. For. Fl. Bombay Pres. & Sind 2: 17, f. 296. 1911.

Distrib. : Commonly found along water courses throughout the district. Salebhatti, Wani range; Umarda forest nursery surroundings, Yavatmal; Waghadi nadi banks, Yelabara.

T. 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.); Witt, List. 38. 1908. *Myrobalanus bellirica* Gaertn. Fruct. 2: 90, t. 97. 1791 (*bellirina*). *Bahera*.

Trees, c 15 m high, bark greyish, young parts rusty puberulous. Leaves c 16.5 x 10.0 cm, orbicular-ovate or elliptic-obovate, apex obtuse or sub-acute, base acute, unequal, scabrid above. Flowers greenish yellow in axillary spikes or terminal panicles. Fruits globose or ovoid, minutely tomentose, rusty when young.

Fls. & Frts. : February-December.

Illus. : Wight, Ic. t. 91. 1838; Bedd. Fl. Sylv. t. 19. 1869; Talb. For. Fl. Bombay Pres. & Sind 2: 13, f. 294. 1911.

Distrib. : Common. Mohroli; Salebhatti, Wani range.

Cultivated species :

Quisqualis indica L. was found to be planted in gardens and occasionally as an escape around villages.

MYRTACEAE

SYZYGIUM Gaertn.

Syzygium cumini (L.) Skeels in U.S. Dept. Agr. Bur. Fl. Industr. Bull. 248: 25. 1912. *Myrtus cumini* L. Sp. Pl. 471. 1753. *Eugenia jambolana* Lam. Encycl. 3: 198. 1789; Duthie in Hook. f. Fl. Brit. India 2: 499. 1879; Cooke, Fl. Pres. Bombay 1: 523. 1958 (Repr. ed.); Witt, List. 40. 1908. *Jambhal, Jamun.*

Trees, c 15 m high; bark rough. Leaves coriaceous, opposite, c 15 x 5 cm, elliptic-oblong, apex acute, pellucid dotted, shining. Flowers greenish white in axillary cymes on old branches. Berries variable in size, globose, oblong or broadly ellipsoid, red when immature, purple at maturity.

Fls. & Frts. : March-July.

Illus. : Wight, Ic. t. 535. 1842; Talb. For. Fl. Bombay Pres. & Sind 2: 42, f. 313. 1911 (*Eugenia jambolana*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 271. 1982.

Notes : Common along the banks and in the beds of streams (Witt, op. cit.).

Usually cultivated for the fruit.

BARRINGTONIACEAE

BARRINGTONIA J.R. & G. Forst.

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.); Witt, List. 40. 1908; Payens in Blumea 15: 226. 1967. *Eugenia acutangula* L. Sp. Pl. 471. 1753. *Tivar, Tiwarang.*

Trees, c 5 m high; young branches and petioles puberulous. Leaves c 12.5 x 6.0 cm, alternate, usually crowded towards the tips of branches, elliptic-obovate, apex rounded or sub-acute, base cuneate, margins crenulate. Flowers pale pinkish in slender, pendulous, c 40 cm long racemes. Berries c 1.5 x 1.0 cm, quadrangular, with persistent calyx.

Fls. & Frts. : August-November.

Illus. : Bedd. Fl. Sylv. t. 204. 1872; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 273. 1982.

Distrib. : Rare; found along the banks of Penganga river. Penganga felling series, Kharbi range, 156713.

LECYTHIDACEAE

CAREYA Roxb.

Careya arborea Roxb. Pl. Cor. t. 218. 1811; C.B.Cl. in Hook. f. Fl. Brit. India 2: 511. 1879; Cooke, Fl. Pres. Bombay 1: 528. 1958 (Repr. ed.); Witt, List. 41. 1908. *Kuba, Kumbhi*.

Trees, c 20 m high. Leaves c 30 x 17 cm, sub-sessile, alternate, crowded at the tips of branches, obovate, apex obtuse or sub-acuminate, margins crenate. Flowers white, in terminal spikes, filaments long, red. Berries c 8.5 cm across, globose, crowned by the persistent calyx limb.

Fls. & Frts. : March-June.

Illus. : Bedd. Fl. Sylv. t. 205. 1872; Talb. For. Fl. Bombay Pres. & Sind 2: 49, f. 316. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 274. 1982.

Notes : This plant is included on the authority of Witt, *op. cit.*

LYTHRACEAE

- 1. Herbs :

 - 2. Fruits opening by valves, the valves minutely horizontally striate ... ROTALA
 - 2. Fruits opening irregularly, the valves not striate ... AMMANNIA

- 1. Trees or shrubs :

 - 3. Shrubs; leaves black dotted beneath; flowers zygomorphic, calyx tubular, curved ... WOODFORDIA
 - 3. Trees; leaves greyish, glabrous or shortly pubescent beneath; flowers actinomorphic, calyx tube not curved ... LAGERSTROEMIA

AMMANNIA L.

- 1. Leaves auriculate at base; flowers pedicelled, solitary or in cymes ... *A. multiflora*
- 1. Leaves acute, attenuate or sub-cordate at base; flowers sessile or subsessile in axillary clusters ... *A. baccifera*

Ammannia baccifera L. Sp. Pl. 120. 1753 & ed. 2. 1: 175. 1762; C.B.Cl. in Hook. f. Fl. Brit. India 2: 569. 1879; Cooke, Fl. Pres. Bombay 1: 541. 1958 (Repr. ed.). *Bharjamphal*.

Herbs, c 1 m high. Leaves c 5 x 1 cm, sessile, opposite, decussate,

variable, narrowly elliptic or oblanceolate. Flowers pink. Capsules red, circumciss above the middle. Seeds minute, many.

Fls. & Frts. : Throughout the year.

Distrib. : Commonly found in marshy places. Aruna river, in dried up places, Hiwri R.F., Yavatmal; Penganga river edges, Bori; Pandharkawada-Bhiwkund road, 3 km, in rice fields.

Notes : There are two sub species which are described below.

ssp. *baccifera*.

Leaves acute or occasionally attenuate at base, the flowers and capsules smaller.

ssp. *aegytiaca* (Willd.) Koehne in Engl. Bot. Jahrb. 1: 258. 1880. *A. aegytiaca* Willd. Hort. Berol. 1: 6, t. 6. 1803. *A. salicifolia* Hiern in Oliv. Fl. Trop. Afr. 2 : 478. 1871 excl. syn. *non* Monti ex Bl. 1856; C.B.Cl. in Hook. f. Fl. Brit. India 2: 569. 1879; Cooke, Fl. Pres. Bombay 1: 542. 1958 (Repr. ed.).

Flowers and capsules larger.

Distrib. : Common. Durg Camp; Karanji; Waghadi nadi banks, Yelabara.

A. 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.).

Herbs, c 15 cm high, stem tetragonal and slightly winged. Leaves c 1.5 x 0.3 cm, opposite, sessile, linear-oblong. Flowers red. Capsules pink, globose.

Fls. & Frts. : September-December.

Illus. : Ic. Roxb. Fasc. 7: pl. 19. 1976.

Distrib. : Common; found in marshy places or on banks of dried up tanks. Kharad talao banks, Hiwri R.F, Yavatmal; Patri, near Umari village on Yavatmal-Pandharkawada road.

LAGERSTROEMIA L.

Lagerstroemia parviflora Roxb. Pl. Cor. 1: 47, t. 66. 1796; C.B.Cl. in Hook. f. Fl. Brit. India 2: 575. 1879; Cooke, Fl. Pres. Bombay 1: 545. 1958 (Repr. ed.); Witt, List. 41. 1908; Furtado & Srisuko in Gard. Bull. Straits Settlem. 24: 195. 1969. *Bondara, Lendia*.

Trees, c 20 m high; bark grey. Leaves c 10.0 x 4.5 cm, subsessile, elliptic to elliptic-ovate, apex acute. Flowers white in axillary and terminal panicles. Capsules c 2.5 cm long, 1.5 cm across, ellipsoid, loculicidal, 3-4-valved, calyx accrescent. Seeds many, subfalcate, winged.

Fls. & Frts. : June–December.

Illus. : Wight, Ic. t. 69. 1840; Bedd. Fl. Sylv. t. 31. 1869; Talb. For. Fl. Bombay Pres. & Sind 2: 61, f. 323. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 279. 1982.

Distrib. : Common throughout the range; usually found along with *Anogeissus latifolia*, *Boswellia serrata* and *Tectona grandis*. Dhabdi forest; Karanji R.F.; Khandala R.F.; Morchandi felling series, Bittergaon range.

ROTALA L.

Rotala indica (Willd.) Koehne in Engl. Bot. Jahrb. 1: 172. 1880; C.D.K. Cook in Boissiera 29: 108. 1979. *Peplis indica* Willd. Sp. Pl. 2: 244. 1799. *Ammannia peploides* Spreng. Syst. 1: 444. 1825; C.B.CI. in Hook. f. Fl. Brit. India 2: 566. 1879; Cooke, Fl. Pres. Bombay 1: 538. 1958 (Repr. ed.).

Herbs, c 20 cm high, stems quadrangular, decumbent, rooting at lower nodes. Leaves c 1.5 x 0.5 cm, decussate, sessile, spatulate to obovate, apex sub-obtuse, base narrowed. Flowers white in the axils of leafy bracts, forming dense spikes; bracteoles 2, scarious. Capsules very small, ellipsoid.

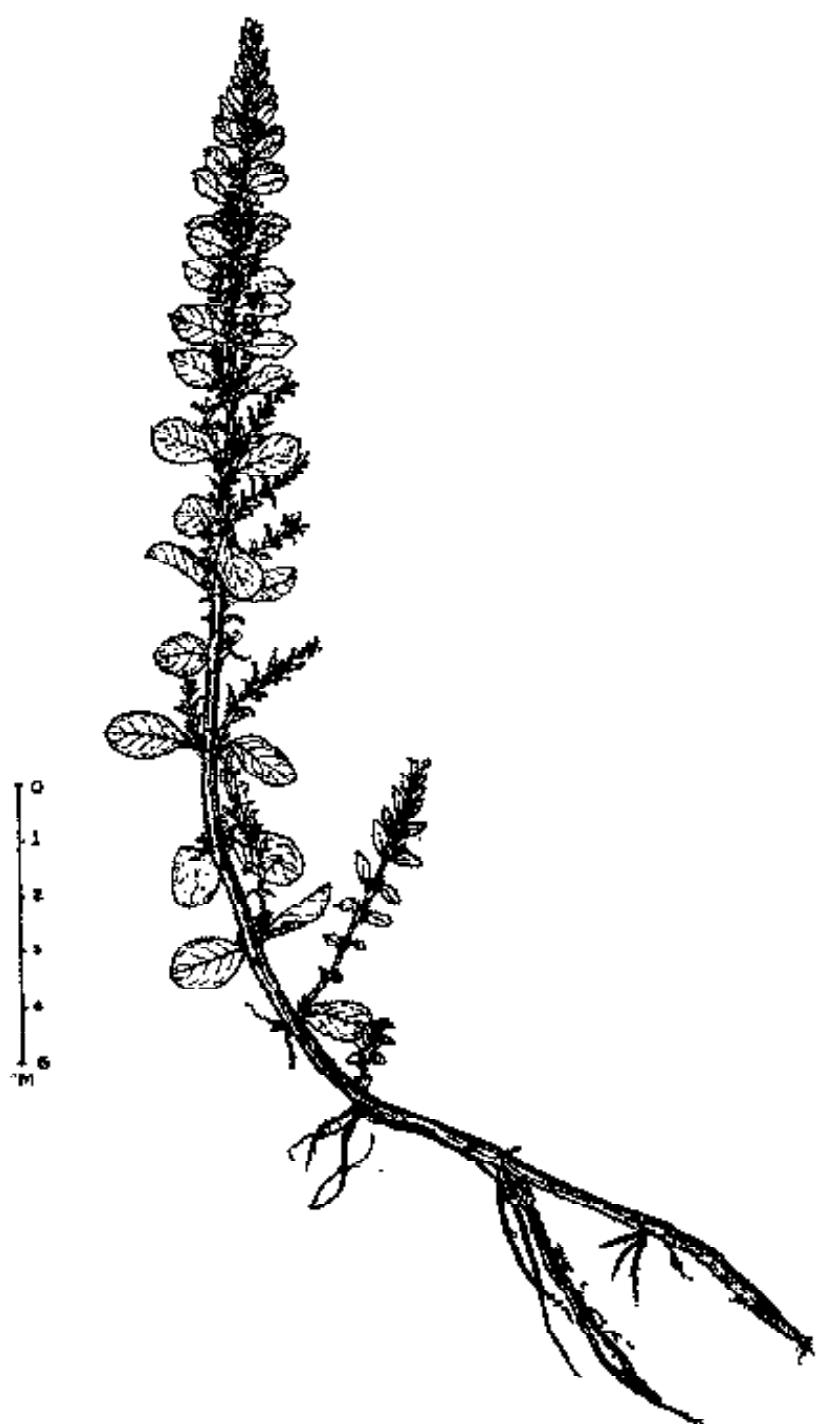
Fls. & Frts. : September–November.

Illus. : Wight, Ic. t. 257A. 1840. [*Ameletia indica* (Willd.) DC. in Mem. Soc. Phys. Nat. Hist. Geneve 3: 82, t. 3, f. A. 1826].

Distrib. : Rare; found in marshy soil on banks of ponds along with *Cyperus* spp., *Ludwigia adscendens* and *Oryza rufipogon*. Mandar talao on Wani–Pardi road, 156699.

WOODFORDIA Salish.

Woodfordia fruticosa (L.) Kurz in J. As. Soc. Beng. 40: 56. 1871; Howard & Jayaweera in Baileya 10: 14. 1962. *Lythrum fruticosum* L. Sp. Pl. ed. 2. 641. 1762. *Woodfordia floribunda* Salisb. Parad. Lond. t.



Rotala indica (Willd.) Koehne

42. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 2: 572. 1879; Cooke, Fl. Pres. Bombay 1: 543. 1958 (Repr. ed.); Witt, List. 41. 1908. *Dhawati*, *Dhayati*.

Shrubs, 1–4 m high, bushy; young branches pubescent; bark peeling off from old stems. Leaves c 10.0 x 2.5 cm, opposite, sessile, ovate-lanceolate, apex acute, base sub-amplexicaul, oblique, puberulous and sparsely gland-dotted above, white tomentose beneath. Flowers red in axillary fascicled cymes. Capsules c 0.5 cm long. Seeds minute, brown, somewhat trigonous.

Fls. & Frts. : December–May.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 58, f. 322. 1911.

Distrib. : Commonly found along dried up streams along with *Butea monosperma*, *Madhuca longifolia* var. *latifolia* and *Tectona grandis*. Jholapur–Pardi forest, Karanji; Penganga felling series, Kharbi.

Cultivated species :

Lawsonia inermis L. (*Mehandi*) is commonly cultivated as a hedge plant.

ONAGRACEAE

LUDWIGIA L.

- | | | |
|---|-----|----------------------|
| 1. Stems creeping or floating; leaves obovate, obtuse at apex | ... | <i>L. adscendens</i> |
| 1. Stems erect; leaves elliptic or linear-lanceolate, sub-acuminate at apex | ... | <i>L. perennis</i> |

***Ludwigia adscendens* (L.) Hara** in J. Jap. Bot. 28: 291. 1953; Raven in Reinwardtia 6: 387. 1963. *Jussiaea adscendens* L. Mant. 69. 1767. *J. repens* L. Sp. Pl. 388. 1753 non *Ludwigia repens* Forster 1771; C.B.Cl. in Hook. f. Fl. Brit. India 2: 587. 1879; Cooke, Fl. Pres. Bombay 1: 549. 1958 (Repr. ed.).

Herbs, rooting at nodes. Leaves c 3.5 x 1.0 cm, alternate, narrowed into long petioles. Flowers white, solitary, axillary. Capsules c 4 cm long, glabrescent.

Fls. & Frts. : September–December.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 285. 1982.

Distrib. : Not common; found along with *Nymphoides cristatum*, *Ottelia alismoides* and *Vallisneria spiralis*. Mukutban talao.

L. perennis L. Sp. Pl. 119. 1753; Raven in Reinwardtia 6: 367. 1963. *L. parviflora* Roxb. Fl. Ind. 1: 419. 1820; C.B.Cl. in Hook. f. Fl. Brit. India 2: 588. 1879; Cooke, Fl. Pres. Bombay 1: 550. 1958 (Repr. ed.).

Herbs, c 0.5 m high, stem quadrangular. Leaves c 7.5 x 1.0 cm, alternate. Flowers yellow, solitary, axillary. Capsules c 1.1 cm long, obconical. Seeds ellipsoid, numerous.

Fls. & Frts. : August–October.

Illus. : Ic. Roxb. Fasc. 7: pl. 20. 1976; Mahesh, Illus. Fl. Delhi f. 85. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 286. 1982.

Distrib. : Commonly found in marshy areas during rainy season, Mukutban talao; Patri, near Umari village on Yavatmal–Pandharkawada road.

TRAPACEAE

TRAPA L.

Trapa natans L. var. *bispinosa* (Roxb.) Makino in Iinuma, Somoku–Dzusetzii, ed. 3. 1: 137. 1907; Brenan in Turrill & Milne–Redhead, Fl. Trop. E. Afr. (Trapac.) 3. 1953. *T. bispinosa* Roxb. Pl. Cor. 3: 20, t. 234. 1815; C.B.Cl. in Hook. f. Fl. Brit. India 2: 590. 1879; Cooke, Fl. Pres. Bombay 1: 551. 1958 (Repr. ed.). *Shingada*.

Herbs, floating. Leaves crowded at apex of stem, alternate; petioles c 12.5 cm long, inflated above the middle into a float, hairy above the middle; lamina c 4.0 x 5.5 cm, rhomboid–ovate, serrate in the upper part, serrations with 2–3 short spines, glabrous and shining above, pubescent beneath. Flowers white, solitary, axillary. Fruits obconical, broader than long with 2–lateral spines, beaked, indehiscent.

Fls. & Frts. : August–October.

Distrib. : Not common. Mukutban talao.

CUCURBITACEAE

- | | | |
|---------------------------------|-----|-------|
| 1. Berries conspicuously ribbed | ... | LUFFA |
| 1. Berries not ribbed : | | |
| 2. Tendrils simple : | | |

3.	Stipular bracts foliaceous, long ciliate at margins	...	CTENOLEPIS
3.	Stipular bracts absent :		
4.	Flowers white	...	COCCINIA
4.	Flowers yellow :		
5.	Berries globose, smooth	...	MUKIA
5.	Berries ovoid-ellipsoid, echinate	...	MOMORDICA
2.	Tendrils 2-3-fid :		
6.	Petals fimbriate	...	TRICHOSANTHES
6.	Petals not fimbriate	...	DIPLOCYCLOS

COCCINIA Wight & Arn.

Coccinia grandis (L.) Voigt, Hort. Suburb. Calc. 59. 1845; Bhandari in Ann. Arid Zone 4: 229. 1965; Chakr. in Fasc. Fl. India 11: 24. 1982. *Bryonia grandis* L. Mant. 1: 126. 1767. *Cephalandra indica* (Wight & Arn.) Naud. in Ann. Sci. Nat. 5, 5: 16. 1859; C.B.Cl. in Hook. f. Fl. Brit. India 2: 621. 1879. *Coccinia indica* Wight & Arn. Prodr. 347. 1833; Cooke, Fl. Pres. Bombay 1: 572. 1958 (Repr. ed.); Witt, List. 44. 1908. *Indravan*, *Tondli*.

Climbers, dioecious, slender. Leaves alternate; petiole c 3.5 cm long; lamina c 4.5 x 5.5 cm, ovate-triangular, 3-5 lobed, lobes acute, base sub-cordate, margins distantly toothed, glandular beneath, scabrid. Male flowers solitary or subcymose; female solitary. Berries oblong-ellipsoid, c 5 x 2 cm, green with white streaks when young, red at maturity. Seeds obovoid, apex rounded, base notched, c 0.5x0.3 cm, yellow.

Fls. & Frts. : Throughout the year.

Illus. : Ic. Roxb. Fasc. 8: pl. 18. 1978; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 293. 1982.

Distrib. : Common; found to be climbing on *Calotropis gigantea*. Aruna river banks, Mangrul village.

CTENOLEPIS Hook. f.

Ctenolepis garcinii (Burm. f.) C.B.Cl. in Hook. f. Fl. Brit. India 2: 629. 1879; Witt, List. 44. 1908; Jeffrey in Kew Bull. 34: 793. 1980. *Sicyos garcinii* Burm. f. Fl. Ind. 211. 1768. *Blastania garcinii* (L.) Cogn. in DC. Monogr. Phan. 3: 629. 1881; Cooke, Fl. Pres. Bombay 1: 576. 1958 (Repr. ed); Chakr. in Fasc. Fl. India 11: 13. 1982.

Climbers, monoecious, herbaceous. Leaves alternate; petiole c 3.7 cm long; lamina c 4 x 5 cm, ovate-orbicular, 5(-7)-lobed, margins denticulate, lobes sub-acuminate, base cordate, hirsute, becoming scabrid at length. Flowers small, male racemose, female solitary in the same axils. Berries ellipsoid, orange or red. Seeds 2, c 0.7 x 0.4 cm, obovoid, concave on one side, convex on the other.

Fls. & Frts. : August–October.

Illus. : Mahesh. Illus. Fl. Delhi f. 87. 1966 (*Blastania garcinii*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 295. 1982.

Distrib. : Common; found as a climber on *Ziziphus mauritiana*. Aruna river bank, Mangrul village.

DIPLOCYCLOS (Endl.) van Post & O. Kitze.

Diplocyclos palmatus (L.) Jeffrey in Kew Bull. 15: 352. 1962; Chakr. in Fasc. Fl. India 11: 48. 1982. *Bryonia palmata* L. Sp. Pl. 1012. 1753, excl. syn. *B. laciniosa* L. op. cit. 1013. p.p. (quoad. syn. cit. typ. excl.); C.B.Cl. in Hook. f. Fl. Brit. India 2: 622. 1879. *Bryonopsis laciniosa* auct. non (L.) Naud. 1859; Cooke, Fl. Pres. Bombay 1: 568. 1958 (Repr. ed.); Witt, List. 44. 1908. *Kowdodi*, *Shivlingi*.

Climbers, monoecious, stems angular. Leaves alternate; petioles c 3.6 cm, scabrid; lamina c 6.5 x 7.5 cm, ovate, (3)-5-7-lobed, lobes acute, base cordate, scabrid above. Male flowers pale yellow, female pale green, often in the same axils. Berries c 1.8 cm across, globular, green with white markings, ripening brick-red. Seeds many, pyriform, c 0.5 x 0.3 cm, margins crenulate.

Fls. & Frts. : August–December.

Illus. : Wight, Ic. t. 500. 1841 (*Bryonia laciniosa*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 297. 1982.

Distrib. : Common; found to be climbing on *Dichrostachys cinerea* and *Ziziphus mauritiana*. Aruna river banks, Mangrul village.

Notes : According to Jeffrey (op.cit.) *Bryonia laciniosa* L. known for a long time as *Bryonopsis laciniosa* (L.) Naud. should be called *Cayaponia laciniosa* (L.) Jeffrey, op. cit. 346 and is endemic to Jamaica.

LUFFA Mill.

- | | | |
|------------------------------------|-----|--------------------|
| 1. Roots tuberous; fruits 8-ribbed | ... | <i>L. tuberosa</i> |
|------------------------------------|-----|--------------------|

1. Roots not tuberous; fruits 10-ribbed ... *L. acutangula*
var. *amara*

***Luffa acutangula* (L.) Roxb. var. *amara* (Roxb.) C.B.Cl. in Hook. f. Fl. Brit. India 2: 615. 1879; Cooke, Fl. Pres. Bombay 1: 567. 1958 (Repr. ed.); Witt, List. 43. 1908; Chakr. in Fasc. Fl. India 11: 70. 1982. *L. amara* Roxb. Fl. Ind. 3: 715. 1832. *Ran turai*, *Turai*.**

Climbers, monoecious, slender; young stems puberulous; tendrils 3-fid, puberulous, 6.5–12.0 cm. Leaves alternate, petioles c 5.5 cm long; lamina c 6.5 x 12.0 cm, broadly ovate or sub-orbicular, palmately 5-angled, margins denticulate, seabrid, apex sub-acuminate, base cordate. Flowers yellow; male in axillary, many-flowered racemes; female solitary in the same axils. Berries fusiform, c 7.0 x 3.5 cm. Seeds c 0.7 cm, black, ovoid, beaked.

Fls. & Frts. : September–November.

Distrib. : Rare; climbing on *Anogeissus latifolia*, Penganga felling series, Kharbi R.F., 156716.

Notes : This is the wild variant of *Luffa acutangula* (Jeffrey, 1980).

L. tuberosa Roxb. Fl. Ind. 3: 717. 1832; Chakr. in Fasc. Fl. India 11: 74. 1982. *Momordica cymbalaria* Hook. f. in Oliv. Fl. Trop. Afr. 2: 540. 1871; C.B.Cl. in Hook. f. Fl. Brit. India 2: 618. 1879; Cooke, Fl. Pres. Bombay 1: 564. 1958 (Repr. ed.); Witt, List. 43. 1908. *Kadvanchi*.

Herbs, trailing, monoecious; tendrils simple; stems pubescent. Leaves alternate, petioles c 2 cm long; lamina c 2.5 x 4.0 cm, orbicular-reniform, shallowly lobed, lobes acute, margins distantly denticulate, sparsely pubescent above, hairy on the nerves beneath. Flowers yellow, male 2–5 in racemes, ebracteate; female solitary, ebracteate. Berries c 2.5 cm long, fusiform. Seeds c 0.5 cm long, ovoid, dark brown.

Fls. & Frts. : August–December.

Illus. : Ic. Roxb. Fasc. 8: pl. 12. 1978.

Distrib. : Rare; found along the stream banks, Hiwri R.F., 160167.

MOMORDICA L.

***Momordica dioica* Roxb. ex Willd. Sp. Pl. 4: 605. 1805; C.B.Cl. in Hook. f. Fl. Brit. India 2: 617. 1879; Cooke, Fl. Pres. Bombay 1: 563. 1958 (Repr. ed.); Witt, List. 43. 1908; Chakr. in Fasc. Fl. India 11: 94. 1982. *Kartoli*.**

Climbers, dioecious; stems furrowed. Leaves alternate; petioles 4 cm long; lamina c 9.5 x 8.5 cm, broadly ovate, margins sub-entire or 3-5-lobed, distantly denticulate, lobes acute, base cordate, hairy on the nerves and scabrid beneath. Flowers male on solitary, axillary c 8 cm long peduncles with cucullate, orbicular-reniform bract near the apex; female on a long peduncle, bract small, near the base; ovary clothed with long, soft, papillae. Seeds many, turgid c 0.8 x 0.5 cm, ovoid, black.

Fls. & Frts. : July–October.

Illus. : Wight, Ic. t. 505 & 506. 1841; Ic. Roxb. Fasc. 8: pl. 17. 1978.

Distrib. : Common; found to be climbing on *Clerodendrum serratum* in the border of cultivated fields. Karanji village; Majra felling series, Patan Bori range; Patri, near Umari village on Yavatmal–Pandharkawada road.

MUKIA Arn.

Mukia maderaspatana (L.) Roem. Syn. Monogr. 2: 47. 1846; Jeffrey in Kew Bull. 34: 795. 1980. *Cucumis maderaspatanus* L. Sp. Pl. 1012. 1753. *Mukia scabrella* (L.f.) Arn. in Hook. J. Bot. 3: 276. 1841; C.B.Cl. in Hook. f. Fl. Brit. India 2: 623. 1879. *Melothria maderaspatana* (L.) Cogn. in DC. Monogr. Phan. 3: 623. 1881; Cooke, Fl. Pres. Bombay 1: 573. 1958 (Repr. ed.); Chakr. in Fasc. Fl. India 11: 83. 1982. *Chirati*.

Herbs, trailing or climbing, monoecious, all parts hispid. Leaves alternate, subsessile or petiolate; petioles c 2.5 cm; lamina c 2.5 x 4.5 cm, triangular-ovate, 3-5-angled, apex acute, base cordate, margins serrate, scabrid. Male flowers pedicellate, fascicled on short peduncles; female sessile in the same axils. Berries c 0.4 cm across, red at maturity. Seeds 2, c 0.4 x 0.25 cm, obovoid, rugose.

Fls. & Frts. : July–October.

Illus. : Wight, Ic. t. 501. 1841 (*Bryonia scabrella* L.f. Suppl. 424. 1781); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 302. 1982.

Distrib. : Common; usually found on the bunds of cultivated fields; found in forest undergrowth too. Khandala R.F.; Patri, near Umari village on Yavatmal–Pandharkawada road; Penganga felling series, Kharbi range.

TRICHOSANTHES L.

- | | | |
|--|-----|------------------------|
| 1. Male racemes bracteate; berries globose | ... | <i>T. tricuspidata</i> |
| 1. Male racemes ebracteate; berries fusiform | ... | <i>T. cucumerina</i> |

Trichosanthes cucumerina L. Sp. Pl. 1008. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 609. 1879; Cooke, Fl. Pres. Bombay 1: 560. 1958 (Repr. ed.); Kundu in J. Bombay nat. Hist. Soc. 43: 372. 1942; Chakr. in Fasc. Fl. India 11: 112. 1982. *Jungli padvel*.

Climbers, monoecious, sparsely hispid with bristles. Leaves alternate; petioles c 5 cm long; lamina c 9.5 x 7.5 cm, ovate, sub-orbicular, 5-lobed, distantly denticulate, apex of lobes acute, base cordate, puberulous. Flowers white, male in axillary racemes; peduncles c 10 cm long; female solitary, axillary; peduncles c 1 cm long. Berries c 7.5 x 2.0 cm, beaked, green with white markings when young, scarlet at maturity. Seeds many, c 1.2 x 0.7 cm, oblong, margins rugulose, whitish.

Fls. & Frts. : August–October.

Illus. : Mahesh. Illus. Fl. Delhi f. 88. 1966.

Distrib. : Common; usually found on the bunds of cultivated fields. Patri, near Umari village on Yavatmal–Pandharkawada road.

T. tricuspidata Lour. Fl. Cochinch. 589. 1790; Jeffrey in Kew Bull. 34: 797. 1980. *T. palmata* Roxb. Fl. Ind. 3: 704. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 2: 606. 1879; Cooke, Fl. Pres. Bombay 1: 560. 1958 (Repr. ed.); Witt, List. 43. 1908. *T. bracteata* (Lam.) Voigt, Hort. Suburb. Calc. 58. 1848; Kundu in J. Bombay nat. Hist. Soc. 43: 379. 1942; Chakr. in Fasc. Fl. India 11: 109. 1982. *Kaundal*.

Climbers, large, dioecious; stems scaly in the male plant. Leaves alternate; petioles c 4.5 cm long; lamina c 15x14 cm, variable, ovate-triangular to deeply 3-lobed, apex acute, base cordate, margins dentate, scabrid. Male flowers white in axillary racemes; peduncles c 7 cm long, bracts ovate, laciniate, gland-dotted; female flowers solitary, axillary, on c 1.3 cm long peduncles. Berries c 5 cm across, red, with 10 orange streaks at maturity. Seeds many, c 1 cm long, ellipsoid, turgid.

Fls. & Frts. : August–October.

Illus. : Ic. Roxb. Fasc. 8: pl. 5. 1978.

Distrib. : Common; observed to climb on *Acacia* spp. and *Sterculia foetida* along roadsides. Patri, near Umari village on Yavatmal–Pandharkawada road; Umarda.

Citrullus lanatus (Thunb.) Matsumura & Nakai has been found as an escape.

CACTACEAE

OPUNTIA Mill.

Opuntia elatior Mill. Gard. Dict. ed. 8, n. 4. 1768. *O. dillenii* Grah. ex Dalz. & Gibbs. Bombay Fl. Suppl. 39. 1861; C.B.Cl. in Hook. f. Fl. Brit. India 2: 657. 1879 p.p.; Witt. List. 45. 1908. *O. nigricans* Woodrow in Rec. bot. Surv. India 1: 89. 1895, non Haw. 1819; Cooke, Fl. Pres. Bombay 1: 587. 1958 (Repr. ed.). *Nagphani, Nigadung*.

Shrubs, bushy, c 2.5 m high; stems jointed, joints c 30 x 16 cm, fleshy, obovate, ashy; areoles with 2-5 spines. Flowers yellow, drying reddish-purple, solitary, axillary. Berries red, obovoid, spiny. Seeds orbicular-reniform, tomentose, margin ridged.

Fls. & Frts. : May–October.

Distrib. : Common; usually planted as a hedge around cultivated fields; also found as an escape. Mukutban.

MOLLUGINACEAE

- | | | |
|--|-----|---------|
| 1. Plant softly tomentose; leaves obovate to suborbicular, petiolate; flowers in axillary subseasile fascicles | ... | GLINUS |
| 1. Plant glabrous; leaves linear-lanceolate, sessile; flowers pedicellate in terminal and axillary corymbose cymes | ... | MOLLUGO |

GLINUS L.

Glinus lotoides L. Sp. Pl. 463. 1753; Sant. in Bull. Bot. Surv. India 3: 17. 1961. *Mollugo hirta* Thunb. Prodr. Fl. Cap. 1: 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, Kotrak*.

Herbs, spreading, base woody. Leaves usually several at each node, sometimes opposite, very variable, usually c 1.5 x 1.2 cm, sub-acute, occasionally obtuse. Flowers greenish-brown. Capsules c 0.4 x 0.2 cm, oblong. Seeds minute, sub-reniform, tuberculate, dark brown.

Fls. & Frts. : November–March.

Illus. : Mahesh. Illus. Fl. Delhi f. 90. 1966.

Distrib. : Common; found in wet soil along banks of ponds along with *Eragrostis* spp., *Gnaphalium polycaulon* and *Polygonum plebeium*. Mukutban talao; Pandharkawada-Bori road.

MOLLUGO L.

Mollugo pentaphylla L. Sp. Pl. 89. 1753; Cooke, Fl. Pres. Bombay 1: 594. 1958 (Repr. ed.); Sivarajan & Usha in Taxon 32: 123. 1983. *M. stricta* sensu C.B.Cl. in Hook. f. Fl. Brit. India 2: 663. 1879, non L. 1762. *Jharasi*.

Herbs, diffuse. Leaves c. 3.0 x 0.4 cm, both radical and caudine, 2-9 in whorls. Flowers white with a reddish tinge. Capsules brown, globose, c. 0.15 cm across. Seeds many, reniform, tuberculate, dark brown.

Fls. & Frts. : July-October.

Distrib. : Common; usually found in gravelly or loamy soil on the banks of rivers. Arni-Yavatmal road, near Hiwri talao; Dhansala R.F.; Jamwadi tank banks.

Notes : Sivarajan & Usha (*op.cit.*) have convincingly argued that *Mollugo pentaphylla* L. and *M. stricta* L. (Sp. Pl. ed. 2. 131. 1762) can be distinguished by their leaf shape, nervation of the tepals and by seed coat characters.

AIZOACEAE

TRIANTHEMA L.

Trianthema portulacastrum L. Sp. Pl. 223. 1753; Jeffrey in Kew Bull. 14: 235. 1960. *T. monogyna* L. Mant. 69. 1767; C.B.Cl. in Hook. f. Fl. Brit. India 2: 660. 1879; Cooke, Fl. Pres. Bombay 1: 589. 1958 (Repr. ed.). *Bis khapra*.

Herbs, succulent, young stems pubescent, glabrous at length. Leaves, c. 3.5 x 2.5 cm, opposite, obovate, apex sub-acute or emarginate, base cuneate, usually unequal; petioles dilated and membranous at base and forming a pouch to shelter the flowers. Flowers pink, solitary, sessile. Capsules almost concealed by petiolar pouch, circumscissile. Seeds 3-5, sub-reniform, ribbed.

Fls. & Frts. : July-October.

Illus. : Wight, Ic. t. 288. 1840 (*T. monogyna*).

Distrib. : Common; usually occurs as a weed along cultivated fields. Karanji village.

ALANGIACEAE

ALANGIUM Lam.

Alangium salvifolium (L.f.) Wangerin. in Engl. Pflanzenr. 4: 9, 2A-E. 1910; Mukerjee in Bull. Bot. Surv. India 10: 330. 1968. *Grewia salvifolia* L.f. Suppl. 409. 1781. *Alangium lamarchii* Thw. Enum. Pl. Zeyl. 133. 1859; C.B.CI. in Hook. f. Fl. Brit. India 2: 741. 1879; Cooke, Fl. Pres. Bombay 2: 1. 1958 (Repr. ed.); Witt, List. 45. 1908. *Akola*, *Ankul*.

Shrubs or small trees, 3–10 m high, branches spinescent. Leaves c 13 x 5 cm, alternate, oblong-lanceolate, elliptic-lanceolate or elliptic-oblong, apex sub-acute or obtuse, pubescent on nerves beneath. Flowers white in axillary fascicles. Berries globular, c 1.5 cm across, purplish-black. Seeds enclosed in a red pulp.

Fls. & Frts. : February–May.

Illus. : Wight, Ic. t. 194. 1839 (*Alangium decapetalum* Lam. Encycl. Meth. 1: 174. 1783).

Distrib. : Found in open places. Near Hiwri temple, Hiwri R.F.; Kharbi R.F.

RUBIACEAE

1. Trees or shrubs :

2. Armed :

- 3. Leaves 20–25 cm long; berries ovoid ... TAMILNADIA
- 3. Leaves upto 8 cm long; berries globose :
 - 4. Trees; flowers dimorphic; ovary 1-celled ... CERINCOIDES
 - 4. Scandent shrubs; flowers not dimorphic; ovary 2-celled ... CATUNAREGAM

2. Unarmed :

- 5. Flowers clustered in globose heads :
 - 6. Fruit a syncarp ... MORINDA
 - 6. Fruit a cluster of capsules :
 - 7. Leaves cordate at base ... HALDINA
 - 7. Leaves rounded, acute or sub-truncate at base ... MITRAGYNA
- 5. Flowers not in heads :
 - 8. Flowers in corymbose cymes; berries upto 0.7 cm across ... IXORA
 - 8. Flowers solitary, or in pairs; berries 2.5 to 5.0 cm across ... GARDENIA

1. Herbs :
- 9. Stems short, usually upto 1 cm only; leaves 4 together at the apex of the stem; peduncles filiform, much longer than the stem ... **THECAGONUM**
 - 9. Stems well developed; leaves opposite or whorled, arranged throughout the stem; peduncles never longer than the stem :
 - 10. Leaves linear, upto 0.2 cm in breadth ... **KOHAUTIA**
 - 10. Leaves various, never linear, always broader than 0.3 cm:
 - 11. Flowers sessile ... **BORRERIA**
 - 11. Flowers pedicellate :
 - 12. Leaves linear-lanceolate ... **OLDENLANDIA**
 - 12. Leaves lanceolate, elliptic, ovate or ovate-lanceolate :
 - 13. Fruits longer than broad, of 2, semi-terete, indehiscent, connate mericarps separating vertically from a columella ... **KNOXIA**
 - 13. Fruits broader than long, 2-4-celled capsules, not leaving a columella when dehiscing ... **NEANOTIS**

BORRERIA G.F.W.Mey. nom. cons.

- 1. Whole plant hispid; stem procumbent; leaves elliptic-oblong ... **B. articulata**
- 1. Plant not hispid, scabrid on the angles only; stem erect; leaves linear-lanceolate ... **B. pusilla**

Borreria articulata (L.f.) F.N.Will. in Bull. Herb. Boiss. 2, 5: 956. 1905. *Spermacoce articulata* 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.); Deb & R. Dutta in J. Econ. Tax. Bot. 5: 1046. 1984. *Madan ghanti*.

Herbs, woody and branched from base. Leaves c 2.5 x 1.3 cm, opposite, subsessile, apex acute, scabrid at margins; stipules membranous with marginal setae. Flowers white with a pinkish tinge, in axillary whorls. Capsules c 0.3 cm long, obovoid, hispid. Seeds dark brown, c 0.2 cm long, oblong-ellipsoid, finely reticulate, grooved on ventral side.

Fls. & Frts. : July–November.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 327. 1982.

Distrib. : Common. Dhansala, Washim-Pusad road; Durg tank banks; Majra village, Patan Bori range; Mukutban.

Notes : *Spermacoce hispida* L. though earlier, cannot be transferred to *Borreria* as the epithet is occupied (*Borreria hispida* Spruce ex K. Schum. 1888). So the next available epithet *articularis* has been chosen.

B. pusilla (Wall.) DC. Prodr. 4: 543. 1830; Hepper, Fl. West Trop. Afr. ed. 2. 2: 220. 1963. *Spermacoce pusilla* Wall. in Roxb. Fl. Ind. 379. 1820; Deb & R. Dutta in J. Econ. Tax. Bot. 5: 1057. 1984. *S. stricta* L. f. Suppl. 120. 1781; Hook. f. Fl. Brit. India 3: 200. 1881; Cooke, Fl. Pres. Bombay 2: 52. 1958 (Repr. ed.).

Herbs, c 30 cm high. Leaves c 4 x 1 cm, sub-sessile, apex acute, scabrid; stipules membranous with long setae. Flowers white, many, in terminal and axillary clusters surrounded by a whorl of 6-8, linear leaves. Capsules c 0.2 cm long, ellipsoid, pubescent towards the apex. Seeds c 0.2 cm long, oblong-ellipsoid, ventrally grooved, chestnut-brown.

Fls. & Frts. : August-October.

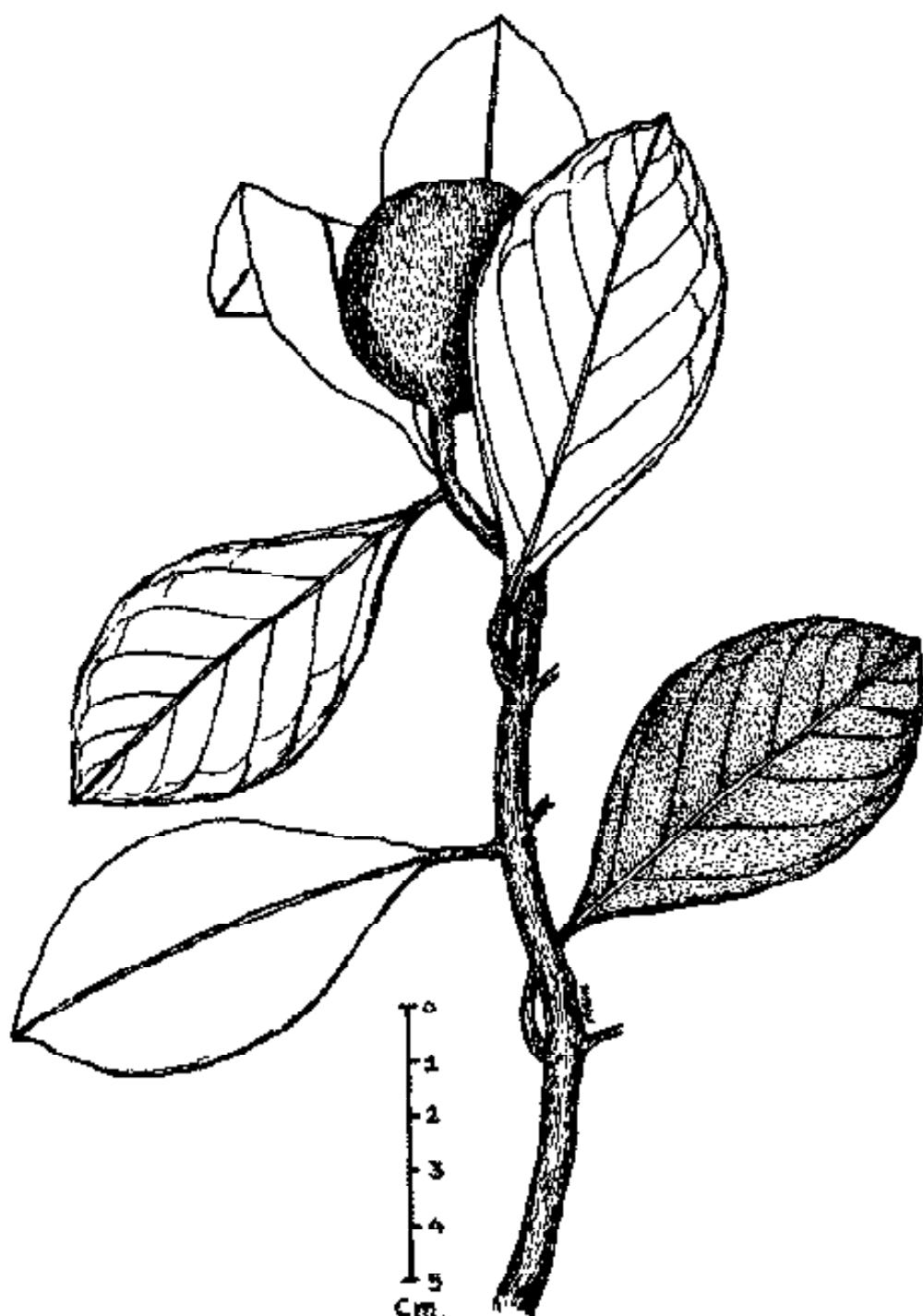
Distrib. : Not common. Dhansala, Washim-Pusad road; Kharad talao, Hiwri R.F.

Notes : Though *Spermacoce stricta* L. f. is earlier it could not be transferred to *Borreria* as the specific epithet is preoccupied [*Borreria stricta* (L.f.) K. Schum. in Engl. & Prantl, Pfam. 4, 4: 143. 1891, non G.F.W.Mey. 1818]. Hence the next available epithet *Spermacoce pusilla* has been selected for the species.

CATUNAREGAM Adans. ex v. Wolf

Catunaregam spinosa (Thunb.) Tirvengadum in Taxon 27: 515. 1978. *Gardenia spinosa* Thunb. Diss. Gard. no 7. 1780. *Randia dumetorum* (Retz.) Poir. in Lam. Encycl. Suppl. 2: 829. 1812; Hook. f. Fl. Brit. India 3: 110. 1880; Cooke, Fl. Pres. Bombay 2: 27. 1958 (Repr. ed.); Witt, List. 47. 1908. *Gehela*, *Gel.*

Shrubs, scandent; spines opposite; bark grey, rough. Leaves c 8 x 4 cm, clustered at ends of branchlets, obovate, apex obtuse, base attenuate, puberulous. Flowers white, solitary or 2-3-fascicled at ends of branchlets. Berries ripening yellow, c 2.5 cm across, ovoid, faintly ribbed. Seeds many, c 0.4 x 0.2 cm, oblong-ellipsoid, minutely rugulose, brown.



Cerisoides turgida (Roxb.) Tirvengadum

Fls. & Frts. : September–December.

Illus. : Wight, Ic. t. 580. 1842; Talb. For. Fl. Bombay Pres. & Sind 2: 99 & 100, f. 341 & 342. 1911 (*Randia dumetorum*); Wight, Ic. t. 582. 1842 [*R. longispina* (Roxb.) DC. Prodr. 4: 386. 1830].

Distrib. : Common. Dhabdi forest.

Notes : *Catunaregam* Adans. ex v. Wolf, a validly published generic epithet (1776) based upon Rheedee's 'Katu Naregam' has been overlooked or ignored. Having priority and being congeneric with *Xeromphis* Raf. (1838) it has been re-established by Tirvengadum (*op. cit.*).

CERISCOIDES (Hook. f.) Tirvengadum

Ceriscoides turgida (Roxb.) Tirvengadum in Bull. Mus. natn. Hist. nat. Paris 3e, 521, Bot. 35: 15. 1978. *Gardenia turgida* Roxb. Fl. Ind. 2: 557. 1824; Hook. f. Fl. Brit. India 3: 118. 1880; Witt, List. 46. 1908. *G. turgida* var. *montana* (Roxb.) Hook. f. *op. cit.*; Cooke, Fl. Pres. Bombay 2: 29. 1958 (Repr. ed.). *Phetra*.

Trees, c 6 m high, bark white, smooth. Leaves c 6.5 x 4.0 cm, usually crowded at the apex of branchlets, elliptic to elliptic-obovate, apex acute, base attenuate, tomentose beneath; stipules small, triangular, cuspidate, caducous. Male flowers in fascicles, female solitary, white. Berries c 5 cm across, ovoid or globose, pale green, brown speckled. Seeds many, small.

Fls. & Frts. : May–January.

Illus. : Wight, Ic. t. 579. 1842; Talb. For. Fl. Bombay Pres. & Sind 2: 104, f. 345. 1911.

Distrib. : Common; found along with *Anogeissus latifolia*, *Mitragyna parvifolia* and *Terminalia alata*. Morchandi felling series, Bittergaon range; Patapangra forest.

GARDENIA Ellis

- | | | |
|---|-----|----------------------|
| 1. Calyx teeth erect; nerves of leaves 20–30 pairs | ... | <i>G. resinifera</i> |
| 1. Calyx teeth recurved; nerves of leaves 12–18 pairs | ... | <i>G. latifolia</i> |

Gardenia latifolia Ait. Hort. Kew. 1: 294. 1789; Hook. f. Fl. Brit. India 3: 116. 1880; Cooke, Fl. Pres. Bombay 2: 30. 1958 (Repr. ed.); Witt, List. 46. 1908. *Ghogar*.

Trees, c 12 m high, bark smooth, pale grey; young parts resin coated. Leaves c 25 x 14 cm, opposite or ternate, broadly elliptic or obovate, apex sub-acuminate, base attenuate, puberulous on the veins; stipules connate. Flowers white. Berries globose, green with brownish scales. Seeds many, ellipsoid to ovoid, c 0.5 x 0.3 cm, compressed.

Fls. & Frts. : August–March.

Illus. : Wight, Ic. t. 759. 1844; Talb. For. Fl. Bombay Pres. & Sind 2: 102, f. 343 & 344. 1911.

Distrib. : Common; found along with *Buchanania lanzae*, *Butea monosperma*, *Ixora arborea* and *Tectona grandis*. Durg R.F.; Khandala; Penganga felling series, Kharbi.

G.resinifera Roth, Nov. Pl. Sp. 150. 1821. *G. lucida* Roxb. Fl. Ind. 2: 553. 1824; Hook. f. Fl. Brit. India 3: 115. 1880; Cooke, Fl. Pres. Bombay 2: 30. 1958 (Repr. ed.); Witt, List. 46. 1908. *Dikamali*, *Dikemali*.

Trees, small, c 8 m high; bark smooth, grey; young shoots resinous. Leaves c 25 x 8 cm, elliptic-oblong, apex subacuminate, base attenuate. Flowers white, axillary. Berries ellipsoid. Seeds many, sub-reniform, compressed.

Fls. & Frts. : October–January.

Illus. : Wight, Ic. t. 575. 1842; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 332. 1982.

Notes : Reported on the basis of Witt (*op. cit.*).

HALDINA Ridsd.

Haldina cordifolia (Roxb.) Ridsd. in Blumea 24: 361. 1978. *Nauclea cordifolia* Roxb. Pl. Cor. 1: 40, t. 53. 1796. *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.); Witt, List. 45. 1908. *Haldu*, *Hed*, *Hedi*, *Hedu*.

Trees, c 20 m high, bark grey, fissured. Leaves c 25 x 24 cm, orbicular, apex sub-acuminate, puberulous beneath. Flowers 1–3-together, yellow; heads axillary, c 2 cm long on c 5 cm long peduncles. Capsules c 0.5 cm long, obconical. Seeds oblong, testa winged.

Fls. & Frts. : July–March.

Illus. : Bedd. Fl. Sylv. t. 33. 1869 (*Nauclea cordifolia*); Talb. For. Fl. Bombay Pres. & Sind 2: 85, f. 334. 1911 (*Adina cordifolia*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 333. 1982.

Distrib. : Scattered, but nowhere plentiful; hilly localities (Witt, *op. cit.*).

Notes : Reported on the authority of Witt, *op. cit.*

IXORA L.

Ixora arborea Roxb. ex J.E.Sm. in Rees, Cyclop. 19: 5. 1811; Sant. in Rec. Bot. Surv. India 16(1): 119. 1967, 3rd Rev. ed. *I. parviflora* Vahl, Symb. Bot. 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.); Witt, List. 47. 1908. *Lokhandi, Rai kuda*.

Trees, small, c 6 m high, inflorescence axis hairy. Leaves c 11.5 x 4.0 cm, shortly petioled, oblanceolate, coriaceous, abruptly sub-acuminate; stipules ovate, cuspidate. Flowers creamish. Berries didymous.

Fls. & Frts. : February–April.

Illus. : Wight, Ic. t. 711. 1843; Bedd. Fl. Sylv. t. 222. 1872; Talb. For. Fl. Bombay Pres. & Sind 2: 114, t. 350. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 337. 1982.

Distrib. : Rare; found abundantly under the shade of *Ficus hispida*. Penganga felling series, Kharbi, 149028.

KNOXIA L.

Knoxia sumatrensis (Retz.) DC. Prodr. 4: 570. 1830; R. Battacharjee & Deb in J. Econ. Tax. Bot. 6: 89. 1985. *Spermacoce sumatrensis* Retz. Obs. Bot. 4: 23. 1786. *Knoxia corymbosa* Willd. Sp. Pl. 1: 582. 1798; Hook. f. Fl. Brit. India 3: 128. 1880; Cooke, Fl. Pres. Bombay 2: 33. 1958 (Repr. ed.).

Herbs, c 0.7 m high, stem hairy. Leaves c 10 x 3 cm, opposite, lanceolate, apex acute, puberulous; stipules with 3–5 filiform, hairy bristles. Flowers pale pink in terminal, corymbose cymes. Fruits ellipsoid, 4-angled, perforate at base.

Fls. & Frts. : September–November.

Illus. : Wight, Ill. 2: t. 128. 1850 (*Knoxia corymbosa*).

Distrib. : Rare; found under the shade of *Tectona grandis*.
Morchandi felling series, Bittergaon range, 156729.

KOHAUTIA Cham. & Schlecht.

- | | | |
|--|-----|-----------------------|
| 1. Leaves 4–5, whorled; flowers subsessile | ... | <i>K. aspera</i> |
| 1. Leaves 2, opposite; flowers on c 2.5 cm long pedicels | ... | <i>K. naghorensis</i> |

Kohautia aspera (Roth) Bremek. in Verh. K. Nederl. Akad. Wet. Afd. Naturk. 2, 48(2): 113. 1952. *Hedyotis aspera* Roth, Nov. Pl. Sp. 94. 1821. *Oldenlandia aspera* (Roth) DC. Prodr. 4: 428. 1830; Hook. f. Fl. Brit. India 3: 68. 1880; Cooke, Fl. Pres. Bombay 2: 18. 1958 (Repr. ed.).

Herbs erect, c 25 cm high, stem and leaves scabrid with minute whitish points. Leaves c 3.0 x 0.2 cm, more or less involute; stipules minute, membranous. Flowers pink, in terminal cymes; corolla puberulous. Capsules c 0.2 x 0.3 cm, 2-lobed, persistent calyx teeth small. Seeds many, ellipsoid.

Fls. & Frts. : August–October.

Distrib. : Not common ; found as a weed in cultivated fields. Karegaon, near Penganga river, Bori range.

K. naghorensis (Brace ex Haines) Sant. & Merch. in Bull. Bot. Surv. India 3: 108. 1962. *Oldenlandia naghorensis* Brace ex Haines, Bot. Bihar & Orissa 2: 448. 1922. *O. senegalensis* Hook. f. Fl. Brit. India 3: 68. 1880, non Hiern 1877; Cooke, Fl. Pres. Bombay 2: 19. 1958 (Repr. ed.).

Herbs, c 30 cm high, minutely scaberulous. Leaves c 3.0 x 0.1 cm, margins slightly recurved, apex acute, scaberulous; stipules bristly. Flowers purple, in lax, terminal cymes. Capsules c 0.25 x 0.3 cm, globose, persistent calyx teeth minute.

Fls. & Frts. : August–October.

Distrib. : Rare; found among grasses in wet places. Bhiwkund R.F., 156593.

MITRAGYNA Korth.

Mitragyna parvifolia (Roxb.) Korth. Obs. Nacl. Ind. 19. 1839; Cooke, Fl. Pres. Bombay 2: 8. 1958 (Repr. ed.). *Nauclea parvifolia* Roxb. Pl. Cor. t. 52. 1796. *Stephegyne parvifolia* (Roxb.) Korth. in Verh. Nat. Ges. 161. 1840; Hook. f. Fl. Brit. India 3: 25. 1880. *Kadam, Kalam*.

Trees, c 12 m high, bark smooth. Leaves c 17 x 12 cm, opposite, variable, broadly elliptic or elliptic-obovate, apex acute or obtuse, puberulous beneath; stipules oblong, spathulate, deciduous. Flowers white. Fruit a globose head of capsules c 1.4 cm across, each with 2 follicular cocci. Seeds many, winged.

Fls. & Frts. : May-August.

Illus. : Bedd. Fl. Sylv. t. 34. 1869; Talb. For. Fl. Bombay Pres. & Sind 2: 87, f. 335. 1911. (*Stephegyne parvifolia*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 340. 1982.

Distrib. : Common; found along with *Albizia* spp., *Butea monosperma*, *Tectona grandis* and *Terminalia alata*. Khandala R.F.; Penganga felling series, Kharbi range; Phiski.

MORINDA L.

Morinda pubescens J.E.Sm. in Rees, Cyclop. 24, no. 3. 1813; Verdc. in Kew Bull. 37: 543. 1983. *M. tinctoria* Roxb. Fl. Ind. 1: 543. 1832, *non* Noronha, 1790; Witt, List. 48. 1908. *M. tinctoria* var. *tomentosa* (Heyne ex Roth) Hook. f. Fl. Brit. India 3: 156. 1880; Cooke, Fl. Pres. Bombay 2: 43. 1958 (Repr. ed.). *Ahl, Al.*

Trees, small, c 8 m high, young branches tomentose, bark grey. Leaves variable in size, c 25 x 16 cm, opposite, elliptic, ovate or ovate-elliptic, apex sub-acuminate, base attenuate, tomentose; stipules bilobed, lobes ovate, acute. Flowers white in axillary or leaf-opposed heads. Fruits globose, c 2 cm across, fleshy. Seeds obovoid.

Fls. & Frts. : April-December.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 122, f. 356. 1911.

Distrib. : Common; found along with *Anogeissus latifolia*, *Butea monosperma* and *Cassia fistula*. Phiski; Tipeshwar R.F.

NEANOTIS W.H.Lewis

- | | | |
|---|-----|----------------------|
| 1. Perennials; flowers in lax cymes; capsule cells 2-4-seeded | ... | <i>N. lancifolia</i> |
| 1. Annuals; flowers in clusters; capsule cells 1-3-seeded | ... | <i>N. monthaloni</i> |

Neanotis lancifolia (Hook.f.) W.H.Lewis in Ann. Missouri Bot. Gard. 53: 39. 1966. *Anotis lancifolia* Hook. f. Fl. Brit. India 3: 73. 1880; Cooke, Fl. Pres. Bombay 2: 20. 1958 (Repr. ed.).

Herbs, erect, c 0.5 m high, hispid throughout. Leaves c 5 x 2 cm, opposite, ovate-elliptic to ovate-lanceolate, apex acute, pale beneath, hairy on the nerves below, scabrid in between; stipules membranous with minute bristles. Flowers purple. Seeds excavated on one face, pitted, black.

Fls. & Frts. : August–October.

Distrib. : Common; usually found as a weed in cultivated fields and as forest undergrowth in wet humus soil. Jodmoha grass farm; Karanji; Khandala R.F.; Morchandi felling series, Bittergaon range; Tipeshwar R.F.

Notes : W.H.Lewis (*op. cit.*) concluded that the species included by De Candolle in *Anotis* are all referable to various genera and are restricted to New World. The Asian species treated under the genus *Anotis* by various authors, consequently, required a generic epithet. Lewis proposed the name, *Neanotis* and effected transfer of all Asian species earlier treated under *Anotis*.

An interesting feature is, *Anotis lancifolia* is based on *Hedyotis lancifolia* Dalz. in Hook. J. Bot. 2: 135. 1850, *non* Schum. 1827. As *Hedyotis lancifolia* Dalz. is a later homonym, it could not be transferred to *Anotis*. Hence Hook. f.'s name is treated as a new name which in turn has been transferred by Lewis, *op. cit.*

N. montholoni (Hook. f.) W.H. Lewis in Ann. Missouri Bot. Gard. 53: 39. 1966. *Anotis montholoni* Hook. f. Fl. Brit. India 3: 73. 1880; Cooke, Fl. Pres. Bombay 2: 22. 1958 (Repr. ed.).

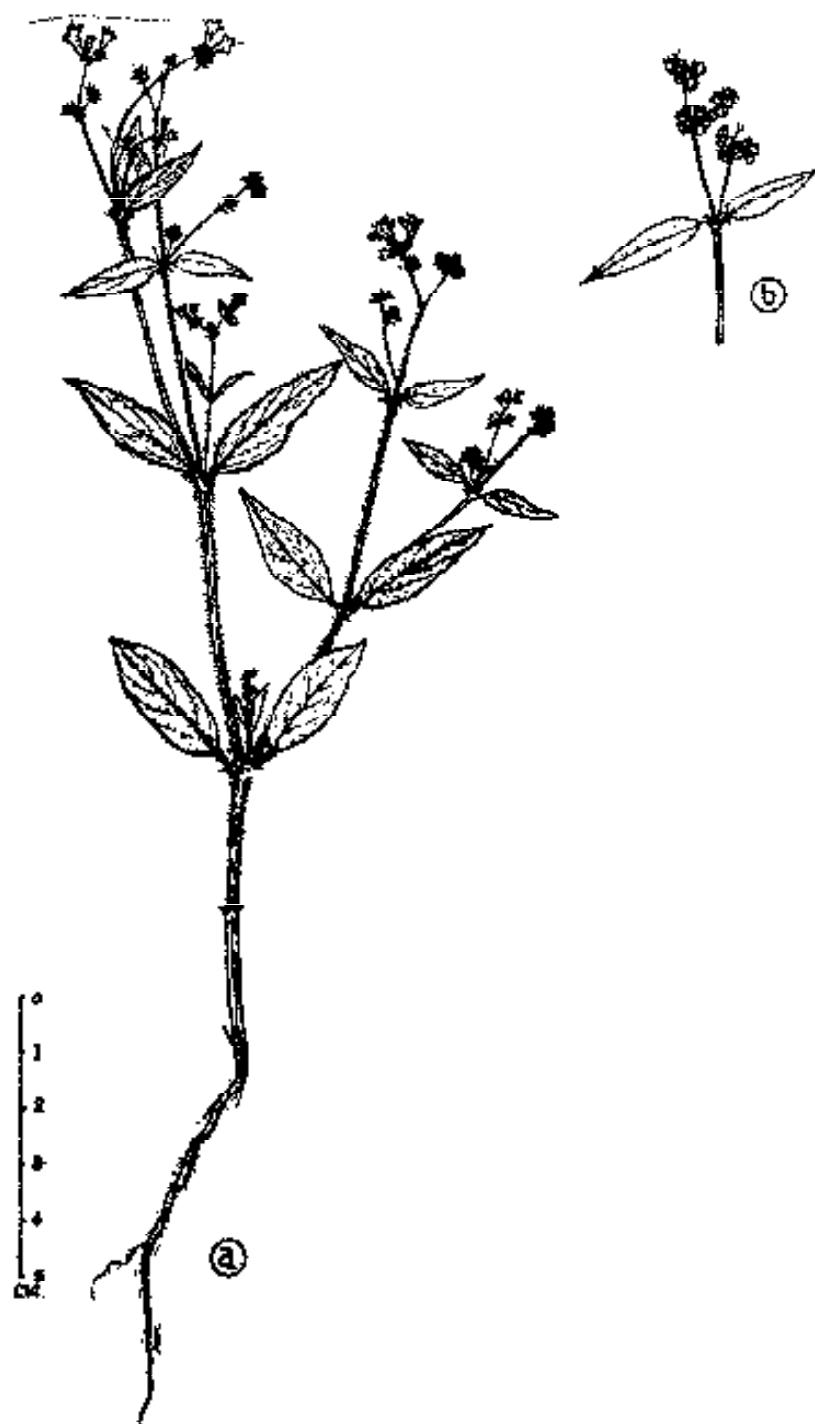
Herbs, erect c 0.3 m high, hispid. Leaves c 4.0 x 1.5 cm, opposite, ovate-lanceolate, hispid; stipules membranous, bristly. Flowers purple. Capsules 2-celled. Seeds globose, excavated on one face, pitted, black.

Fls. & Frts. : August–October.

Distrib. : Common; found in wet places and as a weed in *Sesamum orientale* fields. Karegaon, near Penganga river, Bori range; Kharad talao banks, Hiwri R.F.

OLDENLANDIA L. emend. Bremek.

Oldenlandia corymbosa L. Sp. Pl. 119. 1753; Hook. f. Fl. Brit. India 3: 64. 1880, *p.p.*; Cooke, Fl. Pres. Bombay 2: 15. 1958 (Repr. ed.). *Pitpapda*.



Neanotis montholoni (Hook. f.) W.H. Lewis
a. Habit, in flowering b. A portion of fruiting twig

Herbs, c. 0.15 m high, quadrangular, scabrid on the margins. Leaves c. 2.5 x 0.3 cm, opposite, sessile, margins recurved, scabrid above; stipules membranous, margins bristly. Flowers white, cymes peduncled, axillary. Capsules globose, didymous. Seeds angular, dark brown.

Fls. & Frts. : August–October.

Illus. : Mahesh. Illus. Fl. Delhi f. 96. 1966.

Distrib. : Commonly found in open places, on old walls, along road sides etc. Aruna river banks, Mangrul village; Jamwadi talao banks.

TAMILNADIA Tirvengadum & Sastre

Tamilnadia uliginosa (Retz.) Tirvengadum & Sastre in Mauritius Inst. Bull. 8(4): 85. 1979. *Gardenia uliginosa* Retz. Obs. Bot. 2: 14. 1781. *Randia uliginosa* (Retz.) DC. Prodr. 4: 386. 1830; Hook. f. Fl. Brit. India 3: 110. 1880; Cooke, Fl. Pres. Bombay 2: 27. 1958 (Repr. ed.); Witt, List. 47. 1908. *Pandara*.

Trees, small, c. 2 m high. Leaves c. 23.5 x 10.0 cm, fascicled at the ends of branches, obovate or obovate-oblong, apex sub-acute or obtuse, base tapering. Flowers white, solitary at the ends of suppressed branches. Berries c. 5 cm long. Seeds many, angular.

Fls. & Frts. : July–October.

Illus. : Wight, Ic. t. 397. 1840; Talb. For. Fl. Bombay Pres. & Sind 2: 97, f. 340. 1911 (*Randia uliginosa*).

Distrib. : Rather rare, found along banks of streams, along with *Acacia* spp., *Butea monosperma* etc. Karanji, 160116.

Notes : This species was treated under *Randia* L. by Hook. f. *op. cit.* and Cooke, *op. cit.* Keay (1958) observed that *Randia* is a very heterogeneous, pantropical assemblage of species (Maheshwari, 1962). He proposed that *Randia* L. sect. *Ceriscus* Hook. f. should be transferred to the genus *Xeromphis* Rafin. This separation was supported by pollen and floral morphology. Convinced by this argument Maheshwari (*op. cit.*) effected the new combination *Xeromphis uliginosa* (Retz.) Mahesh. in Bull. Bot. Surv. India 3: 92. 1962.

However, Tirvengadum (1978) observed that this species is totally unrelated to *Xeromphis* and excluded it from the genus. Later Tirvengadum & Sastre (1979) decided to erect a new genus, *Tamilnadia* to accommodate this species.

THECAGONUM Babu

Thecagonum ovatifolium (Cav.) Babu in Bull. Bot. Surv. India 11: 214. 1971. *Hedyotis ovatifolia* Cav. Descr. Pl. Ic. 6: 52. 1801. *Oldenlandia nudicaulis* Roth, Nov. Pl. Sp. 95. 1821; Hook. f. Fl. Brit. India 3: 70. 1880.

Herbs. Leaves c 1.5 x 1.1 cm, ovate, sub-sessile or shortly petiolate, apex obtuse or apiculate. Flowers white, in c 4 cm long peduncled, corymbose panicles. Capsules c 0.2 x 0.3 cm, hemispherical. Seeds many, pitted, brown.

Fls. & Frts. : August–October.

Distrib. : Rare; found as an undergrowth in humus soil along stream banks under the shade of bamboos. Tipeshwar R.F., 156626.

Notes : This species was treated under the genus *Gonotheca* Bl. ex DC. Prodr. 4: 429. 1830, non Rafin. 1808. Due to its being a later homonym, Babu *op. cit.* has provided a new name, *Thecagonum*, which is an anagram of the former.

ASTERACEAE (COMPOSITAE)

1. Leaves pinnatifid or pinnatisect :
2. Leaf margins spiny ... **ECHINOPS**
2. Leaf margins not spiny :
 3. Leaf base semi-amplexicaul with spreading, acute auricles ... **SONCHUS**
 3. Leaf base not as above :
 4. Leaves mostly radical :
 5. Plants glabrous at base; leaves shallowly lobed; heads yellow ... **LAUNaea**
 5. Plants woolly at base; leaves deeply lobed; heads purple ... **CYATHOCLINE**
 4. Leaves caulinne :
 6. Involucral bracts awned ... **AMBERboa**
 6. Involucral bracts not awned :
 7. Achenes enclosed by 2-beaked utricles ... **XANTHIUM**
 7. Achenes not enclosed by utricles :
 8. Heads white ... **PARTHENIUM**
 8. Heads yellow :

9. Lobes of the lamina ovate ... **BIDENS**
9. Lobes of the lamina linear :
10. Achenes densely ciliate on margins; pappus of 2 stiff, smooth awns ... **GLOSSOCARDIA**
10. Achenes glabrous; pappus a minute corona ... **CHRYSANTHELLUM**
1. Leaves not divided :
11. Plants woolly tomentose ... **GNAPHALIUM**
11. Plants glabrous or hairy, never woolly :
12. Stems winged ... **SPHAERANTHUS**
12. Stems not winged :
13. Achenes enclosed by an involucre :
14. Involucre spiny, not gibbous above ... **XANTHIUM**
14. Involucre not spiny, gibbous above ... **SCLEBOCARPUS**
13. Achenes not enclosed by an involucre :
15. Achenes with many lateral hooked spinules and 2, apical, large hooked spines ... **ACANTHOSPERMUM**
15. Achenes not as above :
16. Heads 1-flowered ... **LAGASCEA**
16. Heads many flowered :
17. Achenes winged ... **CAESULIA**
17. Achenes not winged :
18. Leaves both radical and caudine, the former petioled and latter sessile, auricled at base ... **EMULIA**
18. Leaves caudine only :
19. Leaves (the upper in *Blumea*) sessile :
20. Leaves auricled at base ... **VICOA**
20. Leaves not auricled at base :
21. Heads upto 1.5 cm long; pappus paleaceous, scales many-seriate ... **GONIOCAULON**

21. Heads less than 0.75 cm long; pappus of slender, caducous 1-seriate hairs ... **BLUMEA**
19. Leaves petioled :
22. Leaves opposite (sometimes upper ones alternate in *Ageratum* and *Blainvillea*) :
23. Heads homogamous ... **AGERATUM**
23. Heads heterogamous :
24. Leaves deeply serrate; heads solitary; pappus of unequal aristate feathery bristles ... **TRIDAX**
24. Leaves not deeply serrate or cut; heads 1-few; pappus of minute teeth or 2-5-unequal scales :
25. Achenes horizontally lined; pappus of 2-5-unequal scales ... **BLAINVILLEA**
25. Achenes warty; pappus of 2-minute teeth ... **ECLIPTA**
22. Leaves alternate (sometimes lower leaves opposite in *Ageratum* and *Blainvillea*):
26. Heads homogamous :
27. Achenes 5-angled; pappus of 5 free paleaceous scales, broad and lacerate towards the base, aristate at apex ... **AGERATUM**
27. Achenes 3-5-angled; pappus hairs 2-seriate, white, long, feathery ... **VERNOMIA**
26. Heads heterogamous :
28. Achenes truncate, triquetrous, horizontally lined ... **BLAINVILLEA**
28. Achenes oblong, subterete or obtusely angled, often ribbed ... **BLUMEA**

ACANTHOSPERMUM Schrank

***Acanthospermum hispidum* DC.** Prodr. 5: 522. 1836; Sant. in J. Bombay nat. Hist. Soc. 45: 445. 1945.

Herbs, erect, c 0.5 m high, hispid. Leaves c 3.5 x 1.5 cm, opposite, sub-sessile, obovate-spathulate, margins distantly serrate, hirsute. Heads yellow in the forks of dichotomous branches. Achenes 5-10, stellately arranged, obconical.

Fls. & Frts. : October-February.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 350. 1982.

Distrib. : Commonly found as a weed in waste places in open situations. Jamwadi talao banks, Yavatmal.

AGERATUM L.

Ageratum conyzoides L. Sp. Pl. 839. 1753; Hook. f. Fl. Brit. India 3:243. 1881; Cooke, Fl. Pres. Bombay 2:70. 1958 (Repr. ed.). *Osadi*.

Herbs, c 0.5 m high, glabrescent. Leaves c 7.5 x 4.0 cm, ovate, margins crenate, ciliate, apex acute, bristly hairy. Heads white or purple in terminal corymbs. Achenes 5-angled; pappus of 5, free, paleaceous scales, broad and lacerate towards the base, aristate at apex.

Fls. & Frts. : Throughout the year.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 352. 1982.

Distrib. : Common; usually found in wet places. Umarda forest nursery, Yavatmal; Waghadi nadi, Yelabara.

AMBERBOA (Pers.) Less.

Amberboa ramosa (Roxb.) Jeffrey in Scientist 3: 29. 1959. *Carduus ramosum* Roxb. Fl. Ind. 3: 407. 1832. *Volutarella divaricata* Benth. & Hook. f. ex Hook. f. Fl. Brit. India 3: 383. 1881; Cooke, Fl. Pres. Bombay 2: 115. 1958 (Repr. ed.) *Lih-catmando*.

Herbs, c 0.5 m high, pubescent, stem dichotomously branched, angled and striate. Leaves c 10 x 5 cm, oblong, pinnatifid, undulate lobed, glabrescent. Heads purple, c 2.0 x 0.7 cm; involucral bracts tomentose. Achenes many, c 0.5 cm long, oblong, apex truncate, angled, pitted between the angles; pappus of many unequal, barbellate bristles.

Fls. & Frts. : October–March.

Illus. : Wight, Ic. t. 1139. 1846 (*Tricholepis procumbens*).

Distrib. : Common in waste places in open situations Karanji; Umarkhed (weed in wheat fields).

BIDENS L.

Bidens biternatus (Lour.) Merr. & Sherff ex Sherff in Bot. Gaz. 88: 293. 1929; Sant. in Bull. Bot. Surv. India 3: 12. 1961; Koester in Blumea 25: 261. 1979. *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.).

Herbs, c 0.5 m high. Leaves c 10 cm long, opposite, bipinnatisect, margins of lobes dentate or serrate, apex acuminate, puberulous. Heads on c 11 cm long peduncles. Achenes many, c 1.5 cm long, tetragonal, shortly hairy; pappus of 2 persistent, retrorsely barbellate awns.

Fls. & Frts. : July–November.

Distrib. : Common. Dhansala, Washim–Pusad road; Jodmoha grass farm; Khandala R.F.; Kharad talao banks, Hiwri R.F.

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. Bot. Ind. 17. 1834; Hook. f. Fl. Brit. India 3: 305. 1881. *B. rhomboidea* Cass. Dict. Sci. Nat. 29: 493. 1823; Cooke, Fl. Pres. Bombay 2: 97. 1958 (Repr. ed.).

Herbs, erect, c 0.75 m high, hispid. Leaves c 7.5 x 3.5 cm, ovate-lanceolate, apex acuminate, margins serrate, hispid. Heads white, c 0.6 cm across. Achenes truncate, c 0.3 cm long, of ray florets triquetrous, of disc florets compressed, cuneate.

Fls. & Frts. : August–November.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 356. 1982.

Distrib. : Not common. Durg R.F.

BLUMEA DC.

- | | |
|---|---------------------------|
| 1. Petioles of lower leaves upto 6 cm long | ... <i>B. membranacea</i> |
| 1. Petioles of lower leaves not more than 1.5 cm long : | |
| 2. Leaves sharply dentate, the teeth alternately long and short, the young ones silky; heads few; corolla lobes of bisexual flowers pubescent | ... <i>B. eriantha</i> |
| 2. Leaves coarsely toothed, the young ones hairy, never silky; heads many; corolla lobes glabrous | ... <i>B. lacera</i> |

Blumea eriantha DC. in Wight, Contrib. Bot. Ind. 15. 1834; Hook. f. Fl. Brit. India 3: 266. 1881; Cooke, Fl. Pres. Bombay 2: 76. 1958 (Repr. ed.); Randeria in Blumea 10: 279. 1960. *Nimurdi*.

Herbs erect, c 0.75 m high, younger parts viscid-pubescent. Leaves c 7 x 4 cm, elliptic or obovate. Heads yellow, c 0.6 cm across in axillary and terminal cymes; achenes c 0.1 cm long, sparsely pilose; pappus c 0.3 cm long.

Fls. & Frts. : November-March.

Distrib. : Not common. Mukutban.

Notes : Whole plant scented.

B. lacera (Burm.f.) DC. in Wight, Contrib. Bot. Ind. 14. 1834; Hook. f. Fl. Brit. India 3: 263. 1881; Cooke, Fl. Pres. Bombay 2: 76. 1958 (Repr. ed.); Randeria in Blumea 10: 264. 1960. *Conyza lacera* Burm. f. Fl. Ind. 180. 1768. *Burando*.

Herbs, erect, c 0.5 m high, woody at base, glandular pubescent. Leaves c 7.0 x 2.5 cm, elliptic-obovate, apex sub-acute, base tapering. Heads c 0.3 cm across, in terminal and axillary panicles. Achenes c 0.1 cm, sparsely hairy; pappus white hairy, c 0.4 cm long.

Fls. & Frts. : December-March.

Distrib. : Common on bunds of wheat fields. Umarkhed.

Notes : Whole plant scented.

B. membranacea 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*.

Herbs, c 1 m high, pilose, young branches and inflorescence axis glandular hairy. Leaves c 8.5 x 5.0 cm, membranous, elliptic-ovate or obovate, margins irregularly dentate, apex acute, base tapering, pilose. Heads c 0.4 cm across, yellow, in terminal and axillary panicles; involucre pinkish. Achenes c 0.5 cm, pubescent, pappus white, c 0.25 cm long.

Fls. & Frts. : December-March.

Distrib. : Abundantly found on the edges of dried up nullahs as forest undergrowth. Penganga felling series, Kharbi.

CAESULIA Roxb.

Caesulia axillaris Roxb. Pl. Cor. 1: 64, t. 93. 1798; Hook. f. Fl. Brit. India 3: 291. 1881; Cooke, Fl. Pres. Bombay 2: 92. 1958 (Repr. ed.). *Maka*.

Herbs, c 0.5 m high. Leaves c 8.0 x 1.5 cm, alternate, sessile, lanceolate, distantly serrulate. Heads axillary, solitary, c 1.5 cm across, sessile, white. Achenes c 0.25 cm long, obovoid, flat, hairy; pappus 2, scaly.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1102. 1846.

Distrib. : Common; usually found along dried up streams or in marshy soil along with *Ageratum conyzoides*, *Cyperus* spp., and *Polygonum glabrum*. Near Aruna river, Hiwri R.F., Yavatmal; Khandala R.F.; Waghadi nadi, Yelabara.

CHRYSANTHELLUM L.C.Rich.

Chrysanthellum indicum DC. Prodr. 5: 631. 1836; Hook. f. Fl. Brit. India 3: 310. 1881.

Herbs, c 15 cm high. Leaves alternate, petioles c 2 cm long, dilated at base, lamina bipinnatifid, veins prominent, pale beneath. Heads yellow, c 0.3 cm across. Achenes c 0.3 cm long, linear-oblong, outer ones tubercled, inner smooth.

Fls. & Frts. : July–September.

Distrib. : Not common. Penganga felling series, Kharbi range.

Notes : Hook. f. (*op. cit.*) mentions Munro's collections from Nagpur. However, Cooke has not recorded this species in his Flora of the Presidency of Bombay.

CYATHOCLINE Cass.

Cyathocline purpurea (Buch.–Ham. ex D. Don) O. Ktze. Rev. Gen. Pl. 1: 333. 1891. *Tanacetum purpureum* Buch.–Ham. ex D. Don, Prodr. Fl. Nepal. 181. 1825. *Cyathocline lyrata* Cass. in Ann. Sci. Nat. 1, 17: 420. 1829; Hook. f. Fl. Brit. India 3: 246. 1881; Cooke, Fl. Pres. Bombay 2: 71. 1958 (Repr. ed.).

Herbs, c 20 cm high, pilose. Leaves c 19 cm long, segments oblong, irregularly toothed, hairy. Heads c 0.4 cm across in terminal corymbose panicles; axis glandular hairy. Achenes minute; pappus 0.

Fls. & Frts. : November–March.

Illus. : Wight, Ic. t. 1098. 1846 (*C. lyrata*).

Distrib. : Common. Jamwadi talao banks, Yavatmal; Waghadi nadi banks, Yelabara.

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.).

Herbs, c 0.75 m high, white tomentose. Leaves c 15.0 x 4.5 cm, sessile, alternate, deeply pinnatifid, lobes triangular, scaberulous above, white woolly beneath. Heads white, in globose involucrate c 4 cm across clusters, 1 or 2 bracts produced into spines. Achenes obconical, villous; pappus of many, short bristles.

Fls. & Frts. : December–June.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 364. 1982.

Distrib. : Commonly found in waste places in open situations. Hiwri–Yavatmal, on road sides; Karanji; Wani–Mohroli road.

ECLIPTA L.

Eclipta prostrata (L.) L. Mant. 2: 286. 1771; Sant. in J. Bombay nat. Hist. Soc. 54: 476. 1957 & Bull. Bot. Surv. India 3: 16. 1961. *Verbesina prostrata* L. Sp. Pl. 902. 1753. *Eclipta alba* (L.) Hassk. Fl. Jav. Rar. 528. 1848; Hook. f. Fl. Brit. India 3: 304. 1881. *E. erecta* L. Mant. 2: 286. 1771; Cooke, Fl. Pres. Bombay 2: 95. 1958 (Repr. ed.). *Bhangra*, *Maka*.

Herbs, c 0.75 m high, erect or prostrate, strigosely hirsute. Leaves c 9 x 4 cm, elliptic-lanceolate to oblong-lanceolate, apex acute, margins serrate, appressed strigose hairy. Heads white, c 1 cm across, axillary and terminal, solitary or fascicled, c 1.5 cm long, pilose, pedunculate. Achenes more or less triquetrous, c 0.3 cm long.

Fls. & Frts. : August–October.

Distrib. : Common; usually found in wet or marshy places along with *Alternanthera sessilis*. Aruna river banks, Mangrul village; Umarda forest nursery.

Notes : Linnaeus (1753) described *Verbesina prostrata* L. (page 902), *V. alba* L. (page 902) and *V. pseudo-acmella* L. (page 901). It has been found that all the three names denote only a single species of which there are many forms although the forms do not merit even a varietal status.

Again in 1771, Linnaeus reduced the above three species to two and described *Eclipta prostrata* and *E. erecta* L. The former name is based on *Verbesina prostrata* L. (1753) whereas the latter dated only from 1771. Therefore, *E. prostrata* is accepted here.

EMILIA Cass.

Emilia sonchifolia (L.) DC. Prodr. 6: 302. 1837; Koster in Blumea 26: 238. 1980; 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*.

Herbs, c 35 cm high. Leaves radical, c 5.0 x 2.2 cm, obovate, subentire or lyrate-pinnatifid; caudine c 6.0 x 2.2 cm, apex acute or obtuse. Heads pink, c 1.5 cm long, in lax corymbs. Achenes narrowly oblong, 5-angled, angles scabrid; pappus copious, white, soft, minutely hairy.

Fls. & Frts. : August–November.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 367. 1982.

Distrib. : Common. Khandala R.F.; Kharad talao banks, Hiwri R.F.

GLOSSOCARDIA Cass.

Glossocardia bosvallea (L.f.) DC. in Wight, Contrib. Bot. Ind. 19. 1834. *Verbesina bosvallea* L. f. Suppl. 379. 1781. *Glossocardia linearifolia* Cass. in Dict. Sc. Nat. 19: 62. 1821; Hook. f. Fl. Brit. India 3: 308. 1881; Cooke, Fl. Pres. Bombay 2: 100. 1958 (Repr. ed.). *Phattarsuva*, *Pitpapda*.

Herbs, c 5 cm high, diffuse, stem angular. Leaves c 2 cm long, alternate, bipinnatisect. Heads c 1 cm long, terminal and axillary, solitary. Achenes c 0.8 cm long, narrowly oblong.

Fls. & Frts. : August–October.

Illus. : Wight, Ic. t. 1110. 1846; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 372. 1982.

Distrib. : Sparse; found among grasses in wet seasons. Dhansala, Washim–Pusad road; Durg R.F.

GNAPHALIUM L.

Gnaphalium polycaulon Pers. Syn. Pl. 2: 421. 1807; Grierson in Notes Roy. Bot. Gard. Edinburgh 31: 137. 1971. *G. indicum* auct. non L. 1753; Hook. f. Fl. Brit. India 3: 289. 1881; Cooke, Fl. Pres. Bombay 2: 87. 1958 (Repr. ed.).

Herbs, c 30 cm high. Leaves c 5.0 x 0.5 cm, upper sessile, lower petioled, linear-obovate-spathulate, apex shortly apiculate,

occasionally glabrate above. Heads white in terminal, c 4 cm long spikes. Achenes minute, oblong, papillose; pappus hairs uniseriate, white.

Fls. & Frts. : December–March.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 373. 1982.

Distrib. : Commonly found in wet places. Waghadi nadi, Yelabara.

GONIOCAULON Cass.

Goniocaulon indicum (Klein ex Willd.) C.B.CI. Comp. Ind. 236. 1876; Jeffrey in Kew Bull. 22: 134. 1968 *Serratula indica* Klein ex Willd. Sp. Pl. 3: 1642. 1803. *Goniocaulon glabrum* Cass. in Bull. Soc. Philom. 34. 1817; Hook. f. Fl. Brit. India 3: 377. 1881; Cooke, Fl. Pres. Bombay 2: 113. 1958 (Repr. ed.). *Kadkusumba*.

Herbs, c 1 m high, erect, stem angled. Leaves c 7.0 x 2.3 cm, alternate, linear-oblong to obovate, margins serrate, black gland dotted. Heads purple, in axillary and terminal corymbs, occasionally paniculate. Achenes c 0.5 cm long, oblong, upto 20 ribbed; pappus c 0.7 cm long, the scales oblanceolate, unequal, ciliolate on margins.

Fls. & Frts. : November–January.

Illus. : Wight, Ic. t. 479. 1841 (*Amberboa indica*).

Distrib. : Sparse. Karanji.

LAGASCEA Cav.

Lagascea mollis Cav. in Anal. Ci. Nat. 6: 331, t. 44. 1803; Hook. f. Fl. Brit. India 3: 302. 1881; Cooke, Fl. Pres. Bombay 2: 93. 1958 (Repr. ed.). *Jharvad*.

Herbs or undershrubs, c 1 m high, grey-pubescent; stem faintly angled and striate. Leaves c 5.5 x 3.0 cm, lower opposite, upper alternate, ovate-acuminate, silky beneath, somewhat coarse hairy above. Heads many on a common receptacle supported by bract-like leaves; flowers white with a pinkish tinge. Achenes cuneate, white tomentose; pappus a fimbriate cup.

Fls. & Frts. : August–December.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 378. 1982.

Distrib. : Common; usually found as a weed in cultivated fields and waste places. Jamwadi talao banks, Yavatmal; Khandala (weed in *Cicer arietinum* fields); Majra village, Patanbori range.

LAUNAEA Cass.

Launaea procumbens (Roxb.) Ramayya & Rajagopal in Kew Bull. 23: 465. 1969. *Prenanthes procumbens* Roxb. Fl. Ind. 3: 404. 1832. *Launaea nudicaulis* Hook. f. Fl. Brit. India 3: 416. 1881 non Less. 1832; Cooke, Fl. Pres. Bombay 2: 122. 1958 (Repr. ed). *Pathari*.

Herbs, c 35 cm high. Leaves c 12.5 x 2.5 cm, oblong-ob lanceolate, segments ovate, margins serrulate. Heads c 1.8 cm long, solitary or fascicled on the flowering stem, and in terminal racemes. Achenes c 0.2 cm long, columnar, thickly ribbed; pappus copious, of simple white multiseriate hairs connate at base in a deciduous ring.

Fls. & Frts. : Throughout the year.

Illus. : Mahesh, Illus. Fl. Delhi f. 99. 1966 (*L. nudicaulis*).

Distrib. : Common; usually found on roadsides or as weed in cultivated fields. Karanji, weed in wheat fields.

PARTHENIUM L.

Parthenium hysterophorus L. Sp. Pl. 988. 1753; Rolla Rao in J. Bombay nat. Hist. Soc. 54: 218, t. 1. 1956.

Herbs, c 1m high, erect, pubescent, stem striate. Leaves c 15 cm long, alternate, appressed hairy, densely so beneath. Heads c 0.4 cm across, in terminal paniculate cymes. Achenes c 0.2 cm long, obovoid; pappus minute.

Fls. & Frts. : August–March.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 382. 1982.

Distrib. : Common. Penganga river banks, Kharbi; P.W.D. Deputy Engineer's office compound, Yavatmal.

Notes : Observed only sparsely at Penganga river banks, Kharbi range during December, 1976. In February, 1977 it was found to be quite abundant at the same spot. Also seen in Yavatmal town and Darwah. Now it has spread almost throughout the district.

Though it was suspected by Rolla Rao, *op. cit.* as a new entrant to the Flora of India, Bennet *et al.* (Indian J. For. 1: 128–131. 1978) and Maiti (*Ibid.* 6: 328. 1983) have established that this plant has been introduced in Indian Botanic Garden, Howrah around 1810. However, its presence remained obscure and since Rolla Rao's report, botanists have taken cognisance of this plant in various parts of India and have initiated studies on its obnoxious effects on man and cattle.

SCLEROCARPUS Jacq.

Sclerocarpus africanus Jacq. ex Murr. Syst. Veg. ed. 14. 783. 1784; Hook. f. Fl. Brit. India 3: 305. 1881; Cooke, Fl. Pres. Bombay 2: 96. 1958 (Repr. ed.).

Herbs, c 1 m high, erect, stem striate, hispid. Leaves c 5.0 x 2.5 cm, mostly alternate, occasionally opposite towards the apex, apex acute, margins serrate, appressed pubescent. Heads yellow, c 1 cm across, sessile, solitary, terminal. Achenes c 0.5 cm long, obovoid, ribbed, enclosed in the rough, rugose, beaked palea; pappus 0.

Fls. & Frts. : August–December.

Distrib. : Sparse. Dhansala, Washim–Pusad road, Hiwri temple, Hiwri R.F.

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.); Boulos in Bot. Notis. 113: 412. 1960. *Mhatara*.

Herbs, c 0.5 m high, glabrescent. Leaves c 15.0 x 6.5 cm, caudine and radical, the former alternate, runcinate-pinnatifid, dentate, apex acuminate. Heads yellow, c 1.5 cm long, in irregular umbellate cymes. Achenes obovoid, ribbed, transversely muriculate; pappus copious, multiseriate, hairs white, soft and silky, united at base in a deciduous ring.

Fls. & Frts. : December–March.

Illus. : Wight, Ic. t. 1141. 1846 (*S. ciliatus* Lam. Fl. Fr. 2: 87. 1778); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 385. 1982.

Distrib. : Sparse; found as a weed in wheat fields. Umarkhed.

SPHAERANTHUS L.

Sphaeranthus indicus L. Sp. Pl. 1314. 1753; Hook. f. Fl. Brit. India 3: 275. 1881, p.p.; Cooke, Fl. Pres. Bombay 2: 84. 1958 (Repr. ed.). *Gorakh mundi*.

Herbs, procumbent, young parts hairy. Leaves c 5.0 x 1.5 cm, sessile, alternate, decurrent, obovate to oblanceolate, irregularly serrate, teeth spiny, margins glandular hairy, pubescent. Heads pink in globose clusters, c 1 cm across. Achenes angular, subglabrous; pappus o.

Fls. & Frts. : November–March.

Illus. : Wight, Ic. t. 1094. 1846 (*S. hirtus* Willd. Sp. Pl. 3: 1395. 1802); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 386. 1982.

Distrib. : Commonly found in waste places and banks of ponds. Kharad talao banks, Hiwri R.F., Yavatmal; Mukutban talao banks.

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.); Powell in Brittonia 17: 80. 1965.

Herbs, spreading, pilose. Leaves c 5.0 x 2.5 cm, opposite, ovate, apex acute, shortly appressed hairy from glandular bases. Heads yellow, c 1 cm across, on terminal, c 15 cm long peduncles. Achenes oblong, hairy.

Fls. & Frts. : Throughout the year.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 391. 1982.

Distrib. : Common. Hiwri R.F.; Jamwadi talao banks, Yavatmal; Khandala R.F.; Pusad–Yavatmal road, 15 km point.

VERNONIA Schreb.

Vernonia cinerea (L.) Less. in Linnaea 4: 291. 1829; Hook. f. Fl. Brit. India 3: 233. 1881, p.p.; Cooke, Fl. Pres. Bombay 2: 65. 1958 (Repr. ed.). *Conyza cinerea* L. Sp. Pl. 862. 1753. *Sahadevi*.

Herbs, c 0.75 m high, young branches and inflorescence axis pubescent. Leaves c 5.5 x 4.0 cm, elliptic or ovate, size and shape variable, apex obtuse or subacute, margins subentire or shallowly crenate, glabrescent. Heads purple, c 0.5 cm across, in terminal paniculate cymes. Achenes c 0.2 cm long, pubescent.

Fls. & Frts. : Throughout the year.

Illus. : Mahesh. Illus. Fl. Delhi f. 101. 1966.

Distrib. : Common. Durg talao banks; Mangrul village, near Aruna river (weed in wheat fields).

VICOA Cass.

Vicoa indica (L.) DC. in Wight, Contrib. Bot. Ind. 10. 1834. *Inula indica* L. Sp. Pl. ed. 2. 1236. 1762. *Vicoa auriculata* Cass. in Ann. Sci. Nat. Paris 1, 17: 418. 1829; Hook. f. Fl. Brit. India 3: 297. 1881; Cooke, Fl. Pres. Bombay 2: 38. 1958 (Repr. ed.). *Sonkadi*.

Herbs, c 1 m high; stem striate, sparsely pubescent. Leaves c 4.5 x 1.0 cm, alternate, linear to oblong-lanceolate, margins entire or serrulate, appressed hairy. Heads bright yellow, c 1 cm across, axillary, solitary or in leaf-opposed cymes. Achenes c 0.15 cm long hairy; pappus of unequal hairs, c 0.3 cm long.

Fls. & Frts. : October-January.

Illus. : Wight, Ic. t. 1148. 1846; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 395. 1982.

Distrib. : Common; found as a forest undergrowth during winter; occasionally as a weed in cultivated fields too. In dried up nallahs near Aruna river, Hiwri R.F., Yavatmal; Mathni felling series, Parwa.

XANTHIUM L.

Xanthium strumarium L. Sp. Pl. 987. 1753; Hook. f. Fl. Brit. India 3: 303. 1881; Cooke, Fl. Pres. Bombay 2: 94. 1958 (Repr. ed.). *Shankheshwar*.

Herbs, c 1.5 m high, scabrid. Leaves c 8.5 x 9.5 cm, alternate, c 7 cm long, petioled, broadly triangular-ovate, 3-7-lobed, margins irregularly serrate, base sub-truncate or slightly cuneate, scabrous due to the bulbous based, short, bristle-like hairs. Heads pale green, in terminal and axillary, c 7 cm long peduncles. Achenes c 0.75 cm long, ellipsoid, compressed, black, shortly aristate, 2 per head; utricles formed by the hardened involucre and covered with hooked spines; pappus o.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1104. 1846 (*X. indicum* Koen. ex Roxb. Fl. Ind. 3: 601. 1832).

Distrib. : Found throughout in waste places and road sides. Near Aruna river, Mangrul village.

Cultivated species :

Eupatorium triplinerve Vahl, Symb. Bot. 3: 97. 1794, a native of Tropical America is being grown as a hedge plant in Umarda forest nursery, Yavatmal (160207).

Zinnia elegans Jacq. Ic. Pl. Rar. 3: t. 589. 1793 was found to grow abundantly along roadsides, especially on Pandarkawada-Bori road (156576).

PRIMULACEAE

ANAGALLIS L.

Anagallis arvensis L. Sp. Pl. 211. 1753; Hook. f. Fl. Brit. India 3: 506. 1882; Cooke, Fl. Pres. Bombay 2: 139. 1958 (Repr. ed.); P. Taylor in Kew Bull. 1955: 329. 1955.

Herbs, c 25 cm high, branched from the base; stem tetragonal, margins winged. Leaves c 2 x 1 cm, sessile, opposite, elliptic or ovate, apex subacute. Flowers blue, solitary, axillary, pedicels c 2.5 cm long, recurved in fruit. Capsules c 0.3 cm across, globose, circumscissile; calyx and style persistent. Seeds trigonous, brown.

Fls. & Frts. : December–March.

Illus. : Wight, Ic. t. 1205. 1848 (*A. latifolia* L. op. cit. 149); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 404. 1982.

Distrib. : Commonly occurring as a weed in wheat fields. Aruna river banks, Kharad.

SAPOTACEAE

MADHUCA J.F.Gmel.

Madhuca longifolia (Koen.) MacBride var. *latifolia* (Roxb.) Chev. in Rev. Bot. Appl. 23: 149. 1943; van Royen in Blumea 10: 55. 1960. **Bassia latifolia** Roxb. Pl. Cor. 1: 20. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 3: 544. 1882; Cooke, Fl. Pres. Bombay 2: 152. 1958 (Repr. ed.); Witt, List. 49. 1908. *Mahua*.

Trees, c 20 m high, bark grey, rough, latex present. Leaves c 15 x 8 cm, clustered at the ends of branchlets, coriaceous, elliptic, apex sub-acuminate, petioles c 2.5 cm long. Buds rusty pubescent; flowers creamy white in dense fascicles at ends of branchlets. Berries c 3.5 cm long, ovoid. Seeds ovoid, elliptic, c 3.25 cm long, shining black.

Fls. & Frts. : February–May.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 157, f. 372. 1911 (*B. latifolia*).

Distrib. : Common. Kharbi.

Cultivated species :

Mimusops elengi L. is planted along roadsides and in gardens for its fragrant flowers and edible fruits.

EBENACEAE

DIOSPYROS L.

- | | | |
|--|-----|-----------------------|
| 1. Leaves alternate, c 4.2 x 2.2 cm; drupes c 0.4 cm across | ... | <i>D. chloroxylon</i> |
| 1. Leaves alternate and sub—opposite, c 16 x 10 cm; drupes c 3 cm across | ... | <i>D. melanoxylon</i> |

Diospyros chloroxylon Roxb. Pl. Cor. 1: 38, t. 49. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 3: 560. 1882; Cooke, Fl. Pres. Bombay 2: 166. 1958 (Repr. ed.); Witt, List. 49. 1908. *Nensi, Ninai*.

Trees, c 4 m high, thorny, young branches greyish. Leaves elliptic or obovate, slightly pubescent above, fulvous hairy beneath. Male flowers subsessile, axillary, 4–10-fascicled; female flowers sessile, solitary, axillary. Drupes globose. Seeds 2–3, oblong.

Fls. & Frts. : June–September.

Illus. : Wight, Ic. t. 1224. 1848 (♂) & 1588 bis. 1850 (♀) (*D. capitulata*).

Distrib. : Rather rare. Mehroli, Wani range, 156687.

D. melanoxylon Roxb. Pl. Cor. 1: 36, t. 46. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 3: 584. 1882; Cooke, Fl. Pres. Bombay 2: 159. 1958 (Repr. ed.); Witt, List. 50. 1908. *Temru, Tendu*.

Trees, c 12 m high, bark black, young parts tomentose. Leaves elliptic or elliptic-ovate, coriaceous, apex obtuse or sub-acute, tomentose beneath. Male flowers in dense cymes, densely tawny-tomentose; female solitary. Drupes globose, yellow, pubescent when young, glabrous at length. Seeds c 1.6 x 0.9 cm, dark brown, 2-8, rugose.

Fls. & Frts. : March-September.

Distrib. : Common; found along with *Boswellia serrata*, *Lagerstroemia parviflora*, *Tectona grandis* and *Terminalia* spp. E. Gondwakadi R.F.; Jholapur-Pardi forest, Karanji; Kharbi.

OLEACEAE

1. Scandent shrubs	...	JASMINUM
1. Trees :		
2. Leaves simple; capsules sub-orbicular, not woody	...	NYCTANTHES
2. Leaves imparipinnately compound; capsules ovoid, woody	...	SCHREBERA

JASMINUM L.

Jasminum auriculatum Vahl, Symb. Bot. 3: 1. 1794; C.B.CI. in Hook. f. Fl. Brit. India 3: 600. 1882; Cooke, Fl. Pres. Bombay 2: 174. 1958 (Repr. ed.). *Jai*.

Shrubs, scandent, all parts more or less hairy. Leaves 3-foliolate, terminal leaflet c 4.5 x 3.0 cm, ovate, apiculate, lateral minute or sometimes wanting, all tomentose. Flowers white, in pubescent corymbose cymes. Berries c 0.6 cm across, black when ripe. Seed 1.

Fls. & Frts. : September-December.

Illus. : Wight, Ic. t. 700. 1843.

Distrib. : Not common; found to climb on *Ziziphus oenoplia*. Phiski.

NYCTANTHES L.

Nyctanthes arbor-tristis L. Sp. Pl. 6. 1753; C.B.CI. in Hook. f. Fl. Brit. India 3: 603. 1882; Cooke, Fl. Pres. Bombay 2: 176. 1958 (Repr. ed.); Witt, List. 50. 1908. *Har*, *Parijath*.

Trees, c 6 m high, young branches quadrangular, scabrid. Leaves

c 11.0 x 6.5 cm, opposite, ovate, apex acuminate, base rounded, scabrid with bulbous based hairs above, pubescent beneath. Flowers in trichotomous cymes; corolla tube bright red, lobes white. Capsules compressed, parallel to the septum, c 1.5 x 1.5 cm, notched at apex, prominently veined. Seeds 2, flat.

Fls. & Frts. : Throughout the year.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 192, f. 387. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 421. 1982.

Distrib. : Usually found along with *Butea monosperma*. Durg R.F.; Karanji R.F.

SCHREBERA Roxb.

Schrebera swietenioides Roxb. Pl. Cor. 2: 1, t. 101. 1799; C.B.Cl. in Hook. f. Fl. Brit. India 3: 604. 1882; Cooke, Fl. Pres. Bombay 2: 177. 1958 (Repr. ed.); Witt, List. 50. 1908. *Mokha*.

Trees, c 20 m high, bark ashy. Leaves opposite, rhachis upto 25 cm long, grooved; leaflets c 9.0 x 4.5 cm, 5-7 (-9), opposite, elliptic or ovate or elliptic-lanceolate, apex acuminate, base usually unequal, punctate beneath. Flowers white in terminal and axillary dichotomously paniculate cymes. Capsules c 5.5 x 2.7 cm (above the middle), loculicidally 2-valved, brown spotted. Seeds pendulous, testa winged.

Fls. & Frts. : April-December.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 194, f. 388. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 423. 1982.

Distrib. : Common; usually found along with *Acacia* spp., *Butea monosperma*, *Emblica officinalis*, *Maytenus emarginata*, and *Woodfordia fruticosa*. Jholapur-Pardi forest, Karanji.

APOCYNACEAE

1. Corolla with coronary scales; anthers conniving in a cone around and adherent to the stigma, the cells produced at base in an empty spur; coma of the seeds basal ... **WRIGHTIA**
1. Corolla without coronary scales; anthers free from the stigma, the cells rounded at the base; coma of the seeds apical ... **HOLARRHENA**

HOLARRHENA R.Br.

Holarrhena pubescens (Buch.-Ham.) Wall. ex G. Don, Gen.

Syst. 4: 78. 1837; Panigr. in Taxon 36: 466. 1987. *Echites pubescens* Buch.-Ham. in Trans. Linn. Soc. 13: 524. 1822. *Holarrhena antidysenterica* (Roth) 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.); Witt, List. 52. 1908. *Echites antidysenterica* Roth, Nov. Pl. Sp. 138. 1821. *Kudal*.

Trees, c 6 m high. Leaves c 25 x 10 cm, opposite, ovate, elliptic or ovate-oblong, apex obtuse. Flowers white, in terminal, corymbose cymes. Follicles c 35.0 x 0.8 cm, terete, elongate, connected at the tip, otherwise free. Seeds linear or oblong; coma deciduous of long silky brown hairs.

Fls. & Frts. : April–October.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 217, f. 398. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 430. 1982.

Notes : Report of this species is based on Witt (*op. cit.*).

WRIGHTIA R. Br.

Wrightia tinctoria R. Br. ssp. *rothii* (G. Don) P. t. Ngan in Ann. Missouri bot. Gard. 52: 144. 1965. *W. rothii* G. Don, Gen. Syst. Gard. Bot. 4: 86. 1838 ex char. *W. tinctoria* R. Br. var. *rothii* (G. Don) Hook. f. Fl. Brit. India 3: 635. 1882. *W. tinctoria* sensu Cooke, Fl. Pres. Bombay 2: 200. 1958, *p.p.*, non R. Br. 1811.

Trees, 3–9 m high, young parts pubescent. Leaves c 18 x 7 cm, opposite, elliptic-oblong to elliptic-ovate, apex acuminate, pubescent. Flowers white, in lax, terminal dichasial cymes, puberulous. Follicles 2, c 42 cm long, free, sometimes coherent at the tip only, lenticellate. Seeds c 1.5 cm long, fusiform; coma deciduous, c 4 cm long.

Fls. : December–May.

Frts. : Throughout the year.

Distrib. : Common. Karanji; Pusad–Khandala road.

Cultivated species :

Plumeria rubra L. is cultivated in gardens for its flowers which are useful in worshipping.

ASCLEPIADACEAE

1. *Plants erect* :

2.	Shrubs; leaves sessile, opposite-decussate, cordate at base	...	CALOTROPIS
2.	Herbs; leaves petiolate, opposite, acute at base	...	TYLOPHORA
1.	Plants climbing or twining :		
3.	Leaves suborbicular, cordate	...	PERGULARIA
3.	Leaves elliptic, ovate-oblong or linear, never cordate :		
4.	Follicles terete, upto 20 cm long	...	HEMIDESMUS
4.	Follicles lanceolate or ovoid-lanceolate, not more than 12 cm long :		
5.	Leaves linear-lanceolate; plants partially hydrophytic	...	OXYSTELMA
5.	Leaves other than linear-lanceolate; plants always terrestrial :		
6.	Leaves elliptic-oblong, whitish beneath	...	CRYPTOLEPIS
6.	Leaves broadly ovate, softly pubescent below	...	WATTAKAKA

CALOTROPIS R. Br.

Calotropis gigantea (L.) R.Br. in Ait. Hort. Kew. ed. 2. 2: 78. 1811; Hook. f. Fl. Brit. India 4: 17. 1883; Cooke, Fl. Pres. Bombay 2: 214. 1958 (Repr. ed.); Witt, List. 54. 1908; Sant. & Irani in Univ. Bombay Bot. Mem. 4: 17. 1962. *Asclepias gigantea* L. Sp. Pl. 214. 1753. *Ak, Rui.*

Shrubs, c 3 m high, branches, leaves and inflorescence covered with loose, soft, white wool. Leaves c 13.5 x 10.0 cm, obovate-oblong, apex sub-acuminate, glaucous green. Flowers purple, in terminal and axillary pedunculate cymes. Follicles in pairs, c 12 x 4 cm, inflated, fleshy, thick. Seeds numerous, ovate, flat, comose.

Fls. & Frts. : Throughout the year.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 240, f.408. & 409. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 437. 1982.

Distrib. : Common. Aruna river banks, Hiwri R.F., Yavatmal; Karanji; Khandala.

CRYPTOLEPIS R. Br.

Cryptolepis buchananii R. & S. Syst. Veg. 4: 409. 1819; Hook. f. Fl. Brit. India 4: 5. 1883; Cooke, Fl. Pres. Bombay 2: 210. 1958 (Repr. ed.); Witt, List. 54. 1908; Sant. & Irani in Univ. Bombay Bot. Mem. 4: 91. 1962. *Kao vel, Kawa vel.*

Climbers, bark peeling off in papery flakes. Leaves c 9.5 x 6.0 cm, opposite, abruptly apiculate. Flowers greenish-white, in terminal and axillary cymes. Follicles c 10 cm long, stout. Seeds oblong, flattened, c 0.35 cm, comose at apex.

Fls. & Frts. : June–December.

Illus. : Wight, Ic. t. 494. 1840.

Distrib. : Common; found usually to climb on *Maytenus emarginata*. Khandala slopes on Washim road.

HEMIDESMUS R. Br.

Hemidesmus indicus (L.) R. Br. in Ait. Hort. Kew. ed. 2. 2: 75. 1811; Hook. f. Fl. Brit. India 4: 5. 1883; Cooke, Fl. Pres. Bombay 2: 210. 1958 (Repr. ed.); Witt, List. 54. 1908; Sant. & Irani in Univ. Bombay Bot. Mem. 4: 96. 1962. *Periploca indica* L. Sp. Pl. 211. 1753. *Anant vel.*

Shrubs, twining, pubescent. Leaves c 8.0 x 4.5 cm, opposite, elliptic-oblong, apex abruptly acuminate, minutely pubescent beneath. Flowers pale pink, crowded in axillary, opposite, sub-sessile cymes. Follicles slender, divaricate. Seeds c 0.7 cm long, oblong, flat, ridged ventrally, coma apical.

Fls. & Frts. : September–March.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 233, f. 403. 1911.

Distrib. : Common; found to climb on *Acacia* spp., *Maytenus emarginata* etc. Bhiwkund R.F.; E. Gondwakadi R.F.; Karanji; Khandala R.F.

OXYSTELMA R. Br.

Oxystelma secamone (L.) Karst. Deut. Fl. 1031. 1880–1883; Sant. & Irani in Univ. Bombay Bot. Mem. 4: 67. 1962. *Periploca secamone* L. Mant. 216. 1771. *Oxystelma esculentum* R. Br. in Mem. Wern. Soc. 1: 40. 1810; Hook. f. Fl. Brit. India 4: 17. 1883; Cooke, Fl. Pres. Bombay 2: 216. 1958 (Repr. ed.); Witt, List. 55. 1908. *Dudhani*.

Herbs, twining, rooting at lower nodes. Leaves c 10.0 x 0.5 cm, opposite, apex acute. Flowers rose coloured, in axillary, sub-umbellate or racemose cymes. Follicles 2, often 1 absent, c 6.5 cm long, ovoid-lanceolate, rounded at base and winged. Seeds ovoid, winged on margin, silky comose at apex.

Fls. & Frts. : August–December.

Illus. : Mahesh, Illus. Fl. Delhi f. 125. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 451. 1982.

Distrib. : Not common. Kayar village, on Wani–Mukutban road.

Notes : Found to be a terrestrial herb on bunds of cultivated paddy fields and when it enters the stream nearby, it develops floating roots and looks like a regular aquatic plant. Both types occur side by side.

PERGULARIA L.

Pergularia daemia (Forssk.) Chiov. Result. Sc. Miss. Stefan. Paoli Somal. Ital. 1: 115. 1916; Sant. & Irani in Univ. Bombay Bot. Mem. 4: 74. 1962. *Asclepias daemia* Forssk. Fl. Aeg.–Arab. 51. 1775. *Daemia extensa* (N. Jacq.) R. Br. in Ait. Hort. Kew. ed. 2. 2: 76. 1811; Hook. f. Fl. Brit. India 4: 20. 1883; Cooke, Fl. Pres. Bombay 2: 219. 1958 (Repr. ed.); Witt, List. 55. 1908. *Utarnavel, Utarni*.

Climbers, tomentose. Leaves c 3.5 x 3.75 cm, apex acuminate, pubescent beneath. Flowers pale greenish-yellow, in axillary pedunculate cymes. Follicles 2, c 6.0 x 1.25 cm, lanceolate, acuminate, softly echinate, often recurved. Seeds many, c 0.6 x 0.4 cm, ovate, minutely pubescent, crenate at the rounded base; coma c 4 cm long, apical.

Fls. & Frts. : August–March.

Illus. : Wight, Ic. t. 596. 1842 (*D. extensa*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 453. 1982.

Distrib. : Common. Durg camp; Karanji.

TYLOPHORA R.Br.

Tylophora fasciculata Buch.–Ham. ex Wight, Contrib. Bot. Ind. 50. 1834; Hook. f. Fl. Brit. India 4: 40. 1883; Cooke, Fl. Pres. Bombay 2: 226. 1958 (Repr. ed.); Sant. & Irani in Univ. Bombay Bot. Mem. 4: 85. 1962. *Bhindodi*.

Herbs, slender, pubescent. Leaves c 8 x 5 cm, diminishing in size upwards, ovate to ovate-lanceolate, glabrous but for hairy veins. Flowers pink in lateral umbellate cymes. Follicles lanceolate, c 5.0 x 1.25 cm. Seeds orbicular; coma c 2 cm long.

Fls. & Frts. : August–October.

Illus. : Wight, Ic. t. 848. 1844-45.

Distrib. : Not common. Majra felling series, Patan bori range.

WATTAKAKA Hassk.

Wattakaka volubilis (L.f.) Stapf in Curtis, Bot. Mag. subtab. 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; Witt, List. 55. 1908; Sant. & Irani in Univ. Bombay Bot. Mem. 4: 42. 1962. *Marsdenia volubilis* (L.f.) Cooke, Fl. Pres. Bombay 2: 166. 1904 (2: 230. 1958, Repr. ed.). *Ambri, Hirandodi*.

Shrubs, climbing, young branches pubescent, old branches lenticelled. Leaves c 10.0 x 7.5 cm, opposite, apex acuminate. Flowers yellowish-green, in lateral, long peduncled, drooping umbellate cymes. Follicles c 12.0 x 2.5 cm, lanceolate, striate. Seeds c 1.2 x 0.7 cm, ovate, margined; coma c 6 cm long.

Fls. & Frts. : April-October.

Illus. : Wight, Ic. t. 586. 1840-43 (*Hoya viridiflora* R.Br. in Mem. Wern. Nat. Hist. Soc. 1: 27. 1810); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 458. 1982.

Distrib. : Commonly found to climb on *Azadirachta indica* and *Butea monosperma*. Mukutban.

LOGANIACEAE

1. Herbs	...	MITREOLA
1. Trees	...	STRYCHNOS

MITREOLA L.

Mitreola petiolata (J.F.Gmel.) Torr. & A. Gray, Fl. N. Amer. 2: 45. 1845; Heine in Kew Bull. 23: 251. 1969. *Cynoctonum petiolatum* J.F. Gmel. Syst. Nat. ed. 13. 2: 443. 1791. *Mitreola oldenlandioides* Wall. ex DC. Prodr. 9: 9. 1845; C.B.Cl. in Hook. f. Fl. Brit. India 4: 79. 1883; Cooke, Fl. Pres. Bombay 2: 246. 1958 (Repr. ed.).

Herbs, c 30 cm high. Leaves c 7 x 4 cm, opposite, membranous, ovate-oblong, apex sub-acuminate, more or less glabrous; stipules interpetiolar, small. Flowers white, in 2-3-chotomous terminal or

axillary, peduncled cymes, often unilateral. Capsules c 0.4 cm broad, laterally compressed, 2-horned. Seeds numerous, minute.

Fls. & Frts. : August–October.

Distrib. : Rare, found to be restricted to moist and shady localities; seen only on two occasions. Bhiwkund R.F., 156598; also found in Morchandi felling series near Kharbi range.

STRYCHNOS L.

Strychnos potatorum L. f. Suppl. 148. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 4: 90. 1883; Cooke, Fl. Pres. Bombay 2: 251. 1958 (Repr. ed.); Witt, List. 56. 1908. *Mirmali*.

Trees, c 8 m high, bark grey, cracked. Leaves c 9 x 5 cm, opposite, elliptic, coriaceous, acute at both ends. Flowers white in axillary or terminal cymes. Berries c 1 cm across, globose. Seeds 1–2.

Fls. & Frts. : May–October.

Illus. : Wight, Illus. t. 156. 1840.

Distrib. : Not common. Mohroli, Wani range.

GENTIANACEAE

1. Flowers in axillary, sessile clusters	...	ENICOSTEMA
1. Flowers in peduncled cymes (solitary in <i>Canscora decussata</i>) :		
2. Ovary 2-celled	...	EXACUM
2. Ovary 1-celled :		
3. Flowers pale yellow; stigma sub-entire	...	HOPPEA
3. Flowers white or pink; stigma deeply 2-lobed	...	CANSORA

CANSORA Lam.

1. Calyx prominently winged; flowers white, solitary	...	<i>C. decussata</i>
1. Calyx not winged; flowers pink in terminal and axillary cymes	...	<i>C. decurrens</i>

Canscora decurrens Dalz. in Hook. J. Bot. Kew Gard. Misc. 2: 136. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 103. 1883; Cooke, Fl. Pres. Bombay 2: 257. 1958 (Repr. ed.).

Herbs, c 20 cm high, diffuse, stems angular, winged. Leaves c 4 x 1

cm, lanceolate, apex acute, decurrent at base along the whole length of internode. Capsules cylindric membranous. Seeds minute, angular.

Fls. & Frts. : November–March.

Distrib. : Common; found usually as a weed in wheat fields. Aruna river banks, Kharad; Khandala R.F.

C. decussata (Roxb.) J.A. & J.H. Schult. Mant. 3: 229. 1827; C.B.Cl. in Hook. f. Fl. Brit. India 4: 104. 1883. *Pladera decussata* Roxb. Fl. Ind. 1: 418. 1820.

Herbs, c 15 cm high, erect; stem angular, winged. Leaves c 2.0 x 0.7 cm, opposite, sessile, ovate to lanceolate, acute, 3–5-nerved at base. Capsules oblong.

Fls. & Frts. : September–October.

Distrib. : Rare. Bhiwkund R.F., 156595.

Notes : This species has been recorded by Malhotra & Moorthy (1971) for the first time from Chandrapur Dt., Maharashtra. This is the second report of the species.

ENICOSTEMA Bl.

Enicostema axillare (Lam.) Raynal in Adansonia 2, 9: 75. 1969. *Gentiana axillaris* Lam. Ill. Gen. 1: 487. 1793. *Enicostema littorale* non Bl. 1826; C.B.Cl. in Hook. f. Fl. Brit. India 4: 101. 1883; Cooke, Fl. Pres. Bombay 2: 255. 1958 (Repr. ed.). *Chota Karait*.

Herbs, 4–angled. Leaves c 4.0 x 0.6 cm, opposite, sessile, linear to linear-oblong, apex sub–acute, 3–nerved. Flowers white. Capsules c 0.4 cm long, ellipsoid, septically 2–valved. Seeds many, sub–globose, reticulate.

Fls. & Frts. : July–October.

Illus. : Wight, Ic. t. 600. 1842 (*Adenema hyssopifolium* (Willd.) G. Don, Syst. 4: 201. 1837); Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 463. 1982.

Distrib. : Common; found as a forest undergrowth or in open plains. Kharad talao, Hiwri R.F.; Penganga felling series, Kharbi range; Pusad–Yavatmal road.

EXACUM L.

Exacum pedunculatum L. Sp. Pl. 112. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 97. 1883; Cooke, Fl. Pres. Bombay 2: 253. 1958 (Repr. ed.); Klackenberg in Nord. J. Bot. 3: 367. 1983.

Herbs, c 25 cm high, erect, quadrangular. Leaves c 3.5 x 0.8 cm, opposite, sessile, 3-nerved, elliptic-oblong, apex sub-acute. Flowers purple, in axillary and terminal cymes. Capsules c 0.25 cm across, globose. Seeds numerous, minute.

Fls. & Frts. : September–February.

Illus. : Wight, Ic. t. 336. 1840; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 464. 1982.

Distrib. : Common; found on dried up banks of tanks and streams among grasses. Khandala R.F.; Kharad talao banks, Hiwri R.F., Yavatmal; Nirguda river, Punwat village, Wani range.

HOPPEA Willd.

Hoppea dichotoma Willd. in Ges. Naturf. Freunde Berlin Neue Schriften 3: 435. 1801; C.B.Cl. in Hook. f. Fl. Brit. India 4: 100. 1883; Cooke, Fl. Pres. Bombay 2: 256. 1958 (Repr. ed.).

Herbs, c 15 cm high, erect. Leaves c 0.6 x 0.4 cm, opposite, sessile, ovate, apex acute. Flowers in axillary or terminal, dichotomous cymes. Capsules globose, c 0.4 cm across. Seeds many, minute, obscurely reticulate.

Fls. & Frts. : September–December.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 465. 1982.

Distrib. : Not common; found among grasses in open, moist places. Karegaon, near Penganga river, Bori range.

MENYANTHACEAE

NYMPHOIDES Hill

Nymphoides hydrophyllum (Lour.) O. Ktze. Rev. Gen. Pl. 429. 1891; Chater in Hara *et al.* Enum. Flower. Pl. Nepal. 3: 95. 1982. **Menyanthes hydrophllum** Lour. Fl. Cochinch. 105. 1790. **Nymphoides cristata** (Roxb.) O. Ktze. Rev. Gen. Pl. 429. 1891; Subr. Aq. Ang. 24, f. 16. 1962. **Menyanthes cristata** Roxb. Pl. Cor. t. 105. 1798.

Limanthemum cristatum (Roxb.) Griseb. Gen. Sp. Gent. 342. 1839; C.B.Cl. in Hook. f. Fl. Brit. India 4: 131. 1883; Cooke, Fl. Pres. Bombay 2: 261. 1958 (Repr. ed.). *Kumudini*.

Herbs, stem petiole-like. Leaves c 7.5 x 8.5 cm. Flowers white, in clusters at nodes. Capsules c 1.2 cm long, sub-globose. Seeds 7-10, tuberculate, tubercles slightly glochidiate.

Fls. & Frts. : September-March.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 466. 1982.

Distrib. : Common; found in ponds along with *Hydrilla verticillata*, *Ludwigia adscendens*, *Ottelia alismoides* and *Vallisneria spiralis*. Mukutban talao.

BORAGINACEAE

1. Trees or shrubs :

2. Trees; leaves ovate ... **CORDIA**

2. Shrubs; leaves spatulate ... **ROTULA**

1. Herbs :

3. Flowers in scorpioid cymes or spikes ... **HELIOTROPIUM**

3. Flowers solitary or in few flowered terminal cymes ... **TRICHODESMA**

CORDIA L.

Cordia macleodii (Griff.) Hook. f. & Thoms. in J. Linn. Soc. 2: 128. 1858; C.B.Cl. in Hook. f. Fl. Brit. India 4: 139. 1883; Cooke, Fl. Pres. Bombay 2: 266. 1958 (Repr. ed.); Witt, List. 56. 1906; Kazmi in J. Arnold Arbor. 51: 143. 1970. *Hemigymnia macleodii* Griff. in Calc. J. Nat. Hist. 3: 363. 1843. *Dahi palas*.

Trees, c 6 m high; stem and petioles tomentose. Leaves c 12.5 x 10.0 cm, alternate, crenate, apex obtuse, tomentose beneath. Flowers white in terminal and axillary corymbs. Drupes c 2 cm long, ovoid, acute, half enclosed in ribbed cup-shaped calyx.

Fls. & Frts. : March-May.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 272, f. 423. 1911.

Distrib. : Common. Mangrul village.

Cultivated species :

Cordia dichotoma Forst. f. is frequently planted in gardens and avenues.

HELIOTROPIUM L.

1. Calyx in fruit closely enveloping the nutlets	...	<i>H. spinum</i>
1. Calyx in fruit not closely enveloping the nutlets :		
2. Leaves obovate-spathulate	...	<i>H. ovalifolium</i>
2. Leaves linear-lanceolate	...	<i>H. marifolium</i> var. <i>wallichii</i>

Heliotropium marifolium Retz. var. *wallichii* C.B.Clarke in Hook. f. Fl. Brit. India 4: 152. 1883. *H. marifolium* non Retz. Obs. Bot. 2: 8. 1810; Cooke, Fl. Pres. Bombay 2: 280. 1958 (Repr. ed.).

Herbs, c 20 cm high, appressed hirsute, branches ascending. Leaves c 1.5 x 0.4 cm, alternate, both ends acute. Flowers white, in terminal spikes. Nutlets subglobose, bristly.

Fls. & Frts. : August–October.

Illus. : Wight, Ic. t. 1390. 1848.

Distrib. : Sparse. Katliborgaon on Pandharkawada-Sibla road, 12 km point.

Notes : Kazmi (in J. Arnold Arbor. 51: 155. 1970) treats this as a subspecies of *Heliotropium marifolium*. However, we have followed C.B. Clarke's view in maintaining the taxon as a variety.

H. ovalifolium Forssk. Fl. Aeg.-Arab. 38. 1775; C.B.Clarke in Hook. f. Fl. Brit. India 4: 150. 1883; Cooke, Fl. Pres. Bombay 2: 278. 1958 (Repr. ed.); Kazmi in J. Arnold Arbor. 51: 178. 1970.

Herbs, c 20 cm high, erect or sub-erect, appressed hairy. Leaves c 1.7x0.8 cm, alternate, apex obtuse. Flowers white, in terminal once forked, unilateral c 5 cm long spikes. Nutlets densely pubescent, acute at apex.

Fls. & Frts. : September–February.

Illus. : Wt. Ic. t. 1388. 1848 (*H. coromandelianum* Retz. Obs. Bot. 2:9. 1810).

Distrib. : Common; usually found in the banks of ponds. Durg talao banks; Mukutban.

H. supinum L. Sp. Pl. 130. 1753; C.B.CI. in Hook. f. Fl. Brit. India 4: 149. 1883; Cooke, Fl. Pres. Bombay 2 : 275. 1958 (Repr. ed.); Kazmi in J. Arnold Arbor. 51:179. 1970.

Herbs, spreading, villous. Leaves c 2.3 x 1.1 cm, alternate, ovate-elliptic or obovate, apex obtuse. Flowers white, in simple or once forked cymes. Nutlets usually margined, rounded and tuberculate on the dorsal surface.

Fls. & Frts. : December-March.

Illus. : Wight, Ic. t. 1387. 1848.

Distrib. : Common; usually found on banks of ponds. Chandnitalao banks; Khandala; Mukutban talao banks.

ROTULA Lour.

Rotula aquatica Lour. Fl. Cochinch. 121. 1790. *Rhabdia lycioides* Mart. Nov. Gen. & Sp. 2: 137. 1826; C.B.CI. in Hook. f. Fl. Brit. India 4: 145. 1883; Cooke, Fl. Pres. Bombay 2: 272. 1958 (Repr. ed.); Witt, List. 57. 1908.

Shrubs, c 1 m high, bushy; branches virgate. Leaves c 2.3 x 0.8 cm, alternate, often fascicled, apex apiculate, margins hairy, surfaces hairy or glabrous. Flowers pink or purplish, 1-3 on short, lateral branchlets. Drupes c 0.15 cm across, subglobose with persistent style.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1385. 1848 (*Ehretia cuneata*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 474. 1982.

Distrib. : Common; found on edges of rivers in crevices of rocks, submerged when water level rises. Usually associated with *Homonoia retusa*. Pandharkawada-Bori road; Penganga river banks, Bori; Penganga felling series, Kharbi.

TRICHODESMA R. Br.

- | | | |
|---|-----|-------------------------|
| 1. Calyx lobes rounded at base | ... | <i>T. seychelianum</i> |
| 1. Calyx lobes cordate or hastate at base : | | |
| 2. Corolla-tube as long as the lobes, lobes recurved in flowers | ... | <i>T. indicum</i> |
| 2. Corolla-tube much longer than the lobes, lobes not recurved in flowers | ... | <i>T. sedgwickianum</i> |

Trichodesma indicum (L.) R. Br. Prodr. 149. 1810; C.B.Cl. in Hook. f. Fl. Brit. India 4: 153. 1883; Cooke, Fl. Pres. Bombay 2: 281. 1958 (Repr. ed.); Kazmi in J. Arnold Arbor. 52: 516. 1971; Banerjee & Pramanik in Bull. Bot. Surv. India 17: 110. 1975. *Borago indica* L. Sp. Pl. 137. 1753. *Chota Kalpa*.

- | | | |
|---|-----|--------------------------|
| 1. Leaves villous beneath | ... | var. <i>indicum</i> |
| 1. Leaves glabrous beneath except on the midrib and veins | ... | var. <i>amplexicaule</i> |

var. *indicum*.

Herbs, c 0.5 m high, hispid. Leaves c 6.5 x 2.2 cm, opposite, sessile, apex sub-acute, base sub-amplexicaul, white tubercled above. Flowers white. Fruits pyramidal, 4-ribbed, nutlets c 0.45 x 0.3 cm, smooth on the outer, rugosely pitted on the inner face.

Fls. & Frts. : August-January.

Illus. : Wight, Ill. Indian Bot. 2: t. 172. 1841; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 475. 1982.

Distrib. : Common. Jodmoha grass farm; Karanji; Khandala R.F.

var. *amplexicaule* (Roth) Cooke, Fl. Pres. Bombay 2: 215. 1904 p.p. (2: 282. 1958 Repr. ed.); Banerjee & Pramanik in Bull. Bot. Surv. India 17: 113. 1975. *T. amplexicaule* Roth, Nov. Sp. Pl. 104. 1821; C.B.Cl. in Hook. f. Fl. Brit. India 4: 153. 1883, p.p.

Herbs, c 35 cm high, hispid. Leaves c 9 x 4 cm, opposite, sessile, elliptic-oblong, apex subacute, base cordate or sub-amplexicaul, hairy from tubercles above. Flowers blue. Fruits pyramidal, more or less 4-ridged; nutlets 4, shining.

Fls. & Frts. : August-October.

Illus. : Mahesh. Illus. Fl. Delhi f. 134. 1966 (*T. amplexicaule*).

Distrib. : Common. Gadinala, Kharbi range; Karanji.

T. sedgwickianum Banerjee in Bull. Bot. Soc. Bengal 16: 10. (1962) 1964; Banerjee & Pramanik in Bull. Bot. Surv. India 17: 116, f. A-D. 1975. *T. amplexicaule* A. DC. in DC. Prodr. 10: 172. 1846, non Roth 1821; C.B.Cl. in Hook. f. Fl. Brit. India 4: 158. 1883, p.p. *T. indicum* var. *amplexicaule* Cooke, Fl. Pres. Bombay 2: 215. 1905 (2: 282. 1958 Repr. ed.) p.p.

Herbs, c 50 cm high, hispid. Leaves c 7.0 x 2.5 cm, opposite, sessile, ovate-oblong, hairy from tubercled bases above and on the nerves

beneath. Flowers white with a purple tinge. Fruits of 4, c 0.8 cm broad, ovoid nutlets.

Fls. & Frts. : August–October.

Illus. : Banerjee & Pramanik, *op. cit.*

Distrib. : Common; usually found on bunds of cultivated fields. Patri, near Umari village on Yavatmal–Pandharkawada road.

T. zeylanicum (Burm. f.) R. Br. Prodr. 496. 1810; C.B.Cl. in Hook. f. Fl. Brit. India 4: 154. 1883; Banerjee & Pramanik in Bull. Bot. Surv. India 17: 120. 1975. *Borago zeylanica* Burm. f. Fl. Ind. 41, t. 14, f. 2. 1768.

Herbs, c 0.75 m high, long soft hairy. Leaves c 8.5 x 2.5 cm, opposite, oblong-lanceolate, apex subacute, base narrow, bulbous-based hairy above, pubescent beneath with a few tubercled hairs. Flowers white. Nutlets 4, broadly ovoid, smooth on the outer face, the inner spotted or slightly rugose.

Fls. & Frts. : January–March.

Distrib. : Common, usually found as a weed in wheat fields. Karanji; Mangrul village, Aruna river banks.

CONVOLVULACEAE

1. Leaves less than 2 cm broad :

 2. Leaves hastate at base :
 3. Leaves longer than 3 cm; flowers white with a pinkish tinge ... **CONVOLVULUS**
 3. Leaves less than 2 cm long; flowers pale yellow ... **XENOSTEGIA**
 2. Leaves not hastate at base :
 4. Stems rooting at nodes; leaves ovate-cordate; flowers yellow ... **MERREMIA**
 4. Stems not rooting at nodes; leaves linear-oblong; flowers blue ... **EVOLVULUS**
 1. Leaves more than 2 cm broad :
 5. Leaves suborbicular, silky pubescent beneath ... **RIVEA**
 5. Leaves varieus, if suborbicular or ovate-cordate then more or less glabrous below :
 6. Pollen grains spinulose ... **IPOMOEA**
 6. Pollen grains not spinulose ... **JACQUEMONTIA**

CONVOLVULUS L.

Convolvulus arvensis L. Sp. Pl. 153. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 219. 1883; Cooke, Fl. Pres. Bombay 2: 303. 1958 (Repr. ed.); Ooststr. in Blumea 3: 283. 1939. *Chand vel, Hiran pag.*

Herbs, prostrate, puberulous. Leaves c 4.0 x 1.1 cm, alternate, triangular-oblong, apex shortly apiculate. Flowers solitary, axillary. Capsules c 0.7 cm across, globose. Seeds sub-trigonous, reddish brown.

Fls. & Frts. : January–March.

Distrib. : Commonly found as a weed in cultivated fields. Umarkhed.

EVOLVULUS L.

Evolvulus alsinoides (L.) L. Sp. Pl. ed. 2. 2: 392. 1762; C.B.Cl. in Hook. f. Fl. Brit. India 4: 220. 1883; Cooke, Fl. Pres. Bombay 2: 297. 1958 (Repr. ed.). *Convolvulus alsinoides* L. Sp. Pl. 157. 1753. *Shanka veli, Vishnukranta.*

Herbs, prostrate, spreading, hirsute. Leaves c 2.0 x 0.7 cm, alternate, fulvous-hirsute. Flowers solitary or in 2–3-flowered pedunculate cymes. Capsules c 0.3 cm across, globose. Seeds 4, brownish black.

Fls. & Frts. : Throughout the year.

Illus. : Mahesh. Illus. Fl. Delhi f. 136. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 479. 1982.

Distrib. : Common. Durg R.F.; Durg talao; Wani-Mohroli road.

IPOMOEA L.

- | | | |
|---|-----|------------------------|
| 1. Peduncles less than 0.5 cm long | ... | <i>I. eriocarpa</i> |
| 1. Peduncles more than 2 cm long: | | |
| 2. Leaves palmately 5–7-lobed : | | |
| 3. Plants patently hairy; flowers sessile | ... | <i>I. pes-tigridis</i> |
| 3. Plants glabrous; flowers pedicelled | ... | <i>I. mauritiana</i> |
| 2. Leaves entire or shallowly lobed, more so towards the base : | | |
| 4. Plants usually aquatic, rooting at nodes | ... | <i>I. aquatica</i> |
| 4. Plants terrestrial, not rooting at nodes : | | |

5. Flowers red	...	<i>I. hederifolia</i>
6. Flowers white or creamish :		
6. Flowers white; sepals obtuse	...	<i>I. sepiaria</i>
6. Flowers creamish; sepals acute	...	<i>I. obscura</i>

Ipomoea aquatica Forssk. Fl. Aeg.-Arab. 44. 1775; C.B.Cl. in Hook. f. Fl. Brit. India 4: 210. 1883; Cooke, Fl. Pres. Bombay 2: 315. 1958 (Repr. ed.); Ooststr. in Blumea 3: 529. 1940 & in Steenis, Fl. Males. 1, 4: 473. 1953. *Nalichi bhagi*.

Leaves alternate, petioles c 16 cm long, lamina c 9 x 8 cm, triangular-ovate, apex acute, base sub-cordate, lobed below the middle. Flowers pale purple, 3-4 in axillary cymes on c 9 cm long peduncles. Capsules c 0.6 cm long, ovoid. Seeds puberulous.

Fls. & Frts. : September-March.

Illus. : Mahesh. Illus. Fl. Delhi f. 139. 1966.

Distrib. : Not common; found in shallow water. Kayar village on Wani-Mukutban road.

I. 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.); Ooststr. in Steenis, Fl. Males. 1, 4: 462. 1953.

Herbs, trailing with spreading hairs. Leaves c 5.5 x 2.7 cm, alternate, triangular-ovate, apex apiculate, base cordate, lobes rounded, hairy. Flowers pale purple, few in axillary heads. Capsules c 0.7 cm across, globose. Seeds foveolate.

Fls. & Frts. : September-March.

Illus. : Wight, Ic. t. 169. 1839 (*I. sessiliflora* Roth, Nov. Pl. Sp. 116. 1821).

Distrib. : Common; found as a weed in cultivated fields. Jamwadi talao banks; Mukutban, weed in *Gossypium* fields.

I. hederifolia L. Syst. Nat. ed. 10. 925. 1759. *I. coccinea* sensu C.B.Cl. in Hook. f. Fl. Brit. India 4: 199. 1885 non L. 1753 p.p. *Quamoclit coccinea* sensu Cooke, Fl. Pres. Bombay 2: 330. 1958 (Repr. ed.) non Moench. 1795.

Climbers. Leaves c 5 x 5 cm, alternate, ovate-orbicular, margins distantly toothed, apex acuminate, base cordate. Flowers in lax,

umbellate cymes. Capsules c 0.8 cm long, ovoid. Seeds trigonous, rounded on back, black, minutely hairy.

Fls. & Frts. : October–January.

Illus. : Matthew, *Illus. Fl. Tamilnadu Carnatic 2*: t. 481. 1982.

Distrib. : Common; found climbing on *Apluda mutica*, *Dichrostachys cinerea*, *Xanthium strumarium* and *Ziziphus mauritiana*. Aruna river banks, Hiwri R.F., Yavatmal.

I. mauritiana Jacq. Collect. 4: 216. 1791. *I. digitata* auct. non L. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 202. 1883; Cooke, Fl. Pres. Bombay 2: 318. 1958 (Repr. ed.).

Herbs, twining. Leaves c 13 x 15 cm, alternate, base cordate; lobes lanceolate, apex acuminate. Flowers pink, in axillary c 12.5 cm long, pedunculate, paniculate cymes. Capsules c 1.2 cm long, ovoid. Seeds black, brownish cottony hairy.

Fls. & Frts. : September–November.

Distrib. : Occasional. Penganga felling series, Kharbi range.

Notes : This is supposed to be doubtfully indigenous (Cooke, *op. cit.*). Might have been introduced accidentally.

I. 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.); Ooststr. in Blumea 3: 519. 1940. *Convolvulus obscurus* L. Sp. Pl. ed. 2. 1: 220. 1762. *Pungali*.

Herbs, twining or trailing, stem patently hairy. Leaves c 5.5 x 5.5 cm, orbicular, apex acute to acuminate. Flowers 1 or 2 on axillary peduncles. Capsules c 0.8 cm long, ovoid. Seeds obtusely trigonous, brown velvety.

Fls. & Frts. : August–March.

Distrib. : Commonly found climbing on *Lantana camara* var. *aculeata* and *Pithecellobium dulce*. Also on hedges on border of cultivated fields. Aruna river banks, Kharad; Durg camp; Karanji.

I. pes-tigridis L. Sp. Pl. 162. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 204. 1883; Cooke, Fl. Pres. Bombay 2: 320. 1958 (Repr. ed.); Witt, List. 59. 1908; Ooststr. in Blumea 3: 504. 1940.

Twiners. Leaves c 4.5 x 7.0 cm, base cordate, appressed hairy; lobes ovate-lanceolate, apex acuminate. Flowers pink, in heads on c 15

cm long, axillary peduncles. Capsules c 0.6 cm across, globose. Seeds grey-pubescent.

Fls. & Frts. : August–November.

Illus. : Mahesh. Illus. Fl. Delhi f. 143. 1966.

Distrib. : Common. Aruna river banks, Mangrul village.

I. sepiaria 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.). *Amti vel.*

Twiners, patently hairy. Leaves c 5 x 5 cm, alternate, ovate-triangular or orbicular, apex acuminate, base cordate. Flowers in axillary sub-umbellate cymes on c 12 cm long peduncles. Capsules c 0.5 cm across, ovoid. Seeds grey-silky hairy.

Fls. & Frts. : August–October.

Distrib. : Scarce. Tipeshwar R.F., 156619.

Cultivated species :

Ipomoea carnea ssp. *fistulosa* (Mart. ex Choisy) Austin is cultivated as a hedge plant.

Pandharkawada; Wani–Mohroli road.

JACQUEMONTIA Choisy

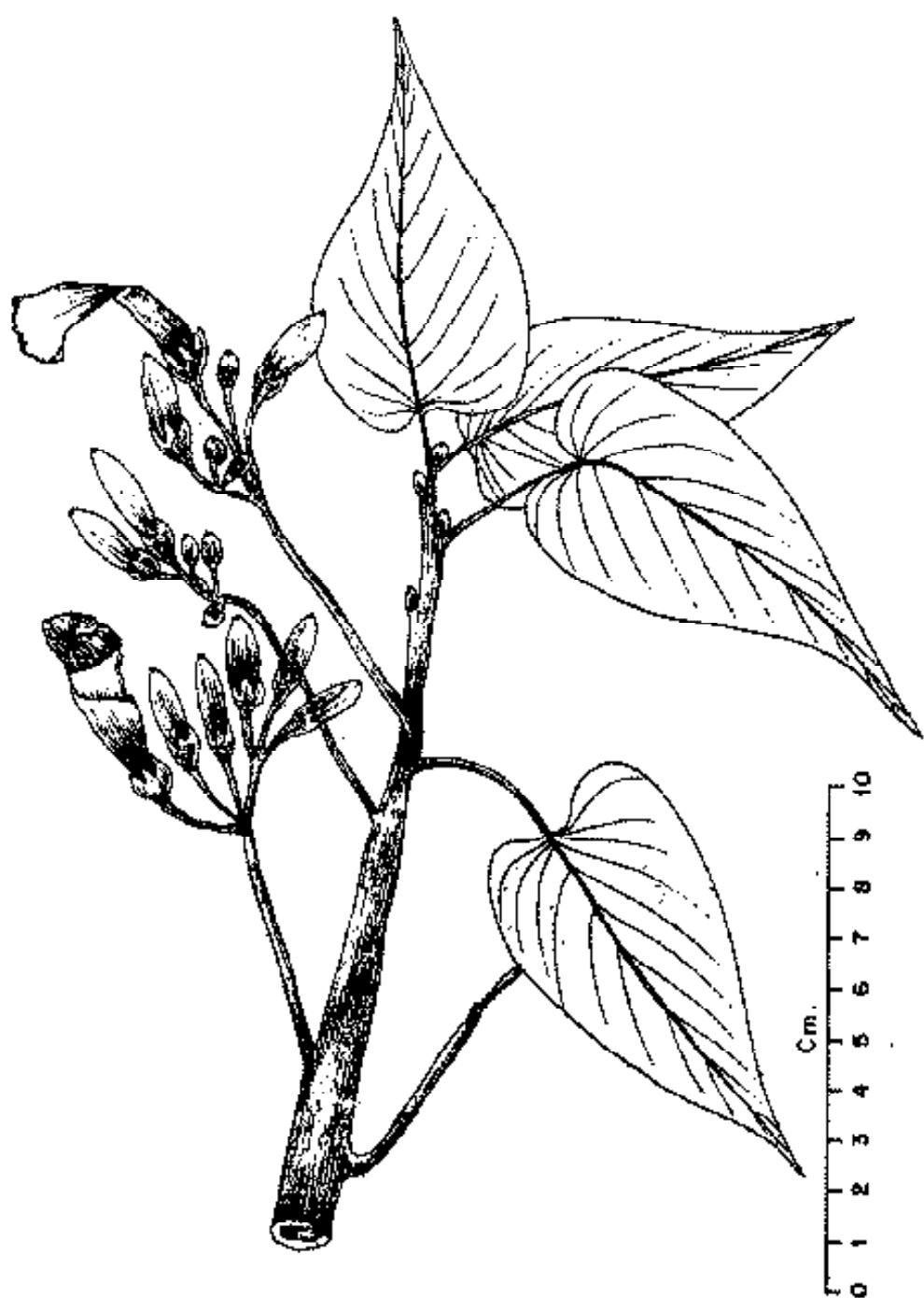
Jacquemontia paniculata (Burm.f.) Hall. f. in Engl. Jahrb. 16: 541. 1893 & 18: 95. 1894; Cooke, Fl. Pres. Bombay 2: 303. 1958 (Repr. ed.); Ooststr. in Blumea 3: 269. 1939. *Ipomoea paniculata* Burm. f. Fl. Ind. 50, t. 21, f. 3. 1768. *Convolvulus parviflorus* Vahl, Symb. Bot. 3: 29. 1794; C.B.Cl. in Hook. f. Fl. Brit. India 4: 220. 1883.

Twiners, puberulous. Leaves c 5.0 x 3.5 cm, ovate, alternate, base sub-cordate, apex acuminate, nearly glabrous. Flowers white, in axillary, umbellate cymes in c 4 cm long peduncles. Capsules c 0.5 cm across, globose. Seeds 4, trigonous, slightly winged, and often minutely rugose.

Fls. & Frts. : September–December.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 482. 1982.

Distrib. : Sparse. Yavatmal–Arni road, beyond Javala village, 156708.



Ipomoea carnea ssp. *fistulosa* (Mart. ex Choisy) Austin

MERREMPIA Dennst. emend. Hall. f.

Merremia gangetica (L.) Cufod. in Bull. Jard. Bot. Etat. Suppl. 31: 743. 1961. *Convolvulus gangeticus* L. in Torner, Cent. Pl. 2: 9. 1756. *Ipomoea reniformis* Choisy in Mem. Soc. Phys. Geneve 6: 446. 1833; C.B.Cl. in Hook. f. Fl. Brit. India 4: 206. 1883. *Merremia emarginata* (Burm. f.) Hall. f. in Bot. Jahrb. 16: 552. 1893; Cooke, Fl. Pres. Bombay 2: 305. 1958 (Repr. ed.). *Undirkani*.

Herbs, prostrate, patently hairy. Leaves c 1.0 x 1.3 cm, alternate, apex obtuse, margins crenulate. Flowers solitary or 2-3 together, axillary. Capsules c 0.4 cm across, globose. Seeds hemispherical.

Fls. & Frts. : October-January.

Distrib. : Common; found along the banks of the tanks. Durg R.F.

RIVEA Choisy

Rivea hypocrateiformis (Desr.) Choisy in Mem. Soc. Phys. Geneve 6: 408. 1834; C.B.Cl. in Hook. f. Fl. Brit. India 4: 184. 1883; Cooke, Fl. Pres. Bombay 2: 323. 1958 (Repr. ed.); Witt, List. 58. 1908. *Convolvulus hypocrateiformis* Desr. in Lam. Encycl. 3: 561. 1792. *Phanji*.

Climbers; stem, petioles and peduncles appressed hairy. Leaves c 5.2 x 7.5 cm, alternate, apex obtuse or emarginate, occasionally mucronate. Flowers white, usually solitary, on axillary peduncles. Capsules c 1.25 cm across, globose, mucronate at apex. Seeds sub-trigonous, brown.

Fls. & Frts. : July-October.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 283, f. 427. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 485. 1982.

Distrib. : Sparse; found to be climbing on *Tectona grandis*. Aruna river banks, Mangrul village.

XENOSTEGIA Austin & Staples

Xenostegia tridentata (L.) Austin & Staples in Brittonia 32: 533. 1980. *Convolvulus tridentatus* L. Sp. Pl. 157. 1753. *Ipomoea tridentata* (L.) Roth in Roem. Arch. Bot. 1, 2: 38. 1798; C.B.Cl. in Hook. f. Fl. Brit. India 4: 205. 1883. *Merremia tridentata* (L.) Hall. f. in Bot. Jahrb. Syst. 16: 552. 1893; Cooke, Fl. Pres. Bombay 2: 306. 1958 (Repr. ed.). *Morga*.

Herbs, prostrate. Leaves c 1.5 x 0.6 cm, alternate, variable, linear-hastate or oblong-obovate, the former usually acute, the latter obtuse and 3-toothed, all auricled at base and toothed. Flowers 1-3-on axillary peduncles. Capsules c 0.7 cm across, ovoid. Seeds sub-trigonous, ridged, black.

Fls. & Frts. : October-January.

Distrib. : Common; found on sandy soil. Mukutban.

Notes : This species has been found to be anomalous in *Merremia*. Though it shares some characters with *Ipomoea* it does not fit in that genus too. Hence Austin & Staples (*op. cit.*) have established a new genus to accommodate this species. They have differentiated *Ipomoea*, *Merremia* and *Xenostegia* thus :

- | | | |
|--|-----|------------|
| 1. Anthers mostly spiralled when dehisced; seeds rounded to truncate apically; pollen 3-12 colporate, smooth; stigmas undulate or lobed, the papillae clavate or cylindrical | ... | MERREMIA |
| 1. Anthers straight when dehisced; seeds obtuse to rounded apically; pollen pantoporate, spinulose or smooth; stigmas smooth, lobed to undulate, the papillae villiform : | | |
| 2. Stigmas lobed to undulate; pollen spinulose | ... | IPOMOEZA |
| 2. Stigmas neither undulate nor lobed; pollen smooth | ... | XENOSTEGIA |

CUSCUTACEAE

CUSCUTA L.

Cuscuta reflexa Roxb. Pl. Cor. 2: 3, t. 104. 1798; C.B.CI. in Hook. f. Fl. Brit. India 4: 225. 1883; Cooke, Fl. Pres. Bombay 2: 292. 1958 (Repr. ed.); Witt, List. 58. 1908; Sant. & Patel in J. Bombay nat. Hist. Soc. 54: 712. 1957; P.K. Bhattacharyya & S.K. Mukerjee in Ind. J. For. 1: 162. 1978. *Akashvel, Amarvel*.

Twiners, yellow, leafless. Flowers white or yellowish-white, solitary or 2-4 in umbellate clusters. Capsules c 0.7 cm across, globose, circumscissile. Seeds black.

Fls. & Frts. : November-March.

Distrib. : Common; found as a parasite on *Acacia* spp., *Ficus* spp. and *Ziziphus* spp. Arni-Yavatmal road, Near Baum village; Hiwri R.F., Yavatmal.

SOLANACEAE

1. Fruit a capsule	...	DATURA
1. Fruit a berry :		
2. Berries enclosed in accrescent calyx	...	PHYSALIS
2. Berries not enclosed in accrescent calyx	...	SOLANUM

DATURA L.

1. Capsules erect	...	<i>D. stramonium</i>
1. Capsules inclined :		
2. Capsules covered with stout tubercles	...	<i>D. metel</i>

2. Capsules covered with long slender spines ... *D. inoxia*

Datura inoxia Mill. Gard. Dict. ed. 8. n. 5. 1768; Sant. in J. Bombay nat. Hist. Soc. 47: 659. 1948; Avery et al. in Blakeslee, Genus Datura 28, f. 10. 1959; Deb in J. Econ. Tax. Bot. 1: 37. 1980. *D. metel* sensu Sims in Curtis, Bot. Mag. 35; t. 1440. 1812, non L. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 243. 1883; Cooke, Fl. Pres. Bombay 2: 344. 1958 (Repr. ed.).

Undershrubs, c 1 m high, tomentose. Leaves c 15 x 9 cm, sub-opposite, ovate-elliptic to broadly ovate, margins irregularly shallowly lobed, apex acute, base unequal, tomentose. Flowers white, solitary, axillary. Capsules c 6 cm across, globose; persistent calyx reflexed. Seeds reniform, dark brown.

Fls. & Frts. : Throughout the year.

Illus. : Avery et al. in Blakeslee, op. cit.

Distrib. : Common; found in waste places along with *Abutilon indicum*, *Cassia occidentalis*, *Physalis minima* and *Sida* spp. Mukutban; Pandharkawada; Umarkhed.

Notes : The specific epithet is spelled *inoxia* in de Chazelles and Holandre's translation of Miller's ed. 8, vol. 3. 1787 and by most subsequent authors (Avery et al. op. cit.)

D. metel L. Sp. Pl. 179. 1753; Sant. in J. Bombay nat. Hist. Soc. 47: 657. 1948; Avery et al. in Blakeslee, Genus Datura 32, f. 13. 1959; Deb in J. Econ. Tax. Bot. 1: 37. 1980. *D. fastuosa* L. Syst. Nat. ed. 10, 2: 932. 1759; C.B.Cl. in Hook. f. Fl. Brit. India 4: 243. 1883; Cooke, Fl. Pres. Bombay 2: 343. 1958 (Repr. ed.); Witt, List. 61. 1908. *D. fastuosa* var. *alba* C.B.Cl. in Hook. f. op. cit.; Cooke, op. cit. 344. *Kala Dhatura*.

Undershrubs, c 1 m high, dichotomously branched. Leaves c 15.0 x 11.5 cm, ovate, margins entire or shallowly lobed, apex acute, base unequal sided, more or less glabrous. Flowers white or purple, solitary, axillary. Capsules c 3 cm across, globose. Seeds light brown, suborbicular.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 852. 1844-45 (*D. alba* Nees in Trans. Linn. Soc. 17: 73. 1834); Avery *et al.* in Blakeslee, *op. cit.*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 488. 1982.

Notes : Found in rubbish heaps around villages (Witt, *op. cit.*).

D. stramonium L. Sp. Pl. 179. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 242. 1883 (incl. var. *tatula*); Avery *et al.* in Blakeslee, Genus *Datura* 18, f. 1. 1959; Deb in J. Econ. Tax. Bot. 1: 38. 1980.

Herbs, c 50 cm high. Leaves c 6.5 x 5.5 cm, alternate, ovate, margins sinuate, apex acute, base narrowed. Flowers white, solitary, axillary. Capsules c 4 cm across, sub-globose, spinous. Seeds reniform, black.

Fls. & Frts. : July-November.

Illus. : Avery *et al.* in Blakeslee, *op. cit.*

Distrib. : Not common; found as a weed in waste places around villages. Karanji.

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.); Sant. in J. Bombay nat. Hist. Soc. 47: 657. 1948; Deb in J. Econ. Tax. Bot. 1: 43. 1980. *Chirboti, Ran popati*.

Herbs, erect or sub-erect; stem hollow, striate. Leaves c 7.0 x 3.5 cm, alternate, ovate or ovate-elliptic, margins entire or shallowly lobed, apex acute or sub-acuminate. Flowers solitary, axillary; corolla pale creamish, deep pink in throat. Berries c 1 cm across, sub-globose; accrescent calyx inflated, 5-10 ribbed, reticulately veined. Seeds discoid, muriculate, yellow.

Fls. & Frts. : August-February.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 490. 1982.

Distrib. : Common; found as a weed in cultivated fields, waste places and along roadsides. Hiwri temple surroundings, Hiwri R.F.; Mukutban; Pandharkawada; Umalkhed.

Cultivated species :

P. peruviana L. is cultivated for its edible berries (Witt, *op. cit.*)

SOLANUM L.

1. Plants smooth	...	<i>S. nigrum</i>
1. Plants prickly :		
2. Prickles straight	...	<i>S. surattense</i>
2. Prickles curved	...	<i>S. anguivi</i>

Solanum anguivi Lam. Tab. Encycl. Meth. Bot. 2: 23. 1794; Hepper (in Hawkes) in Bot. J. Linn. Soc. 76: 290. 1978. *S. indicum* auct. non L. 1753, p.p.; C.B.Cl. in Hook. f. Fl. Brit. India 4: 234. 1883; Cooke, Fl. Pres. Bombay 2: 336. 1958 (Repr. ed.); Witt, List. 60. 1908; Sant. in J. Bombay nat. Hist. Soc. 47: 653. 1948; Deb in J. Econ. Tax. Bot. 1: 47. 1980. *Dorli*.

Undershrubs, c 0.75 m high, stellate-tomentose. Leaves c 7.5 x 5.5 cm, alternate, ovate, margins sinuate-pinnatifid, apex acute, stellately tomentose, prickly on nerves. Flowers pink or violet in extra-axillary cymes. Berries c 1.5 cm across, globose, yellow at maturity. Seeds discoid, pitted, yellow.

Fls. & Frts. : August-January.

Illus. : Wight, Ic. t. 346. 1840; Mahesh. Illus. Fl. Delhi f. 151. 1966 (*S. indicum*).

Distrib. : Commonly found in waste places around villages. Karanji; Majra village, Patan Bori range.

Notes : The name *S. indicum* L. (1753) belongs to the species known as *S. ferox* L. and hence the plant hitherto called as *indicum*, has been provided with the name *S. anguivi* Lam. (Hepper, *op. cit.*).

S. 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.); Sant. in J. Bombay nat. Hist. Soc. 47: 652. 1948; Deb in J. Econ. Tax. Bot. 1: 49. 1980. *Kangni*.

Herbs, erect, much-branched, more or less glabrous. Leaves c 6.0 x

4.2 cm, ovate or ovate-lanceolate, apex acute or acuminate, sparsely hairy beneath. Flowers white, in extra-axillary, subumbellate cymes. Berries c 0.6 cm across, globose, red or black. Seeds discoid, pitted, yellow.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 344. 1840 (*S. rubrum* Mill. Gard. Dict. ed. 8. No. 4. 1768).

Distrib. : Commonly found as a weed in waste places and in cultivated fields. Umarkhed.

S. surattense Burm. f. Fl. Ind. 57. 1768; Sant. in Bull. Bot. Surv. India 3: 20. 1961; Deb in J. Econ. Tax. Bot. 1: 51. 1980. *S. xanthocarpum* Schrad. & Wendl, Sert. Hanov. 1: 8, t. 2. 1795; C.B.CI. in Hook. f. Fl. Brit. India 4: 236. 1883; Cooke, Fl. Pres. Bombay 2: 335. 1958 (Repr. ed.); Sant. in J. Bombay nat. Hist. Soc. 47: 653. 1948. *Bhuiringani, Kateringani*.

Undershrubs, spreading, young parts stellately pubescent. Leaves c 10.0 x 6.3 cm, alternate, ovate-elliptic, pinnatifid, apex acute, stellately pubescent, prickly on veins. Flowers purple, in extra-axillary cymes. Berries c 1.5 cm across, spherical, green with white streaks when young, yellow at maturity. Seeds ovate-oblong, minutely rugose, light brown.

Fls. & Frts. : Throughout the year.

Illus. : Mahesh. Illus. Fl. Delhi f. 150. 1966.

Distrib. : Commonly found in waste places along road sides and in cultivated fields. Durg R.F.; Khandala R.F.; Penganga river banks, Kharbi.

Cultivated species :

Lycopersicon lycopersicum (L.) Karsten and *Solanum melongena* L. are cultivated extensively for fruits which are used as vegetables.

SCROPHULARIACEAE

1. Plants glandular hairy :

2. Leaves alternate ... *VERBASCUM*

2. Leaves opposite, atleast the lower as in *Sutera* :

3. Leaves pinnatifid ... *SUTERA*

8. Leaves serrulate	...	STEMODIA
1. Plants glabrous, scabrid or if hairy, hairs not glandular :		
4. Leaves pinnatisect	...	SOPUBIA
4. Leaves not divided :		
5. Plants creeping, rooting at nodes :		
6. Calyx divided to the base	...	BACOPA
6. Calyx campanulate, 3-4-lobed	...	GLOSSOSTIGMA
5. Plants erect or diffuse, not rooting at nodes :		
7. Plants fleshy	...	DOPATRIUM
7. Plants not fleshy :		
8. Leaves always linear	...	STERGA
8. Leaves various, never linear :		
9. Bracteoles 2	...	BUCHNERA
9. Bracteoles absent	...	LINDERNIA

BACOPA Aubl.

Bacopa monnieri (L.) Penn. in Proc. Acad. Nat. Sci. Philadelphia 98: 94. 1946; Sant. in J. Bombay nat. Hist. Soc. 49: 30. 1950; Philcox in Kew Bull. 33: 679. 1979. *Lysimachia monnieri* L. in Terner, Cent. Pl. 2: 9. 1756. *Herpestis monniera* H.B. & K. Nov. Gen. & Sp. Pl. 2: 366. 1818; Hook. f. Fl. Brit. India 4: 272. 1884. *Moniera cuneifolia* Michx. Fl. Bor. Am. 2: 22. 1803 (*Monniera*); Cooke, Fl. Pres. Bombay 2: 356. 1958 (Repr. ed.). *Bam, Nira brahami*.

Herbs. Leaves c 1.5 x 0.5 cm, sessile, opposite-decussate, obovate to oblanceolate, apex obtuse. Flowers white or pale blue, solitary, axillary; pedicels c 1.8 cm long. Capsules ovoid, acute. Seeds yellow, many, minute, striate.

Fls. & Frts. : Throughout the year.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 494. 1982.

Distrib. : Commonly found in marshy places along nullahs. Karanji; Pandharkawada; Wani-Mukutban road.

BUCHNERA L.

Buchnera hispida Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 91. 1825; Hook. f. Fl. Brit. India 4: 298. 1884; Cooke, Fl. Pres. Bombay 2: 373. 1958 (Repr. ed.); Sant. in J. Bombay nat. Hist. Soc. 49: 42. 1950.

Herbs, slender, unbranched, hispid, becoming black on drying. Leaves sessile; lower c 2.2×1.2 cm, obovate-elliptic, apex obtuse; upper c 2.8×0.7 cm, linear-lanceolate, apex acute. Flowers purple, distant in terminal spikes. Capsules c 0.5 cm long, oblong, apiculate. Seeds black, minute, irregularly cuneate-oblong.

Fls. & Frts. : October-December.

Illus. : Wight, Ic. t. 1413. 1849.

Distrib. : Not common. Majra village, Bhiwkund.

DOPATRIUM Buch. — Ham. ex Benth.

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.); Sant. in J. Bombay nat. Hist. Soc. 49: 35. 1950. *Gratiola juncea* Roxb. Pl. Cor. t. 129. 1800.

Herbs c 35 cm high, simple or branched, stem hollow. Leaves sessile, opposite; lower c 2.0×0.5 cm long, oblong, apex obtuse; upper smaller, bract-like, distant. Flowers purple, axillary, in lax, terminal racemes. Capsules c 0.2 cm across, globose, apiculate. Seeds minute, deep yellow, oblong, apiculate, tuberculate.

Fls. & Frts. : August-October.

Distrib. : Sparsely found in marshy soil, in rice fields. Patri, near Umari village on Yavatmal-Pandharkawada road.

GLOSSOSTIGMA Arn.

Glossostigma diandrum (L.) O. Ktze. Rev. Gen. Pl. 461. 1891. *Limosella diandra* L. Mant. Alt. 252. 1771. *Glossostigma spathulatum* (Hook.) Wight & Arn. ex Arn. in Nova Acta Acad. Caes. Leop.-Carol. German Nat. Cur. 18: 355. 1836; Hook. f. Fl. Brit. India 4: 288. 1884; Cooke, Fl. Pres. Bombay 2: 371. 1958 (Repr. ed.); Sant. in J. Bombay nat. Hist. Soc. 49: 41. 1950.

Herbs, slender, tufted. Leaves c 1.0×0.2 cm, opposite, spatulate, apex obtuse. Flowers white, solitary, axillary. Capsules c 0.1 cm across, subglobose. Seeds pale yellow, minute, ellipsoid.

Fls. & Frts. : November-December.

Distrib. : Not common; found on banks of ponds in marshy soil. Mukutban.

LINDERNIA All.

- | | | |
|---|-----|----------------------|
| 1. Leaves 3-5-nerved at the base | ... | <i>L. parviflora</i> |
| 1. Leaves 1-or pinni-nerved : | | |
| 2. Capsules cylindrical | ... | <i>L. ciliata</i> |
| 2. Capsules ovoid to ovoid-ellipsoid : | | |
| 3. Calyx lobes as long as or slightly longer than
the tube | ... | <i>L. crustacea</i> |
| 3. Calyx lobed almost to the base | ... | <i>L. multiflora</i> |

Lindernia ciliata (Colsm.) Penn. in Brittonia 2: 182. 1936; Philcox in Kew Bull. 22: 51, f. 10/12-15. 1968; Mukerjee in J. Indian Bot. Soc. 24: 133. 1945; Sant. in J. Bombay nat. Hist. Soc. 49: 39. 1950; Sivarajan & Mathew, Ibid. 80: 133. 1983. *Gratiola ciliata* Colsm. Prodr. Descr. Grat. 14. 1793. *Bonnaya brachiata* Link & Otto, Ic. Pl. Select. 25, t. 11. 1820; Hook. f. Fl. Brit. India 4: 284. 1884; Cooke, Fl. Pres. Bombay 2: 369. 1958 (Repr. ed.).

Herbs, c 12 cm high. Leaves c 1.7x0.7 cm, sessile, opposite, elliptic-oblong, margins dentate, teeth aristate, finely hirsute beneath. Flowers pale purple, in terminal racemes. Capsules c 0.7 cm long. Seeds many, minute, light black, sub-quadrata, alveolate.

Fls. & Frts. : August-September.

Illus. : Philcox, *op. cit.*

Distrib. : Commonly found in wet places among grasses.
Bhiwkund.

L. crustacea (L.) F. v. Muell. Syst. Cens. Austr. Pl. 1: 97. 1882; Mukerjee in J. Indian Bot. Soc. 24: 130. 1945; Sant. in J. Bombay nat. Hist. Soc. 49: 37. 1950; Philcox in Kew Bull. 22: 17, f. 1/9-12. 1968; Sivarajan & Mathew in J. Bombay nat. Hist. Soc. 80: 136. 1983. *Capraria crustacea* L. Mant. 87. 1767. *Vandellia crustacea* (L.) Benth. Seroph. Ind. 35. 1835; Hook. f. Fl. Brit. India 4: 279. 1884; Cooke, Fl. Pres. Bombay 2: 366. 1958 (Repr. ed.).

Herbs, c 10 cm high, diffuse, more or less glabrous. Leaves opposite, shortly petioled, c 1.3 x 0.7 cm, ovate, bluntly serrate, apex acute. Flowers purple, solitary, axillary. Capsules c 0.4 cm long, ovoid-ellipsoid. Seeds many, minute, yellow, irregular, shallowly alveolate.

Fls. & Frts. : August-September.

Illus. : Wight, Ic. t. 863. 1845 (*V. crustacea*); Mahesh. Illus. Fl. Delhi f. 155. 1966; Philcox, *op. cit.*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 499. 1982.

Distrib. : Common. Mukutban.

L. multiflora (Roxb.) Mukerjee in J. Indian Bot. Soc. 24: 131. 1945; Sant. et al. in J. Bombay nat. Hist. Soc. 55: 482, t. 2. 1958; Philcox in Kew Bull. 22: 36, f. 8/8-12. 1968; Sivarajan & Mathew in J. Bombay nat. Hist. Soc. 80: 137. 1983. *Torenia multiflora* Roxb. Fl. Ind. 3: 96. 1832. *Vandellia multiflora* (Roxb.) G. Don, Gen. Syst. 4: 549. 1838; Hook. f. Fl. Brit. India 4: 280. 1884.

Herbs, c 12.5 cm high. Leaves opposite, petiolate to sub-sessile, lamina c 1.5 x 0.9 cm, oblong-ovate to elliptic, margins crenate to sub-entire. Flowers white, in axillary and terminal racemes. Capsules c 0.3 cm long, ovoid, apiculate. Seeds many, minute, pale yellow, oblong, alveolate.

Fls. & Frts. : August-September.

Illus. : Sant. et al. *op. cit.*; Philcox *op. cit.*

Distrib. : Rare; found in marshy places; also a weed in rice fields. Pandharkawada-Bhiwkund road, 156607.

Notes : Sant. et al. (*op. cit.*) have recorded this for the first time from Maharashtra as a weed in Victoria Gardens, Bombay.

L. parviflora (Roxb.) Haines, Bot. Bihar & Orissa 2: 635. 1922 (2: 665. 1961 Repr. ed.); Mukerjee in J. Indian Bot. Soc. 24: 132. 1945; Sant. in J. Bombay nat. Hist. Soc. 49: 38. 1950; Sivarajan & Mathew, *ibid.* 80: 135. 1983. *Gratiola parviflora* Roxb. Pl. Cor. 3: 3, t. 203. 1811. *Ilysanthes parviflora* (Roxb.) Benth. in DC. Prodr. 10: 419. 1846; Hook. f. Fl. Brit. India 4: 283. 1884; Cooke, Fl. Pres. Bombay 2: 368. 1958 (Repr. ed.).

Herbs, c 15 cm high, diffuse. Leaves c 1.5 x 0.6 cm, sessile, opposite, ovate-lanceolate, apex sub-acute. Flowers white, solitary, axillary and in terminal racemes. Capsules c 0.5 cm long, ovoid-oblong. Seeds many, minute, yellow, oblong, alveolate.

Fls. & Frts. : August-January.

Distrib. : Commonly found in marshy soil on banks of ponds and in rice fields. Mukutban talao; Pandharkawada-Bhiwkund road.

SOPUBIA Buch.-Ham.

Sopubia delphiniifolia (L.) G.Don, Gen. Syst. 4: 560. 1837; Hook. f. Fl. Brit. India 4: 302. 1884; Cooke, Fl. Pres. Bombay 2: 378. 1958 (Repr. ed.); Sant. in J. Bombay nat. Hist. Soc. 49: 45. 1950. *Gerardia delphiniifolia* L. in Juslenius, Cent. l. Pl. 21. 1756. *Dudhali*.

Herbs, c 40 cm high. Leaves c 3 cm long, opposite, segments filiform, pubescent. Flowers solitary, axillary or in terminal racemes; corolla pale purple, dark purple on middle of posterior lobe. Capsules c 0.7 cm long, oblong-ellipsoid. Seeds many, minute, oblong, striate.

Fls. & Frts. : September–December.

Distrib. : Common. Durg camp; Jamwadi talao banks, Yavatmal.

STEMODIA L.

Stemodia viscosa Roxb. Pl. Cor. 2: 33, t. 163. 1802; Hook. f. Fl. Brit. India 4: 265. 1884; Cooke, Fl. Pres. Bombay 2: 359. 1958 (Repr. ed.); Sant. in J. Bombay nat. Hist. Soc. 49: 32. 1950.

Herbs, c 35 cm high, aromatic, diffuse. Leaves c 5.0 x 1.5 cm, sessile, oblong-obovate, apex acute, base amplexicaul, glandular pubescent. Flowers blue or purple, axillary, solitary or in terminal racemes. Capsules c 0.5 cm long, ovoid, apiculate. Seeds many, minute, oblong, pale brown.

Fls. & Frts. : November–March.

Illus. : Wight, Ic. t. 1408. 1849; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 506. 1982.

Distrib. : Commonly found in drying, moist places on banks of ponds and in river beds along with *Alternanthera sessilis*, *Gnaphalium polycaulon*, *Polygonum plebeium* and *Sphaeranthus indicus*. Kharad talao banks, Hiwri R.F., Yavatmal; Kharbi; Pandharkawada-Bori road; along Penganga river, Penganga felling series, Kharbi.

STRIGA Lour.

Striga angustifolia (D. Don) Saldanha in Bull. Bot. Surv. India 5: 70. 1963. *Buchnera angustifolia* D. Don, Prodr. Fl. Nepal. 91. 1825. *Striga euphrasioides* Benth. in Hook. Comp. Bot. Mag. 1: 364. 1836; Hook. f. Fl. Brit. India 4: 299. 1884; Cooke, Fl. Pres. Bombay 2: 376. 1958 (Repr. ed.); Sant in J. Bombay nat. Hist. Soc. 49: 44. 1950.

Herbs, c 30 cm high, scabrid. Leaves c 3.0 x 0.2 cm, sessile, lower opposite, upper alternate, scabrous. Flowers white, sessile, axillary, solitary and in terminal spikes. Capsules c 0.6 cm long, ellipsoid, apiculate at apex. Seeds many, minute, black, cuneate-oblong, truncate at one end, striate.

Fls. & Frts. : August–October.

Illus. : Wight, Ic. t. 855. 1844–45.

Distrib. : Commonly found among grasses. Durg camp; Karegaon, near Penganga river, Bori range; Sunna-Tipeshwar road, 1 km point, Bori range.

Notes : *Striga euphrasioides* Benth. op. cit. is based on *Buchnera euphrasioides* Benth. Scroph. Ind. 41. 1835, non Vahl 1794. However, D. Don's epithet is earlier and Saldanha (op. cit.) has effected the necessary combination.

SUTERA Roth

Sutera dissecta (Del.) Walp. Report. 3: 271. 1844; Sant. in J. Bombay nat. Hist. Soc. 49: 28. 1950. *Capraria dissecta* Del. Fl. Egypte 1: 95, t. 32, f. 2. 1812. *Sutera glandulosa* Roth, Nov. Pl. Sp. 291. 1821; Hook. f. Fl. Brit. India 4: 258. 1884; Cooke, Fl. Pres. Bombay 2: 356. 1958 (Repr. ed.) Bhul.

Herbs, diffuse, viscid-pubescent, branches c 30 cm long. Lower leaves opposite, upper alternate, c 2.5 x 1.2 cm, ovate, lobes toothed, viscid-pubescent. Flowers white, pedicellate, axillary, solitary or in terminal racemes. Capsules c 0.4 cm long, ovoid. Seeds many, minute, yellow, more or less spherical, muriculate.

Fls. & Frts. : November–March.

Illus. : Wight, Ic. t. 856. 1844–45 (*S. glandulosa*).

Distrib. : Common in marshy places along banks of dried up ponds along with *Alternanthera sessilis*, *Gnaphalium polycaulon*, *Sphaeranthus indicus* and *Stemodia viscosa*. Kharad talao banks, Hiwri R.F., Yavatmal; Pandharkawada–Bori road.

VERBASCUM L.

Verbascum chinense (L.) Sant. Fl. Purandhar 90. 1958. *Scrophularia chinensis* L. Mant. 250. 1771. *Celsia coromandeliana*

Vahl, Symb. Bot. 3: 79. 1794; Hook. f. Fl. Brit. India 4: 251. 1883; Cooke, Fl. Pres. Bombay 2: 352. 1958 (Repr. ed.). *Kutki*.

Herbs, c 0.5 m high. Leaves radical and caudine; radical ones c 10.0 x 4.5 cm, lyrate with small segments at base and a large elliptic-oblong, dentate terminal lobe; petioles c 7 cm long; caudine ones c 7.5 x 5.0 cm, ovate-oblong, margins dentate; petioles c 2 cm long. Flowers yellow in terminal c 20 cm long racemes. Capsules c 0.5 cm across, ovoid. Seeds many, minute, oblong, muricate, black.

Fls. & Frts. : December-March.

Illus. : Wight, Ic. t. 1406. 1849 (*C. coromandeliana*).

Distrib. : Commonly found as a weed in waste places, in dried up nullahs and along river banks. Aruna river banks, Kharad R.F.; Patapangra.

Notes : This species has been described under the name *Verbascum coromandelianum* (Vahl) O. Ktze. Rev. Gen. Pl. 1: 468. 1891 by Santapau in J. Bombay nat. Hist. Soc. 49: 25. 1950, the basionym being *Celsia coromandeliana* Vahl. Sant. (*op. cit.*) has copiously quoted Pennell's work (Scrophulariaceae of Western Himalayas, p. 39. 1943) to justify that name. However, he later found that Linnaeus's specific epithet was earlier and effected the necessary combination.

LENTIBULARIACEAE

UTRICULARIA L.

- | | | |
|---|-----|---------------------|
| 1. Aquatic herbs; leaves divided into numerous, capillary, pectinate segments; peduncle with a whorl of floats;
flowers yellow | ... | <i>U. stellaris</i> |
| 1. Terrestrial herbs; leaves entire; peduncles without floats;
flowers purple | ... | <i>U. caerulea</i> |

Utricularia caerulea L. Sp. Pl. 18. 1753; C.B.CI. in Hook. f. Fl. Brit. India 4: 333. 1884; Cooke, Fl. Pres. Bombay 2: 392. 1958 (Repr. ed.); Sant. in J. Bombay nat. Hist. Soc. 49: 220. 1950; P. Bhattacharyya in Bull. Bot. Soc. Bengal 30: 76. 1976.

Herbs, c 10 cm high, bladders globose. Leaves c 0.3 cm long, spatulate, apex sub-obtuse. Flowers 2-10, in racemes; bracts and bracteoles attached at middle. Capsules ovoid, papillose. Seeds minute, ellipsoid, reticulate.

Fls. & Frts. : September-October.

Illus. : Wight, Ic. t. 1583. 1850.

Distrib. : Rare; found in marshy soil in rice fields. Datatri temple, Punwat village, Wani range, 156697.

U. stellaris L. f. Suppl. 86. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 4: 328. 1884, p.p. excl. var. *inflexa* (Forssk.) C.B.Cl.; Cooke, Fl. Pres. Bombay 2: 389. 1958 (Repr. ed.); Sant. in J. Bombay nat. Hist. Soc. 49: 217. 1950.

Herbs, free floating. Leaves submerged, whorled; each pinna with a globular-ovoid bladder near base. Peduncles c 8 cm long. Capsules globose. Seeds prismatic, narrowly winged.

Fls. & Frts. : January–March.

Illus. : Wight, Ic. t. 1567. 1850; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 510. 1982.

Distrib. : Not common; found along with *Nymphoides cristata*, *Ottelia alismoides*, *Vallisneria spiralis* etc. Mukutban talao.

Notes : P. Taylor in Kew Bull. 18: 189. 1964 argues that this species is not distinguishable from *U. inflexa* Forssk. Fl. Aeg.–Arab. 9. 1775. Hence he prefers to treat it as a variety of *U. inflexa* and effected the combination as *Utricularia inflexa* var. *stellaris* (L.f.) P. Taylor in Mitt. Bot. Staatss. Muenchen 4: 96. 1961 & in Hutch. & Dalz. Fl. W. Trop. Afr. ed. 2. 2: 380. 1963.

However, the entity is treated as a species here awaiting a thorough taxonomic study of all Indian materials of *Utricularia*.

BIGNONIACEAE

- | | | |
|---|-----|---------------|
| 1. Calyx spathaceous; corolla white | ... | DOLICHANDRONE |
| 1. Calyx not spatheaceous; corolla yellow, tinged with purple | ... | Stereospermum |

DOLICHANDRONE (Fenzl.) Seem.

Dolichandrone falcata 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.); Witt, List. 61. 1908. *Medasinghi*.

Trees, c 16 m high, young parts pubescent, bark grey, rough. Leaves pinnate; rhachis c 12.5 cm long, pubescent; leaflets usually 7, c 6.5 x 4.0 cm, sub-orbicular or obovate, apex sub-acuminate, base unequal sided, pubescent. Flowers in terminal racemes. Capsules c 48 x 2 cm, falcate. Seeds rectangular, winged at both ends.

Fls. : March–May. *Frt.s.* : June–February.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 512. 1982.

Distrib. : Commonly found in scrubs and dry deciduous forests.
Kharbi; Phiski.

STEREOSPERMUM Cham.

Stereospermum colais (Buch.–Ham. ex Dillw.) Mabberley in Taxon 27: 553. 1978. *Bignonia colais* Buch.–Ham. ex Dillw. Rev. Ref. Hort. Malab. 28. 1839. *Stereospermum chelonoides* auct. non (L.f.) DC. 1845; C.B.Cl. in Hook. f. Fl. Brit. India 4: 382. 1884; Cooke, Fl. Pres. Bombay 2: 405. 1958 (Repr. ed.); Witt, List. 62. 1908. *Padal*.

Trees, c 15 m high, bark yellow. Leaves pinnate; rhachis c 30 cm long; leaflets upto 11, c 13 x 5 cm, elliptic, apex acuminate, base unequal sided. Flowers in drooping terminal panicles. Capsules c 50 x 1 cm long, curved, speckled white. Seeds c 3 cm long, winged at both ends.

Fls. : April–July. *Frt.s.* : Throughout the year.

Illus. : Wight, Ic. t. 1341. 1848; Talb. For. Fl. Bombay Pres. & Sind 2: 313, f. 438. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 514. 1982.

Notes : This plant is included on the authority of Witt, *op. cit.*

This species was known as *Stereospermum personatum* (Hassk.) Chatterjee in Bull. Bot. Soc. Bengal 2: 70. 1948 based on *Dipterosperma personatum* Hassk. in Flora 25(2) Bieb.: 28. 1842. This view was followed by Santisuk too in Kew Bull. 28: 178. 1973. However, Mabberley has found that Dillwyn's epithet is earlier and effected the necessary combination.

Cultivated species :

Millingtonia hortensis L. f. is planted in gardens for its fragrant flowers.

PEDALIACEAE

SESAMUM L.

Sesamum orientale L. Sp. Pl. 634. 1753; Back. & Bakh. f. Fl. Java 2: 544. 1965. *S. indicum* L. *op. cit.*; C.B.Cl. in Hook. f. Fl. Brit. India 4: 387. 1884; Cooke, Fl. Pres. Bombay 2: 413. 1958 (Repr. ed.). *Til*.

Undershrubs, c 1 m high, glandular-pubescent. Lower leaves palmatisect, 3-5-foliolate; lobes c 13 x 6 cm, elliptic-lanceolate, margins coarsely serrate, pubescent beneath; upper leaves 1-foliolate, linear-lanceolate, margins entire, pubescent. Flowers 1-3 in upper leaf-axils with a pair of yellow glands at base of pedicels; corolla pale purple without; posterior lobe deep pink without, deep pink dotted within. Capsules c 2.0 x 0.5 cm, beaked, glandular pubescent. Seeds brown, ovoid, rugose.

Fls. & Frts. : August-October.

Illus. : Mahesh. Illus. Fl. Delhi f. 161. 1966.

Distrib. : Commonly found in waste places, road sides and in fields. Hiwri temple surroundings, Hiwri R.F.; Jodmoha grass farm.

MARTYNIACEAE

MARTYNIA L.

Martynia annua L. Sp. Pl. 618. 1753. *M. diandra* Glos. 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*.

Undershrubs, c 1 m high, viscid-pubescent. Leaves c 14 x 12 cm, opposite, ovate, margins irregularly dentate, apex acute, base cordate, viscid-pubescent. Flowers showy, in axillary racemes; corolla pale pinkish, deep pink towards the tip, yellow dotted within. Drupes c 3 cm long, ovoid with a short upturned beak, glandular-pubescent. Pyrenes black, hard with longitudinal ribs, two hooked at apex.

Fls. & Frts. : August-January.

Illus. : Mahesh. Illus. Fl. Delhi f. 162. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 515. 1982.

Distrib. : Commonly found as a weed in waste places and road sides. Durg camp; Jamwadi talao banks.

ACANTHACEAE

- | | | |
|---|-----|--------------|
| 1. Stemless herbs; leaves radical | ... | ELYTRARIA |
| 1. Stem present; leaves caudine : | | |
| 2. Spikes in radical or sub-radical globose heads | ... | LEPIDAGATHIS |
| 2. Inflorescence various, not as above : | | |

3. Corolla lobes twisted in bud :
4. Ovules more than 2 in each cell :
5. Corolla distinctly 2-lipped ... **HYGROPHILA**
5. Corolla of 5-subequal lobes :
6. Flowers 2-3 together ... **DIPTERACANTHUS**
6. Flowers in spikes :
7. Inflorescence a capituliform, compound spike ... **GANTELBIA**
7. Inflorescence of short, compact, axillary and terminal spikes ... **HEMIGRAPHIS**
4. Ovules 2 in each cell :
8. Bracts absent ... **DYSCHORISTE**
8. Bracts foliaceous :
9. Flowers blue ... **BRANTHEMUM**
9. Flowers yellow ... **PETALOLUM**
3. Corolla lobes imbricate in bud :
10. Ovules 3-10 in each cell :
11. Flowers in one sided racemes or terminal panicles ... **ANDROGRAPHIS**
11. Flowers clustered in midst of axillary cladodes ... **HAPLANTHOIDES**
10. Ovules 2 in each cell :
12. Corolla lobes sub-equal ... **BABLERIA**
12. Corolla distinctly 2-lipped :
13. Flowers in axillary fascicles ... **DICLIPTERA**
13. Flowers in spikes or lax, terminal cymes :
14. Flowers in lax terminal cymes ... **PERISTROPHE**
14. Flowers in spikes :
15. Bracts with scarious margins ... **RUNGLA**
15. Bracts without scarious margins ... **JUSTICIA**

ANDROGRAPHIS Wall. ex Nees

1. Stem spreading hairy ... **A. echinoides**
1. Stem glabrous ... **A. paniculata**

Andrographis echiooides (L.) Nees in Wall. Pl. As. Rar. 3: 117. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 505. 1884; Cooke, Fl. Pres. Bombay 2: 451. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 51. 1952. *Justicia echiooides* L. Sp. Pl. 16. 1753.

Herbs, c 15 cm high. Leaves c 6.2 x 1.9 cm, opposite, sessile, elliptic-oblong, margins ciliate, apex obtuse, sparsely hairy. Flowers white, purple spotted within, on horizontal axillary racemes; rhachis and calyx glandular hairy. Capsules c 1.0 x 0.4 cm, elliptic-lanceolate, pilose. Seeds c 0.2 cm long, oblong, rugose.

Fls. & Frts. : July–October.

Illus. : Mahesh. Illus. Fl. Delhi f. 165. 1966.

Distrib. : Common. E. Gondwakadi R.F.

A. paniculata (Burm.f.) Wall. ex Nees in Wall. Pl. As. Rar. 3: 116. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 501. 1884; Cooke, Fl. Pres. Bombay 2: 451. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 50. 1952. *Justicia paniculata* Burm. f. Fl. Ind. 9. 1768. *Kala meti*, *Kalpa*, *Kreat*.

Herbs, c 0.5 m high, stem 4-angled. Leaves c 8.5 x 2.2 cm, opposite, elliptic-lanceolate, apex acute, base tapering. Flowers white, deep pinkish streaked within, in lax, axillary and terminal panicles. Capsules c 1.7 x 0.3 cm, linear-oblong, apex acute. Seeds subquadrate, rugose.

Fls. & Frts. : August–December.

Illus. : Wight, Ic. t. 518. 1842.

Distrib. : Common. Mukutban R.F.

BARLERIA L.

1. Plants armed	...	<i>B. prionitis</i>
1. Plants unarmed :		
2. Outer sepals spinous on the margins, hairy	...	<i>B. cristata</i>
2. Outer sepals not spinous, glabrous	...	<i>B. gibsoni</i>

Barleria cristata L. Sp. Pl. 636. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 488. 1884; Cooke, Fl. Pres. Bombay 2: 460. 1958 (Repr. ed.); Witt, List. 65. 1908; Sant. in Univ. Bombay Bot. Mem. 2: 59. 1952. *Gokarn*, *Koranti*.

Herbs, c 25 cm high, erect, stem appressed hairy. Leaves c 9.5 x 2.5 cm, opposite, elliptic-oblong, apex acute, appressed-hairy. Flowers axillary and in terminal spikes; outer sepals c 1.8 x 0.8 cm, ovate-oblong, mucronate; corolla tube white, lobes pale purple. Capsules c 1.5 cm long, ellipsoid. Seeds orbicular.

Fls. & Frts. : September–November.

Illus. : Mahesh. Illus. Fl. Delhi f. 171. 1966.

Distrib. : Rare; found as an undergrowth in deciduous forests. Bhiwkund, 156587.

B. gibsoni Dalz. in Kew J. Bot. 2: 339. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 487. 1884; Cooke, Fl. Pres. Bombay 2: 464. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 62. 1952. *B. montana* non Nees 1832; Witt, List. 65. 1908. *Gura*.

Undershrubs, c 1.5 m high. Leaves c 15.0 x 6.3 cm, opposite, ovate-elliptic, apex acuminate. Flowers pale purple, solitary, axillary and in terminal spikes; outer sepals c 2.8 x 1.5 cm, elliptic. Capsules c 2.5 cm long, oblong. Seeds orbicular.

Fls. & Frts. : September–December.

Distrib. : Rare. Tipeshwar R.F., 156621.

Notes : "Grows gregariously along the banks of steep rocky ravines and nullahs as undergrowth in the denser forests" Witt, *op. cit.*

B. prionitis L. Sp. Pl. 636. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 482. 1884; Cooke, Fl. Pres. Bombay 2: 457. 1958 (Repr. ed.); Witt, List. 64. 1908; Sant. in Univ. Bombay Bot. Mem. 2: 57. 1952. *Kholeta*, *Pivala koranta*.

Shrubs, c 1 m high. Leaves c 8.0 x 3.5 cm, opposite, elliptic, apex bristle-tipped; spines present in the leaf-axils. Flowers yellow, axillary, solitary or in terminal spikes; bracts and bracteoles bristle-tipped. Capsules c 2 cm long, beaked. Seeds orbicular, compressed, appressed hairy.

Fls. & Frts. : October–March.

Illus. : Wight, Ic. t. 452. 1841; Mahesh. Illus. Fl. Delhi f. 170. 1966.

Distrib. : Common; found along road sides, waste places and in forest undergrowth. Hiwri R.F.; Karanji; Khandala.

DICLIPTERA A.L.Juss.

Dicliptera verticillata (Forssk.) C. Chr. in Dansk. Bot. Ark. 4(3): 11. 1922; Wood *et al.* in Kew Bull. 38: 450. 1983. *Dianthera verticillata* Forssk. Fl. Aeg.-Arab. 9. 1775. *Dicliptera micranthes* Nees in Wall. Pl. As. Rar. 3: 112. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 553. 1885; Cooke, Fl. Pres. Bombay 2: 481. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 79. 1952. *Amphutavani*.

Herbs, erect or spreading. Leaves c 3.5 x 1.7 cm, ovate-elliptic, apex sub-acuminate. Flowers pink; bracts cuspidately-acuminate. Capsules c 0.4 cm long, ellipsoid, hairy near apex. Seeds orbicular, echinulate.

Fls. & Frts. : November–February.

Distrib. : Common. Karanji, weed in *Gossypium* fields; Pandharkawada–Bori road.

DIPTERACANTHUS Nees

Dipteracanthus prostratus (Poir.) Nees in Wall. Pl. As. Rar. 3: 81. 1832; Sant. in Univ. Bombay Bot. Mem. 2: 24. 1951 & in Indian Forester 79: 321. 1953. *Ruellia prostrata* Poir. in Lam. Encycl. 6: 349. 1804; C.B.Cl. in Hook. f. Fl. Brit. India 4: 411. 1884. *R. prostrata* var. *dejecta* C.B.Cl. in Hook. f. *op. cit.* 412; Cooke, Fl. Pres. Bombay 2: 431. 1958 (Repr. ed.).

Herbs, sub-erect, stem sparsely hairy. Leaves c 5.2 x 3.0 cm, opposite, ovate-elliptic, apex acute, densely hairy when young, sparse at length. Flowers violet, sessile, axillary. Capsules c 2.0 x 0.4 cm, clavate, pubescent, apex sub-acuminate. Seeds orbicular, hairy on margin.

Fls. & Frts. : August–October.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 525. 1982.

Distrib. : Common; usually found in forest undergrowth and in cultivated fields. Karanji.

DYSCHORISTE Nees

Dyschoriste nagchana (Nees) Bennet in Indian Forester 109: 220. 1983. *Dipteracanthus nagchana* Nees in Wall. Pl. As. Rar. 3: 82. 1832. *Calophanes nagchana* (Nees) Nees in DC. Prodr. 11: 109. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4: 410. 1884. *Dyschoriste depressa*

Nees in Wall. Pl. As. Rar. 3: 81. 1832; Cooke, Fl. Pres. Bombay 2: 437. 1958 (Repr. ed.).

Herbs, branches prostrate, rooting at nodes. Leaves c 5.5 x 2.5 cm, opposite, petiolate, ovate-elliptic, apex obtuse, base tapering into petiole. Flowers 1-4, in axillary fascicles; corolla pale pink with purplish streaks. Capsules c 1 cm long, oblong, apex bluntly pointed. Seeds broadly elliptic, hairy.

Fls. & Frts. : December-March.

Distrib. : Not common. Banks of Aruna river, Kharad.

Notes : Sant. in Univ. Bombay Bot. Mem. 2: 31. 1952 treats this as *Dyschoriste erecta* (Burm. f.) O. Ktze. Rev. Gen. Pl. 485. 1891, based on *Ruellia erecta* Burm. f. Fl. Ind. 135, t. 41, f. 3. 1768. However, Long in J. Arnold Arbor. 51: 295. 1970 has remarked thus", *Ruellia erecta* is typified by a reference of Burm. f. to a plate and description by van Rheede (*Hortus malabaricus*). Unfortunately, the plant illustrated and described has alternate, lance-ovate leaves, annual roots and an apparently one-lipped corolla. The calyx is described as four-parted, with two segments larger than the others. It is apparently *not acanthaceous*, but its true identity is uncertain "*(emphasis ours)*"

ELYTRARIA Michx.

Elytraria acaulis (L.f.) Lindau in Engl. & Prantl, Nat. Pfam. Nachr. 1: 304. 1897; Sant. in Univ. Bombay Bot. Mem. 2: 11. 1952. *Justicia acaulis* L. f. Suppl. 84. 1781. *Elytraria crenata* Vahl, Enum. Pl. 1: 106. 1804; C.B.CI. in Hook. f. Fl. Brit. India 4: 394. 1884. *Tubiflora acaulis* (L.f.) O. Ktze. Rev. Gen. Pl. 1: 500. 1891; Cooke, Fl. Pres. Bombay 2: 420. 1958 (Repr. ed.). *Dasmori*.

Leaves c 8.5 x 3.5 cm, elliptic-obovate, margins crenate, apex obtuse, hairy on nerves beneath. Flowers white, in c 8.5 cm long spikes; bracts ovate, spine tipped, ciliate on margins, pubescent without. Capsules c 0.8 cm long, ovoid, acute.

Fls. & Frts. : August-October.

Illus. : Mahesh. Illus. Fl. Delhi f. 163. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 528. 1982.

Distrib. : Commonly found under shade in deciduous forests, Mohroli, Wani range.

ERANTHEMUM L.

Eranthemum roseum (Vahl) R.Br. Prodr. 1: 477. 1810; Sant. in Univ. Bombay Bot. Mem. 2: 34. 1952. *Justicia rosea* Vahl, Enum. Pl. 1: 165. 1804. *Daedalacanthus roseus* T. And. 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.); Witt, List. 64. 1908. *Dasamuli*.

Herbs, c 0.5 m high. Leaves c 15 x 5 cm, opposite, petiolate, elliptic, margins entire or crenulate, apex acuminate. Flowers in axillary and terminal spikes; bracts c 1.7 x 0.8 cm, obovate, white with green nerves, apex mucronate, densely hairy without. Capsules c 1 cm long, clavate. Seeds spherical, hairy.

Fls. & Frts. : November–January.

Distrib. : Not common; found in forest undergrowth. Mohroli.

GANTELBUA Bremek.

Gantelbuia urens (Heyne ex Roth) Bremek. in Verh. Kon. Ned. Akad. Wetensch., Afd. Natuurk., Tweede Sect. 2, 41, 1, 55: 148. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 28. 1952. *Ruellia urens* Heyne ex Roth, Nov. Pl. Sp. 302. 1821. *Hemigraphis dura* T. And. in J. Linn. Soc. 9: 461. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 422. 1884; Cooke, Fl. Pres. Bombay 2: 433. 1958 (Repr. ed.). *Gantelbu*.

Herbs, spreading, strigosely hairy. Leaves c 2.5 x 1.2 cm, opposite, elliptic-oblong, margins crenulate, apex obtuse, strigosely hairy. Flowers purple; bracts and calyx densely white and brown hairy. Capsules c 1.1 cm long, linear-oblong, acuminate at apex. Seeds broadly ellipsoid, dark brown.

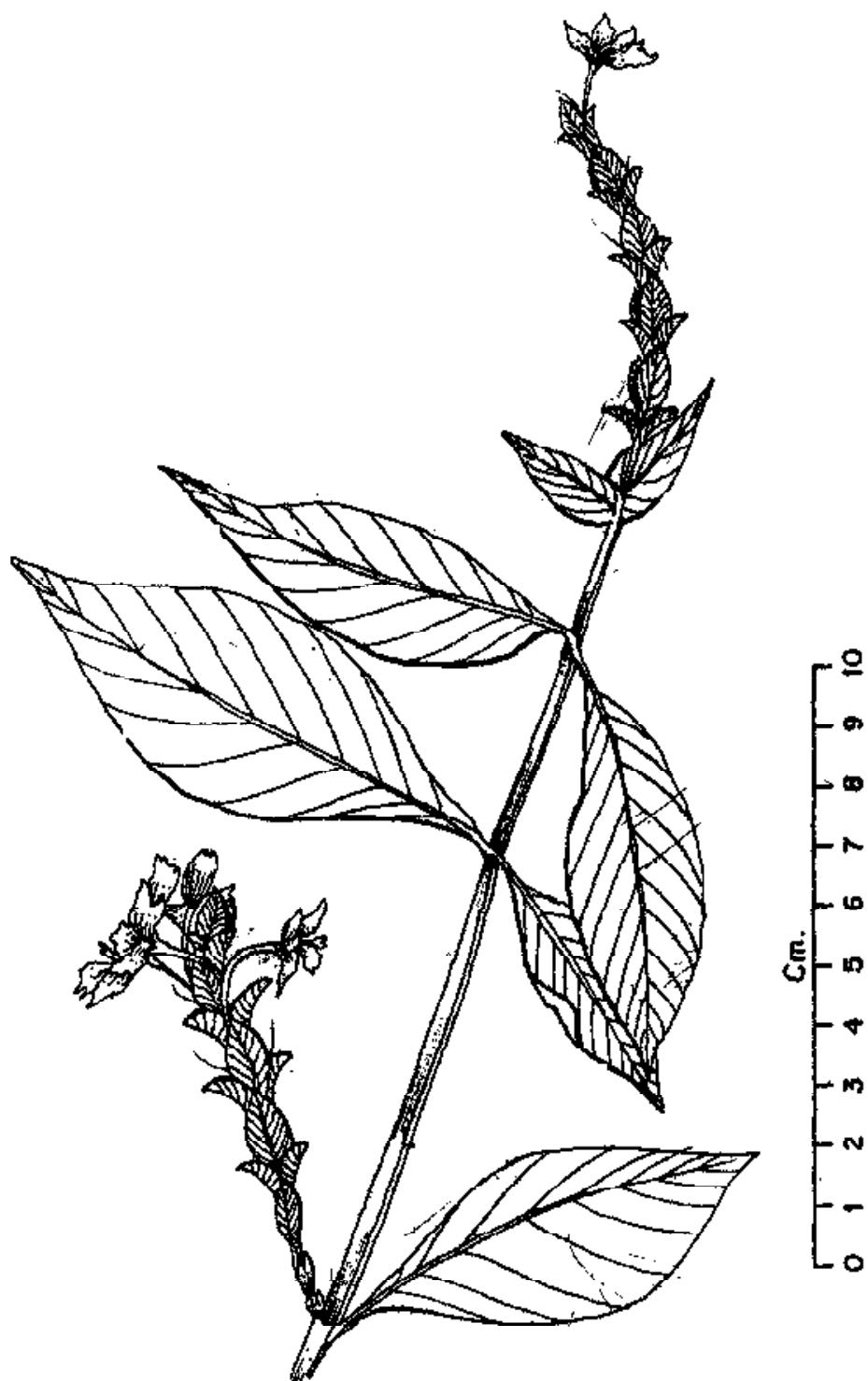
Fls. & Frts. : November–January.

Distrib. : Commonly found as a weed in cotton fields. Karanji.

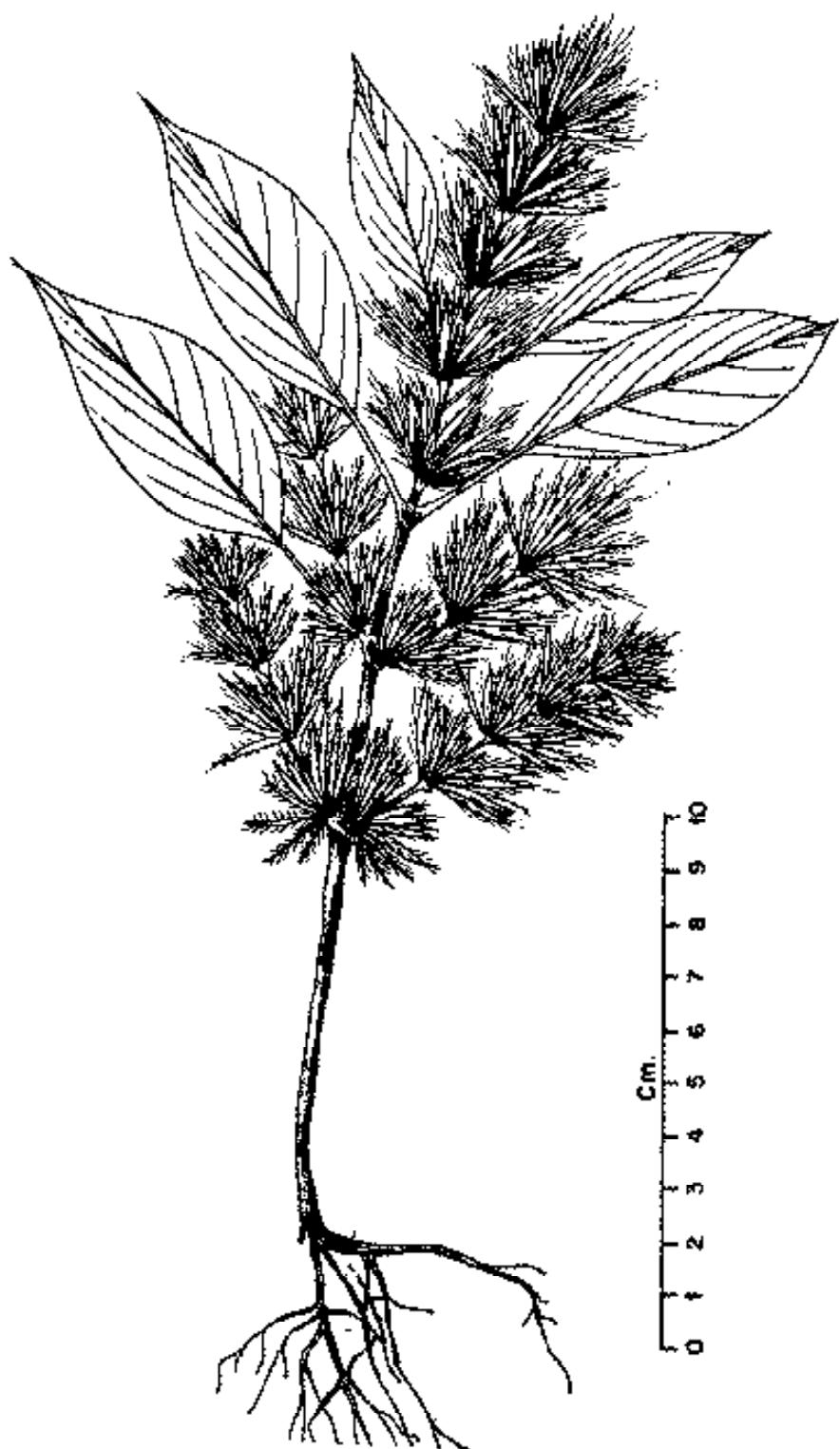
HAPLANTHODES O. Ktze.

Haplanthodes verticillata (Roxb.) R.B. Majumdar in Bull. Bot. Soc. Bengal 25: 76. 1971; Panigr. & Das in Bull. Bot. Surv. India 23: 199. 1981. *Justicia verticillata* Roxb. Fl. Ind. 1: 135. 1832. *Haplanthus verticillatus* (Roxb.) Nees in DC. Prodr. 11: 513. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4: 506. 1887; Cooke, Fl. Pres. Bombay 2: 452. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 51. 1952. *Jakara, Kateri*.

Herbs, c 55 cm high, woody; stem pubescent upwards. Leaves



Eranthemum roseum (Vahl) R.Br.



Haplanthodes verticillata (Roxb.) R.B. Majumdar

c 10.0 x 6.5 cm, opposite, ovate-elliptic, apex obtuse, pubescent above, glabrous beneath except on nerves. Flowers purple, sessile; cladodes c 2 cm long, with 2 spinous teeth at apex, covered with glandular and simple hairs. Capsules c 1.4 cm long, oblong, grooved, apex acute. Seeds brown, oblong, slightly curved.

Fls. & Frts. : October–February.

Distrib. : Commonly found as an undergrowth in deciduous forests. Mahur; Penganga felling series, Kharbi.

Notes : The genus *Haplanthus* Nees ex T. And. 1867 is a later homonym of *Haplanthus* Nees 1847, *non* Nees 1832. Hence, O. Kuntze proposed the epithet *Haplanthodes* in Lexicon 265. 1904. Unaware of this, Sreemadhavan proposed a superfluous name *Bremekampia* in Bull. Bot. Surv. India 6: 323. 1965.

Santapau proposed to conserve the generic name *Haplanthus* Nees ex T. And. in Taxon 16: 250. 1967. However, it has been rejected by the Committee for Spermatophyta (c.f. Taxon 17: 465. 1968) ".... as the name *Haplanthodes* is available and it resembles *Haplanthus* in spelling and in sound..."

HEMIGRAPHIS Nees

Hemigraphis latebrosa (Heyne ex Roth) Nees in DC. Prodr. 11: 723. 1847; C.B.CI. in Hook. f. Fl. Brit. India 4: 423. 1884; Cooke, Fl. Pres. Bombay 2: 434. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 26. 1952. *Ruellia latebrosa* Heyne ex Roth, Nov. Pl. Sp. 307. 1821.

Herbs, trailing, hairy. Leaves c 5.0 x 2.5 cm, opposite, ovate or ovate-elliptic, margins crenate, apex sub-acuminate or obtuse, base cuneate, hairy. Flowers purple or blue with pink veins. Capsules c 0.9 cm long, oblong, apiculate at apex, pubescent. Seeds pale yellow, sub-orbicular, hairy.

Fls. & Frts. : December – March.

Illus. : Wight, Ic. t. 1504. 1850.

Distrib. : Commonly found in shady places. Aruna river banks, Kharad; Penganga felling series, Kharbi.

HYGROPHILA R. Br.

Hygrophila auriculata (Schumach.) Heine in Kew Bull. 16: 172. 1962. *Barleria auriculata* Schumach. in Schumach. & Thonn. Beskr.

Guin. Pl. 285. 1827. *Asteracantha longifolia* (L.) Nees in Wall. Pl. As. Rar. 3: 90. 1832; Cooke, Fl. Pres. Bombay 2: 428. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 17. 1952. *Hygrophila spinosa* T. And. in Thw. Enum. Pl. Zeyl. 225. 1860; C.B.Cl. in Hook. f. Fl. Brit. India 4: 408. 1884; Witt, List. 63. 1908. *Kolshinda*, *Unt katara*.

Herbs or undershrubs, c 0.75 cm high, stem swollen at nodes, hispid below nodes. Leaves 6 in a whorl at each node, hispid, the 2 outer leaves larger, c 15.5 x 2.5 cm, elliptic-lanceolate, apex acute, each leaf with an axillary spine. Flowers purple in a whorl at each node. Capsules c 0.8 cm long, linear-oblong. Seeds spherical, hairy.

Fls. & Frts. : October–March.

Illus. : Wight, Ic. t. 449. 1841 (*A. longifolia*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 530. 1982.

Distrib. : Abundantly found in marshy places along with *Ammannia baccifera*, *Cyathocline purpurea* and *Cyperus* spp. Karanji; Umarda forest nursery, Yavatmal.

Notes : *Barleria longifolia* L. Amoen. Acad. 4: 320. 1759 & Sp. Pl. ed. 2. 2: 887. 1763 is the earliest name available for this plant. However that specific epithet is not available while it is being transferred to *Hygrophila* as it is preoccupied by *Hygrophila longifolia* Nees in Mart. Fl. Bras. 9: 21. 1847.

JUSTICIA L.

1. Bracts orbicular	...	<i>J. glauca</i>
1. Bracts not orbicular :		
2. Bracts and bracteoles shorter than calyx lobes :		
3. Stem prostrate	...	<i>J. prostrata</i>
3. Stem erect	...	<i>J. diffusa</i>
2. Bracts and bracteoles as long as or longer than calyx lobes :		
4. Sepals glabrous	...	<i>J. quinqueangulatis</i> var. <i>peploides</i>
4. Sepals hairy	...	<i>J. simplex</i>

Justicia diffusa Willd. Sp. Pl. 1: 87. 1797; C.B.Cl. in Hook. f. Fl. Brit. India 4: 538. 1885; Cooke, Fl. Pres. Bombay 2: 489. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 87. 1952.

Herbs, c 16 cm high; stem more or less hairy. Leaves c 3.5 x 1.6 cm, opposite, elliptic, apex acute. Flowers pale purple, in axillary and terminal c 4.5 cm long spikes. Capsules c 0.4 cm long, oblong, apex acute. Seeds minute, sub-orbicular, rugose, pale yellow.

Fls. & Frts. : July–September.

Distrib. : Commonly found in forest undergrowth in humus soil. Morchandi felling series, Bittergaon range.

J. glauca Rottl. in Ges. Naturf. Freunde Berlin Neue Schriften 4: 219. 1802; C.B.Cl. in Hook. f. Fl. Brit. India 4: 529. 1885; Cooke, Fl. Pres. Bombay 2: 487. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 86. 1952.

Herbs, c 1 m high, stem pubescent. Leaves c 9 x 4 cm, opposite, elliptic, apex acute or acuminate, hairy on the nerves above. Flowers in axillary and terminal c 13.5 cm long spikes; corolla white, pinkish blotched on lower lip, maroon dotted on upper lip. Capsules c 0.5 cm long, ellipsoid, apex acute. Seeds orbicular, tubercled, pale yellow.

Fls. & Frts. : August–October.

Distrib. : Commonly found in humus soil in forest undergrowth. Karegaon, near Penganga river, Bori range; Penganga felling series, Kharbi range.

J. prostrata (C.B.Cl.) Gamble, Fl. Pres. Madras 1081. 1924 (2: 757. 1967, Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 88. 1952. *J. diffusa* Willd. var. *prostrata* C.B.Cl. in Hook. f. Fl. Brit. India 4: 538. 1885; Cooke, Fl. Pres. Bombay 2: 490. 1958 (Repr. ed.).

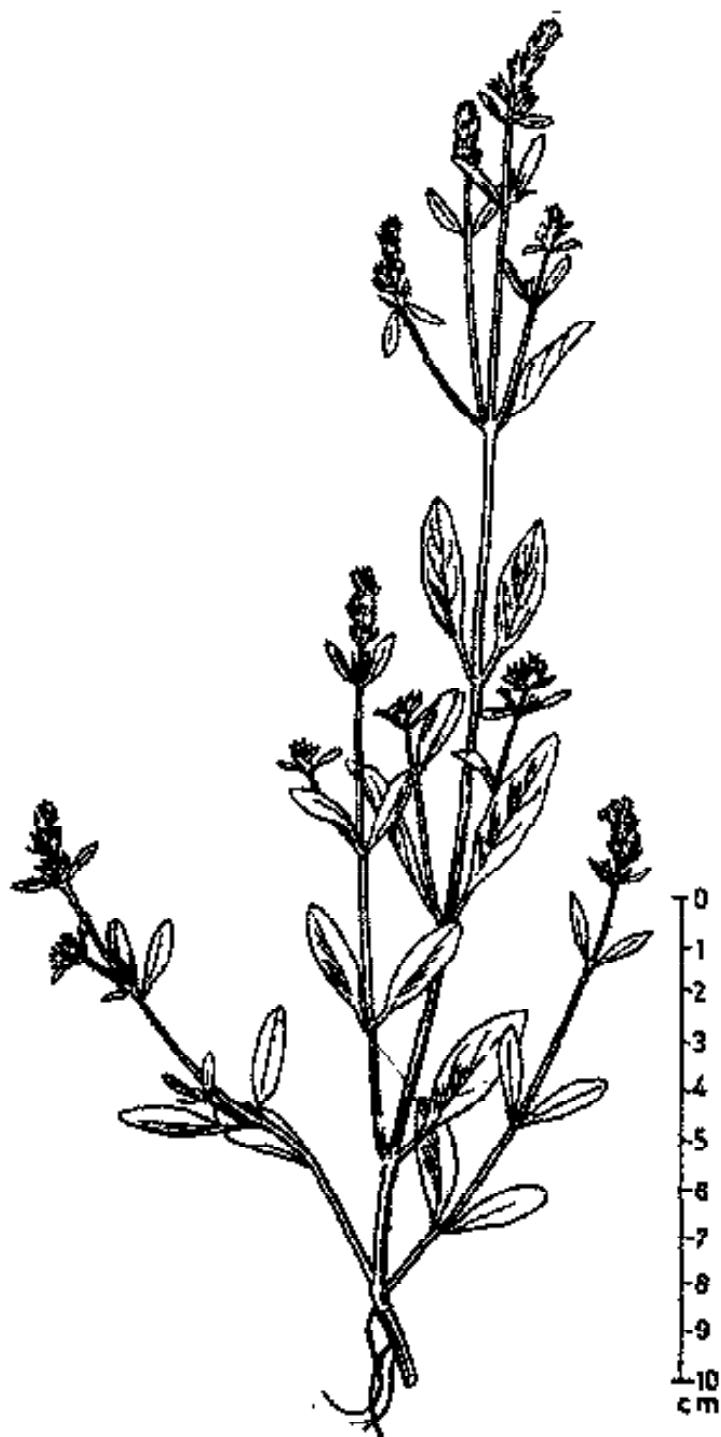
Herbs, much branched, stem hairy. Leaves c 1.6 x 0.7 cm, opposite, ovate-elliptic, apex acute. Flowers purple, in axillary and terminal c 10 cm long spikes. Capsules c 0.4 cm long, linear-oblong, apex acute, pubescent. Seeds oblong, rugose, dark brown.

Fls. & Frts. : November–March.

Distrib. : Commonly found as a weed in wheat fields and in forest undergrowth. Andarwadi, Bori R.F.; Umalkhed.

J. quinqueangularis Koen. ex Roxb. var. *peploides* (Nees) C.B.Cl. in Hook. f. Fl. Brit. India 4: 537. 1885; Cooke, Fl. Pres. Bombay 2: 490. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 89. 1952. *Rostellularia peploides* Nees in Wall. Pl. As. Rar. 3: 101. 1832.

Herbs, c 0.75 m high; internodes distant. Leaves c 2.0 x 1.5 cm,



Justicia quinqueangularis var. *peploides* (Nees) C.B.C.

opposite, oblong or oblanceolate, apex acute. Flowers pink or violet, in c 2.5 cm long terminal spikes. Capsules c 0.5 cm long, oblong, apex acute. Seeds sub-quadrangular, reticulately rugose.

Fls. & Frts. : August–October.

Distrib. : Commonly found as a weed in cultivated fields and along road sides in water-logged areas. Durg camp; Katliborgaon on Pandharkawada–Bori road; Khandala R.F.; Sonadavi village, Kharbi range.

J. simplex D.Don, Prodr. Fl. Nepal. 118. 1825; C.B.Cl. in Hook. f. Fl. Brit. India 4: 539. 1885; Cooke, Fl. Pres. Bombay 2:490.1958 (Repr. ed.); Sant in Univ. Bombay Bot. Mem. 2: 89. 1952.

Herbs, c 0.5 m high, slender; internodes long, pubescent. Leaves c 6.5 x 1.2 cm, opposite, elliptic-oblong, apex acute, puberulous. Flowers in axillary and terminal, c 4 cm long, spikes; corolla tube white, lobes with pink markings. Capsules c 0.4 cm long, oblong, pointed and pubescent at apex. Seeds sub-globose, rugose, yellow.

Fls. & Frts. : September–November.

Distrib. : Common. Bhiwkund R.F.

Notes : This is a common but variable species. Ellis in Bull. Bot. Surv. India 22: 196. 1982 has treated this as *Rostellularia japonica* (Thunb.) Ellis (based on *Justicia japonica* Thunb. Fl. Jap. 20. 1784). Ellis (*op. cit.*), has pointed out the confusion prevalent in the works of various authors. Till a thorough study is made on the taxonomy of this species to stabilise its nomenclature either in *Justicia* or *Rostellularia* it is preferable to retain it in *Justicia* only.

LEPIDAGATHIS Willd.

Lepidagathis cristata Willd. Sp. Pl. 3: 400. 1800; C.B.Cl. in Hook. f. Fl. Brit. India 4: 516. 1885; Cooke, Fl. Pres. Bombay 2: 470. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 71. 1952. *Bhuigend*.

Herbs; branches diffuse. Leaves c 1.0 x 0.8 cm, opposite, sessile, elliptic-oblong, apex acute, margins ciliate, hairy on nerves beneath. Bracts spinous-pointed; corolla white with pinkish dots. Capsules c 0.5 cm long, ovoid, acute. Seeds 2, c 0.3 cm long, ovoid-oblong, hairy.

Fls. & Frts. : December–March.



Justicia simplex D. Don

Illus. : Wight, Ic. t. 455. 1841; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 535. 1982.

Distrib. : Commonly found on bunds of wheat fields. Umardked.

PERISTROPHE Nees

Peristrophe paniculata (Forssk.) Brummitt in Kew Bull. 38: 451. 1983. *Dianthera paniculata* Forssk. Fl. Aeg.-Arab. 7. 1775. *Peristrophe bicalyculata* (Retz.) Nees in Wall. Pl. As. 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.

Herbs, c 1 m high, more or less hairy. Leaves c 9 x 4 cm, opposite, ovate, apex acuminate, hairy on nerves beneath. Flowers pink; bracts in unequal pairs. Capsules c 1 cm long, narrowed into a pointed, pubescent, stalk. Seeds orbicular, tubercled.

Fls. & Frts. : October-March.

Illus. : Mahesh. Illus. Fl. Delhi f. 166. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 538. 1982.

Distrib. : Commonly found as a weed in cultivated fields. Mukutban; Umardked.

PETALIDIUM Nees

Petalidium barlerioides (Roth) Nees in Wall. Pl. As. Rar. 3: 82. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 416. 1884; Cooke, Fl. Pres. Bombay 2: 435. 1958 (Repr. ed.); Witt, List. 64. 1908; Sant. in Univ. Bombay Bot. Mem. 2: 29. 1952. *Ruellia barlerioides* Roth, Nov. Pl. Sp. 319. 1821.

Shrubs, c 1.5 m high, short hairy towards apex. Leaves c 7.5 x 4.6 cm, opposite, ovate, margins crenate, apex acuminate, glabrous except on nerves beneath. Flowers crowded on short, lateral branches; bracteoles foliaceous, reticulately veined. Capsules c 1.2 cm long, clavate. Seeds orbicular, hairy.

Fls. & Frts. : January-April.

Distrib. : Rare. Yelabara R.F., 149114.

RUNGLA Nees

- | | | |
|-----------------|-----|-------------------|
| 1. Plants erect | ... | <i>R. elegans</i> |
|-----------------|-----|-------------------|

1. Plants decumbent or sub-erect :
 2. Bracts uniform ... *R. repens*
 2. Bracts dimorphic ... *R. pectinata*

Rungia elegans Dalz. in Dalz. & Gibbs. Bombay Fl. 196. 1861; C.B.Cl. in Hook. f. Fl. Brit. India 4: 549. 1885; Cooke, Fl. Pres. Bombay 2: 480. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 78. 1952.

Herbs, c 70 cm high, stem with spreading hairs. Leaves c 9.0 x 4.8 cm, opposite, upper sub-sessile, lower petiolate, elliptic, apex sub-acuminate, glabrous except on nerves beneath. Flowers purple, in terminal, c 2.7 cm long spikes. Capsules c 0.5 cm long, obovoid-oblong, pubescent, apex mucronulate. Seeds sub-orbicular, rugose.

Fls. & Frts. : September-December.

Distrib. : Not common. Banks of Aruna river, near Mangrul village.

R. pectinata (L.) Nees in DC. Prodr. 11: 469. 1847; Sant. in Univ. Bombay Bot. Mem. 2: 77. 1952. *Justicia pectinata* L. in Turner, Cent. II Pl. 3. 1756. *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.).

Herbs, c 20 cm high, sub-erect, much branched, more or less glabrous. Leaves c 7.0 x 2.5 cm, opposite, elliptic-oblong, apex acute. Flowers blue, in terminal or axillary, solitary or 2-3-fascicled c 1 cm long spikes. Capsules c 0.2 cm long, ovoid, apex acute. Seeds orbicular, echinulate.

Fls. & Frts. : October-February.

Illus. : Wight, Ic. t. 1547. 1850.

Distrib. : Commonly found in shady places. Aruna river banks, Hiwri R.F., Yavatmal; Penganga felling series, Kharbi R.F.; Yelabara, E. Gondwakadi R.F.

R. repens (L.) Nees in Wall. Pl. As. Rar. 3: 110. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 549. 1885; Cooke, Fl. Pres. Bombay 2: 480. 1958 (Repr. ed.); Sant. in Univ. Bombay Bot. Mem. 2: 78. 1952. *Justicia repens* L. Sp. Pl. 15. 1753. *Ghatipitpapra*.

Herbs, decumbent, branches erect, spreading hairy. Leaves c 6.5 x 2.8 cm, opposite, subsessile, elliptic or elliptic-oblong, apex acute. Flowers purple, in c 22.5 cm long spikes. Capsules c 0.6 cm long, ovoid, oblong, apex acute, pubescent. Seeds sub-orbicular, rugose, black.

Fls. & Frts. : September–February.

Illus. : Wight, Ic. t. 465. 1841; Mahesh. Illus. Fl. Delhi f. 168. 1966;
Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 541. 1982.

Distrib. : Commonly found as a weed in cultivated fields, banks of dried up nullahs and in wet places. Aruna river banks, Hiwri R.F., Yavatmal; Durg R.F.; Jamwadi talao banks; Khandala R.F.; Pusad-Khandala road; Umrikhed, weed in wheat fields.

VERBENACEAE

1. Herbs, creeping	...	PEYIA
1. Shrubs or trees :		
2. Inflorescence of spikes; plants armed with recurved prickles	...	LANTANA
2. Inflorescence of panicles; plants unarmed :		
3. Leaves 3-5-foliate	...	VITEX
3. Leaves simple :		
4. Corolla regular; stamens equal	...	TECTONA
4. Corolla 2-lipped; stamens didynamous :		
5. Leaves cordate, fulvous tomentose beneath, margins entire; drupes with 1-pyrene	...	GMELEINA
5. Leaves acute or truncate at base, glabrous or pubescent, never fulvous, margins serrate or crenate; drupes with 4-pyrenes, 1-3-often suppressed	...	CLERODENDRUM

CLERODENDRUM L.

1. Petioles less than 0.5 cm long; leaves acuminate at apex	...	C. serratum
1. Petioles more than 0.5 cm long; leaves acute or obtuse at apex	...	C. multiflorum

Clerodendrum multiflorum (Burm. f.) O. Ktze. Rev. Gen. Pl. 3: 526. 1891. *Volkameria multiflorum* Burm. f. Fl. Ind. 137, t. 45, f. 1. 1768. *Clerodendrum phlomidis* L. f. Suppl. 292. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 4: 590. 1885; Cooke, Fl. Pres. Bombay 2: 511. 1958 (Repr. ed.); Witt, List. 66. 1908. *Iran, Takal*.

Shrubs, c 2 m high, stem pubescent. Leaves c 5.2 x 3.8 cm, opposite, ovate-rhomboid, puberulous beneath. Flowers creamish white, in axillary dichotomous cymes and terminal panicles. Drupes black, c 0.8 cm long, obovoid, 4-lobed.

Fls. & Frts. : September–February.

Illus. : Mahesh. Illus. Fl. Delhi f. 173. 1966. (*C. phlomidis*).

Distrib. : Commonly found in hedges in villages. Aruna river banks, Hiwri R.F.; Underwadi, Bori; Yelabara village.

C. serratum (L.) Moon, Cat. 46, No. 382. 1824; C.B.Cl. in Hook. f. Fl. Brit. India 4: 592. 1885; Cooke, Fl. Pres. Bombay 2: 512. 1958 (Repr. ed.); Witt, List. 67. 1908. *Volkameria serrata* L. Mant. 90. 1767. *Bharang*.

Undershrubs, c 1 m high, stem pubescent. Leaves c 30.0 x 14.5 cm, opposite or ternate, elliptic or ovate–elliptic, more or less pubescent. Flowers blue, in dichotomous cymes in axils of bracts forming a terminal pyramidal panicle. Drupes c 0.6 cm long, obovoid, 4–lobed.

Fls. & Frts. : August–October.

Illus. : Wight, Ic. t. 1472. 1849; Talb. For. Fl. Bombay Pres. & Sind 2: 359, f. 455. 1911.

Distrib. : Commonly found as a forest undergrowth. Durg R.F.; Majra felling series, Patan Bori range.

GMELINA L.

Gmelina arborea Roxb. Pl. Cor. t. 246. 1815; C.B.Cl. in Hook. f. Fl. Brit. India 4: 581. 1885; Cooke, Fl. Pres. Bombay 2: 504. 1958 (Repr. ed.); Witt, List. 67. 1908. *Shivan*.

Trees, c 20 m high; bark greyish–yellow, young parts pubescent. Leaves c 35 x 20 cm, opposite, ovate, apex acuminate. Flowers yellow, in terminal fulvous hairy panicles. Drupes c 2.5 cm long, ovoid, orange–yellow when ripe.

Fls. & Frts. : March–May.

Illus. : Wight, Ic. t. 1470. 1849; Talb. For. Fl. Bombay Pres. & Sind 2: 349, f. 451. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 550. 1982.

Notes : This plant has been included on the authority of Witt, *op. cit.*

LANTANA L.

Lantana camara L. var. *aculeata* (L.) Moldenke in Torreya 34: 9. 1934. *L. aculeata* L. Sp. Pl. 627. 1753. *L. camara* L. *op. cit.*; C.B.Cl. in

Hook. f. Fl. Brit. India 4: 562. 1885; Cooke, Fl. Pres. Bombay 2: 498. 1958 (Repr. ed.); Witt, List. 65. 1908. *Tantani*.

Shrubs, straggling, more or less pubescent. Leaves c 6 x 4 cm, opposite, ovate, apex acute, margins crenate, scabrid above, pubescent beneath. Flowers pink or yellow in terminal or axillary, compact spikes. Pyrenes c 0.4 cm across, globose, ripening purple.

Fls. & Frts. : Throughout the year.

Distrib. : Common. Aruna river banks, Mangrul village.

PHYLA Lour.

Phyla nodiflora (L.) Greene in Pittonia 4: 46. 1899. *Verbena nodiflora* L. Sp. Pl. 20. 1753. *Lippia nodiflora* (L.) Michx. Fl. Bor. Amer. 2: 15. 1803; C.B.Cl. in Hook. f. Fl. Brit. India 4: 563. 1885; Cooke, Fl. Pres. Bombay 2: 499. 1958 (Repr. ed.). *Ratoliya*.

Herbs, rooting at nodes. Leaves c 1.7 x 0.6 cm, opposite, sub-sessile, oblanceolate to spatulate, serrate in the upper part, appressed pubescent. Flowers white, in axillary pedunculate heads. Drupes globose, splitting into 1-seeded pyrenes.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1463. 1849; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 553. 1982.

Distrib. : Commonly found in marshy soil on edges of tanks. Durg talao.

TECTONA L.f.

Tectona grandis L.f. Suppl. 151. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 4: 570. 1885; Cooke, Fl. Pres. Bombay 2: 503. 1958 (Repr. ed.); Witt, List. 66. 1908. *Sag, Sagwan*.

Trees, c 25 m high, young branches ferruginous tomentose. Leaves c 50 x 30 cm, elliptic to obovate, apex acute, scabrid above, softly tomentose beneath. Flowers white, in branched cymose panicles. Drupes c 1.7 cm across, sub-globose. Seeds sub-globose, villous.

Fls. & Frts. : August–December.

Illus. : Roxb. Pl. Cor. t. 6. 1795; Bedd. Fl. Sylv. t. 250. 1872; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 558. 1982.

Distrib. : Common. Major area of the forests in the district has been covered by teak plantations. Khandala R.F.; Kharad talao banks, Hiwri R.F.

VITEX L.

Vitex negundo L. Sp. Pl. 638. 1753; C.B.CI. in Hook. f. Fl. Brit. India 4: 583. 1884; Cooke, Fl. Pres. Bombay 2: 508. 1958 (Repr. ed.); Witt, List. 66. 1908. *Nirgundi*, *Nirguri*.

Shrubs, c 2 m high, branches quadrangular, white tomentose. Leaves opposite; leaflets c 10.0 x 2.7 cm, lanceolate-oblong, apex acuminate, white pubescent beneath. Flowers white, in terminal and axillary panicles. Drupes obovoid, c 0.2 cm across.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 519. 1842.

Distrib. : Common; usually found as a hedge plant. Aruna river banks, Hiwri R.F., Yavatmal; Durg talao banks; Wani-Mohroli road.

LAMIACEAE (LABIATAE)

- | | | |
|--|-----|-------------|
| 1. Leaves pinnatifidate | ... | LAVANDULA |
| 1. Leaves not divided : | | |
| 2. Stamens declinate : | | |
| 3. Lower lip of corolla deflexed, much longer than the upper lip | ... | HYPTIS |
| 3. Lower lip of corolla declinate, hardly longer than the upper lip : | | |
| 4. Stigma 2-fid | ... | OCIMUM |
| 4. Stigma entire | ... | ORTHOSIPHON |
| 2. Stamens erect, spreading or ascending : | | |
| 5. Only anterior 2 stamens perfect | ... | SALVIA |
| 5. All 4 stamens perfect : | | |
| 6. Upper lip of corolla flat | ... | ANISOMELES |
| 6. Upper lip of corolla hooded : | | |
| 7. Lower lip of corolla longer than the hood; bracts not spinous pointed | ... | LEUCAS |
| 7. Lower lip of corolla shorter than the hood; bracts spinous pointed | ... | LEONOTIS |

ANISOMELES R.Br.

- | | | |
|---|-----|----------------------|
| 1. Plants sparsely tomentose; leaves ovate | ... | <i>A. indica</i> |
| 1. Plants densely white woolly; leaves lanceolate | ... | <i>A. malabarica</i> |

Anisomeles indica (L.) O. Ktze. Rev. Gen. Pl. 512. 1891; Mukerjee in Rec. Bot. Surv. India 14: 152. 1940; Keng in Gard. Bull. Straits Settlem. 24: 34. 1969. *Nepeta indica* L. Sp. Pl. 571. 1753. *Anisomeles ovata* Ait. Hort. Kew. ed. 2. 2: 364. 1811; Hook. f. Fl. Brit. India 4: 672. 1885; Cooke, Fl. Pres. Bombay 2: 543. 1958 (Repr. ed.). *Gopali*.

Herbs, c 2 m high. Leaves c 10.0 x 5.5 cm, opposite, margins crenate, apex acuminate, sparsely pubescent above, densely so beneath. Flowers white, in whorls in interrupted axillary and terminal spikes. Nutlets elliptic-oblong, black, shining.

Fls. & Frts. : September–January.

Illus. : Wight, Ic. t. 865. 1844–1845; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 562. 1982.

Distrib. : Common. Bhiwkund R.F.; Durg R.F.

A. malabarica (L.) R.Br. ex Sims, Bot. Mag. 46: t. 2071. 1819; Hook. f. Fl. Brit. India 4: 673. 1885; Cooke, Fl. Pres. Bombay 2: 544. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14: 153. 1940; Keng in Gard. Bull. Straits Settlem. 24: 37. 1969. *Nepeta malabarica* L. Mant. Alt. 566. 1771. *Gajibha*.

Herbs, c 1.5 m high. Leaves c 9.0 x 2.8 cm, opposite, margins crenate-serrate, apex acute, pale tomentose above, white below. Flowers pale purple, in terminal and axillary interrupted spikes. Nutlets broadly ovoid, dark brown, shining.

Fls. & Frts. : January–March.

Illus. : Wight, Ic. t. 864. 1844–1845.

Distrib. : Common. Aruna river banks, Mangrul village.

HYPTIS Jacq.

Hyptis suaveolens (L.) Poit. in Ann. Mus. Natl. Hist. Nat. 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: 63. 1940; Keng in Gard. Bull. Straits Settlem. 24: 96. 1969. *Ballota suaveolens* L. Syst. Nat. ed. 10. 1100. 1759.

Herbs or undershrubs, c 1.5 m high, spreading, hairy. Leaves opposite, variable, ovate, occasionally sub-orbicular, margins dentate-serrate, apex acute or obtuse, sparsely pubescent above, densely so beneath. Flowers purple, in axillary whorls. Nutlets oblong, slightly emarginate, brown.

Fls. & Frts. : September–March.

Distrib. : Common. Durg R.F.; E. Gondwakadi R. F.; Jamwadi talao banks; Mukutban, weed along *Gossypium* fields.

LAVANDULA L.

Lavandula bipinnata (Roth) O. Ktze. Rev. Gen. Pl. 521. 1891; Mukerjee in Rec. Bot. Surv. India 14: 65. 1940. *Bystropogon bipinnatus* Roth, Nov. Pl. Sp. 225. 1821. *Lavandula burmanni* Benth. Lab. Gen. & Sp. 151. 1833; Hook. f. Fl. Brit. India 4: 631. 1885; Cooke, Fl. Pres. Bombay 2: 534. 1958 (Repr. ed.). *Ghodeghui*, *Gorea*.

Herbs, c 1 m high, whole plant appressed pubescent. Lobes of leaves linear. Flowers blue, in axillary or terminal spikes; bracts shortly ovate with a long capillary awn. Nutlets oblong, the back marked by a large white areole.

Fls. & Frts. : September–November.

Illus. : Wight, Ic. t. 1438. 1849 (*L. burmanni*).

Distrib. : Common. Found on the edges of cultivated fields. Karegaon, near Penganga river, Bori range.

LEONOTIS (Pers.) R. Br.

Leonotis nepetifolia (L.) R. Br. Prodr. 504. 1810; Hook. f. Fl. Brit. India 4: 691. 1885 (*nepetaefolia*); Cooke, Fl. Pres. Bombay 2: 555. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14: 185. 1940. *Phlomis nepetifolia* L. Sp. Pl. 586. 1753 (*nepetaefolia*). *Dipmal*, *Matisul*.

Undershrubs, c 1 m high, pubescent. Leaves c 10 x 5 cm, opposite, ovate, margins serrate, apex acute, minutely pubescent. Flowers orange-scarlet, in globose axillary whorls; calyx spinous tipped. Nutlets oblong to ovoid, triquetrous with a deep triangular pit at apex.

Fls. & Frts. : December–February.

Illus. : Wight, Ic. t. 867. 1844–1845; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 568. 1982.

Distrib. : Common. Found on the edges of cotton fields, Mukutban.

LEUCAS R. Br.

- | | | |
|--|-----|----------------------|
| 1. Leaf-margins entire | ... | <i>L. stricta</i> |
| 1. Leaf-margins crenate to crenate-serrate : | | |
| 2. Bracts linear, villous and long-ciliate; the upper calyx tooth long, the rest smaller | ... | <i>L. aspera</i> |
| 2. Bracts foliaceous, lanceolate, ciliate; calyx teeth sub-equal | ... | <i>L. cephalotes</i> |

Leucas aspera (Willd.) Spreng. Syst. 2: 743. 1825; Hook. f. Fl. Brit. India 4: 690. 1885; Cooke, Fl. Pres. Bombay 2: 548. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14: 166. 1940; Keng in Gard. Bull. Straits Settlem. 24: 101. 1969. *Phlomis aspera* Willd. in Link, Enum. Pl. Hort. Berol. 2: 621. 1822.

Herbs, c 40 cm high, hairy. Leaves c 4.5 x 1.5 cm, opposite, elliptic-lanceolate, apex acute, pubescent. Flowers white, in terminal and occasionally axillary whorls. Nutlets oblong.

Fls. & Frts. : December–February.

Distrib. : Commonly found in cultivated fields. Durg camp, weed in *Sorghum* fields; Khandala, weed in *Cicer arietinum* fields.

L. cephalotes (Roth) Spreng. Syst. 2: 743. 1825; Hook. f. Fl. Brit. India 4: 689. 1885; Cooke, Fl. Pres. Bombay 2: 549. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14: 168. 1940. *Phlomis cephalotes* Roth, Nov. Pl. Sp. 262. 1821.

Herbs, c 0.75 m high, hairy. Leaves c 7.5 x 3.2 cm, opposite, ovate to ovate-lanceolate, margins crenate, apex acute, pubescent. Flowers white, in terminal whorls. Nutlets oblong, brown.

Fls. & Frts. : August–October.

Illus. : Wight, Ic. t. 337. 1840.

Distrib. : Common. Hiwri temple surroundings, Hiwri R.F.; Khandala R.F.; Majra village, Patan Bori range; Penganga felling series, Kharbi range.

L. stricta Benth. in Wall. Pl. As. Rar. 1: 81. 1829; Hook. f. Fl. Brit. India 4: 688. 1885; Cooke, Fl. Pres. Bombay 2: 551. 1958 (Repr. ed.); Mukerjee in Rec. Bot. Surv. India 14: 170. 1940.

Herbs, c 20 cm high, hairy. Leaves c 2.5 x 0.5 cm, opposite, linear-oblong, apex obtuse, pubescent. Flowers white, in terminal whorls. Nutlets oblong, brown.

Fls. & Frts. : November–March.

Distrib. : Common. Found as a weed in wheat fields. Mukutban.

OCIMUM L.

Ocimum americanum L. in Jusl. Cent. 1, Pl. 15. 1775; Keng in Gard. Bull. Straits Settlem. 24: 126. 1969. *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: 17. 1940. *Ran tulsi*.

Herbs, c 0.75 m high, pubescent. Leaves c 4.5 x 2.3 cm, whorled, elliptic-oblong or elliptic-ovate, acute at both ends, sparsely pubescent, gland dotted. Flowers white, in whorls arranged on terminal spikes. Nutlets oblong, black, minutely punctate.

Fls. & Frts. : August–February.

Distrib. : Common. Usually occurring on the bunds of cultivated fields. Aruna river banks, Hiwri R.F., Yavatmal; Karanji; Majra village, Patan Bori range; Umalkhed.

ORTHOSIPHON Benth.

- | | | |
|--|-----|----------------------|
| 1. Root tubers fusiform; corolla tube longer than the calyx | ... | <i>O. rubicundus</i> |
| 1. Root tubers absent; corolla tube about equal to the calyx | ... | <i>O. pallidus</i> |

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: 23. 1940.

Herbs, suffrutescent, minutely pubescent. Leaves c 3.5 x 1.6 cm, opposite, ovate, margins crenate-serrate, apex subacute, gland-dotted. Flowers white, whorled, in terminal and axillary racemes. Nutlets subglobose, light brown.

Fls. & Frts. : July–September.

Illus. : Mahesh. Illus. Fl. Delhi f. 175. 1966.

Distrib. : Common. Usually found in the edges of forests. Karanji R.F.; Morchandi felling series, Bittergaon R.F.

O. rubicundus (D. Don) Benth. in Wall. Pl. As. Rar. 2: 14. 1831; Hook. f. Fl. Brit. India 4: 614. 1885; Mukerjee in Rec. Bot. Surv. India 14: 25. 1940. *Plectranthus rubicundus* D. Don, Prodr. Fl. Nepal. 116. 1825 (*Plectranthes rubicunda*).

Herbs. Leaves c 13 x 5 cm, opposite, ovate-elliptic to ovate-lanceolate, margins crenate-serrate, apex obtuse to sub-acute, puberulous. Flowers white with a pinkish tinge, in whorls arranged on c 25 cm long racemes. Nutlets sub-globose, punctulate, yellow.

Fls. & Frts. : July-September.

Distrib. : Common. Found as an undergrowth in open places in the forest. E. Gondwakadi R.F.; Majra felling series, Patan Bori range.

Notes : This is an addition to the Flora of Maharashtra (Karthikeyan & Anandkumar, 1983).

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: 111. 1940; Keng in Gard. Bull. Straits Settlem. 24: 162. 1969.

Herbs, c 0.5 m high, gland-dotted, hairy. Leaves c 7.5 x 2.5 cm, opposite, oblong, lanceolate to oblanceolate, margins crenate, apex obtuse, pubescent, gland dotted. Flowers white, in whorls arranged on terminal and axillary c 15 cm long racemes. Nutlets ovoid-oblong.

Fls. & Frts. : December-March.

Distrib. : Common. Aruna river banks, Kharad.

NYCTAGINACEAE

BOERHAVIA L.

Boerhavia diffusa L. Sp. Pl. 3. 1753; Cooke, Fl. Pres. Bombay 2: 563. 1958 (Repr. ed.). *B. repens* L. op. cit.; Hook. f. Fl. Brit. India 4: 709. 1885. *B. repens* var. *diffusa* (L.) Hook. f. op. cit.

Herbs, diffuse, pubescent. Leaves c 2.5 x 2.2 cm, opposite, ovate or sub-orbicular, apex obtuse, whitish and sparsely hairy beneath. Flowers pink, in axillary and terminal umbels; perianth glandular viscid. Fruits obovoid or clavate 5-ribbed, glandular.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 874, 1844–1845; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 578. 1982.

Distrib. : Common. Agriculture farm, Yavatmal.

Cultivated species :

Bougainvillea spectabilis Willd. is usually planted in gardens and near houses for ornamental purposes.

AMARANTHACEAE

1. Leaves narrowly linear, fascicled at the nodes of branchlets ... *Aerva (monsoniae)*
1. Leaves various, never narrowly linear or if so then not fascicled, opposite or alternate :
 2. Leaves alternate :
 3. Perianth scarious; seeds several ... *Celosia*
 3. Perianth not scarious; seed solitary :
 4. Flowers in axillary clusters or panicles ... *Amaranthus*
 4. Flowers in spikes :
 5. Spikes dense, white woolly ... *Aerva (lanata)*
 5. Spikes lax, glabrous ... *Digera*
 2. Leaves opposite :
 6. Flowers and fruits deflexed ... *Achyranthes*
 6. Flowers and fruits not deflexed :
 7. Flowers in axillary, globose clusters ... *Alternanthera*
 7. Flowers in terminal, ovoid heads ... *Gomphrena*

ACHYRANTHES L.

Achyranthes aspera L. Sp. Pl. 204. 1753; Hook. f. Fl. Brit. India 4: 730. 1885; Cooke, Fl. Pres. Bombay 2: 580. 1958 (Repr. ed.); Witt, List. 67. 1908. *Aghada*, *Aghara*.

Herbs, c 1 m high, all parts pubescent. Leaves c 5 x 4 cm, variable, obovate or sub-orbicular, apex obtuse, pubescent. Flowers pale greenish in spikes. Utricles oblong.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1777. 1852; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 581. 1982.

Distrib. : Commonly found as a weed in wheat fields or in waste places. Umalkhed.

AERVA Forssk.

- | | | |
|---|-----|---------------------|
| 1. Leaves alternate, elliptic or obovate; perianth lobes 5 | ... | <i>A. lanata</i> |
| 1. Leaves fascicled at the nodes of the branchlets, narrowly linear; perianth lobes 4 | ... | <i>A. monsoniae</i> |

Aerva lanata (L.) A. Juss. in Ann. Mus. Nat. Hist. Paris 11: 131. 1808; Hook. f. Fl. Brit. India 4: 728. 1885; Cooke, Fl. Pres. Bombay 2: 578. 1958 (Repr. ed.). *Achyranthes lanata* L. Sp. Pl. 205. 1753. *Kapuri maduri*.

Herbs, c 0.5 m high, erect or sub-erect, tomentose. Leaves c 4.5 x 3.0 cm, apex obtuse, sparsely pubescent above, densely so beneath. Flowers white, in axillary spikes. Utricles ovoid, black, shining.

Fls. & Frts. : August–February.

Illus. : Mahesh. Illus. Fl. Delhi f. 176. 1966.

Distrib. : Common. Agriculture farm, Yavatmal; Chandni village; Karanji; Umalkhed.

A. monsoniae (L.f.) Mart. in Nov. Act. Acad. Caes. Leop. Carol. Nat. Cur. 13: 291. 1826; Hook. f. Fl. Brit. India 4: 728. 1885; Cooke, Fl. Pres. Bombay 2: 578. 1958 (Repr. ed.). *Illecebrum monsoniae* L. f. Suppl. 161. 1781.

Herbs, branches prostrate or ascending, white woolly-tomentose. Leaves c 1 cm long, sessile, apex finely acuminate, pubescent. Flowers pale pink in cylindrical spikes at the ends of short lateral branches. Utricles circumscissile. Seeds ellipsoid, pale brown, polished.

Fls. & Frts. : October–January.

Illus. : Wight, Ic. t. 725. 1843.

Distrib. : Rare. Found to occur in sandy soil and cultivated fields. Mukutban, 148428.

ALTERNANTHERA Forssk.

Alternanthera sessilis (L.) R. Br. ex DC. in Cat. Hort. Monspel.

4: 77. 1813; Hook. f. Fl. Brit. India 4: 731. 1885; Melville in Kew Bull. 1958: 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.). *Jal jamba, Kanchri.*

Herbs, prostrate, often rooting at lower nodes, minutely pubescent. Leaves sessile, linear-oblong, apex acute, more or less glabrous. Flowers white. Utricles broadly obovate. Seeds orbicular, bright yellow.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 727. 1843; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 584. 1982.

Distrib. : Common. Pandharkawada; Pandharkawada-Bori road; Patri, near Umari village on Yavatmal-Pandharkawada road; Umarda forest nursery, Yavatmal; Waghadi river, Yelabara.

AMARANTHUS L.

- | | |
|--|-----------------------------|
| 1. Stems spiny; leaves ovate; perianth lobes 5 | ... <i>A. spinosus</i> |
| 1. Stems not spiny; leaves obovate; perianth lobes 3 | ... <i>A. roxburghianus</i> |

Amaranthus roxburghianus Nevski in Act. Inst. Bot. Acad. Sc. USSR 1, Fasc. 4: 311. 1937 in Obs. (*roxburghiano*); N.C. Nair in J. Bombay nat. Hist. Soc. 73: 60. 1976. *A. polygamus* Hook. f. Fl. Brit. India 4: 721. 1885 *non* L. 1759; Cooke, Fl. Pres. Bombay 2: 575. 1958 (Repr. ed.). *Chavlai.*

Herbs, c 0.5 m high. Leaves c 2.0 x 1.1 cm, apex obtuse. Flowers green, in axillary clusters. Utricles ovoid, circumscissile. Seeds orbicular, black, shining.

Fls. & Frts. : October–February.

Illus. : Wight, Ic. t. 719. 1843 (*non* t. 512).

Distrib. : Common. Usually found as a weed in cultivated fields or waste places. Agriculture farm, Yavatmal.

A. spinosus L. Sp. Pl. 991. 1753; Hook. f. Fl. Brit. India 4: 718. 1885; Cooke, Fl. Pres. Bombay 2: 573. 1958 (Repr. ed.). *Kante math.*

Herbs, c 1 m high, more or less glabrous. Leaves c 6.0 x 3.5 cm, apex obtuse. Flowers green, in axillary clusters and terminal, dense, spicate panicles. Utricles ovoid, circumscissile. Seeds sub-orbicular, dark brown.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 513. 1841.

Distrib. : Common. Usually found along roadsides and near villages. Karanji village; Majra village, Bhiwkund; Yelabara.

CELOSIA L.

Celosia argentea L. Sp. Pl. 205. 1753; Hook. f. Fl. Brit. India 4: 714. 1885; Cooke, Fl. Pres. Bombay 2: 570. 1958 (Repr. ed.) *Kurdu*.

Herbs, c 0.75 m high. Leaves c 8 x 4 cm, variable, linear-lanceolate, elliptic, sub-orbicular, ovate or obovate, apex obtuse, acute or acuminate. Flowers white with a pinkish tinge, in terminal spikes. Utricles circumscissile. Seeds compressed, orbicular, black.

Fls. & Frts. : August–February.

Illus. : Wight, Ic. t. 1767. 1852; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 586. 1982.

Distrib. : Common. Usually found as a weed in cultivated fields. Aruna river banks, Hiwri R.F., Yavatmal; Karanji; Sunna-Tipeshwar road, Bori range.

DIGERA Forssk.

Digera muricata (L.) Mart. Beitr. Amar. 77, n. 2. 1825. *Achyranthes muricata* L. Sp. Pl. ed. 2. 295. 1762. *Digera arvensis* Forssk. Fl. Aeg.-Arab. 65. 1775; Hook. f. Fl. Brit. India 4: 717. 1885; Cooke, Fl. Pres. Bombay 2: 572. 1958 (Repr. ed.).

Herbs, c 0.75 m high, more or less glabrous. Leaves c 3.2 x 2.6 cm, ovate, apex acute. Flowers pale pink, in axillary, pedunculate spikes. Nuts subglobose, crustaceous, rugose. Seeds globose.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 732. 1843 (*Desmochaeta muricata* DC. Cat. Hort. Monsp. 103. 1813); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 587. 1982.

Distrib. : Common. Found as a weed in cultivated fields. Aruna river banks, Hiwri R.F., Yavatmal; Pandharkawada; Umarkhed.

GOMPHRENA L.

Gomphrena celosioides Mart. in Nov. Act. Nat. Cur. 13: 301. 1826; Raiz. in J. Bombay nat. Hist. Soc. 48: 675. 1949.

Herbs, spreading, pilose. Leaves c 3 x 1 cm, elliptic or obovate-oblong, apex acute or mucronate, pilose. Flowers white. Nuts ovoid. Seeds sub-orbicular, brown.

Fls. & Frts. : Throughout the year.

Illus. : Mahesh. Illus. Fl. Delhi f. 179. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 588. 1982.

Distrib. : Common. Found as a weed in cultivated fields, waste places and along dried up ponds. Hiwri-Barsagaon on Pandharakawada – Sibla road, 11 km point; Karanji village; Mukutban.

Notes : This is a native of S. Brazil, Paraguay, Uruguay and Argentina and a rapidly spreading weed (Raiz. op. cit.).

CHENOPodiaceae**CHENOPodium L.**

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*.

Herbs, c 1 m high, stem striped, covered with white, mealy granular pubescence. Leaves c 4.2 x 1.0 cm, alternate, variable, lanceolate, margins distantly serrate. Flowers green, in clusters in panicled spikes. Utricles membranous. Seeds black, orbicular, compressed.

Fls. & Frts. : December–March.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 594. 1982.

Distrib. : Common. Usually found as a weed on bunds of wheat fields. Umarkhed.

BASELLACEAE**BASELLA L.**

Basella rubra L. Sp. Pl. 272. 1753; Hook. f. Fl. Brit. India 5: 20. 1886; Cooke, Fl. Pres. Bombay 2: 594. 1958 (Repr. ed.). *Vet-bondi*.

Herbs, twining, fleshy. Leaves c 10.5 x 7.5 cm, alternate, broadly ovate, apex acuminate. Flowers white, pinkish towards apex, in lax, axillary, peduncled spikes. Utricles globose. Seeds subglobose.

Fls. & Frts. : September–January.

Illus. : Wight, Ic. t. 896. 1844–1845 (*B. alba* L. op. cit.); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 596. 1982.

Distrib. : Common. Usually found near habitations in wet places. Aruna river banks, Mangrul village.

POLYGONACEAE

POLYGONUM L.

- | | | |
|--|-----|--------------------|
| 1. Plants prostrate; leaves less than 1.5 cm long, linear-oblong or obovate; ocrea hyaline, lacerate | ... | <i>P. plebeium</i> |
| 1. Plants erect; leaves more than 1.5 cm long, linear-lanceolate; ocrea membranous, truncate | ... | <i>P. glabrum</i> |

Polygonum glabrum Willd. Sp. Pl. 2: 447. 1799; Hook. f. Fl. Brit. India 5: 34. 1886; Cooke, Fl. Pres. Bombay 3: 5. 1958 (Repr. ed.); Gage in Rec. Bot. Surv. India 2: 393. 1903. *Sheral*.

Herbs, c 2 m high. Leaves c 15 x 2 cm, alternate, apex acuminate, occasionally gland dotted beneath; ocrea c 3.5 cm, truncate, veins conspicuous. Flowers pale pink, in paniculate racemes. Nutlets biconvex to trigonous, black, shining.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1797. 1852; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 598. 1982.

Distrib. : Common. Found in marshy places or on the edges of streams. Aruna river bed, Hiwri R.F., Yavatmal; Waghad nadi, Yelabara.

P. plebeium R. Br. Prodr. 420. 1810 (*plebejum*); Hook. f. Fl. Brit. India 5: 27. 1886; Cooke, Fl. Pres. Bombay 3: 4. 1958 (Repr. ed.); Gage in Rec. Bot. Surv. India 2: 383. 1903.

Herbs, prostrate. Leaves c 1.0 x 0.2 cm, alternate, sub-sessile. Flowers pink, in axillary clusters. Nutlets trigonous, black, polished.

Fls. & Frts. : November–March.

Illus. : Wight, Ic. t. 1808. 1852 (*P. indicum* Heyne in Roth, Nov. Pl. Sp. 208. 1821).

Distrib. : Common. Found in dried edges of ponds and rivers alongwith *Chrozophora prostrata*, *Cyperus pygmaeus* and *Heliotropium supinum*. Aruna river bed, Kharad; Khandala R.F.; Mukutban talao.

CASSYTHACEAE

CASSYTHA L.

Cassytha filiformis L. Sp. Pl. 35. 1753; Hook. f. Fl. Brit. India 5: 188. 1886; Cooke, Fl. Pres. Bombay 3: 35. 1958 (Repr. ed.). *Amar vel.*

Herbs, parasitic, leafless, stem greenish-yellow, twined and matted together. Flowers white, in lateral, lax, divaricate spikes. Drupes globose, c 0.5 cm across.

Fls. & Frts. : October-January.

Illus. : Wight, Ic. t. 1847. 1852; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 607. 1982.

Distrib. : Sparse. Found to be parasitic on *Anogeissus latifolia* and *Ficus hispida*. Durg R.F.

LAURACEAE

LITSEA Lam.

Litsea chinensis Lam. Encycl. Method. 3: 574. 1789; Cooke, Fl. Pres. Bombay 3: 32. 1958 (Repr. ed.). *L. sebifera* Pers. Syn. Pl. 2: 4. 1807; Hook. f. Fl. Brit. India 5: 157. 1886; Witt, List. 68. 1908. *Maidlakdi*.

Trees, middle sized; branchlets pubescent. Leaves c 22 x 9 cm, alternate, thinly coriaceous, ovate or elliptic-lanceolate, pubescent beneath. Flowers white or yellow, in globose, few flowered umbels or corymbs. Berries globose, c 0.5 cm across, purple at maturity.

Fls. & Frts. : March-July.

Illus. : Roxb. Cor. Pl. t. 147. 1800 (*Tetranthera apetala*).

Notes : Report based on Witt, op. cit.

LORANTHACEAE

DENDROPHTHOE Mart.

Dendrophthoe falcata (L.f.) Etting. in Denkschr. Kaiserl. Akad. Wiss. Math. Naturwiss. Kl. 32: 52, 58, t. 13, f. 14. 1872; Danser in Bull. Jard. Bot. Buit. 3, 16: 30. 1938. *Loranthus falcatus* L. f. Suppl. 211. 1781. *L. longiflorus* var. *falcatus* (L.f.) Kurz, For. Fl. 2: 321. 1877; Hook. f. Fl. Brit. India 5: 215. 1886. *L. longiflorus* var. *amplexifolia* (DC.) Thw. Enum. 134. 1859; Hook. f. op. cit. 215. *L. longiflorus* Desr. in Lam. Encycl. 3: 498. 1789; Cooke, Fl. Pres. Bombay 3: 42. 1958 (Repr. ed.); Witt, List. 69. 1908. *Kawarak*.

Herbs, parasitic, dichotomously branched. Leaves c 10.5 x 5.0 cm, alternate, coriaceous, elliptic or ovate-lanceolate, apex obtuse. Flowers red, in solitary or fascicled racemes. Berries ovoid-oblong, c 1 cm long.

Fls. & Frts. : December–March.

Illus. : Wight, Ic. t. 302. 1840 (*L. longiflorus*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 616. 1982.

Distrib. : Common. Found to be parasitic on *Diospyros melanoxylon* and *Madhuca longifolia* var. *latifolia*. Jholapur–Pardi forest, Karanji; Mohroli.

SANTALACEAE

SANTALUM L.

Santalum album L. Sp. Pl. 349. 1753; Hook. f. Fl. Brit. India 5: 231. 1886; Cooke, Fl. Pres. Bombay 3: 49. 1958 (Repr. ed.). *Chandan*.

Trees c 6 m high, bark brown. Leaves c 4.5 x 2.5 cm, elliptic-lanceolate, apex acute. Flowers brick red in paniculate cymes. Drupes c 1 cm across, globose, purplish when ripe.

Fls. & Frts. : August–December.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 622. 1982.

Distrib. : Umarda forest nursery surroundings, Yavatmal.

Notes : This species is naturally regenerating and thriving well in this area only. It has not been observed anywhere else in the district.

EUPHORBIACEAE

1. Inflorescence a cyathium	...	EUPHORBIUM
1. Inflorescence other than a cyathium :		
2. Plants with stinging hairs	...	TRAGIA
2. Plants without stinging hairs :		
3. Trees :		
4. Fruit a berry with bony cocci	...	EMBLICA
4. Fruits drupaceous or capsular :		
5. Flowers in racemes	...	ANTIDESMA
5. Flowers in spikes or spicate clusters :		
6. Fruits drupaceous	...	BRIDELIA
6. Fruits capsular :		
7. Leaves ovate to ovate-lanceolate with red glands beneath	...	MALLOTUS
7. Leaves elliptic-ovate or orbicular, eglandular	...	CLEISTANTHUS
3. Shrubs, undershrubs or herbs :		
8. Petals present :		
9. Herbs, whole plant stellate-tomentose	...	CHROZOPHORA
9. Shrubs, glabrous	...	BRIDELIA
8. Petals absent :		
10. Female flowers with accrescent leafy bracts....		ACALYPHA
10. Female flowers not as above :		
11. Fruit a berry	...	KIRGANELIA
11. Fruits capsular :		
12. Male flowers usually fascicled, female solitary	...	PHILLANTHUS
12. Flowers in racemes, spikes or contracted panicles :		
13. Flowers in spikes; capsules globose	...	HOMONOIA
13. Flowers in racemes or contracted panicles; capsules obovoid	...	BALIOSPERMUM

ACALYPHA L.

1. Bracts glandular hairy	...	A. malabarica
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1. Bracts not glandular hairy :

 2. Leaf apex cuspidate-acuminate ... *A. ciliata*
 2. Leaf apex acute :
 3. Leaves ovate-lanceolate; capsules with bulbous based hairs ... *A. lanceolata*
 3. Leaves rhomboid-ovate; capsules without bulbous based hairs ... *A. indica*

***Acalypha ciliata* Forsk.** Fl. Aeg.-Arah. 162. 1775; Hook. f. Fl. Brit. India 5: 417. 1887; Cooke, Fl. Pres. Bombay 3: 109. 1958 (Repr. ed.).

Herbs, c 25 cm high, pubescent. Leaves c 5 x 3 cm, alternate, ovate, margins crenate, scabrid and sparsely long hairy. Flowers greenish, in axillary, androgynous spikes. Seeds ovoid, reddish-brown.

Fls. & Frts. : July-September.

Distrib. Not common. Pandharkawada.

***A. indica* L.** Sp. Pl. 1003. 1753; Hook. f. Fl. Brit. India 5: 416. 1887; Cooke, Fl. Pres. Bombay 3: 108. 1958 (Repr. ed.). *Khokali, Kupi*.

Herbs, c 75 cm high, pubescent. Leaves c 4.0 x 2.7 cm, alternate, margins serrate from about the middle, scaberulous above, sparsely hairy beneath. Flowers green, in axillary, lax, androgynous spikes. Capsules hirsute. Seeds ovoid, brown.

Fls. & Frts. : August-March.

Illus. : Mahesh. Illus. Fl. Delhi f. 197. 1966.

Distrib. : Common in waste places or as a weed in cultivated fields. Durg camp; Pandharkawada; Umalkhed.

***A. lanceolata* Willd.** Sp. Pl. 4: 524. 1805; Cooke, Fl. Pres. Bombay 3: 109. 1958 (Repr. ed.). *A. fallax* Muell. Arg. in Linnaea 34: 43. 1865; Hook. f. Fl. Brit. India 5: 416. 1887.

Herbs, c 50 cm high, hirsute. Leaves c 5.0 x 3.2 cm, margins crenate-serrate, hairy on nerves below. Flowers in axillary spikes; male reddish, female green. Seeds globose-ovoid, pale brown.

Fls. & Frts. : July-September.

Distrib. : Sparse. Morchandi.

A. 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.).

Herbs, c 30 cm high, pubescent. Leaves c 3.2 x 2.0 cm, alternate, ovate, margins serrate, apex acute, sparsely hairy. Flowers green, in axillary, androgynous spikes. Capsules hispid. Seeds ovoid, reddish-brown.

Fls. & Frts. : July-September.

Distrib. : Common. Dhansala, Washim-Pusad road; Kharad talao banks, Hiwri R.F.; Majra felling series, Patan Bori range; Pandharkawada; Penganga Felling series, Kharbi range.

ANTIDESMA L.

Antidesma acidum Retz. Obs. Bot. 5: 30. 1789; Airy Shaw in Kew Bull. 26: 352. 1972. **A. diandrum** (Roxb.) Roth, Nov. Pl. Sp. 369. 1821; Hook. f. Fl. Brit. India 5: 361. 1887, p.p.; Cooke, Fl. Pres. Bombay 3: 90. 1958 (Repr. ed.).

Trees, c 3 m high. Leaves c 12 x 5 cm, alternate, elliptic-obovate or elliptic-lanceolate, abruptly acuminate. Flowers in c 5 cm long, slender racemes. Drupes purplish-red, c 0.3 cm across.

Fls. & Frts. : July-October.

Illus. : Wight, Ic. t. 766. 1844.

Distrib. : Rather rare. Usually found on edges of streams. Morchandi felling series, Bittergaon range, 156731.

BALIOSPERMUM Bl.

Baliospermum montanum (Willd.) Muell. Arg. in DC. Prodr. 15: 1125. 1866; Airy Shaw in Kew Bull. 26: 222. 1972. *Jatropha montana* Willd. Sp. Pl. 4: 563. 1805. **Baliospermum axillare** Bl. Bijdr. 604. 1825; Hook. f. Fl. Brit. India 5: 461. 1887; Cooke, Fl. Pres. Bombay 3: 106. 1958 (Repr. ed.); Witt, List. 73. 1908. *Danti, Jamalgota*.

Undershrubs, c 2 m high, young stems hairy. Leaves c 16 x 9 cm, lanceolate or ovate-lanceolate, margins sinuate toothed, apex sub-acute. Flowers all male or with a few female below; perianth of male flowers red, those of female flowers reddish-green. Capsules obovoid, of three, 2-valved crustaceous cocci. Seeds ellipsoid, smooth, mottled.



Acalypha malabarica Muell. Arg.

Fls. & Frts. : November–March.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 479, f. 508. 1911 (*B. axillare*).

Distrib. : Common. Usually found along waste places near habitations. Jodmoha; Karanji; Wani–Mohroli road.

BRIDELIA Willd.

- | | |
|--|-------------------|
| 1. Leaves rhomboid–ovate to oblanceolate; flowers monoecious ... | <i>B. montana</i> |
| 1. Leaves elliptic–oblong; flowers dioecious ... | <i>B. retusa</i> |

Bridelia montana Willd. Sp. Pl. 4: 978. 1806; Hook. f. Fl. Brit. India 5: 269. 1887, *p.p.*

Shrubs, bushy, c 1.5 m high. Leaves c 4.5 x 3.0 cm, apex obtuse. Flowers pale–greenish yellow. Drupes green, white speckled, globose, c 0.4 cm across.

Fls. & Frts. : October–December.

Illus. : Roxb. Cor. Pl. t. 171. 1802.

Distrib. : Rather rare. This occurs in open slopes and grows in crevices of rocks. Mahur–Arni road, 148532.

Notes : This is a new distributional record to the flora of Maharashtra (Karthikeyan & Anandkumar, 1983).

B. retusa (L.) Spreng. Syst. Veg. 3: 48. 1826; Hook. f. Fl. Brit. India 5: 268. 1887; Cooke, Fl. Pres. Bombay 3: 68. 1958 (Repr. ed.). *Clutia retusa* L. Sp. Pl. 1042. 1753. *Asana, Kutgi*.

Trees, c 15 m high. Leaves c 19 x 9 cm, alternate, apex subacute, margins crenulate, finely tomentose beneath; petioles tomentose. Flowers greenish–yellow, sessile or sub–sessile, crowded in dense, axillary clusters or on long, axillary or terminal, sometimes paniculate spikes. Drupes purplish–black, c 0.7 cm across.

Fls. & Frts. : July–February.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 436, f. 488. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 629. 1982.

Distrib. : Common. Usually found along with *Cassia fistula*, *Tectona grandis* and *Terminalia alata*. Hiwri R.F., Yavatmal; Khandala R.F.; Tipeshwar R.F.

CHROZOPHORA Neck. ex A.H.L.Juss.

- | | | |
|--|-----|---------------------|
| 1. Stems erect; capsules gaining blue colour when wetted | ... | <i>C. rottleri</i> |
| 1. Stems prostrate; capsules not as above | ... | <i>C. prostrata</i> |

Chrozophora prostrata Dalz. in Dalz. & Gibbs. Bombay Fl. 233. 1861; Cooke, Fl. Pres. Bombay 3: 105. 1958 (Repr. ed.); Balakr. in Bull. Bot. Surv. India 15: 6. 1973. *C. plicata* var. 3; Hook. f. Fl. Brit. India 5: 410. 1887.

Herbs. Leaves c 3 x 2 cm, broadly ovate or sub-orbicular, apex obtuse, base cordate or truncate, bullate, sparsely stellate hairy above, densely stellate woolly beneath. Male flowers yellow, female green, in short, few-flowered axillary racemes. Capsules stellately woolly.

Fls. & Frts. : November–March.

Distrib. : Common. Usually found in dried loamy soil alongwith *Cassia tora*, *Heliotropium supinum* and *Sphaeranthus indicus*. Khandala talao banks; Mukutban talao banks.

C. rottleri (Geisel.) A. Juss. ex Spreng. Syst. 3: 850. 1826; Balakr. in Bull. Bot. Surv. India 15: 4. 1973. *Croton rottleri* Geisel. Crot. Monogr. 54. 1807. *Chrozophora plicata* auct. non A. Juss. 1824; Hook. f. Fl. Brit. India 5: 409. 1887; Cooke, Fl. Pres. Bombay 3: 104. 1958 (Repr. ed.). *Suryavarti*.

Herbs, c 50 cm high. Leaves c 7 x 7 cm, variable, ovate to orbicular, apex obtuse, base cuneate, stellate hairy. Flowers green, in pedunculate densely stellate hairy racemes. Capsules c 0.5 cm across.

Fls. & Frts. : November–March.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 630. 1982.

Distrib. : Common. Penganga river bed, Kharbi; Umarkhed.

CLEISTANTHUS Hook. f. ex Planch.

Cleistanthus collinus (Roxb.) Benth. ex Hook. f. Fl. Brit. India 5: 274. 1887. *Clutia collina* Roxb. Cor. Pl. t. 169. 1802.

Trees, c 15 m high. Leaves c 8 x 6 cm, apex often retuse. Flowers in small axillary and shortly spicate clusters. Capsules c 2.5 cm across, obscurely 3-lobed, sub-globose.

Fls. & Frts. : July–December.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 632. 1982.

Distrib. : Morchandi felling series, Bittergaon range.

Notes : Malhotra & Moorthy (1971) recorded this species for the flora of Maharashtra from the adjacent Chandrapur district.

EMBLICA Gaertn.

Emblica officinalis Gaertn. Fruct. 2: 122, t. 108. 1790.
Phyllanthus emblica L. Sp. Pl. 982. 1753; Hook. f. Fl. Brit. India 5: 289. 1887; Cooke, Fl. Pres. Bombay 3: 81. 1958 (Repr. ed.). *Amla, Avla, Nelli*.

Trees, c 8 m high, branchlets finely pubescent. Leaves c 1.0 x 0.2 cm, linear-oblong; stipules ovate, finely acute. Flowers greenish-yellow, often on the naked portion below the leaves; male flowers numerous on short slender pedicels; female flowers few, subsessile. Fruits fleshy, globose, pale yellow, c 2 cm in diam. Seeds trigonous.

Fls. & Frts. : March–May.

Illus. : Wight, Ic. t. 1896. 1852; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 648. 1982 (*Phyllanthus emblica*).

Distrib. : Common. Usually found in association with other deciduous species like *Acacia chundra*, *Maytenus emarginata*, *Tectona grandis* and *Ziziphus xylopyra*. Durg R.F.; E. Gondwakadi R.F.; Khandala R.F.

EUPHORBIA L.

1. Shrubs or small trees; stems fleshy :
 2. Branches angular ... *E. nerifolia*
 2. Branches terete ... *E. nivulia*
1. Herbs; stems erect or prostrate, not fleshy :
 3. Leaves exstipulate, alternate below, opposite above or all alternate :
 4. Floral leaves distinctly broad and shorter than lower leaves ... *E. perbracteata*
 4. Floral leaves slightly broader than the lower leaves or more or less similar ... *E. dracunculoides*
 3. Leaves all opposite, stipulate, if exstipulate then opposite pairs of leaves joined by an interpetiolar line :

- 5. Gland of involucre with a conspicuous petaloid limb ... *E. parviflora*
- 5. Gland of involucre without a petaloid limb or limb inconspicuous :
 - 6. Herbs erect or ascending; leaves upto 3.5 cm long ... *E. hirta*
 - 6. Herbs prostrate; leaves less than 0.8 cm long :
 - 7. Capsules appressed-hairy ... *E. thymifolia*
 - 7. Capsules pubescent at angles of cocci only ... *E. prostrata*

Euphorbia dracunculoides Lam. Encycl. 2: 428. 1788; Hook. f. Fl. Brit. India 5: 262. 1887; Cooke, Fl. Pres. Bombay 3: 59. 1958 (Repr. ed.); Sant. in Bull. Bot. Soc. Bengal 8: 11. 1954.

Herbs, c 50 cm high. Leaves c 6.0 x 0.5 cm, sessile, linear to linear-lanceolate, apex subacute. Involucres solitary, subsessile, pubescent within, lobes short, ovate, ciliolate; glands semilunate, horned; filaments pubescent. Capsules c 0.25 cm long, ellipsoid, rugose or tuberculate. Seeds ellipsoid, rounded at base, grooved down on one side with an arillode at the oblique depressed apex.

Fls. & Frts. : October–March.

Illus. : Mahesh. Illus. Fl. Delhi f. 192. 1966.

Distrib. : Common. Penganga river banks, Kharbi.

E. hirta L. Sp. Pl. 454. 1753; Sant. in Bull. Bot. Soc. Bengal 8: 15. 1954. ***E. pilulifera*** Hook. f. Fl. Brit. India 5: 250. 1887; Cooke, Fl. Pres. Bombay 3: 64. 1958 (Repr. ed.).

Herbs, c 45 cm high, pubescent. Leaves c 3.5 x 1.5 cm, opposite, obliquely lanceolate or ovate or rhomboid-oblong, apex acute, base unequal, margins serrulate, appressed-hispid. Cymes axillary, pedunculate, involucres hispid; glands 4, erect. Capsules globose-trigonous, appressed-hispid. Seeds oblong, tetragonal.

Fls. & Frts. : Throughout the year.

Illus. : Mahesh. Illus. Fl. Delhi f. 193. 1966.

Distrib. : Common. Aruna river banks, Hiwri R.F., Yavatmal; Dhansala, Washim-Pusad road; Khandala; Majra village, Patan Bori range.

E. nerifolia L. Sp. Pl. 451. 1753; Hook. f. Fl. Brit. India 5: 255. 1887; Cooke, Fl. Pres. Bombay 3: 59. 1958 (Repr. ed.); Sant. in Bull. Bot. Soc. Bengal 8: 7. 1954; Witt, List. 70. 1908. *Niwarung, Nurang*.

Shrubs or small trees, c 1.5 m high; branches with pairs of stipular spines from low, conical, truncate, distant, spirally arranged tubercles. Leaves towards the end of branches, c 20.0 x 6.5 cm, fleshy, alternate, obovate to obovate-oblong, apex rounded, more or less sessile, deciduous. Involucres hemispheric, lobes large, erect, fimbriate; glands transversely oblong. Capsules 0.8–1.2 cm across, ovoid-trigonous.

Fls. & Frts. : December–April.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 432, f. 485. 1911 (*E. ligularia* Roxb. Fl. Ind. 2: 465. 1832).

Distrib. : Found as an occasional escape. Pandharkawada; Pusad–Khandala road.

E. nivulia Buch.–Ham. in Trans. Linn. Soc. London 14: 286. 1825; Hook. f. Fl. Brit. India 5: 255. 1887; Sant. in Bull. Bot. Soc. Bengal 8: 8. 1954; Witt, List. 70. 1908. *E. nerifolia* sensu Cooke, Fl. Pres. Bombay 3: 59. 1958, p.p. (Repr. ed.), non L. 1753.

Shrubs, c 4 m high. Leaves c 20.0 x 6.5 cm, at the ends of branches, obovate-oblong or spatulate, stipular thorns paired, straight. Flowers and fruits same as in *E. nerifolia*.

Fls. & Frts. : December–May.

Illus. : Wight, Ic. t. 1862. 1852.

Notes : Reported on the authority of Witt, *op. cit.*

E. parviflora L. Syst. ed. 10. 2: 1047. 1759; Sant. in Bull. Bot. Soc. Bengal 8: 13. 1954. *E. hypericifolia* L. Sp. Pl. 454. 1753, p.p.; Hook. f. Fl. Brit. India 5: 249. 1887, p.p. *E. hypericifolia* var. *parviflora* (L.) Prain, Bengal Pl. 2: 924. 1903; Cooke, Fl. Pres. Bombay 3: 63. 1958 (Repr. ed.).

Herbs, c 50 cm high, sparsely pubescent. Leaves c 3.0 x 1.3 cm, opposite, elliptic-oblong, apex obtuse, margins serrulate, base rounded, sides unequal. Involucres in axillary and terminal, usually pedunculate and many flowered cymes, turbinate bracts many, subulate, at the base of the pedicel; limb of gland usually white, orbicular. Capsules subglobose. Seeds smooth.

Fls. & Frts. : Throughout the year.

Distrib. : Common. Found as a weed in cultivated fields as well as in disturbed forest areas. Agriculture farm (weed), Yavatmal; E. Gondwakadi R.F.; Karanji; Khandala; Kharad talao banks, Hiwri R.F.; Umarkhed; Umarda forest nursery surroundings.

E. perbracteata Gage in Kew Bull. 1914: 238. 1914; Sant. in Bull. Bot. Soc. Bengal 8: 10. 1954.

Herbs, c 40 cm high. Leaves c 6.0 x 0.5 cm, sessile, linear, apex acute. Involucres solitary, in umbels, campanuliform, c 0.3 cm long, sparsely hirsute within; lobes 5, oblong, or sub-triangularly elongate, sublacerate, sparsely ciliolate; glands 4, truncate. Capsules sub-pyramidal trilobed, sulcate. Seeds dark grey.

Fls. & Frts. : November–March.

Distrib. : Common. Found as a weed in cultivated fields. Patapangra; Umalkhed.

E. prostrata Ait. Hort. Kew. ed. 1, 2: 139. 1789; Hook. f. Fl. Brit. India 5: 266. 1887; Sant. in Bull. Bot. Soc. Bengal 8: 16. 1954; Mitra in Indian Forester 95: 425. 1969.

Herbs, c 25 cm long, puberulous. Leaves c 0.5 x 0.3 cm, opposite, shortly petiolate, oblong to oblong-ovate, margins denticulate, more or less glabrous. Capitula in short, axillary, leafy, racemiform clusters. Involucres campanulate or elongate, turbinate; glands 4, minute; lobes 5, ovate, pectinate-ciliate. Capsules minute, obovoid. Seeds minute, tetragonal, transversely grooved.

Fls. & Frts. : Throughout the year.

Illus. : Mahesh. Illus. Fl. Delhi f. 194. 1966.

Distrib. : Common. Aruna river banks, Hiwri R.F., Yavatmal; Pandharakawada; Umalkhed.

E. thymifolia L. Sp. Pl. 454. 1753; Hook. f. Fl. Brit. India 5: 252. 1887; Cooke, Fl. Pres. Bombay 3: 64. 1958 (Repr. ed.); Sant. in Bull. Bot. Soc. Bengal 8: 16. 1954. *Dhakti dudhi*, *Lahan nayati*.

Herbs, c 20 cm long. Leaves c 0.7 x 0.25 cm, opposite, oblong, apex obtuse, margins serrulate-crenulate, more or less glabrous above, appressed hirsute below. Capitula axillary; involucres turbinate; glands very minute. Capsules ovoid. Seeds oblong-tetragonal, transversely 4–5-sulcate.

Fls. & Frts. : Throughout the year.

Distrib. : Common. Aruna river banks, Hiwri R.F., Yavatmal; Durg talao banks; Pandharkawada-Bori road.

HOMONOIA Lour.

1. Leaves cuneate-obovate	...	<i>H. retusa</i>
1. Leaves linear-lanceolate	...	<i>H. riparia</i>

Homonoia retusa (Grah. ex Wight) Muell.-Arg. in Linnaea 34: 200. 1865; Hook. f. Fl. Brit. India 5: 456. 1887; Cooke, Fl. Pres. Bombay 3: 119. 1958 (Repr. ed.); Airy Shaw in Kew Bull. 26: 282. 1972. *Adelia retusa* Grah. ex Wight, Ic. t. 1869. 1852. *Machim*.

Undershrubs, c 1 m high. Leaves c 3.0 x 1.5 cm, sub-sessile, rigidly coriaceous, margins toothed, puberulous. Flowers pale red, in short, stout spikes. Capsules hoary tomentose. Seeds rounded on back, slightly angular on inner face.

Fls. & Frts. : December–March.

Illus. : Wight, op. cit.

Distrib. : Common; found along water courses in loamy soil in association with *Phyllanthus lawii*. Penganga river banks, Bori; Kharbi.

H. riparia Lour. Fl. Cochinch. 637. 1790; Hook. f. Fl. Brit. India 5: 455. 1887; Cooke, Fl. Pres. Bombay 3: 118. 1958 (Repr. ed.). *Serni*.

Shrubs, c 2 m high. Leaves c 12 x 1 cm, apex acute, puberulous, scaly beneath. Flowers in c 6 cm long spikes. Capsules c 0.3 cm in diam. Seeds rounded at back, slightly angular on inner face.

Fls. & Frts. : June–September.

Illus. : Wight, Ic. t. 1868. 1852 (*Adelia nerifolia* Roth, Nov. Pl. Sp. 375. 1821); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 641. 1982.

Distrib. : Sparse. Found on the edges of streams. Pandharkawada–Bori road, Penganga river bed.

Cultivated species :

Jatropha curcas L. and *J. gossypifolia* L. have been found to be planted for hedge purposes.

KIRGANELIA A.L.Juss.

Kirganelia reticulata (Poir.) Baill. Etudes Gen. Euph. 614. 1874. *Phyllanthus reticulatus* Poir. in Lam. Encycl. 5: 298. 1804; Hook. f. Fl. Brit. India 5: 288. 1887; Cooke, Fl. Pres. Bombay 3: 81. 1958 (Repr. ed.); Witt, List. 71. 1908. *Datvan*, *Pavan*.

Shrubs, c 2 m high, young branches tomentose. Leaves c 1.8 x 1.0 cm, oblong or elliptic, apex obtuse or acute, more or less glabrous. Male flowers red, in fascicles; female green, solitary. Berries purple, fleshy, globose.

Fls. & Frts. : August–January.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 440, f. 490. 1911 (*Phyllanthus reticulatus*); Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 643. 1982.

Distrib. : Common. Mukutban.

MALLOTUS Lour.

Mallotus philippensis (Lam.) Muell. Arg. in Linnaea 34: 196. 1865; Hook. f. Fl. Brit. India 5: 442. 1887 (*philippensis*); Cooke, Fl. Pres. Bombay 3: 113. 1958 (Repr. ed.); Witt, List. 72. 1908. *Croton philippense* Lam. Encycl. 2: 206. 1786. *Kamala*, *Kapilo*, *Ruhin*, *Shendri*.

Trees, c 8 m high; branchlets, young leaves and inflorescence rusty-pubescent. Leaves c 22 x 11 cm, alternate, apex acuminate, margins slightly toothed, pubescent beneath, base strongly 3-nerved; petiole c 8 cm long, with two small, sessile glands one on each side of the summit. Male flowers green, clustered, in erect terminal and axillary spikes which are usually several together; female flowers in short spikes. Capsules c 1 cm in diam. Seeds subglobose, black.

Fls & Frts. : December–March.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:483, f. 509. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 645. 1982.

Distrib. : Abundantly found on the banks of Penganga river in Kharbi range. Often found under the shade of *Terminalia arjuna*. Penganga felling series, Kharbi.

PHYLLANTHUS L.

- | | | |
|---|-----|--------------------|
| 1. Shrubs | ... | <i>P. lawii</i> |
| 1. Herbs : | | |
| 2. Stipules peltate : | | |
| 3. Leaves closely arranged; capsules echinate | ... | <i>P. urinaria</i> |
| 3. Leaves distant, scattered; capsules not echinate : | | |

4.	Leaves obovate-cuneate	<i>P. maderaspatensis</i>
4.	Leaves linear-oblong	<i>P. virgatus</i>
2.	Stipules not peltate :	
5.	Leaves distichous; styles minute, 2-lobed; seeds with regular, parallel ribs	<i>P. fraternus</i>
5.	Leaves not distichous; styles prominent, arms recurved and reflexed; seeds with irregular ribs	<i>P. debilis</i>

Phyllanthus debilis Klein ex Willd. Sp. Pl. 4: 582. 1805; Hook. f. Fl. Brit. India 5: 299. 1887; Cooke, Fl. Pres. Bombay 3: 84. 1958 (Repr. ed.); Webster in J. Arnold Arbor. 38: 307. 1957.

Herbs, c 25 cm high. Leaves c 1.3 x 0.8 cm, elliptic or obovate, apex obtuse or acute, glaucous beneath; stipules lanceolate-subulate, scarious. Flowers white, axillary, shortly pedicelled. Capsules c 0.35 cm across, depressed-globose. Seeds minute, trigonous.

Fls. & Frts. : August-September.

Distrib. : Common. Usually found on border of Jowar fields. Majra village, Patan Bori range.

P. fraternus Webster in Contr. Gray Herb. 176: 53. 1955 & in J. Arnold Arbor. 38: 309. 1957. *P. niruri* auct. non L. 1753; Hook. f. Fl. Brit. India 5: 298. 1887; Cooke, Fl. Pres. Bombay 3: 84. 1958 (Repr. ed.). *Bhuiavali*.

Herbs, c 50 cm high. Leaves c 0.8 x 0.3 cm, subsessile, oblong to elliptic-oblong, apex obtuse, glaucous beneath. Flowers white, axillary, male 1-3. Capsules depressed-globose. Seeds trigonous.

Fls. & Frts. : Throughout the year.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 649. 1982.

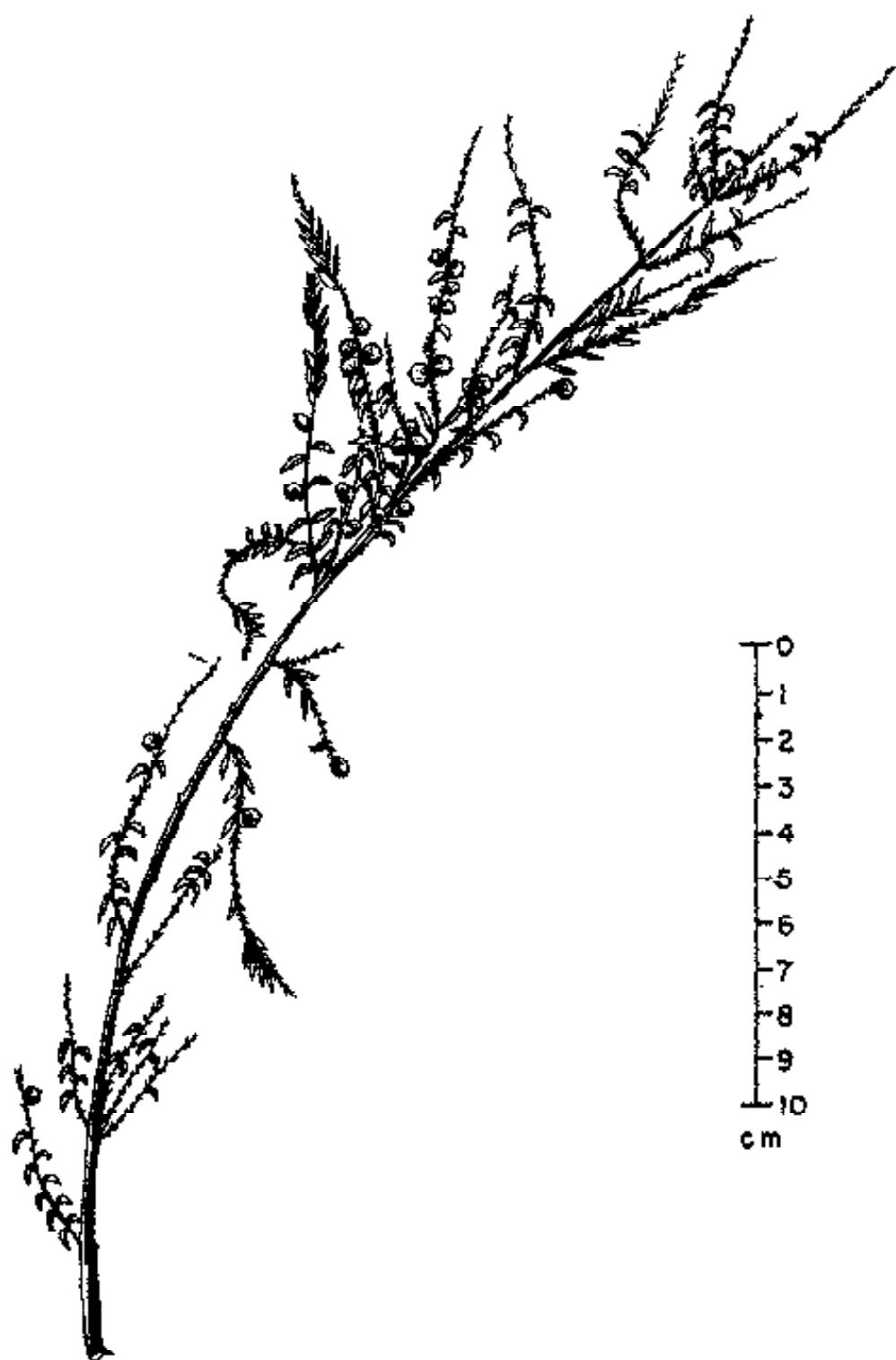
Distrib. : Common. Pandharkawada.

P. lawii Grah. ex Hook. f. Fl. Brit. India 5: 290. 1887; Cooke, Fl. Pres. Bombay 3: 82. 1958 (Repr. ed.).

Shrubs, c 2 m high. Leaves c 0.6 x 0.25 cm, linear-oblong, apex rounded, base more or less subcordate, subsessile. Flowers yellow, axillary. Capsules globose. Seeds trigonous.

Fls. & Frts. : November-December.

Distrib. : Common. Found on the edges of Penganga river.



Phyllanthus lawii Grah. ex Hook. f.

P. maderaspatensis L. Sp. Pl. 982. 1753; Hook. f. Fl. Brit. India 5: 292. 1887; Cooke, Fl. Pres. Bombay 3: 82. 1958 (Repr. ed.).

Herbs, c 50 cm high, glaucous. Leaves c 2.5 x 0.9 cm, apex mucronate, base tapering into a short petiole, glaucous. Flowers green, axillary, male minute in small clusters. Capsules depressed-globose. Seeds trigonous, muriculate.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1895, f. 3. 1852.

Distrib. : Common. Usually found as a weed in wheat fields. Aruna river banks, Hiwri R.F., Yavatmal; Dhansala; Karanji; Khandala; Pandharkawada-Bori road; Umardh.

P. urinaria L. Sp. Pl. 982. 1753; Hook. f. Fl. Brit. India 5: 293. 1887; Cooke, Fl. Pres. Bombay 3: 83. 1958 (Repr. ed.); Webster in J. Arnold Arbor. 38: 194, f. 9. 1958.

Herbs, c 40 cm high. Leaves c 1.6 x 1.0 cm, oblong, apex rounded and apiculate, base rounded, usually oblique. Flowers yellow, axillary. Capsules globose. Seeds trigonous, transversely furrowed.

Fls. & Frts. : August–October.

Illus. : Wight, Ic. t. 1895, f. 4. 1852 (*P. leprocarpus*); Webster, o.p. cit.

Distrib. : Common. Khandala forest.

P. virgatus Forst. f. Fl. Ins. Austr. Prodr. 65. 1786. *P. simplex* Retz. Obs. Bot. 5: 29. 1789; Hook. f. Fl. Brit. India 5: 295. 1887; Cooke, Fl. Pres. Bombay 3: 83. 1958 (Repr. ed.).

Herbs, c 50 cm high, branches compressed. Leaves c 3.0 x 0.5 cm, subsessile, apex obtuse and apiculate. Flowers greenish-white, axillary, pedicellate. Capsules globose, minutely tuberculate. Seeds trigonous, finely tubercled.

Fls. & Frts. : August–April.

Illus. : Wight, Ic. t. 1902, f. 1. 1852 (*Macraea oblongifolia*).

Distrib. : Common. E. Gondwakadi R.F.; Khandala; Majra felling series, Patan Bori range; Pandharkawada-Bori road; Pusad-Yavatmal road.

TRAGIA L.

Tragia plukenetii A. Radcliffe-Smith in Kew Bull. 37: 688. 1983.
T. involucrata L. var. *cannabina* (L.f.) Muell. Arg. in DC. Prodr. 15(2): 944. 1866; Hook. f. Fl. Brit. India 5: 465. 1888. *T. cannabina* L. f. Suppl. 415. 1781; Cooke, Fl. Pres. Bombay 3: 120. 1958 (Repr. ed.).

Shrubs, c 60 cm tall, erect or straggling, hispid. Leaves c 7.5 x 3.5 cm, palmately 3-partite, broadly ovate, hispid. Flowers yellow, in terminal and axillary racemes. Capsules 3-lobed, hirsute. Seeds globose, smooth.

Fls. & Frts. : July–April.

Distrib. : Common. Datatri temple surroundings, Punwat village, Wani range.

Notes : Two species were published by Linnaeus in *Croton*. They were *Croton hastatus* L. Sp. Pl. 1005. 1753 and *C. urens* L. op. cit. Linn. f. (op. cit.) united them and transferred these species to *Tragia*. Unfortunately he did not choose and retain one of the epithets as was incumbent upon him according to the requirements of ICBN. His name, *Tragia cannabina*, thus has become *nomen superfluum illegitimum*. Both the epithets *hastata* and *urens* have been employed subsequently in *Tragia* for other species and so Radcliffe-Smith has provided a new name. He has selected the epithet to commemorate Leonard Plukenet upon whose plates in *Phytographia* (1691–2), Linnaeus based his concept of his two conspecific *Crotos* which plates in turn were based on the specimens of Richard Sambach in Plukenet's herbarium, incorporated into the Sloane Herbarium at the BM (NH) (Radcliffe-Smith, op. cit.).

Cultivated species :

Croton bonplandianus Baill. the introduced S. American weed is found to occur gregariously in the Circuit House compound, Yavatmal. **Ricinus communis** L. has been found to be cultivated near habitations.

MORACEAE

FICUS L.

- | | | |
|--|-----|------------------------|
| 1. Receptacles sessile or subsessile : | | |
| 2. Young leaves tomentose beneath | ... | <i>F. benghalensis</i> |
| 2. Young leaves glabrous beneath | ... | <i>F. amplissima</i> |

1. Receptacles peduncled :
3. Receptacles on old trunks or on special branches ... *F. racemosa*
3. Receptacles axillary or on branches or on stems near base ... *F. hispida*

Ficus amplissima J.E.Sm. in Rees, Cyclop. 14: n. 1. 1810; Corner in Gard. Bull. Straits Settlem. 21: 11. 1965. *F. tsiela* Roxb. ex Buch.-Ham. in Trans. Linn. Soc. London 15: 149. 1826; King in Ann. Roy. Bot. Gard. Calcutta 1: 59, t. 74 & 84. 1887-88; Hook. f. Fl. Brit. India 5: 515. 1888; Cooke, Fl. Pres. Bombay 3: 150. 1958 (Repr. ed.). *Pipri*.

Trees, c 20 m high. Leaves c 18 x 11 cm, ovate-oblong or elliptic-oblong, sub-coriaceous, apex acute, base rounded. Receptacles c 1.5 cm across, spherical, crowded towards ends of branches, axillary or from leaf scars. Achenes ovoid-reniform.

Fls. & Frts. : November-February.

Illus. : Wight, Ic. t. 668. 1843 (*F. tsiela*).

Distrib. : Common. Karanji; Penganga felling series, Kharbi; Tipeshwar R.F.

F. benghalensis L. Sp. Pl. 1059. 1753; King in Ann. Roy. Bot. Gard. Calcutta 1: 18, t. 13 & 81 C. 1887-88; Hook. f. Fl. Brit. India 5: 499. 1888; Corner in Gard. Bull. Straits Settlem. 21: 14. 1965; Cooke, Fl. Pres. Bombay 3: 145. 1958 (Repr. ed.); Witt, List. 74. 1908. *Wad, War*.

Trees, c 12 m high, young parts pubescent. Leaves c 24.5 x 16.0 cm, ovate or orbicular-ovate to elliptic, apex obtuse, base rounded to subcordate, glabrescent above. Receptacles c 2.5 cm in diam., axillary, in pairs, puberulous.

Fls. & Frts. : July-March.

Illus. : Wight, Ic. t. 1989. 1853 (*Urostigma benghalense* (L.) Gasp. Nov. Gen. Fici 7. 1844).

Distrib. : Commonly found cultivated, occasionally run wild in the edges of the forests. E. Gondwakadi R.F.; Yavatmal.

F. hispida L. f. Suppl. 442. 1781; King in Ann. Roy. Bot. Gard. Calcutta 1: 116, t. 154. 1887-88; Hook. f. Fl. Brit. India 5: 522. 1888; Corner in Gard. Bull. Straits Settlem. 21: 89. 1965; Cooke, Fl. Pres. Bombay 3: 154. 1958 (Repr. ed.); Witt, List. 75. 1908. *Bokeda, Kala umbar*.

Shrubs or small trees, c 7 m tall, all parts more or less hispid-pubescent. Leaves c 30 x 15 cm, usually opposite, ovate-oblong or sub-ovate, apex apiculate or shortly and abruptly acuminate, margins toothed or entire, base rounded, subcordate or subcuneate, hispid-pubescent on the lower surface, upper hispid-scabrid. Receptacles c 2 cm across, obovoid or spherical, tomentose. Achenes ovoid, minutely tubercled.

Fls. & Frts. : March-June.

Illus. : Wight, Ic. t. 638. 1843 (*F. oppositifolia* Roxb.).

Distrib. : Common. Penganga felling series, Kharbi R.F.; Wani-Mohroli road.

F. racemosa L. Sp. Pl. 1060. 1753; Corner in Gard. Bull. Straits Settlem. 21 : 34. 1965. *F. glomerata* Roxb. Pl. Cor. t. 123. 1798; King in Ann. Roy. Bot. Gard. Calcutta 1: 173, t. 218A. 1887-88; Hook. f. Fl. Brit. India 5: 535. 1888; Cooke, Fl. Pres. Bombay 3: 154. 1958 (Repr. ed.); Witt, List. 75. 1908. *Umbar*.

Trees, c 15 m tall, young shoots pubescent. Leaves c 15 x 6 cm, ovate-oblong or elliptic-lanceolate, tapering to a blunt point towards apex, glabrescent. Receptacles c 3.5 cm across, ovoid, sub-globose or sub-turbinate, tomentose. Achenes ovoid, minutely tubercled.

Fls. & Frts. : Throughout the year.

Illus. : Wight, I. t. 667. 1843 (*F. glomerata*).

Notes : Reported on the authority of Witt, op. cit.

Cultivated species :

F. religiosa L. and *F. virens* Ait. are commonly planted as as avenue trees.

HYDROCHARITACEAE

- | | | |
|--|-----|--------------|
| 1. Stems branched, leafy throughout : | | |
| 2. Leaves in whorls; perianth double | ... | HYDRILLA |
| 2. Leaves alternate; perianth single | ... | LAGAROSIPHON |
| 1. Stemless or stoloniferous; leaves radical : | | |
| 3. Petioles distinct; spathes winged | ... | OTTELIA |
| 3. Petioles indistinct; spathes not winged | ... | VALLISNERIA |

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. Bombay 3: 170. 1958 (Repr. ed.); Hartog in Steenis, Fl. Males. 1, 5: 385. 1957. *Serpicula verticillata* L. f. Suppl. 416. 1781.

Herbs, submerged in fresh water, free floating or rooting. Leaves 0.6–1.5 cm long, sessile, linear or linear-oblong, apex apiculate, margins entire or serrulate. Flowers white, minute, dioecious, solitary, axillary, on filiform pedicels. Fruits smooth or muricate.

Fls. & Frts. : October–February.

Illus. : Mahesh, Illus. Fl. Delhi f. 200. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 686. 1982.

Distrib. : Common. Usually found to occur in association with *Nymphoides cristata*, *Ottelia alismoides*, *Utricularia stellaris* and *Vallisneria spiralis*. Mukutban talao.

LAGAROSIPHON W.H.Harvey

Lagarosiphon alternifolia (Roxb.) Drues 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. 2: t. 165. 1802 & Fl. Ind. 3: 750. 1832. *Lagarosiphon roxburghii* (Planch.) Benth. in Benth. & Hook. f. Gen. Pl. 3: 451. 1880; Hook. f. Fl. Brit. India 5: 659. 1888; Cooke, Fl. Pres. Bombay 3: 170. 1958 (Repr. ed.).

Herbs, submerged in fresh water. Leaves 3–8 cm long, linear-lanceolate to oblong-lanceolate, sessile, base amplexicaul, margins serrulate, pinkish dotted. Flowers dioecious, white, axillary, sessile, in ovoid spathes. Fruits ovoid, winged. Seeds narrowly obovoid, shortly mucronate.

Fls. & Frts. : September–December.

Illus. : Subram. Aq. Ang. 56, f. 38. 1962; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 687. 1982 (*Nechamandra alternifolia* (Roxb.) Thw. Enum. Pl. Zeyl. 332. 1864).

Distrib. : Abundant. Mukutban talao.

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.); Subram. Aq. Ang. 61, f. 43. 1962. *Stratiotes alismoides* L. Sp. Pl. 535. 1753.

Herbs, flaccid, height varying with the depth of water. Leaves 5–17 x 2.5–20.0 cm, submerged ones shortly petioled and usually oblong or narrow and tapering to base, the floating ones oblong or orbicular, base cordate or rounded then narrowed into the angled petiole, margins undulate. Flowers white, bisexual, solitary, sessile in a tubular spathe. Spathes 5–6-toothed with 5–6 wavy, crisped wings, attenuate or cordate at base. Capsules ellipsoid. Seeds oblong.

Fls. & Frts. : September–February.

Illus. : Subram. op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 688. 1982.

Distrib. : Common. Mukutban talao.

VALLISNERIA L.

Vallisneria spiralis L. Sp. Pl. 1015. 1753; Hook. f. Fl. Brit. India 5: 660. 1888; Cooke, Fl. Pres. Bombay 3: 171. 1958 (Repr. ed.); Subram. Aq. Ang. 57, f. 39. 1962. *Saivala*.

Herbs, submerged in fresh water, tufted, stoloniferous. Leaves variable in length depending upon the depth of water. Flowers dioecious; male minute, many together in a shortly peduncled, ovoid, 3-lobed spathe; female solitary, in a tubular 3-toothed spathe at the tip of a very long filiform spirally coiled scape. Fruits linear, included in the spathe. Seeds numerous.

Fls. & Frts. : November–March.

Illus. : Subram. op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 689. 1982.

Distrib. : Common. Mukutban talao.

ORCHIDACEAE

1. Epiphytes	...	VANDA
1. Terrestrials :		
2. Flowers with a spur :		
3. Sepals subequal and more or less connivent	...	PERISTYLUS
3. Sepals unequal, the lateral spreading or reflexed	...	HABENARIA

2. Flowers without a spur or mentum :

4. Leaf solitary, often appearing after the flowers	...	NERVILIA
4. Leaves more than one, appearing with flowers	...	ZEUXINE

HABENARIA Willd.

1. Petals bipartite; stem leafy upwards	...	<i>H. digitata</i>
1. Petals entire; leaves appressed to the ground	...	<i>H. roxburghii</i>

Habenaria digitata Lindl. Gen. & Sp. Orchid. Pl. 307. 1835; Hook. f. Fl. Brit. India 6: 134. 1890; Cooke, Fl. Pres. Bombay 3: 220. 1958 (Repr. ed.).

Herbs, c 75 cm high. Leaves c 12 x 3 cm, variable, ovate-oblong, apex acute to acuminate, base sheathing. Flowers greenish-white, in many flowered, lax racemes; bracts large, often foliaceous; spur more or less equalling the ovary. Capsules ribbed.

Fls. & Frts. : August-December.

Illus. : Wight, Ic. t. 1701. 1851 (*Habenaria trinervia*); Duthie in Ann. Roy. Bot. Gard. Calcutta 9: 178, t. 128. 1906 (*H. graveolens*); Sánt. & Kap. Orchid. Bombay 10, t. 3, f. 7-8. 1966; Joseph in Rec. Bot. Surv. India 22: 58, f. 41 a & b. 1982.

Distrib. : Not Common. Found in open grasslands on the banks of streams. E. Gondwakadi R.F.

H. roxburghii Nicolson in Saldanha & Nicolson, Fl. Hassan Dt. 834. 1976. *H. platyphylla* Spreng. Syst. Veg. 3: 690. 1826; Hook. f. Fl. Brit. India 6: 140. 1890; Cooke, Fl. Pres. Bombay 3: 222. 1958 (Repr. ed.).

Herbs, c 45 cm high. Leaves c 10 x 10 cm, fleshy, sessile, orbicular or elliptic. Flowers white, in dense flowered spikes; bracts lanceolate, shorter than ovary; spur longer than ovary.

Fls. & Frts. : July-September.

Illus. : Wight, Ic. t. 1709. 1851 (*H. platyphylla*).

Distrib. : Abundant. Usually found along the edges of water sources. Bhiwkund R.F.

Notes : This species was originally named as *Orchis plantaginea* Roxb. Pl. Cor. 1: 32, t. 37. 1795. It could not be transferred to *Habenaria* as the epithet was preoccupied by that of Lindley's *Habenaria*.

plantaginea (1835). The other epithets proposed for this plant were *Orchis platyphyllus* Willd. Sp. Pl. 4: 11. 1805, *O. roxburghii* Pers. Syn. Pl. 2: 503. 1807 and *Habenaria platyphylla* Spreng. Syst. Veg. 3: 690. 1826 which were all superfluous names when they were published as they included *Orchis plantaginea* Roxb. which was a valid name. Hence Nicolson has proposed a new name to this plant.

NERVILIA Comm. ex Gaud.

Nervilia aragoana Gaud. in Freyc. Voy. Bot. 422, t. 35. 1829; Sant. & Kap. Orchid. Bombay 134. 1966. *Pogonia flabelliformis* Lindl Gen. & Sp. Orchid. Pl. 415. 1840; Hook. f. Fl. Brit. India 6: 121. 1890.

Herbs, tuberous, acaulescent. Leaves c 15 cm across, orbicular or subreniform, apex cuspidate, base cordate, margins wavy; petioles c 20 cm long. Flowers c 1.75 cm long, greenish or brownish-yellow, drooping, in large, lax racemes.

Fls. & Frts. : May-June.

Illus. : Wight, Ic. t. 1720. 1851 (*Pogonia carinata*); Joseph in Rec. Bot. Surv. India 22: 21, f. 10a-10d. 1982.

Distrib. : Occasional. Mohroli.

PERISTYLUS Bl.

Peristylus plantagineus Lindl. Gen. & Sp. Orchid. Pl. 300. 1835; Cooke, Fl. Pres. Bombay 3: 216. 1958 (Repr. ed.). *Habenaria wightii* Trim. Cat. Ceylon Pl. 91. 1885; Hook. f. Fl. Brit. India 6: 162. 1890.

Herbs, c 45 cm high, tuberous. Leaves c 20 x 8 cm, oblong-lanceolate or elliptic-lanceolate, sessile, base closely sheathing. Flowers white, in compact c 20 cm long, terminal spikes.

Fls. & Frts. : August-October.

Illus. : Wight, Ic. t. 921. 1844-45; Sant. & Kap. Orchid. Bombay 51, t. 10, f. A & B. 1966.

Distrib. : Common. Bhiwkund R.F.; Majra felling series, Patan Bori range.

VANDA R.Br.

Vanda tessellata (Roxb.) Hook. ex G. Don in Loud. Hort. Brit. 372. 1838. *Epidendrum tessellatum* Roxb. Pl. Cor. 1: 34, t. 42. 1795.

Vanda roxburghii Roxb. in Bot. Reg. 6: t. 506. 1820; Hook. f. Fl. Brit. India 6: 52. 1890; Cooke, Fl. Pres. Bombay 3: 208. 1958 (Repr. ed.).

Herbs, c 1 m long. Leaves c 15.0 x 1.25 cm, thickly coriaceous, linear-oblong, slightly recurved. Flowers yellowish green with a bluish tinge, 6–10, racemose. Capsules narrowly clavate, oblong with acute wings.

Fls. & Frts. : July–October.

Illus. : Wight, Ic. t. 916. 1844–45 (*V. roxburghii*); Sant. & Kap. Orchid. Bombay 220, t. 51. 1966; Joseph in Rec. Bot. Surv. India 22: 130, f. 110 a & b. 1982; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 717. 1982.

Distrib. : Common, Penganga felling series, Kharbi range.

Notes : The flowers emit a very sweet fragrance. It can be used as an ornamental plant as it requires very little care to maintain.

ZEUXINE Lindl.

Zeuxine strateumatica (L.) Schltr. in Fedde, Repert. 1: 77. 1911. *Orchis strateumatica* L. Sp. Pl. 943. 1753. *Zeuxine sulcata* Lindl. Gen. & Sp. Orchid. Pl. 485. 1840; Hook. f. Fl. Brit. India 6: 106. 1890; Cooke, Fl. Pres. Bombay 3: 213. 1958 (Repr. ed.).

Herbs, c 25 cm high. Leaves c 5.0 x 0.75 cm, linear to linear-lanceolate, sessile. Flowers white, bracteate, in dense, spirally arranged, secund spikes. Capsules broadly ovoid, strongly ribbed.

Fls. & Frts. : February–April.

Illus. : Wight, Ic. t. 1724. 1852 (*bis*) (*Z. bracteata*); t. 1725 (*Z. brevifolia*) & t. 1726 (*Z. robusta*); Sant. & Kap. Orchid. Bombay 167, t. 38. 1966.

Distrib. : Not common. Found in open grasslands along the banks of streams. Mehroli, Wani range, 149164.

ZINGIBERACEAE

CURCUMA L.

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, p.p. (*non* Rosc. 1828). *Shindalwai*, *Sindarbar*.

Herbs, scapigerous, tuberous. Leaves c 30 x 15 cm, lanceolate-oblong, apex acuminate. Flowers bright yellow, in spikes; bracts oblong to obovate-lanceolate, pale pink, deeper towards the apex. Capsules trigonous, white. Seeds with a hyaline aril.

Fls. & Frts. : August–December.

Distrib. : Abundant. E. Gondwakadi R.F.; Majra felling series, Patan Bori range.

AMARYLLIDACEAE

CRINUM L.

- | | | |
|---|-----|---------------------|
| 1. Leaves 10–15 cm broad; umbels 15–20-flowered; perianth tube 7–10 cm long | ... | <i>C. asiaticum</i> |
| 1. Leaves 1.5–2.0 cm broad; umbels 6–12-flowered; perianth tube 5–7 cm long | ... | <i>C. defixum</i> |

Crinum asiaticum L. Sp. Pl. 292. 1753; Hook. f. Fl. Brit. India 6: 280. 1892; Cooke, Fl. Pres. Bombay 3: 256. 1958 (Repr. ed.). *Nagdaun*.

Herbs, perennial, bulbs c 10 cm across. Leaves c 50 cm long, linear-lanceolate, base sheathing. Inflorescence scape c 50 cm long; flowers white, sessile, in terminal umbels on c 50 cm long spathes. Fruits subglobose.

Fls. & Frts. : Throughout the year.

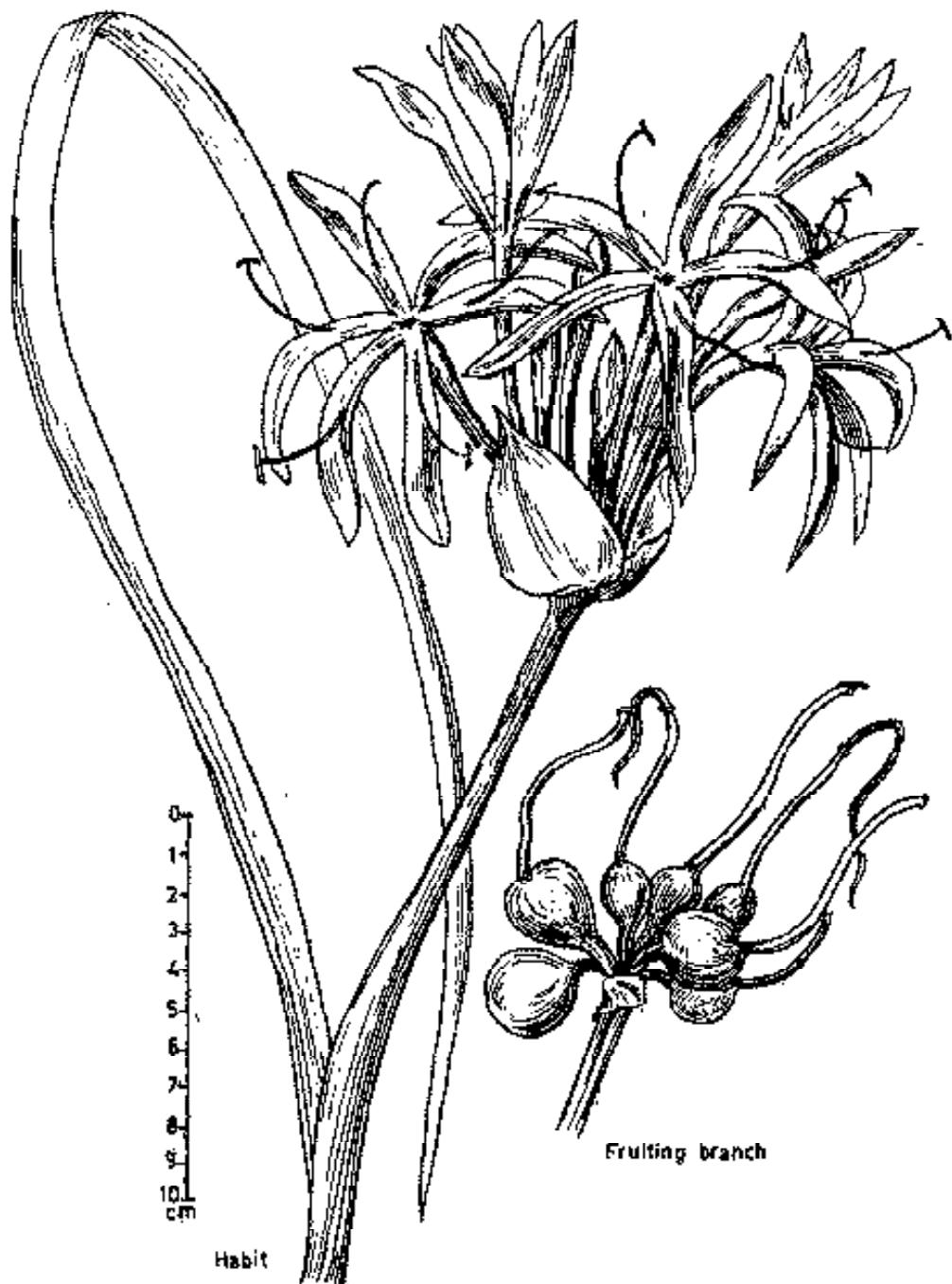
Illus. : Wight, Ic. tt. 2021 & 2022. 1853; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 732. 1982.

Distrib. : Commonly found along the edges of streams. E. Gondwakadi R.F.

C. defixum Ker-Gawl. in J. Sci. Arts London 3: 105. 1817; Hook. f. Fl. Brit. India 6: 281. 1892; Cooke, Fl. Pres. Bombay 3: 257. 1958 (Repr. ed.).

Herbs, perennial, bulbs c 8 cm across. Leaves c 50 cm long, linear, thick. Scape c 40 cm long, pale greenish with a pinkish tinge; flowers white in terminal umbels, mildly fragrant. Fruits subglobose.

Fls. & Frts. : August–October.



Crinum defixum Ker-Gawl.

Distrib. : Common. Found along the edges of streams along with *Cyperus* spp. Ghatanji-Parwa road.

HYPOXIDACEAE

CURCULIGO Gaertn.

Curculigo orchoides Gaertn. Fruct. 1: 63, t. 13. 1788; Hook. f. Fl. Brit. India 6: 279. 1892; Cooke, Fl. Pres. Bombay 3: 255. 1958 (Repr. ed.).

Herbs, perennial, rootstock stout. Leaves c 45 x 3 cm; linear-lanceolate, plicate, base sheathing. Flowers golden yellow, in racemes. Capsules beaked, septa spongy. Seeds 1-4, oblong.

Fls. & Frts. : June-September.

Illus. : Wight, Ic. t. 2043 A. 1853 (*C. malabarica*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 733. 1982.

Distrib. : Common. E. Gondwakadi R.F.; Majra felling series, Patan Bori range; Penganga felling series, Kharbi R.F.

AGAVACEAE

Agave americana L. is cultivated extensively for hedge purposes.

DIOSCOREACEAE

DIOSCOREA L.

- | | | |
|--|-----|---------------------|
| 1. Leaves 3-foliate | ... | <i>D. hispida</i> |
| 1. Leaves simple : | | |
| 2. Stems twining to the left; capsules quadrately oblong, reflexed upwards | ... | <i>D. bulbifera</i> |
| 2. Stems twining to the right; capsules broadly obovate, facing forwards | ... | <i>D. wallichii</i> |

Dioscorea bulbifera L. Sp. Pl. 1033. 1753; Prain & Burkhill in Ann. Roy. Bot. Gard. Calcutta 14: 111, t. 49-51. 1936; Cooke, Fl. Pres. Bombay 3: 265. 1958 (Repr. ed.); Sant. in J. Bombay nat. Hist. Soc. 49: 628. 1951. *Kadu karanda*.

Twiners, bulbil bearing. Leaves c 15 x 12 cm, broadly ovate to sub-orbicular, base cordate, apex acuminate, more or less cuspidate.

Flowers greenish-white, male in long pendulous spikes, fascicled in axils of leaves or often in bracts on leafless branch endings; female in usually solitary pendulous spikes. Seeds ovoid, membranous, winged towards base.

Fls. & Frts. : July–March.

Illus. : Wight, Ic. t. 878. 1844.

Distrib. : Common. Khandala R.F.; Pandharkawada–Bori road; Penganga felling series, Kharbi range; Tipeshwar R.F.

D. hispida Dennst. Schluess. Hort. Ind. Malab. 15. 1818; Prain & Burkhill in Ann. Roy. Bot. Gard. Calcutta 14: 188, t. 77 & 78. 1936; Sant. in J. Bombay nat. Hist. Soc. 49: 629. 1951. *D. daemonia* non Roxb. 1832; Hook. f. Fl. Brit. India 6: 289. 1892; Cooke, Fl. Pres. Bombay 3: 264. 1958 (Repr. ed.).

Climbers, prickly. Leaflets c 18 x 12 cm, ovate–oblong, lateral very oblique, apex caudate– acuminate, cuspidate, villous when young, glabrous or glabrescent at length. Flowers greenish-yellow; male in dense, clustered spikes; female spikes solitary. Capsules c 2.5 x 1.5 cm, oblong, membranous winged. Seeds winged at base.

Fls. & Frts. : June–December.

Illus. : Wight, Ic. t. 811. 1844 (*D. daemonia*).

Distrib. : Common. Usually found under shade near water courses. Hiwri R.F.

D. wallichii Hook. f. Fl. Brit. India 6: 295. 1892; Sant. in J. Bombay nat. Hist. Soc. 49: 633. 1951.

Twining, prickly. Leaves c 17 x 18 cm, opposite, long petioled, orbicular-ovate, apex caudate– acuminate. Flowers greenish-white; male in c 5 cm long spikes on short leafless branches, solitary or paired in axils of ovate bracts; female in decurved, slender, solitary or paired spikes. Capsules c 3 cm in diam. apex emarginate. Seeds orbicular, winged.

Fls. & Frts. : August–December.

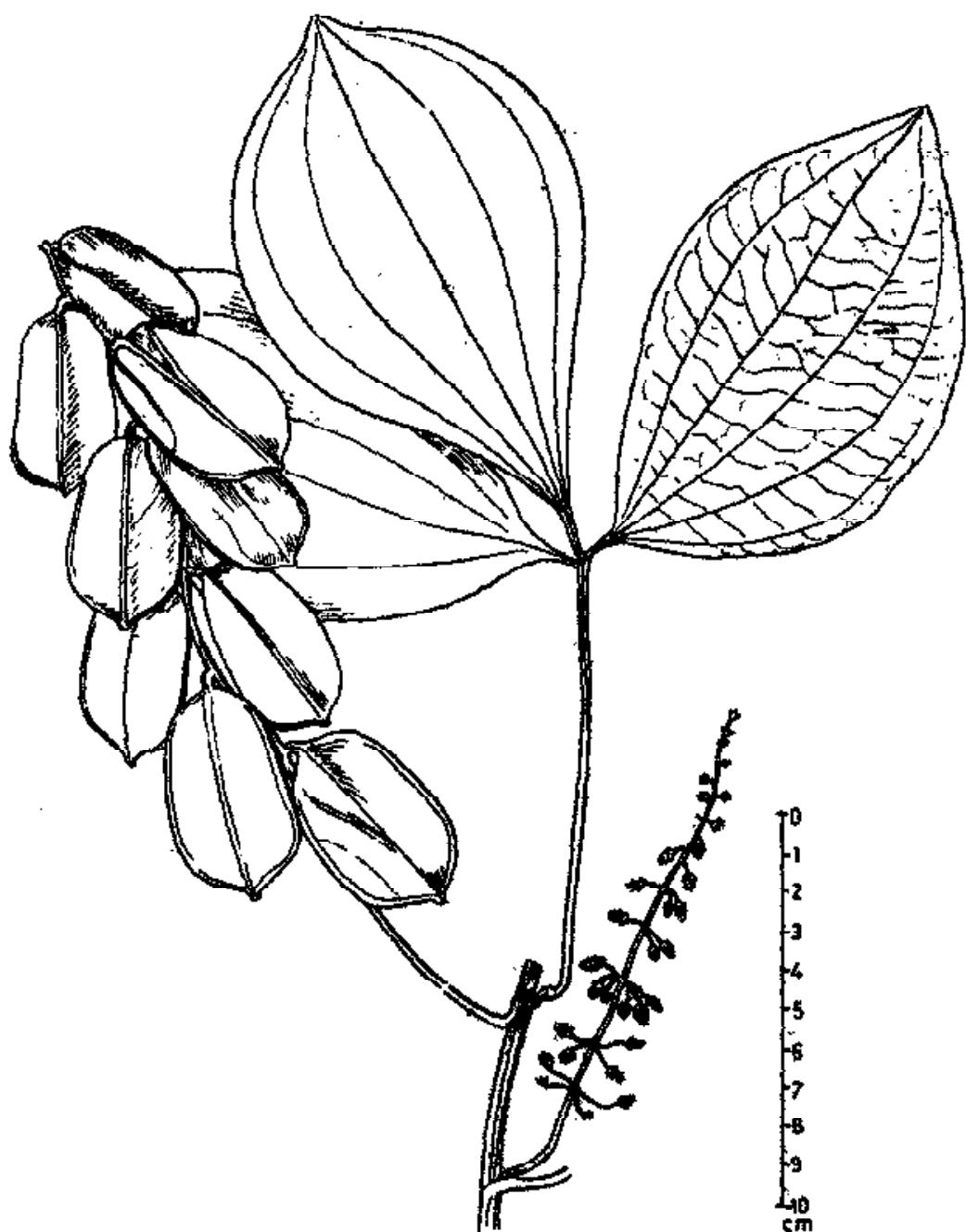
Distrib. : Sparse. Penganga felling series, Kharbi range.

LILIACEAE

1. Plants climbing

...

GLORIOSA



Dioscorea hispida Dennst.

1. Plants erect :			
2. Leaves caulin	...		IPHIGENIA
2. Leaves radical :			
3. Leaves appearing after flowers; seeds ellipsoid	...		DRIMIA
3. Leaves appearing with flowers; seeds subglobose	...		SCILLA

DRIMIA Jacq. ex Willd.

Drimia indica (Roxb.) Jessop in J.S. Afr. Bot. 43: 272. 1977.
Scilla indica Roxb. Fl. Ind. 2: 147. 1824. *Urginea indica* (Roxb.) Kunth, Enum. Pl. 4: 333. 1843; Hook. f. Fl. Brit. India 6: 347. 1892; Cooke, Fl. Pres. Bombay 3: 277. 1958 (Repr. ed.); Deb & Dasgupta in Bull. Bot. Surv. India 16: 118. 1974. *Jangli piaz*.

Herbs, perennial; bulbs c 6 x 5 cm, ovoid. Leaves c 30 x 5 cm, strap-shaped. Peduncles c 50 cm long; flowers white in racemes. Capsules ellipsoid.

Fls. & Frts. : February–May.

Distrib. : Common. Usually found in marshy soil along the streams. Tipeshwar R.F.

Notes : Jessop (*op. cit.*) reduced *Urginea* Steinh. to the synonymy of *Drimia* based on the colour of the bulbs, the degree of fusion of the perianth lobes and the tendency of the stamens to be connivent which are common to both genera.

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*.

Climbers, herbaceous. Leaves c 20 x 5 cm, ovate-lanceolate, more or less sessile, acuminate, tip spiralled like a tendril. Flowers solitary, axillary; perianth green when young, yellowish green below the middle, red above at maturity. Capsules c 3 cm long, linear-oblong.

Fls. & Frts. : August–November.

Illus. : Wight, Ic. t. 2047. 1853; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 743. 1982.

Distrib. : Common. Durg R.F.; Pandharkawada–Yavatmal road.

IPHIGENIA Kunth

Iphigenia indica (L.) A. Gray in Kunth, Enum. Pl. 4: 213. 1843; Hook. f. Fl. Brit. India 6: 357. 1892; Cooke, Fl. Pres. Bombay 3: 275. 1958 (Repr. ed.). *Melanthium indicum* L. Mant. Alt. 226. 1771. *Markallai*.

Herbs, c 25 cm high. Leaves c 20.0 x 0.5 cm, narrowly linear. Flowers purple, c 1.5 cm across, axillary or terminal. Capsules c 2.0 x 0.75 cm, oblong or ellipsoid. Seeds spherical, brown.

Fls. & Frts. : June—September.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 744. 1982.

Distrib. : Common. Bhiwkund; Jodmoha grass farm; Majra felling series, Patan Bori range.

SCILLA L.

Scilla hyacinthina (Roth) MacBride in Contrib. Gray Herb. 2, 56: 14. 1955; Deb & Dasgupta in Bull. Bot. Surv. India 17: 46, f. 2. 1975. *Lebedouria hyacinthina* Roth, Nov. Pl. Sp. 195. 1821. *Scilla indica* (Wight) Baker in Saund. Refug. Bot. 3, App. 12. 1870, non Roxb. 1824; Hook. f. Fl. Brit. India 6: 348. 1892; Cooke, Fl. Pres. Bombay 3: 276. 1958 (Repr. ed.).

Herbs, bulb ovoid. Leaves c 11.0 x 3.5 cm, oblong-lanceolate, more or less fleshy. Scapes c 15 cm long, flexuous; flowers purple. Capsules c 0.5 cm across, obovoid, unequally trilobed. Seeds obovoid, wrinkled.

Fls. & Frts. : June—July.

Illus. : Wight, Ic. t. 2041. 1853 (*Barnardia indica*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 745. 1982.

Distrib. : Common. Majra felling series, Patan Bori range.

PONTEDERIACEAE

MONOCHORIA K.B.Presl

Monochoria vaginalis (Burm.f.) K.B.Presl ex Kunth, Enum. Pl. 134. 1843; Hook. f. Fl. Brit. India 6: 363. 1892; Cooke, Fl. Pres. Bombay 3: 286. 1958 (Repr. ed.). *Pontederia vaginalis* Burm. f. Fl. Ind. 80. 1768.

Herbs, c 30 cm high, rootstock short, spongy. Leaves c 8 x 4 cm, ovate to ovate-lanceolate, base sub-cordate, apex sub-acuminate. Flowers blue, in racemes, peduncles emerging from the channelled sheaths of the uppermost leaves. Capsules ellipsoid, glandular-pubescent.

Fls. & Frts. : August–October.

Illus. : Subram. Aq. Ang. 69, f. 47. 1962; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 748. 1982.

Distrib. : Common. This grows in association with *Aponogeton natans*, *Lagarosiphon alternifolia*, *Lemna perpusilla*, *Limnophyton obtusifolium*, *Nymphoides cristatum*, *Ottelia alismoides*, *Paspalidium geminatum*, *Trapa natans* var. *bispinosa*, *Vallisneria spiralis* etc. Mukutban talao.

COMMELINACEAE

- | | | |
|---|-----|-----------|
| 1. Fertile stamens 3, staminodes 1–3 : | | |
| 2. Cymes 1–2, arising from a spathaceous bract | ... | COMMELINA |
| 2. Cymes panicled, not arising from a spathaceous bract | ... | MURDANNIA |
| 1. Fertile stamens 6, staminodes absent : | | |
| 3. Cymes enclosed in leaf-sheaths | ... | TONNINGIA |
| 3. Cymes not enclosed in leaf-sheaths | ... | CYANOTIS |

COMMELINA L.

- | | | |
|---|-----|------------------------|
| 1. All the cells of the ovary 1-ovuled | ... | <i>C. erecta</i> |
| 1. The 2 anticus cells of the ovary 2-ovuled, the posticus 1-ovuled or obsolete : | | |
| 2. Spathes turbinate | ... | <i>C. benghalensis</i> |
| 2. Spathes complicate : | | |
| 3. Capsules 3-celled | ... | <i>C. hasskarii</i> |
| 3. Capsules 2-celled | ... | <i>C. attenuata</i> |

Commelina attenuata Koen. ex Vahl, Enum. Pl. 2: 168. 1806; Hook. f. Fl. Brit. India 6: 372. 1892; Cooke, Fl. Pres. Bombay 3: 293. 1958 (Repr. ed.).

Herbs, c 1 m long. Leaves c 7.0 x 1.25 cm, linear or linear-lanceolate, apex sub-obtuse, sheaths ciliate. Spathes narrowly

ovate-lanceolate, apex acute to caudate-acuminate, base deeply sagittate-cordate. Flowers blue. Capsules subquadrate oblong, the cells 1-2-seeded.

Fls. & Frts. : September–November.

Distrib. : Sparse. Khandala R.F.

C. benghalensis L. Sp. Pl. 41. 1753; Hook. f. Fl. Brit. India 6: 370. 1892; Cooke, Fl. Pres. Bombay 3: 291. 1958 (Repr. ed.).

Herbs, c 1 m long, branches diffuse. Leaves c 7 x 4 cm, ovate or oblong, base inequilateral, margins ciliate or rufous-hairy. Spathes auricled on one side, pubescent; flowers blue. Capsules pyriform. Seeds oblong, pitted.

Fls. & Frts. : July–December.

Illus. : Wight, Ic. t. 2065. 1853; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 751. 1982.

Distrib. : Common. Sometimes found as a weed in cultivated fields. Aruna river banks, Mangrul village; Karanji village; Mukutban.

C. 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. 11:444. 1871 et Comm. & Cyrt. Beng. t. 8. 1874; Hook. f. Fl. Brit. India 6: 373. 1892; Rolla Rao & Kammathy in J. Bombay nat. Hist. Soc. 59: 61. 1962. **C. undulata** R.Br. Prodr. 270. 1810; Hook. f. op. cit.

Herbs, c 50 cm high, annual, erect or sub-erect, hairy or glabrate. Leaves c 12 x 4 cm, ovate-lanceolate, pubescent beneath; sheaths ciliate. Spathes cucullate, broadly cordate, recurved; flowers blue. Capsules ellipsoid, apiculate. Seeds oblong.

Fls. & Frts. : August–October.

Illus. : Mahesh, Fl. Delhi f. 202. 1966 (*C. kurzii*).

Distrib. : Common. Often found as a weed in cultivated fields. Agriculture farm, Pandharakawada; Aruna river banks, Mangrul village; Penganga felling series, Kharbi R.F.

C. hasskarlii C.B.Cl. Comm. & Cyrt. Beng. 13, t. 5. 1874 et in DC. Monogr. Phan. 3: 157. 1881; Hook. f. Fl. Brit. India 6: 370. 1892; Cooke, Fl. Pres. Bombay 3: 291. 1958 (Repr. ed.).

Herbs, much branched. Leaves c 7.0 x 1.5 cm, ovate to oblong-lanceolate. Flowers blue, in ovate-lanceolate spathes. Capsules

quadrate, subtruncate, apiculate. Seeds cylindric, truncate at one end, sub-acute or rounded at the other.

Fls. & Frts. : September—February.

Illus. : C.B.Cl. *op. cit.*

Distrib. : Common. Aruna river banks, Mangrul village; Jamwadi talao banks, Yavatmal; Karanji; Khandala R.F.; Patri, near Umari village on Yavatmal—Pandharkawada road.

CYANOTIS D.Don

- | | | |
|--|-----|-----------------------|
| 1. Stems floccosely silky or woolly—cobwebby | ... | <i>C. fasciculata</i> |
| 1. Stems glabrous or spreading hairy, not woolly | ... | <i>C. cristata</i> |

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.

Herbs, erect or diffuse. Leaves c 7.0 x 1.5 cm, oblong to ovate-oblong. Flowers purple, in closely imbricating spathes. Capsules trigonous. Seeds trigonous, striate.

Fls. & Frts. : June—October.

Illus. : Wight, Ic. t. 2082. 1853.

Distrib. : Common. Dhansala, Washim—Pusad road; Hiwri R.F.

C. fasciculata (Heyne ex Roth) J.A. & J.H.Schult. in R. & S. Syst. Nat. 7(2): 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, c 15 cm high. Leaves c 7.5 x 1.75 cm, lanceolate to ovate-lanceolate, more or less fleshy. Flowers purple, in compact, axillary and terminal cymes. Capsules oblong, trigonous, pilose at apex. Seeds oblong, faintly rugose.

Fls. & Frts. : August—October.

Illus. : Wight, Ic. t. 2086. 1853.

Distrib. : Rather sparse. Found as a weed in cultivated fields. Karanji.

MURDANNIA Royle

Murdannia nudiflora (L.) Brenan in Kew Bull. 7: 189. 1952.
Commelina nudiflora L. Mant. 177. 1767 (*non* Sp. Pl. 41. 1753).
Aneilema nudiflorum (L.) R. Br. Prodr. 271. 1810; Hook. f. Fl. Brit. India 6: 378. 1892; Cooke, Fl. Pres. Bombay 3: 298. 1958 (Repr. ed.).

Herbs, c 30 cm high. Leaves c 8.0 x 0.5 cm, linear to linear-lanceolate, apex acuminate, margins of sheaths markedly ciliate. Flowers purple, in terminal and axillary panicles. Capsules globose, mucronate. Seeds rugose, tuberculate.

Fls. & Frts. : August–October.

Distrib. : Common. Bhiwkund R.F.; Mukutban talao banks.

TONNINGIA Neck. ex A.H.L.Juss.

- | | | |
|---|-----|---------------------|
| 1. Filaments naked; capsules 3-horned at apex; seeds sub-quadrata, smooth or obscurely pitted | ... | <i>T. cucullata</i> |
| 1. Filaments densely bearded; capsules beaked; seeds cylindric, pitted | ... | <i>T. axillaris</i> |

Tonningia axillaris (L.) O. Ktze. Rev. Gen. Pl. 2:721. 1891.
Commelina axillaris L. Sp. Pl. 42. 1753. *Cyanotis axillaris* (L.) Sweet, Hort. Brit. 430. 1827; Hook. f. Fl. Brit. India 6: 388. 1892; Cooke, Fl. Pres. Bombay 3: 305. 1958 (Repr. ed.).

Herbs, c 50 cm high, prostrate or sub-erect. Leaves c 9 x 1 cm, linear-lanceolate; sheaths inflated. Flowers blue; bracteoles linear-lanceolate. Capsules oblong, beaked.

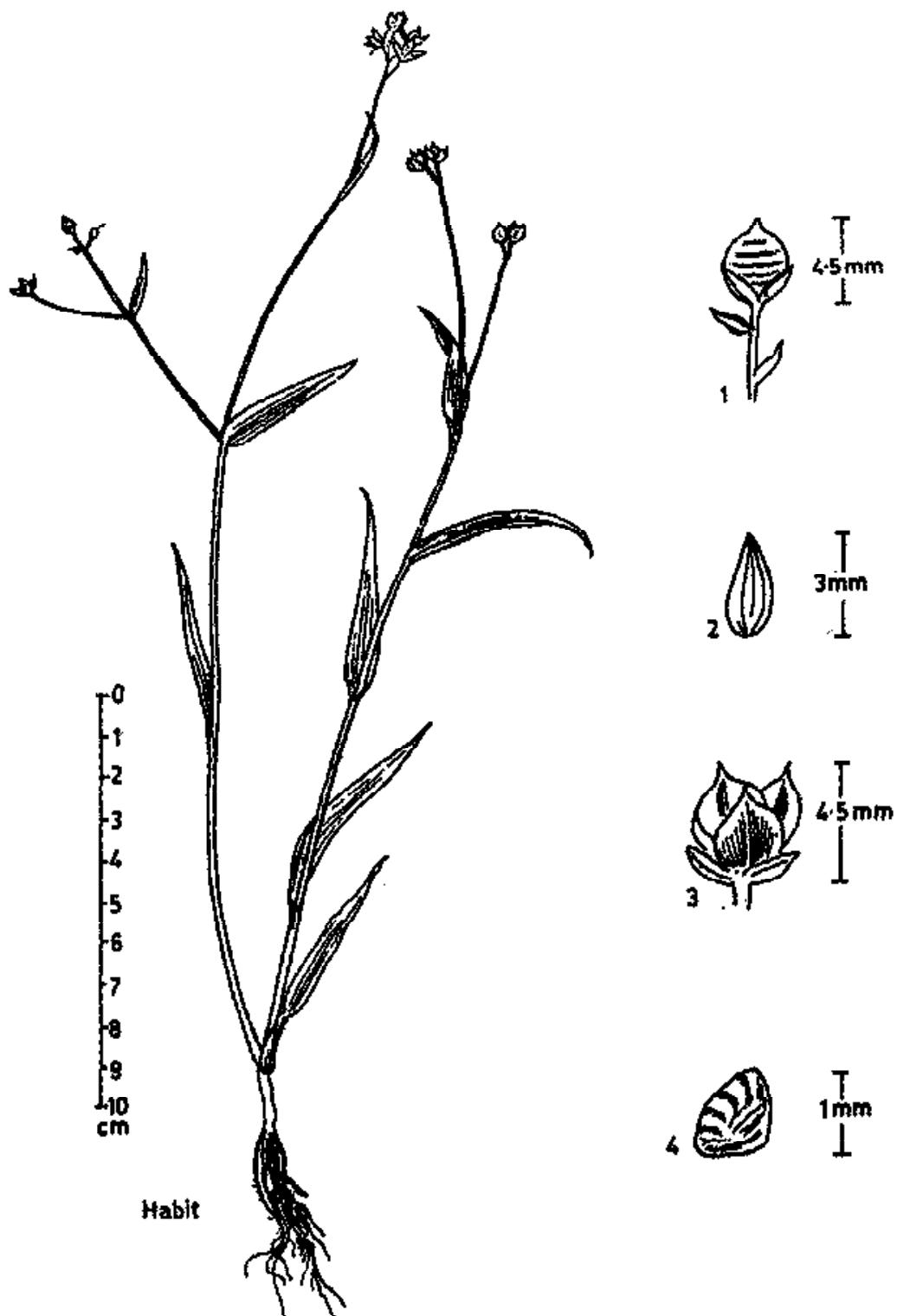
Fls. & Frts. : August–December.

Illus. : Mahesh, Illus. Fl. Delhi f. 205. 1966 (*Cyanotis axillaris*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 750. 1982.

Distrib. : Common. Usually found in moist localities. Sometimes found as a weed in cultivated fields. Karanji; Mukutban.

T. cucullata (Roth) O. Ktze. Rev. Gen. Pl. 2: 722. 1891.
Tradescantia cucullata Roth, Nov. Pl. Sp. 189. 1821. *Cyanotis cucullata* (Roth) Kunth, Enum. Pl. 4: 107. 1843; Hook. f. Fl. Brit. India 6: 389. 1892.

Herbs, prostrate or sub-erect, rooting at nodes. Leaves c 3.0 x 0.5 cm, slightly recurved, linear-lanceolate. Flowers white to pale purple. Capsules ellipsoid-oblong, depressed between the horns.



Murdannia nudiflora (L.) Brenan

1. Incipient capsule with persistent calyx and bracts 2. Calyx segment
3. Open capsule 4. Seed

Fls. & Frts. : August–November.

Distrib. : Common. Usually found in moist localities. Jamwadi talao banks.

ARECACEAE (PALMAE)

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.); Mahabale & Parthasarathy in J. Bombay nat. Hist. Soc. 60: 374. 1963. *Elate sylvestris* L. Sp. Pl. 1189. 1753. *Shindi*.

Trees, c 3 m high. Leaves c 1.5 m long, pinnate; leaflets rigid, linear-lanceolate, conduplicate; petioles with a few spines at base. Flowers spicate in a compound spadix. Berries oblong-ellipsoid, orange-yellow.

Fls. & Frts. : January–June.

Distrib. : Commonly found along the edges of forests. Karegaon, near Penganga river, Bori R.F.

Notes : Fruits are edible.

Cultivated species :

Borassus flabellifer L. (*Tad, Tadi, Tar*) is cultivated for the fruit and other plant products.

TYPHACEAE

TYPHA L.

Typha angustifolia L. Sp. Pl. 971. 1753; Backer in Steenis, Fl. Males. 1, 4: 243. 1951. *T. angustata* Bory & Chaub. Exp. Sci. Mor. 2(1): 338. 1832; Hook. f. Fl. Brit. India 6:489. 1893; Cooke, Fl. Pres. Bombay 3: 326. 1958 (Repr. ed.). *Jungli bajri, Pan kanis, Pun*.

Herbs, c 1.5 m high, robust, perennial. Leaves as long as the flowering stem, base sheathing. Spikes cylindric, c 35 cm long, reddish brown, male flowers above, female below, separated by a sterile constricted region. Nutlets minute, ellipsoid, brown.

Fls. & Frts. : September–March.

Illus. : Mahesh, Illus. Fl. Delhi f. 206. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 763. 1982.

Distrib. : Common. Karanji.

ARACEAE

1. Floating herbs; leaves in a close spiral	...	PISTIA
1. Terrestrial or marsh plants; leaves not as above		
2. Leaves simple, not lobed :		
3. Leaves peltate	...	COLOCASIA
3. Leaves not peltate	...	THERIOPHONUM
2. Leaves compound or deeply lobed :		
4. Leaf pedately lobed; lower spathe margins fused into a tube	...	SAUROMATUM
4. Leaf ternately divided and dichotomously decompound; lower spathe margins overlapping	...	AMORPHOPHALLUS

AMORPHOPHALLUS Bl. ex Decne.

Amorphophallus sylvaticus (Roxb.) Kunth, Enum. Pl. 3: 34. 1841; C.E.C. Fischer in Gamble, Fl. Pres. Madras 1587. 1931 (3: 1107. 1967, Repr. ed.). *Arum sylvaticum* Roxb. Fl. Ind. 3: 511. 1832. *Syntherias sylvatica* (Roxb.) Schott, Gen. Aroid. t. 28. 1858; Hook. f. Fl. Brit. India 6: 518. 1893; Cooke, Fl. Pres. Bombay 3: 340. 1958 (Repr. ed.).

Herbs, c 1 m high, tuberous. Leaves c 30 cm across; petioles c 0.75 cm long; leaflets lanceolate. Spathes ovate, convolute to the middle; spadix with appendage much longer than spathe; male and female flowers distant with interposed neuters.

Fls. & Frts. : June–August.

Illus. : Wight, Ic. t. 802. 1844 (*Arum sylvaticum* Roxb.)

Distrib. : Common. E. Gondwakadi R.F.; Majra felling series, Patan Bori range; Morchandi felling series, Bittergaon range; Penganga felling series, Kharbi R.F.

COLOCASIA Schott

Colocasia esculenta (L.) Schott in Schott & Endl. Melet. Bot. 1: 18. 1832. *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*.

Herbs, c 75 cm high, rootstock tuberous. Leaves c 30 x 18 cm, ovate-oblong, base cordate or more or less sagittate. Spathes caudate-acuminate, pale yellow; spadix shorter than spathes. Berries orange, angular.

Fls. & Frts. : September–November.

Illus. : Mahesh, Illus. Fl. Delhi f. 207. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 766. 1982.

Distrib. : Common. Penganga felling series, Kharbi R.F.

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.).

Roots tufted. Leaves c 5 x 3 cm, obovate-cuneate, apex retuse, pubescent. Spathes c 1.5 cm long; spadix shorter than spathe; flowers yellow. Fruits ovoid.

Fls. & Frts. : November–January.

Illus. : Subram. Aq. Ang. 75, f. 49. 1962; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 768. 1982.

Distrib. : Abundantly occurs in association with *Ottelia alismoides*, *Tenagogcharis latifolia* and *Vallisneria spiralis*. Mukutban talao.

SAUROMATUM Schott

Sauromatum pedatum (Willd.) Schott in Schott & Endl. Melet. Bot. 1: 17. 1832. *Arum pedatum* Willd. Enum. Suppl. 54. 1809. *Sauromatum guttatum* (Wall.) Schott in Schott & Endl. Melet. Bot. 1: 17. 1832; Hook. f. Fl. Brit. India 6: 508. 1893; Cooke, Fl. Pres. Bombay 3: 335. 1958 (Repr. ed.). *Nurki*.

Herbs, corm bearing. Leaf solitary, segments 5–9 (–13) c 4.0 x 2.5 cm, elliptic to elliptic-oblong, acuminate at apex. Spathes greenish-brown; spadix shorter than spathe; appendage cylindric, obtuse or narrowed from base to a fine point.

Fls. & Frts. : March–May.

Distrib. : Not common. Penganga felling series, Kharbi range.

THERIOPHONUM Bl.

Theriophonum minutum (Willd.) Baill. Hist. Pl. 13: 457. 1895; Sivadasan & Nicolson in Kew Bull. 37: 285. 1982. *Arum minutum* Willd. Sp. Pl. 4: 481. 1805. *Theriophonum crenatum* (Wight) Bl. Rumphia 1: 128. 1837; Hook. f. Fl. Brit. India 6: 512. 1893.

Herbs; corms subglobose. Leaves trilobed to hastate; central lobes c 7.5 x 3.5 cm; lateral lobes c 4.5 x 2.5 cm. Spatha c 15 cm long; spadix c 8 cm long; female flowers at base in a single row, green, stigma white; neuter florets above, dark brown; male flowers above the neuter, reddish brown; above male flowers, neuter flowers present; appendage brown. Berries subconical. Seeds obovoid.

Fls. & Frts. : August–October.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 771. 1982.

Distrib. : Found under shade of *Tectona grandis* along with *Curcuma pseudomontana*, *Justicia diffusa*, *Neanotis lancifolia* and *Sporobolus indicus* var. *diander*. Durg R.F.; Hiwri R.F.; Morchandi felling series, Bittergaon range.

LEMNACEAE

- | | | |
|--|-----|-----------|
| 1. Rootlet solitary; fronds asymmetric, nearly flat on both surfaces | ... | LEMNA |
| 1. Rootlets several, tufted from lower surface; fronds thick, orbicular or nearly so in outline, flat above, slightly convex below | ... | SPIRODELA |

LEMNA L.

Lemna perpusilla Torrey, Fl. New York 2: 245. 1843; Hartog & Plas in Blumea 18: 363. 1970. *L. paucicostata* Hegelm. Lemnac. 138, t. 8. 1868; Hook. f. Fl. Brit. India 6: 556. 1893; McC. in J. Bombay nat. Hist. Soc. 43: 153. 1942.

Herbs, free floating, root sheathed, appendaged, root cap acute. Fronds entire. Flowers minute, in marginal pouches of fronds, males in pairs, one on either side of solitary female. Utricles minute, ovoid.

Fls. & Frts. : October–November.

Distrib. : Common. Mukutban talao.

Notes : From erstwhile Bombay Presidency three new species have been described viz., *Lemna minima* Blatt. & Hallb. in J. Ind. Bot. 2: 50. 1921; *Lemna blatteri* McC. in J. Bombay Nat. Hist. Soc. 43: 153. 1942 and *Lemna eleanorae* McC. *ibid.* 154. They as well as *Lemna paucicostata* (reported by McC. *op. cit.*) are all *Lemna perpusilla* only.

SPIRODELA Shleid.

Spirodela polyrhiza (L.) Schleid. in Linnaea 13: 392. 1839; Hartog & Plas in Blumea 18: 360. 1970. *Lemna polyrhiza* L. Sp. Pl. 970. 1753; Hook. f. Fl. Brit. India 6: 557. 1893; Cooke, Fl. Pres. Bombay 3: 343. 1958 (Repr. ed.).

Herbs, floating. Flowers minute, in marginal clefts of fronds; spathes 2-lipped; male flowers in pairs, female solitary.

Fls. & Frts. : October.

Distrib. : Common. Found in association with *Aponogeton natans*, *Lemna perpusilla* and *Monochoria vaginalis*. Mukutban talao.

ALISMATACEAE

- | | | |
|---|-----|-------------|
| 1. Receptacles flat; stamens 6 | ... | LIMNOPHYTON |
| 1. Receptacles oblong or globose; stamens usually more than 6 | ... | SAGITTARIA |

LIMNOPHYTON Miq.

Limnophyton obtusifolium (L.) Miq. Fl. Ind. Bat. 3: 242. 1855; Hook. f. Fl. Brit. India 6: 560. 1893; Cooke, Fl. Pres. Bombay 3: 345. 1958 (Repr. ed.); Hartog in Steenis, Fl. Males. 1, 5: 324. 1957. *Sagittaria obtusifolia* L. Sp. Pl. 993. 1753. *Nalhut*.

Herbs, scapigerous, rootstock stout, with numerous, long root-fibres. Leaves 10–15 x 7.0–9.5 cm, radical, broadly ovate-triangular, base caudate-sagittate. Flowers pale bluish-white, whorled on 15–25 cm long scape. Achenes c 0.5 cm long, obovoid, turgid, wrinkled, base cuneate.

Fls. & Frts. : September.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 773. 1982.

Distrib. : Common. Mukutban talao.

SAGITTARIA L.

Sagittaria guayanensis H.B.K. ssp. *lappula* (D. Don) Begon in Mem. New York Bot. Gard. 9: 192, f. 5. 1955; Hartog in Steenis, Fl. Males. 1, 5: 328, f. 6. 1957. *S. lappula* D. Don, Prodr. Fl. Nepal. 22. 1825. *S. guayanensis* auct. pl. non H.B.K. 1816; Hook. f. Fl. Brit. India 5: 561. 1893.

Herbs. Leaves floating, broadly ovate, apex obtuse, base deeply cordate. Peduncles c 20 cm long, flaccid, floating, ribbed, hairy towards the apex; racemes c 8 cm long; lower whorls of flowers bisexual, upper ones male; flowers white. Achenes elliptic, surrounded by broad, blunt, spiny wing. Seeds brown.

Fls. & Frts. : September.

Illus. : Hartog, *op. cit.*; Mahesh. Illus. Fl. Delhi f. 208. 1966.

Distrib. : Mandar talao on Wani-Pardi road.

Notes : This is an additional species for the Flora of Maharashtra.

LIMNOCHARITACEAE

TENAGOCHARIS Hochst.

Tenagocharis latifolia (D. Don) Buchen. in Abh. Naturwiss. Verein Bremen 2: 2, 3 & 6. 1868; Subram. Aq. Ang. 88, t. 4, f. 53. 1962. *Butomus latifolius* D. Don, Prodr. Fl. Nepal. 22. 1825. *Butomopsis lanceolata* Kunth, Enum. Pl. 3: 165. 1841; Hook. f. Fl. Brit. India 6: 562. 1893; Cooke, Fl. Pres. Bombay 3: 347. 1958 (Repr. ed.).

Herbs, scapose, sap milky. Leaves 5–9 x 1.0–3.5 cm, elliptic to oblong-lanceolate. Flowers pale-bluish-white, in terminal umbels, on scapes longer than leaves. Follicles reticulately veined, tapering into short beaks. Seeds many.

Fls. & Frts. : October–December.

Illus. : Subram. *op. cit.*

Distrib. : Common, Mukutban talao.

APONOGETONACEAE

APONOGETON L. f.

Aponogeton natans (L.) Engl. & Krause in Pfreich. 24: 11. 1906;

van Bruggen in Blumea 18: 477. 1970. *Saururus natans* L. Mant. 2: 227. 1771. *Aponogeton monostachyon* L. f. Suppl. 214. 1781; Hook. f. Fl. Brit. India 6: 564. 1893; Cooke, Fl. Pres. Bombay 3: 348. 1958 (Repr. ed.).

Herbs, aquatic, submerged. Leaves 5–20 x 3–5 cm, oblong to linear-oblong, apex and base cuneate. Spikes 3–5 cm long, cylindric; flowers bright pink; tepals spathulate. Follicles subglobose, beaked. Seeds oblong.

Fls. & Frts. : September–November.

Illus. : Mahesh. Illus. Fl. Delhi f. 209. 1966.

Distrib. : Common. Found associated with *Monochoria vaginalis*. Mukutban talao.

ERIOCAULACEAE

ERIOCAULON L.

- | | |
|---|--------------------------|
| 1. Involucral bracts much longer than floral bracts and flowers ... | <i>E. dianae</i> |
| 1. Involucral bracts not longer than floral bracts and flowers ... | <i>E. quinquangulare</i> |

Eriocaulon dianae Fyson in J. Indian Bot. 2: 259, t. 11. 1921.

Herbs. Leaves 2–10 x 0.5–0.75 cm, linear. Heads hemispheric on striate peduncles; floral bracts dark green, obovate-cuneate, cuspidate, apex white papillose-hairy; male calyx spathaceous, split down on one side, lobes 3, rounded, apex white papillose-hairy; corolla lobes white papillose-hairy at tip with a black gland. Seeds minute.

Fls. & Frts. : September–November.

Illus. : Fyson, op. cit.

Distrib. : Common in wet places. Mohroli, Wani range; Pandharkawada-Bhiwkund road, in wet rice fields.

E. 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. Indian Bot. 2: 204, t. 9. 1921.

Herbs. Leaves 2–6 x 0.2–0.5 cm, linear, apex acute or acuminate. Heads globosely ovoid, grey or white; floral bracts sub-rhomboid or oblanceolate, acuminate, dorsally hairy, base cuneate; male calyx connate into a spathe, penicillate at apex; petals minute, pilose. Seeds ellipsoid.

Fls. & Frts. : September—October.

Illus. : Fyson, *op. cit.*

Distrib. : Common. Datatri temple surroundings, Punwat village, Wani range; Mandar talao, on Wani—Pardi road.

CYPERACEAE

1. Flowers unisexual	...	SCLERIA
1. Flowers bisexual :		
2. Styles jointed with the ovary; style base dilated or spongy-thickened, distinct :		
3. Hypogynous bristles present	...	ELEOCHARIS
3. Hypogynous bristles absent	...	FIMBRISTYLIS
2. Styles continuing down to ovary without demarcated border :		
4. Spikelets 1-flowered; glumes absent or 2	...	RICKIELLA
4. Spikelets many-flowered; glumes many :		
5. Glumes 2-ranked; hypogynous bristles and scales absent	...	CYPERUS
5. Glumes spirally imbricate; hypogynous bristles and/or scales present :		
6. Glumes pilose without; hypogynous scales 3	...	FUIRENA
6. Glumes glabrous; hypogynous scales absent...	...	SCHOENOPLECTUS

CYPERUS L.

1. Spikelets many-flowered; rhachilla of spikelets persistent :		
2. Stigmas 2; nuts compressed (stigmas 2–3 and at times nut trigonous in <i>C. pygmaeus</i>):		
3. Nuts compressed dorsally	...	<i>C. pygmaeus</i>
3. Nuts compressed laterally :		
4. Stem leafy for more than half its length, decumbent; rhizome creeping	...	<i>C. sanguinolentus</i>
4. Stem leafy only at base, erect; rhizome if present not as above	...	<i>C. flavidus</i>
2. Stigmas 3; nut trigonous :		
5. Spikelets digitate or clustered	...	<i>C. difformis</i>
5. Spikelets distinctly spicate, rarely subracemosely disposed :		

6. Rhachilla of spikelets wingless or obscurely winged (*C. squarrosus*) :
7. Perennials, rhizomes woody ... *C. nutans* var. *eleusinoides*
7. Annuals, stems tufted :
8. Relatively stout herbs; glumes obtuse or minutely mucronate ... *C. alulatus*
8. Slender or tiny herbs; glumes cuspidate or aristate :
9. Glumes aristate; spikelets $1.0\text{--}1.5 \times 0.08\text{--}0.1$ cm, yellowish-brown ... *C. squarrosus*
9. Glumes cuspidate; spikelets $1.2\text{--}6.0 \times 0.1\text{--}0.4$ cm, pale straw or greenish ... *C. compressus*
6. Rhachilla of spikelets distinctly winged :
10. Leaves short, rarely half as long as stem or absent ... *C. pangorei*
10. Leaves long, more than half as long as stem or longer :
11. Rhizomes stoloniferous ... *C. rotundus*
11. Rhizomes not stoloniferous ... *C. exaltatus*
1. Spikelets few-flowered; rhachilla of spikelets deciduous, leaving a disc :
12. Spikelets in terminal, 2-4-lobed heads; stigmas 2; nuts compressed ... *C. triceps*
12. Spikelets in cylindric or oblong umbellate spikes; stigmas 3; nuts not compressed ... *C. panicinus*

***Cyperus alulatus* Kern in Reinwardtia 1: 463. 1952.**

Herbs, c 40 cm high. Leaves c 5-35 cm long, linear, margins serrulate near apex. Spikelets ovoid or oblong, 0.3-1.2 cm long, 0.2-0.25 cm broad. Nuts obovoid, minutely punctate.

Fls. & Frts. : September-December.

Distrib. : Common. Katliborgaon on Pandharkawada-Bori road; Khandala R.F.; Kharad talao banks, Hiwri R.F.; Majra village, Bhiwkund.

Notes : Originally this species was described as *Cyperus iria* var. *rectangularis* Kuekenth. in Engl. Pflanzenr. 101: 152. 1935. Kern (*op. cit.*) raised this variety to the specific level and while doing so, he described it as a new species which was his prerogative and it was in

consonance with the provisions of the ICBN. Bennet raised the variety and named it as *Cyperus rectangularis* (Kuekenth.) in Indian Forester 95: 692. 1969 which becomes a superfluous name.

C. compressus L. Sp. Pl. 46. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 6: 605. 1893; Cooke, Fl. Pres. Bombay 3: 379. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 617. 1974.

Herbs, c 35 cm high. Leaves as long as stem, linear. Spikelets compressed, linear to ovoid-lanceolate. Nuts obovoid to ellipsoid, minutely punctate, shortly beaked.

Fls. & Frts. : September–December.

Illus. : Mahesh. Illus. Fl. Delhi f. 217. 1966.

Distrib. : Common. Jamwadi talao, Yavatmal; Mukutban.

C. 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.); Kern in Steenis, Fl. Males. 1, 7: 629. 1974.

Herbs, annual, c 50 cm high, tufted. Leaves c 30 cm long, linear. Spikelets greenish-brown. Nuts ellipsoid or obovoid-oblong, minutely punctate.

Fls. & Frts. : September–February.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 781. 1982.

Distrib. : Common. Durg camp; Karanji.

C. exaltatus Retz. Obs. Bot. 5: 11. 1789; C.B.Cl. in Hook. f. Fl. Brit. India 6: 617. 1893; Cooke, Fl. Pres. Bombay 3: 386. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 602. 1974.

Herbs, perennial, c 1.5 m high. Leaves c 1 m long, linear, margins serrulate. Spikelets yellowish to brown, linear-lanceolate to elliptic or oblong-lanceolate. Nuts ovoid or ellipsoid-oblong.

Fls. & Frts. : September–November.

Distrib. : Common. Pandharkawada–Bori road.

C. flavidus Retz. Obs. Bot. 5: 13. 1789; Cooke, Fl. Pres. Bombay 3: 375. 1958 (Repr. ed.). *C. globosus* auct. non Forsk. 1775; Cooke, op. cit. 370. *Pycreus capillaris* Nees in Linnaea 9: 283. 1834; C.B.Cl. in Hook. f. Fl. Brit. India 6: 591. 1893.

Herbs, c 20 cm high. Leaves linear. Spikelets linear-oblong to oblong-lanceolate, compressed, in simple umbel of contracted, occasionally solitary heads. Nuts laterally compressed, obovoid to obovoid-oblong, punctate.

Fls. & Frts. : December-March.

Distrib. : Common. Umarda forest Nursery surroundings, Yavatmal.

C. nutans Vahl var. *eleusinoides* (Kunth) Haines, Bot. Bihar Orissa 3: 898. 1924 (3: 941. 1961 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 610. 1974. **C. eleusinoides** Kunth, Enum. Pl. 2: 39. 1837; C.B.Cl. in Hook. f. Fl. Brit. India 6: 608. 1893; Cooke, Fl. Pres. Bombay 3: 382. 1958 (Repr. ed.).

Herbs, c 1.25 m high, stems triquetrous. Leaves c 80 cm long, linear. Spikelets linear-oblong, ovoid-oblong or ovoid-lanceolate. Nuts obovoid-oblong, punctate.

Fls. & Frts. : September-December.

Distrib. : Common. Durg camp; Jamwadi talao, Yavatmal.

C. pangorei Rottb. Descr. & Ic. 31, t. 7, f. 3. 1773. **C. tegetum** 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.).

Herbs, perennial, c 1.25 m high. Leaves linear. Spikelets linear. Nuts obovoid-oblong, punctate.

Fls. & Frts. : November-February.

Illus. : T. Koyama in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 5: 176, f. 9. 1985.

Distrib. : Common. Karanji; Pandharkawada-Bori road.

C. paniceus (Rottb.) Boeck. in Linnaea 36: 381. 1870. *Kyllinga panicea* Rottb. Descr. & Ic. Pl. 15, t. 4, f. 1. 1773. **Mariscus paniceus** (Rottb.) Vahl, Enum. Pl. 2: 378. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 6: 620. 1893; Blatt. & McC. in J. Bombay nat. Hist. Soc. 37: 533. 1934.

Herbs, perennial, c 50 cm high. Leaves c 35 cm long, margins scabrid. Spikelets lanceolate or ovoid-lanceolate. Nuts lanceolate, trigonous, punctate.

Fls. & Frts. : August-November.

Distrib. : Common. Penganga felling series, Kharbi range.

C. pygmaeus Rottb. Descr. & Ic. 20, t. 14, f. 5. 1773; Cooke, Fl. Pres. Bombay 3: 372. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 634. 1974. *Juncellus pygmaeus* (Rottb.) C.B.Cl. in Hook. f. Fl. Brit. India 6: 596. 1893.

Herbs, annual, c 20 cm high, tufted. Leaves c 15 cm long, flaccid, apex acuminate. Spikelets ovoid, glaucous-green to yellowish-brown. Nuts ellipsoid-oblong, punctate.

Fls. & Frts. : December–February.

Distrib. : Common. Pandharkawada–Bori road; Penganga river, Kharbi.

C. 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.); Kern in Steenis, Fl. Males. 1, 7: 604. 1974. *Moth, Motha, Nagarmotha*.

Herbs, perennial, c 75 cm high. Leaves c 50 cm long, linear. Spikelets linear, compressed. Nuts broadly obovoid.

Fls. & Frts. : September–February.

Distrib. : Common. Aruna river bed, Hiwri R.F., Yavatmal; Karanji; Majra village, Patan Bori range; Mangrul village near Aruna river; Pusad–Yavatmal road; Salebhatti, Wani range.

C. sanguinolentus Vahl, Enum. Pl. 2: 351. 1806; Cooke, Fl. Pres. Bombay 3: 369. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 646. 1974. *Pycreus sanguinolentus* (Vahl) Nees ex C.B.Cl. in Hook. f. Fl. Brit. India 6: 590. 1893.

Herbs, perennial, c 50 cm tall. Leaves c 15 cm long, linear. Spikelets linear or oblong. Nuts globose-ovoid or nearly orbicular, transversely lineolate.

Fls. & Frts. : September–November.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 784. 1982.

Distrib. : Common. Datatri temple, Punwat village, Wani range.

C. squarrosum L. in Torner, Cent. Pl. 2: 6. 1756; Kern in Steenis, Fl. Males. 1, 7: 631. 1974. *Mariscus squarrosum* (L.) C.B.Cl. in Hook. f. Fl. Brit. India 6: 623. 1893. *Cyperus aristatus* Rottb. Descr. Pl. Rar. Progr. 22. 1772; C.B.Cl. in Hook. f. op. cit. 606; Cooke, Fl. Pres. Bombay 3: 380. 1958 (Repr. ed.).

Herbs, c 15 cm high. Leaves c 10 cm long, flaccid, apex acuminate. Spikelets linear-oblong, in compact spikes forming a simple umbel and often with a sessile one at base of umbel. Nuts obovoid-oblong, punctate.

Fls. & Frts. : September–November.

Distrib. : Common. Pandharkawada–Bori road, weed in rice fields.

C. triceps (Rottb.) Endl. Cat. Hort. Vindob. 1: 94. 1842; Kern in Steenis, Fl. Males. 1, 7: 659. 1974. *Kyllinga triceps* Rottb. Descr. & Ic. 14, t. 4, f. 6. 1773; C.B.Cl. in Hook. f. Fl. Brit. India 6: 587. 1893; Cooke, Fl. Pres. Bombay 3: 391. 1958 (Repr. ed.).

Herbs, perennial, c 25 cm long, tufted. Leaves c 15 cm long, linear. Spikelets greenish white. Nuts oblong or ellipsoid-oblong.

Fls. & Frts. : August–November.

Illus. : Mahesh. Illus. Fl. Delhi f. 213. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 785. 1982.

Distrib. : Common. Majra village, Patan Bori range; Mukutban talao.

ELEOCHARIS R.Br.

Eleocharis geniculata (L.) R. & S. Syst. Veg. 2: 150. 1817. *Scirpus geniculatus* 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.).

Herbs, annual, c 25 cm high, tufted. Leaves absent. Spikelets solitary, terminal, globose–ovoid; hypogynous bristles upto 7, retrorsely scabrid. Nuts obovoid-oblong or globose.

Fls. & Frts. : December–March.

Distrib. : Common. Mohroli, Wani range; Wani–Mukutban road.

FIMBRISTYLIS Vahl

1. All glumes spirally imbricating :
2. Spikelets 1–6 in the umbel :
 3. Stem obscurely tetragonous; leaves absent; spikelet solitary ... *F. tetragona*
 3. Stem not as above; leaves present; spikelets 1–3(–6) ... *F. echoenoides*

2. Spikelets many, umbellate or capitate :
- 4. Nuts smooth ... *F. sieberiana*
 - 4. Nuts prominently striate with 6–8 vertical trabeculate ribs :
 - 5. Annuals; glumes one nerved, obtuse; nuts 0.1–0.15 cm long ... *F. bisumbellata*
 - 5. Perennials; glumes 3-nerved, mucronate; nuts 0.06–0.08 cm long ... *F. dichotoma*
1. All glumes or at least lower ones distichous or semi-distichous :
- 6. Spikelets solitary (rarely 2) ... *F. ovata*
 - 6. Spikelets many ... *F. complanata*

***Fimbristylis bisumbellata* (Forssk.) Bub. Dodec. 30. 1850; Kern in Steenis, Fl. Males. 1, 7: 579. 1974. *Scirpus bisumbellatus* Forssk. Fl. Aeg.-Arab. 1: 15. 1775. *Fimbristylis dichotoma* Kunth, Enum. Pl. 2: 225. 1837, non Vahl, 1806; C.B.Cl. in Hook. f. Fl. Brit. India 6: 635. 1893; Cooke, Fl. Pres. Bombay 3: 394. 1958 (Repr. ed.).**

Herbs, c 25 cm high, tufted. Leaves c 20 cm long, narrowly linear. Spikelets ellipsoid-oblong to ovoid-oblong, in lax, compound or decompound umbels. Nuts oblong-ovoid, broadly turbinate, minutely stipitate.

Fls. & Frts. : December–March.

Distrib. : Common. Penganga river, Kharbi.

***F. complanata* (Retz.) Link**, Hort. Bot. Berol. 1: 292. 1827; C.B.Cl. in Hook. f. Fl. Brit. India 6: 646. 1893; Cooke, Fl. Pres. Bombay 3: 400. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 548. 1974. *Scirpus complanatus* Retz. Obs. Bot. 5: 14. 1789.

Herbs, perennial, c 40 cm high. Leaves c 20 cm long, linear, margins scabrid. Spikelets ovoid-lanceolate or ovoid-oblong in compound or decompound umbels. Nuts obovoid, trigonous, tubercled.

Fls. & Frts. : September–February.

Distrib. : Common. Durg camp; Mohroli forest; Pandharkawada–Bhiwkund road; Wani–Mukutban road.

***F. dichotoma* (L.) Vahl**, Enum. Pl. 2: 287. 1806; Kern in Steenis, Fl. Males. 1, 7: 575. 1974. *Scirpus dichotomus* L. Sp. Pl. 50. 1753. *Fimbristylis diphyllo* Vahl, op. cit. 289; C.B.Cl. in Hook. f. Fl. Brit. India 6: 636. 1893 (excl. var. *pluristriata* C.B.Cl.); Cooke, Fl. Pres. Bombay 3: 396. 1958 (Repr. ed.).

Herbs, c 60 cm high, tufted. Leaves c 15 cm long, linear to linear-lanceolate, minutely puberulous, reflexed. Spikelets ellipsoid-oblong or ovoid-oblong, in terminal, compound umbels. Nuts broadly orbicular-ovoid, compressed, shortly stipitate.

Fls. & Frts. : August–October.

Illus. : Mahesh. Illus. Fl. Delhi f. 223. 1966.

Distrib. : Common. Bhiwkund; Khandala R.F.

F. ovata (Burm. f.) Kern in Blumea 15: 126. 1967 & in Steenis, Fl. Males. 1, 7: 565. 1974. *Carex ovata* Burm. f. Fl. Ind. 194. 1768. *Fimbristylis monostachyos* Hassk. Pl. Jav. Rar. 61. 1848 (*monostachya*); C.B.Cl. in Hook. f. Fl. Brit. India 6: 649. 1893; Cooke, Fl. Pres. Bombay 3: 399. 1958 (Repr. ed.).

Herbs, perennial, c 25 cm high. Leaves c 15 cm long, linear, margins scabrid. Spikelet ovoid, terminal. Nuts globosely pyriform, trigonous, tuberculate.

Fls. & Frts. : August–October.

Illus. : Mahesh. Illus. Fl. Delhi f. 221. 1966.

Distrib. : Common. Jodmoha grass farm; Majra felling series, Patan Bori range; Pandharkawada–Bhiwkund road.

F. 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.); Kern in Steenis, Fl. Males. 1, 7: 573. 1974. *Scirpus schoenoides* Retz. Obs. Bot. 5: 14. 1789.

Herbs, annual or perennial, c 45 cm high. Leaves c 25 cm long, narrowly linear, margins spinulose. Spikelets terminal, broadly ovoid-oblong to oblong-lanceolate. Nuts turbinate, compressed.

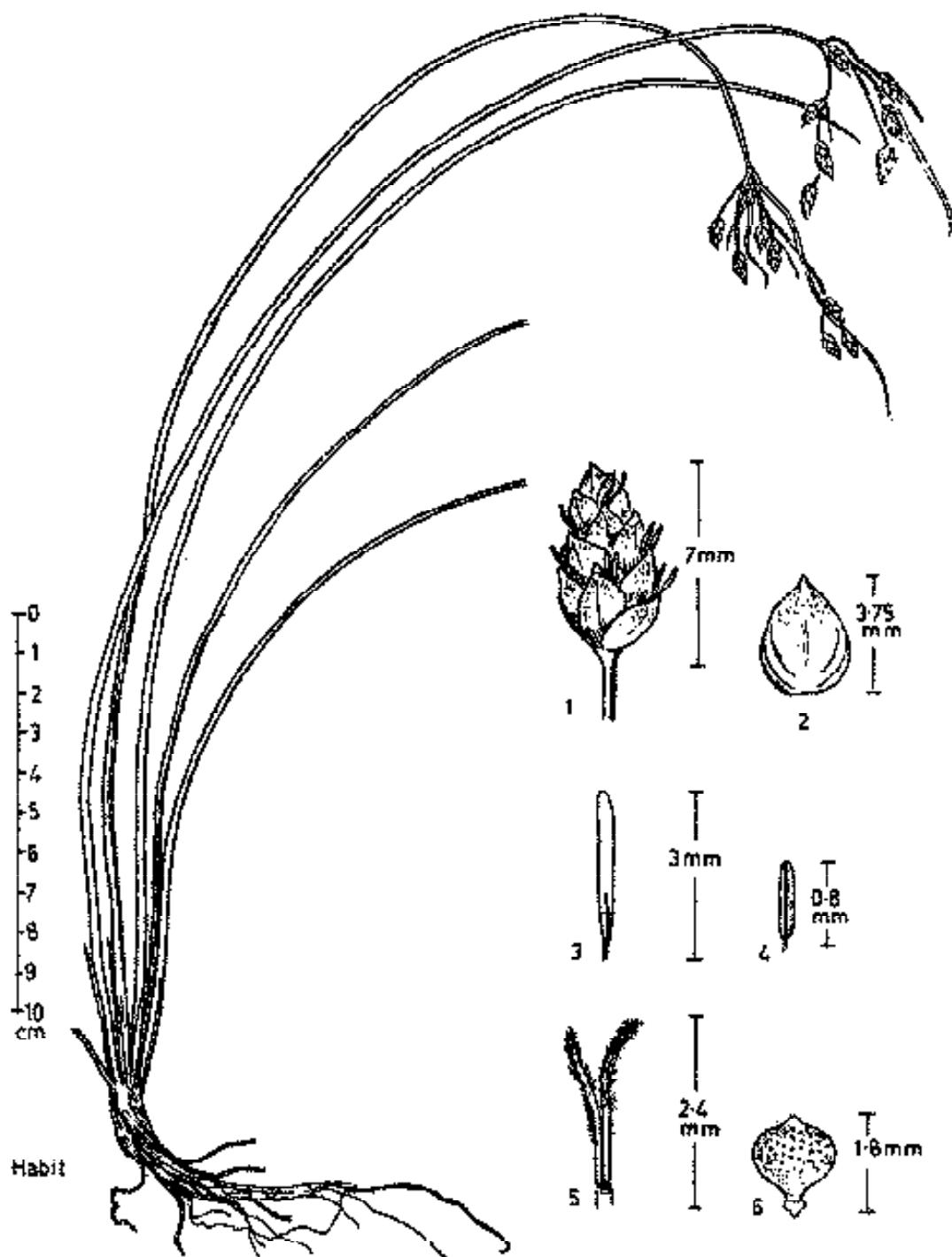
Fls. & Frts. : August–September.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 789. 1982.

Distrib. : Common. Pandharkawada–Bhiwkund road.

F. sieberiana Kunth, Enum. Pl. 2: 237. 1837; Kern in Steenis, Fl. Males. 1, 7: 572. 1974.

Herbs, perennial, c 50 cm high. Leaves c 20 cm long, narrowly linear. Spikelets in terminal, simple or semicomound umbels. Nuts globose or obovoid, biconvex, apiculate.

*Fimbristylis sieberiana* Kunth

1. Spikelet 2. Glume 3. Hypogynous scale 4. Stamen 5. Pistil 6. Nut

Fls. & Frts. : August–October.

Distrib. : Common. Durg camp; Wani–Mukutban road.

Notes : Reported for Maharashtra for the first time from Yavatmal District (Karthikeyan & Anandkumar, 1983).

F. tetragona R. Br. Prodr. 226. 1810; C.B.Cl. in Hook. f. Fl. Brit. India 6: 631. 1893; Cooke, Fl. Pres. Bombay 3: 393. 1958 (Repr. ed.); Kern in Steenis, Fl. Males. 1, 7: 590. 1974.

Herbs, perennial, c 60 cm high. Spikelet ovoid, terete. Nuts linear-oblong or subcylindric, longitudinally trabeculate.

Fls. & Frts. : August–September.

Distrib. : Common. Datatri temple, Punwat village, Wani range.

FUIRENA Rottb.

Fuirena wallichiana Kunth, Enum. Pl. 2: 182. 1837; C.B.Cl. in Hook. f. Fl. Brit. India 6: 665. 1893; Cooke, Fl. Pres. Bombay 3: 412. 1958 (Repr. ed.).

Herbs, perennial, c 60 cm high. Leaves c 20 cm long, linear-lanceolate, margins recurved. Spikelets terete, in corymbose terminal clusters. Nuts turbinate, trigonous, longitudinally ribbed, trabeculate between the ribs, pubescent at apex.

Fls. & Frts. : December–February.

Distrib. : Common. Jholapur–Pardi forest, Karanji.

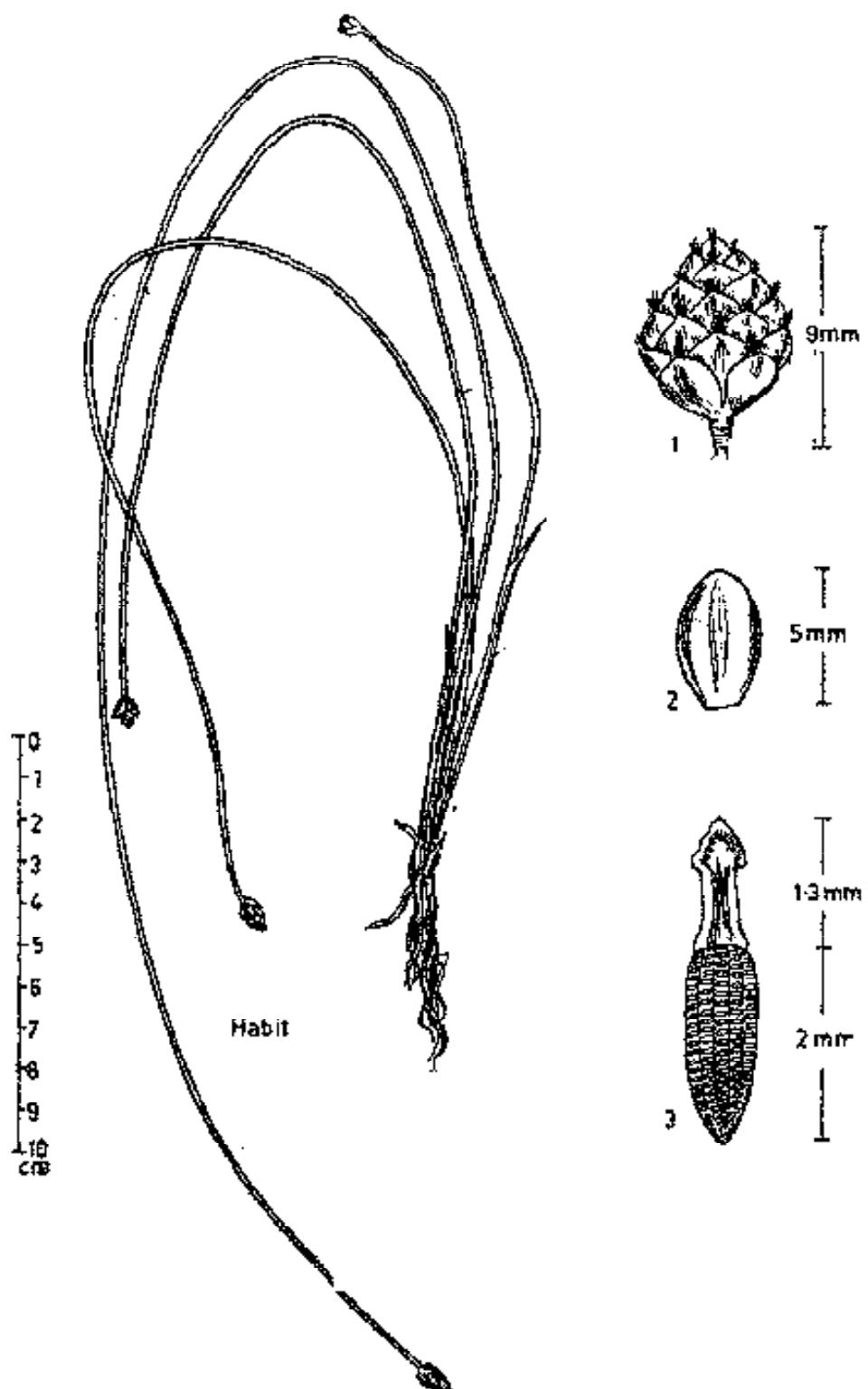
RIKLIELLA J. Raynal

Rikliella squarrosa (L.) J. Raynal in Adansonia 2, 13: 154. 1973. **Scirpus squarrosum** L. Mant. 181. 1771; C.B.Cl. in Hook. f. Fl. Brit. India 6: 663. 1893; Cooke, Fl. Pres. Bombay 3: 410. 1958 (Repr. ed.); J. Raynal in Adansonia 2, 8: 95, t. 1, f. 9–12. 1968.

Herbs, c 15 cm high. Leaves filiform, apex acuminate, margins involute. Spikelets 1–4, sessile, oblong, in subterminal head. Nuts obovoid–ellipsoid, trigonous.

Fls. & Frts. : August–October.

Illus. : Raynal, *op. cit.*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 797. 1982.



Flabriostylis tetragona R. Br.

Distrib. : Common. Pandharkawada-Bhiwkund road.

SCHOENOPLECTUS (H.G.L. Reichb.) Palla

- | | | |
|---|-----|-----------------------|
| 1. Inflorescence open with elongated rays | ... | <i>S. litoralis</i> |
| 1. Inflorescence a congested head | ... | <i>S. articulatus</i> |

Schoenoplectus articulatus (L.) Palla in Bot. Jahrb. Syst. 10: 299. 1888. *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.); Kern in Steenis, Fl. Males. 1, 7: 513. 1974.

Herbs, c 1 m high, tufted, spongy and transversely septate within. Leaves absent. Spikelets ovoid-oblong, sub-terete, rusty-brown, in sessile, lateral heads. Nuts obovoid, triquetrous, transversely striate.

Fls. & Frts. : December-April.

Illus. : T. Koyama in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 5: 163, f. 7. 1985.

Distrib. : Common in marshes. Mukuthan talao.

S. litoralis (Schrad.) Palla in Sitzber. Zool.-Bot. Ges. Wien 38: 49. 1888; T. Koyama in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 5: 157, 1985. *Scirpus litoralis* Schrad. Fl. Germ. 1: 42, t. 5, f. 7. 1806 (*litoralis*); C.B.Cl. in Hook. f. Fl. Brit. India 6: 659. 1893; Cooke, Fl. Pres. Bombay 3: 408. 1958 (Repr. ed.).

Herbs; c 2 m high, terete below, trigonous towards apex. Spikelets oblong, pedicellate, in lax subcorymbose umbels; glumes brownish red, margins scarious. Nuts orbicular-obvoid.

Fls. & Frts. : December-February.

Illus. : Mahesh. Illus. Fl. Delhi f. 227. 1966.

Distrib. : Abundant in marshy soil. Along the Penganga river banks in Kharbi R.F.

Notes : Cooke (*op. cit.*) reported this species from Sind and Gujarat only. Karthikeyan & Anandkumar (1983) have reported it from Maharashtra based on collections from Yavatmal District.

SCLERIA Berg.

Scleria parvula Steud. Syn. Pl. Glum. 2: 174. 1855; Kern in

Blumea 11: 202. 1961. *S. tessellata* Boeck. in Linnaea 38: 470. 1874, p. non Willd. 1805; C.B.Cl. in Hook. f. Fl. Brit. India 6: 686. 1894, p.p.; Cooke, Fl. Pres. Bombay 3: 418. 1958 (Repr. ed.), p.p.

Herbs, c 75 cm high, tufted, triquetrous. Leaves c 25 cm long, linear, margins involute, scaberulous. Spikelets solitary or in small clusters in sparingly branched panicles. Nuts globose, tessellately cancellate vertically.

Fls. & Frts. : August–September.

Distrib. : Common in marshy soil. Jodmoha Grass Farm; Pandharkawada-Bhiwkund Road.

Notes : *S. tessellata* sensu C.B.Cl. (*op. cit.*) from India is a mixture of three species viz., *S. mikawana* Makino, *S. parvula* Steud. and *S. tessellata* Willd. Karthikeyan & Anandkumar (1983) reported *S. parvula* for the first time from Maharashtra based on Yavatmal collections.

S. tessellata Willd. can be differentiated from *S. parvula* Steud. by the following key :

1. Lateral panicles erect; peduncles rigid, usually short; achenes cylindric to ellipsoid-cylindric, 1.5–2.0 mm diam., glabrous, obscurely or distinctly striate-lacunose, the lacunae vertically elongated ... *S. tessellata*
1. Lateral panicles pendulous; peduncles long and flexuous; achenes obovoid-globose to oblong-ellipsoid, 1.5–2.2 mm diam., deeply and squarely lacunose, usually hairy on the walls ... *S. parvula*

POACEAE (GRAMINEAE)

1. Small trees; leaves articulated on sheaths ... **DENDEOCALAMUS**
1. Herbs; leaves not articulated on sheaths :
 2. Spikelets 2-flowered, falling entire at maturity, usually with the upper floret hermaphrodite and the 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 and structure, frequently dorsally compressed :
 3. Male and female spikelets in separate inflorescences or in different parts of the same inflorescence and of different appearance; lemmas hyaline or membranous and thinner than the glumes :
 4. Female spikelets entirely enclosed in a globose or ovoid basal bract through which the rhachis grows out and bears the male spikelets above ... **Cox**

4. Female spikelets enclosed by a structure formed by the hardened lower glume or embedded in the joints of the rhachis ... **CHIONACHNE**
3. Spikelets all hermaphrodite, or with male or barren and hermaphrodite spikelets mixed in the same inflorescence and so arranged that a male or barren spikelet is near a hermaphrodite spikelet :
5. Spikelets often paired, with one sessile and the other pedicelled, those of each pair similar or more often dissimilar; glumes as long as the spikelet and enclosing the florets, more or less rigid and firmer than the lemmas which are both hyaline or membranous; upper lemmas usually awned :
6. Either lemmas or glumes awned or aristate :
7. Inflorescence not spathed :
8. Spikelets in threes, one sessile, the other two pedicelled ... **CHEIROPOGON**
8. Spikelets binate :
9. Pedicelled spikelets well developed :
10. One spikelet long, the other short-pedicelled ... **ISCHAEMUM**
10. One spikelet sessile, the other pedicelled :
11. Inflorescence a solitary raceme :
12. Lower glume of sessile spikelets deeply grooved, 2-toothed or cuspidate ... **SETIMA**
12. Lower glume of sessile spikelets not grooved ... **HETEROPODON**
11. Inflorescence of digitate, fascicled, corymbose racemes or panicles :
13. Upper lemma of sessile spikelets reduced to the hyaline base of the awn ... **DICRANTHUM**
13. Upper lemma of sessile spikelets developed :

14. Upper lemma awned from the back, often from just above the base ... **ARTHRAXON**
14. Upper lemma 2-fid or lobed, awned from the sinus :
15. Inflorescence of digitate, fascicled or corymbose racemes ... **ISCHAEMUM**
15. Inflorescence a panicle ... **VETIVERIA**
9. Pedicelled spikelet usually reduced, often to a pedicel (occasionally developed as in some species of *Arthraxon*) :
16. Upper lemma awned from the back, often just above the base ... **ARTHRAXON**
16. Upper lemma of sessile spikelets 2-fid or lobed, awned from the sinus :
17. Lower glume of sessile spikelets thickly coriaceous, transversely strongly ridged, rugose or tubercled ... **THELEPOGON**
17. Lower glume of sessile spikelets coriaceous or chartaceous, smooth ... **SORGHUM**
7. Inflorescence spathed :
18. Basal sheaths white or cream-tomentose; raceme solitary; lower glume of sessile spikelet dorsally-pitted ... **EKEMOPOGON**
18. Basal sheaths glabrous; inflorescence usually a panicle, rarely solitary, corymbose or digitate racemes (*Andropogon*) :
19. Basal pairs of spikelets closely approximate to form an involucre :
20. Involucral spikelets sessile, either at the same level or in superposed pairs ... **THEMEDA**
20. Involucral spikelets pedicelled, all at the same level ... **ISEILEMA**
19. Involucral spikelets absent :
21. Basal joint of the racemes bulbous ... **APLUADA**
21. Basal joint of the racemes not bulbous :
22. Inflorescence of corymbose, spiciform racemes; joints slender, usually 2-3-toothed at apex ... **ANDROPOGON**
22. Inflorescence of paired racemes, one sessile, the other peduncled, collected into a frequently much branched panicle; joints not toothed at apex; joints and pedicels of the lowest pairs swollen ... **CYMBOPOGON**

6. Lemmas and glumes unawned :
23. Inflorescence white silky hairy; joints and pedicels free :
24. Spikelets binate, one pedicelled and the other sessile; panicles effuse ... **SACCHARUM**
24. Spikelets binate, one short- the other long - pedicelled; panicles narrow ... **IMPERATA**
23. Inflorescence not as above; joints and pedicels fused :
25. Raceme solitary :
26. Raceme cylindric; lower glume of sessile spikelets often narrowly winged on both sides near the apex ... **ROTTELLIA**
26. Raceme compressed; lower glume of sessile spikelets constricted abruptly at the apex into a blunt often bifid point ... **HEMARTHRIA**
25. Racemes fascicled or corymbose:
27. Racemes fascicled; lower glume of the sessile spikelets subglobose, cartilaginous, pitted ... **HACKELOCHLOA**
27. Racemes corymbose; lower glume of the sessile spikelets thickly coriaceous, nearly flat, oblong, obtuse, smooth or pitted in rows ... **OPHIUROS**
5. Spikelets solitary or paired, more or less similar; glumes usually membranous, the lower usually smaller or sometimes suppressed; lower lemma often resembling the upper glume in texture; upper lemma papery to very tough and rigid, usually awnless :
28. Lemmas or glumes awned :
29. Upper lemma shortly aristate; lower glume, upper glume and lower lemma not aristate ... **ALLOTROPSIS**
29. Upper lemma not awned; lower glume, upper glume and lower lemma aristate ... **OPLIUMENUS**
28. Lemmas and glumes not awned :
30. Inflorescence of spiciform racemes :
31. Lower glume well developed :
32. Lower glume turned towards the axis ... **BRACHIARIA**
32. Lower glume turned away from the axis :
33. Upper lemma mucronate ... **UNOCHLOA**
33. Upper lemma acute :
34. Spikelets usually turgid ... **PASPALIDIUM**
34. Spikelets not turgid ... **ECHINOCHLOA**

31. Lower glume usually absent, if present, minute, scale-like :
- 35. Spikelets elliptic or elliptic-oblong or lanceolate, binate or ternate ... DIGITARIA
 - 35. Spikelets orbicular, secund, 2-seriate ... PASPALUM
30. Inflorescence of panicles :
- 36. Spikelets usually subtended by an involucre of bristles :
 - 37. Bristles rigid; upper lemma often rugose or transversely striate ... SETARIA
 - 37. Bristles rather soft; upper lemma more or less smooth ... PENNISETUM
 - 36. Spikelets not subtended by bristles :
 - 38. Spikelets with an annular callus at the base ... ERIOCHLOA
 - 38. Spikelets without an annular callus at the base :
 - 39. Spikelets subglobose; upper glume with a saccate base, 5-8-ribbed ... SACCOLEPIS
 - 39. Spikelets elliptic or lanceolate; upper glume not as above ... PANICUM
2. 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 upper hermaphrodite, usually more or less laterally compressed or terete :
40. Lemmas or glumes awned :
- 41. Spikelets 1-flowered :
 - 42. Lemmas unawned; glumes tapering into long capillary awns ... PERONIA
 - 42. Lemmas awned; glumes if present, shortly aristate :
 - 43. Lower glume well developed; awn of lemma usually with 3 setae ... ARISTIDA
 - 43. Lower glume suppressed; awn of lemma without setae ... ORYZA
 - 41. Spikelets 2-many flowered :
 - 44. Lemmas unawned; glumes aristate ... DINEBIA
 - 44. Lemmas awned; glumes awned or unawned :
 - 45. Glumes toothed or notched at apex ... TRIPOGON
 - 45. Glumes entire :
 - 46. Spikelets densely imbricate in 2 rows ... DACTYLOCTENIUM
 - 46. Spikelets secund in the inflorescence :

47. Inflorescence of umbellled spikes or spiciform racemes; glumes acuminate or the upper aristate or both unawned; spikelets with 1-perfect floret below and 1-imperfect floret above; lemmas obtuse or 2-fid, awned ... **CHLORIS**
47. Inflorescence of sessile or shortly peduncled clusters of 4-5-spikelets on a flattened solitary axis; glumes aristate; florets 2; lemmas 3-cuspidate; rhachilla prolonged beyond the upper lemma and occasionally bearing 1-2 empty scales ... **MELANOCENCHRIS**
40. Both lemmas and glumes unawned :
48. Spikelets 1-flowered :
49. Inflorescence of panicles ... **SPOROBOLUS**
49. Inflorescence of spikes or spiciform racemes :
50. Racemes solitary ... **TRAGUS**
50. Spikes 2-8, umbellate ... **CYNODON**
48. Spikelets 2-many-flowered :
51. Inflorescence of panicles ... **ERAGROSTIS**
51. Inflorescence of spikes :
52. Spikes solitary ... **ERAGROSTIELLA**
52. Spikes 2-6 in a whorl, occasionally 1-2 solitary spikes below the whorl ... **ELEUSINE**

ALLOTEROPSIS J.S. ex C.B.Presl *emend.* Hitchc.

Alloteropsis cimicina (L.) Stapf in Prain, Fl. Trop. Afr. 9: 487. 1919; Bor, Grasses. 276. 1960. *Milium cimicinum* L. Mant. Alt. 184. 1771. *Axonopus cimicinus* (L.) P. Beauv. Ess. Agrost. 12. 1812; Hook. f. Fl. Brit. India 7: 64. 1896; Cooke, Fl. Pres. Bombay 3: 441. 1958 (Repr. ed.).

Herbs, perennial, c 50 cm high. Leaves c 7.0 x 1.25 cm, lanceolate, base cordate, margins hairy from tubercled bases. Spikelets in c 15 cm long racemes; upper glume densely ciliate in margins; upper palea 2-nerved, 2-keeled with basal auricled flaps. Grains ovoid, flat.

Fls. & Frts. : September-December.

Illus. : Blatt. & McC. Bombay Grass. t. 83. 1935; Mahesh. Illus. Fl. Delhi f. 256. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 801. 1982.

Distrib. : Common, Hiwri R.F.; Khandala R.F.; Kharad'talao banks, Hiwri R.F.; Majra felling series, Patan Bori range.

ANDROPOGON L.

Andropogon pumilus Roxb. Fl. Ind. 1: 277. 1820; Hook. f. Fl. Brit. India 7: 170. 1896; Cooke, Fl. Pres. Bombay 3: 495. 1958 (Repr. ed.); Bor, Grasses. 93. 1960. *Baerki*, *Gondval*.

Herbs, annual, c 50 cm high. Leaves c 5.0 x 0.25 cm. Spikelets in racemes; lower glume of sessile spikelet deeply channelled on back; upper glume mucronate; glumes and lemmas of pedicelled spikelets muticous. Grains oblong.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 65. 1935; Patunkar, Grass. Marathwada 27, f. 6. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 802 & 803. 1982.

Distrib. : Common. Aruna river banks, Hiwri R.F., Yavatmal; Karanji; Salebhatti, Wani range.

APLUDA L.

Apluda mutica L. Sp. Pl. 82. 1753; Bor, Grasses. 93. 1960. *A varia* Hack. in DC. Monogr. Phan. 6: 196. 1889; Hook. f. Fl. Brit. India 7: 150. 1896; Cooke, Fl. Pres. Bombay 3: 474. 1958 (Repr. ed.). *Ghagara*.

Herbs, perennial, c 3 m high. Leaves c 15.0 x 0.8 cm, linear-lanceolate. Spikelets in boat-shaped bracts. Grains oblong.

Fls. & Frts. : December–February.

Illus. : Blatt. & McC. Bombay Grass. t. 20. 1935 (*A. varia* var. *aristata* Hack. *op. cit.*); Patunkar, Grass. Marathwada 30, f. 7. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t 804 & 805. 1982.

Distrib. : Common. Aruna river banks, Hiwri R.F.; Yavatmal.

ARISTIDA L.

- | | | |
|---|-----|------------------------|
| 1. Lateral setae of awns much reduced or absent | ... | <i>A. redacta</i> |
| 1. All 3 setae of awns well developed : | | |
| 2. Glumes aristate | ... | <i>A. setacea</i> |
| 2. Glumes not aristate | ... | <i>A. adscensionis</i> |

Aristida adscensionis L. Sp. Pl. 82. 1753; Hook. f. Fl. Brit. India

7: 224. 1896; Cooke, Fl. Pres. Bombay 3: 529. 1958 (Repr. ed.); Bor, Grasses. 407. 1960.

Herbs, annual or perennial, c 50 cm high. Leaves c 10.0 x 0.5 cm, linear, margins scaberulous. Panicles c 50 cm long, contracted; spikelets oblong-lanceolate.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 138. 1935; Mahesh. Illus. Fl. Delhi f. 271. 1966.

Distrib. : Occasionally occurs as a weed in cultivated fields. Jamwadi talao banks, Yavatmal; Pandharkawada–Bori road.

A. 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.); Bor, Grasses. 412. 1960.

Herbs, annual or perennial, c 50 cm high, tufted. Leaves c 24 cm long, slender, convolute, hairy above. Panicles lax, expanded, c 30 cm long. Lemma continuous, not perfectly articulated with the c 1.5 cm long column. Grains cylindric.

Fls. & Frts. : December–February.

Distrib. : Common. Jamwadi talao banks, Yavatmal.

A. setacea Retz. Obs. Bot. 4: 22. 1786; Hook. f. Fl. Brit. India 7: 225. 1896; Cooke, Fl. Pres. Bombay 3: 529. 1958 (Repr. ed.); Bor, Grasses. 412. 1960.

Herbs, perennial, c 60 cm high. Leaves c 20 cm long, narrowly linear. Panicles contracted, branches erect; spikelets narrowly linear-cylindric.

Fls. & Frts. : December–February.

Illus. : Blatt. & McC. Bombay Grass. t. 139. 1935.

Distrib. : Common. Mukutban.

ARTHRAVON P. Beauv.

- | | |
|--|---------------------------|
| 1. Lower glume of sessile spikelets 2-keeled | ... <i>A. lanceolatus</i> |
| 1. Lower glume of sessile spikelets rounded on the back,
not keeled : | |

- | | |
|--|---------------------------|
| 2. Pedicelled spikelets, at least in the upper part of the racemes developed | ... <i>A. lancifolius</i> |
| 2. Pedicelled spikelets not developed | ... <i>A. hispidus</i> |

***Arthraxon hispidus* (Thunb.) Makino in Bot. Mag. Tokyo 26: 214. 1912; Bor, Grasses. 99. 1960; Welzen in Blumea 27: 266. 1981. *Phalaris hispida* Thunb. Fl. Jap. 44. 1784. *Arthraxon inermis* Hook. f. Fl. Brit. India 7: 145. 1896; Cooke, Fl. Pres. Bombay 3: 487. 1958 (Repr. ed.). *A. quartinianus* (A. Rich.) Nash, N. Amer. Fl. 17: 99. 1912; Sant. Fl. Purandhar 139. 1958; Bor, op. cit. 102.**

Herbs, annual, c 45 cm high. Leaves c 5.0 x 1.25 cm, linear to elliptic-lanceolate. Racemes upto 9; joints subterete, finely ciliate on one side; pedicels absent.

Fls. & Frts. : September-December.

Illus. : Blatt. & McC. Bombay Grass. t. 49. 1935; Jain in J. Indian Bot. Soc. 51: 179, f. 13. 1972 (*A. quartinianus*).

Distrib. : Common. Tipeshwar R.F.

Notes : We have identified our specimen as *Arthraxon quartinianus*. Cooke has not included this species in his Flora. Santapau has reported it from Purandhar. However, Welzen (op. cit.) has treated this as a synonym of *A. hispidus*. Cooke, had reported *A. inermis* which again is a synonym of *A. hispidus* (Welzen, op. cit.).

***A. 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, Grasses. 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. Govinder, Harjala.**

Herbs, annual, c 50 cm high. Leaves c 4.5 x 0.5 cm, ovate-lanceolate, glabrescent. Racemes 4-7, slender. Spikelets c 0.5 cm long; marginal and submarginal nerves of lower glumes of sessile spikelet spiculate.

Fls. & Frts. : December-February.

Illus. : Blatt. & McC. Bombay Grass. t. 46. 1935 (*A. serrulatus* Hochst. in Flora 39: 188. 1856); Jain in J. Indian Bot. Soc. 51: 175, f. 18. 1972; Patunkar, Grass. Marathwada 38, f. 9. 1980.

Distrib. : Common. Junnagaon, Khandala; Umarda forest nursery surroundings, Yavatmal.

A. lancifolius (Trin.) Hochst. in Flora 39: 188. 1856; Bor, Grasses 100. 1960; Welzen in Blumea 27: 288. 1981. *Andropogon lancifolius* Trin. in Mem. Acad. Sci. Petersb. 6, 2: 271. 1832. *Arthraxon microphyllus* auct. non (Trin.) Hochst. op. cit.; Hook. f. Fl. Brit. India 7: 147. 1896; Cooke, Fl. Pres. Bombay 3: 488. 1958 (Repr. ed.).

Herbs, annual, c 40 cm high, straggling. Leaves c 4 x 1 cm, linear-lanceolate to ovate, puberulous to densely hairy. Racemes 3-5; joints and pedicels long-ciliate; lower glume of sessile spikelets lanceolate, bicuspitate, minutely puberulous; upper glume mucronate.

Fls. & Frts. : September-December.

Illus. : Blatt. & McC. Bombay Grass. t. 48. 1935; Jain in J. Indian Bot. Soc. 51: 176, f. 7. 1972.

Distrib. : Common. Durg talao banks.

BRACHIARIA Griseb.

1. Spikelets distant	...	<i>B. remota</i>
1. Spikelets approximate :		
2. Spikes erect, appressed to the rhachis	...	<i>B. eruciformis</i>
2. Spikes erecto-patent or horizontal :		
3. Spikelets 1.25-2.0 mm long	...	<i>B. reptans</i>
3. Spikelets 2.5-3.5 mm long	...	<i>B. ramosa</i>

Brachiaria eruciformis (J.E.Sm.) Griseb. in Ledeb. Fl. Ross. 4: 469. 1853; Bor, Grasses. 283. 1960. *Panicum eruciforme* J.E.Sm. in Sibth. & J.E.Sm. Fl. Graeca 1: 44, t. 59. 1806. *P. isachne* Roth ex R. & S. Syst. Veg. 2: 458. 1817; Hook. f. Fl. Brit. India 7: 28. 1896; Cooke, Fl. Pres. Bombay 3: 448. 1958 (Repr. ed.).

Herbs, annual, c 25 cm high, sub-erect. Leaves c 4.0 x 0.4 cm, base rounded, softly pilose from bulbous bases. Spikelets secund, elliptic to broadly oblong; upper glume pilose. Grains oblong.

Fls. & Frts. : December-March.

Illus. : Blatt. & McC. Bombay Grass. t. 85. 1935 (*B. isachne* (Roth) Stapf in Prain, Fl. Trop. Afr. 9: 552. 1919); Patunkar, Grass. Marathwada 132, f. 40. 1980.

Distrib. : Common. Usually occurs as a weed in cultivated fields. Aruna river banks, Hiwri R.F., Yavatmal; Mangrul village; Umarkhed.

B. ramosa (L.) Stapf in Prain, Fl. Trop. Afr. 9: 542. 1919; Bor, Grasses. 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.).

Herbs, annual, c 50 cm high. Leaves c 5.0 x 0.75 cm, lanceolate, base subcordate, glabrous or pubescent. Spikes c 5 cm long; spikelets broadly elliptic, turgid; upper glume broadly oblong, puberulous.

Fls. & Frts. : August–December.

Illus. : Blatt. & McC. Bombay Grass. t. 86. 1935.

Distrib. : Common. Usually found as a weed in cultivated fields. Karanji village; Umarda forest nursery surroundings.

B. remota (Retz.) Haines, Bot. Bihar & Orissa 1005. 1924 (3: 1052, 1961 Repr. ed.); Bor, Grasses. 285. 1960. *Panicum remotum* Retz. Obs. Bot. 4: 17. 1786; Hook. f. Fl. Brit. India 7: 38. 1896.

Herbs, annual, c 50 cm high, decumbent. Leaves c 7.5 x 0.25 cm, narrowly linear, glabrescent. Spikes c 10 cm long; spikelets ellipsoid.

Fls. & Frts. : August–November.

Distrib. : Common. Majra felling series, Patan Bori range.

B. reptans (L.) Gard. & C.E.Hubb. in Hook. Ic. Pl. sub tab. 3363. 1938; Bor, Grasses. 285. 1960. *Panicum reptans* L. Syst. Nat. ed. 10. 870. 1759. *P. prostratum* Lam. Illustr. 1: 171. 1791 & Encycl. 4: 730. 1797; Hook. f. Fl. Brit. India 7: 33. 1896; Cooke, Fl. Pres. Bombay 3: 448. 1958 (Repr. ed.). *Chimanchara*.

Herbs, annual, c 50 cm long, prostrate. Leaves c 5 x 1 cm, base rounded, glabrous or minutely pubescent. Spikelets ovoid to ellipsoid; lower glume sub-orbicular; upper glume and lower lemma elliptic-ovate, acute; upper lemma broadly oblong, mucronate.

Fls. & Frts. : August–February.

Illus. : Blatt. & McC. Bombay Grass. t. 92. 1935 (*Urochloa reptans* (L.) Stapf in Prain, Fl. Trop. Afr. 9: 601. 1920); Mahesh. Illus. Fl. Delhi f. 270. 1966.

Distrib. : Common. E. Gondwakadi R.F.; Karanji; Karegaon, near Penganga river, Bori range; Kharad talao, Hiwri R.F.; Pandharkawada–Bori road; Penganga felling series, Kharbi range.

CHIONACHNE R. Br.

Chionachne koenigii (Spr.) Thw. Enum. Pl. Zeyl. 357. 1864; Bor, Grasses. 262. 1960. *Coix koenigii* Spr. Syst. 1: 239. 1825. *Polytoca barbata* (Roxb.) Stapf in Hook. f. Fl. Brit. India 7: 102. 1896; Cooke, Fl. Pres. Bombay 3: 519. 1958 (Repr. ed.). *Kanta-karvel*.

Herbs, perennial, c 3 m high. Leaves c 50.0 x 1.75 cm. Racemes umbellated; female spikelets solitary below, male few, above; lower glumes winged, puberulous, ciliate.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 3. 1935 (*Polytoca barbata*); Patunkar, Grass. Marathwada 121, f. 37. 1980.

Distrib. : Sparse. Yavatmal–Yelabara road.

CHLORIS Swartz

- | | | |
|--|-----|--------------------------|
| 1. Spikes less than 6.5 cm long; empty lemma oblanceolate,
truncate, aristate | ... | <i>C. virgata</i> |
| 1. Spikes more than 10 cm long, spreading; empty lemma
reduced to a fine awna | ... | <i>C. dolichostachya</i> |

Chloris dolichostachya Lagasca, Gen. & Sp. Pl. 5. 1816; Bor, Grasses. 466. 1960. *C. incompleta* Roth, Nov. Pl. Sp. 60. 1821; Hook. f. Fl. Brit. India 7: 290. 1896; Cooke, Fl. Pres. Bombay 3: 556. 1958 (Repr. ed.).

Herbs, perennial, c 1.5 m high, erect or procumbent. Leaves c 15.0 x 0.75 cm, linear. Spikes 3–10; spikelets in 2 rows, appressed to rhachis; lemma oblong-lanceolate. Grains oblong.

Fls. & Frts. : November–February.

Illus. : Blatt. & McC. Bombay Grass. t. 168. 1935; Mahesh. Illus. Fl. Delhi f. 257. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 825 & 826. 1982.

Distrib. : Common. Kini forest, Parwa R.F.

C. virgata Swartz, Fl. Ind. Occ. 1: 203. 1797; Hook. f. Fl. Brit. India 7: 291. 1896; Bor, Grasses. 468. 1960.

Herbs, annual, c 40 cm high, decumbent. Leaves c 15.0 x 0.5 cm, linear. Spikes 4–7, rhachis hairy; spikelets ovate-lanceolate; lemma obovate, acute, apical margin long-ciliate. Grains subtriangular.

Fls. & Frts. : December–February.

Illus. : Blatt. & McC. Bombay Grass. t. 170. 1935; Patunkar, Grass. Marathwada 217, f. 65. 1980.

Distrib. : Common. Majra village, Bhiwkund.

CHRYSOPOGON Trin.

- | | | |
|--------------------------|-----|-----------------------|
| 1. Leaves distichous | ... | <i>C. polyphyllus</i> |
| 1. Leaves not distichous | ... | <i>C. fulvus</i> |

Chrysopogon fulvus (Spr.) Chiov. Fl. Somal. 1: 327. 1929; Bor, Grasses. 116. 1960. *Pollinia fulva* Spr. Pugill. 2: 10. 1815. *Andropogon monticola* R. & S. Syst. Veg. 2, Mant. 3: 665. 1827; Hook. f. Fl. Brit. India 7: 192. 1896; Cooke, Fl. Pres. Bombay 3: 505. 1958 (Repr. ed.). *Asiva*.

Herbs, perennial, c 75 cm high, prostrate, rootstock creeping. Leaves c 10 cm long, rigid, ciliate from bulbous based bristles. Panicles spreading; upper glume of sessile spikelets rufous hairy on keels, aristate; lower glume of pedicelled spikelets aristate. Grains linear.

Fls. & Frts. : September–December.

Illus. : Mahesh. Illus. Fl. Delhi f. 273. 1966; Patunkar, Grass. Marathwada 47, f. 12. 1980.

Distrib. : Common. Dhabdi forest; Durg camp; Patri, near Umari village on Yavatmal–Pandharkawada road.

C. polyphyllus (Hack. ex Hook. f.) Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 416. 1928; Bor, Grasses. 118. 1960. *Andropogon polyphyllus* Hack. ex Hook. f. Fl. Brit. India 7: 194. 1896.

Herbs, perennial, c 1 m high, rootstock creeping. Leaves c 12.0 x 0.4 cm. Panicle branches ascending; hairs of pedicel and callus yellow; upper glume of sessile spikelets mucronate.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 43. 1935.

Distrib. : Common. Pandharkawada–Beri road; Penganga felling series, Kharbi R.F.

Notes : Blatt. & McC. (*op. cit.*) recorded this species for Maharashtra.

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.); Bor, Grasses. 264. 1960. *Ranjondhala*.

Herbs, annual, c 2 m high. Leaves c 25 x 5 cm, linear-lanceolate, base cordate. Inflorescence axillary and terminal; male spikelets 2-3-nate; lower glume winged.

Fls. & Frts. : November–February.

Illus. : Blatt. & McC. Bombay Grass. t. 1. 1935; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 834 & 835. 1982.

Distrib. : Common in marshy places. Aruna river side, Hiwri R.F., Yavatmal.

CYMBOPOGON Spreng.

Cymbopogon martinii (Roxb.) Wats. in Atkins. Gaz. N.W.Prov. Ind. 392. 1882; Bor, Grasses. 129. 1960; Soenarko in Reinwardtia 9: 330. 1977. *Andropogon martinii* Roxb. Fl. Ind. 1: 280. 1820.

Herbs, perennial, c 2 m high. Leaves c 20.0 x 1.25 cm, linear-lanceolate, base sub-cordate or amplexicaul, apex finely caudate. Racemes c 25 cm long, reddish at maturity; lowest pedicel of sessile racemes slightly swollen and connate to the base of rhachis; lower glume of sessile spikelets deeply channelled in lower half. Grains oblong.

Fls. & Frts. : September–December.

Illus. : Patunkar, Grass. Marathwada 50, f. 13. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 836 & 837. 1982.

Distrib. : Common. Jodmoha grass farm; Majra village, Bhiwkund.

CYNODON L.C.Rich.

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.); Bor, Grasses. 469. 1960; Jain in Bull. Bot. Surv. India 9: 139, f. 1–12. 1967. *Panicum dactylon* L. Sp. Pl. 58. 1753. *Hariyali*.

Herbs, perennial, creeping. Leaves c 5.5 cm long, linear. Lemmas longer than glumes.

Fls. & Frts. : December–February.

Illus. : Blatt. & McC. Bombay Grass. t. 166. 1935; Mahesh. Illus. Fl. Delhi f. 260. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 838. 1982.

Distrib. : Common. Aruna river bed, Kharad; Hiwri temple surroundings; Mukutban; Umalkhed.

DACTYLOCTENIUM Willd.

Dactyloctenium aegyptium (L.) Willd. Enum. Pl. Hort. Berol. 1029. 1809; Bor, Grasses. 489. 1960. *Cynosurus aegyptius* L. Sp. Pl. 72. 1753. *Eleusine aegyptia* (L.) Desf. Fl. Atlant. 1: 85. 1798; Hook. f. Fl. Brit. India 7: 295. 1896; Cooke, Fl. Pres. Bombay 3: 560. 1958 (Repr. ed.).

Herbs, annual, creeping. Leaves c 15.0 x 0.5 cm, glabrous or pilose. Spikes 1–7, digitately spreading; lemmas 3–5, cuspidate. Grains globose.

Fls. & Frts. : August–December.

Illus. : Blatt. & McC. Bombay Grass. t. 176. 1935; Mahesh. Illus. Fl. Delhi f. 263. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 841 & 842. 1982.

Distrib. : Common in dry areas. Mukutban; Pandharkawada-Bori road; Pusad-Yavatmal road, 15 km point; Sunna-Tipeshwar road, Bori range.

DENDROCALAMUS Nees

Dendrocalamus strictus (Roxb.) Nees in Linnaea 9: 476. 1834; Gamble in Hook. f. Fl. Brit. India 7: 404. 1896; Cooke, Fl. Pres. Bombay 3: 572. 1958 (Repr. ed.). *Bambos stricta* Roxb. Pl. Cor. 1: 58, t. 80. 1798. *Kania bans*, Mes.

Trees, small, c 5 m high. Leaves c 7.5 x 1.5 cm, linear-lanceolate. Spikelets in dense, globose heads, spinescent, hairy; lemmas at apex with a short, sharp, spine surrounded by ciliate tufts of hairs.

Fls. : December 1976.

Distrib. : Abundant in Penganga felling series, Kharbi R.F.; Bittergaon felling series and Tipeshwar.

DICHANTHIUM Willem.

1. All pairs of spikelets alike :

 2. Inflorescence of panicles ... *D. huegelii*
 2. Racemes sub-digitate on an elongated rhachis :
 3. Leaves mostly aggregated near the base ... *D. pertusum*
 3. Leaves mostly caulinne ... *D. kuntzeana*
 1. Lower 1 or more pairs of spikelets homogenous and differing from all above them :
 4. Peduncles hairy ... *D. aristatum*
 4. Peduncles glabrous ... *D. annulatum*

Dichanthium annulatum (Forssk.) Stapf in Prain, Fl. Trop. Afr. 9: 178. 1917; Bor, Grasses. 133. 1960. *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.). *Marvel*.

Herbs, perennial, c 50 cm high, nodes patently hairy. Leaves c 7.5 x 0.25 cm, linear. Racemes 2-9, c 5 cm long; lower glume of sessile spikelets rounded and obtuse at apex.

Fls. & Frts. : December-February.

Illus. : Blatt. & McC. Bombay Grass. t. 62. 1935; Mahesh. Illus. Fl. Delhi f. 268. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 844 & 845. 1982.

Distrib. : Common. Aruna river bed, Kharad; Karanji; Penganga felling series, Kharbi R.F.

D. aristatum (Poir.) C.E.Hubb. in Kew Bull. 1939: 654. 1939; Bor, Grasses. 134. 1960. *Andropogon aristatus* Poir. in Lam. Encycl. 1: 585. 1810.

Herbs, c 1 m high. Leaves c 8.0 x 0.25 cm, linear. Racemes 1-6; lower glume of sessile spikelet elliptic-oblong to broadly obovate. Grains fusiform.

Fls. & Frts. : December-February.

Illus. : Patunkar, Grass. Marathwada 53, f. 14. 1980.

Distrib. : Occasionally found as a weed in cultivated fields. Aruna river banks, near Mangrul village; Bellora felling series, Arni; Karanji; Khandala; Umalkhed.

Notes : Cooke had not reported this species. Bor (*op. cit.*) had reported it based on collections of McCann from Purandhar, Maharashtra.

D. huegelii (Hack.) Jain & Deshpande in Bull. Bot. Surv. India 20: 135. 1979. *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.). *Capillipedium huegelii* (Hack.) Stapf in Hook. Ic. Pl. subtab. 3085. 1922; Bor, Grasses. 111. 1960.

Herbs, annual or perennial, c 1.25 m high, nodes bearded. Leaves c 15 x 1 cm, linear-lanceolate. Lower glume and callus of sessile spikelets villous.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 51. 1935 (*C. huegelii*).

Distrib. : Common. Bhiwkund; Durg R.F.; Yelabara, E. Gondwakadi.

Notes : Intergeneric hybridisation has been found to occur and fertile hybrids have been produced between the genera *Dichanthium* Willem., *Capillipedium* Stapf and *Bothriochloa* O. Ktze. Hence de Wet & Harlan (Amer. J. Bot. 53: 97. 1966 & Taxon 19: 339–340. 1970) have merged them. The generic epithet, *Dichanthium* is applicable to the composite genus as it was the earliest.

D. kuntzeana (Hack.) Jain & Deshpande in Bull. Bot. Surv. India 20: 134. 1979. *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.). *Bothriochloa kuntzeana* (Hack.) Henr. in Blumea 3: 456. 1940; Bor, Grasses. 108. 1960.

Herbs, perennial, c 2 m high. Leaves c 30.0 x 0.75 cm, linear. Racemes 8–20; lower glumes of both sessile and pedicelled spikelets pitted.

Fls. & Frts. : December–February.

Illus. : Blatt. & McC. Bombay Grass. t. 55. 1935 (*Amphilophis kuntzeana* (Hack.) Haines, Bot. Bihar & Orissa 1031. 1924 (3: 1078. 1961, Repr. ed.).

Distrib. : Common. Umarda forest nursery compound; Yelabara forest.

D. pertusum (L.) W.D.Clayton in Kew Bull. 32: 4. 1977. *Holcus*

pertusus L. Mant. Alt. 301. 1771. *Andropogon pertusus* (L.) Willd. Sp. Pl. 4: 922. 1806; Hook. f. Fl. Brit. India 7: 173. 1896; Cooke, Fl. Pres. Bombay 3: 497. 1958 (Repr. ed.). *Bothriochloa pertusa* (L.) A. Camus in Ann. Soc. Linn. Lyon 1930, 76: 164. 1931; Bor, Grasses. 109. 1960.

Herbs, perennial, c 50 cm high, creeping at base. Leaves c 10.0 x 0.35 cm. Racemes 1–10; lower glume of the sessile spikelet usually with a median pit. Grains oblong.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 54. 1935 (*Amphilophis pertusa* (L.) Nash ex Stapf in Agric. News W. Ind. 15: 179. 1916); Mahesh. Illus. Fl. Delhi f. 267. 1966; Patunkar, Grass. Marathwada 42, f. 10. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 816. 1982 (*B pertusa*).

Distrib. : Common. Karanji; Kharad talao banks, Hiwri R.F., Yavatmal; Pusad–Yavatmal road; Sunna–Tipeshwar road, Bori range.

DIGITARIA Haller

1. Hairs on the spikelets uniformly thick	...	<i>D. ciliaris</i>
1. Hairs on the spikelets clavate :		
2. Rhachis flat; spikelets more than 1 mm long	...	<i>D. ternata</i>
2. Rhachis trigonous; spikelets less than 1 mm long	...	<i>D. stricta</i>

Digitaria ciliaris (Retz.) Koel. Descr. Gram. 27. 1802; Bor, Grasses. App. II. 1973 (Repr. ed.); Veldk. in Blumea 21: 32. 1973. *Panicum ciliare* Retz. Obs. Bot. 4: 16. 1786. *Paspalum sanguinale* var. *ciliare* (Retz.) Hook. f. Fl. Brit. India 7: 15. 1896. *Digitaria sanguinalis* var. *ciliaris* (Retz.) Prain, Bengal Pl. 1181. 1903 (2: 889. 1963 (Repr. ed.); Cooke, Fl. Pres. Bombay 3: 457. 1958 (Repr. ed). *Dinohi*, Roega.

Herbs, annual or perennial, c 1 m high, tufted. Leaves c 15.0 x 1.25 cm, lanceolate. Racemes 2–14, sub-digitate; rhachis flat, margins winged; spikelets lanceolate; upper glume and lower lemma with lines of fine, appressed, ultimately spreading hairs between the nerves. Grains ellipsoid.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 78. 1935 (*D. marginata* Link var. *fimbriata* (Link) Stapf in Prain, Fl. Trop. Afr. 9: 440. 1919); Mahesh. Illus. Fl. Delhi f. 259. 1966 (*D. adscendens* (HBK) Henr. in Blumea 1: 92. 1934).

Distrib. : Common; often found as a weed in cultivated fields. Agriculture farm, Yavatmal; Aruna river banks, Mangrul village; Majra village, Patan Bori range; Mukutban.

D. stricta Roth ex R. & S. Syst. Veg. 2: 474. 1817; Bor, Grasses. 305. 1960. *Paspalum royleanum* Nees ex Thw. Enum. Pl. Zeyl. 358. 1864; Hook. f. Fl. Brit. India 7: 18. 1896. *Digitaria royleana* (Nees ex Thw.) Prain, Bengal Pl. 1182. 1903 [2: 890. 1963 (Repr. ed.)]; Cooke, Fl. Pres. Bombay 3: 459. 1958 (Repr. ed.).

Herbs, annual, c 50 cm high, tufted. Leaves c 10.0 x 0.5 cm, linear-lanceolate. Racemes 3–15; pedicels setulose at apex; spikelets broadly ellipsoid; upper glume reduced to a tuft of hairs. Grains ellipsoid.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 82. 1935; Patunkar, Grass. Marathwada 142, f. 42. 1980.

Distrib. : Common. Jamwadi talao banks; Khandala R.F.

D. ternata (A. Rich.) Stapf ex Dyer, Fl. Cap. 7: 376. 1898; Cooke, Fl. Pres. Bombay 3: 457. 1958 (Repr. ed.); Bor, Grasses. 306. 1960. *Cynodon ternatus* A. Rich. Tent. Fl. Abyss. 2: 405. 1851. *Paspalum ternatum* (A. Rich.) Hook. f. Fl. Brit. India 7: 17. 1896.

Herbs, annual, c 50 cm high. Leaves c 12.5 cm long. Racemes 2–7, c 6 cm long; rachis narrowly winged; pedicels hispidulous; spikelets elliptic-oblong; upper lemma black when mature. Grains ellipsoid.

Fls. & Frts. : September–October.

Illus. : Blatt. & McC. Bombay Grass. t. 77. 1935.

Distrib. : Common. Jamwadi talao banks; Kharad talao banks, Hiwri R.F.

DINEBRA Jacq.

Dinebra retroflexa (Vahl) Panz. in Denkschr. Acad. Wiss. Muensch. 1813: 270, t. 12. 1814; Bor, Grasses. 491. 1960; S.M. Phillips in Kew Bull. 28: 412. 1973. *Cynosurus retroflexus* Vahl, Symb. Bot. 2: 20. 1791. *Dinebra arabica* Jacq. Fragm. Bot. 77, t. 121, f. 1. 1809; Hook. f. Fl. Brit. India 7: 297. 1896; Cooke, Fl. Pres. Bombay 3: 562. 1958 (Repr. ed.).

Herbs, annual, c 50 cm high. Leaves c 25.0 x 0.75 cm, linear.

Inflorescence c 40 cm long; spikes usually deflexed; glumes rigid; lemmas 2-3; rhachilla produced beyond the uppermost lemma and bearing an imperfect lemma. Grains oblong.

Fls. & Frts. : December-February.

Illus. : Blatt. & McC. Bombay Grass. t. 177. 1935; Patunkar, Grass. Marathwada 235, f. 75. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 849 & 850. 1982.

Distrib. : Common. Found usually to occur as a weed in cultivated fields. Aruna river banks, Hiwri R.F., Yavatmal; Dhansala R.F.; Mangrul village; Umakhed.

ECHINOCHLOA P. Beauv.

Echinochloa colonum (L.) Link, Hort. Berol. 2: 209. 1823; Bor, Grasses. 308, 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*.

Herbs, annual, c 30 cm high. Leaves c 15.0 x 1.5 cm, linear. Racemes simple, distant. Spikelets ovoid; lower glume acute.

Fls. & Frts. : December-February.

Illus. : Blatt. & McC. Bombay Grass. t. 94. 1935; Bor, op. cit.; Patunkar, Grass. Marathwada 145, f. 43. 1980.

Distrib. : Common. Usually occurs as a weed in cultivated fields. Agriculture farm, Yavatmal; Karanji; Khandala forest; Sunna-Tipeshwar road, Bori range; Umakhed.

ELEUSINE Gaertn.

Eleusine indica (L.) Gaertn. Fruct. 1: 8. 1789; Hook. f. Fl. Brit. India 7: 293. 1896; Cooke, Fl. Pres. Bombay 3: 560. 1958 (Repr. ed.); Bor, Grasses. 493. 1960. *Cynosurus indicus* L. Sp. Pl. 72. 1753. *Mahar Nachni*.

Herbs, annual, c 50 cm high. Leaves c 25.0 x 0.5 cm, linear. Spikelets ovate-oblong; glumes lanceolate; lemmas 3-8, oblong-lanceolate. Grains oblong, transversely rugose.

Fls. & Frts. : February-April.

Illus. : Blatt. & McC. Bombay Grass. t. 172. 1935; Mahesh. Illus.

Fl. Delhi f. 261. 1966; Patunkar, Grass. Marathwada 237, f. 74. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 855 & 856. 1982.

Distrib. : Commonly found as a weed in cultivated fields. Agriculture farm, Yavatmal.

ERAGROSTIELLA Bor

- | | | |
|---|-----|------------------------|
| 1. Leaves convolute or complicate, puberulous above | ... | <i>E. bifaria</i> |
| 1. Leaves flat or complicate, glabrous above | ... | <i>E. brachyphylla</i> |

Eragrostiella bifaria (Vahl) Bor in Indian Forester 66: 270. 1940 & *Grasses*. 494. 1960. *Poa bifaria* Vahl, Symb. Bot. 2: 19. 1791. *Eragrostis bifaria* Wight ex Steud. Syn. Pl. Glum. 1: 264. 1854; Stapf in Hook. f. Fl. Brit. India 7: 325. 1896; Cooke, Fl. Pres. Bombay 3: 550. 1958 (Repr. ed.).

Herbs, perennial, c 50 cm high. Leaves c 15 cm long, apex acuminate. Spikes c 25 cm long; spikelets compressed, ovate-oblong; lemmas 30–40, broader than long; keels of palea distinctly winged. Grains subglobose.

Fls. & Frts. : August–November.

Illus. : Mahesh. Illus. Fl. Delhi f. 248. 1966; Patunkar, Grass. Marathwada 241, f. 76. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 863. 1982.

Distrib. : Common. Penganga felling series, Kharbi range.

E. brachyphylla (Stapf) Bor in Indian Forester 66: 270. 1940 & *Grasses*. 494. 1960. *Eragrostis brachyphylla* Stapf in Hook. f. Fl. Brit. India 7: 327. 1896.

Herbs, perennial, c 40 cm high. Leaves c 10 cm long, apex obtuse. Spikes c 18 cm long; spikelets sub-terete; glumes obtuse; lemmas 20–30, broadly ovate, obtuse. Grains subglobose.

Fls. & Frts. : August–October.

Distrib. : Common. Majra village, Patan Bori range.

ERAGROSTIS Wolf

- | | | |
|---|-----|---------------------|
| 1. Lemmas breaking up from the apex downwards : | | |
| 2. Lemmas ciliate | ... | <i>E. coarctata</i> |

- 2. Lemmas not ciliate :
- 3. Panicles thyrsiform ... *E. aspera*
- 3. Panicles oblong or linear :
 - 4. Panicles interrupted; stamens 2 ... *E. japonica*
 - 4. Panicles continuous; stamens 3 :
 - 5. Culms viscid below the panicles ... *E. viscosa*
 - 5. Culms not as above ... *E. tenella*
- 1. Lemmas breaking up from the base upwards :
 - 6. Spikelets ovoid or ovoid-oblong, much compressed, often purple tinged ... *E. unioloides*
 - 6. Spikelets linear or linear-oblong, glaucous or green :
 - 7. Spikelets fascicled, pointing upwards ... *E. gangetica*
 - 7. Spikelets scattered :
 - 8. Plants eglandular; lemmas more than 1.5 mm long ... *E. tremula*
 - 8. Plants often glandular; lemmas less than 1.5 mm long :
 - 9. Lowest branches of the panicles fascicled or sub-whorled ... *E. pilosa*
 - 9. Lowest branches of the panicles not as above ... *E. minor*

Eragrostis aspera (Jacq.) Nees, Fl. Afr. Austr. 408. 1841; Stapf in Hook. f. Fl. Brit. India 7: 314. 1896; Cooke, Fl. Pres. Bombay 3: 544. 1958 (Repr. ed.); Bor, Grasses. 501, f. 55. 1960. *Poa aspera* Jacq. Hort. Vindob. 3: 32, t. 56. 1776.

Herbs, annual, c 25 cm high. Leaves c 15 cm long, linear, sheaths bearded at mouth. Panicles effuse, branches capillary. Glumes obtuse; lemmas c 12, emarginate. Grains subglobose.

Fls. & Frts. : December–February.

Illus. : Bor, *op. cit.*

Distrib. : Sparse. Found as a weed in *Capsicum* fields. Karanji.

E. coarctata Stapf in Hook. f. Fl. Brit. India 7: 313. 1896; Bor, Grasses. 507. 1960.

Herbs, perennial, c 30 cm high, wiry, tufted. Leaves c 5 cm long, linear; sheaths bearded below the mouth, ligule short. Panicles subspiciform; spikelets sub-compressed, 5–10-flowered; lemmas obtuse; keels of palea ciliate. Grains ovoid.

Fls. & Frts. : December–February.

Distrib. : Sparse. Mukutban.

Notes : This is a new record for the Flora of Maharashtra.

E. gangetica (Roxb.) Steud. *Syn. Pl. Glum.* 1: 266. 1854; Cooke, *Fl. Pres. Bombay* 3: 547. 1958 (Repr. ed.); Bor, *Grasses*. 508. 1960. *Poa gangetica* Roxb. *Fl. Ind.* 1: 341. 1820. *Eragrostis stenophylla* non Hochst. ex Miq. 1851; Stapf in Hook. f. *Fl. Brit. India* 7: 318. 1896, *p.p.*

Herbs, perennial, c 80 cm high. Leaves c 7.5 cm long, linear, glaucous. Panicles narrow; lemmas c 14. Grains oblong-fusiform.

Fls. & Frts. : October–December.

Distrib. : Common. Morchandi felling series, Bittergaon range; Wani–Mukutban road.

E. japonica (Thunb.) Trin. in *Mem. Acad. Sci. Petersb.* 6, 1: 405. 1831; Bor, *Grasses*. 509. 1960; T.A.Cope in Nasir & Ali, *Fl. Pak.* 143: 88. 1982. *Poa japonica* Thunb. *Fl. Jap.* 51. 1784. *Eragrostis interrupta* var. *koenigii* (Link) Stapf in Hook. f. *Fl. Brit. India* 7: 316. 1896; Cooke, *Fl. Pres. Bombay* 3: 546. 1958 (Repr. ed.). *Chiksi*.

Herbs, annual or perennial, c 75 cm high. Leaves c 25.0 x 0.5 cm, flat, linear or complicate. Panicles c 30 cm long, branches whorled or fascicled; spikelets 2–14-flowered. Grains obovoid.

Fls. & Frts. : December–February.

Illus. : Mahesh. *Illus. Fl. Delhi* f. 254. 1966 (*E. diarrhena* (Schult.) Steud. *Syn. Pl. Glum.* 1: 266. 1854); Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 864 & 865. 1982.

Distrib. : Commonly found along the edges of water sources. Aruna river bed, Hiwri R.F., Yavatmal; Khandala.

E. minor Host, *Gram. Austr.* 4: 15. 1809 (in nota) & *Fl. Austr.* 135. 1827; Stapf in Hook. f. *Fl. Brit. India* 7: 321. 1896; Cooke, *Fl. Pres. Bombay* 3: 548. 1958 (Repr. ed.); T.A.Cope in Nasir & Ali, *Fl. Pak.* 143: 95. 1982. *E. poaeoides* P. Beauv. *Ess. Agrost.* 162. 1812; Bor, *Grasses*. 512. 1960.

Herbs, annual, c 45 cm high. Leaves c 8.0 x 0.5 cm, linear, margins often glandular; mouths of sheaths bearded. Panicles c 15 cm long; glumes subequal; lemmas c 16, pale green. Grains globose or ellipsoid-globose.

Fls. & Frts. : November–February.

Illus. : Mahesh. Illus. Fl. Delhi f. 249. 1966; Patunkar, Grass. Marathwada 251, f. 77. 1980.

Distrib. : Common. Mukutban.

E. 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.); Bor, Grasses. 512. 1960. *Poa pilosa* L. Sp. Pl. 68. 1753.

Herbs, annual, c 30 cm high. Leaves c 15 cm long, linear, flat; mouth of sheaths bearded. Panicles c 15 cm long; lemmas 6–10. Grains ellipsoid.

Fls. & Frts. : July–September.

Illus. : Blatt. & McC. Bombay Grass. t. 160. 1935; Mahesh. Illus. Fl. Delhi f. 251. 1966.

Distrib. : Common. Sometimes found as a weed in cultivated fields. Karanji; Sunna–Tipeshwar road, Bori range.

E. tenella (L.) P. Beauv. ex R. & S. Syst. Veg. 2: 576. 1817; Stapf in Hook. f. Fl. Brit. India 7: 315. 1896; Bor, Grasses. 513. 1960. *Poa tenella* L. Sp. Pl. 69. 1753. *Eragrostis tenella* var. *plumosa* (Retz.) Stapf in Hook. f. op. cit; Cooke, Fl. Pres. Bombay 3: 545. 1958 (Repr. ed.). *Bakralu, Woya*.

Herbs, annual, c 30 cm high. Leaves c 10.0 x 0.4 cm, linear. Panicles c 20 cm long, effuse. Glumes and lemmas obtuse; lemmas c 16. Grains ovoid.

Fls. & Frts. : September–February.

Illus. : Blatt. & McC. Bombay Grass. t. 155. 1935 (*E. tenella* var. *plumosa*).

Distrib. : Common. Sometimes found as a weed in cultivated fields; otherwise found along dry areas. Aruna river banks, Hiwri R.F., Yavatmal; Karanji; Underwadi, Bori.

E. tremula (Lam.) Hochst. ex Steud. Syn. Pl. Glum. 1: 269. 1854; Stapf in Hook. f. Fl. Brit. India 7: 320. 1896; Cooke, Fl. Pres. Bombay 3: 549. 1958 (Repr. ed.); Bor, Grasses. 514. 1960. *Poa tremula* Lam. Tab. Encycl. Meth. Bot. 1: 185. 1791.

Herbs, annual, c 60 cm high. Leaves c 10.0 x 0.3 cm, linear. Panicles c 15 cm long, ovate, effuse; spikelets scattered; lemmas c 50. Grains ovoid.

Fls. & Frts. : December–February.

Illus. : Blatt. & McC. Bombay Grass. t. 159. 1935; Mahesh. Illus. Fl. Delhi f. 250. 1966.

Distrib. : Common. Mukutban.

E. unioloides (Retz.) Nees ex Steud. Syn. Pl. Glum. 1: 264. 1854; Bor, Grasses. 515. 1960. *Poa unioloides* Retz. Obs. Bot. 5: 19. 1789. *Eragrostis amabilis* Stapf in Hook. f. Fl. Brit. India 7: 317. 1896, *non* Wight & Arn. ex Nees, 1838; Cooke, Fl. Pres. Bombay 3: 546. 1958 (Repr. ed.).

Herbs, annual, c 30 cm high, tufted. Leaves c 20.0 x 0.8 cm, linear. Panicles c 20 cm long; lemmas c 50, mucronate, lateral nerves distinct. Grains ellipsoid.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 156. 1935.

Distrib. : Common. Found usually in marshy places. Durg talao edges; Penganga river margins, Kharbi.

E. viscosa (Retz.) Trin. in Mem. Acad. Sci. Petersb. 6, 1: 397. 1830; Bor, Grasses. 515. 1960. *Poa viscosa* Retz. Obs. Bot. 4: 20. 1786. *Eragrostis tenella* var. *viscosa* Stapf in Hook. f. Fl. Brit. India 7: 315. 1896; Cooke, Fl. Pres. Bombay 3: 546. 1958 (Repr. ed.).

Herbs, annual, c 30 cm high. Leaves c 10.0 x 0.3 cm, convolute. Panicle branches and pedicels with minute glands, scented when fresh. Glumes obtuse; lemmas c 20. Grains ovoid.

Fls. & Frts. : September–December.

Distrib. : Common. Usually found in dry areas. Jamwadi talao banks; Mukutban.

EREMOPOGON (Hack.) Stapf

Eremopogon foveolatus (Del.) Stapf in Prain, Fl. Trop. Afr. 9: 183. 1917; Bor, Grasses. 148. 1960. *Andropogon foveolatus* Del. Fl. d'Egypte 16, t. 8, f. 2. 1812; Hook. f. Fl. Brit. India 7: 168. 1896; Cooke, Fl. Pres. Bombay 3: 496. 1958 (Repr. ed.). *Ghandel*.

Herbs, perennial, c 50 cm high, tufted; nodes bearded. Leaves c 15 cm long, filiform to narrowly linear. Racemes c 3 cm long; lower glume oblong-lanceolate. Grains oblong.

Fls. & Frts. : December–February.

Illus. : Blatt. & McC. Bombay Grass. t. 64. 1935; Mahesh. Illus. Fl. Delhi f. 232. 1966; Patunkar, Grass. Marathwada 58, f. 16. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 866 & 867. 1982.

Distrib. : Common. Usually occurs in dry areas. Karanji.

ERIOCHLOA H.B.K.

Eriochloa procera (Retz.) C.E.Hubb. in Kew Bull. 1930: 256. 1930; Bor, Grasses. 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.).

Herbs, perennial, c 60 cm high, tufted. Leaves c 25 cm long, linear. Panicles c 15 cm long, branches alternate; upper glume and lower lemma finely white silky. Grains ellipsoid.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 84. 1935 (*E. ramosa* O. Ktze. Rev. Gen. Pl. 2: 775. 1891); Mahesh. Illus. Fl. Delhi f. 276. 1966; Patunkar, Grass. Marathwada 149, f. 44. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 868 & 869. 1982.

Distrib. : Common. Usually found in marshy areas. Mukutban.

HACKELOCHLOA O. Ktze.

Hackelochloa granularis (L.) O. Ktze. Rev. Gen. Pl. 2: 776. 1891; Bor, Grasses. 159. 1960. *Cenchrus granularis* L. Mant. 2, App. 575. 1771. *Manisuris granularis* L. f. Nov. Gram. Gen. 40. 1779; Hook. f. Fl. Brit. India 7: 159. 1896; Cooke, Fl. Pres. Bombay 3: 473. 1958 (Repr. ed.).

Herbs, annual, c 50 cm high, erect or geniculate, tufted. Leaves c 10.0 x 0.5 cm, linear-lanceolate, base cordate, hairy. Pedicelled spikelets oblong-lanceolate. Grains suborbicular.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 22. 1935 (*M. granularis*); Patunkar, Grass. Marathwada 62, f. 18. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 874 & 875. 1982.

Distrib. : Sparse. E. Gondwakadi R.F.

HEMARTHRIA R. Br.

Hemarthria compressa (L.f.) R. Br. Prodr. 207. 1810; Bor, Grasses. 161. 1960. *Rottboellia compressa* L. f. Suppl. 114. 1781; Hook. f. Fl. Brit. India 7: 153. 1896; Cooke, Fl. Pres. Bombay 3: 470. 1958 (Repr. ed.). *Baika*.

Herbs, perennial, c 1.5 m high, decumbent and rooting below. Leaves c 8.0 x 0.3 cm, linear. Racemes c 7.5 cm long; upper glume of pedicelled spikelets occasionally narrowly winged on keel near apex.

Fls. & Frts. : October–December.

Illus. : Blatt. & McC. Bombay Grass. t. 21. 1935; Mahesh. Illus. Fl. Delhi f. 244. 1966; Patunkar, Grass. Marathwada 64, f. 19. 1980.

Distrib. : Common. Penganga felling series, Kharbi range.

HETEROPOGON Pers.

Heteropogon contortus (L.) P. Beauv. ex R. & S. Syst. Veg. 2: 836. 1817; Bor, Grasses. 163. 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.). *Kursali*.

Herbs, perennial, c 75 cm high, tufted. Leaves c 15.0 x 0.3 cm, linear. Racemes c 5 cm long; spikelets closely imbricate; fertile ones densely rufous hairy; lower glume glabrous or densely setose from tubercles. Grains cylindric.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 71. 1935; Mahesh. Illus. Fl. Delhi f. 234. 1966; Patunkar, Grass. Marathwada 66, f. 20. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 876 & 877. 1982.

Distrib. : Common. Found in dry places. Aruna river banks, Hiwri R.F., Yavatmal; Bhiwkund.

IMPERATA Cyr.

Imperata cylindrica (L.) Raeuschel. Nom. Bot. ed. 3. 10. 1797; Bor, Grasses. 169. 1960; T. A. Cope in Nasir & Ali, Fl. Pak. 143: 252. 1982. *Lagurus cylindricus* L. Syst. Nat. ed. 10. 878. 1759. *Imperata arundinacea* Cyr. Pl. Rar. Neap. 2: 26, t. 11. 1792; Hook. f. Fl. Brit. India 7: 106. 1896; Cooke, Fl. Pres. Bombay 3: 464. 1958 (Repr. ed.).

Herbs, perennial, c 1 m high, rootstock stoloniferous. Leaves c 15.0 x 0.5 cm, linear, flat. Panicles c 8 cm long, spike-like. Grains oblong.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 30. 1935; Patunkar, Grass. Marathwada 69, f. 21. 1980.

Distrib. : Common. Umarda forest nursery compound, Yavatmal.

ISCHAEMUM L.

- | | | |
|---|-----|-------------------|
| 1. Lower glume winged; pedicels less than half as long as the sessile spikelets | ... | <i>I. rugosum</i> |
| 1. Lower glume not winged; pedicels more than half as long as the sessile spikelets | ... | <i>I. pilosum</i> |

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.); Bor, Grasses. 183. 1960. *Andropogon pilosus* Klein ex Willd. Sp. Pl. 4: 920. 1806. *Kunda*, Nuth.

Herbs, perennial, c 1.25 m high, stoloniferous. Leaves c 25.0 x 0.5 cm, linear. Racemes 2–6, c 15 cm long; joints and pedicels sub-clavate, compressed, pilose; lower glume narrowly lanceolate. Grains oblong.

Fls. & Frts. : December–February.

Illus. : Blatt. & McC. Bombay Grass. t. 9. 1935.

Distrib. : Common; occasionally found as a weed in cultivated fields. Aruna river banks, Hiwri R.F., Yavatmal; Karanji; Umarda forest nursery compound; Wani–Mohroli road.

I. 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.); Bor, Grasses. 184. 1960.

Herbs, annual, c 1 m high. Leaves c 15.0 x 1.5 cm, linear to linear-lanceolate, base tapering. Racemes c 4 cm long; outer margin of joints and pedicels hairy; lower glume of sessile spikelets with a few, horny, sharp, deep, transverse ridges in the lower part, keels unequally winged above. Lower glume of pedicelled spikelet smooth, one keel winged. Grains oblong.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 7. 1935; Patunkar, Grass Marathwada 75, f. 22. 1980.

Distrib. : Common. Wani-Mukutban road.

ISEILEMA Anderss.

- | | |
|--|--------------------------|
| 1. Pedicels of involucral spikelets longer than broad, glabrous ... | <i>I. laxum</i> |
| 1. Pedicels of involucral spikelets as broad as long, sides and base densely bearded ... | <i>I. anthephoroides</i> |

Iseilema anthephoroides Hack. in DC. Monogr. Phan. 6: 683 1889; Hook. f. Fl. Brit. India 7: 219. 1896; Blatt. & McC. in J. Bombay nat. Hist. Soc. 32: 626. 1928; Bor, Grasses. 187. 1960.

Herbs, annual, c 50 cm high. Leaves c 5.0 x 0.5 cm, margin scabrid, spathes glabrous or ciliate from tubercles; glumes of sessile spikelets beaked; glumes of involucral spikelets longitudinally depressed on either side of midrib.

Fls. & Frts. : August–November.

Illus. : Blatt. & McC. Bombay Grass. t. 72. 1935; Matthew, Illus Fl. Tamilnadu Carnatic 2: t. 886 & 887. 1982.

Distrib. : Common. Khandala R.F.; Sunna-Tipeshwar road, Bor range.

I. 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.); Bor, Grasses. 188. 1960.

Herbs, perennial, c 80 cm high. Leaves c 15.0 x 0.25 cm. Spathes broad, smooth. Glumes of sessile spikelets lanceolate. Grains oblong.

Fls. & Frts. : September–February.

Illus. : Mahesh. Illus. Fl. Delhi f. 229. 1966.

Distrib. : Common. Jamwadi talao banks, Yavatmal; Karanji R.F. Khandala R.F.; Morchandi felling series, Bittergaon range; Mukutban Pandharkawada–Bori road.

MELANOCENCHRIS Nees

Melanocenchris jacquemontii Jaub. & Spach, Ill. Pl. Orient. 4 36, t. 325. 1851; Bor, Grasses. 473. 1960. ***Gracilea royleana*** Hook. f. Fl.

Brit. India 7: 284. 1896; Cooke, Fl. Pres. Bombay 3: 553. 1958 (Repr. ed.).

Herbs, annual, c 15 cm high, densely tufted. Leaves c 3.5 cm long, convolute. Paleas 2-cuspidate. Grains ellipsoid.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 165. 1935; Patunkar, Grass. Marathwada 221, f. 67. 1980.

Distrib. : Common. Aruna river banks, Hiwri R.F., Yavatmal; Sunna-Tipeshwar road, Bori range.

OPHIUROS Gaertn. f.

Ophiuros exaltatus (L.) O. Ktze. Rev. Gen. Pl. 2: 780. 1891; Bor, Grasses. 199. 1960. *Aegilops exaltata* L. Mant. 2: 575. 1771. *Ophiuros corymbosus* Gaertn. f. Fruct. 3: 4, t. 181, f. 3a. 1805; Hook. f. Fl. Brit. India 7: 160. 1896; Cooke, Fl. Pres. Bombay 3: 468. 1958 (Repr. ed.). *Hutia*.

Herbs, perennial, c 2 m high, rhizomatous. Leaves c 25 x 1 cm, linear. Racemes c 20 cm long, cylindric. Grains oblong.

Fls. & Frts. : August–November.

Illus. : Blatt. & McC. Bombay Grass. t. 28. 1935; Patunkar, Grass. Marathwada 85, f. 25. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 899 & 900. 1982.

Distrib. : Common. Jodmoha grass farm; Nirguda river, Punwat village, Wani range; Penganga felling series, Kharbi range.

OPLISMENUS P. Beauv.

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.); Bor, Grasses. 317. 1960. *Panicum burmannii* Retz. Obs. Bot. 3: 10. 1783.

Herbs, annual, c 50 cm high. Leaves c 5 x 1 cm, ovate-lanceolate, pilose. Panicles c 10 cm long, of c 2 cm long spikes; aristae capillary, minutely scaberulous. Grains ellipsoid.

Fls. & Frts. : September–November.

Illus. : Blatt. & McC. Bombay Grass. t. 97. 1935; Mahesh. Illus. Fl. Delhi f. 265. 1966; Patunkar, Grass. Marathwada 151, f. 45. 1980.

Distrib. : Common. Hiwri R.F.; Penganga felling series, Kharbi R.F.

ORYZA L.

Oryza rufipogon Griff. Notul. 3: 5. 1851 & Ic. Pl. As. 3: t. 144, f. 2. 1851; Bor, Grasses. 605. 1960. *Oryza sativa* non L. 1753; Hook. f. Fl. Brit. India 7: 92. 1896, p.p.

Herbs, annual, c 50 cm high. Leaves c 25 x 1 cm, linear, scabrid. Panicles c 20 cm long, effuse; spikelets scabrid, awns c 8 cm long, rusty brown, coarsely scabrid. Grains ellipsoid.

Fls. & Frts. : September–October.

Illus. : Patunkar, Grass. Marathwada 265, f. 81. 1980.

Distrib. : Abundant in Mukutban and Wani. Found only in these two places in the district.

PANICUM L.

1. Lower glume more than half as long as the spikelet; spikelets gaping at maturity ... *P. trypheron*
1. Lower glume less than half as long as the spikelet; spikelets not gaping at maturity ... *P. psilopodium*

Panicum psilopodium Trin. Gram. Panic. 217. 1826; Hook. f. Fl. Brit. India 7: 46. 1896; Bor, Grasses. 329. 1960. *P. miliare* non Lam. 1791; Cooke, Fl. Pres. Bombay 3: 456. 1958 (Repr. ed.).

Herbs, annual, c 45 cm high. Leaves c 15 x 1 cm, linear. Panicles c 20 cm long, effuse, branches and pedicels capillary. Upper lemma acute. Grains ellipsoid.

Fls. & Frts. : September–December.

Illus. : Patunkar, Grass. Marathwada 162, f. 50. 1980.

Distrib. : Common. Mukutban talao banks.

Notes : *P. miliare* Lam. Tab. Encycl. Meth. Bot. 1: 173. 1791 is assumed to be the cultivated form of *P. psilopodium*. Incidentally the correct name for the former is *P. sumatrense* Roth ex R. & S. Syst. Veg. 2: 434. 1817.

P. 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.); Bor, Grass. 331. 1960. *Bhatur*.

Herbs, annual, c 50 cm high. Leaves c 11.0 x 0.5 cm, glabrous or hairy from tubercle bases. Panicles effuse; lower glume cuspidate; keel scaberulous; upper lemma obtuse. Grains oblong.

Fls. & Frts. : September–December.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 904 & 905. 1982.

Distrib. : Common. Mukutban.

PASPALIDIUM Stapf

- | | | |
|--|-----|-----------------------|
| 1. Racemes usually, the lowest always, shorter than the internodes | ... | " <i>P. flavidum</i> |
| 1. Racemes longer than the internodes | ... | " <i>P. geminatum</i> |

Paspalidium flavidum (Retz.) A. Camus in Lecomte, Fl. Gen. de l'Indo-Chine 7: 419. 1922; Bor, Grasses. 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.).

Herbs, perennial, c 1 m high, base decumbent. Leaves c 20.0 x 1.5 cm, linear, ciliate near base. Spikelets ovoid or sub-globose; lower glume broadly ovate or suborbicular, apex obtuse; upper glume acute.

Fls. & Frts. : August–October.

Illus. : Blatt. & McC. Bombay Grass. t. 90. 1935; Mahesh. Illus. Fl. Delhi f. 264. 1966; Patunkar, Grass. Marathwada 166, f. 51. 1980.

Distrib. : Common. Aruna river banks, Mangrul village; E. Gondwakadi R.F.; Khandala R.F.

P. geminatum (Forssk.) Stapf in Prain, Fl. Trop. Afr. 9: 583. 1920; Bor, Grasses. 333. 1960. *Panicum geminatum* Forsk. Fl. Aegypt.–Arab. 18. 1775. *P. paspaloides* Pers. Syn. Pl. 1: 81. 1805; Hook. f. Fl. Brit. India 7: 30. 1896. *P. fluitans* Retz. Obs. Bot. 3: 8. 1783; Cooke, Fl. Pres. Bombay 3: 446. 1958 (Repr. ed.).

Herbs, perennial, tufted, spongy below, floating in shallow water. Leaves c 10.0 x 0.5 cm, linear. Spikelets broadly ovoid; lower glume truncate; upper glume broadly ovate, apiculate; lower lemma apiculate.

Fls. & Frts. : September–October.

Distrib. : Common. Mukutban talao.

PASPALUM L.

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.); Bor, Grasses. 340. 1960. *Harik.*

Herbs, annual, c 40 cm high. Leaves c 15 x 1 cm, linear. Racemes 2–6, c 7 cm long; rhachis broad, winged, produced at the apex into 2 lobes. Upper lemma and palea crustaceous. Grains ellipsoid.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 87. 1935; Patunkar, Grass. Marathwada 170, f. 52. 1980.

Distrib. : Common. Often found in marshy areas. Mandar talao edges on Wani–Pardi road.

PENNISETUM L.C. Rich. ex Pers.

Pennisetum pedicellatum Trin. in Mem. Acad. Sci. Petersb. 6, 3: 184. 1834; Hook. f. Fl. Brit. India 7: 86. 1896; Cooke, Fl. Pres. Bombay 3: 431. 1958 (Repr. ed.); Bor, Grasses. 346. 1960.

Herbs, annual, c 1 m high. Leaves c 20 x 1 cm. Panicles linear, cylindric, c 15 cm long; involucres sessile; spikelets solitary or 2; inner bristles densely villous; lower glume villous; upper glume puberulous; lower lemma 3-toothed at apex; upper lemma and palea fimbriate at apex. Grains oblong.

Fls. & Frts. : December–February.

Illus. : Blatt. & McC. Bombay Grass. t. 115. 1935.

Distrib. : Frequently met with as a weed in cultivated fields. Near Aruna river, Hiwri R.F., Yavatmal.

PEROTIS Ait.

Perotis indica (L.) O. Ktze. Rev. Gen. Pl. 2: 787. 1891; Bor, Grasses. 611. 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.). *Kuras.*

Herbs, perennial, c 35 cm high. Leaves c 5.0 x 0.5 cm, ovate-lanceolate, closely imbricate below, rigid, apex pungently acute, margins spinulosely-ciliate. Racemes slender, feathery owing to the long purplish awns; glumes hispid. Grains narrowly cylindric.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 147. 1935; Mahesh. Illus. Fl. Delhi f. 233. 1966; Patunkar, Grass. Marathwada 267, f. 82. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 912 & 913. 1982.

Distrib. : Common. Usually found to occur in sandy, dry areas. Occasionally occurs as a weed in cultivated fields. Mukutban.

ROTTBOELLIA L. f.

Rottboellia cochinchinensis (Lour.) W.D.Clayton in Kew Bull. 35: 817. 1981. *Stegosia cochinchinensis* Lour. Fl. Cochinch. 51. 1790. *Rottboellia exaltata* L. f. Suppl. 114. 1781 non (L.) L. f. 1779; Hook. f. Fl. Brit. India 7: 156. 1896; Cooke, Fl. Pres. Bombay 3: 472. 1958 (Repr. ed.); Bor, Grasses. 206. 1960. *Bursali*.

Herbs, perennial, c 3 m high. Leaves c 25 x 3 cm, linear-lanceolate, hispid above, margins spinulosely scabrid. Racemes c 15 cm long. Upper glume winged on the keel; lower glume of pedicelled spikelet winged on one side. Grains ellipsoid.

Fls. & Frts. : October–December.

Illus. : Blatt. & McC. Bombay Grass. t. 27. 1935; Patunkar, Grass. Marathwada 91, f. 28. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 926 & 927. 1982 (*R. exaltata*).

Distrib. : Common. Morchandi felling series, Bittergaon range.

Notes : According to Clayton, *op. cit.* *R. exaltata* (L.) L. f. 1779 was based on *Aegilops exaltata* L. [= *Ophiuros exaltatus* (L.) O. Ktze.] but was accompanied by a figure of a different species. Linn. f. realised his mistake and corrected it in 1781 by proposing a new name, *R. corymbosa* L. f. for *A. exaltata* and retaining *R. exaltata* L. f. for the earlier figure. However, such retrospective corrections are not permissible as per the provisions of ICBN and *R. exaltata* L. f. 1781 has to be discarded as a later homonym. Clayton *op. cit.* has selected the next available epithet and has effected the combination.

SACCHARUM L.

Saccharum spontaneum L. Mant. 183. 1771; Hook. f. Fl. Brit. India 7: 118. 1896; Cooke, Fl. Pres. Bombay 3: 465. 1958 (Repr. ed.); Bor, Grasses. 214. 1960. *Bagberi, Kamis, Khair.*

Herbs, perennial, c 5 m high, rhizomatous. Leaves c 50.0 x 1.25 cm, linear, stiff. Panicles c 50 cm long; glumes coriaceous and brown below the middle, subhyaline and white above.

Fls. & Frts. : August–December.

Illus. : Blatt. & McC. Bombay Grass. t. 31. 1935; Patunkar, Grass. Marathwada 94, f. 29. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 928 & 929. 1982.

Distrib. : Common. Often found to occur along river banks. Pandharkawada–Bhiwkund road; Penganga river banks, Kharbi; Umarda forest nursery compound.

SACCIOLEPIS Nash

Sacciolepis myosuroides (R.Br.) A. Camus in Lecomte, Fl. Gen. de l'Indo-Chine 7: 460. 1922; Bor, Grasses. 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.).

Herbs, annual, c 50 cm high. Leaves c 15 cm long, linear. Spikes c 10 cm long, continuous; lower glume half as long as the spikelet. Grains ellipsoid.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 107. 1935; Patunkar, Grass. Marathwada 180, f. 56. 1980.

Distrib. : Rare. Mandar talao on Wani–Pardi road, 156702.

SEHIMA Forssk.

1. Joints and pedicels ciliate on one margin only; lower glume of sessile spikelets rounded on the back with a deep longitudinal slit-like groove ... *S. sulcatum*
1. Joints and pedicels ciliate on both edges; lower glume without a slit but deeply grooved ... *S. nervosum*

Sehima nervosum (Rottl.) Stapf in Prain, Fl. Trop. Afr. 9: 36. 1917; Bor, Grasses. 218. 1960. *Andropogon nervosus* Rottl. in Willd. in

Verh. Ges. Naturf. Freund. Berlin, Neue Schr. 4: 218. 1806. *Ischaemum laxum* R. Br. Prodr. 205. 1810; Hook. f. Fl. Brit. India 7: 136. 1896; Cooke, Fl. Pres. Bombay 3: 482. 1958 (Repr. ed.) p.p. *Paunat, Sheda.*

Herbs, perennial, c 75 cm high. Leaves c 20.0 x 0.5 cm, linear. Sessile spikelets linear-lanceolate; lower glume strongly 4-nerved; keel of upper glume narrowly winged at apex, setaceous aristate.

Fls. & Frts. : August–October.

Illus. : Blatt. & McC. Bombay Grass. t. 14. 1935; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 933 & 934. 1982.

Distrib. : Common. Jodmoha–Yelabara road.

S. sulcatum (Hack.) A. Camus in Bull. Mus. Hist. Nat. Paris 27: 373. 1921; Bor, Grasses. 219. 1960. *Ischaemum sulcatum* Hack. in DC. Monogr. Phan. 6: 248. 1889; Hook. f. Fl. Brit. India 7: 137. 1896; Cooke, Fl. Pres. Bombay 3: 483. 1958 (Repr. ed.).

Herbs, annual, c 50 cm long. Leaves c 15.0 x 0.5 cm, linear. Upper glume of sessile spikelets 2-cuspidate, with a setaceous arista. Grains oblong.

Fls. & Frts. : October–February.

Illus. : Blatt. & McC. Bombay Grass. t. 15. 1935.

Distrib. : Common. Pusad–Khandala road; Wani–Mohroli road.

SETARIA P. Beauv.

1. Bristles barbellate with descending teeth	...	<i>S. verticillata</i>
1. Bristles barbellate with erect teeth :		
2. Panicles continuous, cylindric	...	<i>S. pumila</i>
2. Panicles interrupted, lax, flexuous	...	<i>S. intermedia</i>

Setaria intermedia R. & S. Syst. Veg. 2: 489. 1817; Hook. f. Fl. Brit. India 7: 79. 1896; Cooke, Fl. Pres. Bombay 3: 436. 1958 (Repr. ed.); Bor, Grasses. App. II. 1973 (Repr. ed.). *Pandar.*

Herbs, annuals or perennials, c 1 m high. Leaves c 15.0 x 0.5 cm, flaccid, linear-lanceolate, scaberulous on margins. Panicles c 15 cm long, narrowly pyramidal; spikelets ovoid. Grains ovoid.

Fls. & Frts. : August–February.

Illus. : Mahesh. Illus. Fl. Delhi f. 240. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 935 & 936. 1982 (*S. tomentosa* (Roxb.) Kunth, Rev. Gram. 1: 47. 1829).

Distrib. : Common. Often occurs as a weed in cultivated fields. Mangrul village, near Aruna river; Umarda forest nursery compound, Yavatmal.

Notes : Bor (1960) had given *S. tomentosa* (Roxb.) Kunth, Rev. Gram. 1: 47. 1829 as the correct name for this species, based on *Panicum tomentosum* Roxb. Fl. Ind. 1: 303. 1820. The reason being that *S. intermedia* R. & S. is based on *Panicum intermedium* Roth, Nov. Pl. Sp. 47. 1821, non Vahl ex Hornem. 1813. However as per the provisions of ICBN the name *S. intermedia* is treated as a new name and hence acceptable.

S. pumila (Poir.) R. & S. 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. *Setaria pallide-fusca* (Schum.) Stapf & C.E. Hubb. in Kew Bull. 1930: 259. 1930; Bor, Grasses. 363. 1960. *S. glauca* auct. non (L.) P. Beauv. 1812; Hook. f. Fl. Brit. India 7: 78. 1896; Cooke, Fl. Pres. Bombay 3: 435. 1958 (Repr. ed.).

Herbs, annual, c 50 cm high. Leaves c 7.5 x 0.5 cm, linear. Panicles c 10 cm long; spikelets ovoid, deciduous. Grains ellipsoid.

Fls. & Frts. : August–February.

Distrib. : Common. Jodmoha grass farm; Khandala R.F.; Karanji; Pusad–Yavatmal road.

S. 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.); Bor, Grasses. 365. 1960. *Panicum verticillatum* L. Sp. Pl. ed. 2. 82. 1762. *Dangani*.

Herbs, perennial, c 1.25 m high. Leaves c 15 x 1 cm. Panicles curved, continuous, cylindric; spikelets oblong–ellipsoid. Grains ellipsoid.

Fls. & Frts. : September–December.

Illus. : Mahesh. Illus. Fl. Delhi f. 239. 1966; Patunkar, Grass. Marathwada 185, f. 57. 1980.

Distrib. : Common. Punwat village, Wani range.

SORGHUM Moench.

- | | | |
|---|-----|----------------------|
| 1. Sheath-nodes glabrous or finely pubescent, not bearded | ... | <i>S. halepense</i> |
| 1. Sheath-nodes densely bearded | ... | <i>S. deccanense</i> |

Sorghum deccanense Stapf ex Bor, *Grasses*. 245. 1960.

Herbs, perennial, c 1 m high. Leaves 25–40 x 0.5–1.5 cm, linear to linear-lanceolate; ligule a fringe of stiff hairs. Sessile spikelets densely and coarsely hirsute; lower glume minutely 2-toothed. Grains ellipsoid.

Fls. & Frts. : September–December.

Distrib. : Sparse. Jodmoha grass farm.

S. halepense (L.) Pers. *Syn. Pl.* 1: 101. 1805; Bor, *Grasses*. 222. 1960. *Holcus halepensis* L. *Sp. Pl.* 1047. 1753. *Andropogon halepensis* (L.) Brot. *Fl. Lusit.* 1: 89. 1804; Hook. f. *Fl. Brit. India* 7: 182. 1896; Cooke, *Fl. Pres. Bombay* 3: 502. 1958 (Repr. ed.). *Boru*.

Herbs, perennial, c 5 m high, stout, woody. Leaves c 30 x 2 cm, linear to linear-lanceolate. Panicles c 35 cm long, effuse; glumes of sessile spikelets hairy on back.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. *Bombay Grass*, t. 37. 1935; Matthew, *Illus. Fl. Tamilnadu Carnatic* 2: t. 937 & 938. 1982.

Distrib. : Common. Umarda forest nursery compound, Yavatmal.

SPOROBOLUS R. Br.

- | | | |
|---|-----|--|
| 1. Upper glume distinctly shorter than the lemma; lowest branches not truly whorled | ... | <i>S. indicus</i> var. <i>dianthus</i> |
| 1. Upper glume as long, or longer than the lemma; lower branches truly whorled : | | |
| 2. Lower glume minute, less than half the length of the lemma; grains obovoid | ... | <i>S. coromandelianus</i> |
| 2. Lower glume half as long as the lemma; grains discoid | ... | <i>S. capillaris</i> |

Sporobolus capillaris Miq. in Verh. Konink. Nederl. Inst. 3, 4: 37. 1851; Bor, *Grasses*. 627. 1960. *S. pulchellus* non R. Br. 1810; Hook. f. *Fl. Brit. India* 7: 252. 1896 p.p.

Herbs, annual, c 30 cm high, tufted. Leaves 5–8 x 0.3–0.5 cm, linear-lanceolate, base rounded, apex acute, hispid, margins with distant bristles. Panicles effuse, c 15 cm long; rhachis scaberulous; spikelets linear-lanceolate; glumes oblong-lanceolate; lemma ovate.

Fls. & Frts. : August–December.

Illus. : Patunkar, Grass. Marathwada 271, f. 84. 1980.

Distrib. : Usually found as a weed in cultivated fields. Karanji; Mangrul village, near Aruna river.

Notes : Arnott had given a manuscript name to this species as *Vilfa capillaris*. But it was never published and Miquel (*op. cit.*) described it as *S. capillaris*.

Hook. f. (*op. cit.*) treated this as a synonym of *S. pulchellus* R. Br. Prodr. 170. 1810. Incidentally, *S. pulchellus* R. Br. is an Australian grass and what has been described by Hook. f. has been found to be a different and new species by Bor who published it as *S. tetragonus* in Kew Bull. 1949: 251. 1949.

This species is very common in Western parts of India. It has been described as *S. scabrifolius* Bhide in J. & Proc. Asiat. Soc. Bengal n.s. 8: 312. 1912. Apparently Bhide was not aware of Miquel's name.

S. coromandelianus (Retz.) Kunth, Rev. Gram. 1: 68. 1829; Hook. f. Fl. Brit. India 7: 252. 1896; Cooke, Fl. Pres. Bombay 3: 542. 1958 (Repr. ed.); Bor, Grasses. 627. 1960. *Agrostis coromandeliana* Retz. Obs. Bot. 4: 19. 1786.

Herbs, annual, c 30 cm high, tufted. Leaves c 5 cm long, linear, margins cartilaginous, glabrous or sparsely hairy from minute tubercles. Panicles c 10 cm long, effuse, narrowly pyramidal.

Fls. & Frts. : August–November.

Illus : Blatt. & McC. Bombay Grass. t. 153. 1935.

Distrib. : Common. Sunna village, on Pandharkawada–Bori road.

S. indicus (L.) R. Br. var. *diander* (Retz.) Jovet & Guedes in Bull. Centre & Rech. Sc. Biarritz. 7: 65. 1968 & 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.); Bor, Grasses. 629. 1960.

Herbs, annual or perennial, c 60 cm high. Leaves c 25 cm long, narrowly linear, convolute. Panicles c 15 cm long, narrowly pyramidal, effuse.

Fls. & Frts. : August–October.

Illus. : Blatt. & McC. Bombay Grass. t. 148. 1935 (*S. diander*).

Distrib. : Common. Hiwri R.F.; Karanji; Morchandi felling series, Bittergaon range.

THELEPOCON Roth ex R. & S.

Thelepogon elegans Roth ex R. & S. Syst. Veg. 2: 788. 1817; Hook. f. Fl. Brit. India 7: 148. 1896; Cooke, Fl. Pres. Bombay 3: 490. 1958 (Repr. ed.); Bor, Grasses. 247. 1960.

Herbs, perennial, c 1 m high. Leaves c 15 x 2 cm, lanceolate, base cordate or amplexicaul, margins ciliate, glabrous or hispid with hairs from tubercles. Racemes c 5 cm long.

Fls. & Frts. : September–November.

Illus. : Blatt. & McC. Bombay Grass. t. 18. 1935; Patunkar, Grass. Marathwada 113, f. 34. 1980.

Distrib. : Common. Karegaon, near Penganga river, Bori range; Yavatmal–Yelabara road.

THEMEDA Forask.

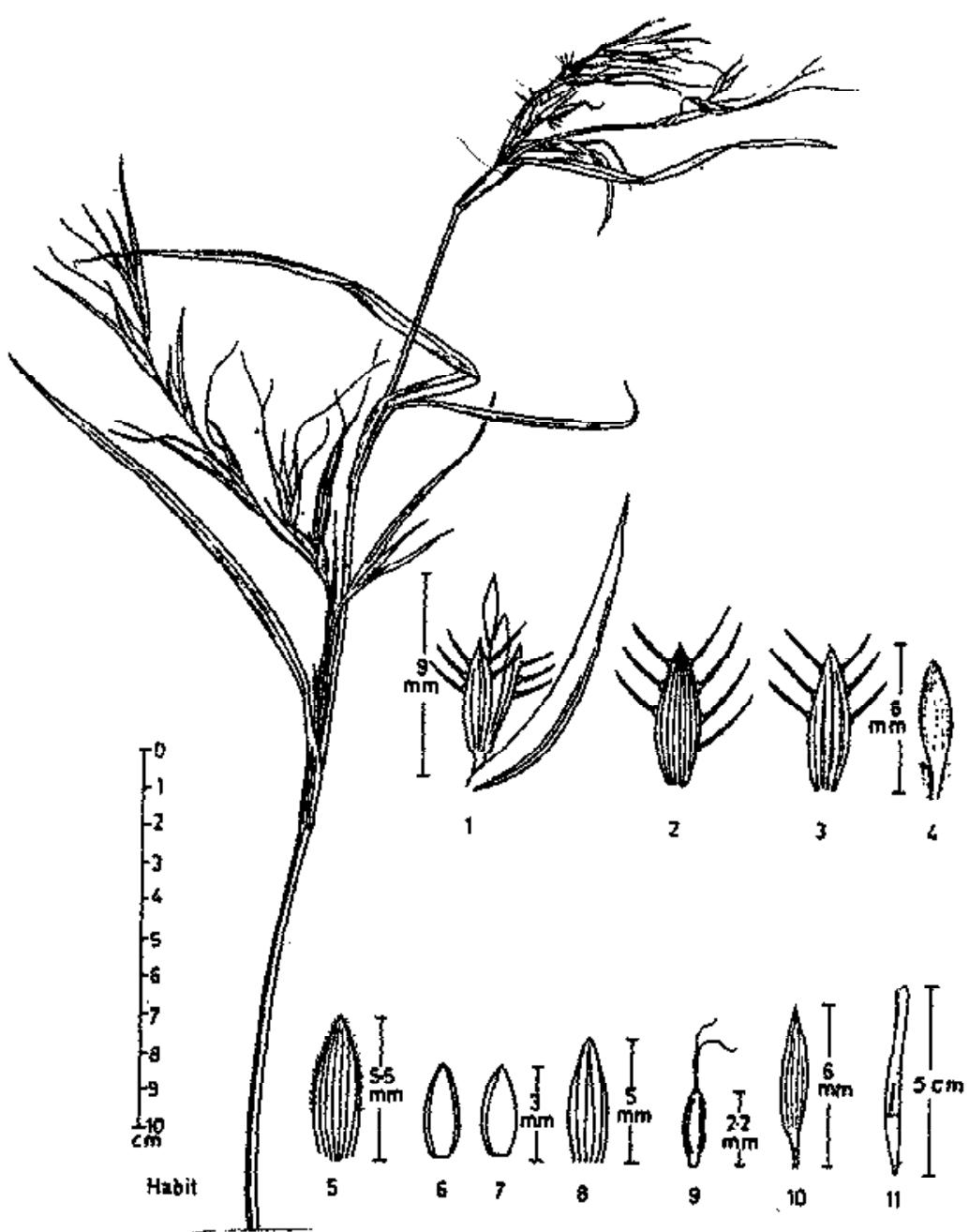
- | | | |
|--|-----|------------------------|
| 1. Branching strict; clusters of inflorescence in numerous fascicles | ... | <i>T. quadrivalvis</i> |
| 1. Branching effuse; clusters in few, small, superposed fascicles | ... | <i>T. laxa</i> |

Themeda laxa (Anderss.) A. Camus in Bull. Mus. Hist. Nat. Paris 26: 423. 1920; Bor, Grasses. 251. 1960. *Anthistiria laxa* Anderss. in Nov. Act. Sci. Upsal. 3, 2: 243. 1856; Hook. f. Fl. Brit. India 7: 213. 1896.

Herbs, perennial, c 1 m high. Leaves c 30.0 x 0.15 cm, linear to linear-lanceolate. Lower glumes of involucral spikelets glabrous but for a few bristles from tubercles near apex; those of bisexual spikelets glabrous and shining below, hispidulous at apex.

Fls. & Frts. : September–December.

Distrib. : Common. Yavatmal–Yelabara road.



Thymeda quadrivalvis (L.) O. Ktze.

Raceme with spathiform bract. Involucral spikelet : 1. Lower involucral glume 2. Upper involucral glume 3. Bisexual spikelet 4. Lower glume 5. Lower lemma 6. Lower palea 7. Upper glume 8. Pistil 9. Pedicelled spikelet 10. Hyaline base of awn

T. quadrivalvis (L.) O. Ktze. Rev. Gen. Pl. 2: 794. 1891; Bor, Grasses. 252. 1960. *Andropogon quadrivalvis* L. in Murr. Syst. Veg. ed. 13. 758. 1774. *Anthistiria ciliata* L. f. Suppl. 113. 1781; Hook. f. Fl. Brit. India 7: 213. 1896. *Themeda ciliata* (L.f.) Hack. in DC. Monogr. Phan. 6: 664. 1889; Cooke, Fl. Pres. Bombay 3: 514. 1958 (Repr. ed.).

Herbs, annual, c 2 m high, erect or geniculately ascending and scrambling. Leaves c 25.0 x 0.75 cm, linear. Lower glumes of involucral spikelets with stiff bristles from large tubercles in margins above the middle; those of bisexual spikelets puberulous.

Fls. & Frts. : September–December.

Illus. : Patunkar, Grass. Marathwada 115, f. 35. 1980.

Distrib. : Common. Pusad–Khandala road; Pusad–Yavatmal road.

TRAGUS A. Hall.

Tragus roxburghii Panigr. in Kew Bull. 29: 496. 1974. *T. biflorus* auct. non Schult. 1824; Bor, Grasses. 682. 1960. *T. racemosus* sensu Hook. f. Fl. Brit. India 7: 97. 1896, non (L.) All. 1785; Cooke, Fl. Pres. Bombay 3: 635. 1958 (Repr. ed.).

Herbs, annual, c 15 cm high, tufted. Leaves c 2 cm long, linear-lanceolate, rigid, glaucous, margins stiffly ciliate. Racemes c 3 cm long; spikelets sessile in deciduous clusters usually 2, facing each other. Lower glume suppressed; upper narrowly lanceolate, 5-ribbed, ribs armed with hooked spinules.

Fls. & Frts. : September–December.

Illus. : Blatt. & McC. Bombay Grass. t. 144. 1935 (*Nazia racemosa* O. Ktze. Rev. Gen. Pl. 3: 357. 1898); Mahesh. Illus. Fl. Delhi f. 242. 1966; Patunkar, Grass. Marathwada 280, f. 86. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 949 & 950. 1982.

Distrib. : Common. Sunna–Tipeshwar road, Bori range.

Notes : Roxburgh named this species as *Lappago biflora* in Fl. Ind. 1: 284. 1820. Unfortunately he cited *Phalaris muricata* Forsk. Fl. Aegypt.–Arab. 202. 1775 as a synonym. Consequently, *L. biflora* became a superfluous name for *P. muricata* Forsk.

Schultes (Mant. Syst. Veg. 2: 205. 1824) proposed the combination *T. biflorus* based on *Lappago biflora* Roxb. Under Art. 72 of ICBN this name can be accepted as a new name.

However, they have to be typified by the type of *Phalaris muricata* Forssk. which is from the Sea of Marmora in Turkey. Though the type has not been located, it is presumed by Panigrahi *op. cit.* that it may turn out to be *T. racemosus* (L.) All. which is a different plant altogether.

It is apparent that the Indian species so long known as *T. biflorus* does not possess a valid name. Hence Panigrahi has described it as a new species.

TRIPOGON Roth ex R. & S.

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.); Bor, Grasses. 522. 1960.

Herbs, perennial, c 30 cm high. Leaves c 15 cm long, convolute. Spikes c 20 cm long, c 20 flowered; lemmas longer than their aristae, lobes obtuse; paleas narrowly winged.

Fls. & Frts. : August–November.

Illus. : Patunkar, Grass. Marathwada 259, f. 79. 1980.

Distrib. : Common. Sunna–Tipeshwar road, Bori range.

UROCHLOA P. Beauv.

Urochloa panicoides P. Beauv. Ess. Agrost. 53, t. 11, f. 1. 1812; Bor, Grasses. 372. 1960; T.A.Cope in Nasir & Ali, Fl. Pak. 143: 209. 1982. *Panicum javanicum* Poir. in Lam. Encycl. 4: 274. 1816; Hook. f. Fl. Brit. India 7: 35. 1896; Cooke, Fl. Pres. Bombay 3: 450. 1958 (Repr. ed.). *Urochloa panicoides* var. *pubescens* (Kunth) Bor, *op. cit.*

Herbs, annual, c 1 m high. Leaves c 8.0 x 1.5 cm, lanceolate, base sub-cordate, ciliate from tubercles or glabrous. Spikelets ovoid or elliptic-oblong, acute; lower glume broadly ovate, acute.

Fls. & Frts. : August–November.

Illus. : Blatt. & McC. Bombay Grass. t. 93. 1935 (*U. helopus* (Trin.) Stapf in Prain, Fl. Trop. Afr. 9: 595. 1920); Patunkar, Grass. Marathwada 187, f. 58. 1980; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 953 & 954. 1982.

Distrib. : Common. Karanji, Penganga felling series, Kharbi R.F.

Notes : Bor (*op. cit.*) recognised 2 varieties based on the nature of

glabrous leaves and spikelets (var. *panicoides*) and pubescent leaves and spikelets (var. *pubescens*). However, there are gradations and intermingling of these characters and so they have been united (Cope, *op. cit.*).

VETIVERIA Bory de St.-Vincent

***Vetiveria zizanioides* (L.) Nash** in Small, Fl. South-east U.S. 67. 1903; Bor, Grasses. 258. 1960. *Phalaris zizanioides* L. Mant. Pl. 2: 183. 1771. *Andropogon squarrosus* L. f. Suppl. 433. 1781; Hook. f. Fl. Brit. India 7: 186. 1896; Cooke, Fl. Pres. Bombay 3: 511. 1958 (Repr. ed.) *non* L. f. 1781. *Khas-khas*.

Herbs, perennial, c 2 m high, tufted, rootstock with spongy aromatic roots. Leaves c 15.0 x 0.5 cm, distichous at base. Panicles c 30 cm long; lower glume of sessile spikelets muriculate, upper muriculate on keel.

Fls. & Frts. : December–February.

Illus. : Blatt. & McC. Bombay Grass. t. 40. 1935; Mahesh. Illus. Fl. Delhi f. 275. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 955 & 956. 1982.

Distrib. : Not common. Penganga river banks, Kharbi.

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