FLORA OF MAHABALESHWAR
AND ADJOININGS, MAHARASHTRA

Volume 1

SANDHYA DESHPANDE
B.D. SHARMA
&
M.P. NAYAR

BOTANICAL SURVEY OF INDIA
FLORA OF MAHABALESHWAR

Vol. 1

(Ranunculaceae to Thunbergiaceae)
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PREFACE

The Botanical Survey of India since its reorganisation in 1954 has been engaged in studies on vegetation and flora and inventorisation of the rich floristic diversity in the country. Since early 1980s, the department has taken up publication of Flora of India under four series: Series 1 comprise taxonomic revisions of families, tribes and genera primarily of flowering plants for the whole country (Fascicles of Flora of India); Series 2 on the Floras of States/Union Territories; Series 3 pertain to the florals of phytoecologically interesting and floristically rich districts, and Series 4 to include special and topical subjects on the plant wealth. Several districts of floristic significance in different states have been intensively and extensively botanized to eventually develop a good base for writing the State Floras and to prepare taxonomic revisions of different plant families for Flora of India volumes.

The present work on the flora of Mahabaleshwar and its adjoining in Satara district, Maharashtra, is one such study to assess and inventorise the rich plant diversity in the area. The area encompasses varied eco-climatic zones which have given rise to interesting vegetation types and plant associations. The flora has a rich assemblage of many rare plants. Panchgani Plateau in the Sahyadri hills which is commonly called the 'Table Land' is a very interesting geomorphological location which harbours many endemics in the flora and is the Type locality of dozens of new species described since the time of Blatter and McCann. Unfortunately, the area being a tourist spot, is subjected to severe anthropogenic activities which are causing extreme stress conditions on the habitats and the plants. The plateau and other flora rich areas in the Sahyadri ranges in the vicinity need immediate attention for conservation.

The flora in two volumes deals with a description of the vegetation and its associated factors, taxonomic treatment of 1398 taxa, each with notes on distribution, frequency, phenology, collectors' names, field numbers, uses, etc. Line drawings for some interesting species have also been provided. Efforts have been made to bring the nomenclature up-to-date as per the present Botanical Code.
The authors wish to express their sincere thanks to Sarvasree S. C. Pal, P. K. Dutta, Samiran Roy, S. K. Sur, S. K. Das, D. Sardar and A. K. Chatterjee of the Printing & Publication Section, Botanical Survey of India for help in bringing out this publication. One of us (S. D.) gratefully acknowledges the Director, Botanical Survey of India for the award of Research fellowship and facilities in carrying out this work.

Authors
Alysicarpus pubescens var. vasavadae (Hemadri) Sanjappa

Crotalaria retusa L.
Smithia agharkarii Hemadri

Echinops echinatus Ruell.
Artemisia parviflora Buch.-Ham. ex D. Don

Swertia densifolia (Griseb.) Kashyapa
INTRODUCTION

General note: The area dealt with is situated at the Western limit of the Deccan tableland between latitudes 16° 74' and 18° 15' N and longitudes 73° 60' and 76° 40' E and covers an area of 10492 sq. km. It is bordered by the Pune district on north, Sholapur district on east, Sangli district on the south and the Ratnagiri on west. These administrative boundaries coincide with some of the physical features like Nira river on the north, Sahyadri range on the west and Mahadeo hills on the east. The forest area is divided into eleven ranges viz., Javali, Karad, Khandala, Khadav, Koregaon, Mahabaleshwar, Man, Patan, Phaltan, Satara, and Wai; and occurs in scattered patches throughout the district. It covers an area of 1697.603 sq km. Out of this, 1521.841 sq km are reserved forests, 58.562 sq km are protected forests, 63.235 sq km are unclassed forests and 53.965 sq km are leased forests. The soil of the area falls under three categories viz., medium black to deep black, malvan or lighter soil and red or laterite soil. The main agricultural products are sugarcane, jowar, bajra, rice, wheat, pulses, cotton, groundnut, safflower, chillies and vegetables and fruits. The major forest produce are timber, firewood and charcoal.

The Kuyna Electric Grid Scheme is a landmark in the industrial development of the district and in Maharashtra. It is one of the biggest hydro-electric projects in Maharashtra. There are five power houses situated at Bhatghar, Karad, Koregaon, Satara and Wai which generate electricity.

There are six sugar factories and distilleries situated in this area. One glass manufacturing factory is situated at Ogalewadi and two cement manufacturing factories are at Karad and Satara. There are some small scale and large scale engineering units which have a countrywide reputation for the manufacture of engines, spare parts, machine tools and agricultural implements. The others are jaggery making, oilseeds crushing, plastic, weaving and pharmaceutical industries. The main crafts are making gold and silver ornaments, copper and brass pots, cotton weaving, tanning and shoe-making. There are a few forest industries like bee-keeping, charcoal manufacturing, collection of shikekai, hirda and making of walking sticks.

Historical notes: The oldest known place from this area is probably Karad which is found in inscription of about 200 B.C. Wai is locally
believed to be the 'Viratanagari' where 'Pandavas' lived in the thirteenth year of their exile. Old Mahabaleshwar, which is about 10 km from Mahabaleshwar is regarded as one of the 'kshetras' or holy places. It is the place of origin of the five rivers Krishna, Koyna, Savitri, Venna and Ghat. The temple known as 'Panchganga temple' is built on the supposed spot of the origin of these five rivers. The Mauryas and Satavahanas ruled over the entire Maharashtra from 230 B.C. to 250 A.D. Satara and Southern Maharashtra were held by Chalukyas between 550 and 1189 A.D. which was followed by Yadavas of Devagiri. The first Muslim invasion of the Deccan took place in 1296. In 14th century, the Bahamani territories were divided into eight provinces in which this area was included under Bijapur.

Before the middle of the 16th century, Shivaji, the founder of the Maratha Empire, regained control over the hilly parts of Pune district. In 1656, he built Pratapgarh Fort on a high rock near the source of Krishna river. A temple of the Goddess 'Bhavani' from which Shivaji and his Maratha Sardars derived their inspiration was also constructed on this Fort. Shivaji appointed eight officers of which the first was 'Peshva' or bead manager, who ruled the area up to 1878. In 1849 this area was annexed by the British Government.

Importance of the project undertaken: Mahabaleshwar and Panchgani are the two popular hill stations situated in Satara district. The variation in altitude, humidity and edaphic factors provide favourable conditions for the growth of tropical, subtropical and temperate species at these places. There is a high concentration of endemic and useful exotic plants introduced by Britishers which have become naturalized component of the local flora in due course of time. A stream of tourists visit these areas due to their grandeur beauty, climate and greenery throughout the year. The variety and richness of vegetation cover of the area always inspired various plant explorers and botanists to visit these places. The investigations carried out by these botanists led to the publication of several floristic accounts. Some of the important contributions are by Dalzell & Gibson (1861), Lisbon (1883), Birdwood (1886-1897), Cooke (1885-1906), Blatter and McCann (1926-1935), Santapau (1952-1962), Puri and Mahajan (1960). Bole & Almeida (1981 onwards) have published a series of papers on the Flora of Mahabaleshwar.

Despite the number of accounts by so many botanists, the Flora of Satara district as a whole remained less explored as the adjacent areas which form inseparable part of the composite picturesque panorama of this tract were almost neglected. The present studies were undertaken to fill up this lacuna and to bring out a comprehensive floristic account of the Satara district as a whole.
Although fortyfour new species have been reported from this area by different workers, but many of them have not been recollected for many decades. Some of these are known only by their type collections, while in other cases, even the types do not exist in any of the Indian herbaria. It was, therefore, thought fit to make a fresh attempt to collect these species and assess the position as it exists today.

Some of the developmental schemes, which are extremely essential for socio-economic upliftment of the rural poor and backward populace, have adversely affected the natural forests. A large chunk of luxuriant semi-evergreen forests of Koyna area have been lost for ever due to the subemergence of catchment area and construction of Koyna Dam and hydro-electric power station. The existence of numerous interesting species occurring in the Koyna valley are indicative and living witness to the richness of the area as a whole. The earlier botanists hardly paid any attention to Koyna area due to its remote location and non-existence of approach roads and hence remained unexplored. In the absence of any recorded floristic data, it is difficult to assess the damage caused by the construction of the dam. Recently on behalf of the Government of India, the Government of Maharashtra has undertaken a scheme “Western Ghats Eco-development” to improve and conserve this centuries-old ecosystem.

Past work: A number of botanists viz., Nairne (1897), Graham (1839), Dalzell & Gibson (1861), Birdwood (1886 1897), Woodrow (1897 1901) and Talbot (1894, 1909 1911) have contributed to the flora of the then Bombay Presidency which included Satara district also. Cooke in his Flora of the Presidency of Bombay (1901 1908) has reported 2337 species belonging to 944 genera and 146 families out of which 401 species comprising 273 genera and 88 families were reported from the present district.

Since the publication of Cooke’s Flora a lot of taxonomic literature has appeared in the form of monographs and revisions of various plant groups, based on additional information available to-date and modern techniques, etc., have led to changes in taxonomic and nomenclatural concepts (Karthikeyan et al. 1981). With a view to revise the ‘Flora of Bombay Presidency’ Blatter published a series of articles alone and in collaboration with McCann 100 (1926 - 1935) with updated nomenclature and critical comments wherever necessary, which included ca. 90 species from the area under study. He also listed 93 species of grasses in collaboration with McCann (1935). Vartak (1957, 1959a, 1959b) recorded 31 species from the district. Puri & Mahajan (1960) published 347 species of Angiosperms and 34 species of Cryptogams from Mahabaleshwar, Santapau & Kapadia
(1966) described 36 species and varieties of orchids. Chavan et al. (1973) have enumerated 128 species from Kas.

In recent years Bole & Almeida (1981 onwards) are publishing a series of articles exclusively on Mahabaleshwar plateau and have described ca 716 species so far.

The flora is further enriched by addition of 44 new species, 5 varieties and 1 forma described by different authors viz., Baker (1898), Cooke (1901), Fyson (1921), Blatter (1927 - 1930), Blatter & McCann (1927 - 1932), Gravely and Mayuramathan (1932), McCann (1934), Santapau & Patel (1958), Santapau & Merchant (1964), Bor (1961), Ansari (1968, 1972), Govindarajalu (1972), Deb & Das Gupta (1976), Raghavan et al. (1982), Taylor (1983) and Ved Prakash & Jain (1983). Out of these new taxa, only 28 species, 3 varieties and 1 forma are valid today as evidenced by the recent monographs and revisions.

Present work: The present work has been undertaken to bring out a comprehensive floristic account of the Satara district as a whole. It also fulfills a part of the aims and objects of the Botanical Survey of India to assess and inventory the plant wealth of the country.

The present work is the outcome of three years (1983 - 1985) of extensive and intensive studies on the Flora of Satara district. During this period eight field trips were undertaken covering all the seasons, and 950 field numbers comprising ca 5700 specimens of angiosperms and a few of ferns have been collected. Out of these, 106 species have been collected for the first time. Special attention was paid to the areas which remained under - or unexplored so far.

The present data is based on the recent collections made by the senior author (1983 - 1985) as well as on the collections housed in the herbarium of the Botanical Survey of India (BSI) and Blatter Herbarium, St. Xavier's College, Bombay (BLAT). The present flora deals with 1398 species belonging to 697 genera and 141 families. Of these, 1201 occur in wild and 197 are cultivated or introduced ones. Further details are provided in Floristic analysis.

MATERIALS AND METHODS

Field study: The area, which is divided into 11 forest ranges, was covered by State Transport buses wherever available. The interior areas were covered on foot. Catchment areas of Koyna and Dhom dam were
covered by motor launches which ply for a very short period during the year and the camping stations were either P.W.D. or Forest rest houses. The plant exploration period varied from 10 - 12 days.

While collecting the specimens, the data such as habit, habitat, flower colour, fragrance if present, frequency of distribution, local names and uses, if any, were recorded in the field itself. Besides the wild species, some major cultivated plants and weeds of cultivated fields and road sides have also been collected.

These specimens were dried in the field using blotters and newspapers. The flowers of some of the species which could not be identified in the field or of interest otherwise were fixed in 4% Formalin for further studies in the laboratory.

Herbarium study: After returning to the headquarters, all the specimens were poisoned and dried using standard herbarium techniques and mounted on standard herbarium mounting sheets. The field identification was confirmed by using relevant floras viz., The Flora of British India by J. D. Hooker et al. (1872 - 1897), The Flora of the Presidency of Bombay by T. Cooke (1901 - 1908) and recent monographs and revisions, which are too many to be cited here; however, they have been cited at the appropriate places in the enumeration. The tentatively identified specimens were matched with the authentically identified specimens deposited in the herbarium of Botanical Survey of India, Pune (BSI), and identification was thus confirmed. These specimens have been incorporated in the same herbarium.

Plan of the Flora: The 'flora' starts with a short introduction and a key to the families. The genera under a family and the species under a genus have been arranged in alphabetical order. The families are arranged according to the Bentham and Hooker's system of classification (1862 - 1883) with slight modification based on Hutchinson (1959). The family key is adapted from Gamble's Flora of Presidency of Madras (1957 Repr. ed.). Dichotomous keys for genera and species are mainly based on macroscopic characters. The generic key for the family Poaceae is adapted with slight modification from Karthikeyan's synopses of Awned and Unawned grasses of former Madras Presidency (1972 & 1980).

The correct name of the species is followed by basionym, if any, and synonyms if necessary to connect the name with the regional floras. The reference to the Flora of British India, Flora of the Presidency of Bombay and recent literature, wherever available is followed by local name in 'Marathi' or common English name if available in inverted
FLORA OF MAHABALESHWAR

commas at the end of citations. The species are briefly described eliminating the characters already reflected in the keys. This is followed by phenological data, reference to the illustration (Illus.) if available and distribution (Distrih). Under distribution, after frequency, collection localities are given alphabetically. In the case of rare species, collector's name and field numbers are also provided. The specimens collected by the senior author are indicated by only field number(s) immediately after locality. The specimens available in herbaria other than BSBI are indicated accordingly. The critical comments, if any, are added at the end. Cultivated species are listed at the end of the respective families or genera. After systematic enumeration of Angiosperms a list of Pterido-phyltes is given. Conventional abbreviations are used throughout the text.

Topography: There is a marked difference in the general topographic features of the area. The main range of the Sahyadri stretching about 160 km from north to south forms the western boundary of the tract. The Mahadeo range originates from the Sahyadri complex about 16 km north of Mahabaleshwar and stretches east and south-east across the whole breadth of the district. These two ranges form the major hill complex of the tract. Within the limits of the tract, the crest of Sahyadris is crowned by several peaks. The main line of the Sahyadris develops into several coalescent saddles of which the more accessible ones have become major ghat routes. Besides many small saddles, the Mahadeo range is crossed by three important passes, the Kambatki pass and two breaks near Tadvala about 19 km north-east of Kambatki.

The tops of the main Sahyadris and of the Mahadeo hills especially in the north-western tracts of Wai, Jaoli and Patan look like a succession of fortresses raised on a series of plateaus piled on top of the other, the whole surmounted by a wall of rock. The top of Mahabaleshwar, the highest point in the tract is about 1,436 m above the mean sea level. From the high Deccan tableland on the east, the Sahyadris seem somewhat low and tame but from the western edge of their crest great forms stand out from the Konkan with bold wild outlines and cliffs which in places have a sheer drop of over 910 metres. For about 46 km after leaving the Sahyadris, the Mahadeo hills attain a height of about 1,220 m above the mean sea level and about 610 m above the plains. The north face of the Mahadeo range falls sharply into the Nira valley to the south. The hill falls much more gently into the valley of the Krishna. Some notable hills which add to the relief of Satara district are - Sonjai (1,003 m), Vardhangad (1,067 m), Pandavgad (1,273 m), Kenjalgad (1,301 m), Vasota (1,302 m) and Kamalgad (1,375 m).

Drainage: The area is drained by four major rivers viz., the Nira in the entire Northern belt, the Man in the East and the Yevla and the
Map 2: Satara District: Plant collection localities
<table>
<thead>
<tr>
<th></th>
<th>Place Name</th>
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<tbody>
<tr>
<td>1</td>
<td>Mahabaleshwar</td>
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<td>2</td>
<td>Pratapgar</td>
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<td>3</td>
<td>Panchgani</td>
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<td>4</td>
<td>Medha</td>
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<td>5</td>
<td>Bannoli</td>
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<td>6</td>
<td>Kas</td>
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<td>7</td>
<td>Kelghar ghat</td>
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<td>8</td>
<td>Kudal</td>
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<td>9</td>
<td>Vasota</td>
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<td>Patna</td>
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<td>11</td>
<td>Devgad</td>
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<td>12</td>
<td>Kumbharli ghat</td>
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<td>13</td>
<td>Mirgaon</td>
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<td>14</td>
<td>Rasati</td>
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<td>15</td>
<td>Morgiri</td>
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<td>Saiwe</td>
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<td>Sanbur</td>
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<td>Chaphal</td>
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<td>Tarle</td>
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<td>21</td>
<td>Saturw</td>
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<td>Asangaon</td>
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<td>Kanher</td>
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<td>Yavteshwar</td>
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<td>26</td>
<td>Mahuli</td>
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<td>27</td>
<td>Borgaon</td>
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<td>28</td>
<td>Wai</td>
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<td>29</td>
<td>Kenjalgad</td>
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<td>30</td>
<td>Kamalgad</td>
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<tr>
<td>31</td>
<td>Dhom dam</td>
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<td>32</td>
<td>Pandavgad</td>
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<td>33</td>
<td>Kumbharli ghat</td>
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<td>34</td>
<td>Shirgaon ghat</td>
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<td>35</td>
<td>Chandan-vandan fort</td>
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<td>36</td>
<td>Khandala</td>
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<td>37</td>
<td>Lonand</td>
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<td>38</td>
<td>Koregaon</td>
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<td>39</td>
<td>Solshi</td>
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<td>40</td>
<td>Pimpodia</td>
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<td>41</td>
<td>Wathar</td>
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<td>42</td>
<td>Kinhai</td>
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<td>43</td>
<td>Vardhangad</td>
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<td>Karad</td>
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<td>Kole</td>
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<td>46</td>
<td>Kolewadi</td>
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<td>47</td>
<td>Nandgaon</td>
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<td>48</td>
<td>Velgaon</td>
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<td>49</td>
<td>Masur</td>
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<td>50</td>
<td>Chorjwadi</td>
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<td>Khatav</td>
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<td>57</td>
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<td>Pingli tank</td>
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<td>59</td>
<td>Malvadi</td>
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<td>60</td>
<td>Mograha ghat</td>
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<td>61</td>
<td>Mardi</td>
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<td>62</td>
<td>Mhasvad</td>
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<td>63</td>
<td>Phaltan</td>
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<td>64</td>
<td>Tathavada</td>
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<td>65</td>
<td>Vathar</td>
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<td>66</td>
<td>Vidni</td>
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<td>67</td>
<td>Nimblak</td>
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<tr>
<td>68</td>
<td>Javali</td>
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</tbody>
</table>
Krishna in the South. The Krishna is one of the three sacred rivers of southern India. It rises on the eastern brow of the Mahabaleshwar plateau 6 km west of Jor in the extreme west of Wai. Like Godavari and Kaveri, it flows across almost the entire breadth of the peninsula from west to east.

Today Koyna has become the most important river in Maharashtra on account of the hydro-electric project developed at Koyna Nagar near Helwak. The river Nira has acquired economic importance on account of the Bhatgar and the Vir dams supporting an extensive network of canals for irrigation.

Geology: The district is covered by basaltic lava flows of upper cretaceous lower eocene age. The basalts capped by laterite are found in the plateaus above 900 m mean sea level. Along the sources of the major rivers, alluvium has been deposited in recent times.

Deccan trap: The basalt flows of the area are of two types. The aa flow, which is common, shows a basal section having chilled basalt or greyish clinkar which shows fragments of highly vesicular or dense purple trap cemented by zeolites or secondary silica or glass. The middle section of the flow comprises dark or dark grey, dense basalt. Over this is found a section of flow breccia which also consists of sub-rounded to angular blocks of vesicular trap cemented by zeolites, glass and pulverised rock. The top-most layer is pinkish or purplish glass which at places gives rise to clay-like material after weathering. The product of weathering comprises fine fragments and gives rise to smooth slopes. Owing to this difference in weathering characters, cliffs, benches and terraces are formed. In addition, wide plateaus of plains are also formed. Broad bottomed valleys are derived wherever the erosion is arrested by the dense sections of the flows. Amphithatre-like geomorphological features are also conspicuous in these areas.

Dyke: Dykes are rare. The rock of the dyke is similar to that of porphyritic basalt.

Laterite: Laterite occurs on the plateau tops as tabular masses. It is well exposed in the Panchgani - Mahabaleshwar plateaus and in the plateaus on either side of Koyna river. In Mahabaleshwar area, the laterite is seen from 1370 m to 1440 m and again around 1290 m indicating two levels. In the area south of Panchgani the level falls from 1265 m in the north to 1045 m in the south near Koyna dam.

Alluvium: Occurs in patches along banks of rivers like the Krishna, Venna, Kudali, Koyna and others. It consists of beds of pebbles and boulders of trap and chert, silt and sand.
Map 3: Satur District: Annual average rainfall

- OVER 600 cm
- 200 - 150
- 150 - 75
- BELOW 75

FLORA OF MAHABALESHWAR
Soil: The breccia portion of aa flows and the pahochoe flows give rise to purplish or reddish soil mixed with grains of zeolite, chert and quartz, etc. The dense sections of the flows give rise to dark clayey soil. In the western part, where the laterite is extensively eroded the reddish brown soil is conspicuous.

Economic rocks and minerals: Bauxite: Bauxite occurs in the laterite plateaus near Panchgani and at a few places in the east Koyna valley. It occurs as large lenses or pockets and shows variation in thickness.

Construction material: The dense section of flows yield tough rock suitable for road making and as railway ballasts and concrete aggregate.

Kankar: Along the courses of streams and in alluvial patches, kankar and calc-tufa occur as irregular patches. These are excavated and used locally for making lime.

Groundwater: The alluvial patches are good aquifers. Wherever the trap rocks are weathered, the joints and fractures become open and help in groundwater movement. Laterite, which is full of voids, helps in seepage of rain water and such water comes out as springs along the lithomargic clay contact. Several such springs are the sources of domestic and to some extent, agricultural needs of many villages, at higher levels in the east Koyna valley.

Climate: The climate can be broadly divided into four seasons viz., the cold, the hot, the south-west monsoon and the post monsoon seasons. The cold season starts by about the end of November and continues up to middle of February. It is followed by hot season from the middle of February till the on-set of the monsoon in the first or second week of June. The south-west monsoon is from June to September. The post monsoon months are October and November.

Rainfall: The narrow strip along the western border gets heavier rainfall whereas the major part under study lies in the rain shadow area. The variation in the annual rainfall is very significant. Mahabaleshwar, in the Ghats, receives over 633 cm rainfall and it suddenly drops down to 76 cm at Wai which is only 32 km away from and at its base. The tract can be roughly divided into the following zones:
<table>
<thead>
<tr>
<th>Zone</th>
<th>Rainfall (in cm)</th>
<th>Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Below 75</td>
<td>Eastern parts of Khandala, Karad, Koregaon and Khatav, Man and Phaltan ranges.</td>
</tr>
<tr>
<td>II</td>
<td>75 - 150</td>
<td>Western rounds of Karad, Khandala, Koregaon, Satara and Wai round.</td>
</tr>
<tr>
<td>III</td>
<td>200 - 250</td>
<td>Dhebewadi range, Eastern parts of Satara, valleys of Krishna, Koyna, Venna and Warna.</td>
</tr>
<tr>
<td>IV</td>
<td>Above 250</td>
<td>Mahabaleshwar.</td>
</tr>
</tbody>
</table>

The major precipitation is from south west monsoon winds. Some rainfall in the form of pre-monsoon showers occur in May but main rainy season is from June to September. The precipitation during these months accounts for about 71% of the total annual rainfall. July is the month with heaviest rainfall. About 18% of the annual rainfall is received in the post monsoon months i.e. October and November.

**Temperature**: The cold season starts from about the end of November and continues up to the middle of February. December is the coldest month of the year. During the period from middle of February to May end, there is continuous increase in temperature and the rise is more marked in the plains than on the hills. The hottest month is May and mean daily maximum and minimum temperatures are 39.3°C and 23.8°C respectively in plains, while at Mahabaleshwar it is 28.3°C and 18.2°C respectively. The onset of the south-west monsoon brings down the temperature appreciably in the first or second week of June. After the withdrawal of the south-west monsoon day temperature shows an increase in October. Thereafter, both day and night temperatures begin to drop.

**Humidity**: In the south-west monsoon the air is highly humid but in the summer and the cold seasons the air is dry, particularly in the afternoons. In the plains, the dryness is more marked than in the hills.

**Winds**: Strong winds are witnessed particularly on the hills in the south west monsoon season. During rest of the year winds are light to moderate. Thunderstorms occur in hot and post monsoon months.

**Forest biota**: The wild life in the district is found in small number and is confined to the hilly regions of the Sahyadris and its foot hills.
The western parts, comprising Mahabaleshwar, Satara, Patan and Dhebewadi forest ranges have good forests, and provide natural protection to the animals.

Among the wild animals tigers are rarely found in Koyna valley and in some portions of Dhebewadi range. However, panthers are found in large numbers in Kas area near Satara, Koyna valley, Panchgani and Mahabaleshwar. Their main prey are only cheetas, sambars and stray cattle. The wild cat is found in large numbers in open forests and scrub jungles. The wolves, jackals and Indian fox are found in the plains of the eastern side. Of the smaller animals, mongoose is sometimes a serious threat to poultry, due to its mass slaughtering habit.

The bears are restricted to Bamanoli and Kas areas. They live on honey combs, tubers and fruits of forest trees, ants and insects. Due to indiscriminate hunting and poaching, the hares and deers have been considerably depleted. Sambars, barking deers and kalvits are some of the rare animals met within the area. The gaur or Indian bison, the largest of all the bovines is rarely found on way to Arthur point, Mahabaleshwar.

The wild bears and monkeys are found in abundance in all hilly forests. Snakes, both poisonous and non-poisonous are common in the forests.

The common game birds like sandgrouse, pigeon, grey partridge, the grey jungle fowl, the pea-fowl, the common teal and the blue winged teal are found scattered throughout the district.

**GENERAL VEGETATION TYPES**

The flora of the district has great diversity of its own supplemented by many exotic species. The area is rich in endemic species the details of which are given separately. The type of vegetation occurring in any area is largely governed by factors such as altitude, rainfall, soil types, humidity and temperature. The vegetation of Mahabaleshwar and Panchgani has been discussed by botanists like Puri & Mahajan (1960), Santapau (1962), Rolla Rao (1978) and Mahabale (1979). Champion (1936) had classified the forests at Mahabaleshwar as subtropical evergreen, however, since then the situation has deteriorated and such vegetation is now restricted to a few sheltered pockets because of shifting cultivation and constant lopping and other biotic interferences. There are some enclaves or sacred groves called as ‘Dev - Rais’ present at Kas near Satara and Mandhardevi near Wai. The forests around temples are protected in this area.
According to Champion & Seth (1969) the vegetation can be classified into the following types:

1. **Western (Montane) subtropical hill forests (8A/C2)**

   This type is restricted around Mahabaleshwar plateau at an altitude between 1000 and 1400 m with annual rainfall above 600 cm and red soil. The typical multistoried vegetation is almost absent because of biotic factors, with an exception of few sheltered pockets. The height of trees ranges between 5 and 12 metres. The dominant trees forming top canopy are *Actinodaphne angustifolia*, *Artocarpus heterophyllus*, *Cinnamomum macrocarpus*, *C. zeylanica*, *Emblica officinalis*, *Ficus nervosa*, *Gloeochidion ellipticum*, *Ligustrum perrottetii*, *Memecylon umbellatum*, *Murraya koenigii*, *Nothapodytes nimmoniana*, *Olea dioica*, *Symlocos beddomei*, *Syzygium cumini* and *Terminalia chebula*. These trees are loaded with mosses during monsoon season.

   The common shrubby elements are *Allophylus cobe*, *Cajanus lineatus*, *Canthium dicoccum*, *Capparis rotundifolia*, *Carvia callosa*, *Chlorodendrum serratum*, *Colebrookea oppositifolia*, *Crotalaria retusa*, *Gnidia glauca*, *Impatiens acaulis*, *Indigofera cassioides*, *Pavetta tomentosa*, *Pogostemon benghalensis* and *Solanum giganteum*. The climbers are represented by species like *Acacia sinuata*, *Clematis wightiana*, *Elaeagnus conferta*, *Piper hookeri*, *Rosa multiflora*, *Rubia cordifolia* and *Smilax zeylanica*.

   The herbaceous flora is represented by *Achyranthes aspera*, *Anisochilus carnosa*, *A. verticillata*, *Blepharis asperissa*, *Begonia crenata*, *Canscora decurrens*, *Carculigo orchidoides*, *Cynoglossum zeylanicum*, *Euphorbia laeta*, *Flemingia strobilifera*, *Hedychium coronarium*, *Hypoxis aurea*, *Lemcos stelligera*, *Pinda concanensis*, *Polygonum plebeium var. indica*, *Rungia repens* and *Seneio edgeworthii*. The grasses like *Aphula antica*, *Arundinella pumila*, *Sporobolus coromandelianus* and *Themeda quadrivalvis* are of common occurrence.

   The orchids found in this type are *Aerides crispum*, *A. dalzelliana*, *Bulbophyllum fimbriatum*, *Dendrobium barbatum*, *D. crepidatum*, *Eria dalzellii* and *Oberonia recurva*.

2. **West coast semi-evergreen Forest (2A/C2)**

   This type is found in the valleys of Krishna, Kayna, Venca and Wara at an altitude between 450 and 1050 m receiving 200 to 250 cm rainfall per annum. The height of trees varies from 12 to 20 m. Some of the common trees found in this type are — *Diospyros sylvestra*, *Elaeocarpus serratus*, *Garcinia indica*, *Holigarna grahamii*, *Lagerstroemia micro-*
carpa, Mnesia indica, Mallouis philippinensis, Symlocos beadomei, Syzygium cumini, Terminalia chebula etc. Representative components of evergreen forests such as Actinodaphne angustifolia, Memecylon umbellatum and Olea diota are also extended to the semi-evergreen forests.

The shrubs found in this area are Allophylus cobbe, Buddleja asiatica, Cajanus lineatus, Carvia callosa, Colebrookea oppositifolia, Embelia ribes, Glycosmis mauritian, Holarrhena antidysenterica, Ixora nigricans, Justicia betonica, Lycianthes laevis, Microcos paniculatus, Pavetta tomentosa, Pittosporum wightii, Turraea villosa and Vigna khandalensis. The common climbers are Aseacia sinuata, Argyrea boseana, Cayratia elongata, Cassia discolor, Clematis gouriana, Dioscorea pentaphylla, Diplocyclos palmatus, Embelia basaal, Jasminum malabaricum, Mecuna pruriens, Oxyeros rugulosa, Paracalyx scariosa, Teramnus labialis, Trichosanthes tricuspidata, Wattakaka volubilis and Zehneria scabra. The rare climbers are: Ceropogia hirsuta, Dumasia villosa, Entada puraetha and Paramignya monophylla.

The ground flora is represented by Achyranthes aspera, Cassia pumila, Centella asiatica, Cynoglossum zeylanicum, Desmodium laxiflorum, Gilpinia lotoides, Indigofera dalzellii, Hedyotis corymbosa, Heracleum grandis, Pinda conocephaleus, Polygnum glabrum, Solena amplexicaulis, Smithia bigemina, Sonerila scapigera, Sopuria delphinifolia, Striga densiflora, S. gesneroides and Swertia densiflora.

3a. Southern moist mixed deciduous forest (3B/C2)

This type is represented in the tract at Dhebewadi, Patan and western parts of Satara range. The dominant trees are Careya arborea, Casearia graveolens, Cassia fistula, Catamangam spinosa, Dalbergia melanoxylon, D. montana, Emblica officinalis, Ficus axyrophes, F. racemosa, Flacourtia indica, Grewia tiliaefolia, Ixora arborea, Kydla calycina, Lagerstroemia parviflora, Terminalia bellirica, Toona ciliata, Xanfolis tomentosa and Ziziphus xylopyrus, Chukrasia tabularis, Eriolaena quinquocularis and Sterculia guttata are of rare occurrence.

The common shrubs are Callicarpa tomentosa, Canthium rheedit, Carissa congesta, Clerodendrum viscosum, Desmodium triangulare, D. trique- trium, Eranthemum roseum, Gnidia glauca, Grewia abutilifolia, Holarrhena antidysenterica, Ixora brachiatia, Leea indica, Rhps myrsinensis, Vitex negundo, Woodfordia fruticosa, Wrightia tinctoria and Ziziphus ruzes. The common climbers are Argyrea cuneata, Cayratia auriculata, Cocculus hirsutus, Dioscorea oppositifolia, Elaeagnus conferta, Jasminum malabaricum, Mezoneuron cucullatum, Moullaya spicata and Stephania japonica.
The common herbaceous species are *Alysicarpus* spp., *Desmodium laxiflorum*, *Hemigraphis latebrosa*, *Hibiscus furcatus*, *Lepidagathis cuspidata*, *L. prostrata*, *Mukia madraspatana*, *Ophiirhiza prostrata*, *Smithia setulosa*, *Solenanthes ambiguus* and *Tephrosia tinctoria*. *Rauvolfia serpentina*, *Smithia sensitiva* and *Tephrosia purpurea* are of occasional occurrence.

3b. Southern dry mixed deciduous forest (5A/C3)

This type is represented in the central belt of the tract, receiving annual rainfall between 75 and 150 cm. The common trees are *Acacia chundra*, *A. nilotica*, *Albizia amara*, *A. chinensis*, *Anogeissus latifolia*, *Bauhinia racemosa*, *Bombax ceiba*, *Butea monosperma*, *Cassia fistula*, *Dalbergia volubilis*, *Diospyros melanoxylon*, *Embelia tseriam-cottam*, *Eriocarpus nimbomii*, *Erythrina stricta*, *Ficus hispida*, *F. retusa*, *Lagerstroemia microcarpa*, *Maytenus emarginata*, *Pongamia pinnata*, *Semecarpus anacardium*, *Terminalia bellirica* and *Wrightia tinctoria*.

The common shrubs are *Acacia torta*, *Barleria prionitis*, *Boehmeria macrophylla*, *Brenynia retusa*, *Capparis zeylanica*, *Carissa congesta*, *Carvita callhosa*, *Cassia auriculata*, *Cannaregam spinosa*, *Celastrus paniculata*, *Clerodendrum serratum*, *Helicteres isora*, *Lepidagathis cuspidata*. *Pogostemon benghalensis*, *Rhus myrsinefolis*, *Tamilnadia uliginosa* and *Woodfordia fruticosa*. The common climbers are *Acacia sinuata*, *Argyreia cuneata*, *Calycoseris floribunda*, *Cayratia elongata*, *Combretum ovalifolium*, *Cryptolepis buchananii*, *Dioscorea oppositifolia*, *D. pentaphylla*, *Gloriosa superba*, *Jasminum malabaricum*, *Mucuna pruriens*, *Paracalyx scariosa* and *Tylophora dalsellii*.

The herbaceous species are represented by *Blepharis asperrima*, *Blumea eriantha*, *B. malcolmii*, *Celosia argentea*, *Centranthera indica*, *Commelina forsskalaei*, *Corchorus olitorius*, *Crotalaria filipes*, *Cyanotis fasciculata*, *Elephantopus scaber*, *Evolvulus alsinoides*, *Exacum bicolor*, *Geissasapis cristata*, *Hemigraphis latebrosa*, *Phyllanthus lawii*, *Polygala pectoralisfolia*, *Stella hyacinthina*, *Solamum indicum*, *Trachyspermum stictocarpum*, *Vigna radiata* and *Wedelia urticaefolia*.

4. Southern thorn forest (6A1)

This type is found in drier parts of the district receiving annual rainfall less than 75 cm. It is found in eastern parts of Khandala, Koregaon, Karad and Khatav ranges also Man and Phaltan ranges. The common species are *Acacia chundra*, *A. leucophloea*, *Albizia odoratissima*, *Azadir-
achta indica, Capparis manii, C. zeylanica, Cassia curculata, Maytenus emarginata and Ziziphus mauritiana.

Because of biotic factors some areas are devoid of trees and major portion is occupied by dry grasslands. The common components are Aristida funiculata, Chrysopogon fulvus, Cymbopogon martini, Cynodon dactylon, Dichanthium annulatum, Eragrostis unioloides, Heteropogon contortus and Schima nervosa. These are associated with Corchorus aestuans, C. trilocularis, Crotalaria nana, C. vestita, Euphorbia laciniata, E. neriifolia and Triumfetta rotundifolia.


Weeds of fallow fields are Bidens biseriata, Bliphytum sensitivum, Blainvillea acmella, Caesalia axillaris, Eclipta erecta, Emilina sonchifolia, Eragrostis unioloides, Gnaphalium luteo album, Hackelochloa granularis, Heteropogon contortus, Leucas lavandulaefolia, Sphaeranthus indicus, Tribulus terrestris, Tridax procumbens. Vicia indica and Xanthium strumarium.

Weeds commonly found in wastelands and along roadsides are—Acanthospermum hispidum; Achiropites asperus, Alternanthera sessilis, Amaranthus spinosus, Argermon mexicana, Bidens biseriata, Blainvillea acmella, Boerhavia diffusa, Cassia occidentalis, C. tora, Commicarpus chinensis, Convolvulus arvensis, Corchorus aetnans, Datura stramonium, Dinebra retroflexa, Echinops echinatus, Euphorbia hirta, E. indica, E. thymifolia, Gierardinia zeylanica, Lugascea mollis, Lantana camara, Leucas
aspera, L. longifolia, Malvastrum coromandelianum, Nicandra physaloides, 
Nicotiana plumbaginifolia, Oxalis corniculata, Parthenium hysterophorus, 
Pilea microphylla, Plectranthus mollis, Solanum nigrum, S. surattense, 
Symodendrum nudiflorum, Trichodesmium indicum, Tridax procumbens, Triumfetta 
rhomboidea. Verbascum chinense and Veronica javanica.

AQUATIC VEGETATION

The district has numerous ponds, lakes and rivers in addition to 
catchment areas and other wetlands. During the monsoon season 
temporary streams and puddles are also formed. All these places provide 
an ideal habitat to the aquatic plants for their luxuriant growth. These 
aquatics can be classified as follows:

1. Free floating herbs: Aponogeton satanensis, Lemna perpusilla, 
Nymphaea nouchali and Spirodela polyrrhiza.

2. Submerged herbs: Blyxa umbellata, Echinodorus, Eriocaulon 
Hydroilla verticillata, Limnophila indica, L. sessilisflora and Vallisneria 
spiralis.

3. In marshy places: Alternanthera sessilis, Bacopa monnieri, Caesalpinia 
axillaris, Canna decurrens, Centaurium eucosmoides, Chrozophora 
prostrata, C. rotleri, Coelachne minuta, Cnix lacrymosa, Crinum deficium, 
Cyathocline purpurea, Cyperus compressus, C. digitatus, C. distans, C. 
globosus, C. iria, C. mutans var. mutans, C. mutans var. eleusinoides, C. 
tenuispica, Drosera indica, Echinochloa colonum, E. crus-galli, E. frumentacea, 
Eclipta prostrata, Eleocharis acutangula, E. geniculata, Eragrostis 
gangetica, E. japonica, E. unioloides, Eriocaulon breviscapum, E. cuspidatum, 
E. eleanorae, E. odoratum, E. quinquangulare, E. setaceum, E. stellatum, 
Eriochloa prosera, Euphorbia natalis, E. his-umbellata, F. dichotoma, 
F. ferruginea, F. ovata, F. tenera, Floscopa scandens, Geissaspinis cristata. 
Ginus lotoides, Homonoia riparia, Hygrophila auriculata, Isache elegans, I. 
globosa, I. miliiaca, Juncella griffithiana, Lindernia unguis, L. hyssopo 
iloides, Lobelia alsinoides, Ludwigia octovalvis ssp. sessiliflora, Myriophyllum 
oliganthum, Oryza rufipogon, Paspalum scrobiculatum, Phyla nodiflora, 
Phyllanthus lawii, Pogostemon deccanensis, P. salicifolius, Polygonum 
glaucum, P. plebejum, Ronappa indica, Rotala floribunda, R. serpyllifolia. 
Rotala aquatica, Schoenoplectus articulatus, S. corymbosus, Sphaeranthus 
indicus, Typha angustata, Utricularia arcuta, U. graminifolia, U. reticulata 
and Wahlenbergia marginata.
Foreigners mostly Britishers treated Mahabaleshwar and Panchgani as their summer health resorts. It is probable that they brought seeds of seedlings of interesting species, in order to quench their nostalgia and to create native surroundings when they returned to India from their mother lands. As a result, there is a high concentration of exotic species in the local flora introduced for food, ornamental or medicinal purposes. A number of weeds also came along accidentally with food grains, seeds or other economic plants and packing materials of the imported goods. Many of them are now naturalised in this area. Some of the common exotic species are listed below:


 Floristic Analysis

The present flora deals with 1,398 species belonging to 697 genera and 141 families. Of the total flora, 197 species are either cultivated or exotics. They are tabulated below. In addition to the Angiosperms, 48 species of Pteridophytes belonging to 29 genera and 23 families have also been recorded.
<table>
<thead>
<tr>
<th>Groups</th>
<th>Number of families</th>
<th>Number of genera</th>
<th>Number of species</th>
<th>Number of sub species</th>
<th>Number of varieties</th>
<th>Number of forma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dicots</td>
<td>121</td>
<td>565</td>
<td>1046</td>
<td>2</td>
<td>11</td>
<td>—</td>
</tr>
<tr>
<td>Monocots</td>
<td>20</td>
<td>132</td>
<td>352</td>
<td>—</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>141</td>
<td>697</td>
<td>1398</td>
<td>2</td>
<td>16</td>
<td>1</td>
</tr>
</tbody>
</table>

Out of 141 families, 44 families are monotypic.

**Comparison between the Cooke's Flora and the present flora.**

<table>
<thead>
<tr>
<th>Taxa reported in Cooke's Flora (excluding Sind)</th>
<th>Families</th>
<th>Genera</th>
<th>Species</th>
<th>Sub-species</th>
<th>Varieties</th>
<th>Forma</th>
</tr>
</thead>
<tbody>
<tr>
<td>146</td>
<td>944</td>
<td>2337</td>
<td>150</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Taxa reported by Cooke from Satara District</th>
<th>Families</th>
<th>Genera</th>
<th>Species</th>
<th>Sub-species</th>
<th>Varieties</th>
<th>Forma</th>
</tr>
</thead>
<tbody>
<tr>
<td>88</td>
<td>273</td>
<td>401</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Taxa reported in the present flora</th>
<th>Families</th>
<th>Genera</th>
<th>Species</th>
<th>Sub-species</th>
<th>Varieties</th>
<th>Forma</th>
</tr>
</thead>
<tbody>
<tr>
<td>141</td>
<td>697</td>
<td>1398</td>
<td>2</td>
<td>6</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Ten dominant families compared with those of Cooke’s Flora are given below:

<table>
<thead>
<tr>
<th>Flora of the Presidency of Bombay (excluding Sind)</th>
<th>Flora of Satara district</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Family</strong></td>
<td><strong>Number of genera</strong></td>
</tr>
<tr>
<td>-----------</td>
<td>----------------------</td>
</tr>
<tr>
<td>1. Fabaceae</td>
<td>81</td>
</tr>
<tr>
<td>2. Poaceae</td>
<td>72</td>
</tr>
<tr>
<td>3. Asteraceae</td>
<td>52</td>
</tr>
<tr>
<td>5. Acanthaceae</td>
<td>36</td>
</tr>
<tr>
<td>7. Orchidaceae</td>
<td>31</td>
</tr>
<tr>
<td>8. Scrophulariaceae</td>
<td>26</td>
</tr>
<tr>
<td>10. Lamiaceae</td>
<td>21</td>
</tr>
</tbody>
</table>
It is interesting to find that the families which are dominant in erstwhile Bombay Presidency and those of the area under study are the same though their positions vary a bit.

PLANTS OF MEDICINAL VALUE

This district abounds in medicinal plants. The following plants are used for the medicinal value in treatment of various ailments by local vaidyas.

The plants used for various domestic and industrial purposes viz., food, fodder, fibre, shelter can be broadly classified as follows:

1. Cereals: The main cereals grown in the district are - 'Jowar' (Sorghum bicolor), 'Bajra' (Pennisetum typhoides), 'Wheat' (Triticum aestivum), 'Rice' (Oryza sativa), 'Vari' (Panicum sumatrense) and 'Maize' (Zea mays).

2. Pulses: 'Gram' (Cicer arletinum), 'Tur' (Cajanus cajan), 'Watana' (Pisum sativum), 'Mug' (Phaseolus aureus), 'Masur' (Lens esculenta), 'Black gram' (Phaseolus mungo), 'Horse gram' (Vigna unguiculata) and 'Chawali' (Vigna unguiculata ssp. cylindrica).

3. Oil seeds: 'Groundnut' (Arachis hypogaea), 'Sesamum' (Sesamum indicum), 'Safflower' (Carthamus tinctorius), 'Castor' (Ricinus communis) and 'Mustard' (Brassica nigra).

4. Drugs and Narcotics: 'Tobacco' (Nicotiana tabacum) and 'Betel' leaves (Piper betel).

5. Condiments and spices: 'Chillies' (Capsicum annuum), 'Coriander' (Coriandrum sativum), 'Turmeric' (Curcuma longa), 'Garlic' (Allium sativum) and 'Ginger' (Zingiber officinale).

6. Fibres: 'Cotton' (Gossypium herbaceum), 'Deccan hemp' or 'Ambadi' (Hibiscus cannabinus) and 'Bombay hemp or tag' (Grotalaria juncea).

7. Fruits: The most common are 'Banana' (Musa paradisiaca), 'Guava' (Psidium guaja), 'Pomegranate' (Punica granatum), 'Lemon' (Citrus medica), 'Mango' (Mangifera indica), 'Phanas' (Artocarpus integrifolia), 'Grapes' (Vitis vinifera), 'Papaya' (Carica papaya), 'Strawberry' (Fragaria vesca) and 'Raspberry' (Rubus niveus) are grown on small scale at Mahabaleshwar.

8. Vegetables: 'Potato' (Solanum tuberosum), 'Onion' (Allium cepa), 'Sweet potato' (Ipomoea batatas), 'Carrot' (Daucus carota), 'Tomato' (Lycopersicon esculentum), 'Brinjal' (Solanum melongena), 'Radish'
(Raphanus sativus,) 'Cucumber' (Cucumis sativus), 'Cabbage' (Brassica oleracea var. capitata), 'Lady's finger or bhendi' (Abelmoschus esculentus) and 'Gavar' (Cyamopsis psoralioides).

9. Sugarcane : 'Sugarcane' (Saccharum officinarum) is grown on large scale as an irrigated crop.

10. Timber : Among the timber species which are mostly used for furniture, construction of buildings, agricultural implements are - 'Sagwan' (Tectona grandis), 'Ain' (Terminalia crenulata), 'Khair' (Acacia chundra) and 'Subabul' (Acacia leucophloea).

FODDER SPECIES


The leaves, young shoots or pods of the following plants other than grasses, are fed to cattle :


INTERESTING PLANTS OF BOTANICAL VALUE

Various botanists have described 44 new species, 5 varieties and 1 forma from the Satara district. They are : Aniclema siennea Blatt., Aponogeton saturans Raghavan et al., Arisaema longicaudatum Blatt.,

Of these species mentioned above, Aneilema siemense, Arizaenu longgaudatum, Arthraxon satarensis, Cryptocoryne tortuosa, Eriocaulon horsley-kundae, Habenaria cerea var. polyantha, H. rariflora var. latifolia, H. speelet, H. variabilis, Oberonia lingmalensis, Oldelandia maheshwarii, Paspalum canare var. fimbrianum, Peristylius xanthochlorus, Utricularia aquaticaulis and U. ogmasperma have been merged under different taxa by various workers as they were not distinct.

Abelmoschus angulosus, Crassocephalum crepidioides, Habenaria multicaudata and Sagina japonica are the distributional records for Maharashtra reported from this area.

ENDEMIC AND RARE PLANTS

There is a high concentration of endemic species along Western Ghats due to significant variation in altitude, humidity, soil, temperature and various other factors. Endemic plants occur in a restricted area, isolated from its surrounding regions through geographical, ecological or natural barriers. Western Ghats along this tract form an ecological boundary between the low-lying plains, Kunkan and the Deccan tableland.
forming an ideal endemic area. There are 56 genera endemic to Peninsular India. (Nayar, 1980) out of which the following 10 monotypic genera are endemic to Western Ghats and occur in the area studied here: Carvia, Dicoclospernum, Erinocharpus, Helicanthes, Indopoa, Moullava, Polyzygus, Pseudodichanthium, Sesiastriga and Trilobachne. Ahmedullah and Nayar (1987) have discussed in detail about the concepts, classification and components of endemic plants of Peninsular India.

Species endemic to the district are - Aponogoton satamensis, Argyrea boseana, Balanophora elatris, Barleriab gibsonioides, Begonia priophylla, Catalluma subascendens var. fimbriata, Ceropogia noorjahaniae, C. santapau, Crinum oleander, C. woodburnii, Cyperus dembensi, Dichantium maccannii, D. panchganiense, Dicpadi maharashtriensis, D. ursulae, Drimia polyantha, Euphorbia panchganiensis, Hitchenia caudina, Iphigenia stellata, Isachne ovaminathanii, Mariscus blatteri, Oxalis corniculata var. hispida, Pancratium donaldi, Thalictrum obvatum and Utricularia praeterita.


CONCLUDING REMARKS

The present assessment of the Flora of Mahabaleshwar & its environs is the outcome of the plant exploratory work carried out during 1983 to 1985, based on the collections made by the senior author as well as on the specimens housed at the Herbarium of Botanical Survey of India, Pune (BSI) and Blatter Herbarium, St. Xavier's College, Bombay (BLAT). This flora accounts for 1,398 species, 697 genera and 141 families of Angiosperms and 48 species of Pteridophytes.

The district Satara, as a whole, is rich in endemic flora recording 108 species distributed over 9 genera which are endemic to the Western Ghats viz., \textit{Carica, Dicatiospernum}, \textit{Erinocarpus}, \textit{Helicanthes}, \textit{Indopoa}, \textit{Moullara}, \textit{Polyzygus}, \textit{Pseudodichanthium}, \textit{Seshagiria} and \textit{Tritobachne}.

During this survey it has been evaluated that out of the total of 1,201 wild species, 348 species are reported from places other than Mahabaleshwar and Panchgani which forms ca 25% of the total flora.
The remaining 853 species are reported from Mahabaleshwar and Panchgani as well as from the other surrounding areas.

Though forty-four new species, 5 varieties and 1 forma have been reported from this area, only 28 species, 3 varieties and 1 forma are valid, rest having been merged with already described taxa. Sixteen species are known only by their type collections viz., Argyreia boseana, Balanophora elkinsii, Barleria gibsonioides, Begonia priophylla, Ceropegia noorjahaniae, Crinum elconorae, C. woodrowii, Cyperus decembens, Dichanthium maccannii, Dipcadi maharashrensis, Mariscus blatteri, Oxalis corniculata var. hispida, Panchratium donaldii, Thalictrum obovatum and Utricularia praeterita. In some cases even types are not available in Indian Herbaria.

During the present work, Ischaemum thomsonii Stapf ex C.E.C. Fischer and Eragrostis nigra Nees have been collected for the first time from Maharashtra. Kalanchoe bhielii T. Cooke has been recollected after a lapse of 8 decades from the type locality, type of which is deposited at the Royal Botanical Gardens, Kew (K). While updating the nomenclature of the species dealt with in this flora in accordance with International Code of Botanical nomenclature (1978) one new combination has been proposed [Wattakaka angustifolia (Hook. f.) Sandhya Deshpande] and one variety has been sunk in the species proper, consequently making it a new synonym (Paspalum compactum var. fimbriatum).

It is clear from the data collected that the present status of flora is different in floristic composition than what it was in the beginning. Already much of the flora has been lost due to various biotic interferences such as illegal tree felling for fuel, fodder, timber, building and road construction, dams, installation of high power electric towers to power stations and encroachment of forest area for agricultural purposes etc. The havoc caused by the tourists, plant collectors and students by overzealous collections particularly of orchids and various bulbous plants is considerable.

Therefore, it is the apprehension of any nature lover that the continued exploitation of this centuries—old ecosystem will leave Mahabaleshwar and its vicinity barren unless corrective measures are initiated. It is suggested that forest areas around Mahabaleshwar and Panchgani harbouring rich flora and exhibiting significant diversity be declared as biosphere reserves as already done in Koyna catchment area. This is the only solution to ensure protection and conservation of our
natural plant wealth to conserve different types of habitats, rejuvenation of depleted forests, untapped resources for posterity.

One of the major objectives of this work was to prepare an inventory of the plants present in this area, provide a means of identifying them, which is a prerequisite for the actual implementation of conservation plan. It is hoped that the present flora would be useful to botanists, ecologists, foresters, agriculturists, university and college students, people interested in indigenous plant medicines, pharmaceutical companies, plant conservationists and various other nature lovers and professionals interested in the plant wealth of the area.
KEY TO THE FAMILIES

1. Leaves usually with reticulate venation; flowers usually 4 - 5 - merous; cotyledons usually 2:

2. Perianth 2 - or - multiseriate:

3. Petals usually free; stamens often numerous:

4. Stamens hypogynous; calyx lobes usually free:

5. Sepals usually united in bud, it valvate, then sepals free:

6. Sepals usually free, if united below, then petals dissimilar:

7. Stamens usually more than 12, if fewer, then sepals and petals 4 with a 2 - valved capsule or berry:

8. Sepals 2 - 3, deciduous:

9. Trees; petals multiseriate...

MAGNOLIACEAE

10. Leaves entire; sap watery; sepals 2, petals 4 - 5...

PORTULACACEAE

11. Leaves lobed; sap yellow; sepals 2 and petals 4 or sepals 3 and petals 6...

PAPAVERACEAE

8. Sepals 4 or more, deciduous or persistent:

11. Aquatic plants; petals many seriate...

NYMPHAEACEAE

11. Terrestrial plants; petals 4 - 8, 1 - 2 - seriate:

12. Sepals deciduous:

13. Carpels free when ripe; ovule 1...

RANUNCULACEAE
13. Carpels united in 1
locular ovary; ovules
2 - many:

14. Sepals 4; ovary and
fruit borne on a long
gynophore.

14. Sepals 5; ovary and
fruit sessile:

15. Plants usually
thorny; petals
absent; fruit a
glabrous berry

15. Plants not
thorny; petals
present; fruit a
bristly capsule

12. Sepals persistent:

16. Leaves opposite or
whorled

16. Leaves alternate:

17. Stamens attached to
the bases of and
deciduous with
the petals

17. Stamens free from
the petals

7 Stamens not more than 10:

18. Flowers 3-merous

18. Flowers 4-5-merous:

19. Petals 4; stamens 6

19. Petals usually 5, rarely 3-4;
stamens as many as or twice as
many as the sepals and petals:

20. Ovary 1-celled:

21. Herbs; stamens twice
as many as sepals

21. Trees; stamens as
many as the sepals
20. Ovary 2 - or more - celled; 
    if 1 - celled then distinctly 
    stipitate:

22. Filaments more or less 
    united; leaves simple:

23. Flowers regular; 
    sepals and petals 
    4 - 5; styles 3 - 5 ... LINACEAE

23. Flowers irregular; 
    sepals 5; petals 
    usually 3, if 4 - 5, 
    then keeled ... POLYGALACEAE

22. Filaments free, if united 
    at base then leaves 
    compound or deeply 
    palmately lobed; leaves 
    simple or compound:

24. Leaves castipulate ... SAPINDACEAE

24. Leaves stipulate:

25. Seeds many ... ELATINACEAE

25. Seed 1:

26. Seeds erect... STAPHYLACEAE

26. Seeds pendulous:

27. Leaves compound, opposite; stamens 
    10, free ... ZYGOPHYLLACEAE

27. Leaves simple, if compound, then alternate; stamens 5 - 10, often united at 
    base:

28. Flowers irregular; stamens 5 ... BALSAMINACEAE

28. Flowers regular; stamens 8 - 10:

29. Climbers; leaves simple, 
    peltate; 3 petals fringed at 
    base ... TROPABOLACEAE

29. Erect herbs; leaves com-
    pound; petals not fringed ... OXALIDACEAE

6. Sepals more or less united at base:

30. Leaves pellucid gland - dotted ... RUTACEAE
30. Leaves not gland - dotted:

31. Leaves opposite; stamens 10; disk obscure... 

32. Leaves alternate, if opposite, then disk large or stamens 5:

33. Carpels syncarpous:

34. Trees; leaves 2-3-pinnate; stamnodes 5-7; style solitary... 

35. Climbing shrubs; leaves simple; stamnodes absent; styles 3... 

36. Carpels syncarpous and septate or apocarpous:

37. Stamens alternate with the petals:

38. Ovules and seeds erect or ascending:

39. Ovules and seeds erect or ascending:
38. Ovary 1 - celled, if
   2 - 5 - celled, then
   leaves compound ... ANACARDIACEAE

38. Ovary 3 - 5 - celled:
   leaves simple:

39. Stamens 4 - 5:
   seeds arillate,
   usually albuminous ... CHLASTRACEAE

39. Stamens 3:
   seeds not arillate, not albuminous ... HIPPOCRATEACEAE

34. Stamens opposite the petals:

40. Leaves extipulate,
    ovules and seeds pendulous; fruits 1
    celled, 1 - seeded ... OXILOMIACEAE

40. Leaves stipulate, ovules
    and seeds erect or ascending; fruits
    usually 2 - 6 - seeded:

41. Scandent herbs or shrubs, rarely
    erect, usually tendrillar; ovary
    2 - celled, cells 2 - ovulate ... VITACEAE

41. Erect shrubs, without tendrils; ovary
    3 - 6 - celled, cells
    1 - ovulate ... 1. BRECON

5. Sepals usually valvate in bud, if imbricate, then petals valvate or bisexual flowers 3 - merous:

42. Flowers 3 - merous; sepals free, rarely united; leaves simple ... ANNONACEAE

42. Flowers 4 - 6 - merous, if 3 - merous, then leaves compound or petals 5; sepals usually united:

43. Filaments united into a column or cup:
44. Stamens usually 15, sometimes few, in a column or cup around the style or if stamens numerous, then petals absent

46. Stamens numerous, rarely few, in a column around the style with only short free filaments or dividing into groups opposite the petals:

45. Leaves simple; epicalyx usually present

45. Leaves digitately compound; epicalyx absent

43. Filaments free, rarely connate at base:

46. Leaves imparipinnate

46. Leaves simple, entire or lobed:

47. Stamens as many as and usually adnate to the base of the petals

47. Stamens numerous or at least twice as many as and free from the petals:

48. Petals ciliate or incisurate; stamens inserted on the disk between glands; fruit a drupe

48. Petals not ciliate or incisurate; stamens borne on a torus, glands absent, fruit capsular or separating into cocci

4. Stamens epigynous or perigynous calyx lobes united:

49. Stems fleshy, flat, articulated, spiny

49. Stems herbaceous or woody, if fleshy, then not flattened or articulated:

50. Ovary syncarpous, usually free from the calyx, occasionally inferior or semi-inferior, 1 - seeded:

51. Flowers unisexual
51. Flowers bisexual:

52. Small herbs; leaves glandular hairy; corona absent

53. Climbers; leaves not glandular hairy; corona present

50. Ovary of 1 or more free carpels, or if carpels united, then more than 1 - celled or if 1 - celled, then small herbs with pendulous ovules or leaves radical and glandular

53. Ovules attached to the inner angles or the bases of the carpels or cells, if in the apex, then ovules many

54. Carpels solitary; styles terminal; leaves usually stipulate; ovules on the inner angle of carpels

54. Carpels many or if solitary, then styles not terminal or ovules at the base of the carpels and leaves exstipulate

55. Flowers unisexual:

56. Free herbs, succulent; stamens many, united; styles free or united at base only; fruits winged

56. Climbers or prostrate herbs, not succulent; stamens usually 3; styles united or free only at apex; fruits not winged

55. Flowers bisexual, if polygamous then petals absent

57. Carpels free or if ultimately united, at least the styles distinct

58. Stamens numerous; leaves stipulate

58. Stamens 5 - 10; leaves exstipulate
59. Carpels free; sepals and petals 4 - 5; fruit follicular:

60. Fleshy herbs; leaves simple, opposite, rarely upper alternate ... Crassulaceae

60. Scandent shrubs or trees; leaves alternate, 1-foliolate or imparipinnate ... Connaraceae

59. Carpels united, or if free, then petals absent; fruit capsular:

61. Ovary 1-celled; ovules pendulous ... Vahliaceae

61. Ovary usually 2 - 5-celled, or if 1-celled, then petals absent; ovules axile or basal:

62. Stipules membranous, fugacious; stamens 3 - 5 ... Molluginaceae

62. Stipules absent; petioles dilated; stamens 5 - 20 ... Aizoaceae

57. Carpels and styles united throughout:
FLORA OF MAHABALESHWAR

63. Calyx lobes imbricate, or if valvate, then trees with flowers in long pendulous racemes and fruit a berry:

64. Stamens as many as or twice as many as petals; petals contorted in bud ... Melastomataceae

64. Stamens numerous; petals imbricate in buds:

65. Leaves opposite, usually gland-dotted ... Myrtaceae

65. Leaves alternate, not gland-dotted ... Lecythidaceae

63. Calyx lobes valvate:

66. Ovary completely or half adnate to the calyx tube ... Onagraceae

66. Ovary free from the calyx tube:

67. Ovary and fruit 10 - 15-celled ... Sonneratiaceae

67. Ovary and fruit 1 - 6-celled;

68. Usually herbs or shrubs; species 8 - 12, rarely trees with
numerous stamens; petals not wrinkled; plants wild ... Lythraceae

68. Shrubs or small trees; stamens numerous; petals wrinkled; plants always cultivated ... Punicaeae

58. Ovules pendulous from the apex of stamens or cells:

69. Ovule 1 in each cell; flowers bisexual:

70. Herbs; fruits dry with oil canals ... Apiaceae

70. Climbing shrubs; fruits shiny without oil canals ... Araliaceae

69. Ovules 2 or more in each cell, or if only 1, then aquatic herbs with unisexual flowers:

71. Aquatic herbs; styles 4; ovules solitary ... Haloragaceae

71. Terrestrial shrubs or trees; styles solitary; ovules more than one:

72. Leaves opposite, stipulate; petals filiform; fruits not winged ... Rhizophoraceae

72. Leaves opposite or alternate, exstipulate; petals not filiform; fruits usually winged ... Combretaceae

3. Petals united; stamens usually less than 12:

73. Ovary inferior; stamens as many as, rarely less than and always alternate with the corolla lobes:

74. Stamens free from the corolla:

75. Corolla irregular, 2-lipped; anthers connate at base ... Lobeliaceae

75. Corolla regular; anthers free ... Campanulaceae
74. Stamens inserted on the corolla:

76. Leaves opposite or whorled, usually stipulate; anthers free; ovary 2-10-celled ... **Rubiaceae**

76. Leaves usually alternate, exstipulate; anthers united into a tube; ovary 1-celled ... **Asteraceae**

73. Ovary superior, or if inferior, then stamens numerous or if semi-inferior, then stamens opposite the corolla lobes:

77. Ovary 1-celled; placentaion free central:

78. Corolla 2-lipped; stamens 2 ... **Lentibulariaceae**

78. Corolla regular; stamens as many as the corolla lobes:

79. Calyx with stipulate glands; styles 5-lobed; ovule solitary ... **Plumbaginaceae**

79. Calyx eglandular; styles not lobed; ovules 2-many:

80. Shrubs or trees; leaves often gland-dotted; fruit a berry ... **Myrtaceae**

80. Herbs; leaves not gland-dotted; fruit a capsule ... **Primulaceae**

77. Ovary 2-many-celled, placentaion axile, or if 1-celled, then placentaion parietal:

81. Stamens free from the corolla ... **Fagaceae**

81. Stamens inserted on the corolla:

82. Ovary 3 or more carpelled, or if 2-carpelled, then stamens as many as and opposite the corolla lobes or numerous:

83. Ovary superior, 2-8-celled; ovule 1 in each cell, axile; fruit a berry ... **Sapotaceae**

83. Ovary inferior, 3-celled; ovules 2-4 in each cell, pendulous; fruit a drupe ... **Symplocaceae**
82. Ovary 2 - carpelled or if 3 - 5 - carpelled, then stamens as many as and alternate with the corolla -lobes or flowers fewer:

84. Corolla regular or slightly oblique; stamens as many as and alternate with the corolla-lobes, or if corolla oblique or irregular and stamens fewer than the lobes, then corolla - limb pilcate or subconvergent or stamens 2 and alternate with carpels:

85. Leaves usually alternate, if opposite or subopposite, then ovary 4 - celled:

86. Ovules many in each cell

... SOLANACEAE

86. Ovules usually 2, rarely 1 - 4 in each cell:

87. Usually climbers; corolla lobes pilcate...CONVOLVULACEAE

87. Erect herbs, shrubs or trees; corolla lobes imbricate or contacted...BORAGINACEAE

85. Leaves opposite or whorled:

88. Stamens 2

... OLEACEAE

88. Stamens 4 or more:

89. Scapigrous herbs; flowers dimorphic...PLANTAGINACEAE

89. Stamens well developed; flowers monomorphic:

90. Flowers always 5 - merous; carpels free; styles united:

91. Pollens aggregated into pollinia attached to stigmatic glands:
91. Pollens not aggregated into pollenia ... Apocynaceae

90. Flowers 4 - 5 - merous; carpels and styles always united:

93. Shrubs or small trees; stipules absent; corolla lobes connate:

94. Aquatic herbs; stems cylindrical ... Menyanthaceae

94. Plants terrestrial; stems quadrangular ... Gentianaceae

84. Corolla irregular or distinctly oblique, lobes overlapping; or if regular and cells of ovary 1 - 2 - ovuled, then embryo with inferior radicle:
95. Carpels usually 1 - ovuled,
    if 2 - ovuled, then ovules
collateral, not super-
posed and fruit indehiscent.

96. Ovary usually lobed
    with 2 - axillary ovules
in each cell; stigma
usually entire; fruits
usually drupaceous ... Verbenaceae

96. Ovary usually entire, or
    if lobed, then with one
    basal ovule in each cell;
    stigma usually 2 - lobed;
    fruits usually noters ... Lamiaceae

95. Carpels 2 - many ovuled, or
    if only 2 - ovuled, then
    ovules superposed or if
collateral then fruit 2 - valved:

97. Ovary 1 - celled:

98. Leafless herbs,
    parasitic on roots ... Orobanchaceae

98. Leafy herbs or
    undershrubs, not
    parasitic ... Gesneriaceae

97. Ovary 2 - celled:

99. Fruits opening elasti-
cally from the apex
of 2 loculicidal
valves:

100. Erect or prostrate herbs or
    shrubs ... Acanthaceae

100. Climbers ... Thunbergiaceae

99. Fruits not opening
    as above:

101. Leaves
    compound;
    seeds winged ... Bignoniaceae

101. Leaves simple,
    sometimes
    lobed; seeds
    not winged:
102. Ovules
many on
placentas
attached to
the middle
of the
septum ... SCROPHULARIACEAE

102. Ovules
many, 1
seriately
under the
leaves of
a project-
ing pterix-
tal 2 -
bladed
placenta ... PEDALIACEAE

2. Perianth absent or 1 - seriate:

103. Flowers often bisexual; or if unisexual, then
embryo peripherie - annular or the ovule not
distinguishable from the carpellary tissue and the
seeds without testa or perianth lobes 2 - seriate and
anthers opening by valves; perianth usually single,
if double, then the outer whorl small, seeds without
testa and stamens opposite the inner perianth lobes:

104. Ovary inferior:

105. Stamens 6 - 12; ovary 4 - 6 celled;
ovoles many ... ARISTOLOCHIACEAE

105. Stamens as many as the perianth lobes,
ovoles 1 - celled; ovules 1 - 4:

106. Shrubs or trees, frequently root -
parasitic; ovules 2 - 4, pendulous
from a free - central column ... SANTALACEAE

106. Shrubs, stem parasitic; ovules
solitary, erect ... LORANTHACEAE

104. Ovary superior:

107. Seeds usually with copious albumen, if
albumen absent or scanty, then embryo
curved:

108. Leaves stipulate ... POLYGONACEAE

108. Leaves castipulate:

109. Perianth tubular ... NYCTAGINACEAE
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109. Perianth lobes connate only at base:

110. Leaves membranous, perianth scarious ... Amaranthaceae

110. Leaves fleshy; perianth not scarious ... Chenopodiaceae

107. Seeds usually exalbuminous, if albuminous, then embryo straight:

111. Aquatic herbs; flowers regular, 3-merous with a perianth or irregular, 2-merous, without a perianth Pongameliaceae

111. Terrestrial shrubs or trees; perianth always present:

112. Perianth tube narrowed above the ovary; lobes 4, valvate; stamens 4, alternate with the lobes ... Elagagnaceae

112. Perianth tube not narrowed above the ovary; lobes 4-6, imbricate; stamens 2-4-seriate:

113. Perianth lobes 2-seriate; filaments with 2 glands at base ... Lauraceae

113. Perianth lobes 1-seriate; filaments without glands ... Thymelaceae

103. Flowers usually unisexual, if bisexual, then perianth absent; perianth when present, single, or if double, then the outer whorl conspicuous with the stamens either all central or the outer whorl of stamens alternate with the inner perianth lobes; or if the stamens of the outer whorl opposite the inner perianth lobes, then the seed with a testa and the plant not parasitic; anthers never opening by valves:

114. Leafless herbs or trees:

115. Root parasitic herbs ... Balanophoraceae

115. Trees, not parasitic ... Casuarinaceae

114. Leafy herbs, shrubs or trees:
116. Ovary syncarpous, 1 - celled; ovules 4 or more, 2 - seriatly superposed on each placenta ... **Salicaceae**

116. Ovary 1 - carpelled, 1 - celled; or if syncarpous, then 2 - more - celled; ovules 1 - 2, collateral in each cell; or if ovary imperfectly 3 - 4 - celled with 6 - 8 ovules in each, then flowers bisexual:

117. Ovary usually 2 - more - celled, rarely 1 - celled with 2 ovules in each cell; or if ovary 1 - celled, 1 - ovuled, then stamens numerous ... **Euphorbiaceae**

117. Ovary 1 - celled, 1 - ovuled:

118. Stipules present:

119. Perianth always absent; seeds with copious albumen and a minute embryo ... **Piperaceae**

119. Perianth usually present; seeds with no or little albumen and a large embryo:

120. Filaments inflexed in bud with reversed anthers:

121. Plants with milky juice; flowers enclosed within a fleshy receptacle ... **Moraceae**

121. Plants with watery juice; flowers not enclosed within a receptacle ... **Urticaceae**

120. Filaments not inflexed in bud; anthers not reversed ... **Ulmaceae**

118. Stipules absent ... **Myristicaceae**

1. Leaves usually with parallel venation; flowers usually 3 merous; cotyledon 1:
122. Perianth 2 - seriate, usually both corolline, or if only
the inner series corolline, the perianth lobes much
greater than those of the outer series, or if perianth
1 - seriate, then ovary 1 - celled and scapigerous herbs:

123. Seeds minute, exalbuminous:

124. Outer perianth lobes calycine, inner
corolline or absent; flowers usually
unisexual

... Hydrocharitaceae

124. Perianth lobes of both series corolline;
flowers bisexual:

125. Flowers irregular; styles and stamens
united into a column; ovary 1 - celled

... Orchidaceae

125. Flowers regular; styles and stamens not
united

... Burmanniaceae

123. Seeds conspicuous, albuminous:

126. Ovary superior:

127. Outer perianth lobes calycine, inner
corolline

... Commelinaceae

127. Both perianth series corolline:

128. Plants woody; flowers unisexual

... Smilacaceae

128. Plants usually herbaceous; flowers
bisexual

... Liliaceae

126. Ovary inferior:

129. Flowers irregular

... Zingiberaceae

129. Flowers almost regular:

130. Ovules many in each cell, 2 -
seriate:

131. Shrubs; flowers in panicles
on stout scapes

... Agavaceae

131. Herbs; flowers in spike-like
racemes or umbels on
slender scapes

132. Rootstock tuberous;
leaves distinctly nerves;
perianth not showy

... Hypoxidaceae
137. Rootstock bulbous; leaves not distinctly
     showy  ... Amaryllidaceae

130. Ovules 2 - many in each cell; not
     2 - seriate:

133. Brass herbs; leaves radical;
     fruits not winged  ... Haemodoraceae

133. Climbing shrubs; leaves
     eauline; fruits winged  ... Dioscoreaceae

122. Perianth 2 - seriate, usually both calyptrae, or if inner
     series corolline, then its lobes not larger than those of
     the outer ones, or if the perianth 1 - seriate, then
     calyptrae and either terrestrial or aquatic herbs with
     1 - carpelled or apocarpous ovary, or perianth reduced
     to scales or bristles or wanting, or if perianth lobes of
     inner series corolline and larger than those of the outer
     one, then aquatic herbs with apocarpous ovary:

134. Perianth 2 - seriate  ... Arecales

134. Perianth absent or reduced to scales or bristles, or
     if present, then plants aquatic:

135. Inflorescence of spadices or spikes; or if
     flowers solitary, then not in the axils of
     modified, glumaceous bracts:

136. Terrestrial plants; flowers on a spadix
     subtended and usually covered by a
     modified spathe  ... Araceae

136. Aquatic or marshy plants, sometimes
     free-floating; flowers not on a spadix,
     or if so, then not covered by a spathe:

137. Free-floating herbs  ... Lemnaceae

137. Fixed herbs with creeping rootstock
     and floating or submerged stems:

138. Perianth of filiform bristles;
     ovary borne on a hairy
     synephrone  ... Typhaceae

138. Perianth not filiform, 3 -
     lobed; ovary sessile  ... Apocynaceae
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135. Inflorescence of heads or spikelets composed of solitary flowers in the axils of glumaceous bracts:

139. Flowers in heads, always unisexual; perianth lobes 3 - 6, membranous ... 

RIOCALCEAE

139. Flowers in spikelets with imbricating glumes, unisexual or bisexual, rarely dimorphic; perianth absent or reduced to scales or bristles:

140. Stems solid; leaf sheaths rarely with a ligule, closed in front; fruit a nut with the seed free within ... 

CYPERACEAE

140. Stems usually hollow except at nodes; leaf sheaths usually with a ligule, split in front; fruit a grain with seed coat adhering to the pericarp ... 

POACEAE

RANUNCULACEAE

1. Climbers; leaves opposite ... 

Clematis

1. Erect herbs; leaves alternate:

2. Leaves simple; petals present ... 

Delphinium

2. Leaves 3-foliate; petals absent ... 

Thalictrum

Clematis L.

1. Leaves glabrous:

2. Leaves bipinnately compound; leaflets 5; connective not produced beyond anther lobes ... 

C. gournieri

2. Leaves pinnately compound; leaflets 3 - 5; connective produced beyond anther lobes ... 

C. hedysarifolia

1. Leaves densely hairy:

3. Flowers yellow; filaments hairy in the middle ... 

C. wightiana

3. Flowers white; filaments glabrous ... 

C. triloba

Climbers. Leaflets ovate, rounded at base, acuminate at apex, 3 6 × 1.5 3.5 cm, middle lobe larger, entire or irregularly toothed. Flowers fragrant in compound panicles, 0.5 1.0 cm across. Achenes ovoid, ca 0.3 cm long.

Fls. & Frts. : November - February.


Climbers, wooden young branches puberulous. Leaflets ovate lanceolate, base rounded, apex acuminate, 3 8 × 2 5 cm. Flowers in compound panicles, 1.0 2.5 cm across. Achenes ovoid, 0.3 - 0.5 cm long, compressed, reddish, hairy.

Fls. & Frts. : November - February.


Distrib. : Frequent along ghats. Dhokewadi, Jadholi, Kumbharli ghat.


Climbers, branches tomentose. Leaves simple or unipinnate, ovate - orbicular, entire or 1 7 lobed. Flowers in axillary, corymbose panicles; bracts ovate, foliaceous. Achenes ovoid, flat, silky with long feathery tails.
Fls. & Frts.: September - November.


Notes: Included on the authority of Lisboa (op. cit.) who reported it from Mahabaleshwar.


Climbers, woody; branches villos. Leaves 3-5 foliolate; leaflets ovate, acute at apex, 4-6 x 2.5-4.0 cm. margins toothed. Flowers in axillary, dichotomous cymes; bracts and bracteoles ovate, villos. Achenes elongate, compressed, 0.2-0.4 cm long with feathery tails.

Fls. & Frts.: December - February.


Distrib.: Common in evergreen forests. Mahabaleshwar, on way to Panchgani.

Delphinium 1...


Herbs, ca 1 m high; stem white hairy. Leaves reniform or suborbicular, 2-3 cm across. Flowers blue in racemes; lower bracts leafy, 2-3-lobed, upper linear; bracteoles 2, subulate; sepals dark blue; spur subcuneate. Ovate, 3, oblong, apiculate.

Fls. & Frts.: September - December.

Iltus.: Munz, op. cit.

Distrib.: Rare, growing on exposed hills slopes among grasses, endemic to Western ghats. Mahabaleshwar, 158900
Thalictrum L.

1. Stipules fimbriate; sepals broadly obovate  ...  T. obovatum
1. Stipules not fimbriate; sepals oblong  ...  T. dalzellii


Herbs, ca 50 cm high. Leaves 3 foliolate; leaflets suborbicular, 2 4 cm across, margins irregularly lobed; stipules oblong, membranous, ca 1 cm long. Panicles leafy, terminal. Achenes furrowed, tips hooked.

Fls. & Frts. : July September.


Distrib. : Rare, usually above 1200 m in moist places along slopes. Mahabaleshwar, Laxman s.n. (BLAT).


Herbs, ca 45 cm high. Leaves 1 - 2 foliolate at apex, 3 - foliolate at base; leaflets orbicular, ca 3 cm across; margins dentate; stipules oblong, acute, ca 1 cm long, strongly nerved. Panicles leafy, terminal. Flowers sweet scented, ca 0.8 cm across; sepals broadly obovate, clawed, white; ovary stipitate.

Fls. & Frts. : July.

Distrib. : Rare, represented by the type collection only. Mahabaleshwar-Panchgani, E. Blatter p. 26 (BLAT).

Dilleniaceae

Dillenia L.

Trees, 8–10 m high. Leaves oblong-lanceolate, ca 60 cm long, at the apex of branches, downy when young. Fruits in axillary fascicles with persistent sepals, 5-seeded.

*Figs.:* June.

*Illus.:* Rxb., *op. cit.*

*Distrib.:* Koyna, Kochhar 153517; Mahabaleshwar, *Birdwood op. cit.*

*Notes:* Though Cooke (*op. cit.*) has reported it as common along Western Ghats, besides Birdwood's, there is only one collection from Koyna.

**MAGNOLIACEAE**

**CULTIVATED SPECIES**


Trees, 6–8 m high. Leaves lanceolate, acute at apex, 8–16 × 5–8 cm. Flowers yellow, axillary, solitary.

*Fls.:* May–August.


*Distrib.:* Cultivated for fragrant flowers. Koyna.

**ANNONACEAE**

1. Large climbers

1. Shrubs or small trees:

2. Connective produced beyond the anther lobes:

3. Flowers straw coloured, solitary; carpels 2 more—seeded

4. Connective not produced beyond the anthers

... *Uvaria*

... *Meiogyne*

... *Polyalthia*

... *Sageraea*
**Meiogyne Miq.**

*M. pannosa* (Dalz.) Sinclair in Sarawak Mus. J. 5: 604. 1951; 
Raiz. in Indian Forester 84: 495. 1958. *Unona pannosa* Dalz. in Hook. 
Kew J. Bot. 3: 207. 1851; Hook. f. & Thoms. in Hook. f. Fl. Brit. India 

Trees, ca 8 m high; young branches puberulous. Leaves ovate 
lanceolate, pubescent and pellucid dotted beneath. Flowers axillary, 
brown tomentose. Carpels many, ovoid.

*Fls.* & *Ffrs.*: March October.


*Distrib.*: Rare in semi-evergreen forests. Koyna. *Kochhar* 154379.

**Polyalthia Bl.**

*Polyalthia cerasoidea* (Roxb.) Bred. Fl. Sylv. 2: 1. 1896; Bth. & 
Roxb. Pl. Cor. 1: t. 38. 1795.

Shrubs or small trees; young branches rufous tomentose. Leaves 
oblong lanceolate, glabrous above, pubescent beneath. Sepals ovate, 
acute; petals oblong. Carpels ovoid.

*Fls.*: March.

*Notes:* Included on the authority of Lee (op. cit.) who reported it 
from Mahabaleshwar. Occurrence of this species seems to be rather 
doubtful as no subsequent collector could locate it (Bole & Almeida, 

**Sagerabha Driz.**

*Sagerabha laurifolia* (Grah.) Blatt. in J. Bombay nat. Hist. Soc. 34: 
dalcellii* Hook. f. & Thoms. in Hook. f. Fl. Brit. India 1: 92. 1872; Bird-
wood, Cat. Fl. Matheran & Mahabaleshwar 6. 1897; Cooke, Fl. Pres. 
Bombay 1: 18. 1958 (Repr. ed.).
Trees. Leaves oblong-lanceolate. Flowers white, solitary or in axillary fascicles on woody tubercles.

_Fls._ : November.


_Notes_ : Included on Birdwood’s report from Mahabaleshwar.

**Uvaria L.**


This is a species growing in Khasia Hills (Hook. f. & Thoms. _op. cit._) and has not been reported from elsewhere. Hence the identity is doubtful and I am not able to decide in the absence of Birdwood’s collection which are not available at BLAT or any other herbaria.


Climbers. Leaves oblong-lanceolate. Flowers reddish, terminal, solitary; sepals 3, orbicular-ovate, tomentose; petals 6, 2 seriate; stamens many.

_Fls._ : November.

_Note_ : Included on Birdwood’s report from Mahabaleshwar.

**Cultivated Species**


Trees, _ca 8 m_ high. Leaves oblong-lanceolate, acute at apex. Flowers 2 - 4 together on lateral pedicels. Fruits globose, yellowish-red when ripe.

_Fls. & Frts._ : July September.

Distrib.: Cultivated for edible fruits. Vasota.


Trees, 5–6 m high. Leaves elliptic, apex subacute. Flowers solitary or 2–4 together on extra axillary branches. Fruits globose, 5–7 cm across, yellowish-green when ripe.

Fls. & Frts.: April–July.


Distrib.: Cultivated for edible fruits. Dhebewadi, Mahuli.

MENISPERMACEAE

1. Leaves peltate; stamens connate:

2. Leaves glabrous beneath... Stephanha

3. Leaves hairy beneath or on both surfaces:

4. Leaves ovate-oblong or sub-hastate; flowers in cymes

5. Stems grooved; leaves cordate

6. Stems not grooved; leaves reniform

CISSAMPHELOS L.

Climbers, branches striate, pubescent. Leaves 3 - 7 cm across. Male flowers in axillary cymes; sepals obovate, concave, hairy; petals connate into a short cup; female flowers in axillary racemes; bracts reniform, villous; sepals ovate, pubescent; petals half the length of the sepals. Drupes subglobose, red, hairy.

Fls. & Frts.: July August.

Illus.: Maheshwari, Ill. Fl. Delhi f. 2. 1966.

Distrib.: Common along forest edges. Koyna-Karad, Mahabaleshwar, Pandavgad, Salve.

Notes: Roots used against dysentery.

**COCCULUS DC.**


Climbers, branches striate. Leaves 2.5 - 5.0 × 1.5 - 4.0 cm. Male flowers: sepals 2 striate, oblong-ovate; petals emarginate; female flowers: sepals and petals as in the male. Drupes laterally compressed; endocarp horned, shoe shaped.

Fls. & Frts.: November January.


Distrib.: Common near forest margins. Panchgani ghat, Pirachi wadi, Shamgaon.

**CYCLEA LAM.**

Climbers; leaves 6 - 10 × 3 - 4 cm. Flowers small, greenish. Male flowers: sepals connate, pilose; petals connate, shorter than the sepals; female flowers: sepals oblong; petals orbicular. Drupes subglobose, pilose.

_Fls. & Frts._: February - August.


_Distrib._: Common along ghats. Dindoli, Ksighar ghats, Kisrude, Koyna, Mahabaleshwar-Pratapgad.

**Diploclisia Miers**


Climbers; leaves 4 - 7 × 5.0 - 10.5 cm; petioles 12 cm long. Flowers yellow, fragrant; calyx 2 seriate; petals embracing the stamens. Drupes 1.5 × 1.0 cm with prominent basal style scar.

_Fls. & Frts._: April - September.

_Illus._: Talbot, For. Fl. Bombay Pres. & Sind 1: 40, f. 25. 1909; Diels, _op. cit._

_Distrib._: Common along ghats in thick forests. Indoli, Koyna, Mahabaleshwar-Pratapgad, Navja, Shirahingi.

**Stephania Lour.**


Climbers; leaves 4.8 - 10.0 × 3.6 - 8.5 cm, base rounded, apex mucronate; petioles slender, 4.5 cm long, striate. Flowers small; sepals ovate, acute; petals obovate. Fruits obovoid, compressed, ridged.

_Fls. & Frts._: July - October.

Distrib.: Common along ghats; Dicholi, Kas, Kelghar ghat, Khambil chorghe ghat, Lingmala, Machutar forest, Mahabaleshwar, Tapola, Wada below Mahabaleshwar.

TINOSPORA Miers.

1. Leaves glabrous; flowers yellow ... T. cordifolia
1. Leaves tumidose beneath; flowers green ... T. sinensis


Climbers; large, woody; bark corky. Leaves membranous, 3 - 4 × 2.5 - 4.0 cm. Flowers in long, pendulous racemes. Drupes 3: endocarp red, dorsally keeled.

Fls. & Frts.: April May.

Illus.: Wight, Ic. t. 485 486. 1841.

Distrib.: Rare. Medha, 165644.

Notes: Plant juice used in fever and jaundice.


Climbers; leaves ovate, acuminate at apex, 10 - 15 × 7.5 - 12.5 cm; pedicels twisted at base. Flowers green in axillary racemes. Drupes ovoid, red, 1 3 together.

Fls. & Frts.: November January.

FLORA OF MAHABALESHWAR

Notes: Rare; included on the authority of Bole & Almeida (op. cit.) who reported it from Fitzgerald ghat near Mahabaleshwar.

NYMPHAEACEAE

CULTIVATED SPECIES


Herbs; leaves peltate, orbicular or elliptic, entire or sinuate dentate. Flowers red, white or blue. Berries globular, spongy.

Fls. & Frts.: Throughout the year.

Illus.: Wight, Ic. t. 178. 1841.

Notes: Ornamental plant, included on Bole & Almeida’s report from Mahabaleshwar.

PAPAVERACEAE

ARGEMONE L.


Herbs, ca 1 m high with yellow juice. Leaves sessile, amplexicaul, 5 - 9 cm long, spiny on veins and margin. Flowers solitary, bright yellow; calyx prickly. Capsules oblong, 2 - 3 cm long, prickly. Seeds globose, blackish-brown.

Fls. & Frts.: Throughout the year.


Note: Latex is used to cure eye ailments.
BRASSICACEAE

1. Petals usually absent, if present, white; pods didymous ... Coronopus

1. Petals always present, yellow; pods not didymous:

2. Leaves hairy; pods linear, flattened ... Cardamine

2. Leaves glabrous; pods subterete ... Rorippa

Cardamine


Herbs, 15 - 20 cm high. Leaflets 5, terminal larger, up to 2 - 7 cm long. Flowers in lax racemes. Pods ca 3 cm long.

Fls. & Frts.: July - November.


Distrib.: Common in wet places, along slopes and rock crevices. Kumbharli ghat, Kasapur, Mahabalishwar, Mahabalishwar - Lingmala, Nauja, Panchgani, Pandavagad.

Coronopus


Herbs, 15 - 30 cm high. Radical leaves pinnatifid, 2 - 3 cm long, hairy; cauline smaller. Racemes 1 - 5 cm long. Pods small, compressed, reddish brown, rugose.

Fls. & Frts.: January - March.

Illus.: Maheshwari, Ill. Fl. Delhi, f. 5. 1966.

Distrib.: Weed of roadsides and forest edges. Mahabalishwar.

Herbs, 10 - 15 cm high. Leaves lanceolate, 3 - 8 cm long, pinnatifid at base. Pods 1.0 - 1.5 cm long, straight. Seeds 2 seriate, numerous, red, ellipsoid.

Fls. & Frts. : November - January.

Distrib. : Common in cultivated fields and wet places. Mahabaleshwar.

CULTIVATED AND INTRODUCED SPECIES


Herbs, erect. Leaves lyrate-pinnatifid. Flowers yellow in elongate racemes. Pods up to 4.5 cm, 2 - valved.

Fls. & Frts. : March - April.

Distrib. : Common under cultivation, also found as an escape. Tapola.


Herbs, erect up to 50 cm high. Leaves lanceolate, entire or dentate, lower leaves pinnatifid. Flowers yellow. Pods erect, up to 3 cm long. Seeds many, reticulate.

Fls. & Frts. : August - October.

Distrib. : Common annuals, also found as an escape along roadsides. Panchgani.

**Distrib.** : Common vegetable grown in agricultural farms Mahabaleshwar.


**Distrib.** : Common vegetable, widely cultivated throughout the district.


Herbs, 20 - 50 cm high. Leaves radical, rosulate, oblong, 4 - 6 cm long, hairy. Flowers white in corymbs. Pods obcordate, cuneate at base, many seeded.

*Fls. & Frts.* : November - April.

**Distrib.** : Common weed near agricultural fields Mahabaleshwar.


Herbs, erect or ascending, 10 - 40 cm high. Lower leaves petiolate, pinnatifid, upper sessile. Flowers in corymbose racemes. Pods broadly ellipsoid. Seeds reddish brown.

*Fls. & Frts.* : January - June.

**Distrib.** : A garden escape near moist places. Venna lake. Mahabaleshwar.


Herbs. Lower leaves petioled, pinnatifid, upper sessile. Flowers in lax racemes. Pods oblong, cu 0.5 × 0.4 cm, 2 valved.

*Fls. & Frts.* : January - April.
**FLORA OF MAHABALESHWAR**

*Distrib.*: Rare. Mahabaleshwar, Soman 157190.


Herbs, annuals or biennials. Leaves pinnately compound; leaflets 3-5 pairs, ovate-oblong, sessile. Flowers small, yellow in racemes. Pods shortly cylindric. Seeds minute, ovoid-rounded, 2-seriate, red.

*Fls. & Frts.*: December - April.

*Distrib.*: Growing near water. Lingmala, Mahabaleshwar.


*Fls. & Frts.*: November - April.

*Distrib.*: Common vegetable grown throughout the district.

**CAPPARACEAE**

1. Herbs; fruits capsular
   
1. Shrubs or trees; fruits succulent:
   
   2. Unarmed shrubs; sepals biseriate, united into a tube; petals when present, smaller than sepals
   
      ... **Maerua**

   2. Armed, especially at base of stem; sepals biseriate, not united into a tube; petals longer than sepals
   
      ... **Capparis**

**Capparis L.**

1. Apparently leafless; leaves when present, small, caducous
   
   ... **C. decidua**

1. Leaves well developed, persistent:

   2. Flowers solitary, axillary:
3. Outer sepals connate in bud; inner petaloid; 
   fruits with warted or sculptured pericarps with 
   knob-like projections ... C. divaricata

3. Sepals all free, never petaloid; fruits smooth, 
   pericarp ribbed ... C. spinosa

2. Flowers in supra axillary rows or in corymbos or 
   umbels :

4. Inflorescence supra axillary in serial rows of 
   2 - 6 :

5. Twigs pubescent; flowers 2.5 - 5.0 cm 
   across; berries many seeded ... C. zeylanica

5. Twigs glabrous; flowers 0.8 - 1.2 cm across; 
   berries 3 - 4 seeded ... C. tenera

4. Inflorescence corymbose or umbellate :

6. Thorns dimorphic, long, straight and acicular 
   or both sharply recurved; inflorescence of 
   umbels; flowers under 1.2 cm across; berries 
   1 - seeded ... C. rotundifolia

6. Thorns not dimorphic; flowers corymbose, 
   exceeding 1.5 cm across; berries many 
   seeded:

7. Leaves velvety pubescent; flowers 
   2.5 - 3.0 cm across ... C. grandis

7. Leaves glabrous; flowers 7 - 12 cm across ... C. moami

*Capparis decidua* (Forsk.) Edgew. in J. Linn. Soc. 6: 184. 1862; 
Bombay 1: 49. 1958 (Repr. ed.). "Nepti".

Shrubs, straggling or small trees, ca 7 m high, densely armed; 
branches zig-zag. Leaves confined to young twigs. Flowers orange red 
in racemes; sepals 4, bi-seriate; petals concave. Berries globose, 
1.4 - 2.0 cm across, scarlet.

*Fls. & Frts.*: July August.


*Distrib.*: Occasional in dry areas. Phaltan.
Notes: A showy plant when in flowers and fruits.


Shrubs or small trees. Leaves dimorphic, young ones linear, obtuse, pubescent, mature, narrowly oblong, lateral nerves 3 - 5. Flowers large, greenish, tomentose, 3 - 5 cm across. Fruits globose or ellipsoid, ca 5 cm across, scarlet.

*Fls. & Frts.:* April - May.

*Illus.:* Wight, 1c. t. 889. 1844; Jacobs op. cit.

Notes: Included on Lisboa’s report from Mahabaleshwar.


Trees; young branches tomentose. Leaves broadly ovate - obtuse, 4.0 - 5.5 × 3.8 - 4.5 cm, velvety pubescent becoming subglabrous. Flowers white, pubescent. Fruits 2.2 - 2.8 cm across.

*Fls. & Frts.:* July - August.


*Distrib.:* Rare in grasslands. Satara road station. 165755.


Shrubs, ascending up to 3 m long. Leaves elliptic - oblong, 5 - 10 × 3 - 5 cm. Flowers fragrant, white, puberulous. Fruits subglobose, 5 - 10 cm across, reddish - brown when ripe.

*Fls. & Frts.:* November - June.

**Distrib.** : Frequent in scrub forests. Kumbharli ghat, Nauja, Satara road station.

**Notes** : Pulverised fruits used in treatment of tuberculosis.


Shrubs, 1-3 m high. Leaves broadly elliptic or orbicular, 2-4 × 1.0-2.7 cm, apex mucronate. Flowers white. Berries white, ovoid globose, 0.9-1.5 × 0.8-1.1 cm across.

**Fls. & Frts.** : February - August.


**Distrib.** : Common component of semi-evergreen forests. Ambeghar, Linga, way to Pratapgarh.


Shrubs ; branches diffused, pubescent when young. Leaves variable, broadly ovate to orbicular, glabrous or pubescent. Flowers white. Fruits obovoid, red when ripe. Seeds globose, embedded in scarlet pulp.

**Fls. & Frts.** : January - March.


**Distrib.** : Occasional in dry stream beds. Mahabaleshwar.


Shrubs, climbing. Leaves ovate - oblong to lanceolate. Flowers white. Berries up to 1 cm across.
**FLORA OF MAHABALESHWAR**

*Fls. & Frts.*: March - May.

*Notes*: Included on the authority of Lisboa (*op. cit.*) who reported it from Mahabaleshwar. However, this species is so far restricted to Karnataka and has not been collected from Maharashtra.


Climbers: stem and young branches reddish brown. Leaves elliptic-oblong to elliptic-ovate, 3.5 - 5.0 x 1.5 - 2.8 cm. Flowers white. Berries subglobose-oblong.

*Fls. & Frts.*: December - April.


*Distrib.*: Occasional. Dhyati, Parli.

*Notes*: Cooke's *C. zeylanica* is *C. brevispina* DC. which is restricted to Konkan and his *C. horrida* is *C. zeylanica* L.

**CLEOME L.**

1. Androgynophore present; stamens 6
   1. Androgynophore absent; stamens more than 6:
   2. Leaves simple; flowers pink or purple
   3. Leaves compound; flowers yellow

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Herbs, ca 1 m high. Leaflets sessile, middle lobe longer. Bracts leafy, trifoliate, sepals deciduous; petals obovate with a long narrow claw; gynophore 1 - 2 cm long. Capsules elongate, cylindrical. 6 - 8 cm long. Seeds dark brown.
**Fis. & Frts.:** June - August.

**Ilhus.:** Maheshwari, Ill. Fl. Delhi, f. 10. 1966.

**Distrib.:** Common near cultivated fields. Pingli.


Herbs. 15 - 40 cm high; stem strigose with rigid spinular hairs. Leaves: lower petiolate, upper sessile, obovate, 1.2 - 3.0 × 0.4 - 0.8 cm. Flowers solitary in the axis of leafy bracts. Capsules elongate, ca. 3.5 cm long, beaked. Seeds 6 - 15, globose, yellowish.

**Fis. & Frts.:** July - September.

**Distrib.:** Frequent near cultivated fields and along roadsides. Dhavadi, Dhebewadi, Ghoti.


Herbs. ca. 1 m high, viscid glandular. Leaflets subsessile, 1 - 2 × 0.5 - 1.3 cm. Flowers in axillary racemes; sepals oblong lanceolate; petals oblong - obovate. Capsules cylindrical, ca. 5 cm long, glandular pubescent. Seeds 30 - 40, reniform, dark brown.

**Fis. & Frts.:** August - September.

**Ilhus.:** Maheshwari, Ill. Fl. Delhi, f. 9. 1966.

**Distrib.:** Weeds with foetid smell near cultivated fields and in waste places. Karad.

**Cultivated Species**

Herbs, ca 1 m high; leaves 3-5 foliolate; leaflets elliptic-ovate, base cuneate, apex acuminate. Flowers rosy in dense racemes. Capsules 5-8 cm long, pubescent. Seeds muricate.

_Fls. & Fris._: April - May.

*Notes*: Cultivated in gardens for showy flowers. Included on Lisboa’s _op. cit._ report from Mahabaleshwar.

**MÆRUA FORSK.**


Shrubs, 2-4 m high; branches divaricate. Leaves elliptic-oblong, 2.5-5.0 x 1.0-2.5 cm, base and apex obtuse. Flowers greenish white, ca 2.5 cm across in terminal or lateral, dense corymbs; sepals hooded and horned at apex, pubescent along margins. Berries monoïlliform, 5-12 cm long, pale brown.

_Fls. & Fris._: November - March.

_Illus._: Bhandari, _Fl. Indian Desert_ 43, f. 10. 1978.

*Notes*: Included on the authority of _Cooke (op. cit._) who reported it from Kamatki ghat near Wai.

**BIXACEAE**

**CULTIVATED SPECIES**


Small trees. Leaves ovate, 7-11 x 4.7-7.5 cm, base subcordate, apex acuminate. Flowers pink or white in terminal panicles. Capsules subglobose, 2-valved, prickly.
**BOTANICAL SURVEY OF INDIA**

*Fls. & Frts.*: August - September.


*Distrib.*: Cultivated for seeds used in dyeing industry; introduced from America. Koyna.

**FLACOURTIACEAE**

1. Flowers unisexual, in racemes; fruit a drupe ... **FLACOURTIA**

1. Flowers bisexual, in axillary fascicles; fruit a capsule ... **CAREARIA**

**CASEARIA Jacq.**


Trees, 6 - 8 m high. Leaves broadly elliptic, 9.0 14.5 × 3.5 6.5 cm, base obtuse, apex acute; stipules deciduous. Flowers green; petals absent. Capsules ellipsoid, ca 2 cm long, yellow.

*Fls. & Frts.*: February November.

*Distrib.*: Common in deciduous forests along ghats. Dicholi, Jadholi, Karanjewadi, Koyna, Shirshingi.

**FLACOURTIA Commers.**


Trees, 6 - 9 m high, armed or unarmed. Leaves broadly elliptic obovate, 2 - 10 × 1 6 cm, coriaceous. Base tapering. Apex acute or obtuse. Flowers greenish white; sepals ovate, connate at base; petals absent. Drupes globose, ca 1 cm across, purplish red when ripe.
Flora of Mahabaleshwar

Fles. & Frts.: April - July.


Distri.: Common in deciduous forests. Goreghar, Kas, Koyna, Lingmala, Mahabaleshwar, Panchgani, Pimpodshi, Pirachi Wadi, Shangshat.

PITTOSPORACEAE

PITTOSPORUM Banks

1. Young branches, inflorescence and capsules densely tomentose ... P. dasycaulon
1. Young branches, inflorescence and capsules glabrous ... P. wightii


Trees, 5 - 7 m high. Leaves oblong lanceolate, 7.5 x 2.7 cm, crowded at apex. Flowers yellow in terminal or pseudoterminal umbels; petals oblong. Capsules ca 1 cm across, 2 valved. Seeds red.

Fles. & Frts.: September - February.


Distri.: Rare, endemic to Western Ghats. Shirshingi, Kochhar 158275.


Trees, 6 - 9 m high. Leaves oblong or lanceolate, 4.5 - 9.5 x 2 - 3 cm, base cuneate, apex acuminate, entire or ciliate - dentate. Flowers yellow in terminal corymb; sepals oblong, ciliate; petals oblanccolate. Capsules globose, ca 1 cm across, 2 valved. Seeds red turning black.

Fles. & Frts.: February - September.

**Distrib.** : Common along ghats in semievergreen forests. Kelghar ghat, Rotunda ghat below Mahabaleshwar, Shirshingi

**Notes** : According to Mukherjee (op. cit.) P. floribundum consists of two elements, one Himalayan and the other peninsular Indian. The name P. floribundum Wight & Arn. ex Royle (1834) is applicable to the Himalayan plants. He, therefore, proposed a new name for peninsular Indian plants.

**POLYGALACEAE**

**Polygala L.**

1. Leaves oblong-lanceolate; wing sepals suborbicular ... *P. pensylvanicaefolia*

1. Leaves obovate or linear; wing sepals ovate-acuminate:

2. Wing sepals with strong midrib ... *P. eriopetala*

2. Wing sepals without midrib ... *P. arvensis*


Herbs, 15 - 20 cm high. Leaves 1.5 - 3.0 × 0.8 - 1.4 cm, base subacute, apex obtuse. Flowers yellow in axillary, capititate racemes. Capsules didynamous, orbicular-oblong, ciliolate. Seeds 2, black; stropheole with 3 basal appendages.

**Fls. & Frts.** : July - September.


**Distrib.** : Frequent and ephemeral species in grasslands. Bhosgaon.

**Notes** : According to Burtt (op. cit.), Indian yellow flowered species which is misidentified as *P. chinensis* L., is actually *P. arvensis* Willd. When he studied the type specimen of *P. chinensis* L. it turned out to be
P. glomerata Lour. He therefore, recommends to abandon the name P. chinensis L. and the two plants may be known as P. arvensis Willd. and P. glomerata Lour. respectively.


Herbs, annual, ascending. Leaves variable, oblong - obovate to narrow linear, base cuneate, apex obtuse, hairy. Flowers yellow in axillary or extra - axillary few flowered racemes. Capsules oblong - elliptic, pubescent, obliquely emarginate.

Fls. & Frts. : August.

Notes : Included on Blatter's report from Pasarni ghat, near Panchgani.


Herbs, 10 - 40 cm high. Leaves subsessile, 2 - 4 x 0.5 - 1.2 cm, base attenuate, apex subacute. Flowers pinkish - violet in axillary and terminal racemes. Capsules elliptic - oblong. Seeds oblong, densely hairy, strophiole hemispheric.

Fls. & Frts. : September - November.


Distrib. : Common monsoon herbs on hill tops and in grasslands. Dhom dam, Wai, Lingmala, Mahabaleshwar, Panchgani, Yavatshwar.

CARYOPHYLLACEAE

1. Stipules scarious
   1. Stipules absent :
   2. Leaves ovate - oblong
   2. Leaves linear

... POLYCARPON

... STELLARIA

... SAGINA
Polycarpolum L.


Herbs, prostrate. Leaves linear - oblong, upto 2 cm long, base narrow, apex obtuse, pubescent or glabrous. Flowers pinkish - purple in axillary and terminal dichotomous cymes; calyx keeled. Capsules ovoid - globose, 3 - valved.

*Fls. & Fris.*: April - July.

*Illus.*: Turr. & Milne - Redhead, *op. cit.*

*Distrib.*: Common in wet places. Koyna, Mahabaleshwar, Old Mahabaleshwar, Shirshingi, Taldeo.

Sagina L.


Herbs. 1.25 - 4.5 cm long. Leaves linear, subulate, 0.4 - 1.0 cm long. Flowers solitary, 2.5 - 3.0 cm across, pentamerosus, rarely tetramerous. Capsules elliptic or ovoid, ca 0.2 cm long. Seeds asymmetrically reniform, brown, minutely tuberculate.

*Fls. & Fris.*: October - December.

*Illus.*: T.S. Nayar, *op. cit.*

*Distrib.*: Panchgani, T.S. Nayar 158764, 412 (K).

**Notes**: Cooke has not reported this genus from erstwhile Bombay presidency. This species has been earlier reported from Assam and West Bengal only. The present collection is a distributional record for peninsular India. (Nayar, *op. cit.*).

Herbs, annuals, diffusely branched. Leaves : upper sessile, elliptic oblong, lower ovate, 1.0 - 2.5 cm long, base obtuse, apex apiculate. Flowers white, axillary, solitary. Capsules ovoid, 3 - valved. Seeds many, brown, tubercled.

Fls. & Frts. : March - April.


Fls. & Frts. : February - March.


Cultivated Species


Notes : Included on Blatter’s report from Mahabaleshwar and Panchgani.
PORTULACACEAE

PORTULACA L.

1. Leaves alternate; nodes without appendages; flowers in terminal fascicles ...  P. oleracea

1. Leaves opposite, nodes with a ring of silvery hairs; flowers solitary ...  P. quadrifida


Herbs, succulent, prostrate; stem reddish, swollen at nodes. Leaves subsessile, obovate spatulate, ca 2.0 × 1.5 cm, base tapering, apex rounded. Flowers yellow; sepals lanceolate; petals obovate. Capsules ovoid. Seeds many, black.

Fls. & Frts.: April July.


Distrib.: Common weed in waste places and cultivated fields. Girvi, Mahabaleshwar, Old Mahabaleshwar, Satara road, Taldco.


Herbs, prostrate. Leaves small, elliptic oblong, 1.0 × 0.3 cm, base cuneate, apex acute, fleshy. Flowers yellow, subsessile, surrounded by silvery hairs and involucre of 4 leaves. Capsules oblong, ca 0.3 cm long. Seeds tubercled.

Fls. & Frts.: July.

Illus.: Wight, Jc. t. 109. 1839.

Distrib.: Weed near cultivated fields. Phaltan.

ELATINACEAE

BERGIA L.

Herbs, glandular pubescent. Leaves oblong-lanceolate, 1.2 × 0.3 cm, base tapering, apex acute, margins sharply serrulate. Flowers minute in axillary fascicles; sepals 5 - keeled. Capsules subglobose. Seeds many, minute, shining.

*Flv & Frts.* - November - December


*Distrib.*: Tiny herbs in marshy places. Mahabaleshwar.

**CLUSIACEAE**

1. Leaves large, coriaceous: calyx splitting into 2 - valves ....... **Mammea**

1. Leaves small, thin: calyx 4 - lobed:
   1. Flowers unisexual in axillary fascicles ............ **Garcinia**
   2. Flowers bisexual, axillary, solitary .............. **Mesua**

**Garcinia L.**

1. Leaves oblong-lanceolate; flowers tetramerous ............ **G. indica**

1. Leaves broadly elliptic; flowers pentameric ............ **G. talbotii**


Trees, 6 - 10 m high. Leaves ca 4 - 8 × 1.0 - 2.5 cm, membranous, base and apex acute. Flowers yellowish. Fruits globose, ca 3 cm across.

*Fls. & Frts.*: February - April.


*Distrib.*: Occasional along hill slopes, also under cultivation. Kusapur, Mahabaleshwar.

Trees, 5–8 m high. Leaves ca 10 16 × 4–8 cm. Flowers creamish white. Fruits subglobose, ca 3.0 × 2.5 cm.

Fls. & Frts.: April June.

Distrib.: Frequent in semi-evergreen forests. Jangli jaigad, Vasota.

MAMMEA L.


Trees, 8–12 m high. Leaves oblong, 15 20 × 5.0–6.5 cm, base rounded, apex obtuse. Flowers white with pink streaks in the axils of fallen leaves. Fruits ovoid. 1 seeded.

Fls. & Frts.: February March.

Illus.: Wight, Ic. t. 1999, 1853.

Notes: Included on Birdwood’s report from Mahabaleshwar.

MESUA L.


Trees, 8–15 m high. Leaves oblong-lanceolate, 7 12 × 2–4 cm, base rounded or acute, apex acute or acuminate. Flowers sessile, white, solitary or in pairs; stamens many, golden yellow. Fruits ovoid, 1–4 seeded.

Fls. & Frts.: March.
Illus.: Wight, Ic. t. 118. 1839.

Notes: Included on Blatter’s report from Mahabaleshwar.

TERNSTROEMIACEAE


Shrubs ca 2 m high. Leaves elliptic oblong, 10-20 × 3-6 cm, membranous. Flowers white, ca 3 cm across, Capsules leathery, trigonous. Seeds globose or obtusely angled, ca 1.8 cm across, smooth.

Notes: The ‘Tea’ plant, cultivated at Bilir estate near Panchgani (Bole & Almeida, op. cit.).

ANCISTROCLADACEAE

ANCISTROCLADUS Wall.


Shrubs. Leaves crowded at apex, oblanceolate, upto 8.0 × 6.5 cm, apex subacute. Flowers white in axillary panicles. Fruits small, 5 winged, calyx accrescent.

Fls. & Frts.: February.

Illus.: Wight, Ic. t. 1878-88. 1853.

Distrib.: Rare in semi-evergreen forests. Jangli jaigad. Kochhar 158337.

MALVACEAE

1. Trees

1. Herbs or shrubs:
2. Involucral bracts present; staminal column lobed at apex:

3. Carpels separating at maturity; style branches twice as many as the carpels
   Urena

3. Carpels not separating at maturity; style branches as many as the carpels:

4. Calyx spathaceous, deciduous
   Abelmoschus

4. Calyx not spathaceous, persistent:

5. Calyx truncate; style not divided at apex
   Theophrasia

5. Calyx 5-lobed; style divided at apex, connate at base
   Hibiscus

2. Involucral bracts present or absent; staminal column split into numerous antheriferous filaments:

6. Involucral bracts 3, linear
   Malvastrum

6. Involucral bracts absent:

7. Leaves orbicular-cordate; seeds 2-3 per mericarp
   Abutilon

7. Leaves ovate-obovate; seed 1 per mericarp
   Sida

**Abelmoschus Medic.**

1. Stem prickly; involucral bracts free
   A. manihot ssp. tetraphylla

1. Stem not prickly; involucral bracts connate
   A. angulosus


Herbs; branches covered with simple and stellate hairs. Leaves cordate, ca 10 cm long, apex acuminate, 5 lobed, hispid when young. Flowers large, ca 10 cm across in terminal racemes; calyx lobes ovate lanceolate; hispid. Capsules ovoid, ca 2.5 cm long, hairy.

Fts. & Frts.: November.

*Illus.*: Wight, le. t. 951. 1845.
Distrib.: Rare. Gureghar near Panchgani, T.S. Nayar 156208; Mahabaleshwar, Talbot 4505.

Notes: Cooke (op. cit.) doubted about the occurrence of this species from the erstwhile Bombay Presidency as there was only one collection by Stokks from Konkan without any precise locality. Recently, it is reported from Panchgani by Nayar (op. cit.) besides Talbot's collection from Mahabaleshwar which was the only collection from Maharashtra. The above collection after a lapse of 73 years confirms its occurrence though it is a rare in the district and the Maharashtra State also.


Herbs, 1 - 2 m high. Leaves orbicular, ca 10 cm across, 3 - 5 lobed, base cordate, prickly on the nerves beneath. Flowers solitary, axillary; calyx connate, splitting on one side, villous; corolla yellow with a purple centre. Capsules ca 3 cm long, oblong, densely bristly, 5 valved.

Fls. & Frts.: September November.


Distrib.: Jadholi, Mahabaleshwar, Pratapagad.

Notes: Bross. (op. cit.) has described two subspecies viz., tetraphyllus and manihot of which former is wild and latter cultivated. In Satara district only ssp. tetraphyllus is found occasionally which is easily recognised by its large yellow flowers.

Abutilum L.

1. Mericarps 15 - 22; sepals ovate ... A. indicum
1. Mericarps 5; sepals lanceolate ... A. persicum

Herbs, ca 50 cm high. Leaves cordate, upto 3.0 × 2.5 cm, 5–7 nerv. Flowers yellow, axillary, solitary; pedicels jointed above the middle. Carpels reniform, acute, dorsally hairy. Seeds ca 0.2 cm across, punctate.

Fls. & Frts. : March April.

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

Distrib. : Rare near cultivated fields. Karad, Phaltan.


Undershrubs, erect ca 1 m high, rootstock woody. Leaves ovate cordate, 5–12 × 2.5–9.0 cm, apex acuminate, tomentose. Flowers orange-yellow, axillary, solitary; calyx densely hairy; corolla ca 3 cm across. Carpels mucronate, slightly longer than the calyx.

Fls. & Frts. : November January.


HIBISCUS L.

1. Herbs, erect; sepals with leafy appendages .......... H. coccineus

1. Shrubs, creeping; calyx without leafy appendages:

2. Flowers solitary ....... H. hirtus

2. Flowers in fascicles ........ H. ovalifolius


Herbs, 50–100 cm high; stem covered with recurved prickles. Leaves 3–5 × 1.5–3.5 cm, palmately 3–5 lobed, prickly on the nerves. Flowers axillary, solitary; calyx lobes lanceolate, bristle; corolla yellow
with a purple centre. Capsules ovoid, acute, enclosed in accrescent calyx.

**Fls. & Frts.** : September - December.


**Distrib.** : Rarely distributed along ghats in moist deciduous forests, Koyna, Shirshingi.


Shrubs 1-2 m high. Leaves oblong, 7 12 x 2.5 6.0 cm, apex hairy. Flowers white or pink, axillary, solitary; epicalyx 6 9 lobed. Capsules globose. Seeds white hairy.

**Fls. & Frts.** : October - January.

**Notes** : A rare species, represented by a single collection by Acland from Mahabaleshwar deposited at BLAT.


Shrubs, up to 1.5 m high, erect, stellate hairy. Leaves oblong to ovate, ca 2 x 1 cm, base obtuse, apex acute, scabrid. Involucral bracts 6, filiform; corolla stellate hairy. Capsules ca 0.8 cm across. Seeds cottony.

**Fls. & Frts.** : June - August

**Illus.** : Maheshwari, Ill. Fl. Delhi, f. 29. 1966 (*H. micranthus*).

**Distrib.** : Slender herbs along roadsides. Rare. Satara Road Station, Puri 2397.

**CULTIVATED SPECIES**

Shrubs. Leaves ovate to ovate lanceolate, coarsely serrate. Flowers creamish, axillary, solitary.

*Fls.*: Throughout the year.

*Notes*: Cultivated as an ornamental plant in gardens.

**Kydia Roxb.**


Trees, 10-12 m high, young branches tomentose. Leaves orbicular, 4.5-8.5 × 3.7-10.7 cm, obtuse, shallowly lobed. Flowers white in dense axillary and terminal panicles; involucral bracts spatulate, strongly nerved. Capsules globose, bracts accrescent.

*Fls.* & *Frs.*: September–November.

*Illus.*: *Wight, Ill. t.* 879 80. 1844.

*Distrib.*: Frequent in moist deciduous forests, occasionally cultivated along roadsides. Karanjewadi, Khandala, Satara, Yaveshwar.

**Malvastrum A. Gray**


Herbs, ca 50 cm high, stellate hairy. Leaves ovate cordate, 3.0 × 2.5 cm, stellate hairy beneath. Flowers orange-yellow, axillary, solitary. Carpels 10-14, reniform, awned.

*Fls.* & *Frs.*: July–August.

*Illus.*: *Maheshwari, Ill. Fl. Delhi, f.* 26, 1966; *Hill, op. cit.*

Sida L.

1. Trailing herbs; leaves palm-nerved  ...  S. cordata
1. Erect or ascending herbs; leaves penninerved:
   2. Petioles spiny at base; cocci aristate  ...  S. spinosa
   2. Petioles not spiny; cocci acute:
      3. Flowers in panicles  ...  S. mysorensis
      3. Flowers solitary or in fascicles:
         4. Pedicels jointed below the middle  ...  S. rhombifolia
         4. Pedicels jointed above the middle  S. acuta


Herbs; branches minutely stellate hairy. Leaves lanceolate, subacute, puberulous beneath. Flowers yellow, axillary, solitary; pedicels jointed above the middle. Carpels 5 - 9, puberulous. Seeds black.

Fls. & Frts.: November - December.

Notes: Included on Bole & Almeida's report from Mahabaleshwar.


Herbs, ca 5 m long. Leaves cordate-ovate, 1.5 - 4.2 × 1.0 - 3.6 cm, apex acuminate, hairy. Flowers yellow, axillary, solitary or in fascicles; pedicels jointed above the middle, accrescent. Carpels 5, beak 2 - dentate, sparsely hairy.

Fls. & Frts.: February - July.

Distrib.: Common near cultivated fields and along roadsides. Bhogapur, Khator, Mahabaleshwar, Satara Road Station.


Herbs, ca 8 m high ; stem viscidly hairy. Leaves ca 6 x 5 cm, stellate hairy. Flowers yellow ; sepals keeled ; staminal column pubescent. Carpels 5, greyish puberulous.

Fls. & Frts.: January March.

Distrib.: Rare, found near cultivated fields. Vardhangad.


KEY TO THE SUBSPECIES

1. Leaves oblong - rhomboid ; pedicels much longer than the petioles

   ... ssp. rhombifolia

1. Leaves obovate, cuneate; pedicels as long as or slightly longer than the petioles

   ... ssp. retusa

ssp. rhombifolia

Herbs, ca 50 cm high. Leaves 1 3 x 0.7 4 cm, stellate hairy, entire at base, serrate at apex. Flowers yellowish orange ; calyx accrescent. Carpels 10, shortly awned.

Fls. & Frts.: October December.

Distrib.: Common weed in waste places. Khandala ghat, Koyna, Machutar forest, Mahabaleshwar.


Undershruibs, ca 1 m high ; young branches stellate hairy. Leaves 1 2 x 0.5 0.8 cm, glabrous above, tomentose beneath. Flowers yellow. Carpels 10, shortly awned.

Fls. & Frts.: November December

*Distr.*: Common in waste places, along roadsides, also found as a forest undergrowth. Koyna, Padolshi, Panchgani, Shirshingi.


Shrubs, suberect; branches grey hirsute. Leaves elliptic, base obtuse or cuneate, apex rounded. Flowers yellow. Carpels 3-6, pubescent.

*Fls. & Frts.*: October - November.

*Notes:* Included on Lisboa's report from Mahabaleshwar.

**Thespesia Soland, ex Cott.**


Shrubs ca 1 m high. Leaves 4 14 x 3 7 cm, cordate at base, 3-lobed. Flowers axillary, solitary or 1-3 together; corolla ca 3 cm across, yellow, crimson at centre. Capsules ca 2.5 cm long, rusty pubescent, 4-valved.

*Fls. & Frts.*: September - December.


*Distr.*: Common along hill slopes. Mahabaleshwar, Mhavashi, Nauja.

**Urena L.**

KEY TO THE SUBSPECIES

ssp. lobata

Herbs, ca 1 m high. Leaves 4.5 - 6.5 x 3.5 - 9.0 cm, stellate hairy, nerves with a gland at the base of midrib beneath. Flowers pink in axillary clusters. Capsules pubescent, spiny; spines with 2 recurved bristles.

Fls. & Frts.: November December.

Illus.: Maheshwari, Ill. Fl. Delhi, f. 27. 1966.

Distrib.: Occasional as a forest undergrowth. Hissule, Koyna.


Herbs, ca 1.5 m high, tomentose. Leaves stellate hairy with a gland at base on midrib beneath. Flowers pink in axillary, shortly pedicelled clusters. Capsules globose, pubescent, covered with hooked spines.

Fls. & Frts.: October February.

Distrib.: Common in waste places and along roadsides. Koyna valley, Morgiri, way to Patan.

CULTIVATED SPECIES


Herbs. Leaves cordate, shortly lobed or 5 angled. Flowers purple in axillary fascicles. Carpels 10 - 12, margin keeled on back. Seeds brownish black.

Notes: Cultivated as an ornamental plant. Included on Bole & Almeida's report from Mahabaleshwar.
FLORA OF MAMABALESHWAR

BOMBACACEAE

BOMBAX L.


Trees, 10-12 m high. Leaves digitate; leaflets ovate lanceolate, 7-15 cm long. Flowers solitary; calyx cup shaped, thick, irregularly lobed; corolla ca. 8 cm long, tomentose outside. Capsules ovoid, 7-10 cm long, downy.

*Fls.* & *Fris.* : December February.

*Illus.* : Bedd. Fl. Sylv. t. 82. 1871.

*Distrib.* : Frequent in deciduous forests along ghats, sometimes planted along roadsides, leafless when flowering. Ambeghar, Kelghar ghat, Shirshingi.

CULTIVATED SPECIES


Trees. Leaves digitate, deciduous; leaflets 3-9, obovate-oblong, acune or obtuse at apex. Flowers large, pendulous, tomentose. Fruits subglobose, ca. 7 cm across, indehiscent, tomentose.

*Notes* : There is only one incomplete sheet at BSI (Pune) collected by W. Burns from Shirala, Satara.

STERculiACEAE

1. Flowers unisexual; petals absent
2. Flowers bisexual; petals present:
   2. Leaves ovate - oblong; fruits spirally twisted follicles
   2. Leaves cordate; fruits 5-10 valved capsules

... "Sterculia"

... "Helicteres"

... "Eniolarna"
ERIOLEA DC.

1. Involucral bracts subpinnatifid
   
   E. candollei

1. Involucral bracts entire or toothed on margin
   
   E. quinquefoliaris


Fls. & Frts.: April May.

Illus.: Wall, op. cit.

Notes: Included on Lisboa’s report from Mahabaleshwar.


Trees, 4 - 5 m high. Leaves 5 - 7 × 3.5 - 5.0 cm, apex acuminate, stellate hairy above, softly tomentose beneath. Flowers yellow, axillary, 1 - 3 together; calyx and corolla pubescent without.

Fls. & Frts.: June.

Illus.: Wight, op. cit.

Distrib.: Rare in deciduous forests. Shirshingi, Kochhar 153448.

HELICTERES L.


Small trees or shrubs; young branches stellate hairy. Leaves 7 - 13 × 4 - 7 cm, base subcordate, apex rounded or subacute, stellate hairy.
Flowers red in axillary clusters; calyx tubular, obscurely 2 lipped; corolla 2-lipped with long claws. Follicles 3-5 3.5 cm long.

*Fls.* & *Frts.*: August - February.

*Illus.*: Wight, Ic. t. 180. 1839.

*Distrib.*: Common in deciduous forests. Karanjewadi, Khambil chorghe ghat, Koyna, Mahabaleshwar, Morgiri, Nauja.

**STERCULIA L.**


Trees, 9 12 m high. Leaves ovate oblong, ca 12 × 8 cm, base truncate, apex acuminate, glabrous above, stellate pubescent on nerves beneath. Flowers reddish in terminal racemes. Follicles 1-5, obvoid, orange.

*Fls.* & *Frts.*: December - February.

*Illus.*: Wight, Ic. t. 487. 1841.

*Distrib.*: Rare along ghats in semi-evergreen forests. Shirshingi, Kochhar 158001.

**CULTIVATED SPECIES**


Trees, ca 20 m high. Leaves digitate; leaflets subsessile. 5-9, oblong-lanate, pubescent when young. Flowers flesh coloured in axillary racemes. Follicles boat shaped, woody, bright red when ripe.

*Fls.* & *Frts.*: March-May.

*Illus.*: Wight, Ic. t. 181. 1839.

*Notes*: Cultivated at Bhilar estate, Panchgani (Bole & Almeida, *op. cit.*).

Trees, 10–15 m high. Leaves variable in shape and size, orbicular or oblong, entire or lobed. Flowers white, axillary, solitary or in pairs. Capsules woody, oblong, 5-angled. Seeds obliquely ovoid, compressed, winged.

*Fls. & Frts.* : December March.

*Distrib.* : Cultivated for fragrant flowers. Mahabaleshwar.

**TILIACEAE:**

1. Herbs or undershrubs:

2. Leaves entire, basal serratures with filiform appendages; petals eglandular; fruits unarmed ... **Corchorus**

7. Leaves lobed, without basal appendages; petals glandular; fruits prickly ... **Triumfetta**

2. Shrubs or Trees:

3. Fruits prickly; triquetrous ... **Erinocarpus**

3. Fruits not prickly, globose or ovoid:

4. Leaves glabrous, entire or irregularly toothed; flowers in terminal, paniculate cymes ... **Micranthus**

4. Leaves pubescent, serrulate; flowers in axillary cymes ... **Grewia**

**Corchorus** L.

1. Capsules angular:

2. Capsules winged; beak 3-fid ... **C. aestuans**

2. Capsules not winged; beak entire ... **C. trilocularis**

1. Capsules cylindrical:

3. Herbs erect; capsules ribbed ... **C. olitorius**

3. Herbs prostrate; capsules not ribbed ... **C. depressus**

Herbs, ca 50 cm high. Leaves ovate to oblong lanceolate, 4 7 × 3.5 4.5 cm, base and apex subobtuse. Flowers yellow, axillary, 1–3 together on short peduncles. Capsules elongate, ca 2.5 cm long.

Fls. & Frts.: September November.

Illus.: Maheshwari, Ill. Fl. Delhi, f. 35. 1966.

Distrib.: Weed near cultivated fields. Dhebewadi.


Herbs, 15 20 cm high. Leaves shortly petiolated, ca 2.0 × 1.5 cm, wrinkled, irregularly crenate. Flowers subsessile in leaf opposed cymes; buds obovoid, apiculate; sepals linear oblong; petals oblong-ovate. Capsules 1.0 – 1.5 cm long, 4-valved. Seeds trigonous, black.

Fls. & Frts.: October – February.

Illus.: Wight, Ic. t. 1073. 1846 (C. antichorus); Maheshwari, Ill. Fl. Delhi, f. 32. 1966.

Distrib.: Rare in drier parts. Phaitan. Razhavan 105049.


Herbs, annual, 14 20 cm high. Leaves broadly elliptic, 2.2 3.4 × 1.2 2.0 cm, base obtuse, apex acuminate. Flowers yellow, solitary, axillary; sepals oblong; petals spathulate. Capsules elongate, 2.0 3.5 cm long, spreading.

Fls. & Frts.: April September.

Illus.: Maheshwari, Ill. Fl. Delhi, f. 33. 1966.

Distrib.: Weed near cultivated fields. Karad,

Herbs, ca 1 m high, hairy. Leaves oblong-lanceolate, 1.5 - 4.5 x 0.8 1.2 cm, base cuneate, apex acute, margin serrate-crenate. Flowers yellow, ca 0.5 cm across in axillary cymes. Capsules elongate, ca 7 cm long, scabrous.

Fls. & Frts. : July September.

Illus. : Maheshwari, Ill. Fl. Delhi, f. 34. 1966.


ERINOCARPUS NIMMO


Trees, 4 - 6 m high. Leaves orbicular, ca 12 cm across, 5 - lobed, irregularly toothed, scabrid above; petioles 5 - 8 cm long. Flowers bright yellow in terminal, lax panicles; sepals fulvous pubescent outside; petals glandular at base, ciliate on margins. Capsules woody, winged on angles.

Fls. & Frts. : September April.


Distrb. : Common in deciduous forests. Ambeghar, Koyna, Mahabaleshwar, Morgiri, Satara, Khambil chorghe ghat.

GERWIA L.

1. Leaves lanceolate, glabrous above, hairy beneath:

2. Drupes 2 - lobed

2. Drupes 4 - lobed

1. Leaves ovate to obovate - oblong, hairy or hoary tomentose on both surfaces:

3. Flowers polygamous

   ... 
   ... 
   ... 
   G. sarrulata
   G. orientalis
   G. hirsuta
3. Flowers bisexual:

4. Straggling shrubs; drupes 4-lobed ... *G. abutilifolia*

4. Erect shrubs or small trees; drupes 1-2-lobed:

5. Leaves 3-nerved; stipules linear-lanceolate ... *G. flavescence*

5. Leaves 5-6-nerved; stipules leafy, auricled ... *G. tilloesifolia*


Shrubs, 2-4m high. Branches stellate hairy. Leaves 8-12 x 4-8cm, chartaceous, 3-nerved, base rounded, apex acute, scabrid; stipules lanceolate, hairy. Flowers white. Drupes ca 1cm across, hairy.

_Fls. & Frts._: August - October.


_Distrib._: Frequent along forest fringes in deciduous forests. Morogiri, Wai.


_Trees, 5-6m high. Leaves 3-6 x 2-3cm, base subcordate, apex acute. Flowers yellow; sepals lanceolate, mucronate, densely pubescent without; petals linear or oblong. Drupes 1.0 - 1.5cm across, tomentose, apiculate._

_Fls. & Frts._: August - September.

_Hlss._: Matthew, Mat. Fl. Tamilnadu Carnatic 2-3. 170, pl. 15f, 16f & 17d. 1983.

_Distrib._: Occasional in deciduous forests. Mahabaleshwar, Shigumo ghat.

Shrubs, 2 5 m high, young branches pubescent. Leaves distichous, 4 6 x 2 4 cm, base unequal, apex acute. Flowers ca 1 cm across; sepals linear-lanceolate, base callose; petals oblong, obtuse, gland orbicular, half the length of the petal, fringed. Drupes globose, obscurely 4 lobed.

Fls. & Frts.: August November.

Distrib.: Common on exposed hill slopes. Karad, Koyna, Mahabaleshwar.


Shrubs, scandent. Leaves cordate, base unequal, apex acuminate, 3 nerved. Flowers yellow, in axillary and terminal umbellate cymes; buds ovoid, oblong, ribbed, pubescent. Drupes yellow, wrinkled, hairy.

Fls. & Frts.: June.

Notes: Included on Nairne's report from Mahabaleshwar (Bole & Almeida, op. cit.).


Shrubs, 3 - 5 m high. Leaves 10 13 x 3 5 cm, membranous, base acute, apex acuminate, 3 nerved. Flowers in umbellate cymes; buds subglobose or ovoid, pubescent; petals glandular. Drupes globose, ca 1 cm across.

Fls. & Frts.: February November.

Distrib.: Common component of deciduous forests. Dicholi, Karanjewadi, Koyna, Morgiri, Nauja.

Notes: In most of the Indian floras, it is treated under G. laevigata Vahl, which is rather a distinct species with rounded, eglandular leaves at base. After critical study of the type material of G. serrulata DC. and G. elabra Bl. by Rolla Rao (Gazett. 1969) it is confirmed that G. serrulata DC. is the earliest valid name for the present taxon.
Fig. 1. *Grewia serrulata* DC.

**Key to the Varieties**

1. Leaves hoary - tomentose beneath; gland one third the length of petals
   ... var. tiliacifolia

1. Leaves glabrous to softly hairy beneath; glands absent or reduced to petal base
   ... var. leptopetala

**var. tiliacifolia**

Trees, 5-10 m high, young branches pubescent. Leaves 7-12 x 5-7 cm, base unequal, apex subacute. Buds obovoid oblong, tomentose; petals spatulate, entire or notched. Drupes black.

**Fls. & Frts.**: May - August.

**Notes**: Included on the authority of Cooke (op. cit.) who reported it from Koyna valley below Mahabaleshwar.


Trees, 4-5 m high. Leaves 4-14 x 3-5 cm. Drupes globose, ca 1 cm across.

**Fls. & Frts.**: June - July.

**Distrib.**: Common than the type variety. Karad, Nauja, Pasarnigbat, Panchgani.

**Microcos L.**

Shrubs, 4.5 m high. Leaves elliptic oblong, up to 17 × 7 cm, base oblique, apex acuminate, 3-nerved; buds ovoid, grey tomentose; petals with glands at the base, ciliate. Fruits obovoid, purplish.

*Fls.* & *Frts.*: May September.

*Illus.:* Wight, *Ic.* t. 84. 1838.

*Distrih.:* Common along ghats in semi-evergreen and scrub forests. Dhokewadi, Jadholi, Karad Chiplon Road, Koyna, Mahabaleshwar, Nauja.

*Notes:* Linnaeus (*op. cit.*) treated this taxon under Sect. *Microcos* of the genus *Grewia*. Burret (*op. cit.*) separated it from *Grewia* on the basis of terminal panicked raceme and typical trifid bracts.

**Triumphetta L.**

1. Herbs, glabrous

1. Herbs, stellate hairy:

2. Leaves ovate - lanceolate; spines on the capsule glabrous above, hispid below

2. Leaves variable; spines glabrous:

3. Flowers in leaf - opposed cymes

3. Flowers in terminal racemes


Herbs, 30–50 cm high. Leaves ovate, toothed. Flowers yellow in fascicles. Capsules globose, ca 0.5 cm across, 4-lobed; spines glabrous, hooked at apex.

*Fls.* & *Frts.*: November.

*Distrih.:* Infrequent along ghats, not reported by Cooke from the erstwhile Bombay Presidency. Tadoshi, *Kochhar* 157835.

Herbs, 1.2 m high. Leaves 6 10 x 2.5 cm, stellate hairy. Flowers in leaf-opposed cymes. Capsules up to 1 cm across; spines hooked.

Fls. & Frts.: November December.


Herbs, 1.0 – 1.5 m high. Leaves upper sessile, lower petiolate, irregularly serrate, hairy. Flowers orange yellow. Capsules globose; bristles pubescent at base, hooked and transparent at apex.

Fls. & Frts.: October December.

Distrib.: Common weed near cultivated fields and in waste places. Khambil-Chorghe ghat, Koyna, Machutar forest, Mahabaleshwar, Mhavashi, Nauja, Panchgani.


Herbs, ca 1 m high. Leaves orbicular, 1.5 – 2.5 cm across, stellate hairy above, tomentose beneath. Flowers yellow, ca 0.5 cm across; buds oblong, tomentose. Capsules ovoid, ca 0.5 cm across.

Fls. & Frts.: October.

Distrib.: Rare near forest clearings. Tarle. 166438.

**ELAEOCARPACEAE**

**ELAEOCARpus L.**

1. Drupes 3-celled
   ... E. sphaericus

1. Drupes 1 – 3-celled:
   2. Anthers bearded; drupes oblong, falcate
      ... E. serratus
   2. Anthers not bearded; drupes ovoid, straight
      ... E. tectorius

Fig. 2. *Triumfetta rhomboidea* Jacq.
Trees, ca 30 m high, young branches pubescent. Leaves oblong elliptic, 6.5–13.5 × 2.5–7.0 cm, irregularly crenate. Flowers white from the axils of fallen leaves; fringed half way down. Drupes ca 3.5 cm long.

*Fls. & Frts.*: April May.

*Illus.*: Wight, Ic. t. 46. 1838.

*Distrib.*: Common in semievergreen forests. Gureghar, Lingmala, Mahabaleshwar, Panchgani, Pratapgarh, Satara.


Trees. Leaves oblong-lanceolate, obscurely crenate serrate. Flowers white in racemes from the old branches; buds ovoid or conical; sepals oblong, acuminate, pubescent without; petals oblong, laciniate. Drupes purple. Stone tubercled.

*Fls. & Frts.*: January February.


*Notes*: Included on Lisboa’s report from Mahabaleshwar.


Trees. Leaves elliptic, 7 × 4–6 cm, base cuneate, apex acute or acuminate, margin crenate serrate, glandular on crenatures. Flowers white in racemes from the axils of fallen leaves; buds ovoid; sepals ovate, acute, reddish brown; petals laciniate. Drupes ca 2.5 cm long.

*Fls. & Frts.*: March November.

Distrib. : Common. Lingmaia, Bole & Almeida (BLAT); Satara, Woodrow (Cooke, op. cit.); Wai ghat, Graham (Cooke, op. cit.).

LINACEAE

1. Herbs; styles 5  ...         Linum
1. Undershrubs; styles 3  ... Reinwardtia

Linum L.


Herbs, 25-30 cm high. Leaves oblong-elliptic, up to 2 cm long, base cuneate, apex obtuse. Flowers yellow in corymbose cymes; sepals elliptic lanceolate, 3-nerved; petals obovate. Capsules globose, ca 0.4 cm across.

Fls. & Frts. : September January.

Distrib. : Common along hill slopes and near cultivated fields. Khambil - Chorghe ghat, Koyna, Mahabaleshwar, Mahabaleshwar Satara Road, Old Mahabaleshwar, Yavatshwar, Umankanchan.

CULTIVATED SPECIES


Herbs, erect, annual, 30-50 cm high. Leaves linear-lanceolate, up to 3 cm long. Flowers blue in corymbose panicles. Capsules globose, ca 1 cm across.

Fls. & Frts. : January March.

Distrib. : Cultivated for oil yielding seeds. Vardhagad.

Reinwardtia Dumort.

Fig. 3. *Linum nylanderi* Hayne ex Bth.

Undershubs ca 1 m high. Leaves elliptic lanceolate, 4-8 × 1.5-3.6 cm, base tapering, apex acute, distantly serrate. Flowers yellow, solitary or in few flowered corymbbs. Capsules globose, 6-8 valved.

Fls. & Frts.: August- November.

Distrib.: Frequent in semi-evergreen forest clearings. Koyna valley, Mahabaleshwar, Old Mahabaleshwar, Panchgani, Yavatshwar.

MALPIGHIACEAE

1. Leaves alternate; flowers greenish-white
   ... Aspidotyrys

2. Leaves opposite; flowers white with pink tinge
   ... Hippage

ASPIDOTYRYS A. JUSS.

1. Leaves cordate, tomentose beneath
   ... A. cordata

2. Leaves ovate-elliptic, glabrous beneath
   ... A. indica


Shrubs, scandent; young branches tomentose. Leaves 6-16 × 14 cm; petioles ca 5 cm long, tomentose. Flowers in lax, axillary and terminal panicles; sepals ovate, acute; petals oblong elliptic. Fruits orbicular, membranous.

Fls. & Frts.: September - October.

Distrib.: Occasional in deciduous forests. Sanbur, Shirgaon ghat.

Fig. 4. *Aspidopetra curdii* (Henry ex Wall.) A. Juls.
Shrubs, climbing. Flowers small in dense axillary and terminal panicles. Fruits linear oblong, membranous.

Fls. & Frts. : November December.

Notes: Included on Woodrow's report from hills near Sutara (Cooke, op. cit.).

**Hiptage Gaertn.**


Shrubs, scendent. Leaves elliptic oblong, 5 8 x 2 5 cm, base obtuse, apex acute or acuminate. Flowers in ca 10 cm long racemes; petals clawed, fringed on margins. Fruits 3 winged, middle wing longer, up to 4 cm long.

Fls & Frts. : February March.

Distrib.: Occasional along ghats. Fitzgerald ghat, Karanjewadi, Panchgani.

**ZYGOPHYLLACEAE**

1. Herbs, procumbent; flowers yellow; fruits spiny ... **TRIBULUS**

2. Herbs, erect; flowers rosy; fruits not spiny ... **FAGONIA**

**Fagonia L.**


Herbs; rootstock woody. Leaves 1 3-foliolate; leaflets entire, mucronate, with 2 pairs of sharp stipules. Flowers solitary; sepals and petals deciduous. Fruits of 5 cocci. Seeds ovoid, compressed.

Fls. & Frts. : October December.

Distrib. : Occasional near cultivated fields in drier parts. Girvi.

TRIBULUS L.


Herbs, annuals or biennials. Leaflets 3-4 pairs, oblong, up to 0.5 x 0.3 cm, base obtuse, apex mucronate, silky villous. Flowers axillary, solitary; petals fugacious; stamens 10, 5 shorter with glandular scales. Fruits globose, cocci 5, muricate.

Fls. & Frts. : Throughout the year.


Distrib. : Common in cultivated fields. Girvi, Hills around Satara, Satara Road, Phaltan.

OXALIDACEAE

1. Herbs, erect; leaves pinnately compound, sensitive to touch ... Biophytum

1. Herbs, procumbent; leaves palmately 3-lobed, not sensitive to touch ... Oxalis

BIOPHYTUM DC.


Herbs, 15-25 cm high; stem reddish, densely hairy. Leaves crowded at apex of branches; leaflets 5-8 pairs, obovate, 1.0 x 0.6 cm, base obtuse, apex apiculate. Flowers yellow, in terminal umbels; sepals glandular-pubescent. Capsules ellipsoid. Seeds ovoid, transversely striate.

Fls. & Frts. : September December.
Oxalis L.


var. corniculata

Herbs, pubescent. Leaves subsessile, obcordate, up to 1.5 x 1.7 cm, base cuneate, apex emerginate, sparingly hairy. Flowers yellow, axillary, solitary or together. Capsules 1.2 2.0 cm long, shortly beaked, tomentose.

Fls. & Frts. : April July.

Illus. : Wight, t. 18. 1838.

Distrib. : Common weed along roadsides and in moist places. Gureghar, Koyna, Koyna-Karad Road, Panchgani, Yavteshwar.


Differs from the type variety only in villous nature.


CULTIVATED SPECIES


Herbs, perennials; bulbs globose with 3 nerved scales. Leaves obcordate. Flowers purple in subumbellate corymbs.

Fls. : April May.

Distrib. : Weed in gardens; introduced from America. Lingmala.

Herbs, erect; bulbs globose with dark brown scales. Leaves 3-foliolate. Flowers violet in umbels; sepals with 2 red callosities at apex.

*Fls. & Frts.*: May December.

*Distrib.*: Native of Tropical America; cultivated in gardens. Koyna, Mahabaleshwar, Panchgani.


Herbs, *ca* 30 cm high; bulbs spherical, with lanceolate, nerved scales. Leaves 4-lobed; leaflets round obtriangular. Flowers violet in umbels.

*Notes*: Included on Blatter's report from Panchgani.


Herbs, trailing, pubescent. Leaves palmately 3 lobed; leaflets obovate. Flowers pinkish violet, subumbellate.

*Fls.*: April January.

*Distrib.*: Cultivated as an ornamental plant. Mahabaleshwar.

**TROPAEOLACEAE**


Climbers. Leaves peltate, 7–9 cm across; petioles 7–19 cm long. Flowers orange-yellow, solitary, axillary; sepals 5, one produced into long spur; petals clawed, 3 fringed at base, 2 small with scarlet streaks inside.

*Fls.*: August September.

*Illus.*: Bailey, *op. cit.*
BALSAMINACEAE

IMPATIENS L.

1. Plants scapigerous; leaves radical ... 1. acaulis

1. Plants not scapigerous; leaves cauline:

7. Leaves opposite:

3. Leaves oblong-lanceolate; flowers yellow ... 1. dalzellii

3. Leaves oblong-linear or elliptic-lanceolate; flowers purple or white:

4. Leaves glandular at base; flowers white ... 1. minor

4. Leaves not glandular at base; flowers pink or violet:

5. Pedicels glabrous ... 1. oppositifolia

5. Pedicels hairy:

6. Pedicels rufous hairy ... 1. tomentosa

6. Pedicels with a line of pubescence, not rufous:

7. Lip boat-shaped ... 1. lawii

7. Lip saccate ... 1. pusilla

2. Leaves alternate or subopposite:

8. Leaves alternate and subopposite mixed capsules ellipsoid ... 1. interfoliis

8. Leaves alternate; capsules furgid:

9. Spur long; capsule glabrous ... 1. pulcherrima

9. Spur short; capsule tomentose ... 1. balsamina

Herbs. scape 12–20 cm long. Leaves suborbicular _ca_ 11 cm long, base subcordate, apex rounded, crenate. Flowers rosy in racemes; spur short, curved. Capsules ellipsoid, _ca_ 1 cm long. Seeds minutely hooked.

_Fls. & Frts._ : August October.


_Distrib._ : Common perennials near waterfalls on wet rocks. Jadholi, Fitzgerald ghat, Nauja, Mahabaleshwar, Mahabaleshwar Pratapgar.


**KEY TO THE VARIETIES**

1. Leaves ovate; spur stout
   - _var. acrostis_

2. Leaves lanceolate; spur slender
   - _var. rosea_


_Herbs, erect._ Leaves _ca_ 5 cm long. Flowers axillary, solitary on short pedicels.

_Fls._ : July.

_Distrib._ : Infrequent in Koyna valley.


_Herbs, _ca_ 1 m high, pubescent. Leaves _ca_ 15 cm long, tapering into a glandular petiole. Flowers pinkish-violet in axillary fascicles; lip small, boat-shaped. Capsules _ca_ 1 cm long.

_Fls. & Frts._ : October January.

_Distrib._ : Widely distributed throughout the district. Dhom dam, Wai, Fitzgerald ghat, Mahabaleshwar, Pirachi wadi, Satara, Tapola ghat, Yavatshwar.

Fig. 5. *Impatiens bolckoi* var. *rosea* (Lindl.) Hank. f.
Herbs, 20-50 cm high. Lower leaves shortly petioled, upper sessile, 4-9 cm long, spinous serrate, hairy above. Flowers solitary or 2-3 together; standard orbicular, hooded, winged on back; lip boat shaped with orange streaks inside. Capsules ellipsoids.

Fls. & Frts.: August October.

Distrib.: Common in semi-evergreen forests, endemic to Western ghats. Gureghar, Kas, Kelghar ghat, Mahabaleshwar, old Mahabaleshwar road, Panchgani.


Herbs, ca 1 m high. Leaves ovate lanceolate, 5-14 × 2-5 cm, pubescent above. Flowers purple in axillary fascicles; pedicels recurved in fruits; spur ca 3 cm long. Capsules ca 1.5 cm long.

Fls. & Frts.: August September.

Illus.: Wight, Inq. t. 741. 1844. (I. cuspidata Wight & Arn.).

Distrib.: Occasional in Western ghats. Khambil, chorghe ghat.


Herbs, 15-30 cm high. Leaves sessile, ca 2 cm long, distantly spinous serrate, secedrid above. Standard orbicular, cuspidate; wings with obovate terminal lobe and small lateral lobes. Capsules ca 0.7 cm long.

Fls. & Frts.: August November.

Distrib.: Rare along ghats. Kelghar ghat, Mahabaleshwar. Gammie s.n.; Nana, Koehyar 150190.


Herbs, 10-30 cm high. Leaves sessile, 2. 6 × 1-3 cm, hairy on the nerves. Flowers in axillary pairs; sepals linear, acute; standard
orbicular oblong; spur as long or slightly longer than the flowers, curved. Capsules fusiform, ca 1 cm long.

*Fls. & Frts.*: July September.

*Illus.*: Wight, Lc. t. 884. 1845.


*Notes*: Cooke (*ap. cit.*) described leaves as usually petioled, however, all the present specimens have sessile leaves.


Herbs, 30-50 cm high. **Leaves** 2-6 x 1-2 cm. Flowers axillary, solitary or 2-3 together; lip conical; spur short, curved. Capsules ellipsoid, up to 1 cm long.

*Fls. & Frts.*: August September.

*Illus.*: Wight, Lc. t. 883 1845

*Distrib.*: Frequent on grassy slopes. Koyna.


Herbs, 30-60 cm high. **Leaves** elliptic-oblong, 5 10 x 1 5 cm, distantly hairy above; petioles with stipitate glands. Flowers purple in axillary fascicles; sepals lanceolate; standard keeled on back. Capsules ellipsoid.

*Fls & Frts.*: September October.

*Distrib.*: Common along ghats. Fitzgerald ghat, Koyna, Morgiri, Nauja.

Fig. 6. *Impatiens psicherrima* Dalz.
Herbs. 10 - 25 cm high. Lower leaves petioled, upper sessile, 3 - 6 cm long. pubescent above. Flowers solitary; sepals linear, subulate; standard ovate, mucronate. Capsules ca 1.4 cm long, beaked.

*Fls. & Fris.*: September - November.

*Illus.*: Wight, l.c. t. 970. 1845.

*Distrib.*: Common along ghats and among grasses on rocky plains. Karanjewadi, Kas, Lingmala, Mahabaleshwar, Shirgaon ghat.


Herbs, erect; branches with rufous hairs in upper part. Flowers solitary; pedicels deflexed in fruits; spur usually absent, if present, hooked. Capsules ellipsoid.

*Fls. & Fris.*: August - September.

*Illus.*: Wight, l.c. t. 749. 1845.

*Notes*: Included on Nairne’s report from Mahabaleshwar. (Boile & Almeida *op. cit.*)

**RUTACEAE**

1. Unarmed shrubs or trees:

2. Leaves opposite; flowers unisexual

3. Leaves alternate; flowers bisexual:

   3. Leaves 1 - foliolar... ... Atalantia

4. Leaves many foliolar:

   4. Leaflets oblong - lanceolate, entire or obscurely crenulate... ... Glycosmias

   4. Leaflets ovate, obtuse, irregularly crenate - dentate... ... Murraya

1. Armed shrubs or trees:

5. Leaves 3 - foliolar... ... Toddalia
5. Leaves 1 - foliolate :

6. Shrubs, erect ; flowers in axillary cymes ...................... Atalantia

6. Shrubs, scandent ; flowers in axillary fascicles ........ Paramignya

**Atalantia Corr.**

1. Cymes contracted ; calyx irregularly and deeply divided ... A. monophylla

1. Cymes elongated ; calyx 4 - lobed ....................... A. racemosa


Shrubs or small trees, 4 - 8 m high. Leaflets ovate - oblong or elliptic, apex emarginate. Flowers white ; petals 3 - 5, obovate, subacute. Berries globular. Seeds 1 - 5, oblong.

*Fls. & Frts.* : September - November.

*Illus.* : Wight, *op. cit.*

*Notes* : Included on Birdwood’s report from Mahabaleshwar (Puri & Mahajan, *op. cit.*).


Trees, armed or unarmed, 10 - 12 m high. Leaflets elliptic, 4 - 8 x 2 - 4 cm, base cuneate, apex emarginate. Flowers white ; calyx ciliate without ; petals broadly elliptic. Berries globular, ca 1.5 cm across.

*Fls. & Frts.* : November - May.

*Illus.* : Wight, l.c. t. 71. 1838. (*Sclerostylos parvifolia*).


Trees, ca 9 m high. Leaves 3 foliolate; leaflets oblong, 5 12 \( \times \) 3 6 cm, base cuneate, apex acuminate, pubescent. Flowers in axillary paniculate cymes, glandular pubescent; bracts broadly ovate, acute; sepals sub orbicular; petals white, ovate, spreading. Coci 2 valved. Seeds globose, black, shining.

*Fls. & Frts.* : April October.

*Illus.* : Wight. Le. t. 204. 1839. (*Zanthoxylum triphyllum*).

*Distrib.* : Frequent along ghats in moist deciduous forests. Mahabaleshwar, Parghat.

GLYCOSMIS COTT.

1. Leaves up to 10 cm long; leaflets with entire margin ... *G. mauritiana*

1. Leaves more than 10 cm long; leaflets with subdentate margin ... *G. pentaphylla*


Shrubs or small trees. Leaves 5 foliolate; leaflets subsessile, 6 10 \( \times \) 1 4 cm. Flowers white in axillary panicles; calyx glandular without; sepals ovate orbicular; petals broadly obovate. Berries globose, ca 0.8 cm across, apiculate.

*Fls. & Frts.* : February September.


Shrubs or small trees, 4 – 6 m high. Leaflets oblong lanceolate or oblanceolate, minutely serrate. Flowers white in axillary panicles ; sepals deltoid, ciliate ; petals broadly oblong or obovate. Fruits globose.

*Fls. & Fris.* : February March.


*Notes* : Rare as forest undergrowth in moist deciduous forests ; known only from Cooke’s collection at BLAT.

**Murraya L.**

1. Leaflets 3 – 7, glabrous ; fruits oblong

2. Leaflets 11 – 17, pubescent ; fruits ovoid

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Trees, ca 5 m high. Leaflets oblong – lanceolate, ca 3 x 1 cm, base unequilateral. Flowers white in terminal cymes, fragrant ; peduncles and pedicels pubescent. Berries blackish, apiculate.

*Fls. & Fris.* : February – April.

*Illus.* : Wight, tc. 15. 1838.


Shrubs, 1.5 - 2.0 m high. Leaflets 4 - 7 × 1 - 4 cm. Flowers white, axillary, solitary; sepals oblong, glandular; petals oblong, lanceolate, spreading. Berries red when ripe.

*Fls. & Frts.*: June - September.

*Illus.*: Wight, Ic. t. 96. 1838. (*M. exotica* L.).

*Distrib.*: Growing in large communities along hill slopes in shady areas. Way to Dicholi, Kumbharli ghat, Mahabaleshwar, Shirshingi.

**Paramignya Wight**


Shrubs, climbing, armed. Leaflets ovate oblong, base unequal, apex obtuse or acute. Flowers white; calyx woolly without; petals linear, oblong, recurved. Berries ellipsoid to obovoid.

*Fls. & Frts.*: November - January.

*Illus.*: Wight, op. cit.

*Distrib.*: Rare in semievergreen forests. Mahabaleshwar. *Santapa u 23617 (BLAT).*

**Toddalia A. L. Juss.**


**KEY TO THE VARIETIES**

1. Midnervare armed beneath; petioles prickly
   ... var. *gracilis*

1. Midnervare unarmed; petioles not prickly
   ... var. *floribunda*


'Tejwal'
Shrubs, straggling. Leaflets obovate ob lanceolate, 3 8 \times 2.0 
3.5 cm, coriaceous, apex with long acumen, nerves distinct. Flowers
unisexual in axillary panicles. Berries globose, ca 1 cm across.

*Fls. & Frts.*: February.


*Distrib.*: Occasional in deforested areas at higher altitude.
Ambeghar, Koyna.

ed.). *'Jangli mirchi'.

Shrubs, scandent. Leaflets lanceolate, 4.0 7.5 \times 2 3 cm, apex
broadly obtuse, nerves obscure. Flowers greenish white in axillary
panicles. Berries globose, ca 0.5 cm across.

*Fls. & Frts.*: April.

*Distrib.*: Occasional near forest edges in scrub jungles. Nauja;
Shirshingi.

**Cultivated Species**

*Limonia acidissima* L. Sp. Pl. ed. 2, 1: 559. 1762; Panigr. in
Bombay 1: 203. 1958 (Repr. ed.). *'Kovath'.

Trees, spiny. Leaves imparipinnate; leaflets obovate, cuneate, 3 5.
Flowers unisexual, reddish in lateral pubescent panicles. Berries globose,
woody.

*Fls. & Frts.*: January March.

*Illus.*: Wight, Ic. t. 15. 1838.

*Distrib.*: Cultivated for edible fruits. Poona Satara road.
SIMAROUBACEAE
CULTIVATED SPECIES


Trees, small, spiny; young branches pubescent. Leaves 2 foliulate; spines axillary, straight, bearing flowers. Flowers greenish in axillary cymes. Drupes large, ovoid, woody, 5 grooved.

Fls. & Frts.: March April.

Illus.: Wight, l.c. t. 274. 1840.

Distrib.: Cultivated along roadsides. Phaltan.

BURSERACEAE

Boswellia Roxb. ex Coleb.


Trees, 6 - 10 m high, bark deciduous. Leaves crowded at apex of branches; leaflets 17 - 31, ovate to ovate lanceolate, pubescent. Flowers white in axillary racemes, pubescent. Drupes trigonous.

Fls. & Frts. February - April.

Illus.: Bedd. Fl. Sylv. t. 174. 1871. (B. glabra Roxb.).

Notes: Included on Birdwood's report from Kamatki ghat (Cooke, op cit.).

MELIACEAE

1. Leaves simple
   ... Turara
1. Leaves compound:
   2. Leaflets velvety when young, entire
      ... Chelakrasia
2. Leaves glabrous, entire or serrate:

3. Filaments united throughout

   3A. Filaments free or connate at base only:

   4. Leaves 4 - 15 pairs; capsules oblong, coriaceous

   4A. Leaves 2 - 6 pairs; capsules globose, not coriaceous

Aглая Lour.


Trees, 10 - 15 m high. Leaves 5, oblong lanceolate or elliptic, 6 - 11 x 3 - 5 cm, base cuneate, apex acuminate. Flowers white in axillary panicles. Fruits pyriform, ca 2 cm long with persistent calyx.

Fls. & Frts.: January - May.


Distrib.: Rare along slopes in semi-evergreen forests. Mahabaleshwar Pratapgar, R.S. Rao 71736.

Chukrаsіа A. Juss.


Trees, up to 20 m high. Leaves ovate or ovate oblong, up to 7 x 4 cm, base unequal, apex acuminate. Flowers in terminal panicles; calyx pubescent without; petals spathulate. Capsules ovoid, ca 3 cm long. Seeds ca 1.0 x 0.5 cm, winged below.

Fls. & Frts.: February.

Illus.: Wight, Ill. t. 56. 1840. (C. nimmonii Grub.).
Distrib.: Rare in semi-evergreen forests. Dhokewadi, Kochhar, 158380.

Toona Roem.


Trees, ca 18 m high. Leaflets lanceolate or ovate - lanceolate, 6 - 9 × 4 - 7 cm, base cuneate, apex acuminate. Flowers white in terminal panicles, puberulous; calyx deeply divided; lobes orbicular, ciliate; petals broadly elliptic, keeled inside at base, ciliate. Capsules 2.0 - 2.5 cm long.

Fls. & Frts.: January.

Distrib.: Occasional in moist deciduous forests. Panchgani.

Trichilia P. Br.


Trees, ca 20 m high. Leaflets ovate oblong, 7 × 12 - 2.5 × 5.0 cm, base unequal, apex long acuminate. Flowers white in panicles; calyx pubescent without; petals oblong, ciliate. Capsules 2 - valved.

Fls. & Frts.: February - April.

Distrib.: Occasional along river banks. Mahabaleshwar.

Turraea L.

Shrubs. Leaves elliptic, 2.5 × 1.5 cm, villous beneath when young. Flowers creamish in axillary clusters; calyx lobes triangular, pubescent; petals linear, spatulate. Capsules subglobose, ca 2 cm across, 4-valved. Seeds black.

Fls. & Frts.: April - August.

Illus.: Wight, t. 1593. 1850.

Distrib.: Common along ghats and forest edges in semi-evergreen forests. Dhekewadi; Koyna valley; Kumbharli ghat; Mahabaleshwar; Pratagpad fort.

CULTIVATED SPECIES


Trees, large, 15-20 m high. Leaflets 9-17, falcate. Flowers white in axillary panicles, fragrant. Drupes oblong, fleshy.

Fls. & Frts.: March - May.

Illus.: Wight, t. 17. 1838.

Distrib.: Widely cultivated as avenue tree along roadsides and also for its medicinal value. Karad.


Trees. Leaflets 5-9, ovate lanceolate, 3.8 × 1.3 cm, toothed. Flowers purplish-white in axillary panicles. Drupes ellipsoid globose.

Fls. & Frts.: December - January.

Distrib.: Cultivated as an ornamental plant in gardens. Kiwai; Mahabaleshwar; Padolshi.
OPILIACEAE

CANSIERA A. Juss.


Climbers, armed or unarmed. Leaves oblong - lanceolate, or ovate, 2.5 - 7.0 × 1.5 - 2.5 cm, base obtuse, apex long acuminate. Flowers in axillary spikes, bracteate; perianth urceolate, hairy. Drupes ovoid ellipsoid, orange - red.

Fls. & Frts. : November - April.


Distrib. : Rare in scrub jungles. Konya valley; Nath hills, Shirala.

ICACINACEAE

NOTHAPODYTES BL.


Trees, ca 3 m high. Leaves ovate - oblong, 5 - 13 × 2.5 - 6.5 cm, base unequal, pubescent on nerves beneath. Flowers small in terminal corymbose panicles, densely pubescent. Drupes ellipsoid obovoid, purple when ripe.

Fls. & Frts. : September - November.

Illus. : Wight, Ic. t. 955. 1845. (Stemonurus foetidus) ; Bedd. Fl. Sylv. t. 141. 1871.

Distrib. : Common. Dhokewadi; Fitzgerald ghat; Jadholi; Khambil - Chorghe ghat; Konya; Mahabaleshwar; Nanja; Panchgani - Mahabaleshwar; Way to Shirahlingi.
HIPPOCRATEACEAE

1. Petals triangular, acute; style longer than the stamens ... Loeseneriella

1. Petals oblong; style shorter than the stamens:

2. Calyx lobes orbicular, puberulous; carpels emarginate ... Arnicastraea

2. Calyx lobes triangular - ovate, glabrous; carpels entire ... Reissantia

ARNICASTREA N. Halle


Fls. & Frts.: March - May.

Illus.: Wight, op. cit.

Distrib.: Extensive climber, rare in the district. Mahabaleshwar, Bole 2370 72 (BLAT).

LOESENERIELLA A.C. Smith


Fls. & Frts. : January.

Illus. : Wight. Ic. t. 963. 1845.

Distrib. : Rare along ghats. Koyna, Koebhar 158335; Mahabaleshwar, R.K.B. 1191 (BLAT).

REISSANTIA N. Halle


Shrubs, scandent. Leaves elliptic, 6 - 8 cm long, tapering into petioles. Flowers yellowish green in corymbose cymes. Carpels ellipsoid, up to 4 cm long, 2 -valved, striate.

Fls. & Frts. : May - November.


Distrib. : Common along ghats and river banks. Fitzgerald ghat; Koyna; Koyna river above Par bridge; Pratapgarh.

CELASTRACEAE

1. Armed shrubs or trees
   2. Climbing shrubs; leaves alternate

1. Unarmed climbers or small trees:
   2. Small trees; leaves opposite

CELASTRACEAE

1. Cassine


Trees, ca 20 m high. Leaves ovate oblong, 5 15 × 2.5 5.0 cm, base obtuse, apex acute, margin crenate-serrate. Flowers greenish in dichotomous axillary cymes; bracts ovate, acute; calyx lobes orbicular, margin membranous; petals oblong. Drupe oblong, ca 1 cm long.

Fils. & Frts.: November January.


Distrib.: Occasional along ghat slopes. Khambatki ghat; Satara; Tapola.

Celastrus L.


Climbers. Leaves elliptic ovate, 6-9 × 2.6 cm, base obtuse or subacute, apex caudate, serrate above, entire at base. Flowers greenish-white, in axillary and terminal paniculæ; sepals suborbicular, ciliate; petals 5, oblong, rudimentary ovary 3 lobed. Capsules subglobose. 3 valved, yellow.

Fils. & Frts.: April August.

Illus.: Wight, Ic. t. 158. 1839.

Distrib.: Common in deciduous forests. Adoshi; Karanjewadi; Kuypia; Nauja; Farli; Tapola ghat; Vasota.

Maytenus Molina

1. Spines bearing flowers; flowers in axillary cymes; fruits purple when ripe ... M. emarginata

1. Spines without flowers; flowers in axillary clusters; fruits bright red when ripe ... M. rotundifolia


Shrubs. 1-2 m high. Leaves obovate elliptic, 3.5-6.0 x 1.5-4.5 cm, base tapering, apex entire or emarginate. Flowers greenish yellow; sepals broadly oblong; petals elliptic-oblong. Capsules obovoid, ca 0.8 cm across.

Fls. & Frts.: November January.

Illus.: Wight, Ic. t. 382. 1840. (Celastrus emarginatus Willd.).

Distrib.: Common. Khambatki ghat; Kole; Shrigaon ghat.


Trees. Leaves obovate, 7-10 x 3-7 cm, base cuneate, apex rounded. Flowers small, yellowish. Capsules 3-valved. Seeds 6, ellipsoid, ca 0.6 cm long with basal aril.

Fls. & Frts.: May October.


Distrib.: Abundant in deciduous forests. Jangli jagad; Jadholi; Karanjewadi; Keighar ghat; Koyna; Lingmala; Mahabaleshwar; Nuuja; Shirasingi.

RHAMNACEAE

1. Armed shrubs:

2. Leaves subopposite, glabrous, 1-nerved

3. Leaves distichous or alternate, hairy, 3-nerved

1. Unarmed shrubs:

3. Erect shrubs; leaves ovate-oblong

3. Climbers; leaves lanceolate, acute

Schutia

Ziziphus

Rhamnus

Ventilago

Shrubs. Flowers in axillary fascicles; calyx urceolate, lobes keeled on the inner face, pubescent without; petals small, lanceolate; styles 3-4, connate below. Berries globose, reddish purple with persistent calyx.

Fls. & Frts : January.

Distrib. : Rare. Mahabaleshwar, Bote 1873 (BLAT).

SCUTIA Commers. ex Brongn.


Climbers. Leaves obovate orbicular, 1.5 x 1.0-2.5 cm, base cuneate, apex obtuse. Flowers green in axillary fascicles; calyx tube turbinate; lobes ovate; petals orbicular, shortly clawed. Drupes globose, ca 1 cm across.

Fls. & Frts. : February April.


Distrib. : Common near forest edges and along exposed slopes. Jangli jaigad; Jadholi; Kas; Karanjewadi; Lingmala; Mahabaleshwar; Shirshingi.

VENTILAGO Gaertn.


Shrubs, scandent; branches fulvous pubescent. Leaves with rufous villous glands in the axils of nerves beneath. Flowers in axillary
fascicles, pubescent; calyx divided half way down; lobes keeled on the inner face; petals obcordate. Fruits subglobose, winged at apex.

Fls. & Frts. : January - March.


Distrib. : Occasional in semi-evergreen forests. Mahabaleshwar.

Ziziphus Miller

1. Straggling shrubs; flowers on leafless spinous branches; petals absent

2. Styles 3, free; drupes up to 4 cm across

2. Styles 2, connate; drupes not exceeding 2 cm:

3. Leaves glabrous on both surfaces; drupes more than 1 cm across

3. Leaves tomentose beneath; drupes up to 1 cm across:

4. Leaves glabrous above; stipular spines in pairs

4. Leaves pubescent above; stipular spines solitary


Trees, 4.5 m high. Leaves elliptic, 3.5 x 2.3 cm. margin irregularly dentate. Flowers in dense, axillary cymes; calyx lobes broadly ovate, keeled inside; petals spatulate. Drupes globose.

Fls. & Frts. : April July.

Distrib. : Rare, in drier part of the district. Nath hills, Shirala, W. Burns s. n.

Trees, 5-6 m high, young branches pubescent. Leaves ovate elliptic, 3-5 × 2.0-3.5 cm. Flowers sessile, greenish; sepals keeled on inner surface, woolly without; petals cucullate. Drupes globose.

Fls. & Frts.: April June.


Distrib.: Frequent in scrub forests and along road sides. Koyna; Parli; Shirala.


Shrubs, 4-6 m high. Leaves ovate lanceolate, 2-4 × 1-2 cm, base unequal, apex acute, margin minutely denticulate; stipular spines hooked, pubescent below the apex. Flowers greenish. Drupes obovoid, reddish black, shining.

Fls. & Frts.: December January.


Distrib.: Occasional. Kole; Morogiri.


Climbers, young branches fulvous tomentose. Leaves broadly elliptic, 4-10 × 2-7 cm, acuminate, base cordate, apex rounded, mucronate. Flowers in paniculate cymes, tomentose. Drupes globose. ca 1 cm across.

Fls. & Frts.: February May.

Illus.: Wight, Ic. t. 339. 1840.

Distrib.: Common along ghats. Gureghar: Kumbharli ghat; Mahabaleshwar; Shirshingi; Vasota.
**VITACEAE**

1. Leaves simple
2. Leaves digitately 3 - 5 foliolar
   3. Leaves 3 - foliolar
   4. Leaves 5 - foliolar:
      1. Young branches pubescent; leaflets ovate, acuminate; stipules auriculate
      2. Young branches glabrous; leaflets oblong - lanceolate; stipules cordate

**CAYRATIA A.L. Juss. (nom. cons.)**

1. Leaves 3 - foliolar
2. Leaves 5 - foliolar:
   1. Young branches pubescent; leaflets ovate, acuminate; stipules auriculate
   2. Young branches glabrous; leaflets oblong - lanceolate; stipules cordate


Climbers. Leaflets 6.5 - 7.5 × 4 - 5 cm, base cuneate, apex cuspate, glabrous above, sparsely hairy beneath. Flowers in divaricate cymes; calyx obscurely 4 - lobed; petals ovate lanceolate, puberulous without. Fruits subglobose, 1.0 - 1.5 cm across, red when ripe.

**Fls. & Frts.:** August - September.

**Illus.:** Wight, Ic. t. 145. 1839.

**Distrib.:** Common in bushes at lower elevation in drier parts of the district. Shforgeon ghat.
Fig. 7. *Ziziphus xylopyrus* (Retz.) Willd.

Climbers. Leaflets 3.5 \(15.0 \times 1.5\) 4.5 cm, tapering into short petioles. Flowers in leaf opposed dichotomous cymes; calyx small, cupular; petals oblong. Berries black when ripe.

_Fls. & Frts._ : May - October.


_Distrib._ : Common component of semi-evergreen hill tracts. Jadholi; Kas : Lingmala ; Mahabaleshwar ; Mahabaleshwar Panchgani ; Old Mahabaleshwar road ; Taldco ; Tapola ghat.


Climbers; branches compressed, pubescent when young. Leaflets 6 \(10 \times 3.5 - 5.0\) cm, base cuneate or truncate, apex rounded, margin glabrous above, pubescent beneath. Flowers in axillary, dichotomous cymes, pubescent; calyx truncate or obscurely 4 lobed; petals oblong, hooded at apex. Berries ca 1.5 cm across.

_Fls. & Frts._ : July - October.

_Illus._ : Wight, Jc. t. 171. 1839. (Vitis carnosa).

_Distrib._ : Rare in deciduous forests. Mahabaleshwar, Cooke, op. cit.; Salve, 165803.

_Cissus L._

1. Erect shrubs

1. Climbers:

2. Stem, leaves and flowers red; leaves ovate-oblong ...

2. Stem and leaves not as above; leaves cordate:

   1. _C. woodrowii_

   1. _C. discolor_
3. Stem and leaves tomentose when young ... *C. repanda*

3. Stem and leaves glabrous:
   4. Stem woody below ... *C. pallida*
   4. Stem herbaceous ... *C. repens*


Climbers. Leaves 4.0 × 1.5 × 3.5 cm, base cordate or truncate, apex acuminate; petioles up to 2 cm long; stipules ovate oblong. Flowers in leaf opposed umbellate cymes; calyx truncate, glandular. Fruits subglobose to pyriform, red when ripe.

*Fls. & Fruits.*: September - October.


*Distrib.*: Occasional in semi-evergreen forests, very conspicuous because of its red colour. Way to Dicholi; Shirshingi.


Climbers. Leaves ovate orbicular, 11 × 11 - 17 cm, base cordate, apex acuminate, margin distantly serrate; petioles 6 - 8 cm long. Flowers in axillary umbellate cymes; calyx saucer shaped, membranous; petals ovate, deciduous. Berries pyriform, mucronate.

*Fls. & Fruits.*: July.


*Distrib.*: Rare along hill slopes. Ghotil, 165787.


Shrubs, scandent. Leaves broadly ovate, cordate, apex acuminate, crenate - dentate; stipules oblong, obtuse. Flowers pink, solitary or in
leaf opposed cymes; calyx truncate, hairy without; petals triangular. Berries pyriform, mucronate.

*Fls. & Frts.*: April - June.


*Notes*: Included on Bole & Almeida's report from Fitzgerald ghat, Mahabaleshwar.


Climbers. Leaves broadly ovate, ca 6.0 × 3.5 cm, base cordate, apex acuminate; stipules ovate, acute. Flowers red in axillary dichotomous cymes. Berries globose, ca 1 cm across.

*Fls. & Frts.*: February - March.

*Distrib.*: Rare in deciduous forests. Ambeghar, Kochhar 158281.


Shrubs. 1 2 m high. Leaves cordate, 9 - 13 × 9 - 12 cm, apex acute, margins crenate, crenatures recurved; petioles 6 - 9 cm long. Flowers in axillary umbellate cymes; calyx membranous, saucer shaped; petals calyptrate, deciduous. Berries subglobose, ca 0.5 cm across.

*Fls. & Frts.*: July.


*Distrib.*: Infrequent. Satara.

**CULTIVATED SPECIES**


Widely cultivated for edible fruits.
LEEACEAE

Leena l...

1. Leaves 1 - pinnate; leaflets oblong ... L. crispa
1. Leaves 2 - pinnate; leaflets ovate - elliptic ... L. indica


Shrubs, up to 5 m high; stem jointed, winged, woolly. Leaflets 3-5 × 1.5-2.0 cm, base rounded, apex acuminate, glabrous above, pubescent on the nerves beneath. Flowers 5-merous in terminal cymes, pubescent; bracts and bracteoles linear - lanceolate; calyx campanulate; petals connate below. Berries 0.7 cm across, black when ripe.

Fls. & Frts.: June.

Distrib.: Rare in deciduous forests. Koyna. Kochhar 158440.


Shrubs, 2-5 m high. Leaves 10-15 cm long; leaflets 3-12 × 2-6 cm, base cuneate, apex acuminate, margin coarsely serrate. Flowers white. Berries globular, 3-5 lobed, purple - black when ripe.

Fls. & Frts.: April - December.

Illus.: Wight, lc. t. 78. 1838. [L. staphylea Roxb. Fl. Ind. (Carey & Wall. ed.) 2: 476. 1824].

Distrib.: Common undergrowth in deciduous forests. Ambeghar; Dicholi; Kumbharli ghat; Mahabaleshwar; Sanbur; Shirshingi.
Fig 8. *Leao crispus* van Royen ex L.
SAPINDACEAE

1. Climbers

1. Shrubs or trees:

2. Trees: fruits tubercled

2. Shrubs; fruits not tubercled:

3. Leaves 3 - foliatae; fruits not winged; seeds arillate

3. Leaves simple; fruits 3 - winged; seeds not arillate

Cardiospermum

Dimocarpus

Allophyllus

Dodonaea

Allophyllus L.

1. Sepals glandular ciliate; fruits red when ripe

1. Sepals glabrous; fruits black when ripe

A. serratus

A. cubbe


Shrubs, 2 4 m high. Leaflets ovate or elliptic, 1.5 12.0 x 2 5 cm, base oblique, apex acuminate, margin distantly serrate, pubescent above, tomentose beneath. Flowers in spike racemes; sepals suborbicular; petals cuneate with scale above the claw. Fruits globose, ca 0.6 cm across.

Flr & Frs: April September.

Illus.: Wight. Ic. t. 964. 1845.

Distrib.: Abundant in moist deciduous forests towards forest edges. Ambeghar; Kas; Karanjewadi; way to Lingmaia; Mahabaleshwar; Nauja; Panchgani; Shirshinghi.

Shrubs, climbing. Leaflets ovate or elliptic ovate, 5 - 10 x 2.5 - 4.5 cm, margin serrate dentate. Flowers white in 5 - 10 cm long pendulous racemes. Fruits subglobose. ca 0.5 cm across.

Fls. & Frts.: August - September.

Illus.: Roxb. op. cit.

Distrib.: Frequent in scrub forests. Mahabaleshwar.

CARDIOSPERMUM L.


Herbs, climbing. Leaves 3 - lobed: leaflets ovate - lanceolate, 2.5 - 5.0 x 1.0 - 3.5 cm, base tapering, apex acute, sparsely pubescent. Peduncles with 2 tendrils at the base. Flowers white, in umbellate cymes; outer 2 sepals small, obovate, hairy on the back. inner larger, rounded; petals with scales at the base. Capsules membranous, inflated, trigonous, winged.

Fls. & Frts.: October - December.

Illus.: Wight, Ic. t. 508. 1841.

Distrib.: Common near forest clearings. Koyna; Miyavashi; Tarle.

DIMOCARPUS Lour.


Trees, 9 - 12 m high. Leaves pininate, leaflets 2 - 5 pairs, oblong - lanceolate, 9 - 15 x 3 - 6 cm, coriaceous, base oblique, apex acuminate. Flowers dioecious in axillary and terminal panicles. Fruits subglobose, reddish when ripe.

Fris.: April.

Illus.: Bedd. Fl. Sylv. t. 156. 1871.

**DODONAEA L.**


Shrubs, 1 3 m high. Leaves sessile, oblanceolate, 4 8 × 1 2 cm, base tapering, apex subacute, shining. Flowers greenish - yellow in axillary cymes. Capsules membranous, compressed, upto 1.5 cm long, broader than long. Seeds black.

*Fls. & Frts.*: January July.


*Distrib.*: Occasional in scrub forests, frequently cultivated as hedge plant. Gondavale; Kolc.

**CULTIVATED SPECIES**


Trees. Leaflets 4 12, oblong-lanceolate. Flowers in terminal panicles. Fruits pink or red when ripe.

*Fls. & Frts.*: May.

*Max.*: Wight, *loc. t.* 43. 1838 [*N. litchi* (Lour.) Camb.]

*Notes*: Cultivated for edible fruits at Bhilar Estate near Panchgani and at Mahabaleshwar; introduced from China.

**STAPHYLEACEAE**

Trees. Leaves opposite, imparipinnate; leaflets oblong - lanceolate, apex acuminate, margins serrate. Flowers white in axillary and terminal panicles, shorter than the leaves; calyx 5 - lobed, lobes oblong, obtuse, ciliate; petals oblong. Fruits globose, purplish - black.

*Fls. & Frts.* : January.

*Notes* : Included on Birdwood's report from Mahabaleshwar.

**ANACARDIACEAE**

1. Leaves simple:
   2. Petioles with 2 - 4 spur-like appendages
      3. Style and stamen 1 each
      4. Styles 3 - 5; stamens more than 1:
         4. Flowers bisexual; stamens 10
         4. Flowers unisexual; stamens <
      3. Styles 3 - 5; stamens more than 1:
         4. Flowers bisexual; stamens 10
         4. Flowers unisexual; stamens <

1. Leaves compound:
   3. Shrubs, unarmed, leaflets 3
   3. Trees, unarmed, leaflets 5

**BUCHANANIA**


Trees, 8 - 10 m high. Leaves broadly oblong, 13 - 16 x 6 - 7 cm, coriaceous, base rounded, apex obtuse, emarginate, glabrous above, villous beneath. Flowers white in axillary and terminal panicles, pubescent: sepals ovate, ciliate; petals ovate - oblong, spreading. Carpels 5, free.

*Fls. & Frts.* : January.


*Distrib.* : Rare in deciduous forests along hill slopes. Kiwal, 166707.
**HOLIGARNA Buch. Ham. ex Roxb. (nom. cons.)**


Trees, _4–6 m high_. Young branches tomentose. Leaves oblong-ovate, _23 × 7–11 cm_. Base cuneate, apex acuminate, glabrous above, pubescent beneath. Flowers in terminal panicles, rusty tomentose. Drupes _1.5–2.0 cm long_. Enclosed in cupular torus, tomentose.

_Fls. & Frts._: December.


_Distrib._: Common along ghats in semi-evergreen forests. Ambeghar, Kumbharli ghat, Nauja.

_Notes._: _Kurz (op. cit.)_ while describing his collection from Burma misidentified them with those of Wight's and based on the latter's epithet proposed a new combination. _Hook, f._ (1876) described Kurz's plant as a new species, _Holigarna_ using Wight's name as the basionym. This became superfluous as Kurz too made the new combination based on the same type. Subsequently, _Balakrishnan (op. cit.)_ also supplied a superfluous new name thinking that _Hook, f._'s name has become a later homonym.

**LANNEA A. Rich. (nom. cons.)**


_Trees, ca 9 m high_. Leaves imparipinnate, deciduous; leaflets ovate-oblong, _5–5 × 1.5–2.5 cm_. Base rounded or acute, apex acuminate, glabrous above, pubescent beneath when young. Flowers purplish in terminal racemes. Drupes oblong, _ca 1 cm long_. Compressed.

_Fls. & Frts._: April May.

_ILLUS._: _Wight, Jc._ 1 : 60. 1838. _Odina wodier_ _Roxb._.
Distrib.: Scarcely distributed in deciduous forests, also cultivated, Rasati. Kochhar 154773

Notropegia Bl. (nom. cons.)


Trees, 5-6 m high. Leaves elliptic oblong, 7-16 × 3-5 cm, base tapering, apex acuminate. Flowers white, bracteate; petals linear-oblong, reflexed. Drupes globose, depressed, red when ripe.

Fls. & Frts.: February April.


Distrib.: Common in semievergreen forests. Dicholi; Jadhali; Karanjewadi.

Rhus L.


Shrubs, 3-4 m high; branches spiny. Leaflets obovate, terminal larger ca 4 cm long, finely pubescent beneath. Flowers in axillary and terminal panicles, pubescent. Drupes subglobose, brownish black when dry, shining.

Fls. & Frts.: July September.


Distrib.: Common in dry deciduous forests. Dhavadi; Pandavgadh; Satara; Shrigaon ghat.

Semecarpus L. f.

Trees, 8 - 10 m high. Leaves coriaceous, broadly oblong, 15 x 8 12 cm, coriaceous, base and apex rounded, glabrous above, pubescent beneath. Flowers small in terminal panicles. Drupes oblong or sub-globose, 1.3 cm long, orange turning black when ripe.

**Fls. & Frts.:** June November.

**Illus.** Wight, Lc. t. 558. 1842; Bedd. Fl. Sylv. t. 166, 1871.

**Distrib.** Frequent in dry deciduous forests. Pimpodhi; Pirachi Wadi; Shamgaon.

**CULTIVATED SPECIES**


Trees, 6 - 8 m high. Leaves obovate, or elliptic, coriaceous. Flowers yellow with pink stripes, polygamous in terminal panicles. Nuts reniform ca 2.5 cm long.

**Fls. & Frts.** June.


**Distrib.** Native of Tropical America; cultivated for edible nuts, sometimes found as an escape in deciduous forests. Research Nursery, Koyna.


Trees, 15 - 20 m high. Leaves oblong lanceolate, apex acute, margins undulate. Flowers small, yellow in dense panicles; sepals ovate, deciduous; petals oblong, subacute. Drupes fleshy, large.

**Fls. & Frts.** January May.

**Illus.** Bedd. Fl. Sylv. t. 162, 1871.

**Distrib.** Large evergreen trees, cultivated for edible fruits throughout the district. Koyna: Mahabaleshwar.
MORINGACEAE

CULTIVATED SPECIES


Trees, 10 - 12 m high. Leaves 3-pinnate; leaflets elliptic to obovate, deciduous. Flowers white in large axillary panicles. Pods elongate, ribbed.

Fls. & Frts.: January - May.

Illus.: Bedd. Fl. Sylv. t. 80. 1869.

Distrib.: Common. Koyna; Mahabaleshwar.

Notes: Young leaves, flowers and fruits eaten as vegetable.

CONNARACEAE

1. Inflorescence glabrous; calyx accrescent; follicles sessile ... Roura

1. Inflorescence tomentose; calyx not accrescent; follicles stalked ... Connarus

CONNARUS L.

1. Erect shrubs ... C. monocarpus

1. Climbers ... C. vincetoxicum


Shrubs, 3 - 5 m high. Leaflets 5, oblong, 4 - 8 x 2 - 4 cm, base rounded, apex acuminate. Flowers in dense terminal panicles. Follicles fusiform, 2.5 - 5.0 cm long, scarlet turning brown.

Fls. & Frts.: December.

Distrib.: Infrequent along forest edges. Kumbharli ghat; Mahabaleshwar.

Climbers. Leaflets 5, oblong, 3.5 x 1.5 x 3.0 cm, coriaceous. Flowers in axillary and terminal panicles. Follicles inflated, striate. 1.0 x 2.5 cm, chestnut brown.

Fls. & Frts. : April.


Distrib. : Rare in semi-evergreen forests along hill slopes. Kumbharli ghat, Kochhar 153010.

ROUREA Aubl.

1. Fruits dehiscing irregularly ... R. prainiana
1. Fruits dehiscing longitudinally on ventral suture ... R. minor


Shrubs, climbing. Leaflets 5 9, elliptic or lanceolate. Flowers white in axillary panicles; sepals ovate suborbicular, minutely ciliate; petals spathulate; stamens 10, connate at base. Follicles ovoid, falcate, seaded on enlarged calyx.

Fls. & Frts. : October.

Notes : Included on Birdwood's report from Mahabaleshwar.


Climbers. Leaflets elliptic - lanceolate, 2 4 x 0.5 x 1.7 cm. Flowers in axillary racemes ca 10 m long. Follicles ovoid, ca 1 cm long with persistent, orbicular calyx.

Fls. & Frts. : September November.

Illus. : Talbot, op. cit.
Distrib.: Rare along ghat in semi-evergreen forests. Pratapgad, Bhide 1205.

FABACEAE

KEY TO THE SUB-FAMILIES

1. Flowers actinomorphic; petals valvate
   2. Flowers zygomorphic; petals imbricate or absent:
      2. Corolla papilionaceous; upper petal outermost, the
         other four in 2 opposite pairs; leaves usually
         imparipinnate; stamens usually connate
         ... Faboideae
      2. Corolla not papilionaceous; upper petal innermost,
         the rest similar to each other; leaves usually
         paripinnate; stamens usually free
         ... Caesalpinioideae
   1. Flowers actinomorphic; petals valvate

FABOIDEAE

1. Climbers:
   2. Calyx showy, foliaceous, persistent, creamish - white ...
      Paragalys
   2. Calyx not as above:
      3. Leaves 1 - foliolate:
   4. Leaves 1 - foliolate
      ... Necora
   4. Leaves 3 - foliolate:
   5. Pods 2 - 4 - seeded:
      6. Flowers solitary or in fascicles
         ... Catalpa
   6. Flowers in racemes:
      7. Leaves gland dotted beneath; pods
         2 - seeded
         ... Rhynchosia
      7. Leaves not gland dotted beneath;
         pods 3 - 4 - seeded
         ... Dumasia
   5. Pods many seeded:
   8. Pods with dense, irritant bristles
      ... Mucuna
   8. Pods not as above:
   9. Stipules produced below the
      insertion
      ... Vigna
9. Stipules not produced below the insertion:

10. Pods hairy:

11. Stamens 5, sterile; pods beaked

   ... Termesia

11. Stamens all fertile; pods not beaked

   ... Purraria

10. Pods glabrous:

12. Styles bearded:

13. Flowers in axillary fascicles

   ... Thespesia

13. Flowers in racemes

   ... Sphenostylis

12. Styles not bearded

   ... Canavalia

3. Leaves more than 3 - foliolate:

14. Herbaceous climbers

   ... Abrus

14. Large, woody climbers:

15. Leaflets opposite; pods winged

   ... Dalbergia

15. Leaflets alternate; pods not winged

   ... Dalbergia

1. Herbs, shrubs or trees:

16. Breech or prostrate herbs or shrubs.

17. Flowers white or yellow:

18. Leaves simple:

19. Pods turgid

   ... Crotalaria

19. Pods not turgid

   ... Gonioleia

18. Leaves compound:

20. Flowers white

   ... Fleminflia

20. Flowers yellow:

21. Stipules produced below the insertion:

22. Leaves 2 - foliolate; pods glochidiate

   ... Zornia

22. Leaves 3 - foliolate; pods not glochidi ate

   ... Vigna

21. Stipules not produced below the insertion:
23. Pods jointed:

24. Leaves imparipinnate

24. Leaves paripinnate:

25. Leaflets 2 pairs; joints of the pods not more than 2

25. Leaflets 2 - 15 pairs; joints of the pods more than 2

23. Pods not jointed:

26. Pods compressed, 1-seeded

26. Pods turgid, more than 1-seeded

16. Trees:

27. Leaflets 3:

28. Plants armed; pods subturgid

28. Plants unarmed; pods flat

27. Leaflets more than 3:

29. Leaflets opposite; flowers in axillary racemes

29. Leaflets alternate; flowers in axillary and terminal panicles

17. Flowers pink, violet or red:

30. Pods jointed:

31. Leaves 1-foliate; pods subterete, 4-angled or moniliform

31. Leaves 1-3-foliate; pods linear-oblong

30. Pods not jointed:

32. Pods viscid pubescent:

33. Leaflets rhomboid-ovate

33. Leaflets ob lanceolate

32. Pods not viscid pubescent:

34. Leaves with reddish glands beneath
34. Leaves without reddish glands beneath.

35. Anthers apiculate; styles glabrous; pods usually cylindric, rarely globose
   ... INDIGOHERA

35. Anthers obtuse; styles bearded; pods linear, flattened
   ... TEPHROSIA

ABRUS L.


Climbers; stem sparsely hairy. Leaves 3–5 cm long; leaflets 8–10 pairs, oblong, ca 1.5 × 0.7 cm. base rounded, apex apiculate, deciduous. Flowers pinkish white. Pods oblong, ca 2 cm long.

Fls. & Frts.: December.

Illus.: Wight, Ic. t. 33. 1838; Maheshwari, Ill. Fl. Delhi f. 71. 1966.


AESCYNOMENE L.


Herbs, ca 1 m high. Leaflets sessile, linear, ca 0.5 cm long, base unequal, apex apiculate. Flowers yellow, axillary, solitary. Pods slightly curved; joints 6–7, disarticulating.

Fls. & Frts.: September October.

Illus.: Wight, Ic. t. 405. 1840.

Distrib.: Common monsoon herb near cultivated fields. Bhosgaon; Vardhangad.
FLORA OF MAHABALESHWAR

ALYSICARPUS Desv. (*nom. cons.*)

1. Calyx shorter than or slightly exceeding the first joint of the pod:
   2. Flowers purple; pods hairy ... *A. procumbens*
   2. Flowers red; pods glabrous ... *A. vaginellus*

1. Calyx longer than the first joint of the pod:
   3. Pods distinctly rugose:
      4. Pods quadrangular ... *A. retrugulobus*
      4. Pods 2-sided ... *A. rugosus*
   3. Pods not rugose:
      5. Calyx imbricate in fruiting, much longer than the first joint of the pod:
         6. Flowers red; joints smooth ... *A. bupleurifolius*
         6. Flowers pinkish-purple; joints transversely ribbed ... *A. scariosus*
      5. Calyx not imbricate in fruiting, slightly longer than the first joint of the pod:
         7. Flowers pedicelled ... *A. belgaumensis*
         7. Flowers sessile ... *A. pubescens*

*Allysicarpus belgaumensis* Wight, in t. 92. 1840; Baker in Hook. f.
(Repr. ed.).

**KEY TO THE VARIETIES**

1. Erect herbs, 30 - 70 cm high; leaflets oblong - lanceolate ... var. *belgaumensis*
1. Ascending herbs, 10 - 30 cm high; leaflets broadly elliptic - suborbicular ... var. *racemosa*

**var. belgaumensis**

Herbs, up to 1 m high. Leaflets 2 - 7 × 1 - 3 cm, glabrous above, hairy beneath. Flowers pink in congested racemes; calyx deeply divided, lobes oblong - lanceolate, strongly nerves. Pods compressed, apiculate. 3 - 4 jointed.

*Fls.* & *Frax.* : April - November.
*Illus.* : Wight, *op. cit.*

*Distrib.* : Common at higher elevations in grasslands, Jadholi, Karkanjewadi, Koyna, Mahabaleshwar, Nauja, Taldeo.


Herbs, 20–30 cm high. Leaflets 1.5 5.0 × 1.0 3.5 cm, apex rounded, mucronate, glabrous above, hairy beneath. Flowers in dense axillary racemes; pedicels ca 2 cm long, hairy. Pods moniliform, reticulately veined.

*Fls. & Frts.* : October November.

*Distrib.* : Common at Mahabaleshwar.


Herbs, ascending. Leaves 1 foliately; leaflets variable, linear, linear lanceolate or oblong, 2 5 × 0.3 1.0 cm. Flowers in lax racemes. Pods cylindric, apiculate; joints 4–8.

*Fls. & Frts.* : June September.


*Distrib.* : Rare. Koyna, Kachhar 157924.


Herbs, prostrate; stems hairy, rooting at lower nodes. Leaves 1 foliately; leaflets oblong, 1–2 2.5 × 0.7 1.2 cm, base rounded, apex mucronate, hirsute when young. Flowers in lax terminal racemes. Pods oblong, compressed, 1 2 cm long; joints 4–7, covered with straight and hooked hairs.

*Fls. & Frts.* : August September.

*Distrib.* : Infrequent near cultivated fields. Bhosgaon; Dhom dam, Wai.

KEY TO THE VARIETIES

1. Flowers in dense spikes; pods with 3-4 joints
   ... var. pubescens

1. Flowers in lax spikes; pods with single joint
   ... var. vasavadae

var. pubescens

Herbs, ca 1 m high. Leaves 1-foliate; stipules linear-lanceolate, 2 cm long, hairy; leaflets lanceolate, acute, 4-5 cm long, apex mucronate, 3-nerved, hairy on the nerves and margins. Flowers in 3-9 cm long spikes; bracts ovate, acuminate, silky hairy; calyx deeply divided. Pods moniliform, mucronate, included; joints globose, reticulate.

Fls. & Frts.: September December.

Illus.: Wight, op. cit.

Distrib.: Occasional near cultivated fields. Pasarani ghat.


Herbs, ca 1 m high. Leaves 1-foliate; stipules ovate-lanceolate, ca 1 cm long; leaflets linear-oblong or lanceolate, 1.5-2.0 cm long, 3-nerved. Pods 0.5-0.7 cm long, shortly beaked.

Fls. & Frts.: November December.

Illus.: Hemadri, op. cit.

Distrib.: Growing along with A. pubescens Law ex Wight on grassy hill slopes and near cultivated fields. Pasarani ghat; Panchgani.

Notes: It differs from the type variety in less plumose rhachis, distant flowers, smaller calyx and obovate pods.


Herbs, ascending, 30-50 cm long, hairy. Leaves 1-foliolate; leaflets oblong, ca 2.5 × 1.5 cm, base cordate, apex obtuse, apiculate. Flowers pink in axillary racemes. Pods 3-6 jointed, transversely ribbed.
Fls. & Frts.: November.

Distrib.: Rare in open areas near forest clearings in grasslands. Koyna, Kochhar 154272; Pasarani ghat, 158889.


Herbs, erect or diffuse, ca 40 cm high, pubescent. Leaves elliptic-oblong. 2.5 x 0.5 - 1.4 cm, apex mucronate, glabrous above, velvety beneath. Flowers in 3 - 11 cm long racemes. Pods 3-4 jointed, up to 1 cm long, apiculate.

Fls. & Frts.: September - November.

Distrib.: Occasional near cultivated fields. Bhosgaon; Kelghar ghat.


Herbs, 30 - 40 cm high, hairy. Leaflets elliptic-oblong or lanceolate, up to 1.5 x 0.5 cm, base rounded, apex obtuse, hairy beneath. Flowers in 2 - 5 cm long racemes. Pods up to 1.3 cm long; joints 2 - 5, apiculate, transversely ribbed.

Fls. & Frts.: September - January.

Distrib.: Sarcely distributed in gravelly soil or in rock crevices. Bhosgaon; Vardhangad.


Herbs, ca 1 cm long, procumbent. Leaflets oblong or ovate-oblong, up to 5.0 x 2.5 cm, base rounded, apex acute. Flowers in 3 - 7 cm long racemes. Pods suberete, apiculate, reticulately veined.

Fls. & Frts.: November.

Fig. 9. *Alysicarpus scariosus* (Rottl. ex Spr.) Grah. ex Thw.
Fig. 10. *Alysicarpus tetragonolobus* Edgew.
Distrib.: Rare in grasslands. Koyna. Kochhar 157924.

Butea Roeb. ex Willd. (nom. cons.)


Trees, 12–15 m high, young branches downy tomentose. Leaflets broadly obovate, 12–16 × 10–13 cm, base cuneate; apex obtuse, glabrous above, hairy beneath. Flowers orange in dense, 10–17 cm long racemes. Pods oblong, 10–15 cm long, thickened at sutures, silvery-white.

Fls. & Frts.: March May.


Distrib.: Common in deciduous forests, leafless when in full bloom. Devghar; Karanjewadi; Punoli; Umarkanchan.

Cajanus DC. (nom. cons.)

1. Slender twiners, flowers in axillary fascicles
   ... C. scarabaeoides

1. Erect shrubs, flowers solitary or in pairs:

2. Leaflets obovate, gray, pubescent when young; stipples unto 0.3 cm long; pods linear
   ... C. lineatus

2. Leaflets oblanceolate, persistently white, pubescent; stipples above 0.5 cm long; pods linear-oblong
   ... C. servius


Shrubs, 1.5–2.0 m high, hairy; stipules linear-subulate, ca 0.5 cm long, hairy. Leaflets 1.0–2.5 × 0.5–1.2 cm. Pods ca 1.5 cm long. Seeds 2, strophilate.

Fls. & Frts.: December April.
Illustr.: Wight, t. 93, 1840 (*Atylosia latifolia* Wight).

**Distrib.** Common near cultivated fields. Jadholi; Lingmala; Mahabaleshwar; Panchgani; Shrishti; Vasota.


Twins, young branches pubescent. Leaflets elliptic-obovate, 0.8 - 2.0 x 0.6 - 1.5 cm, grey pubescent. Flowers yellow, pubescent. Pods oblong, apiculate, ca 1.5 cm long, with distinct transverse lines in between, densely hairy.

**Fls. & Frts.:** September - October.

**Distrib.** Occasional near grasslands and along roadsides. Mahabaleshwar.


Undershrubs, ca 1 m high; stem grooved, white silky hairy. Stipules filiform, ca 0.7 cm long. Leaflets 1.5 - 2.5 x 0.5 - 1.0 cm. Pods ca 1 cm long, densely hairy. Seeds sub-cylindric, black.

**Fls. & Frts.:** October - December.

**Distrib.** Occasional along grassy hill slopes. Mahabaleshwar; Panchgani.

**Canavalia DC.**

*Canavalia stocksii* Dalz. in Dalz. & Gibbs. Bombay Fl. 69: 1861; Cooke, Fl. Pres. Bombay 1: 397. 1858 (Repr. ed.).

Climbers, large. Leaflets terminal rhomboid obovate, lateral broadly ovate, membranous. Flowers large in axillary racemes.

**Fls.:** October.
Notes: Included on the authority of Cooke and Woodrow (Cooke, op. cit.) who reported it from Mahabaleshwar, as a rare species. Sauer in his revision of Canavalia (Brittonia 16: 106. 1964) has treated it as "excluded species" as it shows some incompatible characters like large stipules, 3-nerved leaflets and bidentate upper calyx lip.

CULTIVATED SPECIES


Climbers, stout. Leaflets ovate, 4-6 × 3-5 cm, base rounded, apex acute. Flowers purplish-white in lax, axillary racemes. Pods oblong, upto 15 × 3 cm, curved.

Fls. & Frts.: December.

Distrib.: Cultivated as a vegetable, often found as an escape. Mhavushi, 166586.

Crotalaria L.

1. Leaves 3-foliate:

2. Erect herbs; bracts linear; pods 2-seeded, hairy ... C. medicago var. luxurians

2. Diffuse herbs; bracts linear; pods 4-8-seeded, glabrous ... C. orizensis

1. Leaves simple:

3. Prostrate herbs:

4. Leaves ovate - elliptic, exstipulate; flowers in racemes ... C. filipes

4. Leaves oblong - obtuse, stipulate; flowers in subcapitate heads ... C. hirta

3. Erect herbs or shrubs:

5. Corolla much exserted ... C. retusa

5. Corolla not or slightly exceeding the calyx:

6. Pods hairy ... C. triquetra

6. Pods glabrous:
7. Leaves stipulate:

8. Leaves lanceolate, glabrous above, silky beneath ... C. calycina

8. Leaves linear-oblong, silky on both surfaces ... C. mysorensis

7. Leaves oostipulate:

9. Shrubs: pods 3-4-seeded ... C. albida

9. Herbs: pods 4-many-seeded:

10. Flowers in terminal capitulate umbels ... C. nana

10. Flowers in terminal racemes:

11. Pods 4-seeded ... C. linifolia

11. Pods many seeded ... C. vestita


Shrubs, ca 1 m high, pubescent. Leaves subsessile, oblong, 1.5-3.5 x 0.5-1.0 cm, base acute, apex obtuse, silky pubescent. Flowers in terminal, 5-10 cm long racemes. Pods oblong, ca 1 cm long.

Fls. & Frts. : November - February.

Distrib. : Distributed in dry plains and along ghats. Fitzgerald ghat; Research nursery, Koyna.


Herbs, 20-40 cm high, stem densely hairy. Leaves 4-9 x 1-2 cm, base and apex acute. Flowers axillary, solitary or in terminal racemes: bracts ca 1 cm long with long brown hairs. Pods sessile, dark brown, ca 2 cm long.

Fls. & Frts. : September - October.

Distrib. : Monsoon herb in open situations. Dhebewadi.

Fig. 11. Crotalaria filipes Bih.
Herbs, prostrate; stems slender, clothed with spreading hairs. Leaves sessile, ca 1.5 × 0.7 cm, base obliquely cordate, apex acute or obtuse. Flowers in leaf-opposed or extra axillary racemes. Pods ca 0.7 cm long.

**Fls. & Frts.**: November - February.

**Distrib.**: Abundant throughout the district. It shows variation in size and hairiness as it grows in all kinds of habitats. Bannoli; Dicholi; Gadoli; Karanjewadi; Mahabaleshwari; way to Patan; Shirgaon ghat; Vajegaon.


Herbs, ca 1 cm high with densely hairy stem. Leaves sessile, 1.5 - 3.0 × 0.5 - 1.0 cm, sparsely hairy above, pubescent beneath. Calyx densely hairy with yellow hairs. Pods oblong, ca 1.7 cm long.

**Fls. & Frts.**: October - November.

**Distrib.**: Rare, found along rocky hill slopes. Mahabaleshwari, *Soman* 156278.


Herbs, ca 0.5 m high. Leaves oblong or ob lanceolate, 2 - 4 × 0.2 - 0.5 cm, base cuneate, apex roundăd, apiculate, densely silky. Flowers in lax, 3 - 12 cm long racemes, bracts and bracteoles subulate, hairy. Pods ovoid. black.

**Fls. & Frts.**: September.

**Distrib.**: Rare in grasslands. Satara Poona road, *Cherian* 106742.


Herbs, ca 30 cm high, young branches pubescent. Leaflets oblanceolate, terminal longer, 1.5 - 2.5 cm long, silky beneath; stipules minute. filiform. Flowers in terminal, few flowered racemes. Pods subglobose, oblique, ca 0.4 cm long.

**Fls. & Frts.**: October.
**Illus.**: Maheshwari, Ill. Fl. Delhi f. 49. 1966.

**Distrib.**: Rare along ghat slopes, on gravelly soil. Wai, *Talbot* 4453.


Herbs, 25 - 50 cm high. Leaves subsessile, 2.5 × 0.5 to 1.0 cm, base and apex rounded, silky hairy. Flowers in terminal racemes; bracts foliaceous, lanceolate; calyx with spreading hairs. Pods *ca* 2 cm long, inflated, brown.

**Fls. & Frts.**: October.

**Distrib.**: Occasional in grasslands. Mahabaleshwar; Wada below Mahabaleshwar.


Herbs, *ca* 1 m high, yellowish brown hairy. Leaves oblong to oblongate, 1.0 × 4.5 to 0.5 - 1.0 cm, base cuneate, apex subacute, silky hairy. Flowers densely hairy. Pods oblong, *ca* 0.5 cm long, black.

**Fls. & Frts.**: September November.

**Illus.**: Burm. f. *op. cit.*

**Distrib.**: Slender annuals, common in pasturlands. Mahabaleshwar; Panchgani; Pandavgadh.


Herbs, 30 - 40 cm high, branches sparsely hairy. Leaflets obovate oblong, 1.0 × 2.5 to 0.5 × 1.5 cm, glabrous above, hairy beneath. Flowers in lateral or terminal racemes; bracts ovate, acute. Pods oblong, *ca* 1.5 cm long.

**Fls. & Frts.**: September October.


**Distrib.**: Infrequent in grasslands or along bunds of cultivated fields. Wai, Ghat between Wai and Wathar.

*Dingala*.

Undershubs. ca 1 m high, young branches pubescent. Leaves oblongate, 4 - 8 × 1.2 - 2.0 cm, base cuneate, apex obtuse, mucronate, glabrous above, silky beneath. Flowers in 8 - 17 cm long terminal racemes. Pods linear oblong, apiculate, ca 3.5 cm long.

Fls. & Frts. : November - April.


Distrib. : Widely distributed as forest undergrowth in moist deciduous forests and along ghat in semi-evergreen forests. Banni; Bhikauli forest ; Junkti ; Koyna ; Lingmala ; Mahabaleshwar ; Panchgani ; Parut ; Pratapgad ; Shirdi.


Herbs, 30 - 40 cm high ; branches 3 - 4 angled, hairs few, scattered. Leaves 3 - 4 × 0.5 - 1.0 cm, sparsely hairy ; stipules ovate, acute. Flowers hairy. Pods oblong, 2.0 - 2.5 cm long.

Fls. & Frts. : October - November.

Distrib. : Occasional in moist situations. Mahabaleshwar ; Research nursery, Koyna.


Herbs, ca 50 cm high. Leaves oblong, ca 3 × 1 cm, base rounded, apex subacute, hairy. Flowers in 4 - 5 flowered silky racemes ; bracts leafy, lanceolate ; bracteoles 2, linear, hairy. Pods oblong, 1.0 - 1.7 cm long. Seeds 15 - 20, subcordate, black.

Fls. & Frts. : October - November.

Distrib. : Frequent on hill tops in grasslands. Koyna ; Mahabaleshwar ; Shrigaon ghat.

CULTIVATED SPECIES

Herbs, 2 - 3 m high; branches striate, silky pubescent. Leaves 2.0 - 5.5 × 0.4 - 1.0 cm, hairy. Flowers bright yellow. Pods ca 2 cm long, pubescent with brownish hairs.

*Fls. & Frts.*: November.


*Distrib.*: Cultivated for fibre, occasionally found as an escape. Panchgani; Mahabaleshwar.

**Dalbergia** L.f. (*nom. cons.)*

1. Large climbers:

2. Branches spiny; leaflets 11 - 15; stamens 10 in one bundle...
   
   D. sympaethetica

3. Branches not spiny; leaflets 7 - 9; stamens 10 in two bundles...
   
   D. volubilis

1. Trees:

3. Stamens 9 in one bundle...
   
   D. latifolia

3. Stamens 10 in two bundles...
   
   D. lanceolata


Trees, 12 - 15 m high, young branches pubescent. Leaves 8 - 12 cm long; leaflets 9 - 15, oblong, 1 - 3 × 1.5 - 2.0 cm, base rounded, apex obtuse, mucronate. Flowers small, purple. Pods oblong, narrowed at both ends, 4 - 8 × 2 - 3 cm.

*Fls. & Frts.*: December - March.

*Illus.*: Roxb. *op. cit.*

*Distrib.*: Common in deciduous forests. Kisrude; Rasati.


Trees, ca 20 m high. Leaflets 5 - 7, broadly ovate to suborbicular, 2.5 - 5.0 cm across, base cuneate, apex entire or emarginate at base.
Flowers yellowish in axillary or extra axillary panicles; bracts and bracteoles minute, deciduous. Pods strap-shaped. 1 - 3 seeded.

_Fls. & Frts._: February.

_Illus._: Roxb. _op. cit._

_Distrib._: Occasionally distributed in deciduous forests. Koyna; Mahabaleshwar.


Shrubs, large, scandent. Leaves 6 - 8 cm long; leaflets oblong, _ca_ 2.0 × 1.4 cm, base cuneate, apex emarginate, pubescent. Flowers rusty pubescent. Pods oblong, compressed, up to 5 × 2 cm, pubescent.

_Fls. & Frts._: November - February.


_Distrib._: Scarcely distributed along ghats. Fitzgerald ghat; Karnajewadi.


Shrubs, scandent. Leaves 10 - 14 cm long; leaflets obovate-oblong, _ca_ 1.5 - 4.0 × 1.5 - 2.3 cm, base truncate, apex obtuse. Flowers white in 4 - 16 cm long panicles; bracts ovate, ciliolate. Pods oblong, obtuse, _ca_ 5 × 2 - 3 cm.

_Fls. & Frts._: February - June.


_Distrib._: Common component of deciduous forests along ghats and also in plains. Dicholi; Kumbharli ghat; Nauja; Vasota.

_Cultivated Species_

Trees, 12-15 m high. Leaflets 3, broadly ovate, up to 4.0 x 2.7 cm, apex acuminate. Flowers in axillary panicles. Pods stalked, cu 3.5 x 0.5 cm.

Fls. & Frts.: April.


Distrib.: Cultivated for wood used in furniture making and boat building. Dhebewadi.

DERRIS LOUR. (nom. cons.)

1. Flowers in axillary racemes; pods winged on both surfaces, glabrescent ... D. canarensis

1. Flowers in axillary and terminal racemes; pods winged on dorsal surface, hairy ... D. scandens


Shrubs, scandent. Leaves up to 15 cm long; stipules ovate, ferruginous; leaflets 15-17, oblong-lanceolate, 2.5-4.0 x 1.2-1.7 cm, glabrous above, strigose beneath when young. Flowers pink in axillary racemes. Pods oblong, flat, up to 8 cm long.

Fls. & Frts.: June September.

Illus.: Wight, l.c. t. 244. 1840 (Dalbergia robusta Roxb.).

Distrib.: Rare, along forest margins. Dhebewadi. Kochhar 153581.


Climbers, woody, young branches pubescent. Leaflets 9-19, elliptic or obovate, oblong, subcoriaceous, glabrous above; puberulous beneath. Pods narrowly oblong, 2.5-6.5 cm long.

Fls. & Frts.: June December.

Distrib. : Rare in scrub forests. Mahabaleshwar, Astrana 2741 (BLAT).

Desmodium Desv.

1. Leaves 1 foliulate:

2. Shrubs; petioles winged ... D. triquetrum

2. Herbs; petioles not winged:

3. Leaflets elliptic-oblance, 1- and 3-foliolate intermixed ... D. alysicarpoides

3. Leaflets orbicular, 1 foliolate ... D. ritchiei

1. Leaves 1 foliolate:

4. Flowers in axillary pairs or fascicles:

5. Erect herbs; leaves 1- and 3-foliolate intermixed ... D. alysicarpoides

5. Prostrate herbs; leaves 3-foliolate ... D. triflorum

4. Flowers in racemes or umbellate heads:

6. Diffuse herbs; stipules auricled at base ... D. dichotomum

6. Erect shrubs; stipules not auricled at base:

7. Stipules deciduous; pods with hooked hairs ... D. laxiflorum

7. Stipules persistent; pods without hooked hairs ... D. triangulare var. congestum


Herbs, 30 50 cm high; stem fulvous hairy above, glabrous at base; stipules ovate, acicular; leaflets 2.5 5.0 cm long, glabrous above, hairy beneath. Flowers violet in terminal racemes. Pods falcate, dentate on both sutures; joints 4 6, glabrescent, reticulately veined.

Fls. & Frts. : October November.

Distrib. : Mahabaleshwar, Soman 157181 A.

Notes : Dalzell (op. cit.) reports this taxon under Alysicarpus Desv. because of slightly swollen joints of the pods, the only differentiating
character from *Desmodium* DCev. which has flat pods. According to Cooke *(op. cit.)* and van Meeuwen *(op. cit.)* it represents a transition between the two genera.


Herbs, 25 40 cm high; branches angular, reddish, hairy when young. Leaflets oblong elliptic, terminal larger, ca 4.0 × 2.4 cm, hairy. Flowers in axillary and terminal, 8 27 cm long racemes. Pods ca 1 cm long; joints 2 4, hairy, reticulately veined.

*Fls. & Frts.* : August - September.

*Distrib.* : Rare in grasslands. Mahabaleshwar. Saman 157181 R.


Shrubs ca 2 m high, hairy. Leaflets elliptic, 6 12 × 2 6 cm, base rounded or acute, apex acute, glabrous above, silky beneath. Flowers in axillary and terminal, 10 17 cm long racemes; calyx strigose. Pods linear, ca 2.5 cm long.

*Fls. & Frts.* : August - October.

*Illus.* : Wight, loc. t. 374. 1840. *(D. recurvatum* (Korst.) Grah. ex Wight & Arn.)*

*Distrib.* : Common as undergrowth in semi-evergreen and deciduous forests. Gadoli; Jadholi; Khabrilchorghe ghat; Kumbharli ghat; Koyna; Nauja.


Herbs, 20 40 cm high. Leaflets 1 2 cm long, as broad as long, glabrous above, hairy beneath. Flowers in lax, axillary and terminal racemes. Pods 3 6 jointed, apiculate.

*Fls. & Frts.* : September - October.

*Distrib.* : Common along ghats. Mahabaleshwar; Wai; Pasarani ghat; Yavteshwar.
Fig. 12. Petrodium richiei Sanjappa

Shrubs, 1.5 2.0 m high, pubescent. Stipules upto 1 cm long, bristle pointed, striate. Leaflets elliptic oblong, acuminate at apex, 3 7 x 1.4 3.2 cm. Flowers white in dense, axillary, umbellate heads. Pods oblong, 1.5 3.0 cm long.

Fls. & Frts. : September November.


Distrib. : Common in deciduous forests along ghats. Koyna ; Shirshingi.


Herbs, 10 - 30 cm high. Leaflets obovate, 5-11 cm long, membranous, base cuneate, apex rounded or emarginate, glabrous above, hairy beneath. Flowers in axillary fascicles ; bracts ovate, acute, ciliate. Pods 1 1.5 cm long, 4 5 joints, disarticulating.

Fls. & Frts. : May - November.

Illus. : Wight, t. 292. 1840. (D. triflorum var. minus Wight & Arn.).

Distrib. : Annuals of marshy places among grasses in open fields and on rocky plateau. Gurughar ; Koyna ; Mahabaleshwar.


Shrubs, ca 1 m high ; stem triangular, glabrescent. Leaflets ovate oblong to ovate lanceolate, 10 17 x 4 5 cm. Pods oblong, apiculate, 3.0 3.5 cm long ; joints 3 8, hairy.

Fls. & Frts. : September November.

Distrib. : Frequent in moist deciduous forest edges. Dicholi ; Gadoli, Nauja ; Panthagani.
**Dolichos L.**


Twiners, slender. Leaflets *ovate* rhomboid, acute at apex, 2.5 5.0 × 2.0 4.5 cm, hairy, entire or obtusely 3 lobed. Pods 6.0 7.5 cm long, apiculate.

*Flrs.*: November.

*Distr.*: Tapola ghat, 166527.

*Notes*: This species has not been reported by Cooke from the erstwhile Bombay Presidency. *Baker* (*op. cit.*) has described flower colour as yellow, however my collection is with purple flowers, as also given by Santapau (*op. cit.*).

**Dumasia DC.**


Twiners, hairy. Leaflets *ovate*, 3 - 5 × 2.0 3.5 cm, base cuneate, apex obtuse, margin ciliate, glabrous above, hairy beneath. Flowers yellow. Pods linear, ca 2.5 cm long, velvety.

*Fls.* & *Flrs.*: October - November.


*Distr.*: Rare species, collected from Mahabaleshwar only on exposed rocks. Mahabaleshwar, *Cooke op. cit.*, *Mahajan* 24797, *Talbot* 4525.

**Erythrina L.**

1. Calyx 5 lobed at apex; seeds 3 - 4

1. Calyx entire; seeds 1 - 3

Trees, 15 20 m high; petioles 9 13 cm long, sometimes prickly at base; stipules falcate. Leaflets: lateral ovate - cordate, unequal sided, terminal. reniform. 5.5 10.0 × 3.5 -10.0 cm; stipels gland like. Flowers scarlet in terminal racemes; calyx spathaceous. Pods 7 10 cm long.

Fls. & Frts. : April May.


Distrib. : Conspicuous in deciduous forests because of its scarlet flowers. Ambegaon; Mahabaleshwar.


Trees, 15 18 m high. Leaflets rhomboid - ovate, 10 15 × 3.5 - 8.5 cm, base rhomboid or truncate, apex acute, pubescent when young. Flowers bright red in axillary and terminal racemes. Pods subcylindrical, 10 20 cm long. Seeds subreniform, brown.

Fls. & Frts. : April May.

Illus. : Wight, t. 58. 1838. (E. indica).

Distrib. : Occasional in deciduous forests, also cultivated along roadsides as avenue tree. Koyna; Medha.

FLEMINGIA Rorb.

1. Erect shrubs; leaves 1 - foliolate ...

1. Tracling herba; leaves 3 - foliolate ...


Herbs; branches 30 50 cm long, hairy. Leaflets ovate - oblong to obovate, 1.0 2.5 × 0.7 - 1.0 cm, hairy. Flowers dull purple in terminal heads; calyx densely fulvous pubescent with bulbous based hairs. Pods sub - globose, 0.5 cm across.

Fls. & Frts. : August - September.
Illus.: Wight, fl. t. 987. 1845 (F. procumbens).

Distrib.: Raste on rocky grounds. Mahabaishwar, Suriapau 22718 (BRIAT).


Shrubs, ca 1 m high, pubescent when young. Leaflets oblong, lanceolate, 2.5 × 1.4 × 0.5 cm, glabrous above, silky on the nerves beneath. Flowers in axillary and terminal 7-10 cm long racemes. Pods oblong, ca 1 cm long, pubescent.

Fls.: February - April.

Illus.: Wight, fl. t. 267. 1840.

Distrib.: Common as a forest undergrowth in dense forests and occurs in open situations. Dicholi; Kumbharri ghari; Mahabaishwar; on way to Pratargad; Shirchingi.

Geissaspis Wight & Arn.


Herbs, trailing ca 50 cm long. Leaflets obovate, ca 1.0 × 0.4 cm, base tapering, apex obtuse. Flowers in ca 2.5 cm long racemes; bracts suborbicular, enclosing flowers, strigose. Pods 0.5 cm long, brown.

Fls. & Frts.: June - August.


Distrib.: Common in marshy places on hill slopes, in grasslands near cultivated fields. Punoli.

Goniogyna DC.


Herbs, prostrate, much branched, hairy. Leaves subsessile, ovate, 0.5 - 1.5 × 0.5 - 0.7 cm, base unequal, apex subacute, hairy. Flowers axillary, solitary. Pods oblong, ca 0.5 cm long, hairy. Seeds 2, shining.

Flx. & Frte: March - October.

Distib.: Common in grasslands. Dhom dam, Wai, Satara - Poona road; Wai.

Indigofera L.

1. Leaves simple:

2. Stem triquetrous, narrowly winged; pods 4 - 6-seeded ...
   ... I. dalsellii

2. Stem not as above; pods 1 - 2-seeded:

3. Leaves ovate, mucronate; corolla as long as the calyx; pods 2-seeded ...
   ... I. cordifolia

4. Leaves linear, acute; corolla twice as long as the calyx; pods 1-seeded ...
   ... I. linisfolia

1. Leaves compound:

4. Leaves 3 - foliolate:

5. Erect undershrubs; leaflets not punctate beneath ...
   ... I. trita

5. Prostrate or diffuse herbs; leaflets punctate beneath:

6. Pods globose with toothed wings, 1 - 2-seeded ...
   ... I. glandulosa

6. Pods linear - oblong, narrowly winged, 6 - 8-seeded ...
   ... I. trifoliata

4. Leaves more than 3 - foliolate:

7. Diffuse herbs; leaflets 7 - 9, alternate ...
   ... I. spicata

7. Erect shrubs; leaflets 13 - 21, opposite ...
   ... I. cassioides

Shrubs, 1 2 m high. Leaves 13 16 cm long: leaflets elliptic oblong, 2 3 x 1 2 cm, base acute, apex rounded, apiculate, hairy. Flowers purple in axillary racemes; calyx teeth triangular, hairy; standard orbicular, persistent; wings and keels caducous. Pods cylindric, ca 2.5 cm long.

Fls.: November April.

Illus.: Wight, Ist. t. 367. 1840. (I. pulchella).

Distrib.: Common. Bamnoli; Dicholi; Gureghar; Jadoli; Lingmala road; Mahabaleshwar; Panchgani; Pirachi wadi; Valeeta; Umarkanchan.

Notes: After the study of types of I. cassioides and I. pulchella Roxb. Ali (Bot. Notis. 3: 569. 1958 & Fl. W. Pak. 100 (1977, 1978) maintained them as separate groups with sterile bracts at the base of racemes and without sterile bracts at the base of racemes respectively. However, de Kort and G. Thijsse (op. cit.) do not agree as this is a doubtful character.


Herbs, diffuse, much branched; stem 10 - 20 cm long, white hairy. Leaves subsessile ca 1.2 x 1.0 cm, apex mucronate, densely hairy. Flowers bright red in 4 - 5 flowered, axillary heads. Pods oblong, ca 0.7 cm long, pubescent.

Fls. & Frts.: September December.

Distrib.: Rare along ghats. Pasarani ghat, 158885; Wai, Mahajan 6816.


Herbs, prostrate. Leaves elliptic oblong, 1 2 x 0.5 cm, base acute, apex mucronate, glabrous above, hairy beneath. Flowers pink in axillary racemes. Pods linear, 2 3 cm long, beaked.

Fls. & Frts.: July December.

Distrib.: Frequent on rocky hills. It is common on Panchgani plateau. Endemic to Goa, Karnataka and Maharashtra. Nauja; Panchgani; Pasarani ghat.

Herbs. 20 - 40 cm high, pubescent when young. Leaflets 1.0 - 1.5 cm long, glabrous above, hairy beneath. Flowers red in axillary, short peduncled fascicles; calyx setaceous, hairy without. Pods ca 0.5 cm long, angular, pubescent.

Fls. & Frts.: October - December.

Illus.: Wight, Ic. t. 330. 1840.

Distrib.: Occasional among grasses near agricultural farms. Panchgani - Wai; Satara - Pune road.


Herbs, prostrate; branches silvery hairy. Leaves sessile, 1.0 - 2.5 × 0.2 - 0.4 cm, base and apex acute, silvery white, stipules minute, setaceous. Flowers scarlet in dense, axillary racemes. Pods globose, ca 0.2 cm across, silvery white.

Fls. & Frts.: June - September.

Illus.: Wight, Ic. t. 313. 1840; I. de Kort & G. Thijsse, op. cit.

Distrib.: Common monsoon herbs, growing in small communities on rocky substratum and in grasslands. Dhoni dam, Wai; Panchgani ghat; Pandavgad: Shirgaon ghat: Wai.


Herbs, 30 - 50 cm high, sparsely hairy. Leaves 2.5 - 4.0 cm long; stipules lanceolate, cuspidate; leaflets oblanceolate, ca 1.5 × 0.7 cm, base acute, apex apiculate, hairy. Flowers in axillary racemes, hairy. Pods ca 2 cm long, quadrangular.

Fls. & Frts.: September - November.

Illus.: Jacq. op. cit.
Distrib.: Rarely distributed along ghats in semi-evergreen forests. Panchgani ghat, Cooke op. cit.; Yavteshwar, 165851 B.


Undershrubs ca 1.5 m high, branches hoary pubescent. Leaflets lateral sessile, terminal petioled, oblanceolate, 4–7 cm long, apex acute, margin entire, hairy. Flowers red in spicate racemes. Pods divaricate, 4-6 cm long, hairy.

*FIs. & Fris.*: September November.

Distrib.: Rare along ghats on rocky substratum. Satara, Pune road, Cherian 106741.


Herbs, 25–40 cm high, young branches hairy. Leaflets 1.5–2.5 × 0.5–0.8 cm, sparsely hairy. Flowers pink in axillary racemes. Pods 1.0–1.5 cm long, sparsely hairy.

*FIs. & Fris.*: September.

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

Distrib.: Rare along ghats in semi-evergreen forests. Yavteshwar, 165851 A.

**Melilotus A. Juss.**


Herbs, 20–30 cm high. Leaflets oblanceolate, 1.5–2.0 × 0.5–1.0 cm, margin involute, stipules lanceolate, acute. Flowers yellowish in dense racemes. Pods sub-globose, reticulate.

*FIs. & Fris.*: January.

Fig. 13. Molinietum indica (L.) Aff.
**Mucuna Adams. (nom. cons.)**

1. Perennials; pods oblong, winged on sutures, I-seeded ... *M. monosperma*

1. Annuals; pods falcately curved, not winged; seeds 5–6 ... *M. pruriens*


Climbers, large, woody; young branches rusty tomentose. Leaflets ovate oblong to elliptic, 5 × 3.5–7.5 cm, base rounded, apex acuminate, glabrous above, pubescent beneath. Flowers purple in axillary racemes; bracts triangular, deciduous; calyx with irritant bristles. Pods 6.0 × 5.5 cm, covered with brown bristles.

*Fls. & Frts.*: November January.


*Distrib.*: Infrequent in forest outskirts. Mahabaleshwar.


Climbers, stem pubescent when young. Petioles 4–10 cm long. Leaflets ovate oblong, 6 × 3.5–5.5 cm, base unequal, pubescent. Flowers purple, hairy. Pods 6–7 cm long with longitudinal ribs.

*Fls. & Frts.*: November December.

*Illus.*: Maheshwari, Ill. Fl. Delhi f. 73. 1966.

*Distrib.*: Frequent in semi-evergreen forests. Gadoli; Koyna; Mahabaleshwar - Pratapgad.

**Nogra Merr.**


Herbs, twining; stem brown hairy. Stipules ovate, acute, hairy. Leaflets ovate, acute, 4-10 × 3-10 cm, base cordate, apex acute, mucronate, glabrous above, hairy beneath. Flowers in dense 10-18 cm long racemes. Pods linear, ca 3.5 cm long, densely hairy.

*Fls. & Frts.*: September - October.

*Distrib.*: Rare, restricted to higher ghats. Mahabaleshwar, Cooke s. n.; Panchgani. Cooke s. n.

**Paracalyx Ali**


Twiners, woody; branches strate, finely pubescent. Leaflets terminal rhomboid ovate, lateral ovate, smaller 5.0-7.5 × 2.5-5.0 cm, tomentose. Flowers yellow in axillary racemes. Pods oblong, pubescent, enclosed in calyx.

*Fls. & Frts.*: November - February.

*Illus.*: Wight, Ic. t. 1597. 1850. (*Cylista scariosa*).

*Distrib.*: Common and conspicuous in semi evergreen forests because of its white calyces. Dieholi; Jadholi; Kumbharli ghat; Mahabaleshwar; Panchgani; Pirachi wadi; Umarkanhan.

**Pongamia Vent.**

Trees, 10 15 m high. Leaflets ovate oblong or elliptic, 5 9 × 2 5 cm, base rounded or acute, apex shortly acuminate, gland dotted. Flowers greenish - white. Pods ca 6 × 2 cm.

Fls. & Frts.: February July.

Illus.: Wight, Ic. t. 59. 1838. (P. glabra).

Distrib.: Common along river beds, also planted as an avenue tree. Chaphal; Koyna; Mahabaleshwar; Medha; Satara road station.

**Pseudarthria** Wight & Arn.


Herbs, ca 1 m high, softly hairy. Leaves 3 foliolate; stipules lanceolate, cuspidate, hairy. Leaflets terminal rhomboid ovate, lateral ovate, 2.0 - 5.5 × 1.3 2.5 cm, hairy above, silky beneath. Flowers in axillary and terminal 10 17 cm long racemes. Pods linear-oblong, 15 2.0 cm long, margin indented between the seeds.

Fls. & Frts.: September.

Illus.: Wight, Ic. t. 286. 1840.

Distrib.: Rare in deciduous forests. Bhosgaon, 166412.

**Pueraria** DC.


Herbs, twining; branches densely hairy. Leaflets broadly ovate, 5 10 × 2.5 4.5 cm, base oblique, apex inarculate, glabrous above, hairy beneath. Flowers reddish in dense axillary racemes; bracts linear, subulate. Pods ca 2.5 cm long, compressed.

Fls. & Frts.: November.

Distrib.: Rare. Patan. Vartak 6718 6720 (MACS).
Notes: Verdc. (op. cit.) had examined the type specimen of G. javanica and commented that it was not a *Glycine* in the conventional sense but a *Pueraria*. It agrees with *Dolichos montanus* in inflorescence structure, stipule shape and leaf indumentum.

**Rhynchosia Lour.**


Twiner, pubescent when young. Leaflets rhomboid-ovate, 2.5 x 2.0 cm, base cuneate, apex obtuse, glabrous above, pubescent beneath; stipules linear - lanceolate. Corolla yellow with red streaks. Pods oblong, compressed, up to 0.8 cm long.

*Fls. & Frts.:* July - February.

*Distrib.:* Rare in drier parts of the district. Phaltan, 165821, Raghavan 105056.

**Smithia Ait.**

1. Leaflets usually more than 4 pairs; calyx rigid with parallel veins:
2. Flowers purple
3. Flowers yellow:
   1. Stem bristly
   2. Stem glabrous:
      4. Leaflets linear - oblong; flowers in axillary 2 - 6 - flowered racemes
      1. Leaflets not more than 4 pairs; calyx membranous with anastomosing veins:
      5. Flowers in globose heads
      6. Stem glabrous; bracteoles unequal; leaflets obovate

*S. purpurea*  
*S. serrulata*  
*S. sensitiva*  
*S. conferta*  
*S. pyrnantha*  
*S. agilaburii*
Fig. 14. *Rhynchosia minima* (L.) DC.

Herbs, 9 20 cm high; stem bristly in upper part. Leaflets subsessile, 2 - 3 pairs, up to 1.2 × 0.4 cm, bristle tipped, sparsely strigose beneath; stipules lanceolate, cuspidate, scarious. Pods 3 - 5 jointed; joints orbicular, ribbed.

Fls. & Frts.: September December.

Illus.: Hemadri, op. cit.

Distrib.: On open grassy plateau found along with Canscora diffusa and Swertia densiflora. Mahabaleshwar, Bole 402, 558, Panthaki 1479 (BLAT), Mahajan 24749. Recently T.S. Nayar in Indian Forester 112: 353. 1986 has merged it under S. bigemina. However, I prefer to maintain it as a separate species till monographic work is done on this genus.


Herbs, 20 30 cm high. Leaflets subsessile, 0.7 1.2 × 0.3 - 0.8 cm, base cuneate, apex bristle pointed, glabrous above, strigose beneath. Flowers yellow. Pods 6 - 8 jointed, tubercled.

Fls. & Frts.: August February.


Distrib.: Common in large patches on open rocky grounds and near cultivated fields. Koyna; Machutar forest, Mahabaleshwar; Nauja.


Herbs, 30 50 cm high, diffuse, bristly. Leaflets 1.8 × 0.5 cm, sparsely hairy. Racemes longer than the leaves, bristly; calyx densely ciliate with yellowish hairs. Pods 4 - 7 jointed. Seeds dorsally flat, rugose, brownish black.
Fls. & Frts.: September - November

Distrib.: Frequent but restricted to higher ghat slopes. Mahabaleshwar; Panchgani; Yavatshwar


Herbs up to 1.5 m high, branches straggling. Leaflets subsessile. 4 - 16, bristly on the midrib beneath and on the margin. Flowers axillary, on short, hairy pedicels; bracteoles elliptic - oblong, bristle tipped. Pods turgid, 3 - 6 jointed, papillose.

Fls. & Frts.: November - December.

Distrib.: Annuals in marshy localities and near cultivated fields. Lingmala.


Herbs, ca 60 cm high. Leaflets sessile, 5 - 15 pairs, elliptic - oblong, bristle tipped, ca 1 cm long; stipules ovate - oblong, scarious, auricled at base, ca 1.2 cm long. Flowers in axillary racemes. Pods 10 - 12 jointed; joints orbicular - oblong.

Fls. & Frts.: October - December.

Illus.: Hook. op. cit.

Distrib.: Rare. Mahabaleshwar, Cooke, s. n.


Herbs, ca 50 cm high, stem bristly. Leaflets subsessile, 6 - 8, linear - oblong, glabrous above, bristly on the nerves beneath; stipules lanceolate, acute, hairy. Calyx ciliate on the margin with bristles from black bases. Pods 5 - 9 jointed.

Fls. & Frts.: September - October.

Distrib.: Included on Bole & Almeida's report from Mahabaleshwar.
Smithia sensitiva Ait. Hort. Kew. ed. 1. 3: 496. 1789; Baker in

Herbs, ca 1 m high. Leaflets ca 1 cm long, base rounded unequal,
apex obtuse, bristle tipped. Pod joints orbicular, 4 - 6.

Fls.: February.

Distrib.: Occasional in moist grasslands. Koyna; Mahabaleshwar.

S. setulosa Daiz. in Hook. Kew J. Bot. 3: 208. 1851; Baker in
1958 (Repr. ed.).

Herbs, ca 1 m high. Leaves 4 - 9 cm long; leaflets 8 - 14, oblong,
base oblique, apex obtuse. Flowers in dichotomous racemes. Pods many
oiled.

Fls. & Frts.: October - November.

Lilus.: Bedd. l.c. t. 243. 1874.

Distrib.: Frequent on grassy hill slopes. Koyna; Mahabaleshwar;
Mahabaleshwar - Pratapgad.

**Sphenostylis E. Meyer**

*Dolichos bracteatus* Baker in Hook. f. Fl. Brit. India 2: 210. 1876; Cooke,

Climbers. Leaflets broadly obovate, ca 15 cm long, base cuneate,
apex obtuse or acute; stipules oblong, acute. Flowers reddish in axillary
racemes. Pods linear, 12 - 15 cm long.

Fls. & Frts.: August - October.

Distrib.: Occasional along ghats, climbing on bushes in forest edges.
Mahabaleshwar.

**Tephrinia Pers. (nom. cons.)**

1. Stems sparsely hairy; style glabrescent ... T. purpurea
2. Stems densely hairy; style bearded:
   2. Leaflets 7 - 13, oblong - lanceolate ... T. concolor

1. Stems densely hairy; style bearded:

Shrubs up to 1 m high. Leaflets 4-7 x 2-4 cm, base acute, apex rounded, glabrous above, silvery beneath. Flowers in axillary racemes; bracts lanceolate, acute, scarious. Pods 5-7 cm long, glabrescent.

Fls. & Frts.: October December.

Illus.: Wall. op. cit.

Distrib.: Perennials near cultivated fields or in waste lands. Morgiri; Vajegaon.


Herbs, 30-50 cm high. Leaflets 13-19, oblanceolate, 1.5-2.5 x 1.0-1.5 cm, base acute, apex rounded mucronate, glabrous above, puberulous beneath. Flowers violet in 3-5 cm long, leaf opposed racemes. Pods 3-5 cm long, sparsely hairy.

Fls. & Frts.: April July.


Distrib.: Occasional in wastelands. Girvi; Gondavale.


Shrubs, 1-2 m high. Leaflets 4-8 x 1-2 cm, apex mucronate, glabrous above, silvery beneath. Flowers in dense, silky hairy racemes; peduncles longer than the leaves; bracts lanceolate, hairy. Pods 5-7 cm long, apiculate pubescent.

Fls. & Frts.: April December.

Illus.: Wight, t. 388. 1840.

Distrib.: Common along hill slopes and forest edges. Koyna; Mahabaleshwar; Panchgani; Rasati.
Teramnus P. Br.


Twiners, pubescent. Leaflets ovate lanceolate, 1.5 - 6.0 × 1.0 - 3.5 cm, base and apex subacute. Flowers purple in axillary 3 - 6 cm long racemes; bracts linear - lanceolate. Pods linear, 3.0 - 5.5 cm long, incurved.

Fls. & Frts.: November - April.

Illus.: Wight, Ic. t. 168. 1839 (Glycine labialis L.f.).

Distrib.: Common along forest margins in semi-evergreen forests. Dicholi; Kisrude; Nauja; Shirshingi; Vasota.

Vigna Savi

1. Trailing or erect herbs:
   2. Erect herbs; stipules up to 3 cm broad ...
      V. khandalensis
   2. Trailing herbs; stipules up to 1 cm broad ...
      V. trilobata

1. Climbers:

   3. Flowers rose-purple, 2 - 4 together ...
      V. vexillata

3. Flowers yellow in axillary racemes:
   4. Flowers in elongated racemes; pods glabrous ...
      V. dalzelliana
   4. Flowers in condensed racemes; pods hairy ...
      V. radiata var. sublobatus


Herbs, branches striate. Leaflets ovate to rhomboid - ovate, ca 2.0 - 3.5 × 1.2 - 2.0 cm, base of middle leaflet equal - sided, of lateral unequal, apex acuminate, hairy. Style bearded below. Pods subcylindric, 2.5 - 5.0 cm long.

Fls. & Frts.: September - October.
Distrib.: Rare in grasslands. Tazdeo, Kochhar 154735.


Herbs or undershrubs, up to 2 m high; stem 5 - angled, strigose when young. Leaflets half - way divided, 7 13 cm long, strigose hairy; stipules foliaceous, obovate - oblong, ciliate. Flowers yellow in racemes; peduncles 10 - 15 cm long, bristly. Pods 4.5 cm long with appressed black hairs. Seeds cylindrical, dark brown.

Fls. & Frts.: October November.

Distrib.: Common along ghats in semi-evergreen forests. At present distribution is limited to Maharashtra State only (Raghavan & Wadhwa, op. cit.). Kelghar ghat; Khambil chorghe ghat; Mahabaleshwar; Panchgani.


Climbers; stem clothed with spreading reddish brown hairs. Leaflets ovate rhomboid, terminal larger, 6 - 10 × 4 - 6 cm, densely hairy. Flowers in 4 - 6 flowered racemes. Pods cylindrical, up to 5 cm long.

Fls. & Frts.: September October.

Distrib.: Found along margins of semi-evergreen forests. Mahabaleshwar; Yavatwad.


Herbs, up to 1 m long, pubescent. Leaflets 1.0 - 2.5 cm long, as broad as long, sparsely hairy; stipules oblong, acute, hairy. Flowers yellow in axillary racemes, longer than the leaves. Pods 3.0 - 4.5 cm long.

Fls. & Frts.: July.

Distrib. : Rare near cultivated fields. Phaltan, 165822.


Climbers. Leaflets ovate lanceolate, 3.5 × 1.5 × 3.5 cm, apex acute or acuminate, sparsely hairy; stipules oblong lanceolate, acute. Pods 5–11 cm long, clothed with brown hairs. Seeds subreniform, compressed, brownish-black.

**Fis. & Frets. :** September November.

Distrib. : Common in forest undergrowth. Gureghar ; Karanjewadi ; Mahabaleshwar ; Old Mahabaleshwar ; Panchgani ; Yavtshwar.

### Cultivated Species


Climbers, hirsute. Leaflets ovate rhomboid, apex acute 1.5 × 1–3 cm, membranous, hairy. Flowers yellow in racemes. Pods subcylindrical, many seeded.

**Fis. & Frets. :** October.

**Distrib. :** Common, cultivated as a source of pulses. Satara.


**Fis. & Frets. :** April.

**Distrib. :** Cultivated as a vegetable. Taldeo.
Fig. 15. *Vigna vexillata* (L.) A. Rich.
Zornia Gmel


Herbs, diffuse, much branched. Leaflets lanceolate, up to 1.5 x 0.5 cm, gland dotted. Flowers small, yellow with red streaks in axillary spicate racemes. Pods compressed, up to 1 cm long.

_Fls. & Frts._: November May.


CULTIVATED SPECIES


Herbs, spreading; branches glandular pubescent. Leaflets ovate, elliptic, pubescent, margins dentate. Flowers yellow, solitary, axillary. Pods ovoid oblong.

_Fls. & Frts._: February March.

_Notes:_ One of the major pulses grown in the district, rarely found as an escape.


Twiners, slender. Leaves imparipinnate, leaflets 7, elliptic-oblong, 3 6 x 2 4 cm. Flowers blue or white, solitary, axillary. Pods linear oblong, 10 12 cm long, pubescent.

_Fls. & Frts._: August December.

_Distrib._ : Cultivated as an ornamental plant in gardens, also found as an escape. Chaphal; Research nursery, Koyna.

Trees, 6–9 m high. Leaflets 7–17, oblong, ovate. Flowers white with a pinkish tinge in axillary racemes. Pods linear, compressed, thickened at margins.

*Fls. & Frts.*: February.

*Distrib.*: Deciduous tree introduced from Central America, grown along roadsides and in gardens. Koyna.


Climbers, hairy. Leaflets rhomboid, ovate, terminal larger. 5.0-9.5 × 4.0-7.5 cm, hairy. Flowers yellow in axillary racemes. Pods ca 5 cm long.

*Fls. & Frts.*: September March.

*Distrib.*: Cultivated as a vegetable. Mahabaleshwar; Sanbur.


Climbers. Leaflets ovate to elliptic, oblong. Flowers white in axillary fascicles. Pods many seeded.

*Fls. & Frts.*: September December.

*Distrib.*: Cultivated as vegetable, also found as an escape. Mahabaleshwar.


Climbers. Leaflets 3, rhomboid, ovate, 5.0–7 cm long. Flowers purple in terminal racemes. Pods with crisped serrate margins, 5–7 cm long.

*Fls. & Frts.*: June.

*Distrib.*: Cultivated for edible protein rich fruits. Ambeghar.


Fls. & Frts. : November - March.

Illus. : Wight, Icon. t. 32. 1836.

Distrib. : Cultivated as a hedge plant and also for fodder purpose. Karad ; Vajegaon.


Herbs. erect or prostrate, pubescent. Leaflets lanceolate, up to 2.5 × 0.5 cm, apex mucronate ; stipules adnate half length to the petioles, scarious, with two long spines. Flowers yellow, solitary, axillary. Pods oblong, 0.5 cm long.

Fls. & Frts. : September.

Distrib. : Cultivated along hill slopes as a fodder plant. Dhamani.

CAESALPINIOIDEAE

1. Herbs, shrubs or trees :

2. Trees ; leaves simple ...................................... BAUHINIA

2. Herbs or shrubs (small trees in Cassia fistula) ; leaves pinnate .................................................. CASSIA

1. Climbers :

3. Flowers orange in spicate racemes ................................ MOULIABA

3. Flowers yellow in racemes or panicles :

4. Plants glabrous ; pods broadly winged along the upper suture ........................................... MEZONEVRON

4. Plants grey - pubescent ; pods not or narrowly winged .................................................. CAESALPINIA
BAUHINIA L.


Trees, 10 12 m high. Leaves ovate - orbicular, 1.5 4.0 × 2 - 9 cm, base cordate, apex obtuse, mucronate, glabrous above, puberulose beneath. Flowers white to yellowish in leaf opposed and terminal 5 10 cm long racemes. Pods oblong, 9 17 cm long.

Fls. & Frts. : April December.


Distrib. : Common in deciduous forests. Bhilar estate near Mahabaleshwar ; Dhokewadi ; Koyna ; Morgiri ; Shamgaon ; Shirdigaon ghat ; Shirshingi.

CULTIVATED SPECIES


Shrubs, climbing. Leaves divided half way. Flowers brick red in lax racemes; calyx tube longer than the lobes; petals 5, orbicular, cuspidate, fertile stamens 3. Pods flat.

Fls. & Frts. : March June.

Notes : Included on Bole & Almeida's report from Bhilar estate, Mahabaleshwar.


Trees upto 10 m high. Leaves up to 4 -11 cm long, divided 1/3 of their length. Flowers pink in axillary and terminal racemes. Pods oblong, up to 20 cm long, narrowed at both ends.

Frts. : October November.

Distrib. : Cultivated as an ornamental plant. Bhosgaon ; Panchgani ghat.
CAESALPINIA L.

1. Leaflets 6 - 7 pairs; pods prickly ... C. bonduc
1. Leaflets 8 - 20 pairs; pods smooth ... C. decapetala

Caesalpinia bonduc (L.) Roxb. Fl. Ind. (Carey ed.) 2: 362. 1832
Pl. 381. 1753. C. bonducella (L.) Flem. in As. Res. 11: 159. 1810;
1: 437. 1958 (Repr. ed.). 'Sugurwata'.

Climbers; branches prickly and downy - pubescent. Leaves abruptly
pinnate; leaflets elliptic oblong, 1.5 - 3.0 x 1 - 2 cm, base truncate,
 apex obtuse, mucronate, puberulous beneath. Racemes 8 - 12 cm long;
calyx fulvous tomentose; sepals oblong - obovate; petals ob lanceolate;
 stamens 10, subequal. Pods oblong, 5 - 8 cm long.

Fls. & Frts.: June - September.

Distrib.: Occasional in deciduous forests and in waste places.
Koyna.

C. decapetala (Roth) Alst. in Trim. Handb. Fl. Ceylon 6 (Suppl.):

Shrubs, straggling, with sharp, hooked prickles. Leaves 5 - 12 cm
long; leaflets sub sessile, oblong, 1.2 - 3.0 x 0.7 cm, base cuneate, apex
obtuse, glabrous above, puberulous beneath. Flowers in 15 - 20 cm long
racemes. Pods linear - oblong, slightly recurved, 6 - 8 cm long, beaked.

Fls. & Frts.: July - November.
Illus.: Wight, Ic. t. 37. 1938.

Distrib.: Occasional clumps near forest margins. Satara; Pune;
Wai.

CASSIA L.

1. Trees; pods 30 - 60 cm long ... C. fistula
1. Herbs or shrubs; pods up to 20 cm long:
2. Flowers in axillary and terminal racemes:

3. Leaflets 8 - 12 pairs; stipules foliose
   ...   C. auriculata

3. Leaflets 4 - 6 pairs; stipules absent
   ...   C. occidentalis

2. Flowers solitary or in pairs:

4. Herbs with a strong foetid odour; glands between each of the two lowest pairs
   ...   C. tora

4. Herbs without foetid odour; glands between the lowermost pair only:

5. Leaflets 3 pairs, obovate - oblong
   ...   C. obtusifolia

5. Leaflets 10 - 40 pairs, linear - oblong:

6. Petioles with a sessile gland
   ...   C. mimosoides

6. Petioles with a stipitate gland
   ...   C. pumila


shrubs, 2 3 m high, much branched. Leaflets oblong, 1 2 x 0.3 - 1.3 cm, apex obtuse, mucronate; rachis with two erect glands between each pair of leaflets. Flowers yellow with orange streaks; perfect stamens 7. Pods oblong, 10 x 2 cm, shortly stalked.

*Figs. & Fruits.*: December.


*Distrib.*: Found in drier parts of the district along road sides and in waste places. Khambatki ghat.


Trees, 6 9 m high. Leaflets 4 - 8 pairs, ovate or ovate oblong, 5 10 x 2.5 - 4.5 cm, base acute, apex emarginate. Flowers yellow in lax racemes; calyx deeply divided; lobes oblong, obtuse; petals 5, obovate, shortly clawed; stamens 10. Pods pendulous, brownish black, shining.

*Figs. & Fruits.*: April - September.

*Illustration*: Wight, Ic. t. 269. 1840.

*Distrib.*: An elegant tree in deciduous forests because of its bright yellow flowers in drooping racemes and long pods. It is also cultivated as an ornamental plant in gardens. Dhamani, Koyna, Mahabaleshwar, Medha.

Herbs, erect or ascending. Leaflets overlapping, up to 0.5 × 0.1 cm, base and apex obtuse. Flowers yellow, solitary, axillary; calyx lobes spreading, pubescent. Petals elliptic, obtuse, with long claw. Pods linear, 2.5–5.0 cm long, sparsely hairy.

Fls. & Frts.: September–October.

Distrib.: Occasional near moist places. Panchgani; Pandavgaud.


Herbs, 1–2 m high. Leaves 5–6 cm long; leaflets 2–3 × 1–3 cm. Flowers subsessile, bright yellow in leaf axils; calyx lobes ovate, acute; petals oblong, obtuse. Pods subterete, 16–18 cm long, transversely ribbed.

Fls. & Frts.: December.

Distrib.: Rare annuals growing among grasses. Morgiri 166616.

This species was considered to be conspecific to C. tora L. by Bth. (Trans. Linn. Soc. London 27: 535. 1871) which view was followed by Baker (op. cit.). It differs from C. tora in presence of single gland between the lowest pair of leaflets, seeds with broader areoles and ciliate sepals.


Shrubs, 1–3 m high. Leaflets ovate-lanceolate, 2–8 × 1.5–2.5 cm; base rounded, apex acute; rachis with a solitary gland at the base. Flowers yellow with orange streaks; calyx lobes oblong, obtuse; petals ovate-oblong; perfect stamens 7, staminodes 3. Pods flat, recurved, ca 10 cm long.

Fls. & Frts.: May–July.

Illus.: Pandey, op. cit.

Distrib.: Weed in fallow fields and along road sides. Koyna; Pingli.

Herbs. diffuse, ca 25 cm long with white, spreading hairs. Leaflets subsessile, ca 1.0 × 0.3 cm, base unequal, apex obtuse; petioles with a peltate gland at the base. Flowers yellow; petals obovate, veined. Pods linear, ca 1.5 cm long, glabrescent.

Fls. & Frts.: August.

Illus.: Pandey, op. cit.

Distrib.: Monsoon herbs in open grasslands. Koyna.


Herbs, ca 1 m high. Leaflets obovate oblong, 1.5 × 1.2 cm, base oblique, apex obtuse; rhachis grooved, pubescent. Flowers yellow in axillary pairs; petals oblong, obtuse, upper petal 2 lobed; stamens 7, staminodes 3. Pods subtetragonous, curved, 10-14 cm long.

Fls. & Frts.: April November.

Illus.: Pandey, op. cit.

Distrib.: Common in waste places. Karad; Punoli; Sanbur.

CULTIVATED SPECIES


Trees, 10-15 m high. Leaflets 7-10 pairs, ovate oblong, ca 6 × 2 cm, pilose beneath, base and apex obtuse. Flowers yellow in terminal panicles. Pods linear, ca 22 cm long.

Fls. & Frts.: April.

Illus.: Pandey, op. cit.


Trees, 8-10 m high. Leaflets oblong elliptic, 2-4 x 1-2 cm. Flowers yellow in axillary racemes. Pods flat, 10-16 cm long.

Fls. & Frts.: October.

Illus.: Pandey, op. cit.

Distrib.: Occasional in waste places, also cultivated in gardens. Satara station road, Satara.

MEZONEVRON Desf.


Climbers; branches with recurved prickles. Pinnae 2-5 pairs; leaflets ovate, 2-8 x 2-4 cm, base rounded, apex acute; rachis with small, recurved prickles. Flowers greenish-yellow; pedicles jointed above the middle; calyx yellow, leathery; upper petal 2 lobed; stamens 10, exerted. Pods oblong, ca 7.5 cm long, winged on dorsal surface.

Fls. & Frts.: December February.


Distrib.: An extensive climber at forest edges along ghata. Kumbharli ghat, Vasota.

MOULLAVA (Rheede) Adams.


Shrubs, scandent; main rachis with recurved prickles. Leaflets 5-6 pairs, oblong, 2-4 x 1-2 cm, base rounded, apex obtuse, shining above, pale beneath. Flowers in 8-12 cm long spicate racemes; rachis
brown pubescent, armed with prickles; calyx scarlet, densely pubescent; petals spatulate. Pods 5-7 cm long, tomentose when young.

_Fls. & Frts._: November - April.


_Distrib._: Common component of moist deciduous forests. Kisrude; Koyna; Kumbharli ghat; Mahabaleshwar; Mahabaleshwar Pratapgad; Morgiri; Shirdingi; Umakanchan.

**CULTIVATED SPECIES**


Trees, 2-4 m high with sharp, woody spines. Leaflets numerous, minute, oblongulate, up to 0.5 × 0.2 cm, base cuneate, apex obtuse. Flowers yellow in axillary racemes. Pods moniliform, 6-12 cm long.

_Fls. & Frts._: April.


_Distrib._: Native of Tropical America, planted as a hedge plant. Girvi.


_Fls. & Frts._: March - September.

_Illus._: Wight, t. 206. 1839 (Jonesia asoca Roxb.); Bedd. _op. cit._

_Distrib._: Included on Bole and Almeida's report from Bhular estate near Mahabaleshwar.

Trees, 12-15 m high. Leaves pinnate; leaflets oblong, 1.5 x 0.5 cm, base and apex obtuse. Flowers yellow with pink streaks in axillary racemes. Pods oblong, thick, 3-9 m long.

Fls. & Frts. : July - December.


Distrib. : Widely cultivated throughout the district. Morgiri; Satara road.

MIMOSOIDEAE

1. Armed trees, climbers or undershrubs:

2. Stamens indefinite
   3. Inflorescence bicoloured; pods linear
      3. Inflorescence concolorous; pods sateate
         1. Unarmed trees or climbers:
         4. Woody climbers; pods more than 40 cm long, jointed
            4. Trees; pods not as above:
               5. Stamens numerous
               5. Stamens 10

ACACIA Wild.

1. Erect shrubs or trees.

2. Flowers in heads:
   3. Pods moniliform
   3. Pods not moniliform

2. Flowers in spikes:
   4. Plants with white bark, pubescent
   4. Plants with reddish-brown bark, glabrous:
      5. Stipular spines solitary, hooked; gland at the base of lowest pair of leaflets
      5. Stipular spines in unequal pairs, straight, gland at the middle of petiole
1. Scandent shrubs:

6. Pods thick, wrinkled when dry ... \textit{A. sinuata}

6. Pods not as above:

7. Gland below the lowermost and uppermost pairs; pods with a wavy margin ... \textit{A. torta}

7. Gland on the petiole above the middle and below the uppermost pair; pods without a wavy margin ... \textit{A. pennata}


Trees, 9 12 m high. Leaves 2 pinnate; stipular spines from a broad triangular base; pinnae 10 pairs; leaflets sessile, 18 - 22 pairs, elliptic, \(0.5 \times 0.2\) cm, base unequal, apex subacute. Flowers yellow. Pods 5 - 7 cm long, brown, shining.

\textit{Fls. & Frts.}: March November.

\textit{Illus.}: Bedd. \textit{Fl. Sylv.} t. 50. 1870.

\textit{Distrib.}: Common in deciduous forests. Bannoli; Kiwai; Satara; Wagheri.

This species is often confused with \textit{A. catechu} Willd. from which it differs in having pubescent rachis, calyx and corolla.


Shrubs or small trees \(6 m\) high; smaller stipular spines 2.5 cm long, larger 5 - 6 cm long, hollow, shining. Pinnae 2 - 5 pairs; leaflets 6 - 13 pairs, elliptic, base truncate, apex subobtuse. Flowers creamish in lax spikes. Pods falcate, dark brown.

\textit{Fls. & Frts.}: October March

\textit{Distrib.}: Rare in scrub jungles. Mahabaleshwar, Chibber s. n.

Trees, 10–15 m high, with a yellowish bark. Pinnae 5–10 pairs; leaflets subpetiolate, 12–18 pairs, linear-oblong, up to 0.3 × 0.1 cm; spines 1.0–2.5 cm long, pubescent. Flowers creamish, sessile. Pods 6–9 × 1 cm clothed with brown tomentum.

*Fls. & Frts.* : September April.


*Distrib.* : Common in scrub forests. Medha; Shrigaon ghat.


Trees, 8–10 m high, with dark brown bark. Pinnae 4–6 pairs; leaflets sessile, 10–20 pairs, linear-oblong, ca 0.5 × 0.1 cm, base oblique, apex rounded, stipular spines straight, sharp, 3–7 cm long. Flowers yellow in axillary paniculate heads. Pods 7–10 cm long, with grey pubescence.

*Fls. & Frts.* : April July.


*Distrib.* : Frequent in plains of scrub forests, also planted along roadsides. Mahuli; Koyna; Medha.


Shrubs, scandent. Pinnae 8–12 pairs; leaflets sessile, 40–50 pairs, elliptic, ca 0.5 × 0.1 cm, base truncate, apex acute, margin ciliate. Flowers white in terminal panicles. Pods oblong, 6–8 cm long, shortly stalked.

*Fls. & Frts.* : June August.

*Distrib.* : Rare in deciduous forests in open areas and along ghats. Fitzgerald ghat, Bole & Almeida (BLAT); Koyna, Kochhar 153516.

Trees. 10-12 m high. Pinnae 14-16 pairs; leaflets sessile, 40-50 pairs, linear, ca 0.5 × 0.2 cm, apex subacute, margin ciliate. Flowers creamish white in 10-12 cm long spikes; calyx tomentose. Pods 5-15 cm long, apiculate.

Fls. & Frts.: February March.


Distrib.: Occasional in dry deciduous forests. Karanjewadi; Satara.


Shrubs; branches yellowish pubescent. Pinnae 7-8 pairs; leaflets subsessile, 10-20 pairs, linear, ca 0.5 × 0.2 cm; base oblique, apex apiculate; rachis with a gland below the middle. Flowers creamish in globose heads. Pods oblong, 7-10 cm long.

Fls. & Frts.: March-July.

Distrib.: Common in deciduous forests. Keigbar ghat; Kumbharli ghat; Mahabaleshwar; Research nursery; Koyna; Satara; Shirshingi; Wada below Mahabaleshwar.


Shrubs, scendent with young branches pubescent; Pinnae 8-10 pairs, 5-7 cm long; leaflets subsessile, 12-20 pairs, oblong, up to 1.0 × 0.3 cm, base truncate, apex acute. Flowers yellowish white in globose heads. Pods oblong, 9-16 cm long.

Fls. & Frts.: April November.

Distrib.: Common component of deciduous forests. Ambeghar; Fitzgerald ghat; Ghotil; Karanjewadi; Research nursery; Koyna; Mahabaleshwar; Panchgani.

CULTIVATED SPECIES


Trees, ca 9 m high; branches drooping. Leaves falcate, 7 12 × 2 3 cm, base attenuate, apex obtuse. Flowers yellowish in axillary Fls. 6 8 cm long spikes. Pods 8 10 cm long, coiled.

Fls. & Ffrts.: May December.

Illus.: Maheshwari, op. cit.

Distrib.: Introduced from new Guinea and Australia, planted mostly in drier parts of the district. Karad; Kunoli; Pimpodshi; Rasati.

Albizia Durazz.

1. Pinnae 10 - 14 pairs; stipules large, leafy ... A. chinensis

2. Pinnae 2 - 5 pairs; stipules absent:

2. Young branches yellowish pubescent; flowers pedicellate ... A. amara

2. Young branches grey pubescent; flowers sessile ... A. odoratissima


Trees, 8 10 m high. Leaves 2 pinnate; rhachis pubescent, glands between the upper most pair of pinnae and in the middle of the petiole; leaflets 10 30 pairs, linear oblong, base subacute, apex obtuse, glabrous above, pubescent beneath. Flowers yellow in subsessile heads. Pods large, flat. 7 10 cm long.

Fls. & Frts.: April June.

Illus.: Roxb., op. cit.; Bedd. Fl. Sylv. t. 61. 1870.

Trees, ca 6 - 10 m high; young branches golden - yellow pubescent. Leaflets sessile, 23 - 35 pairs, elliptic - acute, 0.4 - 0.7 × 1.5 - 0.3 cm, base unequal, apex acute, pubescent. Flowers white in paniculate heads. Pods 12 - 15 cm long, brown.

**Fls. & Frts.** : February - June.

**Illus.** : Bedd. Fl. Sylv. t. 55. 1870. [A. stipulata (Korxb.) Boiv.].

**Distrib.** : Common at higher elevation in semi-evergreen forests. Fitzgerald ghat ; Kirsude ; Koyna ; Pratapgad ; Shirshingi.


Trees, ca 9 - 18 m high. Pinnae 6 - 12 cm long ; leaflets 4 - 8 pairs, oblong, 1.3 - 5.0 × 1 - 3 cm, base unequal, apex rounded, glabrous above, grey pubescent beneath when young. Flowers white in large panicles. Pods oblong, 12 - 17 cm long.

**Fls. & Frts.** : May - December.


**Distrib.** : Frequent in deciduous forests. Ghotil ; Karanjewadi : Koyna ; Shirshingi.

**CULTIVATED SPECIES**


Fls.: April July.


Distrib.: Deciduous trees, cultivated in gardens and planted along roadsides as avenue trees. Dhebewadi.


Fls. & Frts.: April May.

Distrib.: Cultivated as an ornamental tree. Lingmala road, Mahabaleshwar.

Dichrostachys (DC.) Wight & Arn. (nom. cons.)


Shrubs, 4-5 m high, thorny. Leaves 2 pinnate, 4-5 cm long; rachis pubescent, glands between each pair of the pinnac; pinnac 10 pairs; leaflets sessile, linear, up to 0.3 × 0.1 cm, base obtuse, apex acute. Flowers yellow in upper half, red in lower half in solitary or paired spikes. Pods 5 cm long, dark brown.

Fls. & Frts.: April June.

Illus.: Wight, Ic. t. 357. 1840.

Distrib.: Rare in scrub forests. Conspicuous because of its two coloured flowers. Satara, Vasavada 5038.

Entada Adams. (nom. cons.)


Lianas. Leaves 2 pinnate; rhachis terminating into bifid tendrils; leaflets 3 pairs, oblong, base cuneate, apex emarginate. Flowers yellow in 20–25 cm long axillary spikes. Pods 1.5 m long, woody. Seeds orbicular, up to 4 cm across, brown, shining.

*Fls. & Frts.*: April–October.

*Distrib.*: Rare. Shirshingi, Kochhar 153047, 153661; Zadoli, 167689.

*Notes*: Largest climber in the district in semi-evergreen forest. Sometimes it is misidentified as *E. scandens* Bth. which does not occur in India. The joints of the pod break away leaving an empty frame.

It is on the verge of depletion due to large scale habitat disturbances, resin used in local medicine and loss of seeds due to decay and ant activity which are easily attracted to sugary exudate and gummy substances in the bark and pods (Nayar, *op. cit.*).

**Mimosa L.**


Shrubs, 3–5 m high with straight or curved prickles. Leaflets 6–10 pairs, ovate oblong, apex mucronate. Flowers pink in axillary and terminal heads. Pods pubescent, prickly on sutures.

*Fls. & Frts.*: March.


*Notes*: Represented by a single collection from the district by Chibber deposited at B.L.A.T.

**Cultivated Species**

Herbs; branches diffuse, prickly and clothed with long bristles from bulbous bases. Pinnae 2 pairs; leaflets 14-20 pairs, elliptic-oblance, overlapping. Flowers pink in globose heads. Pods oblong, jointed, bristly along margins.

Fls. & Frts.: July August.

Distrib.: Frequent near cultivated fields and along waste places. Nanja; Sanbur.

**XYLIA Bth.**


Trees, 10-20 m high; young branches tomentose. Leaflets 2-4 pairs, oblong, 4-6 × 1.5-2.0 cm, base rounded, apex acute. Flowers yellowish white in dense heads. Pods oblong, woody, up to 12 cm long, tomentose.

Fls. & Frts.: April.

Illus.: Roxb. op. cit.

Distrib.: Rare. Koyna, Kachhar 153117.

**CULTIVATED SPECIES**


Trees, ca 10 m high, armed. Leaflets subsessile, 12-20 pairs, oblong, base unequal, apex obtuse. Flowers yellow in axillary spikes. Pods cylindric, turgid, 10-15 cm long.

Fls. & Frts.: July.


Distrib.: Planted near temples as a sacred tree. Khatau.
ROSACEAE

1. Armed shrubs
   ...  RUBUS
1. Unarmed trees
   ...  PRUNUS

PRUNUS L


Trees, ca 15 m high. Leaves oblong - lanceolate, 5 - 10 × 3 - 5 cm, coriaceous, base unequal, apex caudate, glandular at the base of the petiole. Flowers creamish in axillary, 2 - 3 cm long, pubescent racemes. Fruits broader than long, up to 1.8 × 2.5 cm, bilobed.

Fls. & Frts.: October - March.

Illus.: Colebr. op. cit.

Distrib.: Common along ghats in semi-evergreen forests. Mahabaleshwar.

CULTIVATED SPECIES


Fls.: October - November.

Distrib.: Rare under cultivation Mahabaleshwar, Bolo 1248 (BLAT).

Trees, up to 8 m high. Leaves oblong, lanceolate, acuminate, margin crenate - serrate. Flowers pink, sessile, solitary. Drupes red, fleshy.

*Distrib.*: Cultivated for edible fruits at Mahabaleshwar.

**RUBUS L.**

1. Leaves simple
   ...  *R. moluccanus*
1. Leaves 3- foliolate
   ...  *R. ellipticus var. hirta*


Shrubs, ascending, 2-3 m high. Leaflets broadly elliptic or obovate, base and apex rounded, margin serrate - dentate. Flowers white in axillary and terminal panicles. Fruits globose, golden yellow

*Notes*: Included on Talbot's report from Mahabaleshwar.


Shrubs, subscendent, branches densely villous. Leaves cordate, 5.8 × 4.8 cm, 5 nerved, tomentose and prickly on the midrib beneath. Flowers white in axillary and terminal panicles; bracts pectinate; calyx densely silky; petals obovate. Fruits globose, reddish.

*Fls.* & *Fris.*: May.

*Illus.*: Wight, Ic. t. 225. 1839.

*Distrib.*: Rare in ravines below old Mahabaleshwar temple. Old Mahabaleshwar, *Cooke op. cit.*

**CULTIVATED SPECIES**


Shrubs, scendent, 3-5 m long. Leaflets ovate, acute, pubescent above, tomentose beneath. Flowers pink in axillary and terminal corymbs, pubescent. Drupes dark purple.
Fls. & Frts. : September November.

Illus. : Wight, Ic. t. 232. 1839.

Distrib. : Extensively cultivated for edible fruits. Mahabaleshwar; Panchgani.

**CULTIVATED SPECIES**


Herbs. Leaves 3 foliulate; leaflets rhomboid-ovate, glabrous above, silky beneath. Flowers reddish in clusters. Achenes numerous, minute, purple.

Fls. & Frts. : March June.

Distrib. : Cultivated along the Venna river banks for edible fruits, Mahabaleshwar.


Distrib. : Common ornamental plant. Mahabaleshwar; Taldeo.


Trees, ca 9 m high. Leaves ovate, acuminate, tomentose beneath. Flowers pink. Fruits globose.

This species is reported as being cultivated at Mahabaleshwar by Bole & Almeida (op. cit.) and at Panchgani by Cooke (op. cit.) however, it does not bear fruits.


Trees, 5 6 m high. Leaves oblong ovate, acute, 6-10 × 5.0 7.5 cm. Flowers white. Fruits woody, 2 3 cm long.

Climbers, large, prickly. Flowers pink in axillary clusters, fragrant.

**Distrib.**: Common ornamental plant. Mahabaleshwar; Taldeo.


Climbers. Leaflets 5-9, obovate, acuminate. Flowers pink, fragrant in axillary, dense clusters.

**Fls.**: Throughout the year.

**Distrib.**: Common ornamental plant. Mahabaleshwar; Parut.

**VAHLIACEAE**

**Vahlia** Thunb.


Herbs, erect, pubescent. Leaves opposite, subsessile, oblanceolate, up to 2 × 0.5 cm. Flowers greenish, axillary, solitary; calyx 0.3 cm long, glandular hairy; lobes 5, triangular, shorter than the tube. Capsules obovoid, up to 0.3 cm long.

**Fls. & Frts.**: January.

**Illus.**: Wight, Ic. t. 563. 1842.

**Distrib.**: Rare along river bank. Koyna, Kochhar 158439.

**CRASSULACEAE**

**Kalanchoe** Adans.

1. Flowers white;

2. Flowers pure white or with a greenish tinge, glandular... *K. bhidai*
2. Flowers white with a pinkish tinge; pedicels and calyx glandular - hairy... *K. olivacea*

1. Flowers yellow:

3. Glandular herbs; calyx divided half way... *K. lanceolata*

3. Glabrous herbs; calyx divided to the base:

4. Flowers in dense paniculate cymes... *K. integra*

4. Flowers in trichotomous corymbose cymes... *K. floribunda*


Herbs up to 1 m high with a reddish tinge. Leaves elliptic, 5.0 - 7.5 × 2.0 - 4.5 cm, base tapering, coarsely crenate. Flowers in dense cymose panicles; bracts linear - lanceolate, up to 0.4 cm long; calyx deeply divided; lobes triangular, acute, glabrous; petals oblong - obovate, acute; hypogynous scales linear, acute, ca 0.3 cm long. Follicles membranous.

*Fls. & Frts.* November.


*Distrib.*: Shirgaon ghat between Wathar and Wai, *Bhide* 1243, 166455.

*Notes*: Cooke described this species (*op. cit.*) based on Bhide's collection in 1902. It escaped the attention of subsequent collectors. During the present studies, it is collected from the type locality after a lapse of 80 years. It is frequent in Karnataka (Sharma et al. 1984), but appears to be rare in Maharashtra.


Herbs, ca 1 m high. Leaves elliptic - spathulate, up to 10 cm long, base tapering, apex rounded. Cymes 8 - 10 cm long; bracts linear - lanceolate; corolla tube inflated, lobes broadly lanceolate, acute; hypogynous scales ca 0.2 cm long.

*Fls. & Frts.*: November.

Distrib.: Occasional succulent perennials along hills near Satara, Pasarni ehat.


Herbs, upto 1 m high. Leaves spatulate oblong, 7 12 x 3.0 - 5.5 cm. Petals broadly lanceolate, acute; hypogynous scales narrowly linear, ca 0.2 cm long. Follicles ca 1 cm long.

Fls. & Frts.: April

Distrib.: Rare, robust herbs. Panchgani, Puri 14448, Woodrow (Cooke. op. cit.).


Herbs, 30 - 60 cm high. Radical leaves ovate to obovate lanceolate, 10 - 15 cm long; cauline obovate, amplexicaul, pubescent, upper once lanceolate to oblanceolate, densely glandular pubescent. Flowers in paniculate cymes. Carpels 4.

Notes: Included on Woodrow's report from Satara.


Herbs, ca 30 cm high. Leaves elliptic-lanceolate, 5 to 2 - 5 cm, irregularly crenate. Flowers in terminal paniculate cymes. Carpels 4, ca 0.5 cm long.

Fls. & Frts.: October November.

Distrib.: Rare succulent on rocks. Mahabaileshwar, Acland 427 (BLAT); Panchgani, Bhule 1067, Sedgwick 4694.

CULTIVATED SPECIES

Herbs. ca 1 m high, pubescent. Leaves variable in shape and size. Flowers yellow in paniculate cymes.

*Illus.*: Wight, Kc. t. 1158. 1846.

*Notes*: Included on Gibson's report from Pandavgarh near Wai.


Herbs, succulent, stem obtusely 4 - angled, thick. Leaves 3 - 5 foliolate; leaflets elliptic, crenate. Flowers reddish purple, in lax panicles.

*Fls.*: April.

*Illus.*: Salish, op. cit.

*Distrib.*: Frequent near forest clearings and marshy places. Mahabaleshwar; Old Mahabaleshwar; Shirshingi; Wai.

**DROSERACEAE**

**Drosera L.**

1. Cauliflorous herbs; leaves radical, spatulate; capsules 5 - valved ...

   1. Cauliflorous herbs, leaves cauoline, linear; capsules 3 - valved ...


Herbs, erect, glandular. Leaves rosulate, up to 1 × 0.5 cm, upper surface with gland tipped hairs. Flowers white, 5 merous in second racemes; styles 5. Capsules sub-globose. Seeds many, black, reticulate.

*Fls. & Frts.*: December February.

Notes: Insectivorous herbs; easily distinguishable because of the reddish leaves. Included on the authority of Chavan et al. (op. cit.) who reported it from Kas, Satara.


Herbs, 3 5 cm high, glandular hairy. Leaves upto 1.5 cm long with gland tipped tentacles in upper half. Flowers bluish pink, leaf-opposed; styles 3. Seeds minute, many, reticulate.

Fls. & Frts.: August November.


Distrib.: Slender insectivorous herbs in wet places and among grasslands. Machutar forest; Mahabaleshwar.

HALORAGACEAE

Myriophyllum L.


Herbs, aquatic; stem reddish. Leaves whorled, linear, acute upto 1.3 cm long; submerged leaves pectinately dissected. Flowers pink, sessile, unisexual, solitary or in fascicles. Fruits oblong, 0.4 cm long, 4-seeded.

Fls. & Frts.: August September.

Illus.: Wight, t. 1061. 1846. (Haloragis oligantha Wight & Arn.).

Distrib.: Frequent at Mahabaleshwar near Venna lake.
RHIZOPHORACEAE

CARALLIA Roxb.


Trees, 8-10 m high. Leaves variable in shape, broadly elliptic or obovate oblong, 5-7 × 3-5 cm. Flowers white, sessile in axillary trichotomous cymes. Fruits globose, red.

Fls. & Fris.: December March.

Illus.: Wight, Ic. 1. 604, 1843 (Carallia lanceaefolia Roxb. ex DC.); Talbot, For. Fl. Bombay Pres. & Sind 2: 10, f. 292. 1911.

Distrib.: Occasional in semi-evergreen forests. Forest Nursery, Koyna; Nanja.

COMBRETACEAE

1. Climbers; leaves opposite:

2. Young branches rusty tomentose; petals absent; calyx accrescent in fruit ... CALYCOPTERIS

2. Young branches glabrous; petals present; calyx not accrescent in fruit ... COMBRETUM

1. Trees; leaves alternate or subopposite:

3. Leaves glandular (except T. bellirica); flowers in axillary and terminal spikes; fruits 5-angled, not beaked ... TERMINALIA

3. Leaves not glandular; flowers in globose heads; fruits 2-winged, beaked ... ANOGRISSUS

ANOGRISSUS (A.P.DC.) Guillem. et al.

Trees. 12. 15 m high. Leaves elliptic, 4.9 x 2.2, 4.5 cm, base cuneate, apex obtuse or shortly cuspidate. Flowers yellow, ca. 0.3 cm across; calyx tube compressed, pubescent, 2-winged, teeth broadly triangular; petals absent. Fruits yellowish brown.

Fls. & Frts.: August September.

Illus.: Wight, l.c. t. 994. 1845. (Conocarpus latifolia Roxb. ex DC.).

Distrib.: Common component of deciduous forests. Dhamani; Ghat near Wai; Ghat near Wathar.

Calycopteris Lam.


Shrubs, straggling. Leaves ovate-lanceolate, 5-8 x 1.5-3.0 cm, base obtuse, apex acuminate, caudate, puberulous above, tomentose beneath. Panicles 20-30 cm long; flowers green, sessile. Fruits oblong, ca. 0.7 cm long, 5 ribbed, tomentose.

Fls. & Frts.: March July.


Distrib.: Common along ghats in deciduous forests. It is beautiful to see when in fruiting with brick red wings of the fruits. Koyna; Mahabaleshwar; Shirshingi.

Combretum Loei. (nom. cons.)

1. Flowers usually in axillary panicles; calyx funnel shaped, puberulous without ... C. latifolium

1. Flowers in terminal panicles; calyx cup-shaped, glabrous without ... C. ovalifolium

Climbers, large. Leaves opposite, broadly elliptic, 8 - 14 × 4 - 7 cm, base cuneate, apex shortly acuminate, coriaceous. Flowers yellowish, sessile; calyx lobes 4, triangular, reflexed; petals oblong. Fruits 3 - 4 × 3.2 - 4.2 cm, 4 - winged; wings horizontally striate, yellow with a reddish tinge.

**Fls. & Frts.** : December - May.

**Illus.** : Wight, Ic. t. 227. 1839.

**Distrib.** : Frequently distributed in moist deciduous forests. Indoli; Kumbhari ghat; Punoli.


Shrubs, large, scandent. Leaves subopposite, elliptic, 3 - 11 × 2 - 3 cm, base subacute, apex acuminate. Flowers sessile, creamish. Fruits yellowish - brown, ca 3.5 × 3.0 cm, with 4 papery wings.

**Fls. & Frts.** : April - June.


**Distrib.** : Occasional in deciduous forests. Asani; Kumbhari ghat; Mahabaleshwar.

**Terminalia L.**

1. Leaves entire; fruits not winged:
   2. Leaves crowded at the apex, glandular; drupes yellow - tomentose
      \[ \ldots \] \( T. bellirica \)
   2. Leaves sub-opposite with 2 glands at the base; drupes glabrous
      \[ \ldots \] \( T. chobula \)

1. Leaves serrate - crenate; fruits 3 - 5 - winged:
   3. Leaves alternate; fruits 3 - winged
      \[ \ldots \] \( T. paniculata \)
   3. Leaves sub-opposite or alternate; fruits 5 - winged:
      4. Glands on the midrib beneath
      \[ \ldots \] \( T. crenulata \)
      4. Glands at the base of leaves:
5. Young branches yellow - tomentose; nerves on the wings of fruits horizontal ... T. alata
5. Young branches glabrous; nerves on the wings of fruits curved upwards ... T. arjuna


Trees. 15 - 20 m high. Leaves elliptic - lanceolate, 7 - 14 × 4 - 7 cm, coriaceous, base obtuse, apex acute or emarginate. Flowers greenish-white in tomentose spikes. Drupes ovoid, ca 2.5 cm long, brown.

Fls. & Frts. : April - August.

Distrib. : Rare in deciduous forests. Mahabaleshwar, Mahajan s. n. ; Pandavgadh.


Trees. 10 - 12 m high. Leaves oblong elliptic, 7.5 - 12.5 × 2.5 - 5.5 cm, base unequal, apex obtuse. Flowers greenish white, sessile in 7 - 10 cm long panicles. Drupes ovoid, brown, ca 4.5 cm long.

Fls. & Frts. : April - May.


Distrib. : Occasional along water courses, very conspicuous because of its white bark. Koyna : Koyna valley, Mahabaleshwar.


Trees. 12 - 15 m high. Leaves broadly elliptic, 7 - 17 × 4 - 11 cm, coriaceous, base alternate, apex subacute or rounded. Flowers greenish in 4 - 15 cm long spikes; male flowers in upper part of the spike, shortly pedicelled, pubescent; female in lower part, sessile. Drupes ovoid, obscurely angled when dry.

Fls. & Frts. : April - July.
**Flora of Mahabaleshwar**


**Distrib.** Common along ghats and outskirts of deciduous forests. Koyna; Mahabaleshwar; Rasati; Salve; Shirsingi.


Trees, 6–10 m high. Leaves elliptic-oblong, 5–9 x 2–4 cm, base rounded, apex obtuse, apiculate, silky when young. Spikes 5–8 cm long; bracteoles linear, hairy exceeding the flowers; calyx lobes triangular; stamens 10, heteroecious. Drupes pendulous, ellipsoid, 2–0–3.5 cm long, 5–ribbed when dry.

**Fls. & Frts.** April–September.


**Distrib.** Widely distributed in evergreen and semi-evergreen forests. Bhikauali forest, Mahabaleshwar; Dhokewadi; Junkiti; Kas; Lingmala; Mahadevnath forest, Karanjewadi; Old Mahabaleshwar; Panchgani; Shirsingi.


Trees, 12–15 m high. Lower leaves subopposite, upper alternate, elliptic-oblong, 9–22 x 6–11 cm, base cordate, unequal, apex acute or obtuse; glands stalked. Flowers yellow in ca 10 cm long panicles. Drupes 3–5 cm long, reddish, wings coriaceous.

**Fls. & Frts.** May–September.


**Distrib.** Abundant in deciduous forests. Karad; Karanjewadi; Koyna valley; Research Nursery, Koyna; Mahabaleshwar; Tapola; Vasota.

Trees, 9 - 12 m high. Leaves oblong, upto 10.0 × 4.5 cm, coriaceous, base subcordate, apex acute or acuminate; usually with 2 glands at the base. Flowers creamish, sessile; bracts and bracteoles ovate, acute, recurved, pubescent. Drupes sessile, rusty-tomentose; median wing longer than the two lateral wings.

*Fls. & Frts.*: August - December.

*Distrib.*: Common along ghats in semi-evergreen forests. Dicholi; Junkti; Koyna; Gadoli; Nauja.

**CULTIVATED SPECIES**


Shrubs, scandent with young branches pubescent. Leaves opposite, elliptic, acuminate, 4 - 8 × 2 - 4 cm. Flowers orange-red in densely tomentose racemes.

*Fls.*: March August.

*Distrib.*: Cultivated as an ornamental plant. Mahabaleshwar.

**MYRTACEAE**

*Syzygium Gaertn. (nom. cons.)*

1. Leaves ovate - lanceolate; petioles more than 2 cm long ... *S. cumini*

1. Leaves elliptic to oblong - lanceolate; petioles not more than 1 cm long:

2. Flowers in axillary pairs ... *S. phylliracoides*

2. Flowers in axillary or terminal cymes:

3. Flowers in axillary panicleate cymes ... *S. haynouanum*

3. Flowers in terminal cymes:

4. Branches tetragonous ... *S. rubescundum*

4. Branches cylindrical or compressed ... *S. caryophyllatum*


Shrubs, branches ascending. Leaves opposite, 5 11 x 1 3 cm. Flowers white, almost sessile in 4 6 cm long trichotomous cymes; calyx campanulate; petals suborbicular. Fruits subglobose, ca 0.6 cm across, dark purple when ripe.

Fls. & Frts.: April - May.

Illus.: Wight, Ic. t. 540. 1842.

Distrib.: Occasional in deciduous forests. Mahabaleshwar; Shirshingi.


Trees, up to 20 m high. Leaves 7 9 x 3 - 4 cm, coriaceous. Flowers creamish white in paniculate cymes, fragrant; calyx cup-shaped; petals calyptrate, deciduous. Berries globose or oblong, purple.

Fls. & Frts.: April - July.

Illus.: Wight, Ic. t. 535. 1842 (Eugenia jambolana).

Distrib.: Common component of deciduous and semi-evergreen forests, also planted. It forms a thick community along the margins of streams and one of the major timber species. Dhokewadi; Gureghar; Kas; Kisrude; Kumbhatli ghat; Lingmala; Mahabaleshwar; Nauja; Satara Road; Tapola.


Shrubs, ca 5 m high. Leaves 7 10 x 1.5 2.5 cm, base tapering, apex subobtuse, pellucid punctate. Flowers white, shortly pedicelled; calyx funnel-shaped, rugulose; petals calyptrate. Fruits oblong, ellipsoid, ca 1.5 cm long.

Fls. & Frts.: May - June.
Fig. 18. *Syzygium heyneanum* (Duthie) Wall, ex Gamble
**Distrib.** Shrubs along river beds and streams. Koyna: Koyna river bed above Par bridge; Koyna valley; Mahabaleshwar; Rotundaghat.


Shrubs, ca 1.5 m high. Leaves 3 - 6 × 1.5 - 2.5 cm, base rounded, apex acuminate. Flowers white on filiform pedicels, calyx tube funnel shaped, lobes obovate, reflexed; petals broadly ovate. Fruits globose.

*Pls. & Fts.:* February - November.

*Illus.:* Wight, op. cit.

**Distrib.:** Frequent in semi-evergreen forests. Jangli Jaigad; Nauja.


Shrubs or small trees. Leaves oblong, 2.5 - 6.0 × 1.5 - 3.5 cm, attenuated at both ends. Flowers small, pale pink, sessile; calyx rugose outside, lobes obsolete. Fruits globose, black when ripe.

*Pls. & Fts.:* March - June.

*Illus.:* Wight, op. cit.

**Distrib.:** Rare taxon. Fruits eaten by animals. Mahabaleshwar. Santapau 12405 (BLAT).

**CULTIVATED SPECIES**


Trees. 8-10 m high. Leaves narrowly lanceolate, acuminate. Flowers greenish white in terminal racemes. Fruits subglobose with persistent calyx lobes at apex.
Flora of Mahabaleshwar

Fls. & Frts. : June - November.

Illus. : Wight, loc. t. 435. 1841.

Distrib. : Frequently cultivated in gardens. Mahabaleshwar; Old Mahabaleshwar; Pratapgad.


Shrubs or small trees. Leaves alternate, lanceolate, gland-dotted. Flowers pinkish in lax spikes; calyx pubescent; petals gland dotted. Capsules globose.

Fls. & Frts. : Throughout the year.

Distrib. : Cultivated as an ornamental plant. Mahabaleshwar; Forest Nursery, Koyna.

Eucalyptus globosa F.v. Muell. in J. Linn. Soc. 3: 87. 1859.

Trees, 5-6 m high. Leaves alternate, lanceolate. Flowers in axillary, few flowered umbels.

Fls. : December.

Distrib. : Rare. Gureghar Nursery, Kanodia 87049.


Trees. Leaves linear-lanceolate, up to 17 cm long, curved. Flowers in axillary umbels; petals calyptrae, deciduous. Capsules hard, loculicidally dehiscing.

Fls. & Frts. : July - November.

Distrib. : Common. Yavatshwar.


Fls. & Frts. : March - May.
Notes: Included on Birdwood’s report from Mahabaleshwar


Fls. & Frts.: Throughout the year.

Distrib.: Cultivated for fragrant leaves used in native medicine, also found as an escape. Mahabaleshwar.


Trees, 4-6 m high, bark smooth, deciduous. Leaves oblong, acuminate. Flowers axillary, 1-3 together. Fruits globose or pear-shaped.

Fls. & Frts.: Throughout the year.

Distrib.: Commonly cultivated for edible fruits. Mahabaleshwar; Shirshingi.

LECYTHIDACEAE

Careya Roxb.


Trees, ca 15 m high. Leaves broadly obovate, upto 15 × 9 cm, base cuneate, apex acuminate, deciduous. Flowers yellowish-white, in terminal spikes; sepals and petals oblong to elliptic-oblong; stamens many, subconnate at base, red. Fruits globose, fleshy, 3-5 cm across.

Fls. & Frts.: April June.

**Distrib.** Frequent in deciduous forests. Lingmala; Research Nursery, Kuyna; Raliudi.

**MELASTOMATAEAE**

1. Small, stemless herbs ... **Sonerila**

1. Shrubs or medium sized trees:

2. Flowers 4 - merous; fruits 1 - seeded ... **Memecylon**

2. Flowers 5 - merous; fruits many seeded ... **Melastoma**


Shrubs, 2 - 3 m high, whole plant clothed with appressed, paleaceous hairs. Leaves lancolate-oblong, 4 - 9 × 1.5 - 3.5 cm, base rounded, apex acute, strigose above. Flowers purple in terminal cymes; calyx lobes alternate with intermediate teeth; petals obovate. Fruits ovoid.

**Fls. & Frts.** : April September.


**Distrib.** : Occasional near streams in deciduous forests. Deshmukh-wadi; Kuyna.

**Memecylon L.**

1. Leaves yellowish-green on drying; flowers in fascicles ... **M. talbotianum**

1. Leaves turning black on drying; flowers in pedunculate cymes ... **M. umbellatum**

**Memecylon talbotianum** Brand. in Talbot, Trees Bombay ed. 2. 1902 (Appendix); Cooke, Fl. Pres. Bombay 1: 536. 1958 (Repr. ed.).

Trees, 10 - 15 m high. Leaves elliptic, acuminate, 5 - 8 × 2.0 - 3.5 cm, coriaceous, base acute, apex acuminate. Flowers blue, small, on the branches of fallen leaves; calyx campanulate; lobes triangular; petals orbicular. Berries globose, ca 0.5 cm across, yellow turning purplish black.
Fls. & Frts.: April July.


Distrib.: Common in semi-evergreen forests. Kas.


Trees, 5 8 m high. Leaves ovate-elliptic, 5 8 × 2.5-4.5 cm, base cuneate, apex obtuse. Flowers dark blue; calyx campanulate becoming saucer-shaped after expansion; petals orbicular. Berries globose, yellowish turning black, crowned with calyx lobes.

Fls. & Frts.: January June.


Distrib.: Common component of evergreen and semi-evergreen forests. Ambeghar; Jangli Jaigad; Koyna; Lingmala; Mahabaleshwar; Shirshingi.

SONERILA Roxb.


Herbs. Leaves with a purple tinge, ovate orbicular, 1.0-2.5 × 1 2 cm, base cordate, apex subacute, margins minutely crenate. Flowers rosy, 2 6 together on 1.5-4.0 cm long scapes; petals obovate. Capsules sub globose, ca 0.5 cm across.

Fls. & Frts.: July - August.

Distrib.: Occasional monsoon herb on wet rocks. Mahabaleshwar; Old Mahabaleshwar.

LYTHRACEAE

1. Erect or creeping herbs in marshy places:

2. Flowers in axillary clusters; petals absent; capsules dehiscing irregularly ... AMMANNIA
2. Flowers solitary, axillary or in terminal spikes; petals present; capsules 2-3-valved ... *Rotala*

1. Shrubs or trees:

3. Trees; flowers white; stamens numerous ... *Lagerstroemia*

3. Shrubs; flowers scarlet; stamens 12 ... *Woodfordia*

**Ammannia L.**


Herbs, 20-50 cm high; branches quadrangular. Leaves opposite, sessile, oblong lanceolate, up to 5 × 1 cm. Flowers purple; calyx tube hemispheric; lobes 4, triangular, alternate with accessory teeth. Capsules globose, red. Seeds hemispheric, black.

*Fls. & Frts.*: February.


*Distrib.*: Rare in moist place near rice fields. Mahabaleshwar, Mahajan s. n.

**Lagerstroemia L.**

1. Leaves sessile; calyx tube with a ring inside, lobes appressed in fruits ... *L. parviflora*

1. Leaves petiolate; calyx tube without a ring inside, lobes reflexed in fruits ... *L. microcarpa*


Trees, 12-15 m high. Leaves ovate elliptic, 4-10 × 3-6 cm, base and apex acute, glabrous above, hoary tomentose beneath. Panicles 6-9 cm long; calyx tube hemispheric, pubescent, teeth 6, triangular; petals oblong. Capsules ellipsoid, up to 1.5 cm long, 4-valved. Seeds many, up to 1 cm long.
Fls. & Frts. : April December.

Illus. : Wight, op. cit.

Distrib. : Common trees with white bark in dense forests. Ambeghar; Adoshi; Koyna; Mahabaleshwar; Shirshingi; Tapola.


Trees, 7 10 m high. Leaves oblong lanceolate, 2.5 - 6.5 x 1.7 - 2.5 cm, base obtuse, apex rounded, notched. Panicles 8 12 cm long; calyx tube campanulate, coriaceous, enlarged in fruits; petals obovate. Capsules ellipsoid, 2.5 - 3.5 cm long, coriaceous, 4 valved. Seeds many, compressed, up to 2.3 cm long, winged.

Fls. & Frts. : January April.

Illus. : Roxb. op. cit.; Wight, t. 69. 1839.

Distrib. : Frequent along ghats in deciduous forests. Koyna valley; Mahabaleshwar; Nath hills, Shirala; Shangaon.

CULTIVATED SPECIES


Trees, ca 10 m high. Leaves elliptic to oblong lanceolate. Flowers purple in large panicles; calyx ribbed, tomentose; petals undulate, spreading. Capsules subglobose or ellipsoid.

Fls. & Frts. : April June.

Illus. : Wight, t. 413. 1840.

Distrib. : Cultivated as an ornamental plant. Koyna; Mahabaleshwar.
Rotala L.

1. Capsules 3 - valved
2. Leaves alternate, upper linear, lower oblong - obtuse

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Herbs, 15 - 35 cm long, branches quadrangular, rooting at lower nodes. Leaves sessile, oblong lanceolate, 1.0 - 3.5 × 0.3 - 0.7 cm, base rounded, apex obtuse. Flowers pink, sessile, in axils of floral bracteoles as long as the calyx; calyx teeth triangular, alternate with the longer appendages. Capsules subglobose.

Fls. & Frts.: September October.

Illus.: Wight, Lc. t. 260 B. 1810 (R. roxburghiana).

Distrib.: Prostrate herbs near moist places. Koyna; Mahabaleshwar; Old Mahabaleshwar; Panehgoni; Shirshingi.


Herbs, 15 - 30 cm long; stem reddish. Leaves sessile, ca 2.5 cm long, base and apex obtuse. Flowers pink - violet; calyx teeth triangular, acute; petals oblong. Capsules ellipsoid.

Fls. & Frts.: October February.

Distrib.: Common on wet rocks along ghats. Lingmala; Mahabaleshwar; Mahabaleshwar Pratagad.

Notes: It differs from other two species of Rotala L. in dimorphic style and stamens. Flowers are with included stamens and a long exerted style and exerted stamens with style included.

Herbs, ascending, 10 cm long. Leaves small, subsessile, up to 1.5 cm long. Flowers pink in ov 1.5 cm long spikes; bracts oblong-lanceolate; bracteoles linear lanceolate; calyx constricted below the teeth; petals obovate, shorter or as long as calyx. Capsules and seeds ellipsoid.

*Fls. & Fris.*: February.

*Illus.*: Wight, Tc. t. 257 B. 1840 (*Ameletia tenuis*).

*Distrib.*: Slender herbs near streams. Mahabaleshwar.

**Woodfordia** Salisb.


Shrubs, 2-3 m high. Leaves sessile, oblong-lanceolate, 4.0-7.5 X 0.5-2.5 cm, base rounded, apex acute. Flowers in axillary pedunculate cymes; pedicels short, glandular; calyx tubular, constricted below, teeth glandular. Capsules ellipsoid, 0.7-1.0 cm long, enclosed within the calyx tube. Seeds concave-obovoid, brown, smooth.

*Fls. & Fris.*: February May.

*Distrib.*: Common component of deciduous forests along ghat. Asam: Dhekewadi; Karanjewadi; Kumbharli ghat; Mahabaleshwar; Mahabaleshwar Pratagad; Shirshingi; Wai.

**CULTIVATED SPECIES**

Fig. 19. Wodyetia fruticosa (L.) Kurz

_Fls. & Frts. : June December._

_Distrib. : Cultivated as a hedge plant. Mahabaleshwar; Patan; Pimpodshi._

**SONNERATIACEAE**

**CULTIVATED SPECIES**


Trees, ca 15 m high, branches pendent. Leaves oblong, acute, up to 20 × 7 cm. Flowers white in large, terminal panicles. Capsules globose, 4-valved.

_Fls. & Frts. : April June._

_Distrib. : Introduced in garden as an ornamental plant. Koyna._

**PUNICACEAE**

**CULTIVATED SPECIES**


Trees, up to 6 m high; branchlets armed. Leaves opposite or clustered, oblong obovate, up to 5 × 0.5 cm. Flowers orange red, axillary, solitary or clustered. Fruits globose. Seeds angular.

_Fls. & Frts. : Throughout the year._

_Distrib. : Cultivated for edible fruits. Mahabaleshwar._
LUDWIGIA L.

1. Stamens as many as the petals: ... \textit{L. perennis}.
1. Stamens twice as many as the petals:

2. Bracts minute, deciduous; capsules uniseriate in lower 1/3 part, multiseriate in upper part ... \textit{L. hyssopifolia}.
2. Bracts large, persistent; capsules not as above ... \textit{L. octovalvis} spp. \textit{sessiliflora}.


Herbs up to 18 cm high. Leaves alternate, lanceolate, 1.3 \times 0.3 cm, base tapering, apex acuminate. Flowers yellow, solitary, axillary. Capsules cylindric, up to 2.2 cm long. Seeds ellipsoid.

\textit{Fls.} & \textit{Ffrts.} : April.

\textit{Distrib.} : Annual herbs in waste places. Kumbharmeli ghat.


Herbs, up to 1 m high. Leaves subsessile, lanceolate, 5.0 \times 1.2 \times 1.7 cm, base and apex tapering. Flowers yellow, solitary, axillary; calyx tube sub quadrangular; lobes 4, ovate elliptic, hairy; petals broadly obovate. Capsules up to 3 cm long, ribbed, breaking up between the ribs.

\textit{Fls.} & \textit{Ffrts.} : December April.


\textit{Distrib.} : Rare in swamps. Dhayati, 166630; Koyna dam. \textit{Kochhar} 154767.

Fig. 28. *Leucocoria hirsutiflora* (Vr. Don) Exell

Herbs, 15 30 cm high. Leaves oblong lanceolate, 1 2 × 0.3 cm, base attenuate, apex subacute. Flowers yellow; sepals ovate, acute; petals elliptic oblong. Capsules cylindric, up to 2 cm long. Seeds ellipsoid, multiseriate, straw coloured.

Fls. & Frts.: November.


Distrib.: Rare in wet rice fields. Koyna, Kochhar 154299.

CULTIVATED SPECIES


Grows as an ornamental plant. Based on Cooke's report from Mahabaleshwar.


Herbs, prostrate or ascending. Leaves alternate, ovate lanceolate, sparsely hairy. Flowers pink, axillary, solitary. Capsules clavate, pubescent.

Fls. & Frts.: January December.

Distrib.: Small ornamental plant grown in gardens. Mahabaleshwar, Panchgani.

PASSIFLORACEAE

PASSIFLORA L.


Climbers. Leaves ovate, 3 lobed, 5 9 × 4.0 7.5 cm, base cordate, apex acute, glandular hairy; stipules semiauriculate with filiform
segments. Flowers white, axillary, solitary; calyx divided halfway down; petals oblong. Corona of short threads, many seriate.

Fls.: July.

Distrib.: Occasionally found along hedges, also cultivated. Kaya.

CARICACEAE

CULTIVATED SPECIES


Distrib.: Widely cultivated for edible fruits. Mahabaleshwar.

CUCURBITACEAE

1. Tendrils 2 - 3 fold:
   2. Petals fringed on margins
      2. Petals not as above:
         3. Flowers solitary
            3. Flowers in fascicles or racemes:
               4. Fruits 8 - ribbed
               4. Fruits smooth
      5. Ovules and seeds erect
      6. Male flowers with large, orbicular - reniform bracts; calyx with 2 - 3 scales at base
         6. Male flowers without bract as above; calyx without basal scales:
            7. Leaves amplexicaul; connective of anthers not produced
            7. Leaves not amplexicaul; connective of produced:

      ... Trichosanthes
      ... Citrullus
      ... Luffa
      ... Diplopyclnos
      ... Dicoelospermum
      ... Momordica
      ... Salena
8. Plants glabrous:

9. Connective and filaments ciliate; fruits dehiscing by valves ... Zehneria

9. Connective and filaments glabrous; fruits dehiscing by operculum ... Corallocarpus

8. Plants scabrid:

10. Fruits sebace ... Cucumis

10. Fruits not as above:

11. Stamens inserted in the middle of calyx tube; fruits rostrate ... Kadrostis

11. Stamens inserted at the base of calyx tube; fruits not rostrate ... Mukia

Citrullus Schrad.


Herbs, trailing, branches angular, scabrid or hisutic. Leaves ovate deltoid, 3 (5 7) lobed, lobes deeply dissected. Flowers yellowish; calyx tube campanulate; lobes recurved. Fruits up to 5 cm across, variegated green and white. Seeds ovate-oblong, brownish.

Fls. & Frts.: November January.

Illus.: Wight, l.c. t. 498. 1841 ; Chakravarty, op. cit.

Distrib.: Weed near cultivated fields, used in native medicines in Jaundice and rheumatism. Mahabaleshwar.

Cultivated Species

CUMULUS L.

1. Annuals; fruits setose
   ... C. setosus

2. Perennials; fruits glabrous or pubescent, not setose
   ... C. callosus


Herbs, ca 1 m high, scabrid. Leaves 1-2 cm long, entire or 3-lobed, scabrid, margins dentate. Flowers yellow, usually solitary, rarely...

*Fls. & Frts.:* February July.

*Illus.:* Wight, Ic. t. 497. 1841 (*C. trigonus*).

*Distrib.:* Occasional near cultivated fields. Chapral, 165868.


Climbers. Leaves 3 5 cm long, as broad as long, 3-lobed, hairy, margins denticulate. Flowers yellow; male flowers in axillary clusters on villous, filiform peduncles; female flowers solitary, axillary; calyx setose. Fruits oblong, ca 2 cm long. Seeds ovate oblong, compressed.

*Fls. & Frts.:* September.

*Illus.:* Chakravarty, op cit.

*Distrib.:* Rare, endemic to Maharashtra. Yavatashwar, 165861.

CULTIVATED SPECIES


Climbers; stem slender, hairy. Leaves 2 7 cm long, as broad as long, shallowly 3 5 lobed. Flowers yellow. Fruits ellipsoid. Seeds oblong, white.

*Fls. & Frts.:* August November.

*Illus.:* Wight, Ic. t. 496. 1841 (*C. pubescens* Willd.).

*Distrib.:* Extensively cultivated for its edible fruits. Kisdruide.


_Fls & Frts._ : July October.

_Distrib._ : Cultivated for edible fruits. Mahabaleshwar.

**DICOELOSPERMUM C.B. Cl.**


Herbs, scandent ; branches grooved, scabrid. Leaves ovate - cordate, 3 - 8 cm across, obscurely 3 - lobed, sparsely hairy above, scabrid beneath. Flowers white in axillary fascicles. Fruits ca 0.5 cm long, red when ripe. Seeds broadly ovate, compressed.

_Fls. & Frts._ : June November.


**DIPLOCYCLOS (Endl.) Post & O. Ktze.**


Climbers. Leaves 4 - 6 cm long, palmately 3 lobed, base cordate, apex obtuse, scabrid above, glabrous beneath, margin dentate. Flowers yellowish, male and female in the same axis ; calyx tube campanulate ; lobes subulate ; corolla lobes ovate - oblong, pubescent. Fruits ca 2.5 cm across. Seeds pyriform.

_Fls. & Frts._ : September November.

**Distrib.** : Common in semi-evergreen forests along hill slopes.

**Kedrostis Medic.**


Climbers, sparsely scabrid. Leaves orbicular, 2-4 cm across, scabrid, margin denticulate. Flowers yellow; male flowers 2-3 together on filiform peduncles; calyx campanulate, hairy; petals oblong lanceolate; female flowers solitary, axillary. Fruits subsessile, up to 2.5 cm long, pubescent.

*Fls. & Frts.* : November.


**Luffa Mill.**


*Fls. & Frts.* : November.

*Notes* : Included on the authority of Nairne (Cooke, *op. cit.*) who reported it from Satara.

**CULTIVATED SPECIES**


Climbers; branches 5 angled, twisted. Leaves orbicular, palmately 5 lobed, scabrous; tendrils 4 fid. Male flowers in axillary racemes. Female flowers solitary, axillary. Fruits cylindrical, green, striate.

Fls. & Frts.: November.


Distrib.: Cultivated as a vegetable. Satara.

Momordica L.


Climbers, perennials. Leaves broadly ovate, 7 9 x 7 10 cm, 5 lobed, base cordate. Male flowers yellow, solitary; peduncles 10 - 12 cm long; bracts ca 2 cm long, puberulous; female flowers solitary; peduncles 5 - 6 cm long; bracts absent or if present small. Fruits ovoid, ca 3 cm long.

Fls. & Frts.: June September.

Illus.: Wight, Ic. t. 505 506. 1841.


Cultivated Species


Climbers. Leaves deltoid ovate, 3.5 6.0 x 2.5 5.0 cm, 3 - 5 lobed. Flowers yellow, solitary, axillary: bracts foliaceous. Fruits fusiform, beaked, tuberculate.
FLORA OF MAHABALESHWAR

Fls. & Fris.: July September.

Illus.: Wight, Lc. t. 504. 1841.

Distrib.: Cultivated as a vegetable, also as a hedge plant. Ghotil.

MUKIA AHN.


Herbs, climbing; stem grooved, scabrous. Leaves deltoid-ovate, 3 5 x 4 6 cm, obtusely 3 5 angled, scabrid, margins dentate; tendrils striate, scaberulous. Flowers yellow in axillary fascicles. Fruits ca 1 cm across, red when ripe. Seeds ellipsoid, compressed.

Fls. & Fris.: July September.

Illus.: Wight, Lc. t. 501. 1841 (Bryonia scabrella L.f. Suppl. 424. 1781).

Distrib.: Common annuals along hill slopes. Dhebewadi.

SOLENA LOUR.

Herbs, scandent; branches grooved. Leaves ovate deltoid, 4 to 7 x 3.5 to 5.5 cm, base cordate or hastate, apex acute or acuminate. Flowers yellowish in axillary fascicles; corolla puberulous; anthers suborbicular, ciliate. Fruits 2 to 3 cm across.

Fls. & Frts.: August October.


Distrib.: Common along ghats in deciduous and semi-evergreen forests. Khambil; Chorghe ghat; Mahabaleshwar; Tapola; Vasota.

TRICHOSANTHES L.


Climbers. Leaves 9 to 10 x 9 to 12 cm, 3-lobed, margins denticulate. Male flowers white in axillary racemes; bracts upto 3.5 cm long, puberulous; calyx tube longitudinally ribbed; petals oblong; female flowers solitary, axillary. Fruits globose. Seeds ellipsoid, attenuate at base, white.

Fls. & Frts.: May July.


Distrib.: Common on hill slopes. Ambeghar; Koyna; Lingmala; Mahabaleshwar; Mahabaleshwar Pratapgad.

ZEHNERIA Endl.


Climbers. Leaves deltoid, 5 8 x 5.0 7.5 cm, 3 angled, margins distantly toothed. Male flowers in umbels or racemes on long peduncles; female solitary, axillary, shortly pedunculate. Fruits ca 1 cm across, red when ripe. Seeds ovate oblong, attenuate at base.

*Fris.* & *Fris.* : August November.


*Distrib.* : Common component of semi-evergreen forests. Kas; Lingmala; Machutar forest; Mahabaleshwar; Nauja.

**CULTIVATED SPECIES**


*Fris.* & *Fris.* : July September.


*Distrib.* : Widely cultivated as a vegetable. Occasionally found as an escape. Chaphal ; Pandavgad.

**BEGONIACEAE**

**Begonia L.**

1. Plants tuberous ... *B. prinophylla*

1. Plants not tuberous :

2. Capsules winged, 7 - celled ... *B. crassina*

2. Capsules not winged, 3 - celled ... *B. malabarnea*
Begonia crenata Dryand. in Trans. Linn. Soc. 1: 164, t. 14, f. 3. 1791; C.B.Cl. in Hook. f. Fl. Brit. India 2: 651. 1879; Cooke, Fl. Pres. Bombay 1: 584. 1958 (Repr. ed.). (Fig. 21).

Herbs, 15–30 cm high; stems reddish. Leaves alternate, ovate or suborbicular, 4–5 × 3.5–5.0 cm, base cordate, apex acute, glabrous above, silvery white beneath, margins crenate. Flowers unisexual, pinkish with glistening dots when fresh. Capsules membranous, 3 winged, crowned by accrescent perianth. Seeds many, minute, ellipsoid.

Fls. & Frts.: July February.

Distrib.: Common monsoon herbs in moist rocky crevices. Ambeghar, Kas; Koyna, Lingmala Satara road; Mahabaleshwar; Mahabaleshwar Lingmala road; Shirshingi.


Herbs, ca 50 cm high, perennials. Leaves lanceolate, base cordate, unequal, apex acute, pilose above, glabrous beneath. Flowers pink in axillary cymes; male flowers: sepals and petals orbicular; stamens monadelphous. Female flowers: perianth segments 5; styles 3. Capsules ca 2 cm across.


Distrib.: Included on Birdwood's report from Mahabaleshwar.


Herbs, ca 40 cm high. Leaves broadly ovate to rounded, 19–24 cm across, base unequal, apex acute, densely bristly; petioles 15–26 cm long; stipules ovate lanceolate, hairy. Male flowers: sepals orbicular, hairy without; petals broadly obvate; stamens many, free. Female flowers: perianth segments 5, elliptic oblong. Capsules trigonous, hispid.

Fls. & Frts.: August October.

Illus.: Blatt. & McC. op. cit.

Distrib.: Rare species, known only by the type collection; endemic to Mahabaleshwar. Ludwick point, Mahabaleshwar, McCana 2915, 2919, 2923 (BLAT).
CACTACEAE


Shrubs, succulent; stem joints oblong-ovate, flat with many areoles bearing sharp spines. Leaves small, terete, deciduous. Flowers yellow, solitary. Berries red.

Fls. & Frts. : April July.

Distrib. : Native of S. America; found in waste places and along roadsides. Koyna, Kochhar.

MOLLUGINACEAE

1. Leaves obovate-suborbicular, villous; seeds strophiolate ...

1. Leaves narrowly linear, glabrous; seeds estrophiolate ...

GLINUS

GLINUS L.


Herbs, prostrate, 15–40 cm long, softly villous. Leaves 3–5 together, ca 0.5–1.3 cm across. Flowers pinkish-white in axillary fascicles; perianth lobes elliptic-lanceolate, subequal, hairy within. Capsules ovoid, ca 0.5 cm long, 5-valved.

Fls. & Frts. : April May


Distrib. : Annuals along waste places and near cultivated fields. Koyna.
Mollugo L.


Herbs, diffuse, 5–10 cm high. Leaves 2–4 together, ca 2 cm long. Flowers small, white in terminal cymes; peduncles and pedicels filiform; calyx lobes elliptic-oblong, subequal. Capsules globose, slightly longer than the calyx. Seeds many, reniform to rounded.

*Fls.* & *Frs.*: May–September.

*Distrib.*: Common annuals in grass lands and on wet rocks along ghats. Koyna.

Aizoaceae

Triandhema L.


Herbs, prostrate, much branched. Leaves opposite pairs slightly unequal, broadly obovate, 2.2–3.6 × 1.0–2.5 cm, succulent, base cuneate, apex rounded, apiculate. Flowers pink in axillary fascicles, calyx lobes ovate, acute; petals absent; stamens 10, 2-seriate. Capsules ca 0.5 cm long, truncate at apex.

*Fls.* & *Frs.*: July–August.


*Distrib.*: Rare, in drier part of the district in waste places. Phaltan, 165840.

*Notes*: Jeffrey (Kew Bull. 14: 235. 1960) has split the genus *Triandhema* L. into two subgenera viz., *Triandhema* with solitary flowers and 4-many ovules and *Papularia* (Forsk.) Jeffrey with flowers clustered and 2-ovules. According to this classification, the present specimen fits in the subgenus *Papularia*.
APIACEAE

1. Plants trailing; leaves and umbels simple:

2. Leaves lobed; flowers white; mericarps 3-ribbed... \textit{Hydrocotyle}

2. Leaves entire; flowers pink; mericarps 7-9-ribbed... \textit{Centella}

1. Plants erect; leaves and umbels compound:

3. Mericarps laterally compressed, not winged on margin:

4. Pubescent herbs; furrows 2, 3 vittate... \textit{Pimpinella}

4. Glabrous herbs; furrows 1-vittate... \textit{Trachyspermum}

3. Mericarps dorsally compressed, winged on margins:

3. Plants glabrous; roots tuberous... \textit{Polyzygos}

5. Plants hairy; roots fusiform:

6. Petals radiant... \textit{Pinda}

6. Petals not radiant... \textit{Heracleum}

\textbf{Centella L.}


Herbs; stem slender, reddish. internodes long, rooting at nodes. Leaves orbicular-reniform, 10 \(2.2 \times 1.1\) 3.7 cm, broader than long; petioles 6 \(11\) cm long. Flowers sessile; bracts 2, ovate, acute. Mericarps brown, laterally compressed.

\textit{Fls. \\& Frts.}: February August.

\textit{Illus.}: Wight. Io. t. 565. 1842 (\textit{Hydrocotyle asiatica} L.).

\textit{Distrib.}: Common near marshy places and grasslands. Gureghar; Koyna; Mahabaleshwar.

\textbf{Heracleum L.}

1. Flowers yellow... \textit{H. grandis}

1. Flowers white:

2. Primary umbels 6-10 rayed; mericarps broadly winged... \textit{H. aquilegifolium}

2. Primary umbels 8-20 rayed; mericarps narrowly winged... \textit{H. sprengelianum}

Herbs. Leaves radical, 2-pinnate; petioles 5-11 cm long, dilated at base; lower leaflets ternate, second pair sessile; simple, third leaflet 3-lobed with winged petioles; upper leaves reduced to sheaths; bracts 3, oblong-lanceolate. Secondary umbels 6-8 rayed; bracteoles 3-5, linear oblong. Mericarps ellipsoid, ca 1 cm long, commissural vittae 4-6.

Fls. & Frts.: August.

Distrib.: Occasional along ghats. Mahabaleshwar; Panchgani-Wai.


Herbs, 40-50 cm high. Leaves radical, 2-pinnate; 10-15 cm long; leaflets ca 5.0 x 2.5 cm long. Primary umbels 4-6 rayed, unequal; secondary umbels 6-10 flowered; bracteoles 5, oblong. Mericarps obovate, ca 1.5 x 1.2 cm; commissural vittae 4.

Fls & Frts.: July-October.

Distrib.: Common monsoon herb on hill slopes, restricted to Sahyadri ranges. Kusapur; Mahabaleshwar; Panchgani; Pandavgad, Pratapgad.


Herbs ca 1 m high. Lower leaves bipinnate, ovate, sparsely hairy; leaflets 5-7, terminal 3-lobed; upper leaves 3-foliolate, uppermost reduced to sheaths; bracts oblong-lanceolate; bracteoles 3-5, deciduous. Mericarps ellipsoid, 4-vittate on dorsal surface.

Fls. & Frts.: August.

Illus.: Wight, Ic. t. 1008. 1845 (Pastinaca sprengeliana).

Distrib.: Occasional on exposed hill slopes. Panchgani; Pandavgad.

Fig. 22. *Hesperium grandiflorum* (Dull. & Gibbs.) S.M. Almeida
Fig. 23. *Heracleum grandis* (Dalz. & Gibs.) S.M. Almeida
Nairne (op. cit.) reported this species on the authority of Cooke (Bombay Gazetteer 19: 650. 1885), however, Cooke, (op. cit.) had not seen this species but included on the authority of Dalz. & Gibbs, who reported it from Harishchandragad and Harsar. Mukherjee (1983) doubts the availability of this species in any herbaria other than the type.

**HYDROCOTYLE L.**


Herbs, stoloniferous. Leaves orbicular, 0.7 – 2.5 cm across, paimarily lobed, pubescent. Flowers in solitary umbels. Mericarps orbicular, dorsally compressed.

**Fls. & Frts.** : March.


**Distrib.** : Included on Birdwood's report from Mahabaleshwar.

**PIMPINELLA L.**

1. Bracts and bracteoles absent:

   2. Leaflets oblong-lanceolate; mericarps glabrous ... *P. heyneana*

   3. Leaflets ovate-circular; mericarps hispid ... *P. katrajensis*

1. Bracts and bracteoles present:

   3. Flowers polygamous ... *P. wallichiana*

   3. Flowers bisexual:

   4. Prostrate herbs; bracts 4 – 6; mericarps ovoid, minutely pilose ... *P. ascendens*

   4. Erect herbs; bracts solitary; mericarps narrowly oblong with white scales ... *P. tomentosa*

Herbs, 15-25 cm long. Leaves pinnate, 5-7 cm long; leaflets 4-6 pairs, obovate, base cuneate. Flowers white in terminal umbels; primary umbels 6-8 rayed, unequal; bracts linear-subulate; secondary umbels 6-10 flowered; bracteoles linear-subulate. Mericarps ca 0.2 cm long.

Fls. & Frts.: February December.

Distrib.: Common in open grasslands. Asani; Koyna; Mahabaleshwar; Mohavashi; Vasota.


Herbs, ca 1 m high. Leaves 3-foliolate; leaflets 3, 5-1.5, 3.5 cm, deeply lobed, chartaceous. Primary umbels 10-18 rayed, unequal; secondary umbels 6-8 flowered on filiform pedicels; flowers white; petals ovate, apex inflexed, Mericarps ovoid, ca 0.2 cm long.

Fls. & Frts.: November.

Distrib.: Infrequent in semi-evergreen forest edges. Koyna.


Herbs, ca 1 m high. Leaves 3-foliolate, the lower-most sometimes simple; leaflets ca 6.5×5.5 cm, base cordate, apex acute, sparsely hairy beneath, pubescent above, margin coarsely toothed and cartilaginous. Primary umbels ca 4.5 cm long, puberulous; secondary umbels ca 2.5 cm long; petals ovate-oblong or obcordate. Mericarps ovoid, ca 0.3×0.2 cm.

Fls. & Frts.: August November.

illus.: Rola Rao & Hemadri, op. cit.

Distrib.: Panchgani. Cooke s.n.

Notes: Aromatic perennials. Resembles P. teschenavittii DC. & P. candolleana Wight & Arn. in general habit but differentiated from the former by its densely hispid fruits and from the latter by the absence of bracts and bracteoles.

Cooke (op. cit.) reported P. candolleana from Panchgani. However, according to Rola Rao & Hemadri (op. cit.) description of this species is
based on a specimen of *P. candolleana* collected by Meebold from the Nilgiris, which is common in that area and does not occur in Maharashtra. Therefore, Cooke’s *P. candolleana* needed a new name.


**Fls. & Frts.** : January - October.

**Distrib.** : Frequent along ghats. Mahabaleshwar; Panchgani-Wai; Vardhangad.


**Fls. & Frts.** : January - November.

**Distrib.** : Frequent at higher elevations as forest undergrowth. Koyna; Mahabaleshwar; Panchgani.

**PINDA** P.K. Mukh. & Constance


**Fls.** 30 - 40 cm high. Leaves binate; leaflets 5 - 10 cm long; leaflets 3 lobed, margin serrate, pubescent. Flowers white; primary umbels 5 - 10 rayed; bracts 3, lanceolate; bracteoles 5, lanceolate, strongly
Fig. 24. *Pinda concanensis* (Delz.) P.K. Mukh. & Constance
nerved; petals broadly obovate, 7 lobed with short, inflexed tooth between the lobes. Mericarps elliptic, ca 0.7 cm long.

Fls. & Frts. : July - October.

Distrib. : Common along ghats on exposed slopes. Jadugoli, Kas; Mahabaleshwar; Panchgani; Paudavgad; Shirshingi; Yavateshwar.

POLYZYGUS Dalz.


Herbs, ca 50 cm high; stem angular, furrowed above, terete below. Leaflets pinnatisect, ovate-lanceolate, segments with bristly pointed serratures. Flowers white; primary umbels 6 - 8 rayed; bract l. subulate; secondary umbels 8 - 12 flowered; bracteoles 3, lanceolate. Mericarps ovoid, ca 0.3 cm long.

Fls. & Frts. : July.

Distrib. : Rare in the district as well as in Maharashtra State. Koyna. Vasavada 5017.

TRACHYSPERMUM Link (nom. cons.)


Herbs, ca 1 m high. Leaflets deeply cut into linear-lanceolate, glabrous segments. Flowers white in compound umbels; bracts 5 - 6, linear, acute. Mericarps ellipsoid, brown, puberulous, ridges slender, obscure.

Fls. & Frts. : October December.

Distrib. : Common Mahabaleshwar; Mhavashi; Panchgani; Shirdron ghat.
CULTIVATED SPECIES


Herbs, slender, erect. Leaves 2-3 pinnate; segments linear. Primary umbels 6-9-rayed; secondary umbels 6-14-flowered; flowers yellow. Mericarps oblong, ca 0.5 cm long, ridges thick.

*Fls. & Frts.*: December-March.

*Distr.*: Cultivated as a vegetable, also found as an escape. Mhavashi, Mahabaleshwar.


Herbs, 25-50 cm high. Leaves pinnatisect, 5-8 cm long. Primary umbels 3-4 with single linear bract; secondary umbels 8-10 flowered; bracteoles linear. Flowers white. Mericarps ovoid, ca 0.3 cm long.

*Fls. & Frts.*: Throughout the year.

*Distr.*: Commonly cultivated, whole plant and seeds used as condiment. Koyna, Mahabaleshwar.

ARALIACEAE

**Schefflera j. & G. Forst. (nom. cons.)**


Climbers. Leaves alternate, digitate, crowded at the apex; leaflets 3-5, elliptic-oblong, 7-11×4-5 cm; stipules connate, ca 1 cm long. Flowers greenish-white in paniculate umbels. Fruits subglobose, brown, 5-angled.
Fls. & Frts. : June.

Distrib. : Rare in semi-evergreen forests. Koyna, Kochhar 158445.

**Rubiaceae**

1. Climbers :
   2. Stem herbaceous; branches scabrid; flowers in axillary and terminal cymes ... **Rubia**
   2. Stem woody; branches smooth; flowers in leaf opposed cymes ... **Gyranthes**

1. Erect or prostrate herbs, shrubs or trees :

3. Herbs :

4. Flowers 5-merous :
   5. Leaves 3-11 cm long; flowers in terminal cymes ... **Omphaloriza**
   5. Leaves 1 cm long; flowers solitary, axillary ... **Phlebella**

4. Flowers 4-merous :
   6. Flowers in axillary fascicles or terminal sessile heads ... **Spermacoce**

6. Flowers in axillary fascicles or terminal cymes :
   7. Seeds more than 30, angular ... **Hedyotis**
   7. Seeds less than 15, plano-convex or globular with a ventral cavity ... **Neanotis**

3. Shrubs or trees :

8. Plants armed :

9. Erect or scandent shrubs :
   10. Flowers in axillary fascicles; corolla tube glabrous within ... **Cantium**
   10. Flowers in axillary cymes; corolla tube villous within ... **Meyna**

9. Small trees :

11. Leaves tomentose beneath; flowers in fascicles ... **Catunaregam**
   11. Leaves glabrous beneath; flowers solitary ... **Tamilnadia**
8. Plants unarmed:

12. One calyx lobe enlarged, leafy and showy ... **Mussaenda**

12. All calyx lobes equal:

13. Stipules intrapetiolar:

14. Stipules persistent; fruit a berry or capsule ... **Spermacoction**

14. Stipules deciduous; fruit a drupe:

15. Corolla lobes twisted to left in bud; stigma entire ... **Pavrita**

15. Corolla lobes valvate; stigma 2-fold ... **Psychotria**

13. Stipules interpetiolar:

16. Flowers aggregated in globose heads:

17. Flowers orange; corolla lobes imbricate ... **Nolamarckia**

17. Flowers white with a creamish or greenish tinge; corolla lobes valvate:

18. Heads solitary ... **Mitragyna**

18. Heads in fascicles ... **Haldina**

16. Flowers in fascicles, cymes or panicles:

19. Flowers in dense thyrsoid panicles; corolla lobes imbricate **Wendlandia**

19. Flowers in cymes or spicate racemes; corolla lobes valvate:

20. Leaves dichotious; calyx split on one side ... **Lamianthus**

20. Leaves opposite or whorled; calyx not split:

21. Flowers in spicate racemes; fruit a capsule ... **Hymenodictyon**

21. Flowers in cymes; fruit a drupe:

22. Styles inserted, stigma 2-fid ... **Ixora**

22. Styles exerted; stigma entire ... **Cantium**
CANTHIDIUM Lam.

1. Armed shrubs:
   2. Stem scandent; flowers 5-merous in axillary fascicles ... C. rheedit
   2. Stem erect; flowers 4-merous in axillary cymes ... C. parviflora
1. Unarmed trees ...
   C. dicocum var. umbellatum


Trees, 4 5 m high. Leaves elliptic-lanceolate, 8 13 × 3.5 60 cm, base tapering, apex shortly acuminate; stipules ovate, acuminate. Corolla densely bearded in the throat within. Drupes obovoid, ca 1.5 cm long, black when ripe.

*Fls. & Fruits:* September December.

*Illus.*: Wight, op. cit.

*Distrib.*: Common in semi-evergreen forests. Dhokewadi junkti: Koyna valley; Mahabaleshwar; Shirshing; Panchgani.

*Notes:* Wight described *C. umbellatum* which was transferred to *Plectronia* L. by Cooke according to the rule of priority. As specific epithet *umbellatum* was preoccupied for a Madagascan plant, he named it as *P. wightii*. However, this nomenclatural exercise was in futile as *Plectronia* L. was based on two different elements: a specimen from Burmann's herbarium belonging to *Olintaceae* and a figure published by Burmann (1739) belonging to *Rubiaceae*, and so is invalid.

According to Sant. & Merch. (op. cit.) typical var. dicocum does not occur in Maharashtra.


Shrubs, 3 4 m high; spines 1.5 2.5 cm long. Leaves obovate-suborbicular, 2.0 3.5 × 1.5 2.5 cm, base cuneate, apex obtuse; stipules triangular, subulate. Calyx lobes triangular, acute; corolla lobes ovate, acute. Drupes obcordate, didymous, yellow when ripe.

*Fls. & Frets.*: April July.


*Distrib.*: Occasional in scrub forests. Nath hills; Shirala; Satara Road Station.

Shrubs, spines ca 1.5 cm long. Leaves ovate, 3.7×1.2 - 4.0 cm, base rounded, apex acuminate; stipules ovate, cuspidate. Calyx truncate or obscurely toothed; corolla lobes linear-lanceolate. Drupes obcordate, didymous. ca 0.5×0.7 cm, rugose.

Fls. & Frrts.: February December.

Illus.: Wight, l.c. 826. 1845.

Distrib.: Frequent in deciduous forests. Kumbharli ghat; Nauja; Mahabaleshwar.

Catunaregam Adams. ex V. Wolf


Trees, 5-6 m high. Leaves obovate, 3.5×6.5×1.5 - 3.5 cm, base cuneate, apex obtuse; stipules ovate, acuminate. Flowers fragrant, yellowish-white; calyx and corolla densely hairy. Berries ca 2 cm across.

Fls. & Frts.: April September.

Illus.: Wight, l.c. 580. 1842. (Randia dumetorum).

Distrib.: Common. Kasa; Koyna; Lingmala; Machutar forest; Mahabaleshwar; Panchgani.

Dentella J. & G. Forst.


Herbs, prostrate, rooting at lower nodes. Leaves spatulate, margin bristly hairy; stipules connate, scarious. Flowers white, subsessile. Capsules globose, ca 0.3 cm across, villous.

Fls. & Frts.: June July.
ILLUS. : Subr. & Sharma, op. cit.

Distrib. : Slender herbs in marshy places. Dicholi ; Madoshi.

Haldina Ridsdale


Trees, ca 25 m high, young branches pubescent. Leaves ovate-oblong, ca 16×16 cm, apex acute; stipules oblong, obtuse, pubescent. Calyx tube angled, hairy; corolla tube dilated at apex; lobes ovate-oblong, reflexed. Capsules of 2 downy-pubescent cocci. Seeds winged.

Fils. & Frets. : June September.

Illus. : Roxb. op. cit.

Distrib. : Included on Birdwood's report from Mahabaleshwar.

Hedyotis J.

1. Diffuse herbs ; branches terete
   2. Flowers solitary ; calyx lobes aristate
   2. Flowers 2 - 3 together ; calyx lobes acute


Herbs ; branches dichotomous, scaberulous-hispid. Leaves linear-lanceolate, 1.0 2.5×0.3 0.5 cm, base decurrent into a short petiole, apex acute, margins recurved ; stipules bristly. Flowers white. Capsules ca 0.3 cm across. Seeds pale brown.

Fils. & Frets. : May September.


Distrib. : Frequent in grasslands and long roadsides. Dhavadi ; Jadholi ; Koyna ; Mahabaleshwar ; Panchgani.

Herbs, 15 35 cm high. Leaves sessile, linear-lanceolate, 1-2 × 0.3 0.5 cm, base tapering, apex acute, margins recurved. Flowers white. Capsules 0.2 cm across, obscurely didymous, protruded beyond the calyx. Seeds reticulate.

Fls. & Frts. : February November.

Illus. : Matthew, Fl. Tamilnadu Carnatic 2: 3. 726, t. 52g. 1983.

Distrib. : Common near cultivated fields. Dhokewadi; Kas; Koyna; Mahabaleshwar.


Herbs, 9 25 cm high; young branches pubescent. Leaves sessile, linear, 0.4 1.8 × 0.3 0.5 cm, bristle tipped, scabrid when young; stipules membranous with 1 3 filiform bristles. Flowers pink or white. Capsules ca 0.3 cm across. Seeds elongate, minutely longitudinally wrinkled, black or brown.

Fls. & Frts. : October.

Illus. : Sant. & Merch. op. cit.

Distrib. : Slender annuals on open plateaus. Koyna; Mahabaleshwar.

Notes: Sant. & Merch. (op. cit.) described O. maheshwarii from Mahabaleshwar, differentiating it from O. stocksii on the basis of pubescent stems, solitary flowers, ovate-oblong to oblong-calyx teeth, longer than corolla which is white or pink. Deb & Dutta (op. cit.) studied the type of O. stocksii which shows intermediate forms with all characters given for O. maheshwarii, the only difference being flower colour, which is blue in O. stocksii. Therefore, they merged it under O. stocksii, as only flower colour cannot be a differentiating character at the specific level.
Hymenodictyon Wall.

1. Leaves pubescent; flowers pedicelled ... *H. arizensis*
2. Leaves glabrous; flowers sessile ... *H. obovatum*


Trees, 9 12 m high. Leaves ovate-elliptic, 10 22×7.5 10.5 cm, apex acuminate; stipules broadly oblong, recurved, deciduous. Flowers greenish-white. Capsules ellipsoid on deciduous pedicels.

*Fls. & Frts. : June August.*

*Disrth. : Included on Bridwood’s report from Mahabaleshwar.*


Trees, 9 12 m high. Leaves elliptic-ovate, 8 12×4 6 cm, base tapering into petiole, apex acuminate. Flowers greenish; calyx lobes triangular, deciduous; corolla lobes ovate, acute. Capsules 1.0 1.5 cm long. Seeds winged.

*Fls. & Frts. : September November.*

*Illus. : Wight, Ic. t. 1159. 1846.*

*Distrib. : Occasional in moist deciduous forests. Kisrude; Shirshingi.*

**IXORA L.**

1. Shrubs; leaves and inflorescence turning black on drying ...

1. Trees; leaves and inflorescence not turning black on drying:

2. Flower buds globose; calyx urceolate ... *I. brachiata*

2. Flower buds ellipsoid; calyx ovate-oblong ...

3. *I. arborea*


Trees, 4 - 5 m high. Leaves oblong-elliptic, 4 10×3.5 6.5 cm, coriaceous, base rounded, apex obtuse; stipules ovate, cuspidate. Flowers white in trichotomous cymes. Fruits ca 0.5 cm across, didymous.
Flora of Mahabaleshwar

Fis. & Fris.: January April.

Illus.: Wight, Ic. t. 711. 1843 (J. parviflora).

Distrib.: Occasional in deciduous forests. Junkti; Kole; Mahabaleshwar.


Trees, 5-6 m high. Leaves elliptic-oblong, 5-15 × 2-8 cm, base attenuate, apex obtuse. Flowers white in shortly peduncled cyomes; lower bracts shortly cuspidate, upper lanceolate-subulate. Fruits globose or didymous, purple-black when ripe.

Fis. & Fris.: February April.

Illus.: Wight, Ic. t. 710. 1843.

Distrib.: Common along ghat slopes in deciduous forests. Jangli jaigad; Junkti; Nauja.


Shrubs, 2-3 m high. Leaves elliptic-oblong, 4-15 × 2-6 cm, base rounded, apex acute; stipules triangular, bristle tipped. Flower buds narrowly fusiform; bracts lanceolate, cuspidate, flowers white. Fruits globose or didymous.

Fis. & Fris.: November September.

Illus.: Wight, Ic. t. 318. 1840.

Distrib.: Common in semi-evergreen forests. Jadholi; Jangli jaigad; Koyna; Mahabaleshwar; Nauja; Pratapgad.

Lasianthus Jack.

1. Main nerves prominent beneath, curved upwards; flowers sessile in axillary fascicles

L. sessilis

2. Main nerves prominent on both surfaces, spreading; flowers in short peduncled cyomes

L. venulosus

Shrubs, 4–5 m high. Leaves elliptic, 4 × 2–4 cm, base rounded or acute, apex acuminate, hairy on the nerves beneath. Flowers white; corolla villos without. Drupes oblong, dorsally tubercled.

*Flos. & Fruts.*: July–September.

*Illus.*: Talbot, *op. cit.*

*Distrib.*: Infrequent in semi-evergreen forest along ghat. Kovyna.


Shrubs. Leaves elliptic-oblong, cuspidate, hairy on nerves beneath. Flowers yellowish-white; calyx teeth linear-subulate; corolla hairy at mouth. Drupes globose, *ca* 0.4 cm across.

*Illus.*: Wight, *op. cit.*

*Notes.*: Included on Markham's report from Mahabaleshwar. Bole & Almeida (*op. cit.*). Cooke (*op. cit.* had included it on the authority of Dalz. & Gibs. (1861) who reported it from Western Ghats without any precise locality. According to Gamble (1957) this species occurs in the Shola forests of Nilgiris and Pulney Hills above 1,800 m. Therefore, occurrence of this species within the limits of erstwhile Bombay Presidency is doubtful (Karthikeyan & Sharma, 1983).

**Meyna** Roxb. ex Link


Shrubs, *ca* 3 m high, spines 2–5 cm long. Leaves elliptic-oblong 5–9 × 2–5 cm, base cuneate, apex acuminate; stipules broadly triangular at base, shortly acuminate. Flowers greenish-white in axillary cymes from old leaf scars. Drupes globose, *ca* 1.5 cm across.

*Flos. & Fruts.*: February–April.


*Distrib.*: Common in deciduous forests. Dicholi; Karanjewadi; Kovyna; Mahabaleshwar; Shirshingi.
MITRAGYNA Korth. (nom. cons.).


Trees, up to 25 m high. Leaves elliptic-obovate, 5-10 × 2.5-7.5 cm, subcoriaceous, base rounded or acute, apex acute or acuminate; stipules oblong-spathulate, pink. Flowers greenish-yellow. Capsules oblong, 10-ribbed.

*Fls. & Frts.* : May - August.


*Distrib.* : Included on Birdwood’s report from Mahabaleshwar.

**Mussaenda L.**

1. Flowers golden yellow; seeds spiny ... *M. glabrata*
1. Flowers orange; seeds not spiny ... *M. laca*


Shrubs, scandent. Leaves broadly elliptic, 4.5-10.0 × 3.0-6.5 cm; stipules twin, linear-lanceolate, acute, hairy. Buds clavate, hairy, 5-angular, flowers in terminal cymes; calyx lobes linear-subulate, hairy. Berries obovoid, ca 1 cm long.

*Fls. & Frts.* : July - October.


*Distrib.* : Rare in deciduous forests. Koyna valley, Cooke op. cit.


Shrubs, climbing, sparsely hairy. Leaves elliptic-orbicular, 4-13 × 3-7 cm, apex shortly acuminate, sparsely hairy above, pubescent on nerves beneath; stipules ca 1 cm long, 2-lobed. Flowers in terminal
Fig. 25. *Musaenda laxa* (Hook. f.) Hutch. ex Gamble
tomentose cymes; bracts and bracteoles linear-subulate, deciduous. Berries obovoid, ca 1.2 cm long, sparsely hairy.

_Fls. & Frts._: June September.

_Distrib._: Common along ghats in semi-evergreen forests. Ambeghar; Koyna; Shirshingi.

**Neanotis Lewis**

1. Flowers in cymes:

2. Perennials; stem terete

3. Leaves minutely hairy; capsules protruded; seeds rounded on back

4. Leaves glabrous; capsules not protruded; seeds flat

5. Branchlets glabrous; capsules 4-celled

6. Branchlets hispid; capsules 2-celled


_Herbs_, 5 ± 15 cm high, puberulous. Leaves ovate-lanceolate, 1 2 × 0.5 1.0 cm, apex acuminate. Flowers pale-purple. Capsules subglobose, ca 0.2 cm across. Seeds brown, reticulate.

_Fls. & Frts._: August November.

_Distrib._: Common monsoon herbs among grasses. Mahabaleshwar; Panchgani.

Herbs, 15 40 cm high, erect or diffuse. Leaves ovate-lanceolate, 3 7 × 0.7 2.0 cm, membranous, base acute or obtuse, apex acuminate, pubescent; stipules bristle. Flowers purple in terminal cymes. Capsules ca 0.5 cm across, didymous, compressed. Seeds ellipsoid, brownish-black, pitted.

Fls. & Frts.: August January.

Distrib.: Common along roadsides and in open places along hill slopes. Dicholi; Koyna; Lingmala; Mahabaleshwar; Panchgani.


Herbs, 3 10 cm high; stem quadrangular. Leaves linear, 1.0 2.2 × 0.2 0.4 cm, margins recurved. Flowers purple. Capsules ca 0.3 cm across, 2-celled, protruded. Seeds elliptic, pitted, black.

Fls. & Frts.: July August.

Distrib.: Slender annuals in rock crevices and in grasslands. Koyna; Lingmala; Mahabaleshwar.


Herbs, ca 20 cm high. Leaves ovate or ovate-lanceolate, 3 7 × 1.0 × 2.5 cm, apex acute. Flowers purple; calyx aristate. Capsules didymous, hairy, cells 1-3-seeded. Seeds globose, pitted, black.

Fls. & Frts.: August September.

Distrib.: Annuals near cultivated field. Shirshingi.


Herbs, 10 40 cm high, stem rooting at lower nodes. Leaves elliptic-ovate, 3 3 × 0.5 1.3 cm, membranous, base tapering into petioles, apex subacute. Flowers purple-white. Capsules broader than long. Seeds 3 in each cell, semi-ellipsoid, pitted, black.
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Fls. & Frts.: September.

Distrib.: Rare annuals near marshy places. Shirshingi: Kochhar 154105.


Herbs, 30 50 cm high. Leaves ovate, 2.5 7.0 x 1.5 3.5 cm, membranous, base tapering into petiole, apex acute or acuminate. Flowers pink in axillary and terminal cymes. Capsules globose, ca 0.3 cm across. Seeds ellipsoid, minutely reticulate, black.

Fls. & Frts.: July.

Distrib.: Included on Bole & Almeida’s report from Wada below Mahabaleshwar, in moist rock crevices.

Neolamarckia Bosser


Trees, 10 15 m high, young branches pubescent. Leaves elliptic-oblong, 12 20 x 6 10 cm, coriaceous, glabrous above, pubescent beneath. Flowers fragrant in solitary, terminal heads, pubescent. Fruits globose, yellow when ripe

Fls. & Frts.: November February

Distrib.: Infrequent in deciduous forests. Wada below Mahabaleshwar.

Ophiorrhiza L.


Herbs, 20  30 cm high, procumbent, woody at base. Leaves elliptic-lanceolate, glabrous above, pubescent on nerves beneath; stipules with 3 stout bristles. Flowers white; calyx tube hairy without; lobes triangular, acute; corolla funnel-shaped, hairy without. Capsules coriaceous, compressed, broader than long, ca 0.7 cm broad, 2-valved.

Figs. & Fruits.: June September.

Illustr.: Wight, In. t. 1162. 1848 (O. harrisonii).

Distrib.: Common in moist places as undergrowth in deciduous forests. Jadholi; Karanjewadi; Nauja; Shirshingi.

Oxyeros Lour.


Climbers. Leaves elliptic-oblong, 7 10 × 2.5 5.5 cm, apex acuminate; stipules ovate, cuspidate. Flowers white; bracts connate, cuspidate. Berries globose, ca 1 cm across.

Figs. & Fruits.: December July.

Illustr.: Bedd. In. t. 37. 1874 (Randia rugulosa).

Distrib.: Frequent in shady places in semi-evergreen forests. Koyna; Mahabaleshwar.

Pavetta L.

1. Young branches and leaves tomentose; corolla lobes oblong ...  P. tomentosa

1. Young branches and leaves glabrous; corolla lobes obovate ...  P. crassicaulis

Shrubs, 3-4 m high; stems quadrangular. Leaves elliptic-oblong, 6 × 14 × 2.5 × 5.0 cm, base acute, apex acuminate. Flowers greenish-white; stamens exserted. Berries ca 0.6 cm across, black when ripe.

Fls. & Frts.: April October.


Distrib.: Common along the slopes and in plains in deciduous forests. Ambeghar; Gureghar; Kas; Kumbharli ghat; Lingmala; Machutat Forest; Mahabaleshwar; Panchgani; Parli; Shirshingi.


Shrubs, 3-4 m high. Leaves elliptic-lanceolate, 5-15 × 2-6 cm. Flowers white in dense, trichotomous pubescent cymes. Berries globose, ca 0.7 cm across, black when ripe.

Fls. & Frts.: June September.

Ilh. : Wight, Ic. t. 1065. 1846. (P. brunonis)

Distrib.: Common along the forest edges in deciduous forests. Ghotil; Kistude; Koyna; Lingmala; Mahabaleshwar.

Psychotria L.


Shrubs or small trees ca 3-5 m high. Leaves obovate, 8 × 18 × 2.5 cm, base cuneate, apex shortly acuminate; stipules large, ca 2.5 cm long. Flowers white in sessile or subsessile terminal cymes. Fruits ellipsoid, ca 0.8 cm long.

Fls. & Frts.: February June.


Distrib.: Abundant as forest undergrowth in shady places in semi-evergreen forests. Jangli jagad; Jadholi; Karanjewadi; Mahabaleshwar; Nanja; Shirshingi.
RUBIA L.


Climbers; stem quadrangular, prickly on margins. Leaves ovate, 1.7 5.0 x 0.7 2.7 cm, base rounded or cordate, apex acute or acuminate; petioles 1.5 - 3.0 cm long, prickly. Flowers greenish-white. Drupes globose, ca 0.3 cm across, purplish-black when ripe.

Fls. & Ffrts. : October December.


Distrib. : Common near forest clearings and along ghatls. Dichioli, Kelghar ghat; Kovna; Machutar forest; Mahabaleshwar, Padolshi; Shirshingi; Tadoshi.

SPERMACEAE L.

1. Erect herbs; flowers white; septum of capsules splitting irregularly ... S. pusilla

1. Trailing herbs; flowers pinkish-white; septum entire ... S. hispida


Herbs, ca 50 cm long. Leaves sub-sessile, elliptic-oblong, 1.4 3.0 x 0.6 1.0 cm, base truncate or attenuate, apex acute; stipules connate, membranous, bristly. Calyx oblong, hispid without; corolla hairy within. Capsules ellipsoid, ca 0.5 cm long, hairy.

Fls. & Ffrts. : September November.

Distrib. : Weed along roadsides. Tapola, 162515.

Fig 76  *Spermocace pusilla* Wall.
Herbs, 8-10 cm high. Leaves sessile, linear-oblong, 1-2 × 0.3-0.5 cm, base tapering; apex acute. Flowers in dense terminal heads. Capsules oblong, ca 0.3 cm long, pubescent at apex. Seeds ellipsoid, grooved on ventral surface.

**Fls. & Frts.**: April - September.

**Illus.**: Deb & R. Dutta, *op. cit.*

**Distrib.**: Common weed near cultivated fields and in wastelands. Bhosgaon; Koyna.

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**Spermadictyon Roxb.**


Shrubs. 1-2 m high. Leaves elliptic-lanceolate, 1.5-10.5 × 1-4 cm, base and apex acute; stipules ovate, acute, hairy. Flowers white in terminal tri-chotomous cymes. Capsules ellipsoid, ca 0.3 cm long.

**Fls. & Frts.**: November - December.


**Distrib.**: Common along hill slopes in rock crevices. Fitzgerald ghat below Mahabaleshwar; Mahabaleshwar; Panchgani; Pratappad; Shirgaon ghat.

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**Tamilnadia Tirveng. & Sastre**


Trees, 6-8 m high. Leaves elliptic-lanceolate, or obovate, 4 × 1.5-2 cm, apex obtuse. Flowers white, fragrant. Fruits ovoid, ca 5 cm across. Seeds ellipsoid, compressed.

**Fls. & Frts.**: September - November.
**FLORA OF MAHABALESHWAR**


*Distrib.* : Frequent in deciduous forests. Gureghar ; Nauja.

**WENDLANDIA BRTIL.**

1. Leaves opposite, pubescent above; filaments exerted ... *W. heynei*

1. Leaves whorled, glabrous above; filaments included ... *W. thyrsoides*


Trees, 4-6 m high. Leaves ovate-lanceolate, 8-14 × 3-6 cm, apex acute, tomentose beneath; stipules ovate, ca 0.5 cm long, 2-lobed, downy. Flowers small, white in 15-20 cm long tomentose panicles, bracts 2-3, linear-lanceolate. Capsules globose, ca 0.2 cm across, 2-valved. Seeds many, black.

*Fls. & Frts.* : February June.

*Distrib.* : Frequent in deciduous forests. Kusapur, Lingmala; Mahabaleshwar; Shirshingi.


Shrubs or small trees, 5-8 m high. Leaves elliptic-lanceolate, 7-12 × 2.5-5.5 cm, base cuneate, apex acuminate, pubescent beneath. Flowers white, fragrant, in dense, pubescent panicles. Capsules globose, with persistent calyx lobes, pubescent.

*Fls. & Frts.* : February - March.


*Distrib.* : Common on exposed hill slopes and near forest margins. Koyna; Mahabaleshwar; Venna river below Lingmala.

**CULTIVATED SPECIES**

*Cinchona condaminia* H.B.K. and *C. cordifolia* Matt. ex Humb. have been reported by Lisboa (1883) as having been planted at Lingmala.
Fig. 27. *Wendlandia heynei* (R. & S.) Sant. & Moreh.
and Carvalho's Garden, are not to be found at Mahabaleshwar now (Bole & Almeida 1982).


*Trees*, 5-6 m high. *Flowers* purple.

*Distrib.*: Occasional. Lingmala; Mahabaleshwar.


*Fls.* & *Fris.*: January April.

*Distrib.*: Native of Abyssinia; cultivated on the hills between Panchgani and Mahabaleshwar.

*C. robusta* Linden, Cat. Fl. Econ. 64. 1900; Anonymous, Wealth of India 2: 290, f. 104-105. 1950.

*Notes*: Cultivated at Research Nursery, Koyna on experimental scale.

**ASTERACEAE**

1. *Florets* all ligulate:

2. Achenes beaked

2. Achenes not beaked:

3. Achenes truncate at base and apex; *plants* with milky juice

3. Achenes narrowed at base, slightly truncate at apex; *plants* with yellow juice

1. *Florets* all or at least disc *florets* tubular:

4. Achenes spinous:

5. Leaves opposite

5. Leaves alternate

4. Achenes not spinous:

6. Leaves mostly radical, few cauline:

7. Heads in corymbs; *pappus* copious

7. Heads in fascicles; *pappus* bristly

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*Acanthospermum*...  
*Lactuca*...  
*Laurusala*...  
*Sonchus*...  
*Xanthium*...  
*Emilia*...  
*Elephantopus*...
6. Leaves all cauline:

8. Leaves opposite:

9. Heads yellow:

10. Heads in axillary and terminal cymes ...

10. Heads axillary, solitary or 2-3 together:

11. Pappus usually absent; (rarely of 1-2 bristles in *Spilanthes*):

12. Outer involucral bracts glandular ...

12. Outer involucral bracts not glandular:

13. Heads sessile, axillary ..

13. Heads pedunculated, terminal or axillary:

14. Prostrate or decumbent herbs; achenes scabrid or ciliate on margins ...

14. Erect undershrubs; achenes glabrous ...

11. Pappus present .

13. Pappus feathery ...

15. Pappus awned :

16. Outer involucral bracts foliaceous; achenes dimorphic, outer ones winged and spinous on the wings, the inner narrow, slender, muri-cate; awns of pappus 2, slender ...

16. Outer involucral bracts not foliaceous, achenes uniform, tetragonous, cuneiform, narrowed above; awns barbellate ...

9 Heads white or purple :

17. Heads solitary or in fascicles:

18. Heads solitary, 1-flowered; receptacle spathaceous ...

18 Heads fascicled, occasionally solitary, many-flowered; receptacle spathaceous:
19. Leaves 3-nerved; pappus of short bristles ... **Galinsoga**

19. Leaves penninerved; pappus absent or of 1-2 minute scales ... **Eclipta**

17. Heads in axillary or terminal panicles:

20. Achenes obconic, glandular hairy ... **Adenostemma**

20. Achenes angular, glabrous:

21. Achenes 5-angled ... **Ageratum**

21. Achenes trigonous:

22. Herbs foetid; heads white ... **Eupatorium**

22. Herbs not foetid; heads violet ... **Chromolaena**

8. Leaves alternate:

23. Heads spiny:

24. Leaves white-tomentose beneath; heads white ... **Echinops**

24. Leaves glabrous beneath; heads purple ... **Trichospermum**

23. Heads not spiny:

25. Plants white woolly ... **Gnaphalium**

25. Plants glabrous or hairy:

26. Heads of two colours; ray floret, white, disc florets yellow ... **Erigeron**

26. Heads of one colour:

27. Heads yellow or white:

28. Heads white:

29. Pappus absent ... **Artemisia**

29. Pappus present:

30. Leaves entire; involucral bracts multiseriate ... **Anaphalis**

30. Leaves pinnatifid; involucral bracts 5, uniseriate ... **Parthenium**

28. Heads yellow:

31. Heads in fascicles or panicles ... **Bleimea**
31. Heads solitary or in cymes:

32. Heads solitary:

33. Leaves 3-lobed, pappus absent

33. Leaves entire; pappus present:

34. Achenes glabrous; pappus of ray florets scaly

34. Achenes sparsely hairy; pappus of a few bristles

32. Heads in axillary or terminal cymes:

35. Pappus of 4 short awns

35. Pappus hairy or papposeous (pappus absent in Senecio belgianensis):

36. Heads heterogamous:

37. Erect herbs; pappus 1-2

37. Erect or suffruticosous

36. Heads homogamous:

38. Achenes glabrous; styles without appendages

38. Achenes hairy between the ribs; styles with hairy appendages

37. Heads purple, pink or red:

39. Heads red

39. Heads purple or pink:

40. Plants aromatic; stem narrowly winged

40. Plants not as above:

41. Leaves deeply pinnatifid

41. Leaves entire or shallowly lobed:

42. Leaves primarily nervet

42. Leaves pinnately nervet:

43. Heads heterogamous;

43. Heads heterogamous;
anthers tailed

43. Heads heterogamous;
anthers tailed
43. Heads homogamous; athers not united:

44. Achenes smooth or faintly ribbed:

45. Heads axillary, solitary; achenes notched at apex... **Cassula**

45. Heads in paniculate cymes; achenes notched at apex... **Lamprachandium**

44. Achenes ribbed or angled:

46. Heads solitary, axillary or terminal; pappus shorter than corolla... **Phyllocephalum**

46. Heads in terminal or axillary paniculate cymes; pappus longer than corolla... **Vernonia**

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**Acanthospermum Schrank**


Herbs, *ca* 50 cm high, hairs spreading. Leaves sessile, obovato-spathulate, 2.0 3.5 × 0.8–2.0 cm, margin toothed, hairy. Heads yellow, solitary, axillary. Achenes with a pair of horn like spines.

*Fls. & Fris.* : August September.


*Distrib.* : Weed along roadsides and in moist situations. Bhosgaon; Satara-Pune Road; Wai.

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**Adenoc Dalz.**

Herbs, 30-50 cm high; stem with a purple tinge, grooved, hairy. Leaves sessile, obovate or broadly elliptic, 4.9 x 1.5-4.0 cm, base tapering, apex subacute, hairy. Heads ca. 1.2 cm across. Involucral bracts elliptic-oblong, aristate, hairy on back. Achenes oblong, ca. 0.3 cm long, subcompressed, ribbed.

Fls. & Frts.: October November.

Distrib.: Common in open places. Jadholi; Mahabaleshwar.

Adenostemma J. R. & G. Forst.


Herbs, ca 1 m high. Leaves broadly ovate, 4-14 x 2-10 cm, base truncate or acute, apex acute, margin coarsely serrate-dentate, glabrescent. Heads white, 0.5-0.7 cm across. Involucral bracts 2-seriate, oblong-elliptic, glandular hairy. Achenes ca. 0.5 cm long, blackish-brown.

Fls. & Frts.: July November.


Distrib.: Common in shady places along streams. Mahabaleshwar; Shirahingi.

Ageratum L.

1. Branches hairy when young, glabrous at length; involucral bracts oblong-lanceolate, sparsely hairy; heads 60-75 flowered
   ... A. conyzoides

1. Branches hairy throughout; involucral bracts linear, acute, densely hairy; heads 75-100
   ... A. hissonianum


Herbs, ca 1 m high with a strong odour. Leaves ovate, 5-7 x 2.5-5.0 cm. Heads white, small in dense panicles. Involucral bracts 2-3 seriate. Achenes ca. 0.2 cm long, black; pappus of 4 connate scales.
FLORA OF MAHABALESHWAR

Fls. & Frts.: April September.


Distrib.: Common weed near cultivated fields and in waste places. Junkt, Koyna, Mahabaleshwar, Medha.


Herbs, 30-60 cm high. Leaves deltoid, 2.0-6.5 x 1.5 cm, sparsely hairy. Heads purple. Achenes ca 0.2 cm long, brownish-black.

Fls. & Frts.: April December.

Illus.: Wadhwa et al., op. cit.; Giri & Majumdar, op. cit.

Distrib.: Weed in waste places. Koyna; Lingmala; Mahabaleshwar.

Anaphalis DC.


Herbs. Leaves oblong-spathulate, base semi-amplexicaul, pilose above, tumulose beneath. Heads ca 0.4 cm across. Involutacular bracts ob lanceolate-oblong, pink. Achenes terete, sparsely hairy.

Notes: Included on Birdwood's report from Mahabaleshwar (Bole & Almeida, op. cit.); no sheet from the district is available in any of the herbaria.

Artemisia I.

1. Leaves densely white tomentose beneath; outer florets sterile

... A. nilagirica

1. Leaves glabrous or sparsely hairy; outer florets fertile

... A. purvisiana

Shrubs, 2-3 m high; stem striate, pubescent. Leaves 5-9 × 3-4 cm, deeply lobed with stipule-like appendages at base. Heads ca 0.3 cm across; outer involucral bracts ovate, acute; inner oblong, membranous, margins scarious. Achenes oblong, ca 0.15 cm long.

Fls. & Frts.: November - December.


Distrib.: Aromatic shrubs, common along ghats. Mahabaleshwar; Mandhardevi; Marul; Panchgani; Pasarani ghat.


Shrubs, 1-2 m high. Leaves upto 3.0 × 0.7 cm, lower cuneate at base with a pair of stipule-like appendages, toothed at apex; upper minute, entire, lanceolate. Heads numerous, globose in panicked racemes. Involucral bracts ovate, acute, margins scarious. Achenes ellipsoid, brown.

Fls. & Frts.: October - December.

Illus.: Wight, Is. t. 1111. 1846 (*A. glabrata* DC.)

Distrib.: Common near forest edges. Mahabaleshwar; Marul; Panchgani; Pasarani ghat; Satara.

**Bidens L.**


Herbs, 20-30 cm high; stem quadrangular, grooved. Leaves pinnate; petioles sheathing, dilated at base. Heads ca 1 cm across. Outer involucral bracts oblong, subacute, herbaceous. Inner longer, membranous. Achenes 0.6-0.8 cm long.

Fls. & Frts.: Throughout the year.

Distrib.: Weed on exposed hill slopes and in waste places near villages. Bhosgaon; Girvi; Mahabaleshwar; Nauja; Panchgani; Phaltan.
BLAINVILLEA Cass.


Herbs, 25-50 cm high, scabrid-hairy. Leaves ovate-lanceolate, 3-6 x 0.7-3.2, crenate-serrate, hispid. Outer involucral bracts ovate, acute, hairy; inner rigid, striate with green nerves, persistent. Achenes of ray florets triangular, ca 0.3 cm long; those of disk florets compressed, ca 0.5 cm long.

**Fls. & Frts.**: August-September.


**Distrib.**: Annuals along roadsides, near cultivated fields and in gardens. Dhebewadi; Panchgani; Wai.

**BLUMBA DC. (nom. cons.)**

1. Leaves white-woolly beneath:

2. Heads purple

2. Heads yellow:

3. Prostrate herbs

3. Erect herbs:

4. Heads in leafy clusters; achenes cylindrical

4. Heads in terminal panicles; achenes obscurely angled

1. Leaves glabrous or hairy, not woolly:

5. Petioles dilated and appendaged at base

5. Petioles not as above:

6. Heads solitary or in axillary clusters:

7. Achenes 4-5 angled

7. Achenes obscurely angled

6. Heads in panicles:

8. Plants aromatic, leaves hairy

... *B. solidaginoides*

... *B. oxyodoneta*

... *B. belangeriana*

... *B. malcolmii*

... *B. lanceolaria* var. *spectabilis*

... *B. fusciflora*

... *B. eriantha*

... *B. lucera*
8. Plants not aromatic; leaves glabrous:

9. Stems pilose, stipitate glandular ... B. membranacea

9. Stems glabrous or sparsely white-pilose ... B. vivens


Herbs, 50 60 cm high, glabrous at base, silky above. Leaves sessile, obovate, 4 10 x 2 5 cm, margins irregularly dentate, sparsely hairy on upper surface. Heads ca 0.6 cm across. Involutural bracts linear, woolly, ca 0.7 cm long. Achenes ca 0.2 cm long, ribbed, hairy.

Fls. & Frts. : December April.

Distrib. : Occasional in shady places along ghats. Kumbharli ghat, Mahabaleshwar.


Herbs, 20 40 cm high, woolly. Lower leaves petioled, upper sessile, elliptic-oblong, 1 4 x 0.5 1.8 cm, base cuneate, apex acute. Heads yellow. Involutural bracts many seriate. Achenes small, puberulous on angles.

Fls. & Frts. : April December.

Distrib. : Common in cultivated fields and open forests. Shirshingi, Vajegaon; Vasota.


Herbs, ca 1 m high; branches ashy-pubescent. Lower leaves petioled, obovate, pinnatifid; upper sessile, oblong, inciso-serrate. Heads yellow in fascicles. Inner involucral bracts purple. Achenes puberulous.

Fls. & Frts. : December January.

Distrib. : Included on Birdwood's report from Mahabaleshwar.

Herbs. 30 - 60 cm high. Leaves subsessile, elliptic-oblong, 1.5 - 2.5 × 1.0 - 1.5 cm, margins sharply denticate. Heads orange yellow, ca 0.8 cm across. Involucral bracts linear-lanceolate, silky-villous, margins scarios. Achenes oblong.

*Fls. & Frts.:* September - February.

**Distrib.:** Rare along forest margins and roadsides. Way to Patan, Kochhar 154335; Mahabaleshwar, Bole & Almeida (*ap. cit.*).


Shrubs, ca 2 m high; branches puberulous. Leaves lanceolate to oblong-lanceolate, base tapering into petiole, apex acute, margin shallowly serrate. Heads yellow in elongated panicles, subtended by leafy bracts. Involucral bracts narrow, pubescent. Achenes subterete, silky; pappus red.

*Fls. & Frts.:* February.

**Distrib.:** Rare, represented by a single collection from the district. Differs from the type variety in pedunculate and larger heads. Mahabaleshwar, Sedgwick 4650 (*BLAT*).


Herbs, ca 1 m high; branches densely silky-woolly. Leaves sessile, obovate, 3 9 × 1.5 - 2.5 cm, base tapering, apex obtuse, margin irregularly toothed, densely white-woolly beneath. Involucral bracts linear, acute. Achenes sparsely hairy.

*Fls. & Frts.:* Throughout the year.

**Distrib.:** Common along ghats at higher elevations. Koyna; Kumbarli ghat; Mahabaleshwar; Nauja; Mundhardevi.
Fig. 28. *Bianea malcolmii* (C.B.Cl.) Hook. f.

Herbs, ca 1 m high. Leaves sessile, obovate, 3.5 x 1.2 cm, membranous, base tapering, apex acute or obtuse, margins serrate. Heads small, numerous in branched panicles, ca 0.5 cm across, on glandular-hairy peduncles. Involutural bracts lanceolate, acute, glandular-hairy. Achenes angled, hairy, ca 0.15 cm long.

Fls. & Frts.: December April.

Distrib.: Rare as forest undergrowth. Fitzgerald ghat, Bole 218 (BLAT); Mahabalaleshwar, Pur 16726.


Herbs, 10-25 cm long, branches radiating, hairy. Leaves sessile, elliptic-oblong, 1.5 x 0.5 x 1.0 cm, base tapering, apex mucronate, margins spinous-toothed. Heads ca 0.5 cm across, solitary or fascicled on slender peduncles. Involutural bracts linear-acute, pubescent. Achenes angled, hairy.

Fls. & Frts.: February - May.

Distrib.: Common annuals in grassy localities and near cultivated fields. Mahabalaleshwar; Nauja; Punchgani; Shirshingi.


Herbs, 30-60 cm high, aromatic, woolly. Leaves elliptic-oblong, 1.5 - 4.0 x 0.5 - 1.8 cm, irregularly serrate; lower shortly petioled, upper sessile. Heads in terminal, dense, spiciform panicles. Involutural bracts linear, hairy. Achenes oblong, 4 - 5 angled.

Fls. & Frts.: February November.

Distrib.: Common along roadsides, also found as forest undergrowth. Karad; Lingmala; Nauja; Shirshingi.

Herbs, ca 1 m high. Lower leaves obovate, lyrate, upper elliptic-oblong, margin serrate. Heads ca 0.5 cm across on filiform peduncles. Involucral bracts linear-lanceolate, outer longer, hairy at apex. Achenes oblong, ribbed, hairy.

Fls & Frts.: December January.

Distrb.: Slender herbs along hill slopes in open situations. Mahabaleshwar.

Caesulia Roxb.


Herbs, 15-60 cm high. Leaves sessile, lanceolate, 4.5-8.5 × 0.7-1.3 cm, base tapering, apex acute. Involucral bracts 2, orbicular, crenulate. Achenes ca 0.3 × 0.2 cm, flat, broadly winged on sides; pappus scales 2, ovate.

Fls. & Frts.: Throughout the year.

Illus.: Wight, Fl. t. 1102. 1849; Bhandari, Fl. Indian Desert 196, f. 62. 1978.

Distrb.: Common weed near cultivated fields and along roadsides. Mahabaleshwar; Mhavashi; Satara-Pune road; Tarle.

Chromolaena DC.


Undershrubs, ca 2 m high, glandular pubescent. Leaves rhomboid-ovate, 5-9 × 2-5 cm, sub-palmately 3-nerved, pubescent. Involucre cylindrical, multi-seriate. Achenes truncate; pappus hairy.

Fls. & Frts.: December.

Distrib.: Weed along roadsides and near forest clearings, Koyna; Rasati.

Notes: Used as fish poison. Native of S. America, naturalized.

**Coryza Less. (nom. cons.)**

1. Plants viscid; involucral bracts with scariosus margin ... *C. leucantha*
2. Plants not viscid; bracts without scariosus margin ... *C. stricta*


Herbs, 1-2 m high. Leaves elliptic-lanceolate, 3-6 x 1-2 cm, base tapering, apex acute, margins serrate. Heads ca 0.5 cm across in panicles. Involucral bracts linear-lanceolate, ca 0.5 cm long, hairy. Achenes minute.

**Fls. & Frts.:** December.

Distrib.: Occasional along ghats, in open situations. Near Gureghar nursery, Koyna; Fitzgerald ghat.


Herbs, 30-50 cm high, pubescent. Leaves subsessile, spatulate, 1-4 x 0.5-0.8 cm, irregularly toothed, hairy. Heads ca 0.5 cm across; bracts below the heads linear-lanceolate, acute, ca 0.5 cm long. Involucral bracts narrowly lanceolate, pubescent on the back. Achenes oblong, compressed.

**Fls. & Frts.:** April November.


**Crassocephalum Moench.**

Herbs, ca 1 m high; branches ribbed, pilose between the ribs. Leaves sub sessile or shortly petioled, spathulate or oblong, margin serrate-dentate or irregularly lobed, glabrous or sparsely pilose. Heads brick-red in terminal corymbs. Outer involucral bracts short, free; inner linear-lanceolate, connate, ribbed. Achenes cylindrical, ribbed.

*Fls. & Frts.*: October – May.


*Notes*: So far it was reported from South India and now it has extended to Maharashtra (Londhe & Pradhan, *op. cit*.).

**Cyathocline Cass.**


Herbs, 30 - 50 cm high. Leaves sessile, ca 5 cm long, segments toothed, pubescent. Heads ca 0.3 cm across. Involucral bracts linear, acute, margin scarious, ciliate. Achenes minute, oblong.

*Fls. & Frts.*: Throughout the year.

*Illus.*: Wight, Ic. t. 1098. 1846 (*C. lyrata*).

*Distrib.*: Common near water courses. Kas; Kehgar ghat; Khambl-Chorghe ghat; Kyna; Jadholi; Kumbharli ghat; Mahabaleshwar; Way to Pratapgarh; Panoli; Shirshingi.

**Dichrocephala DC.**


Herbs, 15 - 20 cm high, pubescent. Leaves ovate, 3 - 5 cm long, pinnatifid, margin crenate-serrate, sparsely hairy. Heads 0.2 - 0.3 cm across. Involucral bracts minute, linear, margins scarious. Achenes compressed, ca 0.15 cm long, smooth.

*Fls. & Frts.*: January – October.

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**Distrib.** - Common annuals in moist situations. Gureghar; Koyna; Mahabaleshwar; Panchgani.

**Echinocephalus L.**


Herbs, _ca_ 1 m high, white tomentose. Leaves sessile. 2.5-7.5 cm long, pinnatifid; lobes triangular, spinous, scaberulous above. Heads 1.5-3.5 cm across. Involucral bracts multi-seriate, rigid; outer bracts ob lanceolate, intermediate produced into spines, innermost connate into a tube. Achenes elongate, subterete, villous; pappus with connate bristles.

**Fls. & Frls.** - April December.


**Distrib.** - Occasional in waste places and along roadsides. Mahabaleshwar; Medha; Pasarani ghat.

**Eclipta L.**


Herbs, _ca_ 40 cm high, erect or prostrate, rooting at nodes; stem and branches white hairy. Leaves sessile, oblong-lanceolate, 2-7 × 1-2 cm, base cuneate, apex acute. Heads _ca_ 0.7 cm across. Achenes of ray florets triquetrous, warty, often empty, disc florets compressed.

**Fls. & Frls.** - October December.


**Distrib.** - Common along roadsides, in waste places. Chaphal; Dhebewadi; Gojegaon; Koyna; Wai.

**Elephantopus L.**

Herbs, 15 30 cm high, strigose. Leaves in a rosette, oblanceolate, subacute or rounded at apex, 9 15 × 2.5 4.0 cm, serrate, base tapering into petiole, apex subacute or rounded, hairy, margins serrate. Heads purple, terminal, 1 2 cm across. Involucral bracts broadly ovate, ca 2 cm long, stiff. Achenes truncate at apex, cuneate at base, ca 0.5 cm long, 10-ribbed, pubescent.

Fls. & Frts. : October November.


Distrib. : Occasional perennials in forest undergrowth, also found in waste places. Kisture ; Koyna valley.

Emilia Cass


Herbs, ca 40 cm high, diffuse. Caulescent leaves amplexicaul, distantly toothed ; radical petioled, ca 10 cm long. Heads purple, ca 1 cm long. Involucral bracts linear-oblong, margin scarious. Achenes ca 0.2 cm long, ribbed, brown ; pappus white, as long as bracts.

Fls. & Frts. : July - November.


Distrib. : Common in waste places. Bhosgaon ; Dhokewadi ; Dhom dam near Wai ; Koyna.

Erigeron L.


Herbs, ca 1 m high. Leaves linear-lanceolate or oblanceolate, 2 6 cm long. Heads in pyramidal, 2 5 cm long panicles. Achenes ca 0.4 cm long, glabrescent ; pappus hairy, dirty white.

Fls. & Frts. : May November.

CULTIVATED SPECIES


Herbs, prostrate or decumbent. Leaves radical, lower pinnatifid, upper ciliate. Disc florets yellow, ray florets pink.

**Distrib.** Cultivated as an ornamental plant, rarely found as an escape. Mahabaleshwar; Panchgani.

**Eupatorium L.**


Herbs, diffuse; stems with stalked glands. Leaves triangular or rhomboid-ovate, crenate-serrate. Heads in dense clusters. Involucral bracts 3-serrate, elliptic, acute.

**Fls. & Fris.** March April.

**Distrib.** Occasional in grasslands. Mahabaleshwar.

**Flaveria A. Juss.**


Herbs, _ca_ 50 cm high, diffuse. Leaves sessile, oblong or spatulate, 1.5 × 0.7 cm, subobtuse, palmately 3-nerved. Heads yellow, sub-tended by floral bracts longer than heads. Involucral bracts oblong, plicate. Achenes cylindrical, _ca_ 0.25 cm long, ribbed, black.

**Fls. & Fris.** July.

**Illus.** Matthew, _op. cit._

**Distrib.** Weed in cultivated fields. Gondavale.

**Galinsoga Ruiz & Pav.**

1. Leaves scabrous on nerves; ligule deeply 3-lobed ... _G. quadriradiata_
1. Leaves glabrous; ligules shortly 3-lobed ... _G. purpurea_

Herbs, 30-40 cm high. Leaves ovate, 2.7 x 1.5 4.0 cm, sparsely hairy, margin crenate. Heads yellow. ca 0.5 cm across, solitary or few together. Achenes angular, ca 0.2 cm long, black.

Fls. & Frts. : May - July.

Distrib. : Introduced from Tropical America. Found near cultivated fields and in waste places. Koyna; Mahabaleshwar; Panchgani.


Herbs, ca 60 cm high; stem sparsely pilose below, densely strigose above. Leaves ovate, 1.5 10.0 x 0.5 - 5.5 cm, base acute, apex acute or acuminate, margin ciliate. Heads ca 0.8 cm across. Achenes angular, strigose.

Fls. & Frts. : September - April.


Distrib. : Garden weed, native of Mexico. Mahabaleshwar.

Gnaphalium L.

1. Heads in corymbss... G. luteo-album
   ssp. affine
1. Heads in spikes
   G. polycanthum


Herbs, erect or ascending, 7 - 17 cm long. Leaves sessile, spatulate-oblong. 2.5 x 0.4 1.5 cm, base semi-amplexicaul, woolly. Heads yellow in axillary and terminal corymbss. Involutural bracts multiseriate, scarious, shining yellow. Achenes small, oblong or obovate; pappus hairs uniseriate, connate at base, cadaceous.

Fls. & Frts. : March - April.

Distrib. : Common along riverbeds and in waste places. Koyna; Mahabaleshwar; Medha.
Fig. 29. Gnaphalium lateo-album L. ssp. affine (D. Don) Koeter
Notes: Koster (1941) has separated this species into ssp. *luteo-album* with larger heads and pale brownish involucral bracts and ssp. *affine* (D. Don) Koster with smaller heads and golden yellow bracts.


Herbs, erect or prostrate, 5–13 cm high. Leaves sessile, obovate, apiculate, 1–1.5 × 0.7–0.9 cm, white woolly. Heads golden yellow, ca 0.3 cm across in terminal leafy spikes. Achenes oblong, shortly beaked.

*Fls. & Frts.*: February May.


*Distrib.*: Common along roadsides and in waste places. Mahabaleshwar; Pratagad; Taldeo.

**Gynura** Cass.


Undershubs, 1–2 m high; stem grooved. Leaves sessile, 16–18 × 5.0–7.5 cm, distantly toothed. Involucral bracts as long as heads, ca 1.2 cm long, linear, acute, margins scarious. Achenes oblong, brown, ca 0.25 cm long, ribbed; pappus white, silky.

*Fls. & Frts.*: August October.

*Distrib.*: Common along moist grassy slopes and near forest edges. Koyna; Mahabaleshwar; Panchgani-Mahabaleshwar; Sanbur; Shrigaon ghat.

**Kleinia** P. Mill.

Herbs, ca 1.5 m high. Leaves sessile or shortly petiolate, obovate or elliptic-lanceolate, 5-12 x 2-6 cm. Heads pale yellow. Involucral bracts linear-oblong, margins scarious. Achenes oblong, striate; pappus hairy.

Fls. & Frts.: September November.

Illus.: Wight, Le. t. 484. 1841; Matthew, op. cit. & Ill. Fl. Tamilnadu Carnatic 2: t. 381. 1982 (Notonia grandiflora).

Distrib.: Succulent perennials along ghats. Khambatki ghat, Panchgani; Khandala ghat near Wai.

**Lactuca L.**

1. Slender herbs; leaves up to 5 cm long; heads pedunculate ... *L. remotiflora*

2. Stout herbs; leaves more than 5 cm long; heads sessile ... *L. runcinata*


Herbs, ca 20 cm high. Radical leaves obovate, base cuneate, apex obtuse; cauline narrow, semi-amplexicaul. Heads pinkish, cylindrical, ca 1 cm long. Involucral bracts linear-oblong, scarious. Achenes oblong, ca 0.7 cm long, ribbed.

Fls. & Frts.: July September.

Distrib.: Rare, slender monsoon herbs. Mahabaleshwar. *Soman* 157665.


Herbs, stem hollow. Leaves sessile, obovate, pinnatifid, lobes recurved. Heads pinkish-white, solitary or in clusters. Achenes compressed, faintly ribbed, muricate.

Distrib.: Included on Birdwood's report from Mahabaleshwar.

**CULTIVATED SPECIES**


Leaves used as salad.

LAGASCEA Cav.


Herbs, ca 1 m high, slender, pubescent. Leaves 3.7 × 1.5 cm, base cuneate, apex acute or acuminate, margin crenate. Heads white, ca 1.5 cm across. Involucral bracts linear-lanceolate, connate. Achenes ca 0.2 cm long.

Fls. & Frts.: Throughout the year.


Distrib.: Common weed near cultivated fields, along roadsides and in waste places. Girvi: Khatai; Panchgani.

LAMPRACHAENIUM Bth.


Herbs with a purple tinge, 30–50 cm high, hairy. Leaves elliptic, 3.9 × 1.3–4.0 cm, base tapering, apex acuminate, margin distantly toothed, bristly above, woolly tomentose beneath. Heads conical, ca 0.5 cm across. Outer involucral bracts foliaceous, ca 0.5 cm long, green, margins ciliate; inner with scarious margins. Achenes obovoid, slightly compressed, ca 0.2 cm long, shining.

Fls. & Frts.: October–November.

Distrib.: Common annuals in waste places. Machutar forest, near Mahabaleshwar; Mahabaleshwar.

LAUNABA Cass.


Herbs, 20-50 cm high. Leaves oblong, 7 11 × 2.0 - 2.5 cm, pinnatifid, segments rounded, margin spinulose with white cartilaginous teeth; cauline few, narrowly oblong, pinnatifid. Heads cylindric, shortly pedicelled, solitary or fascicled. Involutural bracts many seriate; the outer ovate, acute, inner linear, ca 1 cm long. Achenes cylindrical, ribbed; pappus soft, white.

*Fls. & Frts.*: February  September.


*Distrib.*: Common on sandy soil on ghats in scrub forest and near cultivated fields. Gojegaon; Nauja; Satara road station.

**Parthenium L.**


Herbs, 1 2 m high. Leaves sessile, lanceolate-oblong, 4-7 × 2.0 3.5 cm, base tapering, apex acute. Heads white, ca 0.2 cm across. Achenes triquamous, compressed.

*Fls. & Frts.*: Throughout the year.


*Distrib.*: Native of America spread as a troublesome weed throughout the district. It causes skin allergies. Koyna; Medha.

**Phyelcephalum Cass.**

1. Outer involucral bracts 1-many, linear or lanceolate, acute; ribs of achenes conspicuous
   *P. phyliolaenam*

1. Outer involucral bracts 1-2, oblong-lanceolate, bristly at apex; ribs of achenes faint
   *P. tenue*

Herbs, ca 1 m high with a purplish tinge. Leaves broadly elliptic, 6 10 × 1.7 cm, base tapering, apex acuminate, margins spinuous-serrate, covered with short setae above, densely white tomentose beneath. Heads ca 1 cm across. Outer involucral bracts linear-lanceolate, longer than heads; inner short, margins ciliate; innermost linear-oblong, acute, purple, sericeous. Achenes oblong, ca 0.2 cm long.

Fls. & Frts.: September November.

Distrib.: Frequent in forest undergrowth and in open situations. Kelghar ghat; Forest nursery; Koyna; Nauja; Shirshingi.


Herbs, ca 1.5 m high with a purple tinge. Lower leaves petiolated, upper sessile, elliptic-lanceolate, 3 9 × 1.2 cm, base attenuate, apex acute or acuminate, sparsely hairy above, woolly tomentose beneath, margins irregularly serrate. Heads 0.5 1.0 cm across. Involutural bracts oblong-lanceolate, 1 2 cm long. Achenes oblong, ca 0.3 cm long.

Fls. & Frts.: October.

Distrib.: Rare annuals along grassy hill slopes. Mahabaleshwar. Cooke s.n., Talbot 4457.

Notes: Bole & Almeida (op. cit.) have based their name on Decaneuron Illicium Dalz. & Gibbs Bombay Fl. 314. 1861. Hook. f. (op. cit. 241) had treated this under “doubtful and imperfectly known species” as there was no specimen in Dalzel’s Herbarium and he failed to identify it by the description. Under such circumstances, Bole & Almeida’s combination is not acceptable as it is not based on any type specimen.

PULICARIA Gaertn.


Herbs, 30 50 cm high, pubescent. Leaves sessile, 2 6 × 0.5 – 1.0 cm, base amplexicaul, puberulous. Heads 1.0 × 1.5 cm across. Involutural bracts linear oblong, subacute, ca 1.2 cm long, subequal, hairy. Achenes oblong, minute, ribbed; pappus fimbriate.
FLORA OF MAHABALESHWAR

Fls. & Frts.: November.

Illus.: Wight, Ic. t. 1089. 1846 [Callistephus wightianus (DC.) DC.].

Distrib.: Annuals near cultivated fields. Wai.

Senecio L.

1. Heads bracteolate:

2. Branches pubescent; achenes hairy

S. belgaumensis

2. Branches glabrous or scaberialous; achenes glabrous ...

S. gibsonii

1. Heads bracteolate:

3. Stem grooved, glabrous; pappus paleaceous ...

S. bombayensis

3. Stem terete, white pubescent; pappus hairy:

4. Erect herbs; leaves linear-oblong ...

S. daizelli

4. Sufurticose herbs; leaves ovate-rhomboid ...

S. edgeworthii


Herbs, 20–50 cm high. Leaves lanceolate-rhomboid, 5–9 × 1.7–4.0 cm, toothed, glabrous above, cottony-white beneath, base auricled. Heads on slender peduncles; bracts scattered. Involute bracts linear-oblong, acuminate, hairy. Achenes ca 0.4 cm long, 10-ribbed, black.

Fls. & Frts.: August January.

Illus.: Wight, Ic. t. 1152. 1846.

Distrib.: Occasional along exposed hill slopes. Fitzgerald ghat, Koyna ; Mahabaleshwar.


Herbs, ca 1 m high. Leaves rhomboid-ovate, 1.7–5.2 × 0.6–3.0 cm, base tapering, apex obtuse or acute, white tomentose beneath, margins irregularly toothed. Heads in lax, terminal corymbs. Involute bracts equal, connate at base, pubescent. Achenes obconic, longer than pappus, scabrid.
Fls. & Frts. : January November.

Illus. : Wight, l.c. t. 1151. B 1846. (S. grahami)

Distrib. : Common along ghats. Kelghar ghat, Mahabaleshwar; Panchgani; Yavatshwar.


Herba, ca 1 m high. Leaves sessile or lower shortly petioled, 2.5 7.0 x 0.4 1.0 cm, coriaceous, scabrid above, woolly beneath, margin recurved. Heads ca 1 cm across. Involucral bracts linear-lanceolate, pubescent. Achenes subereic, dorsally compressed, scabrid; pappus white, rigid, scabrid.

Fls. & Frts. : November December.

Distrib. : Rare annuals, included on Birdwood's report from Mahabaleshwar.


Herbs, ca 1 m high, woolly when young, glabrous at length. Leaves 2.0 3.5 x 1.5 3.0 cm, white woolly beneath, margins sinuate-dentate; petioles ca 1 cm long, auricled at base. Heads ca 1 cm across. Involucral bracts linear-lanceolate, acute, ca 0.3 cm long, woolly. Achenes oblong, ca 0.2 cm long, faintly ribbed; pappus white, slightly longer than the achene.

Fls. & Frts. : August October.

Illus. : Wight, l.c. 1151. 1846. (Doronicum tomentosum)

Distrib. : Common along ghats. Way to Nauja; Panchgani; Panchgani ghat; Panchgani-Wai.


Herbs. ca 1.5 m high. Leaves sessile or shortly petioled, ovate-rhomboid, 2.5 x 0.7 3.5 cm, scaberulous above, tomentose beneath, margins irregularly toothed. Heads in lax, dichotomous corymb. Involucral bracts oblong-lanceolate, acute, margins scarious. Achenes oblong, ribbed; pappus hairs yellowish, rigid, unequal.

Fls. & Frts. : April November.

Distrib. : Frequent along ghats. Koyna.
Fig. 30. *Senecio gibsoni* Hook. f.

Herbs, ca 1 m high; branches with a purple tinge, pubescent. Leaves ovate, 4–10 × 3–5 cm, base cuneate, apex acute, pubescent. Disc florets yellow, ray florets red. Outer involucral bracts spathulate or clavate with recurved margins, inner boat shaped, glandular-hairy on the back. Achenes oblong, black.

Fls. & Frts.: November - December.


Distrib.: Rare annuals along hill slopes. Panchgani caves.

Sonchus L.

1. Heads in dense umbels; achenes elliptic ... S. asper
1. Heads in lax cymes; achenes obovoid ... S. oleraceus


Herbs, ca 1 m high. Lower leaves oblanceolate-spathulate, ca 15 × 5 cm, entire or lobed, upper pinnatifid, base auricled, margins dentate. Heads yellow. Involucral bracts many-seriate. Achenes compressed, ribbed; pappus multi-seriate, slender, hairy.

Fls. & Frts.: January - March.

Distrib.: Rare along river banks. Mahabaleshwar. G.L. Shah 10647 (BLAT).


Herbs, ca 50 cm high. Leaves oblanceolate, 6–20 × 3–4 cm, pinnatifid, base semi-amplexicaul. Heads yellow; pedicels reddish glandular. Involucral bracts multi-seriate, campanulate. Achenes ca 0.25 cm long, ribbed, faintly muricate.
Flora of Mahabaleshwar

Fls. & Frts.: January November.


Distrib.: Common weed in waste places. Dhom dam; Koyna; Mahabaleshwar.

**Sphaeranthus L.**


Herbs, 30-50 cm high; wings of stem toothed, glandular hairy. Leaves sessile, oblong, 2.5 x 1.3 cm, dentate, hispid; heads 0.5-1.0 cm across. Involucral bracts linear, acuminate. Achenes oblong, smooth or angled.

Fls. & Frts.: February-April.


Distrib.: Common along river banks and in moist open places near cultivated fields. Bamnoli; Jadholi; Medha; Mhavashi; Shirshingi.

**Spilanthes Jacq.**

1. Achenes strongly ciliate; pappus bristly ... *S. paniculata*

1. Achenes ciliate; pappus absent ... *S. calva*


Herbs, 20-30 cm high, hairy. Leaves ovate, 1.5-5.0 x 1.0-3.5 cm, base and apex acute, margin irregularly crenate. Heads solitary, ovoid, ca 1.2 x 0.7 cm. Involucral bracts ovate, acute, pubescent. Achenes ca 0.2 cm long, compressed.

Fls. & Frts.: February-November.


Distrib.: Frequent in open lands. Karanjewadi; Koyna; Mahabaleshwar.


**Fls. & Frts.** : December.

**Illus.** : Wight, T. t. 1109. 1846 (*S. caiva*).

**Distrib.** : Included on Bole & Almeida’s report after harvest season from Mahabaleshwar.

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**Syneorella** Gaertn. (*nom. cons.*)


Herbs, ca 1 m high. Leaves ovate-lanceolate, 3 8 x 1 4 cm, sparsely hairy. Heads axillary, sessile. Involucral bracts oblong, ca 0.7 cm long. Achenes ca 0.4 cm long, black, awns 2, stiff.

**Fls. & Frts.** : September.


**Distrib.** : Weed along river banks. Native of Central America, first reported by Sant. (*op. cit.*) from Bombay. Ksrude; Mahabaleshwar.

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**Tithonia** Desf. ex A. Juss.


Shrubs, 2 3 m high. Leaves 4 7 x 2.0 3.5 cm. Heads bright yellow, ca 2 cm across. Involucral bracts biseriate, thin, ovate-oblong, acute. Achenes obscurely 4-angled or flattened.

**Fls. & Frts.** : November.

**Distrib.** : In waste lands; native of Tropical America. Koyna.
TRICHOLEPIS DC.

1. Leaves semi-amplexicaul; pappus absent; achenes obovate
   ... *T. amplexicaulis*

1. Leaves not as above; pappus present; achenes oblong:

2. Leaves linear-oblong or lanceolate; achenes faintly ribbed
   ... *T. glaberrima*

2. Lower leaves ovate, upper oblong; achenes smooth
   ... *T. radicans*

*Tricholepis amplexicaulis* C.B. Cl. Comp. Ind. 240. 1876; Hook. f. Fl. Brit. India 3: 381. 1881; Cooke, Fl. Pres. Bombay 2: 115. 1958 (Repr. ed.). 'Dahan'. (Fig. 31).

Herbs, *ca* 1 m high; branches angled, ribbed, minutely scaberulous. Leaves sessile, linear-oblong, 4-9 × 1.0-1.5 cm, margin minutely dentate. Heads 0.5-2.0 cm across, woolly-pubescent. Outer involucral bracts linear-lanceolate, scarious, aristate; inner longer, linear, acute. Achenes *ca* 0.7 cm long, glossy with oblique basal areole.

_Fls. & Frs._: Throughout the year.

_Distrib._: Common on the hill tops. Jangli jaigad; Mahabaleshwar; Mahabaleshwar-Pratagad


Herbs, 1-2 m high, branches ribbed, angular. Leaves sessile, 2-5 × 0.3-0.6 cm, spinous-toothed, punctate. Heads solitary, terminal. Involucral bracts linear-lanceolate, aristate, ciliate; pappus subpaleaceous, yellowish brown.

_Fls. & Frs._: October–November.

_Distrib._: Infrequent on hill slopes and near cultivated fields, Mahabaleshwar; Panchgani.


Herbs, *ca* 50 cm high; stem quadrangular, hairy. Leaves 1.5-4.0 × 0.5-1.0 cm, margins coarsely serrate, bristle-pointed. Heads solitary, terminal. Involucral bracts many serrate, bristle pointed. Achenes oblong, truncate; pappus hairy.
Fig. 31. *Tricholepis amplesicaulis* C.B.Cl.
FLORA OF MAHABALESHWAR

Fls. & Frts.: September - November.


Distrib.: Slender annuals along lower hill slopes. Kelghar ghat; Pandavgad.

TRIDAX L.


Herbs, hispid. Leaves ovate-elliptic, 2.0 4.5 × 1.5 2.5 cm, base and apex acute, margins ineosindentate. Heads solitary on long, hairy peduncles. Outer involucral bracts herbaceous, inner scarious. Achenes oblong, silky hairy, black.

Fls. & Frts.: Throughout the year.


Distrib.: Common weed growing in all types of habitats. Koyna; Mahabaleshwar; Medha; Panchgani.

Notes: Used to cure toothache and juice applied to bruises.

VERNONIA Schreb. (nom. cons.)

1. Herbs; achenes not ribbed ... V. cinerea

1. Shrubs; achenes 10-ribbed:

2. Leaves membranous, on the nerves beneath ... V. divergens

2. Leaves coriaceous, tumenose beneath ... V. indica


Herbs, ca 1.5 m high. Leaves elliptic-lanceolate, 3.5 6.5 × 1.5 3.0 cm, base rounded or acute, apex acute, pubescent, margins crenate-serrate. Heads ca 0.5 cm across. Involucral bracts linear-lanceolate, silky on back. Achenes minute, hairy; pappus of white hairs.

Fls. & Frts.: February November.

Distrib.: Common weed near cultivated fields and in gardens. Ambeghar; Dhayati; Koyna; Koyna-Karad Rd.; Mahabaleshwar; Shitshingi.


Shrubs, ca 2 m high. Leaves elliptic, 4 11 x 1.5 5.0 cm, scabrid above, margins serrate. Heads ca 0.6 cm across. Involucral bracts elliptic, acute, mucronate. Achenes 3.4-angled, ca 0.3 cm long.

Fls. & Frts.: Throughout the year.


Distrib.: Common perennials along ghats. Jadholi; Kumbharli ghat, Mahabaleshwar; Pratapgar road; Punoli; Vasota.


Shrubs, 1 2 m high, tomentose. Leaves subsessile, elliptic, 4 10 x 1 6 cm, margin serrate. Heads ca 0.5 cm across. Bracts below the heads lanceolate, densely tomentose. Involucral bracts ovate-oblong, mucronate, purple tipped, densely tomentose on back. Achenes oblong, sub-compressed, ca 0.35 cm long, glandular between the ribs.

Fls. & Frts.: October.

Distrib.: Occasional on grassy hill slopes. Mahabaleshwar; Panchgani.

**Viciae Cass.**

1. Leaves sessile, auricled at base; ray florets without pappus... V. indica

1. Leaves shortly petiolated, cuneate at base; ray florets with pappus of few bristles... V. cernua

Herbs, 20-50 cm high, pubescent. Lower leaves elliptic-lanceolate, 5 8 × 1.7 3.0 cm, upper oblong-lanceolate, 1 2 × 0.5 1.0 cm, scabrid. Heads 1.5 cm across. Involucral bracts slender, setaceous, hairy, outer squarrose. Achenes oblong, minute.

**Fls. & Frts.:** Throughout the year.

**Distrib.:** Common along forest margins. Karanjewadi; Kumbhatli ghat, Mahabaleshwar; Nauja; Shirshingi; Tadooshi.


Herbs, ca 1 m high. Leaves oblong-lanceolate, 2.5 6.5 × 0.3 1.0 cm. Heads ca 0.5 cm across. Involucral bracts multi-seriate, narrow, scarious. Achenes small, terete. Pappus of few hairs in disc florets.

**Fls. & Frts.:** November - February.

**Illus.:** Wight, Ic. t. 1148. 1846; Matthew, III. Fl. Tamilnadu Carnatic 2: t. 395. 1982.

**Distrib.:** Slender herbs in deciduous forests, also found as a weed in cultivated fields. Asani, Keighar ghat, Kole, Wal.

**Wedelia N. J. Jacq.**


Undershubs. Leaves elliptic-ovate, 3 6 × 2.5 4.0 cm, base, truncate or rounded, apex acute, margin serrate. Heads ca 2.5 cm across, outer involucral bracts ovate-oblong, acute; inner rhomboid-lanceolate. Achenes ca 0.5 cm long.

**Fls. & Frts.:** August - September.

**Illus.:** Wight, Ic. t. 1106. 1846.

**Distrib.:** Included on Bole & Almeida's report from Mahabaleshwar. Grows in shady places near forest margins.

**Xanthium L.**

Herbs, *ca* 1.5 m high. Leaves triangular-ovate, 2.5 \* 1.5 cm, 3-lobed, scaberulous, margin irregularly toothed. Heads in axillary and terminal racemes. Involucre ovoid, bristly and with 2 mucronate beaks. Achenes *ca* 1 cm long, compressed.

_Fls. & Frts._: January - April.

_ILLUS._: Wight, _Ic. t._ 1104. 1846.

_Distrib._: Common weed in waste places, near cultivated fields and along roadsides. Asara; Karad; Mahabaleshwar; Vajegaon.

**CULTIVATED SPECIES**


Annual herbs. Heads yellow or orange.

_Distrib._: Cultivated as an ornamental plant. Mahabaleshwar.


Herbs, *ca* 1 m high. Leaves spiny. Heads orange-yellow, solitary or in terminal corymbs.

_Fls. & Frts._: March - May.

_Distrib._: Annuals, cultivated for its oil seeds. Khambatki ghat.


Herbs. Leaves lanceolate, *ca* 5.5 cm long, distantly serrate. Flowers orange-yellow in terminal heads.

_Fls. & Frts._: February - September.


_Distrib._: Cultivated for oil seeds. Common. Kas; Kuru de; Mahabaleshwar; Nauja; Wai.

Shrubs, 1-3 m high. Leaves ovate, acute. Heads bright yellow, ca 10 cm across.

Fls. & Frts.: February May.

Notes: Grown on large scale as economic and ornamental plant throughout the district.


Herbs, young branches pubescent. Leaves sessile, lanceolate-oblong, distantly serrate, scabrid above, pubescent beneath. Heads yellow in second racemes.

Fls & Frts.: October December

Distrib.: Cultivated in gardens as ornamental plant. Koyna.


Herbs, 20-30 cm high. Leaves 3-6 cm long, deeply pinnatifid, margins distantly serrate. Heads orange, terminal, solitary.

Distrib.: Common ornamental herb. Padolshi.

LOBELIACEAE

Lobelia L.

1. Herbs ca 3 m high; flowers white in terminal racemes ... L. nicotianifolia
1. Herbs not more than 40 cm high; flowers solitary, axillary:

2. Stem winged; only 2 anthers bearded at apex; seeds not trigonous ... L. heyneana
2. Stem not winged; all anthers bearded at apex; seeds trigonous ... L. asinoides


Herbs ca 1.5 cm high. Leaves subsessile, ovate, 1.0 x 0.5 x 0.3 cm, base rounded, apex acute, margins shallowly serrate. Flowers purple, 5-merous on 1-2 cm long pedicels. Capsules ellipsoid, ca 0.5 cm long. Seeds brownish-black.
Fls. & Frts. : August November

Ilhus. : Wight, Is. t. 1170. 1848. (L. trigona)


Herbs, 5 - 7 cm high. Leaves ovate, 0.5 × 0.3 - 1.5 cm, base narrowed, apex acute, margin crenate-serrate. Flowers bluish-white. Capsules ellipsoid, ca 0.4 cm long. Seeds brown.

Fls. & Frts. : August November.

Distrib. : Infrequent in grassy localities in moist places. Koyna; Mahabaleshwar.


Stems hollow, shining. Leaves oblong-lanceolate, 9 × 1.5 - 2.0 cm, base tapering, apex acute, glabrous above, pubescent beneath, margins serrulate. Racemes stout, ca 20 cm long; pedicels pubescent; bracts leafy; anthers purple, the lower two bearded. Capsules subglobose, a 0.6 cm across.

Fls. & Frts. : November February.

Ilhus. : Wight, Is. t. 135. 1839.

Distrib. : Common along ghats above 700 m altitude. Dammoli; Gureghar; Jadholi; Mahabaleshwar; Nauja; Parut; Pratapgarh hills; Shirshingi.

CAMPAULACEAE

1. Capsules dehiscing at the base or sides below the calyx teeth
   ... Campanula

1. Capsules dehiscing longitudinally within the calyx teeth:

2. Stem dichotomously branched; hairy; corolla rotate, deeply divided, stigma capitate
   ... Cephalostigma

2. Stem not dichotomously branched; corolla campanulate, stigma lobed
   ... Wahlbergia
Fig. 32. *Lobelia heyneana* R. & S.
Campanula L.

1. Flowers dimorphic; stems straight... C. colorata
1. Flowers monomorphic; stems spreading... C. alphonssii

Campanula alphonssii Wall. ex A. DC. in DC. Prodr. 7: 473. 1839;
2: 134. 1958 (Repr. ed.).

Herbs, 6–8 cm high, hairy. Leaves alternate, subsessile, ovate-elliptic, up to 1.0 × 0.5 cm, hairy. Flowers blue, in terminal, lax corymbs;
calyx tube campanulate, hairy; lobes triangular, acute, with intermediate
tooth, corolla half way divided, lobes oblong, subacute. Capsules obvoid.
Seeds ellipsoid, minute.

Fls. & Frts.: October.

Illus.: Wight, Ic. f. 1177. 1848.

Distrib.: Rare, variable in habit and leaf size. Mahabaleshwar,
Acland 648 (BLAT), Cooke s.n., Suntapau 22376 (BLAT).

C. colorata Wall. ex Rottb. Fl. Ind. (Carey ed.) 2: 101. 1832; Rau in
Prodr. 7: 474. 1838 non Roth; 1827; C.B. Cl. in Hook. f. Fl. Brit. India

Herbs, 15–40 cm high; branches hispid. Basal leaves subsessile,
obovate in a rosette; upper leaves sessile, linear-lanceolate, pubescent.
Flower purple, in solitary, spiciform panicles; one flower perfect, in
other either corolla or stamens wanting. Capsules obvoid, hairy, many
seeded.

Fls. & Frts.: November December.

Distrib.: Slender herbs in moist places. Lingmala; Mahabaleshwar;
Sajjangad; Satara.

Notes: Sabnis & Bhatt (op. cit.) have discussed about the nomenclature
of this plant and claimed C. dimorphantha as the correct name.
However C. colorata antedates it.


Notes: This species is included on the authority of Cooke, who reported it in his ‘List of principal Mahabaleshwar Plants, Appendix-A (Bombay Gazetteer 19: 650. 1885).

Wahlenbergia Schrad.

1. Leaves sessile, margin entire; corolla lobes oblong ... W. marginata
1. Leaves sub sessile, margin crenated, subdentate; corolla lobes lanceolate ... W. erecta


Herbs, ca 30 cm high, hairy. Leaves elliptic-oblong, 1 2×0.3 0.5 cm, apex acute, hairy above and on nerves beneath. Flowers blue in lax, terminal cymes. Capsules conical, hairy. Seeds oblong ca 0.5 cm long.

Fls. & Fris.: October December.


Distrib.: Rare; slender annuals in shady areas. Mahabaleshwar; Santapau 11742 (BLAT); Panohgani, Woodrow (Cooke, op. cit.).


Herbs, 15-20 cm high. Leaves linear-oblong, 2 3×0.3 cm, glandous above, pubescent beneath. Flowers blue, solitary or in lax cymes. Capsules ca 0.5 cm long, tapering into stalk. Seeds ellipsoid, yellowish-brown.

Fls. & Fris.: April.
ill. : Wight. Il. t. 1175. 1848 (W. agrestis DC.).

Distrib. : Rare, restricted to higher elevations. Mahabaleshwar, Puri 182.

PLUMBAGINACEAE

Plumbago L.


Undershrubs, ca 1 m high. Leaves elliptic-ovate, 4 6 x 2 3 cm, base tapering into petiole, apex subacute; petioles auricled at base. Flowers white in terminal, spadiform racemes; calyx densely covered with stalked glands; corolla lobes obovate-oblong. Capsules oblong, membranous.

Fls. & Frts. : January November.


Distrib. : Common along hill slopes, near forest clearings in scrub jungles. Kelghar ghat; Khadav; Mahabaleshwar; Panchgani ghat; Pimpodshi; Umarkanchan.

CULTIVATED SPECIES


Fls. : May December.

Distrib. : Grown in gardens as ornamental plant. Mahabaleshwar.

Undershubs. Leaves elliptic, tapering at base and apex. Flowers red in spikes.

** Distrib. : Grown as ornamental plants. Mahabaleshwar. **

**PRIMULACEAE**

**ANAGALLIS L.**

1. Leaves opposite; flowers blue  

   **A. arvensis**

1. Leaves alternate; flowers white  

   **A. pumila**


Herbs, 40–45 cm high. Leaves sessile, elliptic-ovate, 1.0  2.2 ×  0.7  1.0 cm, base rounded, apex acute. Calyx lobes lanceolate, acuminate; corolla lobes ovate, glandular-hairy. Capsules globose, ca 0.3 cm across. Seeds trigonous.

**FIs. & Frts. : January October.**


**Distrib. : Common near cultivated fields among grasses. Mahabaleshwar; Panchgani; Taldeo; Vardhangad; Yavatshwar.**


Herbs, ca 15 cm high. Leaves subsessile, ovate, ca 0.6 × 0.3 cm, base cuneate, apex subacute. Calyx lobes lanceolate-oblong, mucronate; corolla lobes ovate-lanceolate, apiculate. Capsules subglobose, ca 0.3 cm across.

**FIs. & Frts. : September December.**


**Distrib. : Occasional in moist places and in fallow fields. Lingmala; Mahabaleshwar.**

Herbs. 15-45 cm high. Leaves obovate-spathulate, gland-dotted. Flowers in 5-10 cm long racemes. Capsules globose, ca 0.3 cm across.

Notes: Reported by Lisboa (Climate of Mahabaleshwar, 1886), but so far it has not been collected from the district. Probably an escape from cultivation.

**MYRSINACEAE**

1. Leaves serrate; calyx tube adnate to the ovary; fruits many-seeded ... **Maesa**

1. Leaves usually entire (Occasionally ciliate in *E. nigerianum* - varium) calyx tube free from ovary; fruits 1-seeded ... **Embelia**

**Embelia** N. Burm.

1. Small trees ... *E. nigerianum - varium*

1. Scandent shrubs

2. Flowers 4-merous, fruits red when ripe ... **E. buscal**

2. Flowers 5-merous; fruits black when ripe ... **E. ribes**


Large climbers; branches warty. Leaves elliptic, 6-16 x 4-7 cm, coriaceous, base rounded or acute, apex obtuse or acute, punctate. Flowers white in short cylindrical racemes; calyx lobes triangular, gland-dotted; petals oblong-obovate, gland-dotted. Fruits globose, ca 0.4 cm across.

*Fls. & Frts.*: December April.


*Distrib.*: Common in semi-evergreen forests. Mahabaleshwar, Panchgani.

Shrubs scandent. Leaves elliptic, 6 × 3 × 4 cm, base rounded or acute, apex obtusely acuminate, punctate below. Flowers greenish-white, in lax, terminal, pubescent, paniculate racemes; calyx connate at base, teeth broadly ovate; petals elliptic, pubescent. Fruits globose, ca 0.2 cm across.

*Fls. & Frits.*: February.

*Illus.*: Wight, l.c. t 1207. 1848.

*Distrib.*: Infrequent along ghats. Fitzgerald ghat; Kistudge; Mahabaleshwar.


Trees, ca 6 m high. Leaves broadly elliptic, 5 × 3 × 6 cm, base rounded or acute, apex acuminate. Flowers greenish-yellow in axillary, pubescent racemes; calyx lobes ovate, connate at base, gland-dotted; petals elliptic-oblong. Fruits globose, apiculate.

*Fls. & Frits.*: February December.

*Distrib.*: Common in deciduous forests along edges. Dhokewadi; Gadoli; Koyna; Mahabaleshwar; Tapola.

**Maesa Forsk.**


Trees, 7–9 m high; stem lenticelled. Leaves elliptic-lanceolate, 10 × 3 × 5 cm, base and apex acute. Flowers small, white, in axillary panicles; bracts and bracteoles ovate, acute; calyx lobes ovate, marked with dark lines, shortly contracted at the base. Berries globose.

*Fls. & Frits.*: November–June.


*Distrib.*: Common along ghats in semi-evergreen forests. Dicholi; Jadholi; Kanjewadi; Kumbharli ghat; Mahabaleshwar.
Notes: The specimens show variation in branches and leaves densely ferruginous tomentose when young to glabrous when old with intermediates.

Sapotaceae

1. Armed trees; flowers 5-merous
   ... 
   Xantolis

1. Unarmed trees; flowers 4-merous
   ... 
   Mimusops

Mimusops L.


Trees, ca 12 m high. Leaves elliptic, 10 17 × 4 7 cm, coriaceous, base attenuate, apex shortly acuminate. Flowers white, solitary or in axillary fascicles; calyx lobes, biseriate, the outer ovate-lanceolate, acute, fulvous-tomentose, the inner linear-lanceolate; corolla lobes 24; stamens 8, alternate with densely hairy staminodes Berries ovoid, ca 1 cm across.

Fls. & Frts.: February April.


Disrib.: Occasional in semi-evergreen forests, also planted for its fragrant flowers. Mahabaleshwar; Vasota.

Xantolis Rafin.


Trees, 9 - 15 m high; young branches tomentose. Leaves elliptic or elliptic-obovate, 4 8 × 2 4 cm, subcoriaceous, base acute, apex rounded or subacute, tomentose when young. Flowers white, small in axillary clusters; calyx campanulate, fulvous-pubescent. Berries ovoid, 1 2 cm long, yellowish-green, pubescent when young.

Fls. & Frts.: September December.

Distrib.: Common along ghats in deciduous forests, Dhicholi; Karanjewadi; Kumbharli ghat; Mahabaleshwar; Nauja; Ratanada ghat below Mahabaleshwar.

CULTIVATED SPECIES


Cultivated throughout the district for edible fruits.

EBENACEAE

DIOSPYROS L.

1. Flowers 3-merous
   ... D. migrescens

2. Flowers 4-5-merous:

3. Male corolla tubular; fruiting calyx woody
   ... D. eburnei

4. Male corolla urceolate; fruiting calyx coriaceous:

5. Leaves glabrous; calyx pubescent
   ... D. sylvestra

6. Leaves pubescent; calyx glabrous
   ... D. mantarena


Trees, 10-15 m high. Leaves elliptic-oblong, 5-10 x 2.5-5.5 cm, coriaceous, shining above, pale beneath. Male flowers in axillary, sub-sessile cymes; calyx cupular, lobes minute; corolla greenish-yellow; female flowers solitary. Fruits globose, beaked; fruiting calyx lobes reflexed.

Fls. & Frts.: February March.

Ilhus: Wight, Ic. t. 188. 1839; Bedd. Fl. Sylv. t. 65. 1870.
Notes: Rare, known only by Birdwood's report from Mahabaleshwar.


Trees. 12-15 m high; young branches tomentose. Leaves elliptic, 5-10 × 2-4 cm, base obtuse, apex subacute, glabrous above, pubescent beneath. Flowers white; male in panicked cymes; female flowers solitary, subsessile. Fruits ovoid, 3-4 cm across, yellow turning red; fruiting calyx accrescent, fulvous-tomentose.

**Fls. & Frts.**: September - January.

**Illus.**: Wight, Le. t. 1223. 1848 (D. dubia Wall. ex A. DC. in DC. Prodr. 8: 223, 1848).

**Distrib.**: Common in deciduous forests. Kiwal; Shrigaon ghat.


Trees. 5-10 m high. Leaves ovate-elliptic, 6-9 × 3-5 cm, base truncate, apex acute or obtuse. Flowers greenish-white; male in short, axillary umbels; female solitary, axillary; staminodes 4. Berries globose, ca 2.5 cm across, orange when ripe.

**Fls. & Frts.**: June - November.


**Distrib.**: Common component of deciduous forests. Dicholi; Koyna; Mahabaleshwar; Padolshi; Shirdi-giri.


Trees, ca 6 m high. Leaves oblong-lanceolate, 5-7 × 1.8-2.2 cm, base cordate, apex subacute, glabrous above, fulvous-hairy beneath, margin undulate; petioles densely fulvous-hairy. Flowers white; male in subsessile cymes; calyx densely fulvous-hairy; corolla lobes hairy on the
buck; female flowers solitary or in pairs. Fruits ellipsoid, fulvous hairy when young.

*Fls. & Frts.*: April June.

*Illus.*: Saldanha *op. cit.*

*Distrib.*: Infrequent. Mahabaleshwar; Nauja; Shirshingi.


Trees, 18-20 m high. Leaves elliptic, 6-11 \( \times \) 3-4 cm, base and apex acute. Male flowers in axillary cymes; female solitary; staminodes 4. Fruits globose, ca 1.5 cm across.

*Frts.*: September November.


*Distrib.*: Occasional, restricted to higher elevation in semi-evergreen forests. Dincholi; Shirshingi.

**SYMPLOCACEAE**

**Symlocos Jacq.**

1. Flowers shortly pedicelled; fruits oblong, smooth ... *S. beddomei*

1. Flowers sessile; fruits globose, ribbed ... *S. laurina*


Trees, 8-10 m high. Leaves elliptic-lanceolate, 8-18 \( \times \) 3.5-6.0 cm, margin crenate. Flowers in axillary spicate racemes, 8-14 cm long, pubescent; bracts ovate, deciduous; bracteoles 2, ovate, ciliate; petals oblong, obtuse. Drupes dark-blue becoming yellow, ca 1.5 cm long.

*Fls. & Frts.*: November April.

*Distrib.*: Common. Mahabaleshwar; Wada below Mahabaleshwar.

*Notes*: Ramamoorthy (1976) has treated this species as a synonym of *S. racemosa* Roxb. According to C.B. Cl. (*op. cit.*) *S. beddomei* differs from *S. racemosa* in less coriaceous leaves, inflorescence and ovoid-oblong fruits (Bole & Almeida, 1984).
Fig. 33. *Symplaca beddomei* C.B.C.

Trees, 6-8 m high. Leaves elliptic-lanceolate, 8-12 x 4.5-5.5 cm, base acute or attenuate, apex acute. Spikes solitary or 2-3 together; corolla lobes oblong, rounded. Drupes 0.5 cm across.

Fls. & Frts.: January.


Distrib.: Rare in semi-evergreen forests. Mahabaleshwar-Panchgani, Mahajan 13094.

OLEACEAE

1. Climbing herbs or shrubs ... JASMINUM

1. Trees:

2. Flowers in terminal thyrsoid panicles ... LIQUISTRUM

2. Flowers in axillary paniculate cymes or fascicles:

3. Flowers polygamous, white ... OLEA

3. Flowers bisexual, yellowish-white ... CHIONANTHUS

CHIONANTHUS L.


Trees, 5-8 m high. Leaves elliptic-oblong, 6-11 x 3-6 cm, base and apex obtuse. Calyx lobes ovate, acute, puberulous without; corolla lobes lanceolate, acute. Drupes ellipsoid, ca 1 cm long.

Fls. & Frts.: November February.

Shrubs scandent; branches hairy. Leaves ovate, 7 x 10 x 2.5 cm, apex acute. Flowers white in terminal trichotomous cymes. Carpels ellipsoid, black when ripe.


Shrubs scandent; branches hairy. Leaves ovate, 7 x 10 x 2.5 cm, apex acute. Flowers white in terminal trichotomous cymes. Carpels ellipsoid, black when ripe.


Shrubs scandent; branches hairy. Leaves ovate, 7 x 10 x 2.5 cm, apex acute. Flowers white in terminal trichotomous cymes. Carpels ellipsoid, black when ripe.


Shrubs scandent; branches hairy. Leaves ovate, 7 x 10 x 2.5 cm, apex acute. Flowers white in terminal trichotomous cymes. Carpels ellipsoid, black when ripe.
Flora of Maharashtra

Minute, puberulous at apex; corolla lobes oblong, rounded. Carpels broadly ovate, purple when ripe.

Fls. & Frts.: October.

Illus.: Wight, l.c. t. 1253, 1848.

Distrib.: Rare in semi-evergreen forests. Satara, Patwardhan, A. M. s. n.


Climbers, large. Leaves opposite, broadly ovate, apex acuminate, 5.8 x 2.5. 5.0 cm. Flowers white in terminal cymes. Berries oblong, 1.0-1.5 cm long, black when dry.

Fls. & Frts.: March May.

Illus.: Wight, op. cit.

Distrib.: Abundant in semi-evergreen and deciduous forests. Karanjewadi; Kas; Kumbharli ghat; Mahabaleshwar; Shirshingi; Yavatshwar.


Shrubs, scandent, fulvous-hairy. Leaves elliptic, 4.10 x 2.4 cm, apex acute or acuminate, glabrous above, tomentose beneath when young; petioles jointed in the middle, densely villous. Flowers white, in terminal cymes; bracts 1.0-1.5 cm long. Berries ellipsoid, black when ripe.

Fls.: February April.

Illus.: Wight, l.c. t. 1249, 1848.

Distrib.: Frequent along ghats and near forest edges. Dicholi; Jadholi; Kumbharli ghat.


Climbers, young branches pubescent. Leaves broadly ovate, base subcordate, apex acute, 2.4 x 1.2 cm. Flowers white in trichotomous cymes; calyx lobes hairy. Carpels ellipsoid, ca 1 cm long.

Fls. & Frts.: September.

Distrib.: Infrequent along the ghat slopes in deciduous forests. Pandavgad; Shirgaon ghat.
CULTIVATED SPECIES


Shrubs, scandent. Leaves pinnately compound. Flowers white with a reddish tinge.

Fls. : September.

Distrib. : Cultivated in gardens for fragrant flowers. Koyna ; Panchgani.


Shrubs, scandent, young branches tomentose. Leaves ovate, apex acute, pubescent when young. Flowers white in dense, terminal cymes ; bracts foliaceous, ovate, acute.

Fls. : Throughout the year.

Distrib. : Elegant shrub, grown as an ornamental plant. Mahabaleshwar.


Shrubs, suberect. Leaves ovate-elliptic, apex obtuse or acuminated. Flowers white, solitary or in terminal cymes.

Fls. : Throughout the year.

Illus. : Wight, Ic. t. 704. 1843.

Distrib. : Cultivated for fragrant flowers. Mahabaleshwar.

Ligustrum L.

Trees, 6 10 m high. Leaves elliptic-ovate, 4 7 x 2.4 4.0 cm, main nerves 4 6 pairs; petioles short, channelled. Flowers white, fragrant. Drupes obovoid, dark purple when ripe.

Fls. & Frts.: October - November.

Illus.: Wight, Ic. t. 1243 & 1244. 1848.

Distrib.: Common at Mahabaleshwar, used for making walking sticks. Lingmala; Machutar forest; Mahabaleshwar; old Mahabaleshwar; Panchgani-Mahabaleshwar; Parut.

OLEA L.


Trees, 8 12 m high. Leaves elliptic lanceolate, 4 15 x 1.0 - 5.5 cm, coriaceous, apex acuminate, margins serrate. Drupes ellipsoid, 0.5 1.0 cm long, purple, becoming black when ripe.

Fls. & Frts.: December - April.


Distrib.: Common component of semi-evergreen and deciduous forests. Ambeghat; Jadholi; Jangli Jaigad; Karanjewadi; Kusapur; Mahabaleshwar; way to Pratapgar; Nauja; Shirshingi.

APOCYNACEAE

1. Plants armed; fruit a berry........................ Carissa

1. Plants unarmed; fruit a capsule, drupe or follicle:

2. Large woody climbers............................... Annona

2. Erect herbs, shrubs or trees:

3. Leaves whorled; drupe or broad or broader than long........................................ Rauvolfia

3. Leaves opposite; follicles much longer than broad:

4. Corona present; anthers connate to the stigma........................................ Wrightia
4. Corona absent, anthers free from the stigma.

5. Follicles cylindrical, up to 25 cm long; seeds with white coma. ... HOLARRHENA

5. Follicles obliquely lanceolate, up to 2 cm long; seeds without coma. ... ERVATAMIA

ANODENDRON DC.


Climbers. Leaves elliptic-oblong, 8 × 3 7 cm, base rounded, apex acute. Flowers yellow in dichotomous cymes; calyx lobes alternate with glandular scales; corolla tube inflated above middle. Follicles swollen at base, tapering towards apex, reddish-brown when ripe. Seeds with white coma.

Fir. & Frts.: December March.

Illus.: Wight, Ic. t. 396. 1840.

Distrib.: Included on Birdwood's report from Mahabaleshwar.

A. paniculatum (Roxb.) DC. is based on Echites paniculata Roxb. Fl. Ind. (Carey ed.) 2: 17. 1832 non Poiret, 1812. Hence Merrill has provided a new name taking the specific epithet from E. manubriata Wall. (Cat. 1663. 1829).

CARISSA L. (nom. cont.).

1. Spines straight or slightly curved, up to 2.5 cm long ... C. conoidea

1. Spines recurved, up to 4.5 cm long ... C. inermis


Shrubs, 3 5 m high. Leaves broadly ovate, 3 6 × 3 - 4 cm, base acute or cuneate, apex mucronate. Flowers white with a pink tinge in axillary and terminal dichotomous cymes; calyx lobes lanceolate, pubescent; corolla tube swollen, pubescent above the middle; lobes oblong-lanceolate, acute. Berries 1 cm long, purplish black when ripe.
**FLORA OF MAHABALESHWAR**

*Fis. & Firs.*: November May.

*Ficus*: Wight, *op. cit.*

**Distrib.**: One of the most common components of deciduous forests. Fruits edible. Bamsoli; Karanjewadi; Kiserude; Koyna; Mahabaleshwar; Nauja; Panchgani-Mahabaleshwar; Parli; Vasota.


Shrubs, ca 5 m high. Leaves elliptic, 6 10 x 4 5 cm, base and apex acute, coriaceous. Flowers white in dichotomous cymes; corolla tube inflated at apex; lobes linear-lanceolate, acute. Berries ellipsoid, 1 2 cm long, purple when ripe.

*Fis. & Firs.*: June November.

**Distrib.**: Common along ghats. Dhokewadi; Jadholi; Nauja.

**ERVATAMIA Stapf**


_Trees, ca 6 m high Leaves 5 15 x 3 6 cm, coriaceous, base acute, apex acuminate. Flowers white in corymbose cymes; corolla lobes imbricate, broadly oblong, obtuse; tube inflated near the mouth. Follicles twin, subsessile, beak recurred, yellow when ripe.

*Fis. & Firs.*: February September.

**Distrib.**: Frequent in deciduous forests along ghats. Koyna; Kumbharli ghat.

**CULTIVATED SPECIES**

Shrubs, 2-3 high. Leaves elliptic-oblong, 9 15 × 5.5-6.0 cm. Flowers white in dichotomous cymes. Follicles oblong, 2.5-3.5 cm, recurved.

Fls. & Frts. : Almost throughout the year.

Illus. : Wight, Ic. t. 477. 1842 (T. coronaria).

Distrib. : Common garden plant, also grown near temples Mahabaleshwar.

HOLARRHENNA R. Br.


Shrubs or small trees, 4-6 m high. Leaves elliptic-oblong, chartaceous, 9 18 × 3-7 cm, base rounded, apex acuminate. Flowers white in paniculate cymes; calyx cupular, glandular within; corolla tube inflated at apex. Follicles twin, curved at apex.

Fls. & Frts. : April November.


Distrib. : Common component of deciduous forests. Ambeghar; Gadoli; Koyna; Kumbharli ghat; Mahabaleshwar; Morgiri.

RAUVOLIA L.

1. Shrubs, ca 3 m high; corolla tube broad, inflated below the mouth; fruits reddish when ripe ... R. verticillata

1. Herbs, ca 30 cm high; corolla tube slender, inflated above the middle; fruits purplish-black when ripe ... R. serpentina

Herbs. Leaves in whorls of 3, oblongate, 5 \(10 \times 2.0 \) 3.3 cm, base attenuate, apex acute. Flowers white in axillary, corymbosum cymes; calyx purple, lobes ovate-lanceolate; corolla lobes ovate. Drupes of 2 pyrenes, connate at base.

**Fls. & Frts.:** August November.

**Illus.:** Wight, Fe. t. 849. 1844; Maheshwari, Ill. Fl. Delhi f. 121. 1966.

**Distrib.:** Rare in deciduous forests. Koyna, Kochhar 157947 Mahabaleshwar, 166740.

**Notes:** Roots used in hypertension. Plant used as an antidote for snake-bites and scorpion stings.


Shrubs; stem woody. Leaves in whorl; or 3-4, oblongate, 7 \(15 \times 2.5\) cm, base tapering, apex acuminate. Flowers white in lax cymes. Drupes ellipsoid, solitary or in pairs.

**Fls. & Frts.:** June September.

**Illus.:** Sulochana, op. cit.

**Distrib.:** Common in partially shaded areas. Jadholi; Lingmala; Mahabaleshwar; Nauja.

**Wrightia R. Br.**


Trees, ca 3 m high. Leaves elliptic or oblong-lanceolate, 5 \(12 \times 1.5 \) 5.0 cm, base acute or rounded, apex acuminate. Flowers white in terminal, dichotomous cymes, bracteate; calyx lobes oblong, margin membranous, glandular inside; corolla lobes oblong, acute; corona of many linear scales, some inserted with the filaments and some on the corolla lobes. Follicles 2, cylindric, tapering towards apex, 30-60 cm long. Seeds linear, attenuated at apex, 2 cm long, coma deciduous.
Fls. & Frts.: April to November.

Illus.: Wight, Ic. t. 444. 1841.

Distrib.: Common in deciduous forests. Karanjewadi; Kumbharli ghat; Mahabaleshwar.

Notes: Ngan (1965) has described corolla in this species in three series, differentiating it into supplementary, alternipetalous and antepetalous lobes. However, in one specimen collected by Nayar (153166) only outer series of antepetalous lobes and inner series of unequal lobes have been observed. It cannot be differentiated as supplementary and alternipetalous lobes. According to Nayar & Kochhar (1980), it might be due to hybridization or aberration as suggested by Ngan (op. cit.).

CULTIVATED SPECIES


Climbers, large. Leaves 4-5 in whorls, lanceolate, up to 8.5 cm long, hairy on nerves beneath. Flowers large, yellow.

Fls.: Throughout the year.

Distrib.: Native of Brazil, often grown in gardens and near houses as an ornamental plant. Koyna; Mahabaleshwar.


Undershubs, ca 50 cm high. Leaves obovate. Flowers pink or white, solitary or in pairs.

Fls.: Throughout the year.

Distrib.: Cultivated as an ornamental plant. Mahabaleshwar.


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Shrubs, erect, woody. Leaves whorled, 3 per node, linear-lanceolate, 10 cm long. Flowers red or white in terminal corymbose cymes.

Fils.: January - July.

Distrib.: Cultivated in gardens and near temples for its fragrant flowers. Kival; Koyna; Mahabaleshwar; Satara Road station.


Trees. 10 - 15 m high. Leaves oblong-lanceolate, 21 - 31 x 4 - 70 cm. Flowers red, fragrant. Follicles paired.

Fils. & Frets.: April.

Distrib.: Cultivated as an ornamental plant in gardens and near temples. Koyna; Mahabaleshwar; Medha.


Trees, 4 - 6 m high. Juice milky. Leaves 7 - 11 cm long, oblong, tapering at both ends. Flowers yellow in sub terminal or terminal cymes. Fruits rounded, 5 cm across, black when dry.

Fils. & Frets.: April - July.

Distrib.: Cultivated as an ornamental plant. Mahabaleshwar; Phaltan; Yavat.shwar.

ASCLEPIADACEAE

1. Erect herbs or shrubs:
2. Leaves minute on young branches, caducous
   3. Flowers solitary or in pairs
   4. Flowers in cymes:
      4.1. Tuberous herbs; corolla lobes connate at apex

Caralluma
Ferrua
Chropegia
4. Plants and flowers not as above:

5. Leaves sessile, base semi-amplexicaul

6. Leaves ovate; corona adnate basally to staminal column, free above

6. Leaves lanceolate; corona adnate throughout to the staminal column

1. Twining herbs or shrubs:

7. Tuberous perennials; corolla lobes connate at apex

7. Plants not as above:

8. Corona an annular ring, entire

8. Corona distinctly lobed:

9. Corona uniseriate:

10. Pollen masses erect:

11. Corona corolline

11. Corona staminal:

12. Epiphytic plants, rooting at nodes

12. Terrestrial plants, not rooting at nodes:

13. Flowers purple

13. Flowers yellowish-green

10. Pollen masses pendulous or suberect:

14. Flowers in lateral, sessile cymes

14. Flowers in axillary, pedunculate cymes:

15. Stipule-like leaves 2; corolla glabrous

15. Stipule-like leaves absent; corolla puberulous

9. Corona biseriate:

16. Leafless herbs or shrubs; flowers in lateral and terminal umbels

16. Leafy herbs; flowers in lateral or sub-axillary cymes:
17. Flowers: atrocinch-yellow; inner corona spurred at base, horned at apex ... **Fergularia**

17. Flowers: purple; corona not as above ... **Senhadiria**

**Calotropis R. Br.**


Shrubs, 2–3 m high, latex milky; young branches white tomentose. Leaves elliptic-oblong, 5–10 × 4–6 cm, white tomentose. Flowers white or purple; corona of 5 fleshy, laterally compressed lobes. Follicles paired, boat-shaped, 8–12 cm. Seeds broadly-ovate, brown with white, silky coma.

*Fls. & Frts.*: February – July.


*Distrib.*: Common in waste places. Kumbharli ghat; Mahabaleshwar; Nauja; Panchgani; Parli.

**Caralluma R. Br.**


Herbs, 15–40 cm high; stem thick, fleshy. Flowers purple with yellow streaks, shortly pedicelled; calyx lobes lanceolate, acute; corolla rotate, deeply 5-lobed; lobes linear, apiculate. Follicles cylindric, ca 8 cm long.

*Fls. & Frts.*: June – August.

*Illus.*: Wight, le. t. 1268. 1848.

*Distrib.*: Rare in open areas. Kole. 166695; Pasarini ghat, Blatter & Fernandez s.n. (Sant. & Irani, op. cit.).
CROPEGIA L.

1. Erect herbs:

2. Leaves linear to linear-lanceolate ... *C. nippophiota*iae

3. Leaves ovate to ovate-lanceolate ... *C. puncblindensis*

1. Twining herbs:

3. Plants densely hairy; inner corona lobes hooked ... *C. hirsuta*

3. Plants puberulous when young or glabrous; inner corona lobes not hooked:

4. Leaves fleshy ... *C. bulbosa*

4. Leaves membranous:

5. Corolla lobes equal or longer than the tube ... *C. vincuefolia*

5. Corolla lobes shorter than the tube:

6. Corolla tube funnel-shaped; lobes oblong; corona hiseriate ... *C. aculata*

6. Corolla tube sub-cylindric; lobes orbicular; corona umiseriate ... *C. sanapauli*


Twiners. Leaves long petioled, ovate-orbicular, 3–5 × 0.5–1.0 cm. Flowers greyish-purple; corolla tube funnel-shaped, inflated at base; lobes ovate-teltoid, hairy inside; outer corona saucer-shaped, entire, inner corona divergent. Follicles cylindric, ca 10 cm long.

*Fls & Frts* : July, October

*Illus.* : Wight, in t. 845. 1844-45.

*Notes* : Rare along hills. Included on the authority of Chavan et al. (op. cit.) who reported it from Kae.

Climbers; roots tuberous. Leaves ovate-lanceolate, 6–8 × 2–3 cm, base acute or truncate, apex acute, hispid. Flowers green with purple spots; peduncles 1 cm long, hairy; corolla tube 3 cm long, inflated at base, lobes ca 1.8 cm long, oblong; outer corona lobes deltoid, apex bifid; inner linear. Follicles ca 10 cm long.

*Fls. & Ffrts.*: July September.

*Illus.*: Ansari, *op. cit.*


Herbs, 15–40 cm high, pubescent when young. Leaves 7–9 × 0.3–1.5 cm, hairy on upper surface. Flowers in pedunculate, usually 3-flowered cymes; corolla tube ca 1.2 cm long, inflated at base; lobes 0.9–1.3 cm long. ovate-deltoid below, linear above; outer corona lobes bifid or emarginate; inner lobes linear-subellavate. Follicles in pairs, ca 9 cm long, tapering at both ends.

*Fls. & Ffrts.*: July September.

*Illus.*: Ansari, *op. cit.*

*Distrib.*: Rare on hill slopes among grasses. It develops twining habit under cultivation (*Ansari, op. cit.*). Wai-Panchgani ghat, *Ansari 104880 A.*


Twiners. Leaves 4.5–9.0 × 1.7–4.8 cm, ovate, base rounded, apex acuminate, glabrous. Flowers in axillary, 4–8 flowered cymes; peduncles white hairy; corolla tube 4 cm long; inflated at base; outer corona of 5 shortly bifid lobes; teeth acute, ciliate; inner lobes erect. Follicles in pairs.

*Fls. & Ffrts.*: July October.

*Illus.*: Ansari, *op. cit.*; Huber, *op. cit.*

*Distrib.*: Rare in forest undergrowth, endemic to Maharashtra. Mahabaleshwar, *McCann 3439, Santapau 11806 (BLAT)*; Tapola 162517.

Herbs, ca 50 cm high, stem pubescent when young. Leaves 6–9 × 3–6 cm, base rounded, apex acute, puberulous above. Flowers in pedunculate cymes; peduncle and pedicels hairy; corolla tube 2.0–2.8 cm long, hairy within; lobes ca 0.6 cm long, obovate; outer corona lobes bifid, hairy; inner ciliate.

Fls.: July August.

Illus.: Ansari, op. cit.

Distrib.: Rare. Lingmala, Ansari 103090 A; Mahabaleshwar, Santapau 13004 (BIAT); Panchgani, Blatter 200 (BIAT).

Notes: The present species was earlier treated as synonymous to C. hawii Hook. f. hence the occurrence of C. hawii Hook. f. from Lingmala in Satara Dist. as reported by Boie and Almeida (1984) is based on the specimens of C. panchganensis only. Ansari (op. cit.) has clarified the distinctness of these two species. So far the true C. hawii Hook. f. has not been reported from Satara Dist.


Climbers. Leaves ovate-lanceolate, 3–13 × 2.0–3.5 cm. Flowers greenish-purple in axillary cymes; peduncle and pedicels sparsely hairy; corolla tube ca 0.8 cm long; lobes ca 0.5 cm long; corona of 5, elongated, convergent processes, hairy without. Follicles paired, ca 7 cm long.

Fls. & Frts.: August October.

Illus.: Ansari, op. cit.

Distrib.: Rare, endemic to Maharashtra. Kumbharli ghat, Koelhar 159502; Mahad ghat, near Mahabaleshwar, Wadwha 109640 A.


Twining. Leaves ovate, 5–10 × 2.5–4.5 cm, puberulous. Flowers in pedunculate cymes; peduncles hirsute; corolla tube 1.6–4.5 cm long.
inflated at base, funnel shaped at apex; lobes 1.5–3.5 cm long. ovate, deltoid at base, linear at apex, pubescent; outer corona lobes entire or shortly bifid; inner oblong-ovate.

*Fls.*: August September

*Illus.*: Ansari, *op. cit*

*Distrib.*: Common on open hills in scrub forests. Lingmala, Mahabaleshwar.

**Cynanchum L.**


Large twiner, juice milky. Leaves 5–7 x 2.8–3.8 cm, base cordate, apex acuminate, glaucous beneath; stipule-like leaves ca. 1 cm long. Flowers brownish on short peduncles; corolla lobes obtuse, plicate, membranous; corona 5 lobed, bifid at apex. Follicles 6–8 cm long, apex narrowed, winged.

*Fls. & Frts.*: September December.

*Illus.*: Wight, 1c. t. 1279. 1848.

*Distrib.*: Rare as forest undergrowth in semi-evergreen forests. Lingmala; Mahabaleshwar, *M.R. Almeida* 2244. *Santapau* 13155 (*BLAT*); *Nauja, Kochhar* 154245.

**Frenrea Dalz.**


Herbs, 10–15 cm high. Leaves subsessile, oblong, 3–5 x 1.8–2.5 cm, fleshy. Flowers purple with yellow spots, corona purple. Follicles linear, 7–10 cm long.

*Fls. & Frts.*: September December.

*Notes*: Rare and endemic species, restricted to Purandhar fort area and Junnar (Pune District) in Western Ghats on bare rocks. There is no
authentic sheet of the present species from Satara District. It is reported to have been seen by Acland at Kates Point, Mahabaleshwar (personal communication with Santapau, Sant & Irani, op. cit.). Rowley (1958) merged this species with *Caralluma* R. Br. on the basis of succulent stems and rotate corolla. However, the distinct floral features and absence of any intermediate species in *Caralluma* with fleshy leaves justify Dalzell’s treatment of this under a separate genus (Raghavan, 1976).

**Gymnema R. Br.**

1. Leaves pubescent, corolla lobes ovate; corona lobes exceeding the corolla ... *G. sylvestre*

1. Leaves glabrous; corolla lobes oblong; corona lobes not exceeding the corolla ... *G. montanum*


Shrubs, twining. Leaves variable, oblong, ovate-oblong or oblanceolate. Flowers greenish-yellow in corymbose or racemose cymes. Follicles lanceolate, acuminate, smooth.

**Notes:** Cooke reported the present species in his list of Principal Mahabaleshwar Plants in Bombay Gazetteer. According to Sant. & Irani (op. cit.) there is no authentic sheet of the above species in any of the Indian herbaria, the only sheet available at Kew is from Konkan by Law.


Climbers, pubescent when young. Leaves ovate or ovate-elliptic, 3.6 × 1.5-3.5 cm, base rounded, apex acute or shortly acuminate, Flowers yellow in extra-axillary cymes; bracts ovate-oblong, hairy; calyx deeply divided, pubescent; corolla lobes deltoid-ovate; corona lobes alternate with corolla lobes. Follicles lanceolate, 6.0-7.5 cm long. Seeds ovoid-oblong with a marginal wing, brown with white coma.

**Fls. & Frts.:** November—June.

**Illus.:** Wight, Ic. t. 349. 1840; Matthew, Ill. Fl. Tamilnadu Carnatic 2 : t. 445. 1982
**Distrib.**: Common woody species in open forests. Dickoli; Kisorude; Koyna; Mahabaleshwar; Pratagad Road.

**Notes**: Leaves used as antidiabetic by local people.

**Holostemma R. Br.**


Shrubs, twining. Leaves broadly ovate, 3 5 × 1.5 3.5 cm, base cordate, apex acute. Flowers pinkish red in axillary cymes; calyx lobes broadly ovate, obtuse; corolla lobes ovate, acute. Follicles boat-shaped, turgid.

**Fls. & Frts.**: June October.

**Illus.**: Wight, t. 597. 1842 (*H. rheedei*).

**Distrib.**: Rare as undergrowth in forest clearings. Included on Rale & Almeida’s report from Mahabaleshwar.

**Hoya R. Br.**


Climbers, stout. Leaves elliptic, 7 8 × 3.0 3.5 cm, base acute, apex acuminate. Flowers pale yellow in lateral, pedunculate umbels; corona fleshy, radiating from the staminal column.

**Fls.**: April October.

**Distrib.**: Occasional perennials growing on rocks or on tree trunks. Karanjewadi; Lingmala; Mahabaleshwar.

Climbers. Leaves elliptic-oblong, 3 6 x 1.5 4.0 cm, base rounded, apex acute, glabrous above, finely pubescent beneath; petioles 1.0 - 2.5 cm long, puberulous. Flowers small, greenish-yellow, puberulous; calyx lobes divided up to middle; corolla lobes ovate-oblong, subobtuse, pubescent; corona of 5 truncate lobes. Follicles paired, cylindric, 3 5 cm long.

Fls. & Frts.: April - August.


Distrib.: Rare in scrub forests. Nath Hills, Shirala, W. Burns s.n.

Pentatropis R. Br.


Herbs. Leaves elliptic, 1.5 2.5 x 0.7 1.4 cm, base rounded, apex mucronate. Flowers purple on filiform pedicels; calyx lobes lanceolate, acute, glandular; corolla lobes deltoid-lanceolate; corona radiating, spurred at base. Follicles ca 4 cm long, inflated at base.

Fls. & Frts.: Throughout the year.

Illus.: Wight, t. 357. 1840 (P. microphylla).

Distrib.: Occasional twiner with watery latex in drier plains of the district, Gondavale.

Pergularia L.


Herbs, twining, juice milky. Leaves ovate-cordate, 2.0 - 4.5 x 1.7 - 4.5 cm, apex acuminate, pubescent above, tomentose beneath. Flowers in lateral cymes on 6 - 8 cm long peduncles; outer corona subquadrate, membranous. Follicles lanceolate, 6 - 7 cm long, reflexed, echinate. Seeds ovate, truncate at apex, ca 0.6 cm long, brown, velvety pubescent.

**Fls. & Frts.** : November.

**Il.** : Wight, Io t 596. 1842 (*Daemlia extensa*);

**Distrib.** : Common climber on shrubs in scrub forests. Kas; Pirachi wadi.

**Sarcostemma R. Br.**

1. Flowers white; style apex fusiform, much exerted ... *S. intermedium*
1. Flowers pale greenish; style apex conical, not exerted ... *S. acutum*


Herbs, twining. Flowers small on slender pedicels; calyx deeply divided, glandular within; corolla campanulate, lobes ovate-oblong; outer corona lobes cupular, inner erect, apex reflexed. Follicles lanceolate, narrowed at base and apex.

**Fls. & Frts.** : April July.

**Il.** : Wight, Io t 595. 1842 (*S. brevistigma*).

**Distrib.** : Leafless herbs on steep slopes. Chaphal, Khambhatki ghat; Mahabaleshwar; Tapola.


Fls. & Frts.: December.

Illus.: Wight, J. C. 1281. 1848 (S. viminale Wight & Arn.).

Distrib.: Khambatki ghat, Graham (Cooke, op. cit.) Pasarni ghat; Fernandez s. n.; Khandala ghat, McCann (Blatt, op. cit.).

Notes: Cooke and Blatter (op. cit.) have reported it from the above mentioned localities, however, Sant. & Irani (op. cit.) have expressed doubt about the occurrence of this species and its probable confusion with S. acidum by the previous workers as there is no sheet in any of the herbaria from Satara district.

SESHAGIRIA Ansari & Hemadri


Twiners. Leaves ovate, acuminate or ovate-oblong, 7.12 X 3.5-6.5 cm, glandular on midrib on upper surface, 6-8 nerved. Calyx lobes ovate, acute, ciliate on margins; corolla rotate, deeply divided; outer corona cupular, fleshy, 5-lobed; inner corona of 5, dilated, fleshy, subglobose masses. Follicles ovate - lanceolate, warty. Seeds many, ovoid with white coma up to 2.5 cm long.

Fls. & Frts.: May - October.

Illus.: Ansari & Hemadri, op. cit.

Distrib.: Rare perennial. Gureghar, Ansari, 105077 A D.

TYLOPHORA R. Br.

1. Suberect herbs; leaves ovate; flowers brown ... T. fasciculata

1. Twining undershrubs; leaves ovate-oblong; flowers purple ... T. dalzellii


Twiners, latex milky, young branches pubescent. Leaves 2-9 X 1-4 cm, base rounded. apex mucronate, glabrous above, sparsely hairy
beneath. Flowers small, on zigzag rhachis; bracts many, linear-lanceolate; calyx deeply divided, hispid without, lobes lanceolate, acute; corona of 5 dark lobes, adnate to the staminal column. Follicles 5 - 7 cm long.

Fls. & Frts.: May November.

Illus. : Sant. & Irani op. cit.

Distrib. : Common in scrub forests and on hedges along roadsides. Ambeghar; Dicholi; Jhadoli; Mahabaleshwar; Satara; Shrigaon ghat; Shirdingi.


Herbs, pubescent. Leaves 2 - 4 x 1 - 3 cm, base rounded, glabrous above, sparsely pubescent on the nerves beneath; petioles ca. 1.5 cm long. Flowers on slender pedicels; bracts lanceolate; small; calyx deeply divided; corolla lobes oblong-lanceolate; corona of 5 ovoid lobes radiating from the staminal column. Follicles fusiform, striate.

Fls. & Frts.: October.

Illus.: Wight, IC. t. 848. 1844.

Distrib.: Rare perennials in open areas. Mahabaleshwar, Talbot 4535.

**Wattakaka Hassk.**

1. Suberect undershrubs; leaves lanceolate

1. Climbing shrubs; leaves broadly obovate-suborbicular


Undershrubs, 30 - 60 cm high. Leaves silky pubescent. Flowers in lateral, globose cymes, bracteate.

Fls. & Frts.: May June.

Distrib.: Included on Birdwood's report from Mahabaleshwar.

Climbers, large. Leaves 6 13 x 4 11 cm, base rounded, apex acuminate. Flowers in lateral umbellate cymes; peduncles 2 3 cm long, puberulous; calyx lobes ovate-oblong, obtuse; corolla lobes broadly ovate, obtuse; corona 5 lobed, fleshy with small apiculation on inner side. Follicles paired, divaricate, tomentose when young.

Fls. & Frts.: April February.


Distrib.: Perennial in hedges and open areas. Common. Lingmala; Mahabaleshwar, Mahabaleshwar-Panchgani, Natibhilla, Shingale, Nauja, Panchgani.

CULTIVATED SPECIES


Herbs, ca 50 cm high; juice milky. Leaves lanceolate, 6 10 x 1.5 3.5 cm, puberulous. Flowers red in umbellate cymes. Follicles 6 7 cm long, flat.

Fls. & Frts.: April July.


Distrib.: Native of West Indies. Grown as an ornamental plant in gardens. Khataf; Mahabaleshwar.

PERIPLOCAEAE

1. Lateral nerves many, uniting into intra-marginal nerves; flowers in pedunculate cymes; corolla lobes ca 8 mm long

... Cryptolepis

1. Lateral nerves few, not uniting into intra-marginal nerves; flowers in subsessile cymes; corolla lobes ca 4 mm long

... Hemidesmus
CRYPTOLEPIS R. Br.


Shrubs, climbing. Leaves elliptic-oblong, 6 - 15 x 3 - 6 cm, green above, whitish beneath. Flowers small, greenish in dichotomous cymes; corolla lobes linear; corona scales 5, clavate; stamens 5; anthers triangular. Follicles divaricate, 6 - 10 cm long. Seeds ovate, black, with long, white, silky coma at apex.

Fls. & Frts.: April - June.

Illus.: Wight, Ic. t. 494. 1840.

Distrib.: Widely distributed in deciduous forests, along the roadsides and on hedges near cultivated fields. Asani; Dhokewadi; Kole; Koyna; Mahabaleshwar; Nath hills; Shirala; Panchgani; Vardhangad; Yavatshwar.

HEMIDESMUS R. Br.


Twiners. Leaves elliptic-lanceolate, 3 - 7 x 1 - 2 cm, apex apiculate. Flowers small, bracteate; calyx glandular at base, margin ciliate; corolla tube short, lobes ovate-oblong; corona scales 5, short, alternate with petals; stamens inserted at the base of the tube. Follicles cylindric, 8 - 10 cm long.

Fls. & Frts.: July - December.

Illus.: Wight, Ic. t. 594. 1842.

Distrib.: Common in forest undergrowth, also found in waste-lands. Roots used as tonic. Dicholi; Gadoli; Karanjewadi; Khambil chorghe ghat; Ksru de; Koyna; Pasarni ghat.

CULTIVATED SPECIES

Shrubs, suberect or climbing. Leaves elliptic-oblong, 7-10 × 3-4 cm. Flowers large, pale purple in terminal, dichotomous cymes. Follicles thick, divaricate, ca 10 cm long, 3 winged.

**Fls. & Frts. :** February July.

**Distrib. :** Cultivated in gardens as a hedge plant, also found as an escape. Gondavale; Karad; Knyna; Parli; Plahtan.

### BUDDLEJACEAE

**BUDDLEIA**


Shrubs, ca 5 m high, tomentose. Leaves lanceolate, 3.5-10.0 × 1-2 cm, base and apex acute, green above, white tomentose beneath. Flowers small, white in dense, terminal, 8-15 cm long, spikes; bracts lanceolate, tomentose, ca 0.3 cm long; calyx campanulate, tomentose, lobes ovate, acute; corolla tubular, lobes obovate, spreading. Capsules oblong, ca 0.5 cm long, apiculate.

**Fls & Frts :** February November.


**Distrib. :** Common along ghat in semi-evergreen forests. Ambeghar; Fitzgeralda ghat; Kesghar ghat; Kumbharli ghat; Mahabaleshwar.

### GENTIANACEAE

1. Flowers zygomorphic
2. Flowers actinomorphic:
   1. Petals glandular
   2. Petals erlandular:
      1. Flowers 5 merous
      2. Flowers 4 merous
         ... CANESCENA
         ... SWERTIA
         ... CENTAURIUM
         ... EXACTUM
Canscora Lam.

1. Calyx distinctly winged:
   2. Bracts linear-lanceolate ... C. concanensis
   3. Bracts orbicular, perfoliate ... C. perfoliata

1. Calyx not winged:
   3. Stem obtusely quadrangular, obscurely winged; bracts suborbicular ... C. diffusa
   3. Stem distinctly quadrangular, 4-winged; bracts linear or ovate-lanceolate:
      4. Pedicels thickened at apex; bracts linear ... C. pauciflora
      4. Pedicels not thickened; bracts ovate-lanceolate:
         5. Calyx keeled ... C. khandalensis
         5. Calyx not keeled ... C. decurrens


Herbs. ca 22 cm high; stem quadrangular, obscurely winged. Leaves sessile, ovate, 1.5 2.5 × 0.5 1.5 cm, apex acute. Flowers bluish purple in terminal, dichotomous cymes; calyx tubular, membranous; corolla imbricate in bud, lobes obovate. Capsules oblong, elliptic, 2-valved. Seeds many, minute, ovoid.

Fls. & Frts. : September.

Illus. : Ahuja & Cherian, op. cit.

Distrib. : Rare, monsoon annual on rocky slopes. Koyna, Kochhar 152531.


Herbs, 30 45 cm high. Leaves sessile; lower oblong, attenuate at base; upper leaves ovate-lanceolate, apex acute. Flowers pink in sub-trichotomous cymes; calyx teeth minute, lanceolate, acute; corolla lobes oblong, obtuse. Capsules oblong, ca 0.5 cm long.

Fls. & Frts. : October - December.
Distrib.: Rare, slender herbs near cultivated fields. Koyna, Kochhar 158427; Mahabaleshwar. Raini s.n., Santapau 11862, Tavakari s.n. (BLAT).


Herbs, ca 50 cm high. Leaves broadly ovate, 0.7 1.2 x 0.4 1.6 cm, membranous, 3-nerved. Flowers pink in lax, terminal cymes, calyx ca 0.6 cm long, lobes lanceolate acute; corolla ca 1 cm long, lobes ovate, obtuse, unequal. Capsules oblong, ca 0.5 cm long.

Fls. & Fris.: August May.

Illus.: Wight, loc. 1. 1327. 1848 (C. lawii).

Distrib.: Widely distributed on moist, rocks, under shade. Balmoli; Bhikauni forest; Lingmala; Kas; Kelghar ghat; Koyna; Mahabaleswar; Nanal.


Herbs, 10 25 cm high. Leaves sessile to subsessile, ovate or elliptic-lanceolate, ca 0.6 x 2.5 cm, base cordate, apex subacute. Flowers pale pink in dichotomous cymes, bracteate; calyx quadrangular. Capsules ca 0.7 x 0.3 cm.

Fls. & Fris.: November January.

Distrib.: Slender herbs, rare in rock crevices. Mahabaleshwar, Santapau 23245 (BLAT).


Herbs, ca 30 cm high. Leaves sessile, ovate or obovate, 0.7 1.0 x 0.4 - 0.6 cm, apex obtuse. Flowers pink in lax, dichotomous cymes; pedicels winged; calyx 12-ribbed; corolla lobes oblong, obtuse. Capsules ca 0.4 cm long, membranous.

Fls. & Fris.: September.

Distrib.: Rare on grassy slopes. Koyna, Kochhar 160309.

Herbs, 15 20 cm high; stem 4-winged. Leaves elliptic, ca 3 × 1 cm, apex acute. Flowers pink in terminal cymes, rarely solitary; corolla lobes obovate. Capsules ca 0.8 cm long.

**Fls. & Frts.** : February.

**Illus.** : Wight, l.c. t. 1326. 1848 (C. grandiflora); Ramamoorthy in Saldanha & Nicolson, Fl. Hassan Dist. 422, f. 85. 1976.

**Distrib.** : Occasional in moist, shady places along ghat slopes. Mahabaleshwar.

**CENTAURIDIUM Hill.**


Herbs. 10 15 cm high, ascending. Leaves sessile; radical leaves rosulate, oblong, 2.0 2.5 × 0.3 0.6 cm, apex obtuse; cauline leaves linear-oblong. Flowers pink in dichotomous cymes; anthers spirally twisted at apex. Capsules oblong, 0.5 - 0.8 cm long.

**Fls. & Frts.** : December - February.

**Illus.** : Wight, l.c. t. 1325. 1948 (*E. roxburghii*).

**Distrib.** : Common herb in harvested rice-fields. Gadoli ; Kumbharli ghat ; Mahabaleshwar ; Shinhingi.

**EXACUM L.**

1. Leaves petiolate

1. Leaves sessile :

2. Robust herbs ca 1 m high; corolla ca 2.5 cm long

2. Slender herbs ca 20 cm high; corolla ca 1 cm long :

3. Flowers in cymes; calyx winged

3. Flowers solitary; calyx not winged

Stems quadrangular. Leaves variable in shape and size, ovate, elliptic or lanceolate. Flowers in terminal cymes, bracteate; calyx lobes ovate, aristate, keeled, keels winged, decurrent; corolla blue in upper half and white in lower half. Capsules ellipsoid, apiculate, 0.7 - 1.0 cm long.

**Fls. & Frts.** : August - November.

**Illus.** : Wight, Jc. t. 1321. 1848.

**Distrib.** : Common on plateaus in grasslands. Koyna; Mahabaleshwar.


Herbs, 5 - 7 cm high, stem subquadrangular, narrowly winged. Leaves ovate, ca 0.8 x 0.3 cm, apex subobtuse, 3-nerved. Flowers purple; calyx 0.3 - 0.4 cm long, lobes broadly ovate, 3-nerved, margin ciliolate; corolla 0.7 - 0.8 cm long, lobes broadly obovate. Capsules subglobe, 0.2 - 0.4 cm across.

**Fls. & Frts.** : September - October.

**Distrib.** : Rare, slender herbs in moist grassy places. Machutar forest, Ansari 67528; Mahabaleshwar, 166544, Ansari 67587.


Herbs, 15 - 40 cm high. Leaves elliptic to lanceolate, 2.5 - 4.5 x 0.7 - 1.2 cm, 5-nerved. Flowers blue in terminal cymes, bracteate; calyx membranous, lobes lanceolate, strongly winged, mucronate; corolla lobes lanceolate, acute. Capsules globose, 0.5 cm across.

**Fls. & Frts.** : October - December.

**Illus.** : Wight, Jc. t. 1324, f. 2. 1848.

**Distrib.** : Included on Puri & Mahajan's report from Mahabaleshwar.

Stems quadrangular. Leaves linear lanceolate, 1 - 2 × 0.4 0.6 cm, base narrowed, apex subobtuse. Flowers bluish purple; calyx lobes ovate, acute, keeled at base, pointed at apex; corolla lobes broadly elliptic suborbicular. Capsules subglobose, ca 0.4 cm across.

Fls. & Frs. : September February.

Illus. : Wight, Io. t. 1324. 1848.

Distrib. : Common in moist places or among grasses on rocky plateaus. Mahabaleshwar; Mhavashi; Shirgaon ghat; Shirshingi.

**Swertia L.**

1. Flowers white with blue veins; corolla lobes broadly ovate, single nectary at the base of each petal ... *S. densifolia*

1. Flowers blue; corolla lobes oblong, with 2 nectaries at the base of each petal ... *S. minor*


Herbs, 40 - 80 cm high; stem obtusely quadrangular. Leaves numerous, sessile, decussate, ovate, 1.5 3.5 × 1.0 - 2.5 cm long, apex obtuse or shortly apiculate, 5 nerved. Flowers in dense, terminal corymbose cymes; bracts foliaceous, lanceolate, acute, ca 0.8 cm long, 3 nerved; calyx lobes lanceolate, acute; nectary yellow, fimbriate. Capsules oblong, 0.3 - 0.5 cm long.

Fls. & Frs. : October January.

Distrib. : Common annual in open areas. Jadholi-Nauja; Lingmala; Mahabaleshwar; Panchgani; Pirachi wadi, Ralph, Wight (Cooke, op. cit.); Panchgani, Ansari 17731, A.S. Rao 77978, Woodrow (Cooke, op. cit.); Pirachi wadi, 166486.

Notes : Common annual in open areas.
Fig. 34. *Swerina densifolia* (Griseb.) Kashyapa

Herbs. Leaves ovate, 1 2 X 0.5 0.8 cm, apex acute. Flowers small, in leafy paniculate cymes; calyx tube short, lobes 4. ovate, acute; corolla subrotated, tube short; stamens 4; filaments flattened, bluish; stigma 2 lobed. Capsules oblong, 0.4 - 0.6 cm long.

Fls. & Frts.: July November.

Illus.: Wight, Ic. t. 1332. 1848 (O. minor).

Distrib.: Frequent on hill tops and in cultivated fields. Mahabaleshwar-Lingmala; Mahabaleshwar Tapola; Panchgani; Taldeo; Tapola; Yavatshwar.

MENYANTHACEAE

NYMPHODES J. Hill


Herbs, rooting at the nodes. Leaves orbicular, 5 - 10 cm across, base cordate. Flowers in clusters from the basal node; corolla white with yellow centre, lobes 4 - 6, oblong, obtuse, densely hairy. Capsules subglobose, many seeded.

Fls. & Frts.: April September.


Distrib.: Occasional in tanks. Kas; Panchgani.

BORAGINACEAE

1. Trees

1. Herbs, or shrubs:

2. Leaves opposite or subopposite:

3. Leaves petiolar; flowers in simple or forked spikes

3. Leaves sessile; flowers solitary or in cymes

CORDIA

HELIOTRIUM

TRICHODESMA
2. Leaves alternate or fascicled:
   
4. Flowers solitary or 2-3 together:
   
5. Prostrate herbs; flowers white; style 2-lobed ... Gardenia
   
5. Erect shrubs; flowers bluish pink; style entire ... Rotula
   
4. Flowers in racemes or cymes:
   
6. Bases of nutlets produced downwards ... Cynoglossum
   
6. Bases of nutlets not produced:
   
7. Nutlets glochidiate ... Adelocaryum
    
7. Nutlets not glochidiate ... Mattiastrum

Adelocaryum Brand.

1. Flowers pale blue with dark centre; stamens included; nutlets sparsely glochidiate ... A. coelestinum

1. Flowers dark blue; stamens exerted; nutlets densely glochidiate ... A. malabaricium


Herbs, 1.0–1.5 m high. Leaves radical, broadly ovate, ca 17 x 14 cm, sparsely hairy except on nerves; cauline ca 8 x 4 cm, glabrous. Calyx ovate, hairy, margin ciliate, slightly enlarged in fruit; corolla lobes spreading with scales at the mouth of the tube. Nutlets 4, broadly ovate.

Fls. & Frts.: July October.

Ilis.: Wight, fl. t. 1394. 1850 [Echthospernum coelestinum (Lindl.) Wight].

Distrib.: Common along grassy hill slopes and in forest edges. Jadholi: Khambil chorghe ghat; Mahabaleshwar: Nauja.

Herbs. 30-50 cm high; stems smooth below, strigose above. Radical leaves broadly ovate. 7 15 x 5-16 cm, base cordate, apex acute, strigose with white bulbous based hairs above, densely hairy on the nerves beneath; upper cauline leaves sessile, lower petiolated. Flowers in cymes; calyx hairy, enlarging in fruit, lobes ovate, subacute. Nutlets ovoid, acute, ca 0.7 cm long, margin incurved.

Fls. & Frts.: August October.

Distrib.: Common along ghats. Mahabaleshwar; Mahabaleshwar Lingmala; Old Mahabaleshwar.

Cordenia L.


Herbs, white hairy. Leaves obovate oblong, 1.3 x 0.6-1.5 cm, margin coarsely serrate, hairy. Calyx lobes ovate, acute, ciliolate; corolla lobes oblong, rounded at apex. Drupes 4 lobed, grooved on two sides and ribbed on two sides, beaked, muricate.

Fls. & Frts.: September October.


Distrib.: Included on Lisbon's report from Mahabaleshwar.

Cordia L.

1. Leaves pubescent above, densely tomentose beneath; calyx cupular, ribbed ... C. macrodactyloides

1. Leaves glabrous; calyx saucer-shaped, not ribbed ... C. dichotoma


Trees, 6-9 m high. Leaves broadly ovate, 5.5 14.0 x 4-11 cm, base rounded, apex obtuse, 3-nerved. Flowers white, polygamous in axillary and terminal panicle cymes; corolla lobes oblong, obtuse, recurved. Drupes ovoid, 1-2 cm long, pinkish, becoming black, shining.
Fls. & Frts.: April.


Distrib.: Scarcely distributed in deciduous forests. Nath, Kochhar 153146, 154756.


Trees, 8-10 m high. Leaves ovate, 4.0-7.5 × 3.6 cm, 3-5 nerved; petioles 2.0-2.5 cm long, tomentose. Flowers white in terminal, paniculate cymes. Drupes ovoid, acute, ca 1.5 cm long.

Fls. & Frts.: April.


Distrib.: Occasional in deciduous forests, sometimes planted. Nath hills: Shirala

Cynoglossum I

1. Stems white hairy; leaves with tubercle-based hairs; styles cylindrical, filiform
   C. waltichii

2. Stems grey pubescent; leaves without tubercle-based hairs; styles 4-angled, thick
   C. zeylanicum


Herbs, 30-50 cm high, branches with tubercle-based hairs. Leaves ca 5.0 × 1.5 cm, base narrowed into short petiole, margin ciliate or denticulate. Flowers blue in elongated racemes; calyx lobes ovate-obtuse, spreading in fruits; corolla tube with 5 scales at mouth, lobes imbricate in bud. Nutlets 4, glochidiate.

Fls. & Frts.: June-November.

Distrib.: Included on Bole & Almeida's report from Mahabaleshwar.


Herbs, 30-50 cm high. Leaves sessile, oblong-lanceolate, 3-6 x 1.2-2.3 cm, appressed hairy. Flowers blue in axillary and terminal racemes; calyx lobes ovate-oblong, hairy, ciliate on margins; stamens 5, inserted on the corolla tube beneath the scales. Nutlets 4, glochidiate, margins prickly.

Fls. & Frts.: January November.


Distrib.: Common annual in open situations. Gureghar; Koyna; Kusapur; Mahabaleshwar; Panchgani; Pratapgarh.

Heliotropium L.


Herbs, 30-50 cm high; branches ascending, densely hairy. Leaves ovate or ovate-oblong, 5-10 x 2.5-5.5 cm, apex subacute, sparingly hairy above. pilose beneath; petioles winged. Flowers bluish-white, in extra-axillary spikes; calyx bristly, lobes linear-lanceolate, unequal; corolla lobes orbicular-oblong, hairy outside. Nutlets 2-lobed, compressed, beaked.

Fls. & Frts.: October December.


Distrib.: Common weed in waste places and along road-sides. Ghotit; Gojegaon; Koyna; way to Nauja.

Mattiastrum Brand.


Herbs, ca 1 m high, young branches appressed hairy. Upper leaves sessile, lanceolate, 7-9 x 1.5-3.0 cm, base cuneate, apex acute; lower leaves petioled, ca 10.0 x 10.5 cm, scabrid above, pubescent on
nerves beneath. Flowers in racemes ca 25 cm long, ebracteate; calyx nectorescent in fruits. Nutlets ovate to orbicular, ca 1 cm across.

*Fls. & Frts.*: October November.

*Distrib.*: Common along hill slopes. Mahabaleshwar; Fitzgerald ghat.

**Rotula Lour.**


Shrubs, 1.0 1.5 m high. Leaves sessile, spathulate, 1.0 2.5 × 0.4 0.6 cm, base cuneate, apex rounded or shortly apiculate, hairy. Flowers axillary, shortly pedicelled; calyx hairy, deeply divided; corolla lobes oblong, spreading. Drupes subglobose, tipped with long, persistent style.

*Fls. & Frts.*: October December.


*Distrib.*: Occasional along river banks on wet rocks. Koyna valley; Marule.

**Trichodesma R. Br.** (*nom. cons.*)


Herbs, ca 50 cm high. Leaves ovate or lanceolate - oblong, 4 8 × 1.5 4.5 cm, base cordate, apex subacute or obtuse, strophic on the nerves beneath. Flowers bluish white; calyx 5 lobed, deeply divided, hispid; corolla lobes ovate deltoid. Nutlets 4, ovoid, rugose on inner face.

*Fls. & Frts.*: August October.

*Illus.*: S.P. Banerjee & Pramanik, *op. cit.*
Distrib.: Common annuals along roadsides and in cultivated fields. Dhom dam near Wai; Panchgani; Satara-Pune Road; Wai; Yavatshwar.

**CONVOLVULACEAE**

1. Leafless, parasitic herbs
   - Circaea

1. Leafy, non-parasitic herbs or shrubs:
   7. Prostrate herbs with woody base; styles 7, stigmas 1
   - Engoulevus

3. Corolla tube uniformly enlarged from base to apex; bands on the lobes not well defined:
   4. Flowers solitary, axillary
   - Convulvulus

4. Flowers in axillary racemes or cymes:
   5. Calyx much enlarged in fruit; flowers in lax racemes; bracts leafy, cordate, persistent
   - Porana

5. Calyx not enlarged in fruits; flowers in axillary cymes; bracts linear, caducous
   - Mebremia

3. Corolla tube not uniformly enlarged from base to apex; bands on the lobes well defined:
   6. Sepals coriaceous, slightly or not enlarged in fruit; fruits indehiscent
   - Argyreia

6. Sepals herbaceous, enlarged in fruit; fruits dehiscent
   - Ipomora

**Argyreia Lour.**

1. Erect shrubs
   - A. cuneata

1. Scandent shrubs:
   2. Bracts minute, caducous
   - A. elliptica

2. Bracts large, 2-4 cm long, persistent:
   3. Stems and bracts strigose; bracts 0.5 cm long
   - A. surinamensis

3. Stems and bracts glabrous or sparsely hairy; bracts 2-4 cm long:
   4. Leaves densely appressed-pilose to subsericeous beneath, base rounded; flowers in subcapitate cymes
   - A. involucrata

4. Leaves minutely pilose becoming glabrescent beneath, base cordate; flowers in elongate cymes
   - A. bossinga

Stems grooved, glabrescent. Leaves broadly ovate, 13 23 × 9 20 cm; petioles 5 13 cm long. Flowers pink; bracts oblong, subacute, puberulous; sepals ovate lanceolate, ca 1.5 cm long, hairy on the back; corolla 7–9 cm long. Berries globose, ca 1.5 cm across.

*Fls. & Frts.*: July December.

*Illus.*: Sant. & Patel, *op. cit.*

*Distrib.*: Common along hill tracts and also in plains. Fitzgeraldghar; Kas; Koyna; Mahabaleshwar; Shirshingi; Wada below Mahabaleshwar.

*Notes*: Cooke reported *A. hookeri* from Mahabaleshwar and Panchgani (*op. cit.*) which is close to *A. involucrata* C.B. Cl. and differs significantly from *A. hookeri* C.B. Cl. an Eastern Himalayan species.


Stems pubescent when young. Leaves obovate-oblong, 6 9 × 1 5 3.0 cm, apex apiculate, glabrous above, hairy beneath. Flowers bright purple in 3-flowered cymes; bracts linear-lanceolate, ca 1 cm long; sepals orbicular, pubescent; corolla 3.0 4.5 cm long. Berries ellipsoid, ca 1.2 cm long, yellowish brown.

*Fls. & Frts.*: July January.


*Distrib.*: Common on dry hill slopes and near forest clearings. Dhawadi; Koyna; Panchgani; Shamgaon.

Fig. 35. *Argyrotheca elliptica* (Roth) Choisy
Stems slender, pubescent when young becoming woody and glabrescent at length. Leaves elliptic-lanceolate, 7.5 - 11.5 x 3.3 - 6.2 cm, glabrous above, sparsely hairy beneath. Flowers pink with purple bands; sepals outer 3 elliptic, inner 2 orbicular, margin membranous. Berries globose ca 0.8 cm across.

Fls. & Frts.: September - February.

Distrib.: Common in semi-evergreen forests. Ambegaon; Dicholi; Karanjewadi; Mahabaleshwar; Morgiri; Rohne; Satara; Vaigaon.


Stems appressed-hairy. Leaves ovate, ca 11 x 8 cm, glabrous above, petioles ca 3.5 cm long. Flowers purple, bands dark, hairy; bracts oblong-lanceolate; sepals: outer 2 ovate-lanceolate, acuminate, inner 3 ovate, acute, shorter, hairy on the back. Berries ca 1 cm across.

Fls. & Frts.: July - October.

Distrib.: Common in deciduous forests. Jodhli; Kirude; Koyna; Nauja; Taldeo; Wada below Mahabaleshwar.


Leaves broadly ovate, 9 - 11 x 9 - 13 cm, apex acute, base cordate. Flowers rose coloured in corymbose cymes; sepals oblong-orbicular, densely strigose; corolla 3 - 4 cm long. Berries ovoid, ca 1.5 cm long, red when ripe.

Fls. & Frts.: November.

Illus.: Wight, l.c. t. 1360. 1848 (L. setosa).

Distrib.: Occasional in deciduous forests. Pirachi Wadi.

Convolvulaceae L.


Herbs; stems trailing, angular. Leaves oblong, 2.5 - 3.0 cm long, base auriculate, apex obtuse. Flowers white with pink streaks. Capsules globose, 0.5 - 0.8 cm across. Seeds reddish-brown.
FIs. & FDr. : July.


Distrib. : Occasional near cultivated fields and along roadsides. Phaltan.

Cuscuta L.


Twiners, slender. Flowers greenish white in axillary fascicles; bracts ovate-oblong; corolla lobes deltoid with obovate scales at the base; styles thick, short; stigmas 2, ovoid. Capsules globose, ca 0.6 cm across.

FIs. & FDr. : August - November.

Illus. : Roxb. op. cit.

Distrib. : Common parasite on Carissa congesta and Duranta repens. Way to Nauja, Mahabaleshwar.

Evolvulus L.


Herbs, much branched, pilose. Leaves sessile, elliptic - oblong, ca 0.6 x 0.4 cm, densely pilose. Flowers solitary, light blue; calyx densely silky, lobes lanceolate, acute. Capsules globose, 4-valved.

FIs. & FDr. : April - August.


Distrib. : Frequent in grasslands. Chaphal; Dhebewadi; Mahabaleshwar; Pandavgad; Vardhangad.
Ipomoea L.

1. Plants aquatic

1. Plants terrestrial:

2. Leaves 3-5-lobed:

3. Flowers solitary

3. Flowers in cymes:

4. Leaves glabrous; sepals acute, mucronate at apex; corolla ca 0.5 cm long

4. Leaves pubescent; sepals with long acumen at apex; corolla 5-6 cm long

1. aquatica

1. diversifolia

1. nil

2. Leaves entire:

5. Erect shrubs; flowers in panicles

5. Twiners; flowers solitary, in fascicles or in cymes:

6. Flowers in subsessile, capitulate fascicles; sepals densely sericeous

6. Flowers solitary or in cymes; sepals glabrous or puberulous:

7. Flowers cream coloured with a purple centre

7. Flowers purple with darker bands

I. carneus ssp. fistulosus

I. eriocarpa

I. canescens

I. campanulata


Stems rooting at nodes. Leaves elliptic-oblong, base cordate or hastate, apex acuminate. Flowers purple in pedunculate cymes; bracts linear-lanceolate; sepals oblong-lanceolate, membranous; corolla infundibuliform, lobes obscure. Capsules ovoid.

Fils. & Frts.: November April.

Ilus.: Matthew, Fl. Tamilnadu Carnatic 3: t. 73g & 74a. 1983.

Distrib.: Occasional annuals in tanks or moist places. Koyna.

Stems angular, glabrescent. Leaves broadly ovate, 6-11 × 5-8 cm, apex acuminate; petioles ca 5 cm long. Sepals finely pubescent, slightly enlarged in fruit; corolla 5-7 cm long. Capsules globose, ca 1 cm across.

Fls. & Frts.: December January.


Distrib.: Common near forest clearings. Fitzgerald ghat; Koyna; Punoli.


Shrubs, 2-3 m high; stems ascending, puberulous when young. Leaves ovate oblong, 7-12 × 3-10 cm, base cordate or truncate, apex acuminate. Flowers purple; sepals broadly ovate, puberulous without. Capsules globose, ca 1 cm across.

Fls. & Frts.: Throughout the year.

Distrib.: Common in waste places in marshy localities, also planted as a hedge plant. Dhebewadi; Koyna.


Stems prostrate, glabrescent. Leaves ovate orbicular, 1.5-2.5 × 1.3-2.5 cm, base cordate, apex acute or acuminate. Bracts lanceolate, minute; sepals oblong, shortly apiculate; corolla ca 2 cm long. Capsules subglobose, ca 0.7 cm across.

Fls. & Frts.: December April.

Illus.: Ooststr. op. cit.

Distrib.: Common climbers along roadsides and near forest edges. Karad; Khatav; Nauja.
Fig. 36. *Ipomoea carnea* Jacq. ssp. *fistulosa* (Mart. ex Choisy) Austin

Stems angled, twining or creeping. Leaves 2 - 5 cm across. sub-digitate, lobes elliptic or linear, margin serrate or pinnatifid; petioles 0.5 - 1.5 cm long. Flowers axillary on 1 - 2 cm long peduncles; bracts linear lanceolate; sepals elliptic, mucronate, ribbed. Capsules subglobose, ca 0.8 cm across.

Fls. & Frts.: October.

Distrib.: Infrequent in grasslands. Mahabaleshwar; Panchgani.


Stems hairy. Leaves ovate-lanceolate, 3 - 8 x 1 - 2 cm, apex acuminate, base cordate; petioles 1.5 - 3.0 cm long, densely hairy. Flowers white, mouth pale pink; bracts short, linear, hairy; sepals narrowly ovate, acuminate, 0.5 - 0.7 cm long; corolla ca 1 cm across. Capsules globose, ca 0.5 cm across.

Fls. & Frts.: October.

Illus.: Wight, fl. t. 169. 1839 (I. sessiliflora Roth).

Distrib.: Rare in grasslands. Panchgani ghat. Anvari 67751.


Stems hispid. Leaves ovate, ca 12 x 10 cm, base cordate, apex acute or acuminate; bracts linear hairy; sepals narrowly ovate, ca 2.5 cm long, densely villous at base, sparsely at apex; corolla tube white, lobes purple. Capsules subglobose. Seeds many, trigonous, black.

Fls. & Frts.: September - December.


Distrib.: Common near cultivated fields, along river beds and on hedges. Bhosgaon; Jadholi; Padolshi; Pandavgad; Shirshingi; Tapola.

Herbs, twining; stems rooting at nodes. Leaves broadly ovate orbicular, 1.5 × 3.0 × 1.7 3.0 cm. Flowers purple in axillary, umbellate-cymes; sepals elliptic, margins ciliate; corolla with darker throat. Capsules subglobose, brown.

Fls. & Frts.: April.

Illus.: Ooststr. op. cit.

Distrib.: Native of Tropical America; grows wild in waste places, also near cultivated fields. Karad.

CULTIVATED SPECIES


Twiners. Leaves palmately 5-7 lobed; lobes ob lanceolate, 3.6 × 1.0 2.5 cm. Flowers violet, solitary, axillary. Capsules subglobose, ca 1.2 cm across.

Fls. & Frts.: April.

Illus.: Wight, fe. t. 156. 1839 (I. pulchella).

Distrib.: Grown on walls and gates. Kumbharli ghat; Mahabaleshwar.


Stems twining or prostrate, pilose. Leaves ovate orbicular, 3 lobed. Flowers blue fading to red, in axillary umbellate cymes.

Distrib.: Grown in gardens as an ornamental plant. Mahabaleshwar; Panchgani.


*Fls. & Frts.:* December January.


*Distrib.:* Cultivated in gardens as an ornamental plant also found as an escape. Chapal; Karad.

**Merremia Discim. ex Hall. f. (nom. cons.)**

1. Leaves entire; flowers white; sepals glabrous ... *M. umbellata*

1. Leaves palmate 5-lobed; flowers yellow; sepals densely hairy without ... *M. vitifolia*


Stems angular, glabrescent. Leaves ovate lanceolate, 5 7 × 2.0 3.5 cm, base hastate, apex acuminate. Sepals broadly elliptic, aristate; corolla limb plicate with obscure bands; anthers twisted. Capsules ovoid, ± 1 cm long. Seeds hairy.

*Fls. & Frts.:* February April.

*Distrib.:* Common near villages, also near forest clearings. Ambeghar; Jadoli; Koyna; Shitshingi.


Stems hirsute when young. Leaves broadly ovate, 6 8 × 5.0 6.5 cm, base cordate, apex acuminate, margins serrate-dentate. Sepals
elliptic, obtuse, accrescent in fruits; corolla with well-defined bands. Capsules ovoid, ca 1 cm long.

_Fls. & Frts._: December February.

_Distrib._: Common perennial along ghats in open grasslands. Dicholi; Koyna; Kumbharli ghat.

**Porana Burm.**


Large climbers. Leaves ovate, 3 9 × 2 8 cm, base cordate, apex acute. Flowers white; sepals narrowly oblong, accrescent in fruits. Capsules cylindric, ca 1 cm long.

_Fls. & Frts._: October November.


_Distrib._: Common on hill slopes in large patches. Koyna; Lingmala; Mahabaleshwar; Panchgani-Mahabaleshwar.

**Solanaceae**

1. Flowers solitary or in fascicles:

2. Fruit a capsule

3. Calyx accrescent in fruit:

4. Stems hoary-tomentose

5. Flowers bluish-white

6. Flowers yellow

7. Flowers yellow

8. Flowers yellow

9. Flowers yellow

10. Plants armed

11. Plants unarmed

12. Plants unarmed

13. Plants unarmed

14. Plants unarmed

15. Plants unarmed

16. Plants unarmed

**Datura**

**Withania**

**Nicandra**

**Physalis**

**Solanum**

**Lychnanthus**
1. Flowers in cymes or racemes:

7. Flowers in racemes; fruit a capsule
   ... 
   NICOTIANA

7. Flowers in cymes; fruit a berry
   ... 
   SOLANUM

DARTULA L.

1. Capsules spiny:

2. Leaves glabrescent; capsules dehiscing by 4-valves, nodding or pendulous
   ... 
   D. stramonium

2. Leaves grey-pubescent; capsules dehiscing irregularly, erect
   ... 
   D. metel

1. Capsule not spiny
   ... 
   D. suaveolens


Herbs, ca 1 m high; stems divaricately branched, pubescent. Leaves ovate, 4 9 × 2 4 cm, base truncate, apex acute. Flowers white, solitary, axillary; calyx tubular, 8 9 cm long, pubescent; teeth triangular, acute; corolla tube 12 13 cm long; lobes shortly deltoid. Capsules subglobose. 2 3 cm across.

Fls. & Frts.: November.

Hene. Wight Ic. t 1396. 1848 (D. fustulosa).

Distrib.: Frequent in waste places and along roadsides. Koyna; Mahabaleshwar.


Herbs. ca 1.5 m high. Leaves ovate-oblong, 6 15 × 3 12 cm, margins irregularly lobed. Flowers white to purple, solitary, axillary. Capsules ovoid.

Fls. & Frts.: June September.

Distrib.: Occasional in waste places, along river banks. Mahabaleshwar.

Herbs, 1–2 m high. Leaves elliptic, 19 cm × 10 cm, base unequal, apex acute, glabrous above, hairy beneath. Flowers pale yellow or white; calyx tube 6–11 cm long, angular; corolla ca 27 cm long, tube pubescent, plicate without.

*Fls. & Frts.* : January March.


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**CULTIVATED SPECIES**


Large shrubs or small trees. Leaves ovate lanceolate, margins entire or obscurely lobed. Flowers white with greenish nerves; solitary, axillary. Capsules broadly ovoid.

*Fls. & Frts.* : December.

*Distrib.* : Cultivated along roadsides. Mahabaleshwar.

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**Lychnanthus (Dural) Hassl.**


Shrubs; stems straggling, quadrangular. Lower leaves solitary, upper in unequal pairs, lanceolate, 8 cm × 3 cm, membranous, base decurrent, scabrid above, glabrous beneath, margins ciliate. Flowers whitish, 2–6 together. Berries globose, 0.5–1.0 cm across on obscurely toothed, saucer shaped calyx.

*Fls. & Frts.* : July December.

*Distrib.* : Common undergrowth in semi-evergreen forests. Research Nursery; Koyna; Mahabaleshwar; Wada, below Mahabaleshwar.

Herbs, 30-50 cm high; stems angular, ribbed. Leaves ovate-elliptic, 5-11 cm long, membranous, margins coarsely serrate. Flowers axillary, solitary; calyx lobes ovate, acute, winged at base. Seeds brown, pitted.

Flls. & Frts.: August - November.


Distrib.: Common weed in waste places. Koyna; Panchgani; Pandavgad; Umarkanchan.

Nicotiana L.


Flls. & Frts.: November - January.

Distrib.: Rare near cultivated fields and in gardens. Mahabaleshwar, G.L. Shah 10648, 10650 (*BLAT*).

Cultivated species


Herbs, ca 1 m high. Leaves sessile, lanceolate - oblong, subacute, ca 13 × 5 cm. Flowers white. Capsules globose, 1.0-1.5 cm across.

Flls. & Frts.: April - June.

Distrib.: Usually cultivated, rarely found as an escape. Ambeghar: Mahabaleshwar.
Physalis L.

1. Flowers yellow with brown spots; anthers greenish or greyish-blue  ...  *P. longifolia*

1. Flowers uniformly yellow; anthers yellow  ...  *P. minima*


Herbs, ca 1 m high; stems dichotomously branched, pubescent when young. Leaves ovate or oblong ovate, 5 10 × 3.5 - 6.5 cm, glabrous above, puberulous beneath. Flowers solitary, axillary. Berries subglobose, ca 1 cm across with persistent calyx.

*Fls. & Frts.*: November.

*Distr.*: Rare perennial found near cultivated fields. Sant. et al. (*op. cit.*) reported this from Maharashtra for the first time, Mahabaleshwar, Soman 156203.


Herbs, ca 1 m high. Leaves ovate-elliptic, 3 8 × 12 4.5 cm, base rounded, apex acute. Flowers solitary, axillary; calyx ca 0.4 cm reaching upto 2.5 cm in fruiting. Seeds subreniform, orange-yellow, minutely rugose.

*Fls. & Frts.*: February August.


*Distr.*: Common weed in cultivated fields. Gojegaon; Forest Nursery; Koyna; Mahabaleshwar.

**Cultivated Species**


Shrubs, ca 1 m high; branches striate, viscid-pubescent. Leaves ovate, 4 × 8 × 3 5 cm, base unequal, acuminate, margins subentire, pubescent. Berries ellipsoid, ca 2 cm long, yellow.

*Fls. & Frts.*: December January.
Distrib. : Cultivated for edible fruits; also found as an escape.
Mahabaleshwar; Panchgani.

Solanum L.

1. Plants unarmed:
   2. Herbs; flowers solitary, axillary
      ... S. surattense
   2. Shrubs; flowers in corymbose cymes:
      3. Leaves lobed, prickly on the midrib
         ... S. indicum
      3. Leaves entire, not prickly on the midrib
         ... S. giganteum

1. Plants unarmed:
   4. Herbs
      ... S. nigrum
   4. Shrubs or small trees:
      5. Flowers white; berries yellow
         ... S. erianthum
      5. Flowers purple; berries red
         ... S. denticulatum

Solanum denticulatum Bl. Bijdr. 697. 1825 ; C.B. Cl. in Hook. f. Fl.
ed.).

Shrubs, 1 - 2 m high. Lower leaves solitary, upper in unequal pairs,
elliptic-lanceolate, 5 12 x 2.5 - 4.5 cm, sparsely hairy above, glabrous
beneath. Flowers in lateral fascicles. Berries globose, ca 1 cm across.

Fls. & Frts. : October - November.

Illus. : Wight, Ic. t. 1397. 1848.

Distrib. : Frequent along ghats. Mahabaleshwar.

S. erianthum D. Don, Prodr. Fl. Nepal. 96. 1825 ; Roe in Taxon
auct. pl. non L. 1753 ; C.B. Cl. in Hook. f. Fl. Brit. India 4 : 230. 1883 ;

Trees, 4 - 6 m high, branches tomentose. Leaves ovate-oblong, 8
23 x 3 14 cm, pubescent above, tomentose beneath. Flowers in
dense, dichotomous corymbose cymes; calyx cup-shaped, densely
woolly. Berries ca 0.8 cm across.

Fls. & Frts. : August.

Illus. : Wight, Ic. t. 1398. 1848 (S. verbascifolium).
**Distrib.**: Rare in deciduous forests along hill slopes. Mahabaleshwar; Talbot *op. cit.*; Wai, Cooke s.n.


Shrubs, 3 -5 m high, armed with broad, triangular spines; young branches, inflorescence and lower surfaces of leaves densely tomentose. Leaves 10 -17 × 3 -5 cm, base unequal, apex acute. Flowers blue in dense, lateral or subterminal cymes. Berries globose, 0.6 -0.8 cm across.

**Fls. & Frts.**: November.

**Illus.**: Wight, Ic. t. 893. 1845.

**Distrib.**: Common on higher hills near forest clearings. Ambeghar; Karanjewadi; Mahabaleshwar.


Shrubs, 1 -2 m high; stems prickly, stellately tomentose. Leaves ovate oblong, 4 -13 × 1 -5 cm, tomentose. Flowers pale-purple in lateral cymes; calyx stellately hairy, lobes triangular, Berries globose, ca 1 cm across, yellow. Seeds minutely pitted.

**Fls. & Frts.**: June - November.


**Distrib.**: Common among undergrowth in deciduous forests. Koyna; Kumbharli ghat; Lingmala; Machutar Forest; Mahabaleshwar; Nauja; Panchgani.


Herbs, ca 1 m high. Leaves ovate lanceolate, 2 -13 × 1.5 -6.0 cm, thin, base tapering, margins entire or slightly toothed, sparsely pubescent. Flowers white, in extra-axillary, subumbellate cymes. Berries globose. 0.5 -0.8 cm across, purplish-black when ripe.

**Fls. & Frts.**: Throughout the year.

Flora of Mahabaleshwar

Distrib.: Common weed near cultivated fields, in gardens and along road sides. Khatav; Koyna; Mahabaleshwar; Padoleshi; Pangchani; Pangchani ghat; Shirshingi.


Herbs, branches diffuse; spines yellow, glabrous, shining, 0.5-1.7 cm long. Leaves elliptic, 3-7 x 1.5-5.5 cm, margins deeply lobed, spiny on the midrib and nerves. Flowers blue; calyx spiny; stamens yellow. Berries ca 1 cm across, yellow, blotched with green.

Fls. & Frts.: November-April.


Distrib.: Common in waste lands and near cultivated fields. Karad; Kelghar ghat; Nauja; Yavatshwar.

Cultivated Species


Widely cultivated for fruits used as vegetable throughout the district.


Notes: Extensively cultivated throughout the district for edible tubers.


Fls. & Frts.: June.

Distrib.: Mahabaleshwar, Patel 1391 (BLAT).

Notes: Cultivated as an ornamental plant.

Under shrubs, 1-2 m high. Leaves ovate, 6 × 3.0-4.5 cm, pubescent on nerves; petioles ca 1 cm long, stellately tomentose. Flowers greenish-yellow in axillary umbellate cymes; calyx and corolla stellate tomentose. Berries globose, enclosed within enlarged calyx.

Fls. & Frts.: July.

Illus.: Wight, Ic. v. 853. 1844 (P. somnifera).

Distrib.: Rare in waste places in drier part. Khutav 165/77.

CULTIVATED SPECIES


Herbs, ca 50 cm high. Leaves ovate, 2 × 1.0-2.5 cm, base cuneate. Flowers blue in terminal racemes. Capsules ellipsoid, ca 0.5 cm long, ribbed.

Fls. & Frts.: December.

Distrib.: Cultivated as an ornamental plant in gardens. Mahabaleshwar.


Herbs, glandular hairy. Leaves ovate-rhomboideal, 1 × 0.8-2.0 cm, puberulous. Flowers blue in terminal racemes.

Fls.: December.

Distrib.: Introduced from S. America, cultivated in gardens, as an ornamental plant, also found as an escape. Mahabaleshwar.


Notes: Cultivated for fruits used as spices.


Shrubs, 2-3 m high. Leaves oblong or elliptic, glabrous above, puberulous beneath. Flowers white, sessile in axillary clusters.

Notes: Cultivated in gardens for fragrant flowers.


Shrubs, scandent. Leaves lancolate, 6-12 × 2.5 cm. Flowers greenish white in paniculate cymes.

Notes: Widely cultivated throughout the district for its fragrant flowers in gardens and also along roadsides.


Herbs, ca 1 m high. Leaves pinnatifid; lobes triangular-ovate, 3-9 × 1.0-4.5 cm. Flowers yellow in lax racemes. Berries subglobose, fleshy.

Fls. & Frts.: Throughout the year.

Distrib.: Widely cultivated for edible fruits. Satara; Taideo; Wai.


Herbs; branches prostrate, glandular hairy. Leaves shortly petioled, ovate, acute. Flowers pink or violet, solitary.

Fls.: January-February.

Distrib.: Cultivated as an ornamental plant in gardens.

SCROPHULARIACEAE

1. Leaves all or at least upper alternate:

2. Prostrate herbs; leaves triangular-bastate

3. Corolla succulent at base

Kickxia

2. Erect herbs; leaves not as above:

3. Corolla succulent at base

Antirrhinum
3. Corolla not as above:

4. Flowers solitary, axillary ... **Rhamphicarpa**

4. Flowers in terminal spikes or racemes:

5. Leaves entire; flowers in spikes:

6. Whole plant with a purple tinge; corolla tube curved, 2 upper lobes smaller than the others ... **Strept**

6. Plant not as above; corolla tube more or less straight, lobes subequal ... **Duchniska**

5. Leaves pinnatisect; flowers in racemes:

7. Leaves all alternate; capsules sub-globose ... **Verbasum**

7. Upper leaves alternate, lower opposite; capsules sublong-ellipsoid ... **Sophisia**

1. Leaves opposite or whorled:

2. Leaves whorled:

9. Aquatic herbs; leaves dimorphic ... **Lianmohila**

9. Terrestrial herbs; leaves monomorphic ... **Scoparia**

2. Leaves opposite:

10. Prostrate herbs:

11. Flowers solitary or in pairs:

12. Stamens 4:

13. Plants glandular-hairy ... **Sutera**

13. Plants glabrous ... **Bacopa**

12. Stamens 2:

14. Leaves narrowly spathulate ... **Glossostigma**

14. Leaves ovate, ovate-cordate or suborbicular ... **Lindernia**

11. Flowers in racemes:

15. Corolla glandular within; capsules included within calyx ... **Mazus**

15. Corolla glabrous; capsules exceeding calyx ... **Lindernia**

10. Erect or ascending herbs:

16. Flowers solitary or in pairs:

17. Calyx spathaceous, split down the front ... **Centranthera**
17. Calyx campanulate, 5-lobed:

18. Stems glandular-hairy

18. Stems glabrous or pubescent

16. Flowers in racemes or subumbellate fascicles:

19. Leaves pinnatisect:

20. Calyx apandrous, split down the front; capsules obliquely ovoid

20. Calyx campanulate, 5-lobed; capsules oblong-ellipsoid

19. Leaves entire:

21. Flowers in subumbellate fascicles; stamens 4

21. Flowers in racemes; stamens 2:

22. Capsules twice the length of calyx

22. Capsules as long as calyx

ANTIRRHINUM L.


Herbs, 15 45 cm high, glandular hairy. Leaves sessile, linear, 2.5 5.0 × 0.2 0.3 mm, apex subacute. Flowers white with purple streaks, in spiciform racemes; calyx glandular-pubescent. Capsules obliquely ovoid, ca 1 cm long, hairy.

Fls. & Frns.: December - May.

Distrib.: Weed in wheat field, reported by Vartak (op. cit.) for the first time from Maharashtra. Wheat Research Station, Mahabaleshwar.

BACOPA Aubl. (nom. cons.).

Herbs, 10-25 cm long, rooting at nodes. Leaves sessile, obovate-oblong, 0.3-2.0 x 0.2-7.0 cm. Flowers bluish-white, one sepal ovate, longer than remaining 4 sepals; corolla lobes with glistening dots when fresh. Capsules ovoid, ca 0.5 cm long. Seeds oblong, minute.

**Fls. & Frls.**: January-May.


**Distrib.**: Rare, along water courses. Mahabaleshwar, Cooke s.n., Santapau 12615 (BLAT), Soman 157135.

**BUCHNERA L.**


Herbs, 30-70 cm high, drying black. Leaves: upper alternate, linear lanceolate, lower opposite, oblong, 3-5 x 0.6-2.0 cm, hairy; bracts leafy. Flowers purple; calyx tube ribbed; stamens didynamous, included. Capsules oblong, ca 0.4 cm long.

**Fls.**: November-December.

**Illus.**: Wight, ic. t. 1413. 1849.

**Distrib.**: Root parasite, occasional in grasslands. Gadoli; Karanjewadi; Koyna valley.

**CENTRANTHERA R. Br.**


Herbs, 7-15 cm long; stems quadrangular. Leaves elliptic-oblong, ca 1.5 x 0.5 cm, scabrid. Calyx ovoid, ca 1 cm long, hispid. Capsules ca 1 cm long.

**Fls. & Frts.**: October.

**Distrib.**: Common annual among grasses in open lands. Koyna: Koyna valley; Mahabaleshwar; Shirshingi; Wada, below Mahabaleshwar.
Glossostigma Wight & Arn. ex Arn.


Herbs, creeping. Leaves radical, ca 0.7 × 0.2 cm, base tapering into petiole. Flowers blue on slender ca 1 cm long pedicels; calyx lobes 3, ovate-deltoid. Capsules globose, enclosed in slightly enlarged calyx.

Fls. & Frts.: October December.


Distrib.: Rare, near wet places, grows in large patches. Mahabaleshwar, Nana 7300. Sedgwick 4577 (BLAT).

Kickxia Dumort.

1. Stems pubescent; leaves broadly ovate ... K. incana
   1. Stems glabrous; leaves triangular-lanceolate ... K. ramosissima


Herbs, rootstock woody. Leaves small, ca 1.2 × 0.8 cm, pubescent. Flowers solitary, axillary on fli-form ca 1 cm long pedicels; calyx densely hairy. Capsules subglobose, ca 0.3 cm across. Seeds many, minute, black.

Fls. & Frts.: December.

Distrib.: Rare herbs on rocky walls. Mahabaleshwar, Somun 157332, 157681, Santapau 22879 (BLAT).

Notes: Cooke (op. cit.) has placed this plant under excluded species as there was no authentic specimen from the Bombay Presidency. However, Sant (op. cit.) collected it from Purandhar and also the present collection confirms its occurrence in the erstwhile Bombay Presidency.

Herbs, 30 - 50 cm long. Leaves 1.5 - 2.5 × 0.5 - 0.7 cm. Flowers yellow, axillary, solitary; pedicels slender, 1.5 - 2.0 cm long. Capsules ovoid, ca 0.4 cm across. Seeds many, echinulate.

*Fls. & Frts.*: June - October.


*Distrib.*: Common perennial on old walls and rocky grounds. Pandavgad; Pasarni ghat; Wai.

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**Limnophila R. Br.**

1. Flowers distinctly pedicelled

1. Flowers sessile or subsessile:
   2. Lower leaves submerged
   3. Leaves not submerged

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Herbs, 15 - 40 cm long. Upper leaves lanceolate, acute, 2.0 × 0.8 cm; 3 - nervèd; lower pinnatifid, segments narrow, linear. Flowers subsessile, axillary, solitary. Capsules subglobose, ca 0.4 cm across. Seeds small, angular.

*Fls. & Frts.*: August - September.

*Distrib.*: Rare perennial in water logged areas. Mahabaleshwar, Soman 156101.


Herbs, 10 - 20 cm long; stems subquadrangular, rooting at lower nodes. Leaves sessile, oblong lanceolate, 1.8 - 2.5 × 0.4 - 0.8 cm, margin serrate, 3 - nervèd. Flowers pinkish-purple in pairs at each node;
bracteoles linear-subulate; calyx membranous, divided half way down. Capsules subglobose, enclosed in persistent calyx.

*Fls. & Frts.*: January October.

*Illus.*: Wight, Ic. 1. 861. 1844.

*Distrib.*: Common in water logged areas. Bannoli; Karanjewadi; Koyna; Mahabaleshwar; Umarkanchan.


Herbs, ca 20 cm high; stems puberulent. Upper leaves lanceolate, ca 1 cm long, entire, 3-nerved; lower leaves pinnatisect, segments narrow. Flowers pink, solitary, axillary; calyx glandular-hairy, lobes lanceolate, acute. Capsules subglobose, ca 0.3 cm across.

*Fls. & Frts.*: August April.

*Distrib.*: Rare perennial along river banks. Koyna, Kochhar 160342; Mahabaleshwar. Cooke, Woodrow (Cooke, op. cit.).

**Lindenbercia Lehnn.**


Herbs, 10 - 20 cm high. Leaves ovate, 1.0 - 2.5 × 1.0 - 1.5 cm, base attenuate, apex subacute, margin crenate, sparsely hairy. Flowers yellow. Capsules oblong, ca 0.4 cm long, hairy in upper half. Seeds elliptic oblong.

*Fls. & Frts.*: October.


*Distrib.*: Rare annual in open lands. Mahabaleshwar, Sontapau 22877 (BLAT); Wai, Talbot 4514.
Lindernia All.

1. Diffuse or prostrate herbs:
   2. Flowers axillary, solitary ... L. pusilla

2. Flowers in axillary and terminal racemes:
   3. Leaves oblong; stamens 2 ... L. antipoda
   3. Leaves ovate-elliptic; stamens 4 ... L. cristaesa

1. Erect herbs:

4. Capsules twice the length of calyx:
   5. Leaves ovate-suborbicular; capsules elliptic ... L. nummularifolia
   5. Leaves ovate-oblong; capsules linear, lanceolate ... L. anagallis

4. Capsules as long as or shorter than calyx:
   6. Stamens 4 ... L. procumbens

6. Stamens 2:
   7. Flowers solitary, axillary ... L. hysopoides
   7. Flowers in axillary racemes ... L. parviflora


Herbs, 8-10 cm high, rooting at nodes. Leaves sessile, 1-2 x 0.5 cm, base truncate, apex acute, margins crenate. Flowers bluish white with yellow spot, solitary, axillary; corolla: lower lip 3 lobed, upper notched. Capsules ca 1 cm long, 2-valved.

Fls. & Frts.: July November.


Distrib.: Frequent in marshy places. Chaphal; Karanjewadi; Koyna; Marul; Punoli.

Herbs, ascending, 20–30 cm high, rooting at nodes; branches quadrangular. Leaves shortly petiolate, 1.0–3.5 × 0.5–1.5 cm, margins serrate. Flowers purple with darker streaks on upper lip; calyx deeply divided, lobes linear-lanceolate. Capsules oblong, ca 1 cm long.

Fls. & Frts.: August.

Illus.: Wight, Ic. t. 1411. 1849 (B. veronicaefolia).

Distrib.: Common annual in grasslands and along river banks. Mahabaleshwar.


Herbs, 25–70 cm high; stems angular, rooting at nodes. Leaves petiolate, 1.0–2.0 × 0.8–1 cm, base truncate, apex acute. Flowers in terminal racemes; calyx 5–ribbed, accrescent in fruit. Capsules ellipsoid, ca 0.6 cm long.

Fls. & Frts.: July.


Distrib.: Occasional near forest edges and along roadsides. Koyna.


Herbs, 8–25 cm high. Leaves paired, the lower oblong or oblong lanceolate, upper linear. Flowers blue; pedicels deflexed in fruit; calyx deeply divided, lobes linear-lanceolate. Capsules oblong, ca 1 cm long.

Fls. & Frts.: October–November.

Distrib.: Rare annuals included on Woodrow’s report from Mahabaleshwar.

Herbs, 3 - 5 cm high; stems quadrangular. Leaves opposite, sessile, serrate, 5 - 8 nerved. Flowers pinkish-purple, solitary or in few flowered racemes. Capsules ca 0.9 cm long.

Fls. & Frets. : September October.

Distrib. : Frequent in open, moist grassland and along ghats. Fitzgerald ghat, old Mahabaleshwar road.


Herbs, 5 - 10 cm high; stems quadrangular. Leaves sessile, 0.8 - 1.0 x 0.4 - 1.0 cm, base rounded, apex acute, margin serrate, 3 - 5 nerved. Flowers blue; pedicels ca 1 cm long, slender; corolla: lower lip 3 lobed, upper lip shallowly 2 lobed. Capsules ovoid-oblong, ca 0.5 cm long.

Fls. & Frets. : May - August.

Illus. : Roxb. op. cit. : Matthew, Fl. Tamilnadu Carnatic 3 : t. 81g & 83g. 1983.

Distrib. : Occasional in wet places and near cultivated fields. Kelghar ghat, Mahabaleshwar.


Herbs, ca 20 cm high, branches divaricate. Leaves sessile, oblong, 1.2 x 0.4 - 0.7 cm, 3 - 5 nerved, margins entire or obscurely crenate. Flowers white, pedicels twice as long as the leaves. Capsules ellipsoid, ca 0.4 cm long.

Fls. & Frets. : August.
FLORA OF MAHABALESHWAR

*Illus.*: Philcox, *op. cit.*

*Distrib.*: Rare in wet grasslands. Koyna, *Kochhar* 158464.


Herbs, ca 20 cm long, hispid. Leaves sessile, ca 1.5 × 1.0 cm. Flowers purple with a yellow centre; calyx glandular-hairy; corolla upper lip entire, lower lip shallowly 2-lobed. Capsules globose, 0.2 cm across.

*Fls.* & *Frts.*: February.

*Illus.*: Philcox, *op. cit.*

*Distrib.*: Rare in marshy places. Koyna, *Kochhar* 154354.

**Mazus** Lour.


Herbs, 5 15 cm long. Leaves obovate-spathulate, ca 1.5 × 0.8 cm. Flowers purple in subterminal racemes; calyx campanulate, ca 0.5 cm long, lobes 5, oblong; corolla upper lip 2-lobed, the lower lip 1-lobed; stamens didynamous; stigma 2-lobed. Capsules globose.

*Fls.* & *Frts.*: February - November.

*Distrib.*: Common along grassy slopes in moist and partially shaded places. Koyna; Mahabaleshwar.

**Pedicularis** L.


Herbs, 15 - 30 cm high. Leaves: upper sessile, lower shortly petioled, oblong-lanceolate, 1.5 4.0 × 0.5 1.5 cm, glabrous above, pubescent beneath. Flowers in elongate, lax racemes, bracteate; corolla tube cylindric; upper lip entire, lower lip 3-lobed. Capsules ca 1 cm long.
Fls. & Frts. : October.

Illus. : Wight, t. 1419. 1849.

Distrib. : Rare, semi-parasite in grasslands. Mahabaleshwar, Birdwood (Cooke, op. cit.), Puri & Mahajan (op. cit.).

**Rhamphicarpa** Bth.


Herbs, 15 - 20 cm high. Leaves black on drying, 1.0 - 2.5 cm long, pinnatisect; segments filiform. Flowers white; calyx tube campanulate, lobes lanceolate, acuminate; corolla lobes obovate, spreading, ca 1.5 cm long. Capsules ovoid, 0.8 - 1.0 cm long, beaked. Seeds minute, oblong.

Fls. & Frts. : August - September.

Illus. : Wight, t. 1415. 1849.

Distrib. : Common near cultivated fields in moist places. Koyna; Tapola; Wada; below Mahabaleshwar.

**Scoparia** L.


Herbs, 30 - 50 cm high; stems quadrangular. Leaves elliptic, 1.5 - 3.5 cm long, margin serrate, sparsely hairy. Flowers white, in axillary umbels; calyx pubescent. Capsules globose, ca 0.3 cm across. Seeds pitted.

Fls. & Frts. : September - July.

Illus. : Tad. & Venkatan. Handb. S. Ind. Weeds 302, f. 120. 1955 (Rev. ed.).

Distrib. : Common weed in waste lands. Koyna; Mahabaleshwar; way to Patan, Vajegaon.

**Sophobia** Buch.-Ham. ex D. Don

1. Flowers purple; calyx tube ribbed, lobes filiform ... *S. delphinifolia*

1. Flowers yellow with a purple centre; calyx tube not ribbed, lobes deltoid-ovate ... *S. trinoda*

Herbs, 20 - 50 cm high; stems grooved, sub-quadrangular. Leaves 1.0 - 2.5 cm long, lobes filiform. Flowers in terminal racemes: bracteoles filiform, ca 1 cm long. Capsules 0.5 - 0.7 cm long. Seeds cuneate-oblong, striate.

Fls. & Frts.: September November.

Illus.: Roxb. Pl. Cor. t. 90. 1798 (G. delphinifolia).

Distrib.: Common in grasslands and along exposed slopes during post-monsoon season. Kelghar ghat, Mahabaleshwar; Panchgani; Pratapgar; Satara-Pune road.


Herbs, 30 - 50 cm high. Leaves sessile, linear, 1.0 - 2.5 cm long, upper entire, lower 3-fd. Calyx woolly within; corolla subrotata. Capsules ca 0.5 cm long. Seeds cuneate-oblong, striate.

Fls. & Frts.: October.


Distrib.: Included on Woodrow's report from Panchgani.

STRIGA LOUR.

1. Leaves reduced to scales

2. Leaves well developed, narrowly oblong-linear:

3. Flowers yellow; calyx 10-ribbed

4. Flowers white; calyx 5-ribbed


Herbs, 30 - 50 cm high, black on drying; stems ribbed, hairy. Leaves opposite below, alternate above, sessile, 1 - 2 cm long, hairy. Flowers in lax, terminal spikes; calyx tubular, hispid, 1 rib reaching the tip of lobe
with secondary ribs in between; corolla tube puberulous without. Capsules oblong, ca 0.5 cm long.

*Fls. & Frts.*: August November.


*Distrib.*: Rare among grasses in wet situations. Koyna, Kochhar 158991.


Herbs, 15-50 cm high; stems abruptly quadrangular, scabrid. Leaves sessile, ca 2.5 cm long, scabrid, upper modified into bracts. Flowers 3-5 cm long in terminal spikes; corolla: upper lip 2-lobed, lower lip 3-lobed, lobes obovate. Capsules oblong-obovoid, ca 0.3 cm long.

*Fls. & Frts.*: September January.

*Distrib.*: Common along ghats among grasses. Koyna Valley; Pandavgad; Satara-Pune Road; Vardhangad.


Herbs, 20-30 cm high. Flowers pink in terminal spikes; bracts ovate-lanceolate, acute; calyx lobes narrowly lanceolate, bristle-tipped, one rib running to the apex of each calyx tooth; corolla hairy in the throat. Capsules ellipsoid, ca 0.5 cm long. Seeds minute, oblong.

*Fls. & Frts.*: October November.

*Illus.*: Wight, le. t. 1414. 1849 (*S. orobanchoides*).

*Distrib.*: Common root-parasite on *Lepidagathis cuspidata*, Fitzgerald ghat, Mahabaleshwar; old Mahabaleshwar Road, Nauja, Pandavgad.

**SUNTERA Roth**

Fig. 37. *Striga densiflora* (Benth.) Benth.
Herbs, 13 20 cm high. Leaves ovate, 1 2 × 0.5 1.2 cm, base tapering into short petiole. Capsules oblong, ca 0.3 cm long, 2-valved.

Fls. & Frts. : February.

Illus : Wight, Ic. t. 856. 1844.

Distrib. : Rare along river bank. Mahabaleshwar, Soman 157140.

TORENI A L.


Herbs, 10 20 cm high; stems quadrangular, sparsely hairy. Leaves ovate-lanceolate, 2 3 × 1.0 1.5 cm, base cuneate, apex acute. Flowers at the end of branches; calyx tubular, 0.3 1.2 cm long, winged on the ribs; corolla, upper lip notched, lower lip 3-lobed. Capsules oblong, ca 1 cm long, with persistent calyx. Seeds truncate.

Fls. & Frts. : November.

Illus : Saldanha, op. cit.

Distrib. : Rare annual in forest undergrowth. Koyna, Kochhar 158983; Punoli, Kochhar 157831.

VERBASCUM L.


Herbs, ca 1 m high. Leaves ob lanceolate, 4 10 × 1.5 4.5 cm, base cuneate, apex acute, pubescent. Flowers yellow in 10 15 cm long racemes, capsules 0.5 0.8 cm across, 2-valved. Seeds oblong, rugose.

Fl. & Fr. : April November.

Illus : Wight, Ic. t. 1406. 1849 (C. coromandeliana).

Distrib. : Common weed in waste places. Chaphai; Kelghar ghat; Koyna; Mahabaleshwar; Medha; old Mahabaleshwar; Wai.
VERONICA L.

1. Flowers in elongate racemes; capsules oblong ... *V. anagallis-aquatica*
1. Flowers in capitate racemes; capsules obcordate ... *V. javanica*


_Herbs, 30 - 50 cm high. Leaves sessile, oblong-lanceolate, 2.5 - 5.0 × 0.6 - 2.0 cm, base amplexicaul, apex acute. Flowers white in axillary and terminal, 10 - 13 cm long racemes. Capsules ca 0.3 cm long. Seeds oblong._

_Fls. & Frts.: May November._

_Distrib.: Occasional in moist situations. Mahabaleshwar; Panchgani ghat._


_Herbs, viscid-pubescent. Leaves shortly petioled, ovate, apex obtuse, pubescent. Flowers pinkish-white; calyx strigose. Capsules enclosed in calyx, pubescent._

_Fls. & Frts.: April._

_Distrib.: Weed along margins of cultivated fields and in waste-lands. Mahabaleshwar._

CULTIVATED SPECIES


_Herbs, prostrate. Leaves opposite, subsessile, ovate-lanceolate, 1.2 × 0.5 - 0.8 cm. Flowers yellow, axillary, solitary. Capsules cylindric. ca 0.5 cm long, 2-valved._

_Fls. & Frts.: April July._

_Distrib.: Garden weed. Koyna, Kochhar 158625, M. P. Nayar 153108._
Fig. 38. Veronica anagallis-aquatica L.
Maurandia lophospermum Bailey, Man. Cult. Pl. 895. 1949 (2nd ed.).
M. scandens A. Gray in Proc. Amer. Acad. 7 : 377. 1868 non Pers. 1807 ;

Climbers; branches glandular-hairy. Leaves triangular, hastate,
hispid; petioles twining. Flowers purple, axillary on long pedicels.

Fls. : November.

Distrib. : Cultivated in gardens as an ornamental plant, native of
Mexico. Mahabaleshwar.

ORO BANCHACEAE

ARGINETIA L.


Herbs, leafless, dirty brown. Scapes branched, 7-16 cm long.
Flowers purple, solitary; calyx spathaceous, splitting to the base, 2.0
2.5 cm long, enclosing corolla. Capsules ovoid, 2.0 × 1.7 cm. Seeds
minute, yellow.

Fls. & Frs. : October.

Illus. : Wight, Ic. t. 895. 1844-45 ; Ramamoothy in Saldanha &

Distrib. : Rare root parasite in moist places. Koyna. Kachhar
152558 ; Nauja, 167691.

LENTIBULARIACEAE

UTRICULARIA L.

1. Flowering scapes leafy; seeds glochidiate

1. Flowering scapes leafless; seeds not glochidiate :

2. Pedicels recurved in fruits :

3. Spur conical, shorter than lower lip ...

3. Spur linear-subulate, equaling lower lip ...

2. Pedicels not recurved in fruits :

4. Scales and bracts medifixed ...

4. Scales and bracts basifixed :

5. Scapes twining ...

U. striata

U. ulbo-coerulea

U. arcuata

U. coerulea

U. reticulata
5. Scapes erect:

6. Calyx as long as or longer than pedicel ..... *U. nigricans*

6. Calyx shorter than pedicel:

7. Calyx lobes narrowly ovate, acute ..... *U. graminifolia*

7. Calyx lobes broadly ovate, obtuse ..... *U. prostrata*


Herbs, 7 - 12 cm high; bladders orbicular, minute. Leaves spatulate. Scapes 1 - 3 flowered. Flowers purple; calyx lobes 2, ovate, acute, enlarged in fruits; corolla: upper lip suborbicular, notched at apex; lower lip quadrangularly orbicular; spur slightly curved or straight. Capsules globose, ca 0.5 cm across. Seeds oblong.

**Fls. & Frts.**: September - November.

**Distrib.**: Rare, restricted to higher elevations, found on wet rocks. Mahabaleshwar, Acland 882, 956. Bole 273, 1670, 1813, 1837. Santapau 11740, 11859 (BLAT); Panchgani, Ansari 67721.


Herbs, 10 - 15 cm high, bladders minute. Leaves oblong-spatulate. Scapes 2 - 5 flowered; bracts ovate, acute; flowers bluish-purple; calyx lobes ovate, acute, subequal; corolla: upper lip obovate, lower lip orbicular; spur ca 1 cm long. Capsules ca 0.3 cm across.

**Fls. & Frts.**: September.

**Illus.**: Wight, op. cit.

**Distrib.**: Jadholi, Mahabaleshwar, Nauja, Panchgani.

**Notes**: Blatt. & McC. (op. cit.) described *U. ogmosperma* allied to *U. albo-coerulea* Dalz. from Panchgani. According to Bole & Almeida (1985) the differentiating characters given by Blatt. & McC. agree with those of *U. arcuata*.

Herbs, 10 15 cm high; bladders globose, minute. Leaves 1.5 cm long, base attenuate. Flowers bluish-purple in lax racemes; bracts ovate, acuminate; calyx upper lobe ovate, lower narrower, 2-lobed. Capsules ovoid, enclosed in enlarged calyx.

*Fls.* & *Fris.*: October - December.

*Illus.*: Wight, t. 1573. 1850.

*Distrib.*: Slender herbs in moist situations. Koyna; Mahabaleshwar


Herbs, 10 15 cm high, often with matted, stout fibres. Scapes 2-6 flowered; flowers blue; bracts ovate, acuminate; spur short, conical. Capsules ovoid, enclosed in enlarged calyx.

*Fls.* & *Fris.*: August - March.


*Distrib.*: Lingmala, Mahabaleshwar, Panchgani.


Herbs, 5 15 cm high. Scapes 1 4 flowered; scales lanceolate; bracts ovate; bracteoles linear; flowers bluish purple; calyx lobes unequal. 0.2 - 0.5 cm; corolla 0.5 - 0.8 cm, upper lip obtuse-circular, lower lip orbicular, obtuse; spur 0.2 - 0.4 cm, acute, curved upwards. Capsules globose, ca 0.2 cm across, calyx much enlarged. Seeds ellipsoid.

*Fls.* & *Fris.*: October - January.

*Illus.*: P. Taylor, *op. cit*.

*Distrib.*: Robust perennial on moist rocks, along stream banks. Panchgani, *P. Taylor* 18104 (K).


Herbs, 10 15 cm high. Leaves linear-oblong, ca 1 cm long. Flowers bluish-purple in lax racemes in upper half of the scape; bracts ovate, acute; pedicels suberect, 0.5 - 1.0 cm long; sepals ovate, acute, enlarged in fruits. Capsules ellipsoid, ca 0.5 cm long.
**Fls. & Frts.** : October November.

**Distrib.** : Rare near cultivated fields in water logged areas. Panchgani, Bhide 1105.


Herbs; stolons creeping, filiform. Leaves orbicular-reniform, small, peltolate. Scapes filiform, 2 - 3 cm long; bracteoles oblong-lanceolate. Flowers purplish with yellow spot at base; sepals orbicular, emarginate, unequal; spur curved. Capsules subglobose, ca 0.2 cm across. Seeds ellipsoid.

**Fls. & Frts.** : July December.

**Illus.** : Wight, loc. t. 1518. 1850 (*U. glauhidulata*).

**Distrib.** : Common on wet rocks. Ambeghar; Mahabaleshwar; old Mahabaleshwar road; Panchgani ghat; Tapola.


Herbs. 3 - 8 cm long. Leaves oblong. 0.3 - 0.6 cm long. Flowers purple in erect racemes; bracts ovate, acute; calyx lobes ovate-obtuse; lower lobe shortly notched at apex; spur conical, ca 0.5 cm long. Capsules globose. Seeds subglobose.

**Fls. & Frts.** : September November.

**Illus.** : Wight, op. cit.

**Distrib.** : Common aquatic herb on wet rocks. Ambeghar; Mahabaleshwar; Panchgani.

**GESNERIACEAE**

1. Epiphytic, under shrubs, leaves opposite, seeds tipped with long hairs *... Abschynanthus*

   1. Terrestrial herbs; leaves alternate; seeds not as above *... Rhynchoglossum*
Aeschynanthus Jack. (nom. cons.).


Stems ca. 1 m high, compressed, swollen and rooting at nodes. Leaves lanceolate, 6 9 x 1.5 - 2.5 cm, base acute or rounded, apex acuminate. Flowers scarlet, 2 4 together; calyx lobes linear, obtuse; corolla tube elongate, curved; mouth 2-tipped, upper lip 2-lobed; lower lip 3-lobed, lobes rounded, reflexed. Capsules many seeded.

Fls. & Frts. : October November.

Illus. : Wight, Ic. t. 1347. 1850 (A. ceylanica).

Distrib. : Rar, there is only one specimen of this species from Koyna valley, below Mahabaleshwar collected by Cooke at BSI.

Rhynchoglossum Bl.

1. Calyx winged; stamens 4  ...  R. notonianum

R. obliquum var. parviflorum

1. Calyx not winged; stamens 2  ...  R. obliquum var. parviflorum


Herbs, slender, 9 - 12 cm high. Leaves ovate or oblong, 2 5 x 1.0 - 1.5 cm, base oblique, auriculate. Flowers purple in terminal racemes; bracts linear, subulate; corolla upper lip oblong; lower lip orbicular, truncate. Capsules broadly ellipsoid, ca. 0.4 cm long.

Fls. & Frts. : September October.

Illus. : Wight, Ic. t. 1353. 1848 (K. notoniana).

Distrib. : Common monsoon herb along ghats. Kumbharli ghat; Wada, below Mahabaleshwar; Pratapgad.

Herbs, ca 50 cm high. Leaves elliptic-oblong, 5 15 x 2 7 cm, base unequal, apex acuminata. Flowers blue in solitary or paired racemes. Capsules ovoid, ca 0.4 cm long. Seeds ellipsoid, minute.

Fls. & Fruits: October.

Distrib: Occasional, slender herbs in moist situations. Mahabaleshwar; Pratapgad Fort.

BIGNONIACEAE

1. Leaves bipinnate; stamens 5
   1. Leaves unipinnate; stamens 4:
      2. Flowers white in loose, dense, fulvous-tomentose panicles
      2. Flowers dull purple in lax, trichotomous, viscid panicles

OROXYLUM


Trees, ca 9 m high. Leaves crowded at the tips of branches; leaflets 5 - 7, elliptic-oblong, 4 9 x 3 5 cm, base unequal, apex acuminata, tomentose when young. Flowers fragrant; pedicels short, stout, tomentose. Capsules linear, 20 - 30 cm long, tomentose when young.

Fls. & Fruits: January - February.


Distrib: Common in deciduous forests. Jangli Jaigad; Mahabaleshwar; Nauja; Umarkanchan.

OROXYLUM Vent.

Trees, 6-8 m high. Leaflets 7, ovate or elliptic, 9, 13 x 6 cm, base rounded, apex acuminate. Flowers purple in large racemes; calyx campanulate, lobes truncate, pubescent; corolla ca 7 cm long, lobes rounded, crisped, reflexed; stamens slightly exerted. Capsules linear, 30-50 cm long, tapering at both ends.

Fls. & Frts.: April - September.

Illus.: Wight, Icon. 337 & 38, 1840.

Distrib.: Rare in deciduous forests with soft wood. Kusapur, Kochhar 154369; Nauja, Kochhar 154235.

**Stereospermum Cham.**


Trees, 8-18 m high; young branches hairy. Leaves 30-50 cm long; leaflets 7-9, broadly elliptic, acuminate, pubescent beneath. Flowers fragrant. Capsules cylindrical, 30-50 cm long, faintly ribbed.

Fls. & Frts.: March - April.

Illus.: Wight, Icon. 1342. 1848.

Distrib.: Included on Graham’s report from Mahabaleshwar.

**Cultivated Species**


Trees, ca 10 m high. Leaves uni- or bi-pinnate, pubescent. Flowers blue in lax, ca 20 cm long axillary and terminal racemes. Fruits oblong.

Fls. & Frts.: March - May.

Distrib.: Planted along roadsides and in gardens. Koyna.


Shrubs, 1-4 m high; branches quadrangular. Leaves imparipinnate; leaflets ovate-lanceolate. Flowers bright yellow in racemes. Capsules linear, beaked.
Fls. & Frts.: Throughout the year.

Illus.: Bor & Raiz op. cit.

Distrib.: Occasionally cultivated in gardens also found in open situations along ghats. Satara.

PEDALIACEAE

CULTIVATED SPECIES


Herbs, ca 1 m high; stems quadrangular, hairy. Lower leaves opposite, 2–3 lobed; upper alternate, 5–10 x 1–3 cm, sparsely hairy. Flowers pinkish-purple, solitary, axillary or fascicled. Capsules oblong, beaked, glandular-hairy.

Fls. & Frts.: August September.

Illus.: Wight, Ill. t. 163. 1830 (S. indicum).

Distrib.: Cultivated for seeds for oil extraction; rarely found as an escape. Yavteshwar.

THUNBERGIAEAE

THUNBERGIA REITZ. (nom. cons.).


Undershrubs, climbing. Leaves opposite, deltoid-ovate, hastate, 3–8 x 1–5 cm. Flowers white, solitary or paired; bracts 2, leafy; bracteoles ovate-lanceolate, acute, ca 1 cm long; corolla lobes obovate, spreading. Capsules 1.5–2.5 cm long with a long beak, 2-valved. Seeds ovoid, rugose.

Fls. & Frts.: August December.

Distrib.: Common along ghats. Ambeghar; Gadoli; Gureghar; Kelghar Ghat; Mahabaleshwar; Nauja; Panchgani; Yavteshwar.
CULTIVATED SPECIES


Slender twiners. Leaves ovate-cordate, 4–7 × 2.5–4.0 cm, villous; petioles 5–6 cm long, winged. Flowers orange-yellow, axillary, solitary. Capsules globose, pubescent.

*Fls & Frts*: August–December.

*Distrib.*: Cultivated as ornamental plant in gardens. Panchgani.


Climbers, pubescent. Leaves ovate, acute, 7.5–10.0 × 8.0–10.5 cm, shallowly 5–7 lobed, pubescent. Flowers blue in terminal racemes.

*Fls*: July–April.

*Illus.*: Wight, loc. cit. 872. 1844.

*Distrib.*: Occasionally grown in gardens as an ornamental plant. Mahabaleshwar; Yuvleshwar.


Twine rs. Leaves elliptic lanceolate, base rounded, apex acuminate, margins entire or shallowly lobed. Flowers in lax, axillary racemes; corolla tube purple, lobes bright yellow or orange.


*Illus.*: Wight, loc. cit. op. cit.

*Distrib.*: Common ornamental plant. Mahabaleshwar.