FLORA OF RAIPUR, DURG & RAJNANDGAON

D. M. VERMA, P. C. PANT, M. I. HANFI

BOTANICAL SURVEY OF INDIA
FLORA OF
RAIPUR, DURG AND RAJNANDGAON
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FOREWORD

Botanical Survey has taken up printing of District Floras which ultimately would form the base work for whole State Floras. In this direction Flora of Raipur, Durg and Rajnandgaon covers three districts.

There are large number of virgin forest pockets in Madhya Pradesh including the regions covered in this work and as such the richness of the Flora is substantiated by the presence of about 1032 species covered under 568 genera. All the specimens are housed in the Central Circle of Botanical Survey of India at Allahabad for reference purposes by the Botanists of the region.

From the climatic point of view the three districts present three different types of topography, with partially xerophytic environment, a rich agricultural fertile land mass and a dense moist forest region. Its flora therefore would give three distinct types of vegetational set up showing a variety of species adapted to above climatic conditions.

The authors' study of this region would be very interesting for students, scientists and industrial houses dealing with plant products as raw materials. I do hope that the present work would provide a comprehensive coverage of floristics of this vast region and I am sure that the authors would welcome any suggestions for the improvement of the publication in its future editions.

Dated: 27.10.84
P.O. Botanic Garden
Howrah 711103.

M. P. Nayar
Director
Botanical Survey of India
PREFACE

Madhya Pradesh in Central India, one of the larger states of the country, does not have a Flora of its own. This region with innumerable patches of rich tropical forests somehow got left out as a central pocket while all around it major Indian Regional Floras were published for the Upper Gangetic Plains (Duthie, 1903 1929), Bombay Presidency (Cooke, 1901 1908), Madras Presidency (Gamble, 1915 1936) and Bihar and Orissa (Haines, 1921 1925). However, considering the time involved in proper exploration, processing the collections, identification and writing a Flora of Madhya Pradesh by a team of professional botanists, it was decided to take up smaller regions for intensive studies. The present composite Flora of the three districts, Raipur, Durg and Rajnandgaon is an outcome of this thought. Although floristic studies are generally accepted as part of activities of an enlightened society, and publication of a Flora an academic achievement, its immense utility is portrayed in teaching, and in identification of plants by botanists, foresters, geologists, economic botanists, agriculturists, vaidyas, plant-based industries, and inquisitive plant-hunters. It is hoped that the present Flora would meet the needs of these people working in the region, and its vicinity. We are equally hopeful that it would also accelerate botanical activities in the region, and generate public interest in wild plants, leading to recognition and protection of rare and threatened species.

The three districts with a total area of about 45,000 sq. km lie between 80° 38’ and 82° 70’ E longitude and 19° 79’ and 22° 48’ N latitudes, in the south-eastern part of Madhya Pradesh. The Flora deals with 1032 species, spread out in 568 genera and 127 families of Angiosperms. It is based mainly on our own collections which were started in 1972. Subsequently, eight more exploration tours were undertaken, yielding a total collection of 3092 field numbers. The specimens are deposited in the Herbarium of the Botanical Survey of India, Central Circle, Allahabad (BSA). A few species which have earlier been reported from the region but not collected by us have also been included, with references to the concerned publication.

Starting with a short introduction and key to the families, the Flora chiefly includes keys to genera and species, correct botanical names and some selected synonyms, with citations, local names (when available), short description of the species, and notes on habitat, phenology, distribution and economic/medicinal uses, if any.
To Dr. M. P. Nayar, Director, Botanical Survey of India, Howrah, we owe a great degree of gratitude for facilities, constant encouragement, and his personal interest in seeing through its early publication. We are also indebted to Dr. K. Thothathri, Joint Director, Dr. N. P. Balakrishnan, Deputy Director, and Dr. V. S. Agarwal, Editor of Publications, Botanical Survey of India, for their valuable help and suggestions at various stages. The officers of the Forest Department, Raipur Circle, particularly Sri M. Dixit and Sri D. P. Sangar, were of immense help during our exploration work, and to them, as well as their staff also, we would like to record here our sincere thanks. The acknowledgement would be incomplete without a mention of our own field-staff who have laid a very deserving claim on a word of thanks for their assistance in collection and processing of specimens. Our thanks are also due to our photographer, Sri M. A. Siddiqui, for the photographs included in the present Flora.

Botanical Survey of India
Allahabad
20th October, 1984

D. M. Verma
P. C. Pant
M. I. Hanfi
Sal forests (Nagri).
Sal mixed forests (Bar-nawapara).
Miscellaneous forests (Deodhara, Taurenga).
Miscellaneous forests on hill-tops (Nagri).
Diospyros melanoxylon (Nagri).
Tribal's imagination (Bar-nawapara).
INTRODUCTION
(D. M. Verma, P. C. Pant & M. I. Hanfi)

PHYSIOGRAPHY

Raipur, Durg and Rajnandgaon are three adjacent districts of Madhya Pradesh, in Central India, lying within 80°38' and 82°70' E longitudes and 19°79' and 22°48' N latitudes, comprising of an area of about 45,000 sq. km. It is in the northern part of the Deccan Peninsula, in southeast Madhya Pradesh, bounded on the south-west by Maharashtra state, on the east by Orissa state, on the north by Balaghat, Mandla, Bilaspur and Raigarh districts and on the south by Bastar district of Madhya Pradesh. Of the three districts, Raipur, with an area of about 25,000 sq. km is larger than the combined areas of Rajnandgaon and Durg. Rajnandgaon, which was formerly a part of Durg district, was constituted as a separate district on 26th January, 1973. The maximum length and width of the three combined districts are 273 km and 225 km respectively.

The area is approachable through the National/State Highways from Bilaspur, Jabalpur, Nagpur, Vishakhapatnam and Sambalpur. There are only two main railway-lines from Nagpur to Bilaspur and from Nagpur to Vishakhapatnam, both passing through Rajnandgaon, Durg and Raipur and a branch-line from Raipur to Dhamuri. Hence, movements are mainly through roads which are motorable in fair-weather, and well spread out. However, during rainy season, a lot of hurdles are created by the numerous over-flowing rivers and streams, and all approaches, particularly to interiors in the hilly terrains in west, south and east, are virtually cut off.

Topographically, the region can easily be divided into the Chhattisgarh Plains in the centre, flanked by a hilly and plateau tract on its west, south and east. On the north, the Chhattisgarh Plains continue into Bilaspur district. In general, the area slopes towards north-east.

The Chhattisgarh plains which occupies more than half the area of the region, has a general altitude between 250 - 350 m. It is a fertile alluvial region, mostly under cultivation. In history, it was also known as Mahakosala, or Dakshini Kosala (to distinguish it from the country of the same name in the north). The drainage is mainly provided by the
Mahanadi river which originates in the Sihawa hills of south Raipur. It first flows northwards and then eastwards, and then through Orissa to the Bay of Bengal. Its major tributary is Seonath river which flows through Rajnandgaon and Durg, collecting water from the western parts. Other tributaries, though numerous, are smaller streams descending from the adjoining hills. Thus, Hanp, Sakri, Karua and Dotu from the Maikal Range in the west, Kharkhara, Tandula, Sitanadi, Sondur, Patri, Sukha and Jok from the southern hills and plateaus, and many others, all contribute to the waters of Mahanadi.

However, it is the hilly regions in the western, southern and eastern parts which are floristically rich and more interesting. The area is sparsely populated, well forested, much less cultivated, and even though human pressures are operating, it is in these places that most of the reserved forests and Game Sanctuaries with good vegetation and diverse flora are found. In the western part of Rajnandgaon is the Maikal Range of rather deep sloping hills which continue northwards towards Sajhura hills. With a general range of 600-800 m, its highest elevation of 918 m is found at the northern end. The southern and the eastern hilly regions are in continuation with the Eastern Ghats through Bastar and Orissa. Higher elevations are found along the south-eastern boundary of Raipur, with highest elevation of 929 m at Mainpur Khurd. This Raipur Plateau is locally divided into Shishupal hills, Sihawa hills and Atang hills. A few reservoirs like Tandula, Maramsilli and Duddhwa have been built for irrigating the large expanse of Chhattisgarh Plains.

GEOLOGY AND SOIL

The area forms part of the northern limit of the well known geological division of India the Deccan Peninsula. Like other parts of the Peninsula, our region also was never submerged under the sea. It is generally composed of horizontal rock-beds on a firm and immovable foundation, and has remained so except for some fracturing due to vertical, downward or upward, movement of some large segments within it. The present day hills in the region were formed due to unequal weathering that has been going on for ages on the Deccan Plateau, cutting down deeper on the land surrounding the hills. The region contains the oldest rocks of the world belonging to Archaean System. Almost equally old, and more common, are the metamorphosed Archaean sedimentary rocks grouped under the name of Dharwar System, and the two are scarcely distinguishable. After a long interval of time during which these were eroded, sometimes almost to the base-level, the next rock-system began to be deposited. This is known as the Cuddapah System. The
Archaean System consists of gneissic rocks (frequently granite), crystalline metamorphosed sediments and schists. The rocks of Dharwar System are often highly metalliferous, containing ores of iron and manganese. The bulk is formed of phyllites, schists and slates. There are different kinds of schists, quartzites, granites, limestones and brilliantly coloured jaspers. The Cuddapah System is mainly composed of hard Chandrapur sandstones, shales, slates, quartzites and limestones. Besides, they contain cherts, jaspers and some manganese and iron ores.

The rocks of Archaean and Dharwar Systems, chiefly consisting of granites, schists, quartzites, shales and limestones, are frequently found exposed in the hilly regions in the western, southern and eastern parts of our area. These are usually overlaid with Chandrapur sandstones and shales of the Cuddapah System. The Chilpi series of the Dharwar, in the north western part, includes a great thickness of highly disturbed slates and phyllites, with quartzite and basic trappaean intrusions. In the Chhattisgarh plains, the Cuddapah System is represented by the stratified rocks of two series. The lower are known as the Chandrapur series, consisting of sandstones, and the upper one known as Raipur series, consisting of purple shales and limestones. The Chandrapur series is exposed only along the rim of the basin.

In addition to the above, towards close of the Cretaceous, the volcanic outbursts in the Peninsula resulted in the eruption of thick layers of lava and associated pyroclastic materials. It resulted in thick horizontally bedded sheets of basalts known as the Deccan Traps. It is found in the Chilpi hills in the north-west. The Lateritic deposits, formed due to metasomotic replacement of Dharwar slates and schists by manganese bearing solutions are of irregular distribution and occur as caps on the outcrops of the Dharwar rocks. The laterite is a comparatively recent Pleistocene formation.

The soil produced by the Archaean, Dharwar and Cuddapah rocks is shallow, stony, sandy loam or clayey loam, generally called the 'residual soil'. This has been grouped as Red soil. However, the colour, though generally red, often grades into brown, chocolate, yellow, grey or even black. This is generally found in the hilly regions and its neighbourhoods. Another kind, known as the Black cotton soil or the Regur, is also found in areas around Chilpi, Rajolidih, Borai, Gariaband etc. Its origin is ascribed to long-continued surface action on rocks like the Deccan Trap and gneisses of basic nature. It is extremely sticky when wetted and retains large proportion of moisture for a long time. It is dark, blackish, rich in humus and iron, and very fertile. The lateritic soil found in patches throughout the districts are generally poor and locally called 'Bhata' lands. In addition to these there are large deposits of
alluvial soil in the basins of the several rivers in the Chhattisgarh Plains. These are light yellow loamy soil with a high degree of productiveness, and locally called 'Matasi'. This is generally under paddy cultivation. The black soil is also sometimes locally called 'Kanhar or Dorsa'.

CLIMATE

The climate of the region is broadly divisible into summer season from March to June, rainy season from July to October and cold season from November to February. Of these, the post-monsoon period in October November is most pleasant. At times frost may be experienced in December January but it is harmless and hangs around valleys and river courses. Hail storms also sometimes occur in late winters. Thunderstorms is a common phenomenon during May June.

The mean temperature data for Raipur (305 m) is given in Table 1. The highest temperature reaching in the afternoons of May June has been recorded as 47.2°C and the lowest in the pre-dawn period of December January, has been recorded as 3.9°C. These conditions more or less prevail throughout the Plains of Chhattisgarh. The hilly terrain in the west, south and east, with an elevation of up to 929 m certainly has a few degrees lower temperature, though proper records are not available.

The average monthly rainfall for three representative areas is given in Table 2. The average annual rainfall in general varies from 1100 mm (in Pithora) to about 2000 mm in the southern hilly tract. About 90% of it falls in the rainy season between June September. These are often torrential, causing much soil erosion. The shallow bedded streams and rivers, with almost dry beds or little water between November - June, suddenly swell up cutting off most of the communication, particularly in the interiors. The rainfall in the remaining months is reduced to a few irregular showers. The wettest parts are its southern hills and plateau while northwards, the Chhattisgarh Plains are comparatively drier.

PEOPLE

The three districts combined together have a population of about 50 lakhs, mainly belonging to 'Gond' tribe. Of these, about 85% live in rural areas. Here again, a larger proportion is settled in the Chhattisgarh Plains as compared to the hill ranges and plateaus. Raipur city, which is the most developed city in eastern Madhya Pradesh with several professional colleges, institutes, offices, factories, and business centres, has the highest population of over 3 lakhs.

INDUSTRIES

The whole tract was pretty backward till about 1960 when industrial development picked up at a rapid pace. Now there are several oil mills,
Table 1—MEAN TEMPERATURE IN RAIPUR (°C)

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<td>Mean max.</td>
<td>21.6</td>
<td>30.0</td>
<td>35.1</td>
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<td>41.8</td>
<td>46.6</td>
<td>49.4</td>
<td>39.9</td>
<td>51.2</td>
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<td>14.5</td>
<td>20.0</td>
<td>24.5</td>
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<td>15.9</td>
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<td>MEAN</td>
<td>20.4</td>
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Table 2—RAINFALL (mm)

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<td>Balod</td>
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<td>316</td>
<td>365</td>
<td>454</td>
<td>390</td>
<td>184</td>
<td>11</td>
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<td>Dhantari</td>
<td>8</td>
<td>18</td>
<td>13</td>
<td>23</td>
<td>20</td>
<td>291</td>
<td>385</td>
<td>355</td>
<td>209</td>
<td>57</td>
<td>13</td>
<td>4</td>
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<tr>
<td>Raipur</td>
<td>10</td>
<td>22</td>
<td>18</td>
<td>16</td>
<td>22</td>
<td>227</td>
<td>375</td>
<td>358</td>
<td>192</td>
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rice mills, soap mills, cotton mills and factories making cement, utensils, lac, bidis, and furniture etc. Rice, timber wood, bamboo and bidi leaves are exported in large quantities.

Surpassing all these is the Bhilai Steel Plant established with Indo Russian collaboration, celebrating its silver-jubilee. Situated in Durg dist. on the highway between Raipur and Durg, it has developed its own township. As expected, it is causing plenty of air pollution and this problem is very much worth further investigation. The pollution could be felt even while breathing. A general observation revealed several dust covered retarded roadside trees speaking of ill health. Trees of *Cassia fistula*, *Pongamia pinnata* and *Peltophorum pterocarpum* appeared to be more susceptible as compared to *Ficus religiosa*, *Fitchelllobium dulce*, *Mangifera indica*, *Dalbergia sissoo* and spp. of *Albizia*, *Manilkara* and *Eucalyptus*.

**EARLIER COLLECTIONS AND PUBLICATIONS**

The contributions of Clarke (1898), Blatter (1911), Haines (1916), Mooney (1942), Hewitson (1951), Santapau (1958) and Burkill (1965) were all looked into in search of earlier collections from our area. The earliest record of a very few stray collections are those of Watt (ca 1894) and Marten (1898) in Raipur, and Lowrie (1908–09) in Raipur and Durg (incl. Rajnandgaon). It is obvious that this region remained unrepresented in J.D. Hooker’s Flora of British India.

The credit for the first serious attempt at botanising the area should go to Henry Haselfoot Haines, a British Forest Officer, and a reputed botanist who later published Botany of Bihar & Orissa (1921–1925). His collections, from 1912 onwards, from ours and the adjoining regions, resulted in the publication of his *Descriptive List of trees, shrubs and economic herbs of the Southern Circle, Central Provinces* (1916). It includes about 330 species from Raipur, Durg and Rajnandgaon districts. Unfortunately, his collections could not be consulted while writing the present Flora since most of these are housed in foreign herbaria (A, ABD, K, NY, WRSL etc.). Hemant Sharma made some collections in Raipur city around 1980–82 in connection with his pollen studies, and his unpublished list was made available to us by Prof. V.B. Sharma, Botany Department, Government Science College, Raipur. Mention may also be made of a few publications on aquatic vegetation of Raipur (D.K. Tiwari, 1960a, b; Unni, 1967a), Compositae of Raipur (Unni, 1967b) and Cyperaceae of Madhya Pradesh (Verma & Chandra, 1981). A few collections of R.M. Singhal (1951) and S.D.N. Tiwari (1948 onwards) have also been reported from Raipur in some floristic publications on Madhya Pradesh.
S.K. Jain (1961, 62) and G. Panigrahi (1963) also collected a few specimens from Raipur while going to Bastar district.

PRESENT COLLECTIONS

Plant collection in the region on which the present Flora is mainly based was started with the first exploration tour, in May-June, 1972, to Raipur district by D.M. Verma. During a total field stay of 25 days, the party camped at Dhamtari, Sitanadi, Khallari, Taurenga, Gariaband, Pithora and Kas dol. From there, movements and collections were made both on foot and by jeep. Naturally, the camping places were more intensively collected though efforts were always made to cover as much of area as possible. A total of 554 field numbers were collected. More or less the same pattern was followed during subsequent field trips. A total of five collection tours were undertaken to Raipur district by D.M. Verma during May-June, 1972 (25 days), by D.M. Verma & M.I. Hanfi in January, 1976 (16 days), and August, '76 (13 days), by D.M. Verma in October, '76 (13 days) and by D.M. Verma & M.I. Hanfi in February, '84 (7 days) and in all 1984 field numbers were collected. The camping places were Borai, Dhamtari, Dugli, Gariaband, Kas dol, Khallari, Nagri, Pithora, Raipur, Sitanadi and Taurenga. In Rajnandgaon district P.C. Pant & M.I. Hanfi collected in April, 1974 (8 days), October, '74 (12 days), September, '76 (13 days) and August, '78 (5 days) with camps at Baghnadi, Chilpi, Deopura, Rajnandgaon, Singhari and Taregaon, and a total collection of 907 field nos. In Durg district P.C. Pant and M.I. Hanfi collected in April 1974 (6 days) and August, '78 (13 days) with camps at Balod, Budhbum, Durg, Kamteli, Khargaon, Malaidah and Rajolidih, and a total collection of 401 field nos. Thus, in the three districts of Raipur, Rajnandgaon and Durg, 131 days were spent in field work and a total of 3092 field numbers were collected. All these specimens are housed in the herbarium of the Botanical Survey of India, Central Circle, Allahabad (BSA).

VEGETATION

The climatic, edaphic, altitudinal and biotic variations with their complex interrelationships and species composition have resulted in different kinds of vegetation cover in the area which needs a much more detailed study than attempted during the present Flora-oriented project. The following account, based on field-notes during movements to different parts, is not very comprehensive, and is aimed only at giving a general idea of the vegetation in the region. The forests cover about 40% of the area, of which about 60% are reserved forests and the remaining protected forests or under Forest Corporation.
The Chhattisgarh Plains has long been under cultivation and at present only small patches of degraded tropical dry deciduous forests have been left, if at all. It is rather more characterised by scattered stunted and crooked trees and shrubs of *Butea monosperma*, *Lagerstroemia parviflora*, *Albizia* spp., *Acacia leucophloea*, *A. nilotica* spp. *indica*, *Mangifera indica*, *Terminalia* spp., *Ficus racemosa*, *F. benghalensis*, *F. religiosa*, *Azadirachta indica*, *Pithecellobium dulce*, *Syzygium cumini*, *Mitragyna parvifolia*, *Aegle marmelos*, *Diospyros melanoxylon*, *Bauhinia* spp., *Calotropis* spp., *Cassia fistula*, *Ipomoea carnea* and *Mimusnum hmalavana*, with several climbers like *Ziziphus oenoplia*, *Celastrus paniculatus*, *Cryptolepis buchananii*, *Ampelocissus* spp., *Mukia madrasapatana*, *Ipomoea* spp., *Atylosia scarrabaeoides* and *Cissampelos pareira*. Particular mention may be made of the 'mahua' trees, *Madhuca longifolia* var. *latifolia*, which are considered sacred and stay unlopped. In addition, *Albizia* spp., *Dalbergia sissoo*, *Delonix regia*, *Cassia fistula*, *Peltophorum pterocarpum*, *Pongamia pinnata*, *Eucalyptus* hybrids, and *Pterocarpus marsupium* are frequently planted on the roadsides. The ground flora, during rainy and post rainy season, consists of several annual or perennial species of grasses, sedges and other herbs and creepers, but by the middle of winter it is completely grazed and presents a bare desolate spectre. Mention may be made of two epiphytic orchids, *Vanda tessellata* and *V. retcacea* which grow freely on *Mangifera indica*, *Butea monosperma*, *Madhuca longifolia* var. *latifolia*, *Diospyros melanoxylon* and *Terminalia* spp. The former with large brown banded flowers immediately catches the eye.

In contrast to the Chhattisgarh Plains, the western regions like Taragarh, Chilpi, and Rengakhar, the southern regions like Rajhara dhalli, Borai, Sitanadi, Khallari and Taurenga and the eastern regions like Deori, Bagbahara, Barnawapara and Chhoa harbour several extremely rich reserved forests of sal, teak and mixed kinds. According to Champion & Seth (1968) these have been broadly grouped into Tropical Moist Deciduous Forests and Tropical Dry Deciduous Forests. These may be of mixed type (Tropical Moist Deciduous Mixed Forests and Tropical Dry Deciduous Mixed Forests), or with predominating *Shorea robusta* (Tropical Moist Deciduous Peninsular Sal forests and Tropical Dry Deciduous Peninsular Sal forests), or with predominating *Tectona grandis* (Tropical Moist Deciduous Teak Forests and Tropical Dry Deciduous Teak Forests). A short account of the two major groups is given below:

I. Tropical Moist Deciduous Forests:

A good development of these forests with a fair amount of sal (*Shorea robusta*) can be observed in the reserved forests around Chilpi,
Rangakhar, Borai, Sitanadi, Khalluri and Tanrenga. It has tall trees of Shorea robusta, Terminalia spp., Pterocarpus marsupium, Dalbergia paniculata, Adina cordifolia, Stereospermum chelionoides, Schleichera oleosa, Garuga pinnata, Lannea coromandelica, Bombax ceiba, Soymida fabriifuga and Boswellia serrata, and smaller trees like Lagerstroemia parviflora, Briedelia squamosa, Mallotus philippensis, Diospyros melanoxylon, Anogeissus latifolia, Burhimanti lanzan, Gmelina arborea, Antidesma ghaemehilla, Ficus spp., Grewia tiliifolia and Cassia fistula, and shrubs like Bremia vitisidiaea, Embelia tseriam cottam, Chloroxylon swietenia, Holarrhena antidysenterica, Cosearia graveolens, Helicteres isora, Semecarpus anacardium, Ocina obtusata, Indigofera cassioides, Woodyfordia fruticosa and species of Lea and Desmodium. The common Madhya Pradesh bamboo, Dendrocalamus strictus, forms dense thickets. The conspicuous climbers and ramblers in these forests are Millettia extensa, Smilax zevalenica, Bauhinia vahlii, Olax scandens, Combretum racchurhi, Ventilago denticulata, Ichnocarpus frutescens, Dioscorea pentaphylla, D. puber, D. oppositifolia and D. bulifera.

The undergrowth in dense forests is often sparse, and not much varied. The common species are Erwanthemum purpurascens, Perileptus edgeworthiana, Nekania canescens, Phoenix acutis. Chorophytum tuberosum, Globba racemosa, G. bulbifera, Curcuma spp., Zingiber spp., Tacca leoniopetaloides, Carex speciosa, and a few ground orchids like Eulophia spp., Habenaria spp., Goodemum densiflorum, and Peristylus spp. The edges of the forests have a very luxurious growth of numerous annual and perennial species of Cleome, Desmodium, Alysicarpus, Tephrosia, Crotalaria, Blumea, Cynoglossum, Burleria, Leucus, Fhyllanthus, Euphorbia, Fupalia, Aerva, Commmelina, Cyamis, and sedges and grasses. The species diversity and undergrowth in forests with high proportion of Shorea robusta (sal forests) is comparatively poorer than in the mixed forests. Sal is generally absent on hill slopes.

The degraded forests of the tropical moist deciduous type also have a composition somewhat similar to that described above but for the conspicuous absence or scarcity of species like Shorea robusta, Dalbergia paniculata, Adina cordifolia, Lannea coromandelica, Garuga pinnata, Bombax ceiba, Isona spp., Ocina obtusata and Bauhinia vahlii. Instead, these forests are mainly composed of Terminalia alata, T. bellirica, Lagerstroemia parviflora, Anogeissus latifolia, Cleistanthus colinus, Diospyros melanoxylon, Briedelia squamosa, Butea monosperma, Cordia obliqua, Buchanania lanzan, Emblica officinalis, Helicteres isora and species of Ziziphus, Acacia, Gardenia and Xeromphis. The common climbers are Celastrus paniculatus, Ventilago denticulata, Cocculus hirsutus, Cissampelos pareira, Rhyynchostoa minima, Atylosia scarabaeoides, Muki maderaspatana, Diplocyclus pulmu-
The ground flora with more intrusion of grasses, sedges and Asteraceae members.

Teak (Tectona grandis) is usually absent in these forests except where plantations of this timber species have been raised by the Forest Department, some of which are more than 50 years old. Only in a few places teak has been found to be naturally occurring in association with other trees and shrubs.

Sometimes Terminalia alata becomes extremely dominant and forms almost pure patches.

II. Tropical Dry Deciduous Forests:

These are found in comparatively drier areas, generally in and around the Chhattisgarh Plains. Though not always conspicuously different from the moist deciduous forests, since transitional stages are not uncommon, dry deciduous forests are dominated by Lagerstroemia parviflora, Butea monosperma, Diospyros melanoxylon, Albizia spp., Anogeissus latifolia, Terminalia spp., Aegle marmelos, Acacia catechu A. torta, A. pennata, Cordia obliqua, Emblica officinalis, Madhuca longifolia var. latifolia, Bauhinia spp., Nectanches arbor-tristis, Ziziphus mauritiana, L. xylapyrus, Helicteres isora, Lannea coromandelica and Boswellia serrata.

The shrubbery layer is usually formed of Holarrhena antidysenterica, Grewia hirsuta, Mimosa himalayana, Flacourtia indica, Capparis zeylanica, Kirganolia reticulata, Soeuriniga virosa, Cassaria elliptica, Woodfordia fruticosa. Clerodendrum serratum and Solanum anguivi. The common climbers are Ziziphus oenoplia, Smilax zeylanica, Celastrus paniculatus, Anogeissus latifolia, A. tomentosa, Asparagus racemosus, Hermodendrum indicus and Ichneocarpus frutescens. A few other climbers like Rhynchosia minima, Attyloia scarabaeoides, Ipomoea spp., Mukia maderaspatana, Diptocyclis palmaus, Cryptolepis buchanani and Pergularia daemia become more common in open forest pockets or its margins. Hypsia suaveolens, Antisomeles indica, Alysicarpus spp., Tephrosia purpurea, Plectranthus mollis, Cassia tora, Pavetta tomentosa, species of Indigofera, Crotonaria, Lecan, Euphorbia and a large variety of grasses and sedges are common along forest margins.

It may also be mentioned that sometimes Anogeissus latifolia, Butea monosperma, Boswellia serrata, Aegle marmelos and Acacia catechu almost individually dominate small patches of dry deciduous forests, and such forests are often named after these individual species.
Terminalia arjuna and Syzygium haeaneanum are commonly found along banks of the rivers and streams. While the former is also found elsewhere, the latter is very specific in its habitat. Bushes of Tamarix ericoides and Rotula aquatica are frequent in river-beds.

The rock boulders in the dry uplands bear in their crevices only a few species like Polycarpaea aurea, P. corimbosa, Indigofera astragalina, I. glabra, Cassia abhus, Anisochilus carnosus, Trichurus monsoniae, Arthraxon prinodes, Chrysopogon verticillatus, Digitaria stricta, Dimeria ornithopoda, Pectis indica and Pogonatherum erinimum.

AQUATIC PLANTS

The numerous rivers, streams, drains, ponds and ditches harbour a number of water-loving species, in and around it, and these are generally grouped together as aquatic plants. However, the exact interpretation or circumscription of this group is debatable since there are numerous borderline species which grow both in marshy lands and water, and still others which grow in drains and ditches which are temporarily filled up during rains. The 85 species mentioned below have been chosen as aquatic in a more strict sense and have been classified into six categories on the basis of their general habit. The wetland hydrophytes, pretty large in number, have been excluded.

I. Free-floating hydrophytes:

Azolla pinnata, Wolffia glabosa, Lemna perpusilla, Spirodelal polynrhiza, Pi'tia stratiotes, Trapa natans var. dispinosus and Eichhornia crassipes.

II. Suspended submerged hydrophytes:

Ceratophyllum demersum, Utricularia aurea and U. exoleta.

III. Anchored submerged hydrophytes:


IV. Anchored hydrophytes with floating shoots:

Neptunia ulvaceae, Ludwigia adscendens, Ipomoea aquatica, Alternanthera philoxeroides, Hygroryza aristata and Cyperus platystylis.

V. Anchored hydrophytes with floating leaves:

Marsilea minuta, Nelumbo nucifera, Nymphaea pubescens, N. nouchali, N. rubra, Nymphoides hydrophylla, N. indica, Ottelia alismoides Monochoria
vaginalis, Sagittaria guayanensis ssp. lappula, Caldesia parnassifolia, Limnophyton obtusifolium, Tenagracharis latifolia, Aponogeton natans and Potamogeton nodosus.

VI. Emergent amphibious hydophytes:


FERNS AND FERN ALLIES

While the main efforts were concentrated on the collection of flowering plants, a few ferns and fern allies were also collected, and these are listed below:


SANCTUARIES

In keeping with Wild Life Conservation three sanctuaries were established in Raipur district during the last decade. These are:

1. Bur-Nawapara Sanctuary with an area of 244.66 sq. km. in the northern part of Raipur district, established in 1975.

2. Sitanadi sanctuary with an area of 566.53 sq. km. in the southern part of Raipur district, established in 1974.

3. Udanti Sanctuary with an area of 247 sq. km. in the southern part of Raipur district along Udanti river, established in 1979.

All these areas were formerly Reserved Forests with generally a high proportion of Shorea robusta. Sitanadi area is particularly extremely rich in species composition. Tigers, panthers, bisons, sambar, cheetals, wild
boars, monkeys, bears and neel-gai are the common animals. These sanctuaries would also go a long way in conserving the flora, especially its herbaceous elements which unknowingly escape the attention of conservationists or foresters. In addition to the above sanctuaries a part of the Chilpi area in western Rajnandgaon has now been included under Kanha National Park.

ECONOMIC BOTANY

Leaving aside urban population the majority of the people still depend to a large extent on wild plants for their various needs. During field trips some efforts were also diverted towards collection of information on local uses of plants. These were mainly gathered by talking to tribals inhabiting the interiors of the southern parts of Raipur who are still partly dependant on surrounding native plants, to village elders and forest staff, and also by having a look at the local weekly markets. Whenever possible, this information was cross-checked. Still, errors might have crept in since some people were not readily prepared to divulge their secret knowledge and might have given wrong information under persuasion, while still others were over-jealous to leave a good impression and came out with some or the other uses of most of the plants enquired into. The following names have been sorted out in this background, and broadly categorized according to their uses.

1. Edible Plants.

(a) Rhizomes/tubers (cooked) of Nymphaea nouchali, Nymphaea pubescens, N. rubra, Dioscorea bulbifera, D. glabra D. pentaphylla, D. puber and Tacca leontopetaloides.

(b) Leaves and tender shoots (cooked) of Cleome gynandra, Coccus hirsutus, Melochia corchorifolia, Corchorus capsularis, C. olitorius, Bauhinia malabarica, B. purpurea, Cassia tora, Cordia obliqua, Polygonum glabrum, Amaranthus hybridus spp. incurvatus var. paniculatus, A. spinosus, A. tricolor, Basella alba, Amorphophallus sylvestris and Dendracalamus strictus.

(c) Flowers (cooked) of Sesbania grandiflora, Bauhinia purpurea, B. roemosa, Semecarpus anacardium, Celastrus paniculatus, Woodfordia fruticosa, Madhuca longifolia var. latifolia, Nymphaea nouchali (carpels) and Hibiscus subdariffla (calyx).

(d) Fruits (raw, cooked or pickled) of Dillenia pentagyna, Annona squamosa; Mangifera indica, Buchanania lanzan, Grewia abutilifolia, G. hirsuta, Aegle marmelos, Ziziphus mauritiana, Z. rugosa, Moringa oleifera, Tropaeolum var. hispinoza, Pithecellobium
(xiv)


(e) Seeds (cooked or roasted) of Semecarpus anacardium, Sterculia urens, Indigofera glandulosa, Vigna aconitifolia, V. trilobata, V. umbellata, Bauhinia vahlii, Cassia occidentalis, Coix aquatica, Eichinice coracana, Oryza rufipogon, Funicum sumatrense and Paspalum scrobiculatum

II. Timber Wood (for construction, agricultural implements, furniture, carts etc.)

Shorea robusta, Tectona grandis, Pterocarpus marsupium, Schleichera oleosa, Ougeinia ogeensis, Terminalia alata, Lagerstroemia parviflora, Boswellia serrata, Acacia catechu, Emblica officinalis, Albizia procera, Anogeissus latifolia, Grewia illustris, Syzygium febrifugum and Cleistanthus collinus. These are the commonly used forest species. Several more tree species are also used as per availability. In addition, wood from several planted species like those from Dalbergia sissoo, D. latifolia, Mangifera indica and Syzygium cumini and poles from the common bamboo, Dendrocalamus strictus are in frequent use.

III. Medicinal Plants

It has not been possible to get conclusive details on diseases and plant parts used, mixture of different species, methods of application etc. Information on these aspects, if locally available, has been given in the text under individual species. Only a selected list of 34 spp. is presented below for reference. However, most of these are established medicinal plants and details can be found in literature.


IV. Other Economic Plants

(a) Beverages and drinks from Cassia occidentalis, Tamarindus indica and Madhuca longifolia var. latifolia

(b) Brooms from Thysanolaena maxima and Phoenix acanther.

(c) Cotton from Bombax ceiba, Gossypium hirsutum, Calotropis gigantea and C. procera.

(d) Dyes from Butea monosperma, Nyctanthes arbor-tristis, Mallotus philippensis, Lawsonia inermis, Woodfordia fruticosa and Curcuma spp.

(e) Fibres generally from Bauhinia vahlii but also from Bauhinia purpurea, Abutilon indicum, Hibiscus cannabinus, Grewia serrulata, Triumphett rhomboidea, Soymida febrifuga and Eulaliopsis binata.

(f) Fish poisons from fruit pulp of Gardenia turgida, Xeromphis spinosa, Cleistanthus collinus and Casearia elliptica and roots of Millettia extensa.

(g) Gums & resins from Sterculia urens, Lannea coromandelica, Roswellia serrata, Ruta monosperma, Acaia catechu, A. leucophloea, A. nilotica ssp. indica, Anogeissus latifolia, Gardenia gummifera and Euphoria nuda.

(h) Match sticks from Bombax ceiba and Boswellia serrata.

(i) Oils (for animal feed, medicine, soaps, burning or flavouring, messaging, as also for frying and pickles) from Shorea robusta Madhuca longifolia var. latifolia, Pongamia pinnata, Schleichera oleosa, Cochlospermum religiosum Buchanania lanzan, Azadirachta indica, Casearia graveolens, Ventilago denticulata, Jatropha curcas, Celastrus paniculatus, Eucalyptus spp., Cymbopogon martini and Vetiveria zizanoides.

(j) Paper pulp from Dendrocalamus strictus.

(k) Plates and bowls mainly from leaves of Butea monosperma and Bauhinia vahlii.

(l) Rolling tobacco (bid) for smoking. Leaves of Diospyros melanoxylon for industries. Tribals use leaves of Bauhinia spp.
(m) Thatching & mat-making from *Phoenix acaulis*. *P. sylvestris*. *Imperata cylindrica*. *Saccharum spontaneum* and *Typha angustata*.

(n) Washing from seeds of *Sapindus marginatus*.

(o) Weighing. Seeds of *Abrus precatorius* used by jewellers.

V. Crop Plants

Rice (*Oryza sativa* L.) cultivated in rainy season, is the main crop of the region. The villagers usually boil it with plenty of water till it is turned into a liquid form. This is their staple food and is called 'Pef'. Because of water scarcity usually only one crop is possible. However, irrigation facilities are being developed through tube-wells, and dams like Rudri, Maramsilli, Dudiha, Sondur, Saroda, Pipariya, Ruse, and Tandula etc., with a network of canals.

Besides rice (*Oryza sativa* L.) of which one of the finest variety 'Yamani' is being cultivated around Nagri (in Raipur) the other common crops are bajra (*Pennisetum americanum* (L.) Leeks), bhutta (*Zea mays* L.), jowar (*Sorghum* spp.), kodo (*Paspalum scrobiculatum* L.), wheat (*Triticum aestivum* L.), maria (*Eleusine coracana* (L.) Gaertn.), chana (*Cicer arietinum* L.), matar (*Pisum sativum* L.), moongphali (*Arachis hypogaea* L.) also (*Linum usitatissimum* L.) rai (*Brassica nigra* (L.) Koch), sarson (*Brassica juncea* (L.) Czern. & Coss.), til (*Sesamum orientale* L.) and pulses like teori (*Lathyrus sativus* L.), arhar (*Cajanus cajan* (L.) Millsp.) and urd (*Vigna mungo* (L.) Hepper). Besides, several seasonal vegetables are also grown.

**FLORISTIC ANALYSIS**

The Flora of Raipur, Durg and Rajnandgaon districts deals with 1032 species in 568 genera and 127 families of flowering plants. Out of these 287 species in 136 genera and 25 families belong to Monocots and 745 species in 432 genera and 102 families belong to Dicots. The proportion of Monocots to Dicots is 1 : 2.8 and total genera to species is 1 : 1.8. Taking into account the entire Indian subcontinent, Hooker (1904) gives the proportion of Monocots to Dicots as 1 : 2.3 and genera to species as 1 : 7.

The ten dominant families in the present Flora have been listed below and a comparison has been made with the list given by Hooker (1904) for Flora of British India. Fabaceae, Caesalpinaceae and Mimosaceae though treated separately in the present Flora have been combined below for the sake of comparison only.
TABLE : LARGEST FAMILIES

<table>
<thead>
<tr>
<th>Flora of Raipur, Durg and Rajnandgaon</th>
<th>Flora of British India</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Leguminosae (129 spp.)</td>
<td>1. Orchidaceae</td>
</tr>
<tr>
<td>2. Poaceae (122 spp.)</td>
<td>2. Leguminosae</td>
</tr>
<tr>
<td>3. Cyperaceae (67 spp.)</td>
<td>3. Poaceae</td>
</tr>
<tr>
<td>4. Asteraceae (58 spp.)</td>
<td>4. Rubiaceae</td>
</tr>
<tr>
<td>5. Euphorbiaceae (43 spp.)</td>
<td>5. Euphorbiaceae</td>
</tr>
<tr>
<td>6. Acanthaceae (43 spp.)</td>
<td>6. Acanthaceae</td>
</tr>
<tr>
<td>7. Convolvulaceae (27 spp.)</td>
<td>7. Asteraceae</td>
</tr>
<tr>
<td>10. Rubiaceae (23 spp.)</td>
<td>10. Urticaceae</td>
</tr>
</tbody>
</table>

The Flora contains about 140 tree spp., 71 shrubby spp., 75 climbing or sarmentose spp., and the remaining, almost equally divided, annual or perennial herbs or undershrubs. As per the list given before there are 83 aquatic spp. Epiphytes are poor, being represented only by Dendrophyton falcata, Scirrula parastica, Viscum nepalense, V. orientale, Vanda tessellata and V. testacea. The insectivorous plants are two spp. of Drosera and eight spp. of Utricularia.

RARE AND THREATENED SPECIES

Recent spread in developmental activities, urbanisation, and additional land requirements for farming and grazing etc. are resulting in severe damage to natural habitats, thus threatening the very survival of several species. The necessity of conserving these and others that are being over-exploited for their miscellaneous utilities is now well recognised. Various Organisations like International Union for Conservation of Nature and Natural Resources (IUCN), National Committee on Environmental planning and Coordination (NCEPC) and National Committee on Man and Biosphere (MAB) are interested in listing of species threatened with extinction and measures for their conservation. Recently, Jain & Sastry (Howrah, 1983) have published ‘Materials for a catalogue of threatened plants of India.’ This has provided an essential basis for critical appraisal, additions and deletions, for finalising an account of such species. It may be emphasised that in a country like India where the flora is insufficiently known, the number of Botanic Gardens are limited, and the masses are not yet awakened to the needs of conservation, cordonning off of representative areas with rare and threatened species appears to be the most effective and practical measure.
Analysing the flora of Raipur, Durg and Rajnandgaon districts in this background, after consulting major Indian Herbaria and publications, it is found that the following species endemic to Indian sub-continent have not been collected/rarely collected from any part of the country during the last thirty years.

*Crotalaria notonii, Acacia donaldi, Rotala fysonii, Rauwolfia serpen-
tina, Alstonia venenata, Tylophora macrantha, Utricularia baouleensis,
Vitex pandurata, Polyplacton stylocum, Euplophila explanata, E. herbacea,
Theriophorum minutum, Amorphophallus sylvaticus and Oropetium
villosulum.*

Some of the other rare species only for Madhya Pradesh flora are : *Lea robusta, Myriophyllum oliganthum, Coffea benghalensis, Blumea
hieractifolia, Blepharispermum subsecule, Cuscuta campestris, C. santapau,
Cryptolepis elegans, Ceropogia hirsuta, C. tuberosa, Rhinacanthus nasutus,
Peperomia pellucida, Elatostema cuneatum, Eulophia flava, E. graminea and
Pothamogeum macranthus.*

**STYLE OF PRESENTATION**

The Flora starts with a key to the families following Bentham &
Hooker (1862-1883) system of classification, with some modifications as
per our recent knowledge. Under each family is given a key to genera,
and under each genus a key to species. The keys to families, genera and
species are artificial, formed by the senior author (DMV). In formation
of keys preference has been given to use of macroscopic characters and
to a combination of vegetative, floral and fruiting characters particularly
while dealing with spp. where these phases are known to be widely
separated. Genera and species under each family are arranged alphabeti-
cally. For each species correct botanical name and basionym, if any,
have consistently been given. If the species has been described under
some other name in major Indian Floras, such names have also been
given under synonymy. The literature references have been usually con-
fined to original citation, though it may be mentioned that numerous
publications, including Floras from India and adjacent countries, mono-
graphs and scattered notes in various journals have been consulted in
writing the present Flora. Local names, whenever known, are given at
the end of citations. The species have been briefly described, generally
excluding the characters given in the keys. Data on habitat, altitude,
flowering (fl.) and fruiting (fr.) time are all based on own collections
unless the species has been included on the basis of some other publica-
tion. Under each district, collection localities have been given with
reference to better known places given in the map. Collection
numbers are not given since, unless mentioned otherwise all the specimens are deposited in the Herbarium of the Central Circle, Botanical Survey of India, Allahabad (BSA).

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TAXONOMIC ACCOUNT

KEY TO FAMILIES

(D.M. Verma)


2a. Perianth present, two - several - seriate.

3a. Petals all free or only some united.

4a. Ovary fully superior, or at least one whorl of the perianth hypogynous, or stamens hypogynous or inserted on the top of a hypogynous disk in which the ovary may be immersed.

5a. Stamens more than twice as many as the petals.

6a. Aquatic plants with rotundate peltate leaves. Pistils many, embedded in fleshy turbinate receptacle ... **Nymphaeaceae** 5

6b. Plants not as above.

7a. Stamens all united by filaments.

8a. Trees. Leaves digitately compound, Styles as many as the carpels. Fruit a woody capsule ... **Bombaceae** 19

8b. Plants not as above ... **Malvaceae** 18

7b. Stamens all free, or in five phalanges of three stamens each.

9a. Stamens in five phalanges of three stamens each ... **Sterculiaceae** 20

9b. Stamens all free.

10a. Pistils more than one.

11a. Sepals deciduous. Perianth 3-seriate, 3-merous ... **Annonaceae** 3
11a. Sepals persistent. Perianth 2-seriate. S-merous ... **Dilleniaceae** 2
10b. Pistil one.

12a. Stamens arising from hypophyllium (perigynous) ... **Lythraceae** 50
12b. Stamens arising from receptacle (hypogynous.)

13a. Ovary stipitate, on a gynophore ... **Capparaceae** 8
13b. Ovary sessile.

14a. Flowers unisexual ... **Buthoniaceae** 98
14b. Flowers bisexual.

15a. Leaves pinnately-nerved.

16a. Flowers small, axillary, up to 1.5 cm across; placation axile ... **Liliaceae** 21
16b. Flowers large, terminal, more than 7.0 cm across; placation parietal. ... **Cochlospermaeae** 10

15b. Leaves pinnately-nerved.

17a. Herbs. Sepals 2 ... **Papaveraceae** 6
17b. Trees or shrubs. Sepals 5.

18a. Leaves 3-foliolate, with pellucid, aromatic glands ... **Rutaceae** 27
18b. Leaves simple, without pellucid, aromatic glands.

19a. Flowers ca 1 cm across, in panicles; anthers dehiscing by longitudinal slits. Fruits winged ... **Dipterocarpaceae** 17
19b. Flowers ca 3 cm across, in subcorymbose racemes; anthers dehiscing by pores. Fruits not winged ... **Ochnaceae** 29
5b. Stamens fewer, at the most twice as many as the petals

20a. Leaves scale-like

20b. Leaves well developed, expanded.

21a. Leaves simple.

22a. Ovary one-celled.

23a. Climbers. Flowers 3-merous, unisexual; ovule solitary, marginal

... MENSIPERMAEAE 4

23b. Plants not as above.


25a. Sepals 2, jointed, the free part deciduous. Capsule circumsciss

... PORTULACACEAE 14

25b. Sepals and capsules not as above.

26a. Stamens alternate with the petals

... CARYOPHYLLACEAE 13

26b. Stamens opposite the petals.

27a. Shrubs. Leaves alternate, gland-dotted

... MYRSINACEAE 66

27b. Herbs. Leaves opposite, not gland-dotted

... PRIMULACEAE 65

24b. Placentation parietal or marginal.

28a. Ovules marginal, on one ventral placenta.

29a. Leaves twice-pinnate, rarely phyllodic. Corolla actinomorphic; petals valvate; stamens four-many. Seed with a U-shaped lateral line

... MIMOSACEAE 42
BOTANICAL SURVEY OF INDIA

29b. Leaves simple, digitate or once-twice-pinnate. Corolla zygomorphic; petals imbricate, rarely absent; stamens ten (—five). Seed usually without a lateral line, rarely with a closed line.

30a. Adaxial petal interior (ascending imbrication) or petals absent ... *CASSALPINIA* CEAB 41

30b. Adaxial petal exterior (descending imbrication) ... *FABACEAE* 40

28b. Ovules parietal, on two or more placentas

31a. Plants insectivorous, covered with glandular hairs ... *DROSERAECAE* 44

31b. Plants neither insectivorous, nor covered with glandular hairs.

32a. Ovary stipitate, on elongated gynophore ... *CAPPARACEAE* 8

32b. Ovary sessile or sub sessile.

33a. Slender herbs. Anther connectives produced beyond cells ... *VIOLACEAE* 9

33b. Shrubs. Anther connectives not produced. ... *FLACOURTIA*-CEAB 11

22b. Ovary two- or more celled.

34a. Stamens tetradynamous, 4 long and 2 short ... *BRASSICACEAE* 7

34b. Stamens not tetradynamous.
35a. Flowers irregular.
   36a. Flowers large, more than 1.5 cm long; sepals 3, postarior petaloid, usually spurred; stamens 5; ovary 5-celled ...
       **Balaminaceae 26**

36b. Flowers small, less than 1.0 cm long; sepals 5, inner 2 petaloid; stamens 8; ovary 2-celled ...
       **Polygalaceae 12**

35b. Flowers regular.

37a. Leaves opposite.

39a. Slender herbs.
   39a. Styles 1, ovules free-central ...
       **Lythraceae 50**
   39b. Styles 2-3, ovules axile ...
       **Balanitaceae 16**

38b. Woody shrubs or climbers.
   40a. Stamens 2 ...
       **Oleaceae 69**
   40b. Stamens 10 ...
       **Malpighiaceae 23**

37b. Leaves alternate.

41a. Flowers all unisexual.
   42a. Pistil 1 ...
       **Euphorbiaceae 98**
   42b. Pistils 3-6 ...
       **Mimosaceae 4**

41b. Flowers all bisexual or intermixed with unisexuals.

43a. Plants climbing or creeping, with tendrils ...
       **Vitaceae 35**

43b. Plants of various habits, without tendrils.
   44a. Leaves with pellucid, aromatic glands ...
       **Kutacae 27**
   44b. Leaves without pellucid, aromatic glands.

45a. Petals 2, of which 2 are deeply bifid; fertile stamens 3, opposite the petals, staminodes 6, bifid ...
       **Olacaceae 32**

45b. Flowers not as above.
46a. Sepals and petals 5. Imbricate or contorted; stamens alternating with staminodes; filaments connate at the base; ovary 3 - 5 - celled but spuriously 6 - 10 - celled due to secondary placentae. **Linaceae 22**

46b. Plants not as above.

47a. Stamens opposite the petals ... **Rhamnaceae 34**

47b. Stamens alternating with the petals.

48a. Venation pinnate ... **Celastraceae 33**

48b. Venation palmate.

49a. Stamens united below ... **Sterculiaceae 20**

49b. Stamens free ... **Tiliaceae 21**

21b. Leaves compound.

50a. Ovary one-celled.

51a. Styles 3 - 4; ovule one, basal ... **Anacardiaceae 38**

51b. Style 1; ovules usually two or more.

52a. Trees with 2 - 3 - pinnate leaves. Stamens 5; staminodes 5 - 7. Fruit a ribbed cylindrical 3 - valved capsule ... **Moringaceae 39**

52b. Plants not as above.

53a. Leaves twice - pinnate, rarely phyllocladic. Corolla actinomorphic; petals valvate; stamens four - many. Seed with a U - shaped lateral line. ... **Mimosaceae 42**

53b. Leaves simple, digitate or once - twice - pinnate. Corolla actinomorphic; petals imbricate, rarely absent; stamens ten (- five). Seed usually without a lateral line, rarely with a closed line.

54a. Adaxial petal interior (ascending imbrication) or petals absent ... **Casalpiniaceae 41**

54b. Adaxial petal exterior (descending imbrication) ... **Fabaceae 49**

50b. Ovary two - or more - celled.

55a. Plants herbaceous.

55a. Leaves alternately compound ... ** Sapindaceae 37**

55b. Leaves ternately or pinnately compound.
57a. Leaves opposite, pinnately compound ... Zygophyllaceae 24
57b. Leaves alternate, ternately or pinnately com-
    pound ... Oxalidaceae 55
58b. Trees or shrubs, without tendrils.
59a. Leaves with pellucid, aromatic glands ... Rutaceae 27
59b. Leaves without pellucid, aromatic glands.
60a. Flowers regular, at least some uni-
    sexual; stamens appended by
    styles at the base ... Simaroubaceae 26
60b. Flowers and stamens not as above.
61a. Flowers often irregular; disc extrastaminal ...
    Sapindaceae 37
61b. Flowers regular; disc intrastaminal.
62a. Stamens twice as many as the petals; filaments
    free, or connate at the base only ... Rubiaceae 30
62b. Stamens either less than twice as many as the
    petals, or the filaments united into a tube ... Malvaceae 31
4b. Ovary fully inferior, or perianth and stamens
    perigynous.
63a. Stamens more than twice as many as the petals.
64a. Aquatic plants ... Nymphaeaceae 5
64b. Terrestrial plants.
65a. Flowers unisexual; styles 2-4 ... Bignoniaceae 54
65b. Flowers bisexual; style 1.
66a. Plants spiny, succulent, almost leafless. Petals
    many ... Cactaceae 55
66b. Plants unarmed, woody, leafy
    Petals four - ten.
67a. Leaves opposite, gland-dotted ...
67b. Leaves alternate, not gland-dotted ...
   68b. Stamens twice as many as the petals, or less.
   69a. Aquatic plants. Leaves narrowly simple, linear, lower pinnately dissected. Flowers in axillary fascicles; stigmas 2-4, plumose, sessile ...
   68b. Plants not as above.
      69a. Aquatic plants. Floating leaves rhomboid. Fruits 2-spined ...
      69b. Plants not as above.
   70a. Herbs. Inflorescence umbellate. Styles 2. Fruit of two mericarps ...
   70b. Plants not as above.
      71a. Fruits winged ...
      71b. Fruits not winged.
   72a. Ovary one-several-celled; ovules on axile, parietal or central placenta.
   73a. Leaves basal or opposite, palmately nerved. Stamens geniculate; anthers opening by pores ...
   73b. Leaves cauline, alternate, pinnately nerved. Stamens not geniculate; anthers opening by slits ...
   74a. Slender herbs. Ovules many in each cell ...
   74b. Trees or shrubs. Ovule solitary in each cell ...

   Myrtaceae 47
   Lecythidaceae 48
   Haloragaceae 45
   Euphorbiaceae 52
   Apiaceae 58
   Combretaceae 46
   Melastomataceae 49
   Onagraceae 51
   Vahliaeae 43
   Alangiaceae 59
3b. Petals all united, at least at the base.

75a. Stamens more than the corolla lobes.

<table>
<thead>
<tr>
<th>76a. Ovary inferior</th>
<th>Cactaceae 55</th>
</tr>
</thead>
<tbody>
<tr>
<td>76b. Ovary superior</td>
<td></td>
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</tbody>
</table>

77a. Leaves usually compound, Ovary of one carpel with marginal placenta
tion. Fruit a legume, sometimes indehiscent or lomentoid.

| 78a. Leaves twice-pinnate, rarely phylloid. Corolla actinomor-
      phic; petals salviate. | Monocotyledons 42 |
|---------------------------|-------------------|
| 78b. Leaves simple, digitate or one-pinnate. Corolla zyemo-
      morphic, petals imbricate | Fabaceae 40 |

77b. Leaves always simple, Ovary of two or more carpels with axillary placenta
tion. Fruit a berry.

<table>
<thead>
<tr>
<th>79a. Flowers usually unisexual corolla urceolate, 3-5-lobed</th>
<th>Ebenaceae 63</th>
</tr>
</thead>
<tbody>
<tr>
<td>79b. Flowers always bisexual; corolla rotate or campanulate, usually 8-lobed</td>
<td>Sapotaceae 67</td>
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78b. Stamens as many as the corolla lobes, or less

80a. Ovary partly or wholly inferior.

<table>
<thead>
<tr>
<th>81a. Creepers or climbers with tendrils</th>
<th>Cucurbitaceae 53</th>
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<tr>
<td>81b. Plants of various habits, without tendrils</td>
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82a. Anthers united around the style (syngenous).

<table>
<thead>
<tr>
<th>83a. Flowers in involucrate heads; ovary one-celled</th>
<th>Asterales 61</th>
</tr>
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<td>83b. Flowers not in heads; ovary two- or more-celled</td>
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<thead>
<tr>
<th>84a. Stamens 2</th>
<th>Stylidaceae 62</th>
</tr>
</thead>
<tbody>
<tr>
<td>84b. Stamens 4 - 6</td>
<td>Campanulaceae 63</td>
</tr>
</tbody>
</table>
82b. Anthers free.

85a. Leaves opposite or apparently whorled due to foliaceous stipules ... Rubiaceae 60

85b. Leaves alternate ... Campanulaceae 63

80b. Ovary superior.

86a. Stamens opposite the corolla lobes.

87a. Ovary one-celled; placentation free-central.

88a. Flowers long-tubular; calyx with stalked glands; styles 5 ... Plumbaginaceae 64

88b. Flowers rotate; calyx not glandular; style 1.

89a. Shrubs. Leaves alternate. Perianth gland-dotted. Fruits fleshy ... Myrsinaceae 66

89b. Herbs. Leaves usually opposite. Perianth not gland-dotted. Fruits circumscissile ... Primulaceae 65

87b. Ovary two-many-celled; placentation axile.

90a. Leaves compound. Stamens united by filaments ... Lecythidaceae 36

90b. Leaves simple. Stamens free.

91a. Flowers bisexual; corolla rotate, usually 8-lobed; stamens epitepalous ... Sapotaceae 61

91b. Flowers unisexual; corolla urceolate, 3-5 lobed; stamens free from the corolla lobes ... Ebenaceae 68

86b. Stamens alternate with the corolla lobes.

92a. Corolla irregular; stamens 2 or 4.

93a. Inflorescence usually with conspicuous bracts. Fruits elastically dehiscent; seeds often on upcurved processes ... Acanthaceae 84

93b. Plants not as above.

94a. Ovules and seeds few.

95a. Ovary 4-lobed; style arising from between the lobes of the ovary ... Lamiaceae 85

95b. Ovary not lobed; style terminal

96a. Plants viscid hairy ... Pedaliaceae 83

96b. Plants not viscid hairy ... Verbascum 85
94b. Ovules and seeds many.

97a. Leaves compound. Seeds winged ... BIGNONIACEAE 82

97b. Leaves simple or dissected. Seeds not winged.

98a. Plants of aquatic or wet places, typically with small insectivorous bladders. Placental free - central ... LENTIBULARIACEAE 80

98b. Plants of various habitats, never insectivorous. Placental parietal or axile.

99a. Plants root - parasites. Leaves scale - like. never green ... OROBANCHACEAE 79


100a. Placental axillary, solid and unbranched ... SCROPHULARIACEAE 78

100b. Placental parietal, sometimes intussuscepted and meeting below middle of locule but branched or winged.

101a. Perianth 4 - 5 - merous; corolla convolute ... GENTIANACEAE 73

101b. Perianth 5 - merous; corolla imbricate or valvate ... Gesneriaceae 81

92b. Corolla regular; stamens usually 5

102a. Leaves alternate.

103a. Flowers in scorpionoid cymes or the calyx with appended sinuses; style terminal or gynobasic.

104a. Style terminal. Fruit a capsule, usually many seeded ... HYDROPHYLLACEAE 74

104b. Style usually gynobasic.

Fruit of 4 nuts, rarely a drupe ... Boraginaceae 75
103b. Flowers neither in scorioid cymes (though often in dichasia) nor the calyx appendaged; style always terminal.

105a. Placentation parietal ... Gentianaceae 73

105b. Placentation axile.

106a. Ovules numerous in each cell ... Solanaceae 77

106b. Ovules one - two in each cell.

107a. Sepals free; corolla lobes contorted and infolded. Fruit a capsule ... Convolvulaceae 76

107b. Sepals connate; corolla lobes imbricate. Fruit dry with 4 nutlets or drupaceous with 1 - 4 - called pyrene Boraginaceae 75

102b. Leaves opposite.

108a. Stamens two ... Oleaceae 69

108b. Stamens four or more.

109a. Carpels united only at the stigmatic disc; pollen in pollinia ... Asclepiadaceae 71

109b. Carpels and pollen not as above.

110a. Plants with milky sap. Corolla lobes contorted in bud. Fruit often of two follicles and seeds with milky appendage ... Apocynaceae 70
110b. Plants with clear sap. Corolla lobes contorted or not. Fruits never follicular.

111a. Hairy herbs. Anthers connate into a cone. Connectives produced and twisted around each other. Fruit of 4 awns. ... **Boraginaceae** 75

111b. Plants not as above.

112a. Flowers zygomorphic ... **Verbenaceae** 85

112b. Flowers actinomorphic

113a. Placentation axile ... **Loganiaceae** 72

113b. Placentation parietal ... **Gentianaceae** 73

2b. Perianth absent, or if present then uni-seriate.

114a. Plants submerged.

115a. Plants thalloid, attached to rocks in streams ... **Podostemaceae** 92

115b. Plants leafy, free floating ... **Ceratophyllaceae** 102

114b. Plants not submerged.

116a. Perianth absent.

117a. Flowers in cyathia; a naked female flower surrounded by several male flowers; each of a single jointed stamen - the whole cluster subtended by often caploid or petaloid involucral bracts and forming a bisexual pseudoflower ... **Euphorbiaceae** 98

117b. Flowers in spikes ... **Piperaceae** 94

116b. Perianth present.

118a. Ovary inferior or half-inferior.

119a. Plants stem - parasites ... **Loranthaceae** 96

119b. Plants free living or root-parasites (in Santalaceae).

120a. Plants herbaceous, erect or creeping.

121a. Leaves alternate.

Flower showy, ca 1 cm or more long, unisexual ... **Bromeliaceae** 54
121b. Leaves opposite. Flowers minute, 2 - 5 mm long, bisexual.

122a. Leaves subsessile. Perianth calycine

122b. Leaves petiolate. Perianth connate

Lythraceae 50

Nyctaginaceae 87

120b. Plants woody, usually trees or shrubs.

123a. Perianth 2 - 3 - lobed; ovary 6 - celled, ovules many ...

Aristolochiaceae 93

123b. Perianth 4 - 5 - lobed; ovary 1 celled, ovules 1 - 3.

124a. Stamens 4 - 5, as many as the calyx lobes ...

Santalaceae 97

124b. Stamens 8 - 10, twice as many as the calyx lobes ...

Combretaceae 46

118b. Ovary superior.

125a. Anthem opening by 2 or 4 upcurled lids ...

Lauraceae 95

125b. Anthem not opening as above.

126a. Pistil two or more (carpels free).

127a. Trees ...

Sterculiaceae 20

127b. Herbs or climbing bushes

Ranunculaceae 1

126b. Pistil solitary (carpels solitary or united).

128a. Ovary 2 - 5 - celled.

129a. Ovules many in each cell ...

Molluginaceae 57

129b. Ovules one, three in each cell.

130a. Ovules axile ...

Euphorbiaceae 98

130b. Ovules all or mostly basal.

131a. Slender herbs. Capsules circumscissile ...

Aizoaceae 56

131b. Trees, shrubs or climbers. Fruit not circumscissile.
132a. Plants armed. Leaves simple, 3-nerved ... **Rhamnaceae 34**

132b. Plants unarmed. Leaves compound or if simple then not 3-nerved ... **Sapindaceae 37**

132b. Ovary 1-celled.

133a. Plants twining. Female flower with a single petal; male flower with a corolline cupule ... **Menispermaceae 4**

133b. Plants not as above.

134a. Herbs with ochraceous stipules ... **Polygonaceae 91**

134b. Plants not as above.

135a. Plants herbaceous.

136a. Perianth and bracts scarious; stamens often connate below ... **Amaranthaceae 88**

136b. Perianth and bracts not scarious; stamens free.

137a. Leaves 3-nerved from the base. Flowers unisexual; style unbranched ... **Urticaceae 99**

137b. Leaves pinnately nerves. Flowers bisexual; style branched.

138a. Twining herbs. Bracteoles adnate to the perianth; anthers versatile ... **Basellaceae 90**

138b. Erect herbs. Bracteoles free from the perianth; anthers erect or incurved ... **Chenopodiaceae 89**

133b. Plants woody.

139a. Stipules absent ... **Plagiochilaceae 11**

139b. Stipules present.

140a. Style branched.

141a. Anthers inserted and reversed in bud; ovule 1, apical ... **Moraceae 101**
141b. Anthers erect in bud; ovules 1-2, apical or basal.

142a. Ovule 1, apical ... Ulmaceae 100
142b. Ovules 2, basal ... Euphorbiaceae 98

140b. Style unbranched.

143a. Placentation parietal ... Flacourtiaeae 11
143b. Placentation otherwise.

144a. Ovule apical ... Monaceae 101
144b. Ovule basal ... Urticaceae 99


145a. Free-floating thallus-like small aquatic herbs. Flowers minute, unisexual, naked, borne in pouches or cavities ... Lemnaceae 119

145b. Plants not as above.

146a. Trees, shrubs or scramblers with plicate or pinnately divided leaves. Flowers 3-merous, in fleshy spikes or panicles with spathe-like bracts ... Arecaceae 115

146b. Plants not as above.

147a. Dioecious spiny trees or shrubs with long linear leathery leaves, often supported by stiff roots. Perianth rudimentary. Fruit a syncarp ... Pandanaceae 116

147b. Plants not as above.

148a. Inflorescence a spadix of inconspicuous flowers subtended by a spathe which is usually large and showy. Fruit a berry ... Araceae 118

148b. Plants not as above.

149a. Tall aquatic monoecious herbs. Leaves basal, striate, cylindrical above the sheath. Flowers in two cylindrical superposed spikes ... Typhaceae 117

149b. Plants not as above.
150a. Inflorescence a head subtended by an involucre of bracts. Flowers unisexual; perianth typically biseriate, 2-3-merous, though sometimes petals absent ... **CYPRESSACEAE 125**

150b. Plants not as above.

151a. Flowers inconspicuous, subtended by glumaceous bracts and arranged in variously disposed spikelets; perianth absent, or represented by bristles, scales or lodicules.

152a. Stems usually solid and 3-angled. Leaf-sheaths usually closed. Flower subtended by a single glume; anthers basifixed ...

**CYPRESSACEAE 126**

152b. Stems usually with hollow internodes and terete. Leaf-sheaths usually open. Flower enclosed by two glumes (sometimes one or both absent), lemmas and paleae, anther mostly dorsifixed and versatile ...

**POACEAE 127**

151b. Plants not as above.

153a. Ovary superior.

154a. Submerged aquatic herbs with linear denticulate leaves axilely sheathing at the base. Flowers inconspicuous, unisexual ... **NAJADACEAE 122**

154b. Plants not as above.

155a. Carpels several, free.

156a. Inflorescence spicate.

157a. Perianth segments 1 - 3; stamens 5 or more; carpels 3 - 6 **APONDGETONACEAE 123**

157b. Perianth segments, stamens and carpels each 4 **POTAMOGETONACEAE 124**

156b. Inflorescence various but never spicate.

158a. Inflorescence mostly an umbel. Ovules many in reticulately branched parietal placentia. Fruiting carpel 9 - 12 mm long, dehiscent ... **BUTOMACEAE 121**
158b. Inflorescence a panicle, a raceme or a
raceme of whorled flowers. Ovule solitary,
basal. Fruitting carpels 1-3 mm long, indehiscent ... **Alismataceae 120**

159b. Carpels solitary or united.

159a. Perianth biseriate with the outer whorl sepaloid and inner whorl petaloid ... **Commelinaeae 114**

159b. Perianth uniseriate, or if biseriate then the inner and the outer whorls similar, often petaloid or united into a tube below.

160a. Rootstock usually a bulb. Leaves radical and mostly linear. Flowers arranged in a
cospoese umbel subtended by membranous spathaceous bracts ... **Amaryllidaceae 107**

160b. Plants not as above.

161a. Aquatic herbs. Inflorescence sub-
tended by a spath-like leaf sheath ... **Pontederiaceae 113**

161b. Dry-land herbs or climbers. Inflo-
rescence not subtended by a spath-like leaf sheath.

162a. Leaves 2-5 nerved, with
reticulate venation. Flowers
mostly dioecious; anthers one-celled ... **Smilacaceae 112**

162b. Leaves mostly with parallel
nerves and veins. Flowers
mostly bisexual; anthers usually two-celled **Liliaceae 111**

153b. Ovary inferior or half-inferior.

163a. Climbers. Flowers unisexual. Capsules winged **Dioscoraceae 110**

163b. Plants not as above.

164a. Aquatic herbs. Flowers mostly uni-
sexual, solitary or the male several
within two-folded or one blind bract **Hydrocharitaceae 103**

164b. Terrestrial or epiphytic herbs. Flowers
bisexual.

165a. Inflorescence umbellate with spatha-
ceous bracts and an involucre of
filiform bracteoles ... **Taccaceae 109**
165b. Inflorescence not as above.

166a. Flowers actinomorphic.

167a. Delicate annual herbs. Leaves usually reduced to a few scales. Ovary with elliptic-ovate wings. Burmanniaceae 104

167b. Rather stout perennial herbs. Leaves well developed, plicate. Ovary not winged. Hypoxidaceae 108

166b. Flowers zygomorphic, with a conspicuous lip.

168a. Lip formed by modification of the median petal; staminodes absent; stamen united with the stigma-bearing column; pollen usually in pollinia. Orchidaceae 105

168b. Lip formed by modification of the staminodes; two additional petaloid staminodes often present; stamen not borne on a column; pollen not in pollinia. Zingiberaceae 106
ENUMERATION

1. RANUNCULACEAE
   (D.M. Verma & M.I. Hanfi)

1a. Climbing shrubs. Leaves cauline, opposite.
   2a. Leaf terminated by leaflet. Petals absent ... Clematis 1
   2b. Leaf terminated by tendril. Petals present ... Naravelia 2

1b. Herbs. Leaves radical or if cauline then alternate.
   3a. Sepals sepaloid; petals 4 - 5 ... Ranunculus 4
   3b. Sepals petaloid; petals absent or nectarial.
      4a. Flowers panicked; on 5 mm across ... Thalictrum 5
      4b. Flowers solitary, 20 - 25 mm across ... Nigella 3

1. Clematis L.


Climbing shrubs with hairy grooved branches. Leaves pinnately compound; leaflets ovate lanceolate, acuminate, 3 - 6 cm long, entire or toothed. Panicles large, trichotomously branched. Flowers white or yellowish, scented; sepals ca 8 mm long, ciliate; stamens and carpels many.

On hedges; 300 m.

Fl. & Fr.: October January.

RAIPUR: Raipur.

2. Naravelia DC.


Climbing shrubs with pubescent branches and tuberous roots. Leaves 3 - foliolate. Lateral leaflets ovate orbicular, 10 - 15 x 6 - 8 cm, terminal leaflet modified into a branched tendril. Flowers in 10 - 20 cm long
panicles, yellowish white or greenish, 1-2 cm across; petals linear. Achene villous.

In drains: 300 m.

Fl. & Fr.: September.


3. Nigella L.


Erect annual herbs, 30-50 cm high. Leaves pinnately dissected, 3-5 cm long, segments linear-lanceolate. Flowers solitary, terminal, long peduncled, ca 2 cm across; pale blue; sepals clawed; petals 8; geniculate. Fruit sub-capsular, ca 1 cm long.

In cultivated fields: 300 m.

Fl. & Fr.: February.

RAIPUR: Raipur.

4. Ranunculus L.


Erect annual herbs, 10-50 cm high. Leaves radical and cauline, lower long petioled, 3-partite, with the segments again variously lobed, upper sessile, uppermost frequently simple, linear-lanceolate. Flowers numerous, terminating the branchlets and in the forke of the branchlets, ca 7 mm across; petals white. Achene numerous, apiculate.

Along ponds: 300 m.

Fl. & Fr.: January.

RAIPUR: Raipur.

5. Thalictrum L.

Thalictrum javanicum Bl. Bijdr. 2. 1825.

Slender erect fern-like herbs, ca 40 cm high. Leaves ternately decomposed; leaflets roundish, lobulate, 3-25 mm long. Panicles
terminal, large and lax. Flowers small; filaments rather club shaped; carpels many. Achenes with a prominent hooked beak.

Among boulders; 800 m.

FL. & FR.: September.

RAJNANDGAON: Chilpi.

2. DILLENIACEAE

(M. Verma & M.I. Hanfi)

1. Dillenia L.

1a. Flowers white. Fruits 8 - 10 cm across

1b. Flowers yellow. Fruits 1.5 - 3.0 cm across.

2a. Flowers 2 - 3 cm across. Fruits ca 1.5 cm across

2b. Flowers 10 - 12 cm across. Fruits ca 3 cm across

D. indica 2

D. pentagyna 3

D. aurea 1


Small deciduous crookedly branched trees. Leaves 20 - 40 x 10 - 25 cm, entire or denticulate. Flowers solitary on leafless branches; anthers opening by apical pores; carpels 10 - 12. Fruits subglobose, orange yellow.

In sal forests; 450 500 m.

FL. : April; FR. : March January.

RAIPUR: Khallari, Taurenga.


Large evergreen trees. Leaves 15 - 30 x 5 - 12 cm, dentate. Flowers solitary, 15 - 20 cm across; sepals fleshy; inner stamens with reflexed tips; carpels 14 - 20. Fruits yellowish green; seeds spinulose.

Sometime planted.

FR.: September.

RAJNANDGAON: Rajnandgaon.

Deciduous trees. Leaves 20 50 x 10 20 cm, entire or denticulate. Flowers two to several together on short leafless branches; anthers opening by longitudinal slits; carpels 5. Fruits orange red.

Fl. : March April; Fr. : May.


3. ANNONACEAE
(D.M. Verma & P.C. Pant)

(Annona reticulata L., Artabotrys hexapetalus (L.f.) Bhandari, and Polyalthia longifolia (Sonner.) Thw. are found planted in the gardens).

1a. Flowers greenish white; connectives broad and overlapping, concealing the anther cells. Carpels sub-ovoid, ultimately forming a syncarpous fruit... Annona 1

1b. Flowers purple; connectives narrow, not concealing the anther cells. Carpels always free... Miliusa 2

1. ANNONA L.


Small trees. Leaves oblong lanceolate, 5 10 cm long. Flowers on extra-axillary peduncles, 2 3 cm long, greenish white; tepals in two series; carpels 1 ovuled. Fruit of numerous fused carpels, fleshy, sub-globose, areolate, 4 8 cm across, glaucous green, drying black.

Cultivated for its edible fruits, also running wild; 300 700 m.

Fl. : April May;
Fr. : August September.


2. MILIUSA Leschm. ex DC.


Moderate sized deciduous trees, young branches tomentose. Leaves ovate oblong, 7 × 5 cm, deciduously tomentose beneath. Flowers ca 2 cm across, long pedicelled, on short leaf-opposed peduncle; sepals of the outer two series small, those of the innermost third series petaloid, saccate at the base. Ripe carpels 5-10, subglobose, ca 2 cm long, purple.


4. MENISPERMACEAE
(D.M. Verma & M.I. Hafiz)

1a. Leaves orbicular - reniform, peltate, glaucous beneath. Male sepals and petals 4 each. Female flowers with foliaceous bracts. ... Cissampelos 1

1b. Leaves ovate - oblong or lanceolate, neither peltate nor glaucous. Male sepals and petals 6 each. Female flowers without foliaceous bracts. ... Cocculus 2

1. Cissampelos L.


Slender climbing shrubs. Leaves 4-10 cm long and equally broad, subcordate, mucronulate. Flowers unisexual. ca 1 mm long; female sepal, petal and carpel all solitary. Fruits globose, ca 3 mm across, red.

Common on roadside and forest trees and shrub; 300-800 m.

Fl. & Fr.: August January.


Roots and leaves medicinal.
2. COCCULUS DC.

*Coccus hirsutus* (L.) Diels in Pflanzenr. heft 46: 236. 1910

Climbing shrubs, young parts villous. Leaves 3-6 x 1-4 cm, mucronulate. Flowers unisexual, ca 1 mm long; carpels 3. Fruits globose, ca 3 mm across, deep purple.

On roadside trees and shrubs; 300-500 m.

*Fl.* & *Fr.*: May January.

RAIPUR: Raipur, Sitanadi. RAJNANDGAON: Rajnandgaon.

5. NYMPHAEA C. A. F.

(D. M. Verma)

1a. Leaves palmately-nerved, retuse at the base. Carpels free, sunk into pits of the obconic spongy torus

... *Nelumbo* 1

1b. Leaves pinnately-nerved, cordate or sagittate at the base. Carpels more or less connate into a syncarpous ovary

... *Nymphaea* 2

1. *Nelumbo* Adans.


Perennial aquatic herbs. Leaves usually slightly emerged, orbicular, peltate, up to 35 cm across, glaucous above; petioles and peduncles sparsely prickly. Flowers solitary, pinkish white with darker tips; petals several 4-12 mm long.

In ponds; 300-400 m.

*Fl.*: May August.

RAIPUR: Dhamtari, Gariyander.

Rhizomes and carpels eaten cooked.

2. *Nymphaea* L.

1a. Leaves glabrous beneath. Stamens appended

... *N. nouchali* 1

1b. Leaves pubescent or villous beneath. Stamens not appended.
2a. Flowers white or outer few petals purple tinged at the tips; stamens yellow ... N. pubescens 2

2b. Flowers carmine red; stamens purple ... N. rubra 3


Perennial aquatic herbs with a small corm. Leaves rotundate, ca 10 cm across, entire or sinuate margined, glabrous beneath. Flowers ca 5 cm across, pink; stamens appendaged.

In shallow ponds; 450 m.

Fl. : June.

RAIPUR : Taurenga.


Aquatic rhizomatous herbs. Leaves oblong or rotundate, hastate, entire or sinuate margined, villous beneath; petioles and peduncles smooth, purplish. Flowers purple white; petals ca 5 cm long; stamens and stigmas pale yellow.

In ponds; 300 m.

Fl. : October.

RAIPUR : Raipur.


Aquatic rhizomatous herbs; petioles and peduncles smooth. Leaves rotundate, denticulate, ca 20 cm across, purplish, villous beneath. Flowers carmine red; petals linear oblong, ca 5–7 cm long; anthers purplish black.

In ponds; 400–500 m.

Fl. : October January.

RAIPUR : Pithora, Raipur, Sihawa.

Rhizomes eaten cooked.
6. PAPAVERACEAE
(M. I. Handi)
ARGEMONE L.


Perennial glaucous green prickly herbs, 30–50 cm high. Leaves sinuately lobed, 5–12 × 2–5 cm, with white stripes along the nerves. Flowers yellow; petals biseriate, soon falling; stigmas red. Capsules ca 3 cm long; seeds black.

In wastelands, 300–500 m.

Fl. & Fr.: January–September.


7. BRASSICACEAE
(D. M. Verma & P. C. Pant)

1a. Flowers white or pinkish. Fruits broadly elliptic or suborbicular, compressed ...
    Lepidium 2

1b. Flowers yellow. Fruits elongated, subcylindric.

2a. Lateral sepals saccate at the base. Fruits with a seedless indehiscent beak ...
    Brassica 1

2b. Sepals not saccate. Fruits mucronulate, not beaked ...
    Rorippa 3

1. BRASSICA L.

1a. Upper leaves amplexicaul and auricled at the base R. rapa spp. 2
    campestris

1b. Upper leaves not amplexicaul, narrowed at the base ...
    B. juncea 1


Annual, slender or rather stout herbs, 10–30 cm high. Lower leaves long petiolate, lyrate-pinnatifid, upper sessile, subentire, margins denteate. Flowers ca 5 mm across. Siliquae 2–4 cm long.
Cultivated for its oilseeds, sometimes found as escape; 300–400 m.

*Fl. & Fr.: January.*

**RAIPUR:** Dugli.


Annual herbs. Lower leaves lyrate - pinnatifid, 10–30 cm long, upper entire or subentire, smaller. Flowers 5–7 mm across, congested at the tips of the elongating racemes. Silicae beak about one half to one third as long as the valves.

Cultivated for its oilseeds, sometimes found as escape, 300–350 m.

*Fl. & Fr.: August–September*

**RAIPUR:** Dhamtari.

2. **Lepidium L.**


Annual glabrous or pubescent herbs, 30–60 cm high. Leaves 4–10 cm long, lower pinnatisect, upper entire or subentire. Flowers 2–3 mm across, in elongating racemes. Siliculae 4–6 mm long, narrowly winged.

A weed of cultivated fields; 300 m.

*Fl. & Fr.: January.*

**RAIPUR:** Raipur.

3. **Rorippa Scop.**


Annual or biennial herbs, 30–50 cm high. Leaves lyrate pinnatifid to almost entire, toothed. Flowers racemose, ca 2 mm across. Siliculae on slender pedicels, linear or linear oblong, 10–15 mm long.

In wastelands; 300 m.

*Fl. & Fr.: January.*

**RAIPUR:** Raipur.
8. CAPPARACEAE
(D. M. Verma)

1a. Shrubs. Fruits oblong-globose, indehiscent ... Capparis 1

1b. Herbs. Fruits narrow, subcylindrical, dehiscing
by two valves ... Cleome 2

1. Capparis L.

Capparis zeylanica L. Sp. Pl. ed. 2, 720. 1762. 'Karawa'.

Sermentose shrubs with short recurved spines, young parts fuscous
tomentose. Leaves coriaceous, ovate oblong, 3-4 \times 2-4 \text{ cm}. Flowers
pinkish white, 4-5 cm across. Fruits hanging on long woody stalks, bright
red.

Along roadside and forest margins; 300-500 m.

Fl. : April; Fr. : May August.

RAIPUR : Dhamtari, Gariaband, Raipur.

2. Cleome L.

1a. Leaves simple ... C. monophylla 3

1b. Leaves digitately compound.

2a. Plants glabrous. Petals ca 20 mm long, rose-purple ... C. chelidonii 1

2b. Plants, at least on the younger parts, glandular
hairy. Petals 7-10 mm long, white, yellow or
purplish.

3a. Petals white or purplish; stamens and carpel
borne on a long stalk (gynandrophere), much
above the insertion of the perianth; stamens 6.
Pedicel of the capsule jointed ... C. gynandra 2

3b. Petals yellow; stamens and carpel borne just
above the insertion of the perianth; stamens
many. Pedicel of the capsule not jointed ... C. viscosa 4


Annual herbs, 40-80 cm high. Leaves 3/7-foliate; leaflets
10-30 \times 2-8 \text{ mm}. Flowers on 2.5-3.5 cm long pedicels; sepals ca
3 mm long; stamens numerous; filaments swollen at the tips, anthers purplish black. Capsules beaked, 7 – 9 cm long.

Locally abundant in paddy fields; 300 m.

Fl. & Fr.: August.

RAIPUR: Dhamtari.


Foetid smelling herbs, 30 – 80 cm high. Leaves 3 – 5 foliolate; leaflets unequal, obovate, larger ones 2 – 3 × 1 – 2 cm. Flowers in elongating corymbiform racemes; sepals 2 – 3 mm long; petals clawed, *gynandrophan* 1 – 2 cm long; stamens purple. Capsules 4 – 7 cm long.

In wastelands; 300 m.

Fl. & Fr.: September – January.

RAIPUR: Raipur. RAJNANDGAON: Chichola.

Tender parts sometimes eaten cooked.


Glandular hairy herbs, 30 – 60 cm high. Lower leaves long petioled, 3 – 5 × 0.5 – 1.5 cm, upper subsessile, shorter. Flowers pale purple, in elongating corymbiform racemes; sepals ca 4 mm long; petals clawed, ca 6 mm long; stamens 6. Capsules 5 – 7 cm long.

In wastelands; 400 – 500 m.

Fl. & Fr.: May – October.

RAIPUR: Sitanadi. RAJNANDGAON: Deopura.


Annual herbs, 10 – 100 cm high. Leaves usually 3 sometimes 5 foliolate; leaflets obovate or oblancofoliate, 1.5 – 3.5 × 0.7 – 1.5 cm. Flowers in elongating corymbiform racemes; sepals 5 – 8 mm long; anthers blackish. Capsules 4 – 8 cm long, beaked, sometimes curving upwards.

In wastelands, forest margins & sandy river beds; 300 – 700 m.
Fl. & Fr. : May - January.


9. VIOLACEAE
(M. I. Hanfi)
HYBANTHUS Jacq.

Hybanthus enneaspermus (L.) F. V. Muell. Fragm. 10 : 81. 1876 ;
1753. V. suffruticosa L. Sp. Pl. 937. 1753. Ionidiun enneaspermum Vent,
Jard. Malm. Sub. t. 27. 1803 ; Dalz. & Gibbs., Bombay Fl. 12. 1861. I.

Perennial diffuse herbs, branches ascending, 5 - 20 cm long. Leaves
linear lanceolate, 7 - 40 × 2 - 7 mm. Flowers solitary axillary on slender
pedicels, ca 5 mm long, violet, blue, mauve or orange red ; lower petal
spurred. Capsules globose, stramineus, ca 5 mm across.

In wastelands & forest floors ; 250 - 350 m.

Fl. & Fr. : AugustNovember.

DURG : Balod. RAIPUR : Dhamtari, Raipur, RAJNANDGAON :
Chichola, Baghnadi, Singhari.

10. COCHLOSPERMACEAE
(M. I. Hanfi)
COCHLOSPERMUM H. B. K.

Cochlospermum religiosum (L.) Alston in Trimen, Handb. Fl. Ceylon
gossypium DC. Prodr. 1 : 527. 1824. 'Gengal'.

Small deciduous soft wooded trees. Leaves palmately 3 - 5 - lobed,
8 - 20 cm broad. Flowers in few - flowered panicles, 9 - 12 cm across,
bright yellow ; petals 5 ; stamens many. Capsules pendulous, ca 10 × 5
cm, purplish black.

In miscellaneous forests ; 450 - 550 m.
**Flora of Raipur**

*Fl. & Fr.:* January - June.

DURG: Amsabad. RAIPUR: Gariaband, Laturanga. RAJNANDGAON: Takajee.

11. **Flacourtiaiceae**  
(D. M. Verma)

1a. Plants unarmed. Flowers bisexual. Fruit an ellipsoid capsule, 15 - 25 mm long … *Casearia 1*

1b. Plants usually thorny. Flowers unisexual. Fruit a globose berry, 5 - 10 mm long … *Flacourtia 2*

1. **Casearia Jacq.**

1a. Leaves tomentose … *C. elliptica 1*

1b. Leaves glabrous … *C. graveolens 2*


- Shrubs with young branches deciduously grey tomentose. Leaves distichous, elliptic oblong, 10 - 15 x 3 - 6 cm, subentire or crenulate. Flowers axillary, *ca* 5 mm across; stamens 6 - 10. Capsules usually in leafless axils, 20 - 25 mm long; seeds yellow, stilt scarlet.

- Frequent in degraded sal forests; 300 - 500 m.

*Fl. & Fr.:* May - June.

DURG: Bordih dam. RAIPUR: Gariaband, Pithora.

Fruits used as fish poison.


- Shrubs or trees. Leaves distichous, elliptic oblong or ovate, 5 - 18 x 3 - 9 cm, crenulate. Flowers clustered in leafless axils, *ca* 5 mm across; stamens 6 - 8. Capsules 15 - 18 mm long, yellow; seeds arillate.

- Locally common in sal and miscellaneous forests; 450 - 670 m.

*Fl. & Fr.:* May - June.

RAIPUR: Borai, Sitanadi.
2. Flacourtia L'Herit.


Trees or shrubs. Leaves elliptic obovate or suborbicular, usually crenate - serrate, 1 - 7 cm long. Flowers almost clustered in short racemes or solitary, ca 5 mm across. Berries with 6 - 7 pyrenes, red.

In deciduous forests; 400 - 450 m.

Fl & Fr.: March May.

DURG Babhum. RAINANDGAON: Baghnadi, Bor Talao.

12. POLYGALACEAE
   (D. M. Verma)

1a. Flowers pedicellate; two inner sepals larger, forming wings; stamens 8

1b. Flowers sessile; all sepals subequal, none forming wings; stamens 5 - 8

1. POLYGALA L.

1a. Wing sepals clawed at the base; lower petal (keel) crested with two flap-like appendages; style unciliate at the apex. Capsules truncate at the apex. P. furcata 3

1b. Wing sepals not clawed at the base; lower petal (keel) with several filiform or flattened appendages; style not unciliate at the apex. Capsules not truncate at the apex.

2a. Racemes up to 2 cm long; wing sepals sparsely pubescent outside; style apex hooked. Capsules symmetric, ovate-oblong. P. arvensis 1

2b. Racemes 4 - 5 cm long; wing sepals glabrous, or sometimes sparsely puberulous only along the margin; style - apex horse - shoe shaped. Capsules asymmetric. rhomboid. P. elongata 2

Annual erect, patent hairy herbs, branches 2-20 (40) cm long. Leaves subsessile, elliptic, obovate or suborbicular, 5-20 mm long. Flowers solitary or in up to 2 cm long lateral racemes, yellow, or sometimes pink. Capsules 3-5 x 2-4 mm, ciliate on the margins; caruncle with three teeth like appendages.

Common in wastelands; 200-320 m.

Fl. & Fr.: August, September.


Slender annual herbs, branches 10-50 cm long. Leaves linear lanceolate, mucronate, 5-50 x 1-8 mm. Racemes slender, usually terminal, sometimes lateral, lax flowered. Flowers yellow. Seeds appressed hairy; caruncle 3-lobed, lobes linear.

In forest floors and clearings; 300-500 m.

Fl. & Fr.: August, September.

DURG: Balod. RAIPUR: Dhamtari. RAJNANDGAON: Baghnadi.


Slender annual herbs, 10-25 cm high. Leaves ovate elliptic, glaucescent, 2-6 x 1-3 cm; petioles 3-6 cm long. Racemes 2-8 cm long; flowers yellow or mauve. Capsules winged; caruncle hood-shaped.

On shady slopes; 500-800 m.

Fl. & Fr.: September, October.

RAIPUR: Taurenga. RAJNANDGAON: Chipli.

2. SALOMONIA Lour.

Slender annual herbs, 10-20 cm high. Leaves sessile, elliptic or ovate-lanceolate, ca 5 mm long. Flowers in dense terminal spikes, ca 2 mm across, pink. Capsules dentate margined; seeds black, not strophiolate.

Along cultivated fields: 300 m.

Fl. & Fr.: September.

RAJNANDGAON: Baghnadi.

13. CARYOPHYLLACEAE

(D.M. Verma & M.I. Hanfi)

1a. Leaves linear. Sepals uniformly white or orange-red; style toothed ...

1b. Leaves oblong-spatulate. Sepals green with broad white margins; style with slender branches ...

Polycarpacea 1

Polycarpon 2

1. POLYCARPAEA Lamk.

1a. Cymes orange-red ...

1b. Cymes glistening white ...

P. aurea 1

P. corymbosa 2


Profusely branched herbs, 20-40 cm high, young branches white flaccid. Leaves opposite, 5 10×1 mm, some with a few axillary leaves. Flowers at the tips of the branches, ca 3 mm long. Capsules ellipsoid, ca 3 mm long, 3-valved.

In crevices of rock boulders; 500 m.

Fl. & Fr.: October.

RAIPUR: Risgaon - Deodhara.


Annual or perennial herbs, 10-40 cm high, branches glabrous or with scattered tomentum. Leaves opposite, 5 15×1 mm, mostly with
3b. Calyx without the above tomentum.

4a. Epicalyx lobes free to the base or almost so, frequently with a subulate appendage near the apex from the inner surface. Calyx glandular. ... \textit{H. radiatus} 4

4b. Epicalyx lobes adnate to the calyx for about one third way up, never appendaged. Calyx lobes outside with a gland on the costa. ... \textit{H. subdariffa} 5

1. \textit{Hibiscus cannabifolius} L. Syst. Nat. ed. 10, 2: 1149. 1759, "Kudrung".

Annual herbs, 0.5 - 1.5 m high. Lower leaves usually unlobed, upper palmately divided into 5 - 7 narrow serrate lobes, a few topmost sometimes linear, undivided. Flowers 5 - 7 cm across, white or yellow with a purple eye; calyx lobes with a large sessile gland. Capsules ovoid beaked, ca. 1.5 cm long, tomentose.

Cultivated along paddy fields for its fibre; 330 - 480 m.

\textit{Fl. & Fr.}: October.

RAIPUR: Gariaband, Rajim.


Annual herbs, 40 - 80 cm high. Leaves broadly ovate or lanceolate, crenate, 1.5 - 7.0 cm long, upper few usually 3 partite. Flowers white, 1.5 cm across. Capsules ovoid, ca. 1 cm long, hairy; seeds black.

In sal and mixed forests: 250 - 800 m.

\textit{Fl. & Fr.}: August - October.


3. \textit{H. panduriformis} Burm. f. Fl. Ind. 151. t. 47. f. 2. 1768.

Perennial herbs, 0.5 - 1.5 m high. Stems with stiff shining stellate hairs. Leaves orbicular or broadly ovate oblong, cordate, crenate, 5 - 15 cm long, lower palmate-lobed. Flowers 2 - 3 cm across, yellow with a purple eye. Capsules ovoid, 1.5 cm long, hairy.
In wastelands and along paddy fields; 330 500 m.

Fl. & Fr.: September - January

RAIPUR: Dhamtari, Gariaband. RAJNANDGAON: Deopura, Rajnandgaon.

4. **H. radiatus** Cav. Diss. 3: 150. t. 54. f. 2. 1787.

Annual somewhat prickly herbs, 0.5 1.0 m high. Leaves ovate orbicular, upper palmately 3 5 - lobed. Flowers 6 8 cm across, (ours) purplish - red; epicalyx lobes with a subulate subapical appendage, together with the calyx, stellately hairy. Capsules ovoid globose, ca 1.5 cm long.

Along paddy fields; 350 m

Fl. & Fr.: October.

RAIPUR: Pithora.

5. **H. subdariffa** L. Sp. Pl. 695. 1753. 'Kudrung, Patwa'.

Annual reddish green herbs, 0.5 1.5 m high. Leaves mostly suborbicular, palmately 3 5 - lobed, serrate dentate. Flowers yellow, ca 4 cm across; calyx fleshy, lobes with a sessile subapical gland. Capsules ovoid, ca 1.5 cm long, hairy.

Cultivated along paddy fields for its edible leaves and preparation of a jelly from its fleshy calyx; 400 m.

Fl. & Fr.: October.

RAIPUR: Mahasamund.

6. **Kydia Roxb.**


Rather slender deciduous trees up to 10 m high, with smooth greyish bark and pinkish blaze. Leaves suborbicular, sinuately 3 - lobed, 5 15 cm broad. Flowers white, in large attractive bunches. Capsules globose, 5 7 cm dia. enclosed within calyx and subtended by a whorl of unequal, spathulate, 10 15 cm long epicalyx lobes.

Common in mixed sal forests; 440 600 m.
Fl. : September October ; Fr. : November January

RAIPUR : Dugli, Mainpur. RAJNANDGAON : Chipli, Sulewara, Taregaon.

7. Malachra L.


Hirsute perennial herbs, ca 1 m high. Leaves ovate orbicular, cordate, 2–9 cm long, crenate. Flower heads few to several together on long axillary peduncles ; bracts navicular, 1–2 cm long ; flowers yellow ca 1 cm across. Schizocarps obpyriform, ca 5 mm across.

An American weed found in the cities, not yet common : 280–320 m.

Fl. & Fr. : August January.

DURG : Durg. RAIPUR : Raipur.

8. Malvastrum A. Grey


Strigously hairy herbs or undershrubs, 20–70 cm high. Leaves ovate lanceolate, serrate, 2–6 x 1–3 cm, sparsely hairy on both the surfaces. Flowers solitary, 10–15 mm across, yellow ; bracteoles 3, linear ; sepals ovate, acuminate, connate for about half-way up. Mericarps cuspidate.

In wasteland : 300 m.

Fl. & Fr. : October.

RAIPUR : Raipur.


Densely hairy undershrubs, 50-100 cm high, profusely flowering. Leaves unequally denticulate, lower suborbicular, sinuately lobed with acute angles, upper narrower, almost unlobed. Flowers solitary axillary on stems and numerous short axillary branches; epicalyx cupular.

On roadsides; 400-480 m.

Fl. & Fr.: October

RAIPUR: Indagaon, Taurenga.

10. SIDA L.

1a. Petioles 2-6 mm long, much shorter than the blade; stipules as long as or longer than the petiole.

2a. Leaves hairy or spicate beneath, lower usually rhomboid or obovate...

2b. Leaves glabrous beneath, linear lanceolate or oblong...

S. rhombifolia 4

S. acuta 1

1b. Petioles frequently much longer, about half to as long as the blade; stipules of at least the larger leaves shorter than the petiole.

3a. Flowers white or creamy. Mericarps 8-10-sawn; awns more than half as long as the main body...

3b. Flowers yellow. Mericarps 5, with acute tips or short awns scarcely one-third as long as the main body.

4a. Leaves broadly ovate-obovate with a broad ovate or subcordate base, hairy on both the surfaces with about 1 mm long hairs, 5-7-nerved at the base...

4b. Leaves oblong or oblong-lanceolate with a narrow acute or slightly rounded base, tomentose on the lower surface, glabrescent above, 3-nerved at the base...

S. cordifolia 3

S. cordata 2

S. spinosa 5


Woody herbs or undershrubs, 30-100 cm high. Leaves 2-3 cm long, crenate. Flowers solitary or 2-3 together, yellow, ca 1 cm across. Mericarps 5-6, aristulate, ca 2.5 mm long.

Common in wastelands, ditches and cultivated fields; 300-450 m.
Fl. & Fr.: August January.


Sometimes used for brooms.


Slender, trailing or suberect diffusely branched herbs, branches 3-70 cm long. Leaves crenate, on slender petioles about half to as long as the blade. Flowers solitary, few together, or loosely panicked, 5-8 mm across. Mericarps ca 2.5 mm long, acute.

Common in wastelands, cultivated fields and forests; 300-450 m.

Fl. & Fr.: throughout the year.

DURG: Buddbhum, Kamteli. RAIPUR : Dhamtari, Dugli, Raipur. RAJNANDGAON : Baghnadi, Chichola, Singhari.


Softly tomentose undershrubs, 50-150 cm high. Leaves ovate, shallowly cordate, 2-6 cm long, crenate; petioles half to about as long as the blade. Flowers solitary or 2-5 together, 10-15 mm across. Mericarps 3.0-3.5 mm long with a pair of retrorse hairy awns.

Along forest margins and cultivated fields; 350-480 m.

Fl. & Fr.: August October.

DURG: Bordih dam. RAIPUR : Mainpur, Taurenga.


Erect undershrub, 50-120 cm high. Leaves lanceolate or ovate-oblong, acute or obtuse, 1.8 × 0.5-5.0 cm, serrate. Flowers yellow, ca 15 mm across; peduncle jointed in the middle. Mericarps muticus or shortly awned.

Along roadsides; 800 m.

Fl. & Fr.: September.

RAJNANDGAON : Chilpi.

Undershubs. 50 100 cm high. Leaves 1 4 cm long, serrate; petioles 2 15 mm long. Flowers solitary or 2-5 together, small, yellow. Mericarps 2 3 mm long, with a pair of short horns, reticulately veined.

Rather rare, in paddy fields; 330 m.

*Fl. & Fr.*: October.

**RAIPUR**: Dhamtari.

11. **Thespesia Soland. ex Correa**

1a. Shrubs or undershrubs. Leaves 3-5-lobed (except a few upper most which are sometimes sinuate or entire), tomentose beneath ...  

1b. Trees. Leaves entire, glabrous or puberulus beneath. ...  


*Hibiscus lampas* Cav. Diss. 3: 154. t. 56. f. 2. 1787. *Bhindikanda, Jungle Kapas*.

Little branched shrubs or undershrubs, 0.5-2.0 m high. Leaves ovate orbicular, 10-20 cm long. Flowers infundibuliform, solitary or few, 8-12 cm across, yellow with a purple blotch in the mouth; calyx cupular with 5 subulate teeth. Capsules ovoid, ca 3 cm long, black.

Frequent in forests; 320-480 m.

*Fl.*: October. *Fr.*: January-May.

**RAIPUR**: Dhamtari, Dugli, Gariabad, Raipur.

The flowers droop down in a day or so. Used for some digestive ailments.


Trees. 3 10 m high. Leaves ovate cordate, acuminate, 7-20 cm long. Flowers solitary axillary, campanulate, hanging on up to 10 cm long pedicels, yellow with a purple centre when fresh, becoming orange.
purplish in age, 5-7 cm long. Fruits subglobose 2-3 cm dia., almost indehiscent.

*Fl. & Fr.* : October.

RAIPUR : Pithora.

Avenue tree, ornamental as well as shade giving.

12. *URENA L.*


Much branched undershrubs, 0.5 - 1.5 m high. Lower leaves usually orbicular, 3-12 cm long, the upper ones frequently narrower, all usually deeply incised with sinuate lobes. Flowers solitary or 2-3 together, rotate. Schizocarps globose, 6-8 mm dia.

In wastelands and forest margins; 300-750 m.

*Fl. & Fr.* : August May.

RAIPUR : Gariaband, Raipur, Sitanadi, Taureuga. RAINANDGAON : Baghnadi, Chilpi, Singhari.

19. **BOMBACACEAE**

(M. I. Hanfi)

*Bombax L.*


Large deciduous trees. Trunk and branches with bulbous prickles when young, greyish, blaze pink. Leaves digitately 5-7-foliolate; petioles pulvinate, 10-15 cm long; leaflets elliptic, 8-15 x 3-7 cm. Flowers ca 8 cm across, scarlet. Capsules 5-valved; seeds bearing cotton.

Along roadsides and in mixed forests; 250-500 m.

*Fl.* : March; *Fr.* : May June.

RAIPUR : Pithora, Sitanadi.

Cotton used for stuffing pillows and mattresses.
20. STERCULIACEAE

(D. M. Verma & M. I. Hanfi)

1a. Trees. Leaves palmately lobed. Flowers unisexual; petals absent.

2a. Leaves tomentose beneath. Follicles woody ... Sterculia 6

2b. Leaves sparsely hirsute beneath. Follicles membranaceous ...

1b. Trees, shrubs or herbs. Leaves simple. Flowers bisexual; petals present.

3a. Trees or shrubs. Flowers 2 - 4 cm long. Fruits 2 - 6 cm long.

4a. Petioles 4 - 7 cm long. Flowers yellow, actinomorphic. Fruits ovoid, capular ...

4b. Petioles 0.5 - 1.0 cm long. Flowers scarlet, zygomorphic. Fruits cylindrical, twisted, follicular ...

Erlolaena 2

Helicteres 4

3b. Herbs or undershrubs. Flowers 0.2 - 0.5 cm long. Fruits 0.3 - 0.5 cm long.

5a. Leaves velvety on both the surfaces. Capsules 2 - valved ...

Waltheria 7

5b. Leaves glabrous or hirsute below and glabrous above. Capsules 5 - valved.

6a. Flowers and fruits on slender pedicels, solitary, or in open cymes. Petals with a hooded base and filiform tip. Capsules echinate ...

Byttneria 1

6b. Flowers and fruits sessile, in capitate clusters. Petals oblong - spatulate. Capsules smooth ...

Melochia 5

1. BYTTNERIA Loesl

**Byttneria herbacea** Roxb. Pl. Corom. t. 29. 1795.

Perennial herbas or undershrubs, 30 - 80 cm high. Leaves ovate lanceolate, 2 - 6 cm long, dentate. Flowers minute, in axillary cymes, pinkish, petals with bifid appendages. Capsules on slender pedicels, ca 5 mm dia., prickly.

In mixed forests ; 440 - 480 m.

*Fl. & Fr.* : May June

DURG : Bordih. RAIPUR : Gariahand, Singhpur, Tauenga.
2. ERIOLAENA DC.


Shrubs, 1.5 - 2.0 m high. Leaves rotundate, serrulate, grey tomentose beneath. Sepals lanceolate, stellately spreading; petals yellow with green bulbous base, reflexed, ultimately drying and splitting into white fibres; stamens numerous, yellow. Capsules oblong, dehiscing stellately by valves; valves inside with a cotton band.

In sal and mixed forests, rather scarce; 450 - 550 m.

*Fl.* : June; *Fr.* : throughout the year.

RAIPUR : Gariaband, Khallari, Taurenga. RAJNANDGAON : Deopura.

3. FIRMIANA Marsili


Deciduous trees with grey brown rough bark. Leaves 15 - 30 cm long, three or more lobed, sparsely stellate hairy beneath, lobes caudate. Flowers panicled; calyx ca 2 cm long, stellately tomentose, orange-scarlet, 5 toothed; gynandrophone long exerted, black; anthers yellow. Follicles membranaceous.

In deciduous forest.

*Fl.* & *Fr.* : February May.


4. HELICTERES L.

**Helicteres isora** L. Sp. Pl. 963. 1753.

Deciduous shrubs, 1 - 3 m high with rough and greyish branches. Leaves broadly oblong or rotundate, 7 - 15 cm long, serrate, usually oblique, sometimes lobed, palmi-nerved. Flowers zygomorphic, 20 - 35 mm long, pink, red or scarlet. Fruit of five spirally twisted hairy follicles, ultimately black.
Common in mixed forests; 240 - 750 m.

Fl. : August; Fr. : October - June.

DURG : Balod. RAIPUR : Chhoaara, Dhamtari, Pithora, Sitanadi. RAJNANDGAON : Baghnadi, Malaidah.

The roots, bark and fruits are considered highly medicinal for colic pains and bowel complaints.

5. *Melochia* L.


Perennial herbs or undershrubs, 15 - 40 cm high. Leaves ovate oblong, 2 - 6 cm long, serrate, pilose. Flowers small, in dense clusters, pink, subtended by 4 - 5 bracteoles. Capsules depressed globose, hirsute, 5 valved, green turning reddish brown.

In wastelands and along canals; 350 - 800 m.

Fl. & Fr. : May - September.

DURG : Balod. RAIPUR : Dokal, Khallari, RAJNANDGAON : Baghnadi, Chilpi.

Leaves eaten cooked.

6. *Sterculia* L.

1a. Bark papery. Leaves 5 - lobed, lobes entire ... *S. urens* 1

1b. Bark not papery. Leaves 3 - 7 - lobed, lobes mostly again 3 - lobed ... *S. viillosa* 2


Large or medium sized deciduous trees with chlorophyll beneath the thin greyish - white bark; branches with leaf scars. Leaves long petioled, 20 - 40 cm broad, cordate, lobed to less than half way down. Flowers in 10 - 12 cm long viscidly pubescent panicles, ca 5 mm across, red - brown tomentose outside, yellowish green inside. Follicles with pungent bristles.

On exposed hills; 400 m.

Fl. : January - February, Fr. : April; leafless : December - May.

DURG : Talgaon.

Yields gum.

Large deciduous trees with grey and brown bark; branches with leaf scars. Leaves long petioled, 20–40 cm broad, cordate, usually lobed to the middle. Flowers in 20–30 cm long rusty pubescent panicles, ca 1 cm across, yellowish with pink centre. Follicles tomentose, scarlet inside.

*Fl.*: January March *Fr.*: May June leafless: December May


7. *Waltheria* L.


Glaucous green tomentose undershrubs. 70–150 cm high. Leaves oblong lanceolate, subulate, 3–6 × 1–3 cm, serrate. Flowers in capitulate cymes and leafless spikes, yellow or pink, 5–7 mm across; petals long clawed. Capsules villous, 1 seeded.

In wastelands and exposed rock crevices: 515–480 m.

*Fl.* & *Fr.*: June October.

DURGI: Halod. RAIPUR: Gariaband, Singhpur, Taurenga. RAJNANDGAON: Deopura.

21. TILIACEAE

(D M Verma & P C Pant)

1a. Fruits covered with hooked bristles all over the surface ... *Triunisella* 3

1b. Fruits unarmed or horned only at the tip.

2a. Trees or shrubs. Fruit a subglobose drupe ... *Grewia* 2

2b. Herbs or undershrubs. Fruit a subglobose or subcylindric capsule ... *Corchorus* 1

1. *Corchorus* L.

1a. Capsules depressed globose ... *C. capsularis* 2

1b. Capsules subcylindric.
2a. Capsules with three spreading horns at the tip ... \textit{C. aestivalis} 1

2b. Capsules with a solitary erect beak (splitting along with the valves and not to be confused with the horns).

3a. Capsules 7 - 15 mm long, pilose ... \textit{C. fascicularis} 3

3b. Capsules 35 - 65 mm long, glabrous, hispidulous or scabrous.

4a. Leaves all or mostly with a pair of tails near the base. Capsules glabrous or hispidulous \textit{C. olitorius} 4

4b. Leaves usually without tails. Capsules scabrous ... \textit{C. trilocularis} 5


Erect or diffuse herbs. Leaves broadly ovate or ovate-lanceolate, 1 7 cm long, crenate, sometimes tailed at the base. Flowers yellow. Capsules 10 25 mm long, 6 angled, more or less 3 winged.

Along cultivated fields; 300 350 m.

\textit{Fl.} \& \textit{Fr.}: August September.

DURG: Balod. RAIPUR: Raipur.


Annual erect herbs, 20 50 cm high. Leaves oblong lanceolate, 3 10 cm long, acuminate, serrate, sometimes tailed at the base. Capsules ribbed, muricate. 5 valved.

In wastelands; 300 450 m.

\textit{Fl.} \& \textit{Fr.}: June November.

RAIPUR: Gariaband. RAINANDGAON: Taregaon.

Found only in wild condition. Leaves locally cooked and eaten. Cultivated in eastern India for its valuable fibre \textit{Jute}. The cultivated forms are much more robust.


Annual herbs, 20 70 cm high. Leaves linear oblong or narrowly lanceolate, 1.5 6.0 cm long, acute, serrate. Capsules in leaf-opposed clusters, subterete, shortly beaked, 3 celled.

In wastelands; 300 350 m.
**FLORA OF RAIPUR**

*Pl. & Fr.*: October April.

**DURG**: Kamtefi. **RAIPUR**: Dhamtari. **RAJNANDGAON**: Singhari.


Herbs or undershrubs, 20 - 70 cm high. Leaves elliptic or broadly ovate oblong, 5 - 10 cm long, serrate. Flowers yellow, buds obovoid, cuspidate. Capsules usually 2 - 3 together, green with purple angles, young hispidulous.

Along paddy fields; 450 - 750 m.

*Pl. & Fr.*: September October.

**RAIPUR**: Gariaband, **RAJNANDGAON**: Chilpi.

Slender parts eaten cooked.

5. *C. trilocularis* L. Mant. 77. 1771.

Annual herbs. Leaves linear oblong, 2 - 7 cm long, serrate, usually pubescent. Flowers yellow; stamens 15 - 20. Capsules very slender, 5 - 6 cm long, 3 - 5 angled.

In wastelands; 520 m.

*Pl. & Fr.*: November.

**RAJNANDGAON**: Deopura.

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**2. GREWIA L.**

1a. Leaves broadly ovate or orbicular.

2a. Leaves stellate hairy on both the surfaces ...

    ... *G. abutilifolia* 1

2b. Leaves glabrous ...

    ... *G. tiliifolia* 6

1b. Leaves linear, lanceolate or oblong - lanceolate

3a. Lower surface of the leaves greyish white throughout with silky pubescence of simple hairs. ...

    ... *G. rothii* 4

3b. Lower surface of the leaves not as above.

4a. Trees. Leaves glabrous or with a few simple hairs along the midrib beneath. Sepals 12 - 15 mm long

    ... *G. serrulata* 5

4b. Plants not as above.

5a. Hairs on the twigs long persistent. Fruits mostly 2 - 4 - lobed, on slender, ca 0.5 mm thick peduncle ...

    ... *G. helectrifolia* 1

Shrubs, 0.5–1.5 m high; branches stellate hairy. Leaves orbicular, usually shallowly 3-lobed at the top, 5 18 × 4 16 cm, bidentate; petioles 1–4 cm long. Flowers yellow turning purplish brown; peduncles ca 3 mm long; bracteoles villous outside. Fruits depressed globose, ca 1 cm across, almost unlobed, hairy.

Common in sal and mixed forests; 450–600 m.

Fl.: May–August; Fr.: persisting throughout the year.

RAIPUR: Borai, Dugli, Situnadi.

Fruits eaten.


Shrubs with about 1.0–1.5 m long slender branches. Leaves linear lanceolate, 5 10 × 1–2 cm, dentate; petioles ca 5 mm long. Flowers white; peduncles 15–25 mm long. Fruits depressed globose, 6–8 mm across, faintly 4-lobed, hairy or glabrous.

In sal forests; 320–500 m.

Fl. & Fr.: August–November.


Shrubs with 1.0–1.5 m long slender hairy branches. Leaves oblong lanceolate, serrate. Flowers oblong, turning yellow and finally brown; peduncles short, subequal to the petioles. Fruits depressed globose, deeply 2-lobed, each half again slightly 2-lobed, red-purple.

In mixed forests; 400–500 m.

Fl.: September; Fr.: December–June.

DURG: Budhbum. RAIPUR: Dugli, Taurenga.

Fruits eaten.

Shrubs, 0.3 1.5 m high. Leaves oblong lanceolate, 5 15 x 2 6 cm, serrate; petioles ca 5 mm long. Flowers yellow turning brownish; peduncles 2 5 cm long. Fruits globose, ca 5 mm across, hairy, usually unlobed, purple.

In sal and mixed forests; 500 800 m.
Fl. : May September; Fr. : October June.

RAIPUR : Boral, Sitanadi. RAJNANDGAON : Chilpi.


Small trees. Leaves ovate lanceolate, 7 15 x 3 5 cm; petioles 5 8 mm long. Peduncles 20 25 mm long; petals ca 3 mm long, quadrilateral. Fruits subglobose, ca 8 mm long, 2 4 lobed.

In mixed, sal forests; 450 500 m.
Fl. : June October; Fr. : January.

RAIPUR : Sitanadi, Taurenga.

Bark used for making ropes.


Small trees. Leaves broadly ovate or orbicular, oblique, 5 15 x 4 -12 cm, crinate, 5 7 ribbed, young sometimes with simple hairs; stipules sagittate; petioles 15 25 mm long. Flowers yellowish brown; peduncles 10 15 mm long. Fruits ca 7 mm across, deeply bilobed.

In sal and mixed forests; 450 750 m.
Fl. : May June; Fr. : September.

RAIPUR : Khallari, Sitanadi. RAJNANDGAON : Chilpi.

Wood used for agricultural implements.

3. TRIUMPETTA L.

1a. Leaves lanceolate or ovate - lanceolate, tapering towards the apex... T. pilosa 2
1b. Leaves, some or all, orbicular, 3 - lobed or rounded at the apex.

2a. Leaves greyish white beneath ........................................... T. rotundifolia 4

2b. Leaves green beneath.

3a. Bristles on the fruit hispid or ciliate .................................. T. pentandra 1

3b. Bristles on the fruit glabrous ............................................ T. rhomboidea 3


Perennial herbs, 10 - 50 cm high. Leaves ovate or rhomboid, mostly 3 - lobed in the upper part, sparsely to densely hairy beneath. Flowers yellow. Fruits ellipsoid, bristles straight or hooked.

In mixed forests; 300 - 500 m.

Fl. & Fr.: September - January

RAIPUR: Dugli. RAJNANDGAON: Baghni.


Shrubs ca 2 m high with stellate hairy branches. Leaves ovate-lanceolate, subcordate, 7 - 15 x 3 - 6 cm, hairy on both sides with bulbous based stellate hairs. Flowers ca 1 cm across, yellow; sepals linear, pubescent; petals clawed, oblanceolate; stamens 10. Fruits subglobose. ca 2 cm across, bristles hairy, hooked.

In wastelands; 300 m.

Fl. & Fr.: October.

RAIPUR: Raipur.


Herbs or undershrubs, 50 - 100 cm high, branches usually pubescent on one side. Leaves hairy beneath, lower suborbicular or rhomboid, 3 - lobed, 5 - 10 cm long, upper smaller and narrower. Flowers yellow. Fruits ellipsoid subglobose.

Along forest margins; 800 m.

Fl. & Fr.: September.

RAJNANDGAON: Chilpi.


Herbs or undershrubs, 30 - 70 cm high. Leaves suborbicular, not or
scarcely lobed, 1.4 cm broad, tomentose beneath. Flowers yellow. Fruits ellipsoid subglobose.

On roadsides and along paddy fields; 300-350 m.

Fl. & Fr.: April-October.


**22. LINACEAE**

(M.L. Ilanli)

1a. Leaves sessile, linear-lanceolate. Flowers blue ... *Linum* I

1b. Leaves petiolate, elliptic or ovate-oblong. Flowers yellow ... *Reinwardtia* 2

1. *Linum* L.


Annual diffusely branched herbs, 20-50 cm high. Leaves 10-30 x 3-4 mm. Flowers cymose, fugacious, 2-3 cm across. Capsules subcylindric, 10-15 mm long.

In wastelands; as an escape; 300 m.

Fl. & Fr.: December-February.

RAIPUR: Raipur.

Sometimes cultivated for its oil-yielding seeds.

2. *Reinwardtia* Dumort.


Undershubs. Leaves 2-10 x 1-6 cm, entire or serrate; petioles 1-3 cm long. Flowers solitary, on 2-4 cm long slender pedicels; petals oblong, ca 3 cm long. Capsules globose; seeds reniform.

Fl. & Fr.: November-February.

23. MALPIGHIACEAE
   (D. M. Verma)
   Hiptage Gaertn.


   Climbing shrubs. Leaves coriaceous, elliptic-ovate, 10-20 x 5-10 cm, acute. Racemes silky. Flowers 20 - 25 mm across, pinkish or yellowish white; calyx gland convex; petals clawed, reflexed, crisped. Wings of the samaras oblong, median wing ca 3 cm long, lateral two wings ca 1.5 cm long.

   Fl.: November; Fr.: March; Fruits: May.


24. ZYGOPHYLLACEAE
   (M. I. Hainsi)
   Tribulus L.

   Tribulus terrestris L. Sp. Pl. 387. 1753.

   Densely white hairy prostrate herbs with 10 - 40 cm long branches. Leaves pinnate; leaflets oblong, 1 - 2 cm long. Flowers pale yellow, ca 1 cm across. Fruits with several cocci, each with two long and two short spines.

   In wastelands, 500 m.

   Fl. & Fr.: June.

   RAIPUR: Sitanadi.

25. OXALIDACEAE
   (D. M. Verma & P. C. Pant)

   1a. Leaves pinnately compound

   1b. Leaves digitately compound

   BIOPHYTUM DC.

   1a. Pedicels 4 - 6 mm long. Sepals shorter than or about as long as the pedicel

   Biophyllum 1

   Oxalis 2

   B. reinwardtii 1
1b. Pedicels 1 - 2 mm long. Sepals 2 - 4 times longer than the pedicel ... \textit{B. sensitivum} 2.


Slender herbs with a crown of pani pinnate leaves terminating 8 - 20 cm high stem. Leaves 5 - 8 cm long with 8 - 12 pairs of leaflets; leaflets oblong, upper 10 - 12 mm long, lower shorter. Flowers white or yellow; sepals 2.0 - 3.5 mm long.

In sal and mixed forests; 400 - 500 m.

\textit{Fl.} & \textit{Fr.}: September October.

RAIPUR: Garinband, Taurenga. RAJNANDGAON: Deopura.


Slender herbs. Stems 5 - 15 cm long, usually much shorter or about as long as the leaves, sometimes longer. Leaves shorted, 5 - 12 cm long; leaflets oblong, upper 7 - 12 mm long, lower shorter. Flowers yellow or orange yellow. Capsules ellipsoid, grooved.

In wastelands and miscellaneous forests; 250 - 300 m.

\textit{Fl.} & \textit{Fr.}: June - August.


2. \textit{Oxalis} L.

1a. Plants caulescent with creeping stems. Flowers yellow ... \textit{O. corniculata} 1

1b. Plants caulescent. Flowers purple ... \textit{O. richardiana} 2


Slender tuberous herbs with 5 - 15 cm long creeping stems. Leaflets 3, digitate, obovate, bilobed, 5 - 15 mm long and equally broad. Flowers ca 7 mm across, in axillary peduncled clusters; petals oblong ob lanceolate, yellow. Capsules subcylindric, 8 - 20 mm long, pubescent.

In moist wastelands; 300 - 800 m.

\textit{Fl.} & \textit{Fr.}: September May.

RAIPUR: Borai. RAJNANDGAON: Rajnandgaon.

Perennial bulbous herba. Leaves 3 foliolar; petioles 10-20 cm long; leaflets obovate, cuneate, with 2 glands below the notched apex, ca 3 cm long. Flowers umbellate, on 12-25 cm long peduncles; petals obcuneate, ca 15 mm long, purple; styles glabrous.

In gardens; 300 m.

*Fl.* : December.


26. BALSAMINACEAE

(M. I. Hanfi)

Impatiens L.

*Siphocampylus balsamina* L. Sp. Pl. 938. 1753. ‘Gul mohdi.’

Annual erect herba. 20-30 cm high. Leaves alternate, lanceolate, 4-12 × 1.0-1.5 cm, acuminate, serrate; petioles usually glandular. Flowers purplish, axillary, 1-3 together; standard petaloid, orbicular, retuse; wing petals unequally 2 lobed, lip with 20-35 mm long incurved spur. Capsules tomentose.

In wastelands near habitations; 300-400 m.

*Fl.* & *Fr.* : August September.

RAIPUR : Raipur. RAJNANDGAON : Baghnaidi.

27. RUTACEAE

(D. M. Verma & M. I. Hanfi)

1a. Plants unarmed. Leaves pinnate. Fruits dehiscent: ... *Chloroxylon* 2

1b. Plants unarmed or armed. Leaves imparipinnate. Fruits indehiscent.

2a. Plants unarmed. Leaflets alternate: ... *Murraya* 4

2b. Plants armed. Leaflets opposite.

3a. Petioles and rachis with wings almost as broad as the leaflets. Ovule solitary in each cell. Fruits ca 1 cm across: ... *Muntingia* 5
3b. Petioles and rachis not or narrowly winged. Ovules several in each cell. Fruits 5 - 10 cm across.

4a. Leaves 3 - foliolar. Flowers hermaphrodite; ovary several - celled ... \textit{Aegle} 1

4b. Leaves mostly 5 - 7 - foliolar, rarely a few 3 - foliolar. Flowers polygamous; ovary ultimately one - celled ... \textit{Feronia} 3

1 \textit{Aegle} Correa


Thorny deciduous medium sized trees. Leaves 3 foliolar; leaflets petiolar, ovate lanceolate, 5 - 10 cm long, subentire. Flowers in lateral or subterminal panicles, whitish, ca 2 cm across. Fruits globose or oblong with a woody rind, 5 - 10 cm long (larger in some cultivated forms); pulp slimy, yellow, aromatic.

Common in mixed forests : 300 - 500 m.

\textit{Fl.} : April May ; \textit{Fr.} : ripening next year in April June.

DURG : Balod, Talgaon. RAIPUR : Dhamtari, Sitanadi.

Fruit juice is a reputed medicine for bowel complaints; leaves used in worship of Lord Siva.

2 \textit{Chloroxylon} DC.

(The genus is sometimes also placed in Meliaceae or Flindersiaceae.)

\textit{Chloroxylon swietenia} DC. Prodr. 1 : 625. 1824. 'Bhirrah'.

Shrubs or medium sized trees. Leaflets 10 - 15 pairs, oblong lanceolate, oblique at the base, ca 3 × 1 cm, gland dotted, glaucous green beneath. Flowers white, panicled, ca 5 mm across. Capsules ovoid, trigonous, 3 - 4 cm long; seeds compressed, winged above.

In sal forests ; 300 - 500 m.

\textit{Fl.} & \textit{Fr.} : May August.

DURG : Balod. RAIPUR : Taurenga.
3 Feronia Correa


Thorny medium sized trees with rough greyish black bark. Leaves 5 or 7, elliptic obovate, 1 3 cm long with marginal glands; rhachis narrowly winged. Flowers raceme or panicled, ca 8 mm across, reddish. Fruits globose, 5 8 cm across with a rough greyish woody rind and white sour pulp.

Planted: 200 500 m.

Fl. : April; Fr. : September - October.

RAIPUR : Tauerenga. RAJNANDGAON : Baghnaidi, Sankar tola.

Fruit pulp is used for 'chutney'.

4 Murraya Koen. ex L.

Murraya koenigii (L.) Spreng. Syst. Veg. 2 : 315. 1825. Bergerea koenigii L. Mant. 563. 1771. 'Mevtha neem'.

Medium sized trees. Leaves 15 30 cm long, pinnate; leaflets obliquely lanceolate, 2 5 cm long, scented. Flowers in terminal short peduncled corymbs, ca 1 cm across, white, scented. Fruits ellipsoid, ca 1 cm long, pink turning black.

Planted: 450 m.

Fl. : February; Fr. : June August.

RAIPUR : Khallari.

Leaves used for flavouring curries.

5 Naringi Adans.


Thorny trees. Leaves pinnately 5 or 7 foliolate; petiole and rhachis articulate; leaflets elliptic obovate, 2 5 cm long, crenate, obtuse, usually notched. Flowers in short racemes, ca 8 mm across, yellowish white. Fruits globose, ca 1 cm diam., black.
In mixed forests; 450 m.

_Fl._: May.

RAIPUR: Sitanadi.

28 SIMAROUBACEAE
(M. I. Hanf)

_Ailanthus_ Desf.


Large deciduous foetid smelling trees with greyish stem and prominent leaf-stems. Leaves long petiolar, pinnae, 0.2–1.0 m long; leaflets 8–16 x 4–7 cm, coarsely toothed. Flowers in large lax panicles, unisexual, _ca_ 3 mm across, greenish. Samaras 4–6 cm long, red.

In villages, usually planted; 300–500 m.

_Fl. & Fr._: January–March.

RAIPUR: Sitanadi.

29 OCHNACEAE
(P. C. Pant)

_Ochna_ L.


Trees or shrubs with greyish bark and pink red blaze. Leaves elliptic lanceolate or obovate, 7–17 x 3–7 cm, acute, serrate, closely nerved. Flowers in short lateral subcorymbose racemes, _ca_ 3 cm across, yellow, fragrant; sepals 5, persistent, purple in fruits; stamens many, filaments persistent. Drupes seated on enlarged disc.

Locally common in mixed forests; 480 m.

_Fl._: June.

RAIPUR: Taurenga.

30 BURSERACEAE
(D. M. Verma & P. C. Pant)

1a. Leaflets acute or obtuse. Flowers in racemiform panicles; disc annular. Fruits ellipsoid, dehiscent; pyrenees winged. _Boswellia_
1. **Leaflets caudate - acuminate. Flowers in much branched panicles; disc campanulate or annular. Fruit globose, indehiscent; pyrenes not winged.**

2a. **Leaflets 3 - 4 pairs, pubescent only along the nerves beneath. Flowers together with the leaves; disc annular.**

2b. **Leaflets 8 - 16 pairs, tomentose throughout on both the surfaces. Flowers when leafless; disc campanulate.**

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**1 Boswellia Roxb. ex Colebr.**

*Boswellia serrata* Roxb. *ex Colebr.* Asiat. Res. 9: 379. t. 5. 1807; Bennett in Hook. f. Fl. Brit. Ind. 1 : 528. 1875 (incl. *var. glabra*). *B. glabra* Roxb. Pl. Corom. t. 207. 1811. *'Salai, Salia'*. Trees with greenish or pinkish white papery bark and pink red blaze, exuding yellowish droplets of resin. Leaves at the tips of branchlets, 30 - 45 cm long; leaflets 9 - 16 pairs, 3 - 7 cm long, serrate, young brown tomentose. Racemes several clustered at the tips of branchlets, 10 - 20 cm long; flowers white, ca 7 mm long. Drupes 3 - valved.

In miscellaneous forests, usually on hill slopes; 350 - 450 m.

*Fl.*: January March; *Fr.*: April June.

DURG: Budhbum. RAIPUR: Pithora, Singhpur.

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**2 Bursera Jacq. ex L.**

*Bursera serrata* Wall ex Colebr. in Trans. Linn Soc. 15 : 361. t. 4. 1827. *'Lindwi'*. Small or medium sized trees with greyish bark and brown blaze. Leaves 15 - 30 cm long; leaflets oblanceolate, shortly petiolulate, 7 - 15 cm long, entire or distantly serrulate. Flowers in lax axillary panicles, green, ca 3 mm across. Fruits globose, 1 - 2 cm across, red.

In miscellaneous forests; 500 m.

*Fr.*: June.

RAIPUR: Taurenga.

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**3 Garuga Roxb.**

*Garuga pinnata* Roxb. Pl. Corom. 3 : 5. t. 208. 1811. *'Kekad'*. 
Large or medium-sized trees. Leaves clustered at the tips of branchlets, 30-45 cm long; leaflets opposite, ovate-lanceolate, 7-10 × 3-4 cm, crenate. Panicles 10-15 cm long; flowers polygamous, ca 7 mm long, yellow. Drupes ca 2 cm across, yellow, slightly sour.

Common in mixed forests; 500 m.

Fl. : April ; Fr. : June.

RAIPUR : Taurenga.

31. MELIACEAE

(D.M. Verma & M. I. Hanfi)

1a. Leaves twice - or thrice - pinnate

1b. Leaves once - pinnate.

2a. Fruits dehiscent; seeds winged.

3a. Leaflets lanceolate, apex caudate, acuminate. Filaments free. Fruits 1.5-2.0 cm long ...

Melia 3

3b. Leaflets elliptic - oblong, apex retuse, obtuse or acute. Filaments united into a tube. Fruits 5-8 cm long

Toona 5

Soyamda 4

2b. Fruits indehiscent; seeds not winged.

4a. Leaflets oblique, the larger ones 1.5-2.0 cm broad. Fruits ellipsoid, 10-15 mm long, one-seeded ...

Azadirachta 1

4b. Leaflets not oblique, the larger ones 3-5 cm broad. Fruits globose, ca 5 mm long, few seeded.

Cipadessa 2

1. AZADIRACHTA A. Juss.


Evergreen trees, 4-15 m high; bark splitting into black flakes. Leaves odd - pinnate; leaflets 5-9 pairs, obliquely lanceolate, 4-6 cm long, serrate. Flowers in axillary panicles, white, scented, ca 15 mm across. Drupes yellow when ripe.

Commonly planted in villages and on roadsides; 250-450 m.

Fl. & Fr. : April - June.


All parts medicinally used; twigs used for cleaning teeth.
2. Cipadessa Blume


Sarmentose shrubs. Leaves odd pinnate, 10 - 30 cm long; leaflets 7 - 11 pairs, opposite, 5 - 10 cm long, entire, serrate or gashed, usually hairy beneath. Panicles narrow, 7 - 10 cm long. Flowers ca 3 mm across; sepals ciliate. Berries globose

In mixed sal forests; 500 m

Fl.: May; Fr.: October.

RAIPUR: Tenurega.

3. Melia L.

Melia azedarach L. Sp. Pl. 384, 1753. 'Bakain'

Medium sized deciduous trees. Leaves mainly clustered at the tips of branches, 40 - 60 cm long, twice - (or thrice ) pinnate; leaflets lanceolate, 15 - 35 mm long, acuminate, serrate. Flowers in large axillary panicles, ca 7 mm across, lilac, scented. Drupes ellipsoid, ca 15 mm long.

Planted; 800 m.

Fl. & Fr.: March April.

RAJNANDGAON: Chipli.


Large or medium sized crookedly branched trees. Leaves clustered at the tips of branches, paripinnate, 20 - 45 cm long; rachis and midrib red; leaflets 3 - 6 pairs, obliquely elliptic, 5 - 10 cm long. Flowers in large terminal panicles, ca 8 mm across, white. Fruits pendulous, 5 - 8 cm long, 5 - valved.
FLORA OF RAIPUR

In mixed and sal forests; 300–500 m.

Fr. : May.

RAIPUR : Dhamtari, Taurenga.

5. **Toona** (Endl.) Roem.

(The genus is sometimes kept in Flindersiaceae).


Deciduous trees. Leaves even- or odd pinnate, 30–75 cm long; leaflets 5–12 pairs, 6–15 cm long, entire or undulate; petiolules ca 1 cm long. Flowers in suberect panicles, white, ca 5 mm long. Capsules ovoid, 5-valved.

Near villages; 600 m

Fl. : April

RAINANDGAON : Gadha.

32. **Olacaceae**

(M. I. Hanf)

**Olax** L.


Sarmentose shrubs with olive coloured, up to 7 m long, pubescent prickly branches, old branches thorny. Leaves oblong, 7–12 cm long. Racemes axillary, up to 5 cm long; flowers ca 8 mm long, white; calyx cupular persistent. Drupes oblong, globose, ca 1 cm long, green with a darker spot at the tip.

Common in mixed forests and along roadsides; 300–500 m.

Fl. & Fr. : April October.


33. **Celastraceae**

(D. M. Verma)

**Celastrus** L.

Salicaceae shrubs with greyish lenticellate branches, 5–15 m high. Leaves obovate oblong, 4×10–3×7 cm, mucronate, serrulate. Flowers ca 5 mm across, greenish yellow, in 5–15 cm long terminal panicked cymes. Capsules globose, 3-lobed, ca 8 mm across; seeds with bright red aril.

Common in miscellaneous forests; 300–750 m.

Fl. & Fr.: April–October.

DURG: Balod, Budhbum. RAIPUR: Chhoora, Dhamtari, Gariaband. RAJNANDGAON: Malaidah, Singhari.

Oil from crushed ripe fruits considered very effective for skin diseases; also used for headache.

34. RHAMNACEAE

(D. M. Verma)

1a. Tendrils present. Fruiting calyx epigynous ........................ Helinus 1

1b. Tendrils absent. Fruiting calyx hypogynous or perigynous.
   2a. Plants unarmed. Leaves with a solitary midrib from the base. Fruits winged. ..................................................... Ventilago 2
   2b. Plants prickly. Leaves 3-5 ribbed from the base. Fruits not winged ................................................................. Ziziphus 3

1. Helinus Meyer ex Endl.

Helinus lanceolatus Brandis, For. Fl. N.W. India. 574. 1874.

Slender unarmed climbing shrubs with some of the branchlets modified into tendrils. Leaves ovate lanceolata, 3×10–1×4 cm, acute, 3-nerved, glaucous beneath, upper much smaller. Flowers in slender cymes, ca 3 mm across, yellowish; petals folded. Fruits drupaceous, broadly obovoid, ca 8 mm long.

In mixed forests; 740 m.

Fl. & Fr.: April.

RAJNANDGAON: Malaidah.

2. Ventilago Gaertn.


Sarmentose shrubs or lianas with grey bark having bright red furrows. Leaves bifarious, elliptic oblong, 7 15 × 3 7 cm, acuminate, sometimes serrate. Panicles interrupted. Flowers ca 3 mm across, yellowish. Fruit globose, ca 7 mm across, with a linear oblong 3 5 cm long, green or stramineous wing at the top.

Common on roadsides and in mixed forests: 250 500 m.

*Fl.*: August September; *Fr.*: October June.

DURG: Kusumkasa. RAIPUR: Gariaban, Sitanadi. RAJNANDGAON: Singhar.

3. *Ziziphus* Miller

1a. Straggling thorny shrubs becoming large climbers, the trunk armed with large conical spine tipped woody bosses. Leaves very oblique at the base, 2 - 5 cm long. Fruits globose, ca 5 mm diam., black.

... *Z. oenoplia* 3

1b. Plants not as above.

2a. Petals 5. Stone hard and thick, more or less rugose.

3a. Leaves glabrous or sparsely hairy along the nerves beneath. ... *Z. glaberrima* 1

3b. Leaves sericeous beneath.

4a. Peduncles of the cymes mostly longer than the pedicels. Mature fruits globose, 2 - 3 cm diam., extremely hard, not edible. Wild ... *Z. xyloporys* 5

4b. Peduncle of the cymes absent or shorter than the pedicels. Mature fruits ellipsoid, or if globose then usually smaller, soft, edible. Wild or cultivated. ... *Z. mauritiana* 2

2b. Petals absent. Stone crustaceous and thin walled, smooth. ... *Z. rugosa* 4


Shrubs or small trees, sparsely prickly. Leaves elliptic oblong, 4 8 × 3 4 cm, acute, entire or serrulate. Cymes axillary, ca 1 cm long;
peduncles usually longer than the pedicels. Fruits ellipsoidal with an acute tip, ca 2.5 cm long, woody.

In mixed forests; 400–500 m.

Fl.: May–June; Fr.: June–August.

RAIPUR: Dhamtari, Kanker, Khallari, Sitanadi.


Small spinescent trees. Leaves obliquely elliptic-oblanceolate, 4-6 × 3-4 cm, white or brown tomentose beneath. Flowers in axillary tomentose cymes or fascicles, ca 5 mm across, greenish white. Fruits globose, ca 1.5 cm dia, red, succulent.

In mixed forests and villages; wild and cultivated; 250–350 m.

Fl.: August–September; Fr.: January–February.

RAIPUR. Raipur. RAJNANDGAON: Khargaon.

Fruits edible. Some cultivated varieties have drooping branches and green or yellow ellipsoidal ca 4 cm long fruits.


Spiny profusely branched undershrubs, ca 70 cm high. Leaves 1.5-4.5 × 1.0-2.5 cm, pale brownish white beneath. Fruits globose, ca 7 mm dia.

In wastelands; 230 m.

Fl.: August; Fr.: October.

RAIPUR: Pithora, Sitnga.


Evergreen climbing shrubs with brown tomentose branches. Leaves very obliquely elliptic-oblanceolate, 2.5 × 1.3 cm, entire or crenulate, brown tomentose beneath. Cymes axillary, ca 1 cm long. Flowers greenish; petals cucullate. Fruits succulent, stone compressed, rugose.
Common in mixed forests; 250 - 500 m.

Fl.: April September; Fr.: September October.

RAJNANDGAON: Baghnadi, Singhari.

Roots of this and *Woodfordia fruticosa* crushed and mixed with cold water are given to increase lactation in women.


Spinescent shrubs or small trees with scandent branches sometimes appearing almost like lianas, dark greyish, young parts tomentose. Leaves elliptic, 5 12 x 4 8 cm. obtuse, serrulate, usually cordate, brown tomentose or glabrescent beneath. Flowers in peduncled cymes, ca 5 mm across, greenish yellow. Fruits globose, 8 12 mm across, white fleshy.

Roadsides: 500 - 700 m.

Fl. & Fr.: April May.

RAIPUR: Khallari. RAJNANDGAON: Malaidah.

Fruits eaten.


Small spiny trees or shrubs with scandent branches. Leaves somewhat obliquely ovate elliptic, 3 8 cm long, serrulate, pubescent or tomentose beneath, apex rounded, base rounded or subcordate. Flowers ca 5 mm across. Fruits globose, green.

Common in mixed forests; 250 - 450 m.

Fl.: June; Fr.: August January.

RAIPUR: Chhoora, Dhamtari, Dugli, Sitanadi. RAJNANDGAON: Baghnadi, Khargaon, Salewara.

35. VITACEAE

(D. M. Verma)

1a. Tendrils on the peduncles, opposite the inflorescence ... *Ampelocissus* 1

1b. Tendrils on the branches, opposite the leaves
2a. Leaves simple. Berries 1-seeded ... Cissus 3
2b. Leaves compound. Berries 2-4-seeded ... Cayratia 2

1. AMPELOCISSUS Planch.

1a. Leaves glabrous beneath. ... A. latifolius 1
1b. Leaves tomentose beneath ... A. tomentosa 2


Extensive climbers with tuberous rootstock bearing long slender glaucous shoots. Leaves 3-7 angled or lobed, 10-20 cm long and equally broad, crenate dentate, cordate or retuse at the base. Flowers usually when leafless or with young leaves; petals ca 1.5 mm long, red, expanding. Berries ca 8 mm diam., black, succulent, sweet.

Common in mixed forests; 300-800 m.

Fl. & Fr.: May - September
RAIPUR: Dhatari. RAJNANDGAON: Chilpi, Salewara.


Extensive perennial climbers bearing tomentose branches. Leaves suborbicular, 3-5 lobed, 15-25 cm across, serrate, deeply cordate, brown tomentose beneath; basal lobes rounded. Petals ca 1.5 mm long, red, spreading. Berries globose, ca 8 mm diam.

Common in mixed and sal forests; 400-600 m.

Fl. & Fr.: August - November.
RAIPUR: Borai, Pithora. RAJNANDGAON: Baghnadi, Salewara.

2. CAYRATIA Juss.

1a. Leaves mostly 5-foliolate. Berries red ... C. auriculata 1
1b. Leaves 3-foliolate. Berries black ... C. trifolia 2


Extensive climbers with spongy stems and 2-3-fid tendrils. Leaflets 5 (rarely 3), elliptic-ovate, 7-12 cm long, acuminate, crenate; stipules hemispherical. Flowers greenish white, ca 18 mm across, pedun-
icles and pedicels fleshy. Seeds obovate oblong, furrowed and transversely ridged on the back and pitted on the face.

In mixed forests; 800 m.

*Fr.*: September.

RAJNANDGAON: Chilpi.


Creepers or climbers on bushes, young branches pubescent. Leaflets 5–10 × 3–6 cm, crenate, pubescent on both sides, terminal elliptic obovate, laterals ovate, somewhat cordate. Cymes 5–10 cm across, hairy; flowers ca 2 mm across, greenish white. Berries 10–18 mm diam.

In wastelands & along cultivated fields; 300–600 m.

*Fl.* & *Fr.*: August–November.


3. *Cissus* L.


Extensive climbers, young branches tomentose, the tomentum usually ferruginous. Leaves broadly ovate or suborbicular, 12–20 cm across, cordate, toothed, deciduously villous. Cymes long peduncled, tomentose; flowers ca 1.5 mm across. Fruits pyriform, ca 8 mm long, purplish black.

In miscellaneous forests; 400–550 m.

*Fl.* & *Fr.*: May–June.

RAIPUR: Gariaband, Taurenga.

The stems on cutting yields drinkable water.

<table>
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<th>36. LELACEAE</th>
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<td><em>Lepa</em> van Royen ex L.</td>
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1a. Petiolar stipule a narrow wing, 1.5–4.0 × 0.5 cm, scar narrow

| L. crispa 1 |

1b. Petiolar stipule obovate, 2–6 × 1–4 cm, scar broad

| L. macrophylla 2 |

Herbs or shrubs. Stem sometimes crispaely winged. Leaves usually once or twice pinnate, sometimes unifoliolate or trifoliolate; leaflets ovate oblange, (4 - 10) 18 (28) × (2) 5 12 (16) cm, acuminate. Flowers greenish white; anthers attached to the filament by a conspicuous boss. Fruits ca 17 mm diam., purple black.

Along roadsides, and in mixed and sal forests; 250 750 m.

*Fl.* : May August, *Fr.* : September October


Shrubs, more or less pubescent on all parts. Leaflets unfoliate, trifoliolate, or once to thrice pinnate; leaflets of unfoliate specimens broadly ovate, 20 - 65 × 15 60 cm, of pinnate specimens elliptic lanceolate, 10 30 × 3 10 cm. Flowers greenish white; anther walls thick, orange brown or dark brown. Fruits 10 - 15 mm diam.

In miscellaneous forests and along cultivated fields; 250 300 m.

*Fr.* : November January.

**RAIPUR** : Sitanadi.
37. SAPINDACEAE
   (D. M. Verma)

1a. Tendril climbers. Leaves binate; leaflets deeply toothed or lobed
    ... Cardiospermum 1

1b. Trees or shrubs. Leaves not binate; leaves or leaflets entire.

2a. Leaves simple. Fruits winged. Dodonaea 2

2b. Leaves pinnate. Fruits not winged.

3a. Leaflets tomentose beneath. Petals present. Fruits
    2 - 3 - lobed. Sapindus 3

3b. Leaflets glabrous. Petals absent. Fruits not
    lobed. ... Schlechteria 4

1. Cardiospermum L.


Profusely branched annual slender climbers. Leaflets ovate
lanceolate, 2 \(\times\) 1 - 3 cm, acuminate. Inflorescence axillary, 3-
branched, with a few racemose flowers at the tip; the lowest pair of pedi-
cells modified into tendrils. Flowers polygamous, ca 3 mm across, white.
Capsules reddish green, inflated.

On roadside bushes; 250 - 350 m.

Fl. & Fr.: April - January.

DURG: Durg. RAIPUR: Simga.

2. Dodonaea Mill.

228. 1771.

Shrubs or small trees. Leaves light green, coriaceous, linear-
oblanceolate, 3.0 - 7.0 \(\times\) 0.5 - 1.5 cm. Flowers in short axillary and terminal
cymes, polygamous, greenish, sepals ca 2 mm long; petals absent. Fruits
membranaceous, 10 - 15 mm long, 2 - 4 winged.

A common hedge-plant growing to a small tree if not pruned;
250 - 350 m.

Fl. & Fr.: October - January.

DURG. RAIPUR. RAINANDGAON.
3. **Sapindus L.**


Evergreen trees; young parts brown tomentose. Leaves 3-15 cm long with 2-3 pairs of subopposite, obtuse or emarginate elliptic-oblong, 6-15 cm long leaflets. Flowers in short terminal panicles, ca 5 mm across, white; petals 5. Fruits ca 2 cm long.

Occasionally planted; 250-400 m.

*Fl.*: October; *Fr.*: January-May.

**RAIPUR**: Chhobra.

Fruits used for washing clothes and hairs.

4. **Schleichera Willd.**


A beautiful shade-giving tree, 3-8 m high, bark thin, blaze pink. Leaves 20-30 cm long with 2-3 pairs of entire, opposite, elliptic-oblong, 10-20 cm long leaflets which are usually acute or apiculate but sometimes rounded or notched at the tip. Flowers polygamous, small, yellowish, in 5-15 cm long tomentose racemes. Fruits oblong, 2.5-3.5 cm long, greyish green.

In miscellaneous forests; 400-450 m.

*Fr.*: May.

**RAIPUR**: Sitanadi.

Reputed for growing lac; yields good quality timber; seeds yield cooking oil. Recommended for roadside plantation.

38. **ANACARDIACEAE**

(D.M. Verma & P.C. Pant)

1a. Leaves simple. Flowers together with the leaves. Carpels solitary or 2, or if 3 - 6 then free.

2a. Leaves lanceolate, glabrous, narrowed to a shortly acuminate tip. Ripe fruits juicy...

**Mangifera 4**
2b. Leaves oblong or obovate, glabrous or hairy beneath, rounded at the tip. Fruits never juicy.

3a. Leaves glabrous. Carpels solitary. Fruit a reniform nut ... \textit{Anacardium} 1

3b. Leaves hairy beneath. Carpels 3 or 5 - 6. Fruit an ovoid or subglobose drupe.

4a. Carpels 3. Drupe ovoid, 2 - 3 cm long, on 5 - 6 mm long fleshy cupular hypanthium \textit{Semecarpus} 5

4b. Carpels 5 - 6. Drupe subglobose, ca 1 cm long, without the above hypanthium ... \textit{Buchanania} 2

1b. Leaves pinnately compound. Flowers when the tree is leafless, or sometimes continuing with the newly sprouting leaves. Carpels 4 - 6, wholly or partially united.

5a. Leaflets with 10 - 30 secondary nerves on each side of the midrib, almost straight, meeting in an intra-marginal nerve. Carpels free above, united below. Drupes 3.0 - 3.5 cm long ... \textit{Spondias} 6

5b. Leaflets with 5 - 7 secondary nerves on each side of the midrib, curving upwards, intra-marginal nerve absent. Carpels almost wholly united. Drupe ca 1 cm long ... \textit{Lannea} 3

1. \textit{Anacardium} L.

\textit{Anacardium} occidentale L. Sp. Pl. 383. 1753. ‘Kaju’.

Dense - foliaged small crooked trees or shrubs. Leaves coriaceous, obovate, 7 - 18 cm long, apex rounded or emarginate. Panicles terminal or in upper leaf - axils. Flowers polygamous, ca 1 cm long, pinkish; stamens ultimately fleshy, pyriform, 5 - 7 cm long. Nuts 2 - 3 cm long.

Sometimes planted; 350 - 450 m.

Fl. : January; Fr. : June.

RAIPUR : Dugli, Gariaband.

Seeds eaten raw and roasted.

2. \textit{Buchanania} Spreng.


Large, deciduous, dioecious trees; young branches with smooth whitish bark and pink crimson blaze. Leaves clustered at the tips of branches; leaflets usually 7, obliquely ovate, 7-13 cm long, stellately hairy beneath. Flowers ca 5 mm across, greenish yellow, in 3-20 cm long racemes. Drupes oblong, ca 1 cm long.

In miscellaneous forests: 400-800 m.

*Fl.* & *Fr.*: March May.


4. Mangifera L.


Evergreen trees with dense dark green foliage. Leaves lanceolate, 10-20 x 3-5 cm. Flowers polygamous, small, greenish white, in terminal panicles; pedicels jointed. Drupes with fleshy and fibrous juicy mesocarp.

Generally planted for its wholesome fruits, and for shade along roadsides: 250-500 m.

*Fl.*: February March; *Fr.*: May.

RAIPUR: Sitanadi.

Several varieties are known in cultivation.

5. *Semenarpus L.*

Shrubs or trees. Leaves generally clustered at the tips of branches, obovate oblong, 20-45 cm long, cuneate, lower surface grey and papillose between the strong hairy nerves. Flowers ca 6 mm across, greenish yellow, in large dense panicles. Drupes compressed, oblong or obliquely ovoid, ca 7.5 cm long, black.

In sal and miscellaneous forests: 400-600 m.

_Fl._: August September; _Fr._: November January.


6. _SPONDIAS_ L.


Large deciduous trees with thick smooth whitish bark and pink red blaze. Leaves crowded at the ends of branches, with mango-like smell; leaflets 4–6 pairs. Oblong. 5-20 x 3-8 cm. Acuminate. Flowers polygamous, ca 7 mm across, white, in large pyramidal panicles. Drupes ellipsoid, yellow.

Sometimes planted: 500 m.

_Fl._: March April; _Fr._: October January.

RAIPUR: Taurenga.

39. _MORINGACEAE_

(P.C. Pant)

_MORINGA_ Adams.


Small deciduous trees with corky greyish or pale brown bark and soft white wood. Leaves generally trifoliate; leaflets opposite, elliptic obovate, 10-15 mm long. Flowers white, in large axillary panicles. Fruit an angular, cylindrical, 3-valved capsule, up to 30 cm long, 10-15 mm thick, green outside, white and pitted inside.

Planted and running wild: 250-320 m.

_Fl._ & _Fr._: May September.
RAIPUR: Kasdol, Raipur. RAJNANDGAON: Rajnandgaon.

Fruits and seeds eaten cooked; seeds yield oil.

40 FABACEAE

(PAPILIONACEAE)

(D. M. Verma & M. I. Hanfi)

1a. Plants generally flowering when leafless, or sometimes also with the young leaves (all the genera repeated in the opposite arm).

2a. Flowers 3 - 6 cm long.

3a. Stem and branches smooth. Pods one - seeded ...

3b. Stem and branches prickly. Pods two - or more - seeded ...

2b. Flowers 1 cm long.

4a. Climbers. Rachis somewhat. Flowers sessile or on up to 3 mm long pedicels ...

4b. Trees. Rachis glabrous or puberulus. Flowers almost all on 10 - 15 mm long pedicels ...

1b. Plants flowering along with the leaves.

5a. Pods two - several - seeded, jointed.

6a. Leaves two - foliolate ...

6b. Leaves one - or three - many - foliolate.

7a. Pods coiled ...

7b. Pods not coiled.

8a. Leaves one - foliolate.

9a. Calyx scarious. Joints of the pod turgid ...

9b. Calyx herbaceous. Joints of the pod flat ...

8b. Leaves three - many - foliolate.

10a. Leaves three - foliolate.

11a. Trees. Pods 8 - 10 mm broad ...

11b. Herbs or shrubs. Pods 2 - 4 mm broad ...

10b. Leaves five - many - foliolate.

12a. Leaflets ciliate. Pods included
within the calyx

12b. Leaflets glabrous. Pods protruding from the calyx

5b. Pods one-seeded, or if more-seeded then not jointed.

13a. Leaves one- foliolate.

14a. Leaflets broadly ovate-oblong or elliptic, dentate, gland-dotted. Flowers purple, in long peduncled axillary heads. Pods one-seeded

14b. Plants not as above

15a. Pods one-seeded.

16a. Pods globose

16b. Pods elliptic-obovate, compressed.

17a. Racemes very lax so that the rachis is distinctly visible. Calyx glabrous or with a few hairs at the tip

17b. Racemes dense so that the rachis is almost invisible. Calyx villos throughout

15b. Pods two- several-seeded.

18a. Leaflets gland-dotted beneath. Flowers hidden within ca 25 mm broad conduplicate bracts

18b. Leaflets glandular. Flowers exposed, bracts narrow, flat, up to 5 mm broad

13b. Leaves two-many- foliolate.

19a. Tendrils present.

20a. Leaflets 2 or absent

20b. Leaflets 4-18

19b. Tendrils absent.

21a. Pods coiled

21b. Pods not coiled.

22a. Leaves three-foliolate.
23a. Trees or lianas. Terminal leaflets 10 - 30 cm long. Pods flat, 7 - 15 cm long, 2 - 5 cm broad, with a solitary subapical seed

23b. Plants not as above.


25a. Flowers white or yellow. Pods subglobose.

26a. Leaflets digitate  ...  Butea 5

26b. Leaflets pinnate  ...  Crotalaria 9

25b. Flowers red. Pods linear - oblong  ...  Melilotus 20

24b. Plant not as above.

27a. Lower two leaflets alternate  ...  Indigofera 15

27b. Lower two leaflets opposite.

28a. Pods one - two seeded.

29a. Shrubs or stout erect herbs. Pods turgid  ...  Dolichos 16

29b. Slender twiners. Pods compressed  ...  Rhabdosia 28

28b. Pods three - several - seeded.

30a. Leaflets gland - dotted beneath.

31a. Twiners. Seeds strophioleate  ...  Fleminlia 14

31b. Erect herbs or under-shrubs. Seeds not strophioleate  ...  Cajanus 6

30b. Leaflets eglandular.

32a. Trees.

33a. Stem and branches prickly. Flowers 0.5 cm long  ...  Erythrina 15

33b. Stem and branches smooth. Flowers 0.1 cm long  ...  Eugenia 23

32b. Climbers or creepers.

34a. Nodes of the racemes swollen.

35a. Flowers 3 - 4 cm long. Pods clothed with stinging hairs  ...  Mucuna 22
35b. Flowers 0.5 - 1.5 cm long. Pods glabrous, or if hairy then the hairs not clinging.

36a. Leaflets silky tomentose beneath. Style glabrous

36b. Leaflets not silky tomentose beneath. Style hairy.

37a. Style divided into a thin basal part and a thick upper part ...

37b. Style uniformly thick, uniformly thin or tapering, not divided into two distinct parts.

38a. Style distinctly thickened, conspicuous. Pollen grains smooth ...

38b. Style not distinctly thickened, often short and inconspicuous. Pollen grains tuberculate or spinulose ...

34b. Nodes of the racemes not swollen ...

22b. Leaves few - many - foliolate.


40a. Pods with a broad circular wing ...

40b. Pods not winged ...

39b. Plants not as above.

41a. Leaflets linear - oblong, 1 - 3 cm long. Pods linear, separte, 15 - 40 cm long ...

41b. Plants not as above.

42a. Annual diffuse herbs. Leaflets toothed. Pods turgid ...

42b. Plants not as above.

43a. Pods 1 - 3 cm broad.

44a. Leaflets 3 - 6 cm broad.

45a. Trees. Pods ellipsoid ...


46a. Flowers solitary, 3 - 5 cm long ...

46b. Flowers racemose, cm 1 cm long ...

44b. Leaflets or 0.5 cm broad ...

Pietaria 27
Vigna 35
Lablab 16
Macrotyloma 18
Teranumus 32
Pterocarpos 26
Dalbergia 10
Sesbania 29
Cleer 7
Abras 1
43b. Pods 0.1 - 0.5 cm broad.

47a. Pods flat, 2 - 4 cm long, 3 - 4 mm broad \ldots \quad \textit{Tephrosia} 31

47b. Pods turgid, frequently smaller and narrower \ldots \quad \textit{Indigofera} 15

1. \textit{Abrus} Adans.

\textit{Abrus precatorius} L. Syst. Nat. ed. 12, 472. 1767 \textit{‘Gumchi, Ratti’}.

Slender climbing shrubs. Leaves 5 - 10 cm long; leaflets 10 - 20 pairs, linear, 15 - 25 x 4 - 6 mm, glabrous or pubescent beneath. Flowers in dense racemes, \textit{ca} 8 mm across, pinkish white. Pods \textit{ca} 4 cm long; seeds subglobose, shining, usually scarlet with a black eye, sometimes white.

Climbing on roadside trees and shrubs; 300 - 500 m.

\textit{Fl.} : August September; \textit{Fr.} : September June.

\textbf{RAIPUR} : Gariaband, Tauranga. \textbf{RAJNANDGAON} : Baghnadi.

The seeds used as jeweller’s weight.

2. \textit{Aeschynomene} L.

1a. Stem spongy, Calyx hispid \ldots \quad \textit{A. aspera} 1

1b. Stem not spongy, Calyx glabrous \ldots \quad \textit{A. indica} 2

1. \textit{Aeschynomene aspera} L. Sp. Pl. 713. 1753.

Stout herbs, 1.5 - 3.0 m high. Leaves 8 - 15 cm long; leaflets numerous, linear, 10 - 15 x 2 mm; stipules scariosus. Racemes simple or branched, 4 - 8 cm long. Flowers \textit{ca} 2 cm long, yellow. Pods 4 - 8 cm long, \textit{ca} 8 mm broad, usually muricate.

In water or marshy places; 300 m.


Slender, erect, profusely branched herbs, 0.2 - 1.0 m high, branches with small warts or papillae. Leaves 7 - 8 cm long; leaflets numerous, sensitive to touch, linear, 4 - 6 x 2 mm. Racemes one few-flowered. Flowers \textit{ca} 1 cm long, creamy or pinkish yellow. Pods 3 - 6 cm long, \textit{ca} 4 mm broad.
Near ponds; 250–340 m.

*Fl. & Fr.: August September.*

DURG: Balod. RAIPUR: Dhamtari. RAJNANDGAON: Deopura.

3. **Alysicarpus Desv.**

1a. Pods strongly transversely ribbed.

2a. Leaflets elliptic-oblong, 7 × 4–16 mm. Racemes compact. **Calyx densely ciliate** ... *A. scariosus* 5

2b. Leaflets linear-lanceolate or oblong, 25–75 × 10–25 mm. Racemes lax. **Calyx almost glabrous or sparsely ciliate** ... *A. rugosus* 4

1b. Pods smooth or faintly reticulate.

3a. **Calyx lobes imbricate at the base** ... *A. bupleurifolius* 1

3b. Calyx lobes not imbricate at the base.

4a. Pods moniliform ... *A. monilifer* 3

4b. Pods not moniliform.

5a. Stems with spreading hairs ... *A. hamosus* 2

5b. Stems glabrous or appressed hairy ... *A. vaginalis* 9

1. **Alysicarpus bupleurifolius** (L.) DC. Prodr. 2: 352. 1825.


Annual slender herbs, 20–75 cm high. Leaflet 1, linear-elliptic, 2 × 2–8 cm, thinly pubescent beneath. Racemes 10–20 cm long with distant pairs of shortly pedicelled purplish red flowers; calyx ca 6 mm long, ciliate. Pods 4–6-jointed, long exserted, smooth or vaguely reticulately nervet.

In mixed forests; 500–800 m.

*Fl. & Fr.: September October.*

RAIPUR: Taurenga. RAJNANDGAON: Chilpi.


Calyx ca 4 mm long. Pods 1–2-jointed, included or slightly exserted.

In mixed forests; 300–500 m.

*Fl. & Fr.: October November.*
RAIPUR: Tauranga. RAJNANDGAON: Machli Deo.


Slender annual herbs, 30–50 cm. high; younger branches clothed with spreading hairs. Leaflet 1, broadly elliptic or sub-orbicular, 2–5 cm long. Racemes short, slender. Flowers mostly in pairs, yellow or pink. Pods compressed, 4–6-jointed, 10–18 × 2–4 mm.

On hill slopes and in wastelands; 440–500 m.

Fl. & Fr.: September.

RAJNANDGAON: Baghnadi, Deopur.


Slender prostrate tufted herbs with 10–50 cm long branches. Leaflet 1, elliptic oblong, 5–15 × 7–10 mm, with rounded or subcordate base. Racemes dense, few flowered. Pods 3–6-jointed, 10–18 × 2 mm, joints globose, pubescent.

In wastelands; 200–500 m.

Fl. & Fr.: August–May.

DURG: Ralod. RAIPUR: Dharasinwan, Sitanadi. RAJNANDGAON: Baghnadi.


Stout erect herbs, 0.5–1.0 m high. Leaflet 1, elliptic oblong, 2–7 × 1–3 cm, pubescent beneath, particularly along the nerves and the margins. Racemes dense, 3–7 cm long, elongating in fruits to 30 cm. Flowers pinkish yellow. Pods almost fully included within the calyx, joints oblate, ca 2.0 × 2.5 mm.

In wastelands; 250–450 m.

Fl. & Fr.: January.

RAIPUR: Dugli, Raipur.


Diffuse herbs, branches 10–20 cm long, pubescent. Leaflet 1, pililose beneath. Racemes dense, axillary, 10–20 mm long, rachis piliose. Calyx glabrous, 6–9 mm long, pale brown. Pods moniliform, 3 jointed, joints oblate, ca 2.0 × 2.5 mm, pubescent.
In fallow fields; 350 – 450 m.

Fl. & Fr.: March – April.

DURG: Durg. RAJNANDGAON: Baghnadi.


Prostrate or ascending diffuse herbs with 15–40 cm long branches, sometimes erect, up to 1 m high. Petoles 2–12 mm long. Leaflet 1, lanceolate, oblong or broadly elliptic, 0.5 × 3.0 cm, pubescent beneath. Flowers purplish. Pods 6–8-jointed. 15–30 × 2 mm, reticulately nerved, hairy.

In wastelands and dried river beds; 300 – 750 m.

Fl.: September – November; Fr.: November – June.

RAIPUR: Dugli, Khallari, Pithora. RAJNANDGAON: Baghnadi, Chilpi, Deopura, Singhari.

4. Atylosia Wi. & Arr.


Slender, copiously branched, greyish green pubescent climbers. Leaflets 3, elliptic or obovate oblong, strongly nerved, terminal 15–35 mm long. Flowers ca 8 mm long, yellow or reddish; calyx silky tomentose, almost as long as the corolla. Pods linear oblong, 20–25 mm long, hairy, with depressed lines between the seeds.

On roadside bushes and in miscellaneous forests; 250 – 800 m.

Fl.: August – November; Fr.: October – June.


5. Butea Koenig ex Roxb.

1a. Flowers ca 1 cm long, white or cream coloured. Pods tomentose tomentose... B. parviflora 2

1b. Flowers 4–6 cm long, orange scarlet. Pods grey tomentose.
2a. Trees. Lowest calyx tooth much shorter than the side ones  

B. monosperma

2b. Large woody climbers. Lowest calyx-tooth equal to the side ones.  

B. superba


Deciduous trees up to 7 m high, though usually found cut and stunted. Leaves ovate rhomboid, 80 - 20 cm long and equally broad, grey tomentose beneath. Racemes ca 10 cm long; calyx coriaceous, velvety black. Pods ca 15 × 4 cm, obliquely rounded at the base.

Common in wastelands and secondary forests; 350 - 500 m.

Fl : March April; Fr : April June.


Stems yield a red gum; leaves used for taking meals.


Large woody climbers. Leaflets subcoriaceous, 15 - 30 cm long, grey tomentose beneath, terminal obovate rhomboid. Panicles 20 - 40 cm long; flowers subsessile, calyx grey velvety. Pods 7 - 10 × 2 - 3 cm, often constricted below the seed.

Fl : October December; Fr : February March.


Large deciduous woody lianas up to 10 m high and with 40 - 60 cm thick trunk but sometimes when support is not available the branches are just spreading out and partly lying on the ground. Leaflets obovate-rhomboid, 20 - 40 cm long. Racemes 20 - 30 cm long. Pods 10 - 15 cm long, base rather narrowed.

In miscellaneous forests; 350 - 500 m.

Fl : March; Fr : April June.

RAIPUR : Pithora. RAJNANDGAON : Kuraijhar.
6. Cajanus DC.


Shrubs, 1-3 m high, branches grey pubescent. Leaves trifoliolate; leaflets lanceolate, 5-10 x 2-8 cm, pubescent and glandular on both surfaces. Flowers racemose or paniced, ca 2 cm long, yellow with reddish brown streaks. Pods linear oblong, 5-10 cm long, pubescent, with oblique depressions between the seeds; seeds globose.

Cultivated ; 250-300 m.
Fl. & Fr. : August January.
RAIPUR : Raipur.

Seeds used as pulse. The plants are perennial but usually grown as annuals.

7. Cicer L.

Cicer arietinum L. Sp. Pl. 738. 1753. 'Chana'.

Annual, slender, glandular pubescent herbs. Leaflets elliptic, 10-15 x 5-7 mm, mucronulate, dentate. Flowers solitary, 10-15 mm long, white or purple. Pods oblong ellipsoid, inflated, 15-25 x 10 mm, glandular pubescent; seeds ovoid.

Cultivated ; 250-350 m.
Fl. & Fr. : January February.
RAIPUR : Simga.

Seeds eaten in cooked, fried, roasted, soaked or powdered form. Also fed to animals.

8. Clitoria L.

Clitoria ternatea L. Sp. Pl. 753. 1753. 'Aparjita'.

Slender twiners. Leaves odd-pinnate; rachis ca 5 cm long; leaflets elliptic, 20-30 x 16-20 mm, usually retuse. Flower solitary hanging on slender pedicels, blue or white; corolla 3-4 cm long, wings adherent to the keel. Pods compressed, 6-8 cm long.
On roadside hedges; 300 m.

*Fl. & Fr.*: October.

RAIPUR: Raipur.

9. **Crotalaria L.**

1a. Leaves simple.
2a. Stem winged.

2b. Stem not winged.

3a. Corolla about half as long as the calyx ...

3b. Corolla about as long as or longer than the calyx.

4a. Flowers 20 - 25 mm long; calyx glabrous. Pods 3 - 5 cm long ...

4b. Flowers 5 - 12 mm long; calyx villous. Pods 0.8 - 1.7 cm long.

5a. Racemes leaf-opposed

5b. Racemes terminal.

6a. Upper calyx lobes connate almost to the tip ...

6b. Upper calyx lobes free or connate only at the base.

7a. Plants with long spreading hairs. Pods 15 - 20 - seeded ...

7b. Plants with short appressed hairs. Pods 6 - 8 - seeded.

1b. Leaves 3 - or 5 - foliolar.

8a. Leaves mostly 5 - foliolar. Pods 5 - 6 cm long ...

8b. Leaves always 3 - foliolar. Pods 0.3 - 1.2 cm long.

9a. Pods cylindric, many - seeded ...

9b. Pods subglobose, two - seeded.

10a. Diffuse herbs, branches and leaflets white pubescent. Leaflets 5 - 10 mm long. Flowers 8; 5 mm long ...

10b. Erect undershrubs, branches and leaflets yellow pubescent. Leaflets 25 - 35 mm long. Flowers 8; 10 mm long

C. *Medianus* 6

C. *notonii* 7

1. **Crotalaria albida** Heyne ex Roth, Nov. Sp. Pl. 333. 1821.

Herbs with several erect branches from a woody rootstock, 20 - 70
cm high. Leaves linear oblong, 20 70 × 5 10 mm. Racemes generally few flowered. Flowers on short slender pedicels; corolla 8 12 mm long, yellow. Pods oblong, ca 1 cm long, glabrous.

Common in forest - floors and along streams; 300 750 m.

Fl. & Fr.: August - April.

DURG: Balod, Bordih. RAJPUR: Dugli. RAJNANDGAON: Baghnaudi, Chilpi, Malaidah, Taregaon.


Sub erect herbs 30 70 cm high, branches hairy. Leaves elliptic oblong or ovate, 2 7 cm long, silky pubescent beneath; stipules decurrent as wings on the branches. Racemes 7 10 cm long. Flowers ca 15 mm long. Pods oblong, ca 3 cm long.

In forest floors; 450 m.

Fl. & Fr.: October.

RAJPUR: Taulenga.


Erect annual herbs, 30 - 60 cm high; branches hairy. Leaves linear-lanceolate, 25 80 × 5 13 mm, silky beneath. Racemes terminal, several-flowered. Calyx 12 - 15 mm long, reddish brown, hairy; corolla yellow. Pods subcylindric, 20 25 × 8 mm, many-seeded.

In forest-floors; 400 500 m.

Fl. & Fr.: October November.

RAJPUR: Taulenga. RAJNANDGAON: Taregaon.


Diffuse herbs with 20 30 cm long suberect hairy branches. Leaves linear-oblongate, 1.5 4.0 × 0.3 1.0 cm, densely hairy. Racemes subcapitate, few-flowered. Flowers ca 1 cm long, yellow. Pods oblong, ca 10 × 7 mm, many-seeded...

Weed in cultivated fields; 240 m.

Fl. & Fr.: November.

RAJNANDGAON: Khairagarh.
5. **C. limifolia** L. f. Suppl. 322. 1781.

Annual, scarcely branched, hairy herbs, 30-60 cm high. Leaves sessile, linear oblong-elliptic, 3-7 x 0.5-1.3 cm, mucronulate. Racemes terminal, several flowered. Flowers ca 8 mm long, yellow, drying black. Pods ovoid oblong, ca 8 mm long, 8-10 seeded.

Along paddy fields; 500 m.

**Fl. & Fr.**: September October.

RAJNANDGAON: Deopura.


Slender herbs, 10-20 cm high. Leaflets oblong-elliptic, subtruncate, 5-10 x 2-5 mm, pubescent beneath; stipules filiform. Racemes terminal and leaf-opposed, few flowered. Flowers ca 5 mm long, yellow. Pods subglobose, apiculate ca 3 mm diam., 2 seeded.

In wastelands; 500 m.

**Fl. & Fr.**: September November.

RAJNANDGAON: Deopura.


Small shrubs or undershrubs; branches and leaves yellow pubescent. Leaflets obovate, 2-4 cm long. Racemes 3-6 cm long, dense-flowered. Flowers ca 1 cm long, bright yellow; keel with a long beak. Pods subglobose, oblong, ca 7 mm long, pubescent.

In mixed forest; 450 m.

**Fl. & Fr.**: October.

RAIPUR: Taurenaga, along forest road between Doorampadav and Deodhara.


Perennial diffuse herbs with 30-40 cm long slender branches clothed with brown bulbose based hairs. Leaflets obovate oblong, 2.0-3.5 cm long, hairy beneath. Racemes lax, few flowered; bracts foliaceous. Flowers ca 7 mm long, yellow. Pods oblong, ca 1 cm long, several seeded.

In wastelands; 250 m.

**Fl. & Fr.**: October November.

RAJNANDGAON: Khairagarh.

Diffuse herbs, 10–30 cm high; stems with silky yellowish brown hairs. Leaves rather obliquely obovate-oblong, 2–4 × 1–2 cm. Racemes long peduncled, 2–4-flowered. Flowers yellow; calyx 3–5 mm long; corolla scarcely exserted. Pods linear-oblong, 12–15 mm long, several seeded.

In forest floors, river beds and cultivated fields; 300–700 m.

*Fl. & Fr.*: October–June.

RAIPUR: Dhamtari, Gariaband, Khallari, Taurenga. RAJNANDGAON: Malaidah.


Annual erect herbs, 20–50 cm high; branches sulcate, pubescent. Leaflets usually 5, rarely 3, linear or narrowly oblanceolate, 5–10 cm long, silky beneath. Racemes terminal, 5–10 cm long; bracts reflexed. Flowers ca 15 mm long, yellow. Pods oblong, 3–5 cm long, many seeded.

In paddy fields; 450 m.

*Fl. & Fr.*: September.

RAJNANDGAON: Satewara.


Glaucous green herbs or undershrubs, 0.5–1.5 m high. Leaves obovate or oblanceolate, 5–15 cm long, pubescent beneath; petiole 15–30 mm long. Racemes terminal, 20–40 cm long, many-flowered; bracts foliaceous, 1–2 cm long. Flowers yellow. Pods linear-oblong, inflated, glabrous, many seeded.

In forest floors and wastelands; 300–500 m.

*Fl. & Fr.*: November–June.

RAIPUR: Raipur, Taurenga. RAJNANDGAON: Taregaon.

10. **DALBERGIA** L. f.

1a. Stamens 9, monadelphous, the staminal tube split along the upper side only.

2a. Leaflets 3–5, cuspitate. ...  **D. sinuata** 3

2b. Leaflets 5–7, obtuse or emarginate ...  **D. latifolia** 1
1b. Stamens 10, diadelphous, the staminal tube split throughout so that the stamens are in two bundles of 5 stamens each.

3a. Trees. Standard longer than broad ...  \textit{D. paniculata} 2

3b. Shrubby climbers. Standard as long as broad ...  \textit{D. volubilis} 4


Large trees. Leaves 10–15 cm long, leaflets 3–7, broadly elliptic obovate or suborbicular, 4–6 cm long, obtuse or rarely emarginate. Panicles lax, 5–10 cm long, axillary or from the axils of the leaf scars. Flowers white. Pods oblong lanceolate, 3.5–8.5 × 2.0 cm, 1–4 seeded.

Roadsides: 400 m.

\textit{Fl.}: September; \textit{Fr.}: November–January.

RAJNANDGAON: Taregaon.

The black heart wood with purple streaks is much valued for furniture.


Tall straight trees up to 20 m high with smooth whitish bark and yellowish blaze becoming brown on exposure. Leaflets 7–15, elliptic oblong, obovate or suborbicular, 10–35 mm long, sparsely hairy above. Panicles 5–8 cm long. Flowers ca 7 mm long, pinkish or bluish. Pods 5–8 cm long, 1–3 seeded.

Along roadsides and in sal forests; 350–500 m.

\textit{Fl.}: April; \textit{Fr.}: October–June.

DURG: Bubhuma. RAIPUR: Pithora, Taurenga.

3.  \textit{D. sissoo} Roxb. Fl. Ind. 3: 223. 1832. ‘\textit{Sheesham}’

Trees 3–5 m high with rough furrowed bark. Leaflets 3–5, broadly ovate or suborbicular, long cuspidate, 3–6 cm long. Panicles dense, axillary. Flowers ca 7 mm long, yellowish. Pods strap shaped, 3–10 cm long, 1–4 seeded.

Commonly planted along roadsides; 300–430 m.

\textit{Fl.}: April; \textit{Fr.}: August–June.

DURG: Balod, Durg. RAIPUR: Dhamtari, Kasdol, Raipur.
RAJNANDGAON: Khairagarh, Rajnandgaon.

Wood highly valued for furniture, doors, carts etc.


Large sericeous shrubs with fluted stems. Leaflets 7-11, elliptic or oblong, 2.5-3.5 x 2.0 cm, obtuse or emarginate. Pedicels large, terminal; rachis tomentose. Flowers 7 mm long, purplish blue. Pods oblong, 5-7 cm long, 1-2 seeded.

In sal forests; 500 m.

Fl.: June.

RAIPUR: Taurenga.

11. Desmodium Desv.

1a. Leaflets usually 3, terminal 5-10 cm long, laterals conspicuously smaller, 1-2 cm long, or sometimes absent. Corolla 7-10 mm long. Pods 20-45 x 5-7 mm, dehiscing in a continuous line along the ventral suture, the 5-10 joints not separating.

D. motorium 6

1b. Plants not as above.

2a. Leaves 1-foliolate.

3a. Leaflets elliptic, 1.5-3.5 cm long, rounded at the apex. Racemes 1.0-2.5 cm long. Pods 1-3-jointed

D. brachystachyum 1

3b. Leaflets lanceolate, ovate or deltoid, generally 7-15 cm long, acute at the apex. Racemes 5-25 cm long. Pods 3-8-jointed.

4a. Stems angled, white appressed hairs. Leaflets herbaceous, lanceolate or narrowly ovate, mostly about half as broad as long.

D. gangeticum 3

4b. Stems terete, with yellowish brown spreading hairs. Leaflets coriaceous, broadly ovate or deltoid, about as broad as long.

D. velutinum 10

2b. Leaves 3-foliolate.

5a. Trailing herbs. Terminal leaflets 3-10 mm long.

D. triflorum 9

5b. Erect shrubs or undershrubs. Terminal leaflets 1.5-15.0 cm long.

6a. Flowers on special branches in which the lateral leaflets are rotundate, appressed, 7-15 mm long, appearing like foliaceous bracts and hiding 1-3 flowers, and terminal leaflet reduced to a bristle.

D. pulchellum 7
6b. Inflorescence not as above.

7a. Flowers in umbels. Pods silky white. ... D. triangulare 6

7b. Flowers in racemes or panicles. Pods not silky, green or brown.

8a. Joints of the pod twice or more as long as broad. ... D. laxiflorum 5

8b. Joints of the pod about as long as broad.

9a. Stipules ovate-oblong, auricled. Flowers 2-3 mm long. Pods distinctly and equally indented along both the sutures. ... D. dichotomum 2

9b. Stipules subulate, not auricled. Flowers 5-7 mm long. Pods distinctly indented only along the ventral suture, the dorsal suture almost straight. ... D. heterocarpum 4


Undershrubs, 30-60 cm high; stems faintly angular, appressed hairy. Leaflets elliptic, reflexed, sericeous beneath. Racemes dense, axillary and terminal. Flowers purple; calyx white villous. Pods hairy, joints ca 3.0 x 1.5 mm.

In crevices of rock boulders; 500 m.

Ft. & Fr.: October.

RAIPUR: Taurenga.


Diffusely branched herbs or undershrubs, 0.5-1.0 m high; stems angled, hairy. Leaflets ovate oblong, 5-8 cm long, strongly many nerved. Flowers minute, bluish, 2-3 together, in terminal panicles. Pods 5-6 jointed, joints sub-circular, hairy.

In wastelands and mixed forests; 300-500 m.

Ft. & Fr.: October - May.

RAIPUR: Gariaband, Sitanadi. RAINANDGAON: Singhari.

FLORA OF RAIPUR

Herbs or undershrubs, 0.3 - 0.7 m high. Leaflets 3 - 15 cm long, smooth or scabrid above, grey silky or glabrous beneath; stipules subulate, aristate. Racemes panicked, 10 - 30 cm long. Flowers ca 1.5 mm long, white or mauve. Pods curved, 15 - 20 mm long, deeply indented on the lower suture.

In wastelands and mixed forests; 250 - 500 m.

Fl.: April, October; Fr.: October, June.

DURG: Durg. RAIPUR: Khallari, Sitanadi, Taurenga.

RAJNANDGAON: Baghnadi, Singhari.


Perennial herbs or undershrubs, 20 - 80 cm high; leaflets elliptic or obovateolate, glaucous beneath, terminal 2 - 8 x 1 - 4 cm. Racemes or panicles dense, 2 - 8 cm long; peduncles villous with appressed hairs which spread out on the upper part of the rachis. Flowers ca 7 mm long, bluish purple. Pods 15 - 30 mm long with spreading hairs particularly on the margins.

Common in wastelands and forest floors; 400 - 500 m.

Fl.: September, October; Fr.: October, June.

RAIPUR: Khallari, Singhpur, Taurenga. RAJNANDGAON: Nivasapur.


Undershubs, 0.5 - 1.2 m high, branches appressed hairy. Leaflets ovate lanceolate or rhomboid, hairy beneath, terminal 8 - 1.5 x 4 - 8 cm. Flowers ca 5 mm long, standard white, keel and wings blue. Pods 3 - 4 cm long, hairy, 6 - 8 - jointed.

On forest floors; 400 - 500 m.

Fl. & Fr.: August - November.

DURG: Bordih. RAJNANDGAON: Taregaon.

Slender perennial herbs, ca 1 m high. Terminal leaflet elliptic oblong, rounded at both ends, usually glaucous beneath. Racemes 5-15 cm long. Flowers manve; stamens diadelphous. Pods pubescent.

In sal forests; 750 m.

Fl.: September.

RAINANDGAON: Chilpi.

Commonly called the telegraph plant. The lateral leaflets, when present, move by little jerks in warm humid weather.


Shrubs or undershrubs, 0.3-1.5 m high; branches grey hairy. Leaflets elliptic or ovate oblong, grey hairy beneath, terminal 6-12 cm long, laterals about half as long. Flowers umbelved, ca 5 mm long, yellowish white. Pods small, apiculate, usually 2 sometimes 1 or 3-jointed.

In sal and mixed forests; 400-500 m.

Fl.: October November; Fr.: January May.

RAIPUR: Dugli, Sitanadi, Taurenga.

RAINANDGAON: Deopura.


Shrubs or undershrubs, 0.5-2.5 m high with triangular hairy branches. Leaflets elliptic or obovate, silky beneath when young, terminal 7-15 cm long. Flowers ca 8 mm long, reddish yellow, in several flowered short peduncled umbels. Pods white silky, 4-6-jointed.

In sal forests; 400-500 m.

Fl. & Fr.: September January.

RAIPUR: Sitanadi, Taurenga.


Slender trailing annual herbs, frequently rooting at the nodes; stems
patently hairy. Leaves ovate, truncate or emarginate, sparsely hairy beneath. Flowers 4 together, axillary, ca 3 mm long, white, pink or blue. Pods on filiform pedicels, curved, 3-5-jointed, indented on the ventral sutures, glabrous or hairy.

In wastelands & paddy fields; 250-500 m.

Fl. & Fr.: September-April.

RAIPUR: Pithora, Raipur, Sitanadi. RAJNANDGAON: Baghnadi, Deogarh.


Shrubs, 0.7-1.7 m high; branches rather slender, fulvous hairy. Leaves 5-15 x 4-9 cm, strigose above, tomentose beneath, obtuse or rounded at the apex, truncate or slightly cordate at the base. Racemes or panicles 5-30 cm long, dense flowered. Flowers ca 5 mm long, purple. Pods hairy, 3-6-jointed.

In mixed forests; 450-800 m.

Fl. & Fr.: September-January.

RAIPUR: Dugli, Sitanadi. RAJNANDGAON: Chilpi.

12. Eleothis DC.


Slender trailing herbs with triquetrous stems. Leaves suborbicular, 2-3 cm broad, obtuse or emarginate, hairy beneath. Racemes 5-8 cm long, patent hairy. Flowers minute, reddish, ca 2 mm long, pod of a solitary boat-shaped compressed joint, ca 7 mm long, reticulately veined.

In crevices of exposed rock boulders; 500 m.

Fl. & Fr.: October.

RAIPUR: Tasurega.

13. Erythrina L.

Erythrina suberosa Roxb. Fl. Ind. 3: 253. 1832.
Small deciduous prickly trees with thick corky stramineous bark. Leaves trifoliate, 15 cm long, greyish white tomentose beneath, terminal broadly ovate, laterals obliquely deltoid. Flowers racemose or fascicled at the tips of the branches, 4-5 cm long, scarlet. Pods 10-15 cm long, 2-3 seeded.

Roadsides; 480 m.

Fl.: April.

DURG: Budhbum.

A beautiful tree flowering when leafless, sometimes planted in gardens.

14. FLEMINGIA Ait. f.

1a. Leaves 1-foliate

1b. Leaves 3-foliate.

2a. Stem almost absent. Flowering before the leaves ...

2b. Stem well developed. Flowering with the leaves ...

F. strobilifera 3

F. macrophylla 1


Shrubs, 1-2 m high. Leaflets ovate oblong, 10-17 x 6 cm, acute or obtuse, sparsely silky beneath. Racemes axillary, solitary or fascicled, shorter than the petiole. Flowers white with pink streaks, ca 12 mm long. Pods 4-12 mm long, pubescent, 2 seeded.

In sal forests; 750 m.

Fl.: September.

RAJNANDGAON: Chilpi.


Undershubs. Stems ca 15 cm long, brown tomentose, from a woody rootstock. Leaflets broadly elliptic or rhomboid, 10-17 cm long, laterals very oblique; petioles winged. Racemes or panicles dense, 7-10 cm long, tomentose. Flowers ca 6 mm long, reddish. Pods 8-12 mm long.
Along forest roads; 700 m.

*Fl.* & *Fr.*: March April.

RAJNANDGAON: Malaidah.


Shrubs or undershrubs, 0.2-1.0 (3) m high, branches deciduously pubescent. Leaflets oblong lanceolate, 8 × 20 × 3 6 cm, pubescent beneath, with 6-7 pairs of lateral nerves. Racemes 4-12 cm long; bracts ca 2 cm long, deciduously villous, usually shortly cuspidate. Flowers hidden within the folded bracts, ca 1 cm long, yellowish white. Pods oblong, apiculate, ca 7 cm long, pubescent.

In sal and mixed forests; 500-700 m.

*Fl.*: November; *Fr.*: January April.

RAIPUR: Sitanadi. RAJNANDGAON: Deopura, Malaidah.

15. **INDIGOPEA L.**

1a. Leaves simple. ... *I. linifolia* 6

1b. Leaves compound.

2a. Leaves all three-foliolate.

3a. Pods oblong, ca 5 mm long ... *I. glandulosa* 5

3b. Pods linear, 10-20 mm long ... *I. trifolia* 9

2b. Leaves all or almost all five-several-foliolate.

4a. Prostrate herbs rooting at the lower nodes. Leaflets alternate. Pods 2-4 mm long ... *I. tinnaei* 7

4b. Erect herbs or shrubs. Leaflets opposite. Pods 5-40 mm long.

5a. Racemes 2-5-flowered. ... *I. glabra* 4

5b. Racemes many-flowered.

6a. Leaflets 13-31. Flowers 10-15 mm long; bracts exceeding the buds ... *I. cassoides* 3

6b. Leaflets 5-13. Flowers 3-6 mm long; bracts minute.

7a. Pods moniliform. Leaflets 3-5 ... *I. angulos* 1


8a. Pods quadrangular, densely hairy ... *I. astragalina* 8

8b. Pods cylindrical, glabrous or puberulus ... *I. tinctoria* 8

Suffruticose, up to 2 m high; branches appressed hairy. Leaves 5 (rarely 3), oblong, 1.5 x 0.5 x 1.5 cm, mucronate, appressed silvery white hairy on both the surfaces. Racemes 10-15 cm long. Flowers ca 4 mm long, pink. Pods torulose, 5-10 mm long, 1-4 seeded.

In mixed forests on hill slopes; 500 m.

Fl. & Fr. : September - November.

RAJNANDGAON: Mobgaon, Mukhiarighat.


Annual herbs, up to 1 m high; branches hairy. Leaves 5-11, oblong, 10 x 4 x 7 x 25 mm, pilose on both sides. Peduncles 10-20 mm long. Flowers 4-5 mm long, orange yellow or red. Pods tetragonal, 10 x 20 x 3 mm, hirsute, 4-6 seeded.

In wastelands, along forest roads & rock-crevices; 350-500 m.

Fl. & Fr. : September - November.


Suffruticose shrubs, 1-3 m high. Leaves 10-25 cm long; leaflets elliptic, oblong, 15-25 mm long, glaucous beneath. Racemes axillary, 3-8 cm long; bracts, navicular, acuminate, caducous. Flowers 10-20 mm long, mauve pink. Pods turgid, reflexed, 3-5 cm long.

Common in mixed forests; 400-500 m.

Fl. : August - January; Fr. : April.


SLender diffusely branched annual herb, 25-50 cm high. Leaflets 5-7, elliptic obovate, 5 20 x 2 10 mm; petioles and peduncles capillary. Flowers red, ca 3 mm long. Pods turgid, straight, 15-25 mm long, ca 1.5 mm thick, slenderly beaked.

In crevices of exposed rock boulders; 500 m.

Fl. & Fr.: October.

RAIPUR: Tanranga.


Annual pubescent herb. 20-50 cm high. Leaflets oblanceolate, 10-25 mm long, glaucous and glandular beneath. Flowers in 6-10 mm long dense clusters, ca 8 mm long, pink. Pods turgid, oblong, ca 5 mm long, hairy and with denticulate sutures.

In cultivated fields; 250-450 m.

Fl.: September November; Fr.: October April.

RAIPUR: Deori. RAJNANDGAON: Baghnadi, Khairagarh, Singhari.

Seeds eaten in times of scarcity.


Prostrate herb; branches slender, 10-50 cm long, 2 or 4 angled, grey pubescent. Leaves simple, linear-oblanceolate, 7 20 x 2 4 mm, apiculate, hairy on both surfaces. Flowers racemose, ca 3 mm long, red. Pods globose, ca 1.5 mm dia., silvery silky.

Common in wastelands & forest pockets; 250-500 m.

Fl. & Fr.: August May.


Copiously branched trailing herb; branches 10-50 cm long. Leaflets 5-11, linear-oblanceolate, 7 12 x 2 5 mm, pubescent on both the surfaces. Flowers in short sessile or peduncled spikes, ca 4 mm long, pink-red. Pods oblong, turgid, 3 6 x 2 3 mm, pubescent.
Common in wastelands; 300–450 m.

Fl. & Fr.: August January.


Undershubs, 0.3–1.0 m high; branches angled, pubescent. Leaflets 7–13, elliptic oblong, 10–25 mm long, pubescent beneath. Racemes slender, axillary, subsessile, 5–12 cm long. Flowers ca 4 mm long, red or pink. Pods turgid. 20–40 mm long, ca 2.5 mm thick, straight or slightly curved.

In wastelands, 300–750 m.

Fl.: August September; Fr.: October May.

RAIPUR: Dhamtari, Raipur, Rajim. RAJNANDGAON: Chilpi.


Diffusely branched undershrubs 20–50 cm high; branches deciduous to hairy. Leaflets oblanceolate, mucronate, 10–25 × 5–10 mm, hairy on both the surfaces, glandular punctate beneath. Racemes sessile. Flowers ca 5 mm long, pink. Pods 12–20 mm long, narrowly 4-winged.

In wastelands: 300–800 m.

Fl. & Fr.: September October.

RAIPUR: Raipur. RAJNANDGAON: Chilpi.


Annual or perennial twining herbs. Leaves trifoliolate; leaflets 5–12 × 4–10 cm, acuminate, glabrous or pubescent. Inflorescence axillary, peduncled. Flowers reddish purple or white; vexillum 12–15 mm long. Pods up to 10 × 4 cm, 2–5 seeded; seeds white, red or black.

Cultivated; 300–500 m.

Fl. & Fr.: January.

RAIPUR: Sitanadi.

Pods eaten cooked.
17. Lathyrus L.

1a. Leaves with all the leaflets reduced to tendrils. Flowers yellow

L. aphaca 1

1b. Leaves with 2 or 4 leaflets and a terminal tendril. Flowers blue

L. sativa 2


Slender annual herbs. Leaves completely reduced to tendrils at the base of which there is a large ovate hastate foliaceous stipule. Flowers 1-2, axillary, yellow. Pods sub falcate, ca 2.5 cm long; seeds compressed, black.

In cultivated fields; 300 m.

Fl. & Fr.: October.

RAIPUR: Raipur.


Slender annual herbs; stems narrowly winged. Leaves paripinnate; leaflets 2, linear lanceolate, 2-10 cm long; 1-3 mm broad; stipules subsagittate; rachis of upper and median leaves mostly ending in trifid tendrils. Flowers solitary, axillary, 1-2 cm long, blue. Pods winged.

In wastelands; 200 m.

Fl. & Fr.: August, January.

RAIPUR: Raipur, Sitanadi.

18. Macrotyloma (Wt. & Arn.) Verde.


Slender, climbing, pubescent herbs. Leaves trifoliolate; leaflets ovate, rhomboid or elliptical, 2-4 cm long. Flowers axillary, solitary or in fascicles of 2-3, cream or greenish yellow, ca 8 mm long. Pods linear, compressed, 3-5 cm long, ca 5 mm broad.

Along roadsides; 500 m.

Fl. & Fr.: October. RAIPUR: Taurenga.

19. Medicago L.


Annual slender herbs with somewhat spreading branches up to 30 cm long. Leaflets 3, obovate, 10 × 7 × 15 mm, toothed. Racemes 2–8 flowered. Flowers ca 4 mm long, yellow. Pods spirally twisted, ca 3 mm high, with two rows of short spines.

In moist wastelands; 250 m.

Fl. & Fr.: January.

RAIPUR: Raipur.


Melilotus albus Desr. in Lamk. Encycl. 4 : 63. 1796.

Annual slender herbs. Leaves 3 foliolate; leaflets obovate or oblong-ovate, ca 2.5 cm long. Racemes 7–10 cm long, elongating to 10–15 cm in fruits. Flowers white; corolla ca 4 mm across. Pods usually 2 seeded.

In cultivated fields; 300 m.

Fl. & Fr.: January–April.


1a. Leaflets silky pubescent beneath. Standard auricled. Pods tomentose

M. extensa 1

1b. Leaflets glabrescent beneath. Standard not auricled. Pods glabrous

M. racemosa 2


Woody climbing shrubs, 2–6 m high. Leaves 20–30 cm long; leaflets 7–9, obovate oblong, cuspidate, 8–15 cm long. Flowers ca 1 cm long, yellowish white; calyx tomentose. Pods flat, woody, 10–15 × 3 cm.

Common in mixed forests; 450–750 m.

Fl.: May–June; Fr.: September–January.
RAIPUR: Sitanadi, Taurenga. RAJNANDGAON: Malaidah, Salewara.

2. *M. racemosa* Benth. in Miq. Pl. Jungh. 249. 1852. 'Junjinar'.

Woody climbing shrubs, up to 15 m high with greyish branches. Leaves ca 30 cm. long: leaflets 11-17, obovate oblong, 5-8 cm long. young slightly silky beneath. Flowers 10-12 mm long, creamy white, reddish or blue (ours): calyx silky. Pods flat, linear, 10-15 × 2 cm.

In mixed forests; 450-550 m.

*Fl.*: May; *Fr.*: September - November.

RAIPUR: Sitanadi. RAJNANDGAON: Baghnadi, Deopura.

22. **Mucuna** Adans.


Rather slender extensive climbers, young branches pubescent. Leaflets 3, obovate, rhomboid or ovate, 5-15 × 3-12 cm, pubescent on both the surfaces. Racemes axillary, 10-20 cm long. Flowers 25-40 mm long, deep purple. Pods 5-6 cm long, clothed with brown stinging hairs.

On small trees & bushes, along roadsides, and in mixed forests; 400-550 m.

*Fl.*: October - November; *Fr.*: January - May.

RAIPUR: Sitanadi, Taurega. RAJNANDGAON: Taregaon.

23. **Ougenia** Benth.

Small deciduous trees; bark grey or pale brown, blaze streaked with] red. Leaflets 3, elliptic obovate, 7 15 × 4 9 cm. Racemes axillary, fascicled. Flowers 10 12 cm long, white or pink; standard orbicular. Pods linear obleng, 5 10 cm long, jointed; seeds reniform.

Fl. : March April; Fr. : May June.

RAIPUR : Sihawa.


Wood valued for building and agricultural implements.

24. PONGAMIA Vent.


Medium sized trees with spreading branches forming dense canopy. Leaves 7 15 cm long; leaflets 5 7, ovate oblong, cuspidate, 5 10 cm long. Racemes axillary, shorter than the leaves. Flowers ca 12 mm long, pinkish. Pods woody, obliquely oblong, shortly cuspidate, 4 5 cm long, 1 seeded.

Commonly planted on roadsides as a shade tree; 250 450 m.

Fl. : April; Fr. : August January.


Seeds yield oil commonly used for burning and for medicinal purposes.

25. PSORALEA L.


Annual herbs, 0.5 1.0 m high. Leaves alternate, unifoliolate, broadly ovate repand, 4 7 × 3 5 cm, toothed. Inflorescence a short and dense long peduncled raceme. Flowers ca 5 mm long, blue purple.
Pods ovoid, ca 5 mm long, black.

In wastelands; 250–450 m.

Fl. & Fr.: October - April.


Seeds are laxative and stimulant.

26. PTEROCARPUS Jacq.

Pterocarpus marsupium Roxb. Pl. Corom. t. 116. 1799. 'Bijasal, Pharri.'

Tall, almost evergreen trees; blaze ultimately red. Leaflets 5–7, elliptic-oblong, 7–12 cm long, obtuse or retuse, glaucous beneath. Panicles terminal, 15–30 cm long; flowers ca 1 cm long, yellow, mildly scented. Pods orbicular, winged, 25–40 mm dia.

Common in sal forests and along roadsides; 300–550 m.

Fl.: October - November; Fr.: April - June.

RAIPUR: Dhamtari, Pithora, Tarenga. RAJNANDGAON: Taregaon.

Wood valued for furniture and agricultural implements; bark and gum medicinally used.

27. Pueraria DC.


Extensive woody climbers. Leaflets 3, rhomboid, 10–20 × 9–17 cm. White silky beneath, thinly hairy above, laterals very oblique. Racemes 15–30 cm long. Flowers when leafless; calyx ca 8 mm long, silky, teeth subequal; corolla ca 15 mm long, blue-purple. Pods 5–8 cm long, densely clothed with grey brown stinging hairs.

Along roadsides and in mixed forests; 500 m.

Fl. & Fr.: April - June.

RAIPUR: Tarenga.
28. RHYNCHOA LOUR.


Slender climbing or trailing herbs. Leaflets 3, ovate-rhomboid or orbicular, 1-3 cm long, pubescent, gland-dotted beneath. Racemes axillary, lax, few-flowered. Flowers ca 6 mm long, yellow. Pods flat 1-2 cm long, pubescent.

Along roadsides: 250-450 m.

Fl. & Fr.: August - April.


29. SESBANIA SCOP.

1a. Herbs. Flowers ca 1 cm long. Pods ca 3 mm broad ... *S. bispinosa* 1

1b. Trees. Flowers 6-10 cm long. Pods ca 8 mm broad ... *S. grandiflora* 2


Annual or biennial herbs, 0.7-1.5 m high; branches and leaf rachis muricate or prickly. Leaves 15-30 cm long; leaflets numerous, linear, 5-15 mm long. Racemes lax, 8-13 cm long, 3-12 flowered. Flowers pale yellow with violet streaks. Pods 15-25 cm long, many seeded.

In wastelands; 450 m.

Fl. & Fr.: September - October.

RAIPUR: Gariaband.


Small soft-wooded trees. Leaves 15-30 cm long; leaflets 10-20 pairs, linear oblong, 18-30 × 5-10 mm. Racemes lax, axillary, 2-4 flowered. Flowers white (or red in one variety). Pods 30-45 cm long, slender, curved, many seeded, sutures markedly thick.

Cultivated; 300 m.
Fl.: October November; Fr.: January May.

RAIPUR: Kasdol.

Young leaves, flowers and pods eaten cooked.

30. Smithia Ait.

1a. Flowers in subsessile heads with their supporting leaves ... S. conferta 1
1b. Flowers in peduncled heads free of leaves ... S. sensitiva 2


Diffusely branched prostrate herbs with 20–40 cm long branches. Leaves 2–4 cm long with bristly rachis; leaflets linear oblong, 7–12 mm long. Flowers yellow with a brown rim at the base, ca 8 mm long. Pods moniliform, ca 8 mm long.

In wastelands; 300–450 m.

Fl. & Fr.: October January.

RAIPUR: Dugh, Pithora. RAJNANDGAON: Singhat.


Profusely branched prostrate herbs with 20–50 cm long branches. Leaves sensitive, 10–25 mm long; rachis bristly; leaflets linear, bristly or ciliate on the midrib and the margins. Flower heads ca 8 mm across, on up to 25 mm long peduncles. Flowers bright yellow. Pods 4–6 jointed, papillose.

In wastelands; 300 m.

Fl. & Fr.: October November.


1a. Mature pods reflexed, villous with ca 1 mm long spreading hairs ... T. villosa 3
1b. Mature pods ascending or divergent, glabrous, or puberulent with ca 0.2 mm long appressed hairs.
2a. Procumbent herbs. Racemes 1 - 3 - flowered
2b. Erect herbs. Racemes several - flowered


Diffusely branched annual or perennial herbs with 15 - 40 cm long villous branches. Leaflets 7 - 13, oblanccolate, 10 - 20 x 5 - 10 mm, sericeous beneath. Racemes terminal and leaf - opposed. Flowers 6 - 8 mm long, white or pink - purple. Pods 60 x 4 mm, curved at the tip only, nearly glabrous.

In paddy fields and in mixed forests; 300 - 500 m.

**Fl. & Fr.** : August - October.

**DURG** : Bordi, RAIPUR : Dhamtari, Gariaband. RAINANDGAON : Baghnadi, Deopura.


Annual or perennial herbs. 0.2 - 1.0 m high. Leaflets 9 - 21, obcu- neate, pubescent beneath. Racemes leaf - opposed, sometimes also with a few flowers in the upper leaf-axis. Flowers 6 - 9 mm long, usually pink - red or purple, rarely white. Pods 3 - 4 cm long, nearly straight, pubescent.

Common in wastelands; 250 - 550 m.

**Fl. & Fr.** : throughout the year.

**DURG** : Durg, Rajharadalli. RAIPUR : Chhorda, Dhamtari, Raipur, Sitanadi, Taurenga. RAINANDGAON : Baghnadi, Singhari.


Perennial, diffuse, erect herbs with slender hairy branches. Leaves 5 - 8 cm long; leaflets 11 - 19, oblanccolate, mucronate, 10 - 20 x 5 - 8 mm. Racemes elongated, lower flowers fascicled, or some axillary. Flowers 10 - 15 mm long, red - purple. Pods 25 - 40 mm long, 5 - 8 seeded.
In wastelands; 330 m.
*Fl. & Fr.*: October.
RAIPUR: Rajim.

32. **Teramnus P. Br.**


Climbing or trailing twining herbs with pubescent branches. Leaflets 3, elliptic-oblong, 2.0 6.0 × 1.5 3.5 cm, pubescent beneath. Racemes axillary, lax flowering, 1 5 cm long. Flowers ca 5 mm long, bluish white; calyx villous, 5-toothed. Pods 40 55 × 3 mm, appressed hairy, with a horizontally curved beak.

Along roadsides; 350 m.
*Fl. & Fr.*: October November.
RAINANDGAON: Singhari.

33. **Urania Desv.**

1a. Upper leaves 5 - 9 - foliolate; leaflets linear

1b. All the leaves 1 - or 3 - foliolate; leaflets ovate-oblong or suborbicular.

2a. Inflorescence lax, the rachis distinctly visible. Calyx lobes subequal

2b. Inflorescence very dense, the rachis not visible. Lower three calyx lobes about three as long as the upper two


Erect or ascending hairy herbs, 20 40 cm high, usually woody at the base; leaves all 1 or 3 - foliolate, or the lower 1 foliolate and the upper 3 - foliolate; leaflets ovate, elliptic or sometimes suborbicular, 3 - 9 × 2 - 8 cm. Inflorescence 3 10 cm long, ca 2 cm broad, dull or shining brown. Flowers ca 5 mm long, blue; pedicel ca 5 mm long. Pods glabrous or glabrescent.
In sal and mixed forests; 450–800 m.

Fl. & Fr.: August–January.

RAIPUR: Dugli, Sitanadi. RAJNANDGAON: Chilpi, Khargaon.


Perennial erect herbs or undershrubs, 0.5–1.0 m high. Leaflets 10–20 cm long, usually with yellowish or purplish green bands along the nerves. Inflorescence 7–12 cm long; flowers ca 3 mm long, purplish red. Pods greyish.

In sal forests; 400–500 m.

Fl. & Fr.: August–September.

RAIPUR: Sitanadi. RAJNANDGAON: Baghnadi.

Root sap mixed with mother’s milk is used for ‘Churna’ disease of the children.


Perennial hairy herbs or undershrubs, 1.0–1.5 m high. Leaves 1 or 3 foliolate, terminal larger, elliptic ovate or oblong, 5–15 × 2–8 cm. Racemes lax, 10–20 cm long; flowers ca 7 mm long, pink purple, on 3–6 mm long pedicels. Pods greyish brown, puberulous, 4–8-jointed.

In mixed forests; 450 m.

Fl. & Fr.: October.

RAIPUR: Gariaband.

34. Vicia L.

Vicia sativa L. Sp. Pl. 736. 1753. ‘Akra.’

Slender, erect or climbing, annual herbs. Leaf-stalks ending into 2–3 flat tendrils; leaflets 8–12, linear oblong-ovate, 10–30 × 2–8 mm; stipules subsagittate. Flowers 1–3, axillary, 1–2 cm long, mauve. Pods linear, 3–7 cm long, deciduously pubescent, 6–10 seeded.

In moist wasteland; 280 m.

Fl. & Fr.: October–January.

RAIPUR: Raipur, Simga.
35. **Vigna Savi**

1a. Leaflets deeply lobed.
   2a. Leaflets all 3-lobed. ... *V. trilobata* 2
   2b. Leaflets mostly 4-5-lobed, sometimes a few 3-lobed ... *V. aconitifolia* 1

1b. Leaflets entire or sinuate.
   3a. Pods hirsute ... *V. vexillata* 4
   3b. Pods glabrous ... *V. umbellata* 3


Prostrate or suberect herbs, branches clothed with yellowish spreading hairs. Leaflets palmately lobed, 3–6 cm long. Racemes axillary, long peduncled. Flowers yellow, ca 5 mm long. Pods 3–6 cm long, ca 4 mm broad, pubescent when young, ultimately glabrous, 5–8-seeded.

In wastelands ; 350 m.

*Fl. & Fr.* : September.

DURG : Balod.

Seeds eaten in times of scarcity.


Prostrate, glabrous or pubescent herbs. Leaflets 2–3 cm long, each 3-lobed, the lobes spatulate, middle one largest. Racemes few-flowered, axillary, long peduncled. Flowers yellow, ca 6 mm long. Pods 3–5 cm long, ca 3 mm broad, 6–12-seeded, glabrous or pubescent.

In wastelands : 250–500 m.

*Fl. & Fr.* : August – January.

RAIPUR : Dhamtari, Raipur. RAJNANDGAON : Deopura, Khairagarh, Rajnandgaon.

Seeds eaten in times of scarcity.

Soc. Bengal 45: 247. 1876.

Prostrate or climbing herbs, branches deciduous hairy. Leaflets 3, entire, sinuate, or sometimes 3 lobed, 2–10 cm long, tip acute acuminate. Racemes axillary, peduncled. Flowers ca 1 cm long, yellow. Pods 5–8 cm long, ca 4 mm broad, 8–12 seeded.

In wastelands; 400 m.

Fl. & Fr.: November.

RAJNANDGAON: Taregaon.

Seeds eaten in times of scarcity.


Prostrate or climbing herbs, branches glabrous or puberulus. Leaflets 3, entire, ovate lanceolate, acute or acuminate, 2–8 cm long, 0.5–2.5 cm broad. Inflorescence axillary. 2–6 flowered, subumbellate. Flowers 20–35 mm long, yellow or purplish. Pods 4–15 cm long, brown hairy, 10–18 seeded.

In wastelands; 450 m.

Fl. & Fr.: September.

RAJNANDGAON: Baghnadi.

36. ZORNIA Gmel.


Slender, annual, prostrate or ascending herbs. Leaflets 2, linear lanceolate, 15–25 × 2 mm with black glands. Spikes lax, 3–6 cm long. Flowers hidden within a pair of foliaceous bracts. Yellow with pinkish base. Pods 5–10 mm long, jointed, subulate.

In wastelands and forest floors; 300–400 m.

Fl. & Fr.: August–November.

DURG: Balod. RAIPUR: Chhoa, Rajim. RAJNANDGAON: Baghnadi, Singhari.
41. **CAESALPINIACEAE**

(D. M. Verma & M. L. Hanifi)

1a. Primary leaf - rachis and stipules modified into spines; secondary rachis flattened. Pods moniliform

*Parkinsonia* 6

1b. Plants not as above.

2a. Leaves simple or two - foliulate.

3a. Petals present

* Bauhinia 1

3b. Petals absent

*Hardwickia* 5

2b. Leaves compound, four - numerous - foliulate.

4a. Leaves once - pinnate.

5a. Trees. Leaflets 10 - 20 pairs, linear oblong, 10 - 25 mm long. Petals 3 well developed and 2 reduced to filamentous scales; stamens 3

* Tamarindus 8

5b. Trees, shrubs or herbs. Leaflets not as above. Petals 5, subequal; stamens 4 - 10...

* Cassia 1

4b. Leaves twice - pinnate.

6a. Sepals in bud valvate

* Delonix 4

6b. Sepals in bud imbricate.

7a. Erect or climbing shrubs, usually prickly. Pods not winged

* Caesalpinia 2

7b. Trees, unarmed. Pods winged at both the sutures

* Pelliochorum* 7

1. **BAUHINIA L.**

1a. Stout tendril climbers

* B. vahlii 5

1b. Trees or shrubs; tendrils absent.

2a. Petals 4 - 5 cm long; stamens 2 - 3

* B. purpurea 2

2b. Petals ca 1 cm long; stamens 3 or 10.

3a. Leaf at the apex entire or scarcely retuse.

Stamens 3

* B. semia 4
3b. Leaf at the apex distinctly bilobed. Stamens 10.

4a. Plants flowering between September - November. Pedicels of the lower flowers 10 - 25 mm long; stigma subsessile ... \textit{B. malabarica} 1

4b. Plants flowering between April - June. Pedicels all 1.3 mm long; stigma on slender style ... \textit{B. racemosa} 3


Small bushy evergreen trees with greyish brown bark and pink red blaze. Leaves lobed from one-eighth to one-third way down, 3 - 10 cm broad, cordate at the base. Flowers in tomentose subcorymbose racemes, white, slenderly pedicelled; petals 10 - 15 mm long. Pods 15 - 30 × 2 cm, beaked.

In mixed forests, sometimes planted; 400 - 700 m.

\textit{Fl.}: September November; \textit{Fr.}: January April.

RAIPUR: Dugli, Pithora, Taurenga. RAJNANDGAON: Maiwandhi, Salewara.

Young leaves eaten cooked.

2. \textit{B. purpurea} L. Sp. Pl. 375. 1753. 'Koliar, Koliari, Schara.'

Small evergreen trees with greyish to dark brown rough bark and pink red blaze. Leaves lobed from about half-way down to almost to the base, 10 - 20 cm long. Panicles few flowered, terminal. Petals 4 - 5 cm long, purple or white with purple claws and mouth. Pods 15 - 25 × 2 cm.

Along roadsides and in mixed forests; sometimes planted; 350 - 500 m.

\textit{Fl.}: October November; \textit{Fr.}: March.

RAIPUR: Pithora, Taurenga. RAJNANDGAON: Deopura.

Leaves eaten cooked; bark yields a fibre.

Small evergreen trees with irregularly breaking greyish black bark and deep red blaze. Leaves rotundate, lobed to about one third way down, 3–6 cm broad, glaucous beneath, shallowly cordate at the base. Flowers in 5–10 cm long racemes, white; petals ca 1 cm long. Pods compressed, 10–25 cm long, often twisted, green, drying black.

Common along roadsides and in mixed and sal forests; 300–600 m.

*Fl.:* April June; *Fr.:* persisting throughout the year.


Medium-sized evergreen trees with greyish brown bark and pale pink blaze. Leaves rotundate, 8–15 cm long, apex entire or retuse, base truncate or slightly cordate. Flowers in lax terminal panicles, ca 25 mm across; petals yellowish white, upper 3 purple mottled on the margin. Pods 12–17 × 3–4 cm.

In mixed forests; 400–500 m.

*Fl.:* October November.

RAIPUR: Mainpur. RAJNANDGAON: Deopura.

Bark yields a gum used in medicine and sweetmeats.


Huge tendril climbers, young branches and tendrils brown tomentose. Leaves orbicular, 10–40 cm long, lobed to about halfway down with a stout macro in the sinus. Racemes subcorymbose. Flowers white or buff; petals 2–4 cm long. Pods woody, 20–30 × 4–7 cm, rusty velvety.

Common in mixed and sal forests; 400–800 m.
Fl. : April May ; Fr. : January.

RAIPUR : Sitanadi. RAJNANDGAON : Chilpi.

Bark yields fibre used for making ropes, leaves for cups and plates, and seeds eaten; also medicinal.

2. **CAESALPINIA L.**

1a. Stamens 2 - 3 - times as long as the petals ... *C. pulcherrima* 3

1b. Stamens about as long as the petals.

2a. Pods prickly ... *C. bonduc* 1

2b. Pods smooth ... *C. decapetala* 2


Very spiny climbing shrubs. Leaves 20 - 60 cm long; pinnae 5 - 9 pairs, 7 - 20 cm long; leaflets 10 - 24 pairs, elliptic obovate, 2.0 - 6.0 × 0.8 - 2.2 cm; stipules pinnately compound, consisting of 3 - 5 ovate rhomboid, ca 5 mm long leaflets. Flowers ca 1 cm across, yellow; bracts spreading. Pods 5 - 7 × 3 - 5 cm, clothed with 5 - 10 mm long prickles; seeds 2.

Along roadsides : 300 - 500 m.

Fl. & Fr. : August October.

RAIPUR : Balodabazar, Raipur. RAJNANDGAON : Baghnadi, Deopura.


Prickly climbing shrubs. Leaves 10 - 35 cm long; stipules subsagittate; pinnae 5 - 10 pairs; leaflets 8 - 12 pairs, obovate, 15 - 20 × 5 - 10 mm.
Flowers yellow, in 30–40 cm long racemes; petals suborbicular, 10–15 mm long. Pods woody, 6–13 x 2–3 cm, beaked.

Along cultivated fields; 320 m.

Fl.: October - November.

RAJNANDGAON: Singhari.


Shrubs with rather slender sometimes prickly branches. Leaves bipinnate, 10–45 cm long; pinnae 4–13 pairs; leaflets oblong, 15–17 x 3–7 mm, apiculate. Flowers in erect 15–30 cm long racemes, orange-yellow or red; one of the petals with longer claw and crisped blade. Pods straight, 5–8 cm long, ca. 17 mm broad.

Commonly planted as an ornamental; 300–450 m.

Fl. & Fr.: September - January.

RAIPUR: Raipur. RAJNANDGAON: Rajnandgaon.

3. **Cassia** L.

1a. Trees. Leaflets 4–9 cm broad. Flowers before or along with the young leaves. Pods terete, indehiscent, 20–40 cm long ... *C. fistula* 2

1b. Plants not as above.

2a. Leaflets all 0.5–5.0 mm broad.

3a. Peciolar gland stipitate, peltate ... *C. pubiflora* 5

3b. Peciolar gland sessile ... *C. mimosoides* 3

2b. Leaflets at least some more than 10 mm broad.

4a. Leaflets 2 pairs. Pods 2–4 cm long ... *C. absur* 1


5a. Leaflets 3 pairs, obovate. Pods suberrate or sub-tetragonal ... *C. tora* 7


6a. Leaflets mostly ovate-lanceolate with acute or acuminate apex, a few some-
times elliptic - oblong, obtuse. Pods with a brown median band and yellowish green margins ... C. occidentalis

6b. Leaflets elliptic - oblong, rounded at the apex with a small bristle from its sinus. Pods brown, concolorous ... C. siamea


Viscous hairy herbs, 20 - 60 cm tall. Leaflets broadly elliptic or obovate, oblique, 2 3 x 1 2 cm, pubescent on both the surfaces. Racemes terminal or leaf-opposed, 4 - 12 cm long. Flowers pink red, ca 7 mm long; disc bristly. Pods flat, 3 4 x 1 cm, hairy, 4 8 seeded.

In wastelands and among rock boulders; 300 - 550 m.

Fl. & Fr.: August November.

DURG: Balod. RAIPUR: Taurenga. RAJNANDGAON: Deopura, Taregaon.

2. C. fistula L. Sp. Pl. 377. 1753. 'Dhan - bhar, Amalts'

Medium sized deciduous trees; bark of young branches smooth, grey, of old branches rough, brown. Leaves 20 - 40 cm long; leaflets 3 8 pairs, obovate oblong, 5 - 15 x 4 9 cm. Flowers in 10 - 40 cm long drooping racemes, large, bright lemon yellow. Pods many seeded, ultimately black.

In mixed forests, commonly planted as an ornamental along roads and in gardens; 300 - 500 m.

Fl.: March May; Fr.: persisting throughout the year.


Pulp of the fruits medicinally used.


Slender herbs or undershrubs, 20 - 60 cm high. Leaves 5 - 10 cm long, rachis clothed with somewhat curled hairs; leaflets numerous.
linear, ca 4 mm long, sensitive to touch. Flowers solitary, rarely paired, 5 - 8 mm long, yellow. Pods 3 - 5 cm long, many seeded.

In roadside ditches; 350 - 650 m.

*Fl. & Fr.*: April - October.

**DURG**: Talgaon. **RAIPUR**: Taurenga. **RAJNANDGAON**: Deogura.


Stout suffruticose foetid smelling herbs or undershrubs, up to 2 m tall. Leaves 10 - 20 cm long; leaflets 3 - 5 pairs, ovate lanceolate or oblong, 2 - 9 x 1 - 3 cm. Flowers in corymbose racemes, ca 12 mm across, yellow. Pods 7 - 12 cm long, ca 7 mm broad, septate, 20 - 30 seeded.

Along roadsides and forest margins; 250 - 550 m.

*Fl. & Fr.*: August - January.

**RAIPUR**: Raipur, Rajim, Sitanadi. **RAJNANDGAON**: Baghnadi.

Various parts medicinally used: seeds eaten roasted.


Decumbent or erect annual herbs, 10 - 40 cm high, branches clothed with rather curled hairs. Leaves 3 - 6 cm long; leaflets 6 - 25 pairs, obliquely linear - oblong, 5 - 13 x 1 - 3 mm. Flowers 1 - 3 together, ca 5 mm long, yellow. Pods 20 - 45 x 3 - 5 mm, pilose, 6 - 16 seeded.

In mixed forests; 300 - 500 m.

*Fl. & Fr.*: August - November.

**DURG**: Balod, Bordih. **RAIPUR**: Gariaband. **RAJNANDGAON**: Baghnadi, Singhari.


Evergreen trees. Leaves 10 - 25 cm long; leaflets 4 - 16 pairs, oblong, 3 - 7 cm long, 10 - 25 mm broad, emarginate with a small bristle from the sinus. Flowers in up to 10 cm long, panicles of corymbs, bright yellow; petals 1 - 2 cm long. Pods compressed, 15 - 30 cm long, 10 - 15 mm broad.

Planted on roadsides; 300 - 450 m.
Fl. : October November ; Fr. : May.

RAIPUR : Dhamtari. RAJNANDGAON : Baghnadi.

7. C. tora L. Sp. Pl. 376. 1753. 'Chekor'.

Annual erect herbs or undershrubs, 0.2 - 1.2 m high. Leaves 5 - 10 cm long; stipules 8 - 15 x 1 mm. Leaflets 0.5 - 5.0 x 0.5 - 2.5 cm, with glands between two lower pair of leaflets. Peduncles 1 - 2 flowered. Flowers yellow; pedicels 4 - 10 mm long; petals 8 - 10 mm long. Pods subtetragonal, 10 - 20 cm long, ca 5 mm broad, on 5 - 15 mm long pedicel; areoles on the seed 1.5 - 2.5 mm broad.

Common in wastelands and forest margins ; 250 - 450 m.

Fl. & Fr. : August June.


Leaves and seeds medicinal, sometimes sold in local markets.

4. Delonix Raf.

1a. Pinnae 4 - 8 pairs ; leaflets 10 - 20 pairs. Flowers white or pale yellow

1b. Pinnae 11 - 18 pairs ; leaflets 20 - 30 pairs. Flowers orange - vermillion or scarlet

D. elata 1

D. regia 2


Trees with greyish bark, 5 - 10 m tall. Leaves 5 - 20 cm long, pinnae ca 5 cm long; leaflets linear-oblong, 7 - 15 x 2 - 3 mm. Racemes terminal. Flowers mildly scented; calyx silky; petals white turning yellow, ca 2.5 cm long. Pods 12 - 20 cm long, 5 - 25 mm broad, 4 - 8 - seeded.

Sometimes planted as an ornamental ; 300 m.

Fl. : January.

RAIPUR : Raipur.

Deciduous trees. Leaves up to 60 cm long; leaflets oblong, 7 - 10 x 3 - 4 mm. Racemes terminal or axillary. Flowers ca 10 cm across; standard yellow or white, streaked with red; stamens much exerted. Pods compressed, 30 - 50 cm long, ca 5 cm broad; seeds 20 - 40, mottled.

Commonly planted in the gardens and along roadsides; 250 - 300 m.

*Fl.*: April - August.

RAIPUR: Dhamtari, Raipur. RAJNANDGAON: Baghnadi.

5. **Hardwickia** Roxb.


Large trees with rather drooping branches. Leaves of only two palmately nerved glaucous leaflets; leaflets coriaceous, obliquely ovate, 3 - 6 x 1 - 3 cm. Flowers in slender panicles; sepals petaloid, ca 5 mm long, yellowish green; petals absent. Pods strap shaped, 5 - 10 cm long, with a solitary subsapical seed.

In mixed forests; 450 m.

*Fl.* & *Fr.*: February.

RAIPUR: Sitanadi.

6. **Parkinsonia** L.

**Parkinsonia aculeata** L. Sp. Pl. 375. 1753.

Shrubs or small trees with rather drooping branches and thorn like leaf rachises. Leaves bipinnate (apparently simply pinnate); rachis of the pinnae flattened; leaflets numerous, 3 - 5 mm long. Petals ca 15 mm long, yellow, the uppermost red brown mottled. Pods 8 - 10 cm long, constricted between the seeds.

Usually planted along roadsides; 300 - 400 m.

*Fl.* & *Fr.*: April.

DURG: Durg. RAJNANDGAON: Khairegarh.
7. **Peltophorum** (Vogel.) Benth.


Trees with smooth grey bark. Leaves bipinnate, rhachis 15 - 30 cm long; leaflets numerous, obliquely oblong, notched, 8 - 25 × 3 - 10 mm. Racemes or panicles rusty tomentose. Calyx reddish; petals suborbicular, wrinkled, 18 - 25 mm long, yellow. Pods thin, 5 - 10 cm long, coppery red.

Commonly planted as an avenue tree; 250 - 350 m.

*Fl.* : April - September; *Fr.* : January.

**DURG** : Durg. **RAIPUR** : Dhamtari, Raipur, RAJNANDGAON : Rajnandgaon.

8. **Tamarindus** L.

*Tamarindus indica* L. Sp. Pl. 34. 1753. *‘Imli’*

Large evergreen trees. Leaves 4 - 15 cm long; leaflets 10 - 20 pairs, oblong, 12 - 18 × 4 - 5 mm, obtuse. Racemes lax, several flowered. Calyx tube turbinate, lower two teeth connate, petals only 3 well developed, 10 - 15 mm long, yellow with red veins, the lower 2 reduced to filamentous scales. Pods linear, indehiscent, 5 - 12 cm long, with brown crustaceous epicarp and pulpy mesocarp.

Common along roadsides; 250 - 500 m.

*Fl.* : May - June; *Fr.* : January.

**RAIPUR** : Dhamtari, Sitapadi.

Fruit - juice obtained after soaking ripe fruits in water is commonly used in various dishes; also medicinal.
FLORA OF RAIPUR

42. MIMOSACEAE

(D. M. Verma & M. I. Haifi)

1a. Petioles modified into phyllodes ... Acacia 1

1b. Petioles not modified into phyllodes.

2a. Pinnate of the leaves two or four, digitately arranged.

3a. Leaflets upper 7 - 20 cm long. Pods 5 cm broad ... Ypsila 10

3b. Leaflets all 0.4 - 4.0 cm long. Pods 0.3 - 1.5 cm broad.

4a. Trees or shrubs. Pinnate with only two 2 - 4 cm long leaflets. Pods smooth, coiled ... Pithecolobium 7

4b. Herbs. Pinnate with several 0.3 - 0.5 cm long leaflets. Pods prickly, straight ... Mimosa 4

2b. Pinnate of the leaves mostly several, pinnately arranged.

5a. Aquatic herbs with radical fibres at the nodes and whorls of spongy floats on the internodes ... Neptunia 5

5b. Plants not as above.

6a. Flowers in elongated spikes.

7a. Stamens many. Pods flat ... Acacia 1

7b. Stamens 10. Pods turgid ... Prosopis 8

6b. Flowers in globose heads.

8a. Flower heads elevate with a constriction about one-third way up, 2 - 5 cm across, solitary, hanging on 10 - 15 cm long peduncles ... Parkia 6

8b. Flower heads not as above.

9a. Spiny or prickly trees, shrubs or scramblers.

10a. Stamens 4 or 8. Pods separating from the persistent wiry sutures and breaking up into 1-seeded joints ... Mimosa 4

10b. Stamens many. Pods not breaking up as above ... Acacia 1

9b. unarmed trees or shrubs.

11a. Leaflets 7 - 30 mm broad.
1. **Acacia** Mill.

1a. Flowers in elongated spikes.

2a. Petioles modified into phyllodes ... *A. auriculiformis* 1

2b. Petioles not modified into phyllodes ... *A. catechu* 2

1b. Flowers in globose heads.

3a. Branches, and usually the petioles also, prickly; stipular spines absent.

4a. Gland on the petiole conical; leaflets 2.0 - 2.5 mm broad ... *A. tora* 8

4b. Gland on the petiole flattish; leaflets 0.8 - 1.5 mm broad.

5a. Climbing shrubs. Petioles 3.0 - 4.5 cm long; pinnae usually 6 - 12 pairs, sometimes up to 20 pairs ... *A. pinnata* 7

5b. Trees, sometimes with rather slender branches. Petioles 1 - 2 cm long; pinnae usually 16 - 20 pairs, sometimes 10 - 27 pairs ... *A. donaldi* 3

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12a. Flowers white or creamy. Pods thin, flat, dry ... *A. leucocarpa* 2

12b. Flowers pink - rose. Pods thick, sub-cylindrical, fleshy ... *Samanea* 9

11b. Leaflets 1 - 3 mm broad.

13a. Stamens many, free. Pods 4 - 7 mm broad, tomentose ... *Acacia* 1

13b. Stamens 10, or if many then united. Pods 8 - 30 mm broad, thinly pubescent.

14a. Shrubs. Flowers white; stamens 10, free ... *Leucaena* 3

14b. Trees. Flowers yellow; stamens many, united ... *Albizia* 2
3b. Branches and petioles not prickly; stipular spines present or absent.

6a. Heads in terminal panicles ... \textit{A. leucophloea} 5

6b. Heads axillary, solitary or few fascicled.

7a. Lower pairs of pinnae mostly 5 - 7 mm apart. Pods cylindric ... \textit{A. farnesiana} 4

7b. Lower pairs of pinnae mostly 10 - 15 mm apart. Pods moniliform ... \textit{A. nilotica} ssp. indica 6


Small trees with smooth white bark. Phyllodes laterally compressed, falcate, 8 15 x 1 2 cm, with 4-6 principal nerves. Spikes axillary, 4-6 cm long. Flowers ca 5 mm long, white; calyx toothed. Pods woody, compressed, twisted into a spiral.

Native of Australia, frequently planted as an ornamental; 250 500 m.

\textit{Fl.} : August - September; \textit{Fr.} : January - May.


Small trees with hooked stipular spines, irregularly splitting black bark and red blaze. Pinnae 7-24 pairs with 1-4 cm long pubescent rhachilla; leaflets 6-35 pairs, linear, 3 5 x 1 2 mm. Flowers small, greenish white, yellowish with age. Pods thin, irregularly constricted, 4-10 cm long, brown.

In open mixed forests; 300 400 m.

\textit{Fl.} : June; \textit{Fr.} : October - June.


"Katha" or "Kathi" chewed with betel is obtained by boiling chips of its wood. The wood is also used as house posts.

Small trees, sometimes with rather slender branches. Leaf - rhachis usually 10 - 15 cm long, sometimes up to 25 cm long; leaflets 25 - 40 pairs, linear, 6 - 12 x 1 mm. Heads ca 12 mm across, white or creamy. Pods attenuated at the base, 8 - 15 cm long, 20 - 25 mm broad, brownish white, ultimately grey.

In mixed forests ; 300 m.
Fl. : July August ; Fr. : November January.
RAIPUR : Dhamtari.


Small trees or shrubs, with 3 - 20 mm long stipular spines. Leaves ca 5 cm long bearing 5 - 7 pairs of 1 - 3 cm long pinnae, the rhachis often ending in a spine. Heads ca 15 mm across, usually clustered. Flowers yellow, fragrant. Pods 5 - 7 cm long, turgid.

Along river banks ; 300 m.
Fl. : August ; Fr. : January.
RAIPUR : Raipur.


Small trees with smooth whitish branches, old trunks rough, blackish; stipular spines present or absent. Leaves 3 - 8 cm long, with 6 - 10 pairs of 2 - 3 cm long pinnae; leaflets 15 - 30 pairs, linear, ca 5 x 1 mm. Heads ca 5 mm across, white, in large tomentose panicles. Pods thick, linear, 7 - 15 cm long, ca 8 mm broad.

Common along roadsides ; 300 - 450 m.
Fl. : August September ; Fr. : November.

Trees, 3–7 m high with greyish black fissured bark and large stipular spines. Pinnae 2–7 pairs; leaflets 3–5 × 1 mm. Heads long peduncled, *ca* 1 cm across, bright yellow. Pods 5–12 cm long, velvety, constricted.

In open lands and along roadsides; 250–500 m.

*Fl.*: May–August; *Fr.*: October–April.

**DURG**: Balod, Durg. **RAIPUR**: Raipur, Sitanadi. **RAJNANDGAON**: Khairagarh.


Large shrubby climbers with 5 angled branches prickly on the angles. Leaves *ca* 10 cm long, bearing *ca* 6 cm long pinnae; leaflets 50–60 pairs, linear, *ca* 6 × 1 mm. Panicle 10–15 cm long; heads 1–2 cm across, white. Pods strap shaped, *ca* 15 × 2 cm, pale brown.

Along streams, on sandy soil; 480 m.

*Fr.*: June.

**RAIPUR**: Gariaband.


Climbing shrubs; branches greyish, with five rows of prickles, tomentose when young. Leaf - rhachis 15–30 cm long, bearing 10–20 pairs of 5–10 cm long pinnace; leaflets 25–45 pairs, linear - oblong, 5–8 × 3 mm. Heads panicled, *ca* 1 cm across, white. Pods flat. 8.0–13.0 × 1.5–2.5 cm, deciduously rusty tomentose.

Common in mixed and sal forests; 300–550 m.

*Fl.*: April–August; *Fr.*: throughout the year.

**DURG**: Rajolidih. **RAIPUR**: Dhamtari, Sitanadi, Taurenga. **RAJNANDGAON**: Baghnadi, Taragaon.
2. Albizia Durazz.

1a. Leaflets 4 - 7 mm long, 1.5 - 2.0 mm broad ... A. amara 1

1b. Leaflets 15 - 55 mm long, 5 - 30 mm broad.

2a. Flowers on 3 - 5 cm long pedicels. Pods stramineous when dry. ... A. lebbeck 2

2b. Flowers sessile or subsessile. Pods dark reddish brown or blackish brown when dry.

3a. Midrib of the leaflets closer to its upper margin... A. odoratissima 3

3b. Midrib of the leaflets closer to its lower margin... A. procera 4


Deciduous trees with smooth greenish bark; young branches and leaf-rhachis yellow pubescent. Leaf-rhachis 5 - 12 cm long, bearing 6 - 15 pairs of 3 - 8 cm long pinnae; leaflets 15 - 25 pairs, linear, midrib almost central. Flower heads 1 - 2 cm across, yellow, fragrant. Pods 10 - 15 x 2 - 3 cm, greyish brown.

*Fl.* : March - May.

RAIPUR : Laon (cf. Haines, Descr. list of trees, shrubs & economic herbs, Southern Circle, C. P. 106. 1916.).


Deciduous trees; old branches blackish, young greyish. Leaf-rhachis 7 - 20 cm long, bearing 2 - 4 pairs of 7 - 12 cm long pinnae; leaflets 5 - 9 pairs, elliptic or oblong, sometimes sinuate, 2 - 4 x 1 - 2 cm, midrib closer to the upper margin. Heads 1 - 2 cm together, white, fragrant. Pods 15 - 30 x 2 - 4 cm.

Commonly planted on the roadsides, sometimes wild : 300 - 450 m.

*Fl.* : April - June; *Fr.* : October - April.

RAIPUR : Gariaband, Pithora. RAJNANDGAON : Khairagarh.

Medium sized trees with greyish bark. Leaves with 2-5 pairs of 8 15 cm long pinnae; leaflets 6-24 pairs, elliptic oblong, 15-30 x 5-10 mm, pale beneath. Panicles downy; heads ca 2 mm across, white. Pods 12-25 cm long, ca 2.5 cm broad.

In mixed forests: 300-600 m.

Fl.: May; Fr.: October-June.

DURG: Budhbum. RAIPUR: Gariaband, Kasdol, Taurenga. RAJNANDGAON: Baghnadi.


Large deciduous trees with greenish white or brownish bark. Leaves with 3-6 pairs of pinnae; leaflets 5-11 pairs, broadly oblong or even roundish, 25-55 x 15-30 mm, deciduously hairy. Panicles 10-30 cm long; heads white. Pods 10-20 cm long, 10-25 mm broad.

Along roadsides: 300-450 m.

Fl.: August-September; Fr.: January-May.


Wood used for making carts and agricultural implements.


Shrubs or small trees. Leaf - rhachis ending in a weak bristle; pinnae 4-8 pairs; leaflets 10-15 pairs, linear, 7-12 mm long, glaucous beneath. Heads ca 25 mm across, white or yellowish; ovary stipitate. Pods flat, ca 15 cm long, many seeded.

Planted as ornamental: 450 m.

Fl. & Fr.: August-September.

RAJNANDGAON: Rajmandgaon.
4. *Mimosa* L.

1a. Shrubs. Pinnae 8–12 pairs, pinnately arranged. Pods 5–8 cm long. ... *M. himalayana* 1

1b. Herbs. Pinnae 1–2 pairs, digitately arranged. Pods 2–3 cm long. ... *M. pudica* 2


Shrubs or small trees with slender prickly branches. Leaf-rachis 6 25 cm long, prickly, bearing 6 10 pairs of 2 5 cm long pinnae; leaflets 7 10 pairs, linear, 3 10 mm long, 1.0 2.5 mm broad. Heads 1 2 together in leaf-axils, and in terminal panicles, 10 12 mm across, pink red. Pods 5 9 cm long, 9 12 mm broad, pale or dark brown, sutures usually smooth, rarely with 1 3 prickles (in the same twig).

In wastelands ; 450 m.

*Fl.* : August September ; *Fr.* : January June.

RAIPUR : Gariaband.

2. *M. pudica* L. Sp. Pl. 518. 1753. 'Lanjua.'

Small woody herbs or undershrubs with slender prickly branches. Leaves long petioled; pinnae 2.5 5.0 cm long; leaflets linear, 7 10 × 1–2 mm ; stipules ciliate. Heads peduncled, axillary, ca 1 cm across, pink-purple. Pods 15 25 × 3 mm, closely prickly on the sutures.

On forest margins , 600 m.

*Fl.* & *Fr.* : August.

RAIPUR : Borai.

5. *Neptunia* Lout.


Slender floating aquatic herbs. Pinnae 2 3 pairs, 5–8 cm long; leaflets 8–15 pairs, linear, 3 12 mm long. Heads axillary, long peduncled oblong, ca 12 mm across bearing polymorphous flowers, upper flowers bisexual, lower reduced to 5–7 mm long stramineus ligulate staminodes. Pods 1.5 2.5 cm long, beaked.
Along ponds; 300 m.

*Fl. & Fr.*: September April.


6. **PARKIA R. Br.**

**Parkia biglandulosa** Wt. & Arn. Prodr. 279. 1834.

Large trees. Leaves 30–50 cm long, feather-like; petiole with 2 glands; pinnae 20–30 pairs. 7 10 cm long; leaflets numerous, linear, ca. 5 × 1 mm. Peduncles 10–20 cm long, rusty tomentose; heads dark brown in buds, ca. 2.5 cm across.

Planted in the Forest Rest House; 450 m.

*Fl.*: January.

**RAIPUR**: Dughi, Nagri.

7. **Pithecellobium** Mart.


Trees with persistent stipular spines; branches greyish. Pinnae 2, leaflets 2 in each pinnace, obliquely elliptic, 2 4 × 1 2 cm. Heads panicked, ca. 1 cm across, white. Pods spirally twisted. Seeds black with white fleshy aril.

Along roadsides; frequently maintained as a hedge in the gardens by periodical pruning; 300–420 m.

*Fl.*: January; *Fr.*: April May.

**RAIPUR**: Raipur. **RAJNANDGAON**: Khairagarh.

The aril is sometimes eaten.

8. **PROSOPIS** L.


Large evergreen shrubs or small trees with long slender branches; stipular spines solitary or paired. Leaves 1–3 together; rhachis 1–6 cm...
long; pinnae 3-10 cm long; leaflets 10-25 pairs, elliptic oblong. 
5 × 2 mm. Spikes 6-10 cm long, greenish white turning light yellow. 
Pods straight or falcate, 10-15 × 1 cm, beaked.

In wastelands, 300-420 m.

Fl. & Fr.: April - January.

RAIPUR: Raipur. RAJNANDGAON: Khairagarh.

A hardy fast growing species frequently used for afforestation. Pods relished by cattle.

9. SAMANEA (DC.) MERR.

Samanea saman (Jacq.) Merr., in J. Wash. Acad. Sci. 6: 47. 1916. 
Mimosa saman Jacq., Frag. 15. t. 19. 1809. Pithecolobium saman Benth. in 
Hooker, Lond. J. Bot. 3: 216. 1844. Enterolobium saman Prain & King 

Large evergreen trees with greyish bark. Leaves 20-30 cm long; 
pinnae 3-7 pairs, 15-20 cm long; leaflets 3-8 pairs, obliquely ovate 
oblong or rhomboid, 2-3 × 1-2 cm. Heads long peduncled, axillary. 
Flowers pedicelled; filaments pink. Pods 10-25 cm long.

Planted on the roadsides; 300 m.

Fl.: April.

DURG. On way to Bhilai Nagar.

10. XYLIA BENTH.

xylocarpa Roxb. Pl. Corom. t. 100. 1798. X. dolabriformis Benth. in 
Hooker, Lond. J. Bot. 4: 417. 1844. ‘Suriya.’

Deciduous trees, with brown tomentose branchlets. Petiole together 
with the rachis 5-12 cm long; rachilla of the pinnae 10-30 cm long; 
leaflets (2) 5-6 (7) pairs, ovate oblong, 5-20 cm long. Heads 
(excluding the stamens) 1-3 cm across, yellowish white. Pods woody, flat, 
curved, ca. 15 × 5 cm, brown pubescent.
In mixed forests; 400–500 m.

Fl. : April; Fr. : maturing the next year.

DURG : Budhbum. RAJNANDGAON : Baghmadi.

43. VAHLIACEAE

(M.I. Hanfi)

Vahlia Thunb.


Caespitose glandular pubescent herbs, 5–15 cm high. Leaves opposite, subsessile, ovate-lanceolate or linear, 1–2 cm long. Flowers axillary, subsessile, usually paired, ca 7 mm across, white. Capsules subglobose, ca 3 mm across.

In sandy river beds: 250–300 m.

Fl. & Fr. : May.

RAIPUR : Dhamtari, Kasdol.

44. DROSERACEAE

(P.C. Pant & M.I. Hanfi)

Drosera L.

1a. Leaves in a basal rosette, obovate or suborbicular ... D. burmannii 1

1b. Leaves cauline, linear ... D. indica 2


Stemless insectivorous purplish red herbs, 5–15 cm high. Leaves sessile, stipulate, obtuse, ca 1 × 1 cm, with sticky marginal glands. Flowers in 3–6 cm long terminal racemes, ca 5 mm across, white; petals obovate.
Around ponds; 300 m.


Slender insectivorous pale green herbs, 5 - 25 cm high. Leaves petiolate, circinate, erect, spreading or deflexed, 3 - 10 x 1 - 2 mm, with red or yellow glands. Racemes lateral, 3 - 10 cm long. Flowers 7 - 10 mm across, reddish violet.

Around ditches; 450 m.

*Fl. & Fr.*: September.

RAJNANDGAON: Baghmani.

45. **HALORAGACEAE**

(D.M. Verma)

**MYRIOPHYLLUM** L.


Slender aquatic herbs. Leaves usually simple, alternate or opposite, linear, 10 - 20 x 1 mm, sparsely denticulate, sometimes the lower pinnatifid, sometimes whorled. Flowers axillary, (1) 3 - 5 together, shortly pedicelled, ca 2 mm long; anthers ca 1 mm long. Fruits rounded, ca 1 mm across, tuberculate, shallowly 4 - sulcate.

In shallow waters of the stream; 450 m.

*Fl. & Fr.*: May.

RAIPUR: Sitanadi.

46. **COMBRETACEAE**

(D.M. Verma & M. I Hanfi)

1a. Flowers in globose heads. Fruits 2 - winged, ca 5 mm long

... *Anogeissus* 1

1b. Flowers in spikes or racemes. Fruits wingless, or 4 - 5 winged, 20 - 60 mm long.
2a. Shrubby climbers or undershrubs. Petals present ...  \textit{Combretum} 2
2b. Trees. Petals absent ...  \textit{Terminalia} 3


Deciduous trees with smooth greyish bark peeling off in thin flakes and leaving roundish scars on the stem. Leaves shortly petioled, broadly elliptic or sometimes suborbicular, 5 - 7 cm long. Heads peduncled, ea 1 cm across, white, axillary, solitary or 2 - 3 together. Fruits beaked, pale brown.

Common in miscellaneous forests ; 300 - 500 m.

\textit{Fl.} : May - September ; \textit{Fr.} : September - January.

RAIPUR : Dhamtari, Sitanadi. RAJNANDGAON : Baghnadi, Salewara.

Timber used for agricultural implements and furniture.

2. \textit{Combretum} Loefl.

1a. Inflorescence with large white foliaceous bracts ; flowers pentamerous. Fruits 5 - winged ...  \textit{C. roxburghii} 3
1b. Inflorescence without the above bracts ; flowers tetramerous. Fruits 4 - winged.

2a. Herbs or undershrubs with 10 - 50 cm long branches from a woody rootstock ...  \textit{C. nanum} 1
2b. Large shrubby climbers, usually several metres high  \textit{C. ovalifolium} 2


Leaves broadly lanceolate or obovate suborbicular, 5 - 10 cm long, red at the time of sprouting and before fall. Flowers white, in 10 - 20 cm long dense racemes. Fruits oblong, 25 - 35 mm long, pink red.

Along roadsides ; 530 m.

\textit{Fr.} : June.

RAIPUR : Tamranga.

Branches greyish. Leaves elliptic ovate, 5 - 10 cm long, tomentose beneath when young, apex rounded or shortly cuspidate. Spikes 1 - 3 cm long, racemose or panicked. Fruits 20 - 25 x 15 - 17 mm, wings shining, closely horizontally striate.

On roadside trees, 350 m.

*Fr.* : May.

RAIPUR : Dhamtari.


Extensive shrubby climbers. Leaves coriaceous, oblong, 7 - 12 x 3 - 5 cm, mucronate, sometimes hairy beneath. Spikes rusty tomentose, 15 - 30 mm long, in large axillary and terminal panicles; flowers greenish. Fruits elliptic oblong, 25 - 35 mm long.

In miscellaneous forests; 450 - 550 m.

*Fl.* : October - January; *Fr.* : April.

RAIPUR : Sitanadi, Taurenga. RAJNANDGAON : Takajee.

3. **TERMINALIA** L.

1a. Fruits 5 - winged.

2a. Leaves glabrous

2b. Leaves tomentose beneath

1b. Fruits not winged.

3a. Fruits tomentose

3b. Fruits glabrous.

4a. Fruits compressed

4b. Fruits terete

Large deciduous trees with dark brown thick bark splitting into oblong chips. Leaves elliptic oblong, 10-20 cm long. Flowers in panicked tomentose spikes, *ca* 5 mm across, white. Fruits 4-6 cm long; wings 15-30 mm broad, spreading, or rarely (*Perma 17602*) three wings diverging and two curving upwards, striations horizontal or ascending.

**Common in sal and miscellaneous forests; 300-600 m.**

**Fl.:** April-May; **Fr.:** January-June.

**DURG:** Rajolidih. **RAIPUR:** Dhamtari, Taurenga.

*Timber commonly used.*


Large evergreen trees with thin greenish or greyish white smooth bark and crimson-red blaze. Leaves oblong or oblong-lanceolate, 7-15 cm long, entire or crenate. Flowers in panicked spikes, *ca* 5 mm across, white. Fruits 25-35 mm long, wings 5-10 mm broad, prominent above, striations ascending.

**Common along rivers and streams, also in miscellaneous forests; sometimes planted along roadsides; 250-450 m.**

**Fl.:** April-June; **Fr.:** August-June.

**DURG:** Durg. **RAIPUR:** Dhamtari, Khallari.

*Bark medicinally used.*


Large deciduous trees with dark grey bark and yellowish blaze. Leaves usually clustered at the tips of branchlets, elliptic-obovate, 7-20 cm long, obtuse or cuspidate. Spikes solitary, axillary or extra axillary,
7 - 15 cm long. Flowers ca 5 mm across, creamy white. Fruits pyriform, ca 5 cm long.

Common along roadsides and in miscellaneous forests; 300 - 450 m.

Fl. : April; Fr. : October June.

DURG : Kamteli. RAIPUR : Dhamtari, Gariaband. RAJNANDGAON : Salewara.

Fruits medicinal.

4. T. catappa L. Mant. Pl. 519. 1771 'Deshi Badam'.

Large deciduous trees with thick brown bark cracking into oblong chips. Leaves clustered at the tips of branches, 15 - 25 cm long, shortly cordate at the base. Spikes solitary axillary. Flowers ca 5 mm across, white. Fruits ellipsoid, ca 4 cm long, with a thick fibrous endocarp.

Planted; 300 m.

Fr. : April.

RAJNANDGAON : Rajmundgaon.


Large deciduous trees with thick greyish flaking bark; young parts rusty tomentose. Leaves elliptic ovate, 7 - 15 x 5 - 10 cm. Spikes in upper leaf-axils, forming a terminal panicle. Flowers ca 3 mm across, cream-coloured, scented. Fruits obovoid ellipsoid. 25 - 35 mm long, faintly 5-ribbed when dry.

Along roadsides; 300 - 750 m.

Fl. : May August; Fr. : October April.


Fruits medicinal.

47. MYRTACEAE

(D. M. Verma)

(Psidium guajava L. is cultivated for its edible fruits. Species and hybrids of Eucalyptus are commonly planted by the Forest Department).
SYZYGIUM Gaertn.

1a. Large trees along roadsides and streams. Leaves mostly over 10 cm long and over 3 cm broad; petioles 1.0 - 3.5 cm long. ... S. cumini 1

1b. Shrubs or small bushy trees along streams. Leaves mostly under 10 cm long and under 3 cm broad; petioles 0.5 - 0.7 cm long ... S. heyneanum 2


Evergreen trees with greyish brown branchlets. Leaves elliptic oblong, 7 15 × 4 9 cm, acute or acuminate, closely parallel nervet. Panicles 5 - 10 cm long. Calyx tube 4 6 mm long; petals white, soon caducaous. Berries oblong - ellipsoid, 2 3 cm long, red-purple or blackish, juicy.

Common along roadsides, rivers and streams, also planted; 250 - 500 m.

Fl. & Fr. : April June.


Berries eaten raw. Wood used for buildings, furniture and agricultural implements.


Shrubs or small bushy trees. Leaves oblong - lanceolate, 7 12 cm long, 1.0 - 2.5 cm broad, acuminate, rather irregularly closely nervet. Flowers in short panicled cymes, white; calyx ca 3 mm long. Berries oblong, ca 1 cm long, almost dry, purplish.

Along streams; 350 m.

Fl. & Fr. : May.

RAIPUR : Dhamtari.

48. LECYTHIDACEAE

(P. C. Pant)

CAREYA Roxb.

Careya arborea Roxb. Pl. Corom. t. 218. 1811. 'Kumbi'.

Deciduous trees with thick dark brown bark. Leaves clustered at the tips of branchlets, obovate, 10 - 30 x 15 cm, circinate. Flowers in short spikes; petals 4 - 5 cm long, yellowish white. Berries globose. 4 - 8 cm across, crowned with calyx lobes, many seeded.

Common in mixed forests: 300 - 500 m.

Fl.: April; Fr.: May - June.


49 MELASTOMATACEAE

(D. M. Verma)

1a. Shrubs or small trees. Leaves 6 - 15 cm long. Ovary 1-celled Memecylon 1

1b. Annual herbs. Leaves 1.0 - 3.5 cm long. Ovary 3-celled Sonerila 2

1. MEMECYLON L.

Memecylon umbellatum Burm. f. Fl. Ind. 87. 1769 var. contractum (Haines) D. M. Verma, comb. nov. Memecylon edule Roxb. var. contractum Haines in Ind. For. 40 : 270. 1914.

Evergreen trees with trunk ca 30 cm across, or shrubs; blaze pink, branchlets 4 angled or subterete. Leaves leathery, ovate lanceolate, shortly acuminate, 3 - 6 cm long, black dotted beneath; nerves very obscure, petioles 5 - 6 mm long. Flowers in blue subsessile heads; the heads along the branches, consisting of 2 or 3 very shortly pedunculate cymes. Berries ca 6 mm dia., black.

Fl.: April - May.

RAIPUR: Singhapur range, along Marwapatra nala, n.v. (cf. Haines, l. c.).

2. SONERILA Roxb.

Sonerila tenera Royle, 111. 215. t. 45. f. 2. 1834.

Annual delicate herbs, 5 - 20 cm high, with usually pinkish glandular hairy stem. Leaves elliptic - ovate or rhomboid, up to 2 cm broad,
usually sparsely hairy on both the surfaces. Flowers racemose, ca 8 mm long, pink purple. Capsules trigonous, 6 - ribbed.

On moist slopes in mixed sa forest; 300 - 500 m.

Fl. & Fr.: Sept. - October.

RAIPUR: Taurenga. RAJNANDGAON: Singhari.

50. LYTHRACEAE

(D. M. Verma)

1a. Herbs. Flowers and fruits 1.0 - 2.5 mm long.

2a. Flowers in dichasia. Cymes. Fruits circumscissile or
    bursting irregularly

2b. Flowers solitary, opicata or racemose. Fruits septicidal

1b. Trees or shrubs. Flowers and fruits more than 3 mm long.

3a. Hypanthium tubular, more or less oblique at the mouth;
    petals subulate. Fruits included within the hypanthium...

3b. Hypanthium cupular, straight at the mouth, petals
    obovate or spatulate. Fruits exserted from the
    hypanthium.

4a. Sepals and petals 4 each, stamens 8. Fruits bursting
    irregularly

4b. Sepals and petals 3 or 5 - 9 each; stamens numerous.
    Fruits dehiscing by valves

1. AMMANNIA L.

1a. Leaves gradually narrowed towards the base. Cymes subscis-
    sile

1b. Leaves rounded or slightly cordate at the base. Cymes on
    3 - 8 mm long peduncles

1. Ammannia baccifera L, Sp. Pl. 120. 1753.

Diffusely branched pinkish green herbs with 5 - 40 cm long quadran-
gular branches. Leaves elliptic - lanceolate, up to 6 x 1 cm, narrowed at
both ends. Flowers in 3–5 mm long cymes, ca 2 mm across, purple. Capsules depressed globose, red.

**Common along streams, ponds and ditches; 250–500 m.**

*Fl. & Fr.*: throughout the year.

**DURG**: Talgaon. **RAIPUR**: Dhamtari, Kasdol, Raipur, Sitanadi. **RAJNANDGAON**: Taregaon.


Diffusely branched pinkish green annuals, 10–40 cm high, with quadrangular branches. Leaves opposite, decussate, linear oblong, 15–35 mm long. Cymes usually longer than the leaves; hypaithrium campanulate, ribbed. Flowers ca 1.5 mm across, red. Fruits globose, ca 1 mm across, red.

Near streams and in moist depressions in sal forests; 250–500 m.

*Fl. & Fr.*: October - January.

**RAIPUR**: Kasdol, Sitanadi, Taurenga.

2. **Lagerstroemia** L.

1a. Flowers 5–7 cm across; calyx ridges 12 or more, prominent

... *L. regineae* 3

1b. Flowers 1.0–3.5 cm across; calyx ridges 4–6, obscure, or absent.

2a. Leaves glaucous beneath. Flower buds 2–3 mm long. Capsules 15–25 × 10–15 mm

... *L. parviflora* 2

2b. Leaves green beneath. Flower buds 5–6 mm long. Capsules ca 10 × 8 mm

L. *indica* 1


Deciduous shrubs. Leaves subsessile, elliptic oblong, 3–10 × 2.4 cm. Panicles subpyramidal, 5–20 cm long. Calyx superficially ridged or smooth with age; petals white, lilac or rose-coloured, suborbicular with crisped margins, blade ca 10 mm long, claw ca 7 mm long.

Commonly planted as ornamental; 200–300 m
FR. & FR.: May - August.

RAIPUR: Raipur.

2. L. parviflora Roxb. Pl. Corom. 47. t. 66. 1795. "Lendia, Senha."

Shrubs or small trees with greyish branches. Leaves elliptic-oblong or ovate-lanceolate, 4 9 x 2 4 cm, young pubescent beneath. Panicles 5 - 20 cm long. Calyx not ribbed; petals white with ca 3 mm long rounded-crenate blade and ca 2 mm long claw. Capsules ellipsoid, 1.5 - 4.0 cm long.

Common in mixed forests and roadsides; 250 - 500 m.

FR. & FR.: June.

RAIPUR: Dugli, Gariaband, Kasdol, Pithora. RAJNANDGAON: Baghmani, Khargaon, Rajnandgaon, Salewara, Taregaon.

Wood used for timber and agricultural implements.


Evergreen trees. Leaves shortly petioled, elliptic-oblong, 10 - 23 x 4 - 8 cm. Panicles subcylindrical, 10 - 40 cm long. Flower buds 8 - 14 x 7 - 10 mm, generally grey; calyx lobes thickened on the margins, spreading in fruits; petals mauve-purple, blade suborbicular, undulate, ca 3 cm across, claw ca 3 mm long.

Planted in gardens and roadsides: 350 - 500 m.

FR.: June.

RAIPUR: Dugli, Khallari.

3. LAWSONIA L.

Shrubs, 1 3 m high with some of the branchlets spiny at the tip. Leaves opposite, shortly petiolate, lanceolate or oblanceolate, 2 – 3 cm long. Flowers in terminal panicked cymes, ca 5 mm across, cream-coloured, fragrant; sepals persistent. Fruits dry, depressed globose, ca 6 mm dia., red, tipped with persistent style.

Commonly planted as hedge; 250 – 450 m.

Fl. & Fr.: April – August.

RAIPUR: Raipur. RAJNANDGAON: Baghnadi.

4. Rotala 1.

1a. Flowers in terminal peduncled spikes

1b. Flowers solitary axillary or in sessile leathery axillary spikes.

2a. Calyx, including the lobes, 2.5 – 3.5 mm long, tube pyramidal. Fruits 2-valved

R. indica 3

2b. Calyx, including the lobes, 1 – 2 mm long, tube campanulate. Fruits 3 – 5 -valved.

3a. Leaves broadly ovate – cordate

R. f. minut 2

3b. Leaves linear – oblong.

4a. Leaves opposite, 10 – 30 mm long. Calyx between the lobes with linear subulate accessory lobes. Fruits ca 1.5 mm long

R. densiflora 1

4b. Leaves opposite or 3–4 – whorled, 3 – 13 mm long. Calyx between the lobes not with accessory lobes. Fruits ca 1 mm long.

R. mexicana 4


Annual erect or ascending herbs, 5 – 30 cm high with quadrangular branches pinkish at the base. Leaves oblong or oblong-lanceolate, with rather cordate decurrent bases, floral leaves much smaller than the cauline ones. Flowers pink, solitary or in dense up to 5 cm long leafy spikes; petals equaling or exceeding the sepals; style ca 0.5 mm long. Capsules 3 - valved.
In ditches and ditches; 500 - 500 m

Fl. & Fr.: September - May.

RAIPUR: Dhamtari, Dugli, Gariaband. RAJNANDGAON: Baghmundi.


Annual filiform herbs up to 10 cm high. Leaves sessile, decussate, sub-amplexicaul, 2.0 - 2.5 x 1.5 - 3.0 mm, acute. Flowers solitary axillary, tetramerous, purplish; calyx ca 1 mm long with accessory subulate lobes. Capsules included within the calyx tube, 4 - 3 valved, red.

In ditches; 500 m.

Fl. & Fr.: October.

RAIPUR: Tauranga.


Annual ascending or creeping herbs with quadrangular fleshy branches. Leaves opposite, oblong or spatulate, 4 - 15 x 2 - 8 mm. Flowers solitary or in up to 4 cm long leafy spikes, tetramerous; calyx without accessory lobes; petals white or reddish. Fruits ellipsoid, red.

In ditches; 400 - 500 m.

Fl. & Fr.: November - January.

RAIPUR: Dugli. RAJNANDGAON: Deopura.


Annual, filiform, green or purplish herbs, 3 - 12 cm high, generally forming matty growth. Leaves generally 3 - 4 whorled, sometimes opposite, linear, ca 1 mm broad. Flowers solitary axillary; calyx ca 1 mm long; petals absent. Fruits ca 1 mm long, 3 - 4 valved.

In ditches; 500 m.

Fl. & Fr.: October.
5. **RAIPUR**: Taurenga.


Slender annual purplish green herbs with a creeping stem and numerous erect 5–15 cm high branches. Leaves sessile, broadly elliptic or suborbicular, 5–10 mm long. Spikes terminal, solitary or 2–3 together, 0.5–2.0 cm long, on 3–5 mm long peduncles. Flowers tetramerosous; calyx tube campanulate; petals red. Capsules 4-valved.

Along ponds; 580 m.

*Fl. & Fr.*: April.

5. **RAJNANDGAON**: Rengakhar.


Profusely branched shrubs, 1–2 m high, almost leafless in Feb. March. Leaves subsessile, linear lanceolate, 3–10 cm long, white pubescent beneath. Flowers in fascicled axillary racemes; calyx tube ca 1 cm long, red, lobes ca 3 mm long, accessory lobes ca 1 mm long; petals small, red. Fruits ellipsoid, ca 1 cm long.

In open sal and mixed forests; 400–800 m

*Fl. & Fr.*: January–May.

5. **RAIPUR**: Dugli, Mainpur. **RAJNANDGAON**: Chilpi.

Flowers yield a pink yellow dye.

51. **ONAGRAEAE**

(D.M. Verma)

**LUDWIGIA** L.

1a. Prostrate or ascending herbs, forming branches with clusters of white spongy spindle-shaped aerophores at the nodes. Petals white or creamy with yellow bases ... *L. ascendens* 1

1b. More or less erect herbs without the above aerophores. Petals uniformly yellow.
2a. Usually villous - pubescent herbs, sometimes subglabrous. Sepals and petals 5 - 17 mm long; stamens 8

L. octovalvis 2

2b. Glabrous or puberulous herbs. Sepals and petals 1.0 - 3.5 mm long; stamens 4 - 5 (rarely more in some flowers of L. perennis).

3a. Capsules terete; seeds pluriseriate in each cell ... L. perennis 3

3b. Capsules slightly 4 - angled; seeds uniseriate in each cell ... L. prostrata 4


Aquatic or marsh - land herbs with a creeping stem rooting at the nodes and emitting erect branches. Leaves elliptic - oblong, 1 - 7 cm long. Flowers solitary axillary, pentamerosus; sepals 5, 10 mm long; petals obovate, 10 - 18 mm long. Capsules terete, 10 - ribbed, 12 - 27 mm long; seeds uniseriate in each cell.

Along ponds & in shallow streams; 250 - 450 m.

Fr. & Fr. : January June.

DURG : Durg. RAIPUR : Gariaband, Raipur. RAJNANDGAON : Rajnandgaon.


Herbs or undershrubs; 0.2 - 2.0 m high, usually profusely branched. Leaves lanceolate, 2.0 - 8.0 x 0.5 - 2.5 cm. Flowers solitary axillary; sepals and petals 4 each. Capsules terete, thin walled, 8 - ribbed, 15 - 30 mm long; seeds pluriseriate in each cell.

In ditches and river beds; 300 - 800 m.

Fr. & Fr. : throughout the year.

DURG : Talgaon. RAIPUR : Dugli, Taurenga. RAJNANDGAON : Chilpi, Khargaon, Singhari.


Annual herbs, 0.3 - 1.0 m high. Leaves elliptic - lanceolate 1.0 - 8.0 x 0.3 - 2.5 cm. Sepals 4, rarely 5, deltoid, 2.0 - 3.5 mm long; petals elliptic, 1 - 3 mm long. Stamens 4 or 5, rarely more. Capsules 3 - 16 mm long; seeds 0.3 - 0.5 mm long.
Along ponds, ditches and in sandy river beds; 250 - 550 m.

*Fl. & Fr.*: November - May.

RAIPUR: Dhamtari, Dugli, Raipur, Sitanadi, Taurenga. RAJNANDGAON: Baghnadi.


Annual herbs, up to 60 cm high. Leaves elliptic, 1.0 - 10.0 x 0.3 - 1.8 cm. Sepals 4, deltoid, 1.3 x 0.7 - 1.0 mm; petals spatulate, equally long; stamens 4. Capsules 12 - 22 mm long; seeds ca 0.6 mm long, speckled.

Along roadside puddles; 250 - 450 m.

*Fl. & Fr.*: November April.


52. TRAPACEAE

(D.M. Verma)

**TRAPA L.**


Aquatic floating herbs. Leaves dimorphic; submerged leaves opposite, pectinate; floating leaves clustered, ovate rhomboid, 3 - 5 cm broad, crenulate, red and villous beneath; petioles inflated. Flowers solitary axillary, tetramerous, ca 2 cm long, white with a yellowish blotch in the mouth. Fruit somewhat compressed, urn shaped, 2 - 3 cm broad, with two horns.

Cultivated in ponds; 400 m.

*Fl. & Fr.*: June October.

RAIPUR: Gariaband.

The sweet white kernel is eaten raw and cooked.
53. CUCURBITACEAE

(D. M. Verma & P. C. Pant)

(*Citrullus lanatus* (Thunb.) Mansf., *Cucurbita maxima* Duch. ex Lamk. *Cucurbita pepo* DC. & *Lagenaria siceraria* (Makina) Standl.) are commonly cultivated for their edible fruits.

1a. Petals fimbriate

1b. Petals entire.

2a. Tendrils 2 - 3 - branched at the tip

2b. Tendrils not branched.

3a. Calyx tube closed near attachment of stamens by 2 - 3 incurved scales. Male peduncle with spathaceous bract

3b. Calyx tube not closed. Bract not spathaceous.

4a. Seeds compressed

4b. Seeds turgid.

5a. Fruits 0.5 - 1.2 cm long

5b. Fruits 4 - 5 cm long

1. **Cucumis** L.

1a. Leaves deeply lobed. Ovaries and fruits not echinate

1b. Leaves angled or shallowly lobed. Ovaries and fruits echinate

C. callosus 1

C. prophetarum 2


Slender, perennial, monocious, creeping or climbing scabrid herbs. Leaves suborbicular, deeply 5 - 7 - lobed, 3 - 6 cm broad, cordate at the base, lobes dentate or lobulate. Flowers yellow, ca 6 mm long. Fruits ellipsoid or globose, 3 - 4 cm long, pungent, greenish yellow with greyish stripes.

Common in wastelands and mixed forests; 300 - 550 m.

*Fl. & Fr.*: August - January.

RAIPUR: Dugli, Raipur, Taurenga.

2. *C. prophetarum* L. Cont. Pl. 32. 1755. ‘Kuru Budela’.
Slender, perennial, monoecious, creeping or climbing strigose herbs. Leaves suborbicular, 3-5 lobed or subentire, 2-4 cm long, subtruncate at the base, lobes dentate or lobulate. Flowers solitary or fasciculate, ca 4 mm long, yellow. Fruits subglobose, 3-4 cm across, dark green with greyish stripes.

In mixed forests; 500 m.

Fl. & Fr.: January.

RAIPUR: Sitanadi.

2. Diplocyclus (Endl.) von Post & Kuntze


Slender, perennial, monoecious, climbing, tuberous herbs. Leaves suborbicular, deeply 3-5 lobed, 3-10 cm long, dentate at the base, scabrid on the upper surface. Flowers fasciculate, male and female often together, 5-10 mm across, greenish yellow. Fruits globose, 2-3 cm across, red, pulpy; seeds compressed.

In wastelands; 250-500 m.

Fl. & Fr.: September January.


Seeds mixed with jaggery is given to barren women for conception.

3. Melothria L.


Perennial dioecious scendent herbs. Leaves coriaceous, extremely polymorphic, lanceolate, ovate, oblong or suborbicular, undivided or variously lobed, 5-20 cm long. Flowers small, yellow; male flowers fascicled or umbellate; female flower solitary. Fruits oblong, 4-5 x 2 cm.
In mixed forests; 450 m.

_Fl. & Fr._: September.

RAJNANDGAON: Baghnadi.

4. **Momordica L.**

1a. Monoecious. Leaves deeply 5-7 lobed. Fruits tubercled

... _M. charantia_ 1

1b. Dioecious. Leaves subentire or shallowly lobed. Fruits clothed with dense fleshy spines

... _M. dioica_ 2

1. **Momordica charantia** L. Sp. Pl. 1009. 1753. ‘Karela.’

Slender prostrate or climbing herbs, 1-2 m long. Leaves reniform or suborbicular, 5-12 cm broad, often pedately lobed, lobes dentate or lobulate. Flowers solitary, 15-20 mm long, yellow, male peduncle with a foliaceous bract about the middle. Fruits oblong, 8-20 cm long, bitter.

Usually cultivated; 400 m.

_Fl. & Fr._: May - June.

RAIPUR: Gariaband.

Fruits eaten cooked; also considered medicinal.


Slender perennial climbers. Leaves ovate, 4-10 × 3-8 cm, entire or sinuately lobed. Flowers solitary, 20-35 mm long, yellow; male peduncle with a reniform bract at the tip. Fruits ovoid, 3-5 cm long, beaked, bitter.

In wastelands; 350-800 m.

_Fl. & Fr._: August - September.

RAIPUR: Borai, Dhamtari. RAJNANDGAON: Chilpi.

Fruits eaten cooked.

5. **Mukia Arn.**


Slender creeping or climbing annual herbs with hispid branches. Leaves ovate deltoid, angular or lobed, 4 × 3 13 cm, denticulate, sebrous (more on the upper surface). Flowers solitary or a few fascicled, small, yellow. Fruits globose, 5 12 mm across, smooth or sparsely echinate, greenish yellow or ultimately red.

In wastelands and mixed forests; 250–600 m.

*Fl. & Fr.*: June – November.

DURG: Balod. RAIPUR: Gariaband, Raipur, Taurenga. RAJNANDGAON: Deopura, Taregaon.

6. *Trichosanthes* L.

*Trichosanthes cucumerina* L. Sp. Pl. 1008. 1753.

Slender annual climbers with 2–3 fied tendrils. Leaves broadly ovate or reniform, 5–7 lobed, 7–10 cm long, denticulate. Flowers white; male flowers generally racemose; female flowers solitary. Fruits aroid, 5–6 × 3–4 cm; seeds compressed.

On roadside bushes; 300–500 m.

*Fl. & Fr.*: August–November.


54. **BEGONIACEAE**

(M. I. Hanfi)

**Begonia** L.


Small monocoeous succulent herbs. Leaves few or solitary, ovate- suborbicular or cordate, 5–12 (–30) cm long, usually unequal-sided, bronze-
green above, crimson beneath, margins dentate. Flowers in terminal cymes, 10–20 mm long, pink. Ovaries and capsules 3-winged, the third wing sometimes obsolete.

In moist shady slopes; 300–800 m.

_Fl. & Fr.:_ September–November.

**RAIPUR:** Mainpur. **RAJNANDGAON:** Chilpi, Singhari.

55. **CACTACEAE**
(M. I. Hanfi)

**Opuntia** P. Mill.


Profusely branched succulent shrubs, 1–3 m high; segments flat with many areoles, each bearing 2–7 flat yellow spines. Flowers solitary, 7–10 cm long, yellow. Berries globose, fleshy, glochidiate.

In villages; 550 m.

_Fl.:_ April.

**RAJNANDGAON:** Rengakhair.

56. **AIZOACEAE**
(D. M. Verma)

**Triandema** L.


Succulent diffuse prostrate herbs with 10–40 cm long forked branches. Leaves sub opposite, obliquely elliptic obovate, 1–3 cm long, often wavy margined. Flowers solitary, sessile, in the forks of the branches, white or pinkish. Capsules scarious in the lower part, coriaceous above, circumsciss.

In wasteland; 300 m.
Fl. & Fr.: August.
RAIPUR: Raipur.
Plants eaten cooked.

57. MOLLUGINACEAE
(D. M. Verma)

1a. Flowers in axillary fascicles. Seeds with a filiform appendage curved round the seed ... *Glinus* 1

1b. Flowers in lax terminal or leaf-opposed cymes or pseudo-racemes. Seeds without the above appendage ... *Mollugo* 2

1. *Glinus* L.

1a. Leaves tomentose beneath. Pedicels 1 - 2 mm long. Tepals densely hairy ... *G. lotoides* 1

1b. Leaves glabrous or sparsely hairy beneath. Pedicels 4 - 15 mm long. Tepals glabrous or thinly pubescent ... *G. oppositifolius* 2


Slender, prostrate or ascending, annual herbs, greyish green or pinkish with age. Stems 10 - 80 cm long. Leaves in fugalious radical clusters and 2 - 3 nate on the stems, obovate-rotundate, 10 - 30 x 5 - 15 mm. Flowers in axillary fascicles; tepals 6 - 10 mm long. Capsules 5 - 10 mm long. Capsules 5 - 10 mm long. Capsules 5 - 10 mm long.

In dry sandy river beds; 500 m.

Fl. & Fr.: May June.

RAIPUR: Sitanadi.


Erect or ascending annual herbs. 5 - 50 cm high, usually profusely branched from the base, sometimes prostrate. Leaves 3 - 5 - nate, oblong-spathulate, 5 - 30 x 3 - 12 mm. Flowers in axillary fascicles of 2 - 6; tepals 3 - 5 mm long, obtuse. Capsules 3 - 4 - valved, ca 3 mm long.
FLORA OF RAIPUR

In dry sandy river beds and along dams, 300 500 m.

Fl. & Fr. : May June.

RAIPUR : Pithora, Sitanadi, Taurenga.

2. **Mollugo** L.

1a. Leaves in a solitary basal whorl ... *M. nudicaulis* 2

1b. Leaves in two to several whorls at the nodes.

2a. Leaves linear. Seeds smooth ... *M. cerviana* 1

2b. Leaves linear - lanceolate or obovate. Seeds tuberculate. ... *M. pentaphylla* 3


Slender annual erect herbs branching from the base. Leaves linear, clustered at the nodes, 5 12 mm long, ca 1 mm broad. Flowers in clusters on filiform pedicels, ca 1 mm across; tepals obovate; stamens 5. Seeds smooth.

In moist places along tank ; 300 m.

Fl. & Fr. : May July.

RAIPUR : Raipur, Sharma (Herb. Sci. Coll. Raipur)

2. **M. nudicaulis** Desr. in Lamk. Encycl. 4 : 234. 1797.

Slender annual herbs, 7 20 cm high. Leaves in a radical cluster, elliptic, 2 5 cm long. Flowers ca 1.5 mm long, in profusely branched cymes; tepals scarious margined. Capsules ellipsoid, ca 2 mm long; seeds shining reddish black, tubercled.

On sandy river banks ; 300 400 m.

Fl. & Fr. : April June.

DURG : Talgaon. RAIPUR : Kas dol.

Slender annual herbs, 3-25 cm high, usually much branched. Leaves in pseudo whorls of 3-5 (9), lower ones rosulate, spathulate, fugacious, upper linear-lanceolate, 1-3 cm long. Flowers 1-2 mm long, in terminal and leaf-opposed cymes. Capsules ellipsoid, ca 2 mm long; seeds brownish black, tubercled.

In dry or moist wastelands and crevices of rocks and walls; 300-500 m.

Fl & Fr. : August - November

DURG : Balod. RAIPUR : Dhamari, Raipur, Sitnadi, Taurenga.. RAINANDGAON : Baghmani, Deopura, Singhari.

58. APIACEAE
(UMBELLIFERAEE)
(D. M. Verma & V. Chandra)

1a. Flowers in simple umbels.

2a. Leaves simple. Mericarps 7-9-ribbed ... Centella 1

2b. Leaves 3-5-lobed or partite. Mericarps 4-ribbed... Hydrocotyle 2

1b. Flowers in compound or decompound umbels.

3a. Fruits elliptic, 8-12 mm long, mature with about 2 mm broad wings ... Peucedanum 3

3b. Fruits roundish, 1-2 mm long, never winged.

4a. Fruits constricted at the commissure, laterally compressed.

5a. Involucral bracts conspicuous, 3-6 mm long Trachyspermum 6

5b. Involucral bracts minute or absent ... Pimpinella 4

4b. Fruits neither constricted at the commissure nor laterally compressed ... Sesi 5

1. Centella L.

Creeping herbs with long stolons. Leaves rosulate, petiolated, reniform, 1.5 cm broad, crenate dentate. Umbels solitary or 2–5 together, on 0.5–1.0 cm long peduncles. Flowers 5–5, ca 1.5 mm across, red. Mericarps ca 2.0×1.5 mm.

Along drains; 500–750 m.

Fl. & Fr.: September–June.

RAIPUR: Taurenga. RAJNANDGAON: Chilpi, Deopura.

Plants medicinally used.

2. HYDROCOTYLE L.


Trailing herbs. Leaves rounded or 3 to 5 palmatifoliated or partite, 0.5–2.5 cm broad; segments crenate serrate. Inflorescence leaf-opposed, on 0.5–3.0 cm long peduncles. Flowers 5–15 in each inflorescence, sessile or shortly pedicelled; calyx teeth none; petals red. Fruits 1.0–1.2×0.7 mm, glabrous or hairy, often red punctate.

Along streams; 600 m.

Fl. & Fr.: January–April.

RAJNANDGAON: Chilpi.

3. PECEDANUM L.

Pecedanum nagpurensiæ (Clarke) Prain, Bengal Pl. 540. 1903.

P. glaucum var. nagpurensiæ Clarke in Hook. f. Fl. Brit. Ind. 2: 710. 1879. 'Tejraj'.

Perennial herbs, ca 1 m high. Leaves ternately compound, upper with narrow lobes. Rays 12–16; bracts absent; bracteoles 4–7. Dried fruits blackish with stramineous wings.

In miscellaneous forests; 450–500 m.

Fl. & Fr.: October–January.

RAIPUR: Mainpur, Sitanadi.

Medicinal.
4. PIMPINELLA L.

1a. Leaves all sub-similar; leaflets all lanceolate or ovate-lanceolate

P. heyneana 2

1b. Leaves dissimilar; leaflets of radical and lower leaves ovate-lanceolate, of upper leaves deeply divided into linear lobes.

2a. Rays 6-12; fruit compressed, not didymous ... P. diversifolia 1

2b. Rays 8-13; fruit tetrate, didymous ... P. wallichiana 3

1. Pimpinella diversifolia DC. Prodr. 4: 122. 1830.

Herbs up to 1.5 m high. Lower leaves rounded ovate; upper entire or 3-partite; segments ovate lanceolate, serrate to subpinnatifid. Flowers 8-16, white, rays 6-12. Fruits ovoid, narrowed towards the apex, hispidulous or glabrescent, greenish.

In sal forests; 740 m.

Fl. & Fr.: September.

RAJNANDGAON: Chipli.


Perennial herbs, 30-70 cm high. Leaflets up to 5 cm long, serrate, puberulous. Flowers minute, in leaf-opposed umbels, white; rays 4-14; bracts absent. Fruits didymous, broader than long, smooth, ridges slender.

In miscellaneous forest undergrowth; 450-550 m.

Fl. & Fr.: October.

RAIPUR: Sitanadi, Taurenga.


Perennial herbs up to 1 m high. Lower leaves 3 foliolate; leaflets ovate with oblique bases, up to 7 × 4 cm, upper much lobed into linear lobes. Umbels 2.5-5.0 cm diam.; rays 8-13; flowers white; bracts absent. Fruits ovoid, compressed, minutely papillose.
In sal and miscellaneous forests; 400–500 m.

Fl. & Fr.: January.

RAIPUR: Singhpur, Sitanadi.

5. SESELI L.


Small pubescent herbs, 8–10 cm high. Leaves decussate, lobes obtuse, apiculate, pubescent. Flowers white or pinkish; rays 11–13; bracts and bracteoles ciliate. Sepals absent; petals 5. Fruits subglobose, hispid, gland-tipped, ridges thick, obtuse.

In wastelands; 350 m.

Fl. & Fr.: April.

DURG: Kamteli.

6. TRACHYSPERMUM Link


Annual herbs, 25–50 cm high. Leaves 1–2 pinnate with the pinnate and their segments usually 3; ultimate segments linear-lanceolate, glabrous. Umbel rays 3–6, slender, 1–4 cm long. Flowers ca 1.5 mm across, white (or pinkish). Fruits hispidulous.

In mixed forests; 400 m.

Fl. & Fr.: November.

RAJNANDGAON: Taregaon.
59. ALANGIACEAE

(M.I. Hanfi)

ALANGIUM Lamk.


Small or medium sized spinescent deciduous trees with greyish branches. Leaves oblong or elliptic lanceolate, acute or acuminate, 7–15 cm long, glabrous above, pubescent beneath. Flowers white, fragrant, in axillary fascicles. Fruits baccate, ellipsoid, young green, mature turning pinkish, pulp inside white, soft, slimy.

In miscellaneous forests ; 350–500 m.

Fl. & Fr.: April–June.

DURG : Buddhnam. RAIPUR : Dhamtari, Gariaband.

60. RUBIACEAE

(D.M. Verma & M.I. Hanfi)

1a. Herbs, up to 0.5 m high, sometimes (in Knoxia) about 1 m high. Flowers and fruits solitary, fascicled or in panicled cymes, up to 3 mm long.

2a. Flowers several, fascicled

2b. Flowers solitary, or if more, then in open panicled cymes.

3a. Leaves oblong lanceolate, 4 12 x 1 3 cm. Flowers subsessile, in cymes

3b. Leaves various. Flowers long-pedicelled, or if subsessile, then solitary.

4a. Leaves 2–8 mm long. Flowers sub sessile; corolla lobes toothed

4b. Leaves usually longer. Flowers long-pedicelled, corolla lobes entire.

5a. Leaves broadly ovate - oblong, 8–18 mm broad. Seeds pitted

Barreria 4

Knoxia 9

Dontelia 5

Thecagonum 14
FLORA OF RAIPUR

5b. Leaves linear or linear-lanceolate, 1-2 mm broad. Seeds not pitted.

6a. Cymes axillary. Corolla tube subequaling the sepals. Fruits about 2 mm across

6b. Cymes terminal. Corolla tube far exceeding the sepals. Fruits about 3 mm across

\[ \textit{Oldenlandia} \; 12 \]

1b. Trees or shrubs, more than 1 m high. Flowers and fruits variously arranged, larger, or if smaller, then in globose heads.

7a. Flowers in globose heads.

8a. Leaves cordate at the base

8b. Leaves acute or rounded at the base.

9a. Hypanthia free; flowers bracteolate, creamy white; corolla lobes valvate; stigma mitriform

9b. Hypanthia connate; flowers ebracteolate, orange; corolla - lobes imbricate; stigma fusiform

\[ \textit{Mitragyna} \; 11 \]

\[ \textit{Antheoccephalus} \; 2 \]

7b. Flowers solitary or in fascicled, panicled or corymbose cymes.

10a. Flowers solitary, or 2-4 in fascicles. Fruit a drupe or a berry, 1-5 cm long.

11a. Ovary 2 - celled, ovule solitary in each cell.

Fruit a 1.0-1.5 cm long 2 - seeded drupe

11b. Ovary 1 or 2 - celled, ovules several in each cell. Fruit a 1.5-5.0 cm long many - seeded berry.

12a. Ovary 1 - celled

12b. Ovary 2 - celled

\[ \textit{Coffee} \; 4 \]

\[ \textit{Gardenia} \; 6 \]

\[ \textit{Xeromphis} \; 16 \]

10b. Flowers many, in panicked or corymbose cymes. Fruit a globose drupe or a capsule, 0.3-0.6 cm long, or a narrowly ellipsoid capsule, 1.5-2 cm long.

13a. Flowers in trichotomously branched corymbose cymes; ovule solitary in each cell. Fruit a 2 - seeded drupe.

14a. Leaves and bracts coriaceous. Style bifid

\[ \textit{Ixora} \; 8 \]
14b. Leaves and bracts not coriaceous, style entire ... *Poevetia* 13

13b. Flowers in panicked cymes or thyrsoid panicles; ovules many in each cell. Fruit a many seeded capsule.

13a. Corolla lobes valvate in bud, Capsules ellipsoid; seeds winged ... *Hymanodieryton* 7

13b. Corolla lobes imbricate in bud, Capsules globose, seeds not winged ... *Wendlandia* 15

1. **Adina** Salisb.


Large trees, 20-10 m high with greyish black stems. Trunk 30-40 cm diam. Leaves broadly ovate, pubescent, 18 x 16 cm, petiole pinkish, up to 8 cm long. Flowers in globose heads, white. Heads 1-3 fascicled, axillary, 2-3 cm across; peduncle 3-5 cm long, 2 bracteolate above the middle; corolla brownish yellow. Capsules 4 mm long.

In sal and miscellaneous forests; 300-550 m.

*Fl.*: August November; *Fr.*: January June.

**BURDIGH - Budhbum, Rajhara - dhalli RAIPUR - Deori, Dhamtari, Pithora, Sitanadi. RAJNANDGAON - Taregaon.**

2. **Anthocephalus** A. Rich.


Large trees, 5-7 m high with spreading subwhorled branches. Leaves elliptic-oblong or ovate, sometimes subcordate at the base, 12-25 cm long. Flowers small, orange, sepals erect, narrowly oblongolate, ca 3 mm
long; corolla ca 7 mm long; stigmas far exerted, white. Pseudocarps large, fleshy, orange, 5–6 cm diam.

In sal and miscellaneous forests; 500–600 m.

Fl.: May July; Fr.: persisting till next year.

RAIPUR: Bori, Sitanadi.

3. BORRERIA G. Meyer

1a. Leaves 2–3 times longer than broad ... B. articulatis 1

1b. Leaves 7–9 times longer than broad ... B. pusilla 2


Deep rooted herbs with prostrate pinkish quadrangular branches, 5–20 cm long. Leaves lanceolate oblong or obovate, 0.5 3.0 × 0.4 1.5 cm. Flowers clustered at the ends of reduced axillary branches; corolla ca 4 mm long, whitish or pale purple. Fruits obovoid, hispidly hairy, ca 4 × 2 mm.

In wastelands & miscellaneous forests; 300–800 m.

Fl. & Fr.: August April.

DURG: Balod, Budhham. RAIPUR: Raipur, Taurenga. RAJNANDGAON: Chipli, Baghnadi, Khargaon, Singhadi.


Erect annual herbs, 10–20 cm high. Stems scabrid on angles. Leaves linear - lanceolate or oblong, 2.0 6.0 × 0.3 1.0 cm, glabrous or scabrid. Flowers in dense terminal clusters, rarely in axillary clusters; bracts
filiform, *ca* 3 mm long. Corolla *ca* 3 mm long. white or pale purple; stamens *ca* 3–4, exerted. Fruits obovoid, hispidly hairy, *ca* 3 mm long.

In rock crevices; 400–800 m.

*Fl. & Fr.*: September–November.

**DURG**: Balod. **RAIPUR**: Taurenga. **RAJNANDGAON**: Baghnadi, Chilpi.

4. **Coffea L.**

*Coffea beghalensis* Heyne ex Roem. & Schult. Syst. Veg. 5: 200. 1819.

Pretty shrubs, 1.5–2 m high. Leaves broadly ovate oblong or rhomboid, abruptly acuminate at apex, glabrous, *ca* 8 × 3–4 cm; petiole *ca* 2–4 mm long. Flowers 1–3 together, salver shaped, *ca* 3 cm across, white; corolla tube *ca* 17 mm long; stamens 4–5; stigmas lanceolate. Fruits ovoid, 10–12 mm long, black; seeds grooved.

In miscellaneous forests, on hill slopes; 450 m.

*Fl. & Fr.*: March–November.

**RAIPUR**: Gariaband.

5. **Dentella J. & G. Forst.**


Annual slender creeping herbs forming matty growth, rooting at the nodes, up to 10 cm high. Leaves linear-oblongate, *ca* 10 × 1–4 mm, slightly hairy on the margins. Flowers axillary, pentameres, campanulate, white or whitish mauve with a deep blotch of mauve on each lobe. Capsules globose, *ca* 3 mm diam.

In riverbeds, along streams, ditches and walls; 300–600 m.

*Fl. & Fr.*: January–June.

**DURG**: Durg. **RAIPUR**: Dhamtari, Gariaband, Pithora, Sitanadi. **RAJNANDGAON**: Rengakhar.
FLORA OF RAIPUR

6. Gardenia J. Ellis

1a. Usually thorny, though the thorns sometimes absent from some of the branches. Leaves with 5 - 7 secondary nerves on each side of the midrib, irregularly ascending and spreading, not parallel. Corolla tube ca 1.5 cm long, lobes ca 1 cm long. Mature fruits globose, 4 - 7 cm diam. ... G. turgida 4

1b. Unarmed. Leaves usually with more secondary nerves on each side of the midrib, conspicuously parallel. Corolla tube 3.5 - 7.0 cm long, lobes 2.5 - 5.0 cm long. Mature fruits ovoid - ellipsoid or globose, 2 - 5 cm long.

2a. Flowers and fruits sessile. Calyx lobes like small teeth, nearly 1 - 2 mm long ... G. gymnifera 1

2b. Flowers and fruits peduncled. Calyx lobes linear, 7 - 15 mm long.

3a. Leaves elliptic - oblong, glabrous or deciduously hairy only along the nerves beneath. Mature fruits ovoid, 2.0 - 2.5 cm long ... G. resinifera 3

3b. Leaves broadly elliptic to almost suborbicular, or young sometimes obovate, deciduously tomentose beneath throughout. Mature fruits ovoid-globose, 3.5 - 5.0 cm long ... G. latifolia 2


Shrubs or small trees, up to 2.5 m high; stem greyish. Leaves sessile, elliptic - oblong or oblongate - oblong, 4.5 - 7.0 × 2.0 - 2.5 cm, main nerves 12 - 18 pairs. Flowers subsessile, 1 - 3 together; calyx densely pubescent, teeth triangular; corolla white yellow, tube pubescent outside, 3 - 4 cm long. Fruits 2.5 - 4.0 cm long, oblong with numerous ribs and a stout beak.

In mixed sal forests; 400 - 550 m.

Fr. : October - June.

DURG : Budhbum. RAIPUR : Khallari, Taurenga.


Shrubs or trees, up to 10 m high with greyish white stems; young parts coated with a resinous exudation. Leaves 10 - 20 × 6 - 15 cm; main nerves 10 - 20 pairs. Flowers solitary or 2 - nate, subsessile, villous outside, white changing to yellow; calyx 20 - 25 mm long; corolla - tube 5 - 6 cm long. Fruits oblong globose with persistent calyx.
In miscellaneous forests; 350 - 800 m.

_Fl._: April; _Fr._: throughout the year.


_Shrubs or trees, 1.5 - 3.0 m high; stems smooth with whitish blotches; resinous. Leaves 6 - 10 x 2.5 - 7.5 cm; main nerves 20 - 25 pairs. Flowers fragrant, white; calyx ca 17 mm long, pubescent; corolla large, white changing to yellow, tube 3 - 5 cm long, lobes obovate, ca 3 x 2 cm, seeds numerous, small, flat, reddish._

In miscellaneous forests and along roadsides; 350 - 450 m.

_Fl._: May; _Fr._: October - May.

_DURG_: Budhbhum. _RAIPUR_: Dhamtari, Pithora. _RAJNANDGAON_: Baghnadi.


_Trees, 2.0 - 3.5 m high, usually with stout opposite spines. Leaves obovate, obtuse or shortly acuminate at the apex, long cuneate at the base, 5 - 8 x 3 - 6 cm, tomentose beneath. Flowers in axils of leaf scars, greenish white when young, turning yellow in age; calyx campanulate, split on one side; corolla tubular, twisted. Fruits fleshy smelling; seeds numerous, triangular, deep red._

In sal and mixed forests; 350 - 550 m.

_Fl._: June; _Fr._: ripening the next year; almost leafless in June.

_DURG_: Budhbhum. _RAIPUR_: Kasdol, Taurenga.

Pulp of ripe fruits used as fish poison.
7. **Hymenodictyon** Wall.


Trees to 15 m high, bark usually smooth. Leaves ovate - elliptic, 10 - 13 × 7 - 10 cm; petioles 2-7 cm long, pubescent; stipules broadly oblong. Flowers numerous, greenish - white, pedicelled; styles very long. Capsules in conspicuous bunches, ellipsoid, ca 2 cm long.

In miscellaneous forests; 500 m.

*Fr.* : January.

**RAIPUR** : Sitanadi.

8. **Ixora** L.


Shrubs or small trees, 2 - 5 m high, bark thick, reddish brown. Leaves coriaceous, oblong or elliptic, 7 - 12 × 4 - 6 cm. Flowers white, odorous, small and numerous, in subglobose clusters; peduncles 3 - 5 cm long, reddish. Fruits 5 - 7 mm in diam., didymous, red.

In miscellaneous forests; 350 - 500 m.

*Fl.* : January April. *Fr.* ; May June.


9. **Knoxia** L.

Erect annual herbs, up to 1 m high; stems simple or branched at the top. 4 angular. Leaves oblong or elliptic lanceolate, 7-12 cm long; petioles 2-15 mm long. Flowers greyish white or bluish, in axillary and terminal corymbose cymes. Fruits white or ultimately black; seeds granulate, 2×1 mm.

In wastelands and forest clearings; 400-800 m.

Fl. & Fr.: August–January.

DURG: Dondi, Rajhara-dhalli. RAIPUR: Borai, Dugli, Gariaband, Singhpur, Taurenga. RAJNANDGAON: Deopura, Chilpi.


Annual or perennial herbs, 20-30 cm high. Leaves linear or narrowly oblong, 15-30 × 1-2 mm, acute, glabrous; stipule segments 2-4, 1-2 mm long. Flowers in terminal, cymose, corymbose panicles. Fruits green, oblong-globose.

In wastelands and near drains; 350-550 m

Fl. & Fr.: May–June.

RAIPUR: Pithora, Taurenga.

11. Mitragyna Korth.


Large, crookedly branched trees, up to 18 m high. Trunk 30-50 cm thick with greyish brown rough bark. Leaves broadly ovate or suborbicular, 5-9 cm long, acute or obtuse. Flower heads globose, ca 4 cm across, creamy white, usually solitary. Fruiting heads globose, black, persistent.

Along roadsides and in miscellaneous forests; 350-450 m.
FLORA OF RAIPUR

Fl. : August ; Fr. : September January.


12. OLDERLANDIA L.

1a. All inflorescence 1 4 flowered ... O. corymbosa 2

1b. Upper inflorescence many - flowered and panicked.

2a. Stems angled. Leaves linear, stiff ... O. pusilla 3

2b. Stems terete. Leaves linear lanceolate, thinly herbaceous ... O. affinis 1


Annual slender erect herbs, up to 30 cm high, copiously branched with filiform branches. Leaves up to 5.0 x 0.5 cm, nerveless; cymes in upper axis panicked. Flowers minute, blue, on hair like pedicels up to 15 mm long; calyx teeth subulate.

In wastelands ; 400 m.

Fl. & Fr. : September.

RAJNANDGAON : Baghnadi.


Slender profusely branched annual herbs, up to 30 cm high. Leaves linear or narrowly elliptic lanceolate, up to 3 cm long and 2 mm broad. Peduncles solitary, 1 4 flowered; flowers small, white. Capsules globose, greyish white.

In wastelands and along paddy - fields ; 300 450 m.

Fl. & Fr. : September - April.

RAIPUR : Dhamtari, Pithora. RAJNANDGAON : Baghnadi, Singhari.

Annual slender herbs with acutely 4-angled stems, 5-10 cm high. Leaves linear, ca 2 cm long and ca 1 mm broad. Peduncles in lower axils solitary, in upper and terminal many-flowered. Capsules globose.

In wastelands: 300 m.

Fl. & Fr.: September.

DURG: Balod.

13. PAVETTA L.


Shrubs or trees, 1.0-2.5 m high. Leaves elliptic-lanceolate, up to 10 x 4 cm, greyish, glabrous or puberulous above, tomentose beneath. Panicles open, terminal. Flowers white, cymose; corolla tube ca 1 cm long. Fruits globose, ca 5 mm across, green.

Common in miscellaneous and sal forests; 400-750 m.

Fl.: May; Fr.: August-January.

RAIPUR: Pithora, Singhpur, Sitnadi, Taurenga. RAJNANDGAON: Chilpi, Deopura.

14. THECAGONUM Babu


Erect annual herbs; stems 5-15 cm high, tetragonal. Leaves sub-sessile or on 3-10 mm long pedicels, ovate-oblanceolate, glabrous or pubescent beneath. Flowers in peduncled, loose, many-flowered corymbose panicle, white. Fruits hemispheric, crowned with subulate calyx-lobes. Seeds ovoid - globose.
In miscellaneous forests along drains; 400 550 m.

Fl. & Fr.: August October.

DURG: Balod. RAIPUR: Gariaband, Taurenga. RAJNANDGAON: Baghnadi.

15. WENDLANDIA Bartl. ex DC.


Trees up to 12 m high; young parts pubescent. Leaves oblong or ovate lanceolate, acuminate, 8-20 x 2-6 cm; stipules persistent, broadly oblong obovate, recurved. Flowers fragrant, white; petals reflexed. Capsules hoary pubescent, crowned by the erect lanceolate hairy sepals.

In miscellaneous forests; 500 800 m.

Fl. & Fr.: April May.

RAJNANDGAON: Chilpi, Baghnadi.

16. XEROMPHIS Rafin.

1a. Leaves 3-8 cm long. Corolla 1.5-3.5 cm dia. Fruits 2-3 cm long
   ... ... X. spinosa 1

1b. Leaves 10-25 cm long. Corolla 3-5 cm dia. Fruits 3.5-5.5 cm long
   ... ... X. uliginosa 2


Small spinaceous trees with 3-5 cm thick branches, branching near the top; bark brown when young, grey when old. Leaves ob lanceolate, subcoriaceous, glabrescent or pubescent. Flowers white, fragrant, soon falling. Fruits globose.

In miscellaneous forests; 300 600 m.
Fl. : May June; Fr. : October January.

RAIPUR : Dugli, Singhpur, Sitanadi, Taurenga. RAJNANDGAON : Singhari.

Fruits used as fish poison.


Small trees. 1.5 - 2.0 m high; bark brown blackish when young, older branches greyish; spines 3 - 4 together on the base of young branches. Leaves on short branchlets, ob lanceolate. Flowers white. Fruits oblong globose, 4 - 5 cm long, young ones green, mature yellow, red streaked inside, yielding red resin; seeds blackish.

Common in sal and mixed forests; 400 - 600 m.

Fl. & Fr. : April May.

DURG : Budhbum. RAIPUR : Dugli, Khallari, Taurenga.

Fruits eaten cooked.

61. ASTERACEAE

(D. M. Verma)

1a. Leaves sinuately lobed, with the lobes ending in 5 - 25 mm long spines, cottony beneath ... *Echinops* 16

1b. Leaves not as above.

2a. Involucral bracts, some or all, spiny or prickly.

3a. Leaves with petioles about as long as the blade and a broadly cordate base ... *Xanthium* 41

3b. Leaves sessile or subsessile with a narrowed base.

4a. Most of the leaves pinnately lobed. Flowers purple or violet; spiny bracts tipped with a solitary spine, unarmed on the surface ... *Olizochaeta* 31

4b. All the leaves unlobed. Flowers yellow; spiny bracts tipped with a terminal spine and also with many spinules on the surface ... *Acanthospermum* 1
2b. Involucral bracts unarmed.

3a. Suberect herbs of marshy places. Leaves subsessile linear. Heads in the axils of dilated leaf - sheaths, sessile, globose, purple ... *Caculia 9*

3b. Plants not as above.

6a. Suberect herbs. Stems with deeply lobed and toothed wings. Heads ovoid - subglobose, compound, of numerous few flowered sessile glomerules on a common receptacle ... *Sphaeranthus 38*

6b. Stems not winged, or if winged (Laggora sp.) then the plants erect with simple heads.

7a. Herbs, white - woolly throughout. Heads more or less clustered, not distinct ... *Gnaphalium 24*

7b. Herbs or shrubs, never white - woolly. Heads distinct, or in distinct compound heads.

8a. Fragrant herbs. Leaves bipinnately lobed. Flowers all tubular, purple ... *Cyathocline 15*

8b. Plants not as above.


10a. Leaves once pinnate, lobed, serrate - dentate margined ... *Bidens 4*

10b. Leaves usually twice or more pinnate, lobes entire - margined.

11a. Tall herbs, 50 - 150 cm high. Leaves scattered throughout the stem, all opposite, or the upper few alternate ... *Cosmos 13*

11b. Low herbs, 5 - 25 cm high. Leaves almost all clustered at the base, few on the stem, alternate.

12a. Heads solitary axillary, yellow ... *Glossocarlia 22*

12b. Heads several on almost leafless cymose branched stem, purplish white ... *Glossogyne 23*
9b. Leaves entire or subulate, or if pinnately lobed then the heads not radiate and achenes awnless.

13a. Herbs with milky sap. Leaves sessile, all or most of the lower ones sinuately or pinnately lobed. Corolla yellow, all ligulate.

14a. Leaves in a basal rosette, none or few on the stem. Heads always tubular; fruiting receptacle ca 2 mm broad...

14b. Leaves scattered all along the stem, a few sometimes rather basal. Heads ovoid-globose when young, capitate on maturity; fruiting receptacle 5 - 10 mm broad...

15b. Plants not as above.

15a. Heads compound, a cluster of few flowered globose rules; involucral bracts of the compound heads foliaceous.

16a. Dichotomously branched herds with a rosette of radical leaves...

16b. Irregularly branched herds or shrubs without radical leaves.

17a. Grey pubescent herds. Leaves, at least the lower ones, long petioled

17b. Glabrous shrubs. Leaves subsessile.

15b. Heads simple; involucral bracts foliaceous or bracteiform.

18a. Leaves all opposite, rarely a few uppermost alternate.
19a. Outer involucral bracts 5, linear - lanceolate, glandular, spreading. \textit{Sigesbeckia} 36

19b. Outer involucral bracts not as above.

20a. Florets all tubular, white or purplish blue. \textit{Ageratum} 2

20b. Florets outer ligulate, inner tubular, yellow or white.

21a. Leaves irregularly toothed or lobed. Pappus of feathery bristles... \textit{Tridax} 40

21b. Leaves subentire or uniformly serrate - dentate (except sometimes undulate in \textit{Enhydra}). Pappus absent, or of scales or barbulate bristles.

22a. Heads white; palesae of the receptacle filiform, not embracing the florets... \textit{Eclipta} 17

22b. Heads yellow or white; palesae of the receptacle broad, embracing the florets.

23a. Heads sessile; involucral bracts 4, decussate... \textit{Enhydra} 20

23b. Heads peduncled; involucral bracts not as above.

24a. Ligule of ray florets inconspicuous, up to 5 mm long.

24b. Ligule of ray florets conspicuous, more than 15 mm long.

24a. Receptacle conical; ligule filiform... \textit{Spilanthes} 39

24b. Receptacle flat; ligule obovate \textit{Blainvillea} 5

25a. Receptacle conical; ligule filiform... \textit{Spilanthes} 39

25b. Receptacle flat; ligule obovate \textit{Blainvillea} 5

26b. Leaves peltate. Heads solitary or binate... \textit{Wedelia} 42

18b. Leaves all alternate.


27a. Heads 2 - 4 mm across, white; pappus of two minute awns... \textit{Parthenium} 32

27b. Heads and pappus not as above.

29b. Outer florets with yellow or orange strap-like ligules.

29a. Outer florets with purplish blue filiform ligules... \textit{Erigeron} 21
30a. Pappus of an outer row of scales and an inner row of hairs

30b. Pappus absent, or of a single row of hairs.

31a. Achenes mostly villous

31b. Achenes all glabrous

27a. Florets all tubular

32a. Pappus a minute cupule, or absent.

33a. Heads solitary or sub-solitary.

34a. Leaves pinnatifid

34b. Leaves simple, toothed

33b. Heads mostly several together, racemose or panicled

32b. Pappus of several hairs, bristles or scales.

35a. Pappus of several - seriate scales

35b. Pappus of hairs or bristles, sometimes a few scales also added.

36a. Involucral bracts 1 - 2 seriate.

37a. Involucral bracts 1-seriate, connate at the base, free above

37b. Involucral bracts 2 - seriate, inner cohering into a tube, outer shorter, free

36b. Involucral bracts several - seriate.

38a. Florets all bisexual and similar, never yellow.

39a. Outer involucral bracts membranaceous in the lower part, herbaceous in the upper part, mostly with obtuse or rounded tips

39b. All involucral bracts uniformly membranaceous with a central band of green nerves, acute or spinulose at the tips

38b. Florets marginal usually female, inner usually bisexual with its corolla different from that of the marginal, florets frequently yellow.
FLORA OF RAIPUR 185

40a. Anther cells tailed with a filiform basal appendage. ... Blumea 7

40b. Anther cells not tailed.

41a. Stems winged. Lagyera 29

41b. Stems not winged.

42a. Involucral bracts glandular - hairy. Campylo 17

42b. Involucral bracts glabrous. ... Blumeopsis 3

I. ACANTHOSPERMUM Schrank

Acanthospermum hispidum DC. Prodr. 5: 522. 1836.

Annual, erect, profusely branched hispid herbs, 10-50 cm high. Leaves spatulate. Heads in the forks of the branches, yellowish green. Achenes 5-10, triangular, with numerous hooked spinules, and two large apical horns.

Common in wastelands and forest margins; 300-500 m.

Fl. & Fr.: August January.

DURG: Balod. RAIPUR: Duglu. RAJNANDGAON: Deopura.

2. AGERATUM L.


Erect hispid herbs, 30-80 cm high. Leaves long petioled, ovate, 3-8 cm long, coarsely crenate, scented. Heads in terminal corymbs, 3-5 mm broad, blue, purple or white; involucres campanulate. Achenes black; pappus of 5-bladed scales.

In wastelands & rock crevices; 250-400 m.

Fl. & Fr.: throughout the year.

DURG: Rajhara dhalli. RAIPUR: Dhamtari, Raipur.
3. *Artemisia* L.


Perennial, bushy, aromatic, pubescent or tomentose herbs. Leaves variously lobed or pinnatifid, up to 15 cm long, lobes serrate or lobulate. Heads ovoid globose, 3–4 mm across, yellow, clustered, racemed or panicled; outer bracts herbaceous, inner scarious.

In miscellaneous forests; 450 m.

*Fl.* & *Fr.*: September.

RAJNANDGAON: Baghnaidi.

4. *Bidens* L.


Erect annual herbs, up to 1 m high. Leaves bipinnate or imparipinnate; leaflets oblong lanceolate, subentire. Heads 10–30 flowered, yellow; outer involucral bracts linear, ciliate; marginal flowers 2–4, or absent, corolla 2–3 dentate. Achenes 5–20 mm long with 2–5 awns of 3–4 mm length.

In wastelands and miscellaneous forests; 300–450 m.

*Fl.* & *Fr.*: August–November.

5. **Blainvillea** Cass.


Erect annual, hairy herbs, 0.1–1.0 m high. Leaves lanceolate or ovate rhomboid, 5-15 × 3-7 cm. Heads large, long peduncled, white or blue tinged. Achenes obovoid, ca 4 mm long, angled or compressed; pappus setae 5–10 mm long, plumose.

In wastelands and cultivated fields; 300–450 m.

*Fl.* & *Fr.*: August–September.

**DURG**: Balod. **RAJNANDGAON**: Baghnadi, Khargaon.

6. **Blepharispermum** DC.


Shrubs, 1.0-1.5 m high. Leaves sessile, coriaceous, ovate-elliptic 4-10 × 1-3 cm. Heads shortly peduncled, globose, 2-3 cm across, white, with leafy involucral bracts. Achenes compressed, black, villous.

In sal forests; 600 m.

*Fl.* & *Fr.*: August.

**RAIPUR**: Sitanadi.

Roots medicinal.

7. **Blumea** DC.

1a. Plants densely woolly all over.

2a. Outer involucral bracts linear, tapering ... *B. lacera* 5

2b. Outer involucral bracts oblong - lanceolate, acute ... *B. hieracoides* 4

1b. Plants glabrate or variably pubescent, never woolly all over.
3a. Corolla lobes of the bisexual florets with multicellular hairs in addition to collers

3b. Corolla lobes of the bisexual florets glabrous or with unicellular hairs in addition to collers.

4a. Heads solitary, axillary and terminal

4b. Heads glomerulate or variously paniculate.

5a. Heads glomerulate, the clusters interruptedly spicate

5b. Heads paniculate.

6a. Leaves spinous-toothed. Corollas of both types of the florets hairy.

7a. Plants erect. Corolla tubes hairy

7b. Plants prostrate. Corolla tubes glabrous

8a. Receptacles pilose

8b. Receptacles glabrous.

9a. Achenes ribbed

9b. Achenes subangular or terete, not ribbed.

10a. Leaves usually lyrate lobed. Corolla yellow

10b. Leaves usually not lobed. Corolla purple or lilac

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Annual, ascending, hairy herbs, 10–50 cm high. Leaves villous and glandular, distantly serrulate. Heads on 5–35 mm long peduncles, solitary, 6–8 mm across, yellow. Corolla 3.5–4.5 mm long. Achenes oblong, pubescent; pappus white, 3–4 mm long.

In wastelands: 500 m.

*Fl. & Fr.*: May.

RAIPUR: Sitanadi.

Perennial dichotomously branched herbs, up to 1 m high. Leaves elliptic obovate, 2 - 19 cm long, pilose, spinulose serrate. Heads solitary or few clustered, ca 5 mm across. Flowers yellow. Achenes subterete, sparsely hairy; pappus white.

In wastelands; 300 m.

*Fl. & Fr.*: April.

*DurG*: Durg.


Erect, puberulus or tomentose herbs, up to 1.2 m high. Leaves sessile or sub sessile, oblong or oblanceolate, 4 15 \times 1 6 cm, serrate dentate. Heads in globose clusters, 4 - 5 mm across; outer involucral bracts purple or purple tipped. Achenes quadrangular, puberulus.

In miscellaneous forests; 450 m.

*Fl. & Fr.*: January.

*RAIPUR*: Singour.


Perennial erect herbs, up to 1 m high; stems silky. Leaves spatulate, 2 - 70 cm long, woolly beneath, deciduously velutinous above, serrate dentate. Heads clustered, 6 - 10 mm across, clusters spicate; involucral bracts sometimes purple tipped. Flowers yellow.

In miscellaneous forests; 800 m.

*Fl. & Fr.*: April.

*RAJNANDGAON*: Chilpi.


Erect herbs, up to 1 m high; stems silky. Leaves obovate oblomg, 3 - 15 cm long, entire or lobed, tomentose, base acute or cuneate. Heads
panicled, 5 6 mm across, involucral bracts reflexed on maturity. Flowers yellow. Achenes subterete, hairy.

In wastelands; 300 m.


Erect or ascending herbs, up to 1.5 m high; stems hollow. Leaves radical and caudine, 5 30 cm long, lower lyrate lobed, upper less lobed, all dentate margined. Heads 6 8 mm across, in large panicles. Flowers yellow. Achenes ribbed, pubescent.

In wastelands; 500 m.

*Fl. & Fr.*: May.

RAIPUR: Sitanadi.

7. **B. membranacea** DC. Prodr. 5: 440. 1836.

Erect hairy herbs, up to 1.5 m high. Leaves obovate-lanceolate, 4 18 cm long, pilose, serrate-dentate, lower petioloed, lyrate lobed. Heads 5 6 mm across, panicled or at the ends of the branches. Flowers yellow. Achenes ribbed, pubescent.

Along miscellaneous forests; 100 m.

*Fl. & Fr.*: January.

RAIPUR: Singhapur.


Erect pilose herbs, up to 1 m high. Leaves ovate oblong. 1 10 cm long, closely serrate, lower petioloate. Heads 3 4 mm across, in dense terminal spiciform panicles; involucral bracts green or purplish. Flowers purplish.

Along ponds; 300 500 m.

*Fl. & Fr.*: January.

RAIPUR: Raipur, Sitanadi.

Erect dichotomously branched herbs, up to 0.5 m high. Leaves sessile, elliptic-oblanceolate, 1-6 cm long, serrate or subentire, usually cordate. Heads solitary, 6-10 mm across. Flowers yellow. Achenes pubescent, pappus yellowish.

In wastelands: 300 m.

*Fl. & Fr.*: April.

*DURG*: Kamteli.


Procumbent or ascending herbs with up to 40 cm long hairy stems. Leaves frequently crowded at the base, obovate-oblong, 3-7 x 1-3 cm, serrate, with spinulose teeth, upper narrower. Heads in corymbose panicles, 6-10 mm across. Flowers yellow.

In wastelands and along ponds: 300-500 m.

*Fl. & Fr.*: January.

*RAIPUR*: Raipur, Sitanadi.

8. **Blumeopsis** Gagnep.


Erect annual herbs, up to 1 m high. Leaves mostly in rosettes, obovate, dentate, upper few lanceolate. Heads ca. 3 mm across, yellow, in corymbose panicles; anthers not tailed. Achenes minute, ribbed; pappus hairs white.

In wastelands: 400-450 m.

*Fl. & Fr.*: January April.


Caesalia axillaris Roxb. Pl. Corom. I : 64. t. 93. 1798.

Succulent ascending herbs with up to 40 cm long branches. Leaves subsessile, linear, 5-12 cm long, with dilated bases embracing the floral clusters. Clusters white with purple dots, intermixed with fleshy involucral bracts.

In moist places along ponds & puddles; 250-350 m.

Fl. & Fr.: April-January.

DURG: Durg. RAIPUR: Raipur.

10. Centipeda Lour.


Prostrate or ascending annual herbs. Leaves elliptic obovate, entire or pinnatifid, 5-15x1-4 mm. Heads solitary axillary, 2-3 mm across; marginal flowers white, disk flowers yellow. Achenes quadrangular, hairy.

In wastelands; 500 m.

Fl. & Fr.: September.

RAJNANDGAON: Deopura.


Erect herbs, 0.5-2.0 m high. Leaves subsessile, elliptic obovate, 5-20 cm long, dentate. Heads stoutly peduncled, subcorymbose, ca 15 mm long; involucre ca 10 mm long, outer linear oblong, constricted below the tip. Achenes black, ribbed; outer pappus of chaffy scales, inner of hairs.
Along roadsides; 300–500 m.

Fl. & Fr.: October–November.

RAIPUR: Indagaon. RAJNANDGAON: Singhari.


Stout erect herbs, 1–2 m high, profusely branched. Leaves lanceolate, entire or shallowly crenate, lower up to 20×6 cm; leaves and involucral bracts scarious-margined. Heads ca 6 mm long, pinkish, in lateral and terminal panicles. Achenes ca 0.5 mm long, bristles glandular,

In sal forests; 500 m.

Fl. & Fr.: January.

RAIPUR: Sitanadi.

13. Cosmos Cav.


Erect herbs up to 1 m high. Leaves pinnatifid, the pinnae again lobed, ultimate lobes oblanceolate, acute. Ray florets pink, 3 notched, disc-florets yellow. Achenes slender, long-beaked; beak hispid, 2 awned.

In wastelands; 400–500 m.

Fl. & Fr.: November-January.

RAIPUR: Sitanadi. RAJNANDGAON: Deopura.

14. Crassocephalum Moench


On river-banks; 500 m.

*Fl. & Fr.: January.*

RAIPUR: Sitanadi.

15. **Cyathocline** Cass.


Profusely branched, erect or decumbent, sweetly scented hairy herbs, 20–60 cm high. Leaves pinnatifid; rachis denticulately winged, lower leaves up to 15 cm long with the lobes toothed or pinnatifid. Heads *ca* 5 mm across, purple.

Common in sandy river beds; 350–520 m.

*Fl. & Fr.: January.*

DURG: Rajolidih. RAIPUR: Dugli, Taurenga. RAJNANDGAON: Baghnadi.

16. **Echinops** L.

*Echinops echinatus* Roxb. Fl. Ind. 3: 447. 1832.

Rigid, grey tomentose and spiny dichotomously branched annual herbs, 30–50 cm high. Leaves sinuate lobed. Balls of heads 3–5 cm across with a common involucre of spinous bracts, proper involucre of oblanceolate bracts sometimes ending in spines. Flowers white becoming brownish.

In wastelands & sandy places; 300–450 m.

*Fl. & Fr.: January-June.*

DURG: Durg. RAIPUR: Gariaband, Raipur
**17. Eclipta L.**


Prostrate or ascending appressed pubescent herbs. Leaves elliptic oblong or lanceolate, entire or serrate. Heads peduncled, 5–10 mm across, white; involucral bracts biserrate, 3–6 mm long. Achenes turbinate, ca 2 mm long, tubercled.

Common in moist depressions; 300–500 m.

*Fl. & Fr.*: August May.


Plants medicinal.

**18. Elephantopus L.**


Erect herbs with a cluster of basal leaves and dichotomously branched hairy stem, 20–50 cm high. Leaves obovate or oblancoleolate, basal 10–15 cm long, upper shorter. Clusters of partial floral heads interspersed with foliaceous cordate bracts. Achenes ca 3.5 mm long, pappus of 4–5 scabrid hairs.

Common in miscellaneous forests; 400–500 m.

*Fl. & Fr.*: September January.


**19. Emilia Cass.**

Annual rather succulent herbs, 5 40 cm high. Lower leaves usually lyrate and pinnatifid, 7 10 cm long, upper oblong lanceolate, smaller. Flowers pink - purple; involucre tubular, 8 10-toothed, splitting in fruits.

In forest clearings and sandy river beds; 300 800 m.

Fl. & Fr.: August May.

DURG: Balod. RAIPUR: Dugli, Sitanadi. RAJNANDGAON: Rajhara dhalli, Taregaon.

20. Enhydra DC.

Enhydra fluctuans Lour. Fl. Cochinch. 511. 1790.

Prostrate herbs; stems succulent, rooting at the nodes, bearing short ascending flowering branches. Flowers in yellow heads; involucral bracts 4, decussate, greenish yellow.

Along ponds; 300 m.


21. Erigeron L.

Erigeron asteroides Roxb. Fl. Ind. 3: 432. 1832.

Annual glandular hairy herbs, 15 45 cm high, branching from the base. Leaves oblong - obovate, toothed or lobulate, 1 5 cm long. Heads solitary, or few, corymbose, 5 10 mm across, with 1 - 2 rows of blue - purple ligulate florets and white or yellow disc florets.

In wastelands; 350 m.

Fl. & Fr.: August.

RAIPUR: Dhamtari.


Annual procumbent herbs, 2-5 (15) cm high. Leaves pinnately cut into linear lobes. Heads oblong, somewhat shining, ca 7 mm long, yellow. Achenes few, large, oblong, hairy on the surfaces. 2 horned.

In wastelands; 400 m.

Fl. & Fr.: September.

DURG: Bailod.


Slender annual herbs, 5-20 cm high. Leaves in a basal cluster, once or twice pinnatifid, 2-7 cm long, lobes linear, cuneate. Heads terminal on corymbose or branched stem, ca 5 mm across; ligulate; florets white, disc-florets purplish.

In gravely wastelands; 350 - 450 m.

Fl. & Fr.: April - June.

DURG: Budhbum. RAIPUR: Pithora.

24. Gnaphalium L.

1a. Heads in corymbs

1b. Heads in leafy spikes


Annual white-woolly herbs, 20-30 cm high. Leaves oblong-spatulate or linear-oblong, 2-6 cm long. Heads in dense terminal corymbs, glistening golden yellow or white; involucral bracts oblong. Achenes tubercled or shortly bristly.

In wastelands; 300 m.

Fl. & Fr.: February.


Annual white-woolly herbs. 3–15 cm high. Leaves obovate or oblanceolate, mucronate. Heads in dense or lax terminal leafy spikes; involucral bracts several seriate. Flowers golden yellow. Achenes oblong, hairy.

In wastelands, along ditches & streams, 250–500 m.

Fl. & Fr. : January–June.

DURG : Talgaon. RAIPUR : Dhamtari, Kasdol, Sitanadi.

25. GONIOCAULON Cass.


Coarse herbs with strongly ribbed stems, 30–80 cm high. Leaves sessile, linear oblanceolate, 5–10 cm long, serrate. Heads in terminal panicles, almost cylindrical, 12–17 mm long, including about 5 mauve-purple florets; involucral bracts with glistening silvery margins.

Along cultivated fields; 250–350 m.

Fl. & Fr. : November–January.

RAIPUR : Simga. RAJNANDGAON : Singhari.

26. GRANGEA Adams.


Slender procumbent herbs with 5–10 cm long hirsute branches. Leaves oblong, pinnately lobed, 1–7 cm long. Heads button shaped, ca 1 cm across, yellow; involucral bracts 2–3 seriate, herbaceous; calyx tube with a ring of short hairs.

Common in ditches; 300–350 m.
Fl. & Fr.: April May.


Erect annual herbs, 20-50 cm high. Leaves linear oblong or lanceolate, semi amplexicaule, 7-12 cm long, serrate. Heads long peduncled, ca 2 cm across, golden yellow; flowers sweetly scented.

Sometimes cultivated for its edible oil; 300-350 m.

Fl. & Fr.: October November.

RAIPUR: Pithora. RAJNANDGAON: Singhari.

28. Lagascea Cav.

Lagascea mollis Cav. in Anal. Cienc. Nat. 6: 333. t. 44. 1803.

Annual, slender, erect or ascending, grey, pubescent herbs. Leaves ovate, 2-3 cm long, acuminate, silky tomentose beneath. Heads compound, ca 2 cm across, white, on slender peduncles; involucral bracts foliaceous, silky.

In moist wastelands & cultivated fields, 300-800 m.

Fl. & Fr.: August January.

RAIPUR: Dugli, Raipur. RAJNANDGAON: Chilpi.

29. Laggera Sch. - Bip. ex Koch.

Stout perennial herbs, 0.5 - 1.2 m high; stem and branches with four rows of sinuately lobed wings. Leaves oblong lanceolate, 3 - 10 cm long, scented, the bases decurrent. Heads ca 7 mm broad, purple; involucral bracts with recurved tips. Achenes ca 0.8 mm long, silky.

In sal forests; 500 m.

Fl. & Fr.: January.

RAIPUR: Sitanadi.

30. LAUNAEA Cass.


Perennial succulent herbs with erect or trailing stems and yellow juice. Leaves in a basal rosette, spatulate, 5 - 20 cm long, lobed or pinnatifid, dentate. Heads subracemose, ca 15 mm long, yellow. Achenes ribbed, 3 - 4 mm long; pappus hairs white, deciduous.

In wastelands; 300 m.


31. OLIGOCHAETA (DC.) Koch.


Rigid caespitose herbs with thinly cottony stems. Leaves sessile, oblong-lanceolate, 4 - 10 cm long, pinnatifid, the lobes tipped with short spinules. Heads boat-shaped, ca 25 mm long, purplish; involucral bracts bearing erect or reflexed yellow spines, outer ovate, inner linear-lanceolate.
In cultivated fields; 250–450 m.

Fl. & Fr.: October–June.

DURG: Durg. RAIPUR: Kas dol, Raipur. RAJNANDGAON: Baghnadi, Khairagarh.

32. Parthenium L.


Erect, profusely branched, very leafy herbs, 0.2–1.0 m high. Leaves 3–8 cm long, hairy, lower deeply pinnately lobed, upper less lobed, uppermost lanceolate, entire. Heads panicled, ca 3 mm across. Flowers yellow; ray florets 5. Achenes compressed, ca 2 mm long; pappus of 2 awns.

Along roadsides; 300 m.

Fl. & Fr.: January.

RAIPUR: Raipur.

Pollen grains cause itching.

33. Pentanema Cass.


Erect, glandular pubescent herbs, 0.5–1.0 m high. Leaves sessile, lanceolate, with a broadly auricled base, 5–10 cm long, hispidulous above, glandular beneath. Heads in terminal corymbose panicles, ca 25 mm across, yellow, with 5–7 mm long ligules.

In wastelands & miscellaneous forests; 300–600 m.

Fl. & Fr.: October–April.

34. **Pulicaria Guss.**

1a. Ligulate florets present.

2a. Leaves more or less crowded on the stem, usually over 12 mm broad. Peduncles thickened upwards ... *P. wightiana* 3

2b. Leaves distant on the stem, less than 12 mm broad. Peduncles not thickened upwards ... *P. angustifolia* 1

1b. Ligulate florets absent ... *P. foliolosa* 3

1. *Pulicaria angustifolia* DC. Prodr. 5 : 479. 1836.

Difflusely branched pubescent or tomentose herbs, 15–30 cm high. Leaves linear oblanceolate, 1–3 cm long, entire or toothed. Heads small, bright yellow; involucral bracts slightly squarrose; ray florets 15–20; pappus hairs slightly thicker upwards.

In wastelands; 250–300 m.

*Fl. & Fr.*: August - January.

**RAIPUR**: Raipur.

2. *P. foliolosa* DC. Prodr. 5 : 480. 1836.

Profusely branched pubescent or tomentose herbs, 20–60 cm high. Leaves half-amplexicaul, lower spatulate, up to 10 cm long, upper narrower, smaller. Heads numerous, 6–8 mm across, orange red; involucral bracts glandular hairy.

In wastelands; 400 m.

*Fl. & Fr.*: April.

**DURG**: Rajolidih.


Profusely branched robust annual herbs, up to 60 cm high. Leaves crowded, sessile, linear - oblong, serrate, pubescent. Heads solitary, yellow, the peduncles thickened above; involucral bracts subequal. Achenes sparsely hairy.

In moist places; 300 m.

35. Senecio L.

**Senecio nudicaulis** Buch. Ham. ex D. Don, Prodr. Fl. Nepal. 1792.

1825.

Erect perennial herbs with fleshy roots. Leaves oblong, amplexicaul,
lower shallowly lobed, upper mostly sinuate or dentate. Heads corymbose,
ca 2 cm across, yellow; involucral bracts biseriate. Achenes ribbed and
hispid; pappus dirty white.

In meadow; 300 m.

*Fl. & Fr.*: May.

RAIPUR: Raipur.

36. Sigesbeckia L.

**Sigesbeckia orientalis** L. Sp. Pl. 900. 1753.

Annual erect herbs. Leaves 7 - 20 × 5 - 10 cm. hispid above.
glandular pubescent beneath, lower ovate rhomboid, upper narrower.
Heads ca 5 mm long, panicked, yellow. Achenes obpyramidal, ca 3 mm
long, viscid.

In wastelands; 300 m.

*Fl. & Fr.*: November.

RAJNANDGAON: Deopura.

37. Sonchus L.

1a. Annuals or biennials, with tap root. Achenes distinctly
compressed, faces 5 - ribbed

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**Sonchus oleraceus** L. Sp. Pl. 794. 1753.


Herbs, 0.1 - 1.4 m high. Leaves mainly clustered at the base, deeply
pinnately lobed, up to 30 × 15 cm, caudine less lobed or even entire, amplex-
icaul at the base. Heads panicked, 1 - 2 cm long, yellow; ligules of the
ray florets as long as the tube, ca 6 mm long.

- In wastelands; 300 m.


Perennial herbs, up to 1 m high. Leaves mostly basal and deeply or shallowly pinnately lobed. Peduncles and involucral bracts white tomentose with purplish glands. Heads panicked, ca 15 mm long, yellow.

In wastelands ; 300 m.


38. Sphaeranthus L.

Sphaeranthus indicus L. Sp. Pl. 927. 1753.

Viscous pubescent and strongly scented prostrate herbs with winged stems. Leaves obovate oblanceolate, 2 - 5 cm long, toothed. Heads compound, terminal and leaf opposite, 1 - 2 cm long, purple violet, surrounded by numerous linear bracts.

Common in roadside ditches ; 250 - 450 m.

Fl. & Fr. : January - June.


Profusely branched herbs, with up to 60 cm long ascending branches. Leaves sessile or petiolate, elliptic ovate, 2 - 5 cm long, subentire or sinuate. Heads long peduncled, ca 8 mm long, 3 - 5 mm across, yellow. Achenes ca 1.5 mm long, black, weakly ciliate along one or both the margins particularly in the upper part ; pappus bristles very weak, ca 0.2 mm long.

In roadside ditches ; 300 m.

Fl. & Fr. : February.

DURG : Bhilai.
40. **Tridax L.**

*Tridax procumbens* L. Sp. Pl. 900. 1753. *'Khal-muriya, Tal muriya'.*

Perennial hairy herbs with usually several procumbent stems up to 50 cm long. Leaves oblong, 2 – 5 cm long, variously toothed and lobed. Heads long peduncled, ca 1 cm across; ray florets pale yellow or whitish with 3 – 4 mm long ligule. Achenes black, silky.

*Common in wastelands; 250 – 500 m.*

*Fl. & Fr. : throughout the year.*


Crushed leaves with salt are applied on boils.

41. **Vernonia Schreber**

1a. Heads 5 – 6 mm long.

2a. Achenes hairy

2b. Achenes glabrous

1b. Heads 10 – 15 mm long


 Erect or decumbent hairy herbs, 20 – 80 cm high. Leaves extremely variable in shape, 2 – 5 cm long, entire or toothed. Heads in dense or very loose panicles, ca 6 mm long, pale purple; involucral bracts spinulose-tipped.

*In wastelands, and sal & miscellaneous forests; 250 – 500 m.*

*Fl. & Fr. : August – May.*


Perennial erect bushy herbs with pubescent stems. Leaves petioled, elliptic ovate, serrate. Heads short peduncled. ca 5 mm long, purple, in corymbose panicles; involucral bracts scarious. Achenes 10 - ribbed; pappus hairs reddish brown or dirty white.

In wastelands; 400-500 m.

Fl. & Fr.: November April.
RAJNANDGAON: Baghnadi, Deopura.


Usually stout erect herbs, 0.3-1.5 m high. Leaves oblanceolate or obovate, 7-17 x 2-7 cm. Heads purple reddish or bluish, in dense or lax panicles generally at the end of branchlets; involucral bracts shortly awned. Achenes ca 3 mm long, silky between the ribs.

In miscellaneous forest; 400-550 m.

Fl. & Fr.: October May.
RAIPUR: Singhpur, Sitanadi, Taurenga.

42 *Wedelia* Jacq.


Annual erect hispid herbs, 30-50 cm high. Leaves ovate, 3-10 cm long, acuminate, serrate, 3-nerved. Heads 1-3, peduncled, 2-3 cm across, yellow; involucral bracts ovate lanceolate, acuminate, hispid. Achenes triquetrous, truncate.

In miscellaneous forests; 600-800 m.

Fl. & Fr.: September October.
RAIPUR: Taurenga. RAJNANDGAON: Chpili.

43 *Xanthium* L.

Stout erect hispid herbs, 0.3 - 1.0 m high. Leaves long petioled, broadly ovate triangular, 5 - 10 cm long, lobed and toothed, 3 costate. Female involucres with hooked spines, male heads in the upper part of the inflorescence, anthers long exserted.

In wastelands: 250 - 600 m.

Fl. & Fr.: November June.

RAIPUR: Dhamtari, Sitnadi. RAJNANDGAON: Taregaon.

62. STYLIIDIACEAE
(P. C. Pant)

STYLIIDIUM Swartz ex Willd.


Annual slender herbs, up to 20 cm high. Leaves oblong obovate, ca 1 cm long. Flowers sessile, cymose, rose purple; corolla with 4 distinct lobes and a spur at the back. Capsules linear, 10 - 15 mm long, valves united at both ends.

In miscellaneous forests: 400 - 500 m.

Fl. & Fr.: September November.

RAJNANDGAON: Baghnadi, Deopura.

63. CAMPANULACEAE
(D. M. Verma & V. Chandra)

1a. Leaves ovate-rhomboid, flowers solitary, axillary, or subaxillary; corolla-lipped ... Lobella 1
1b. Leaves linear-oblong, flowers panicked; corolla not bilipped ... Wahlenbergia 2

1. LOBELIA L.

1a. Seeds triquetrous ... L. alsinoides 1
1b. Seeds lenticular ... L. heyneana 2

Annual fleshy often pinkish green herbs, 20-30 cm high. Leaves subsessile, obtuse, crenulate, 1.0-1.5 × 1.0-1.5 cm. Flowers solitary axillary, blue, on up to 2 cm long pedicels, forming a lax, leafy, terminal raceme; calyx lobes triangular - subulate. Capsules hemispherical.

In sal and miscellaneous forests and river beds, in moist shady places; 440-480 m.

Fl. & Fr.: September - May.

RAIPUR: Dugli, Taurenga. RAJNANDGAON: Baghnadi, Ghor Talab.


Annual tufted herbs, ca 30 cm high. Leaves acute. dentate - serrate, 0.5-5.0 × 0.5-3.0 cm. Flowers pink, axillary, often forming a lax terminal raceme. Calyx lobes elliptic - lanceolate. Capsules obconical.

In moist places; 670 m.

Fl. & Fr.: January.

RAIPUR: Borai.

2. WAHLENBERGIA Schrad. ex Roth


Erect or ascending herbs. Lower leaves approximate; upper ones distant; all sessile, entire to serrate dentate. Flowers pale violet, terminal, solitary or in 1-3 flowered inflorescences. Calyx lobes narrowly triangular. Capsules obconical. 3-valved.

In open places along streams; 440 m.

Fl. & Fr.: March - April.

RAJNANDGAON: Baghnadi.
64. PLUMBAGINACEAE
   (P. C. Pant)
   PLUMBAGO L.


Erect or straggling perennial undershrubs. Leaves ovate - lanceolate or oblong, 2 - 10 cm long, acute, undulate, white punctate beneath. Flowers white in terminal and axillary racemes; rachis glandular; calyx with stalked red tipped glands. Fruit oblong, acute, longitudinally furrowed.

Roadsides; 750 m.

Fl.: April.

RAJNANDGAON: Malaidah.

65. PRIMULACEAE
   (D. M. Vemka & M. I. Hanfi)

1a. Capsules opening by circumscissile dehiscence ... Anagallis 1
1b. Capsules opening by valves ... Lysimachia 2

1. ANAGALLIS L.

1a. Leaves 3-nerved. Petals blue, glandular hairy on the margins ... A. arvensis 1
1b. Leaves 1-nerved. Petals white, eglandular ... A. punctil 2


Slender annual creeping herbs. Leaves opposite, ovate, 10 - 15 x 5 - 10 mm, cordate or amplexicaul at the base, palmately 3-nerved. Flowers axillary, on slender pedicels; petals broadly obovate, subequalling the calyx lobes, ca 4 mm long. Capsules circumscissile.

In moist places; 300 m.

Fl. & Fr.: January.


Annual herbs up to 25 cm high. Stem scarcely winged. Leaves subcylindrical, ovate or obovate rounded, obtuse, apiculate, 0.5 - 1.0 cm long. Flowers axillary, short pedicelled; sepals lanceolate-oblong, acute; corolla white, as long as the calyx. Capsules as long as the calyx.

In shady places; 400 - 450 m.

Fl. & Fr.: September - November.

RAJNANDGAON: Baghnadi. Deopura.

2. LYSIMACHIA L.


Annual herbs, 20 - 50 cm high. Leaves petioled, oblanceolate, acute or obtuse, minutely gland - dotted. Flowers white, with long slender pedicel, in elongated terminal racemes; sepals linear, acuminate; corolla segments obovate. Capsules as long as the persistent calyx.

Scarce, in wastelands; 600 - 800 m.

Fl. & Fr.: April - September.

RAIPUR: Khallari. RAJNANDGAON: Chilpi.

66. MYRSINACEAE

(D. M. Verma & V. Chandra)

1a. Flowers 15 - 20 mm across: pink - mauve, samopetalous. Fruits 8 - 12 mm diam. ... Ardisia 1

1b. Flowers 3 - 4 mm across, greenish white or white, polypetalous. Fruits 2.5 - 3.5 mm diam. ... Embelia 2
1. **Ardisia Sw.**


Shrubs ca 2 m high. Leaves coriaceous, clustered towards ends of the branchlets, oblanceolate. Flowers long pedicelled, deep mauve, pentameres, in axillary often contracted or corymbose racemes; calyx and corolla glandular; stamens yellow. Berry depressed globose, black on ripening.

In sal forests; 450 m.

*Fl.* & *Fr.*: May June.

**RAIPUR** : Khallari.

2. **Embelia Burm. f.**


Shrubs, 1 2 m high. Leaves obovate, acuminate or obtuse, entire or serrate. Flowers in axillary racemes, white or greenish white, odoriferous; perianth lobes 5 (6). Fruits globose, red, or black on drying, with persistent style forming a filiform beak.

In sal and mixed sal forest; 400 750 m.

*Fl.*: August; *Fr.*: September January.

**RAIPUR** : Dugli, Sitanadi, Taurenga. **RAJNANDGAON** : Chilpi.

Fruits used as condiment and also considered medicinal.

67. **Sapotaceae**

(V. Chandra)

1a. Deciduous trees. Flowers when leafless; stamens 12 or more in two whorls; staminodes absent

1b. Evergreen trees. Flowers along with leaves; fertile stamens 6, staminodes 6.
1. Madhuca Gmel.


Trees *ca* 8 m high with spreading branches; bark brown, nearly smooth. Leaves elliptic or oblong elliptic. Flowers fleshy, cream-coloured, on long rusty tomentose pedicels clustered at the ends of usually leafless branches. Fruits ovoid, brown tomentose. Seeds ellipsoid, almost terete, shining brown.

On road sides and in mixed forests. 400–440 m.

Fl. & Fr.: April–June.


Sun dried flowers and unripe fruits eaten. Spirit distilled from flowers.


Small trees; bark rough, grey. Leaves clustered towards the end of the branches, oblong, elliptic or elliptic obovate. Flowers white, in fascicles of 2–6 and from the axils of fallen leaves; sepals 3+3. Fruits oblong ellipsoid.


68. EBENACEAE

(D. M. Verma & M. I. Harih)

*Diospyros* L.

iae. Leaves linear or narrowly linear-oblong, mostly one fifth to one-third as broad as long. Stamens 20–35, or more. Fruits covered with bright red deciduous scurf, mature 1–2 cm across... *D. multibarica* 1
1b. Leaves broadly elliptic - oblong, mostly one - half to two - third as broad as long. Stamens 12 - 16. Fruits glabrous or sparsely hairy with greenish white hairs, mature 2.8 - 3.5 cm across.

2a. Leaves mostly subopposite. Calyx of male flowers about one - half or more as long as the corolla; anthers subacute; lobes of fruiting calyx with recurved margins ... *melanoxylon*

2b. Leaves alternate. Calyx of male flowers one - fourth to one - third as long as the corolla; anthers ovate; lobes of fruiting calyx with flat margins ... *D. montana*


Trees, ca 4 m high; bark black, smooth. Leaves coriaceous. 12.5 - 22.5 cm long. Flowers white, fragrant; males in umbeliate cymes; females solitary. Fruits globose.

In miscellaneous forests; 550 m.

Fr. : October.

RAIPUR : Taurangā.

Fruits eaten raw.


Trees, 3 - 6 m high; bark splitting into black chips. Leaves tomentose to glabrescent beneath. Male flowers 4 - 6 merous, in peduncled 3-12-flowered cymes. Female flowers solitary, axillary or from leaf-scar. Fruit globose, green when young, red on maturity, becoming black when dry.

Common in miscellaneous forests and on roadsides; 300 - 500 m.

Fr. : September June.

RAIPUR : Dugli, Khallari. RAINANDGAON : Baghendi, Singhari.

Leaves used for rolling ‘bidis’; mature fruits eaten raw.


Shrubs ca 2 m high. Leaves glabrous or pubescent. Male flowers green in 3 - 7 or more flowered cymes; buds conical. Female flowers green or yellow, on very short peduncles. Fruits globose to somewhat oblong, greenish - yellow.
In sal forests; 450 m.

*Fl. & Fr.*: June - September.

RAIPUR: Gariaband. RAJNANDGAON: Baghnadi.

69. **OLEACEAE**

(D. M. Verma & V. Chandra)

1a. Leaves compound. Fruit a pyriform, 2-valved, woody capsule

1b. Leaves simple. Fruits not as above.

2a. Leaves scabrid on the upper surface. Fruit a compressed 2-valved capsule

2b. Leaves not scabrid on the upper surface. Fruit a drupe, or baccate.

3a. Trees. Flowers ca 3 mm long. Fruit drupaceous

3b. Usually climbing shrubs. Flowers more than 10 mm long. Fruit baccate

**Schrebera 4**

**Nyssa 3**

**Linum 2**

**Jasminum 1**

1. **Jasminum L.**

1a. Leaves 7.5 - 11.0 cm long. Flowers in lax trichotomous cymes

1b. Leaves 3.5 - 7.0 cm long. Flowers in dense capitate cymes

**J. arborescens 1**

**J. pubescens 2**


Climbers, 5 - 20 m high. Leaves ovate acuminate, tomentose when young. Flowers white, fragrant, in lax trichotomous cymes; bracts oblong, green, turning purplish black with age; corolla lobes usually 9. Fruits oblong, with membranous pericarp, black when ripe.

On roadside trees and sal forests, 380 - 800 m.

*Fl. & Fr.*: April - June.

DURG: Budhbum. RAIPUR: Gariaband. RAJNANDGAON: Chilpi.
FLORA OF RAIPUR


Scandent shrubs. Leaves ovate, acuminate, upper surface pubescent, becoming glabrous, lower tomentose on the nerves. Flowers fragrant, white, in dense capitate cymes; corolla lobes 6-9. Fruits ellipsoid, simple or didymous, black when ripe, surrounded by long hairy calyx teeth.

Roadsides; 680 m.

Fr. : April.

RAJNANDGAON : Rangakhar.

2. *Lincociera* Swartz ex Schr.


Small or large trees. Leaves oblong or elliptic, 7-20 cm long, shortly acuminate. Flowers white, in axillary pyramidal panicles. Drupes blue-purple, oblong.


3. *Nyctanthes* L.

*Nyctanthes arbor-tristis* L. Sp. Pl. 6. 1753. 'Kharsi.'

Shrubs or small trees, 2-4 m high. Leaves ovate, 7-10 cm long, entire or toothed. Flowers white with orange red tube, fragrant, in terminal trichotomous cymes. Fruits compressed, suborbicular, ca 2 cm long.

In miscellaneous forests and planted in villages; 300-500 m.

Fl. : September October; Fr. : January.

RAIPUR : Chhoora, Sitanadi. RAJNANDGAON : Deopura, Singhari.

Flowers yield an orange yellow dye.
4. Schrebera Roxb.

Moderate sized trees. Leaves 7-9 foliolate; leaflets ovate or obovate, 7.5-15.0 cm long. Flowers white, in terminal panicles; sepals and petals 4-7. Capsules drooping, verrucose, seeds 2-4 angled.

In miscellaneous forests; 300 m.

Fr.: November.

RAJNANDGAON; Singhari.

70. APOCYNACEAE

(D. M. Vohra & J. Lal)

(Nerium indicum Mill., Thvetia peruviana. (Pers.) Schum. and Laburna montana divaricata (L.) R. Br. are planted as ornamentals.)

1a. Herbs or undershrubs, less than 1 m high.

2a. Leaves mostly ternately whorled, a few sometimes opposite. Flowers many together in long peduncled cymes. Fruits drupaceous

... Rauvolfia 6

2b. Leaves always opposite. Flowers solitary or paired. Fruits follicular

... Catharanthus 3

1b. Trees, shrubs or climbers, more than 1.5 m high.

3a. Plants armed with spines. Fruit a betty

... Carissa 2

3b. Plants not armed. Fruit a follicle.

4a. Climbers.

5a. Branches rusty tomentose. Flowers ca 6 mm across. Follicles slender, 2-3 mm broad

... Ichnoscarpus 5

5b. Branches not rusty tomentose. Flowers ca 15 mm across. Follicles stout, 25-40 mm broad.

... Vuliaria 7

4b. Trees or shrubs.

6a. Leaves mostly hairy. Pedicels, calyx and corolla tube densely pubescent; calyx divided almost to the base. Seeds comose

... Holarrhena 4

6b. Plants not as above.
FLORA OF RAIPUR

7a. Leaves whorled, mostly ternate; secondary nerves united with an intra-marginal nerve. Follicles with 1 - 2 cm long beak ... Alstonia 1

7b. Leaves opposite, intra-marginal nerve absent. Follicles not beaked ... Wrightia 2

1. Alstonia R. Br.

Alstonia venenata R. Br. in Mem. Werner, Soc. 1 : 75. 1811.

Shrubs ca 2 m high. Leaves ternate, linear or oblong lanceolate, 11 × 3 - 4 cm, acuminate; young leaves softly pubescent beneath, glabrescent with age; secondary nerves many, strong, parallel, united in an intra-marginal vein. Cymes dichotomous. Flowers pure white; calyx ciliate. Follicles paired, terete, beaked, 9 - 12 cm long.

In miscellaneous forests; 600 m.

Fr.: October.

RAIPUR: Tauengra.

2. Carissa L.

Carissa opaca Stapf. ex Haines in Ind. For. 47. 378. 1921. C. spinarum auct., Hook. f. Fl. Brit. Ind. 3 : 631. 1882; non L.

Spiny shrubs, 1 2 m high. Spines straight, paired. Leaves opposite, ovate or elliptic, 3 - 4 × 2 - 3 cm, acute or mucronate, Cymes corymbose, few flowered. Corolla white, salver shaped. Berries sub globose or ellipsoid, 2 seeded.

In miscellaneous forests; 550 m.

Fl.: April.

RAJNANDGAON: Rengakhar.

3. Catharanthus G. Don

1a. Leaves lanceolate, apex acute to acuminate. Flowers ca 0.3 cm across ... C. pusillus 1

1b. Leaves obovate-oblong, apex rounded with reflex or mucromulate tips. Flowers 2 - 4 cm across ... C. roseus 2
1. Catharanthus pusillus (Murr.) G. Don, Gen. Syst. 4: 95. 1837. 

4 (2): 145. 1895.

Small erect herbs, 10 - 40 cm high. Stem sharply 4 angled. Leaves 
lanceolate, 5 - 7 x 1 - 2 cm, glabrous. Flowers axillary, white. Follicles 
very slender, ca 5 cm long.

On roadsides; 250 - 500 m.

Fl. & Fr.: August - November.

DURG: Balod. RAIPUR: Raipur. RAJNANDGAON: Deopura, 
Rajnandgaon.

2. C. roseus (L.) G. Don, Gen. Syst. 4: 95. 1837. Vinca rosea L. 
134. 1828. 'Sada suhagii'.

Perennial diffusely branched herbs, 30 - 60 cm high. Leaves obovate 
oblong, 5 - 6 x 1 - 2 cm, pubescent, olive green. Flowers white or rose 
coloured. Follicles 2 - 3 cm long, pubescent.

Cultivated as ornamentals; 400 - 550 m.

Fl. & Fr.: May - October.

RAIPUR: Chhoora, Gariaband, Sitanadi.

Highly medicinal.


Holarrhena antidysenterica (Roth) A. DC. in DC. Prodr. 8: 413. 
antidysenterica (Roth) G. Don, Gen. Syst. 4: 76. 1837. 'Dudhi.'

Shrubs or small trees, 1.5 - 2.5 (- 5) m high with milky latex; young 
branches and leaves pinkish. Leaves broadly ovate to elliptic oblong 
17 - 20 x 6 - 9 cm, nerves 10 - 14 pairs. Cymes terminal, corymbose. 
Flowers white, sweet - scented. Follicles green, cylindrical, with lenticels; 
seeds comose at the top.

Common in sal and miscellaneous forests; 300 - 500 m.

Fl.: June; Fr.: September - April.

DURG: Balod, Budhbum. RAIPUR: Dhamtari, Dugli, Gariab-
band, Sitanadi. RAJNANDGAON: Baghnadi, Singhari.

Medicinal.
5. **Ichneumon** R. Br.


Large woody climbers. Leaves elliptic or broadly oblong, acute or shortly acuminate, 5-10 x 3-4 cm, glabrous. Panicles long, terminal or axillary. Flowers minute, white; corolla-tube swollen in the middle. Follicles linear, divaricate, 5-17 cm long; seeds comose.

In miscellaneous forests; 350-500 m.

Fl. : September November; Fr. : January April.


6. **Rauvolfia** L.


Erect perennial herbs or undershrubs. Leaves lanceolate or oblanceolate, acute or acuminate, 13-18 x 6-8 cm. Cymes corymbose, bracts minute. Flowers white or pinkish; pedicels and calyx red; corolla tube swollen above the middle; lobes elliptic oblong. Drupes purplish black.

Scarce, in miscellaneous forests; 500 m.

Fr. : October.

RAIPUR : Taurenga.

Roots highly medicinal.

7. **Vallaris** Burm. f.


Climbing shrubs. Leaves elliptic oblong, acuminate. 4-10 x 1.5-4.0 cm. Cymes axillary, usually subcorymbose, 5-8 cm across. Flowers on 5-10 mm long pedicles; corolla white, with a short tube and broad lobes. Follicles 8-12 cm long with a broad truncate base tapering above to a blunt apex.
In mixed forests; 350 m.

Fl.: May; Fr.: December.


8. WRIGHTIA R. Br.

1a. Corolla - scales orange - red, entire or broadly toothed. Follicles connate throughout its length .................................. W. arborea 1

1b. Corolla - scales white, cut into linear segments. Follicles free or cohering only at the tip .................................. W. tinctoria 2


Small trees with slender pubescent branches. Leaves shortly candate - acuminate, tomentose, 5 15 x 4 6 cm. Flowers greenish orange or cream-coloured. Follicles slender, 15 30 cm long, connate, greenish with white tubercles.

In miscellaneous forests; 400 m.


Trees ca 3 m high, with milky sap. Leaves subsessile, elliptic, oblong, obovate or obovateolate, 8 12 x 3 5 cm. Flowers white. Follicles slender, 40 55 cm long, curved and cohering at the tip or sometimes free.

In miscellaneous forests; 400 500 m.

Fl. & Fr.: April.

DURG: Budhbum. RAJNANDGAON: Baghnadi, Deopura.

71. ASCLEPIADACEAE

(D. M. Verma & J. Lal)

1a. Plants erect.

2a. Shrubs or small trees, 0.7 2.5 m high with milky sap. Leaves 5 25 cm long. Corolla 1 2 cm long .................................. Culicicoris 1
2b. Herbs, 0.3 - 0.5 m high with watery sap. Leaves 1 - 4 cm long. Corolla or 0.3 cm long ... *Tylophora 12*

1b. Plants climbing or straggling.

3a. Corolla - tube or 2 cm long, conspicuously curved toward, widened at the base and the top, lobes cohering at the tips by means of hard cusps at their tips; corona cylindrical, behind each anther with a ligulate appendage ... *Ceropegia 2*

3b. Corolla and corona not as above.

4a. Corolla - lobes 5 - 10 mm broad, pinkish-white with purple-red blotches or veins.

5a. Leaves linear or linear-lanceolate, acute at the base. Corolla - lobe margins villous ... *Oxystelma 10*

5b. Leaves broadly ovate-oblong, at least the lower ones deeply connate at the base. Corolla - lobe margins glabrous ... *Holostemma 7*

4b. Corolla - lobes otherwise, usually white or yellow, or (in *Hemidesmus*) uniformly dark brown-purple.

6a. Cymes subsessile; flowers brown-purple; filaments free ... *Hemidesmus 6*

6b. Cymes mostly distinctly peduncled; flowers greenish white or yellow; filaments connate, or (in *Cryptolepis*) free.

7a. Leaves glabrous. Corolla - lobes glabrous; filaments free; pollinia granular ... *Cryptolepis 3*

7b. Leaves usually hispid to tomentose, or glabrate with age. Corolla - lobes hairy to ciliate within or on margins, or glabrous; filaments connate into a tube; pollinia waxy.

8a. Corolla - lobes valvate; anthers without a membranous tip ... *Leptadenia 8*

8b. Corolla - lobes imbricate; anthers with a membranous tip.

9a. Pollinia pendulous. Follicles clothed with soft spines ... *Pergularia 11*

9b. Pollinia erect or horizontal. Follicles smooth.

10a. Corolline corona of small fleshy callosities projecting above the sinuses of the corolla; staminal corona absent. Follicles 5 - 8 mm thick ... *Gymnema 5*
10b. Corolla corona absent; staminal corona present, various. Follicles 25 - 40 mm thick.

11a. Prostrate herbs. Corona - lobes tubercle-like, quite adnate to the staminal column... Tylophora 12

11b. Stout climbers. Corona - lobes otherwise, adnate to the staminal column at the base, free above.

12a. Corolla sub-campanulate, pubescent outside; corona - lobes hard, linear - oblong, appressed to the column and with membranous bind tips...

12b. Corolla rotate, glabrous; corona - lobes fleshy, roundish with a small apiculus Dregia 4

1. Calotropis R. Br.

1a. Corolla - lobes spreading to revolute, uniformly reddish purple or tinge in the upper half; corona - scales shorter than the staminal column, hairy at the back, its apex entire, with two obtuse auricles below it, spur involute...

C. gigantea 1

1b. Corolla - lobes erect or suberect, with a distinct reddish purple blotch in the upper half; corona - scales equaling to exceeding the staminal column, glabrous, its apex bifid, without auricles; spur not involute...

C. procera 2


Shrubs, 1 2.5 m high. Leaves sessile or sub sessile, thick, elliptic oblong, cordate, acute, white pubescent beneath, 7 13 x 3 6 cm. Flowers in umbellate cymes. Follicles paired, recurved, 7 10 x 3 4 cm; seeds flat, with 2 3 cm long coma.

In wastelands, 500 500 m.

Fl. & Fr.: throughout the year.

DURG: Bordih. RAIPUR: Chhoora, Dhamtari, Sitanadi.

FLORA OF RAIPUR

Shrubs, 0.7 - 1.5 m high. Leaves ovate-oblong, cordate, acute or sub mucronate, subabrupt with apex, 12 - 17 × 7 - 11 cm. Follicles recurved, somewhat sausage-shaped, 8 - 10 × 4 - 5 cm; seeds obovate, ca. 6 mm long, comose.

In wastelands; 300 - 500 m.
Fl. & Fr.: throughout the year.

DURG: Durg. RAIPUR: Dhamtari, Raipur, Sitanadi.

2. CEROPEGIA L.

1a. Stems and peduncles glabrous; inner corona lobes not hooked

C. candelabrum

1b. Stems and peduncles pubescent; inner corona lobes hooked

C. hirsuta


Slender tuberous twiner. Leaves ovate-lanceolate, acuminate or mucronate, 3 - 7 cm long. Flowers in umbellate cymes; corolla inflated at the base, usually with brown stripes within and long reflexed hairs in the neck; corolla lobes with cohering appendages. Follicles very slender, 10 - 13 cm long.

In miscellaneous forests; 500 m.
Fl. & Fr.: October.

RAINANDGAON: Taregaon.


Slender hirsute twiner. Tubers ca. 2 cm diam. Leaves ovate-elliptic, acute, 10 - 13 × 3 - 5 cm. Flowers axillary; sepals linear-subulate, green; corolla tube beautifully purple green dotted and striped, lobes green, joined at the tips. Follicles erecto-patent, ca. 8 cm long.

Along miscellaneous forests; 550 m.
Fl.: October.

RAIPUR: Taurenga.

3. CRYPTOPELIS R. Br.

1a. Main secondary nerves of the leaves many pairs, more or less horizontal, and parallel, meeting in an intramarginal loop. Follicles lanceolate, 5 - 10 cm long, 12 - 18 mm thick

C. buchananii
1b. Main secondary nerves of the leaves about seven pairs, not as above, mostly curving upwards. Follicles linear, 12 - 20 cm long, 5 - 8 mm thick
C. elegans 2


'Nag - bel.'

Climbers with milky latex. Leaves coriaceous, elliptic oblong, apiculate, 7 - 15 × 5 - 10 cm. Flowers pale yellow or greenish yellow; sepals ovate, acute. Follicles divaricate, splitting by two diverging valves, ca 8 cm long; seeds brown with silky, white coma.

Common on roadsides and in miscellaneous forests: 300 - 600 m.

Fl.: August - October; Fr.: January - June.


2. C. elegans Wall. ex G. Don, Gen. Syst. 4 : 82. 1838.

Climbers, ca 2 m high. Leaves linear lanceolate, sometimes ovate, 4 - 6 cm long. Flowers 3 - 4 cm across, yellow. Follicles paired, long cylindrical, each splitting by two valves, ca 15 cm long. Seeds black, each tipped with a tuft of white silky hairs.

In miscellaneous forests: 400 m.

Fr.: June.

RAIPUR: Pithora.

4. DREGEA E. Meyer


Perennial woody twiners with watery sap. Leaves broadly ovate, 7 - 10 × 5 - 7 cm. Flowers green, in drooping umbels. Follicles paired, divaricate, slightly bottle shaped with rounded apex, ca 10 cm long, velvety, reddish brown, wrinkled when ripe.

On roadsides: 300 - 400 m.

Fl.: April; Fr.: January.

DURG: Dondi. RAIPUR: Raipur.
5. Gymnema R. Br.


Climbers with densely yellow pubescent or hispitate branchlets. Leaves ovate or oblong, acuminate, densely pubescent, 3–5 × 2–3 cm. Flowers pale yellow, in corymbose cymes. Follicles usually solitary, 6–7 cm long, gradually tapering from the base.

In miscellaneous forests; 450 m.

Fl.: September; Fr.: December.


6. Hemidesmus R. Br.


Slender twining shrubs. Leaves in distant pairs, linear, linear-lanceolate, elliptic oblong or ovate oblong, apiculate, 5–10 × 1–5 cm. Flowers few in axillary fascicles. Follicles slender, striate, 17–22 cm long.

On roadsides and in miscellaneous forests; 250–600 m.

Fl.: August November; Fr.: January April.

DURG: Balod. RAIPUR: Chhooora, Mahasamund, Sitanadi, Taurenga. RAJNANDGAON: Baghnaidi, Malaidah, Rajnandgaon.


Climbers, without latex. Stems glaueous green. Leaves broadly ovate, cordate with a broad sinus, 9–11 × 6–7 cm, apex shortly acuminate. Flowers in axillary panicles; petals fleshy, white with deep red blotch inside; corona white. Follicles boat-shaped, 9–12 × 3–6 cm.
In sal forests; 600 m.

Fl. : August.

RAIPUR : Borei.

8. Leptadenia R. Br.


Slender climbers with watery sap. Leaves ovate or lanceolate, 4 7 x 2 3 cm. acute or acuminate. Flowers long pedicelled, in axillary peduncled clusters, green; petals 5, stellately spreading. Follicles ovate lanceolate, ca 15 cm long.

On roadsides; 300 350 m.

Fl. : August October.

RAIPUR : Dhamtari, Raipur.


Climbers up to 3 m high, pubescent or tomentose throughout. Leaves broadly ovate, deeply cordate, acuminate or cuspidate, villous on both the surfaces, 10 18 x 8 13 cm. Flowers deep yellow, in umbellate cymes arranged in a panicle. Follicle solitary, 13 15 cm long.

In miscellaneous forests; 450 m.

Fl. : August.

RAIPUR : Dhamtari.

10. Oxystelma R. Br.


Slender climbers with milky latex. Leaves opposite, linear or narrowly lanceolate, acuminate, 7 10 cm long, 4 7 mm broad, purplish-green when young. Flowers on long axillary peduncles; sepals 5, linear, ca 3 mm long; corolla lobes stellately spreading, white, red veined on the inside.
On roadsides ; 350 450 m.

Fl. : August September.

RAIPUR : Dhamtari. RAJNANDGAON : Baghnaidi.

11. **Pergularia L.**


Hirsute climbers. Leaves ovate or suborbicular, deeply cordate with rounded basal lobes, 8 12 x 6 10 cm. Flowers greenish white, ridges on the corona acute at the base. Follicles paired, green turning purplish, hairy, echinate, ca 6 cm long.

On roadsides ; 300 m.

*Fl. & Fr.* : August January.

RAIPUR : Raipur. RAJNANDGAON : Singhari.

12. **Tylophora R. Br.**

1a. Erect herbs or undershrubs. Leaves ovate ... *T. macrantha* 1

1b. Herbs with prostrate branches, leaves rotundate ... *T. rotundifolia* 2


Perennial herbs. Stems simple or branched, pubescent. Leaves petiolate, ovate, acute, 2 3 x 1 2 cm, glabrous. Sepals lanceolate; corolla lobes ovate lanceolate, ca 2 mm long.

In wastelands ; 550 m.

Fl. : August.

RAIPUR : Dhamtari Keskal.


Perennial herbs with 50 70 cm long branches. Stem pubescent. Leaves rotundate, 4 5 x 5 6 cm, pilose on margins, rounded to slightly cordate, apex rounded to obtuse sometimes mucronate. Cymes umbellate to paniculate. Sepals lanceolate, pilose; corolla lobes ovate, pale greenish purple.
In sal forests; 500 m.
*Fl.*: June.
RAIPUR: Sitanadi.

72. LOGANIACEAE
(D. M. Verma & V. Chandra)

1a. Trees or shrubs.

2a. Leaves tomentose beneath. Flowers 4-merous. Fruit 2-valved capsule ...

b. Leaves not tomentose beneath. Flowers 5-merous. Fruit indehiscent, baccate ...

1b. Annual herbs.

3a. Flowers 5-merous, in 2-3-chohotous cymes ...

b. Flowers 4-merous, solitary or clustered ...

1. BUDDLEIA L.

*Buddleja asiatica* Lour. Fl. Cochinch. 72. 1790.

Shrubs *ca* 1.5 m high; branches densely hairy when young. Leaves narrowly oblong or ovate-lanceolate, serrate, dentate or subentire. Inflorescence terminal or axillary, densely tomentose; flowers in cymes. Calyx densely tomentose; corolla white or pale violet, stellate hairy outside. Capsules ovate or oblong, brown, reflexed; seeds ellipsoid.

*Frequent*; 500 m.

*Fl.* & *Fr.*: May–June.
RAIPUR: Sitanadi.

2. CYNOCTONUM Gmel.


Annual herbs, *ca* 5 cm high. Leaves ovate or ovate-long, Inflorescence terminal, branched; bracts narrowly deltoid; flowers shortly pedice-
plied or subsessile; sepals broadly membranous margined, corolla 2
mm long; stigmas 2, horn like. Capsules compressed; seeds ellipsoid,
smooth.

Along drains in moist shady places; 500-550 m.

Fl. & Fr.: September, October.

RAIPUR: Taurenga. RAJNANDGAON: Deopura.


*Mitrasacme indica* Wt. & L. 4: 15. t. 1601. 1850. *M. alsinoides* Clarke

Annuals, up to 15 cm high. Stems narrowly winged. Leaves lanceolate
or ovate, 1-nerved. Flowers white, solitary in the upper leaf-axils, white;
calyx-lobes lanceolate; corolla bearded in the mouth. Capsules subglo-
bose, ca 2 mm across; seeds angular-ovoid, coarsely reticulate.

In miscellaneous forests; 450 m

Fl. & Fr.: September.

RAJNANDGAON: Baghnadi.

4. Strychnos L.

1a. Petioles 7-12 mm long. Fruits 2.5-5.0 cm across ... *S. nux-vomica* 1

1b. Petioles 2-5 mm long. Fruits 1.0-1.7 cm across ... *S. potatorum* 2


Trees up to 20 m high; branches sometimes with axillary thorns. Leaves broadly ovate or elliptic, acuminate. Inflorescence on short axillary
branchlets, many-flowered, thinly tomentose. Sepals ovate, tomentose.
Fruits globular; seeds lenticular, orbicular or elliptic.

Fl.: March, April; Fr.: December, January.

RAIPUR: Loxo range, n. v. (cf. Haines, Descr. list of trees, shrubs

2. *S. potatorum* L. f. Suppl. 148. 1781. *'Kuya'.*

Small trees or shrubs, ca 3 m high. Stem covered with black thick
square to rectangular pieces of bark. Leaves elliptic or ovate, acute at both

In miscellaneous forests; 300 m.

Fl. May.

RAIPUR. Dhamtari.

73. GENTIANACEAE
(D. M. Verma & R. Saran)

1a. Aquatic herbs. Leaves broadly ovate or orbicular, deeply cordate at the base ... Nymphoides 6

1b. Terrestrial or marsh herbs. Leaves linear, elliptic - oblong or ovate, acute or roundish at the base.

2a. Leaves 0.5 mm long. Flowers subsessile, irregular, 2 - 3 mm long; style almost absent ... Hoppea 5

2b. Plants not as above.

3a. Corolla lobes gianular inside at the base ... Swertia 1

3b. Corolla lobes eglandular.

4a. Ovary 2 - celled. Capsules subglobose ... Eucosma 4

4b. Ovary 1 - celled. Capsules linear- oblong or ellipsoid.

5a. Corolla regular.

6a. Flowers in sessile axillary clusters ... Enicostema 3

6b. Flowers in open dichotomous cymes

5b. Corolla irregular

1. CANSDORA Lamk.

1a. Stems winged

C. decussata 1

1b. Stems not winged

C. diffusa 2


Erect herbs up to 25 cm high. Leaves sessile, ovate lanceolate, 2 - 3 cm long, subcordate at base, minutely ciliate. Flowers in cymes; pedicels 4 winged, up to 2 cm long; corolla tubes 8 - 10 mm long. Capsules oblong.
Roadsides; 450 m.

Fl. & Fr.: September.

RAJNANDGAON: Baghnadi, Salewara.

Symb. Bot. 3: 47. 1794. "Bhuj neem".

Erect much branched herbs. Leaves ovate elliptic, 15-40 x 5-12 mm. Flowers in paniculate cymes; pedicels subterete or quadrangular, 15-20 mm long; corolla tube as long as the calyx; one stamen longer than the other three. Capsule 10-12 mm long.

In shade along drains and streams; 300 - 450 m.

Fl. & Fr.: October May.

RAIPUR: Gariaband, Raipur.

2. **CENTAURIUM** Hill


Small erect herbs. Basal leaves rosulate, lanceolate oblong, obtuse, upper ones linear - lanceolate, acute or subobtuse. Flowers in cymose panicles; calyx lobes linear, 5-6 mm long; corolla pink or purple, ca 1 cm long. Capsules up to 6 mm long.

In marshy places; 300 m.

Fl.: August.

RAIPUR: Raipur.

3. **ENICOSTEMA** Blume


Profusely branched perennial herbs with erect or ascending branches. Leaves linear or linear oblong, up to 6.0 x 1.2 cm, 3 nerved. Flowers white; corolla with a long tube, funnel shaped above; filaments with scales at the base. Capsules ellipsoid.
Along tanks; 300 m.

*Fl. & Fr.*: October.

RAIPUR: Raipur.

4. **EXACUM L.**

1a. Flowers 5 - 8 mm across.

2a. Leaves ovate, shortly petiolate, one - half to two - third as broad as long. Calyx wings ovate ... *E. carinatum* 1

2b. Leaves elliptic - oblong, narrowed to a sessile or subsessile base, one - eighth to one - third as broad as long. Calyx wings lanceolate ... *E. pedunculatum* 2

1b. Flowers 15 - 25 mm across ... *E. tetragonum* 3


Slender erect herbs, 5 - 15 cm high. Leaves ovate - elliptic, 3 - 9 cm long. Flowers in axillary and terminal cymes, blue or whitish; corolla lobes lanceolate. Capsules subglobose.

Along drains; 300 - 450 m.

*Fl. & Fr.*: September - October.

RAIPUR: Taurenga. RAINANDGAON: Salewara, Singhari.


Erect herbs, 5 - 30 cm high. Stem quadrangular. Leaves sessile or subsessile, elliptic - lanceolate, 12 - 30 mm long. Flowers in terminal cymes, blue; calyx lobes ovate; corolla lobes elliptic, exserted. Capsules subglobose.

River banks; 300 - 400 m.

*Fl. & Fr.*: January - April.

DURG.: Rajhara dhalli. RAIPUR: Raipur.


Erect herbs, 30 - 60 cm high. Stem quadrangular. Leaves subsessile, elliptic - lanceolate, 8 - 12 cm long. Flowers in terminal panicked cymes, blue; calyx lobes ovate, winged on the back; corolla lobes ovate lanceolate. Capsules globose or subglobose.
Roadsides: 500 - 800 m.

*Fl. & Fr.*: September - November.

RAJNANDGAON: Chilpi, Deopura.

5. *Hoppea* Willd.


Tiny herbs up to 7 cm high. Stems 4-winged. Leaves opposite, sessile, ovate-lanceolate, 4-5 mm long. Flowers white or green, irregular, in dichasia cymes. Capsules subglobose.

In moist depressions: 350 - 500 m.

*Fl. & Fr.*: November - April.

DURG: Talgaon. RAIPUR: Dhantari. RAJNANDGAON: Deopura.

6. *Nymphoides* J. Hill.

1a. Corolla white throughout, longitudinally folded in the middle forming a suberispy keel, margin entire  

\[N. \text{ hydrophylla}\] 1

1b. Corolla white with a yellow centre, lobes not folded, margin filibrate  

\[N. \text{ indica}\] 2


Aquatic herbs with slender stolons. Leaves ovate orbicular, 5-10 cm. 6-12 cm, herbaceous, floating. Flowers white, clustered; pedicle up to 4 cm long; corolla ca 2 cm across. Capsules broadly ovoid or subglobose; seeds tubercled.

Common in ponds: 300 - 450 m.

*Fl. & Fr.*: throughout the year.

RAIPUR: Raipur, Taurenga. RAJNANDGAON: Rajnandgaon, Singhari.

Aquatic stoloniferous herbs. Leaves leathery, orbicular, deeply cordate, 10–20 cm across. Flowers clustered; pedicel up to 10 cm long; corolla white with a yellow centre, 20–30 mm across, lobes linear-oblong. Capsules ellipsoid; seeds smooth.

In ponds; 300–550 m.

*Fl. & Fr.*: November–June.

RAIPUR: Gariaband, RAJNANDGAON: Rengakhar, Singhari.

7. *Swertia* L.


Erect much branched herbs. Stem quadrangular. Leaves, upper ovate, obtuse, mucronate, lower spathulate, obovate, obtuse. Flowers tetramerous, in terminal corymbose or panicoled lax cymes; corolla lobes white with blue nerves or pale blue with a gland at the base of each lobe.

In miscellaneous forests; 450 m.

*Fl. & Fr.*: January.

RAIPUR: Singlipur.

74. HYDROPHYLLACEAE

(V. Chandra)

HYDROLEA L.


Prostrate or procumbent herbs. Leaves narrowly lanceolate, 1.5–6.0 cm long. Flowers blue, ca 1 cm across, in short, terminal, hairy racemes; calyx glandular pubescent. Capsules ovoid, oblong or ellipsoid, 4–6 mm long, enclosed within persistent calyx; seeds numerous, minute, oblong.

In marshy places; 300 m.

*Fl. & Fr.*: November–January.

75. BORAGINACEAE
(D. M. Verma & J. Lal)

1a. Trees, more than 3 m high.
   2a. Style twice 2 - partite. Fruits 15 - 20 mm across ... Cordia 2
   2b. Style once 2 - partite. Fruits ca 5 mm across ... Ehretia 4

1b. Herbs, undershrubs or shrubs (Rotala), less than 1.5 m high.
   3a. Prostrate herbs. Leaves plicate, serrate - lobulate, densely appressed hairy. Flowers solitary axillary though sometimes very close along short leafy side - shoots... Coldenia 1
   3b. Plants not as above.
      4a. Flowers 1 - 2 cm across on long slender pedicels, pedicels usually 1 - 3 cm long; calyx 10 - 15 mm long ... Trichodesma 7
      4b. Flowers usually smaller, sessile or on up to 0.5 cm long pedicels; calyx 1 - 5 mm long.

5a. Fruits with many spreading glocidia ... Cynoglossum 3
5b. Fruits without glocidia.

6a. Shrubs. Flowers 1 - 3 together on short lateral branches, 5 - 10 mm across; style linear ... Rotala 6
6b. Herbs. Flowers in axilpinid cymes, less than 3 mm across; style conoid or disciform at the apex ... Heliotropium 5

1. Coldenia L.

Coldenia procumbens L. Sp. Pl. 125, 1753.

White hairy herbs with prostrate branches forming patches. Leaves thick, with deeply set veins forming attractive pattern, elliptic - obovate, ca 15 x 8 mm. Flowers solitary axillary, sessile; calyx lobes persistent. Fruits ovoid.

In open moist places: 250 - 550 m.

Fl. & Fr.: April June.

DURG: Durg. RAIPUR: Dhamtari, Pithora, Taurenga.
2. Cordia L.


Small tree, branches hairy when young. Leaves orbicular, elliptic oblong or obovate. 6 11 x 5 - 9 cm. Flowers corymbose, white, fragrant: calyx persistent. Fruits globose, ripe yellowish or pinkish, glossy, with very sticky juice.

In miscellaneous forests and roadsides; 500 m.

*Fl. & Fr.* : May June.

RAIPUR : Sitanadi.

3. Cynoglossum L.


Perennial hairy herbs or undershrubs with rather slender up to 2 m long branches spreading among bushes. Leaves linear lanceolate, 3 12 x 1 4 cm, white dotted above. Flowers white, in long slender branches. Nutlets glochidiate.

In miscellaneous forests; 400 550 m.

*Fl. & Fr.* : October January.

RAIPUR : Mainpur, Sitanadi. RAINANDGAON : Deopura.

4. Ehretia P. Br.


Small trees. Leaves variable, ovate, elliptic or obovate, 7 12 x 4 8 cm, glabrous or pubescent beneath, secondary nerves forked and reticulate below the margins. Flowers ca 7 mm across, in 5 10 cm broad scorpioid cymes. Drupes ca 5 mm diam., black.

In open areas; 300 m.

*Fl.* : February.

5. Heliotropium L.

1a. Leaves usually more than 15 mm broad. Flowers blue or violet. Fruits glabrous, strongly ribbed  

   \[H. \text{indicum}\] 1

1b. Leaves less than 12 mm broad. Flowers white or yellowish. Fruits, at least in some parts, hairy, not ribbed.

   2a. Inflorescence bracteate. Calyx lobes subequal, stigma on ca 0.5 mm long style  

   \[H. \text{strigosum}\] 3

   2b. Inflorescence ebracteate. Calyx - lobes very unequal; stigma sessile or subsessile  

   \[H. \text{ovalifolium}\] 2


   Herbs, slightly strigose to woolly, 15 - 30 cm high. Leaves alternate or sometimes subopposite, ovate or ovate-oblong, 3 - 9 x 2 - 6 cm, rugose above, pilose beneath. Cymes coiling at the tip, 5 - 15 cm long. Flowers blue mauve.

   In wastelands and along drains; 300 - 400 m.

   \[Fl. \& Fr.\] throughout the year.

   DURG: Talgaon. RAIPUR: Raipur. RAJNANDGAON: Khargaon.


   Annual hairy deep rooted herbs, 3 - 15 cm high. Leaves rather thick, elliptic-obovate, 1.0 - 1.3 x 0.5 - 0.8 cm. Cymes long, curved. Corolla hairy in the mouth. Fruits pubescent.

   In wastelands, river beds and along ponds; 250 - 400 m.

   \[Fl. \& Fr.\] : August - June.

   DURG: Durg. RAIPUR: Dhamtari, Gariaband.


   Profusely branched white hairy herbs with prostrate branches. Leaves linear or linear-lanceolate, 10 - 12 x 2 - 3 mm. Cymes 2 - 5 cm long. Flowers white, bracteate; corolla strigose; connective produced into a long acumen.

   In wastelands, and along ponds; 300 - 350 m.

   \[Fl. \& Fr.\] : August - June.

   RAIPUR: Dhamtari, Pithora, Raipur.
6. Rota\l\a\l\a Lour.


Closely branched woody undershrubs, 0.3 1.0 m high. Leaves linear or oblong - oblanceolate, apiculate, narrowed at the base, purplish when young, 1.2 1.5 x 0.4 0.6 cm. Flowers campanulate, ca 1 cm long, blue. Drupes subglobose. ca 2 mm diam., brown with stellately spreading persistent sepals.

In river beds, among rocks and pebbles; 300 450 m.

Fl. & Fr.: September June.

RAIPUR: Pithora. Raipur. RAJNANDGAON: Bagh\nadi.

7. Trichode\sma R. Br.

1a. Fruiting calyx - lobes cordate or hastate at the base.

2a. Anthers exerted; connectives with short, crisped, yellowish - white hairs on the back, tips spirally contorted T. indicum 1

2b. Anthers included; connectives with long, straight, glistening white hairs on the back, equalling or exceeding the tips of the connective, tips not contorted ... T. sedgwickianum 2

1b. Fruiting calyx - lobes rounded at the base ... T. zeylanicum 3


Annual hirsute herbs, ca 20 cm high. Leaves crowded, lanceolate, 3 8 x 0.7 1.5 cm, strigose on both the surfaces with white bulbous based hairs, base narrow or broad and subcordate. Flowers white, pale blue or violet.

In wastelands; 300 500 m.

Fl. & Fr.: August April.

DURG: Talgaon. RAIPUR: Dugli, Raipur. RAJNANDGAON: Deopura.

Annual hirsute herbs, ca 30 cm high. Leaves ovate oblong, cordate, subamplexicaul, 5.8 x 1.5 3.5 cm, densely sebripid with white bulbous based hairs. Flowers white (or pinkish lilac) with brown bands at corolla mouth.

Along drains; 300 m.

*Fl. & Fr.*: August.

RAIPUR: Raipur.


Annual hairy herbs, ca 40 cm high. Leaves sessile or shortly pedioled, oblong or oblong lanceolate, 3.7 7.5 x 1.5 2.0 cm. densely clothed above with white bulbous based hairs. Flowers pale blue.

In wastelands; 400 - 500 m.

*Fl. & Fr.*: September April.

DURGA: Rajbhar dhilli. RAINANDGAON: Deopura.

**76. CONVOLVULACEAE**

(D. M. Verma & R. C. Srivastava)

1a. Plants parasitic. Stems yellow, Leaves reduced to scales ...

1b. Plants autotrophic. Stems never yellow, Leaves well developed.

2a. Leaves rotundate, silky whitish pubescent beneath ...

2b. Leaves not as above.

3a. Leaves coriaceous. Corolla lobes bifid; styles absent

3b. Leaves herbaceous. Corolla lobes entire or subentire; styles present.

4a. Styles two, stigmas four ...

4b. Style one, stigmas one or two.

5a. Fruits dehiscent, dry.


7a. Flowers 3.5 - 5.0 cm long. Capsule opening by circumscissile dehiscence...
7b. Flowers 0.5 - 2.0 cm long. Capsule opening by 4 valves or irregularly dehiscent ... *Moroncia* 6

6b. Corolla infundibuliform or salverform, pink-purple (white in *I. pestigridis*). Pollen spirulous ... *Ipomoea* 5

5b. Fruits indehiscent, fleshy, woody or leathery ... *Argyrodes* 1

1. *Argyrodes* Lour.

1a. Well developed leaves about half as broad as long, acute.
Bracts and sepals narrow, linear-oblong.

2a. Sepals 9 - 10 mm long ... *A. daltonii* 1

2b. Sepals 14 - 15 mm long ... *A. involucrata* 2

1b. Well developed leaves about as broad as long. Bracts and sepals broadly obovate-oblong to suborbicular.

3a. Flowers in heads ... *A. sericea* 3

3b. Flowers in corymbose cymes ... *A. strigosa* 4


Climbers. Leaves elliptic or oblong, 4 15 x 2 9 cm, acute, fulvous strigose beneath. Peduncles 2 7 cm long, rigid, fulvous silky. Sepals fulvous strigose in fruit, coriaceous; corolla 7 8 cm long, purple, densely hairy outside. Capsules 4 5 cm across.

In miscellaneous forests; 480 m.

*Fl. & Fr.*: October.

RAIPUR: Gariaband.


Climbers. Leaves ovate, 5 18 x 5 11 cm, acuminate, sparingly hairy or glabrescent. Peduncles 3 - 12 cm long, shorter than the leaves. Flowers subcapitate; bracts ca 3 cm long, stellately spreading, persistent; sepals subequal or unequal, ovate-lanceolate; corolla funnel-shaped. Capsules oblong, 4 6 cm across.

In miscellaneous forests; 450 550 m.

*Fl. & Fr.*: October January.

RAIPUR: Singhpur, Taurenga.

Climbers. Leaves ovate-cordate, 4-9 x 6-10 cm, acute, hispid or trigose above, silky beneath. Peduncles equal to or longer than the petioles, 2-15 cm long. Flowers capitulate; bracts persistent, oblong or elliptic, silky; sepals elliptic-lanceolate, unequal; corolla ca 5-5 cm long, hairy outside in bands.

In miscellaneous forests; 800 m.

*Fl.*: September.

RAJNANDGAON: Chilpi.


Climbers. Leaves ovate-cordate, 5-13 x 3-12 cm, acute or sub obtuse, sparsely hirsute on both the surfaces. Peduncles 4-16 cm long; bracts ovate, 5-8 cm long, obtuse, persistent; bracts and sepals strigose. Sepals ovate-elliptic; corolla mauve, densely setose. Capsules 5-7 cm across.

In miscellaneous forests; 500 m.

*Fl.* & *Fr.*: October.

RAIPUR: Taurenga.

Roots medicinal.

2. *CUSCUTA* L.

1a. Flowers ca 2 mm long; styles 2

1b. Flowers 6-10 mm long; style 1.

2a. Infra-staminal scales fimbriate at the margins as well as at the bases

2b. Infra-staminal scales fimbriate at the margins only

C. campestris 1

C. santapaul 3

C. reflexa 2


Leafless filiform twining parasites. Flowers in globose clusters; calyx campanulate, ca 1.5 mm long; corolla campanulate, ca 2 mm long, white, lobes broadly triangular; stamens ca 1 mm long, infra-staminal scales ovate, fimbriate, bridged at the base.
Common on linseed plants; 300 m.

*Fl. & Fr.*: September - February


Leafless twining parasites. Flowers white or cream coloured; calyx cupular, 2-4 mm long; corolla campanulate, 6-10 mm long, lobes erect, spreading or reflexed; anthers basifixed; style very short, stigmas 2, thick. Capsules globose, circumscissile near the base; seeds ca 3 mm long, black.

On roadside trees and shrubs; 400-500 m.

*Fl. & Fr.*: September.

**RAIPUR:** Gariaband. **RAJNANDGAON:** Baghnadi.


Leafless yellow parasitic twiners. Flowers 6-8 mm long, in few flowered fascicles; calyx somewhat urceolate, ca 1.5 mm broad; corolla white with brown spots in the throat, tube 3-4 mm long, lobes broadly lanceolate, ca 2 mm long; anthers attached to filaments slightly above its base; style short, stigmas thick.

On roadside hedges; 300 m.

*Fl. & Fr.*: February.

**RAIPUR:** Raipur


Large woody climbers. Leaves oblong obovate, 5-10 cm long. Flowers in many flowered terminal panicles; sepals ovate or rounded, 1-2 mm long, tomentose, corolla campanulate rotate, 5-6 mm long, white. Fruits sub baccate, leathery, ovoid to ellipsoid, 10-14 mm long, glabrous; seeds solitary, glabrous.

In miscellaneous forests; 400 m.

*Fl. & Fr.*: August.

**RAIPUR:** Dhamtari.
4. EVOLVULUS L.

1a. Leaves elliptic or linear-oblong, pilose. Capsules 2-locular
    ...  **E. alsinoides** 1

1b. Leaves broadly ovate or orbicular, glabrous. Capsules 1-locular
    ...  **E. nummularius** 2


    Prostrate herbs, mostly covered with silky indumentum. Leaves sub-sessile, 8-26 mm long, acute or rounded at both ends. Sepals ovate-lanceolate, 4-5 mm long; corolla campanulate, white. Capsules globose, 3-4 mm long; seeds ovoid.

    Common in wastelands & river beds, sometimes in miscellaneous forests; 300-550 m.

    *Fl. & Fr.*: August-June.

    **DURG**: Balod, Budhnum. **RAIPUR**: Gariaband, Kasdol, Pithora, Raipur, Taurenga. **RAJNANDGAON**: Deopura, Baghnadi, Rajnandgaon.


    Prostrate herbs, rooting at nodes, pilose to glabrate. Leaves shortly petiolate, 4-15 mm long, glabrous, apex rounded or emarginate. Flowers axillary, solitary or paired; sepals elliptic-ovate; corolla campanulate, 5-7 mm long. Capsules globose; seeds sub-globose.

    Common in wastelands and cultivated fields, sometimes in miscellaneous forests; 250-500 m.

    *Fl. & Fr.*: August-June.

    **DURG**: Durg, Rajhara dhalli. **RAIPUR**: Dugli, Kasdol, Pithora, Gariaband, Raipur, Sitanadi. **RAJNANDGAON**: Deopura, Rajnandgaon.

5. IPOMOEA L.

1a. Stout shrubs; stem ca 1-2 cm thick below, erect or scandent (or sometimes twining); latex milky. Leaves entire, ovate-oblong, young leaves softly pubescent on both the surfaces. Flowers 5-8 cm long
    ...  **I. carnea** 4
1b. Slender climbers, twiners or creepers; other characters not
    united.

2a. Leaves pinnately lobed with filiform segments. ..... I. aquanulis 10

2b. Leaves entire or palmately lobed with broad segments

3a. Leaves palmately lobed.

4a. Leaves deeply divided, lobes cut almost to the
    base.

   3a. Plants glabrous. Leaves 5 - 9 lobed ..... I. umbrosa 3

   3b. Plants pubescent. Leaves 7 - 9 lobed ..... I. pes-tigris 9

4b. Leaves shallowly divided, lobes cut less than half
    way down.

6a. Sepals 4 - 5 mm long, corolla yellowish red... I. hederifolia 6

6b. Sepals 12 - 25 mm long; corolla purple or
    blue ..... I. nil 7

3b. Leaves entire.

7a. Leaves linear-lanceolate to narrowly oblong
    lanceolate with hastate or cordate bases.

8a. Flowers in open peduncled cymes, or solitary; peduncles
    more than 10 mm long ..... I. aquatica 1

8b. Flowers in dense sessile or sub-sessile cymes or
    heads; peduncles less than 3 mm long... I. eriocarpa 5

7b. Leaves ovate or broadly oblong lanceolate, with
cordate bases.

9a. Lower surface of the leaves with white cottony indumentum ..... I. arachnosperma 2

9b. Lower surface of the leaves not as above.

10a. Stems warty, Peduncles muricate ..... I. turbinata 12


11a. Leaves rotundate. Sepals 3 - 4 mm
    long; corolla 15 - 25 mm long ..... I. obscura 8

11b. Leaves ovate. Sepals 6 - 9 mm
    long; corolla 30 - 60 mm long ..... I. sepiaria 11

1. Ipomoea aquatica. Forsk. Fl. Aegypti. Arab. 44. 1775. I. reptans
    Poir. in Lamk. Encycl. Suppl. 3: 460. 1814.

Procumbent or floating herbs rooting at the lower nodes. Stems
    hollow. Leaves mostly hastate, 3 - 10 cm long, 0.5 - 6.5 cm broad. Sepals
ovate oblong, 6–7 mm long, glabrous; corolla 2–6 cm long, purple. Capsules ovoid, 7–8 mm long; seeds glabrous.

In ponds; 300 m. RAIPUR: Raipur.


Annual prostrate or twining herbs with rigid trichomes. Leaves ovate, 5–10 cm long and equally broad. Flowers in lax or dense bracteate cymes; sepals densely hairy, ciliate, margined; corolla tubular, 20–25 mm long, pink or mauve. Capsules ovoid, pubescent.

In wastelands; 300 m.

Fl.: September November.


Climbers. Leaves ovate orbicular, palmately divided to the base into 5–7 lobes, 3–10 cm long, lobes lanceolate, ovate or elliptic, 3–5 cm long. Inflorescence one–many-flowered. Sepals ovate, 4–6 mm long, unequal, glabrous; corolla 3–5 cm long, purple or blue purple. Capsules subglobose, ca 1 cm across; seeds subglobose or ovoid, 4–6 mm long, tomentose blackish.

Planted in houses as an ornamental; 300 m.

Fl.: January.

RAIPUR: Raipur.


Shrubs, 1–6 m tall. Stems woody. Leaves ovate cordate to lanceolate, 4–21 x 3–10 cm. Flowers in cymose paniculate clusters; corolla deep pink to purple, rarely white (*Verma* 24968), 5–9 cm long; stigma biglobular. Capsules ovoid subglobose, ca 15 mm across; seeds covered with long comose brown trichomes.

Common on roadsides, and along cultivated fields for protection and demarcation; 300–500 m.
Fl. & Fr.: April January.


Twinning or prostrate pilose herbs. Leaves ovate, oblong, lanceolate or linear lanceolate, 2 - 9 x 1 - 4 cm, glabrate. Flowers axillary, in sessile or short peduncled cymes, or almost in heads, sepals linear, 5 - 7 mm long; corolla tubular, 7 - 9 mm long, pink or purple. Capsules broadly ovoid or globular, 5 - 6 mm across, pubescent; seeds glabrous.

In wastelands & paddy fields; 300 - 600 m.

Fl. & Fr.: September October.

RAIPUR: Pithora, Sitanadi, Taurenga. RAJNANDGAON: Baghnadi, Deopura, Singhari.


Twiners. Stems glabrous or sparsely pubescent. Leaves ovate, suborbicular, 2 - 8 x 1 - 8 cm, entire or trifoliate, acute or acuminate. Flowers solitary or in few to several flowered cymes; sepals elliptic oblong, 4 - 5 mm long, outer with 1.5 - 2.0 mm long subapical fleshy aristae; corolla salver-shaped, red - yellow, 3 - 4 cm long. Capsules subglobose, 6 - 8 mm long; seed ca 5 mm across.

On roadside bushes and trees; 350 m.

Fl. & Fr.: October.

RAIPUR: Pithora.


Climbers. Stems pubescent. Leaves ovate suborbicular, 2 - 14 cm long, entire or 3 lobed, cordate. Flowers in 1 flowered cymes; sepals lanceolate, 12 - 25 mm long with linear - lanceolate apices; corolla purple or blue, 3 - 5 cm long. Capsules globose, 8 - 10 mm long; seeds pyriform, glabrous.
In miscellaneous forests ; 450 m.

Fl. & Fr. : October.

RAIPUR : Gariaband.


Twiners. Leaves ovate - cordate to rotundate, 2 - 7 x 1 - 6 cm, acute, acuminate or apiculate, glabrous. Flowers axillary ; sepals ovate to ovate lanceolate, 3 - 4 mm long ; corolla pale yellow, ca 2 cm long, campanulate. Capsules globose, 5 - 10 mm across ; seeds ovoid, softly pubescent, 4 mm long.

In wastelands ; 300 m.

Fl. & Fr. : November January.

RAIPUR : Raipur. RAJNANDGAON : Singhari.


Twining, prostrate or sprawling pubescent annual herbs. Leaves orbicular, palmately divided nearly to the base, 5 - 9 lobed. Inflorescence involucrate cymose. Sepals lanceolate, 13 - 17 mm long ; corolla funnel shaped, 2 - 4 cm long. Capsules ovoid, ca 7 - 8 mm across ; seeds sparsely pubescent, 3 - 4 mm long.

In wastelands and along cultivated fields ; 300 - 450 m.

Fl. & Fr. : August November.


Slender climbers. Leaves 1 - 5 cm long, ovate to elliptic in outline, deeply pinnatisect with 6 - 19 pairs of linear lobes. Flowers solitary or in 2 - 5 flowered cymes ; sepals oblong, 4 - 7 mm long ; corolla salver shaped, red, 2 - 3 cm long. Capsules ovoid, 6 - 8 mm across.

Cultivated in gardens as an ornamental, sometimes found as escape ; 400 - 800 m.

Fl. & Fr. : September October.

RAIPUR : Indagaon. RAJNANDGAON : Chilpi.

Slender pilose twiners. Leaves ovaee cordate, 3 7 x 3 6 cm, with rounded lobes at the base, acute to acuminate at apex, glabrous. Inflorescence few to many flowered cyme. Sepals elliptic oblong to ovate, obtuse to acute, glabrous; corolla funnel shaped, 3 6 cm long. Capsules globose, 8 10 mm across, glabrous; seeds densely tomentose.

Along drains : 450 m.

*Fl.* & *Fr.* : January.

RAIPUR : Dugli.


Climbers. Stems warty at some places. Leaves broadly ovate to orbicular, 5 12 cm long. Peduncles usually muricate, 1 6 cm long. Sepals ovate to oblong, outer 6 7 cm long; corolla lavender to purplish, 5 6 cm long, limbs funnel or salver shaped. Capsules ovoid, 1 2 cm long; seeds ovoid, glabrous.

In wastelands : 500 m.

*Fl.* & *Fr.* : November.

RAJNANDGAON : Deopura.

6. MERREMIA DONN. ex Endl.

1a. Prostrate herbs. Peduncles very short or absent ... *M. emarginata 1*

1b. Twiners. Peduncles long, equal to or longer than the flowers.

2a. Leaves ovate to broadly ovate, rarely narrow.
   Inner sepals obtuse ... *M. hederacea 2*

2b. Leaves linear - oblong to obliqueolate, spatulate or subquadrate. Inner sepals attenuate or acuminate ... *M. tridentata 3*


Prostrate herbs. Stems glabrescent, rooting at nodes. Leaves reniform to broadly ovate, 0.5 3.0 cm long, emarginate, cordate. Inflorescence axill-
ary, solitary or in 2-3 flowered cymose groups. Sepals obovate to orbicular, unequal, deeply emarginate; corolla campanulate, 5-9 mm long, white. Capsules subglobose, glabrous, 5-6 mm across; seeds greyish brown, glabrous, dotted, 2.5 mm long.

In wastelands; 300-500 m.

Fl. & Fr.: November - April.


Twiners. Stems smooth, glabrous. Leaves ovate, 1-5 cm long, broadly cordate, apex obtuse, 3 lobed. Sepals broadly obovate, notched at apex; corolla 7-11 mm long, yellow. Capsules broadly conical to depressed globose, 4 angled; seeds blackish, glabrescent, 2.5 mm long.

In wastelands; 400-500 m.

Fl. & Fr.: November - April.

DURG: Talgaon. RAJNANDGAON: Deopura.


Twiners. Stems glabrous or pubescent. Leaves linear or oblanceolate, 2-10 cm long. Sepals ovate or oblong lanceolate, 4-10 mm long; corolla pale yellow, 10-20 mm long. Capsules globose, 4-9 mm long; seeds black, glabrous, 2-3 mm long.

In wastelands and river beds; 300-450 m.

Fl. & Fr.: August - June.

DURG: Balod. RAIPUR: Gariaband, Pithora, Raipur. RAJNANDGAON: Baghmadi.
7. **Operculina Manso**


Usually shrubby climbers with narrowly winged stems. Leaves broadly ovate or oblong lanceolate, 4-15 x 2-10 cm, with reddish midribs. Flowers in one several flowered cymes; sepals 15-20 mm long; corolla 4-5 cm long, sulphur yellow, densely hirsute outside with long hairs. Capsules ovoid, ca 12 mm long.

In mixed forests; 600 m.

*Fl. & Fr.*: April.

**RAJNANDGAON**: Chilpi.

8. **Rivea Choisy**


Creepers or climbers. Stems woody, pubescent. Leaves rotundate, obtuse, silvery white pubescent beneath. Flowers usually solitary, sometimes subsesicate; sepals unequal, ovate, obtuse; corolla salverform, 6-9 cm long. Fruits indehiscent; seeds brown, glabrous.

Roadsides; 400 m.

*Fr.*: August.

**DURG**: Rajhara dhalli.

77. **Solanaceae**

(D. M. Verma & V. Chandra)


1a. Flowers more than 6 cm long. Fruits prickly ... *Datura 1*

1b. Flowers less than 2 cm long. Fruits smooth.

2a. Flowers solitary in the forks of branches; fruiting calyx inflated like a bladder and enclosing the berry ... *Physalis 2*

2b. Flowers in extra-axillary or terminal racemes; fruiting calyx not inflated, shorter than the berry ... *Solanum 3*
1. **Datura L.**

1a. Plants throughout densely grey pubescent. Corolla 10-toothed. Prickles on the fruits sharp, mostly 7 - 10 mm long  

\[ D. inoxia \]

1b. Plants glabrous, or pubescent on some, particularly the younger parts. Corolla 5-toothed. Prickles on the fruits blunt, 2 - 5 mm long  

\[ D. metel \]


Undershubs, up to 70 cm high. Leaves elliptic ovate, often unequal at the base, entire or toothed. Flowers white, ca 8 cm long. Fruits globose, green, clothed with sharply pointed spines, irregularly dehiscing.

In wastelands, along drains; 300 m.

*Fr. & Fr.* : August - January.

**RAIPUR :** Raipur.


Undershubs up to 1.7 m high, young branches purplish. Leaves elliptic or ovate, 7 - 15 cm long, with sinuate margins. Flowers white with purplish tinge outside; calyx reflexed in fruits. Fruits nodding, irregularly dehiscing.

In wastelands; 300 - 450 m.

*Fr. & Fr.* : August - January.

**RAIPUR :** Dhamtari, Raipur. **RAJNANDGAON :** Rajnandgaon.

Leaves soaked in hot oil are tied over sprained parts.

2. **Physalis L.**

**Physalis minima** L. Sp. Pl. 183. 1753.

Herbs, 20 - 30 cm high. Leaves ovate, 2 - 3 cm long, toothed, sinuate or lobulate. Flowers pale yellow; corolla often with small spots at the base within. Fruits globose, ca 5 mm diam., enclosed within ca 2 cm long inflated calyx.
In wastelands; 300 - 450 m.

Fl. & Fr. : August - January.


3. SOLANUM L.

1a. Plants unarmed ... S. nigrum 3

1b. Plants prickly.

2a. Erect herbs or undershrubs; prickles on the stem conspicuously broad-based and compressed, almost triangular with recurved tips.

3a. Flowers bisexual, in cymose corymbbs. Fruits ca 8 mm in diam. ... S. anguivi 1

3b. Flowers unisexual, male flowers racemose, female flowers solitary. Fruits 18 - 25 mm in diam. ... S. inanum 2

2b. Diffuse herbs; prickles on the stem not much broad at the base, suberect, linear, with straight tips ... S. surattense 4


Slender to rather stout undershrubs up to 1.5 m high, clothed with purplish brown prickles. Leaves ovate oblong, 6 15 x 5 10 cm, sinuate pinnatifid. Flowers violet; calyx and corolla stellate pubescent. Fruits globose, green and pale green blotched; seeds smooth.

Mostly in sal or mixed forests, sometimes on roadsides; 480 - 600 m.

Fl. & Fr. : throughout the year.

RAIPUR : Borai, Sitanadi.

2. Solanum inanum L. Sp. Pl. 188. 1753.

Shrubs. Leaves ovate elliptic, 7 11 cm long, sinuate or lobed, stellate tomentose above, woolly beneath. Flowers blue; peduncles lateral, usually paired; calyx and corolla stellate hairy. Fruits ovoid or sub-globose, yellow; seeds minutely pitted.
in miscellaneous forests: 450 m.

Fr.: September.

RAJNANDGAON: Salawara.


Herbs up to 40 cm. high. Leaves ovate, ovate-oblong or oblong-lanceolate. 6 - 10 x 3 - 5 cm, entire, sinuate or dentate. Flowers white, in umbelliform extra-axillary inflorescences; anthers yellow, ca 2 mm long. Fruits globose.

In wastelands: 300 - 500 m.

Fl. & Fr.: November - January.

RAIPUR: Raipur. RAJNANDGAON: Deopura.


Perennial diffuse very prickly herbs. Leaves ovate, elliptic or oblong, pinnatifid, stellate-hairy when young, segments ovate, irregularly dentate. Flowers violet, in 2 - 6 flowered cymes; calyx and corolla stellate-hairy. Fruits globose, green, white mottled.

In wastelands: 300 - 530 m.

Fl. & Fr.: throughout the year.


78. SCROPHULARIACEAE

(D. M. Verma & R. Prasad)

1a. Plants hairy throughout. Leaves all alternate ... *Verbascum* 15

1b. Plants glabrous or hairy. Leaves all, or at least some, opposite or whorled.

2a. Bracteoles 2.

3a. Anthers 1 - celled.

4a. Corolla tube strongly incurved; upper lip emarginate ...

4b. Corolla tube almost straight; upper lip 2 - lobed ...

3b. Anthers 2 - celled.
5a. Anther cells stipitate.

6a. Bracteoles at the base of pedicel; calyx lobes dissimilar.
   \[ Macandania 8 \]

6b. Bracteoles at the base of calyx; calyx lobes similar.

7a. Plants densely viscid hairy. Seeds not angular.
    \[ Stemodia 11 \]

7b. Plants glabrous or almost so. Seeds angular.
    \[ Limnophila 6 \]

5b. Anther cells sessile.

8a. Anther cells equal.
    \[ Bacopa 1 \]

8b. Anther cells unequal.

9a. Calyx spathaceous, split on one side.
    \[ Centranthera 3 \]

9b. Calyx tubular, not split.
    \[ Sopubia 10 \]

2b. Bracteoles absent.

10a. Calyx 4-lobed.

11a. Tiny filiform herbs, 1-3 cm high. Corolla glabrous.
    \[ Glossostigma 3 \]

11b. Stout herbs, 10-15 cm high. Corolla bearded to mouth.
    \[ Scoparia 9 \]

10b. Calyx 5-lobed.

12a. Calyx winced or strongly ribbed. Flowering calyx 5 mm or more broad; anther cells divergent. Fruits included.
    \[ Torenia 14 \]

12b. Plants not as above.

    \[ Sutera 13 \]

13b. Plants not as above.

    \[ Limnophila 6 \]

14b. Fertile stamens 2 or 4. Fruits 2-3-valved.
15a. Leaves with several faint parallel nerves. Anther cells parallel ... \textit{Dopatrium} 4

15b. Leaves 1-3-nerved from the base, or pinnately nerved. Anther cells divergent ... \textit{Lindernia} 7

1. \textbf{Bacopa Aubl.}


Creeping, suberect or prostrate herbs, rooting at the nodes. Leaves simple, opposite, nerves indistinct. Flowers axillary, solitary, ca 1 cm long. Capsules ovoid, acute, glabrous.

In moist places; 250 m.

\textit{Fl.} & \textit{Fr.}: April.

\textit{DURG}: Durg.

2. \textbf{Buchnera L.}

\textit{Buchnera hispida} Buch. Ham. \textit{ex} D. Don, Prodr. 91. 1825.

Erect annual hispid herbs, branches ascending. Leaves obovate or oblong-elliptic. Flowers 10–13 mm long, white or pale purple; bracteoles 2, subulate; calyx tubular, almost 10 ribbed; stamens 4; anthers 1-celled. Capsules oblong-ovoid.

In wastelands; 450 m.

\textit{Fl.} & \textit{Fr.}: November.

\textit{RAJNANDGAON}: Taregaon.

3. \textbf{Centranthera R. Br.}

1a. Leaves elliptic or linear-oblong. Corolla purple or white ... \textit{C. nepalensis} 1

1b. Leaves linear. Corolla yellow ... \textit{C. tranquharica} 2

Erect, somewhat hispid or hoary herbs. Leaves clothed with white tubercles. Flowers subsessile, ca 15 mm long; bracts usually longer than calyx; calyx spathaceous, hairy; corolla 13–15 mm long; stamens 4. Capsules broadly ovoid, oblong, grooved, 5–6 mm long; seeds reticulate.

In wastelands; 400 m.

*Fl. & Fr.* : November.

**RAJNANDGAON** : Deopura.


Erect herbs, often diffusely branched. Leaves opposite below, alternate above, linear. Flowers axillary; bracts oblong; corolla ca 1 cm long, purplish yellow. Capsules globose, slightly shorter than the calyx; seeds oblong - cuneate, reticulate.

In wastelands; 350 m.

*Fl.* : October.

**RAIPUR** : Saraipalli.


Annual slender herbs, 15–30 cm high. Leaves opposite, lower oblong, obtuse, entire. Flowers in slender racemes of distant opposite pairs, 5–7 mm long, rose coloured. Stamens 2. Capsules globose or broadly ellipsoid, 2.5–3.5 mm long. Seeds tubercled.

Along ponds & in paddy fields; 350–450 m.

*Fl. & Fr.* : September–October.

**RAIPUR** : Dhamtari, Saraipalli. **RAJNANDGAON** : Baghnadi.
5. **Glossostigma Wt. et Arn. ex Arn.**


Filiform herbs, 1-3 cm high. Pedicels slender, shorter than the leaves; calyx campanulate, 3-lobed, ca 1 mm long; corolla bluish, 5-lobed; stamens 2; anthers unitunicular. Capsules globose, equalling the calyx; seeds small, ovoid.

Along ponds; 350 m.

*Fl. & Fr.*: October.

RAIPUR: Saraipalli.

6. **Limnophila R. Br.**

1a. Leaves all entire, penninerved.

2a. Flowers pedicellate ... **L. aromatica** 1

2b. Flowers sessile ... **L. rugosa** 3

1b. Leaves upper entire, 3-ribbed from the base, lower pinnatifid or multifid.

3a. Flowers pedicellate, the pedicel longer than the calyx ... **L. indica** 2

3b. Flowers sessile or subsessile ... **L. sessiliflora** 4


Erect herbs. Leaves opposite and 3-nately whorled, linear oblong, subacute, serrate. Racemes up to 25 cm long and paniculately branched with whorled flowers, or few flowered, or the flowers solitary, axillary; pedicels glandular. Capsules oblong.

In drains; 450 m.

*Fl. & Fr.*: January.

RAIPUR: Singhapur.

Aquatic, slender, or stout and much branched herbs. Leaves whorled, upper sometimes opposite. Flowers solitary axillary, or in terminal racemes; corolla 9–13 mm long, white, purple or bluish; stamens 4. Capsules broadly ellipsoid or globose, ca 5 mm long.

Common in roadside drains & ditches; 250–500 m.

*Fl. & Fr.:* throughout the year.

**DURG:** Talgaon. **RAIPUR:** Dhamtari, Pithora, Sitanadi. **RAJNANDGAON:** Baghnaidi.


Erect herbs, up to 30 cm high. Leaves opposite, elliptic to ovate, acute or obtuse, crenate, glabrous or pubescent. Flowers sessile, blue-purple with yellow mouth; corolla ca 9 mm long; stamen 4. Capsules compressed, ca 6 mm long, oblong, grooved.

In wastelands; 450 m.

*Fl. & Fr.:* September.

**RAJNANDGAON:** Salewara.


Annual sparingly branched herbs, floating or partly submerged. Leaves subsessile, verticillate, 7–13 mm long, lobulate and pinnatisect or the upper up to 18 mm long, less divided. Flowers solitary, axillary, subsessile, light purple or pink; stamens 4. Capsules orbicular.

In marshy places; 500 m.

*Fl. & Fr.:* October.

**RAJNANDGAON:** Taregaon.
7. Lindernia All.

1a. Flowering calyx lobed to about half-way down, or less. Capsules ellipsoid or ovoid, globose, about as long as the calyx ... *L. crustacea* 4

1b. Flowering calyx lobed to about two-thirds way down, or more. Capsules (except in *L. procumbens*) subcylindrical, 2-3 times as long as the calyx.

2a. Leaves 2-3 - ribbed from the base. Capsules ellipsoid, about as long as the calyx ... *L. procumbens* 5

2b. Leaves penninerved. Capsules subcylindrical, 2-3 times as long as the calyx.

3a. Leaf-margins closely denticulate with apices of the teeth developed into fine aristae almost as long as the teeth ... *L. eiiata* 5

3b. Leaf-margins entire, or if serrate - dentate then the teeth subacute.

4a. Perfect stamens 4 ... *L. anagallis* 1

4b. Perfect stamens 2 ... *L. antipoda* 2


Decumbent or creeping annual or perennial herbs. Leaves oblong, elliptic or obovate lanceolate up to 4.0 × 1.3 cm. Flowers 11-13 mm long, blue, pinkish or violet, linear subulate, 12-17 mm long, septicidal. In river beds; 450-500 m.

*Fl. & Fr.* : June.

RAIPUR : Taurenga.


Erect or more or less prostrate annual herbs with ascending branches up to 20 cm long. Leaves linear-oblong or oblanceolate, subentire or serrate. Flowers about 8 mm long; corolla blue, violet or purple. Capsules linear, striate, 10-13 mm long.
Common in moist places, sometimes partly submerged; 300–600 m.

*Fl. & Fr.*: May October.

**DURG**: Balod. **RAIPUR**: Dhamtari, Kasdol, Pithora, Sitanadi, Taurenga.


Small annual herbs, stem quadrangular. Leaves sessile, broadly oblong, 12–40 mm long, obtuse or subacute. Flowers ca 8 mm long, white, pink or red; fertile stamens 2, staminodes 2. Capsules linear-oblong, acute; seeds truncate at both ends.

In moist places; 300–450 m.

*Fl. & Fr.*: August October.

**DURG**: Balod. **RAIPUR**: Dhamtari. **RAJNANDGAON**: Baghnanadi, Khairagarh, Rajnandgaon.


Erect or decumbent annual herbs. Leaves small, ovate, entire or serrate. Flowers axillary and terminal, purple or blue violet; corolla ca 8 mm long; stamens 4. Capsules oblong ovoid; seeds ovoid with minute tail at one end, pale yellow, granulate.

Along roadside drains and forest clearings; 300–800 m.

**DURG**: Balod. **RAIPUR**: Borai, Dhamtari, Kasdol. **RAJNANDGAON**: Baghnanadi, Chilpi, Khairagarh.


Erect annual herbs, 10–20 cm high. Leaves sessile, opposite, elliptic oblong, entire or crenulate, 3–5 nerved. Flowers solitary, axillary, 5–8 mm long, white; stamens 4. Capsule broadly ellipsoid, as long as calyx; seeds rugose.

Along streams, sometimes partly submerged; 300–350 m.

*Fl. & Fr.*: May June.

**RAIPUR**: Dhamtari, Kasdol.
8. Mecardonia Ruiz & Pavon


Annual glabrous herbs. Leaves subsessile, ovate-lanceolate, up to 15 × 7 mm, glandular beneath. Flowers solitary axillary, yellow; corolla bilabiate, slightly exerted. Capsules ca 6 mm long.

Along forests; 400–750 m.

Fl. & Fr.: September - November.

RAJNANDGAON: Chilpi, Taregaon.

9. Scoparia L.


Annual or perennial, much branched herbs. Leaves opposite or verticillate, entire or dentate, punctate. Flowers axillary, usually paired, sometimes solitary, white, yellow or pale blue; sepals 4–5; corolla 4 fl.; stamens 4. Capsules ovoid globose.

Common in wastelands and forest clearings; 300–600 m.

Fl. & Fr.: January – September.

DURG: Balod. RAIPUR: Dhantiari, Raipur, Sitanadi, Taurenga.
RAJNANDGAON: Deopura.

10. Sopubia Buch. Ham. ex D. Don


Annual herbs, 40–80 cm high; stem quadrangular, glabrous or hispidulous, often speckled with purple. Leaves pinnatisect. Flowers purple or rose coloured; corolla 5 lobed, up to 38 mm long.; stamens 4. Capsule oblong; seeds oblong, striate.
In roadside ditches: 300–500 m.

Fl. & Fr.: August October.

DURG: Balod. RAIPUR: Taurenga. RAJNANDGAON: Baghnadi, Deopura.

11. Stemodia L.


Annual or perennial viscid herbs, up to 30 cm high. Leaves sessile, oblong, 10–25 mm long, base amplexicaul, cordate. Flowers axillary, solitary or rarely in terminal few flowered racemes. violet; stamens 4. Capsules ovoid; oblong; seeds ellipsoid.

In river beds: 300–450 m


12. Striga Lour.

1a. Three calyx ribs terminating at the tip of each lobe...

1b. One calyx rib terminating at the tip of each lobe

S. angustifolia 1

S. asiatica 2


Erect annual herbs, glabrous, or more or less scabrid. Leaves mostly alternate, linear or linear lanceolate, entire or 1–2 toothed. Flowers solitary axillary, 10–18 mm long, white; corolla pilose; calyx ribs 15 or more. Capsules ovoid, ca 7 mm long.

In wastelands and paddy fields: 300–450 m.

Fl. & Fr.: September January.


Erect parasitic herbs. Leaves linear, up to 3 cm long, rough. Spikes elongate; bracts long, usually longer than the calyx; bracteoles minute. Flowers white or yellow, tube twice as long as the calyx; calyx 10-15 ribbed, one rib reaching the tip of each lobe, others ending in sinus.

Along ditches; 450 m.

*Fl. & Fr.*: November.

**RAJNANDGAON**: Taregaon.

13. **Sutera Roth**


Erect or spreading herbs. Leaves 2-3 cm long. Flowers sessile or subsessile, solitary axillary or the uppermost racemose; corolla 5 lobed, purplish yellow or white; stamens 4. Capsules ellipsoid oblong, 6-4 mm long; seeds pitted.

In wastelands; 300 m.

*Fl. & Fr.*: April.

**DURG**: Durg.

14. **Torenia L.**


Annual herbs up to 30 cm high; stem quadrangular, simple or trichotomously branched. Leaves opposite, ovate lanceolate. Flowers axillary and usually whorled, or sub umbellate at the tip of the branches, pale blue; stamens 4. Capsules oblong.

In miscellaneous forests; 450-550 m.

*Fl. & Fr.*: September October.

**RAIPUR**: Taurenga. **RAJNANDGAON**: Deopura.
15. Verbascum L.


Erect hairy herbs, up to 60 cm high. Leaves serrate dentate, basal lyrate, pinnatifid, 5 7 x 3 cm, upper ovate oblong, shorter. Racemes simple or branched. Flowers yellow; corolla 5 lobed; stamens 4, filaments pilose. Capsules subglobose, glandular.

In wastelands & river beds; 300 500 m.

Fl. & Fr. : May June.

RAIPUR: Dhamtari, Gariaband, Sitanadi.

79. OROBANCHIACEAE
(M J Hanfi)

Aeginetia L.


Perennial leafless root parasitic herbs, 15 30 cm high, with a short rootstock. Flowers racemose, on curved peduncles, mauve to purple; calyx spathaceous, swollen at the base; corolla lobes subequal. Fruits ovoid globose, 1.5 2.0 cm long.

In sal and miscellaneous forests; 450 550 m.

Fl. & Fr. : September - October.

RAIPUR: Gariaband, Thurenga. RAINANDGAON: Salewara.

80. LENTIBULARIAEAE
(D M Verma)

Utricularia L.

1a. Leaves divided into capillary segments.

2a. Primary leaf segments two. Peduncle with a scale in the middle

U. exota 5
2b. Primary leaf segments three or more. Peduncle naked ... \( U. \) aurea 1

1b. Leaves not divided, sometimes connate.

3a. Flowers yellow.

4a. Peduncle twining ... \( U. \) scandens 8

4b. Peduncle not twining ... \( U. \) bifida 3.

3b. Flowers blue, purple, mauve or white.

5a. Bracts modified ... \( U. \) caerulea 4

5b. Bracts basifixed.

6a. Peduncle twining.

7a. Lower lip of the corolla 3 - 5 mm broad ... \( U. \) baouleensis 2

7b. Lower lip of the corolla 12 - 25 mm broad ... \( U. \) reticulata 2

6b. Peduncle not twining ... \( U. \) polygaloides 6


In shallow water along ponds; 300 m.

\( Fl. \& Fr. \) : August January.

DURG : Balod. RAIPUR : Dhamtari. RAJNANDGAON : Bagh-
nadi.


Terrestrial herbs, up to 20 cm high. Leaves linear, up to 3 cm long and 1 mm broad. Traps few, globose, ca 1 mm dia. Peduncles capillary, bearing 2 - 5 distant flowers; pedicels reflexed in fruits. Capsules compressed, ovoid; seeds with loose corky testa.
Along ponds and in paddy fields; 250–350 m.

Fl. & Fr.: October.

RAIPUR: Rajim, Saraipalli.


Terrestrial herbs, up to 20 cm high. Rhizoids capillary with thickened bases. Leaves linear, 1–2 cm long, ca 1 mm broad. Traps on the vegetative organs globose, 0.5–1.0 mm long. Peduncles capillary, bearing 1–10 distant flowers. Corolla 5–10 mm long, lower lip suborbicular, ca 4 mm broad.

In marshy places; 400 m.

Fl. & Fr.: April.

DURG: Talgaon.


Terrestrial herbs, up to 30 cm high. Leaves narrowly spatulate, up to 7.0 × 1.5 mm. Traps dimorphic, larger ca 1.5 mm long, smaller ca 0.7 mm long. Peduncles rather stout, bearing 1–20 distant or very congested flowers; bracts ca 2 mm long. Corolla 4–10 mm long, pink, mauve or blue-purple, sometimes white. Capsules globose, ca 2 mm across.

In mud and shallow water; 400 m.

Fl. & Fr.: September.

RAJNANDGAON: Baghnadi.


Free floating aquatic herbs, up to 15 cm high. Leaves dichotomously divided into capillary, sometimes setulose, segments. Traps on foliar segments ca 1 mm long. Peduncles solitary or fasciculate. Corolla 4–8 mm long, yellow. Capsules 2–3 mm across; seeds with an irregular corycky wing.

Forming muddy growth in shallow still water; 350–450 m.

Fl. & Fr.: June–September.

RAIPUR: Gariaband. RAJNANDGAON: Baghnadi.

Peduncles rather stout, 3 10 flowered; pedicels recurved in fruits. Sepals ovate, decurrent; corolla blue; lower lip suborbicular, ca 6 mm dia., spur conical. Seeds obovoid, longitudinally reticulate.

In marshy places; 400 m.

Fl. & Fr. : April.

DURG: Taituon.

7. U. reticulata Sm. Exot. Bot. t. 119. 1805.

Terrestrial herbs, up to 60 cm high. Leaves narrowly spathulate. Peduncles twining and interlacing, bearing several flowers. Corolla blue-violet, reticulated with pale blue and white; upper lip obovate, lower suborbicular. Seeds rhomboid, reticulate.


Terrestrial herbs, up to 35 cm high. Leaves linear, up to 10 × 1 mm. Traps globose, 0.5 1.0 mm long. Peduncles capillary, bearing 1 8 distant flowers. Corolla 5 10 mm long, upper lip oblong, lower suborbicular, 5 7 mm long. Seeds reticulate.


31. GESNERACEAE

(R. Saran)

Didymocarpus Wall.


Pubescent annual herbs up to 10 cm high. Stem curved, having one leaf at its tip. Leaf sessile, elliptic, cordate, 1.5 10.0 × 1.8 6.0 cm;
calyx 5 partite, ca 5 mm long; corolla tubular, white. Capsules up to 18 mm long.

In miscellaneous forests; 500 m.

Fl. & Fr.: September.

RAINANDGAON: Mukhlaighat.

82. BIGNONIACEAE
(D. M. Verma)

(Jacaranda mimosaefolia D. Don, Kigelia africana (Lamk.) Benth. (K. pinnata DC.), Millingtonia hortensis L. f., Spathodea campanulata P. Beauv. and Tecoma stans (L.) H.B.K. are commonly planted along roadsides and in gardens).

1a. Leaves twice or thrice pinnate. Flowers 7-10 cm long.
Capsules sword-like

... Oroxylum 1

1b. Leaves once pinnate. Flowers 2-3 cm long. Capsules cylindrical

... Stereospermum 2

I. OROXYLUM Vent.


Sparingly branched deciduous trees with erevish stem. Petioles 0.5-1.5 m long; leaflets ovate-oblong, 4-11 × 3-9 cm, acuminate, viscid hairy. Racemes up to 1 m long. Calyx 2-4 cm long, purplish brown, almost woody; corolla red-purple, crisped. Capsules pendulous, rather woody, ca 60 × 7 cm, ultimately black; seeds winged.

In mixed forests; 400 m.


2. STEREOSPERMUM Cham.

1a. Leaves and inflorescence viscid, hairy by capitulate-glandular hairs. Corolla dull purple, yellow streaked within; filaments glabrous. [Capsules tereete or faintly 3-angled, 10-20 mm across

... S. chelomoides 1
1b. Leaves and inflorescence glabrous or puberulous. Corolla yellowish red streaked within; filaments hairy at the base. Capsules somewhat 4 angled, 5-7 mm across ... **S. colais** 2


Large deciduous trees. Leaves 30 50 cm long; leaflets 3 4 pairs, obovate oblong, 5 23 × 3 10 cm, viscid hairy, glabrescent, entire or denticulate. Inflorescence up to 25 cm across. Flowers 2 3 cm long, fragrant. Capsules 15 25 (-45) cm long; seeds winged, *ca* 35 mm long.

Common in mixed and sal forests; 350 500 m.

**Fl.** : April; **Fr.** : June, January.


Medium sized deciduous trees with greyish black bark. Leaves 20 40 cm long; leaflets 3 6 pairs, elliptic oblong, 5 15 × 2 6 cm, caudate acuminate, pinkish green when young. Inflorescence up to 40 cm long. Flowers *ca* 3 cm long; calyx purple. Capsules 8 45 cm long; seeds winged, *ca* 2 cm long.

On hill slopes in mixed forests; 300 400 m.

**Fl.** : June; **Fr.** : August.

**RAIPUR** : Dhamtari, Gariaband.

83. **PEDAVITACEAE**

(M. I. Hanfi)

1a. Flowers in terminal racemes. Fruits with two apical hooks ... **Marataia** 1

1b. Flowers solitary axillary. Fruits apiculate ... **Sesamum** 2
1. **Martynia L.**


Perennial viscous hairy herbs 0.5 - 2.0 m high. Leaves ovate orbicular, 20 - 45 cm across, dentate; petiole fistular. Flowers mauve with deep purple blotches on the inside of the corolla lobes; calyx and corolla glandular pubescent. Fruit ovoid, green, drying black.

In wastelands; 300 - 350 m.

*Fl. & Fr.*: August - November.

**DURG**: Balod. **RAIPUR**: Dhamtari. **RAJNANDGAON**: Singhadi.

2. **Sesamum L.**


Annual glandular pubescent herbs, 50 - 70 cm high. Lower leaves opposite, 3 foliolate or palmatisect; higher ones ovate lanceolate or oblong. Flowers white, pedicels with a pair of yellow glands at the base. Fruits 1.5 - 3.0 cm long, apiculate; seeds white, brown or black, smooth or rugose.

Cultivated for its oil yielding seeds, sometimes found as escape; 300 - 500 m.

*Fl. & Fr.*: September - October.

**RAIPUR**: Dhamtari. **RAJNANDGAON**: Baghnadi, Deopura.

84. **ACANTHACEAE**

(D. M. Verma & R. Prasad)

1a. Climbers. Leaves palmately nerved. Calyx many toothed

--- Thunbergia 23

1b. Herbs or shrubs. Leaves pinnately nerved. Calyx 4 - 5 - lobed.

2a. Calyx 4 - lobed.

3a. Stamens 2, staminodes 1 - 2, or absent.

4a. Flowers more than 2 cm long

--- Bapierta 3

4b. Flowers less than 1 cm long.
5a. Capsules four-seeded; seeds borne on retinacula. ... Justicia 13

5b. Capsules several-seeded; seeds not borne on retinacula. ... Nelsonia 15

3b. Stamens 4, staminodes absent.

6a. Corolla with a spreading 3-lobed lower lip, upper lip obsolete; anther 1-celled. ... Blepharis 4

6b. Corolla 2-lipped, or lobes 5, subequal; anther 2-celled.

7a. Corolla distinctly 2-lipped, lobes in bud contorted. ... Hygrophiila 12

7b. Corolla not distinctly 2-lipped, lobes in bud imbricate. ... Barleria 3

2b. Calyx 5-lobed.

8a. Stamens 2, staminodes 1-2, or absent.

9a. Corolla - lobes in bud contorted. ... Eranthemum 8

9b. Corolla - lobes in bud imbricate.

10a. Anther cells inserted at the same level. Capsule cells three-many-seeded. ... Andrographis 2

10b. Anther cells inserted at different levels. Capsule cells 1-or 2-seeded.

11a. One or both the anther cells spurred at the base.

12a. Shrubs. Inflorescences all axillary. Flowers on 25 mm long ... Adhatoda 1

12b. Herbs or shrubs. Inflorescences, at least most of them, terminal. Flowers 5-15 mm long.

13a. Shrubs or under shrubs. Bracts all linear. Calyx - lobes subequal. ... Gendarussa 10

13b. Plants not as above.

14a. Calyx lobes subequal. Bracts, at least those flowering, broadly ovate - obovate or suborbicular, conspicuously white at least of margin. ... Rungia 22
14b. Posterior calyx-lobe usually little developed. Bracts all linear-lanceolate, or if obovate-suborbicular then not scarious - margined ... \textit{Justicia} 13

11b. Anther cells not spurred at the base.

15a. Flowers white, 2.5 - 3.5 cm long ... \textit{Rhinacanthus} 20

15b. Flowers rose or blue-purple, 1.0 - 1.3 cm long.

16a. Cymules in dense clusters ... \textit{Diciptera} 5

16b. Cymules in lax panicles ... \textit{Peristrophe} 17

8b. Stamens 4, staminodes absent.

17a. Corolla-lobes in bud imbricate ... \textit{Lapidagathis} 14

17b. Corolla-lobes in bud contorted.

18a. Capsule cells one - two - seeded.

19a. Flowers ca 5 mm across, white; corolla tube very slender, scarcely widening above ... \textit{Phaulopsis} 19

19b. Flowers 10 - 20 mm across, blue-purple or white; corolla tubular ventricose.

20a. Flowers in 3 - 10 cm long spikes; anther cells mattaceous at the base ... \textit{Petalopta} 16

20b. Flowers in clusters or contracted cymes or spikes; anther cells spurred at the base.

21a. Flowers 1.5 - 2.0 cm long, blue purple; bracteoles subulate ... \textit{Dyschoriste} 7

21b. Flowers 3.0 - 4.0 cm long, white; bracteoles large, ovate \textit{Petalidium} 18

18b. Capsule cells three - or more - seeded.

22a. Corolla 2-lipped, upper lip erect, lower lip reflexed - patent or reflexed ... \textit{Hygrophila} 12

22b. Corolla not 2-lipped, lobes all erecto-patent.

23a. Flowers 2 - 4 cm long.

24a. Bracteoles foliaceous. Capsules clavate, with a solid base, bearing seeds only in the upper part ... \textit{Dipteracanthus} 6
24b. Bracteoles narrow. Capsules linear, without a solid base, bearing seeds throughout

23b. Flowers ca 1 cm long.

25a. Plants almost bristly with stiff hairs. Leaves entire or crenulate. Heads with 4 large reticulate outer bracts and oblong spatulate inner bracts; bracteoles linear or absent. Capsules ca 1 cm long

25b. Plants not as above

**1. Adhatoda Mill.**


Dense evergreen shrubs. Leaves elliptic lanceolate, acuminate, glabrous when mature. Flowers in short, bracteate, pedunculate spikes, clustered towards the ends of the branches; bracts foliaceous; corolla white with some rose purple lines and dots in the throat. Capsules clavate, 2–3 cm long.

In wastelands; 400 m.

Fl.: January.

RAIPUR: Sitanadi.

Leaves medicinal.

2. **Andrographis Wall. ex Nees**

1a. Hirsute herbs. Flowers all sessile

1b. Glabrous or puberulous herbs. Flowers all or mostly pedicelled


Annual white hairy herbs. Leaves sessile, oblong-elliptic, 2–8 cm long. Flowers white, streaked with purple; calyx ciliate; corolla glan-
dulcar hairy outside; anthers dark purple. Capsules elliptic lanceolate, hairy; seeds rugose.

In wastelands; 300 400 m.

*Fl. & Fr.* : August January.

**Durg** : Bordih. **Raipur** : Dugli, Rajim.


Erect annual herbs, 30 90 cm high. Stems quadrangular. Leaves linear lanceolate. Flowers in axillary and terminal racemose panicles, or rarely solitary, axillary; corolla 2 lipped, glandular pubescent outside, white with deep pink or purplish violet markings inside at the base of the lower lip. Capsules linear oblong; seeds rugose.

In wastelands; 400 500 m.

*Fl. & Fr.* : April June.


Roots and leaves medicinal.

3. **Barleria** L.

1a. Plants armed with 1 - 2 cm long spines. Flowers yellow ... *B. prioritis* 2

1b. Plants unarmed. Flowers blue - mauve (or white).

2a. Spikes secund. Bracteoles ovate - lanceolate. Outer sepals ciliate on the margins ... *B. strigosa* 3

2b. Spikes not secund. Bracteoles linear. Outer sepals spinulose - dentate ... *B. cristata* 1


Undershribs 0.3 1.0 m high. Leaves elliptic or oblong lanceolate. Flowers in axillary and terminal, short head like spikes. Bracts absent; bracteoles 10 - 15 mm long. Calyx 4 partite nearly to the base, the two outer sepals lanceolate; corolla deep purple or pinkish purple. Capsules ellipsoid, 4 seeded.

Roadsides & forest clearings; 400 550 m.

*Fl. & Fr.* : September June.
DURG: Budhbum. RAIPUR: Singhpur, Sitanadi, Taurenga.
RAJNANDGAON: Baghnadi.

Roots and leaves medicinal.


A much branched prickly shrub or undershrub; young shoots pubescent. Leaves elliptic, bristle tipped, short petioled. Flowers terminally spicate or sometimes 1 – 2 in lower axils. Bracts 1 – 2 cm long. Corolla yellow. Capsules ovoid, pointed; seeds 2, ca 6 mm diam.

In wastelands; 300 m.

Fl.: January.

RAIPUR: Raipur.
Leaves medicinal.


Undershrubs, young branches fulvous strigose. Leaves ovate, acuminate. Calyx densely strigose, margins denticulate and ciliate; corolla 2.5 – 5 cm long, blue. Capsules ca 1.8 cm long; 4-seeded; seeds silky hairy.

In sal and miscellaneous forests; sometimes road sides; 450 – 550 m.

RAIPUR: Sitanadi, Taurenga.

4. BLEPHARIS JUSS.

1a. Leaves petiolate, acute. Flowers in clusters of 2 – 3 ... B. maderaspatensis 1
1b. Leaves sub-sessile, obtuse. Flowers solitary ... B. repens 2


Prostrate perennial herbs. Stems wiry, divaricately branched. Leaves whorled, elliptic, 2 larger and 2 smaller at each node. Corolla pale blue with a yellow spot on the anterior lip. Capsules broadly ellipsoid, ca 7 mm long; seeds 2, densely papillose.

In wastelands; 500 m.

Fl. & Fr.: November.

RAJNANDGAON: Deopura.

Prostrate herbs. Stem wiry, with patent hairs. Leaves whorled, 4 at each node, oblong, obovate, slightly succulent, mucronate. Flowers sessile, solitary, axillary. Corolla blue or violet. Capsules compressed, elliptic, enclosed by accrescent calyx.

In wastelands; 300-450 m.

*Fl. & Fr.*: September-July.

RAIPUR: Raipur, RAJNANDGAON: Baghni.

5. *DICLIPTERA JUSS.*

1a. Flowers 12-15 mm long. Cymule bracts mostly ovate, glandular-pubescent.  

   *D. roxburghiana* 1

1b. Flowers ca 6 mm long. Cymule bracts oblanceolate, densely white-ciliate.

   *D. verticillata* 2


Herbs, up to 1 m high. Leaves elliptic, up to 6 cm long, puberulus; petiole ca 12 mm long. Flowers numerous, in small sessile axillary clusters; bracts unequal; ca 12 mm long; corolla rose-purple, ca 18 mm long. Capsules ca 18 mm long; seeds verrucose.

In wastelands and rock crevices; 500 m.

*Fl. & Fr.*: May-June.

RAIPUR: Siranadi.


Extensively branched ascending annual herbs, 15-45 cm high. Leaves ovate or elliptic, acuminate, liniolate, glabrous or slightly hairy; petiole 10-35 mm long. Flowers in small, sessile, axillary clusters; corolla hairy outside. Capsules compressed, elliptic, hairy at the tip; seeds echinulate.

In wastelands; 400 m.

*Fr.*: April.

DURG: Buddhum.
6. DIPTERACANTHUS Nees

1a. Flowers 2 - 3 cm long. Corolla (outside) and capsules pubescent ... \( D. \) prostratus 1

1b. Flowers 4 - 5 cm long; corolla (outside) and capsules glabrous ... \( D. \) suffruticosus 2


Prostrate or decumbent. Stem 15 - 50 cm long, rooting at lower nodes. Leaves elliptic ovate, acute. Flowers almost sessile, usually solitary, pale mauve violet; bracteoles 2, broadly elliptic or elliptic oblong, 1 - 2 cm long. Capsules clavate, 15 - 20 mm long; seeds 16 - 20, ca 3 mm diam.

In wastelands and sandy river beds; 400 - 550 m.

\textit{Fl.} & \textit{Fr.}: April - June.

DURG: Baddhu, RAIPUR: Sitanadi.


Erect pubescent perennial herbs, 25 - 60 cm high. Roots stout, often with fusiform swellings. Leaves oblong or broadly elliptic, rounded or obtuse at the tip. Flowers solitary, terminal, subsessile, white; calyx lobes ca 6 mm long. Capsules oblong, ca 35 mm long; seeds 12 - 14.

In wastelands and forest floors; 350 - 550 m.

\textit{Fl.} & \textit{Fr.}: August - June.

RAIPUR: Dhamtari, Gariaband, Taurenga.

7. DYSCHORISTE Nees

1a. Calyx 6 - 8 mm long. Corolla 8 - 10 mm long ... \( D. \) erecta 1

1b. Calyx 12 - 15 mm long. Corolla 18 - 20 mm long ... \( D. \) vagans 2

Perennial herbs, branches usually prostrate and rooting at the nodes. Leaves broadly elliptic or obovate. Flowers subsessile, in axillary clusters, pink, violet; bracts absent, bracteoles long, linear. Calyx 6-8 mm long, divided more than half way down. Capsules ca 1 cm long.

In wastelands; 300 m.

Fl. & Fr.: April.

DURG: Durg.


Undershubs, up to 1 m high; branches strigulose. Leaves lanceolate or ovate, pale beneath, hispidulous above. Clusters or cymes glandular-pubescent, often few-flowered; bracts and bracteoles linear. Calyx with sub equal filiform tipped teeth & stalked glands; corolla 18-20 mm long.

In forest floors and along drains; 350-450 m.

Fl. & Fr.: September-January.

RAIPUR: Dugli, Singhpur. RAJNANDGAON: Salewara.

8. ERANTHEMUM L.


Stout herbs, ca 1 m high. Leaves ovate, acuminate. Spikes solitary, oblong, very dense, 3-8 cm long; bracts glandular-pubescent, ca 2.5 cm long; bracteoles smaller, linear-lanceolate. Calyx 6-9 mm long; corolla ca 3 cm long, bluish-purple or lilac. Capsules 12-16 mm long.

In miscellaneous forests; 300-500 m.

Fl. & Fr.: October-April.


9. GANTELBUA Bremek.

Procumbent or diffuse hairy herbs. 25 - 60 cm high. Leaves short petioled, spatulate oblong, subentire, hispid. Heads many flowered, densely clothed with white and yellowish brown hairs; bracts oblong or spatulate, 18 - 25 mm long. Calyx ca 12 mm long; corolla ca 16 mm long, blue, tube slender. Capsules ca 12 mm long, 6 - 8 seeded.

In wastelands; 300 m.

Fl. & Fr.: February.

RAIPUR - Nagpur Road.

10. Gendarussa Nees


Shrubs, 0.6 - 1.3 m high. Leaves linear lanceolate, subacute. Flowers in interrupted 4 - 8 cm long terminal or axillary spikes; corolla 12 - 15 mm long, rose, white purple or pinkish with deep reddish violet spots within the throat, tube narrow. Capsules clavate, ca 12 mm long.

Commonly planted as hedge; 300 - 500 m.

Fl.: January.

RAIPUR: Raipur, Sitanadi.

11. Hemigraphis Nees

1a. Leaves 1.0 - 2.5 cm long. Corolla tubular - ventricose

1b. Leaves 3.5 - 10.0 cm long. Corolla tubular - funnel - shaped


Prostrate, softly hairy or villous much branched herbs. Leaves ovate or elliptic, acute or obtuse. Heads 2 - 6 flowered; bracts 10 - 15 mm long. Calyx ca 8 mm long; Corolla 10 - 15 mm long, ashy grey or greyish violet with deep violet throat. Capsules linear cylindrical, ca 1 cm long, ca 12 seeded.

In wastelands; 550 m.

Fl.: April.

RAINANDGAON: Rengakhar.

Annual hairy herbs, up to 60 cm high. Leaves ovate oblong, acuminate, 2-11 cm long. Heads usually terminating small axillary branches; bracts ovate or elliptic, pellucid. Corolla tube sometimes yellow, lobes rounded, blue; longer filaments bearded with papillose hairs, shorter glabrous. Capsules pubescent, 6-seeded.

In miscellaneous forests; 350-550 m.

*Fl. & Fr.*: October January.

RAIPUR: Dugli, Singhapur, Taurenga.


1a. Flowers in whorls.

2a. Plants armed with axillary whorls of spines ... *H. auriculata* 1

2b. Plants unarmed ... *H. salicifolia* 4

1b. Flowers in spikes.

3a. Flowers purplish blue. Retinaculum conical ... *H. heinsoi* 2

3b. Flowers white. Retinaculum hooked ... *H. polyrrhiza* 3


Stout herbs, up to 70 cm high, with axillary whorls of 15-30 mm long spines. Leaves subsessile, linear-lanceolate, 4-8 cm long. Flowers about 8 in each whorl; corolla 30-35 mm long, blue-purple. Capsules linear-oblong, ca 8 mm long, pointed, 4-8-seeded.

Along ponds & ditches; 300-750 m.

*Fl. & Fr.*: September June.

DURG. Durg. RAIPUR: Gariaband, Raipur. RAJNANDGAON: Chipli.

Erect or decumbent succulent herbs, 30–45 cm high. Leaves oblong-ovate, 2–4 cm long, entire or crenate. Bracts elliptic, ovate, cordate, ca 6 mm long. Flowers purplish blue; sepals linear, pubescent; corolla ca 8 mm long. Capsules ca 5 mm long.

In cultivated fields; 300 m.

Fl. & Fr.: January

RAIPUR: Dhamtari.


Erect or procumbent herbs, rooting at the lower nodes. Leaves ovate or elliptic oblanceolate. Flowers in dense terminal spikes; bracts foliaceous, bracteoles ciliate, marginated. Calyx ca 4 mm long; corolla ca 7 mm long, white, pink or blue. Capsules ca 7 mm long, ca 20 seeded.

Along drains; 300–550 m.

Fl. & Fr.: October–April.

DURG: Rajhara dhalli. RAIPUR: Raipur. RAJNANDGAON: Rengakhar


Erect or ascending rather stiff herbs, 30–90 cm high. Leaves narrowed at both the ends. Bracts ovate or elliptic, 6–8 mm long. Calyx 8–12 mm long, corolla 12–16 mm long, pale purple; stamens 4. Capsules 12–16 mm long. 20–28 seeded.

Near ponds; 300 m.

Fl.: September.


13. *Justicia* L.

1a. Calyx lobes 5, subequal.

2a. Suffruticose. Bracts ovate, white with green nerves ...

2b. Herbs. Bracts obovate, uniformly green

J. betonica 1

J. glauca 3
1b. Calyx lobes 4, sometimes with an additional tooth.

3a. Bracts distinctly longer than the sepals. Capsules constricted between seeds.

4a. Hairs on the bracts and bracteoles jointed. Capsules obtuse, mucronulate  
   \[ J. \text{ simplex} 7 \]

4b. Hairs on the bracts and bracteoles not jointed. Capsules sharply pointed  
   \[ J. \text{ procumbens} 4 \]

3b. Bracts shorter or as long as the sepals. Capsules not constricted.

5a. Bracts as long as the sepals, obtuse  
   \[ J. \text{ quinqueangularis} 6 \]

5b. Bracts shorter than the sepals, acute.

6a. Bracts glabrous except for a tuft of hairs at the apex. Capsules glabrous  
   \[ J. \text{ diffusa} 2 \]

6b. Bracts hairy throughout. Capsules puberulous  
   \[ J. \text{ prostrata} 5 \]


Undershubs with several ca 1 m high pubescent branches, swollen above the nodes. Leaves ovate lanceolate, 4 10 x 2 4 cm. Spikes terminal, solitary or several panicked; bracts and bracteoles imbricating, up to 15 mm long, white with green nerves. Flowers small, white with red purple dots.

In wastelands; 300 m.

Fl. & Fr.: October.

RAIPUR: Raipur.


Diffuse or erect profusely branched herbs. Stems 4 angled. Leaves opposite, ovate or elliptic lanceolate, 2 5 cm long, acute or acuminate. Flowers pink or pale purple, in erect axillary and terminal spikes. Bracts linear lanceolate, shorter than the calyx. Capsules oblong, glabrous.

In wastelands and miscellaneous forests; 300 - 450 m.

Fl. & Fr.: August June.


Erect or somewhat diffuse herbs, 30–60 cm high. Branches purple, pubescent with bulbous based hairs. Leaves ovate elliptic, 2–8 cm long. Spikes terminal, lax, solitary flowers often scattered in the distant lower axils. Sepals linear, pubescent or glabrous; corolla ca 8 mm long. Capsules obovate, 4 seeded.

In forest clearings and rock crevices; 350–500 m.

Fl. & Fr.: August–October.

RAIPUR: Dhamtari, Taurenga.


Slender annual herbs, often rooting at the lower nodes with zigzag branches. Leaves petioled, elliptic or lanceolate, 15–30 mm long, hairy or glabrate. Spikes cylindrical, dense, hisrate. 2–6 cm long; bracts linear lanceolate, acute. Sepals linear lanceolate, hisrate; corolla pink or blue.

Roadsides; 750 m.

Fl. & Fr.: September.

RAJNANDGAON: Chilpi.


Slender herbs with long spreading branches from a rootstock. Leaves elliptic-ovate or orbicular, up to 18 mm long. Flowers in axillary and terminal, up to 6 cm long spikes; bracts scabrous. Corolla ca 7 mm long, pink or white, with purple spots. Capsules puberulous; seeds tuberculate, black.

In wastelands; 300 m.

Fl. & Fr.: April.

DURG: Durg.


Erect or ascending herbs. Stem 4–5 angled. Leaves in distant pairs, linear or linear lanceolate, 2–8 cm long. Spikes terminal, rather lax; bracts linear, glabrous. Corolla white with purplish blotch. Capsules oblong, pointed.

In wastelands; 300–800 m.
Fl. & Fr.: August April.


Ascending or prostrate herbs. Branches quadrangular, grooved, hairy, swollen above the nodes. Leaves variable, 2–5 cm long. Flowers in dense cylindrical terminal or axillary spikes; bracts and bracteoles membranous, margined, longer than the calyx. Calyx lobes unequal, ciliate; corolla pale purple or whitish. Capsules elliptic, pubescent at the tip.

In wastelands; 400 m.

Fl. & Fr.: August September.

DURG: Balod.

14. LEPIDAGATHIS Willd.

1a. Flower heads aggregated at the base of the stem. Capsules 2-seeded.

2a. Bracts and calyx-lobes with dense soft silky hairs, no stiff ones .......................... L. cristata 1

2b. Bracts and calyx-lobes glabrescent but ciliate with long stiff white hairs .......................... L. hamiltoniana 2

1b. Flower heads terminal and axillary. Capsules 4-seeded .................................. L. incurva 3


Perennial herbs, 15–45 cm high, with a woody rootstock. Leaves linear oblong, lineolate, up to 3 × 0.5 cm. Bracts and calyx-lobes spinous-tipped. Flowers white with purple brown spots, ca 8 mm long; lower calyx-lobes joined to about half way up. Capsules grooved.

In wastelands; 300 m.

Fl. & Fr.: October.

RAJNANDGAON: Singhari.

2. L. hamiltoniana Nees in Wall. Pl. As. Rar. 3: 96. 1832.

Erect or diffuse herbs. Leaves linear or narrowly oblong, nearly glabrous. Spikes aggregated at the base of the stem in globose heads. Bracts
long, tapering upwards with white hairs on their margins. Calyx lobes membranous upwards, reddish when young; corolla with adpressed straight white hairs, blue-mauve or white, with brown spots.

In wastelands and miscellaneous forests: 300-500 m.

*Fl. & Fr.*: October-June.

**RAIPUR**: Pithora, Raipur, Taurenga.


Stems 30-60 cm high, 2-4 ribbed. Leaves petiolated, variable in shape, lower ovate, upper narrower. Bracts lanceolate, acuminate mucronate, ca 12 mm long. Calyx linear-lanceolate, outer lobes longest; corolla ca 6 mm long, white with brown spots on the palate. Capsules 4 seeded.

In forest clearings; 500-700 m.

*Fl. & Fr.*: January-June.

**RAIPUR**: Khallari, Sitanadi. **RAJNANDGAON**: Malaidah, Renganagar.

15. **NELSONIA R. Br.**


Herb with trailing branches, young parts more or less densely clothed with white hairs. Leaves elliptic oblong, lower 10-20 cm long, with long petioles. Spike: 1-5 cm long, grey woolly; bracts 4-6 mm long; bracteoles represented by two opposite tufts of hairs. Calyx strongly nerved; corolla purplish, ca 6 mm long. Capsules aovoid-ovonic, 8-12 seeded.

In wastelands and river beds: 300-550 m.

*Fl. & Fr.*: April-June.

**RAIPUR**: Kasdol, Khallari. **RAJNANDGAON**: Baghnadi.
16. PERILEPTA BREMEEK.


Small shrubs. Branches divaricate, quadrangular. Leaves often very unequal, sessile, auriculate, oblong lanceolate, serrulate. Flowers in compact, strobiliform, axillary and terminal spikes; bracts obovate, broader than long, imbricate, pubescent, margins ciliate. Corolla blue, 20-25 mm long.

In miscellaneous forests; 400 m.

Fl. & Fr.: January.

RAIPUR: Singhpur.

17. PERISTROPHE NEES


Annual erect or suberect hispid herbs, with quadrangular branches. Leaves petiolated, ovate, lanceolate. Flowers in lax panicles, bracts 2, unequal, linear. Calyx lobes 5, linear lanceolate with ciliate margins; corolla 2 lipped, ca 12 mm long, pink. Capsules oblong, ca 1 cm long.

In wastelands, under shade; 300 m.

Fl. & Fr.: January.

RAIPUR: Raipur.

Plants medicinal.

18. PETALIDIDIUM NEES


Straggling shrubs. 0.6 1.5 m high with straw coloured twigs. Leaves on the main stem petiolated, broadly ovate, 5-10 cm long, crenate
serrate. Bracts absent; bracteoles ovate elliptic. Calyx glandular-hairy; corolla narrowly campanulate, up to 35 mm long, yellowish white, pale blue or white. Capsules ca 12 mm long.

In miscellaneous forests: 450–600 m.

Fl & Fr: January–May.

RAIPUR: Borai, Sitanadi. RAJNANDGAON: Baghnaidi.


Prostrate or decumbent hairy herbs. Stem 20–80 cm long. Leaves ovate or elliptic, 2–8 cm long, narrowed at both ends; petioles 0.5–2.5 cm long. Flowers in terminal spikes, or sometimes clustered in lower axils also. Calyx ciliate and glandular hairy. Corolla 7–9 mm long, white. Capsules 5–6 mm long, 4-seeded.

In miscellaneous forests: 500 m.

Fl: January.

RAIPUR: Sitanadi.

20. Rhinacanthus Nees


Undershrubs, 0.8–1.5 m high, young shoots pubescent. Leaves elliptic or elliptic lanceolate, 5–10 cm long, margins undulate; petioles 7–15 mm long. Flowers sessile or subsessile, in terminal pubescent panicles. Calyx ca 3 mm long; corolla 2.0–2.5 cm long, white or bluish tinged. Capsules ca 2 cm long, pubescent.
In miscellaneous forests; 500 m.

Fl.: January.

RAIPUR - Sitnadi.

21. RUCELLIA L.

Ruellia tuberosa L. Sp. Pl. 635. 1753.

Annual or perennial herbs, 10–40 cm high, much branched from a rootstock of numerous fleshy tubers. Leaves elliptic or elliptic obovate, apex obtuse or rounded. Flowers in axillary and terminal cymes; calyx 15–20 mm long, glandular; corolla 30–35 mm long, blue. Capsules cylindric, pointed, ca 2 cm long.

In wastelands; 300 m.

Fl. & Fr.: August.

DURG: Durg.

22. RUNGIA Nees

1a. Bracts dimorphic. Flowers 3–5 mm long ... R. pectinata 1

1b. Bracts all similar. Flowers 8–10 mm long ... R. repens 2


Annual procumbent herbs. Leaves sessile or petioled, lanceolate or elliptic. Spikes dense; flowering bracts obovate orbicular, ca 4 mm long, broadly scarious-margined, barren bracts oblong lanceolate, narrowly scarious margined. Calyx lobes ciliate margined; corolla light blue with two rows of darker patches in the lower lip.
FLORA OF RAIPUR

In wastelands and miscellaneous forests; 300 - 450 m.

Fl. & Fr.: January April.


Diffuse or procumbent annual herbs; branches tetragonous. Leaves subsessile, elliptic lanceolate or oblong. Spikes erect, pubescent, 1 - 3 cm long; bracts all ovate orbicular, broadly scarious margined. Calyx ca 4 mm long, pubescent; corolla pink or rose with deep red or purple spots in the throat of the lower lip. Capsules ovoid oblong, compressed, 4 - 5 mm long.

In roadside ditches; 300 - 500 m.

Fl. & Fr.: November January.

RAIPUR: Raipur. RAJNANDGAON: Deopura.

23. THUNBERGIA Retz.


Slender climbers. Leaves oblong or deltoid-ovate, 5 - 8 cm long, rounded, cordate or hastate at the base, entire or with a few basal angular apiculate lobes. Flowers solitary or paired in the leaf axils; calyx pubescent; corolla ca 4 cm long, pure white. Capsules 18 - 25 mm long; seeds rugose.

In sal forests; 450 - 500 m.

Fl.: November January.

RAIPUR: Sitanadi. RAJNANDGAON: Deopura.
85. VERBENACEAE
(D.M. Verma & A. Kumar)

1a. Leaves digitately 3-5-foliolate

1b. Leaves simple.

2a. Flowers in capitate cymes, subtended by a clusture of
foliaceous bracts; corolla several-lobed.

2b. Flowers variously arranged without any clusture of
foliaceous bracts; corolla 4-5-lobed or -toothed.

3a. Flowers in spikes or racemes.

4a. Flowers somewhat immersed into the
rhachis

4b. Flowers not immersed into the rhachis.

5a. Flowers in lax terminal and axillary
racemes

5b. Flowers in dense capitate or cylindric
spikes.

6a. Rambling or climbing shrubs. Leaves
ovate

6b. Creeping herbs. Leaves obovate or
spathulate

3b. Flowers in cymes, the cymes frequently disposed
in panicles.

7a. Fruits enclosed in persistent bladder like
calyx

7b. Fruits not enclosed in bladder like calyx.

8a. Flowers less than 5 mm long

9a. Flowers distinctly zygomorphic; stamens didynamous

9b. Flowers almost regular; stamens not
didynamous
8b. Flowers more than 10 mm long.

10a. Stamens longer than the corolla and much exerted, the exerted part more than 1 cm long ... *Clerodendrum* 2

10b. Stamens shorter than to as long as the corolla, scarcely exerted ... *Cmella* 4

1. **Callicarpa L.**


Trees up to 10 m high; branchlets tomentose. Leaves opposite, elliptic or ovate oblong, 16–30 × 7–15 cm, sub acuminate, glabrous above, tomentose beneath, margin entire. Flowers lilac purple, in dichotomous cymes. Drupes globose, 2–3 mm across, purple; seeds more or less oblong, pale yellow.

In miscellaneous forests; 450 m.

*Fr.* : September.

RAJNANDGAON : Salewara.

2. **Clerodendrum L.**

1a. Corolla tube over 5 cm long ... *C. indicum* 1

1b. Corolla tube less than 3 cm long.

2a. Leaves ovate - rhomboid. Flowers ca 2 cm across; calyx lobes triangular, caudate - acuminate ... *C. phlomoides* 2

2b. Leaves narrowly elliptic - oblong. Flowers ca 3 cm across; calyx lobes very shallow, obtuse - acute ... *C. serratum* 3

Shrubs, 1 - 2 m high. Stems fistular, quadrangular. Leaves subsessile, in whorls of 3 - 5, elliptic lanceolate, 10 - 20 × 1 - 5 cm. Flowers in 20 - 40 cm long terminal panicles, white. Drupes globose, blue, subtended by red enlarged calyx; seeds oblong.

River banks, on sandy soil; 550 m.

Fl.: June; Fr.: October.

RAIPUR: Taurenga.


Shrubs or small trees with pubescent branches. Leaves ovate rhomboid, 3 - 6 × 3 - 4 cm, subentire or crenate dentate. Flowers in dense axillary dichotomous cymes forming a subglobose bunch, white or pinkish.

In wastelands and as hedges; 300 m.

Fl. & Fr.: October - February.

RAIPUR: Raipur.

3. C. serratum (L.) Moon, Cat. 46. no. 382. 1824. Volkameria serrata L. Mant. 90. 1771. 'Bharangi, Duma'.

Shrubs, 1 - 3 m high. Stem quadrangular. Leaves subsessile, opposite or ternate, elliptic or ovate, 10 - 25 × 5 - 10 cm. Flowers in 10 - 35 cm long terminal pyramidal panicles, blue. Drupes obovoid, up to 7 mm across; seeds oblong.

On forest margins; 350 - 800 m.

Fl.: August - September; Fr.: October.

DURG: Rajhara dhalli. RAIPUR: Chhaura, Sitanadi. RAJNANDGAON: Chilpi.

3. DURANTA L.

Armed shrubs, 1-2 m high. Leaves opposite or verticillate, obovate elliptic, 1.5 x 1.2 cm, obtuse, entire or serrate. Flowers in 4-10 cm long drooping racemes, blue or violet; calyx pubescent. Drupes globose, 4.5 mm across, completely enclosed in accrescent, beaked calyx, orange; seeds oblong.

Usually planted as hedge, sometimes found as escape; 300-400 m.

Fl. & Fr.: August.

RAIPUR: Dhamtari, Raipur.

4. Gmelina L.

Gmelina arborea Roxb. Pl. Corom. 3: 42. t. 246. 1819. ‘Kamhar, Sewan.’

Trees, up to 15 m high; bark smooth; young branches yellowish tomentose. Leaves opposite, ovate, 5 x 20 x 5 x 18 cm, acuminate, fulvous-tomentose beneath. Flowers in 10-25 cm long fulvous paniculate cymes, yellow. Drupes obovoid, 1-2 cm long, orange yellow.

In sal forests; 350-500 m.

Fl. & Fr.: April - June.

RAIPUR: Kasdol Deori. RAINANDGAON: Baghnadi.

5. Lantana L.


Prickly rambling or climbing shrubs up to 2.5 m high. Leaves opposite, ovate, 2-9 x 1-6 cm, base cuneate, rounded or cordate. Flowers in pedunculate capitate spikes; all pink or orange, or central
ones yellow or orange and peripheral ones pink. Drupes globose, 2-3 mm across, black.

On roadsides and forest margins, becoming a serious pest; 250-550 m.

Fl. & Fr.: April June.

DURG: Rajhara dhalli. RAIPUR: Raipur, Sitanadi.

6. Phyla Lour.


Perennial creeping herbs, rooting at the nodes. Leaves subsessile, opposite, obovate or spatulate, 0.5-2.8 × 0.2-1.2 cm, serrate in upper part. Flowers in pedunculate, 5-15 mm long cylindrical spikes, white or pink. Drupes globose; seeds plano convex, yellow.

In moist wastelands; 250-450 m.

Fl. & Fr.: April June.


7. Premna L.

1a. Trees

1b. Herbs with leaves appressed to the ground

Trees. Leaves usually ovate, cordate, 17\(\times\)30 \(\times\)10 20 cm, coarsely toothed, minutely pubescent on the nerves beneath. Fruits globose, ea 4 mm across with 3 4 cells, seated on the enlarged calyx.


Perennial herbs up to 10 cm high; rootstock woody. Leaves pressed to the ground, sessile, in 2 - 3 close pairs, elliptic-obovate or sub orbicular, 3 16 \(\times\)1 15 cm, serrate crenate in the upper part. Flowers in terminal corymbus, white. Drupes globose, 4 5 mm across, black; seeds tuberculate, yellow.

In sal forests; 500 - 650 m.

*Fl. & Fr.*: June - August.

RAIPUR: Borai, Sitanadi.

8. *STACHYTSARPEA* Vahl


Herbs or undershrubs, up to 1 m high; young branches pubescent. Leaves elliptic ovate, 1.0 6.0 \(\times\)0.8 3.0 cm, serrate, cuneate at the base. Flowers in terminal, 10 - 25 cm long spikes, violet, becoming white on drying. Bracts acuminate. Fruits linear oblong, ribbed.

In miscellaneous forests: 500 - 600 m.

*Fl. & Fr.*: November - April.

RAJNANDGAON: Chilpi, Deopura.

Symphorema polyandrum Wight, Ic. t. 363. 1840.

Climbing shrubs, up to 2 m high; young branches fulvous - tomentose. Leaves sessile, ovate, 4 - 13 × 3 - 8 cm, dentate, stellately hairy on either sides. Flowers when leafless, white, in capitulate cymes, with an involucre of 6 foliaceous tomentose bracts; calyx tomentose; corolla many - lobed.

In miscellaneous forests; 400 - 450 m.

Fl. & Fr.: April - June.

DURG: Budhbum. RAIPUR: Gariah, RAJNANDGAON: Baghnadi.

10. Tectona L. f.


Deciduous trees, up to 15 m high, young parts tomentose. Leaves opposite, ovate elliptic, 10 - 50 × 5 - 40 cm, stellate - tomentose beneath. Flowers white, in dichotomously branched, 20 - 40 cm long, terminal tomentose panicles. Drupes enclosed in tetragonal inflated calyx.

Commonly planted for its timber, natural regeneration seen at some places; 300 - 500 m.

Fl.: August; Fr.: September - January.

DURG: Balod. RAIPUR: Raipur, Sitanadi. RAJNANDGAON: Baghnadi.

11. Vitex L.

1a. Leaves greyish - white beneath

... V. negundo 2

1b. Leaves green beneath.
2a. Leaves gland - dotted beneath ... *V. peduncularis* 3

2b. Leaves eglandular beneath ... *V. leucoxyylon* 1

1 *Vitex leucoxyylon* L. f. Suppl. 293. 1791.

Trees, up to 3 m high; bark grey, smooth. Leaves 3 - 5 foliolate; leaflets petiolulate, elliptic or lanceolate, 3 10 × 1 - 3 cm, obtuse or acute. Flowers white, in axillary, corymbose cymes. ca 15 mm long, purple, supported on enlarged calyx at the base. Seeds obovate.

In river beds; 400 - 600 m.

*Fl. & Fr.*: May-June.

**RAIPUR**: Pithora, Taurenga.

2 *V. negundo* L. Sp. Pl. 638. 1753. 'Shivari, Negur'.

Shrubs, 1.5 - 3 m high, young branches tomentose; bark grey. Leaves 3 - 5 foliolate; leaflets petiolulate, elliptic or lanceolate. 2 10 × 1 3 cm, acute or acuminate, tomentose, beneath. Flowers blue-purple, in 4 - 20 cm long tomentose panicked cymes. Drupes globose, black.

Along roadsides; 300 - 400 m.

*Fl. & Fr.*: August-November.

**RAIPUR**: Kasdol, Raipur. **RAJNANDGAON**: Taregaon.

Leaves medicinally used.


Trees, up to 10 m high; young shoots pubescent, Leaves 3 - foliolate, petiole often winged in young plants; leaflets petiolulate, lanceolate or elliptic, 8 15 × 3 - 5 cm, yellow gland dotted beneath. Flowers white with a yellow palate, in 12 - 25 cm long panicked cymes. Drupes obovoid.

In miscellaneous forests; 400 m.

**RAIPUR**: Sitanadi.
86. Lamiaceae
(D. M. Verma & V. Chandra)

1a. Calyx - lobes 6 - 10.

2a. Flowers orange - red; bracts and calyx - lobes spinulous

2b. Flowers white or creamy; bracts and calyx lobes not spinulous

1b. Calyx lobes 5, or less.

3a. Calyx bilipped, upper lip entire, lower usually toothed.

4a. Verticillasters congested forming capitate or cylindric spikes.

5a. Spikes solitary, 0.5 - 1.5 cm long. Corolla about as long as the calyx

5b. Spikes several, panicled, 1 - 5 cm long. Corolla about twice as long as the calyx

Antischilus 2

4b. Verticillasters, at least the lower, distantly placed, forming interrupted spikes or racemes.

6a. Fertile stamens 2

6b. Fertile stamens 4.

7a. Stamens declinate.

8a. Lower lip of the corolla navicular, about twice as long as the upper lip

8b. Lower lip of the corolla flat, about as long as the upper lip.

9a. Stigma two - lobed

9b. Stigma entire

Octimum 11

Orthostphon 12

7b. Stamens not declinate

Nepeta 10

3b. Calyx not bilipped, lobes all similar and subequal.
10a. Corolla sub - 2 - lipped or 4 - lobed.

11a. Calyx 5 - rid, lobes ultimately plumose  ...  Colebrookea 4

11b. Calyx 5 - toothed, lobes never plumose.

12a. Inflorescence of panicled subcapitate cymes. Corolla sub - 2 - lipped  ...  Pagostemon 14

12b. Inflorescence spicate. Corolla 4 - lobed  ...  Eusteralis 5

10b. Corolla distinctly 2 - lipped.

13a. Lower lip of corolla entire  ...  Hyptis 6

13b. Lower lip of corolla 3 - rid.

14a. Stamens included  ...  Lomandra 7

14b. Stamens exerted  ...  Anisomeles 3

1. **Acrocephalus** Benth.


Annual herbs, 20 - 30 cm high. Leaves ovate-lanceolate, 2 - 4 cm long, coarsely serrate. Flowers in capitulate-cylindric spikes; calyx pubescent outside; upper lip entire; lower lip with 4 lanceolate teeth; corolla pale purple, lower and upper lips subequal. Nutlets minute, oblong - ellipsoid, compressed.

In mixed forest; 400 - 450 m.

*Fl. & Fr.* : September - October.

**RAIPUR** : Gariaband. **RAINANDGAON** : Baghnadi.
2. *Anisochilus* Wall. ex Benth.


Undershrubs, 30 - 60 cm high. Leaves broadly ovate, 2 - 6 cm long, crenate - serrate. Flowers in dense cylindric spikes; calyx tubular, upper lip ovate, lower lip truncate; corolla mauve coloured, lower lip much longer than the upper lip. Nutlets ovoid subturbicular, ca 1 mm long, glistening brownish black.

In rock crevices; 450 - 550 m.

*Fl.*: October; *Fr.*: January - June.

RAIPUR: Sitanadi, Taurenga.

3. *Anisomeles* R. Br.


Undershrubs, up to 1.5 m high. Stems tetraquetrous. Leaves ovate, 3 - 8 cm long, serrate, hirsute on both the surfaces. Flowers mauve, in axillary dense - flowered whorls and terminal spikes; calyx ca 6 mm long, ciliate. Nutlets ca 2.5 mm long, smooth, shining black.

In sal and miscellaneous forests; 400 - 500 m.

*Fl.* & *Fr.*: September - January.

RAIPUR: Chhoora, Gariaband, Singhpur, Sitanadi. RAJNAND-GAON: Baghmani.

4. *Colebrookea* J. R. Smith

Shrubs, 2 3 m high with whitish branchlets. Leaves opposite or
3 nate elliptic oblong, 10 20 cm long, crenate, white tomentose, strongly
nerved. Flowers small, white, in 5 10 cm long panicled spikes; calyx
villous, with 5 capillary lobes in fruits.

In wastelands; 300 m.

Fl. & Fr.: February.


5. 

Eusteralis Raf.

Eusteralis stellata (Lour.) Panigrahi in Phytologia 32: 474. 1976 ;
Dysophylla verticillata Benth. in Wall. Pl. As. Rar. 1: 30. 1830.

Annual succulent herbs, up to 85 cm high. Leaves verticillate, sessile,
4 - 10 in a whorl, linear, 2 16 cm long, serrate. Flowers in dense terminal
spikes; calyx ca 1 mm long, hispidulous; corolla pinkish, lobes long-
ciliolate. Nutlets globose, ca 0.7 mm long.

In wastelands; 300 m.

Fl. & Fr.: October.

RAJNANDGAON: Singhavi.

6. Hyptis Jacq.

t. 29. f. 2. 1806. Balfota suaveolens L. Syst. ed. 10, 1100. 1759.

Undershrubs, 0.5 1.5 m high. Stems quadrangular, white hairy.
Leaves ovate, crenate-denticulate, 3.0 - 9.5 cm long, sweetly scented,
purplish-green when young. Flowers axillary, in cymose racemes, or in
fascicles; calyx somewhat deflexed, mouth ciliate; corolla red purple or
blue. Nutlets 1 3 mm long, compressed, ribbed.
In wastelands: 300 - 550 m

*Fl. & Fr.*: throughout the year.

**DURG**: Talgaon. **RAIPUR**: Dugli, Sitanadi, Taurenga.

7. **LAVANDULA L.**


Perennial herbs, 60 - 100 cm high. Leaves subsessile, pinnatisect, 5 - 12 cm long; segments linear, entire or cren. Spikes solitary, capitulate or sometimes panicled; bracts glandular, 1 flowered; calyx tubular, 4 - 6 mm long; corolla blue or white, throat hairy. Nutlets oblong, smooth, black.

In wastelands: 400 - 700 m.

*Fl. & Fr.*: October - April.

**RAJNANDGAON**: Malaidah, Taregaon.

8. **LEONOTIS (Pers.) R. Br.**


Annual herbs, up to 1.5 m high. Stem tetraquetrinous, brown puberulent. Leaves ovate, 4 - 20 cm long, crenate. Flowers bright orange-red, velvety, in dense axillary whorls; bracts many, spinous; calyx with several unequal spinous teeth, pubescent; corolla-tube exserted. Nutlets oblong - ovoid, black.

In wastelands: 300 - 450 m.

*Fl. & Fr.*: October - January

**RAIPUR**: Gariaband, Raipur. **RAJNANDGAON**: Singhari.
9. **Leucas R. Br.**

1a. Bracts lanceolate, imbricating and forming a conspicuous involucre, almost concealing the floral head

... \*L. cephalotes* 2

1b. Bracts linear-subulate, neither imbricating nor forming an involucre.

2a. Calyx-mouth oblique

... \*L. lavandulifolia* 4

2b. Calyx-mouth straight.

3a. Leaf-margins entire

... \*L. clarkii* 3

3b. Leaf-margins crenate-serrate

4a. Calyx hirsute on the ribs only, or entirely glabrous

... \*L. biflora* 1

4b. Calyx with long spreading hairs on the ribs, pubescent or glabrous in between

... \*L. mollissima* 3


Procumbent or trailing herbs. Stem 4-angular, retrorsely pubescent. Leaves broadly ovate or elliptic, 1.5-5.0 cm long, obtuse, serrate or crenate; petiole 6-10 mm long. Flowers axillary, 2-4 in a whorl (rarely 6); bracts setaceous; calyx 8-9 mm long, ribbed. Nutlets ovoid, \textit{ca} 1.5 mm long.

In wastelands; 400-500 m.

**Fl. & Fr.** : November.

**RAJNIANDGAON** : Deopura.


Annual pubescent herbs, 7-30 cm high. Leaves elliptic-lanceolate, 3-10 cm long, crenate-serrate; glandular-punctate beneath. Flowers in large globose verticillasters; calyx \textit{ca} 2 cm long, hairy above, bearded at mouth; corolla white, woolly, lower lip slightly longer than the upper lip; anthers red. Nutlets \textit{ca} 3 mm long.
In wastelands; 300–800 m.

_Fl. & Fr.:_ August January.

_DURO:_ Balod. _RAIPUR:_ Balodabazar, Pithora, Raipur. _RAINANDGAON:_ Chilpi, Baghniadi.


Annual herbs, 15–30 cm high, scabrous with deflexed hairs. Leaves subsessile, linear-lanceolate, 3–6 cm long, hispid above. Flowers in terminal subgiobose verticillasters; bracts ciliolate; calyx ca 5 mm long, pubescent, upper teeth acicular; corolla white, upper lip short, narrowly oblong, lower wider. Nutlets ca 2 mm long.

Along cultivated fields and in rock-crevices; 300–550 m.

_Fl. & Fr.:_ September November.

_DURO:_ Balod. _RAIPUR:_ Taurenga. _RAINANDGAON:_ Singliari.


Perennial herbs, 15–30 cm high. Stem softly pubescent. Leaves linear lanceolate, 5–10 cm long. Flowers subsessile or shortly pedicelled, white, in axillary and terminal clusters; calyx up to 9 mm long. Nutlets oblong, triquetrous, ca 2 mm long.

In sandy river beds; 350 m.

_Fl. & Fr.:_ May.

_RAIPUR:_ Dhamtari.


Slender diffusely branched herbs, up to 1 m high. Leaves ovate or ovate lanceolate, serrate, 3–8 cm long; petiole up to 2.5 cm long. Flowers in axillary clusters; bracts minute, villose; calyx 6–8 mm long, tubular; teeth triangular subulate, subequal; corolla white. Nutlets ca 2 mm long, black.
FLORA OF RAIPUR

In miscellaneous forests; 400-500 m.

Fl. & Fr.: August to January.

DURG: Bordih. RAIPUR: Mainpur, Sitanadi.

10. Nepeta L.

Nepeta hindostana (Roth) Haines, Bot. Bihar & Orissa 744. 1922.
ex Benth. in Wall. Pl. As. Rar. 1: 64. 1860.

Annual herbs, 15-40 cm high. Leaves ovate, 1.5-6.0 cm high, crenate serrate; petiole 1-2 cm long. Flowers in axillary dense cymes aggregated at the top of the stem into dense spikes; calyx ca 4 mm long, villous; corolla blue-purple, ca 6 mm long.

In wastelands; 650 m.

Fl. & Fr.: April.

RAJNANDGAON: Rengakhar.

11. Ocimum L.

1a. Shrubs or undershrubs. Leaves shortly acuminate, 5-10 cm long. Lower calyx teeth shorter than the upper lip

1b. Herbs, sometimes woody below. Leaves acute or obtuse, mostly 1.5-3.5 cm long, sometimes a few up to 5 cm long. Lower calyx teeth longer than the upper lip.

2a. Leaves obtuse. Calyx inside, above the glabrous base, very thinly covered with minute hairs, or glabrous

2b. Leaves acute. Calyx inside, above the glabrous base, with a dense whorl of long hairs.
3a. Fruiting calyx 4.0 - 5.5 mm long; corolla 5 - 7 mm long ... \textit{O. canum} 2

3b. Fruiting calyx 6 - 8 mm long; corolla 7 - 10 mm long ... \textit{O. basilicatum} 1


Annual or perennial herbs, 0.5 - 1.3 m high. Leaves ovate-lanceolate, acute, 2 - 4 cm long, entire or serrate; petiole 1 - 2 cm long, hairy. Verticillasters racemose; lower calyx teeth longer than the upper lip; corolla white. Nutlets ellipsoid, 2 - 3 mm long.

In wastelands; 250 - 350 m.

\textit{Fl.} & \textit{Fr.}: November - April.


Annual herbs, 30 - 50 cm high. Leaves elliptic-lanceolate, 1.5 - 3.5 cm long, entire or faintly toothed, scented; petiole 1.0 - 2.5 cm long, pilose. Verticillasters in 6 - 15 cm long racemes; bracts awned, ciliate; calyx villous inside; corolla white. Nutlets elliptic-oblong, punticulate, ca 1 mm long, blackish.

In wastelands; 300 - 500 m.

\textit{Fl.} & \textit{Fr.}: August - May.

RAIPUR: Chhaura, Dhamtari, Sitnadi. RAJNANDGAON: Rajnandgaon.


Shrubby, ca 1 m high. Leaves scented, long petiolated, ovate, lower 7 - 12 cm long. Flowers white, whorled, whorls in 10 - 15 cm long racemes, the pedicel about half as long as the calyx; upper lip of the calyx much longer than the lower one.
In wastelands; 300 m.

Fl. & Fr.: October.


4. O. sanctum L. Mant. 1: 85. 1767. O. inodorum Burm. f. Fl. Ind. 130. 1768. 'Tulsa'.

Perennial herbs, ca 50 cm high, purplish green with age. Leaves ovate or ovate oblong, 1.5 - 3.0 cm long, crenate - serrate, pubescent, scented; petiole 1.0 - 2.5 cm long. Verticillasters racemose, bracts broadly cordate, finally reflexed; calyx ca 3 mm long; corolla purplish, upper lip pubescent on the back. Nutlets reddish yellow with black markings.

Considered sacred by Hindus and frequently grown in houses and temples; 300 - 500 m.

Fl. & Fr.: August - May.

RAIPUR: Raipur, Sitanadi.

Decoction of leaves is quite effective in common cold and cough.

12. Orthosiphon Benth.

1a. Roots swollen into 3 - 10 cm long fusiform tubers. Leaves sessile or short - petiolated. Corolla tube longer than the calyx... O. rubicundus 2

1b. Roots not swollen into tubers. Leaves at least some with the petiole about half as long as to equalling the lamina. Corolla tube as long as the calyx... O. pallidus 1


Diffusely branched herbs, 15 - 35 cm high. Leaves elliptic - ovate, 1 - 4 cm long, acute, serrate - dentate; petiole ca 1 cm long. Verticillasters racemose; calyx glabrous within, many - nerved, hispidulous outside; corolla white. Nutlets subglobous, smooth, yellowish brown.
in wastelands; 300 m.

**Fl. & Fr.**: August.

RAIPUR - Raipur.


Perennial herbs, 20-40 cm high. Leaves usually confined to basal clusters, elliptic oblong, 5-10 cm long, serrate crenate. Verticillasters racemed; calyx 4-6 mm long, minutely pubescent, upper lobe sub-petaloid; corolla pinkish. Nutlets suborbicular, compressed, puncticulate

In sal forests; 500-550 m.

**Fl. & Fr.**: August May.

RAIPUR: Khallari, Sitanadi.

13. *Plectranthus L’Herit*


Undershubs ca 40 cm high. Leaves ovate cordate, 5-10 cm long, crenate; petiole 3-8 cm long. Flowers in terminal racemes or panicles; calyx 2-lipped, upper lip broadly ovate, lower lip with 4 long subulate teeth; corolla white or pale bluish white. Nutlets subglobose.

In wastelands; 400-800 m.

**Fl. & Fr.**: September January.

RAIPUR: Chhoa, Sitanadi. RAJNANDGAON : Chilpi, Dcopura.


Flora of Raipur

Shrubs, ca 1.5 m high. Leaves ovate, serrate, 5-12 cm long. Flowers in bracteate spikes; bracts softly pubescent, overtopping the flower-buds; calyx ca 5 mm long, ciliate; corolla pink or white; filaments bearded. Nutlets minute, shining, brownish black.

Along miscellaneous forests; 500 - 700 m.

Fl. & Fr.: April.

RAIPUR: Sitanadi. RAINANDGAON: Malaidah.

15. **Salvia** L.

*Salvia plebeia* R. Br. Prodr. 501. 1810.

Annual herbs, ca 20 cm high. Leaves oblong lanceolate, ovate, 2.5 - 7.5 cm long, crenate, sparsely hairy or glabrous. Flowers minute, in terminal often spicate racemes; bracts small, narrow; upper lip of the calyx entire, reflexed, lower lip obtusely 2 toothed; corolla white or lilac, tube exserted. Nutlets ovoid, brown.

In sandy river beds; 300 - 500 m.

Fl. & Fr.: April May.

DURG: Durg. RAIPUR: Dhamtari.

87. **Nyctaginaceae**

(M.I. Hanf)

1a. More or less creeping or diffuse herbs. Flowers 2-4 mm long. ... **Boerhavia** 1

1b. Erect herbs or undershrubs. Flowers 5-7 cm long ... **Mirabilis** 2

1. **Boerhavia** L.

Diffuse herbs with up to 1 m long almost prostrate branches. Stems often purple tinged. Leaves in unequal pairs, ovate rounded or lanceolate, 2-6 cm long, acute or obtuse, subentire undulate. Flowers 1-7 several in glandular viscid pubescent cymose panicles. Perianth bright purple.

In wastelands; 300-500 m.

Fl. & Fr.: throughout the year.

DURG: Rajhara dhalli RAIPUR: Sitanadi RAINANDGAON: Rajnandgaon.

Plants medicinal.

2. **Mirabilis L.**

**Mirabilis jalapa** L. Sp. Pl. 177. 1753.

Shrubs with slender spreading branches. Leaves in unequal pairs, ovate lanceolate, acute or acuminate, subentire or sinuate. Flowers white or red, crowded in lax leafy corymbs; stamens subequal, filaments cobling on maturity. Anthocarp globose, ribbed, black.

Cultivated in gardens as ornamental, sometimes found as escape; 300 m.

Fl.: August.

RAIPUR: Raipur.

88. **AMARANTHACEAE**

(D.M. Verma & M. I. Hulfi)

1a. Leaves opposite.

2a. Flowers mixed with several hooked bristles (the imperfect flowers)

Prapalla 9
2b. Flowers without the above bristles, sometimes the outer tepals spine-like (*Achyranthes* sp.).

3a. Flowers in spikes, deflexed after anthesis; one or more of the outer tepals spine-like ... *Achyranthes* 1

3b. Flowers in globose-cylindric heads or in spikes, always erect or spreading; tepals none spine-like.

4a. Leaves filiform - seraceous ... *Trichurus* 10

4b. Leaves elliptic lanceolate, oblanceolate or orbicular.

5a. Anthers 2 - celled ... *Aerva* 2

5b. Anthers 1 - celled.

6a. Filaments connate only towards the base, forming a short cup; stigma solitary, capitate ... *Alternanthera* 4

6b. Filaments connate throughout, forming a tube; stigmas two, linear - filiform ... *Gomphrena* 8

1b. Leaves alternate or fascicled.

7a. Fruits several - seeded ... *Celosia* 6

7b. Fruits one - seeded.

8a. Tepals all or the inner only woolly; stamens with interposed linear staminodes.

9a. Leaves filiform - seraceous tepals 4 ... *Iriomote* 10

9b. Leaves ovate elliptic or lanceolate; petals 5 ... *Aerva* 2

8b. Tepals all glabrous or pubescent, stamens without the above staminodes.

10a. Flowers bisexual, distinctly spicate or capitulate.

11a. Flowers spicate ... *Digera* 7

11b. Flowers capitulate ... *Allomaria* 3

10b. Flowers unisexual, variously clustered and spicate ... *Amaranthus* 5
1. *Achyranthes* L.

*Achyranthes aspera* L. Sp. Pl. 204. 1753. *'Chichdi.'*

Erect perennial herbs, up to 1 m high with slightly mealy tomentose branches. Leaves ovate, obovate or oblong, 2.10 × 1.5 cm. Spikes 10 - 40 cm long; bracts acuminate. Flowers 4 - 6 mm long, glistening whitish green or purplish, lower reflexed.

In wastelands; 250 - 500 m.

*Fl. & Fr.*: June - September.

RAIPUR: Sitanadi. RAJNANDGAON: Baghnadi.

Plants medicinal.

2. *Aerva* Forsk.

1a. Sepals 1.2 - 1.5 mm long; stigmas 2, linear

1b. Sepals 2.0 - 2.5 mm long; stigmas 1, globular or obscurely bilobed

   ... *A. lanata* 1

   ... *A. sanguinolenta* 2


Slender perennial herbs, 20 - 70 cm high. Leaves alternate, ovate - elliptic or obovate, 0.5 - 5.0 × 0.3 - 3.0 cm. Spikes mostly 2 - 4 together, axillary, cylindric, white, for the greater part 5 - 25 mm long, the highest collected into more or less leafless inflorescence; bracts, bracteoles and tepals woolly.

In wastelands; 300 - 500 m.

*Fl. & Fr.*: August - April.

DURG: Balod, Rajhara - dhalli. RAIPUR: Sitanadi.

Perennial herbs with slender somewhat climbing branches. Leaves opposite or alternate, ovate elliptic or lanceolate, 2.0 7.0 × 0.5 4.0 cm, green or purplish. Spikes in the axils of leaves and bracts, frequently forming a panicle, 0.7 5.0 cm long, white or purplish.

In wastelands and forest floors; 400 - 550 m.

*Fl. & Fr.* : October January.

RAIPUR : Dugli, Sitanadi, Taurenga. RAJNANDGAON : Deopura.

3. **ALLMANIA** R. Br. *ex Wt.*


Erect or ascending annual slender herbs, 10 - 60 cm high. Leaves linear spatulate or obovate, 1.5 - 7.0 × 0.5 2.0 cm, glabrous or pubescent beneath. Heads terminal or leaf-opposed, first globose, later elongating, 1 2 cm long, greenish or purplish white. Seeds ca 2.5 mm diam., black; aril pink brown.

In wastelands and miscellaneous forests; 300 - 600 m.

*Fl. & Fr.* : August.

DURG : Balod. RAIPUR : Dhamtari.

4. **ALTERNANTHERA** Forssk.

1a. Heads, except sometimes the terminal one, borne on long bractless peduncle; filaments connate at the base into an elongated tube

... *A. phloxoides* 2
1b. Heads all sessile, sometimes appearing peduncled after the fall of the lower flowers but this spurious peduncle can be recognised by the presence of bracts; filaments connate at the base into a short cup.

2a. All tepals 1-nerved, or obscurely 3-nerved only at the very base; anthers 3

2b. Three outer tepals distinctly 3-nerved in their basal half to one-third part; anthers 5

A. sessilis 3

A. paronychioides 1


Prostrate, hairy annuals. Leaves lanceolate or narrowly spatulate, up to 7 × 2 cm. Spikes sessile, on short axillary branches, globose cylindric, up to 2 × 1 cm; bracts and bracteoles white, scarious. Tepals sparsely strigose; anthers reniform ellipsoid, ca 0.3 mm long.

Forming large patches in open moist places along ponds, roadsides and in sandy river-beds; 300–550 m.

Fl. & Fr.: January June.


Aquatic herbs with long creeping fistular stems rooting at the nodes and erect emerged branches. Leaves obovate oblong, 3.0–8.0 × 1.0–2.5 cm, attenuated at the base. Heads terminal and axillary, ovoid ellipsoid or globular, 8–15 mm long. Flowers ca 6 mm long, white; anthers yellow.

In ponds: 280 m.

Fl. & Fr.: January.

RAIPUR: Raipur.

Erect, ascending or prostrate herbs rooting at the lower nodes. Leaves sessile or shortly petiolate, linear-lanceolate or obovate, 1.0-10.0 x 0.5-2.0 cm, green or purplish. Heads solitary or few, axillary, ovoid-globose or cylindric, white. Utricles equalling the tepals, brown.

In moist wastelands; 250-400 m.

*Fl. & Fr.* throughout the year.

**DURG**: Balod, Durg. **RAIPUR**: Simga. **RAJNANDGAON**: Baghnadi, Rajnandgaon, Taregaon.

Sometimes eaten as vegetable.

5. **Amaranthus L.**

1a. Herbs armed with axillary spines

1b. Herbs not armed.

2a. Tepals 3. Utricle indehiscent or irregularly bursting

2b. Tepals 5 or 3. Utricle circumscissile.

3a. Tepals 3 long awned

3b. Tepals 5, mucronate-acuminate


Annual erect herbs, 0.5-2.0 m high. Stem purplish green. Leaves long petiolate, ovate-oblong, 5-10 x 2-3 cm. Spikes or panicles terminal and in upper leaf axils, erect or drooping, green; bracts and bracteoles longer than the tepals, acuminate. Seeds white or black.

Cultivated; 280 m.

*Fl. & Fr.*: January.

**RAIPUR**: Raipur.

Erect annual herbs, 10 - 50 cm high. Stem yellowish or reddish green. Leaves ovate - oblong or lanceolate, the larger ones 3 - 10 × 1 - 4 cm. Flower clusters dense, lower axillary, higher collected into axillary and terminal spikes. Tepals 5. Utricles circumscissile.

Usually in wastelands, sometimes in forests; 220 - 650 m.

**Fl. & Fr.** : August - January.


Annual herbs, 20 - 50 cm high. Leaves petioled, ovate rhomboid or elliptic, 5 - 15 × 1 - 10 cm, suffused or blotched with red purple. Flower clusters dense, green, lower ones axillary, upper ones often collected in spikes; bracts, bracteoles and tepals all long awned from a broad base.

In wastelands and river - beds, sometimes cultivated; 250 - 550 m.

**Fl. & Fr.** : November - May.

RAIPUR : Gariaband, Sitanadi. RAJNANDGAON : Taregaon.

Sometimes eaten as vegetable; the variegated leaved forms often grown as ornamentals.


Annual erect herbs, 10 - 50 cm high. Leaves ovate rhomboid or oblong, glabrous or sparingly hairy, the larger ones 3 - 7 × 2 - 5 cm. Flowers clustered, green or purplish, ca 1.5 mm long; lower clusters axillary, upper in terminal, continuous or interrupted spikes. Utricles subequaling the tepals and falling off with it, beaked.

In wastelands; 300 - 400 m.

**Fl. & Fr.** : May - August.

RAIPUR : Dhamtari, Dokal.
6. *Celosia* L.

*Celosia argentea* L. Sp. Pl. 205. 1753.

Annual erect herb, 30 - 80 cm high with green or reddish stem. Leaves linear, *ca* 3.5 × 0.3 cm. Spikes terminal, ovoid or subcylindrical, 2 - 10 cm long, glistening white with pink tips. Flowers white with pink tips, bracts and bracteoles persistent. Utricles obovoid, *ca* 3 mm long.

In rock-crevices and wastelands; 250 - 550 m.

*Fl. & Fr.*: August June.


Annual, erect, diffusely branched herbs, 20 - 60 cm high, sometimes shortly creeping. Leaves long petioled, ovate oblong, 2 - 6 × 1 - 4 cm. Racemes axillary, rather flexuous, 1 - 20 cm long. Flowers 3 - 5 mm long, pink or white, mostly accompanied by a pair of sterile lateral flowers.

In wastelands and along cultivated fields; 250 - 350 m.

*Fl. & Fr.*: August January.


8. *Gomphrena* L.

Profusely branched ascending white hairy herbs. Leaves short petioled, oblong spathulate, 2 - 5 cm long. Spikes terminal, globose-cylindric; bracts and bracteoles scarious, bracteoles shortly winged at the top. Flowers white; tepals hairy on the back.

Common in lawns and wastelands; 250 - 550 m.

DURG: Balod. RAIPUR: Raipur, Sitanadi.

9. PUPALIA JUSS.


Perennial sarmentose herbs, up to 2 m high. Leaves ovate oblong, 3 - 10 x 2 - 6 cm, glabrous or hairy. Racemes terminal and in upper leaf axils, rather flexuous, up to 30 cm long. Flowers in clusters of 2 - 3 bisexual flowers and several rudimentary flowers consisting of fascicled hooked bristles.

In mixed forests; 550 m.

Fl. & Fr.: October.

RAIPUR: Tauengga.

10. TRICHURUS TOWNSEND


Annual slender herbs, 10 - 20 cm high. Leaves opposite or fascicled, 1 - 3 cm long. Spikes terminal, cylindric, ca 1 cm long, glistening white or purplish red; bracts and bracteoles scarious. Tepals 4, subulate; stigmas 2, spreading. Seeds ovoid with an aereole like depression on the opposite side to the hilum.
Among rock boulders and in sandy river beds; 400 - 500 m.

Fl. & Fr.: October - June.

RAIPUR: Chhoora, Gariaband, Taurenga.

89. CHENOPODIACEAE
(P.C. Pant)

CHENOPODIUM L.


Herbs, ca 30 cm high. Leaves rhomboid deltoid, acute or obtuse, undulate. Flowers green, in cymose clusters combined into spikes forming panicles; tepals slightly keeled. Seeds orbicular, sharply margined.

Near drains: 300 m.

Fl. & Fr.: January.

RAIPUR: Raipur.

90. BASELLACEAE
(P.C. Pant)

BASELLA L.


Climbers with purplish or greenish stems. Leaves fleshy, ovate, acute or acuminate. Flowers sessile, red, in cymose clusters combined into spikes; bracts much shorter than the perianth. Fruits depressed globose, slightly lobed, shining black, with violet juice.

Cultivated; 350 m.

Fl. & Fr.: October.

RAIPUR: Sankra.

Leaves eaten cooked.
ANTIGONON


Slender extensive climbers. Leaves ovate triangular, 5-10 cm long, undulate, pubescent on the nerves beneath. Flowers pink red, fascicled, fascicles combined into axillary racemes; rhachis of the racemes frequently terminated by a branched tendril. Fruits ovoid conical; seeds deeply grooved.

On roadside bushes & hedges; 300 m.

Fl. & Fr.: August.

RAIPUR: Raipur.

POLYGONUM

1a. Flowers axillary, solitary or in clusters. ... P. plebejum 6

1b. Flowers in terminal pseudo-spikes, spurious heads or panicles.

2a. Stems with recurved prickles on the nodes. Flowers in cymosely disposed spurious heads ... P. dichotomum 2
2b. Stems not prickly at the nodes. Flowers in pseudo-spike or panicles.

3a. Ochrea with a spreading or reflexed limb at the mouth

3b. Ochrea without the above limb.

4a. Ochrea ciliate. Styles 2; nuts lenticular (rarely a few flowers with 3 styles and trigonous nuts)

4b. Ochrea ciliate at the mouth (rarely a few almost ciliate). Styles 3; nuts trigonous (rarely a few flowers with 2 styles and lenticular nuts).

5a. Pseudo-spires lax, bracts remote

5b. Pseudo spikes dense, bracts closely imbricate

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Perennial aquatic herbs, 15 30 cm high. Leaves linear lanceolate, 5 20 cm long, narrowed at both ends, usually shortly appressed hairy on both the surfaces but sometimes almost glabrescent with the hairs confined only to the midrib beneath. Pseudo spikes in panicles; peduncles glabrous or hairy. Perianth white or pinkish. Nuts ca 2 mm long.

Along streams and paddy fields; 300 800 m.

Fl. & Fr.: September April.

RAIPUR: Dhamtari, Sitanadi, Taurenga. RAJNANDGAON:
Chipli.


Trailing herbs. Leaves elliptic oblong or linear-oblong, 2.5 5.0 cm long, acuminate at both ends, softly ciliate, prickly on the margins. Peduncles glandular; bracts pubescent. Perianth white, sometimes tinged with pink.
Along streams; 750 m.

Fl. & Fr.: September.

RAJNANDGAON: Chilpi.


Perennial herbs, creeping at the base, 1.0 - 2.5 m high. Ochrea tubular. Leaves elliptic-ovate or lanceolate, up to 16 cm long, acuminate, gland dotted. Racemes in terminal panicles. Perianth pink red or whitish. Nuts glistening dark brown.

Common along ponds and streams; 300 - 550 m.

Fl. & Fr.: September May.

DURG: Rajhara - dhalli. RAIPUR: Dhamtari, Gariaband, Pithora, Taurenga.

RAJNANDGAON: Baghnadi, Deopura.


Undershrubs with glandular punctate branches. Leaves ovate-lanceolate or oblong, 5 - 12 cm long, acute or acuminate. Pseudo - spikes glandular - punctate; bracts glandular, ciliate on the upper margin. Nuts brown, 2 - 3 mm long.

Along streams; 400 m.

Fl. & Fr.: September.

RAJNANDGAON: Salewara.

5. P. himatium Meissn. in DC. Prodr. 5: 14. 1856.

Perennial herbs. Leaves lanceolate, 10 - 20 cm long, acuminate, scaberulous on both the surfaces. Flowers white, in short erect paniculate racemes; peduncles strigose. Nuts orbiculate.

In puddles; 300 m.
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FLORA OF RAIPUR

*Fl. & Fr.* : October.

RAJNANDGAON : Singhari.


Small, tufted, deep rooted, purplish green, white hairy herbs. Leaves whorled, linear - oblong, 1 - 3 cm long, obtuse or rounded. Perianth white or pink. Nuts glistening, ca. 1 mm long.

In wastelands & sandy river beds ; 250 – 500 m.

*Fl. & Fr.* : January – April.

DURG : Durg. RAIPUR : Dhamtari, Gariaband, Sitanadi, Taurenga.

3. RUMEX L.


Annual herbs. Leaves variable, basal much larger than the cauline ones, oblong, obtuse; petioles equaling or shorter than the lamina. Flowers greenish, arranged in leafy or leafless whorls. Nutlets trigonous, brown.


92. PODOSTEMACEAE
(D.M. Verma & J. Lal)

*Polyleurum* (Tay. ex Tul.) Warming


Thallloid perennial submerged herbs. Thallus dichotomously branched with distinct midrib, reddish brown, up to 16 cm long. Flowers on both
margins of the branches, bisexual; bracts 2 pairs. Style branches 2. Capsules stipitate, 2 valved.

On rock boulders in slow flowing streams; 500 m.

Fl. & Fr. : October.

RAIPUR : Taurenga.

93. ARISTOLOCHIACEAE
(D. M. Verma)

ARISTOLOCHIA L.


Slender climbers. Leaves elliptic obovate, often slightly constricted above the base, 5 - 10 x 2 5 cm, mucronate. Flowers somewhat clustered, 2 3 cm long with a subglobose base, a short tube and a purple brown strap like lip. Capsules broadly obovate subglobose, 3 4 cm long on a pedicel which is ultimately split into 6 strands.

In miscellaneous forests; 400 m.

Fl. : September ; Fr. : February.

RAIPUR : Barnawapara.

94. PIPERACEAE
(P. C. Pant)

Piperomia Ruiz. & Pav.


Annual herbs. Stem purple streaked. Leaves ovate cordate, 0.7 - 4.0 cm long, obtuse or acuminate, punctate. Spikes one or two together; bracts ovate-rounded. Fruits globose; seeds warty.
Along cultivated fields; 450 m.

Fr.: September.

RAJNANDGAON. Rajnandgaon.

95. LAURACEAE
(D. M. Verma & V. Chandra)

LITSEA Lamk.

1a. Perianth absent; stamens 15-21 ... L. glutinosa 1
1b. Perianth present; stamens 12 ... L. monopetala 2

Syn. 2: 4. 1804.

Small or medium sized trees with light grey bark. Leaves narrowly 
to broadly elliptic, 7-22 cm long, glabrescent except sometimes on the 
nerves, slightly aromatic. Flowers in small corymbose umbels. Fruits 
globose, black, shining, on slightly enlarged perianth tube.

Fl. & Fr.: June November.

RAIPUR, n.v. (cf. Haines, Descri. list of trees, shrubs and eco. herbs, 

Nat. Paris 6: 211. 1805.

Small trees with smooth bark. Leaves elliptic or oblanceolate - oblong 
10-20 cm long, pubescent and glaucous beneath. Flowers in stout 
peduncled umbels which are axillary and clustered along the branchlets. 
Fruits ellipsoid or ovoid, seated on the shallow saucer shaped perianth.

In miscellaneous forests; 550 m.

Fl.: June.

RAIPUR: Tauronga.
96. LORANTHACEAE
(D. M. Verma & V. Chandra)

1a. Leaves absent or if present then without a midrib. Flowers unisexual
     ... Viscum 3

1b. Leaves present, with a midrib. Flowers bisexual.

2a. Flowers regular; corolla tube not split on one side
     ... Dendrophthoe 1

2b. Flowers irregular; corolla tube split on one side
     ... Scurrula 2

1. Dendrophthoe Mart.


Epiphytic bushy herbs. Leaves elliptic oblong, obovate or ovate-lanceolate, 6-15 cm long, obtuse or rounded. Flowers in second racemes which are often clustered in the axils of fallen leaves; perianth bright red. Fruits ovoid oblong, bright red, crowned with a persistent calyculus.

Epiphytic; 400 - 800 m.

Fl. & Fr.: January May.


2. Scurrula L.

Tufted shrubby parasitic epiphytes, young parts brown or white tomentose. Leaves ovate oblong or elliptic, 5 – 10 cm long, mature sometimes glabrous. Flowers in few flowered contracted racemes; corolla & style 8 – 15 mm long. Fruits clavate.

RAIPUR, n. v. (e. f. Haines in Ind. For. 40 : 432. 1914).

3. *Viscum* L.

1a. Branches flattened, leafless

1b. Branches terete or angular, leafy

...  

\[ V. nepalense \ 1 \]

\[ V. orientale \ 2 \]


Leafless, pendulous dichotomously branched shrubs; branches jointed, linear, flattened, readily disarticulating, pale green. Flowers 1 – 6 together in fascicles at the nodes, each with a large cup-shaped bract at the base. Fruit globose, smooth, yellowish green.

Epiphytic; 400 – 500 m.

*Fl.* & *Fr.*: April – June.

DURG: Budhbum. RAIPUR: Dugti, Pithora, Taurenga.


Stems much branched; branches terete or angular, grooved, thickened at the nodes. Leaves elliptic or elliptic lanceolate, 3 – 8 cm long, obtuse. Flowers in axillary sessile or shortly pedunculate clusters of 3 – 5. Fruits ovoid or subglobose.

Epiphytic; 500 – 600 m.

*Fr.*: May.

RAIPUR: Borai, Sitanadi.
97. SANTALACEAE
(V. Chandra)

SANTALUM L.

Santalum album L. Sp. Pl. 497. 1753. 'Chunian.'

Trees ca 3 m high with blackish bark. Leaves ovate lanceolate or elliptic, 4 - 7 cm long. Flowers in panicles; calyx 4 - lobed, lobes stellately spreading, deep purple inside; corolla lobes obovate, ca half the size of the calyx. Fruits globose, black.

Planted in gardens; 350 m.

Fl. August

RAIPUR. Dhamtari.

Wood scented.

98. EUPHORBIACEAE
(D.M. Verma & M.I. Hanfi)

1a. Plants with milky juice. Flowers arranged in a head resembling a single flower. Heads consisting of 4 - 5 - lobed calyx - like involucre enclosing several male flowers consisting of solitary pedicelled stamens surrounding a single central stalked female flower consisting of a 3 - carpelled pistil

... Euphorbia 10

1b. Plants not as above.

2a. Perianth differentiated into distinct calyx and corolla.

3a. Stamens 5, on a gynandrophore; ovary cells 2 - ovuled.

4a. Styles 3. Fruit a schizocarp, 2.0 - 2.5 cm across

... Cleistanthus 7

4b. Styles 2. Fruit a drupe, ca 0.1 cm across

... Briedelia 5

3b. Stamens frequently more, not on a gynandrophore; ovary cells 1 - ovuled.
5a. Flowers in corymbs, the main branches of which are terminated by a female flower, the other flowers male

5b. Flowers in racemes bearing female flowers at base and male flowers above.

6a. Inflorescence terminal, or in bifurcations of the stems. Stamens incurved in bud

6b. Inflorescence axillary. Stamens erect in bud

2b. Perianth monochlamydous, either calycine or corolline.

7a. Leaves peltate, palm - lobed, serrate - crenate; petioles glandular. Stamens numerous, in several branched fascicles. Schizocarp subglobose, 1.5 - 2.5 cm across

7b. Plants not as above.

8a. Herbs. Leaves linear. Male flowers in 5 - 12 mm long extra - axillary spikes with a single female flower at the base; ovary 3 - lobed, each lobe with two vertical rows of 4 - 5 fleshy red warts

8b. Plants not as above.

9a. Shrubs or undershrubs with hairy twigs. Leaves mostly lobulate or sinuate - dentate, biglandular at the base. Male flowers with 4 - 6 disk - glands; stamens many. Female flowers with annular disk; ovary cells 1 - ovuled

9b. Plants not as above.

10a. Flowers in elongated, simple or branched spikes or racemes.

11a. Leaves linear - lanceolate, with small orbicular scales on the lower surface. Stamens numerous, in several branched fascicles. Ovary cells 1 - ovuled, stigmas on the inside feather like

11b. Plants not as above.
12a. Monoecious. Female flowers in the lower part of the raceme in the axils of follicular bracts, and male flowers in the upper part, oblongate

Acalypha 1

12b. Dioecious. Flowers, both male and female, in the axils of scale-like bracts.

13a. Leaf-margins entire. Flowers with lobed or annular disk. Ovary 1-celled, cells 2-ovuled

Antidesma 7

13b. Leaf-margins more or less toothed. Flowers without disk. Ovary 2-3-celled, cells 1-ovuled

Malvaviscus 15

10b. Flowers, at least the male, solitary, or in fascicles, clusters or very short cymes.

14a. Trees. Leaves pinnately arranged on short lateral branches, linear, 10 - 20 x 2 - 3 mm. Fruits globose, succulent, 2 - 3 cm diam.

Emblica 9

14b. Plants not as above.

13a. Flowers with distinct disk or disk-gland

16a. Herbs or shrubs (P. latiflora

Stamens 3. Fruits dry

Phyllanthus 16


17a. Monoecious. Flowers usually one male and one female in each leaf axil, sometimes racemose. Stamens 9, united, 5 free; pistil dilode absent. Fruit green, turning black
17b. Dioecious. Flowers both male and female, mostly several clustered in each leaf axil. Stamens all free; pistillode present. Fruits pure white ... 

Securinega 20

15b. Flowers without disk.

18a. Ovary 3 - celled, style or stigmas 3, free, divaricate, each divided into two recurved branches ... 

Sarmentos 18

18b. Ovary 3 - 15 - celled, styles or stigmas different.

19a. Ovary 3 - 15 - celled; styles comitate into a column bearing at the apex nearly free, often bilobulate, erect stigmas ... 

Glochidion 11

19b. Ovary 3 - celled; stigmas 3, free, incurved, sessile, subulate - dentiform ... 

Breynia 4

1. Acalypha L.

1a. Bract - teeth with gland - tipped hairs ... 

A. maliaboriensis 3

1b. Bract - teeth without gland - tipped hairs.

2a. Bracts dentate or crenate ... 

A. indica 2

2b. Bracts almost pectinate with subulate hispid teeth ... 

A. ciliata 1


Erect, sparingly branched annual herbs, 0.2 - 2 m high. Stems shortly pubescent with recurved hairs. Leaves ovate rhomboid, 5 - 10 × 2 6 cm, crenate - serrate. Inflorescence axillary, elongating to
2 cm. Perianth segments 3, ovate, acute. Fruits enclosed by the accrescent bracts; seeds smooth.

In wastelands and on hill slopes; 400–600 m.

Fl. & Fr.: August November.

RAJNANDGAON: Baghaudi, Neopura, Targaon.

2. A. indica L. Sp. PI. 1003. 1753.

Erect annual herbs, 30–40 cm high. Stems with numerous, angular, pubescent branches. Leaves ovate or rhomboid ovate, 2.5–7.5 × 2–4 cm, acute or subobtuse, crenate, serrate, glabrous; petiole longer than the blade; stipules minute. Inflorescence axillary, up to 8 cm long. Capsules hispid; seeds ovoid, smooth.

In wastelands and along cultivated fields; 300–400 m.

Fl. & Fr.: August September.

RAIPUR: Arang. RAJNANDGAON: Rajnandgoan.

3. A. malabarica Muell. Arg. in Linnaea 34: 42. 1865.

Leafy branched annual herbs, up to 20 cm high. Stems pubescent. Leaves rigid, elliptic or elliptic lanceolate, 2.5–3.7 × 1.2–2 cm; petiole shorter than the blade. Flowers in ca 15 mm long axillary androgyous spikes, the males few, terminal, minute, the females numerous. Capsules nearly glabrous; seeds globose ovoid, smooth.

In wastelands; 400 m.

Fl. & Fr.: September.

DURG: Balod.

2. ANTIDESMA L.

1a. Stamens 2
1b. Stamens 3–7.

A. acidum 1
FLORA OF RAIPUR

2a. Stamens inserted in hollows of the disk ... A. menas 3

2b. Stamens inserted within the disk ... A. ghaesembilla 2


Erect, dioecious undershrubs or shrubs with slender branches, up to 2 m high. Leaves obovate elliptic to oblong with a rounded cuneate or acute base, entire, hairy, 3-8 x 2-6 cm, petioles grooved above. Female flowers in glabrous racemes; bracts ovate, acute; stamens 2, in the cavities of unlobed glabrous disk. Fruits red, compressed.

In miscellaneous and sal forests; 300 - 600 m.

Fl. & Fr.: August - October.

RAIPUR: Khallari, Raipur. RAJNANDGOAN: Baghnadi, Singhari.

2. A. ghaesembilla Gaertn. Fruct. 1:189. t. 39. 1788. 'Amthi.'

Shrubs with slender branches and greyish stems, ca 2 m high. Leaves broadly elliptic or orbicular oblong, obtuse, 5-10 x 2-5 cm, fulvous tomentose beneath, stipules lanceolate, acute. Flowers sessile, in slender paniculate spikes; petals white becoming brownish. Fruits subglobose, reddish purple.

In sal and miscellaneous forests, along streams; 300 - 600 m.

Fl.: June; Fr.: August - September.

DURG: Rajhara dhalli. RAIPUR: Borai, Dhamtari, Khallari, Pithora.


Small or middle sized trees; branchlets, stipules, petioles and inflorescence pubescent. Leaves elliptic - oblong, acuminate or mucronate, 9-15 x 3-6 cm, shining on both sides; stipules linear, acute. Flowers in axillary and terminal, solitary or paniculate racemes; ovary glabrous; stigmas 3-5. Fruits ovoid, 5-8 mm long, sour.
In miscellaneous forests, along streams: 450 m.

_Fr._: September.

RAJNANDGAON: Salewara.

3. BALIOSPERMUM BL.


Perennial herbs or undershrubs, 0.3 - 1 m high, usually branching from the base. Leaves mostly towards the tips of the branches, 5 - 20 x 2 - 15 cm, lobulate sinuate, denticulate, strigose on both surfaces; petioles 2 - 15 cm long with a pair of stipular glands at the base. Inflorescence axillary and terminal. Flowers pinkish. Fruits shortly pedicelled.

In moist shady places and hill slopes; 500 - 500 m.

_Fl._: October - November; _Fr._: January - May.

RAIPUR: Raipur. RAJNANDGAON: Singhari.

4. BREYNIA J. & G. FORST.


Large glabrous shrubs, 1 - 3 m high. Leaves thin distichous, 0.7 - 1.0 cm long. Flowers minute, monoecious or rarely dioecious, green, yellow or pinkish, solitary, male and female often on separate twigs. Berries numerous, globose - ovoid, ca 5 mm across, red.
In sal and miscellaneous forests; 300–600 m.

_Fl. & Fr._: June October.

**DURUG**: Balod. **RAIPUR**: Borai, Gariaband, Sitanadi. **RAJNANDGAON**: Singhari.

5. **Briedelia Willd.**

1a. Leaves elliptic - oblong, sometimes a few obovate - rounded; secondary nerves 15–20 pairs, markedly straight and parallel, unbranched or only a few forked below the margin ....  

**B. squamosa** 2

1b. Leaves rhombic - obovate or oblongobovate; secondary nerves 6–10 pairs, not markedly straight or parallel, mostly forked, looped or reticulate before reaching the margins ....  

**B. hamiltoniana** 1


Straggling shrubs. Leaves elongate - elliptic or obovate elliptic, 4–8 × 2–3 cm, obtuse, entire, glabrous, cuneate at the base. Flowers in small axillary and spicate sessile clusters. Drupes globose, _ca_ 5 mm in dia., black.

_Fl. & Fr._: August December.

**RAIPUR**: Lain range, _n.v._ (cf. Haines, Deser. list of trees, shrubs & econ. herbs, Southern Circle, C. P. 199. 1916).


Small trees with greyish flaking bark. Leaves elliptic oblong, 10–20 cm long, glaucous beneath, strongly nervet. Flowers small, green, in axillary clusters, or clusters spicate, male and female intermixed. Fruits globose, 6–8 mm across, yellowish.
Common in sal and miscellaneous forests; 300–500 m.

**Fl. & Fr.:** August January.

**DURG:** Balod. **RAIPUR:** Dhamtari, Gariabad, Pithora, Sitanadi. **RAJNANDGAON:** Salewara, Taregaon.

6. **CHROZOPHORA A. Juss.**

1a. Prostrate herbs. Leaves eglandular at the base, stellate hairs stipitate

1b. Erect herbs. Leaves biglandular at the base, stellate hairs sessile

---

1. **Chrozophora prostrata** Dalz. in Dalz. & Gibs. Bombay **Fl.** 233. 1861.

Stellately woolly herbs with numerous branches spreading from the base. Leaves broadly ovate or orbicular, 1–3 cm broad, cordate or truncate at the base, pubescent with some stellate hairs above, densely stellately woolly beneath. Flowers in axillary racemes; bracts linear. Capsules ca 7 mm in dia., stellately woolly.

In wastelands; 400 m.

**Fl. & Fr.:** April.

**RAJNANDGAON:** Khairagarh.


Greyish green, annual, or sometimes perennial herbs. Leaves and stems scabrous which gives itching sensation on touch. Leaves orbicular with 3 rounded lobes, 3–8 cm broad, undulate crenate, long petioled. Flowers yellow. Fruits clothed with stellate hairs.

Common in low lands; 300–400 m.

**Fl. & Fr.:** April.

**DURG:** Rajolidih. **RAJNANDGAON:** Khairagarh.
7. **Cleistanthus Hook. f. ex Planch.**

*Clytia collina* Roxb. Pl. Corom. 2: 37. t. 169. 1802. ‘*Karra*’.

Shrubs or small trees, crookedly branched, 2 - 10 m high; bark black, peeling off in small chips; branches greyish. Leaves leathery, orbicular, obovate or elliptic, 2 - 10 X 2 - 7 cm, glaucous beneath. Flowers small green, appearing with the new leaves. Fruits globose, angular, green, black and wrinkled on drying.

Common in miscellaneous forests; 300 - 500 m.

*Fl.*: March - April; *Fr.*: August - June.

**DURG:** Bubdhum. **RAIPUR:** Dhamtari, Dugli, Sitanadi. **RAJNANDGAON:** Baghuaudi, Khargaon, Singhari.

Fruits sometimes used as fish-poison.

8. **Croton L.**


Woody herbs, 10 - 50 cm high, profusely branched from the base. Leaves ovate lanceolate, with 2 glands at the base. Flowers spicate, white, or pale yellow on drying. Fruits green, glandular hairy; seeds strophiolate, oblong.

Common in wastelands and stream beds; 300 - 450 m.

*Fl.* & *Fr.*: April.

**DURG:** Durg, Bordih. **RAIPUR:** Raipur. **RAJNANDGAON:** Rajnandgaon.
9. **Emblica Gaertn.**


Trees up to 7 m high with greyish spreading branches, exfoliating. Leaves small, pinnately arranged, linear, 7–15 mm long; stipules fimbriate. Flowers small, greenish white, densely fascicled. Fruits globose, succulent, yellow or pink when ripe, 2–3 cm across, sour.

In miscellaneous forests along streams; commonly planted in villages; 250–800 m.


**RAIPUR** : Dugli, Taurenga. **RAJNANDGAON** : Chilpi, Baghnadi.

Fruits eaten raw and pickled. Wood used for poles and implements.

10. **Euphorbia L.**

<table>
<thead>
<tr>
<th>1a. Succulent trees or shrubs. Leaves small, soon caducous.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2a. Twigs prickly</td>
</tr>
<tr>
<td>2b. Twigs smooth</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1b. Non-succulent herbs. Leaves well developed, persistent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3a. Leaves on 1–3 cm long petioles, larger ones 5–10 × 2.5–4.5 cm. Involucre with only a solitary well developed gland</td>
</tr>
<tr>
<td>3b. Leaves sessile, or on up to 5 mm long petioles, usually smaller. Involucre with 4–5 well developed glands.</td>
</tr>
<tr>
<td>4a. Lower leaves alternate, upper opposite or whorled.</td>
</tr>
<tr>
<td>5a. Final ramifications of inflorescence forming a sympodium on which the solitary involucres are axillary</td>
</tr>
</tbody>
</table>
5b. Inflorescence umbellate or dichasial throughout ... *E. dracunculoides* 2

4b. Leaves all opposite.

6a. Leaves all or at least the larger ones 1 - 5 cm long. Gland appendages petaloid or obsolete.

7a. Stem - apices bearing long patent hairs in addition to short appressed hairs. Gland appendages obsolete ... *E. hirta* 4

7b. Stem - apices glabrous or pubescent with short appressed or slightly spreading hairs of same size. Gland appendages petaloid, white or pink, 0.3 - 0.5 mm long ... *E. hypericifolia* 5

6b. Leaves all 2 - 7 mm long. Gland appendages obsolete.

8a. Fruits glabrous ... *E. orbicularis* 7

8b. Fruits hairy.

9a. Fruits on a rather long stalk, soon cernuous, with rather short stiff hairs only on the ribs of the lobes ... *E. chamaesyce* 1

9b. Fruits on short stalks, erecto-patent, rather sparsely hairy with longish white hairs throughout ... *E. thymifolia* 9


Annual slender diffusely branched herbs, frequently with pinkish branches. Leaves oblong-elliptic, 2 - 7 × 1 - 4 mm, crenulate, prominently 3 - nerved; stipules ovate, hairy. Involucre hairy outside. Coccii with spreading hairs on the keel; seeds red brown, 4 - angled.

In moist depressions; 300 - 350 m.

*Pl. & Fr.* : August - May.

DURG : Balod. RAIPUR : Dhamtari.

Profusely branched annual glabrous erect herbs, 10-15 cm high. Leaves sessile, linear-lanceolate, with an acute, rarely rounded or subcordate base, frequently with a reddish midrib. Flowers yellowish green. Capsules smooth; seeds ellipsoid.

In wastelands; 300 m.

*Fl. & Fr.*: January.

RAIPUR: Dhamtari.


Annual herbs, 50-80 cm high. Stems fuscular, ribbed. Leaves long petiolated, oblong-obovate, 7-12 cm long, sub-entire, shallowly denticulate; petioles 1-3 cm long. Involucres 5 lobed, ovate. Fruits glabrous; seeds tumidulate.

In wastelands and fallow fields; 250-800 m.

*Fl. & Fr.*: August-November.


Perennial ascending herbs, very hairy, usually purplish green with age, branches up to 60 cm long. Leaves opposite, elliptic-oblong, obovate or oblong-lanceolate, 1-3 cm long, serrulate. Involucres minute, crowded, in capitulate finally peduncled axillary cymes, hairy. Fruits depressed globose, appressed pubescent.

Common in wastelands; 300-500 m.

*Fl. & Fr.*: August-April.

DURG: Durg. RAIPUR: Dhamtari, Raipur, Sitanadi.

Scandent herbs. Stems frequently red tinged; branches 5–60 cm long. Leaves oblong or ovate-lanceolate or obovate with an oblique, rounded subcordate base, 3 15 × 2 7 mm, serrate. Lobes of the involucre narrowly lanceolate, acuminate. Ovary and capsules glabrous; seeds smooth.

In wastelands and miscellaneous forests; 250–750 m.

*Fl. & Fr.*: August–April.

DURG: Balod. RAIPUR: Simga. RAJNANDGAON: Chilpi, Baghnadi, Rajnandgaon.


Large erect shrubs, up to 4 m high, with ca 5 cm thick stems at base, and pairs of stipular spines on tubercles. Leaves fleshy, obovate, ca 20 cm long. Involucres yellowish, 3–7 in a cyme; lobes of involucres broadly cuneate and fimbriate. Anthers sagittate, apiculate. Capsules 3 lobed, lobes compressed.

Along roadsides; 350 m.

*Fl. & Fr.*: February.

RAIPUR: Pithora.


Small procumbent herbs with many villously hairy stems, 5–10 cm long. Leaves opposite, oblong, 2–7 mm long, entire or toothed; petioles distinct; stipules subulate. Involucres minute, lobes ovate, very acute or mucronate, glands distinctly pedicelled. Fruits glabrous; seeds ovoid, whitish blue.

In wastelands; 400 m.

*Fl. & Fr.*: April.

DURG: Talgaon.

Annual erect glaucous green herbs, 20–50 cm high. Leaves alternate, sessile, linear-oblanceolate, 1.5–6.0 cm long, 2–5 mm broad, entire. Involucres solitary in the upper forks and cymosely sub siccate. Capsules 3-lobed, sulcate, ca 4 × 5 mm, glabrous.

In wastelands and fallow fields; 300–400 m.

*Fl. & Fr.*: January April.

RAIPUR: Simga. RAJNANDGAON: Khairagarh.


Annual purplish green herbs, with prostrate branches. Leaves opposite, oblong ovate, 4–7 mm long, serrate; stipules subulate, hairy. Involucres small, axillary, green or pinkish, without a common peduncle. Capsules pubescent; seeds furrowed.

In wastelands; 300–450 m.

*Fl. & Fr.*: August June.

DURG: Balod, Rajhara dhalli. RAIPUR: Dhamtari, Gariaband, Ksadol. RAJNANDGAON: Baghnadi, Deopura.


Profusely branched shrubs with terete polished branches, ca 1.5 m high. Leaves small, scaly, caducous. Involucres shortly pedicell, clustered, in the forks of the smaller branches; glands peltate. Capsules ca 5 mm long; cocci compressed velvety; seeds ovoid, smooth.

Used as a hedge plant; 370 m.

*Fl. & Fr.*: August.

RAIPUR: Sankra.
11. **Glochidion Forst.**

1a. Leaves pubescent beneath. Fruits 7 - 10 mm across  ...  *G. velutinum* 3

1b. Leaves glabrous. Fruits 15 - 25 mm across.

2a. Leaves glaucous beneath. Connectives very short. Fruits much broader than long, deeply lobed  ...  *G. multiloculare* 2

2b. Leaves not glaucous beneath. Connectives as long as the anther cells. Fruits suborbicular, scarcely lobed  ...  *G. hohenackeri* 1


Middle sized evergreen trees, with angular twigs. Leaves coriaceous, dark green usually narrowly elliptic or elliptic - acuminate, 7 - 12 cm long. Male flowers numerous, clustered, yellowish; anthers 4 - 6. Female flowers usually 1 - 3, campanulate, ca 3 mm long. Fruits slightly depressed, 15 - 18 mm broad; seeds red.

Roadsides; 450 m.

*Fr.* : September.

**RAJNANDGAON** : Salewara.

2. **G. multiloculare** Muell. Arg. in Linnaca 32: 59. 1863.

Dwarf gregarious bushes, 0.9 - 1.2 m high. Leaves 7.5 - 12.5 cm long, oblong, linear oblong or obovate, obtuse or sometimes apiculate, sometimes purplish beneath. Male flowers small, shortly pedicelled; female flowers large, stoutly pedicelled. Fruits strongly depressed, 20 - 25 mm broad; 10 - 15 lobed; seeds red.

In miscellaneous forests; 550 m.

*Fl.* & *Fr.* : May.

**RAIPUR** : Khallati.

Medium sized trees with nearly all parts pubescent or tomentose. Leaves elliptic oblong or lanceolate, 5–15 x 3–8 cm, with strong secondary nerves. Flowers in axillary clusters. Male flowers ca 4 mm across, yellow; stamens 3, connivent long. Female flowers green. Fruits depressed at both ends, deeply lobed; seeds red.


12. **Homoioa** Lour.

**Homoioa riparia** Lour. Fl. Cochinch 637 1790.

Rigid evergreen shrubs, ca 1.5 m high, with numerous erect branches. Leaves linear lanceolate or linear oblong, 7–25 x 0.5–2.5 cm. Flowers green, in axillary spikes with grey tomentose rachis; bracts ovate, acuminate, female spikes 5–8 cm long. Capsules tomentose; seeds bright crimson.

In miscellaneous forests; 350 m.

*Fl. & Fr.*: June.

RAIPUR: Taurenga.

13. **Jatropha** L.

1a. Leaves 5 - angled, margins glandular. Flowers yellow... ... *J. curcas* 1

1b. Leaves palmately 3 - 5 lobed, margins with stipitate viscid glands. Flowers red... ... *J. gossypifolia* 2


Shrubs, 1.5 - 4.0 m high. Leaves long petioled, broadly ovate cordate, 10 - 15 cm in dia., mature glabrous. Flowers small, yellowish, with a campanulate 5 - 10 lobed corolla, in terminal cymose panicles; petals cohering. Capsules subglobose or ellipsoid, ca 25 mm long.
Along cultivated fields & wastelands; 300 – 450 m.

Fl. : August; Fr. : January.

DURG : Balod. RAIPUR : Sitanadi.


Shrubs, 1 – 2 m high. Leaves palmately lobed, with yellow viscid glands covering the leaf margins, petioles, and stipules. Flowers small, red, in glandular corymbose cymes; petals free, stamens 10 – 12; Fruits broadly oblong, ca 2 cm long, reddish green.

Along roadsides and cultivated fields; 300 – 380 m.

Fl. & Fr. : April – September.

DURG : Rajhara dhalli. RAIPUR : Dhamtari.


Very leafy sarmentose shrubs, up to 1.5 m high with pinkish branches. Leaves elliptic or oblong, 12 – 35 mm long. Flowers red, campanulate, male and female sub - similar, usually one male and one female in each axil, sometimes racemed. Fruits on slender pedicels, globose, green turning purplish.

In wastelands and deforested areas; 300 – 400 m.

Fl. & Fr. : August – June.

DURG : Balod. RAIPUR : Dhamtari, Gariaband.

15. *MALLOTUS Lour.*

Trees, 2-7 m high. Leaves ovate, 8-15 cm long, toothed, pubescent and covered with scarlet glands beneath. Male flowers clustered in 15-25 cm long racemes, female racemes 5-7 cm long. Capsules 7-10 mm dia., coated with reddish mealy powder.

Common in sal and miscellaneous forests; 400-550 m.

Fl. : October - January; Fr. : June.

RAIPUR : Sitanadi, Taurenga. RAJNANDGAON : Taregaon.

The red powder on the fruits is used for dyeing.

16. **Phyllanthus** L.

1a. Anthers subglobose or reniform, horizontally dehiscent.

2a. Filaments more or less free to the base

2b. Filaments entirely connate into a column.

3a. Leaves mostly less than 12 mm long, though sometimes up to 18 mm long. Male sepals ca. 0.8 mm long; female sepals, in fruits, ca. 1 mm long

3b. Leaves 12-18 mm long. Male sepals ca. 1.2 mm long; female sepals, in fruits, 2.0-2.5 mm long

1b. Anthers oblong, vertically dehiscent.

4a. Shrubs

4b. Herbs.

5a. Filaments entirely connate into a column. Fruits warty

5b. Filaments free above for more than half its length. Fruits smooth.


Perennial herbs, ca. 30 cm high, with a woody base. Stems subterete, glabrous; branchlets subterete or 3-gonous. Flowers white or greenish white, on slender often reflexed pedicels. Fruits oblate, ca. 2 mm across; seeds brown, longitudinally ribbed on the backside, ca. 1 mm long.
In sal and miscellaneous forests ; 400 - 450 m.

Fl. & Fr. : August October.


Annual herbs. Stems suberete, glabrous; branchlets scabridulous on the angles. Leaves oblong with obtuse or rounded ends, glabrous, 5 15 x 3 6 mm ; stipules lanceolate subulate. Flowers numerous axillary, yellowish; male flowers 1 3 ; females solitary. Fruits oblate; seeds brown, longitudinally ribbed on the back.

In wastelands ; 500 m.

Fl. & Fr. : May.

RAIPUR : Khallari.


Shrubs with numerous rigid stems, 1.0 1.5 m high; branchlets spreading, with persistent stipules. Leaves distichous, crowded, linear-oblong, 3 8 mm long, glaucous. Flowers solitary or few together in nearly all the axils, ca 3 mm across, pink; disk of 3 peltate glands. Fruits globose, 3 4 mm across, smooth.


Annual erect or decumbent herbs, 20 - 30 cm high. Leaves oblong obovate, 8 20 mm long, with rounded subacute, apiculate apex. Male flowers in fascicles, sub sessile; females axillary and solitary. Capsules smooth, depressed globose, ca 3 mm dia.

In wastelands ; 250 350 m.

Fl. & Fr. : November - April.

DURG : Durg. RAJNANDGAON : Khairagarh, Rajnandgaon, Singhari,

Pinkish green annual herbs, 10 - 50 cm high. Leaves falcate lanceolate or oblong with a cuneate, rounded or slightly oblique base, apex obtuse or rounded, mucronate. Disk lobes glandular. Female flowers solitary. Fruits globose, purplish green, lobed, tubercled; seeds transversely ribbed on the back.

In wastelands and miscellaneous forests; 350 - 750 m.

Fl. & Fr. : August January.

DURG : Balod. RAIPUR : Dhamtari, Singhpur. RAJNANDGAON : Chilpi, Deopura.


Annual slender herba. 5 - 30 cm high. Stems narrowly margined. Leaves elliptic lanceolate or oblong with a rounded base, subobtuse, 1.3 x 0.3 0.6 cm; petioles ca 1 mm. long; stipules peltate, ovate-triangular. Flowers solitary axillary. Fruits long pedicelled, globose, green.

Along roadside drains; 300 - 500 m.

Fl. & Fr. : June September.

DURG : Balod RAIPUR : Dhamtari, Khallari. RAJNANDGAON : Baghnadi, Deopura.

17. RICINUS L.


Small trees. Shoots and panicles glaucous. Leaves peltate, orbicular, palmatifid, green, often suffused with red, 2.5 - 5.0 cm in dia. Flowers yellow, in sub sessile cymes; female flowers in 1 - 7 flowered cymes. Capsules 1.2 - 2.5 cm, globose, echinate; seeds oblong, smooth, mottled.
Commonly cultivated: 300 m.

*Fl.*: January; *Fr.*: June.

**RAIPUR**: Raipur.

The seeds are used for extracting 'Castor oil'.

18. **Sauropus Blume**

*Sauropus quadrangularis* Muell. Arg. in Linnacea 32: 73. 1863.

Perennial tufted herbs, *ca* 40 cm high; branchlets angled. Leaves 1-2 × 0.7-1.2 cm, elliptic-oblong or obovate, apiculate. Flowers axillary, white, on long filiform pedicels. Fruits globose, *ca* 8 mm dia.; cocci rounded on the back, 3-gonous, *ca* 4 mm long, smooth, pale.

In sal forests and wastelands: 400-550 m.

*Fl.* & *Fr.*: August-November.

**RAIPUR**: Chhoora, Sitanadi.

19. **Sebastiania Spreng.**


Annual herbs, 20-40 cm high, with erect or ascending often angled branches. Leaves linear, 2-7 cm long, crenulate. Flowers minute yellowish, in short terminal spikes; male flowers above, females at the base. Capsules 7-10 mm long, crustaceous subglobose; seeds ellipsoid-oblong, yellow.

In moist depressions and miscellaneous forests; 300-550 m.

*Fl.* & *Fr.*: August-November.

**DURG**: Balod. **RAIPUR**: Taurenga. **RAJNANDGAON**: Baghnadi, Deopura.


Undershrubs or shrubs, up to 2 m high. Stems sulcate. Leaves ovate, elliptic, rhomboid or obovate, with an acute or cuneate - rounded base, glaucous beneath, 2.4 x 1.5-2.0 cm; stipules scarious, ovate - lanceolate. Flowers small, green, on filiform pedicels. Fruits depressed globose, milky white when ripe.

In wastelands and along paddy fields; 300-350 m.

Fl. & Fr.: August October.

RAIPUR: Dhamtari, Raipur. RAJNANDGAON: Singhari.

99. URTICACEAE
(D. M. Verma & M. J. Hann)

1a. Plants, particularly the inflorescence, clothed with stinging hairs

1b. Plants without stinging hairs.

2a. Flower clusters in elongated spikes

2b. Flower clusters solitary axillary (the uppermost clusters in Ponzolzia may sometimes appear spike-like due to gradually decreasing size of leaves).

3a. Small slender herbs, 2-20 cm high. Leaves fal- cate or cuneate or hatched-shaped. Female perianth 3-5-partite

3b. Tall rather stiff herbs, up to 1 m high. Leaves equilateral, linear - lanceolate or the lower ovate - lanceolate. Female perianth tubular, toothed at the mouth

**Elatostema cuneatum** Wt. Icon. 6 : 35. t. 2091. f. 3. 1853.

Small herbs, 10 - 20 cm high, often rooting near the base. Leaves subsessile, tending cuneate or hatchet shaped, tip rounded or subacute; stipules ovate. Flowers green; the heads of female flowers sessile, solitary, axillary, perianth - segments 3, very short. Achenes ellipsoid, ribbed, yellow.

Among rock boulders, along streams; 500 m.

*Fl. & Fr.* : September.

RAJNANDGAON : Deopura.

**Girardinia Gaud.**


Perennial, monoeccious herbs, 50 - 70 cm high, clothed with stinging hairs. Leaves entire or 3 - 7 lobed, acuminate, truncate or cordate at the base, more or less appressed hairy, margins inciso serrate; stipules 7 - 15 mm long. Flowers minute, white, usually in simple spikes; male flowers aggregated in heads along the rachis. Fruits green.

On hill tops, among rock boulders; 550 m.

*Fl. & Fr.* : October.

RAJPUR : Taurenga.

Its ash is reported highly medicinal for skin diseases like eczema and ring worms.

3. *Neodistemon Babu & Henry*

Hairy herbs. Leaves membranous, broadly ovate, 5-8 cm long, acuminate, cuneate at the base; petioles 2.5-3.5 cm long. Flowers in interrupted spikes; male flowers minute, tipped with hooked hairs; females strigose. Fruits ca 2 mm long, ovoid or rhomboid, beaked.

In miscellaneous forests; 500 m.

Fl. & Fr.: November.

RAJNANDGAON: Deopara.

4. POZULZIA Gaud.


Erect perennial herbs, 60-90 cm high. Leaves sessile or shortly petiolated, opposite, oblong - lanceolate, 3-10 cm long, acute or acuminate, upper ones much smaller, mostly alternate, linear - oblong. Flowers white, clustered in erect or nodding, terminal, ca 45 cm long spikes; male flowers truncate in bud; female perianth in fruits with 2 or 3 broad lateral wings.

Along streams; 450 m.

Fl. & Fr.: September.

RAJNANDGAON: Salewara.

100. ULMACEAE
(D. M. Verma)

1a. Flowers distinctly pedicelled; perianth lobes in male flowers imbricate, perianth in female and bisexual flowers caducous. Fruits 3-5-angled

Calops 1

1b. Flowers subsessile; perianth lobes in male flowers induplicate - valvate. Perianth in both female and male flowers persistent. Fruits 2-angled

Trema 2
1. **Celtis L.**


Semi-deciduous trees with rather slender greyish brown deciduously hairy branches. Leaves ovate elliptic, 5 20 x 2 8 cm, serrate, mostly oblique at the base, with 3 6 pairs of nerves. Inflorescence tomentose. Flowers bisexual or male, 2 3 mm across. Fruits globose. 5 8 mm across, deep red or blackish.

In mixed forests; 500 m.

*Fl. & Fr.*: January - February.

RAIPUR: Sitanadi.

2. **Trema Lour.**

1a. Leaves silky tomentose beneath

1b. Leaves scabrid beneath

... *T. orientalis* 1

... *T. pollotilla* 2


Trees or shrubs with smooth or fissured greyish bark. Leaves ovate, elliptic or lanceolate, serrate, 5 15 x 2 6 cm, cordate, rounded or truncate at the base, silvery or grey brown tomentose beneath. Flowers unisexual, pentamerasous, ca 2 mm long. Drupes ovoid, 3 5 mm long, black.

In mixed forests; 800 m.

*Fl. & Fr.*: September.

RAJNANDGAON: Chilpi.

Small trees with greyish bark and scabrid branchlets. Leaves obovate-lanceolate, 5–12 cm long, acuminate, serrulate, hispid, usually shining above, pale beneath, base rounded or cordate. Flowers in compact cymes. Drupes ovoid, blackish.

In miscellaneous forests; 450–500 m.

Fl. & Fr.: April–September.

RAIPUR: Sitanadi. RAINANDGAON: Deopura.

101. MORACEAE
(D. M. Verma & M. I. Hanti)

1a. Flowers hidden in a hollow receptacle (fig) ...

1b. Flowers exposed, not in a hollow receptacle.

2a. Leaves sub-cordate with scarcely up to 5 mm long petioles, base narrowed. Male flowers in heads, female solitary or 3–4–together ...

2b. Leaves distinctly petiolate with the petioles generally 1.5–8.0 cm long, base more or less rounded or cordate. Male flowers in cylindric spikes, females in heads ...

1. BROUSSONETIA L’Herit. ex Vent.


Trees, 9–15 m high, with thick pubescent branches. Leaves long-petiolated, usually ovate cordate, acuminate, coarsely dentate, often deeply lobed, especially on younger plants, rough above, pubescent beneath, 7.5–12.0 cm long. Flowers red. Fruiting heads ca 2 cm across, red.

Planted; 500 m.

Fl. : May.

RAIPUR: Sitanadi.

Used for making paper in China & Japan.
2. Ficus L.

1a. Figs stalked.

2a. Leaves all or at least in the upper part of the branches opposite

   ...  \[ F. hispida \]

2b. Leaves all spiral.

3a. Leaves very obliquely cordate at the base with one basal lobel arge and the other short or absent

   ...  \[ F. semicordata \]

3b. Leaves acute, rounded or equally cordate at the base.

   4a. Leaves smooth above. Figs on tubercles on the stem and branches, or on leafless branches

       ...  \[ F. racemosa \]

   4b. Leaves usually scabrid above. Figs axillary.

   5a. Leaves almost all asymmetric with one side more or less gibbous, acute or cuneate at the base

       ...  \[ F. tinctoria \]

   5b. Leaves all symmetric, mostly rounded or cordate at the base.

       6a. Straggling shrubs

       ...  \[ F. heterophylla \]

       6b. Erect shrubs or trees.

       7a. Leaves elliptic - oblong

       ...  \[ F. ulvens \]

       7b. Leaves broadly ovate or orbicular

       ...  \[ F. vallata \]

1b. Figs sessile.

8a. Leaves cuneate - acuminate with 2 - 9 cm long acumen

   ...  \[ F. religiosa \]

9b. Leaves obtuse, acute or shortly mucronate.

   9a. Leaves densely white tomentose beneath. Figs ca 8 mm across, tomentose

       ...  \[ F. mollis \]

   9b. Plants not as above.

   10a. Figs 15 - 20 (-30) mm across, ripening red

       ...  \[ F. benghalensis \]
11a. Aerial roots from the branches developing pillar-roots. Leaves rather thick, acute or obtuse, with prominent basal nerves; cystoliths on both sides of the lamina ... F. microcarpa 5

11b. Plants not as above.

12a. Petiole articulate to the lamina; cystoliths only on the underside of the lamina ... F. virens 12

12b. Petiole not articulate; cystoliths only on the upper side of the lamina ... F. amplissima 1


Large spreading trees, all parts glabrous. Leaves thinly coriaceous, broadly ovate or elliptic lanceolate, acute or obtusely cuspidate, 7 15 × 4 - 9 cm, base narrowed or rounded; cystoliths present on the upper surface; lateral veins 6 - 10 pairs. Figs axillary and below the leaves, obovoid, subglobose, ca 1 cm across. Tepals reddish.

In villages; 300 m.


Large trees, 7 20 m high, sending down greyish green aerial roots from the branches. Leaves coriaceous, ovate or orbicular-ovate or elliptic, 10 - 20 × 5 12 cm, obtuse, with cystoliths abundant on the surface. Figs sessile, in pairs, axillary, globose, 15 20 mm across, red when ripe.

Frequent along roadsides, sometimes in secondary forests; 300 - 550 m.

Fl. & Fr. : throughout the year.

RAIPUR: Dhamtari, Saraipalli, Sitanadi.

Shrubs, ca 3 m high. Leaves membranous, ovate or lanceolate, sub entire or denticulate, scabrid on both the surfaces, juvenile 5 many- lobed. Figs solitary, axillary, peduncled, ellipsoid, 12 - 22 × 8 - 17 mm, young scabrid, ripening orange red.

In miscellaneous forests; 550 m.

*Fl. & Fr.*: May - June.

RAIPUR: Taurenga.


Shrubs or trees, up to 6 m high, all parts more or less hispid pubescent. Leaves usually opposite, ovate, obovate or subovate, 10 - 30 × 5 - 15 cm, base rounded, cuneate or subcordate, scabrid above, hispid beneath. Figs depressed globose, 15 - 25 mm across, axillary or on up to 1.5 m long clustered leafless hanging or trailing branches.

Along roadsides, streams and in sal forests; 500 - 550 m.

*Fl. & Fr.*: January - June.

RAIPUR: Khallari, Sitandii, Taurenga.


Large evergreen trees with copious slender aerial roots from the branches, developing pillar roots; bark grey. Leaves spirally arranged to subdistichous, glabrous or puberulous; stipules ca 15 mm long, glabrous. Figs paired, axillary, sessile, 5 - 9 × 7 - 11 mm, ripening pink to mauve purple and ultimately black. Bristles between the flowers few or abundant.


Trees, 8-16 m high, often throwing out small aerial roots. Stems smooth, whitish. Young branches brown tomentose. Leaves coriaceous, ovate oblong, 6-14 × 4-8 cm, obtuse or subacuminate, whitish brown tomentose. Figs axillary, paired, depressed globose, ca 8 mm across.

On hill slopes; 450 m.

Fl. & Fr.: June.
RAIPUR: Gariaband.


Bushes or small trees with tomentose twigs; bark smooth, dull grey. Leaves orbicular ovate, 4-12 cm long, acute or apiculate, denticulate, sometimes 3-5 lobed. Figs axillary, solitary, subglobose or pyriform, ca 2 cm across, pubescent; yellow or purple when ripe. Male flowers on hairy pedicels; gall flowers sessile or stalked.

Planted: 450 m

Fr.: September.
RAJNANDGAON: Rajnandgaon.


Trees, 5-10 m high with spreading branches; stems and branches greyish brown. Leaves ovate oblong or elliptic lanceolate, 5-15 × 3-7 cm, base acute or rounded. Figs shortly peduncled, pyriform, or subglobose, 2-3 cm across, red, on main branches or trunk, or on leafless branches, orifice closed by 5-6 apical bracts.

Frequent in wastelands and miscellaneous forests; 350-500 m.

Fl. & Fr.: May - September.
RAIPUR: Dhamtari, Sitanadi. RAJNANDGAON: Salewara.

The figs are full of small insects and scarcely edible.


Large semi-deciduous, with greyish branches. Leaves coriaceous, shining, long-petioled, drooping, ovate, 5-15 cm broad, caudate-
acuminate with 2-9 cm long acumen. Figs in pairs, axillary, sessile, smooth, depressed globose, ca 1 cm across, ripe pink, purple or ultimately black.

Common in villages and on roadsides; 300-650 m.

_Fl. & Fr._: May - September.

RAIPUR: Boraib. RAJNANDGAON: Baghnadi.

Considered sacred by Hindus.


_Bhuin Gulor, Dooman_.

_Ticos_, 5-8 m high with greyish branches; trunk 20-25 cm thick. Leaves alternate, elliptic to oblong lanceolate, acuminate, entire or serrate, scabrid or smooth on upper surface, more or less pubescent beneath. Figs globose or pyriform, 1-2 cm across, in pairs or clusters on long scaly leafless branches arising from near the base of the trunk, reddish-brown and ribbed when ripe.

Along streams, and in mixed forests; 400-750 m.

_Fl. & Fr._: throughout the year.

RAIPUR: Sitanadi, Taurenga. RAJNANDGAON: Chilpi, Rengakhar, Taregaon.


Large straggling shrubs with copious aerial roots. Leaves elliptic ovate or subrhomboid, 5-15 x 4-7 cm, frequently sinuate, hispidulous, usually scabrid beneath, acute or acuminate. Figs axillary, paired, pyriform subglobose, 8-12 mm across, ripening golden yellow (gall) or red (seed).

In miscellaneous forests; 400-500 m.

_Fl. & Fr._: June - November.

RAIPUR: Khallari. RAJNANDGAON: Deopura.

Deciduous trees, 4–10 m high, with few or numerous aerial roots. Leaves ovate-lanceolate, 10–20 × 4–9 cm, abruptly obtusely acuminate, rounded or truncate at the base, slightly glossy, with 3–5 basal nerves and 6–8 pairs of lateral nerves. Figs in axillary pairs, subsessile or shortly peduncled, globular, glabrous, 3–10 mm across, creamy white.

In villages; 300–450 m.


*DURG* : Baghnadi, Budbhum, Durg.

Ripe figs eaten raw.


Profusely branched, very leafy dioecious trees, 2–3 m high. Stem greyish with some round blotches. Leaves elliptic or rhomboid, or obovate, irregularly toothed in the upper half, scabrous on both the surfaces. Flowers greyish white; ovary stipitate with two long thread-like stigmas. Fruits pisiform, yellow, edible.

On roadsides; 350 m.

*Fl. & Fr.* : May–August.

*RAIPUR* : Dhamtari.

102. **CERATOPHYLLACEAE**

*(V. Chandra)*

**CERATOPHYLLUM** L.

*Ceratophyllum demersum* L. Sp. Pl. 992. 1753.

Profusely branched, submerged floating aquatic herbs. Leaves whorled, usually 4–9 at the nodes, 10–25 mm long, mostly twice-
forked, segments filiform. Flowers inconspicuous, unisexual, solitary axillary. Fruits ellipsoid or ovoid, compressed, with usually 3 horns.

In ponds and streams; 300–450 m.

_Fl. & Fr._: October.

_RAIPUR_: Dhamtari. RAJNANDGAON: Rajnandgaon.

103. HYDROCHARITACEAE

_(D. M. Verma)_

1a. Stems present. Leaves cauline.

3a. Leaves whorled, or sometimes the lower opposite ... _Hydrola_ 2

2b. Leaves all alternate ... _Nechanandra_ 3

1b. Stems absent. Leaves clustered on rootstocks or stolons.

3a. Leaves sessile, all linear.

4a. Flowers unisexual; petals absent; female scapes coiled in fruits ... _Vallisneria_ 5

4b. Flowers bisexual or unisexual; petals present; female scapes never coiled ... _Blyxa_ 1

3b. Leaves petioled, mostly ovate, oblong or suborbicular ... _Ottelia_ 4

1. _BLYXA_ Thouars

1a. Flowers bisexual. Stamens 3 ... _B. aubertii_ 1

b. Flowers unisexual; stamens 9 ... _B. octandra_ 2


Slender aquatic herbs. Leaves 10 - 50 × 0.5 - 1.0 cm. Scape solitary or more, up to 40 cm long; spathe 4 - 7 cm long, 1 flowered. Petals 1 -
2 cm long; ovary long beaked. Seeds ellipsoidal, 1--2 mm long, with 8 longitudinal tubercled ribs.

Along ponds; 300 m.

_Fl. & Fr._: August.


Aquatic, submerged, dioecious herbs. Leaves linear, 10--50 cm long, 5--10 mm broad, subentire or serrulate. Male spathe tubular; flowers white; petals linear; stamens 8. Female spathe stouter; petals filiform. Seeds tubercled, acute or shortly tailed.

In ponds & streams, in shallow waters; 300--550 m.

_Fl. & Fr._: September--January.

_RAIPUR_: Dhamtari, Pithora, Taurenga. _RAJNANDGAON_: Baghnadi, Singhari.


_Hydrilla verticillata_ (L. _f._) Royle, _Illustr._ t. 376. 1839. _Serpicula verticillata_ L. _f._ Suppl. 416, 178).

Copiously branched, dioecious, submerged aquatic herbs, with long stolons. Leaves linear-oblong, 8--15×1--2 mm, entire or serrulate, lower often opposite, upper 3--8 nately whirled. Spathe solitary axillary, male subglobose, female cylindrical. Flowers reddish white.

In ponds & rivers; 300--500 m.

_Fl. & Fr._: January.

_RAIPUR_: Dugli, Kasdol, Taurenga.


In ponds; 500 m.

Fl. : November.

RAJNANDGAON : Deopura.


Submerged annual herbs. Leaves long petiolated, upper ovate suborbicular, 5-22 x 4-21 cm, lower narrower, linear-lanceolate. Spathes elliptic, 2-6 cm long, usually with 5-10 entire or wrinkled wings, sometimes only ribbed. Flowers bisexual; petals spatulate, 20-30 x 10-13 mm, white with yellow spotted base.

In sluggish streams & pools; 350-550 m.

Fl. & Fr. : November May.

RAIPUR : Mainpur, Pithora. RAJNANDGAON : Taregaon.

5. Vallisneria L.


Submerged, stoloniferous, dioecious herbs. Leaves 5-40 cm long, 3-6 mm broad. Male spathes ovoid, ca 5 mm long, many flowered, on short scapes; flowers ca 0.5 mm across, white, detaching and floating. Female spathes cylindrical, ca 1 cm long, on long coiled scapes.

In ponds & river banks; 300-450 m.

Fl. & Fr. : January to June.

RAIPUR : Gariaband, Pithora, Simga.

104. BURMANNIAEAE

(D. M. Verma)

**Burmansia caelestis** D. Don, Prodr. Fl. Nep. 44. 1825.

Annual slender herbs, 5-10 cm high, usually unbranched. Leaves 2-3 at the base, linear-lanceolate, ca 10×2 mm, and a few scale-like upwards. Flowers solitary or few, terminal, ca 1 cm long, with 3 elliptic purplish wings; perianth lobes minute, yellowish.

On muddy drain slopes; 450 m.

Fl. & Fr. : January.

RAIPUR : Singhpur.

105. ORCHIDACEAE

(D. M. Verma & P. C. Pant)

1a. Plants epiphytic

1b. Plants terrestrial.

2a. Inflorescence on a separate leafless shoot.

\[ 3a. \] Flowering raceme always erect; lip distinctly 3 lobed, secalate or spurred at the base

\[ Eulophia 1 \]

3b. Flowering raceme at first decurved; lip obscurely 3-lobed, widely ventricose at the base but not spurred

\[ Gaudium 2 \]
2b. Inflorescence on central leafy shoot.

4a. Lip spurred.

5a. Upper leaves on the stem passing into ovate bracts. Flowers 5 - 7 cm across  
Platanthera 5

5b. Leaves not passing into bracts. Flowers 0.3 - 1.5 cm across.

6a. Spur scrotiform, 1 - 2 mm long; stigmas connate, not borne on processes  
Peristylus 4

6b. Spur linear - filiform, 10 - 60 mm long; stigmas free, generally borne on processes  
Habenaria 3

4b. Lip not spurred  
Zeuxine 7

I. Eulophia R. Br. ex Lindl.

2a. Column in the flower produced into a distinct foot.

3a. Flowers golden yellow; sepals 3 - 4 cm long  
E. flavia 2

3b. Flowers pale green, whitish or pale yellow, with pink - purple marking; sepals 3.0 - 2.5 cm long  
E. nuda 6

2b. Column in the flower not or scarcely produced into a foot.

4a. Bract shorter than the ovary. Lip saccate at the base  
E. explanata 1

4b. Bract as long as or longer than the ovary. Lip with a short bent spur.

5a. Sepals spreading, linear - lanceolate, acuminate, green  
E. herbacea 4

5b. Sepals cret, ovate, obtuse, yellow brown  
E. muckiment 5


Pseudobulbs ovoid, annulated, ca 5 cm long. Leaves appearing with late flowers, broadly elliptic - lanceolate, acuminate, up to 25 x 10
cm. Racemes arising from the lower part of the pseudobulb; sheaths dull white. Flowers ca 1 cm across, white with faint brown lines; bracts lanceolate, acuminate.

In miscellaneous forests; 500 m.

Fl: May.

RAIPUR: Sitanadi.


Stout herbs with ca 5 cm thick creeping tuberous rhizome. Leaves appearing after flowers, elliptic lanceolate, 30 - 50 x 5 - 7 cm, plicate. Racemes 30 - 50 cm long, many flowered, on long stout peduncles. Flowers golden yellow with some brown spots near its saccate base; lip 3 lobed, lobes oblong; suborbicular.

In miscellaneous forests; 550 m.

Fl: June.

RAIPUR: Taurenga.


Pseudobulbs obconic. Leaves grass-like, 10 - 20 cm long, 5 - 8 mm broad. Panicle 1 + 2 branched, ca 60 cm long, laxly several flowered, on ca 40 cm long peduncles. Flowers brownish green; sepals oblong-lanceolate, ca 15 mm long; lip 3 lobed, side lobes green with brown nerves, midlobe white with purple hairs along the middle.

In miscellaneous forests; 550 m.

Fl: October.

RAIPUR: Taurenga.


Tubers ovoid, ca 3 cm long. Leaves plicate, linear or elliptic-lanceolate, 15 - 25 cm long. Racemes separate from the leaves, few-flowered, on 40 - 60 cm long peduncles. Flowers ca 5 cm across, greenish white; lip ca 2 cm long with small side lobes, spur very short.
In sal forests; 500 m.

Fl.: May June.

RAIPUR: Sitanadi.


Pseudostems up to 20 cm high. Leaves plicate, usually 2, along with the flowers, lanceolate, up to 75 cm long, 5-8 cm broad, acuminate. Racemes short peduncled, laxly 8-10-flowered. Flowers 12-18 mm long; sepals and petals ovate-oblong, yellow tinged with reddish brown, lip 3 lobed. Yellow, purple streaked, with three white lamellae.

Fl.: July August.


Tubers large, ovoid. Leaves plicate, elliptic lanceolate, 25-35 cm long. Peduncles separate from the leaves, stout, ca 50 cm long; racemes lax, ca 20 cm long, many flowered. Sepals purplish green; petals white; lip white or pale yellow flushed with pink purple.

In sal forests; 500 m.

Fl.: May June.

RAIPUR: Sitanadi.

2. Geodorum Jackson ex Andr.


Tubers globose, ca 3 cm across. Leaves elliptic, 15-40 x 4-7 cm, with 3-4 prominent nerves on either sides of the midrib, base tapering to a long sheath. Racemes short, corymbose, drooping when young. Flowers
pale purple or rose coloured; sepals ca 1 cm long; lip emarginate, disk with a ridge ending in raised yellow calli.

In miscellaneous forests; 400 - 500 m.

Fl. June.; Fr.: October.

RAIPUR: Chhoora, Mainpur.

3 Habenaria Willd.

1a. Leaves alternate, scattered throughout the stem.

2a. Bracts acuminate, ciliate - margined. Petals entire ... \textit{H. commelinifolia} 1

2b. Bracts acute, eciliate. Petals 2 - partite almost to the base ... \textit{H. digitata} 2

1b. Leaves clustered at the base or around the middle of the stem.

3a. Leaves appressed to the ground. Midlobe of the lip narrower than the side lobes ... \textit{H. roxburghii} 6

3b. Leaves erecto - patent, not appressed to the ground. Midlobe of the lip as broad as or broader than the side lobes (except in \textit{H. plantaginea}).

4a. Midlobe of the lip narrower than the side lobes ... \textit{H. plantaginea} 5

4b. Midlobe of the lip as broad as or broader than the side lobes.

5a. Leaves pale yellowish white - margined. Spur about as long as the ovary ... \textit{H. marginata} 4

5b. Leaves not margined. Spur longer than the ovary ... \textit{H. furcifera} 3


Robust herbs, 40 80 cm high. Leaves oblong lanceolate, 7 15 cm long, prominently membranous margined. Spikes lax, 10 15 cm long. Flowers white, 12 18 mm across; lateral sepals gibbous, deflexed, median sepal orbicular; lip linear, with two filiform lateral lobes; spur ca 5 cm long.
In mixed and sal forests; 400–800 m.

Fl. & Fr. : September - October.

RAIPUR : Gariaband. RAJNANDGAON : Baghnadi, Chilpi.


Herbs, 30–60 cm high. Leaves elliptic-lanceolate, 5–10 cm long, papillosely ciliate, lowest reduced to sheaths. Spikes 8–12 cm long. Flowers greenish white; lateral sepals obliquely ovate, ca 8 mm long; petals 2-partite almost to the base with linear segments; lip with 3 linear-filiform lobes, ca 12 mm long; spur subclavate.

In mixed forests; 300–450 m.

Fl. & Fr. : September - October.

RAJNANDGAON : Satewara, Singhari.


Herbs, 30–50 cm high. Leaves 3–5 clustered near the base of the stem, elliptic-oblong, obovate or suborbicular, 7–15 cm long. Spikes 10–15 cm long. Flowers greenish, ca 15 mm long; lip trifid, ca 8 mm long, lateral lobes filiform; spur slightly exceeding the ovary. Capsules fusiform, ca 12 mm long, beaked.

In mixed forests; 450–750 m.

Fl. & Fr. : September

RAJNANDGAON : Chilpi, Satewara.


Small herbs, 10–20 cm high. Leaves in the lower part of the stem, oblong, 3–5 x 1.5–3.0 cm. Spikes ca 5 cm long. Flowers yellow or greenish yellow; sepals ca 6 mm long; petals falcate; lip 3-partite, lobes linear; spur fusiform.

In mixed forests; 450 m.

Fl. : September.

RAJNANDGAON : Satewara.

Herbs, 20 - 50 cm high. Leaves 4 - 7, clustered near the base, elliptic - oblong, 5 - 10 x 2 - 3 cm. Spikes 8 - 15 cm long. Flowers white, puberulus; sepals and petals *ca* 5 mm long; lip *ca* 10 mm long with a linear mid-lobe and falcately oblong side-lobes; spur slender, *ca* 3 cm long.

In *sal* forests; 500 m.

*Fl. & Fr.*: October.

RAIPUR: Taurenga.


Herbs, 20 - 50 cm high. Leaves 2 - 3, appressed to the ground, broadly elliptic or suborbicular, 4 - 8 cm long. Spikes dense, 5 - 10 cm long. Flowers *ca* 1 cm across, white; sepals ovate - oblong; petals linear; lip with a lanceolate mid-lobe and rounded side-lobes; spur 2 - 3 cm long, clavate at the tip.

In mixed forests; 450 m.

*Fl. & Fr.*: September.

RAJNANDGAON: Baghnadi.

4. **Peristylus Bl.**

1a. Lateral sepal 6 - 10 mm long; *lip ca* 8 mm long ... *P. constrictus* 1

1b. Lateral sepal 2 - 4 mm long; *lip* 2 - 4 mm long.

2a. Lip smaller than the sepals, entire or scarcely 3 - lobed ... *P. plantagineus* 3

2b. Lip slightly larger than the sepals, distinctly 3 - lobed ... *P. lawit* 2

Stout herbs, 30–50 cm high. Leaves clustered near the middle of the stem, elliptic, 7–12 cm long, with large sheaths inflated at the mouth. Flowers yellowish or greenish white; petals ca 8 mm long; lip 3 lobed from the middle, midlobe lanceolate, side lobes narrower; spur globose, ca 2 mm long.

In mixed forests; 450 m.

Fr.: September.

RAJNANDGAON: Salewara.


Slender herbs, 15–30 cm high. Leaves 3–4, above the middle of the stem, suberect, elliptic-lanceolate, 5–12 cm long. Spikes 5–10 cm long, densely clothed in the lower part with empty bracts (sometimes with abortive flowers). Flowers white; floral parts ca 3 mm long; spur bulbous.

In mixed forests; 450 m.

Fl. & Fr.: August.

RAJNANDGAON: Salewara.


Robust herbs, ca 60 cm high. Leaves 4–8, clustered about the middle of the stem, oblong-lanceolate or broadly elliptic, 7–23 × 2–9 cm, pinkish beneath. Spikes 10–20 cm long, compactly numerous flowered. Flowers pinkish brown; sepals 2.0–5.0 × 1.5–2.5 mm; lip 2.0–3.5 × 2.0–3.5 mm.

In mixed forests; 450–800 m.

Fl. & Fr.: September.

RAJNANDGAON: Chilpi, Salewara.


Stout herbs, 0.5 1.2 m high. Leaves ovate oblong, 5 18 × 2 7 cm, yellowish margined. Racemes 15 20 cm long, 2 6 - flowered. Flowers large, greenish white; sepals ca 4.5 cm long; petals ca 3.5 cm long; lip fan-shaped, ca 5 × 9 cm, fimbriate; spur cylindrical, 7 10 cm long.

In moist shady places; 350 m.

*Fl. & Fr.* : October.

RAJNANDGAON : Siughari.


1a. Flowers 4 - 5 cm across; sepals and petals yellowish green or bluish, brown tessellated on the inside; lip white ... *V. tessellata* 1

1b. Flowers ca 1 cm across; sepals and petals yellow, not tessellated; lip pink dotted ... *V. testacea* 2


Epiphytic herbs. Stems 30 50 cm long. Leaves coriaceous, distichous, closely packed, linear, complicate, 15 20 cm long, keeled. Flowers racemose; sepals and petals clawed, obovate, with wavy margins; lip with small acute side lobes and broad truncate notched mid lobe; spur conical.

Common on roadside trees of *Butea monosperma*, *Diospyros melanoxylon*, *Madhuca longifolia*, *Mangifera indica* and *Terminalia alata*; 350 - 450 m.
Fl. & Fr.: throughout the year.

DURG: Buddhun, Dondi. RAIPUR: Dhamtari, Uugh, Pithora.
RAJNANDGAON: Baghnadi, Salewara.


Small epiphytic herbs. Stems 10 - 15 cm long. Leaves coriaceous, distichous, linear, keeled, 7 - 10 cm long, premorse at the tip. Flowers in lax few flowered 5 - 10 cm long racemes; sepals and petals oblanceolate, ca 8 mm long, wavy margined; lip with small side-lobes and oblong, ca 5 mm long mid-lobe.

On roadside trees of Butea monosperma, Diospyros melanoxylon, Madhuca longifolia and Terminalia bellirica; 400 - 500 m.

Fl. & Fr.: April - September.

DURG: Dondi. RAIPUR: Taurenga. RAJNANDGAON: Deopura.

7. Zeuxine Lindl.


Annual terrestrial herbs, 5 - 15 cm high, with fleshy roots. Stem closely sheathed, often creeping below. Leaves linear, erect, grass-like, 2 - 5 cm long. Flowers in 2 - 5 cm long spikes; sepals ca 5 mm long, lip linguiform, ca 6 mm long, fleshy, green.

In wastelands; 300 m.

Fl. & Fr.: August.

RAIPUR: Raipur.
106. ZINGIBERACEAE

(D. M. Verma & J. Lal)

1a. Leaves spiral; sheaths closed. Inflorescence compact, terminal on the leafy stem. Lateral staminodes absent

   ...  Costus 1

1b. Leaves distichous; sheaths open. Inflorescence compact or open, terminal on the leafy stem or directly from the rhizome. Lateral staminodes present or absent.

   2a. Inflorescence compact with a terminal plume of barren bracts; flowering bracts laterally partially connate, forming pouches.

      ...  Curcuma 2

   2b. Inflorescence compact or open, without a terminal plume of barren bracts; bracts all free.

      3a. Inflorescence open. Stamen much longer than the lip; staminodes free

      ...  Gibbua 3

      3b. Inflorescence compact. Stamen shorter than the lip; staminodes adnate to the lip

      ...  Zingiber 4

1. Costus L.


Perennial rhizomatous, 1 - 2 m high. Leaves oblanceolate, obovate, 15 - 25 × 6 - 15 cm, pubescent or villous beneath. Spikes ovoid, 4 - 8 cm long; bracts greenish red becoming bright red on maturity. Calyx green becoming red; corolla white; lip broadly obovate, cuneate, 4 - 8 cm long, white with a hairy yellow band at the base, crumpled, margined; connective petaloid.

In sal and mixed forests; 500 - 600 m.

Fl.: August October; Fr.: up to June.

RAIPUR: Borai, Taurenga.

Tubers eaten by tribals and considered very good for health and digestion.

In one clump in Taurenga (Verma 25165, October, 1976) the whole of the mature spike, including bracts, calyx and capsules, were observed to be pale green, even when dry. This is very unusual. The tribals distinguish it as 'Safed (white) Kev-kanda.'
2. Curcuma L.

1a. Inflorescence central, amidst leaves, with its peduncle enclosed within leaf-sheaths

... C. pseudomontana 2

1b. Inflorescence lateral, separate from the leafy shoot, usually produced before the leaves, sometimes persisting and found with the leaves.

2a. Rhizomes strongly aromatic. Leaves uniformly green ... C. aromatica 1

2b. Rhizomes almost non-aromatic. Leaves mostly with a purple band on the upper surface along the midrib ... C. zedoaria 3


Rhizomes whitish inside, strongly smelling of camphor; some root fibres ending in ellipsoid tubers. Leaves long petioled, 50–80 × 18–28 cm, pubescent beneath. Peduncles ca 25 cm long; spikes ca 15 cm long; lower bracts green, upper pink tipped; coma bracts pinkish white. Corolla lobes and staminodes white with pink tips; lip yellow.

In sal forests; 500 m.

Fl. & Fr.: May–June.

RAIPUR: Sitanadi.


Rhizomes yellow inside, faintly aromatic, with several root fibres ending in 7–4 cm long ellipsoidal tubers. Leaves ca 30 × 10 cm. Peduncle fully enclosed within leaf-sheaths, ca 25 cm long; flowering bracts greenish white; coma bracts white with purplish tips. Flowers subequalling the bract, white with a yellow obovate lip, ca 20 × 15 mm.


Rhizomes pale greenish white or yellowish, faintly aromatic. Leaves 25–40 × 9–12 cm. glabrous. Peduncles 8–20 cm long. Spikes 8–18 cm long; lower flowering bracts green, upper tipped with purple, coma bracts bright purple, however, all the flowering, and coma bracts becoming
whitish or pure white with age. Flowers equaling the bracts, yellow tipped.

Common in wastelands and forest-floors; 500 - 550 m.

Fl.: May June.

RAIPUR: Khallari, Sitanandi.

3. Globba L.

1a. Bracts persistent. Anthers with a blunt wing on either sides ... G. buttifera 1

1b. Bracts deciduous. Anthers not winged ... G. racemosa 2

1. Globba buttifera Roxb. in Asiatic Res. 11: 358. 1810.

Rhizomatous herbs, 30 - 60 cm high. Leaves elliptic - lanceolate or oblong, 7 - 25 x 3 - 8 cm. Panicles 6 - 18 cm long; bracts foliaceous, lower distant, upper congested, lowest 2 - 7 cm long, usually enclosing a ca 5 mm long globose - ellipsoid bulbil, sometimes upper bracts also enclosing a bulbil. Flowers 25 - 30 mm long, orange yellow; filament long, curved.

In mixed and sal forests; 550 - 750 m.

Fl. & Fr.: September October.

RAIPUR: Taurenga. RAJNANDGAON: Chilpi.


Rhizomatous herbs, 40 - 80 cm high. Leaves oblong lanceolate, 8 - 30 x 3 - 9 cm, pubescent beneath. Panicles 5 - 20 cm long; bracts 10 - 15 mm long. Flowers 2 - 5 on each branch, ca 30 mm long, yellow or orange yellow, with a long curved filament. Capsules muricate (or smooth).

In sal forests: 450 - 550 m.

Fl. & Fr.: August - September.

RAIPUR: Khallari. RAJNANDGAON: Salowara.

4. Zingiber Bochm.

1a. Spike terminal on the leafy stem ... Z. capitatum 1

1b. Spikes radical or from the base of the leafy stem.
2a. Flowering peduncle 10-30 cm long, well emerged from the ground; bracts broad, flat, closely clasping.  \( Z.\) \textit{casumunar} \(2\)

2b. Flowering peduncle ca 3 cm long, hidden under ground; bracts narrow, convolute, not closely clasping. \( Z.\) \textit{roseum} \(3\)


Rhizomatous perennials, 60-100 cm high; rhizomes yellow inside, faintly aromatic. Leaves linear, 10-35 cm long, 15-25 mm broad, pubescent beneath. Spikes 8-13 cm long; bracts green with red margins, becoming reddish in fruit, lower 4-5 cm long. Flowers pale yellow; lip obovate, ca 2 cm long, yellow, with two oblong yellow basal lobes; anther with a long incurved beak.

In mixed forests; 400-550 m.

\(Fl.:\) August; \(Fr.:\) September - October.

RAIPUR: Taurenga RAJNANDGAON: Baghnadi.


Rhizomatous perennials, 1.0-1.5 m high; rhizomes yellow inside. Leaves linear- lanceolate, 20-30 x 2.5-3.5 cm, pubescent beneath. Spikes elliptic-ovoid, narrowed at the top, 6-13 cm long; bracts ca 3 cm long, pubescent, red brown. Flowers creamy yellow; corolla lobes ca 25 mm long; lip obovate, ca 28 x 22 mm, lateral lobes obliquely elliptic, acute, ca 12 x 8 mm; anther with ca 10 mm long beak.

In teak and sal forests; 450-600 m.

\(Fl.:\) August; \(Fr.:\) January.

RAIPUR: Borai, Sitanadi. RAJNANDGAON: Baghnadi.


Rhizomatous perennials, 1-2 m high. Leaves oblong- lanceolate, 25-60 x 6-13 cm, pubescent beneath. Spikes ellipsoid subglobose, ca 5 cm long. Bracts, calyx and corolla red; corolla tube ca 4 cm long; lip oblong, ca 25 x 15 mm, white with pale red streaks throughout, along the pale yellow crumpled recurved margins; basal lobes of the lip small, roundish.

In sal forests; 550 m.

\(Fl.:\) September; \(Fr.:\) January.

RAIPUR: Sitanadi.
107. AMARYLLIDACEAE

(D. M. Verma)

CINNUM L.

1a. Leaves 7 - 15 cm broad, all flat. Scape erect ... C. asiaticum 1

1b. Leaves 2 - 5 cm broad, mostly distinctly concave. Scape
    declinate ... C. defixum 2


Robust bulbous herbs with a stout caudex. Bulbs 5 - 7 cm dia.
Leaves coriaceous, clustered, linear lanceolate, 30 - 80 cm long. Flowers
several, umbellated, white; pedicels 5 - 25 mm long; perianth tube 8 - 10
cm long, lobes ca 6 cm long; stamens red.

Along streams and in dry forest - floors; 400 - 500 m.

Fl.: November May.

RAIPUR: Sitanadi. RAJNANDGAON: Baghnadi.


Bulbs ovoid, ca 5 cm across. Leaves coriaceous, clustered at the tip
of a short caudex. linear, 40 - 80 cm long, usually very concave above,
erect in water, spreading on soil. Flowers several, umbellated, white; perianth
tube 8 - 12 cm long, lobes spreading, ca 1 cm broad, usually with inrolled
margins; stamens scarlet.

Common along rivers, streams and roadside ditches, usually partly
submerged; 250 - 500 m.

Fl.: September January.

RAIPUR: Dhamtari, Raipur, Sitanadi. RAJNANDGAON: Baghnadi.

108. HYPOXIDACEAE

(M. I. Haust)

CURCULIGO Gaertn.

Curculigo orchioides Gaertn. Fruct. 1: 63. t. 16. 1788. 'Kanwa, Kua-
pur'.

Perennial herbs. Tubers subcylindric, ca 5 mm thick. Leaves radical,
plicate. linear lanceolate. 10 × 1.3 cm, narrowed below into a short petiole. Flowering scape very short, the flowers appearing almost at the ground level; flowers few, 1-3 opening at a time, yellow, hairy outside, on a beak-like hypanthium, upper male with ca 7 mm long tepals, lowest usually female or bisexual with ca 15 mm long tepals.

In sal and mixed forests; 350-800 m.

Fl. & Fr.: August September.


109. TACCACEAE

(D. M. Verma)

TACCA J. R. & G. Forest.


Erect perennial herbs. Tuber depressed globose, 2-6 cm across. Leaves 1-3 on 0.2-1.5 m long petioles, palmately 3-lobed, 0.5-1.0 m across, each lobe again divided into numerous variously shaped segments. Scapes 0.2-1.5 m long; involucral bracts 4-12, obovate lanceolate 3-10 × 1-5 cm, green, sometimes purple-margined; filiform - bracts many, 15-25 cm long. Flowers drooping, 5-15 mm long, yellow or purplish green.

In sal and mixed forest clearings; 500-800 m.

Fl.: August; Fr.: September October.

RAIPUR: Borai, Taurenga. RAJNANDGAON: Chilpi.

110. DIOSCOREACEAE

(D. M. Verma & M. I. Hanfi)

DIOSCOREA L.

2a. Leaves compound. Stems twining to the left.

2b. Middle leaflets 3 - costate. Stamens 6. Capsules 4-6 cm long.

D. hispida var. daemona 3
2b. Middle leaflet 1 - costate. Stamens 3. Capsules 1.5 - 2.0 cm long  ...  D. penaphylla 3

1b. Leaves simple. Stems twining to the right or to the left.

3a. Stems twining to the left  ...  D. bulbifera 4

3b. Stems twining to the right.

4a. Stems unarmed. Leaves elliptic - obovate, obtuse or rounded at the base. Male flower buds pubescent  ...  D. oppositifolia 4

4b. Plants not as above.

5a. Plants hairy, particularly on the petiole and the inflorescence  ...  D. puber 6

5b. Plants glabrous throughout.

6a. Male axillary leafless branches much shorter than the axillar leaves; male flowers ca 2 mm apart  ...  D. wallichii 7

6b. Male axillary leafless branches, in general, much longer than the axillar leaves; male flowers touching each other  ...  D. glabra 2


Climbers. Tuber solitary, subcylindrical, globose pyriform, 10 - 15 cm across. Bulblets abundant. Leaves broadly ovate - cordate, subcaudate, 10 - 30 x 8 - 28 cm. Male flowering axes on up to 1 m long leafless branches; flowers whitish or pinkish, fragrant. Female flowering axes axillary, 20 - 45 cm long. Capsule wings 20 - 22 x 7 - 9 mm; seeds winged at the base.

Common in mixed forests: 300 - 550 m.

Fl. & Fr.: August - November.


Tubers and bulblets edible.


Climbers. Tubers solitary or more, on up to 50 cm long stalks, cylindrical, ca 4 cm across. Leaves elliptic - ovate, 7 - 9 x 4 - 6 cm, base rounded or cordate. Male flowering axes on up to 70 cm long leafless branches. Capsules retuse both at the tip and the base, on 3 - 4 mm long stipes wings 15 - 18 x 14 - 20 mm; seeds winged all around.
In mixed forests; 450 m.

*L. & Fr.* : January.

RAIPUR : Sitanadi.

Tubers edible.


Climbers. Tubers subglobose, up to 30 cm across. Stems deciduously golden hairy, usually prickly. Leaves 3 folioate; middle leaflet elliptic obovate or obovate, 10 20 × 8 to 12 cm, lateral leaflets smaller, 5 costate. Male flowering axes on up to 30 cm long villous leafless axillary branches. Capsules ascending, stramineus; wings 40 60 × 10 to 13 mm; seeds with ca 2 cm long basal wing.

In mixed forests; 400 500 m.

*Fl.* : September; *Fr.* : September to May.

RAIPUR : Gariaband. RAJNANDGAON : Deopura, Satara.

Tubers poisonous but sometimes eaten after a thorough wash.


Climbers. Tuber deeply descending, cylindrical, up to 2 m long. Stems glabrous or deciduously pubescent. Leaves opposite or alternate, elliptic obovate (orbicular), up to 12 cm long. Male spikes grouped in leaf axils, spike axes glabrous or pubescent. Capsule wings 16 24 × 12 17 mm; seeds winged all around.

In sal forests; 550 m.

*Fl.* & *Fr.* : August.

RAIPUR : Taurenga.


Climbers. Bulbils profuse, globose - ellipsoid. Leaves 3 - 5 folioate; middle leaflet elliptic oblongate, up to 15 × 5 cm, outer smaller. Male flowering axes usually on large leafless branches, sometimes axillary; buds congested. Capsules ascending, pubescent when young; wings up to 20 × 6 mm; seeds winged at the base.
Common in sal and mixed forests; 400–500 m.

Fl.: September–November; Fr.: November January.

RAIPUR: Sitanadi, Taurenga. RAJNANDGAON: Baghnadi, Deopura.


Climbers with deciduously creamy white pubescence. Tubers 1–2, long stalked, clavate. Bulbs up to 7 cm across, greyish. Leaves ovate-cordate, 10–20 × 8–15 cm, pulvinous lilac. Male flowering axes on leafless branches; buds congested. Capsules puberulus; wings 12–18 × 13–18 mm; seeds winged all around.

In sal and mixed forests; 450–600 m.

Fl. & Fr.: January.

RAIPUR: Sitanadi, Taurenga.

Tubers edible.


Climbers. Tubers numerous, fascicled, cylindrical, 0.5–1.0 m long, 2–7 cm thick. Leaves subcoriaceous, ovate orbicular, cordate, up to 25 cm long, 7–9-costate, with translucent dots and dashes. Flowers red-brown. Capsules striamineus with brown flecks; wings 20 × 15–18 mm; seeds winged all around.

In mixed forests; 550 m.

Fl.: October.

RAIPUR: Taurenga.

111. Liliaceae

(D. M. Verma)

1a. Leaves reduced to spinescent scales; cladodes present, needle-like

Asparagus 1

1b. Leaves normal; cladodes absent.

2a. Leaf tips circinate

Gloriosa 3

2b. Leaf tips not circinate.

3a. Rootstock short with a fascicle of fleshy roots. Leaves radical

Chlorophytum 2

3b. Rootstock a corm. Leaves caudine

Iphigenia 4
1. **Asparagus L.**


Slender bushy scramblers or climbers with woody prickly branches. Cladodes acicular, triquetrous, deciduous, ca 2 cm long. Raceme axillary, 5 - 10 cm long. Flowers on filiform jointed pedicels, ca 3 mm across, white, scented. Berries globose, 3 - 5 mm dia., scarlet.

In sal and mixed forests; 400 - 500 m.


RAIPUR : Chhoora, Dugli. RAINANDGAON : Baghnadi, Taregaon.

Decoction of roots is considered highly medicinal, and a good tonic, and the roots are commonly sold in the markets.

2. **Chlorophytum Ker - Gawler**

1a. Leaves almost all narrowed into a petiole. Anthers about twice as long as the filaments ... *C. arundinaceum* 1

1b. Leaves almost all sessile. Anthers about as long as the filaments ... *C. tuberosum* 2

1. **Chlorophytum arundinaceum** Baker in *J. Linn. Soc.* (Bot.) 15 : 323. 1876.

Perennial herbs with a cluster of fleshy roots. Leaves radical, linear lanceolate, 15 - 60 cm long, 2.5 - 6 cm broad, outer distinctly petiololed, inner sometimes subsessile. Scape as long as the leaves; racemes dense, flowered, sometimes shortly branched at the base. Flowers white; tepals 7 - 10 mm long. Capsules globose, ca 8 mm dia.

In sal forests: 500 - 650 m.

*Fl.* & *Fr.* : August - October.

RAIPUR : Borai, Tarenga.


Perennial herbs with fleshy roots. Leaves radical, linear, 15 - 60 cm long, 1.5 - 4.0 cm broad, usually wavy-margined. Scape 15 - 90 cm long; racemes often interrupted; pedicel jointed at or below the middle. Flowers
white: tepals elliptic, 12-15 mm long. Capsules subglobose, ca 1 cm dia.

In sal forests; 500 m.

Fl.: May.

RAIPUR: Sitanadi.

3. GLORIOSA L.

Gloriosa superba L. Sp. Pl. 305. 1753.

A very graceful scrambler among bushes with 1-3 m long herba-
ceous branches from a tuberous rootstock. Leaves lanceolate, 8-15 cm long with a spiral tip. Flowers very attractive, solitary or subcorymbose, long peduncled, drooping, lower half yellow, upper half red, finally the whole becoming red; tepals 5-8 cm long, 10-15 mm broad, with crisped margins.

Sporadic, in open forests; 280-500 m.

Fl. & Fr.: August - November.

RAIPUR: Mainpur, Raipur. RAJNANDGAON: Salawara, Singhari.

4. IPHIGENIA Kurth


Perennial grass-like herbs, 5-25 cm high. Corm ca 1 cm across with 3-5 cm long sheathed neck. Leaves few, sessile, linear lanceolate, 2-15 cm long, 3-7 mm broad. Flowers 1-3, chocolate brown, on 2-5 cm long pedicels; perianth lobes subulate, ca 7 mm long. Capsules oblong, 1-2 cm long, ribbed.

In wastelands and forest floors; 250-550 m.

Fl.: August - September; Fr.: August - November.

RAIPUR: Chhoora, Gariaband, Raipur, Taurenga. RAJNAND-
GAON: Chilpi, Deopura.
FLORA OF RAIPUR

112. SMILACACEAE

(D. M. Verma)

SMILAX L.

*Smilax zeylanica* L. Sp. Pl. 1029. 1753. — *'Ram datoon'*

Stout climbers with a pair of stipular tendrils from the tip of the leaf-sheaths; branches usually prickly. Leaves elliptic-oblong or suborbicular, 10-25 x 8-23 cm, acute or cuspidate, 5-7-costate, reticulately veined. Umbels 1-3 on axillary peduncles. Flowers ca 6 mm long, greyish white. Berries globose, ca 1.5 mm dia., green.

Common in sal and mixed forests; 400-500 m.

*Fl.*: June August; *Fr.*: November January.

RAIPUR: Dugli, Sitanadi. RAJNANDGAON: Rajnandgaon.

Twigs used for cleaning teeth.

113. PONTEDERIACEAE

(D. M. Verma)

1a. Petioles mostly swollen to form bulbous floats. Flowers sessile, zygomorphic ...

*Elochondria* 1

1b. Petioles not swollen. Flowers pedicelled, actinomorphic ...

*Monochoria* 2

1. *Elochondria* Kunth


Stoloniferous herbs, 15-50 cm high, floating, or rooting in mud. Leaves rosulate, broadly ovate or rhomboid, obtuse, 5-25 cm long and 2-6 cm wide. Flowers few to many; perianth lobes unequal, oblong-obovate, lilac, posterior longest, ca 3 cm long, with a yellow blotch.

A serious pest choking ponds and drains, not yet common in our area; 250-450 m.

*Fl.* & *Fr.*: April - October.

DURG: Durg. RAIPUR: Garijaband, Raipur, Simga.
2. Monochoria Presl

Monochoria vaginalis (Burm. f.) Presl, Rel. Haccuk. 1 : 128. 1827.  
Pontederia vaginalis Burm. f. Fl. Ind. 80. 1768.  

Perennials, 10–50 cm high, with a short oblique rootstock. Leaf solitary, terminal, with its erect petiole appearing as though a continuation of the stem, ovate or oblong-lanceolate, up to 12 × 7 cm. Raceme partly hidden within the leaf sheath when young, then bursting forth and reflexed. Flowers blue-violet; perianth lobes 8–15 mm long.

Along drains, ditches and ponds; 400–550 m.

Fl. & Fr.: September–April.

RAIPUR: Taurenga. RAJNANDGAON: Baghnadi, Salewara, Taregaon.

114. COMMELINACEAE

(D. M. Verma)

1a. Bracts spatheaceous.

2a. Bracts solitary or few, clustered, folded like a boat or a funnel. Petals free; stamens 2–3; staminodes present ... Commelina 2

2b. Bracts several, biciliate, imbricate, accrescent. Petals connate below into a tube; stamens 6; staminodes absent ... Cyanotis 3

1b. Bracts minute or absent.

3a. Flowers solitary or 2–6 together in axillary fascicles ... Amischophacelus 1

3b. Flowers few–several in terminal panicles, or sometimes also panicled in the uppermost leaf–axis ... Murdannia 4

1. AMISCHOPACELUS Rolla Rao & Kammathy


Slender perennial creeping herbs with ascending branches 10–75 cm long. Leaves linear or ensiform, 4.0–15.0 × 0.3–1.2 cm; sheaths 5–10 mm long, swollen and almost fully enclosing the flowers. Flowers blue or
pink; corolla tube ca 1 cm long, lobes ovate, ca 5 mm long; filaments blue-bearded. Capsules 3 - seced.

Common in moist places along roads and cultivated fields; 300 – 800 m.

*Fl. & Fr.*: August January.

**DURG**: Balod. **RAIPUR**: Balodabazar, Dhamtari, Raipur. **RAJNANDGAON**: Baghna, Chipli.

2. *Clematina L.*

1a. Spathes, in natural folded condition, navicular, 2 - 6 times longer than broad, margins free or connate only at the base.

2a. Leaves linear - lanceolate, about 9 - 13 - times longer than broad. Seeds appendiculate at both the ends ... *C. attenuata* 1

2b. Leaves lanceolate or ovate - lanceolate, about 3 - 4 times longer than broad. Seeds not appendiculate.

3a. Seeds smooth ...

3b. Seeds rugose.

4a. Spathes one to several; cincinni unbranched. Capsules 2 - seced, 2 - seced ...

4b. Spathes one to two; cincinni bifid. Capsules 3 seced, 5 - seced ...

1b. Spathes, in natural folded conditions, funnel-shaped, about as long as broad, margins connate almost to the top.

5a. Leaves acute, obtuse or rounded at the tip, pubescent to villous on both the surfaces ...

5b. Leaves subcaudate - acuminate at the tip, glabrous above, glabrous or pubescent beneath.

6a. Spathes cuneate, mostly not very unequal sided, sessile or on up to 6 mm long peduncles. Seeds smooth ...

6b. Spathes cordate or truncate, very unequal sided, on 10 - 20 mm long peduncles. Seeds plicate - rugose ...


Slender ascending herbs. Leaves linear, usually conduplicate, 3 - 7.0 × 0.3 - 0.7 cm, acute or acuminate. Spathes 20 - 35 mm long, caudate - acuminate, minutely dotted, hairy inside. Flowers small, blue. Capsules 2 -
1. celled, each cell 2. seeded; seeds subterete with a pale, soft appendage at each end.

In wastelands among rock boulders; 440 - 550 m.

*Fl. & Fr.*: August - September.

RAIPUR: Dhamtari. RAJNANDGAON: Baghnadi.


Slender ascending herbs with stems up to 1 m long. Leaves sessile or petiolar, elliptic, ovate or suborbicular, 8 x 1.4 cm. Spathes terminal or leaf-opposed, 8 - 17 mm long and equally broad, gibbous. Flowers blue or lilac, sometimes there are subterranean leafless branches bearing white cleistogamous flowers.

In wastelands and among bushes; 300 - 450 m.

*Fl. & Fr.*: August - January.

DURG: Balod. RAIPUR: Dhamtari, Dugli, Raipur.

3. **C. diffusa** Burm. f. Fl. Ind. 18. t. 7. f. 2. 1768. **C. nudiflora** auct., *non* L. 1753.

Stems slender, up to 1 m long, red-brown streaked. Leaves lanceolate, 3.5 x 1.0 - 2.5 cm; sheaths often ciliate. Spathes 17 - 40 mm long, cordate at base. Flowers blue or white, ca 1 cm across. Capsules ca 5 mm long, apiculate; seeds of 2-seeded cell ca 1.5 mm long and those of 1-seeded cell ca 2.5 mm long.

In wastelands; 300 - 450 m.

*Fl. & Fr.*: August - November.

RAIPUR: Chhoora, Dhamtari. RAJNANDGAON: Baghnadi, Rajnandgaon.


Slender diffuse herbs. Leaves lanceolate, 3 x 8 cm long, acute; sheaths ciliate. Spathes solitary, leaf-opposed, 1.0 - 2.5 cm long, cordate at the base. Flowers blue, in bind cincinnati. Capsules quadrate, apiculate; seeds cylindrical, 3 - 4 mm long.

In roadside ditches and along cultivated fields; 300 - 450 m.

*Fl. & Fr.*: November - January.

RAIPUR: Dugli. RAJNANDGAON: Singhari.

Diffuse ascending herbs; stems up to 3 m long. Leaves obliquely lanceolate, 5.0 \( \times \) 1.5 - 5.5 cm. Spathes 3 – 8 clustered together, 15 – 30 mm long, usually red brown margined. Flowers blue violet or white, \( ca \) 18 mm across. Capsules 2 – 3 celled, 1 – 3 seeded.

Common in sal and mixed forests; 300 - 500 m.

Fl. & Fr.: October January.

RAIPUR: Gariaband, Taurenga. RAJNANDGAON: Deopura, Singhuri.


Usually stout tufted herbs. Leaves lanceolate, 7 - 15 \( \times \) 2 - 5 cm, glabrous or pubescent beneath. Spathes solitary or several clustered together, 10 - 15 mm long. Flowers white, 6 - 12 in unbranched cincinni. Seeds ellipsoid, \( ca \) 3.5 mm long.

In sal and mixed forests; 500 - 600 m.

Fl. & Fr.: August September.

RAIPUR: Sitanadi. RAJNANDGAON: Deopura.

3. CYANOTIS D. DON

1a. Bracts and sepals glabrous, or ciliolate on the margins only ... C. cristata 1

1b. Bracts and sepals silky ... C. fasciculata 2


Perennial trailing herbs. Stems up to 60 cm long. Leaves oblong - lanceolate, 5 - 10 \( \times \) 1 - 2 cm, ciliolate margined. Flowers blue violet, in sessile or long peduncled cincinni; corolla tube 5 - 7 mm long, lobes 3 – 4 mm long. Seeds trigonous, blackish, pitted.

Common in sal and mixed forests, wastelands and walls; 300 - 800 m.

Fl. & Fr.: August September.


Annual floccose herbs. Stems 5 - 30 cm long. Leaves linear lanceolate, 1.0 - 8.0 x 0.5 - 1.2 cm. Cincinni 5 - 15 mm long; peduncles solitary or more together, up to 3 cm long. Flowers blue, purple or pink, ca 6 mm across. Capsules ca 4 mm long; seeds rugulose.

In wastelands and mixed forests; 300 - 450 m.

*Fl. & Fr.*: August - September.

DURG: Balod. RAIPUR: Balodabazar. RAJNANDGAON: Baghnadi.

4. *Murdannia* Royle

1a. Leaves on the stem reduced to bladeless sheaths ... *M. edulis* 1

1b. Leaves on the stem with well-developed blades.

2a. Flowers 1 - 3 in axillary fascicles; pedicels twice-jointed ... *M. vaginata* 4

2b. Flowers several panicled, or sometimes a few axillary; pedicels not - or once-jointed.

   a. Leaf margins usually wavy; bracts persistent. Stamens 3. Seeds 3 - 7 in each cell ... *M. spirata* 3

   b. Leaf margins not wavy. Bracts caducous. Stamens 2. Seeds 2 in each cell ... *M. nudiflora* 2


Roots fusiform. Radical leaves lanceolate, wavy margined, 10 - 25 cm long, 3 - 15 mm broad. Stems 1 - 5 together, separate from the leaves, 20 - 40 cm long with a few 2 - 5 cm long apiculate sheaths. Panicles 5 - 15 cm long. Flowers blue - mauve; petals 8 - 12 mm long. Seeds uniseriate, reticulate.

In sal forests; 550 m.

*Fl. & Fr.*: June.

RAIPUR: Taurenga.

Slender diffuse ascending herbs. Stems 5-50 cm long. Leaves usually linear lanceolate, 3-10 cm long, rarely ovate lanceolate. Panicles terminal and in upper leaf axils. Flowers 2-12 in each cincinnus at the tips of 1-7 cm long branches, whitish, pink, purple or blue, ca 6 mm across.

Common in moist depressions along roadsides and in forests; 300-800 m.

*Fl*. & *Fr.*: August-November.

**DURG**: Balod. **RAIPUR**: Dhamtari, Sitanadi. **RAJNANDGAON**: Chilpi, Baghna, Deopura, Khargaon, Taregaon.


Erect or ascending, usually diffuse herbs, 5-30 cm high. Leaves oblong to lanceolate or ovate, 1.0-4.0 × 0.4-1.0 cm, with an auricled amplexicaul base, usually wavy. Panicles 1.5-4.0 cm long, usually divaricately branched. Flowers pink, blue or purple (sometimes white). Seeds rugose.

In moist depressions and forest floors; 300-500 m.

*Fl.*: August-January; *Fr.*: January-May.

**DURG**: Talgaon. **RAIPUR**: Dhamtari, Singhapur, Sitanadi. **RAJNANDGAON**: Baghna.


Erect or ascending herbs. Leaves linear lanceolate, 4.0-20.0 × 0.4-1.0 cm, sometimes sparsely hairy beneath. Flowers 1-3 together, fascicled in the axils of a few distant 8-15 mm long linear lanceolate bracts, blue violet, ca 8 mm across; stamens 2, staminodes 4. Seeds rugose.

In moist wastelands; 300 m.

*Fl.* & *Fr.*: August-October.

115. ARECACEAE

(P. C. Pant)

PHOENIX L.

1a. Under shrubs, 0.5 - 1.0 m tall ... *P. acaulis* 1

1b. Trees, 8 - 16 m tall ... *P. sylvestris* 2


Stem ovoid, almost underground, ca 20 cm thick, clothed with petiole bases. Leaves up to 75 cm long; petioles ca 30 cm long with long pale yellow compressed spines, leaflets almost opposite, 20 - 30 cm long. Drupes oblong - ellipsoid. 15 - 20 mm long. Orange red becoming blue black on ripening, flesh scanty.

In sal forests; 500 m.

Fr.: June.

RAIPUR : Tamaranga.

Leaves used for thatching and mat making; fruits eaten.


Tall trees, trunk 20 - 40 cm across, clothed with petiole bases, and with a crown of 2 - 4 m long greyish green leaves. Leaflets in several fascicles lying in different planes, 15 - 45 × 2 - 3 cm, the lowest converted into long spines. Male flowers white, scented. Female inflorescence ultimately drooping. Drupes oblong, ca 15 mm long. Orange to reddish brown, flesh sweet, scanty.

Scattered in villages; 500 m.

Fr.: May.

RAIPUR : Sitanadi.

Leaves used for thatching and mat making; fruits eaten.

116. PANJANACEAE

(P. C. Pant)

PANDANUS Parkinson

A dioecious bush or a small tree, with stilt roots. Leaves spirally crowded at the tips, acisile, cnsiform, caudate acumin ate, 1-2 m long, 3-9 cm broad, margins and midrib spiny. Sp athes white. Male inflorescence much branched, sweet scented, each branch subtended by a spathe. Female inflorescence stout, unbranched. Drupes connate into 4-7 cm long yellowish orange phalanges.

RAIPUR (cf. Unni in J. Bombay nat. hist. Soc. 64 : 100. 1967.)

Detailed study required. See Stone in Matthew, Flora Tamilnadu Carnatic 2 : 1680. 1983, for discussions on nomenclature and identity.

117. TYPHACEAE

(D. M. Verma)

TYPHA L.


Aquatic, rhizomatous, monoecious. 1-3 m tall herbs. Leaves radical, distichous, concavo convex below, flattening above, up to 1 m long. 5-10 mm broad. Inflorescence an interrupted spike, the lower part pistillate and upper part staminate, each subtended, by a caducous foliaceous spathe; male perianth of 3 hairs, female perianth of several capillary bristles.

In marshes; 300 m.

Fl.: April.

DURG: Durg.

118. ARACEAE

(D. M. Verma)

1a. Free floating herbs. Leaves many in a rosette, sessile, obovate-oblong

... Pistia 5

1b. Attached herbs. Leaves not as above.

2a. Leaves simple, appearing along with the flowers.

3a. Aquatic. Leaves linear-lanceolate ...

... Cryptocoryne 4

3b. Terrestrial. Leaves ovate-oblong.
4a. Leaves peltate, cordate or sagittate at the base. Stamens fused
   ... Colocasia 3

4b. Leaves not peltate, hastate at the base. Stamens free
   ... Theriophonum 7

2b. Leaves pedately lobed, often, appearing after flowers.

5a. Leaves appearing after flowers; segments of the pedatipartite leaf pinnatisect. Spadix appendaged or not.

6a. Spadix appendaged. Placentation basal
   ... Amorphophallus 1

6b. Spadix not appendaged. Placentation axile
   ... Plesonium 6

5b. Leaves appearing along with the flowers; segments of the pedatipartite leaf not pinnatisect. Spadix appendaged
   ... Arisaema 2

1. AMORPHOPHALLUS Bl. ex Decaisne

**Amorphophallus sylvaticus** (Roxb.) Kunth, Enum. 3: 34. 1841. **Arum sylvaticum** Roxb. Fl. Ind. 3: 511. 1832. **Synantherias sylvatica** Schott, Gen. Aroid. t. 28. 1858. "Bhaid dhain".

Tuber **ca 7 cm** across. Leaf solitary, **ca 30 cm** across, leaflets lanceolate, **5 20 cm** long. Peduncle **ca 30 cm** long. Spathes **12 15 cm** long, convolute except at the top, outside green, inside with a purple blotch, or throughout purple with age. Spadix stipitate; female part **ca 3 cm** long, stigmas yellow; neuter part **ca 2 cm** long, neuters flesh-coloured; male part **ca 5 cm** long, brown; appendage cylindrical, **ca 12 cm** long, brown.

In sal and mixed forests; 450-600 m.

**Fl.** May June; **Lvs.** August.

RAIPUR: Borai, Sitanadi, Taurenga.

Petioles eaten as 'Chutney'.

2. **ARISAEMA Matt**

FLORA OF RAIPUR

Tubers depressed globose, 2-6 cm across. Leaves usually 2; petiole 15-80 cm long, clasping the peduncle; leaflets ovate-oblong, median 5 15 x 1 - 4 cm. Spathe green, tube 2.5 cm long, limb ovate-lanceolate 3 6 x 2 3 cm. Appendage 15 25 cm long, sigmoidly curved at the base, green, tapering to a slender tip.

In forest clearings; 600 m.

Fl. : August.

RAIPUR : Borai.

3. COLOCASIA Schott


Rhizome hard, tuberous, often stoloniferous. Leaves radical, long petioled, peltate, ovate or triangular, 10-30 cm long, pale or glaucous beneath. Spathe tube green, accrescent, 3-5 cm long, limb lanceolate, convolute, 12-15 cm long, yellow, deciduous. Spadix ca. 10 cm long, including ca. 1.5 cm long appendage, female and male parts separated by a zone of neuters.

Usually cultivated for its edible tubers; 300 450 m.

Fl. : August September.

RAINANDGAON : Khargaon, Salwara.

4. CRYPTOCHORYNE Fischer ex Wydler


Small aquatic purplish green rhizomatous herbs. Leaves linear-lanceolate, crispied, 5-40 cm long, 3-18 mm broad. Spathes shortly peduncled, subequaling the leaves, greyish green, streaked with purple, limb linear, twisted. Spadix tip adhering to the septum of the tube.

In shallow water and marsh; 250 m.

Fl. & Fr. : October.

RAIPUR : Simga.
5. *Pistia* L.


Floating stoloniferous herbs with rosettes of leaves. Leaf rosettes 2-10 cm across; leaves flabellate, nerv- ed, brownish papilliform in the upper part and white woolly in the lower part. Spatha inconspicuous, 10-15 mm long, yellowish green. Spadix as long as the leaves, adnate to the spatho tube at the base.

In ponds, 250-450 m.

FL.: November.

RAIPUR: Raipur. RAJNANDGAON: Baghnadi.

6. *Plesmonium* Schott


Tuber depressed globose, 5-7 cm across. Leaf solitary, appearing after the flowers, 20-40 cm across, ultimate leaf segments linear-lanceolate, 8-15 cm long, 5-20 mm broad. Scape 20-60 cm high. Spatha ovate-deltoid, folded, ca 10 cm long, green flushed with purple inside. Spadix stipitate, exerted, female and male zones separated by neuters.

In sal forests: 500-750 m.

FL.: June; July; Fru. : June-September.

RAIPUR: Taurenga. RAJNANDGAON: Chilpi.

7. *Theriophonum* Bl.


Tuber globose, ca 2 cm across. Petiole slender, ca 20 cm long; lamina hastate, side lobes ovate-lanceolate, ca 4.0 x 1.5 cm, midlobe ovate-oblanceolate, ca 8 x 4 cm. Peduncle ca 8 cm long. Spatha convolute, ca 8 x 3 cm, pale green, margins crenulate. Spadix ca 5 cm long; stamens red; neuters on both sides of the male zone, subulate, red, lower 2-4 mm long, upper ca 2 mm long; appendage ca 3 cm long, purplish black.
In miscellaneous forests; 300 m.

Fl. & Fr.: August.

RAIPUR: Dhamatari.

119. LEMNACEAE

(D. M. Verma & M. I. Hanfī)

1a. Roots present.

2a. Root solitary on each thallus ... Lemna 1

2b. Roots several on each thallus ... Spirodela 2

1b. Roots absent ... Wolffia 3

1. Lemna L.


Small aquatic plants, free floating on the surface; root sheathed and winged. Thallus ovate oblong, 1.5 \( \times \) 0.7 \( \times \) 2.5 mm, asymmetrical, pale green, 3 nerved; daughter thalli several closely adhering. Flowering cavity lateral with an open spathe enclosing two staminate flowers and one pistillate flower.

In slow flowing or stagnant water; 300 m.

RAIPUR: Taurenga.

2. SPIRODELA Schleid.


Small aquatic plants, free floating on the surface; roots several, a few mm long, arising from a thickening on the thallus. Thallus broadly ovate or orbicular, 1-3 mm long and equally broad, 5-11 nerved,
usually purple beneath. Flowering pouch lateral, with a small open spathe, 2-3 staminate flowers, and a solitary pistillate flower.

Common in stagnant water; 300 m.

RAIPUR: Raipur.

3. Wolffia Horkel ex Schleid.


Minute free floating aquatic plants. Thallus thick, almost globular with a flattened upper surface, 1.0 - 1.5 mm long, dark green above, paler elsewhere, budding pouch in a circular lateral pit. Inflorescence on the upper surface in a simple median pit, with one staminate and one pistillate flower.


120. ALISMATACEAE

(D. M. Verma)

1a. Pistils inserted on a large globular or oblong receptacle. Achene compressed

Achene swollen

... Sagittaria 3

1b. Pistils inserted on a small inconspicuous receptacle. Achene

2a. Leaves sagittate. Flowers male and bisexual. Achene with two lateral air-chambers

... Limnophyton 2

2b. Leaves cordate. Flowers all bisexual. Achene without air-chambers

... Caldesia 1

1. Caldesia Parl.


Aquatic herbs. Leaves floating, broadly elliptic ovate or suborbicular, 3-8 cm long, deeply cordate with rounded basal lobes, 13-17-costate; petioles 15-40 cm long. Panicle long peduncled, pyramidal, ca 30 cm long, with branches and flowers in whorls of 2-4. Flowers white;
petals ca 5 mm long; pistils 5--8; style persistent. Achenes ca 3 mm long, ribbed.

In ponds; 400 m.

*Fl. & Fr.*: November – May.

RAJNANDGAON: Taregaon.

2. **LIMNOHYTON** Miq.


Aquatic herbs. Leaves floating, pellucid punctate, broadly sagittate with triangular acute basal lobes; apical lobe 7–12 cm long; petioles septeate, up to 40 cm long. Peduncle ribbed, hairy. Panicle pyramidal. Flowers whorled, white; bracts and pedicels mostly reflexed after anthesis; sepals elliptic, obtuse, 4–6 mm long; petals suborbicular; pistils 15–20. Achenes obovate, ca 5 mm long.

In mud along ponds; 300–450 m.

*Fl. & Fr.*: November–January.

RAIPUR: Dhamtari. RAJNANDGAON: Rajnandgaon.

3. **SAGITTARIA** L.


Annual aquatic herbs. Leaves ovate, deeply cordate, 3–10 × 2–8 cm, apex rounded; basal lobes about two-third as long as the apical lobe. Racemes, including the peduncle, 6–40 cm long. Flowers white, in the upper whorls male, in the lower whorls bisexual; sepals ca 10 mm long; petals obovate suborbicular, 12–18 mm long. Achenes 3–4 mm long, beaked and winged.

In marsh and shallow water; 400–550 m.

*Fl. & Fr.*: June–September.

RAIPUR: Sitanadi. RAJNANDGAON: Baghnadi.
121. BUTOMACEAE

(D. M. Verma)

TENAGOCHARIS HEOCHST.


Perennial aquatic herbs with a short rootstock. Leaves long petioled, oblanceolate, 5 15 x 2.6 cm. Peduncle 25 50 cm long, usually bearing a single whorl of 3-30 flowers, sometimes flowers in two whorls; pedicels unequal, 5 14 cm long. Flowers white; sepals 4 9 mm long; petals slightly longer; pistils 5-7, cohering at the base. Fruits 9-12 mm long, shortly beaked.

In shallow water and marsh along ponds; 300-550 m.

Fl. & Fr.: October-April.

RAIPUR: Dhamtari, Gariband, Taurenga, RAJNANDGAON: Rengakhar, Talgaon.

122. NAJADACEAE

(D. M. Verma & M. I. Hanfi)

NAJAS L.

1a. Sheath auricles more than twice as long as broad. Male flowers naked

... N. graminea 1

1b. Sheath auricles mostly broader than long. Male flowers enclosed in a spathe

... N. indica 2


Slender submerged aquatic herbs rooting at the base. Leaves linear, 2.5-3.5 cm long, 0.7-1.0 mm broad, margins spinulose; sheath auricles ca 2.0 x 0.7 mm. Male flowers: anther elliptic, ca 1.5 mm long, *perianth lobes* globular. Female flowers: spathe absent; pistil ca 2 mm long. Seeds ca 2.5 mm long, areolate.

In roadside ditches; 300 m.
FLORA OF RAIPUR

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FL. & FR. : August.

RAIPUR : Balodabazar.


Annual submerged aquatic herbs, rooting below. Leaves linear, flat or subterete, 2 - 5 cm long, 0.8 - 1.2 mm broad, margins usually conspicuously spinous toothed; sheath auricles mostly small and rounded, sometimes triangular. Male flowers: spathe ca 3 mm long; anther subsessile. Female flower: spathe absent or 2 - 3 mm long; pistil ca 2 mm long. Seeds areolate.

In ponds and streams; 250 - 450 m.

FL. & FR. : September.

RAIPUR : Dhamtari, Kasdal, Taurenga. RAJNANDGAON : Baghnadi.

123. APONOGETONACEAE

(D. M. Verma)

APONOGETON L. f.

1a. Ovules 2

1b. Ovules ca 8

... A. crispus 1

... A. natans 2


Aquatic tuberous herbs. Submerged leaves ovate with cordate or truncate base, or linear, 3 - 30 cm long, 2 - 6 cm broad, margins straight, waved or crisped; floating leaves rare, oblong-ovate, up to 7 x 2 cm. Spike solitary, rather lax flowered. Flowers white or pink; tepals obovate, ca 2 x 2 mm.

In ponds; 300 m.


Aquatic tuberous herbs. Submerged leaves linear lanceolate, up to 6.5 x 1.5 cm, base cuneate, midrib broad with 2-3 parallel nerves on either sides; floating leaves linear lanceolate with usually cordate base, up to 11 x 3 cm. Spike 3-7 cm long, dense flowered, on 15-40 cm long peduncle. Flowers white, pink or lilac; tepals spatulate, 1.5-2.0 x 0.5-1.0 mm.

Common in ponds and rivers; 250-350 m.

Fl. & Fr.: August-October.

DURG: Balod. RAIPUR: Raipur, Simga.

124. POTAMOGETONACEAE

(D. M. Verma)

POTAMOGETON L.

1a. Leaves all filiform, 0.1-0.15 cm broad ... P. pectinatus 4

1b. Leaves, at least those well-developed, linear, lanceolate or oblong, 0.3-3.5 cm broad.

2a. Leaves all sessile, crisped and serrulate margined ... P. crispus 1

2b. Leaves mostly petiolate, neither crisped nor serrulate margined.

3a. Leaves, at least the upper, floating, coriaceous, mostly broadly elliptic-oblong ... P. nodusus 3

3b. Leaves all submerged, membranaceous, mostly linear-oblong ... P. mucronatus 2


Slender aquatic perennials with dichotomously branched stems. Leaves distichous, submerged, linear oblong, semi-amplexicaul, 2-7 cm long, 3-7 mm broad, 3(-5) nerved. Spikes 5-10 mm long, 5-8-flowered. Flowers greenish, ca 2 mm long. Drupelets ca 3 mm long, beaked.


Perennial submerged aquatic herbs. Leaves all submerged, translucent, 5-10 cm long, 1-2 cm broad, with a rounded base and acute or
cuspitate tip; petioles 1-2 cm long. Peduncle long, pinkish; spike ca 3 cm long, many flowered. Sepals suborbicular, ca 2 mm across, greenish. Drupelets ca 3 mm long, shortly beaked.

In ponds: 550 m.

*Fl. & Fr.*: June.

**RAIPUR**: Taurenga, Deodarha.


Aquatic perennials with long slender stolons. Leaves mostly floating, some submerged; floating leaves 3-8 x 2-3 cm, with 2-5 cm long petioles; submerged leaves narrower and with shorter petioles. Spikes 3-4 cm long, peduncle pinkish. Flowers green; sepals ca 2 mm long. Drupelets 3-4 mm long.

In ponds and rivers, in shallow water; 300-600 m.

*Fl. & Fr.*: October-June.

**RAIPUR**: Kasdol, Taurenga.


Slender profusely branched submerged aquatic perennials. Leaves narrowly linear or filiform, 2-10 cm long, with thickened inrolled margins. Spikes 5-20 mm long, interrupted, on a filiform peduncle. Drupelets obovoid, ca 4 mm long, ridged, shortly beaked.

In rivers, in shallow water; 300 m.

*Fl. & Fr.*: January.

**RAIPUR**: Kasdol.

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123. **ERIOCAULACEAE**

(D. M. Verma)

**ERIOCAULON** L.

1a. Anthers white or yellowish

1b. Anthers black.

2a. Involucral bracts longer than the floral bracts, erect throughout

...  *E. cinerereum* 2

...  *E. echites* 1
2b. Involucral tracts shorter than the floral bracts. recurved or reflexed on maturity.

3a. Leaves usually more or less red. Involucral bracts about two-thirds as broad as long. Floral bracts cuspidate-acuminate. ... *E. quinquelobum* 3

3b. Leaves always green. Involucral bracts about half or less as broad as long. Floral bracts obtuse or acute. ... *E. solitatum* 4


Stemless herbs. Leaves rosetulate, 1.5-2.0 cm long, ca 2 mm broad. Peduncles 3-7 cm long, ribbed. Heads subglobose, ca 2.5 mm broad; receptacle villous; involucral bracts ca 2 mm long, stramineous. Male flowers: sepals 2; petals obsolete. Female flowers: sepals 2; petals 2-3, narrowly ob lanceolate, or absent.

Along drains; 450.

*Fl. & Fr.* : October.

RAIPUR : Chhoaora.


Stemless herbs. Leaves rosetulate, 3-6 cm long, 1.0-1.5 mm broad. Peduncles several, 5-12 cm long, 5 ribbed. Heads 2.5-3.5 mm broad; receptacle glabrous or sparsely hairy; floral bracts glabrous. Male flowers: sepals 3, connate or one free; petals minute. Female flowers: sepals and petals 2-3, subulate, or absent.

In moist to muddy places; 300-500 m.

*Fl. & Fr.* : September November.

RAIPUR : Abhanpur, Garia band, Sarai palli. RAJ NANDGAON : Baghnadi, Deopura.


Stemless herbs. Leaves rosetulate, 2-10 cm long, 2-5 mm broad, along with the sheaths, mostly entirely or partly red, sometimes entirely green. Peduncles twisted, ribbed, 5-27 cm long. Heads subglobose, 3-5 mm broad, rarely slightly elongated; receptacle villous; involucral bracts 1.5-2.0 mm long; floral bracts ciliate at the tip. Male flowers: sepals linear-ob lanceolate, one petal larger than the others.

In drains and ditches; 400-600 m.

*Fl. & Fr.* : September January.
RAIPUR: Dugli, Gariaband, Singhpur, Taurenga. RAJNANDGAON: Baghnadi.


Stemless herbs. Leaves rosulate, 1.8 cm long, 1.5-6.0 mm broad. Peduncles one several, 3-20 cm long. Heads 2.5-6.0 mm broad, receptacle villous; involucral bracts 2-4 mm long; floral bracts ciliate at the tip. Male flowers: calyx lobes ciliate; petals small. Female flowers: sepals oblanceolate, ciliate, at the tip; petals linear, ciliate.

In ditches and ditches: 300-550 m.

Fl. & Fr. October, January


126. CYPERACEAE

(D. M. Verma & V. Chandra)

1a. Flowers unisexual; nuts enclosed with in an utricle...
   ... Carex 2

1b. Flowers unisexual or bisexual; nuts naked.

2a. Nuts borne on a 3-lobed or band-like disk...
   ... Scirpus 10

2b. Nuts without the above disk.

3a. Perianth present.

4a. Perianth of scales and bristles.

5a. Inflorescence capitulate; hypogynous scales 2, hyaline...
   ... Lipocarpha 8

5b. Inflorescence paniculate, hypogynous scales 3, thick...
   ... Fatrena 6

4b. Perianth of bristles only.

6a. Inflorescence reduced to a solitary spikelet...
   ... Eleocharis 4

6b. Inflorescence anthelate...
   ... Scirpus 9

3b. Perianth absent.

7a. Nuts crowned by the persistent style-base which is articulated with the nut proper...
   ... Bulbostylis 1

7b. Nuts not crowned by the persistent style-base; style-base continuous or articulated.
8a. Style articulated with the ovary, usually swollen at the base and usually fimбриate. ... *Fimbristyris* 5

8b. Style continuous with the ovary, neither swollen nor fimбриate.

9a. Glumes distichous ... *Cyperus* 3

9b. Glumes spiral.

10a. Inflorescence distinctly terminal, of sessile glomerules ... *Kyllingiella* 7

10b. Inflorescence pseudo-lateral, spikelets capitate or annulate ... *Scirpus* 9

1. **Bulbostylis** Kunth

1a. Spikelets several together, congested in a head. Nuts smooth ... *B. barbata* 1

1b. Spikelets all solitary. Nuts transversely wrinkled ... *B. densa* 2


Tufted annuals, up to 20 cm high. Leaves short, filiform. Heads 5 18 mm across; spikelets ovate-oblong, 3 8 × 1.0 1.5 mm; glumes ovate, mucronulate, keeled. Stamen 1. Nuts broadly obovate, triquetrous, whitish to stramineus.

In wastelands; 300 400 m.

*Fl. & Fr.*: August May.

RAIPUR: Dhamtari, Raipur. RAJNANDGAON: Baghnadi.


Small filiform annuals. Anthela simple or subcompound, lax; spikelets oblong-ovate or oblong, 3 6 × 1.8 2.3 mm; glumes ovate, muticous, keeled. Stamens 2. Nuts obovate, triquetrous, stramineus.

In wastelands; 300 m.

*Fl. & Fr.*: August.

RAIPUR: Raipur.
2. Carex L.

1a. Leaves all along the stem, 4-13 mm broad. Inflorescence paniculate. Utricles 1.5-2.0 mm long  

   C. cruciata 1

1b. Leaves basal, 2-8 mm broad. Inflorescence recemose. Utricles 3.5-4.0 mm long  

   C. speciosa 2


Perennials, 30-150 cm high. Panicles 15-45 (58) cm long; spikelets sessile, androgy nous, 6-15 mm long; male part 3 7 × 1.0 1.5 mm; female part 3 9 × 3 mm. Utricles subsessile, ellipsoid, ovoid oblong or subglobose, abruptly beaked. Nuts subsessile, ellipsoid, 1.5-2.0 mm long, blackish brown.

   In sal & miscellaneous forests; 450-500 m.

Fl. & Fr.: August October.

RAIPUR: Sitanadi, Taurenga.

2. C. speciosa Kunth, Enum. 2:504. 1837.

Perennials, 5-55 cm high. Spikelets subsessile, androgy nous, 1-2 cm long; male parts 3 7 × 1.0 1.5 mm; female parts 4-6 mm thick. Utricles subsessile, ellipsoid, subabruptly beaked. Nuts shortly stipitate, narrowly ovoid ellipsoid, 3.5-4.0 mm long, stramineus to ultimately brown.

   In sal forests; 400-450 m.

Fl. & Fr.: May June.

RAIPUR: Khallari, Sitanadi.

3. Cyperus L.


2a. Inflorescence capitata of sessile glomerules; each spikelet maturing a solitary nut.

3a. Keel of the glume distinctly winged.

4a. Keel of the glume with a broad hyaline, deeply lobed crest  

   C. metzii 17

4b. Keel of the glume with a spinulose crest  

   C. kyllingia 16
3b. Keel of the glume not winged.

5a. Rhizome short. Heads usually three, rarely one or five. Stamens 2
    ...  C. tricaps 31

5b. Rhizome horizontally creeping. Head solitary. Stamens 1 - 2(-3)
    ...  C. brevifolius 3

2b. Inflorescence antelate or capitate, each spikelet maturing several nuts.

6a. Glumes muticous.

7a. Robust perennials. Leaves flat, 6 - 16 mm broad. Glumes 5 - 7 - nerved
    ...  C. alopecuroides 1

7b. Slender annuals. Leaves canalicate, 1 - 2 mm broad. Glumes 3 - 5 - nerved.

8a. Inflorescence of dense glomerules contracted into a head
    ...  C. pygmaeus 26

8b. Inflorescence a simple or subcompound anthela
    ...  C. pumilus 25

6b. Glumes muticous.

9a. Nuts with transverse wavy lines
    ...  C. diaphanus 9

9b. Nuts puncticulate or finely reticulate

10a. Glumes usually with a depression on each side; keel arcuate
    ...  C. sanguinolentus 28

10b. Glumes without depression, keel straight
    ...  C. flavidus 13

1b. Style 3 - 6d. Nuts trigonal.

11a. Rhachilla of the spikelets caduous, the spikelets thus falling off as a whole along with the persistent glumes.

12a. Anthelas compound or decompound. Spikes globose.

13a. Spikelets linear - lanceolate, 6 - 16 mm long, each maturing 4 - 14 nuts
    ...  C. compactus 5

13b. Spikelets elliptic - oblong, 3 - 4 mm long, each maturing 1 - 2 nuts
    ...  C. pseudokyliingoides 24

12b. Anthelas simple. Spikes cylindrical
    ...  C. cyperoides 8

11b. Rhachilla of the spikelets persistent, the glumes acropetally caduous.

14a. Nuts linear - oblong with almost parallel sides. Stamens 1
    ...  C. castaneus 4


15a. Inflorescence capitate.
16a. Spikelets globose; glumes very small, up to 0.8 mm long, orbicular or broadly ovate ... \textit{C. dillenius} 10

16b. Spikelets broadly ovoid; glumes larger, 3 - 5 mm long, ovate or ovate-lanceolate.

17a. Spikelets green. Stigmas ca 0.5 mm long ... \textit{C. compressus} 6

17b. Spikelets pale stramineous or almost white. Stigmas ca 2 mm long ... \textit{C. niveus} 18

15b. Inflorescence anthelate with distinct rays.

18a. Spikelets spicate, the rachis several times longer than the spikelets.

19a. Glumes as broad as long.

20a. Rhachis of the spike smooth; keel 3 - 5 - nerved, smooth ... \textit{C. iria} 15

20b. Rhachis of the spike scabrid; keel 7 - nerved, winged with serrate margins at the top ... \textit{C. atalanta} 2

19b. Glumes about half or less as broad as long.

21a. Rhachis hispidulous.

22a. Inflorescence simple or sub-compound. Spikelets 10 - 35 mm long. Nuts ca 1.5 mm long ... \textit{C. procerus} 23

22b. Inflorescence compound. Spikelets 6 - 12 mm long. Nuts 1.0 - 1.2 mm long... \textit{C. pilosus} 21

21b. Rhachis alabrous.

23a. Spike penicellate. 2 - 5 mm broad with ascending spikelets ... \textit{C. mutus} var. \textit{eleusinoides} 19

23b. Spikes cylindrical, 15 mm broad with spreading spikelets ... \textit{C. exaltatus} 12

19b. Spikelets digitate or very shortly spicate, the rhachis obscure, or much shorter than to about as long as the spikelets.

24a. Nuts corky-thickened on angles ... \textit{C. phlyctylis} 22
24b. Nuts not corky - thickended on angles.

25a. Spikelets digitate, 3 - 10 mm long.

26a. Rhachilla hidden by the ascending and appressed glumes; glumes 1.0 - 1.5 mm long ... *C. halpan* 14

26b. Rhachilla visible between the widely spreading glumes; glumes 0.7 - 1.0 mm long ... *C. tenuspica* 30

25b. Spikelets shortly spicate, 6 - 60 mm long.

27a. Anthelas simple; glumes distinctly mucronate.

28a. Spikelets squarrose; glumes ca 1.2 mm long ... *C. squarrosus* 29

28b. Spikelets not squarrose, glumes 3 - 4 mm long ... *C. compressus* 6

27b. Anthelas simple or compound; glumes muticos or mucronulate.

29a. Stems stout, 4 - 8 mm thick in the middle. Leaves absent or solitary.

30a. Bracts all short, rarely as long as the anthela ... *C. corymbosus* 7

30b. Lower bracts much exceeding the anthela

29b. Stems slender to stout, 1 - 5 mm thick in the middle. Leaves two - several.

31a. Spikelets acicular, ca 1 mm broad;

Stout perennials, up to 1 m high; stem trigonous. Anthela compound or decomposed, or sometimes contracted; bracts foliaceous. Spikes digitate; spikelets ovate or oblong lanceolate, 12–30 flowered, 4–6 mm long; glumes ovate, apiculate, 5–7-nerved. Nuts lenticular, obovoid, apiculate, reddish brown, ca 1.5 × 1 mm.

Along drains: 300–400 m.

*Fl. & Fr.*: September–January.

**RAIPUR**: Raipur. **RAJNANDGAON**: Rajnandgaon.


Annual herbs, up to 30 cm high. Leaves as long as or longer than the stem. Anthela simple or compound; spikelets oblong, 3–7 × ca 2 mm; glumes ovate, imbricate; stamens 2. Nuts obovoid, apiculate, reddish brown, ca 1 mm long.

In roadside ditches: 400–500 m.

*Fl. & Fr.*: August–May.

**RAIPUR**: Khallari, Sitanadi. **RAJNANDGAON**: Deopura.


Perennials with long creeping sympodial rhizomes. Stems approximate to distant, up to 30 cm high. Leaves much shorter than to equaling the stem, 1–3 mm broad. Spikelets compressed, 2.5–3.5 × 1 mm; glumes mucronulate, keeled. Nuts lenticular, obovate, apiculate, yellowish brown, ca 1 mm long.

In moist shady places; 250–450 m.
**Fl. & Fr.**: September - April.

**DURG**: Durg. RAIPUR: Raipur. RAJNANDGAON: Baghnadi.


Annuals up to 15 cm high. Anthela usually simple, often reduced to a solitary head; spikelets linear-oblong, ca 1.5 mm broad; glume long spatulate, chestnut brown; stamen 1. Nuts linear-oblong with almost parallel sides, ca 1 mm long, castaneous.

In wastelands; 350 m.

**Fl. & Fr.**: October.

**RAIPUR**: Pithora.


Perennials, up to 80 cm high. Leaves septate-nodulose, 5-10 mm broad; sheath spongy. Spikelets in numerous globose heads, linear-lanceolate; glumes oblong-lanceolate, muticous, 3-4 mm long, brown. Stamens 3. Nuts oblong-linear, trigonous, 1.5-2 mm long, brown.

Along roadside drains; 500 m.

**Fl. & Fr.**: October.

**RAIPUR**: Taurenga.


Annuals, or sometimes perennials, 5-10 cm high. Anthela simple, lax; spikelets linear or oblong, compressed, green; glumes ovate, mucronate, strongly keeled, 3-4 × ca 2 mm. Stamens 3. Nuts broadly obovoid, shortly apiculate, ca 1.5 × 1.0 mm, dark brown to blackish.

In wastelands; 300-500 m.

**Fl. & Fr.**: August-May.

**RAIPUR**: Dhamtari, Raipur. RAJNANDGAON: Deopura.

7. **C. corymbosus** Rotb. Descr. & Tc. 42. t. 7. f. 4. 1773.

Perennials, 0.5-1.0 m high. Stems faintly septate. Leaves absent or solitary. Anthela compound; spikelets linear, subterete, 6-40 × 1 mm; glumes ovate-oblong, obtuse, 3-5-nerved, 2.5-3.0 mm long. Nuts trigonous, ca 1.5 mm long, black.


Perennials, 25 - 50 cm high with short branched rhizomes. Leaves 3 - 6 mm broad. Spikes sessile or subsessile, green, in terminal simple anthela; spikelets linear lanceolate, 3 – 5 mm long; glumes oblong-ovate, keel 3 nerved. Stamens 3. Nuts linear, slightly curved, apiculate, rufous to castaneous.

Along sal & miscellaneous forests, and wastelands; 300 – 600 m.

*Fl. & Fr.*: August, May.

RAIPUR: Balodabazar, Dora, Dhamtari. RAINANDGAON: Baghnadi.


Annuals, 6 - 40 cm high. Anthela simple, contracted or evolute; spikelets 3 – 6 together, oblong lanceolate, 10 – 17 × 3 – 4 mm; glumes ovate oblong, muticous, castaneous or purplish, 2.5 – 3.5 mm long, keel 3 nerved. Stamens 2. Nuts stipitate, broadly obovoid, transversely undulately zonate, ca 1.5 mm long.

Along sal forests; 500 m.

*Fl. & Fr.*: October, January.

RAIPUR: Mainpur, Sitanadi.


Annuals, 10 – 65 cm high with reddish roots. Leaves 2 – 5 mm broad. Anthela simple; spikes dense, globose; spikelets stellately spreading, linear oblong, glumes orbicular or broadly obovate, muticous, 3-nerved. Stamens (1 – 2). Nuts obovoid, 0.5 – 0.8 mm long, stramineous or pale brown.

In moist depressions; 300 – 500 m.

*Fl. & Fr.*: April – May.


Perennials, up to 1 m high; rhizome shortly creeping. Leaves shorter than to equalling the stem, 5–8 mm broad. Anthela compound or decom-pound; spikelets linear, 6–60 mm long; rhachilla winged; glumes appressed, oblong ovate or elliptic, reddish brown. Stamens 3. Nuts ellipsoid, ca 1.5 × 0.5 mm, deep brown.

In stream beds; 500 m.

*Fl. & Fr.*: August.

RAIPUR: Sitanadi.


Perennials, up to 1.8 m high. Leaves 8–15 mm broad. Anthela compound or decom-pound; spikes digitate, spikelets subdistichous, linear-lanceolate, 5–10 × 1.5–2.0 mm; glumes ovate, mucronate, keeled. Stamens 3. Nuts ellipsoid, stipitate, 0.6–0.8 mm long, yellowish brown.

Along drains; 450–800 m.

*Fl. & Fr.*: September - October.

RAIPUR: Mainpur. RAJNANDGAON: Chilpi, Rajnandgaon.


Annuals or sometimes perennials, up to 60 cm high. Leaves 1.2 mm broad. Anthela simple or decom-pound; spikelets linear, 10–20 × 2 mm; glumes oblong-ovate, keeled, 1.0–2.5 × 1.0–1.5 mm. Stamens 2. Nuts lenticular, oblong-obovate, 0.8–2.2 mm long, fuscous to dark castancous.

Along ditches; 350–450 m.

*Fl. & Fr.*: September – April.

DURG: Dondi, Rajolidih. RAJNANDGAON: Baghnadi.


Perennials. Stems solitary or tufted, 8–70 cm high. Leaves 2–5 mm broad. Anthela compound or decom-pound; spikelets stellately spreading, 5–10 × 1.0–1.5 mm; glumes ovate oblong, mucous, keeled, 1.0–1.5 mm long, margins inrolled. Stamens 1. Nuts broadly obovoid, shortly spicate, ca 0.5 mm long, granulate to verruculose. Whitish.

In moist depressions; 400–500 m.

*Fl. & Fr.*: September – January.

RAIPUR: Indagaon, Singhpur. RAJNANDGAON: Baghnadi.

Annuals, or rarely perennials, 5–50 (80) cm high. Leaves shorter than to exceeding the stem, 3–8 mm broad. Anthela simple or compound; spikelets oblong, 3.8 × 1.5–2.0 mm; glumes broadly ovate, mucronulate, keel 3–5 nerved. Stamens 2–3. Nuts obovoid, ellipsoid, stipitate, triquetrous, 1.0–1.5 mm long, dark brown to black.

In moist wastelands; 300–600 m.

*Fl.* & *Fr.*: August–April.

**RAIPUR**: Borai, Dhamtari, Raipur, Sankra, Sitanadi, Taurenga.

**RAJNANDGAON**: Deopura, Silewa.


Perennials, 3–40 cm high. Leaves 2–5 mm broad. Inflorescence capitate; spikelets ovate, elliptic, 3.0 × 1.5 mm; glumes reddotted all over; keel winged in the upper half, wings denticulate-serrate. Stamens 3. Nuts lenticular, oblong, yellowish-brown to castaneous, 1.0–1.5 mm long.

In sal forests; 600 m.

*Fl.* & *Fr.*: August.

**RAIPUR**: Borai.


Tufted annuals, up to 35 cm high. Leaves usually exceeding the stem, ca 2 mm broad. Inflorescence capitate; spikes 1–3; spikelets ca 2 mm long; glumes acute, keeled, keel winged by a broad hyaline incised-toothed crest, ca 1 mm long. Nuts suborbicular, brown.


Perennials, up to 75 cm high. Leaves shorter than to equaling the stems, 1.5–2.5 mm broad. Inflorescence capitate; spikelets oblong, elliptic, obtuse, 10.25 × 4.6 mm; glumes ovate lanceolate, mucronulate, 4–5 mm long. Stamens 3. Nuts subsessile, obovoid, ca 1.5 mm long, deep brown.
In sal and miscellaneous forests; 450–500 m.

*Fl. & Fr.:* May.

**RAIPUR:** Khallari, Taurenga.


Perennials, 30–120 cm high. Leaves 6–15 mm broad. Anthela compound, lax; spikelets few flowered, linear oblong, 3.8 × 1.5–2.0 mm; glumes elliptic oblong, mucronate, 1.5–2.0 mm long. Stamens 3. Nuts obovoid, ca 1.5 mm long.

In stream beds; 300–550 m.

*Fl. & Fr.:* August–January.

**RAIPUR:** Balodabazar, Sitanadi, Taurenga.


Perennials up to 1 m high. Leaves usually all reduced to bladeless sheaths, sometimes the upper one bearing a blade up to 20 cm long. Anthela compound or decompound; spikelets linear, 12–28 × 2.5–3.0 mm; glumes elliptic oblong, keeled, ca 3 mm long. Stamens 3. Nuts narrowly obovoid oblong, ca 1.5 mm long, blackish brown.

In stream beds; 300–550 m.

*Fl. & Fr.:* September–April.

**RAIPUR:** Simga, Taurenga. RAJNANDGAON: Baghnadi.


Perennials up to 1 m high. Leaves canaliculate, 4–10 mm broad. Anthela compound; spikelets elliptic or linear lanceolate, compressed, 6–12 × 1.5–2.0 mm; glumes ovate, muticous or mucronulate, 5–7-nerved. Stamens 3. Nuts obovoid or ellipsoid, stipitate, ca 1 mm long, blackish brown.

Along roadside drains; 500 m.

*Fl. & Fr.:* October.

**RAIPUR:** Mainpur.

Perennial aquatic herbs with up to 1 m long floating stems. Leaves septate nodulose, ca 1 cm broad. Anthela compound or decompound; spikelets numerous, congested, ovate lanceolate, 5-20 mm long; glumes ca 2 mm long, muronate. Nuts ellipsoid.

In tanks; 300 m.

Fl. & Fr.: October.

RAIPUR: Raipur.

23. C. procerus Rottb. Descr. & Lc. 29. t. 5. f. 3. 1773.

Perennials up to 1.2 m high. Leaves canaliculate, 9-15 mm broad. Anthela simple or subcompound; spikelets oblong to broadly linear, 10-35 mm long; glumes ovate or elliptic, 2.5-3.0 mm long, ca 7-nerved, reddish brown. Stamens 3. Nuts obovoid or ellipsoid, ca 1.5 mm long, blackish brown.

In low lying wastelands; 400 m.

Fl. & Fr.: September.

RAJNANDGAON: Baghnadi.


Annuals, 8-50 cm high. Leaves equaling the stems, 1.5-4.0 mm broad. Anthela compound or decompound; spikes subglobose; spikelets elliptic - oblong, 3-4×1.2-1.5 mm; glumes elliptic, muronate, keeled, 2.5-3.0 mm long. Stamens 3. Nuts fusiform, 2.3-2.7 mm long, deep brown.

In fallow fields; 350-450 m.

Fl. & Fr.: September January.

RAIPUR: Dhamtari, Dugli. RAJNANDGAON: Baghnadi.


Annuals, 12-20 cm high. Leaves 1-2 mm broad. Anthela simple or sub-compound; spikelets oblong linear, strongly compressed, 8-30-flowered, 5-10×1.5-2.5 mm; glumes ovate, 1.0-1.7 mm long, keel 3-5-nerved. Stamens usually 1, rarely 2. Nuts oblong - obovate, ca 0.5 mm long, shining brown to castaneous. 
In wastelands, 300–550 m.

Fr. & Fr.: August April.

DURG: Talgaon. RAIPUR: Dhamtari, Raipur, Taurenga. RAJNANDGAON: Baghnadi.


Tufted annuals, up to 25 cm high. Leaves 1–2 mm broad. Inflorescence capitate; spikelets ovate to lanceolate, 10–20-flowered, 3 5 × 1.5–2.0 mm; glumes lanceolate, keeled, 3–5 nerves, ca 2 mm long. Stamens 1–2. Nuts oblong, ca 1 mm long, pale brown.

In wastelands; 300–400 m.

Fr. & Fr.: January June.

RAIPUR: Dhamtari, Pithora.


Perennials, 10–40 cm high. Stolons with intermittent ellipsoid aromatic tubers. Stems compressed, trigonous. Leaves 2–5 mm broad. Anthela simple or compound; spikelets 10–35 × 1.5–2.0 mm, red-brown, often curved; rachilla winged; glumes ovate, 3.0–3.5 mm long. Stamens 3. Nuts 1.5–1.7 mm long, blackish.

In moist wastelands; 300–500 m.

Fr. & Fr.: August May.

RAIPUR: Balodabazar, Dhamtari, Khallari, Raipur.

Tubers highly medicinal.


Annuals or perennials, up to 60 cm high. Leaves 2–4 mm broad. Inflorescence more or less open, or when capitate with many spikelets; spikelets 2.2–2.5 mm broad, ovate or oblong lanceolate; glumes ovate, keeled, with a distinct depression on either sides, ferrugineous, 1.5–2.0 mm long. Stamens 2. Nuts broadly obovate, ca 1 mm long, brown to blackish.

River banks; 300 m.
Fl. & Fr. : October.

RAIPUR : Simga.


Annuals, 10 cm high. Leaves 1 2 mm broad. Inflorescence usually reduced to a single hemispherical head; spikelets oblong, linear, strongly compressed, 5 15 x 3 4 mm; glumes elliptic-ovate, 5 9-nerved, ferrugineous to fuscosus. Stamen 1. Nuts oblong obovoid to almost linear, stipitate, 0.5 1.0 mm long, greyish brown.

In wastelands; 300 - 500 m.

Fl. & Fr. : August May.

RAIPUR : Dhamtari, Raipur. RAJNANDGAON : Deopura.


Annuals, 3 - 40 cm high. Leaves 2 4 mm broad. Anthela compound or decumbent; rays 2 10; spikelets linear oblong, compressed, 3 - 8 x 1.0 - 1.5 mm; glumes laxly arranged, ovate, slightly keeled towards the tip, ca 1 mm long. Stamens 1 (- 2). Nuts broadly obovoid, stipitate, ca 0.5 mm long, tubercled, marble - white.

In ditches; 450 m.

Fl. & Fr. : September.

RAJNANDGAON : Baghnadi.


Perennials, 5 40 cm high. Leaves 1-3 mm broad. Inflorescence capitate, of (1-)3 (-5) dense heads: central head sub-globose, 5 8 x 5 mm. lateral ones globose, somewhat smaller; spikelets oblong, ca 2 mm long, pale green to whitish; glumes ovate oblong. Stamens 2. Nuts oblong, ca 1 mm long, yellowish brown.

In wastelands; 300 - 650 m.

Fl. & Fr. : August September.

RAIPUR : Botai, Simga. RAJNANDGAON : Baghnadi.
4. **Eleocharis R. Br.**

1a. Somewhat stout herbs with 2 - 10 mm thick stems. Spikelets about as thick as the stems, subcylindric; glumes coriaceous.

2a. Stems terete, transversely septate. Nuts smooth

    ... *E. dulcis* 4

2b. Stems triquetrous, not septate. Nuts trabeculate.

3a. Perianth bristles 6 - 7; Nuts constricted below the apex into a short neck

    ... *E. acutangula* 1

3b. Perianth bristles 3 - 4. Nuts without neck

    ... *E. spiralis* 8

1b. Slender herbs with filiform, up to 1.5 mm thick stems. Spikelets markedly thicker than the stem; ovoid-oblong; glumes membranous.


5a. Spikelets 5 - 20 mm long. Nuts ca 1.5 mm long

    ... *E. palustris* 6

5b. Spikelets 3 - 5 mm long. Nuts ca 0.5 mm long.

    6a. Glumes keeled. Bristles glistering white

    ... *E. atropurpurea* 2

6b. Glumes scarcely keeled. Bristles reddish-brown

    ... *E. geniculata* 5


7a. Perianth bristles 4. Nuts ca 1.5 mm long; style base 1.2 - 1.5 mm long

    ... *E. palustris* 6

7b. Perianth bristles 6. Nuts ca 1 mm long; style base ca 0.3 mm long.

    8a. Nuts cancellate; style - base as broad as the nut...

    ... *E. retroflexa* 7

8b. Nuts smooth; style - base narrow

    ... *E. congesta* 3

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Perennial, tufted, 30 - 70 cm high. Spikelet cylindrical, dusky green, 2.0 - 3.5 cm long; glumes ovate, many-nerved, 4.2 - 4.5 x 2.2 - 3.2 mm. Perianth bristles 6 - 7, rusty brown. Stamens 2 - 3. Nuts obovate, 1.5 - 2.0 mm long, epidermal cells transversely oblong in ca 15 vertical rows on either face; style - base ovate deltoid.

In marshy places; 350 m.

**Fl. & Fr.** : October.

RAIPUR : Saraipalli.

Annuals, 4-15 cm high. Stems succulent. Spikelets obovate, somewhat angular, 2-4 × 1.5-2.0 mm; glumes elliptic, keeled, sides purplish. Perianth bristles 3-4(-6), retrorsely scabrous or almost smooth, whitish; stamens 1-2. Nuts obovate, 0.5-0.6 mm long, shining black, style base disciform or depressed conical.

In wastelands; 300-600 m.

*Fl. & Fr.*: August-June.

RAIPUR: Dhamtari, Kasdol, Raipur, Taurenga. RAINANDGAON: Baghnowadi.


Annuals or perennials, very slender or stout, 5-40 cm high. Spikelets ovate or lanceolate, 3.9-1.5-3.0 mm; glumes obovate, ovate to lanceolate scarcely keeled, pale ferrugineous. Stamens 2(-3). Nuts obovate 0.8-1.0 mm long, yellowish.

In marshy places; 450 m.

*Fl. & Fr.*: September.

RAINANDGAON: Baghnowadi.


Perennials, up to 1 m high. Stems transversely septate. Spikelets cylindrical, 15-60 × 3-6 mm; glumes appressed, obovate oblong, many-nerved, 4.0-6.5 mm long. Perianth bristles 6-8, retrorsely scabrous, light brown; stamens 3. Nuts obovate, 1.5-2.0 × 1.2-1.5 mm, shining brown; style base triangular.

In marshy places; 300-400 m.

*Fl. & Fr.*: October.

RAIPUR: Pithora, Sankra.

Annuals, 5 - 40 cm high. Spikelets obovate - ovoid, 4 - 8 × 3.0 - 3.5 mm; glumes broadly elliptic, scarcely keeled, 1 - nerved, sides tinged with purple. Perianth bristles 6 - 8, ferrugineous to brown; stamens 2 - 3. Nuts obovate, smooth, ca 1 mm long, shining black. Style - base conical.

In streams beds. 300 - 500 m.

Fl. & Fr.: January.

RANPUR: Raipur, Sitabani.


Perennials, 10 - 40 cm high. Spikelets ovoid or sub-cylindrical, 5 - 20 × 3 - 5 mm; glumes ovate lanceolate, muticous, 3 - 4 mm long. Perianth bristles 4, subequal; stamens 3 or sometimes 1 - 2. Nuts obovoid, smooth, 1.2 - 1.7 mm long, stramineus brownish, style base oblong conic, 1.2 - 1.5 mm long.

Along drains: 400 m.

Fl. & Fr.: April.

DURGA: Talgaon.


Annuals, 5 - 20 cm high. Spikelets ovoid, 2 - 5 × 1.5 - 2.5 mm; glumes ovate, keeled, with green mid rib and purplish sides. Perianth bristles 6, retrorsely scabrous, whitish or yellowish; stamens 3. Nuts obovoid, ca 1 mm long, stramineus, the surface cells subquadrate in 6 - 10 vertical rows on each face; style base depressed conic.

In ditches, 400 m.

Fl. & Fr.: May.

RANPUR: Dokal.


Perennials, 20 - 60 cm high. Spikelets cylindrical, terete, yellowish, 15 - 35 × 3 - 5 mm; glumes broadly cuneate - obovate, faintly many - nerved, stramineous to light brown. Perianth bristles 4 - 6, ferrugineous; stamens 3. Nuts obovate, ca 1.5 mm long, stramineus to deep brown, epidermal cells in ca 20 vertical rows on each face; style base triangular.
In wastelands; 400 m.

 фл. & фл. : September.

RAJNANDGAON : Deopura.

5. **Fimbristyli**s Vahl

1a. Stigmas 2.

2a. Nuts linear with almost parallel sides

2b. Nuts obvoid or suborbicular.

3a. Leaves ligulate, ligule a fringe of short hairs.

4a. Inflorescence with 1 - 2(-3) spikelets. Nuts smooth


5a. Nuts 1.2 - 1.7 mm long, surface cells arranged in 12 - 16 vertical rows on each face; anthers ca 0.7 mm long

5b. Nuts 0.6 - 1.2 mm long, surface cells arranged in 5 - 10 vertical rows on each face; anthers 0.7 - 1.0 mm long.

6a. Spikelets angular, 1.0 - 1.5 mm broad

6b. Spikelets terete, 2.5 - 3.0 mm broad

3b. Leaves eliulate

1b. Stigmas 3.

7a. Glumes all spiral.

8a. Spikelets in clusters of 2 - 5, or sometimes a few solitary

8b. Spikelets all solitary.

9a. Leaves equitant; laterally compressed

9b. Leaves not equitant, dorsiventrally flattened

7b. Glumes lower distichous or subdistichous, upper spiral.

10a. Inflorescence of 1(-3) spikelets. Nuts 2 - 3 mm long...

10b. Inflorescence of many spikelets. Nuts ca 1 mm long...

Annuals, 3 20 cm high. Stems angular. Leaves setaceous, up to 0.5 mm broad. Anthela compound, rarely simple; spikelets solitary, ovoid or oblong lanceolate, 3 7 × 1.0 - 1.5 mm; glumes ovate, mucronulate, 1.2 - 1.5 mm long, keel 3 nerved. Stamen 1. Nuts elliptic or obovate, ca 0.5 mm long, stramineus.

In wastelands; 350 - 450 m.

Fl. & Fr.: May - June.

RAIPUR: Dhamtari, Dokal, Gariaband, Pithora.


Annuals, 20 - 50 cm high. Stem obtusangular. Leaves 1 2 mm broad. Anthela simple or subcompound, loose; spikelets solitary, ovoid, 4 - 11 × 2.0 - 2.5 mm; glumes broadly ovate, muticous, ca 2 mm long. Stamen 1. Nuts obovate, ca 1 mm long, verruculose, stramineus, epidermal cells in 12 - 16 vertical rows on either face.

River - banks; 300 m.

Fl. & Fr.: October.

RAIPUR: Singa.


Annuals, up to 25 cm high. Leaves flat, 1 2 mm broad. Anthela compound or decompound, loose; spikelets solitary, oblong obovoid, 3 - 8 mm long; glumes broadly ovate, mucronulate, sharply keeled, ca 1.5 mm long. Stamen 1. Nuts obovate, trabeculate, 0.4 - 0.7 mm long, stramineus, epidermal cells in 5 - 9 vertical rows on each face.

In wastelands; 300 - 350 m.

Fl. & Fr.: January - May.

DURG: Durg. RAIPUR: Dhamtari, Kasdol.


Annuals or perennials, 10 - 100 cm high. Leaves flat, 1.5 - 5.0 mm broad. Anthela simple or subcompound; spikelets ovoid, globose, terete, 5 11 × 2.5 - 3.0 mm; glumes broadly ovate, mucronulate, scarcely
keeled. Stamens 1. Nuts obovate, trabeculate with 5-10 longitudinal ribs on either face, whitish to stramineus, ca 1 mm long.

Along forests, cultivated fields & streams; 300-800 m.

Fl. & Fr.: August April.


Perennials with shortly creeping rhizome, 10-40 cm high. Leaves short, 1.5-3.6 mm broad. Anthela compound or decompound, spikelets ovoid, angular, 3-6 mm long; glumes broadly ovate, apiculate, keeled, 2.0-2.5 mm long. Stamens 3. Nuts obovoid, shortly stipitate, 0.8-1.0 mm long, verruculose to almost smooth, whitish or stramineus.

In wastelands; 300-500 m.

Fl. & Fr.: August May.

RAIPUR: Khallari, Raipur.


Perennials, 18-25 cm high. Leaves much shorter than the stems, 1-4 mm broad. Anthela compound to supradecomposed; spikelets solitary, lanceolate, 5-10 × 2.0-2.5 mm; glumes lanceolate, 1-nerved, 4.0-6.5 × 2.0-2.5 mm; stamens 3. Nuts obovoid, shortly stipitate, densely verruculose, whitish to brownish, ca 1 mm long.

Along streams; 500 m.

Fl. & Fr.: May.

RAIPUR: Khallari.


Annuals or perennials, 10-50 cm high. Leaves equitant, 1-3 mm broad. Anthela lax or rather dense, compound or decompound; spikelets solitary, subglobose, 2-5 × 1.5-2.5 mm; glumes ovate-oblong, muticous, 3-nerved, 1.0-1.5 mm long; stamens 1. Nuts narrowly obovoid, shortly stipitate, ca 0.5 mm long, stramineus, verruculose, transversely lineolate.
Along ponds and streams; 300–500 m.

Fl. & Fr.: September–April.

DURG: Durg. RAIPUR: Dhamtari. RAJNANDGAON: Baghnadi, Deopura, Salwaru.


Annuals or perennials, 20–90 cm high. Leaves shorter than to equaling the stems, 2–3 mm broad. Anthela lax, compound or decomposed; spikelets all or nearly all solitary, oblong ovoid, 1.5–5.0 × 1–2 mm; glumes ovate, mucronulate, 1–2 mm long; stamens 1–2. Nuts broadly ellipsoid to subglobose, 0.4 × 0.8 × 0.3–0.5 mm, densely verruculose, minutely transversely lineolate by the transversely linear surface cells arranged in 4–6 vertical rows on either face, stramineus to pale brown.

River banks; 300 m.

Fl. & Fr.: October.

RAIPUR: Simga.


Perennials, 10–40 cm high. Leaves one third to half as long as the stem, 0.5–1.0 mm broad. Anthela reduced to a solitary (-3) spikelets; spikelets ovate or ovate-lanceolate, 6 × 15 × 3–6 mm; glumes broadly ovate, 4.5–6 mm long, stamens 2–3. Nuts obovoid, stipitate, 2–3 × 1.2–2.0 mm, tuberculate, yellowish-brown.

In sal forests and wastelands; 300–500 m.

Fl. & Fr.: August–May.

RAIPUR: Balodabazar, Khallari, Raipur.


Perennials, 10–50 cm high. Leaves 0.5–1.0 mm broad. Anthela simple or reduced to a solitary spikelet; spikelets broadly ovoid, terete, 4 × 8 × 3.0–4.5 mm; glumes broadly ovate or suborbicular, muticus or mucronulate, 2.5–3.3 mm long; stamens 3–2. Nuts stipitate, obovoid, ca 1.5 mm long, stramineus.
Along roadside drains; 300–450 m.

Fl. & Fr.: September October.

RAIPUR: Dhamtari, Simga. RAJNANDGAON: Baghnadi, Salewara.


Annuals or perennials, 10–60 cm high. Leaves absent. Spikelets solitary, terminal, ovoid globose, terete, 6 18 × 4–6 mm; glumes broadly ovate, 3 nerved, 3.5 mm long; stamens 1–2. Nuts long stipitate, linear oblong, 1.5–2.0 × 0.5 mm, stramineous, trabeculate due to surface cells being arranged in ca 9 vertical rows.

Along roadside drains; 300–450 m.

Fl. & Fr.: August October.

RAIPUR: Dhamtari, Pithora, Simga. RAJNANDGAON: Baghnadi.


Annuals, 10–40 cm high. Leaves linear lanceolate, 3–8 mm broad, ciliate on the margins, 3–4-nerved. Inflorescence of 1–2 clusters; glumes obovate-oblong, 1.5–1.7 mm long, hairy. Perianth biseriate; bristles scaberulous to almost smooth; scales distinctly clawed, subquadrate, cordate or hastate at the base. Nuts stipitate, elliptic or obovate, ca 0.5 mm long, beaked.

Along streams & drains, 350–500 m.

Fl. & Fr.: October May.

DURG: Talgaon. RAIPUR: Dokal, Dugli, Pithora, Sitanadi.

7. *Kyllingiella R. Haines & K. Lye*


Perennials, up to 15 cm high. Leaves ca 1 mm broad. Inflorescence a single head; spikelets ovoid lanceolate; glumes ovate-lanceolate to oblong-lanceolate, keeled, 3 5 nervetd. Nuts obovoid oblong, minutely punctulate.

In sal forests; 600 m.

Fl. & Fr.: October.

RAIPUR: Boral.

8. Lipocarpha R. Br.


Annuals or perennials, 20 50 cm high. Leaves usually much shorter than the stems. 2 4 mm broad. Spikelets 3 6, ovoid, terete, 5 8 mm long, congested into a head; glumes spathulate, purplish lineolate, 1.8 2.8 mm long; scales oblong, 5 7 nervetd, 1.8 2.0 mm long. Stamens 1(-2). Nuts oblong-obovate, 1.0 1.2 mm long, stramineous to fuscous.

In ditches; 450 m.

Fl. & Fr.: September.

RAJNANDGAON: Salawara.

9. Scirpus L.

1a. Spikelets squarrose by the recurved mucro of the glumes; the mucro about as long as or longer than the main body ... S. squarrosus 6

1b. Spikelets not squarrose; the mucro absent, or if present then much smaller.

2a. Inflorescence subtended by several foliaceous bracts, not continuous with the stem.

3a. Leaves all clustered at the base; glumes 2.2 3.0 mm long ... S. grossus 2

3b. Leaves scattered all along the stem; glumes 5 7 mm long ... S. maritimus 5

2b. Inflorescence subtended by a single bract, similar to and continuous with the stem.

4a. Stem and bract transversely septate, flowering nearer to the base ... S. articulatus 1

4b. Stem and bract not septate, flowering nearer to the top.

5a. Perianth - bristles present ... S. funcoideus 3

5b. Perianth - bristles absent ... S. lateriflorus 4

Annuals or perennials, 5 35 cm high. Stems spongy, transversely septate. Leaves absent. Inflorescence capitate; spikelets ovoid oblong, 8 17 × 4 5 mm; glumes broadly ovate to suborbicular, 3.5 5.0 mm long. Nuts obovoid, trigonous, transversely wavy wrinkled, ca 1.5 × 1.0 mm.

In marshy places; 300 500 m.

*Fl.* & *Fr.* : September June.

**DURG** : Buddhun. **RAIPUR** : Dugli, Pithora, **RAJNANDGAON** : Baghnadi.


Perennials, up to 2 m high. Stems trigonous below, almost 3 winged above. Leaves clustered at the base, 7 30 mm broad. Anthela compound to supradecomound; spikelets ovoid oblong, 4 - 10 × 2.7 3.5 mm; glumes ovate, 2.2 3.0 mm long; bristles 3 6, unequal, plumose when young, sparsely retrorsely scabrid on maturity. Nuts oblong-obovoid, 1.7 1.7 mm long.


Perennials or annuals, up to 80 cm high. Leaves absent. Inflorescence capitate; spikelets ovoid oblong, 7 18 × 5.0 6.5 mm; glumes broadly ovate to suborbicular, mucronate, 3 4 mm long. Perianth - bristles 5 6, unequal, retrorsely scabrid; stamens 3 - 2. Nuts broadly obovate, apiculate, faintly transversely wavy wrinkled, 1.7 2.2 mm long.

In shallow water; 350 m.

*Fl.* & *Fr.* : April.

**DURG** : Durg.


Annuals, up to 35 cm high. Leaves absent. Inflorescence capitate; spikelets oblong obovoid, 5 10 mm long, ca 2.5 mm broad; glumes ovate, mucronate, 2.0 2.5 mm long, stramineus with purplish dots along the midrib; perianth absent; stamens 3. Nuts obovate, compressed trigonous, transversely wavy wrinkled, 1.2 1.4 mm long.

In shallow water; 250 450 m.
Fl. & Fr. : throughout the year.
DURG ; Talgaon. RAIPUR : Dhamtari, Kasdol. RAINAND-GAON : Baghnadi.

Perennials, 0.3 2.0 m high. Leaves up to 12 mm broad. Anthela usually simple or compound, sometimes almost capitate bearing few spikelets ; spikelets solitary or in clusters of 3 - 6, ovoid oblong, 10 - 15 (-40) × 4 - 7 mm; glumes ovate, awned, 5 - 7 mm long. Perianth - bristles (0 -) 3 - 6, unequal, retrorsely scabrid. Nuts narrowly obovoid, 2.5 - 3.5 mm long, beaked, smooth.

River banks ; 300 m.

Fl. & Fr. : June.

RAIPUR : Kasdol.

Annuals, 5 - 30 cm high. Leaves flat, 0.5 - 1.0 mm broad. Inflorescence capitate, pseudolateral; spikelets oblong, 3 - 7 × 3 mm, squarrose; glumes obovate, rhomboid, aristate, 1.0 - 1.2 mm long. Perianth absent; stamens 1 (- 2). Nuts obovate or oblong obovate, apiculate, ca 0.5 mm long.

In moist depressions ; 350 - 450 m.

Fl. & Fr. : January - May.

RAIPUR : Dhamtari, Sitanadi.

10. Scleria BEIG.

1a. Inflorescence spiciform, unbranched

1b. Inflorescence paniculate.

2a. Nuts cancellate, beaked

2b. Nuts neither cancellate nor beaked.

3a. Nut disk broad, 3 - lobed

3b. Nut disk a narrow ring

Annuals, 15 - 75 cm high. Leaves 3 - 8 mm broad. Panicles 2 - 4 ;
spikelets unisexual or sometimes male and bisexual; males linear lanceolate, ca 3 mm long, females obovoid, ca 4.5 mm long; glumes ovate, mucronulate. Nuts globose, cancellate, beaked, 2.0–2.5 mm broad; disk lobes lanceolate, reaching half the nut.

In miscellaneous forests; 400 m.

Fl. & Fr.: September.

RAJNANDGAON: Baghnadi.


Perennials, 30–100 cm high. Leaves 3–8 mm broad. Panicles 2–3; spikelets unisexual, in clusters of 2–4; males lanceolate, 3–4 mm long, females ovate, 4–6 mm long; glumes ovate, 3.5–4.0 mm long. Nuts ovoid globose, apiculate, 2.0–2.5 mm long, smooth or slightly rugulose, pubescent; disk lobes often bidentate at the top.

In sal forests; 500 m.

Fl. & Fr.: October.

RAIPUR: Taurenga.


Perennials, 40–90 cm high. Leaves often somewhat aggregated towards the middle, 1–4 mm broad. Inflorescence paniculate; spikelets bisexual, solitary or in clusters of 2–3; stamens 1(–2). Nuts ovoid to oblong-ovoid, obtusely trigonous, 2.0–2.5 × 1.5–2.0 mm, smooth, shining; disk reduced to a narrow minutely glandular ring.

In sal forests; 500 m.

Fl. & Fr.: October.

RAIPUR: Taurenga.


Annuals, 25–50 cm high. Leaves narrowly linear, 0.5–2.0 mm broad. Inflorescence linear, spikeform unbranched; spikelets bisexual, obovate, 2.5–3.0 mm long; glumes oblong obvate, acute, keeled; stamens 2. Nuts obovoid, suberecte, apiculate, lacunose rugose, white; disk obolate.

RAIPUR, Lumsie (DD).
1a. Tall arborescent or shrubby plants. Culms woody. Leaves with a pseudo-petiole articulated with the sheath. Spikelets mostly arranged in head-like alternate clusters along branches of pseudo-inflorescence.

2a. Spikelets falling off as a whole; rhachilla internodes very short, not disarticulating; lemmas successively longer upwards... *Dendrocalamus 19*

2b. Spikelets not falling off as a whole but breaking up at maturity; rhachilla internodes up to half the length of the lemma, promptly disarticulating; lemmas all subequal... *Bambusa 7*

1b. Usually herbaceous plants, sometimes tall reed-like. Culms not woody. Leaves neither with a pseudo-petiole nor articulated with the sheath. Spikelets not arranged as above.

3a. Spikelets two-flowered, falling entire at maturity, with the upper floret bisexual and the lower male or barren.

4a. Spikelets unisexual; female spikelets enclosed in a hardened glossy fruit-case.

5a. Fruit-case formed by leaf-sheath... *Calit 15*

5b. Fruit-case formed mainly by lower glume and to a small extent by the internode of the rhachis... *Chionachne 12*

4b. Spikelets bisexual, or if unisexual then the female spikelet not enclosed in a fruit-case.

6a. Spikelets usually in pairs with one sessile and the other pedicelled, those of each pair usually dissimilar (the pedicelled sometimes much reduced), rarely solitary and all alike; glumes as long as the spikelet and enclosing the florets, more or less rigid and firmer than the hyaline lemmas, upper lemma often awned.

7a. Spikelets solitary... *Dimeria 23*

7b. Spikelets in pairs, one sessile and the other pedicelled, or one short and the other long-pedicelled (sometimes the pedicelled reduced to scale),
8a. Pedicels and rachis internodes stout, 3 - angled, rounded or flattened and thickening upwards; upper lemma awnless.

9a. Sessile spikelet spherical
9b. Sessile spikelet not spherical.

10a. Sessile spikelets broadly winged on the keels of the lower glume

10b. Sessile spikelets not winged as above.

11a. Axis of the spikes tough, not breaking up
11b. Axis of the spikes, fragile, breaking up on maturity.

12a. Sessile spikelets in pairs at each node of the axis
12b. Sessile spikelets solitary at each node of the axis.

13a. Spikelets in pairs, one sessile and the other pedicelled
13b. Spikelets solitary, sessile, the pedicelled spikelet suppressed or rudimentary with the pedicels fused to the internodes

8b. Pedicels and rachis internodes slender, filiform or linear, if thickened upwards then with the upper lemma awned.

14a. Spikelets of each pair alike, the sessile and the pedicelled both bisexual.

15a. Spikelets in silky panicles, arranged along a central axis, often contracted and spike-like.

16a. Culms 0.1 - 1.2 m high. Panicle spike-like, its numerous primary branches bearing very short secondary racemes; raceme rachis not breaking up at maturity

16b. Culms 2 - 4 m high. Panicle rather open, racemes flexuous, 3 - 15 cm long, many crowded upon the primary panicle branches or borne directly on the main axis; raceme rachis breaking up at maturity

15b. Spikelets in distinct racemes, these solitary or several and digitate or subdigitate.

17a. Raceme solitary
17b. Racemes two or more.
18a. Upper lemma deeply bifid at the apex; lower glume flat with inflexed margins … Eulalia 31

18b. Upper lemma scarcely notched at the apex; lower glume convex … Eulalaptis 32

14b. Spikelets of each pair different, the sessile bisexual, the pedicelled male or sterile, sometimes the pedicelled much reduced or suppressed.

19a. Racemes arranged in a panicle with its common axis longer than the lowest raceme, not supported by spathes.

20a. Sessile spikelet dorsally compressed.

21a. Pedicels and rachis internodes with a translucent median line … Capsipedium 10

21b. Pedicels and rachis internodes solid … Sorghum 66

20b. Sessile spikelet laterally compressed or terete.

22a. Racemes reduced to one sessile and two pedicelled spikelets, rarely with one or two additional pairs below … Chrysopogon 14

22b. Racemes composed of many pairs of spikelets … Vetiveria 73

19b. Racemes solitary, paired or sub-digitate, often supported by spathes.

23a. Fertile lemma awned from low down on the back … Arthraxon 5

23b. Fertile lemma awned from the tip or from the sinus of the 2-lobed tip, or awnless.

24a. Inflorescence a short (up to 3 cm long) one- or few-noded condensed raceme of 3-11 spikelets; inflorescences usually combined into a leafy pseudo-inflorescence consisting of many racemes.

25a. Raceme of three spikelets, articulated with a short peduncle; one spikelet sessile, bisexual; two spikelets pedicelled, of which one is rudimentary and one male or bisexual … Aplicula 3

25b. Raceme not as above, of 7-11 spikelets of which lower 4 form a kind of involucre.
26a. Raceme falling off as a whole; sterile spikelet neither with indurated nor with pungent base  

26b. Raceme not falling off as a whole, the involucral spikelets persistent; fertile spikelet with sharp or indurated bearded base ...  

24b. Inflorescence not as above.  

2/a. Inflorescence of a solitary spike or raceme.  

28a. Upper glume of the sessile spikelet with 7 - 12 mm long awn ...  

28b. Upper glume of the sessile spikelet awnless or with short awn.  

29a. Awn of the upper lemma of the sessile spikelets 6 - 12 cm long ...  

29b. Awn of the upper lemma of the sessile spikelets absent, or up to 3 cm long.  

30a. Lower one several sessile spikelets awnless; upper lemma of the higher sessile spikelets consisting of an awn with a stipe-like base (body of the lemma) ...  

30b. All the sessile spikelets awned; upper lemma of the sessile spikelets consisting of an awn with 2 - lobed base (body of the lemma) ...  

27b. Inflorescence of two or more spikes or racemes.  

31a. Inflorescence of two short racemes inside a spathe-like leaf; inflorescences united into leafy panicles ...  

31b. Inflorescence not as above.  

32a. Pedicelled; spikelet reduced to a stipesessile spikelet awned; lower glumes transversely ribbed ...  

32b. Spikelets not as above.  

33a. Joints of the rhachis and pedicels of the pedicelled spikelets stout, more or less triquetrous ...  

33b. Joints of the rhachis and pedicels of the pedicelled spikelets capillary.
34a. Pedicels and rhachis internodes with a translucent median line ... *Bothriochloa* 8

34b. Pedicels and rhachis internodes solid ... *Dichanthium* 21

6b. Spikelets usually solitary, rarely paired, all more or less similar; glumes usually membranous, the lower mostly smaller or sometimes suppressed; lower lemma mostly resembling the upper glume in texture, upper lemma papery to very tough and rigid, usually awnless.

35a. Spikelets all or some of them subtended by one - many bristles or spines.

36a. Bristles persisting on the axis after the spikelets have fallen ... *Setaria* 65

36b. Bristles or spines falling with the spikelets.

37a. Bristle solitary, formed by the prolongation of the branch beyond the terminal spikelet ... *Pseudoraphis* 37

37b. Bristles or spines numerous, formed by modified branchlets.

38a. Bristles united at the base into a hard cup ... *Cenchrus* 11

38b. Bristles free to the base ... *Pennisetum* 54

35b. Spikelets not subtended by bristles or spines.

39a. Inflorescence a panicle, open, or contracted and spike-like.

40a. Inflorescence an open elliptic - ovoid panicle ... *Panicum* 51

40b. Inflorescence a cylindrical spike-like panicle.

41a. Spikelets more or less gibbous; upper lemma and palea indurated and closed at the apex ... *Saccolopis* 61

41b. Spikelets lanceolate; upper lemma and palea membranous, tapering at the apex ... *Hymenachne* 37

39b. Inflorescence consisting of one-sided spikes or racemes, these digitate or scattered, sometimes solitary; the racemes sometimes with short secondary branchlets (*Cenchrus* spp.)

42a. Upper lemma chartaceous or cartilaginous, usually flat with hyaline margins.

43a. Spikelets awned ... *Alopecurus* 2

43b. Spikelets not awned ... *Digitaria* 22
42b Upper lemma crassilamellate or coriaceous, usually with narrow involuted margins clasping the edge of the palea.

44a. Spikelets with a bead-like swelling at its base ... *Eriachloa 30*

44b. Spikelets passing smoothly into the pedicel without a bead-like swelling.

45a. Lower glume present.

46a. Lower glume turned towards the rhachis, the back of the upper lemma turned away from it, hence the spikelets adaxial ... *Brachiaria 9*

46b. Lower glume turned away from the rhachis, the back of the upper lemma facing it, hence the spikelets abaxial.

47a. Glumes acuminate or awned, rarely acute; upper lemma not mucronate.

48a. Leaves linear ... *Echinochloa 25*

48b. Leaves ovate-lanceolate ... *Optisetum 48*

47b. Glumes not awned, if acuminate then the upper lemma mucronate.

49a. Upper lemma mucronate ... *Urochloa 72*

49b. Upper lemma acute ... *Paspalidium 52*

45b. Lower glume absent ... *Paspalum 53*

3b. Spikelets one-many-flowered, breaking up at maturity above the more or less persistent glumes, or if falling entire then the spikelets neither two-flowered nor with the upper floret bisexual and the lower male or barren.

50a. Spikelets containing one fertile floret with or without 1-2 male or barren florets.

51a. Glumes very minute or suppressed.

52a. Aquatic free floating grasses. Leaves ovate-oblanceolate; sheaths inflated ... *Hygroryza 36*

52b. Terrestrial or aquatic attached grasses. Leaves linear, sheaths not inflated.

53a. Tips of the pedicel with two minute lips. Fertile lemma supported by two empty scales ... *Oryza 50*

53b. Tips of the pedicel without lips. Fertile lemma not supported by scales ... *Leersia 42*
51b. Glumes usually well-developed.

54a. Spikelets falling entire at maturity, either singly or in clusters.

53a. Spikelets awned ... Peratis 35

55b. Spikelets not awned

54b. Spikelets breaking up at maturity above the persistent glumes.

56a. Inflorescence of one or more racemes or spikes.

57a. Inflorescence of pedunculate groups of spikelets second and distant on a tough solitary axis ... Melanocenchrus 45

57b. Inflorescence not as above; spikelets sub-sessile, biserrate.

58a. Spikelets more or less sunk in the rhachis Oropetium 49

58b. Spikelets not sunk in the rhachis.

59a. Lemmas awned.

60a. Spikelets 1-flowered ... Schoenefeldia 63

60b. Spikelets 2-4-flowered ... Chloris 13

59b. Lemmas not awned ... Cynodon 17

56b. Inflorescence a panicle, sometimes contracted and spike-like.

61a. Spikelets 1-flowered.

62a. Lemmas bearing a 3-branched awn ... Aristida 4

62b. Lemmas not awned ... Sporobolus 67

61b. Spikelets 2-5-flowered, the lower 1-2 florets may be reduced to minute chaffy scales at the base of the fertile lemma.

63a. Tall reed-like grasses with 1.5-2.5 m high culms. Spikelets small, 1.2-1.8 mm long; rhachilla produced beyond the upper floret ... Thysanolaena 70

63b. Slender grasses with 0.1-1.0 m high culms. Spikelets large, 4-14 mm long; rhachilla not produced beyond the upper floret ... Arundinella 6

56b. Spikelets containing two or more fertile florets.

64a. Tall reed-like grasses with large plumose panicles ... Phragmites 56

64b. Slender grasses without large plumose panicles.

65a. Spikelets two-flowered; lemmas hard or leathery, not awned ... Isachne 39

65b. Spikelets nearly always three or more-flowered; lemmas membranous or awned.
66a. Lemmas 2-toothed at the apex, hairy along the nerves ... Leptochloa 43

66b. Lemmas entire at the apex, or if 2-toothed (Acrachne) then glabrous along the side nerves.

67a. Spikelets in dense globose clusters, awned ... Elytrphorus 27

67b. Spikelets not in globose clusters; awned or awnless.

68a. Glumes aristate; spikelets sessile on the flattened branches of a narrow panicle ... Dinebra 24

68b. Glumes obtuse, acute or acuminate, or if aristate then the spikelets in solitary or more and digitate spikes.

69a. Spikelets in open, contracted or spike-like panicles, rarely in solitary second spike (Eragrostiella).

70a. Inflorescence a panicle, sometimes spike-like ... Eragrostis 29

70b. Inflorescence a solitary second spike ... Eragrostiella 28

69b. Spikelets sessile or very shortly pedicellate, loosely to densely imbricate in digitate or racemously arranged spikes or spike-like racemes, rarely in solitary spikes (Dactylloctenium, Eleusine).

71a. Inflorescence of numerous spikes crowded into a long narrow dense panicle; spikelets falling entire at maturity ... Desmostachya 20

71b. Inflorescence not as above; spikelets breaking at maturity.

72a. Rhachis of the spike terminating in a sharp point ... Dactylloctenium 18

72b. Rhachis of the spike terminating in a spikelet.

73a. Lemmas toothed at the apex by the excurrent nerves ... Acrachne 1

73b. Lemmas entire at the apex ... Eleusine 26
1. Acrachne Chiov.


Annual, tufted, erect or ascending, 20 - 70 cm high. Spikes digitate or subdigitate, second, 2 - 10 cm long; spikelets closely imbricating, 6 - 10 mm long, 6 - 15 flowered; glumes unequal, 1 - 3 mm long, lower acute - mucronate, upper acuminate - awned.

Common in cultivated fields; 450 m.

_Fl. & Fr._ : June.

RAIPUR : Gariaband.

Reported to be a good fodder grass.

2. Allotheropsis Prest


Annual, hairy, erect or ascending, 20 - 80 cm high. Leaves ovate-lanceolate, 3 - 15 cm long, 5 - 15 mm broad with somewhat amplexicaul base and tuberculate hairy margins. Racemes several, usually whorled. Spikelets 4 - 5 mm long; upper glume ciliate margined; palea papillose.

In wastelands and along cultivated fields; 400 - 500 m.

_Fl. & Fr._ : August - September.


3. Apluda L.

Perennial, rather slender, 40–130 cm high, rooting at the lower nodes. Each raceme enclosed within a spatheole, and many such racemes together forming a 5–30 cm long interrupted pseudo panicule; raceme comprising of one sessile and two pedicelled spikelets, sessile spikelet 3–5 mm long, with its upper lemma awned or not.

In wastelands & forest margins; 350–600 m.

Fl. & Fr.: September June.

RAIPUR: Borai, Pithora, Sitanadi. RAINANIDGAON: Deopura.

4. Aristida L.

1a. Lateral awns much reduced and of a different texture from the central awn, or absent ... A. reddata 2

1b. Lateral awns well developed, of the same texture as the central awn.

2a. Glumes long awned, the awn 3–5 mm long ... A. setacea 3

2b. Glumes shortly awned, the awn at the most 2 mm long ... A. adscensionis 1

1. Aristida adscensionis L. Sp. Pl. 82. 1753.

Tufted annuals or perennials with a short rootstock, 10–60 cm high. Leaves usually folded, ca 2 mm broad. Panicles contracted, 4–25 cm long. Spikelets green or purplish; lower glume 1–3 mm long, upper 5–10 mm long; central awn 7–25 mm long, laterals as long or shorter.

In wastelands, on sand or red morrum; 300–400 m.

Fl. & Fr.: October May.

DURG: Talgaon. RAIPUR: Dhamtari, Sankra.

2. A. reddata Stapf in Kew Bull. 1892: 85. 1892.

Tufted erect annuals, 10–40 cm high. Leaves usually folded, 5–15 cm long, ca 1.5 mm broad. Panicles contracted or effuse, 7–20 cm long. Glumes subequal, 8–12 mm long, acuminate or shortly awned; lemma passing into the rather swollen and twisted column with 15–25 mm long awn, lateral awns usually absent.

On sand deposits; 350 m.
**Fl. & Fr.** : October.

**RAIPUR** : Sankra.


Tufted perennials, 50 - 100 cm high. Culms often fastigiately branched. Leaves rolled, 15 - 30 cm long, ca 3 mm broad; sheaths polished, yellow, open at the ramifications. Panicles contracted, 20 - 40 cm long. Lower glume up to 17 mm long, upper up to 20 mm long; lemma rather rigid at the base of the trifid awn, central awn 20 - 35 mm long.

Along forest margins; 400 - 500 m.

**Fl. & Fr.** : September - January.

**DURG** : Balod **RAIPUR** : Chhoa, Dugli.

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5. **Arthraxon P. Beauv.**

1a. Spikelets laterally compressed; lower glume of the sessile spikelet not keeled; anthers 2, 0.3 - 0.6 mm long ... **A. lancifolius** 1

1b. Spikelets not laterally compressed; lower glume of the sessile spikelet 2 - keeled; anthers 3, 2.3 - 3.5 mm long ... **A. prionodes** 2


Slender annuals, 10 - 30 cm long, usually trailing. Leaves ovate-lanceolate, 1 - 4 cm long. Racemes two; several, 1 - 2 cm long, rhachilla ciliate. Sessile spikelets 2 - 4 mm long; awns 5 - 8 mm long; pedicelled spikelets 1 - 2 mm long or suppressed.

In mixed forests; 450 m.

**Fl. & Fr.** : October.

**RAIPUR** : Gariaband.

Perennial, trailing, 30–70 cm long, with a short silky rootstock. Leaves narrowly ovoid lanceolate, 2–6 cm long, tuberculate-ciliolate-margined. Racemes two several, 4–6 cm long. Sessile spikelets 5–6 mm long, spinulose on the keel; awn 8–12 mm long.

In rock crevices; 600 m.

*Fl. & Fr.*: October.

**RAIPUR**: Taurenga.

6. **Arundinella** Raddi

1a. Upper lemma with two setae, one on each side of the awn at the tip ... *A. setosa* 2

1b. Upper lemma with a single awn without any setae ... *A. pumila* 1


Erect tufted annuals, 20–70 cm high. Leaves linear-lanceolate, 10–20 cm long. Panicle open, profusely branched, 5–20 cm long. Spikelets 1.5–2.0 mm long; glumes up to 1.7 mm long, glabrous or hispidulous; upper lemma ca 0.8 mm long, with ca 2 mm long awn.

In sal forests; 400–500 m.

*Fl. & Fr.*: October January.

**RAIPUR**: Chhorda, Sitanadi.


Perennials, 30–80 cm high with tuberous rootstocks. Leaves linear, hairy at the base. Panicle effuse with capillary branches. Spikelets 5–6 mm long; lower glume ca 4 mm long, upper ca 5 mm long; upper lemma coriaceous, 2-toothed, awn 8–10 mm long.

On hill slopes; 500 m.

*Fl. & Fr.*: September.

**RAINANAGAUN**: Deopura.


Tall arborescent bamboo, with thorny culms up to 20 m high and 5 - 10 cm thick. Leaves linear-lanceolate, 5 - 12 cm long, auricles bristly; culm sheath 20 - 30 x 10 - 20 cm, dark brown hairy, apiculate. Spikelets lanceolate, ca 15 mm long, 3 - 6 flowered; lemma ca 8 mm long.

In wastelands; 300 m.

Fl. & Fr.: August.

RAIPUR: Pithora.


1a. Inflorescence with a long central axis

1b. Inflorescence subdigitate


Tufted perennials, 40 - 150 cm high. Leaves 10 - 55 cm long, 2 - 12 mm broad. Inflorescence with a central axis 4 - 20 cm long and numerous racemes in irregular whorls upon simple or branched peduncles. Sessile spikelet 3 - 4 mm long, lower glume with or without a pit.

Along forest margins; 450 - 500 m.

Fl. & Fr.: January.

RAIPUR: Singhpur, Sitanadi.

Stoloniferous perennials with up to 60 cm long erect or ascending culms. Leaves 2.5 - 5 mm broad. Racemes 3 - 8, subdigitate, shortly peduncled, 2.5 - 5.5 cm long. Sessile spikelets 3.5 - 4.5 mm long, lower glume glossy, 1 or 2 pitted; awn 15 - 20 mm long.

In wastelands; 300 m.

*Fl. & Fr.* : August - October.

RAIPUR : Balodabazar, Raipur.


1a. Spikelets 2.5 - 3.5 mm long, lower glume one-third to one-half the length of the spikelet... *B. ranosa* 1

1b. Spikelets 1.5 - 2.2 mm long, lower glume one-eighth to one-fourth the length of the spikelet... *B. reptans* 2


Tufted annuals. Culms ascending, 10 - 70 cm long, very slender or stoutish. Leaves linear-lanceolate, 4 - 10 cm long, 10 - 15 mm broad. Racemes 3 - 8 scattered along 1 - 10 cm long common axis, each 2 - 9 cm long, lower sometimes branched. Spikelets elliptic, white ciliate at the base.

On dilapidated walls; 250 m.

*Fl. & Fr.* : August.

RAIPUR : Arang.


Tufted annuals. Culms ascending, 20 - 60 cm long, rooting at the lower nodes. Leaves lanceolate, 2 - 5 cm long, 4 - 8 mm broad. Racemes 4 - 10 scattered along 1 - 6 cm long common axis, each 1.5 - 3.5 cm long.
Spikelets elliptic, crowded, white ciliate at the base; lower glume usually truncate.

In roadside ditches; 250 m.

Fl. & Fr.: August.

RAIPUR: Raipur.

10. CAPILLIPEDUM Stapf


Usually slender perennials, erect or straggling, with up to 2 m long culms. Panicles 5–12 cm long with capillary branches bearing short racemes. Sessile spikelets 1.8–2.5 mm long, scabrid or pubescent; awn 6–12 mm long; pedicelled spikelets 3.0–4.5 mm long.

In mixed forests; 450 m.

Fl. & Fr.: January.

RAIPUR: Singhpur.

11. CENCHRUS L.

*Cenchrus elihuia* L. Mant. 302. 1771.

Perennials, 15–40 cm high. Leaves 3–5 mm broad. Spikes terminal, 3–5 cm long; spikelets ca 5 mm long; involucral bristles 6–15 mm long, antrorsely scabrid, inner rather slender, ciliate-margined.

In wastelands; 300 m.

Fl. & Fr.: October.

RAIPUR: Raipur.

12. CHIONACHNE R. Br.

Robust monoecious perennials, 1.5 - 3 m high. Leaves scabrid above and on the margins, and with irriant hairs beneath. Inflorescence a much branched leafy panicle with spathes and spatheoles. Racemes 2 - 4 cm long, entirely male or with a solitary female spikelet at the base.

In wastelands; 450 - 750 m.

Fl. & Fr.: September - January.

RAIPUR: Dugli. RAJNANDGAON: Chilpi.

13. CHLORIS Sw.

1a. Spikes flexuous and drooping, 15 - 25 cm long. Spikelets 5 - 6 mm long, dorsally compressed

1b. Spikes straight and ascending, 2 - 10 cm long; spikelets 4 - 5 mm long, laterally compressed

... C. dolichostachya 1

... C. virgata 2


Erect or ascending perennials, up to 1 m high. Leaves 5 - 10 mm broad, acuminate. Inflorescence of 4 - 6 or more digitate flexuous spikes. Spikelets 2 flowered, 5 - 7 mm long; lower lemma scabrid with up to 17 mm long awn; upper lemma scale-like, bearded, with 2 - 4 mm long awn.

In wastelands & mixed forests; 400 - 500 m.

Fl. & Fr.: November - May.

RAIPUR: Sitanadi. RAJNANDGAON: Baghnadi.

2. C. virgata Sw. Fl. Ind. Occ. 1: 203. 1797.

Erect or ascending annuals, up to 1 m high. Leaves 2.5 - 6 mm broad; basal sheaths strongly keeled. Inflorescence of 4 - 12 digitate spikes. Spikelets 2 flowered; lowest lemma obliquely obovate, 3 - 4 mm long, ciliate, with 5 - 12 mm long awn; second lemma ca. 2 mm long with 5 - 12 mm long awn.

In cultivated fields; 300 - 600 m.

Fl. & Fr.: August - October.

RAIPUR: Balodabazar, Taurenga.
14. Chrysopogon Trin

1a. Pedicels less than half the length of the sessile spikelet ... C. fulvus 1

1b. Pedicels more than half the length of the sessile spikelet ... C. verticillatus 2


Erect perennials, ca 50 cm high. Inflorescence a dense panicle. Sessile spikelets 4 - 6 mm long, upper glume keeled, awned, with long golden brown hairs along the keel; pedicelled spikelets ca 4 mm long, lower glume pubescent and awned; pedicels villous.

Along paddy fields; 300 m.

Fl. & Fr.: October.

RAIPUR: Simga.


Tufted perennials, ca 1 m high. Leaves 5 - 20 mm broad, pubescent and with longer caducous hairs, spinulose or sebrid margined. Panicles bright yellowish with chestnut brown awns, branches subverticillate. Spikelets ca 5 mm long.

Among boulders; 600 m.

Fl. & Fr.: October.

RAIPUR: Taurenga.

15. Coix L.

Coix aquatica Roxb. Fl. Ind. 3: 571. 1832.

Robust succulent monoecious perennials with 2 - 4 m long culms, partly creeping or floating and partly erect. Leaves glandular hairy above. Inflorescence subtended by an ovoid head like cupule; female raceme enclosed within the cupule; male raceme exerted from its mouth. Lower glume of the male spikelets conspicuously winged.
Along roadside drains; 400 - 750 m.

*Fl. & Fr.:* September - January.

**RAIPUR:** Dugli, Taurenga. **RAJNANDGAON:** Chilpi, Singhahi.

16. **CYMBOPOGON** Spreng.


Tufted perennials, up to 2 m high, with a short rootstock. Leaves linear-lanceolate, 1-3 cm broad, aromatic. Pseudo-panicle up to 40 cm long; racemes 15-20 mm long. Sessile spikelet 4-5 mm long, lower glume with a V-shaped groove at the back; upper lemma bend, with a 12-18 mm long awn.

In wastelands & mixed forests; 300 - 800 m.

*Fl. & Fr.:* October - April.

**RAIPUR:** Dhamtari, Sitanadi. **RAJNANDGAON:** Chilpi, Deopura.

Two morphologically indistinguishable varieties are known in cultivation; the variety known as "Motia" (diploid) yields Palmarosa oil and the variety known as "Sofia" (tetraploid) yields Ginger-grass oil.

17. **CYNODON** Rich.

1a. Ligule membranous, ciliolate on the upper edge. Hairs on the lemma usually clavate; anthers ca 0.5 mm long ... **C. arcuatus** 1

1b. Ligule a short scariosus-ciliolate rim. Hairs on the lemma not clavate; anthers more than 1 mm long ... **C. dactylon** 7


Non-rhizomatous, widely creeping, stoloniferous perennials; culms 20-40 cm long. Leaves linear-lanceolate, 4-15 cm long, 3-6 mm
broad, glaucous green; ligule ca 0.5 mm long. Racemes usually 4-8, whorled, 5-10 cm long, flexuous. Spikelets ca 2 mm long; glumes lanceolate, 1-nerved.

In wastelands; 600 m.

Fl. & Fr.: August.

RAIPUR: Sitanadi.


Stoloniferous perennials with slender underground rhizome; culms 10-40 cm long. Leaves 2-10 cm long, 2-4 mm broad, scaberulous; ligule a short ciliolate rim ca 0.3 mm long. Racemes 4-6, whorled, slender, 2-7 cm long; spikelets ca 2 mm long; lemma silky pubescent on the keel.

Common lawn grass, and in wastelands; 300-500 m.

Fl. & Fr.: throughout the year.

RAIPUR: Chhoora, Dhamtari, Pithora, Sitanadi.

18. DACTYLOCTENIUM Willd.


Annuals with 3-70 cm long erect or ascending culms rooting at the lower nodes, sometimes stoloniferous. Leaves papillose-hispid. Spikes 1-9, whorled, 0.5-6.5 cm long, rachis produced into a pointed extension. Spikelets 2-4 mm long; upper glume with a 1-3 mm long awn. Grains obovoid, transversely rugose.

Common in wastelands; on sand, red morrum or clayey lowlands; 300-450 m.

Fl. & Fr.: August June.

19. **Dendrocalamus Nees**


Deciduous densely tufted bamboo with solid or slightly hollow culms 4 - 15 m high and 3 - 7 cm thick. Rootstock copiously branched. Culm sheaths 8 - 30 cm long, golden brown hairy on the back, ciliate - margined. Leaves linear - lanceolate, 3 - 25 cm long, pubescent beneath. Spikelets in globose heads, the heads in long spikes: lemma spinescent, with a tuft of hairs.

In *cal forests*; 400 - 500 m.

*Fl. & Fr.*: January June.

RAIPUR: Sitanadi. RAJNANDGAON: Baghnadi.

20. **Desmostachya (Stapf) Stapf**


Perennial, rhizomatous, 40 - 70 cm high. Leaves rolled, 4 - 8 mm broad; lower leaf sheaths densely imbricating. Inflorescence 15 - 40 cm long, purplish stramineus. Spikelets clustered or distant, 3 - 10 mm long, 3 - 17 flowered.

In *low lands*; 500 m.

*Fl. & Fr.*: May.

RAIPUR: Sitanadi.

21. **Dichanthium Will.**

Perennial, geniculately ascending; culms 20-80 cm long. Racemes shortly peduncled, two several, subdigitate, 3-7 cm long; sessile spikelet 2-6 mm long; lower glumes villous; upper lemma with 8-20 mm long awn.

Common in wastelands; 300-600 m.

Fl. & Fr.: November - June.

RAIPUR: Balodabazar, Sitabadi. RAJNANDGAON: Deopura.

Reported to be an excellent fodder grass.

22. Digitaria Haller

1a. Spikelets binate in the centre of the racemes, 2.0-3.5 mm long.
   2a. Lower glume absent or very obscure ... D. setigera 4
   2b. Lower glume distinct, 0.2-0.4 mm long ... D. ciliaris 2

1b. Spikelets ternate in the centre of the raceme, 1.0-1.8 mm long.
   3a. Hairs on the spikelets verrucose, i.e. covered with warty growths as if sprinkled with fine grains of sand ...
      D. longiflora 3
   3b. Hairs on the spikelets clavate at the tip.
      4a. Tip of the pedicel with a corona of hairs up to 1 mm long ...
          D. stricta 5
      4b. Tip of the pedicel glabrous ...
          D. abuldens 1


Erect or ascending annuals, 10-60 cm high. Racemes 1-5, each 2-7 cm long, arranged along a 1-4 cm long common axis; rachis almost wingless. Spikelets elliptic obovate, 1.2-1.5 mm long; lower glume absent, upper glume and lower lemma with minutely clavate hairs between the nerves.

In wastelands, mixed forests and on walls; 300-500 m.

Fl. & Fr.: August - October.

RAIPUR: Arang, Balodabazar, Dhamtari, Taurenga.

Slender ascending annuals usually rooting at the lower nodes. Racemes 7 - 12, digitate, 2 - 15 cm long; rhachis broadly winged, triquetrous. Spikelets 2.5 - 3.5 mm long, glabrous, villous or ciliate; upper glume 2 - 3 mm long; nerves of the lower lemma smooth.

In wastelands, farms and along ponds; 250 - 350 m.

Fl. & Fr.: August.

RAIPUR: Balodabazar, Dhamtari.


Slender ascending annuals or perennials with stoloniferous base. Culms 10 - 30 cm long. Racemes usually 2, sometimes up to 4, digitate, 2 - 4 cm long; rhachis ribbon-like; tips of pedicels discoid. Spikelets 1.0 - 1.8 mm long; lower glume a hyaline rim, upper as long as the spikelet.

In wastelands; 250 m.

Fl. & Fr.: August.

RAIPUR: Pithora.


Slender ascending annuals. Culms 20 - 70 cm long. Racemes 1 - 4, digitate (or up to 15 on a common axis), 4 - 11 cm long; rhachis winged, sometimes hairy. Spikelets elliptic - lanceolate, 2.0 - 3.5 mm long; upper glume one - eighth to one third as long as the spikelet, faintly 3 - nerved; lower lemma silky pubescent.

In wastelands & forest clearings; 500 m.

Fl. & Fr.: August.

RAIPUR: Dhamtari.

Tufted erect annuals. 25-60 cm high. Leaves linear, with sparse tubercle based hairs. Racemes 3-10, subdigitate, 4-10 cm long; rhachis and pedicels narrowly winged. Spikelets elliptic obovate, 1.0-1.5 mm long, usually with clavate hairs; lower glume absent, upper present or absent. Fruit ellipsoid, shining chestnut brown or black.

In rock crevices; 600 m.

*Fl. & Fr.*: October.

RAIPUR: Taurenga.

23. **Dimeria** R. Br.

1a. Spikelets ca 4 cm long; upper glume narrowly winged on the keel ... *D. commivens* 1

1b. Spikelets ca 2 mm long; upper glume not winged ... *D. ornithopoda* 2


Annual, tufted, 8-30 cm high; culms erect or ascending. Leaves with long scattered tubercle based hairs. Spikes 1-2, erect, 1-4 cm long; rhachis flat, purplish. Spikelets with a tuft of hairs at the base; glumes ciliate; awn 8-10 mm long.

Along paddy fields and in rock crevices; 400-600 m.

*Fl. & Fr.*: October

RAIPUR: Pithora, Taurenga.


Annual, tufted, 5-25 cm high. Leaves with long scattered deciduous tubercle based hairs. Spikes erect, usually 2, sometimes 1 or 3, slender, 1-4 cm long; rhachis flat. Spikelets with a tuft of hairs at the base; glumes long hairy along the keel; awn ca 7 mm long.

In rock crevices; 600 m.

*Fl. & Fr.*: October.

RAIPUR: Taurenga.
24. **Dinebra** Jacq.


Slender erect or straggling annuals; culms up to 1 m long. Leaves glandular. Inflorescence 8-20 cm long, composed of several spikes; spikes ascending or ultimately divaricate, 1-5 cm long. Spikelets imbricate, ca 6 mm long, hairy; lemmas mucronate.

In wastelands : 450 m.

*Fl & Fr* : September

**RAJNANDGAON** : Ram Sagar.


1a. Ligule absent ......................................... *E. colona* 1

1b. Ligule a fringe of hairs, at least in the lower leaves ........................................ *E. stagnina* 2


Annual, erect or ascending, 10-80 cm high. Inflorescence linear, 1-15 cm long, usually of several 4 rowed approximate or distant 1-3 cm long racemes. Spikelets ovate elliptic, 1.5-3.0 mm long; lower lemma acute or cuspidate.

Common along cultivated fields, roadside puddles and streams; 300-800 m.

*Fl. & Fr.* : August - May.

**DURG** : Balod. **RAIPUR** : Dhamtari, Kasdol, Raipur, Taurenga. **RAJNANDGAON** : Baghnadi, Chlipi, Singhari, Taregaon.


Annuals or perennials with 30-90 cm long spongy ascending culm in inflorescence 5-20 cm long, of 3-7 secund racemes 1-3 cm long. Spikelets ovate, ca 4 mm long, hispid; lower lemma with up to 1 cm long awn.
Along ponds, partly submerged ; 450 m.

Fl. & Fr. : January.

RAIPUR : Dugli.

26. ELEUSINE GAERTN.

1a. Spikes 9 - 15 mm wide; spikelets ovate, non-shattering.
Grains plump, almost globose, usually brown

... E. coracana 1

1b. Spikes 3 - 7 mm wide; spikelets elliptic, disarticulating
between the florets. Grains elliptic - oblong, blackish

... F. indica 2

1. ELEUSINE CORACANA (L.) GAERTN. Fruct. 1 : 8, t. 1, f. 11. 1788.
Cynosurus coracanus L. Syst. ed. 10, 2 : 875. 1759. - 'Maria'.

Robust tufted annuals, 40 - 100 cm high. Spikes 3 - 7, digitate,
suberect with rather incurved tips, ca 4 cm long. Spikelets congested,
awulose, 3 - 4 mm long. Grains usually exposed, ca 2 mm dia., with a
black hilum, and slightly flattened on one side.

Cultivated ; 350 m.

Fl. & Fr. : October.

RAIPUR : Indagaon.

Grains used for preparing a local alcoholic beverage.

2. E. INDICA (L.) GAERTN. Fruct. 1 : 8. 1788. Cynosurus indicus L.

Tufted annuals with erect or ascending 15 - 60 cm long culms.
Leaves usually folded. Spikes usually several, digitate or subdigitate,
sometimes solitary, slender, erect, 4 - 10 cm long. Spikelets 3 - 5 mm
long, 3 - 7 flowered.

Along drains and ditches ; 250 - 500 m.

Fl. & Fr. : August - May.

RAIPUR : Raipur, Sitanadi. RAJNANDGAON : Deopura.

Considered to be a good fodder grass.
27. Elytrophorus P. Beauv.


Tufted erect annuals, 7–30 cm high. Spikelets scarcely 2 mm long, awned, in oblong sessile bright green clusters which are densely or interruptedly packed along a central rhachis thus forming a spiciform panicle.

In roadside ditches and paddy fields; 300-450 m.

Fl. & Fr.: January June.


28. Eragrostiella Bor

1a. Leaves from the basal sheaths long, reaching the base of the inflorescence.

1b. Leaves from the basal sheaths short, never reaching the base of the inflorescence.

2a. Leaves filiform. Keel of the palea broadly winged.

2b. Leaves broader. Keel of the palea not broadly winged.


Erect, tufted, 20-50 cm high. Leaves convolute, filiform, basal 3-8 cm long. Spikelets bifarious, erect, elliptic, 4-7 mm long, grey; lower glume lanceolate, scaberulous on the keel, upper glume broader; lemmas ca 2.5 mm long; wings of the palea keel ciliate.

In wastelands and forest clearings; 350 m.

Fl. & Fr.: August.

RAIPUR: Dhamtari.

Perennials, 25 45 cm high. Leaves almost all in a basal cluster, 5 10 cm long, ca 2.5 mm broad. Spikelets linear-oblong, closely packed, 5 20 mm long, secund in 8 20 cm long spikes; glumes subequal, ca 1 mm long.

In wastelands; 300 m.

Fl. & Fr.: October.


Erect, tufted, 20 60 cm high. Leaves convolute, needle-like, 15-30 cm long. Inflorescence 10 20 cm long with a wiry rachis. Spikelets erect, imbricating or distant, 5 8 mm long, stramineus; lemmas ca 2 mm long.

On hill slopes; 500 m.

Fl. & Fr.: September.

RAJNANDGAON: Deopura.

29. Eragrostis Wolf

1a. Spikelets breaking up from above downwards; rachis fragile.

2a. Keels of the palea ciliate.

3a. Panicles spiciform, or compact and dense.

4a. Lemmas cuspitate

4b. Lemmas obtuse ...

... E. ciliata 3

3b. Panicles effuse.

5a. Culms and leaves more or less viscid ...

5b. Culms and leaves not viscid ...

... E. viscosa 13

2b. Keels of the palea scabrid or smooth, never ciliate.

6a. Panicle branches mostly solitary. Spikelets densely clustered, 6-14 - flowered; lemma ca 1 mm long ...

6b. Panicle branches more or less whorled. Spikelets loose, scattered, few-flowered; lemma less than 1 mm long. ...

... E. japonica 7
1b. Spikelets breaking up from below upwards; rhachis tough.

7a. Annuals.

8a. Lemmas up to 1.5 mm long.

9a. Spikelets more or less fascicled on the primary or secondary branches, or shortly pedicelled in narrow racemes; spikelets all pointing forwards ... *E. gangetica* 6

9b. Spikelets not fascicled, seated on long pedicels in ample panicles with filiform branches which are fascicled at the lowest node; spikelets all spreading ... *E. pilosa* 10

8b. Lemmas more than 1.5 mm long.

10a. Spikelets 2 mm or more broad.

11a. Leaf sheaths bearded at the mouth, margins usually glabrous. Spikelets grey. Grains subglobose ... *E. ciliatensis* 2

11b. Leaf sheaths not bearded at the mouth, margins not glabrous. Spikelets green or reddish purple. Grains obovoid or ellipsoid, compressed ... *E. unaloides* 12

10b. Spikelets 0.7 - 2.0 mm broad.

12a. Spikelets 1.5 - 2.0 mm broad ... *E. minor* 8

12b. Spikelets 0.7 - 1.2 mm broad ... *E. pilosa* 10

7b. Perennials.

13a. Lemmas 2.0 - 2.5 mm long ... *E. zeylanica* 14

13b. Lemmas 1.2 - 1.8 mm long.

14a. Spikelets 2.0 - 2.5 mm broad ... *E. atrovirens* 1

14b. Spikelets ca 1 mm broad ... *E. nutans* 9


Tufted perennials, 20 - 30 cm high. Panicles ovate oblong, 5 - 25 cm long with ascending primary branches. Spikelets 3 - 10 mm long, greyish green (sometimes yellowish or dark green and purple tinged); rhachilla visible; palea deciduous.

In moist places; 300 - 800 m.

*Fl. & Fr.*: August - April.

**DURG**: Seoni. **RAIPUR**: Dhamtari. **RAJNANDGAON**: Baghnadi, Chilpi.

Slender annuals, 10 - 70 cm high. Leaf margins usually warty. Panicles ovate, 5 - 15 cm long, usually glandular on branchlets and pedicels. Spikelets 2 - 4 mm broad, yellowish green or greyish, lemmas broadly ovate; paleas persistent.

In wastelands; 300 m.

Fl. & Fr.: May.

RAIPUR: Dhamtari.


Perennials, 30 - 100 cm high with a horizontal rootstock. Panicles dense, spiciform, 4 - 10 cm long. Spikelets 2 - 4 mm long; glumes, lemmas and paleas all ciliate; lower lemma mucronate.


Perennials with a short creeping rootstock; culms tufted, erect or ascending, 20 - 80 cm long. Panicles dense, sub-spiciform, 7 - 12 cm long; rachis bearded at the nodes. Spikelets ca 3 mm long; glumes, lemmas and paleas all ciliate.

In wastelands; 300 - 550 m.

Fl. & Fr.: October - May.

RAIPUR: Dhamtari, Indagaon, Khallari.


Slender, tufted, erect or ascending, 10 - 70 cm high. Panicles linear oblong, 12 - 35 cm long, with mostly solitary branches. Spikelets clustered, ca 2 mm long, 6 - 14 - flowered; lemma ca 1 mm long.

In wastelands & cultivated fields; 300 - 450 m.
**Fl. & Fr.** : January June.

**RAIPUR** : Dhamtari, Dugli, Pithora, Raipur.


Tufted erect annuals, 50 - 120 cm high. Panicles narrowly oblong, 10 - 25 cm long, fairly dense with capillary branches and spikelets, mostly pointing upwards. Spikelets 4 - 7 mm long, several-flowered, slate-grey; lemmas 1.0 - 1.3 mm long with prominent lateral nerves.

In river-beds; 300 - 450 m.

**Fl. & Fr.** : September - May.

**RAIPUR** : Dhamtari, Dugli. **RAJNANDGAON** : Baghnadi.


Erect tufted annuals or perennials, 10 - 90 cm high. Leaves flat, 3 - 5 mm broad. Panicles 4 - 30 cm long, branches mostly in dense remote pseudo whorls, bare towards the base. Spikelets ca 2 mm long, rachilla fragile.

In moist depressions; 350 m.

**Fl. & Fr.** : October.

**RAIPUR** : Pithora.


Tufted annuals, 10 - 40 cm high. Leaves usually with a row of warty glands on the margins. Panicle ovate, 5 - 15 cm long, usually glandular on branchlets and pedicels. Spikelets pale green, greyish or purplish; glumes 1.0 - 1.5 mm long.

In forest clearings; 480 - 550 m.

**Fl. & Fr.** : May June.
RAIPUR : Sitanadi, Taurenga.


Perennials, 30 - 100 cm high. Panicles contracted, up to 12 cm long, up to 3 cm wide. Spikelets crowded, ascending, ca 1 mm wide, green or greyish, dense flowered; lemmas oblong, ca 1.3 mm long with straight lateral nerves. Grains terete.

In sandy river beds; 300 - 500 m.

*Fl. & Fr.* : May - June.

RAIPUR : Dhamtari, Khallari.


Loosely tufted erect or ascending annuals, 10 - 50 cm high. Leaves flat. Panicles ovate elliptic, 5 - 20 cm long. The lower branches usually whorled, and with long white hairs in the axils. Spikelets 3 - 6 mm long, greyish or pale green.

In moist depressions; 300 - 450 m.

*Fl. & Fr.* : October - June.

RAIPUR : Dhamtari, Kasdol.


Slender erect or ascending tufted annuals; culms 5 - 40 cm long. Panicles open, elliptic or pyramidal, 2 - 12 cm long. branches with yellowish glands. Spikelets 1.5 - 2.5 mm long, 4 - 8 flowered; palea keels ciliate.

In wastelands, river - beds and ditches; 280 - 450 m.

*Fl. & Fr.* : October - June.


Considered to be a good fodder grass, the seeds being particularly nutritious.

Tufted erect or ascending annuals or perennials, 10 - 60 cm high. Panicles 5 - 20 cm long, fairly dense and oblong, or open and ovate. Spikelets ovate, 3 - 10 × 2 - 4 mm, usually purple tinged; lemma broadly ovate suborbicular.

Common in wastelands and along drains and rivers; 300 - 800 m.

*Fl.* & *Fr.*: September - April.

**DURG**: Rajolidih. **RAIPUR**: Balodabazar, Dugli. **RAJNANDGAON**: Chilpi, Baghmandi.


Tufted erect annuals, 10 - 30 cm high. Leaves glandular on the keel, the margins and the sheath. Panicle ovate oblong, 5 - 10 cm long, with sticky yellowish glands. Spikelets 1.5 - 4.0 mm long, purplish or stramineus; glumes ca 0.8 mm long; palea keel ciliate.

In wastelands; 450 m.

*Fl.* & *Fr.*: January.

**RAIPUR**: Dugli.


Culma tufted, ascending. 10 - 25 cm long. Panicle branches short, distant, spreading. Spikelets 6 - 12 mm long, usually dense, glumes ca 2 mm long, cuspidate; palea curved, apiculate, with ciliolate margins.

Along paddy fields; 400 m.

*Fl.* & *Fr.*: October.

**RAIPUR**: Pithora.

30. *Eriochloa* Kunth

Erect or ascending annuals, 20 - 60 cm high. Racemes 2 - 7 cm long, few to several scattered along 5 - 15 cm long axis. Spikelets lanceolate, 3 mm long, acute or acuminate. Lower glume absent; upper lemma with a 0.3 - 0.5 mm long mucro.

In moist depressions; 300 m.

Fl. & Fr.: April.

DURG: Durg.

31. Eulalia Kunth

Eulalia trispicata (Schult.) Herrn. in Blumea 3: 453. 1940. Andropogon trispicatus Schult. Mant. 2: 452. 1824.

Perennial, tufted; culms 30 - 100 cm high. Racemes 2 - 12, subdигitate, 5 - 11 cm long, brownish, with white hairs on the joints. Spikelets elliptic - ovoid, 2.5 - 3.5 mm long; lower glume pilose; upper lemma deeply bifid, long awned.


32. Eulaliopsis Honda


Tufted perennials, 40 - 80 cm high with white woolly basal sheaths. Leaves long, convolute. Racemes 2 - 4, subdигitate, 2 - 4 cm long, brown hairy. Spikelets 3.5 - 4.5 mm long, glumes toothed, upper mucronate; upper lemma with 6 - 9 mm long awn.

Along streams, in rock crevices; 450 m.

Fl. & Fr.: June.

RAIPUR: Khallari.
33. Hackelochloa O. Ktze.


Annual, erect, 5–30 cm high. Leaves subamplexicaul, linear, lanceolate, hispid. Racemes 5–12 mm long, fragile, numerous and aggregated into a spatheate false panicle; internodes flattened, cupuliform above. Sessile spikelet ca 1 mm long; upper glume crested at the apex.

Along forests and paddy fields; 400–500 m.

*Fl. & Fr.*: September.

RAJNANDGAON: Baghnadi, Deopura.

34. Hemarthria R. Br.


Stoloniferous perennials; culms 50–120 cm long, rooting at the lower nodes. Racemes in the upper leaf-axils, tough, suberect, 3–8 cm long, dorso-ventrally compressed. Spikelets narrowly elliptic-oblanceolate; lower glume 3–4 mm long, obtuse or bidenticate.

In paddy fields; 300–450 m.

*Fl. & Fr.*: August - September.

RAIPUR: Balodabazar. RAJNANDGAON: Baghnadi.

35. Heteropogon Pers.


Erect tufted perennials, 30–100 cm high. Racemes usually long exserted, 3–8 cm long, often in pseudo panicles, awns long, chestnut brown, spirally twisted. Sessile spikelets 6–8 mm long with a pungent rufously bearded callus.
Along forest margins; 450 m.

Fl. & Fr.: October.

RAIPUR: Gariaband.

Considered to be a good fodder grass before flowering.

36. Hygrocybe Nees


Aquatic, floating, mat forming perennials. Culms spongy, with whorls of feathery roots at the nodes. Leaves ovate oblong, 2.7 × 1.2 cm. Panicles ovate, 3.6 cm long. Spikelets sessile, long awned.

In ponds; 300–550 m.

RAIPUR: Arang. RAJNANDGAON: Baba Talab.

Considered to be a good fodder grass.


Stout aquatic perennials. Culms partly creeping, usually spongy and with tufts of feathery roots at the nodes. Leaves lanceolate, cordate, 20–40 × 1–2 cm. Panicles dense with appressed branches, up to 30 × 3 cm. Spikelets awned, ca 6 mm long.


38. Imperata Cyt.

1841. *I. cylindrica* var. *major* C.E. Hubbard, Grasses Maur. Prodr. 96. 1840. 'Chhir ghas'.

Erect rhizomatous perennials 30–80 cm high. Leaves mostly basal, 10–40 cm long, 3–8 mm broad. Panicles spiciform, cylindrical, 7–13 cm long, 15–18 mm across, copiously silky white hairy. Spikelets ca 5 mm long; glumes as long as the spikelets.

In forest clearings, low lands, along drains and paddy fields, colonising wherever it grows; 300–750 m.

*Fl. & Fr.:* August–June.

RAIPUR: Balodabazar, Borai, Dugli, Sitanadi, Taurenga. RAJNANDGAON: Malaidah.

Young shoots relished by cattle, old shoots used for thatching.

39. **Isachne R. Br.**


Slender ascending perennials, rooting at the lower nodes. Leaves scattered, 5–10 cm long. Panicles lax, 3–12 cm long. Spikelets subglobose, ca 2 mm long; glumes about as long as the florets, shortly hairy; lemmas elliptic, oblong, with incurved edges.

Along paddy fields: 350 m.

*Fl. & Fr.:* October.

RAIPUR: Dhamtari.

40. **Ischaemum L.**

1a. Margins of the lower glume of the sessile spikelets expanded below the middle

... *I. Indicum* 1

1b. Margins of the lower glume of the sessile spikelets narrowly and evenly internod from base to apex

... *I. rugosum* 2

Erect or ascending with up to 50 cm long culms. Leaves 5 - 10 cm long. Spikes rather stout, 2 - 3 together, 2 - 5 cm long, long - peduncled. Spikelets ca. 4 mm long; lower glume winged at the top, upper glume coriaceous, long acuminate.

In drains and sandy river - beds; 250 - 700 m.

_Fl. & Fr._: November - June.

RAIPUR: Damhati, Duggi, Gariaband. RAJNANDGAON: Baghnaudi, Malaidah.


Slender straggling annuals. Culms 10 - 50 cm long. Racemes paired, terminal and axillary, 3 - 6 cm long; internodes and pedicels clavate, ciliate. Sessile spikelet 4 - 6 mm long; lower glume coriaceous and transversely ridged below; upper lemma with 15 - 20 mm long awn.

In wastelands and sandy river - beds; 300 - 450 m.

_Fl. & Fr._: January - May.

RAIPUR: Damhati. RAJNANDGAON: Baghnaudi.

41. _Isiclema_ Anderss.

1a. Spatholes smooth. Sessile spikelets 4 - 5 mm long ... _I. laxum_ 1

1b. Spatholes tuberculate on the midrib. Sessile spikelets 2.5 - 3.0 mm long ... _I. prostratum_ 2

1. _Isiclema laxum_ Hack. in DC. Monogr. Phan. 6: 682. 1889.

Erect or suberect slender perennials. Culms 25 - 70 cm high; nodes, at least the lower, glabrous. Leaves up to 18 cm long, sometimes ciliate at the base. Pseudo panicles long, with distant spathes; spatheoles 8 - 10 mm long. Sessile spikelets rather contracted at the base.

In moist depressions and paddy fields; 250 - 450 m.

_Fl. & Fr._: August - April.

DURG: Durg. RAIPUR: Duggi, Raipur.

Considered to be one of the best fodder grass in the area.

Slender ascending perennials. Culms 15 - 60 cm long; nodes usually bearded. Pseudo panicles linear, 5 - 30 cm long; spatheole 7 - 12 mm long. Homogamous spikelets all pedicelled, male 3 - 4 mm long; sessile spikelets bearded at the base; awn 5 - 12 mm long.

Along drains and mixed forests; 400 - 500 m.

*Fl. & Fr.:* August - November.

RAIPUR: Pithora, Taurenga. RAJNANDGAON: Deopura.

42. **Leersia** Swartz

*Leersia hexandra* Swartz, Prodr. 21. 1788.

Slender perennials. Culms 20 - 50 cm long, rooting at the lower nodes. Panicles open, flexuous, 5 - 10 cm long, with capillary branches. Spikelets closely imbricating, 2.5 - 3.5 mm long, laterally compressed; glumes absent; lemmas spinulosity ciliate.

In muddy places; 450 m.

*Fl. & Fr.:* January.

RAIPUR: Dugli.

43. **Leptochloa** P. Beauv.


Slender ascending tufted annuals, 25 - 100 cm high. Leaves up to 25 cm long, papillate - pilose. Racemes several, slender, ascending, 4 - 11 cm long. Spikelets closely imbricating, ca 2 mm long; glumes acute or mucronulate; lemmas 2 - toothed.

In wastelands; 500 m.

*Fl. & Fr.:* January.

RAIPUR: Sitanadi.
44. Manisuris L.


Erect annuals, 20–80 cm high. Leaves narrowly lanceolate, 8–15 cm long, 7–13 mm broad. Racemes solitary, axillary, 1–3 cm long; rhachis fragile, joints pyriform. Sessile spikelets closely imbricating, ca 3 mm long; lower glume umbonate, winged on both sides above the middle.

In miscellaneous forests and stream beds; 400–550 m.

Fl. & Fr.: October.

RAIPUR: Chhoora, Gariaband, Tauranga.

45. Melanocenchris Nees


Slender tufted annuals, 3–10 cm high. Leaves convolute, ca 1.5 mm broad, with tubercle based hairs at the base. Inflorescence of shortly peduncled 6–8 mm long second heads scattered along the rhachis. Spikelets 5–8 in a head; glumes, including the awn, 6–8 mm long, with white or purplish hairs.

In wastelands, on red morrum; 250 m.

Fl. & Fr.: August.

RAIPUR: Balodabazar.

46. Mnesithea Kunth


Shortly rhizomatous perennials, 30–80 cm high. Leaves flat, abruptly acute. Racemes solitary, terminal and axillary, 3–6 cm long; rhachis fragile. Sessile spikelets ca 3 mm long; lower glume wingless; pedicelled spikelet absent, the pedicel fused to the internode at its upper end.
On sandy river - banks ; 400 m.

Fl. & Fr. : October.

RAIPUR : Deori.

47. Ophiuros Gaertn. f.


Tufted perennials, 40 100 cm high, with a creeping rhizome. Leaves linear, up to 5 mm broad, glabrous. Spikes corymbose, stouter, 5 - 10 cm long, ca 1 mm across. Spikelets ca 2.5 mm long, equalling the joint; glumes with longitudinal rows of pits.

Along driers : 350 m.

Fl. & Fr. : August.

RAIPUR : Dhamtari.


Tufted perennials with 20 - 70 cm long rambling culms. Leaves ovate - lanceolate, 5.0 11.0×1.5 2.5 cm. Inflorescence axillary and terminal, 10 - 25 cm long ; racemes distant; 3 - 12 cm long. Spikelets 3 - 4 mm long, in distant pairs; glumes with 3 - 10 mm long viscid awns.

In sal forests ; 500 m.

Fl. & Fr. : January.

RAIPUR : Sitanadi.

49. Oropetium Trin.

1a. Spikes 2 - 5 cm long. Lemmas glabrous ... *O. thomaeanum* 1

1b. Spikes 1.0 - 1.5 cm long. Lemmas hispida ... *O. villosulum* 2

Small tufted perennials, 3 - 7 cm high. Leaves convolute, filiform, 1 - 3 cm long, ca 0.5 mm broad. Spikes terminal, straight or curved, ca 1 mm thick, with a tough wavy rachis. Spikelets embedded, 1.5 - 2.0 mm long; lemmas obovate, ca 0.8 mm long.

In dry gravelly wastelands; 250 - 300 m.

*Fl. & Fr.*: August.

*RAIPUR*: Dhamtari, Raipur.


Slender purplish green annuals, 3 - 5 cm high. Leaves filiform, rolled, 1 - 2 cm long, ca 0.5 mm broad. Spikes terminal, almost straight, ca 1 mm thick with a rather spongy rachis. Spikelets embedded in two rows in the hollows of the wavy rachis, 1.0 - 1.5 mm long; tips of the upper glume spreading.

In dry uplands, on red morrum; 250 m.

*Fl. & Fr.*: August.

*RAIPUR*: Balodabazar.

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50. **ORYZA** L.

**Oryza raphagon** Griff. Notul. 3: 5. 1851.

Erect annuals, 30 - 60 cm high. Leaves flat, 10 - 30 cm long, 5 - 10 mm broad; ligule membranaceous, lower 10 - 15 mm long. Panicles narrow, dense, 8 - 12 cm long. Spikelets caducous, oblong, ca 8 mm long, with 5 - 8 cm long awns.

Along ponds and ditches; 250 - 450 m.

*Fl. & Fr.*: September - October.


Very similar to the cultivated *Oryza sativa* L. The grains eaten in times of scarcity.
51. Panigum L.

1a. Leaves lanceolate, cordate, usually ciliate at the base. Lower glume about three-fourth the length of the spikelet.

P. notatum

1b. Plants not as above.

2a. Spikelets widely gaping at maturity; lower glume cuspidate - acuminate.

P. trypferon

2b. Spikelets never gaping; lower glume acute or obtuse.

3a. Aquatic perennials. Spikelets narrowly lanceolate, acute; lower glume nerveless.

P. paludosum

3b. Terrestrial annuals. Spikelets elliptic - oblong, acute or obtuse.

4a. Wild. Spikelets caducous, 2-3 mm long, often giant and deformed due to being diseased.

P. psilopodium

4b. Cultivated. Spikelets sub-persistent, 2.0-3.5 mm long.

P. sumatrense


Erect perennials with a short rootstock, 30-80 cm high. Leaves 7-15 cm long, 1.2-2.5 cm broad; ligule obscure. Panicle effuse, up to 30 cm long and equally broad, with long capillary branches and pedicels. Spikelets ca 2.5 mm long; lower glume ca 2 mm long, 3-5 - nervèd.

In mixed forests; 450 m.

Fl. & Fr.: January.

RAIPUR: Dugli.


Aquatic perennials. Culms 20-90 cm long, spongy, creeping and rooting below. Leaves narrowly linear lanceolate, with loose sheaths. Panicles 10-25 cm long, lower branches whorled. Spikelets 3-4 × 1 mm; lower glume orbicular, hyaline, ca 0.8 mm long.

Along ponds and reservoirs; 400 m.

Fl. & Fr.: April.

DURG: Talgaon.

Tufted annuals. Culms slender, firm or sometimes spongy, 15–60 cm high. Leaves linear or narrowly lanceolate, 3–10 mm broad, usually glabrous but sometimes quite hairy. Panicles 5–20 cm long, usually spreading. Spikelets usually glabrous, sometimes hairy, often some are diseased and up to 7×4 mm. Grains ca 1.8 mm long.

In lowlands, river-beds, mixed forests and along paddy-fields; 250–800 m.

*Fl. & Fr.*: August–January.

RAIPUR: Balodabazar, Raipur, Sitanadi. RAJNANDGAON: Chilpi, Deopura.


Slender tufted annuals, 30–60 cm high. Leaves glabrous or hairy. Panicles 8–20 cm long, contracted. Spikelets elliptic lanceolate, acute or cuspidate; lower glume broadly ovate with a subamplexicaul base, ca 1 mm long. Grains 2.0–2.5 mm long.

Cultivated; 500 m.

*Fl. & Fr.*: November.

RAJNANDGAON: Nivaspur.

It is thought to be a cultivated form of *P. psilopodium* Trin. from which it is difficult to distinguish in the herbarium specimens.


Tufted annuals, 25–50 cm high. Leaves linear or linear-lanceolate, hirsid. Panicles lax, ovate or oblong, 10–20 cm long. Spikelets elliptic-oblong, 2.8–3.5 mm long; lower glume about two thirds as long as the spikelet; upper lemma yellowish, shining.

In wastelands; 400 m.
Fl. & Fr.: September.

RAJNANDGAON: Baghnandi.

52. Paspalidium Stepf

1a. Lower floret male, with a palea; upper lemma granulose

P. flavidum 1

1b. Lower floret sterile, without a palea; upper lemma rugulose

P. punctatum 2


Tufted perennials. Culms erect or ascending from a prostrate base, 5 - 100 cm long. Leaves 2 - 8 mm broad, acute or obtuse. Inflorescence 2 - 30 cm long; spikes one several, 3 - 25 mm long, usually distant by 2 - 4 - times their own length. Spikelets ovoid, 2 - 3 mm long.

In wastelands & forest clearings; 250 - 600 m.

Fl. & Fr.: August - May.


Perennials with creeping or floating spongy rhizomes. Culms 20 - 80 cm long. Leaves 3 - 6 mm broad, acute or long acuminate. Inflorescence 10 - 30 cm long; spikes several, more or less distant, 1 - 5 cm long. Spikelets ellipsoid, 2 - 3 mm long.

In moist places; 300 m.

Fl. & Fr.: September.

RAIPUR: Raipur.

53. Paspalum L.

1a. Spikelets ovate - lanceolate; upper glume herbaceous; pubescent

P. paspalodes 1

1b. Spikelets broadly obovate or suborbicular; upper glume papery, usually glabrous

P. scrobidulatum 2

Creeping perennials. Culms 10-50 cm long. Racemes 2, each 2-6 cm long. Spikelets in two rows on a flattened rachis, plano convex, 2.5-3.5 mm long, green; lower glume often present as a small scale; lower lemma like the upper glume but glabrous.

Along ponds; 300 m.


Perennials, 10-100 cm high, usually erect, sometimes with a procumbent base. Leaves 3-7 (15) mm broad, with a filiform tip. Racemes one-several, digitate or scattered along a common axis, lowest 3-8 (-15) cm long. Spikelets biseriate, 1.5-3.0 mm long, green becoming brown, lower glume absent.

Cultivated for its edible grains which are harmful under certain conditions; 300-400 m.

Fl. & Fr.: August - April.


A highly polymorphic species and variations in several characters has been discussed in detail by Clayton (in *Kew Bull.* 30: 101. 1975). However, it would be of interest to mention, as an additional variation, that in two collections (Abhanpur, *Verma* 24980 and Taurenga, *Verma* 25166) the upper glumes and the lower lemmas are quite pubescent, thus bringing these specimens very close to *Paspalum paspalodes* (Michx.) Scribner.

1a. Rhachis not winged; bristles all glabrous  
   ...  *P. hohenackeri*  

1b. Rhachis winged below the involucre; inner bristles plumose.  
   2a. Spikelets in clusters of 1 - 5 within the involucre, at least one of the spikelets upon a pedicel 1 - 3 mm long  
      ...  *P. pedicellatum*  
   2b. Spikelets solitary and sessile within the involucre  
      ...  *P. polystachion*  


Erect tufted perennials, 50 - 100 cm high. Leaves long, folded, rigid, 1 - 3 mm broad. Panicles linear, 10 - 18 cm long; rhachis ribbed, scaberulous; involucre enclosing a solitary sessile spikelet. Spikelets linear-lanceolate, 6 - 8 mm long.  

In shady places; 500 m.  

*Fl. & Fr.*: September - November.  

RAJNANDGAON: Deopura.  


Erect annuals 0.6 - 1.2 m high. Leaves flat, 4 - 8 mm broad. Spikes 10 - 12 cm long, excluding the bristles. 8 - 12 mm thick, white or usually pale purple; rhachis puberulus; involucral bristles unequal, outer small, scabrous, inner longer, woolly plumose in the lower part, longest ca 1 cm long. Spikelets 4 - 6 mm long.  

In stream-beds and forest-clearings; 400 - 550 m.  

*Fl. & Fr.*: October - November.  

RAIPUR: Taurenga. RAJNANDGAON: Deopura, Taregaon.  

   *Panicum polystachion* L. Syst. ed. 10, 2: 870. 1759.  

Slender erect annuals, 25 - 50 cm high. Leaves 3 - 6 mm broad. Spikes rather flexuous, 5 - 10 cm long, excluding the bristles, 6 - 8 mm thick, whitish or pale green; involucral bristles unequal, outer small,
scabrous, inner longer, woolly in the lower part, longest 15 25 mm long. Spikelets 2.0 - 2.5 mm long.

On roadsides; 400 m.

Fl. & Fr.: October.

RAIPUR: Pithora.

55. Perotis Ait.


Loosely tufted slender perennials with 20 - 70 cm long spreading culms. Leaves ovate lanceolate, amplexicaul, 2 - 7 cm long, 4 - 10 mm broad. Spikes solitary, 3 25 cm long. Spikelets linear, 2.0 - 2.5 mm long, ultimately horizontally spreading; glumes long awned.

In rock-crevices; 550 m.

Fl. & Fr.: October.

RAIPUR: Taurenga.

56. Phragmites Adams.


Tall perennial reeds with a creeping rhizome. Culms 2 - 5 m high. Leaves 30 - 50 cm long, 1 3 cm broad. Panicles 20 - 40 x 10 - 20 cm, profusely branched and silky hairy. Spikelets ca 1 cm long. rachilla hairs ca 5 mm long; upper glume ca 5 mm long.

Along streams; 500 - 550 m.

Fl. & Fr.: November - June.

RAIPUR: Taurenga. RAJNANDGAON: Deopura.

57. Pogonatherum P. Beauv.

Slender tufted perennials, 15–30 cm high. Leaves 1–5 cm long, 1–3 mm broad. Rachis flexuous, 1–3 cm long, fragile. Spikelets narrowly elliptic, 1.3–2.0 mm long; callus bearded with ca 2 mm long white hairs, upper lemma bearing 8–20 mm long flexuous awns.

In rock crevices; 550 m.

Fl. & Fr.: June.

RAIPUR: Taurenga.

58. Pseudoraphis Griff.


Aquatic, floating, or creeping in mud, with up to 1 m long branched culms rooting at the lower nodes; nodes hairy. Leaves 3–8 cm long, 3–5 mm broad, scabridulous. Panicles 6–10 cm long, branches undulate, scabrid. Spikelets subulate, 5–6 mm long; lemma of the lower floret aristate.

Along streams; 300 m.

Fl. & Fr.: August.

RAIPUR: Raipur.

59. Rottboellia L. f.


Erect annuals, 0.3–2.0 m high with stilt roots and coarsely hispid basal sheaths. Leaves 25–45 cm long, 1–2 cm broad. Racemes 5–15 cm long, with a terminal tail of reduced spikelets, gathered into a spatheate pseudo panicle. Sessile spikelets elliptic; lower glume 4–5 mm long; upper glume winged at the tip.
In stream-beds and mixed forests; 400-600 m.

Fl. & Fr.: October November.

RAIPUR: Chhoa, Taurenga. RAJNANDGAON: Deopura.

60. SACCHARUM L.

Saccharum spontaneum L. Mant. 2: 183. 1771. ‘Kaans’.

Tall rhizomatous perennials. Culms 2-4 m high. Leaves up to 2 m long, 5-7 mm broad, tapering at the base into a narrowly winged petiole. Panicles 20-40 cm long, silky white hairy, narrow, with articulated branches; racemes 3-12 cm long. Spikelets 3-5 mm long; glumes subcoriaceous, equal; upper lemma shortly awned.

Along streams and swampy places; 350-550 m.

Fl. & Fr.: August October.


Commonly used for thatching.

61. SACCIOLEPIS Nash

1a. Culms usually spongy below. Spikelets 4-5 mm long, lower glume about one-third as long as the spikelet; 5-nerved

S. interrupta 2

1b. Culms never spongy. Spikelets 2.0-3.5 mm long, lower glume about half as long as the spikelet; 3-nerved

S. indica 1


Slender erect or ascending annuals, 15-50 cm high. Panicles very narrow, spike-like, 1-7 cm long, ca 4 mm across, pale green or frequently purple. Spikelets crowded, ovoid, acuminate, sometimes slightly curved, usually more or less hispid.

In drains and lowlands; 400-450 m.

Fl. & Fr.: October - January.

RAIPUR: Dugli, Gariaband.
Scarcely distinguishable from Sacciolepis myosuroides (R. Br.) A. Camus which has sublobose glabrous spikelets.


Robust perennials. Culms spongy below, 50 - 100 cm high. Panicles narrow, spike like, 6 - 25 cm long, ca 8 mm thick, continuous or frequently interrupted. Spikelets crowded, subsessile, ellipsoidal, ultimately spreading, hispidulous or glabrous.

Along ponds; 250 - 500 m.

Fl. & Fr.: November - January.

RAIPUR: Raipur. RAJNANDGAON: Deopura, Singhari.

62. Schizachyrium Nees


Slender much branched straggling annuals. Culms 20 - 40 cm long. Leaves linear-lanceolate, 1.5 - 3.0 cm long, obtuse, becoming reddish on maturity. Racemes few in each leaf-axil, 1 - 2 cm long, joints of the racemes 2 - 3 mm long; spathe subtending the raceme linear. Spikelets 3.0 - 3.5 mm long, shortly awned.

In wastelands; 500 m.

Fl. & Fr.: October.

RAJNANDGAON: Deopura

63. Schoenoplecta Kunth


Erect or ascending tufted annuals, 10 - 50 cm high. Spikes 1 - 4, slender, often flexuous, 3 - 15 cm long, pale. Spikelets 3 - 5 mm long; glumes shortly aristate, lower 2.5 - 4.5 mm long, upper 3 - 5 mm long; lemma ca 2 mm long with 2 - 4 cm long awn.
In wastelands; 350 m.

Fl. & Fr.: October.

RAIPUR: Sankra.

64. Setaria Forsk.


Perennials, 50 - 120 cm high. Leaves 10 - 50 cm long, 3 - 6 mm broad. Raceme solitary, 6 - 18 cm long; peduncle with widened ciliate apex; rachis jointed. Sessile spikelets 7 - 9 mm long, ciliate, yellowish, upper lemma with 3 - 5 cm long awn; pedicelled spikelets ciliate, purple tinged.

In wastelands; 500 m.

Fl. & Fr.: October.

RAIPUR: Raipur, Nanda 1862 (DD).

An excellent fodder grass.


1a. Bristles retrorsely barbed, adhering to clothings ... S. verticillata 3

1b. Bristles antrorsely barbed, not adhering to clothings.

2a. Inflorescence a distinctly branched panicle ... S. intermedia 1

2b. Inflorescence a cylindric false spike ... S. pumila 2


Slender tufted ascending annuals, 15 - 60 cm high. Leaves 2 - 10 mm broad, usually searbrid on both the surfaces. Panicles 3 - 10 cm long, ca 5 mm broad, branched at least at the base; bristles 3 - 10 mm long. Spikelets broadly ellipsoid, 1.5 - 2.0 mm long; upper lemma rugose.
In wastelands; 300 - 400 m.

Fl. & Fr.: August.

RAIPUR: Arang, Dhamtari.


Slender or rather stout tufted annuals. Culms 5 - 80 cm high. Leaves 3 - 30 cm long, smooth or scabrous. Panicles 1 - 10 cm long, 4 - 8 mm thick; bristles 3 - 12 mm long, yellowish brown. Spikelets 2.0 - 2.5 mm long; glumes one third to two third the length of the spikelets; upper lemma usually rugose-corrugate.

Common in farms, wastelands and forest clearings; 250 - 550 m.

Fl. & Fr.: August October.

RAIPUR: Arang, Balodlabaaz, Dhamtari, Pithora.
RAINANDGAON: Baghna-di.


Tufted annuals. Culms 10 - 80 cm long, ascending. Leaves linear-lanceolate, 4 - 20 cm long, 4 - 12 mm broad, usually scabrous. Panicle linear, spiciform or untidiily lobed, 2 - 12 cm long; bristles 3 - 8 mm long. Spikelets ellipsoid, 1.5 - 2.5 mm long; upper lemma finely rugose.

In wastelands; 500 m.

Fl. & Fr.: January.

RAIPUR: Sitanadi.

66. SORGHUM Moench.

Rhizomatous erect perennials. Culms simple or branched, 0.5 - 3.0 m high. Leaves 20 - 100 cm long, 5 - 40 mm broad. Panicles open, pyramidal, 10 - 50 cm long, branches capillary. Spikelets ellipsoid, 4.5 - 5.5 mm long, yellow, purple or brownish, usually hairy; lower glume toothed, upper long - awned.

Along streams & paddy fields; 300 - 500 m.

Fl. & Fr.: October - January.
RAIPUR: Rajim, Sitanadi.

An obnoxious weed, sometimes poisonous.

67. **Sporobolus** R. Br.

1a. Panicle contracted, subspiciform
1b. Panicle effuse.
   2a. Stamens 2
   2b. Stamens 3

... S. ferrilis 2
... S. diander 1
... S. tenellissimum 3


Tufted perennials with a small rootstock. Culms usually erect, 15 - 70 cm high. Leaves usually convolute, up to 25 cm long. Panicles 4 - 20 cm long, the branches suberect or spreading. Spikelets lanceolate, 1.2 - 1.5 mm long; lower glume ca 0.5 mm long, upper ca 0.7 mm long.

In wastelands; 300 - 550 m.

Fl. & Fr.: August.
RAIPUR: Dhamtari.


Erect tutted perennials, 0.5 - 1.0 m high. Leaves flat or convolute, tapering to a long filiform tip. Panicles dense, spiciform, somewhat interrupted, 20 - 40 cm long; primary branches erect and appressed to the main axis, up to 5 cm long. Spikelets ca 2 mm long, green or purplish; lower glume hyaline, ca 0.5 mm long. Grains obovoid, ca 0.8 mm long.

On roadsides; 550 m.
Fl. & Fr.: October.

RAIPUR: Taurenga.


Tussock erect perennials, 5 - 60 cm high. Leaves usually convolute, up to 20 cm long. Panicles pyramidal, 3 - 17 cm long, its branches spreading, filiform. Spikelets oblong-ellipsoid, ca 1 mm long; upper glume about two-third as long as the lemma.

Common in wastelands; 250 - 600 m.

Fl. & Fr.: August - January.

RAIPUR: Arang, Borai, Dhamtari, Dugli, Pithora.

68. Thelepodon Roth ex R. & S.


Erect annuals, 10 - 150 cm high, often supported by stilt roots. Leaves lanceolate, cordate, 5 - 20 cm long, 5 - 30 mm broad, ciliate-margined. Racemes 4 - 15 cm long, lower verticillate. Sessile spikelets 5 - 13 mm long, glumes rugose; upper lemma with 15 - 25 mm long awn.


69. Themeda Forssk.

1a. Involucral spikelets 7 - 9 mm long
... T. triandra 3

1b. Involucral spikelets 4.5 - 5.5 mm long.

2a. Branching strict. Clusters many in numerous fascicles T. quadrivalvis 2

2b. Branching very diffuse. Clusters very few in few small superposed fascicles on the filiform branches ...

... T. laxa 1


Slender, profusely branched, 60 - 120 cm high. Panicles very lax and leafy, of sub-solitary or 3 - 4 small heads one over the other in verticilliform clusters on filiform branches. Involucral spikelets with
glabrous callus; glumes mainly in the upper part with long white tubercle-based hairs; awns 3–4 cm long.

Along paddy fields; 450 m.

Fl. & Fr.: September.

RAINANDGAON: Baghnadi.


Tufted annuals, 1.2 m high. Culms erect or geniculate at the base. Leaves ca 5 mm broad, glaucous beneath. Panicle dense, of several 3–8 cm long partial panicles with small leaves. Glumes of the involucral spikelets with white tubercle-based hairs in the upper part; awns 3–4 cm long.

In wastelands and sal forests; 400–600 m.

Fl. & Fr.: October - January.

RAIPUR: Dugli, Taurenga.


Perennials with shortly creeping rhizomes, 0.5–2.5 m high. Culms polished stramineus. Leaves 20–40 cm long, 3–6 mm broad. Panicle lax, leafy, slender; partial panicles consisting of fan-shaped fascicles or a system of fan-shaped fascicles. Glumes of the involucral spikelets deciduously hairy, scarcely tubercled; awns 3–5 cm long.

Along drains, paddy fields and in forest clearings; 300–600 m.

Fl. & Fr.: November - June.

RAIPUR: Dugli, Khallari, Taurenga. RAJNANDGAON: Singhari.

70. *Thysanolaena* Nees

Erect perennials, reed-like, 1.5-3.5 m high. Leaves lanceolate, sub-amplexicaul, 30-50×3-6 cm. Panicles open, 20-50 cm long. Spikelets tardily breaking up above the glumes and between the florets, lanceolate, 1.2-1.8 mm long; glumes hyaline; upper lemma ciliate-margined.

Along streams; 500 m.

Fl. & Fr.: January May.

RAIPUR: Sitanadi.

Several panicles are tied together and commonly used as a broom.

71. Tragus Haller


Tufted spreading perennials. Culms 5-15 cm long, rooting at the lower nodes. Leaves linear-lanceolate, 10-25×1-3 mm, ciliate-margined. Panicle spike-like, 1-3 cm long, consisting of several pairs of subopposite spikelets. Spikelets ca 3 mm long, pinkish; upper glume clothed with ca 0.7 mm long prickles.

In wastelands; 300 m.

Fl. & Fr.: August.

RAIPUR: Abhanpur.

72. Urochloa P. Beauv.


Tufted annuals. Culms usually ascending and rooting below, 10-70 cm long. Leaves linear-lanceolate, 2-15 cm long, 5-15 mm
broad, glabrous or pubescent, margins ciliate at the base. Racemes 2 - 7 on a short common axis, each 1 - 6 cm long. Spikelets mostly solitary, sometimes paired. 3 - 5 mm long, glabrous or pubescent.

In wastelands and paddy-fields; 250 - 300 m.

Fl. & Fr.: August.

RAIPUR: Arang, Balodabazar, Simga.

73. VETIVERIA S.-VINCENT


Erect tufted perennials with a stout rhizome. Culms 1 - 2 m high. Leaves coarse, up to 1 m long, 4 - 10 mm broad. Panicle contracted, purplish green, 15 - 30 cm long, with whorls of 2 - 5 cm long fragile racemes. Sessile spikelets 4 - 5 mm long, lower glume spinulose; pedicelled spikelet smaller, male.

In river-beds, along drains and forests, in moist places; 400 - 550 m.

Fl. & Fr.: September - June.

RAIPUR: Sitanadi, Tangera. RAJNANDGAON: Baghnadi
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