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Front Jacket : Argyreia cuneata (Willd.) Ker Gawl.

Back Jacket : Ceropegia sahyadrica Ansari & Kulkarni
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★★★
There is a global concern for assessing the status of living organisms belonging to various kingdoms and conserving biodiversity. All life is based on the genetic code: all forms have life evolved by natural selection and all life is connected. There is no true estimate of the total number of species in the world, although the sum of recorded number exceeds 1.7 million. As plants are the main solar energy converters and providers of food, oxygen and a host of useful products, it is essential to estimate their occurrence and availability. As continued research is yielding plant compounds with newer uses, it is all the more essential to prepare comprehensive databases. The main requirements for an inventory are accurate identification, nomenclature, description and environmental status.

Since its re-organisation, the Botanical Survey of India (BSI) has been engaged in floristic survey of unexplored and incompletely studied areas of the country. From 1980, the BSI has started publishing the _Flora of India_ under four series: (i) national flora comprising taxonomic revisions of families of flowering plants, tribes and genera of the entire country, (ii) floristic inventories of the various states/union territories, (iii) florae of phytogeographically interesting and floristically rich districts and (iv) special and miscellaneous publications. The number of recorded species of plants including lichens and fungi from India is around 47,000 of which 17,500 are angiosperms.

The present publication belongs to Series (ii) and covers the State of Maharashtra. This state is the third largest in the Indian Union and was carved out of the former Bombay Presidency, that included parts of Gujarat, Maharashtra, Goa, North Kanara and Sind (which is now in Pakistan). As now reconstituted Maharashtra has 34 districts and is bounded by the Arabian sea in the west, Goa and Karnataka in the south, Andhra Pradesh in the south-east, Madhya Pradesh in the north and Gujarat in the north-west.

Cooke’s _Flora of the Presidency of Bombay_ (1901-1908) continues till today as the most authoritative floristic account for the identification of species of this region. Nevertheless, this work has become obsolete owing to changes in the regional boundaries and modifications in the patterns of the flora caused by natural and anthropogenic activities. Through extensive collections in the past ninety years 1087 species, 21 sub-species, 51 varieties, one sub-variety and two forms have been added to Cooke’s _Flora_. Importantly, taxonomists have introduced name changes for 1045 species, 4 subspecies and 18 varieties. Therefore, revising and rewriting this flora along modern lines have become absolutely essential.

The flora of Maharashtra is rich and extremely interesting. Internationally, the Western Ghats have been classified as one of the world’s hotspots of biodiversity that are under threat. A major portion of northern Western Ghats - the Sahyadris - is spread over 11
districts. The Sahyadris are characterised by a high degree of diversity in floristic composition that is only next to the Indian Himalayan region. Moreover, 400 sacred groves are reported from Maharashtra at various conditions of preservation and floral composition. Konkan, Deccan, Khandesh, Marathwada and Vidarbha regions represent unique floristic features that differ from one another owing to differences in rainfall, temperature, elevation and edaphic features.

The BSI is bringing out floristic account of the Maharashtra State in three volumes. The volume containing the account of Monocotyledones has already appeared in 1996. The remaining two volumes deal with Dicotyledones. It is estimated, that presently the state of Maharashtra is represented by 187 families, 3025 species, 21 sub-species, 145 varieties, one sub-variety and two forms that occur in the wild. Besides, 844 cultivated species have been recorded. 25 genera and 694 species which are endemic to India occur in Maharashtra. Some of the critically endangered plants from this flora include among others: Abutilon ranadei, Aponogeton bruggenii, Bonnayodes limnophiloides, Ceropegia panchganiensis, Crinum brachynema, Dipcadi concanense, Frerea indica and Lepidagathis bandraensis.

The highest amount of colchicine - the polyploidizing agent - has been reported from the seeds of Iphigenia stellata, endemic to Maharashtra.

This is the second of the three volumes covering 70 families, 314 genera, 856 species, 10 subspecies and 53 varieties in wild. In addition, there are 5 families which include only cultivated species. A total of 262 cultivated taxa have also been treated in this volume. The Flora provides an extended introductory chapter on several topics such as vegetation, mangroves, aquatics, weeds, economically important plants, medicinal plants, endemic and threatened plants, major threats to diversity, national parks and sanctuaries, ethnomedical plants, sacred groves, wasteland development and forest biota. Line drawings of 179 plants and 26 colour photographs have also been given.

It is hoped that the Flora will be useful to students of botany, professional taxonomists, teachers, plant geographers, wildlife biologists, foresters, and all those interested in learning about the flora, conservation and utilisation of the plant resources of the state. This is also an authentic source of reference to planners and decision makers.

I congratulate the scientists who have brought this volume by professional competence, dedication and labour.

H. Y. Mohan Ram
INSA Senior Scientist,
Formerly Professor of Botany
University of Delhi, Delhi
1 January, 2000
The present publication of Flora of Maharashtra State: Dicotyledones is in continuation of the Volume 1 published in January 2000. In the first volume, 70 families have been treated besides exhaustive introductory chapters. This second and final volume deals with the systematic treatment of 91 families (Combretaceae-Ceratophyllaceae) comprising 1319 species, 13 subspecies, 67 varieties and 4 formae belonging to 527 genera occurring in wild and also 437 cultivated taxa. Line drawings of 143 plants and 32 colour photographs have been rendered. At the end of this volume, additions which were noted later, to those already treated are given. A total of 46 species, 2 subspecies, 17 varieties and 3 formae belonging to 21 families (of which one family viz., Grossulariaceae) are new additions to the Flora. In cultivated category, 91 species, 1 subspecies and 7 varieties have been added.

With the publication of this second volume, the entire Angiosperm Flora of the State is made available to all those interested in knowing the rich floristic wealth of the state.

**FLORA OF MAHARASHTRA STATE : STATISTICS (ANGIOSPERMS)**

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EDITORS
COMBRETACEAE
(P. G. Diwakar)

1. Petals present:
   2. Straggling shrubs; leaves opposite ... **Combretum**
   2. Erect shrubs; leaves alternate ... **Lumnitzera**

1. Petals absent:
   3. Trees; leaves alternate:
      4. Inflorescence of spikes or racemes ... **Terminalia**
      4. Inflorescence of heads ... **Anogeissus**
   3. Straggling shrubs; leaves opposite ... **Calycoperis**

**Anogeissus** (DC.) Guill. & Perr.

1. Calyx–stalks curved; wings entire ... **A. latifolia**
1. Calyx–stalks not curved; wings jagged at apex ... **A. acuminata**


Large deciduous trees, 12–15 m high. Leaves 3–7 x 1.5–3.5 cm, elliptic or elliptic-lanceolate, apex acute, pubescent. Drupes c 0.25 x 0.5 cm, broadly trapezoidal, laterally winged.

Fls. & Frts. : February-July.
Distrib. : Bombay, Chandrapur (Scott, op. cit.), Thane.


Deciduous trees, 9–18 m high. Leaves 3–10 x 1.5 x 4.5 cm, ovate to oblong-elliptic, apex obtuse. Flowers sessile, in dense heads; calyx pubescent, teeth triangular. Fruits with persistent calyx stalk, wings entire, beaked, clustered.
Fls. & Frts.: March–September.


Distrib.: Common throughout in dry deciduous forests.

**Calycopteris** Lam.


Shrubs; young parts rusty puberulous. Leaves 3.5–9.0 x 1.5 cm, elliptic-oblanceolate, tomentose on both sides. Flowers yellowish-green, in terminal panicles. Fruits 0.8–1.0 cm long, samaroid, 5-ribbed, pubescent, with a crown of calyx lobes.

Fls. & Frts.: February–July.


Distrib.: Frequent in deciduous forests. Chandrapur, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

**Combretum** Loebl. (nom. cons.)

1. Flowers with 5-calyx lobes; fruits 5-winged … *C. album*

2. Flowers with 4-calyx lobes; fruits 4-winged:
   2.1. Calyx tube funnel shaped and longer than ovary … *C. latifolium*
   2.2. Calyx tube campanulate, equaling ovary … *C. albidum*


Lianas; branches divaricate. Leaves 4–10 x 3.5–5.5 cm, elliptic or ovate. Flowers greenish-white in large panicles. Fruits indehiscent, ovoid, 4-winged, 2.5 x 1.5 cm, including papery wings.

Fls. & Frts.: January–May.

Distrib. : Frequent in deciduous forests. Ahmednagar, Akola, Buldhana, Chandrapur, Nasik, Osmanabad, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.


Fls. & Frts. : January–May.


Lianas, 15–20 m long. Leaves 5–15 x 4–8 cm, ovate–elliptic or elliptic. Flowers greenish–white, in panicles of dense spikes. Fruits 4 x 3 cm, indehiscent, suborbicular, yellowish.

Fls. & Frts. : January–May.


Distrib. : Infrequent in moist deciduous forests. Dhule, Pune, Ratnagiri, Satara, Sindhudurg, Thane. Also cultivated in Bombay gardens (Almeida, op. cit.).

**Lumnitzera** Willd.

Small trees or shrubs, up to 2 m high. Leaves 3–5 x 1.2 cm, oblanceolate to elliptic. Flowers whitish–green, in 0.8–1.0 cm long spikes. Drupes c 1 cm long, ovoid, angled, crowned by persistent calyx.

Fls. & Frts. : February–March.


Distrib. : Occasional along coasts in mangrove swamps. Ratnagiri, Sindhudurg.

**TERMINALIA L. (nom. cons.)**

1. Drupes winged; spikes panicled:
   2. Drupes equally 3–winged, rusty puberulous … T. paniculata
   2. Drupes equally 5–winged, glabrous:
      3. Wings of fruits hard, lines on wings curved upwards … T. cuneata
      3. Wings of fruits papery, lines on wings straight … T. elliptica

1. Drupes not winged; spikes simple or sparsely branched:
   4. Leaves clustered at apices of branches, eglandular … T. bellirica
   4. Leaves not clustered at apices of branches, frequently glandular on petiole or at base of midrib … T. chebula


Large trees, 15–20 m tall; young parts rufous pubescent. Leaves 8–15 x 6–10 cm, obovate or broadly elliptic, tomentose on both sides. Flowers yellowish–brown, in axillary spikes, foetid. Drupes subglobose, 3 x 2 cm, softly tomentose.

Fls. & Frts. : March–November.


Distrib. : Common throughout.

Trees, 5–10 m high. Leaves 6–13 x 3–7 cm, elliptic–ovate or elliptic–oblong. Flowers yellow, in simple or sparsely branched spikes. Drupes 3 x 2 cm, ellipsoid or ovoid, 5–ribbed when dry.

Fls. & Frts. : February–May.


Distrib. : Frequent in moist deciduous or dry deciduous forests. Ahmednagar, Chandrapur, Dhule, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Trees, 10–15 m tall. Leaves 5–10 x 3–8 cm, elliptic–oblong, apex obtuse or subacute, base rounded or cordate. Flowers yellowish in short and terminal panicles. Drupes 3.0–4.5 x 2.0–2.5 cm, ovoid or obovoid.

Fls. & Frts. : February–November.


Distrib. : Common throughout.


Trees, 3–20 m tall; bark rough, deeply cracked. Leaves 5–17 x 2.5–8.0 cm, elliptic to elliptic-lanceolate or elliptic-oblong, ovate or obovate. Flowers yellowish-brown or greenish-yellow, in pubescent panicles. Drupes 2.4–4.0 cm across, obovoid-oblong or globose, dark brown or reddish.

Fls. & Frts. : April–November.

Distrib. : Frequent in deciduous forests.


Trees, 10–15 m tall; young parts rusty pubescent. Leaves 7-15 x 3.0–6.5 cm, oblong-elliptic, with 2-sessile glands at base. Flowers greenish-white, in panicked-spikes. Drupes brownish-red, with unequal wings.

Fls. & Frts. : April–August.


Distrib. : Frequent in moist deciduous forests. Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**CULTIVATED SPECIES :**


Extensive climbers. Foliage dark green. Flowers brilliant scarlet coloured and in dense elegant racemes.

Distrib. : Bombay, Pune, Thane.

Notes : It is a native of Madagascar.


Large, straggling shrubs. Leaves 5-18 x 2.5–9.0 cm, elliptic-oblung, acuminate at apex, rounded or subcordate at base. Flowers in terminal, corymbose spikes; petals white, turning pink to deep red. Fruits c 3 x 1 cm, ovoid or ovoid-ellipsoid, chocolate brown, wings 5.
Fls. : Almost throughout the year & Frts. : Very rare.


Distrib. : It is a native of Tropical Asia, grown in gardens.


Trees, 8–12 m tall; branches in horizontal whorls. Leaves crowded at ends of branches, 15–20 x 8–12 cm, obovate, rounded or shortly acuminate at apex, glabrous above, pubescent on nerves beneath; petioles with 1–2 glands at tip on lower surface. Flowers sessile, in axillary spikes, white or yellowish–green. Fruits 3–7 x 2–5 cm, ovoid or ellipsoid, usually reddish–green.

Fls. & Frts. : April–October.


Distrib. : It is a native of Tropical Asia, planted in gardens and along roadsides.

**MYRTACEAE**
(B. G. Kulkarni)

1. Calyx closed entirely in buds, bursting irregularly; fruits many–seeded ... **Psidium**
1. Calyx open in buds; fruits 1–2–seeded:
   2. Calyx tube produced beyond ovary, lobes shorter than petals ... **Syzygium**
   2. Calyx tube not as above, lobes longer than petals ... **Eugenia**

**EUGENIA L.**

1. Flowers pedicellate ... **E. vartakii**
1. Flowers sessile ... **E. macrosepala**


Shrubs or trees, 3–10 m high; young leaves and branchlets tomentose. Leaves 4–12 x 3–6 cm, elliptic or elliptic-oblong, drying
brown, hairy on nerves beneath, apex acuminate, base acute. Flowers sessile, 1.2–2.0 cm across, white, fragrant, in axillary clusters, 2–5; calyx hairy; petals ovate. Berries 1.5–2.0 cm across, globose. Seeds 2–3, irregularly angled.

Fls. & Frts.: February–May.

Distrib.: Occasional in semi-evergreen forests. Ahmednagar (Cooke, op. cit.).

Notes.: Though common in Karnataka, Cooke's report from Maharashtra indicates northern extension of species.


Shrubs or small trees, 5–8 m tall. Leaves ovate-oblong, shortly petioled, glabrous, chartaceous, margins recurved. Flowers white, in axillary cymes; peduncles rusty-villous. Berries globose, red.

Fls. & Frts.: March–May.

Distrib.: Cooke (op. cit.) mentions it as native of South India, planted in Pune. S. M. Almeida (op. cit.) reports it in forest areas, rare. Sindhudurg.

Psidium L.


Shrubs, 3–5 m high; bark smooth, peeling off. Leaves 4–10 x 3–6 cm, oblong-elliptic, pubescent on both sides, apex acute, obtuse or rounded, base rounded. Flowers 1.5–2.5 cm across, white, axillary, solitary; calyx and petals pubescent. Berries 3–4 cm across, ovoid, pulpy.

Fls. & Frts.: November-June.

Distrib.: Native of Tropical America, cultivated and naturalized along streams near villages. Ahmednagar, Chandrapur, Nasik, Osmanabad, Pune, Ratnagiri, Satara, Sindhudurg.
SYZYGIUM Gaertn. (nom. cons.)

1. Flowers solitary or in pairs, rarely in fascicles ... S. phillyraeoides
1. Flowers usually more than 2 in cymes or racemes:
   2. Calyx tube with thickened, staminal disc at mouth:
      3. Calyx tube slenderly funnel-shaped; stamens red ... S. laetum
      3. Calyx tube shortly and stoutly hemispheric; stamens white ... S. hemisphericum
   2. Calyx tube not as above:
      4. Branchlets tetragonal; calyx tube turbinate:
         5. Leaves upto 5 cm broad, leaf-nerves close, parallel ... S. rubicundum
         5. Leaves more than 5 cm broad, leaf-nerves distant, scarcely parallel:
            6. Leaves coriaceous, dots pellucid; inflorescence branches stout ... S. tamlnadensis
            6. Leaves membranous, dots not as above; inflorescence branches slender ... S. stocksii
      4. Branchlets terete; calyx tube not as above:
         7. Calyx tube longer than broad:
            8. Calyx with white incrustation; petals 5 or less ... S. zeylanicum
            8. Calyx without white incrustation; petals upto 12 ... S. lanceolatum
         7. Calyx tube broader than long:
            9. Leaves gland-dotted; inflorescence terminal; calyx campanulate ... S. caryophyllatum
            9. Leaves pellucid-dotted; inflorescence axillary, lateral or from branches below leaves; calyx not as above:
               10. Leaves upto 2.5 cm broad; calyx funnel-shaped ... S. heyneanum
               10. Leaves more than 3 cm broad; calyx turbinate ... S. cumini


Shrubs or small trees, 2–5 m high. Leaves 4–10 x 2–5 cm, obovate or elliptic, subcoriaceous, apex acute, obtuse or abruptly bluntly acuminate, base tapering. Flowers 0.5–0.6 cm across, white, in laxly, trichotomous panicles of umbellules; calyx 0.3 cm long; corolla calytrate. Berries 0.8–1.0 x 0.6–0.8 cm, globose, dark purple turning black.

Fls. & Frts.: March–October.

Illus.: Wight, Ic. t. 540. 1842 (Eugenia caryophyllaea).

Distrib.: Frequent in deciduous forests along Western ghats and coastal areas. Pune (Sant. 1967), Raigad, Ratnagiri, Satara, Sindhudurg.


Trees, 8–15 m high; bark thick, rough. Leaves 6–18 x 3–8 cm, elliptic-oblong or elliptic or ovate, subcoriaceous, close veined, apex acute to acuminate or subobtuse, base narrowed. Flowers white, sessile or shortly pedicelled, crowded in heads on ends of laxly panicled-cymes; calyx cupular; corolla calytrate. Berries 1.5–2.2 x 1.0–1.5 cm, oblong or ovoid, purple, fleshy.

Fls. & Frts.: March–June.


Distrib.: In deciduous and semi-evergreen forests. Common throughout.


Trees, 10–15 m high; bark smooth, blackish. Leaves 7–12 x 3–6 cm, elliptic-oblong, ovate-lanceolate or oblongoblate, coriaceous, apex subacuminate, base tapering. Flowers 2.5–3.0 cm across, white, in axillary and terminal paniculate-cymes; calyx 0.6–1.0 cm long; petals ovate, 0.8 cm long. Berries 1.5–2.0 cm across, hemispheric, purple, crowned with persistent calyx segments.
Fls. & Frts.: December–June.


Distrib.: Infrequent in moist deciduous and semi-evergreen forests along Western ghats. Kolhapur, Ratnagiri, Sindhudurg.


1. Cymes lateral ... var. heyneanum
1. Cymes axillary ... var. alternans

var. **heyneanum**.

Shrubs or small trees, 3–5 m high. Leaves 6–11 x 2.0–3.2 cm, elliptic–lanceolate or oblanceolate, subcoriaceous, apex acute, base tapering. Flowers white, in small heads, in trichotomous cymes on old stem or in axils of fallen leaves, subsessile; calyx obscurely lobed; petals orbicular, calyptrate. Berries c 2.5 x 1.6 cm, ovoid to ellipsoid, reddish-brown when ripe.

Fls. & Frts.: February–June.

Illus.: Wight, Ic. t. 539. 1842 (E. salicifolia Grah.).

Distrib.: Frequent in deciduous forests along rivers and streams. Akola, Chandrapur, Dhule, Nanded, Nasik, Pune, Ratnagiri, Satara, Sindhudurg, Thane.

var. **alternans** (Duthie) B. G. Kulkarni & Lakshmi., comb. nov.


All the characters like the species but it differs from the species in having cymes in the axils of upper leaves.

Notes: This variety is reported from deciduous forests of 'Konkan' (Duthie in Hook. f. op. cit. & Cooke, op. cit.).

Syzygium laetum (Buch.-Ham.) Gandhi
Trees, 8–10 m high; branches slender, terete. Leaves 5–8 x 2–4 cm, oblong–lanceolate to elliptic–lanceolate, subcoriaceous, punctate, apex acuminate, base narrowed. Flowers 1.5–2.5 cm across, white, solitary or in few–flowered axillary cymes; calyx conical; petals orbicular. Berries 2.5 x 1.6 cm, ovoid to ellipsoid, reddish–brown.

Fls. & Frts. : January–May.


Distrib.: Infrequent in semi–evergreen forests along ghats. Sindhudurg ('Phundaghat', Cooke, op. cit.).


Small trees, 5–8 m high; branches slender. Leaves 6–12 x 3–4 cm, elliptic–lanceolate, coriaceous, punctate, apex caudate–acuminate, base tapering. Flowers white, in subsessile, few–flowered, axillary cymes or on leafless branches; calyx tube clavate, elongate; petals calyptrate. Berries 1.8–2.5 cm long, ellipsoid, dark brown.

Fls. & Frts. : February–May.

Illus.: Wight, op. cit.

Distrib.: Occasional in moist deciduous / semi–evergreen forests. 'Konkan' (Cooke, op. cit.).


Undershrubs or shrubs, 1.5–2.0 m high. Leaves 3–6 x 1.5–2.2 cm, elliptic or elliptic–lanceolate, coriaceous, apex acuminate or subobtuse, base narrowed. Flowers c 0.6 cm across, white, pedicels filiform, 1.8 cm long; calyx hairy; petals 4, ovate, glandular. Berries c 0.8 cm across, globose, scarlet.

Fls. & Frts. : October–February.
Syzygium phillyraeoides (Trim.) Sant.
Illus.: Wight, op. cit.

Distrib.: Infrequent in moist deciduous and semi-evergreen forests along Western ghats. Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg.


Trees, 8–12 m high. Leaves 3–7 cm long, variable, ovate or elliptic-lanceolate, shining above, pale beneath, pellucid dotted, apex acuminate, base narrowed. Flowers 0.4–0.6 cm across, pinkish-white, in terminal or axillary cymes; petals calyptrate. Berries globose, black.

Fls. & Frts.: March–June.

Illus.: Wight, op. cit.

Distrib.: Reported to occur in moist deciduous / semi-evergreen forests along Western ghats. 'Konkan' & Pune (Cooke, op. cit.), Satara.


Trees, 10–15 m high, evergreen; branchlets compressed. Leaves 8–15 x 3.5–6.5 cm, elliptic-ovate or lanceolate-oblong, obscurely dotted, apex rounded or shortly acuminate, base narrowed. Flowers c 0.4 cm across, white, in axillary cymes; calyx funnel-shaped, rugose outside; petals calyptrate, gland-dotted.

Fls. & Frts.: January–February.

Distrib.: Rare plant in evergreen forests. 'Konkan' (Cooke, op. cit.).

Trees, 8–10 m high; bark brown, peeling off. Leaves 6–12 x 3–6 cm, elliptic-oblong, or elliptic, nerves prominent, apex acuminate or emarginate, base acute. Flowers 0.35–0.4 cm across, white, in terminal corymbose–cymes; calyx funnel–shaped; petals calyptrate. Berries globose, purplish.

Fls. & Frts.: February–June.

Illus.: Wight, op. cit.

Distrib.: Occasional in moist deciduous forests and in sacred groves. Sindhudurg.


Shrubs or small trees, 5–8 m high; branches slender. Leaves 3–8 x 1–3 cm, ovate-elliptic or lanceolate, coriaceous, shining above, pale beneath, apex acuminate, base narrowed. Flowers 0.4–0.5 cm across, white, in axillary or terminal panicled–cymes; calyx 0.6 cm long, glandular, lobes ovate; petals orbicular, free. Berries 0.5 cm across, globose, white.

Fls. & Frts.: February–June.

Illus.: Wight, Ic. t. 73. 1838 (Eugenia zeylanica); Talb. For. Fl. Bombay Pres. & Sind 2:36, f. 308. 1911.

Distrib.: Infrequent in semi–evergreen forests along Western ghats. Ratnagiri, Sindhudurg.

**CULTIVATED SPECIES:**

Small trees or shrubs; bark fissured, branches drooping. Leaves linear-lanceolate, 4-7 x 0.4-0.6 cm, rigid, glandular-punctate. Flowers crimson-red, in terminal spikes; sepals deciduous; petals free, greenish-white. Capsules ovoid, truncate at apex.

Fls. & Frts.: October-February (Throughout the year).

Distrib.: Usually grown in gardens as an ornamental tree. Bombay, Pune.


Large trees; bark white, smooth. Leaves variable, deltoid-ovate, 5-7 x 3-5 cm; petioles 3-4 cm long. Flowers white, in axillary umbels below leaf bearing shoots. Fruits turbinate-hemispheric, convex at top.

Fls. & Frts.: April-July.

Distrib. Usually grown in gardens as an avenue tree. Thane.


Trees, upto 20 m tall; bark subfibrous. Leaves broadly lanceolate-acuminate. Flowers yellowish-white, in 6-10-flowered umbels. Fruits cylindrical, sessile.

Fls. & Frts.: April-May.

Distrib.: Planted in gardens. Pune.


Tall trees, 15-20 m tall; bark dark grey to white. Leaves elliptic or elliptic-lanceolate. Flowers white, in lateral or supra-axillary umbels, few-flowered. Fruits ovoid, truncate at tip.

Fls. & Frts.: November-May.


Tall, handsome trees; bark shining, whitish or reddish-grey. Leaves linear-lanceolate, greyish-green, acute at base, acuminate at apex. Flowers white, in short, axillary panicles. Fruits ovoid, flattened at tip.

Fls. & Frts.: April–August.


Distrib.: Planted in gardens, as an avenue tree. Pune.


Trees, 25–40 m tall; bark bluish, smooth. Leaves lanceolate, falcate, 10–30 x 3–4 cm, coriaceous. Flowers axillary, solitary, rarely 2-3-flowered. Fruits globular to conical, 4-ribbed.

Fls. & Frts.: October–May.

Distrib.: Planted in gardens and on hill slopes. Sindhudurg.


Tall to medium sized trees; bark hard, persistent, deeply fissured. Leaves lanceolate, acute at base, acuminate at apex. Flowers white, in panicles; calyx absent; petals fused into a calyptra. Fruits ovoid, truncate at tip.

Fls. & Frts.: November–February.

Distrib.: Cultivated in gardens. Pune.


Tall, columnar trees; bark rough, greenish-white. Leaves 10-12 x 2-4 cm, lanceolate, thinly chartaceous, puberulous along margins. Flowers white, in axillary, 6-12-flowered umbels. Fruits ovoid or subglobose.

Fls. & Frts.: September–March.

Distrib.: Grown in gardens. Pune.

Trees, upto 40 m tall; bark reddish, rough, fibrous. Leaves 10–16 x 2–3 cm, lanceolate. Flowers white, in 5–10–flowered umbels. Fruits ovoid, hemispherical.

Fls. & Frts.: March–May.

Distrib.: Grown in gardens. Pune.


Medium sized trees; bark rough but not hard, flaky. Leaves ovate–lanceolate, 8–15 x 2–5 cm, placed horizontally, dark green above, paler beneath, acute at base, acuminate at apex. Flowers white, in axillary umbels, 3–10–flowered. Fruits ovoid, 1.5 cm long, truncate at tip.

Fls. & Frts.: November–July.

Distrib.: Cultivated in gardens Pune.


Trees, 15–20 m tall; bark smooth, branches apically angular, often glaucous. Leaves lanceolate to elliptic-ovate, 5–12 x 1.5–6.0 cm, dull bluish–green to shining green, obliquely acute at base, acute or acuminate at apex. Flowers white, in simple umbels. Fruits globular, 0.6–0.8 cm long, protruding at apex.

Fls. & Frts.: October–May.

Distrib.: Usually planted in gardens. Pune.


Trees, 10–15 m tall; bark blackish–grey, scaly and subtessellated at base, smooth above, branchlets hirsute. Leaves broadly ovate, 5–12 x 3–8 cm, greenish, shining above. Flowers white, in corymbose–panicles. Fruits ovoid, 0.6 cm long, sessile, truncate at tip.
Fls. & Frts. : November–April.

Distrib. : Planted in gardens. Thane.


Trees with smooth, ashy-grey or white bark and slender branches. Leaves lanceolate-falcate. Flowers white, in lateral or supra-axillary umbels; calyx tube semiglobose. Fruits subglobose.

Fls. & Frts. : Almost throughout the year.

Distrib. : Planted as an avenue tree and in gardens. Pune.


Trees, 30–45 m tall; bark rough, persistent, 2–3 m from base, decorticating in long ribbons above. Leaves lanceolate-falcate, 10–20 x 1.2–3.0 cm. Inflorescence of axillary, 3-flowered umbels; flowers white, subsessile. Fruits spherical to turbinate, disc convex.

Fls. & Frts. : April–November.

Distrib. : Usually grown in gardens, as an avenue tree. Pune.


Shrubs or small trees, 5–8 m tall; branches glabrous, compact. Leaves sessile, ovate or ovate-lanceolate, dark green, shining above, pale beneath, rounded at base, acuminate at apex. Flowers white, solitary, axillary, 1.2 cm across, fragrant. Fruits globose, 1.5–2.5 cm across, obscurely 8-ribbed, deep crimson when ripe, edible.

Fls. & Frts. : February–May.

Distrib. : Native of Brazil, occasionally grown in gardens. Pune.

Large trees; bark thick, spongy; branches drooping. Leaves elliptic or oblong, 4–10 x 1.2–1.9 cm, tapering at both the ends. Flowers creamy-white, in terminal spikes. Capsules hemispheric, c 0.6 cm across.

Fls. & Frts.: February–April.


Evergreen shrubs upto 3 m tall; branches glabrous. Leaves ovate to lanceolate, 2–4 x 1.5 cm, bright green, apex acuminate. Flowers white tinged with rose, axillary, solitary; calyx turbinate; petals spreading. Fruits ovoid, surrounded by persistent calyx-lobes.

Fls. & Frts.: Almost throughout the year.

Distrib.: Sweet scented shrubs planted in gardens. Pune, Sindhudurg (S. M. Almeida, Fl. Savantwadi 1: 170. 1990 states that shrub grows along forest margins); native of Western Asia, Mediterranean Region.


Trees, 10–15 m tall. Leaves ovate-oblong, 5–15 x 2–8 cm, tapering at base, acute at apex. Flowers pale purple, 0.6 cm across, in terminal cymes; flower-buds when dried in the sun, furnish clove of commerce.

Fls. & Frts.: February–April.

Distrib.: Planted in the gardens. Bombay, Sindhudurg.


Trees, 8–10 m tall. Leaves ovate-lanceolate, 15–20 x 3–4 cm, base attenuate, acuminate at apex. Flowers 3–5 cm across, greenish-white, in trichotomous cymes; calyx funnel-shaped; petals obovate. Fruits 2–4 cm long, globose, pinkish-white.

Illus.: Wight, Ic. t. 435. 1841 (Jambosa vulgaris).

Distrib.: Usually cultivated in gardens. Kolhapur, Pune, Satara, Sindhudurg.


Small trees, 8–10 m tall, elegant in shape. Leaves elliptic–lanceolate, shining green, thinly coriaceous, acute at base, acuminate at apex. Flowers crimson, showy, in axillary cymes. Fruits of fleshy berries with persistent incurved calyx lobes.

Fls. & Frts.: February–April.

Distrib.: Usually grown in gardens for bright crimson flowers and edible fruits. Bombay.


Small trees; bark smooth, grey. Leaves elliptic or elliptic-oblong, upto 25 x 10 cm. Flowers white, showy, 4–5 cm across, in axillary or terminal cymes. Fruits white or pinkish–white, fleshy, top-shaped.

Fls. & Frts.: March–May.


**LECITHIDACEAE**
(S. G. Pradhan)

**CAREYA Roxb.** (nom. cons.)

Trees, 12–28 m tall. Leaves 15–30 x 7–16 cm, broadly obovate, oblong-obovate, rounded to shortly acuminate at apex, tapering at base, margins crenate-denticulate. Flowers yellowish-white, 6–8 cm across, in terminal spikes. Fruits 6.0–7.5 cm across, globose.

Fls. & Frts.: March–April.


Distrib.: Usually found in moist forests. Ahmednagar, Akola, Bombay, Chandrapur, Dhule, Nanded, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.

CULTIVATED SPECIES:

Evergreen trees, up to 15 m tall. Leaves 20–25 cm long, oblong, Flowers cauliflorous, i.e. borne on trunk and larger branches in racemes up to 1.5 m long, yellow to red outside, crimson lilac inside, c 10 cm across, with numerous stamens on the lower and upper wall. Fruits almost globose, up to 20 cm across.

Fls. & Frts.: September–November.

Illus.: Bailey, op. cit. fig. 145.

Distrib.: Native of Trinidad and S. E. America, grown in the gardens for its attractive flowers and fruits. Bombay, Pune.

BARRINGTONIACEAE
(S. G. Pradhan)

BARRINGTONIA J. R. & G. Forst. (nom. cons.)

1. Leaves c 15 cm long; flowers 0.8–1.2 cm across; sepals obtuse ... B. acutangula
1. Leaves c 30 cm long; flowers 3.5–5.0 cm across; sepals acute ... B. racemosa

Trees, c 15 m tall. Leaves 6–15 x 3–8 cm, elliptic, obovate-oblong, rounded or subacute at apex, cuneate at base, margins minutely dentate. Flowers scarlet, in pendulous, many-flowered racemes. Fruits 3.0–3.5 x 1.2–1.8 cm, obtusely quadrangular, broadest in the middle with truncate ends and persistent calyx crown.

Fls. & Frts.: September–October.


Distrib.: Common near the coast but also occurs along banks of streams and rivers. Chandrapur, Nanded, Pune, Raigad, Ratnagiri, Sindhudurg, Thane, Yavatmal.


Trees, 10–15 m tall. Leaves 10–30 x 5–12 cm, oblanceolate to obovate-oblong, shortly acuminate at apex, cuneate at base, margins slightly crenate-denticulate. Flowers distant, in pendulous, many-flowered racemes. Fruits 5–7 x 3.5–5.0 cm, bluntly 4-lobed, crowned with persistent calyx.

Fls. & Frts.: April–May.

Illus.: Wight, Ic. t. 152. 1839.

Distrib.: Rare. A coastal plant. Ratnagiri, Sindhudurg.

MELASTOMATACEAE

(S. G. Pradhan)

1. Petals 3 ...
   ... SONERILA
   1. Petals 4–5:
   2. Flowers in umbellate-cymes; ovary glabrous, ovules 6–12 ...
   ... MEMECYLMON
   2. Flowers not in umbellate-cymes; ovary setose at apex, ovules numerous:
   3. Stamens equal or subequal ...
   ... OSBECKIA
   3. Stamens markedly unequal ...
   ... MELASTOMA
MELASTOMA L.


Shrubs; young parts densely pubescent. Leaves 5–10 x 1.5–4.0 cm, ovate-oblong or oblong-lanceolate, rounded at base. Flowers in terminal, corymbose-panicles; anthers red and yellow, alternating with yellow filaments. Fruits c 1.2 cm long, ovoid, truncate. Seeds many.

Fls. & Frts.: October–March.


Distrib.: Usually found in moist and semi-evergreen to evergreen forests. Chandrapur, Ratnagiri, Satara, Sindhudurg.

MEMECYLON L.

1. Leaves sessile
2. Leaves petiolate:
   1. Flowers sessile
   2. Flowers pedicelled:
      1. Leaves lanceolate, nerves prominent
      2. Leaves ovate-elliptic, nerves obscure


Shrubs or small trees, 5–8 m high. Leaves c 20 x 8 cm, leathery, dark green, intra-marginal nerves connected by 10–16 straight nerves. Flowers blue, in 1.2 cm broad fascicles; calyx tube campanulate, disk-rays prominent. Berries spherical.

Fls. & Frts.: September–November.

Illus.: Wight, l.c. t. 277. 1840 (Memecylon jambosoides).

Distrib.: Occasional in semi-evergreen forests. Sindhudurg (S. M. Almeida, op. cit.).

Small trees, 5–8 m tall; branches terete. Leaves 6–10 x 2.5–5.0 cm, ovate-oblong, shining above, nerves obscure, apex obtusely acute, base cordate to rounded. Flowers bright blue, in clusters on old wood; calyx 2 mm long, red; corolla 2 mm long, suborbicular. Berries spherical, black when ripe, crowned by persistent calyx limbs.

**Fls. & Frts.:** March–May.

**Distrib.:** Occasional in semi-evergreen forests. Sindhudurg (S. M. Almeida, op. cit.).


Large shrubs or small trees, 2-3 m tall. Leaves 5–10 x 2.5–5.0 cm, elliptic or elliptic-oblong, coriaceous, glossy, shortly obtusely acuminate at apex, acute at base. Flowers purplish-blue, in clusters. Berries globose, c 0.6 cm across, yellow when ripe.

**Fls. & Frts.:** March–April.


**Distrib.:** Found in semi-evergreen forests. Ahmednagar, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.


1. Peduncles 0.3–1.0 cm long
2. Peduncles c 2.5 cm long

**var. umbellatum.** 'Anjan', 'Karap'.

Small trees, 4-5 m tall. Leaves 3.5–7.5 x 1.5–3.5 cm, subacute or shortly acuminate at apex, attenuate or rounded at base. Flowers bluish, many, in umbellate cymes from axils of fallen leaves on old branches. Berries c 0.6 cm across, globose, blackish when ripe.

**Fls. & Frts.:** January–April.


**Distrib.:** Found in moist and semi-evergreen forests. Ahmednagar, Bombay, Chandrapur, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.
Small trees, 3–4 m tall. Leaves elliptic or ovate-elliptic. Flowers bluish, in many-flowered, umbellate cymes. Berries c 0.6 across, globose.

Fls. & Frts.: January–April.

Distrib.: Found in moist and semi-evergreen forests. 'Konkan' (Cooke, op. cit.), Pune.

Osbeckia L.

1. Stamens truncate at apex; fruits 8-ribbed
2. Stamens attenuate or beaked at apex; fruits more than 8-ribbed:
   1. Plants glabrate or sparsely hairy, length of hairs usually less than 0.1 cm
   2. Plants densely hairy, length of hairs usually more than 0.1 cm


Herbs, c 20 cm tall; stems erect, bristly hairy. Leaves 1.2–3.0 x 0.6–1.5 cm, elliptic, subacute at both ends, margins entire or sometimes slightly serrulate. Flowers purple, in capitate inflorescence. Fruits ovoid-oblong.

Fls. & Frts.: August–December.

Illus.: Wight, l.c. t. 375. 1840.

Distrib.: Frequent in moist places. Nasik, Pune, Raigad, Ratnagiri, Thane.

Herbs; stems erect, densely appressedly bristly hairy. Leaves 2.5–5.5 x 1.2–3.0 cm, elliptic or elliptic-oblong, acute or subobtuse at base. Flowers purple or occasionally white, in subcapitate or lax inflorescence. Fruits ovoid-oblong, obscurely many-ribbed.

Fls. & Frts.: December–March.
Illus.: Wight, Ic. t. 996. 1845 non DC. 1828 (O. leschenaultiana).
Distrib.: Rare. 'Konkan' (Cooke, op. cit.).


Herbs, 10–30 cm tall; stems erect. Leaves 1.5–3.0 cm long, elliptic or oblong, narrowed at both ends. Flowers purple-mauve. Fruits 0.3–0.5 cm broad, ovoid-oblong.

Fls. & Frts.: November–March.
Distrib.: Rare. Chandrapur.

**SONERILA** Roxb.

1. Stems present; leaf-margins bristly-serrate; leaves bristly hairy on upper surface; seeds tuberculate ... **S. rheedei**

1. Stems absent; leaf-margins minutely crenate-serrate; leaves glabrous or occasionally glandular-pubescent on upper surface; seeds not tuberculate ... **S. scapigera**


Herbs, 8–15 cm tall; stems hairy. Leaves 3.0–7.5 x 1.5–3.0 cm, ovate, rounded or subcordate at base; petioles 1.2–3.0 cm long. Flowers 4–8, in subumbellate, axillary or terminal, on c 6 cm long peduncles. Capsules 0.3–0.4 cm long.

Fls. & Frts.: July–September.
Distrib.: Rare. 'Konkan' (Cooke, op. cit.).


Herbs, 7–10 cm tall. Leaves radical, 2–3 x 1.2–2.5 cm, ovate or ovate-oblong, obtuse or subacute at apex, cordate at base; petioles 3–6 cm long. Flowers 4–10, subumbellate, on 2.5–7.5 cm long scapes. Capsules 0.3–0.4 cm long.
Fls. & Frts. : July–August.
Distrib. : Occasional in wet places. Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

LYTHRACEAE
(P. G. Diwakar)

1. Trees or shrubs:
   2. Capsules loculicidal; seeds winged ... LAGERSTROEMIA
   2. Capsules irregularly dehiscent; seeds not winged ... WOODFORDIA
   1. Herbs, usually aquatic:
      3. Capsules dehiscent:
         4. Capsules dehiscing septicidally ... ROTALA
         4. Capsules dehiscing above with operculum, irregularly below ... NESAEA
      3. Capsules indehiscent or breaking irregularly ... AMMANNIA

AMMANNIA L.

1. Calyx winged ... A. octandra
1. Calyx not winged:
   2. Styles distinct; petals caducous:
      3. Peduncles longer than leaves, 1-3- flowered; pedicels 3-5 mm long ... A. multiflora
      3. Peduncles as long as or shorter than leaves, up to 15 flowers; pedicels 1-2 mm long:
         4. Peduncles filiform; stamens 4; seeds ovoid ... A. nagpurensis
         4. Peduncles stout; stamens 6-8; seeds ellipsoid ... A. auriculata
   2. Styles absent or nearly so; petals absent:
      5. Cymes distinctly peduncled ... A. senegalensis
      5. Cymes sessile or subsessile ... A. baccifera


Erect or diffuse herbs, 10-30 cm high; branches sharply 4-angled. Leaves 0.5-2.0 x 0.2-0.4 cm, linear, acute at apex, cordate or subcordate at base. Flowers in axillary, peduncled cymes; petals pink. Capsules globose or obtusely 4-gonous, c 2 mm across, brown.
Fls. & Frts.: September–January.

Distrib.: Occasional in moist situations. Aurangabad & Nanded (Naik op. cit.).


1. Leaves narrow at base
2. Leaves rounded or cordate at base

**ssp. baccifera.**

Erect, annual herbs, 15–40 cm tall; stems and branches slender. Leaves 1.8–4.0 x 0.3–1.2 cm, linear-oblong or lanceolate, base attenuate-cuneate. Flowers reddish, in axillary clusters forming whorls. Capsules depressed-globose, red.

Fls. & Frts.: December–March.


Distrib.: Common throughout, as weed of harvested rice fields, wet soil along stream banks.


Erect herbs; stems and branches more robust, 0.3–0.5 m tall. Leaves 1–2 x 0.2 cm, linear-oblong or oblong-lanceolate, base rounded or cordate. Flowers red, in dense axillary fascicles. Capsules 0.2–0.3 cm across.

Fls. & Frts.: October–December.


Distrib.: Common in marshes along stream banks. Osmanabad, Pune (Cooke, op. cit.), Ratnagiri (Cooke, op. cit.), Satara, Yavatmal.

Annual herbs, 15–35 cm tall. Leaves 0.5–2.5 x 0.1–0.4 cm, linear-oblong or elliptic-oblong, chartaceous. Flowers purplish-red, in axillary cymes. Capsules globose, 1.0–0.2 cm across, red.

Fls. & Frts.: September–March.


Distrib.: Common weed in harvested rice fields, along stream banks and along margins of tanks, etc.


Annual herbs; stems c 30 cm long, erect, sparsely branched, usually with one or two basal branches, 4-winged. Leaves simple, opposite, decussate, 0.3–0.5 x 0.05–0.3 cm, linear-oblong, base auriculate-cordate, entire, semi-amplexicaul. Flowers in axillary, simple or compound pedunculate cymes; calyx tube campanulate, c 0.1 cm long, lobes 4; petals 4, 0.5–0.1 cm long, pink. Capsules 0.2 cm across globose. Seeds many, minute, 0.04 x 0.03 cm, ovoid, brown.

Fls. & Frts.: October–November.

Illus.: Matthew & Nayar, op. cit.

Distrib.: Grows in paddy fields, river banks and other moist places. Nagpur (Matthew & Nayar, op. cit.).


Erect herbs, 20–40 cm tall. Leaves 3.7–6.2 x 0.2–0.5 cm, linear-lanceolate, base subauriculate. Flowers rose-coloured, in short peduncled, usually 3-flowered cymes. Capsules globose-ellipsioid, enclosed in the calyx.

Distrib.: Bombay (Cooke, op. cit.).


1. Capsules reddish ...  f. senegalensis
1. Capsules purple ...  f. indica
forma **senegalensis**.

Erect herbs, 15–20 cm tall. Leaves 2.0 x 0.2–0.5 cm, linear-oblong or lanceolate. Flowers bright red, in axillary clusters. Capsules globose, 0.2–0.3 cm across, reddish.

**Fls. & Frts.**: September–February.

**Distrib.**: Scarce in open, moist places. Nasik, Pune.


Erect or suberect herbs, 10–20 cm tall, simple or sparingly branched near base. Leaves linear-oblong or lanceolate, subacute. Capsules purple.

**Fls. & Frts.**: August–November.

**Distrib.**: Occasional. Nasik & Pune (Blatt. & Hallb. op. cit.).

**LAGERSTROEMIA** L.

1. Calyx ridges as many as sepals or reduced to warts or auricles:

   2. Leaves distinctly petiolate; fruiting calyx tube 0.2 cm deep ... **L. microcarpa**

   2. Leaves sessile or subsessile; fruiting calyx tube 0.6–0.9 cm deep ... **L. parviflora**

1. Calyx ridge twice the number of sepals ... **L. reginae**


Trees, 10–15 m tall. Leaves 6–10 x 3.5–5.0 cm, elliptic or elliptic-ovate. Flowers inodorous, in terminal panicles. Capsules 1.2–1.5 x 0.6–0.8 cm, ellipsoid, brownish-red.

**Fls. & Frts.**: March–June.


**Distrib.**: Frequent in moist deciduous forests. Ahmednagar, Dhule, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

Trees, 8–10 m tall. Leaves 5–9 x 2.5–4.0 cm, glabrous above, greyish-hairy beneath. Flowers white, in terminal and axillary panicked-cymes. Capsules 2–3 x 1.5–2.0 cm, ellipsoid, 3–4-valved.

Fls. & Frts.: June–October.


Distrib.: Common in hill forests and also planted.


Trees, 10–12 m tall. Leaves 8–12 x 3–6 cm, elliptic-oblong. Flowers purple, in large panicles. Capsules subglobose, 3 x 2.5 cm.

Fls. & Frts.: August–October.

Illus.: Wight, Ic. t. 413. 1843; Furtado & Srisuko, op. cit.

Distrib.: Infrequent along streams, sometimes planted. Ahmednagar, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

**Nesaea Commers. ex Juss.**


Annual, erect herbs, 8–15 cm tall. Leaves 1.2–2.0 x 0.1–0.15 cm, glabrous above, minutely puberulous beneath. Flowers rose coloured, in axillary clustered cymes. Capsules subglobose, 0.4 x 0.5 cm.

Fls. & Frts.: September–October.

Distrib.: Ratnagiri, Sindhudurg.
Rotala L.

1. Lower leaves alternate; upper bracts scale-like: R. floribunda

1. Lower and upper leaves decussate or whorled; bracts not scale-like:

2. Leaves in whorls of 3 or more, rarely decussate:
   3. Petals present: R. verticillaris
   3. Petals absent:
      4. Leaves in whorls of 3, base often sheathing; bracteoles longer than flowers: R. occultiflora
      4. Leaves in 3–8 whorls or rarely decussate, base not sheathing; bracteoles minute: R. mexicana

2. Leaves opposite–decussate:
   5. Appendages present between calyx lobes:
      6. Calyx lobes 4:
         7. Calyx lobes apiculate at apex; bracteoles equal or longer than calyx tube: R. illecebroides
         7. Calyx lobes obtuse at apex; bracteoles less than half as long as calyx tube: R. ritchiei
      6. Calyx lobes 5:
         8. Petals fimbriate: R. fimbriata
         8. Petals not fimbriate:
            9. Petals equaling calyx lobes; capsules exceeding calyx lobes: R. rosea
            9. Petals as long as calyx lobes; capsules not exceeding calyx lobes: R. densiflora
   5. Appendages absent between calyx lobes:
      10. Capsules opening by 4 valves:
          11. Anthers and stigmas included within calyx; bracts longer than wide: R. rotundifolia
          11. Anthers and stigmas exerted beyond calyx; bracts wider than long: R. macrandra
      10. Capsules opening by 2 or 3 valves:
          12. Leaves with distinct cartilaginous margins: R. indica
          12. Leaves without cartilaginous margins: R. serpyllifolia

Erect herbs, 7–25 cm tall, rooting at basal nodes. Leaves 0.8–1.5 x 0.3–0.5 cm, linear–oblong or linear–lanceolate. Flowers pinkish, in axils of bracts. Capsules globose or subglobose, reddish.

Fls. & Frts.: August–November.


Distrib.: Frequent in moist places, along streams.


Fls. & Frts.: September–October.

Illus.: Wight, op. cit.; C.D.K. Cook, op. cit.

Distrib.: Rare. Found in paddy fields. Sindhudurg (S. M. Almeida, op. cit.).


Herbs, creeping at base, erect above, 15–30 cm long. Leaves 0.5 cm long, linear to lanceolate. Flowers pink–violet, in dense, terminal, globose-racemes. Capsules ovoid to ellipsoid, opening by 2 valves.

Fls. & Frts.: October–February.


Distrib.: Rare, in rocky areas. Satara.

Annual herbs, creeping and rooting below, 10–15 cm long. Leaves oblong, apex acute. Flowers purple, all over the stems, in axillary clusters. Capsules subglobose, minute, red.

Fls. & Frts.: July–February.


Distrib.: Occasional in moist places, wet rice fields. Nanded, Nagpur (Ugemuge, 1986), Sindhudurg (S. M. Almeida, op. cit.).


Erect, annual herbs, ascending up to 25 cm high, rooting at lower nodes. Leaves 0.5–1.7 x 0.4–0.8 cm, obovate or nearly so or narrowly oblong. Flowers pink or red, in axillary or solitary, terminal spikes. Capsules 0.2 cm long, ellipsoid.

Fls. & Frts.: November–February.


Distrib.: Infrequent in water logged areas, damp places and harvested fields. Chandrapur, Nanded, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane, Yavatmal.


Procumbent herbs, 20–40 cm long, rooting at basal nodes. Leaves 1.0–2.2 x 1.1–2.2 cm, ovate to orbicular. Flowers pink, in compact spikes, in bracts. Capsules globose, 0.15 cm across.

Fls. & Frts.: October–February.

Illus.: Wight, Ic. t. 258. 1840; C.D.K. Cook, op. cit.
Distrib. : Occasional in wet places. Ratnagiri, Sindhudurg.


Creeping or erect caespitose or tufted herbs; stem and branches filiform, 8–20 cm long. Leaves 3–15 x 0.5–1.0 cm, filiform to linear. Flowers axillary, solitary, sessile. Capsules globose, 2–3–valved, brown. Seeds ellipsoid, brown.

**Fls. & Frts.** : September–January.

Distrib. : Rare on damp soil along margins of ponds. Nanded (Naik, op. cit.).


Annual, erect, delicate herbs, 8–10 cm tall. Leaves 0.5–1.2 x 0.1 cm, basal leaves linear, upper leaves linear to ovate. Flowers pink, minute, axillary, solitary. Capsules 0.15 cm long, ellipsoid.

**Fls. & Frts.** : August–October.


Distrib. : Occasional in wet places. Akola, Bombay (Cooke, op. cit.), Nanded, Nasik (Cooke, op. cit.), Pune, Raigad, Ratnagiri, Sindhudurg, Thane.


Annual or perennial herbs, 30–40 cm long. Leaves 1.0–1.2 x 0.5–0.6 cm, elliptic-oblong, apex rounded. Flowers pale rose coloured, axillary, solitary. Capsules ellipsoid, included in calyx.

**Fls. & Frts.** : October–December.


Distrib. : Rare, found floating along banks of ponds at Pune.

Annual herbs, 10–15 cm tall. Leaves 0.5–2.5 x 0.1–0.8 cm, linear–lanceolate or ovate–oblong. Flowers pale pink, axillary and solitary in axils of bracts forming compact spikes. Capsules globose, c 0.5 cm long, red.

Fls. & Frts.: September–November.


Distrib.: Infrequent in wet areas. Ahmednagar, Nanded, Ratnagiri, Sindhudurg, Thane.


Procumbent herbs, creeping or floating, 15–30 cm long. Leaves 1.2–2.0 x 1.4–2.4 cm, obovate to orbicular. Flowers rose coloured, in terminal spikes. Capsules globose, c 0.15 cm across. Seeds ellipsoid, yellowish–brown.

Fls. & Frts.: September–December.

Illus.: Wight, Ic. t. 258. 1839; C.D.K. Cook, op. cit.

Distrib.: Frequent in wet areas, rice fields. Kolhapur, Nanded, Ratnagiri, Sindhudurg, Solapur.


Tiny, erect, annual herbs, 4–17 cm tall. Leaves 0.4–1.0 x 0.3–0.7 cm, broadly ovate to elliptic. Flowers reddish, in terminal spikes or spicate racemes on filiform peduncles. Capsules ellipsoid, 0.1–0.2 cm long.

Annual or perennial, procumbent herbs, 7.5–13.0 cm tall. Leaves 0.5–0.9 x 0.1–0.15 cm, linear, in whorls of 4–8. Flowers rosy pink, in axillary whorls. Capsules ellipsoid, as broad as long. Seeds obovoid.

**Fls. & Frts. : October–March.**

**Illus. : C.D.K. Cook, op. cit.**

**Distrib. : Common in wet areas and on riverbeds.**

**WOODFORDIA Salisb.**


Shrubs or undershrubs, 2–3 m tall. Leaves 3.5–8.0 x 1.2–2.5 cm, oblong-lanceolate, glabrous above and glandular punctate beneath. Flowers red, in racemes in axils of fallen leaves. Capsules 0.8–1.0 cm long, ellipsoid, enclosed by persistent calyx tube.

**Fls. & Frts. : May–June.**

**Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 58, f. 322. 1911.**

**Distrib. : Common throughout.**

**CULTIVATED & INTRODUCED SPECIES:**

**Lagerstroemia indica** L. Syst. Nat. ed. 10: 1076. 1759; C.B.Cl. in Hook. f. Fl. India 2 : 575. 1879. 'Chinaimendhi'.

Handsome shrubs, 2–3 m tall. Leaves 2–5 x 1.5–2.5 cm. Flowers white, pink or red, in short, 2–3-flowered paniculate cymes. Capsules globose, c 1 cm across, acute at apex. Seeds compressed, winged at one end.
Fls. & Frts.: May–August.

Distrib.: It is a native of China, cultivated for ornamental purpose. Aurangabad, Buldhana, Chandrapur, Osmanabad, Pune.


Tall trees; young parts clothed with fulvous, stellate tomentum. Leaves alternate, 15–22 x 4.5 cm, lanceolate or ovate-oblong, acute or acuminate at apex, rounded or subacute at base, glabrous above, tomentose beneath. Flowers in dense, terminal panicles; calyx fulvous tomentose; petals dull white. Capsules 12–15 x 5–6 mm, ellipsoid, glabrous with crown of reflexed calyx teeth. Seeds compressed, winged at one end.

Fls. & Frts.: February–June.

Distrib.: Aurangabad (Naik, op. cit.).


Fls. & Frts.: June–December

Distrib.: Commonly cultivated.

**SONNERATIACEAE**

(P. Lakshminarasimhan & P. Venkanna)

**SONNERATIA** L. f.

1. Leaves linear-oblong; calyx 4-5-lobed; petals absent; stamens included or slightly exerted; style shorter than stamens; stigma umbrella shaped

2. Leaves oblong or obovate-elliptic; calyx 6-lobed; petals 6; stamens much exerted; style longer than stamens; stigma not umbrella shaped

Trees, 6–10 m high; branches slender, drooping. Leaves 5–10 x 2.5–4.0 cm, thick, apex obtuse; main nerves 10–12 pairs, obscure. Flowers 3-together; calyx cup shaped; stamens slightly exserted. Berries indehiscent, c 2 cm broad, depressed–globose, tipped with style, smooth.

Fls. & Frts.: January–April.


Distrib.: Common in the tidal forests, along the creeks. Bombay, (Cooke, op. cit.), Raigad, Ratnagiri, Sindhudurg, Thane.


Trees, c 5 m tall. Leaves 6–13 x 2–5 cm, apex obtuse. Flowers terminal, solitary, buds ellipsoid; calyx tube hemispheric, lobes lanceolate–oblong, acute; corolla 6, linear–oblong, dark rose coloured. Berries indehiscent, 2.5–5.0 cm across, cushion–shaped, with persistent calyx.

Fls. & Frts.: February–August.


Distrib.: Common on the tidal zones along the creeks. Bombay (Cooke, op. cit.), Raigad, Ratnagiri, Sindhudurg.

**CULTIVATED SPECIES:**


Trees, c 15 m high; branches pendent. Leaves oblong, acute, upto 20 x 7 cm. Flowers white, in large, terminal panicles. Capsules globose, 4-valved.

Fls. & Frts.: April–June.
Distrib.: Introduced in gardens as an ornamental plant. Satara.

PUNICACEAE
(P. Venkanna & P. V. Prasanna)

CULTIVATED SPECIES:

Shrubs or small trees, c 6 m tall. Leaves 2–6 x 1–2 cm, oblong-lanceolate, obtuse at apex. Flowers 3 cm across; sepals persistent; petals red; stamens many. Fruit a berry with numerous seeds surrounded by juicy pulp.

Fls. & Frts.: August–November.


Distrib.: Planted for fruits throughout the state.

ONAGRACEAE
(P. Venkanna & P. V. Prasanna)

LUDWIGIA L. ('Ludvigia')

1. Aquatic herbs; stems with aerophores; flowers 5-merous... L. adscendens
   1. Terrestrial herbs; stems not as above; flowers 4-merous:
      2. Stamens 4; capsules stout, oblong:
         3. Petals elliptic; capsules inflated... L. perennis
         3. Petals narrowly spatulate; capsules not inflated... L. prostrata
      2. Stamens 8; capsules narrowly linear:
         4. Flowers less than 1 cm across; seeds embedded in endocarp... L. hyssopifolia
         4. Flowers more than 2 cm across; seeds not as above:
            5. Lateral veins more than 20; capsules glabrous... L. erecta
            5. Lateral veins less than 20; capsules tomentose... L. octovalvis
Bombay 1: 549. 1958 (Repr.).

Herbs with prostrate or ascending stems, rooting at nodes, c 4 m
long. Leaves 0.4–7.0 x 0.7–4.0 cm, oblong–elliptic, base cuneate; lateral
veins 6–13. Flowers solitary, axillary; sepals deltoid–acuminate; petals
white, yellow at base, obovate; stamens 10, epipetalous; disc slightly
elevated. Capsules terete, 1.2–2.7 cm long, light brown, with 10
conspicuous dark brown ribs.

Distrib.: Common in marshy places or in ponds. Thane, Yavatmal.

L. erecta (L.) Hara in J. Jap. Bot. 28: 292. 1953; Raven in

Herbs, 0.3–3.0 m tall, erect, subglabrous. Leaves 2–13 x 0.2–4.5
cm, lanceolate to elliptic, rarely ovate. Flowers solitary, axillary; sepals
acuminate, 0.3–0.5 cm long; stamens subequal. Capsules 1–2 cm long,
with 4 prominent dark brown ribs.

Distrib.: Rare in wet places. Bombay (Sreem. op. cit.).

L. hyssopifolia (G. Don) Exell in Garcia de Orta 5:471. 1957;

Herbs, 0.5–3.0 m tall, often woody at base; young parts minutely
puberulent. Leaves 1–9 x 0.2–3.0 cm, lanceolate, base narrowly
cuneate; lateral veins 11–17. Flowers solitary, axillary; sepals 0.2–0.4
cm long, lanceolate, finely puberulent, 3–nerved; petals yellow, drying
orange–yellow, elliptic; stamens pale greenish–yellow; disc slightly
elevated. Capsules thin walled, finely puberulent, 1.5–3.0 cm long,
subterete.


1. Leaves subovate
1. Leaves lanceolate or linear

ssp. *octovalvis*.

Herbs, up to 2 m tall, robust, branched, woody at base, subglabrous, puberulent or densely villous. Leaves 0.7–4.5 x 0.1–4.0 cm, base tapering. Sepals c 0.15 cm long, ovate or lanceolate; petals yellow, broadly ovate or cuneate; stamens epipetalous; disc slightly raised. Capsules 1.7–4.5 cm long, thin walled, terete, pale brown with 8 dark ribs.

Fls. & Frts.: August–March.


Herbs, 0.5–1.5 m tall; stems woody below, much branched. Leaves 5–15 x 1.5–2.0 cm, sessile or nearly so, glabrescent or pubescent, sometimes villous. Flowers yellow; calyx hairy; corolla obovate. Capsules 2.5–3.5 cm long, angled, tapering towards base, 8–ribbed. Seeds ovoid, brown.

Fls. & Frts.: August–March.


Distrib.: Common in wet places. Ahmednagar, Bombay (Babu, op. cit.), Bhandara, Chandrapur, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Herbs, 0.5–1.5 m tall; stems woody below, much branched. Leaves 5–15 x 1.5–2.0 cm, sessile or nearly so, glabrescent or pubescent, sometimes villous. Flowers yellow; calyx hairy; corolla obovate. Capsules 2.5–3.5 cm long, angled, tapering towards base, 8–ribbed. Seeds ovoid, brown.

Fls. & Frts.: August–March.

Distrib.: Common in marshy places. Bhandara, Chandrapur, Pune, Ratnagiri, Satara, Sindhudurg, Thane.


Annual, erect herbs, 0.5–1.0 m tall, subglabrous or minutely puberulent on young parts. Leaves 1–11 x 0.3–2.7 cm, narrowly elliptic to lanceolate, base cuneate; main veins 6–12; petioles 0.02–0.15 cm long, winged. Flowers solitary or clustered, axillary, minutely puberulent; petals yellow, 1–3 mm long, elliptical; stamens rarely more than 4; disc slightly elevated. Capsules 0.3–1.6 cm long, thin walled, irregularly dehiscent. Seeds pluriseriate in each locule, free.

Fls. & Frts.: July–August.


Distrib.: Common throughout in wet places.


Herbs, annual, 0.6–1.0 m tall, subglabrous, often reddish tinged. Leaves 1–13 x 0.3–2.7 cm, elliptic, glabrous or slightly hairy along veins; submarginal veins weakly developed. Sepals 4, 1.3–2.5 mm long, deltoid; petals yellow; disc slightly elevated. Capsules thin walled, 4–angled, pale brown. Seeds uniseriate, pale brown.


Illus.: Wight, Ic. t. 762. 1844; Raven, op. cit. (Capsule only).

Distrib.: Rare in moist rice fields. Raigad.

**CULTIVATED SPECIES:**


Well branched perennial herbs, prostrate or ascending. Leaves alternate, ovate-lanceolate, sparsely hairy. Flowers pink, axillary, solitary. Capsules clavate, pubescent.
Fls. & Frts.: January–December.

Distrib.: It is a Native of America, naturalised throughout the warmer regions of the world. Pune, Satara.

**TRAPACEAE**

(P. Lakshminarasimhan & P. Venkanna)

**Trapa L.**


Herbs, annuals, floating. Leaves 3–5 x 5.5–7.0 cm, crowded, submerged leaves pinnatisect, segments filiform, dentate at apex, densely pubescent below; stipules caducous; petioles 3–12 cm long with fusiform swelling at upper end. Flowers tubular, white; sepals 0.7 cm long; petals oblong with elongated narrow base; disc c 0.3 cm wide. Nuts 2.0–3.8 cm across, bihorned.

Fls. & Frts.: July–November.

Distrib.: Found in ponds occasionally, often cultivated. Raigad, Thane, Yavatmal.

**TURNERACEAE**

(P. Lakshminarasimhan & P. Venkanna)

**Turnera L.**


1. Bracteoles with two glands; pedicels adnate to petiole at base ... var. *ulmifolia*
1. Bracteoles eglandular; pedicels adnate to petiole along entire length ... var. *elegans*

var. *ulmifolia*.

Perennial herbs, c 1 m high; branchlets glandular pubescent. Leaves 4–15 x 1.5–3.5 cm, chartaceous, lanceolate, 15-nerved,

Fls. & Frts.: June–November.
Illus.: Backer in Steenis, op. cit.

Distrib.: Native of West Indies, naturalised as a weed in waste lands and along roadsides, cultivated in gardens as an ornamental plant. Aurangabad, Bhandara, Bombay, Chandrapur, Nanded, Pune, Raigad, Sindhudurg, Thane.


Herbs, up to 80 cm high, covered with downy pubescence. Leaves 2.5–5.5 cm long, ovate-oblong, obtuse at apex, cuneate and slightly decurrent at base, crenate-dentate along margins, hairy, 7–9-nerved; petioles with 2 discoid foliar glands. Flowers c 1.5 cm across; petals pale yellow. Capsules globose, c 5mm long, pubescent.

Fls. & Frts.: September–December.

Distrib.: Trombay–Bombay (Almeida, op. cit.).

PASSIFLORACEAE
(P. Venkanna & P. V. Prasanna)

1. Flowers bisexual; corona present ... PASSIFLORA
1. Flowers unisexual; corona absent ... ADENIA

ADENIA Forssk.


Perennial herbs, woody at base; stem thickened at nodes, terete. Leaves 10–13 x 15–18 cm, cordate, entire or deeply palmately 5-lobed, membranous, shining; nerves and veins conspicuous. Flowers in opposite cymes, on a long axillary peduncle; male flowers with calyx campanulate; petals linear-obleng, ciliate; stamens distant; female flowers: calyx & corolla as in males. Capsules 15 cm across, globose, shortly stalked. Seeds compressed.

Fls. & Frts.: April–May.

Distrib. : Occasional in deciduous forests. Sindhudurg.

PASSIFLORA L.


Weak stemmed climbers, glandular hairy and tendrillar. Leaves 5–7 x 4–6 cm, 3-lobed, often serrate. Flowers white, axillary, solitary; bracts deeply pinnatisect, filiform; gynophore present. Berries 2.5–3.5 cm across, ovoid.

Fls. & Frts. : September–March.


Distrib. : A native of S. America, frequently found as a weed along hedges, also cultivated in gardens.

**CULTIVATED SPECIES:**


Extensive climbers; stems terete. Leaves divided into 5 lanceolate lobes. Flowers purple with whitish tinge, solitary; corona in two series. Fruits orange–golden in colour.

Fls. & Frts. : May–September.

Illus. : Bor & Raiz. op. cit.

Distrib. : Cultivated in gardens. Sindhudurg.


Fls. & Frts. : March–October.

Distrib.: A native of Brazil, cultivated in gardens, for its showy flowers. Chandrapur, Osmanabad, Sindhudurg.


Woody climbing shrubs; stem silky pubescent. Leaves c 10 x 8 cm, ovate, shallowly 3-lobed, covered with silky pubescence on both surfaces. Inflorescence with 2 or more flowers in umbels. Flowers white, sweet scented.

Fls.: May–August.

Illus.: Bor & Raiz. op. cit.

Distrib.: Cultivated in gardens. Pune.


Perennial climbers; stems wiry. Leaves broadly cordate, 3-lobed, 8-15 x 6–10 cm. Flowers axillary, c 8 cm long, white with purplish tinge. Fruits ovoid, c 5 cm long, edible.


Illus.: Bor & Raiz. op. cit.

Distrib.: Cultivated as ornamental. Sindhudurg.


Climbers; stems terete. Leaves entire, ovate-oblong. Flowers white or blue with red spots. Fruits ovoid, c 7.5 cm long, yellow. edible.

Fls. & Frts.: September–November.

Distrib.: It is a tropical American species. Bombay (Cooke, op. cit.).


Robust climbers with quadrangular stem. Leaves 10–20 x 8–10 cm, broadly ovate-oblong, acuminate at apex, truncate at base; petiole winged below. Flowers white, solitary or in pairs, in axils; corona double. Fruit c 5 cm long, edible.
FIs. & Frts.: Throughout the year.

Illus.: Bor & Raiz. Some Beautiful Indian Climbers & Shrubs f. 142. 1954.

Distrib.: Cultivated. Sindhudurg.


Climbing shrubs. Leaves 8–10 x 7.5 cm, shallowly cordate at base; stipules foliaceous. Inflorescence a pendulous raceme c 20 cm long. Flowers deep red or scarlet, solitary c 10 cm across. Fruit a berry, trisulcate, many seeded.

FIs. & Frts.: April–August.

Distrib.: Commonly cultivated.


Slender climbers. Leaves shallowly cordate. Flowers bright red.

Distrib.: It is native of Brazil. Cultivated. Bombay (Cooke, op. cit.).


Climbers. Leaves 3-lobed, cordate, glaucous. Flowers fragrant, white to greenish–white.

Distrib.: It is a native of central America. Cultivated in Bombay.

**CARICACEAE**

(P. Venkanna & P. V. Prasanna)

**CULTIVATED SPECIES**:


Dioecious trees, c 7.5 m tall; stem with copious latex. Leaves 30–62 cm across, palmately and deeply 7-lobed, each lobe is pinnately lobed again. Flowers greenish–yellow, unisexual, fragrant. Berries fleshy, ovoid-oblong, yellow when ripe. Seeds black.
**FLORA OF MAHARASHTRA STATE**

- **Fls.** : November–March.
- **Frts.** : January–December.
- **Distrib.** : Widely cultivated throughout the state.
- **Note** : It is a native of Tropical America.

### CUCURBITACEAE

(K. Madhusudan Rao)

1. Petals fimbriate

1. Petals not as above:

2. Ovules pendulous

2. Ovules otherwise, not pendulous:

3. Calyx with scales; male flowers with spathaceous bracts

3. Calyx without scales; male flowers not as above:

4. Tendrils branched:

5. Male flowers in racemes

5. Male flowers solitary or clustered:

6. Tendrils bifid; seeds belted at centre

6. Tendrils 2–3–fid; seeds not as above

4. Tendrils unbranched:

7. Anther cells flexuose:

8. Corolla 5 partite, divided up to 3/4 the length or up to base; filament of anthers free:

9. Calyx lobes subulate; connective of anthers produced

9. Calyx connective of anthers not produced; lobes triangular

8. Corolla campanulate, divided up to 1/2 the length; filaments of anthers connate

7. Anther cells not flexuose:

10. Style inserted on a prominent disc:

11. Leaf base amplexicaul

11. Leaf base not as above:

12. Fruits globose:
<table>
<thead>
<tr>
<th></th>
<th>Fruiting peduncles 0–6 mm long; seeds grey or ashy</th>
<th>Mukia</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.</td>
<td>Fruiting peduncles 5–10 mm long; seeds brown</td>
<td>Zehneria</td>
</tr>
<tr>
<td>12.</td>
<td>Fruits not as above:</td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>Anthers dilate; fruits c 6–costate, puberulous</td>
<td>Zehneria</td>
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<tr>
<td>14.</td>
<td>Anthers not as above; fruits not costate, hirsute</td>
<td>Cucumella</td>
</tr>
<tr>
<td>10.</td>
<td>Style base naked, not inserted on a disc or disc obscure:</td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>Fruits dehiscing by an operculum</td>
<td>Corallocarpus</td>
</tr>
<tr>
<td>15.</td>
<td>Fruits indehiscent or if dehiscent then not dehiscing by an operculum:</td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>Petioles bracteate at base</td>
<td>Tenolepis</td>
</tr>
<tr>
<td>16.</td>
<td>Petioles ebracteate at base:</td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>Connectives 2–fid or 2–partite, produced beyond cell</td>
<td>Kedrostis</td>
</tr>
<tr>
<td>17.</td>
<td>Connectives not branched and not produced beyond cell:</td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>Male flowers in racemes</td>
<td>Bryonia</td>
</tr>
<tr>
<td>18.</td>
<td>Male flowers solitary or in fascicles</td>
<td>Dicaelospermum</td>
</tr>
</tbody>
</table>


**Fls. & Frts.** May – September.

**Distrib.** Infrequent. Bombay (Chakr. op. cit.).
**CITRULLUS** Schrad. (nom. cons.)


Herbs, perennial, prostrate, scabrid; stems diffuse, hirsute, angled. Leaves 4–10 x 1.5–9.0 cm, deeply 3–7–lobed, lobes acute or subacute. Flowers (male & female) pale yellow, axillary, solitary; calyx hispid; corolla–lobes ovate; ovary in female flowers obovate, hirsute. Berries globose-depressed, 5–7 cm across, variegated green and white. Seeds ovoid-oblong, yellowish.

**Fls. & Frts.** : July–October.

**Illus.** : Wight, Ic. t. 498. 1841; Chakr. op. cit.

**Distrib.** : Frequent along river banks. Ahmednagar, Aurangabad, Bombay (Cooke, op. cit.), Osmanabad, Parbhani, Pune, Satara, Solapur.

**COCCINIA** Wight & Arn.


Climbers, slender, herbaceous. Leaves 2.9–12.0 x 2.6–11.0 cm, broadly ovate or ovate-triangular, entire or 3–5–angled or palmately lobed. Flowers (male & female) white, axillary, solitary. Fruits baccate, pulp red, subglabrous, rounded at both ends. Seeds 6–7 x 2.5–4.0 mm, compressed, oblong, yellowish, smooth.

**Fls. & Frts.** : March–December.


**Distrib.** : Frequent on hedges. Akola, Chandrapur, Kolhapur, Nasik, Osmanabad, Raigad, Satara, Ratnagiri, Sindhudurg, Thane, Yavatmal.
**CORALLOCARPIUS Welw.**


Herbs, prostrate or climbing, monoecious; stem slender, sulcate. Leaves 2–5 cm long, as broad as long, suborbicular, 3–lobed, scabrid. Flowers greenish–yellow, males in axillary racemes, female flowers usually solitary on short peduncles. Berries ovoid, beaked, 2–4 cm long. Seeds 6–9, brown, marginate.

Fls. & Frts.: August–October.


Distrib.: Frequent on slopes and hedges. Ahmednagar, Bombay (Chakr. op. cit.), Nasik, Osmanabad, Pune, Satara, Solapur.

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**Ctenolepis Hook. f.**

1. Male flowers pedicellate on 2 cm long peduncles; berries globose
   ...  C. cerasiformis

1. Male flowers sessile, on 1.0–1.5 cm long peduncles; berries kidney or hammer shaped
   ...  C. garcinii


Climbers; stem much branched, filiform. Leaves 3–6 x 4–5 cm, lobed or tripartite, lobes ovate or nearly orbicular, villose-hirsute, ultimately white punctate. Flowers pale yellow; bracts orbicular, reniform, long ciliated. Seeds ovoid, grey or dusky.

Fls. & Frts.: August–October.

Distrib.: Infrequent, annual climbers on hedges. Bombay (Chakr. op. cit.), Dhule.

Climbers; branches subfiliform, drying black. Leaves 2.0–3.5 x 2.0–5.0 cm, deeply 5-lobed, lobes subequal, obovate or ovate, acute, villous on both sides. Flowers dull white: male flowers 3–4 on thin peduncles; female flowers solitary on short peduncles; calyx tube short, ovary ovoid. Berries 0.6–0.8 cm long, reddish, smooth. Seeds dark, grey, oblong, marginate.

Fls. & Frts.: October–December.


Distrib.: Frequent on hedges. Ahmednagar, Aurangabad (Chakr. op. cit.), Bombay (Chakr. op. cit.), Beed, Chandrapur, Dhule, Jalgaon, Jalna, Nanded, Nasik, Thane, Yavatmal.

**Cucumella Chiôv.**


Herbs, climbing, slender, monoecious; stems slender, pilose. Leaves 2–4 cm long, as broad as long, base cordate, 5-angular, margins undulate, denticulate. Male flowers shortly pedicellate, dusky; female flowers solitary or few on the male axil. Berries elongate-linear, rostrate. Seeds ovoid-oblong, dusky, emarginate.

Fls. & Frts.: March–April.

Illus.: Chakr. op. cit.

Distrib.: Climbers on hills. Ratnagiri, Sindhudurg (Chakr. op. cit.).

**Cucumis L.**

1. Fruits glabrous or pubescent
2. Fruits bristly setose or echinate:
   2.1. Fruits bristly setose
   2.2. Fruits echinate

Herbs, climbing, perennial, prostrate; stems angular, rigid hairy. Leaves 2–7 x 2.0–6.0 cm, suborbicular, subhirsute on both sides, margins dentate. Flowers yellow; male & female flowers solitary. Berries polymorphous, 3 cm long, oblong or obovoid, green or yellow. Seeds numerous, oblong or ellipsoid, white.

Fls. & Frts. : July–December.


Distrib. :Common on hill slopes. Ahmednagar, Akola, Bombay, Chandrapur, Dhule, Nasik, Osmanabad, Pune, Raigad, Ratnagiri, Satara, Thane.


Herbs, prostrate or climbing, perennial; stems greyish–white, angular, branched; tendrils filiform. Leaves polymorphous, 2 to 4 cm long, as broad as long, base cordate or truncate, frequently 3–lobed, margins crisped, scabrous. Male flowers fascicled, calyx tube subcylindric; female flowers solitary. Berries sparsely echinate. Seeds oblong, emarginate.

Fls. & Frts. : April–August.


Distrib. : Occasional in dry areas. Ahmednagar, Amravati.

Cucumis prophetarum L.
Herbs, trailing, annual; stems slender. Leaves 4–6 cm long, membranous, ovate-triangular, slightly trilobed, margins denticulate. Male flowers fasciculate; calyx & corolla villous, hispid; female flowers solitary; ovary oblong, villous. Berries oblong, 2–5 cm long. Seeds straw-coloured, smooth, faintly margined.

Fls. & Frts.: September–October.

Illus.: Chakr. op. cit.; Bhogaonkar & Devarkar, Additions to the Fl. of Melghat 18, figs. A–F. 1999.

Distrib.: Frequent along the Sahyadris. Amravati, Aurangabad, Jalna, Kolhapur, Nanded, Nasik, Pune, Satara, Thane.

Dicaelospermum C.B.Cl.


Herbs, scandent, scabrous, slender. Leaves 6 to 9 cm long, ovate, base cordate or subhastate. Flowers fascicled, male & female flowers in same axil; corolla deeply 5-lobed; peduncles filiform, hairy. Berries dry, depressed-globose, unilocular. Seeds 3, erect, inserted at the base.

Fls & Frts.: August–October.

Distrib.: Climbers, occasional in deciduous forests, over bushes. Ahmednagar, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

Diplocyclos (Endl.) van Post & O. Ktze.


Illus.: Wight, l.c. t. 500. 1841 (Bryonopsis laciniosa); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 297. 1982; Chakr. op. cit.

Distrib.: Found on hill slopes and valleys. Ahmednagar, Akola, Chandrapur, Nasik, Osmanabad, Pune, Raigad, Satara, Thane, Yavatmal.

Notes.: According to Jeffrey (1962), Bryonia laciniosa L. known for a long time as Bryonopsis laciniosa (L.) Naud. should be called as Cayaponia laciniosa (L.) Jeffrey, op. cit. 346 and is endemic to Jamaica.

**Kedrostis Medik.**


Herbs; stems pilose, scandent or trailing. Leaves 1.5–4.0 x 1–5 cm, broadly ovate, 3–lobed, hispid. Flowers yellow, axillary: male flowers 2–4, in racemes, females solitary or fascicled. Berries 1.0–1.2 x 0.6–0.8 cm, ovoid, beaked, deep red when mature. Seeds ellipsoid, smooth, turgid.

Fls & Frts.: July–September.


Distrib.: Infrequent on hedges. Aurangabad, Bombay (Chakr. op. cit.), Parbhani, Raigad, Ratnagiri, Satara, Sindhudurg.

**Luffa Mill.**

1. Stamens 5 ... L. graveolens
2. Stamens 3:
2.1. Fruits 10–angled ... L. acutangula
2.2. Fruits not angled ... L. echinata

Luffa acutangula (L.) Roxb.
A-Habit sketch with flowers; B-Part of stem and a leaf with a glandular fleshy probract; C-A male flower cut open to show 3-stamens; D-A female flower longitudinally cut to show style and stigma; E-Fruit; F-T.s. of fruit; G-Seeds
Annuals, extensive climbers; stems slender. Leaves 15 x 20 cm, broadly ovate, entire or 3–7–lobed, membranous with glands on upper surface. Flowers pale yellow, 2.5–3.0 cm across, male & female flowers in same axil. Berries linear–obvoid or clavate–oblong, angled. Seeds black, ovoid, flat.

Fls. & Frts.: June–October.

Illus.: Ic. Roxb. Fasc. 8, t. 11. 1978 [Repr. ed. (Luffa acutangula var. amara)]; Chakr. op. cit.

Distrib.: Common on hedges and bushes. Bombay (Cooke, op. cit.), Chandrapur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane, Yavatmal.


Climbers, herbaceous; stems elongate, sulcate; plants dioecious. Leaves 3–7 x 5–8 cm, shallowly 3–5–angled or lobed, subreniform, scabrid on both surfaces. Flowers yellow; calyx villous; male flowers 5–12; females solitary. Berries ellipsoid or ovoid, ashy, densely bristly. Seeds ovoid, black, slightly verrucose.

Fls. & Frts.: August–September.


Distrib.: Infrequent on hedges. Bombay (Chakr. op. cit.), Dhule, Pune (Chakr. op. cit.).


Climbers, monoecious; stems smooth. Leaves upper surface scabrid, 4–12 cm as long as broad, almost round, apex acute and apiculate, 5–lobed, margins denticulate. Flowers axillary, bright yellow; male & female flowers clustered in axils. Berries c 6 x 3 cm, ovoid, grey, tubercular or spinous. Seeds oblong, grey or white.

Fls. & Frts.: August–September.

Illus.: Ic. Roxb. Fasc. 8, t. 9. 1978 (Repr. ed.).

Distrib.: Infrequent in the area. Bombay (Chakr. op. cit.).
Momordica balsamina L.
1. Roots tuberous
   ... M. cymbalaria
1. Roots not tuberous:
   2. Plants monoecious
      ... M. balsamina
   2. Plants dioecious
      ... M. dioica


Climbers; stems slender, herbaceous, glabrous or sparsely hairy. Leaves 4 to 7 cm as long as broad, nearly orbicular, 3–5-lobed, lobes rhomboid, membranous. Flowers bright yellow; male and female flowers solitary. Berries 3–6 cm long, broadly ovoid, fusiform, muricate or echinate, beaked. Seeds slightly turgid, smooth or sculptured.

Fls. & Frts.: Throughout the year.


Distrib.: Infrequent over hedges. Amravati, Chandrapur, Deccan (Rare - Cooke, op. cit.).


Climbers, perennial; stems herbaceous, slender, striate. Leaves 2.0–4.5 x 2.5–5.0 cm, shallowly 5–7-lobed, orbicular, reniform, margins entire. Flowers yellow, male and female flowers in 1.0–2.5 cm long racemes. Berries 1–2 cm long, broadly fusiform or pyriform with 8 sharp ridges. Seeds broadly ovoid, blackish-grey, smooth.

Fls. Frts.: July–November.

Illus.: Ic. Roxb. Fasc. 8, t. 12. 1978 (Repr ed.).

Distrib.: Frequent on hedges. Akola, Nasik (Cooke, op. cit.), Satara, Solapur, Yavatmal.

Herbs, perennial with tuberous roots; stems slender. Leaves 10 x 8 cm, variable, cordate at base, 3–5-lobed, lobes triangular, ovate or oblong, margins serrate. Male flowers solitary, yellow, on slender peduncles, bracteate; female flowers with ebracteate peduncles. Fruits baccate, ellipsoid, shortly beaked, densely echinate with soft spines. Seeds many, broadly ellipsoid, enclosed in a red pulp.

Fls. & Frts.: June–October.


Distrib.: Common among bushes near human inhabitations. Ahmednagar, Akola, Nasik, Raigad, Satara, Sindhudurg, Yavatmal.

**Mukia Arn.**

1. Seeds smooth; leaves softly villous beneath ...
   M. leiosperma
1. Seeds scrobiculate; leaves hirsute or scabrid beneath ...
   M. maderaspatana


Herbs, scandent; stems angular-sulcate, villose, robust. Leaves 6–8 x 4.6 cm, ovate-cordate, angular or shallowly lobed, margins denticulate, densely villous. Flowers both male and female fasciculate; calyx villous; corolla puberulous. Fruits 10–13 mm across, baccate, globose, smooth. Seeds ovoid, turgid, distinctly marginate.

Fls. & Frts.: July–September.

Distrib.: Infrequent in moist deciduous forests. Kolhapur (Cooke, op. cit.), Pune (Chakr. op. cit.), Raigad.

Herbs, annual, prostrate or climbing; stems sulcate Leaves 4–15 x 3–12 cm, margins entire or shallowly 3–5–angled or lobed, ovate-triangular. Flowers yellow, axillary, fascicled, female ones sometimes solitary; fruiting peduncles almost absent. Fruits globose, baccate, red when ripe.

Fls. & Frts. : July–October.


Distrib. : Common throughout in the state.

Notes. : Coccinia cordifolia (L.) Cogn is a synonym of Mukia maderaspatana, but has been widely misapplied to Coccinia grandis (L.) Voigt in a number of floras (Jeffrey, op. cit.).

**Solena amplexicaulis** (Lam.) Lour.

Climbers, perennial; stems slender, sulcate. Leaves c 6 x 5 cm, variable, ovate, deltoid-ovate, ovate-oblong or suborbicular, apex acute, base deeply cordate or sagittate. Flowers 0.5–0.7 cm long, creamy-yellow, axillary, subsessile or shortly pedicelled; male flowers subumbellate; females solitary. Berries ellipsoid, broadly ovoid, rostrate, ribbed, red when ripe. Seeds 3–4, grey, turgid, marginate.

Fls. & Frts. : July-January.

Trichosanthes L.

1. Male flowers in racemes; anthers connate:
   2. Leaf margins entire
   3. Bracts in male racemes minute
   4. Sepals entire
   ... T. nervifolia

2. Leaf margins lobed:
   3. Bracts in male racemes large, conspicuous:
      4. Sepals entire
      ... T. wallichiana

3. Bracts in male racemes large, conspicuous:
   4. Sepals dentate or laciniate
   ... T. tricuspidata

1. Male flowers 1 or 2; anthers free:
   ... T. dioica


Extensive climbers; stems herbaceous, slender. Leaves 7–10 x 8–12 cm, broadly ovate or orbicular-reniform, shallowly to deeply 5–7-lobed, margins denticulate. Flowers white: male and female flowers in same or different axils; male flowers 8-15-flowered in 3 cm long racemes; female solitary, ovary oblong. Berries c 6 x 4 cm, oval-fusiform, scarlet to orange when ripe. Seeds ovoid, undulate, compressed, truncate.

Fls. & Frts.: August–October.


Distrib.: Frequent. Chandrapur, Jalgaon, Nagpur, Nasik (Chakr. op. cit.), Raigad, Ratnagiri, Sindhudurg, Solapur, Thane, Yavatmal.


Climbers; stems herbaceous, slender. Leaves 7–10 x 4–8 cm, ovate-oblung, sparsely scabrous, apex acute, margins sinuate, dentate. Flowers white: male and female flowers in same or different axils; male flowers 2.0–4.5 cm long, solitary on each pedicel; female solitary. Berries 5–12 x 2–6 cm, oblong, smooth. Seeds globose.

Fls. & Frts.: July–September.

Illus.: Ic. Roxb. Fasc. 8, t. 7. 1978 (Repr. ed.).

Herbs, perennial, much branched. Leaves 6–10 x 2.5–6.0 cm, ovate-oblong, 3-nerved at base, margins denticulate. Male flowers axillary, 2–7-flowered in corymbose racemes; female flowers axillary, solitary, on short peduncles. Berries ellipsoid, green with white lines, afterwards red above, ends acute. Seeds semi-ellipsoid, compressed.

**Fls. & Frts. :** November–February.

**Illus. :** Rheede, Hort. Ind. Malab. 8: t. 17. 1688.

**Distrib. :** Vary rare. 'Konkan' (Cooke, op. cit.).


Climbers; stems stout, woody at base, branches sulcate. Leaves variable in size, broadly ovate, subentire or palmately 3–5-lobed, margins denticulate. Flowers whitish; male flowers in axillary, 5-10-flowered racemes; female flowers axillary, solitary. Fruits 4-5 x 3.2–4.0 cm, globose, red when ripe. Seeds ovate-oblong, smooth, emarginate, white.

**Fls. & Frts. :** August–October.


**Distrib. :** Frequent along moist deciduous forests as undergrowth and on hill slopes. Ahmednagar, Akola, Chandrapur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane, Yavatmal.
Zanonia indica L.
A-Habit sketch with an inflorescence and mature fruit; B-A male flower; C-A female flower; D-T. s. of fruit; E-Part of a male flower showing stamens; F-Seeds (two views).

Climbers; stems robust, angular-sulcate. Leaves 10–20 cm long, almost as broad as long, membranous with black-dotted glands at base, suborbicular, deeply palmately 3–9-lobed, lobes oblong-lanceolate. Male inflorescence 6–12–flowered on 15–35 cm long peduncles; female inflorescence: peduncles 2–4 cm long; female flowers solitary. Berries 5–6 cm long, ovoid or oblong, apex acute. Seeds angular.

Fls. & Frts.: September–November.

Distrib.: Rare. Bombay.

Notes.: This species is closely allied to T. tricuspidata Lour. It can be separated by the membranous leaves with black-dotted glands at base.

Zanonia L.


Climbers; stems robust, glabrous or pubescent. Leaves petiolate, 8–20 x 5–12 cm, ovate or oblong, apex acute, margins entire. Male flowers greenish-yellow in racemes or panicles on slender branches; female flowers greenish-yellow, 5–12-flowered, in racemes. Berries 5–10 cm long, cylindric, dative, truncate, pale yellowish-brown. Seeds oblong, much compressed, with yellowish wings.


Illus.: Rheede, Hort. Ind. Malab. 8: t. 49. 1688; Chakr. op. cit.

Distrib.: Rare. Bombay (Chakr. op. cit.), Sindhudrug (Cooke, op. cit.).
Zehneria Endl.

1. Male flowers subumbellate at apex of peduncle:
   2. Fruits globose or rarely ellipsoid ... Z. scabra
   2. Fruits ellipsoid ... Z. mucronata

1. Male flowers with long pedicels clustered in axils or clustered on long racemes ... Z. thwaitesii


Annual herbs, scandent. Leaves entire or somewhat lobed, often membranous, 5–8 cm long and as broad, denticulate, scabrous. Male flowers: peduncles 2–6 cm long, slender, 10–30-flowered. Female flowers solitary, axillary. Fruits 8–15 x 6–9 mm, ovoid-oblong. Seeds pale grey, obovoid, oblong, smooth.

Fls. & Frts.: October–December.

Distrib.: Maharashtra (Chakr. op. cit.).


Climbers; stems and branches sulcate, slender. Leaves 5–9 x 4–7 cm, broadly ovate, minutely scabrous above, rufous villous beneath, apex shortly acuminate, mucronate, base rounded. Female flowers solitary or rarely subumbellate. Berries 8–10 cm thick, globose, finely reticulate. Seeds ovoid-oblong, much compressed, smooth, marginate.

Fls. & Frts.: February–July.


Distrib.: Frequent on hill slopes. Chandrapur, Pune, Ratnagiri, Satara, Sindhudurg, Thane.
Notes. : Melothria perpusilla (Bl.) Cogn. has been misapplied to plants from the Indian subcontinent which are to be referred if dioecious to a distinct, large seeded subspecies of Z. scabra or if monoecious to Z. maysorensis (Wight & Arn.) Arn. Properly it applies to a Malesian taxon which is probably a small seeded subspecies of Z. scabra.


Climbers; stems slender, sulcate. Leaves 5–10 x 4–7 cm, undivided, apex acuminate, base truncate, punctate-scabrous at nerves on upper surface. Male flowers 1–2 cm long, fasciculate, corolla puberulous; female flowers solitary. Berries 3–4 x 1.0–1.5 cm, oblong, longitudinally 6-costate, fusiform, puberulous. Seeds ovoid-oblong, 3-lobed, compressed.

Fls. & Frts.: March–April.

Distrib.: Infrequent on hill slopes. Ratnagiri (Chakr. op. cit.).

CULTIVATED SPECIES:


Fls. & Frts.: June–October.


Distrib.: Fruits both raw and ripe are used as vegetable. Nasik, Osmanabad.

var. lanatus. 'Kalingad'.


Fls. & Frts.: November–May.
Distrib.: Cultivated in sandy soil for its edible fruits. Chandrapur, Dhule, Osmanabad, Pune, Thane, Yavatmal. It is a native of South Africa.


Herbs; stem thick, Leaves sparingly lobed, hispid-hairy. Flowers yellow. Fruits round, dark green, striped white.

Fls. & Frts.: April-June.
Distrib.: Extensively cultivated for its fruits on plains, as a vegetable. Pune.


Herbs, hispid, annual, prostrate. Leaves suborbicular or reniform, 3–7-lobed, dentate. Male flowers yellow, 1–3 on axillary peduncles. Fruits yellow or orange, variable in form and size. Seeds oblong, pale yellow.

Fls. & Frts.: August–December.


Distrib.: Cultivated for its edible fruits. Ahmednagar, Chandrapur, Nasik, Osmanabad, Pune, Raigad, Satara – Native of North India.


Herbs, annual, prostrate or twining. Leaves orbicular or reniform in outline, 5-lobed, dentate. Flowers reddish-yellow or orange-coloured, axillary, solitary. Berries oblong, yellowish-brown, pulp yellow.

Fls. & Frts.: March–August.

Illus.: Wight, Ill. Ind. Bot. t. 105 (121) 1850, in part.

Distrib.: Cultivated in most of the parts as a rainy season vegetable. Pune.


Herbs, annual, prostrate or climbing. Leaves 5-lobed. Flowers yellow, monoecious, solitary. Fruits dark green.

Fls. & Frts.: December–April.

Distrib.: Occasionally seen in cultivation, used as a vegetable. Pune.


Herbs, prostrate or climbing annual. Leaves 5–6-lobed. Flowers yellow, solitary, large. Fruits often globose, depressed at apex, generally white when ripe.

Fls. & Frts.: October–March.

Illus.: Chakr. op. cit.
Distrib. : Cultivated throughout the district for its edible fruit. Osmanabad.


Fls. & Frts. : August–February.

Distrib. : Cultivated throughout for its fruits. Used as a vegetable. Pune.


Herbs, extensive climbers. Leaves 7–11 cm long and broad, palmately 5–lobed. Flowers yellow; male and female flowers in the same axil. Fruits cylindrical, green, striate. Seeds ovoid, smooth, usually black.

Fls. & Frts. : August–December.


Distrib. : Cultivated for its tender fruits used as vegetable.


Fls.–Frts. : April–October.
Illus. : Chakr. op. cit.

Distrib. : Cultivated throughout the state. Fruits used as vegetable.


Herbs, annual, climbers. Leaves broadly ovate-cordate, denticulate, 3-5-angled or lobed. Flowers white; male in long racemes; females solitary. Fruits often coiled, smooth with 7-8 white stripes along the length. Seeds oblong, finely rugose.

Fls. & Frts.: July-October.

Distrib. : Cultivated throughout the state for its edible fruits, cooked as vegetable.

**BEGONIACEAE**
(K. Madhusudan Rao)

**BEGONIA** L.

1. Fruits winged :
   2. Capsules 2-celled :
      3. Leaves crenate-dentate, whitish beneath ... B. crenata
      3. Leaves nearly entire, ciliate, blood red beneath ... B. integrifolia
   2. Capsules 3-celled :
      4. Flowers white ... B. trichocarpa
      4. Flowers rose or pink :
         5. Stamens nearly free :
            6. Male sepals elliptic, 1.2 cm across ... B. concanensis
            6. Male sepals almost orbicular, 2.7 cm across ... B. phrixophylla
      5. Stamens shortly monadelphous :
         7. Rootstock tuberous; leaves ovate, acuminate ... B. picta
         7. Rootstock not tuberous; leaves lanceolate, acute ... B. malabarica
   1. Fruits not winged ... B. roxburghii
Begonia concanensis A. DC.

Herbs, c 30 cm high, tender, succulent, semi-transparent; roots tuberous. Leaves 5–18 x 3–4 cm, broadly ovate, sometimes lobed, hairy, base cordate, slightly oblique, margins serrate or undulate, denticulate and denticulate. Flowers few on elongate dichotomous cymes; peduncles & pedicels hairy; male flowers with sepals & petals 2 each; females with 5 perianth lobes. Capsules turbinate, terminated by styles, 3–winged. Seeds ellipsoid.

Fls. & Frts. : August–October.
Distrib. : Infrequent along the ghats. Kolhapur, Pune, Raigad.


Herbs, 10–14 cm high, annual, succulent. Leaves 1–4, 1.4–8.2 x 1.2–7.0 cm, ovate or suborbicular. Inflorescence of terminal cymes. Flowers pinkish, monoecious; male flowers 0.7 cm long; female flowers c 1.5 cm long. Capsules c 0.7 x 0.7 cm, membranous, 3–winged. Seeds minute, ellipsoid.

Fls. & Frts. : September–October.
Illus. : Bedd. Ic. t. 110. 1874 (Begonia minima).
Distrib. : Frequent along the ghats. Ahmednagar, Bombay (Cooke, op. cit.), Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Satara, Thane.


Herbs, 15–30 cm high, succulent; rootstocks tuberous. Leaves 7.5–17.5 x 3.7–10.0 cm, inequilateral, obliquely ovate, sparingly clothed with stout, short hairs above, pubescent beneath, apex subobtuse. Flowers white, 1 cm across; male flowers with sepals & petals 2 each; females with 5 perianth segments. Capsules 1–2 cm long, 3–winged, dehiscing by an elliptic line round the narrow face. Seeds minute, ellipsoid.
Begonia crenata

Dryand.
Herbs, c 50 cm high, perennials. Leaves lanceolate, apex acute, base cordate, unequal, pilose above, glabrous beneath. Flowers pink, in axillary cymes. Capsules c 2 cm across.


Distrib. : Satara (Birdwood, op. cit.).


Herbs, 40 cm high. Leaves 19–24 cm across, broadly ovate to rounded, densely bristly, apex acute; petioles 15–26 cm long; stipules ovate-lanceolate, hairy. Male flowers : sepals orbicular; petals broadly obovate, stamens many, free. Female flowers with 5 perianth segments, elliptic-oblong. Capsules trigonous, hispid.

Fls. & Frts. : August–October.

Illus. : Blatt.& McC. op. cit.

Distrib. : Rare, along the ghats. Satara (Blatt. & McC. op. cit.).


Herbs, perennial; rootstocks tuberous. Leaves 1–3, 3–7 x 2.0–6.5 cm, broadly ovate-cordate, setose hairy above, almost glabrous beneath, apex acuminate, margins irregularly dentate–biserrate. Flowers pinkish, few, on peduncles. Fruits 3-winged.

Fls. & Frts. : September–October.


Herbs, 30–90 cm high; roots fibrous. Leaves 15–30 x 10–20 cm, ovate, apex acuminate, base obliquely cordate, margins irregularly dentate. Flowers white or pale pink, in short, dichotomous, few or many-flowered cymes. Fruits subpyramidal, thick walled, 4–angled, angles obtuse, each ending in a small horn upwards. Seeds obovoid.

Fls. & Frts. : Throughout the year.

Illus. : Wight, Ic. t. 1817. 1852 (Diplodemum lindleyanum).

Distrib. : Rare in moist places. S. Konkan (Cooke, op. cit.).


Herbs, 30–40 cm high; roots tuberous. Leaves 5–13 x 3.5–8.0 cm, ovate, apex acute or subacute, palmately 7–9–nerved. Flowers 5 cm across, in 4–6–flowered panicles, longer than petioles. Capsules 1.0–1.5 x 2.0 cm, wings obtuse, ciliate. Seeds ellipsoid.

Fls. & Frts. : August–December.

Distrib. : Rare in shaded areas along western ghats. 'Konkan' & 'Western Ghats' (Cooke, op. cit.).

**CULTIVATED SPECIES :**


Herbs, 0.1–1.0 m high, succulent, perennial. Leaves broadly ovate, apex obtuse, palmately 4–6–veined, 4–10 x 4–9 cm. Inflorescence axillary, cymes few–flowered. Flowers pink or white. Seeds narrowly ovoid.

Distrib. : Pune.
**Tetrameles nudiflora** R. Br.
A.–Habit; B.–Inflorescence; C.–Flower.


Distrib. : Pune.

**TETRAMELACEAE**
(S. Y. Kamble & P. Lakshminarasimhan)

**Tetrameles R. Br.**


Trees, 30–45 m high; trunk buttressed at base. Leaves 11–15 x 10–13 cm, broadly ovate, margins irregularly serrate. Flowers dioecious, appear before leaves; male flowers subsessile in pubescent panicles, calyx lobes linear–oblong, stamens exserted; female flowers sessile, in pendulous spicate racemes, calyx teeth 4, triangular, ovary pubescent, style exserted. Capsules 0.4–0.6 cm long, 8–ribbed.

Fls. & Frts. : February–April.


Distrib. : Frequent in moist deciduous forests. Pune, Raigad, Ratnagiri, Sindhudurg, Thane.

**CACTACEAE**
(S. Y. Kamble & P.V. Prasanna)

1. Plants climbing; branches 4–5–winged with long joints ... **ERIOCEREUS**

1. Plants erect; branches flattened, often with obovate joints :

2. Joints of branches spineless or with minute spines; perianth red; stamens exerted ... **NOPALEA**

2. Joints of branches with stout spines; perianth yellow, turning pink; stamens included ... **OPUNTIA**
**Eriocereus Berg.**


Arching or clambering shrubs, 3–4 m tall; spines 6–8, sharp, needle-like. Flowers solitary, arising from areoles, 12–20 cm long, nocturnal, funnel-form; perianth lobes white. Fruits globose, 4–5 cm across, red, splitting irregularly, glochidiate, juicy. Seeds many, ovoid, white.

**Fls. & Frts.**: September–November.

**Distrib.**: It is native of tropical America, grown in hedges and naturalised in many parts. In all districts of Marathwada (Naik, op. cit.).

**Nopalea Salm-Dyck**


Erect shrubs, 3–5 m tall. Leaves 2–3 cm long, subulate, caducous. Flowers 4–5 cm long, borne on upper edge of joints; sepals and petals scarlet; stamens pinkish. Fruits globose-ellipsoid, 3.5–4.5 cm long, red. Seeds many, ovoid, brown.

**Fls. & Frts.**: March–June.

**Distrib.**: Cultivated in gardens for ornamental purpose, also escaped in many places. Probably native of Mexico. In all districts of Marathwada (Naik, op. cit.).

**Opuntia Mill.**

Opuntia elatior Mill.
A– Habit; B– L. s. of Flower
Shrubs, large, succulent with ovate-oblong limbs having 2–5 spines on each areole; spines straight, slender, tawny or brownish in colour. Flowers at first yellow, turning to pink or bright red later. Fruits fleshy, bright red or reddish-purple when mature.

Fl. & Frts.: January–July.


Distrib.: Frequent in open places.

**CULTIVATED SPECIES:**


Tree-like, much branched, 10–15 m tall; branches usually green, 10–20 cm in diam., 6–9-ribbed; spines 5–10, acicular, brown to black, 1–3 cm long. Flowers white, red or brownish outside, c 15 cm long. Fruits almost globose, orange-yellow, up to 4 cm in diam.

Fls. & Frts.: October–July.

Distrib.: Originally from S.E. Southern America. Widely planted in Tropical America. In India planted in hedges, etc. Pune, Satara.

*Epiphyllum macropterum* Britton & Rose, Cactaceae IV. 193. 1923. ‘Brahma-Kamal’:

Flat-stemmed, unarmed, branching cactus with large and showy flowers. Plants upright up to 1.5 m tall with flat, 2-edged, leaf like branches which are crenate or serrate on margins, spineless. Flowers usually large, mostly nocturnal, arise on edges of leaf, the tube longer than limb; corolla white, c 10 cm in diam.; stamens elongated, numerous. Fruits oblong, red, juicy, bearing a few bracts. Seeds many, black.

Fls. & Frts.: July–January

Distrib.: Native of Mexico, Central America but in India cultivated in gardens and is also popular as house-plant. Pune, Sangli, Satara.


Bushy or sometimes tree-like, with woody trunk, 3–5 m tall; joints elliptic or oblong, thick, 35–50 cm long. Spines usually lacking but when present, solitary and white. Flowers yellow, 8–10 cm across. Fruits purple or red, edible. 5–8 cm long.
Fls. & Frts.: November–June.

Distrib.: Nativity not known but now widely cultivated in the tropics and subtropics for its fruits, sometimes found as an escape. Pune.


Shrubs, up to 2 m tall; areoles raised, densely elongate-bristly, glochidiate. Spines 5–7 per areole, yellow, 0.7–4.5 cm long. Leaves deciduous. Flowers 5 cm across; perianth many.

Fls. & Frts.: January–December.


Distrib.: Native of America. Introduced in other countries. Planted in rock gardens. Pune.


Trees or shrubs up to 5 m tall, woody trunk up to 10 cm in diam. which is spiny and fleshy; branches bearing 1–2 acicular spines at areoles. Leaves oblong, 8–15 cm long, obtuse or acute, somewhat narrowed at base. Flowers rose-coloured or white, 3.5–5.0 cm across, in small clusters, ovary leaf-bearing. Fruits 5 cm long, pear-shaped, many-seeded.

Fls. & Frts.: December–June.

Distrib.: Native of Brazil but widely cultivated in gardens. Bombay, Pune.

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**AIZOACEAE**

(S. Y. Kamble & P. Lakshminarasimhan)

1. Carpels free; leaves and calyces close streaked with numerous, whitish, short, linear raphides
   
   ... **GISEKIA**

1. Carpels united; leaves and calyces not as above:
2. Style 1 ... TRIANTHEMA

2. Styles 2–5:

3. Flowers glomerulate; lid of capsule splitting into two valves; seeds 4 ... ZALEYA

3. Flowers solitary; lid of capsule remaining in one piece; seeds usually more than 4 ... SESUVIUM

GISEKIA L.


Herbs, diffuse, semi–succulent; stems trailing, decumbent or prostrate, 10–50 cm in length. Leaves subfleshy, mostly opposite, 2–4 x 0.3–0.6 cm, linear–oblong or oblanceolate–spathulate, tapering at base, sessile or with petioles up to 0.6 cm long. Inflorescence sessile or pedunculate, umbelliform; flowers hermaphrodite, greenish or greenish–white, with pink or yellowish tinge; sepals 0.1–0.3 cm long; stamens 5, filaments broadened below; carpels and styles 5. Ripe carpels as long as sepals, white–papillose, indehiscent. Seeds compressed, subreniform.

Fls & Frts.: August–October.


Distrib.: Occasional in open moist places. Raigad.

SESUVIUM L.


Herbs, suberect, prostrate or creeping; stems thick, smooth, rooting at nodes. Leaves opposite, oblanceolate, 2.5–4.0 x 0.3–1.5 cm, fleshy; petioles short, amplexicaul at base. Flowers axillary, 0.7–1.2 cm long; pedicels filiform; calyx 5–lobed, lobes unequal, triangular, acute, purplish outside, rosy within; stamens numerous, free or nearly so; ovary usually 3–celled. Capsules 3–celled, enclosed in persistent calyx, circumscissile.
Sesuvium portulacastrum (L.) L.
A – Habit; B – Flower; C – Ovary; D – Seed
Illus.: Jeffrey, op. cit.
Distrib.: Found along sea coast. Bombay, Raigad, Thane.

**Trianthema L.**

1. Flowers axillary, solitary; stamens 10–20 ... *T. portulacastrum*
2. Flowers axillary, glomerulate; stamens 5 ... *T. triquetra*


Herbs, somewhat succulent, prostrate; stems procumbent or ascending, spreading, glabrous or pubescent, up to 50 cm long. Leaves subfleshy, opposite, one pair much smaller than other, stipulate, blades 0.4–5.0 x 0.4–1.5 cm, obovate or broadly so, entire; petioles 0.2–0.25 cm long, extended into a sheathing membranous base. Flowers partly hidden by sheathing leaf bases, hermaphrodite, pinkish or white; stamens inserted on calyx tube; ovary bilobed. Capsules mitriform. Seeds with concentric muricate lines.

Fls. & Frts.: June–September.
Distrib.: Common weed in waste places.


Herbs, more or less succulent, prostrate, much branched from base; stems and branches slender, terete, often tinged red. Leaves 0.6–1.0 x 0.15–0.2 cm, linear or oblanceolate, fleshy, more or less covered with crystalline papillae; petioles short, slightly sheathing at base. Flowers sessile, axillary; calyx segments 5, triangular; ovary obconical, turbinate. Capsules with annular depressed cushion at top. Seeds 2, orbicular-reniform with concentric smooth lines.
Fls. Frts.: September–November.


Distrib.: Occasional in moist places. Ahmednagar, Aurangabad, Beed, J alna, Konkan (Cooke, op. cit.).

**Zaleya** Burm. f.

1. Capsules 4-seeded; stamens 10 … \( \star \) decandra
1. Capsules 2-seeded; stamens 5 … \( \star \) pentandra


Herbs, prostrate; stems much branched, angular, striate. Leaves 2–4 x 0.6–1.5 cm, elliptic-oblong, petiolate; petioles much dilated and amplexicaul at base. Flowers in axillary clusters; sepals oblong-obtuse, margins scarious; stamens 10; styles 2. Capsules truncate at top with annular rim. Seeds with concentric muricate lines.

Fls. Frts.: December–February.

Illus.: Wight, Ic. t. 296. 1840 (Trianthema decandra).

Distrib.: Frequent in wet open areas.


1. Plant parts, especially ripe fruits yellow … \( \star \) var. flava
1. Plant parts including fruits not as above:
   2. Leaves c 2 mm long … \( \star \) var. pentandra
   2. Leaves longer, 1.5–3.5 cm long … \( \star \) var. rubra

\( \star \) var. **pentandra**.

Diffuse, much branched, up to 45 cm high; stems and branches more or less papillose (rarely glabrous), angled and grooved.
Leaves elliptic-oblong, sometimes slightly obovate, rounded (rarely subacute) at apex, narrowed at base. Flowers in few or many-flowered axillary fascicles. Capsules c 4 mm long, exserted, mitriform. Seeds orbicular-reniform, compressed, rugulose, dull-black.

Fls. & Frts.: October–November.

Distrib.: Bombay, Osmanabad & Pune (Almeida, op. cit.).


Fls. & Frts.: October–November.

Distrib.: Found intermixed with typical variety (Almeida, op. cit.).


Fls. & Frts.: October–November.

Distrib.: Intermixed with typical variety (Almeida, op. cit.).

**CULTIVATED SPECIES:**


Herbs, procumbent, annual; papillae glistening. Leaves 3–8 x 0.5–2.0 cm, spatulate, succulent. Flowers solitary, terminal, pinkish—red; sepals persistent. Capsules star-shaped on dehiscing.

Fls. & Frts.: January–May.

Distrib.: It is a native of South Africa, cultivated in private garden as an ornamental in pots or in hanging baskets (Almeida, op. cit.).

Much spreading prostrate annuals, often covering several feet, thick and somewhat succulent. Leaves deltoid to deltoid-ovate, 5–12 cm long, abruptly narrowed into short petiole. Flowers 1 or 2 in axils, nearly sessile, yellowish-green. Fruits somewhat top shaped, angled, c 0.8 cm long, dry and hard, crowned with horns.

Fls. & Frts.: August–December.

Distrib.: Cultivated as a pot-herb and sometimes found as an escape. Bombay.

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**GLINACEAE**

(S. Y. Kamble & P. Lakshminarasimhan)

1. Calyx tube 5-partite; capsules loculicidal ...
   *Glinus*

1. Calyx not as above; capsules circumsessile ...
   *Mollugo*

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Prostrate herbs. Leaves 1–4 x 0.5–2.0 cm, opposite or apparently verticillate, obovate, apiculate, petioled. Tepals ovate, acute; stamens 10, intermixed with linear, membranous staminodes; ovary 5-locular; styles 5. Fruiting calyx 0.5–0.8 x 0.25–0.4 cm. Capsules ovoid.

Fls. & Frts.: February–May.


Distrib.: Common throughout.

Slender, decumbent herbs. Leaves 1–5 cm long (incl. petiole), whorled, obovate or linear–lanceolate or oblanceolate. Flowers inconspicuous, greenish or pinkish–white, fascicled at nodes; tepals 5, elliptic; stamens 5, free, staminodes absent; ovary 3–locular; styles 3. Capsules ellipsoid, included in tepals. Seeds reniform, appended, dark brown.

Fls. & Frts.: September–November.


Distrib.: Common in waste places.

**MOLLUGO L.**

1. Leaves radical ... M. nudicaulis

1. Leaves whorled at nodes:

2. Flowers in axillary clusters; seeds smooth ... M. cerviana

2. Flowers in racemes; seeds areolate or tuberculate:

3. Basal leaves obovate-obtuse; sepals without a broad, green middle band, vascularised throughout length; seeds areolate ... M. pentaphylla

3. Basal leaves linear–lanceolate; sepals greenish with broad green middle band, vascularised only about 2/3 of length; seeds tuberculate ... M. stricta


Herbs with many upright or ascending stems from base. Leaves linear, sessile, glaucous green, basal leaves in rosette, oblanceolate, spathulate, cauline leaves whorled or linear–oblong or subspathulate, apex apiculate. Flowers numerous, in axillary or terminal cymes; tepals obovate, green; stamens 3. Capsules globose. Seeds yellowish–brown, papillate.
Fls. & Frts.: September–December.


 Distrib.: Common on rocky soil of hill slopes at Aurangabad (Naik, op. cit.) and occasional in open situations at Solapur.


 Herbs, erect, slender, annual. Basal leaves 1–4 x 0.2–3.0 cm, in a rosette, spatulate with membranous bracts. Flowers in trichotomous cymes; tepals 5; stamens 3–5, hypogynous; styles 3. Capsules ellipsoid, compressed, granular. Seeds black, tuberculate.

 Fls. & Frts.: September–November


 Distrib.: A weed along roadsides in open and waste places and also in cultivated fields. Aurangabad, Chandrapur, Jalgaon, Nanded, Pune.


 1. Leaves obovate, apex obtuse or acute ... var. pentaphylla
 1. Leaves linear, apex aciculate ... var. rupestris

 var. **pentaphylla.** 'Jharasi':

 Herbs, 30 cm high, erect, slender, much branched, diffuse, annual; stems numerous, 4–angled, dichotomously branched. Leaves whorled, sometimes opposite, 1.5–3.5 x 0.5–1.5 cm, mucronate, narrowed at base. Flowers white or greenish, orange or pinkish, numerous, in lax, corymbose, terminal cymes; stamens 3. Capsules globose. Seeds many, dark reddish-brown, shining.

 Fls. & Frts.: July–December.

Distrib.: Common in dry as well as moist areas, stony localities, rocky patches, cultivated fields, waste places and along railway lines.


Herbs, 6–15 cm high. Leaves 1.0–2.5 x 0.2 cm, narrowly linear as compared to type variety. Other characters as in type variety.

Fls. & Frts.: August–November.

Distrib.: Found abundantly on wet rocks. Pune, Satara.


Herbs, upto 30 cm high, erect, much branched, diffuse, annual; stems numerous, 4-angled, dichotomous, branched. Leaves whorled, sometimes opposite, 1.5–3.5 x 0.5–1.5 cm, mucronate, narrowed at base. Flowers white or greenish, orange or pinkish, numerous, in lax corymbose, terminal cymes; stamens 3. Capsules globose. Seeds many, dark reddish-brown, shining.

Fls. & Frts.: July–December.

Distrib.: Rare on rocky soils in all districts of Marathwada (Naik, op. cit.).

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**APIACEAE (UMBELLIFERAE)**

*(S. G. Pradhan)*

1. Mericarps without vittae
   1. Mericarps with vittae:
   2. Leaves simple, entire:
   3. Fruits broader than long
   3. Fruits longer than broad
   2. Leaves not as above, variously divided or compound:
   4. Fruits laterally compressed:
   5. Bracts usually divided
   5. Bracts entire if present:

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**FLORA OF MAHARASHTRA STATE**

95
6. Fruits beaked
   ...  Scandix

6. Fruits not beaked:
   7. Mericarps 1–vittate  ...  Trachyspermum
   7. Mericarps 2–3–vittate  ...  Pimpinella

4. Fruits dorsally compressed:
   8. Ovary glabrous:
      9. Roots tuburous; fruits < 0.3 cm long  ...  Polyzygus
      9. Roots not tuburous; fruits < 0.9 cm long  ...  Peucedanum

8. Ovary pubescent:
   10. Fruits densely hairy  ...  Seseli
   10. Fruits glabrate at length:
      11. Exterior petals of marginal flowers disproportionately dilated; lateral ribs of mericarps not winged  ...  Pindo
      11. Exterior petals of marginal flowers not disproportionately dilated; lateral ribs of mericarps winged  ...  Heracleum

**Ammi L.**


Herbs, 30–100 cm tall, annual. Leaves 2–3–pinnate, variable; leaflets: lower ones elliptic or obovate, apex obtuse, margins serrate; middle ones lanceolate, apex acuminate, margins serrate–dentate; upper ones with linear, dentate lobes. Flowers in compound umbels, bracteate. Fruits 0.15–0.2 cm long.


Distrib. : In open situations, may be an escape from cultivation.

**Bupleurum L.**

Perennial herbs, c 1.5 m tall. Basal leaves sessile to petiolate, 0.6–1.5 x 0.3–1.0 cm, narrowly linear-oblong to lanceolate, cauline leaves amplexicaul at base. Flowers in terminal and lateral umbels, yellow to purplish; petals obovate. Fruits ovoid-ellipsoid, 0.2–0.3 x 0.1–0.2 cm; mericarps glabrous, vittae solitary or rarely 2.

Fls. & Frts.: July–October.

Distrib.: Bombay Presidency (P.K. Mukh. & Constance, op. cit.).

**CENTELLA L. (nom. cons.)**


Herbs; stems slender with elongated internodes, prostrate, rooting at nodes. Leaves 1.2–4.0 cm across, orbicular or reniform, cordate at base; petioles 1–2.5 cm long. Flowers pink, in fascicled, bracteate umbels. Fruits 0.4 cm long, ovoid, rugose with persistent corolla-crown; mericarps with 7–9 ridges.

Fls & Frts.: May–November.

Illus.: Wight, Ic. t. 565. 1842 (*Hydrocotyle asiatica*).

Distrib.: Common on moist grounds. Aurangabad, Beed, Jalgaon, Nagpur, Nanded, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**HERACLEUM L.**

1. Petals yellow, long-acuminate:
   2. Plants glabrous
   2. Plants hairy

1. Petals white, emarginate or 2-lobed:
   3. Ovary glabrous
   3. Ovary pubescent

Herbs; roots fusiform. Leaves: radical ones 2-pinnate, 10–20 cm long, petioles 10–20 cm long; pinnae usually 2 pairs, ternate, margins serrate–dentate. Flowers in umbels. Fruits 0.3 x 0.6 cm, ellipsoid, margins thick, winged.

Fls. & Frts.: September–October.

Distrib.: Rare in open moist places. 'Konkan' (Cooke, op. cit.), Satara, Sindhudurg.

Notes.: Endemic to Western ghats of Peninsular India.


Herbs; stems 1–5 m tall, roots tuberous. Leaves imparipinnate; radical leaves long petiolar; petioles upto 30 cm long; leaflets 1–2 pairs, 5–6 cm broad, ovate-lancedolate, lobed or not, margins serrate, terminal one usually lobed, cauline leaves smaller. Flowers in umbels. Fruits 0.8–1.0 x 0.6–0.8 cm. Carpophore bipartite.

Fls. & Frts.: August–November.

Illus.: Almeida, op. cit.

Distrib.: Rare in moist places. Sindhudurg.


Herbs, upto 75 cm tall, perennial. Leaves mostly radical, 2-pinnate with terminal leaflet; lowest pair ternate, upper simple and terminal leaflets 3-lobed, margins serrate, cauline leaves usually ternate, lobed. Flowers in umbels, more than 10-rayed. Fruits 0.9–1.2 cm long, obovoid, narrowly winged, dorsal intermediate ridges prominent.

Fls. & Frts.: July–August.

Notes. : Endemic to Western ghats of Peninsular India.


Herbs, stout, 0.6–1.2 m tall. Lower leaves pinnate or bipinnate, 25 cm long, ovate; pinnae 2–3 pairs and a terminal leaflet; upper leaves usually 3-foliolate, upper most reduced to sheaths. Flowers in umbels of unequal rays, bracteate, bracteolate or ebracteate. Fruits 0.6 x 0.5 cm, ellipsoid, narrowly winged.

Fls. & Frts. : August–September.

Illus. : Wight, l.c. t. 1008. 1845 (Pastinaca sprengelianum).

Distrib. : Occasional in moist situations. Pune (Cooke op. cit.), Satara, Sindhudurg.

**Hydrocotyle L.**


Fls. & Frts. : Mostly throughout the year.

Distrib. : Bombay Presidency (P. K. Mukh. & Constance, op. cit.).

**Peucedanum L.**

K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 217. 1993: 'Koland'.

Herbs, 13–20 cm tall; roots fusiform. Leaves radical, pinnately partite; leaflets oblong to suborbicular, 3–5, 2.0–2.5 cm long, entire or 2–3–lobed. Flowers yellow, in 5–10–rayed umbels. Fruits c 0.9 x 0.6 cm, broadly ellipsoid, vittae linear between ridges, commisural ones 2, marginal.

Fls. & Frts.: July–August.

Distrib.: Rare in open moist situations. Bombay, Raigad.

PIMPINELLA L.

1. Flowers unisexual ...
   P. wallichiana

1. Flowers bisexual :
   2. Bracts 0 or 1
      3. Fruits glabrous :
         4. Ridges on mericarps obscure :
            5. Primary rays 6–20 ...
            6. Primary rays 1–2 ...
      4. Ridges on mericarps prominent ...
   3. Fruits not as above :
      6. Fruits ovoid, hispid–hairy ...
      6. Fruits narrow–oblong with attenuate apex, covered with white scales ...
   2. Bracts 2–3 ...


Herbs; stems 10–30 cm long, many spreading. Leaves radical, pinnate; leaflets 4–8 pairs, lateral 1.2–1.8 cm long, with obovate or ovate–cuneate lobes, terminal ones larger, margins serrate, cauline leaves few, upper pinnatisect. Flowers white, in compound umbels; petals pubescent outside. Fruits 0.15 cm long, ovoid, slightly pilose.

Fls. & Frts.: January–February.
**Distrib.** : Common as undergrowth and in open areas. Ahmednagar, Aurangabad, Bombay, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Herbs, erect, upto 90 cm tall. Leaves 3–foliolate, gradually becoming smaller upwards, lateral leaflets ternate, terminal leaflets usually simple but seldom ternate, margins entire or lobed; lower cauline leaves 2.0–4.5 x 0.3–1.2 cm, ovate–lanceolate, stalked, margins serrate. Flowers 4–12, in umbels. Fruits 0.15 cm across, ovoid or subglobose, didymous.

**Fls. & Frts.** : August–October.


**Distrib.** : Common. Ahmednagar, Amravati, Aurangabad, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Herbs, annual; stems erect, 15–50 cm tall. Leaves trifoliolate; upper ones simple but biternately lobed, blades ovate–lanceolate, margins variously denticulately dissected, lower ones pinnately compound. Inflorescence of simple or compound umbels; bracts solitary or 2–3, rarely 5. Flowers white, 2–15, c 1.5 cm across. Fruits laterally compressed, globose or subglobose.

**Fls. & Frts.** : July–November.

**Illus.** : Billore & Hemadri, op. cit. f. 1–7, plate facing page 713.

**Distrib.** : Rare, in open areas. Ahmednagar, Thane.

**Notes.** : Mukherjee and Constance in their Umbeliferae of India (1993) did not make any mention of this species.


Herbs, 50–80 cm tall; stems erect, pubescent. Lower cauline leaves 2–3–pinnatifid, ultimate segments inciso-serrate, serratures bristle-tipped, upper leaves often reduced to sheaths. Flowers white, 3–12, in umbels. Fruits 0.4 cm long.

Fls. & Frts.: November–December.

Distrib.: Common, in open situations on slopes. Ahmednagar, Bombay, Dhule, Nasik, Pune, Satara, Thane.


Herbs, 0.7–1.5 m tall or even more. Lower cauline leaves simple or pinnately 3-foliolate; leaflets 2.8 x 1.8–5.0 cm, ovate, ovate-lanceolate, acute at apex, cordate or truncate at base, margins serrate, petioles 6–15 cm long, petiolules 1–4 cm long, upper leaves with linear segments. Flowers white, bracts 0 or 1, subulate. Fruits 0.1–0.3 x 0.2 cm, ovoid; disk granular when young.

Fls. & Frts.: September–December.

Distrib.: Frequent along the ghats and hilly areas. Ahmednagar, Aurangabad, Bombay, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

Notes: The species described by Cooke under P. candolleana Wight & Arn. are not true P. candolleana which occur in Nilgiris & Pulney hills of Tamilnadu state. P. candolleana does not occur in Maharashtra state.

Pinda P. K. Mukh. & Constance

Pimpinella wallichiana (Miq. ex Hohen.) Gandhi:
A– Flowering branch; B– Flower; C– Fruit.
Herbs, 45–100 cm tall, more or less hairy. Lower leaves 2-ternate; leaflets 3-lobed or ternate, margins serrate; upper leaves scaly. Flowers white, usually in umbels; petals of radiant flowers 2-lobed. Fruits 0.4–0.5 cm long, flattened, obsoletely winged.

Fls. & Frts.: July–September.


Distrib.: Common, in ghat areas. Ahmednagar, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

Notes.: This species is endemic to Maharashtra state. Mukherjee and Constance (1986) doubtfully treated *Heracleum pinda* Dalz. & Gibs. as a synonym of *Pinda concanense* Dalz. Cooke (1901–1908) mentioned no collections of *Heracleum pinda* Dalz. & Gibs. either from type locality or anywhere else. Their description of above species is based on Dalzell & Gibson’s work. However, a careful study of *Heracleum pinda* deposited at BSI revealed variations in the shape of bracts, the number of bracteoles varying from 3–5 and the number of commisural vittae varying from 2–4. Because of all above overlapping characters, it is felt that there is no consistancy in the key characters of *Heracleum pinda* and *H. concanense* and as such they are conspecific and should be treated under *Pinda concanense*.
Polyzygus tuberosus Dalz. ex Walp.
Fls. & Frts.: June–July.
Illus.: P. K. Mukh. & Constance, op. cit.
Distrib.: Rare in open situations on plains. Pune; Ratnagiri & Sindhudurg (Cooke, op. cit.), Raigad, Satara.
Notes.: Endemic to Western Ghats of Peninsular India.

**Scandix L.**


Fls. & Frts.: February–March.
Distrib.: Rare. Pune (Sant. op. cit.).

**Seseli L.**


Herbs; branches spreading, 30–45 cm tall. Leaves 10–14 cm long, oblong or oblong-lanceolate, 2-pinnate or pinnae pinnatisect; cauline leaves smaller. Flowers white, in compound umbels, bracts absent or 1–2, bracteoles many. Fruits oblong, glochidiate on ridges.

Fls. & Frts.: April & May.
Illus.: Wight, Ic. t. 569. 1842 (Cnidium diffusum DC.).
Distrib.: Occasional. Chandrapur, Nagpur, Nanded.

**Trachyspermum** Link (nom. cons.)

1. Basal leaves with linear to filiform ultimate segments ... T. ammi
1. Basal leaves with oblong to obovate leaflets ... T. roxburghianum

Annual herbs; stems slender, branched, 15–90 cm tall. Leaves 2–8 x 2.6 cm, oblong to ovate, pinnately decompound; cauline leaves similar, gradually reduced upwards. Flowers in peduncled umbels; peduncles 1–11 cm long, involucral bracts, 4–10; petals obcordate. Fruits ovoid–globose, 1.5–2.5 x 1.5–2 mm, narrowed at apex with cordate base, vittae solitary.

Fls. & Frts.: January–November.

Distrib.: Nagpur, Nasik, Osmanabad. Cultivated but also found as an escape.


Herbs, 40–80 cm tall. Leaves: the lower ones 2-pinnate, leaflets cut into linear–lanceolate segments; petioles broadly sheathing with ciliate margins. Flowers white, 3–6-bracteate, in compound umbels. Fruits ovoid, glabrous or puberulous, brown.

Fls. & Frts.: August–October.

Distrib.: Common, in open areas and fallow fields. Ahmednagar, Aurangabad, Bombay, Jalgaon, Nagpur, Osmanabad, Pune, Raigad, Satara, Thane.
CULTIVATED SPECIES:


Slender herbs, branched above, glabrous, 30–75 cm tall. Leaves 10–40 x 10–20 cm, oblong-ovate, pinnately decompound, segments filiform. Flowers in 15–50-flowered umbels. Fruits ovoid or elliptic-oblung, 0.4–0.5 x 0.2–0.3 cm.

Fls. & Frts.: June–August.

Distrib.: Widely cultivated.


Erect herbs, 50–100 cm tall. Leaves 8–15 x 4–8 cm, pinnate; leaflets 2–5 cm across, ovate to suborbicular; cauline leaves trilobed. Flowers greenish-white, in 5–10-flowered umbels. Fruits 0.1–0.2 cm across, ovoid to orbicular.

Fls. & Frts.: June–August.

Illus.: Bhogaonker & Devarkar, Additions to the Fl. of Melghat 20, figs. A–F. 1999.

Distrib.: Occasionally cultivated.


Herbs, 30–45 cm tall. Lower leaves 3–10 x 2.8 cm, ternately or pinnately lobed or pinnate with incised leaflets upto 2 x 1 cm, upper cauline leaves decompound with linear or filiform segments. Flowers in peduncled umbels. Fruits 0.15–0.5 cm across.

Fls. & Frts.: July–September.

Distrib.: Widely cultivated throughout the state.

Herbs, 15–30 cm tall. Leaves 5–10 cm long, filiform. Flowers white, in peduncled, 2–6-rayed, up to 8-flowered umbels. Fruits 0.5–0.7 x 2.0–0.3 cm.

Fls. & Frts.: February–March.

Distrib.: Widely cultivated throughout the state.


Herbs, usually biennial, 30–70 cm tall with a fusiform taproot. Leaves 5–12 x 2–6 cm, oblong, pinnately decompound with linear ultimate segments. Flowers white or yellowish, in 20–30-flowered umbels. Fruits 0.3–0.4 x 0.2 cm, ovoid.

Fls. & Frts.: February–May.

Distrib.: Cultivated throughout the state for its fleshy edible roots.


Herbs, 60–100 cm tall. Leaves 5–50 cm across, triangular-ovate; ultimate segments 5–40 cm long, petiolate; petioles 10–13 cm, broadly sheathing at base. Flowers yellow, in 12–25-flowered, peduncled umbels. Fruits 0.5–1.0 x 0.15–0.25 cm, ovoid-oblong, prominently ribbed.

Fls. & Frts.: October–December.

Distrib.: Cultivated throughout the state for its fruits.

Glabrous herbs, 30–90 cm tall. Leaves 2–3-pinnate, ultimate lobes or segments 1.2–5.0 cm long, linear-oblong to ovate, margins distantly toothed or entire. Flowers yellow, many, pedicellate in ebracteate umbels. Fruits c 0.4 cm long, winged.

Illus. : Wight Ic. t 572. 1840–43.

Distrib. : Usually cultivated, rare. Sindhudurg.


Robust herbs, upto 1.5 m tall, glabrous with taproot 40–50 x 10 cm. Leaves imparipinnate; leaflets in 3–4 pairs, ovate to oblong, margins toothed or lobed, 5–10 cm long. Flowers greenish-yellow, in compound umbels. Fruits strongly ribbed and dorsally compressed, oblong to ovate-oblong, winged on margins.

Distrib. : Cultivated for edible roots, not common in the state.

ARALIACEAE
(A. N. Londhe)

1. Panicles small or large; fruits subglobose, 5–6-angled ... Schefflera

1. Panicles depressed, never large; fruits globose, not angled ... Hedera

Hedera L.


Shrubs, scandent. Leaves 5–8 x 2.5–5.5 cm, ovate-elliptic, apex caudate-acuminate, base cuneate. Flowers yellowish-green, in terminal panicles. Fruits c 0.7 cm across. Seeds 1–5.

Fls. & Frts. : October–February.

Distrib. : Found in forest clearings. Pune (Sant. op. cit.).

Schefflera J. R. & G. Forst. emend. Harms (nom. cons.)

1. Leaflets chartaceous; main nerves scarcely more prominent than secondary and reticulations not very
1. Leaflets coriaceous; main nerves much prominent than secondary and reticulations much oblique, 30 with midrib


Climbers. Leaves alternate, digitate, crowded at apices; leaflets 3–5, 7–11 x 4–5 cm, elliptic-oblong, stipules connate, c 1 cm long. Flowers greenish-white, in branched panicles. Drupes brown, 5-angled.

Fls. & Frts.: March–August.


Distrib.: Frequent along Western ghats. 'Bombay' (Cooke, op. cit.), Ratnagiri, Satara, Sindhudurg.


Shrubs, straggling. Leaflets c 10 x 5 cm, oblong or elliptic, apex shortly and abruptly pointed. Flowers white, in terminal, paniculate racemes. Drupes 0.4–0.5 x 0.3–0.4 cm, 5–6–angled.

Fls. & Frts.: March–May.

Distrib.: In moist deciduous forests. Kolhapur, Ratnagiri.

CULTIVATED SPECIES:


Climbers, extensive, upto 20 m long, evergreen, climbing by means of the numerous extra axillary adhesive rootlets. Leaves dimorphic; those of the sterile shoots broadly ovate to triangular, 4–6 x 5–8 cm, coriaceous, 3–5-lobed, those of the fertile shoots ovate, tapering at the

**Fls. & Frts.:** November–April.


**Distrib.:** Grows freely in Deccan on the shady side of houses. Grown for their handsome persistent foliages. Pune.

**Panax cochleatum** DC Prodr. 4: 253. 1830; Bailey, Cycl. Hort. 3: 2748. 1929; Cooke, Fl. Pres. Bombay 1: 611. 1958 (Repr.).

Shrubs, c 4 m tall, erect. Leaves nearly orbicular, 5–15 cm across, simple, cordate, somewhat concave above, spinulose–dentate.

**Distrib.:** Very common as a foliage plant in gardens.


Tall erect shrubs, up to 6 m high; young parts bronzy green, speckled with grey. Leaves long petiolate; leaflets orbicular to reniform, 8–10 cm across, coarsely crenate–dentate. Flowers in axillary, clustered umbels; petals dull, greenish–white.

**Fls. & Frts.:** March–May.

**Distrib.:** Native of Caledonia, grown in gardens in Marathwada (Naik op. cit.).


Shrubs, 2–3 m tall, erect, aromatic, evergreen; young branches lenticelled. Leaves irregularly pinnately 3 compound; leaflets stalked & segmented. Inflorescence terminal & in upper axils, 10–15 cm long. Flowers umbellate. Fruits c 3 cm long, broad–ovoid, compressed.

**Fls. & Frts.:** Very rarely flowering in cultivation.

Distrib. : Native of the Eastern Islands. Commonly grown as a foliage plant in gardens & in pots about houses.


Erect shrubs, 3–4 m tall. Leaves 30–40 cm long; leaflets 2–4 pairs, 8–12 x 4–6 cm, ovate-elliptic to orbicular, obtuse or shortly acuminate at apex, remotely dentate along margins.

Distrib. : Native of Polynesia, grown in gardens for ornamental leaves in Marathwada (Naik op. cit.).


Shrubs or small trees, 2–5 m tall, evergreen; branches & young leaves covered with stellate hairs. Leaves when mature reaches c 25 cm long, 5–12-lobed, each lobe in turn divided again, lobes acute, serrate with deep sinus. Inflorescence of terminal panicles, branched, woolly, dense, c 80 cm long. Flowers yellowish–white, 4–merous. Fruit a berry, subglobose.

Fls. & Frts. : November–May

Distrib. : Grown for the ornamental purposes. Pune.


Trees, c 7 m tall, prickly. Leaves 30–60 cm long, palmate, 5–9-lobed to below middle; petioles 30–60 cm long, crowded at the ends of branches. Panicles erect, bearing c 15 cm long umbels. Flowers 2–5 cm across, yellowish–white.

Distrib. : Recently introduced in gardens at Pune.
**ALANGIACEAE**

(A. N. Londhe)

**ALANGIUM** Lam. (nom. cons.)


**ssp. salvifolium**. 'Ankul', 'Ankwal', 'Ansaroli'.

Trees, 3–10 m tall. Leaves 5–12 x 2.0–2.5 cm, ovate, lanceolate. Flowers cream coloured, in axillary fascicles, few; pedicels pubescent; calyx turbinate. Berries 2.5–3.0 cm across, ellipsoid or ovoid.

Fls. & Frts.: February–April.


Distrib.: Frequent in deciduous forests. Ahmednagar, Chandrapur, Dhule, Nagpur, Nanded, Pune, Raigad, Sindhudurg, Thane, Yavatmal.


Shrubs, scandent; stems with sharp straight and branched thorns at basal parts. Leaves oblanceolate, apex acuminate, 3-nerved from base, entire. Flowers axillary, solitary, white, scented, pedicellate; pedicels and calyx tomentose; corolla curling inwards; connectives and style prolonged; ovary hairy. Berries oblong.

Fls. & Frts.: April–May.

Distrib.: Sindhudurg.

Trees, 8–10 m high; bark smooth. Leaves 10–15 x 5–10 cm, elliptic-oblong, base unequal sided. Flowers numerous in pubescent panicles; petals 5, leathery, greenish–yellow. Fruits 4–5 x 1.0–1.5 cm, ellipsoid.

Fls. & Frts.: January–May.
Illus.: Wight, op. cit.
Distrib.: 'Konkan' (Cooke, op. cit.).

CULTIVATED SPECIES:

Lonicera japonica Thunb. Fl. Jap. 89 1784; Bor & Raiz. Some Beaut. Ind. Climb. and Shrubs 175, t. 57 & f. 101. 1990 (Repr.).

Climbing twiners; stems glandular–hairy. Leaves ovate to oblong-ovate, acute or obtuse at apex, rounded at base, ciliate along margins; petioles with soft yellow hairs. Flowers in axillary, pedunculate pairs or collected in terminal panicles or spikes of whorled pairs. Flowers white or purple tinged, changing to yellow; corolla hairy and glandular without.

Fls.: November–February
Illus.: Bor & Raiz. op. cit.
Distrib.: Grown in gardens. Pune.

L. sempervirens L. Sp. Pl. 173. 1753; Bor & Raiz. Some Beaut. Ind. Climb. and Shrubs 173, t. 56. 1990 (Repr.).

Evergreen climbing twiners. Leaves oblong or ovate, rounded at apex, wedge-shaped or rounded at base, glossy green above, covered with white bloom below. Inflorescence of terminal interrupted spikes.
Corolla tube glabrous without, sparsely pubescent within, scarlet orange or sometimes yellow on outer surface, yellow within. Fruit a red berry.

Fls. & Frts.: February–April.
Illus.: Bor & Raiz. op. cit.
Distrib.: Grown in gardens. Pune.

RUBIACEAE
(S. K. Mudaliar & V. P. Prasad)

1. Ovules more than 2, usually numerous in each cell:
   2. Flowers crowded in dense globose heads:
      3. Calyx tubes fused into a fleshy mass ... OCHREINAUCLEA
      3. Calyx tubes not fused as above:
         4. Corolla lobes imbricate; flowers bracteolate:
            5. Seeds not winged; stigma fusiform ... NEOLAMARKIA
            5. Seeds winged; stigma globose ... NEONAUCLEA
         4. Corolla lobes valvate; flowers bracteolate:
            6. Calyx-limb 5-lobed; stigma clavate ... Haldina
            6. Calyx truncate; stigma mitriform ... Mitragyna
   2. Flowers not in dense heads:
      7. Fruits capsular:
         8. Trees or shrubs:
            9. Corolla lobes valvate; seeds winged ... Hymenodictyon
            9. Corolla lobes twisted; seeds not winged ... Wendlandia
         8. Herbs:
            10. Corolla lobes toothed on each side ... Dentella
            10. Corolla lobes entire:
               11. Anthers connivent, dehiscing by apical pores; capsule bursting irregularly at apex ... Argostemma
               11. Anthers not connivent, dehiscing laterally; capsules usually dehiscing regularly, rarely indehiscent:
                  12. Calyx teeth 5 ... Ophiorrhiza
                  12. Calyx teeth 4:
13. Calyx teeth contiguous on capsule:
   14. Leaves radical ... Thecagonum
   14. Leaves not as above ... Hedyotis (p.p.)
13. Calyx teeth distant on capsule:
   15. Seeds numerous, minute, angular ... Hedyotis (p.p.)
   15. Seeds few, plano-convex or globose, excavated ... Neanotis

7. Fruits of berries:
   16. Corolla lobes valvate ... Mussaenda
   16. Corolla lobes twisted:
      17. Inflorescence terminal:
         18. Ovary 2-celled:
            19. Seeds few ... Tarenna
            19. Seeds numerous:
               20. Erect shrubs:
                  21. Flowers in many-flowered cymes; corolla lobes acute ... Benkara
                  21. Flowers 1-3; corolla lobes obtuse or orbicular:
                     22. Leaves 20-25 cm long; berries ovoid ... Tamilnadia
                     22. Leaves up to 8 cm long; berries globose ... Catunaregam
               20. Climbing shrubs ... Oxyeros
         18. Ovary 1-celled:
            23. Unarmed shrubs or trees ... Gardenia
            23. Armed shrubs or trees ... Cerisoides
      17. Inflorescence axillary ... Discospermum

1. Ovules solitary in each cell:
24. Leaves with stipules:
   25. Radicle superior:
      26. Fruit of 2 mericarps, separating from columnella; herbaceous plants ... Knoxia
      26. Fruit a drupe with 2-many, free or cohering pyrenes; shrubs or trees:
         27. Ovary 2-celled ... Canthium
         27. Ovary 3-5-celled ... Meyna
   25. Radicle inferior:
28. Corolla lobes twisted:
   29. Bracts coriaceous; style 2-fid … **Ixora**
   29. Bracts membranous; style entire … **Pavetta**
28. Corolla lobes valvate:
   30. Calyx tubes confluent … **Morinda**
   30. Calyx tubes not as above:
      31. Ovules basilar, erect, anatropous:
      32. Style branches 2:
         33. Trees or shrubs:
            34. Stipules intra-petiolar:
               35. Corolla tube straight … **Psychotria**
               35. Corolla tube curved … **Chassalia**
            34. Stipules inter-petiolar … **Saprosma**
      33. Slender creeping herbs … **Geophila**
      32. Style branches 3-9:
         36. Fruit a capsule … **Spermacictyon**
         36. Fruit a drupe:
            37. Stipules herbaceous, entire; cymes sessile … **Lasianthus**
            37. Stipules membranous, with ciliate setose margins; cymes peduncled … **Litosanthes**
      31. Ovules attached to septum, amphitropous:
         38. Fruit of 2 indehiscent cocci; stipules entire or toothed … **Hydrophyllax**
         38. Fruit of 2 or 1 cocci, dehiscing ventrally; stipules pectinate … **Spermacoce**
24. Leaves without stipules … **Rubia**

**Argostemma Wall.**


Tiny herbs, 4.0-10.5 cm high, as an epiphyte or on rocks. Leaves in whorls of 4, unequal, subsessile, 1.5-4.0 x 0.5-1.0 cm, elliptic-lanceolate, apex acute, base cuneate, faintly nerved. Flowers in few-flowered umbels (lateral umbels simple, middle one compound), white, 5-merous; calyx broader than long, c 0.3 x 0.2 cm, teeth triangular; petals c 0.1 cm long, divided to base, lobes narrowly triangular, oblong or ovate, acute. Capsules 2-celled, many-seeded. Seeds 6-8, bluntly angular, dark brown.
Fls. & Frts.: August–October.

Distrib.: Occasional on moist rocky places. Sindhudurg (Cooke, op. cit.).

**Benkara** Adans.


Shrubs, 2–4 m high; branches sometimes armed with spines. Leaves 3–6 x 1–2 cm, elliptic-oblong or obovate, coriaceous; nerves conspicuous. Flowers scented, axillary, white, in cymose fascicles. Berries red with calyx scars at tip. Seeds 6–8, orange, embedded in pulp.

Fls. & Frts.: April–November.

Illus.: Wight, l.c. t. 310. 1840 [Griffithia rugulosa Thw. (excl. fruit section)].

Distrib.: S. Konkan (Cooke, op. cit.).

**Canthium** Lam.

1. Armed shrubs or climbers; spines supra axillary:
   2. Flowers 5-merous ... *C. angustifolium*
   2. Flowers 4-merous ... *C. coromandelicum*
1. Unarmed shrubs or trees ... *C. dicoccum* var. umbellatum


Scandent, straggling shrubs; thorns straight or curved, 2.5–6.0 cm long; branches clothed with appressed hairs. Leaves opposite, 3.0–7.5 x 1.7–3.7 cm, elliptic or elliptic-lanceolate, apex acute, base rounded or cordate; nerves and margins hirsute on lower surface; stipular hairs fall off at fruiting. Flowers greenish-white, 5-merous, in short, few-flowered, axillary fascicles or cymes; corolla tube short. Drupes obcordate, 0.6 cm across; pyrenes rugose.

Fls. & Frts.: February–May.
Illus.: Wight, l.c. t. 826. 1845 [C. leșchenaulti (DC.) Wight & Arn. Prodr. 426. 1834].

Distrib.: Frequent in deciduous forests. Bombay (Cooke, op. cit.), Kolhapur, Ratnagiri, Satara, Sindhudurg.


Thorny shrubs, 2–3 m tall or climbing; thorns opposite, stout, straight; bark grey; wood hard. Leaves in clusters of 4 or 5, 0.7–4.0 x 0.5–2.5 cm, variable, obovate, orbicular, elliptic or elliptic-ovate, apex acute, base obtuse or cuneate; petiole 0.5–0.6 cm long. Flowers yellowish-green or green, in axillary clusters; calyx tubular; stamens hairy, filaments white. Drupes didymous, furrowed, obcordate, 1.1 x 0.9 cm, yellow or orange when ripe, edible.

Fls. & Frts.: June–May.


Distrib.: Infrequent in deciduous forests. Ahmednagar, Buldhana, Akola, Aurangabad, Chandrapur, Kolhapur, Nagpur, Osmanabad, Pune, Ratnagiri, Satara.


Small trees or shrubs, 3–8 m tall. Leaves olive-green, opposite, 7.0–12.7 x 3.4–7.0 cm, elliptic or ovate, smooth, shining, coriaceous, apex acute; petiole 0.5 cm long; stipules connate, ovate, with a dorsal subulate hard point. Flowers in axillary clusters, white, fragrant, 5-merous; corolla tube narrow. Drupes subglobose, 1.3 x 0.7 cm, prominently rugose, pericarp thin, black when ripe.

Fls. & Frts.: October–March.

Distrib. : Frequent in moist deciduous forests. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

Notes : Cooke transferred Canthium umbellatum Wight to Plectronia L. as Plectronia L. (1677) antedated Canthium (1785). But the specific epithet umbellata was not available as it had been adopted for a Madagascar plant by Baker (J. Linn. Soc. 20:168. 1883). So he proposed a new name P. wightii. However, Plectronia L. (1677) was based on two different elements one, a specimen and another, a figure published by Burmann in Pl. Afr. 257, t. 94. 1739 and they were referable to two widely separated families, Oliniaceae and Rubiaceae. Hence Plectronia L. had to be rejected. Consequently Canthium Lam. (1785) happens to be the next available name for this genus.

**Catunaregam** Adans. ex V. Wolf

**Catunaregam** Adans. ex V. Wolf a validly published generic name (1776) based upon Rheede's Katu Naregam has been over looked or ignored. Having priority and being congeneric with Xeromphis Raf. (1838) it has been re-established by Tirvengadam (1978).


Trees, 5–6 m tall, armed with strong, straight, nearly opposite decussate spines; lateral branches suppressed, short, bearing fascicles of 3–4 leaves. Leaves ovate or obovate, apex obtuse, more or less rounded or attenuate into a petiole (0.5 cm); young leaves hirsute, densely so on nerves of both surfaces. Flowers white, turning yellow at maturity, axillary, at ends of leaf bearing branches, fragrant, c 2 cm across; peduncles short. Berries globular up to 4 x 4.4 cm. Seeds flat, embedded in pulp.

Fls. & Frts. : March–November.

Illus. : Wight Ic. t. 580. 1842; Talb. For. Fl. Bombay Pres. & Sind 2; 99 & 100, f. 341 & 342. 1911 (Randia dumetorum); Wight. Ic. t. 582. 1842 [R. longispina (Roxb.) DC. Prodr. 4: 386. 1836].

Distrib. : Common throughout.
Ceriscoides turgida (Roxb.) Tirveng.
**Ceriscoides (Hook. f.) Tirveng.**


Shrubs or small trees, 3–8 m tall; bark bluish-grey, smooth, with sometimes leaf bearing strong spines. Leaves 1.0–12.5 x 0.4–5.6 cm, coriaceous, glabrous or velvety tomentose beneath, apex obtuse, base tapering to an obscure petiole. Flowers dimorphic; the male ones in fascicles; calyx lobes minute; female flowers solitary, with longer calyx lobes. Berries globose, c 4.5 x 4.6 cm, woody. Seeds smooth.

**Fls. & Frts.** March–October.


**Distrib.**: Infrequent in deciduous forests. Ahmednagar, Akola, Amravati, Bhandara, Chandrapur, Dhule, Jalgaon, Nagpur, Nasik, Pune, Ratnagiri, Sindhudurg, Wardha, Yavatmal.

**Chassalia Comm. ex Poir.**


Undershubs, 0.5–2.0 m tall; branchlets terete. Leaves 8.0–22.5 x 3.5–7.0 cm, variable, elliptic, oblanceolate or obovate, obtuse or acuminate at apex, cuneate at base. Flowers pinkish-white, in terminal cymes; calyx tube curved; corolla tube elongate. Fruits of 2 pyrenes, c 0.8 cm long, ventrally grooved, dorsally rounded. Seeds purplish-black, orbicular.

**Fls. & Frts.** April–October.


**Distrib.**: Infrequent in the undergrowth along ghats. Ratnagiri, Sindhudurg.
**Dentella J. R. & G. Forst.**


1. Leaves hairy along the margins; fruits densely to sparsely covered with hairs
   2. var. repens
1. Leaves glabrous; fruits glabrous
   2. var. serpyllifolia

**var. repens.**

Slender, prostrate, succulent herbs, rooting at nodes, dichotomously branched. Leaves minute, 0.2–0.9 x 0.1–0.2 cm, lanceolate, hairy along margins, subsessile; stipules connate, scarious. Flowers 0.15 cm across, white, in axils or forks of branches. Capsules 0.3 cm across, globose, indehiscent. Seeds minute, angular.


Distrib.: Frequent in open, moist situations. Ahmednagar, Akola, Amravati, Bhandara, Buldhana, Chandrapur, Kolhapur, Nagpur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Herbs with subsessile, glabrous, obovate-elliptic leaves. Flowers subsessile; calyx membranous; corolla white. Capsules glabrous.

Fls. & Frts.: April–May.

Distrib.: Rare in sandy soils. Chandrapur.

**Discospermum Dalz.**

1. Flowers in cymes; stamens in male and hermaphrodite flowers with long filaments
   2. D. apicolarpa
1. Flowers fascicled; stamens sessile
   2. D. sphaerocarpa

Trees, medium sized, 8–15 m tall; branches tetragonal. Leaves 9–20 x 4.0–7.5 cm, ovate–lanceolate, hairy glands present in axils of veins beneath, bluntly acuminate at apex. Flowers creamy, subsessile, fragrant; calyx minutely toothed; corolla c 0.6 cm long, glabrous or with a few weak hairs outside, hairy inside. Berries c 1.9 cm long, ovoid. Seeds rugose.


Distrib. : Rare in moist deciduous forests. Konkan (Cooke, op. cit.), Sindhudurg.


Trees, 8–15 m tall. Leaves 4.0–15.5 x 4.0–6.5 cm, elliptic–lanceolate, apex obtuse or acute; petiole 0.5–10.0 cm long. Corolla tube shorter than calyx lobes, 0.3 cm long, throat glabrous. Drupes globose, c 2.0 cm across. Seeds flat, smooth.

Fls. & Frts. : October–December.


Distrib. : Rare in ghat forests. Bombay, 'Konkan' (Cooke, op. cit.).

GARDENIA J. Ellis (nom. cons.)

1. Leaves petioled; calyx teeth erect ... G. resinifera
1. Leaves sessile or subsessile; calyx teeth not as above:

2. Calyx teeth minute, equal, triangular ... G. gummifera
2. Calyx teeth long, unequal, recurved ... G. latifolia

Shrubs or small trees, c 3.5 m tall. Leaves sessile, 1.5–10.5 x 0.7–5.0 cm, obovate, shining, apex obtuse or subacute. Flowers subsessile, 1–3 together, white; calyx teeth c 1 cm long; corolla tube 4.5–5.5 cm long, lobes 3.5–5.5 cm across. Berries c 4 x 2 cm, oblong–ellipsoid, ripe ones edible.

Fls. & Frts.: March–October.

Illus.: Wight, Ic. t. 576. 1842.

Distrib.: Infrequent in deciduous forests. Bhandara, Chandrapur, Dhule, Nagpur, Raigad.


Trees, 10–12 m tall; bark grey, flaky. Leaves subsessile, opposite or 3–nately whorled at ends of branches, 7.5–23.0 x 2.5–14.0 cm, broadly elliptic, oblong or obovate, coriaceous, obtusely acute or rounded at apex, attenuate at base. Flowers solitary or 2 together, subsessile, white, changing to yellow, fragrant; calyx teeth 5–9, lanceolate, subulate, margins ciliate; corolla tube 5.0–7.5 cm long, lobes c 5 cm across, densely pubescent. Berries globose, surmounted by calyx–limbs, c 4.5 x 4 cm.

Fls. & Frts.: March–October.


Distrib.: Infrequent in deciduous forests. Amravati, Akola, Bhandara, Chandrapur, Nagpur, Nasik, Nanded, Yavatmal.


Shrubs, 3–8m tall; bark greenish-grey, fleky. Leaves 6.5–15.7 x 2.5–8.0 cm, elliptic or elliptic-oblong, thinly coriaceous, shining, apex acute, attenuate at base into a short petiole, c 0.6 cm long; nerves 20–25 pairs, parallel. Flowers white, turning yellow, fragrant, c 3 cm across, solitary; corolla tube 2–5 cm long. Berries ellipsoid or subglobose, c 2 x 1.5 cm, surmounted by calyx limbs.

Fls. & Frts.: January–September.

Distrib. : Frequent in deciduous forests. Bhandara, Bombay, Chandrapur, Nagpur, Osmanabad, Pune, Raigad, Solapur, Thane, Yavatmal.

**GEOPHILA D. Don (nom. cons.)**


Perennial herbs, creeping and rooting at nodes. Leaves long petioled, 1–4 x 0.8–2.5 cm, acute at apex, cordate at base, lower surface white; petioles 1–5 cm long. Flowers white, solitary and terminal, c 0.75 cm across; corolla funnel shaped. Drupes 0.6–1.0 cm across, 2–celled.

Fls. & Frts. : June–October.

Illus. : Wight, Ic. t. 54. 1838.

Distrib. : Occasional in moist situations. Sindhudurg (Cooke, op. cit.).

**HALLDINA Ridsd.**


Trees, 6–15 m tall; bark thick, grey, rough. Leaves crowded at ends of branchlets, 6.5 –29.0 x 6–25 cm, orbicular, abruptly acuminate at apex, cordate at base, lower surface densely pubescent. Flowers in globose, yellow, peduncled heads, 1.8–2.5 cm across; calyx tube angled; corolla tube funnel-shaped. Capsules 0.4–0.5 cm long, pubescent.

Fls. & Frts. : May–August.

Distrib. : Frequent in deciduous forests. Chandrapur, Dhule, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.

**HEDYOTIS L.**

The broad concept of Lewis (Rhodora 63: 216. 1961; Backer & Bakhuizen, Fl. Java 2: 284. 1965) and Rao & Hemadri (Indian Forester 99: 372. 1973) who merged the genera *Oldenlandia* L., *Exallagu* Brem. and *Kohautia* Cham. & Sch. by taking in view that the majority of the characteristics of several species do not exhibit much more differentiation. Hence in the present treatment *Hedyotis L. sensu lato* is followed.

1. Corolla tube inflated near lobes and narrowed below :
   2. Flowers sessile or subsessile ... *H. aspera*
   2. Flowers long pedicelled :
      3. Capsules globose ... *H. nagporensis*
      3. Capsules elongate ... *H. gracilis*

1. Corolla tube evenly narrowed downwards :
   4. Capsules indehiscent ... *H. auricularia*
   4. Capsules dehiscent :
      5. Capsules dehiscent at top only :
         6. Capsules hard, crustaceous; stipule of many hair-like, long bristles ... *H. nitida*
         6. Capsules soft; stipules not as above ... *H. trinervia*
      5. Capsules septicidally or loculicidally dehiscent :
         7. Flowers in axillary or terminal heads :
            8. Stipules pectinate; capsules hispid ... *H. coerulea*
            8. Stipules not as above; capsules glabrous ... *H. pinifolia*
         7. Flowers not in heads :
            9. Corolla tube usually short :
               10. Flowers in partly axillary and partly terminal panicled cymes ... *H. stocksii*
               10. Flowers 1-4 together, axillary :
                  11. Herbs, erect; corolla tube slender; capsule valves elongate ... *H. herbacea*
                  11. Herbs, diffuse; corolla tube broad; capsule valves short :
12. Flowers pedicelled, usually in pairs or threes ... H. corymbosa
12. Flowers sessile or subsessile, solitary ... H. diffusa
9. Corolla tube long and slender :
13. Capsules longer than broad, compressed ... H. pumila
13. Capsules not as above :
14. Leaves opposite, linear; capsules 1.5–2.0 mm across ... H. affinis
14. Leaves whorled, broader, more than 1 mm broad; capsules c.2.5 mm across :
15. Capsules 4 angled; seeds hardly angled ... H. racemosa
15. Capsules terete; seeds angular ... H. puberula


Annual, sparsely hairy or glabrous, dichotomously branched herbs, 20–45 cm high; branches filiform. Leaves 1.0–4.0 x 0.1–0.4 cm, linear to linear-lanceolate, acute, nerveless. Flowers paired, white to purple, on capillary pedicels in panicles on slender peduncles. Capsules c.0.02 cm across, globose, with persistent calyx.

Fls. & Frts.: June–November.

Illus.: Bedd. Ic. t. 33. 1874 (O. dichotoma).

Distrib.: Infrequent in open situations. Akola, Amravati, Chandrapur, Nagpur, Nasik, Osmanabad, Pune, Thane.


Erect, hirsute herbs, 15–40 cm high, branched; stem obtusely angled. Leaves 3–6 x 0.1–0.5 cm, whorled, filiform, linear or linear-lanceolate. Flowers white, bluish in throat, in terminal branched cymes, solitary or in pairs. Capsules didymous, 0.4–0.5 cm across, scabrous.
Fls. & Frts.: August–November.


Distrib.: Frequent in open areas. Ahmednagar, Akola, Aurangabad, Beed, Dhule, Nasik, Osmanabad, Pune, Solapur, Yavatmal.


Herbs, branched, trailing, annual, rooting at nodes, hairy all over or at nodes. Leaves sessile or subsessile, 3–5 x 1–3 cm, ovate, ovate-lanceolate or lanceolate, hairy on both surfaces, apex acuminate, prominently nerved. Flowers white, pedicellate, in axillary, dense cymes. Capsules c 0.2 cm across, globose, hairy, hard, indehiscent.

Fls. & Frts.: July–November.

Illus.: Bedd. Ic. t. 27. 1874.

Distrib.: Frequent among grasses in moist places. Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg.


Erect, annual, scabrous, herbs, 10–38 cm high. Leaves 0.5–2.5 cm long, linear, subulate, margins recurved, hirsute, aristate; stipules truncate, with about 5–6 pectinate bristles. Flowers bluish-violet, 4-merous, sessile, in axillary or terminal few-flowered heads, c 1.2 cm across. Capsules globose, c 0.2 cm across, crustaceous, late dehiscent with a crown of calyx lobes.

Fls. & Frts.: August–November.


Distrib.: Scattered in open moist situations. Chandrapur, Thane.

Herbs, ascending, spreading or prostrate, procumbent, reddish, 3–60 cm long. Leaves whorled, 1.0–3.5 x 0.15–0.4 cm, linear or narrowly linear-elliptic, margins recurved and scabrous, nerveless. Flowers minute, white to pale violet, in axils; corolla tube pinkish. Capsules globose; crown flat.

Fls. & Frts.: February-December.


Distrib.: Common throughout.


Annuals with prostrate stems. Leaves subsessile, linear or linear-lanceolate, acute at apex, glabrous; stipules slightly pectinate. Flowers solitary or rarely two together, sessile or short pedicellate. Capsules broader than long, truncate, not produced beyond calyx, with angular seeds.

Fls. & Frts.: April-December.

Distrib.: Found in wet soils of paddy fields and along river banks.

Note: This species is included on the authority of S. M. Almeida (op. cit.).


Slender, almost grass-like herbs, 22–45 cm high. Leaves 4.0–10.0 cm long, linear, strap-shaped, apex acuminate. Flowers pale brown or lurid green-purple, in narrow, erect panicles; corolla-tube 1.5 cm long; pedicels 0.9–2.5 cm long, filiform. Capsules 0.5 x 0.4 cm.

Fls. & Frts.: February-June.

Illus.: Bedd. Ic. t. 32. 1874 (H. aspera).

Distrib.: Rare in open areas. Dhule.

'Paripath'.

Herbs, erect to procumbent, with 4-sided, dichotomously branched stems, 3–50 cm high; stems, leaves and branches turning black on drying. Leaves sessile, 1.0–3.5 x 0.1–0.3 cm, linear-oblong to linear-lanceolate, acute at apex, margins recurved, nerveless. Flowers white, with reddish tinge, on filiform pedunclcs in corymbbs. Capsules ovoid or subglobose, 0.15–0.2 cm across, pale straw coloured, 2-celled; crown of capsule protruded beyond calyx.

Fls. & Frts. : Almost throughtout the year.

Illus. : Fyson, Fl. South Indian Hill st. 2: t. 216. 1932.

Distrib. : Frequent in open moist situations. Ahmednagar, Buldhana, Chandrapur, Kolaba, Kolhapur, Nagpada, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Slender annual herbs, 20–40 cm high. Leaves 2.5–5.5 cm long, linear. Flowers in lax cymose-panicles at end of wiry stems; cyme branches divaricate; pedicels capillary, 2.5–5.0 cm long. Flowers minute, pink; sepals subulate, shorter than corolla tube, 0.2–0.3 cm long; corolla lobes acuminate. Capsules c 0.4 cm long and broad.

Fls. & Frts. : September–November.

Distrib. : Infrequent in open moist places. Aurangabad, Pune Yavatmal.


Annuals, usually prostrate or ascending, 15–45 cm high; stems 4-angled, rough on angles. Leaves subsessile, 2.5–7.5 x 0.3–1.7 cm, lanceolate, elliptic-lanceolate, rigid, mid-rib prominent, nerves
indistinct, scabrous toward much recurved margins, base acute. Flowers white, solitary or few, axillary, sessile. Capsules ovoid, 0.3 x 0.6 cm, hard, crustaceous, crowned with calyx-teeth equalling length of capsules.

**Fls. & Frts.:** February–November.

**Illus.:** Bedd. l.c. t. 36. 1874 (H. glabella).

**Distrib.:** Scattered in open areas. Kolhapur.


Slender wiry plants, 10–20 cm high; branches 4-angled, angles hispid. Leaves narrow, acicular, fascicled, scabrid, nerveless with a single mid-rib, margins revolute; stipules 0.4 cm long including rigid bristles. Flowers in few-flowered cymes, subsessile or shortly pedicelled; calyx teeth shorter than capsules. Capsules free, 2-lobed, keeled, c. 0.3 x 0.2 cm. Seeds minute, brown, angled.

**Fls. & Frts.:** August–November.

**Distrib.:** Rare in open areas. Chandrapur.


Herbs, biennial or perennial, glabrous or scaberulous, 15–25 cm high, much branched from base. Leaves sessile, fascicled, 0.8–1.5 x 0.1–0.3 cm, oblong-lanceolate, margins recurved, nerveless, apex acute. Peduncles axillary, bearing 3-angled, many-flowered umbels. Flowers lilac or light purple, c 0.08 cm across. Capsules globose, didymous.

**Fls. & Frts.:** August–December.


**Distrib.:** Infrequent in open moist areas. Chandrapur, Pune, Solapur (Cooke, op. cit.).
Hedyotis pinifolia Wall. ex G. Don

Herbs, annual; stems slender, prostrate or erect, branching from base. Leaves sessile, 1.0–1.5 x 0.2–0.4 cm, elliptic or elliptic–lanceolate, apex acute, attenuate at base into a short slender petiole. Flowers white, solitary, on filiform peduncles. Capsules c 0.3 x 0.2 cm, obovoid, base of calyx teeth touching in fruit.

**Fls. & Frts.** : August–December.

**Distrib.** : Scattered in open areas. Aurangabad, Dhule, Kolhapur, Pune, Raigad.


Herbs, prostrate, spreading, branched, succulent. Leaves 1–4 x 0.5–1.3 cm, elliptic–oblong or oblanceolate. Flowers white. Capsules green, included. Seeds many, brownish–black, pitted.

**Fls. & Frts.** : September–October.


**Distrib.** : Rare in open, moist situations. Raigad.


Herbs, slender, erect, 8–25 cm high; branches ending in 2–3 chotomous cymes. Leaves sessile, 0.6–1.8 x 0.05–0.2 cm, linear–lanceolate, scabrid on both sides, apex acute and tipped with a fine bristle. Flowers white, minute, 0.6 cm across; calyx–teeth linear–lanceolate, equal to corolla tube; corolla tube 0.4–0.6 cm long. Capsules 0.15–0.3 cm across, hemispheric or turbinate, smooth, shining, crowned by long erect subulate calyx lobes.
**Hedyotis racemosa** Lam.
A–Entire plant; B–L. s. of flower; C–Corolla spread open with epipetalous stamens; D–T.s. of fruit.

Herbs, annual, flaccid, spreading, glabrous or hairy; stems rooting near base. Leaves subsessile, 0.6–1.2 x 0.5–0.9 cm, ovate–elliptic or orbicular, apex acute to rounded, 3–nerved from base. Flowers white to purplish, sessile, solitary or in clusters of 1–6 in axil; calyx hairy; corolla 0.5–0.9 cm long. Capsules globose, hairy, 0.15–0.2 cm across, didymous, crowned by calyx–teeth.

**Fls. & Frts.** : September–October.

**Illus.** : Bedd. Ic. Pl. t. 29. 1874.

**Distrib.** : Found in wet places in fallow fields. Ratnagiri, Sindhudurg.

**HYDROPHYLAX L. f.**


Herbs, perennial; stems prostrate, succulent, rooting at nodes; plants reddish with woody tap–root. Leaves 0.5–1.5 x 0.3 – 0.5 cm, ovate, obovate, apex acute, cuspidate, margins and lower surface papillose; stipules connate with petioles in an entire or toothed sheath. Flowers lilac and blue, 4–merous, axillary. Fruits yellowish, acutely angled, corky, 0.8–2 cm long.

**Fls. & Frts.** : August.
Hymenodictyon Wall.

1. Leaves pubescent; flowers pedicelled; capsules pendulous on decurved peduncles  ...  H. orixense
1. Leaves glabrous; flowers sessile; capsules erect  ...  H. obovatum


Trees, 8–10 m tall. Leaves crowded at ends of branches, 10–20 x 8.0 – 9.5 cm, elliptic or obovate, apex abruptly acuminate, base tapering into c 5 cm long petiole, glabrous above, pubescent beneath. Flowers white, sessile, in dense cylindric spikes. Capsules c 1.5 x 0.5 cm, purple, ellipsoid, erect. Seeds winged.

**Fls. & Frts.** : August–December.


**Distrib.** : Frequent in deciduous forests. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Trees, 4.5–12 m tall; bark grey, smooth. Leaves crowded at ends of branchlets, 12.5–25.0 x 4.5 –11.0 cm, broadly elliptic–oblong or elliptic–lanceolate, apex abruptly acuminate, attenuate at base into 2.5–8.0 cm long petiole, pubescent on both surfaces. Inflorescence pendulous; flowers greenish, fragrant, pedicelled in fascicles or umbels on a thyrsoid panicle. Capsules dehiscent, brown, ellipsoid 1.5–2.0 x 0.9–1.0 cm, 4–locular. Seeds winged, c 1.0 x 0.5 cm

**Fls. & Frts.** : April–September.

Distrib. : Infrequent in deciduous forests. Amravati, Chandrapur, Dhule, Nasik, Pune, Raigad, Satara, Thane.

**IXORA L.**

1. Calyx teeth longer than ovary  
   ...  *I. polyantha*

1. Calyx teeth shorter than ovary:

2. Leaves and inflorescence turning black on drying  
   ...  *I. nigricans*

2. Leaves and inflorescence not as above:

3. Peduncles more than 15 cm long  
   ...  *I. elongata*

3. Peduncles less than 15 cm long:

4. Flowers white:

5. Flower buds globose  
   ...  *I. brachiata*

5. Flower buds ellipsoid:

6. Corolla tube with white hairs at the mouth  
   ...  *I. alba*

6. Corolla tube without white hairs at the mouth  
   ...  *I. pavetta*

4. Flowers bright scarlet  
   ...  *I. coccinea*


Shrubs. Leaves elliptic, apex acute, base narrowed; stipules broad. Flowers white, in cymes, much divided, towards ends of branches, pedicelled; bracts: lower most pair embracing base of common peduncle, cordate, rest gradually decreasing in size; styles hairy; stigma clubbed.

**Fls. :** November–February.

**Illus. :** Wight, Ic. t. 185. 1850.

**Distrib. :** Rare in forest areas. Sindhudurg (S. M. Almeida, op. cit.).


Small trees, 3–5 m tall; bark grey, smooth. Leaves opposite, shining, 7.0–15.5 x 2–7 cm, elliptic, apex obtuse, coriaceous, acute at base; petioles c 0.5 cm long. Flowers in sessile or shortly peduncled,
brachiate cymes; corolla tube 0.6 cm long, lobes oblong, tip rounded,
deflexed; pedicels and peduncles pubescent. Drupes globose, reddish
tinged, 0.5–0.8 cm across, purplish–black when ripe, edible.

_Fls. & Frts._ : November–February.

_Illus._ : Wight, Ic. 2(4) : 6, t. 710. 1843.

_Distrib._ : Frequent in deciduous forests. Ahmednagar, Akola,
Buldhana, Chandrapur, Kolhapur, Nanded, Nasik, Pune, Raigad,
Ratnagiri, Satara, Sindhudurg, Thane.

1880; Cooke, Fl. Pres. Bombay 2:40. 1958 (Repr.). 'Bakara'.

Shrubs, 1.0–1.5 m tall. Leaves opposite, sessile or subsessile, olive
green when dry, shining, 5–10 x 3.0–5.7 cm, oblong, elliptic, apex
obtuse, apiculate, base rounded or subcordate. Inflorescence of dense,
 sessile, corymbiform cymes. Flowers 4.0–5.5 cm long; corolla tube 4.0
cm long. Drupes globose, reddish or purple, 1–2–seeded.

_Fls. & Frts._ : Throughout the year.

_Illus._ : Wight, Ic. t. 153. 1839.

_Distrib._ : Frequent in open & deciduous forests. Bombay,
Buldhana, Kolhapur, Nagpur, Osmananbad, Pune, Raigad, Ratnagiri,
Sindhudurg, Thane.

*I. elongata* Heyne ex G. Don, Gen. Syst. 3:571. 1834; Hook. f. Fl.

Shrubs, glabrous except for calyx, bracts and corolla lobes;
branches terete. Leaves 6.4–16.5 x 4.0–6.4 cm, elliptic–lanceolate,
thinly coriaceous, obtuse or subacute at apex, base attenuate into
0.6–1.8 cm long petiole. Flowers pink, in long pedunculate, brachiate,
pubescent, corymbose–cymes; peduncles 10.0–17.5 cm long, branches of
cymes red pubescent; corolla tube 0.8–1.2 cm long, lobes c 0.6 x 0.2 cm,
ovate–oblong, acute, usually hairy on back. Drupes faintly 2–lobed,
smooth, black when ripe.

_Fls. & Frts._ : February–May.

_Distrib._ : Occasional in deciduous forests. Kolhapur, Konkan &
Pune (Cooke, op. cit.).

Shrubs, 1–2 (5) m tall. Leaves 10–19 x 4.0–6.5 cm, dark green above, pale beneath, elliptic–oblong or elliptic–lanceolate (rarely obovate), membranous, apex acutely acuminate, cuneate or rounded at base; petiole 0.6–1.0 cm long. Flowers white, odorous, in subpaniculiform, brachiate cymes; corolla–tube 1.0–1.2 cm long, i. e. twice as long as lobes (0.6–0.7 cm); peduncle slender 2.5 cm long. Drupes globose, didymous, 0.5–0.6 cm across.

Fls. & Frts. : Throughout the year.

Illus. : Wight Ic. t. 318. 1840.


Woody shrubs, 2.5–6.0 m tall; bark dark brown, smooth. Leaves 8–21 x 3.0–8.5 cm, elliptic–obovate or oblong, shining, thickly coriaceous, upper surface dark green, dull beneath, base rounded or cordate; petioles rugose, c 0.5 cm long. Flowers white, fragrant, in dense terminal corymbose–cymes; anthers reflexed. Drupes reddish–green, 2–lobed, c 0.6 cm across.

Fls. & Frts. : Almost throughout the year.


Distrib. : Infrequent in deciduous forests. Ahmednagar, Amravati, Bhandara, Buldhana, Chandrapur, Dhule, Jalgaon, Kolhapur, Nagpur, Nanded, Nasik, Osmanabad, Pune, Raigad, Satara, Solapur, Yavatmal, Thane.

Shrubs, 0.3–1.0 m tall. Leaves 15–30 x 6–14 cm, obovate, elliptic, elliptic–oblong or oblong–lanceolate, coriaceous, apex acute or acuminate, base cuneate; petioles 0.6–1.0 cm long, rugose. Flowers white, mildly fragrant, in corymbiform–cymes, branches of cymes densely white hairy, open or collected into globose heads; corolla–tube 4 cm long, slender, without hairs in the throat. Drupes yellowish–red when ripe, tomentose, c 1 x 2 cm, ovoid, crowned with persistent calyx teeth.

Fls. & Frts. : January–June.
Illus. : Wight, op. cit.
Distrib. : Occasional in deciduous forests. 'Konkan' (Cooke, op. cit.), Nagpur, Pune.

KNOXIA L.


1. Leaves lanceolate to linear–lanceolate; fruits oblong–ellipsoid ... var. mollis

1. Leaves ovate to ovate–lanceolate; fruits terete, ovoid to ovoid–ellipsoid ... var. hookeriana

var. mollis.

Perennials, up to 100 cm high; stems sparsely to densely tomentose above. Leaves petioled, narrowly lanceolate, sparsely pubescent on both surfaces. Inflorescence lax, paniculate, much elongate while fruiting. Flowers bluish. Fruits quadrangular, oblong–ellipsoid.

Fls. & Frts. : July–October
Illus. : Wight, Ill. 2: t. 128. 1850 (Knoxia corymbosa).
Distrib. : Infrequent in deciduous forests. Ahmednagar, Bhandara, Chandrapur, Kolhapur, Nagpur, Pune, Sindhudurg (Cooke, op. cit.), Thane, Yavatmal.

var. hookeriana (Bhattacharjee & Deb) V.P. Prasad & Lakshmi., comb. nov. K. sumatrensis var. hookeriana Bhattacharjee & Deb in J.
This variety can be distinguished by the shorter and ovate-elliptical, shortly petioled to subsessile leaves; congested, corymbose inflorescence and more or less globose, subterete, smaller, dark blackish-brown fruits with mericarps usually remaining unsplit and falling off carrying the columella inside.


*Distrib.* : Mountain regions. Maharashtra (without exact locality, Bhattacharjee & Deb, l.c.).

*Note* : This variety is included on the authority of Bhattacharjee & Deb, l.c. As there are no specimens in BSI, description provided above is as given by them.

Lasianthus acuminatus


Shrubs, 2–6 m tall. Leaves 7–10 x 2–5 cm, elliptic–lanceolate, smooth, shining, apex abruptly acuminate, base rounded, veins 3–6 pairs, arching. Flowers white, in elongate, sessile spikes. Drupes 0.8–0.9 cm across, subglobose, 4–locular, crowned with persistent calyx–teeth; pulp edible.

*Fls. & Frts.* : January–March.

*Illus.* : Deb & Gang. op. cit.


Lasianthus sessilis

Shrubs, 4–5 m high. Leaves elliptic, obtuse or acute at base, acuminate at apex, hairy on the nerves beneath. Flowers white; corolla villous outside. Fruits oblong, dorsally tubercled.

*Fls. & Frts.* : July–September.

*Illus.* : Talb. op. cit.; Deb & Gang. op. cit.

*Distrib.* : Semi–evergreen forests in ghat areas, not common. Satara.

**Litosantes Bl.**


Shrubs, 5–8 m tall, much branched; bark light brown, rough, corky. Leaves 12–15 x 3.5 – 4.5 cm, elliptic–oblong, sparsely pubescent beneath, acuminate and apiculate at apex, rounded at base; petioles 3–5 mm long; stipules 3–5 mm broad, acuminate. Flowers creamy–white, in cymes; peduncles 3–4 mm long; calyx hairy, tube short, lobes 3, subulate, acute, erect; corolla tube 3–4 mm long, throat hairy, lobes 3, each 2–3 mm long, ovate, glabrous; stamens 3, filaments upto 1 mm long, inserted at throat of corolla tube, anthers up to 2 mm long; ovary 4–locular, locules 1–ovuled; style 2–3 mm long; stigma 4–lobed. Drupes c 8 mm across, globose, often 3–4–lobed, blue when ripe, crowned with persistent calyx lobes.

*Fls. & Frts.* : February–April.

*Illus.* : Wight (op. cit.); Deb & Gang (op. cit.).


*Notes.* : 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 (Karthik. & Sharma, 1983). Deb & Gangopadhayay in their revision of *Lasianthus* (J. Econ. Tax. Bot. 15: 265 – 308. 1991) made no mention about this species.
MEYNA Roxb. ex Link


Shrubs or small trees, 3–10 m tall, armed with thorns, 2.0–2.5 cm long. Leaves 5.0–12.5 x 3.7–8.5 cm, elliptic, ovate or ovate–lanceolate, shining, apex acute, base cuneate, tapering into 0.6–2.5 cm long petioles. Flowers greenish–yellow, in axillary clusters; calyx cup–shaped, ribbed, teeth triangular, acute; corolla tube hairy at throat within. Drupes 2.5 cm across, fleshy, chocolate–colour when ripe, edible. Seeds 5–6.

*Fls. & Frts.* : March–June.


*Distrib.* : Frequent in deciduous forests. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Solapur, Thane.

*Note.* : Young fruits eaten as vegetable.

MITRAGYNA Korth. (nom. cons.)


Trees, 10–15 m tall. Leaves at ends of branches, variable in shape, 5.0–19.5 x 4.0–13.5 cm, orbicular, obovate, elliptic, ovate, nerves prominent on lower surface, acute or rounded at apex, base rounded or cuneate. Flowers in greenish–yellow, 2.5–3.0 cm across, fragrant, globose heads; corolla–tube reddish, lobes greenish–yellow, salver–shaped. Fruits in globose heads of capsules, c 2 cm across; single capsule bluntly ribbed.

*Fls. & Frts.* : Throughout the year.

**MORINDA L.**

1. Corolla–tube densely pilose inside, lobes acute, glabrous; leaves glabrous, indistinctly transversely veined ... *M. citrifolia*

1. Corolla–tube glabrous on either side; lobes obtuse short, hairy in upper half; leaves tomentose or pubescent, distinctly transversely veined ... *M. pubescens*


Trees, c 13 m tall; bark smooth. Leaves 15–19 x 8.5 – 10.0 cm, elliptic or elliptic–lanceolate, coriaceous, shining, acute; petiole 0.5–1.0 cm long. Flowers white, in solitary peduncled heads, usually in axil of every other pair or leaf–opposed. Syncarps of pyrenes yellowish, fleshy, globose, stalked, 1.0–2.5 cm across, winged.

**Fls. & Frts.** : August–March.


**Distrib.** : Usually cultivated, grows as an escape. Akola, Bombay, Jalgaon, Nagpur, Pune, Ratnagiri, Thane.


Trees, 2–8 m tall; bark greyish–brown, vertically fissured; branches 4–angled. Leaves opposite, decussate, usually one of the pair suppressed, 8.5–18.0 x 3.0–11.5 cm, broadly elliptic or oblong–lanceolate, young leaves tomentose on both surfaces, upper surface glabrous at length; petioles 0.6–1.25 cm long. Flowers creamy–white, in globose–heads, fragrant. Syncarps of pyrenes ellipsoid, fleshy, c 3 cm across, not winged.

**Fls. & Frts.** : March–December.


**Distrib.** : Common throughout.

**Notes.** : It was thought that *M. pubescens* Sm. was an extinct Mascarene endemic but further work by Verdcourt (op. cit.) has demonstrated that it is the earliest name for the well known Indian species and must have been introduced at a very early date.
MUSSAENDA L.

1. Branches and leaves densely tomentose; stipules bifurcated 1/2 way down; flowers orange; seeds not spiny
   ...  M. belilla

1. Branches glabrous; leaves loosely spreading, hairy; stipules not as above; flowers golden yellow;
   seeds spiny
   ...  M. glabrata


Climbing shrubs, densely tomentose; stem lenticular. Leaves broadly ovate, abruptly acuminate at apex, the transverse nerves not prominently parallel; stipules c 0.8 cm long. Corolla tube c 2.5 cm long, limbs c 2.0 cm broad. Berries obovoid, 1.0–1.3 cm long, sparsely hirsute.

*Fls. & Frts.* : April–November.

*Distrib.* : Rare in moist deciduous forests. Nagpur, Ratnagiri (Jayaweera, op. cit.), Satara, Sindhudurg.


Climbing shrubs; branches appressedly hairy. Leaves 7.5–13.7 x 4.5–8.0 cm, broadly elliptic, apex shortly acuminate, base rounded or tapering into a petiole of 2.0–2.5 cm length. Flowers orange–red, in terminal and axillary cymes; one calyx lobe modified into a creamy–yellow, elliptic bract, acute at apex, base tapering into a claw, 2.0–2.5 cm long. Corolla–tube 0.9 cm long, yellow, mouth of tube densely hairy; lobes orange–red. Berries green, subglobose or obovoid, 0.7–0.8 cm across.


1. Capsules dehiscing loculicidally:

2. Flowers in cymes:

3. Erect perennial herbs with terete stems:

   4. Capsules broader than long … N. lancifolia

   4. Capsules subglobose or obscurely 4–sided:

      5. Leaves distinctly petiolate; calyx lobes lanceolate; seeds 1–3 … N. decipiens
      6. Leaves subsessile or very shortly petiolate; calyx lobes broadly ovate; seeds 4–12 … N. sahyadrica

3. Erect annual herbs with 4–angular stems:

   6. Capsules much protruded; calyx lobes minute; seeds cup–shaped … N. latifolia
   6. Capsules not protruded; calyx lobes lanceolate; seeds flat … N. calycina

2. Flowers in clusters:

   7. Capsules 3–4–celled … N. tubulosa

   7. Capsules 2–celled:

      8. Leaves fleshy; capsules slightly protruded … N. carnosa
      8. Leaves membranous; capsules prominently protruded:

         9. Leaves ovate or lanceolate; capsule cells 1–3–seeded … N. montholoni
         9. Leaves linear; capsule cells 5 – seeded … N. foetida

1. Capsules dehiscing septicidally … N. monosperma


Fleshy herbs, 10–30 cm high, 4–angular. Leaves 1.0–2.5 x 0.3 – 1.0 cm, ovate, oblong, pale green beneath, shortly and sparsely pilose on both surfaces, apex acute or obtuse, cuneate to attenuate at base. Cymes loose, terminal and axillary, glabrous or sparsely pubescent, peduncles 0.5–0.6 cm long. Flowers white or purple; calyx–tube sparsely pilose without. Capsules broadly campanulate with a crown of calyx–lobes inserted slightly below apex, c 0.2 cm long, sparsely white hairy, dehiscing over entire width. Seeds 6–10 in each cell.

*Fls. & Frts.* : August–November.

*Distib.* : Occasional in moist open places. Ahmednagar, Pune, Ratnagiri, Satara, Thane.

Annual herbs, 10–15 cm high, diffusely branched from base. Leaves thick, fleshy, scaberulous with papillae above, pale beneath, margins recurved, attenuate at base into a short petiole, almost sessile. Flowers purple, sessile, 3–6 clustered in axils. Fruits 2–locular, with a crown of papillose calyx teeth. Seeds 3–6 in each cell, excavated on face, black.

*Fls. & Frts.*: August–September.


*Distrib.*: Rare on sandy area along sea shores. Raigad, Ratnagiri, (Cooke, op. cit), Sindhudurg.


Perennials with slender, branching stems. Leaves petiolate, membranous, ovate, acuminate at apex, sparsely pilose; stipules with long bristles. Inflorescence terminal and axillary, subpaniculately branched, many–flowered. Capsules subglobose, small, didymous, with a crown shorter than the calyx teeth, with 1–3 seeds in each cell.

*Fls. & Frts.*: Not reported.

*Distrib.*: Concan (Hook. f. op. cit.).

*Note*: As Concan falls in Maharashtra, Goa and Northern Karnataka, presence of this species within Maharashtra has to be confirmed by further collections.


Erect or procumbent, annual herbs, 10–30 cm high; branches 4–angular, rooting at basal nodes. Leaves subsessile, c 2 x 0.2 cm, linear or linear–lanceolate, apex subacute. Inflorescence axillary, capitate, 2–3–flowered. Flowers white, pink or purple, sessile. Capsules 2–locular, with prominent crown. Seeds orbicular, compressed, pitted, black.
Neanotis foetida (Hook. f.) W. H. Lewis


Distrib.: Frequent in deciduous forests in open areas and on tree trunks, rocks, etc. Ahmednagar, Bombay (Cooke, op. cit.), Buldhana, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Herbs, 0.5–1.0 m tall, erect; branches 4–angled. Leaves 2.5–7.5 x 1.0–2.5 cm, ovate or ovate–lanceolate, membranous, pubescent, paler and hairy on nerves beneath, apex acuminate, base cuneate or rounded; petioles 0.6–1.0 cm long. Flowers white or purple, in terminal and axillary corymbs; calyx lobes acuminate; corolla–tube 3–4 mm long. Capsules compressed, broader than long, crowned by distant, recurved teeth. Seeds 4–6, convex on back, pitted.

Distrib.: Frequent in open situations among grasses. Akola, Ahmednagar, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.

Notes.: Lewis (1966) concluded that the species included by De Candolle in *Anotis* are referable to various genera and are restricted to new world. The Asian species treated under the genus *Anotis* by various authors, consequently required a generic name. Lewis proposed the name *Neanotis* and effected transfer of all Asian species treated under Anotis. An interesting feature is *Anotis lancifolia* is based on *Hedyotis lancifolia* Dalz. in Hook. J. Bot. 2:135. 1850 non Schum. 1827. As *Hedyotis lancifolia* Dalz. is a later homonym, it could not be transferred to *Anotis*. Hence Hook. f.’s name is treated as a new name which in turn has been transferred by Lewis, op. cit.

Neanotis latifolia (Dalz.) Deb & Dutta
Herbs, 15–30 cm high; stems purplish to reddish tinged, 4–angled. Leaves 1.5–5.5 x 0.7 – 2.5 cm, ovate, membranous, sparsely hairy on both surfaces, apex acute or acuminate, tapering at base into a petiole. Flowers minute, pink or white, in axillary and terminal cymes. Capsules semi–ellipsoid, 2–locular. Seeds 4–12, rounded on back, black.

_Fls. & Frts._ : July–October.

_Distrib._ : Frequent in deciduous forests and along ghats. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Herbs, erect, sparingly branched. Leaves ovate–lanceolate, apex acuminate, entire with prominent veins; petioles 0.9–1.0 cm long. Inflorescence of few–flowered, terminal, compound cymes; corolla–tube twice longer than pubescent calyx. Capsules compressed, globose. Seeds solitary in each cell, excavated on one face.

_Fls. & Frts._ : September.

_ILLUS._ : Wight, Ic. t. 1031. 1845.

_Distrib._ : Sindhudurg (S. M. Almeida, op. cit.).


Erect, hispid herbs, 10–20 cm high; nodes swollen. Leaves 3.5–5.0 x 1.5–2.0 cm, ovate, ovate–lanceolate, hairy on both surfaces, apex acute. Inflorescence of terminal and axillary loose cymes. Flowers purple; calyx–teeth bristle–tipped. Capsules clustered together, broader than long. Seeds globose, black, pitted.

_Fls. & Frts._ : June–November.


_Distrib._ : Frequent in open, moist, situations. Akola, Amravati, Aurangabad, Beed, Jalgaon, Kolhapur, Nasik, Osmanabad, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Yawatmal.
Neanotis montholonii (Hook. f.) W. H. Lewis

Herbs, 20–40 cm high, erect to shortly procumbent, rooting at lower nodes; branches 4-angular. Leaves membranous, subsessile or shortly petioled (0.5–1.0 cm), membranous, lanceolate or elliptic–lanceolate, apex acute or acuminate with a short mucro, base narrowed down into a shortly vaginated petiole, margins and lower side veins white hairy. Flowers bluish–white, in cymes, 1.5–7.5 cm long. Capsules subglobose or obscurely 4-sided, 2–locular, valves hispidulous with white hairs, 0.75–1 mm long, protruding beyond calyx. Seeds 4–11 (12) x 0.75 mm, broadly ellipsoid, finely pitted or reticulate, black.

*Fls. & Frts.*: October–November.

*Illus.*: Billore & Mudaliar, op. cit.

*Distrib.*: In open, moist areas. Ahmednagar, Thane.


Fleshy annual herbs, 6–22 cm high, fistular, rooting at basal nodes. Leaves c 3 x 1.5 cm, ovate, hairy, apex subacute, attenuate, petioled. Inflorescence of cymes, axillary and sessile or terminal and peduncled. Flowers white, pink or purple, 2–4–together in axils. Capsules ovoid, compressed, 3–4–locular. Seeds hemispheric, pitted, black.

*Fls. & Frts.*: July–October.


*Distrib.*: Frequent along roads in open areas. Ahmednagar, Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg.

**Neolamarckia Bosser**


Trees, 10–12 m tall. Leaves elliptic to elliptic–oblong, coriaceous, 10.0–23.5 x 5.5–15.0 cm, upper surface shining, lower pubescent, apex acute, base rounded or sometimes cordate. Inflorescence a globular head, 7.5–9.0 cm across. Flowers white or creamy–yellow; petals linear, oblong, acute, imbricate, hairy. Capsules in globose receptacles, 5 cm across, yellow when ripe.

Fls. & Frts. : November–February.

Distrib. : Frequent in deciduous forests. Kolhapur, Nagpur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

**Neonauclea Merr.**


Trees, c 20 m tall. Leaves 5.5–13.5 x 2.5–5.5 cm, elliptic–lanceolate, coriaceous, apex acute or obtuse; petioles 0.5–1.5 cm long. Flowers in purple heads, c 3 cm across; corolla tube c 0.7 cm long. Capsules in globose receptacles, 0.3 x 0.17 cm, hairy on ribs.

Fls. & Frts. : February–November.


Distrib. : Occasional in deciduous forests. ‘Konkan’ (Talb. op. cit.), ‘Maharashtra’ (Ridsd. op. cit.).

**Ochreinauclea Ridsd.**

Trees, 8–10 m tall. Leaves 8–14 x 4–6 cm, elliptic, rarely obovate, membranous to chartaceous, apex acute or obtuse, base attenuate, sometimes decurrent; petioles 0.5–1.5 cm long. Flowers in heads, 2–3 cm across; corolla 0.8–1.0 cm long, infundibuliform, lobes densely pubescent outside. Fruits of pyrenes, connate into a fleshy globose mass.

**Fls. & Frts.:** April–May.


**Distrib.** Rare in semi evergreen forests. 'Maharashtra' (Ridsd. op. cit.).

**Ophiorrhiza L.**


Herbs, 20–30 cm high, procumbent, rooting at lower nodes. Leaves 3.5–15.0 x 1.5–4.0 cm, elliptic or elliptic–lanceolate, pubescent on nerves beneath, obtuse or slightly acute at apex, attenuate at base into a petiole. Flowers white, in axillary and terminal dichotomous cymes. Capsules broader than long, c 0.2 x 0.7 cm. Seeds minute, angular.

**Fls. & Frts.** March–August.

**Illus.** Wight, Ic. t. 1192. 1846 (**O. harrisi**).

**Distrib.** Infrequent in open moist situations. Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg.

**Oxyceros Lour.**


Unarmed, climbing shrubs; branches pendulous. Leaves 6.5–11.5 x 2.5–5.5 cm, elliptic–lanceolate, elliptic or ovate, obtusely acuminate at apex, rounded at base. Flowers creamy–white, pedicelled, in leaf–opposed cymes. Berries c 1.8 cm across, globose. Seeds few, rugose.
Fls. & Frts.: Bedd. Ic. t. 37. 1874 (Randia rugulosa).

Distrib.: Infrequent in ghat forests. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

PAVETTA L.

1. Inflorescence axillary
   ... P. concanica

1. Inflorescence terminal:

2. Flowering shoots not covered with cork but green only
   ... P. siphonantha

2. Flowering shoots covered with cork upto the inflorescence:

3. Leaves obovate:

4. Leaves slightly pubescent beneath; ovary and calyx hirsute
   ... P. crassicaulis

4. Leaves softly and densely pubescent beneath; ovary and calyx pubescent
   ... P. stocksii

3. Leaves elliptic
   ... P. tomentosa


Erect shrubs, up to 2 m tall; young branches 4-angular. Leaves 3.5–14.0 x 2.1–5.5 cm, elliptic or elliptic-oblong, sparsely or densely pubescent beneath, upper surface almost glabrous, acute or acuminate at apex, attenuate at base. Flowers white, fragrant, in loose corymbose-cymes. Drupes globose, c 0.9 cm across, black when ripe.

Fls. & Frts.: May–November.

Distrib.: Infrequent in open areas in forests & along roads. Pune, Ratnagiri, Satara, Sindhudurg (S. M. Almeida, 1990), Thane.


Erect shrubs, up to 2 m tall; young branches 4-angular. Leaves 3.5–14.0 x 2.1–5.5 cm, elliptic or elliptic-oblong, sparsely or densely pubescent beneath, upper surface almost glabrous, acute or acuminate at apex, attenuate at base. Flowers white, fragrant, in loose corymbose-cymes. Drupes globose, c 0.9 cm across, black when ripe.

Fls. & Frts.: May–November.

Distrib.: Infrequent in open areas in forests & along roads. Pune, Ratnagiri, Satara, Sindhudurg (S. M. Almeida, 1990), Thane.
Erect shrubs, 1–2 m tall; young branches subquadrangular, glabrous. Leaves 4–12 x 2–6 cm, obovate–oblanceolate, more or less hairy, apex acute or bluntly acuminate, base cuneate. Flowers white, in 1 cm long, loose cymes; peduncles stout and long. Berries globose, 1 cm in diam., black, smooth.

Fls. & Frts. : March–November.


Distrib. : Frequent in open areas along ghats & plains. Ahmednagar, Bombay, Chandrapur, Dhule, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

Notes : Santapau (op. cit.) was of the opinion that as per Bremekamp's view the true P. indica L. is found only in south India and Sri Lanka and the plant that goes under the name P. indica L. in our floras is not true Linnean species.


Shrubs, 1–3 m tall; branches compressed, obtusely 4–angular, pubescent; leaves and inflorescence turn black on drying. Leaves 5.5–15.0 x 2.0–5.5 cm, elliptic–lanceolate or obovate, apex acuminate, attenuate at base into a petiole (0.5–1.0 cm). Flowers greenish–yellow or greenish–white, 1.8–2.0 cm across; corolla tube 2.5–3.0 cm long; style exserted upto 3.0 cm. Berries globose, 0.8–0.9 cm across, smooth, grey–purple, shining.

Fls. & Frts. : April–November.


Shrubs, 1–2 m tall; branches at first puberulous, soon glabrescent. Leaves c 11 x 4.5–5.0 cm, narrowly obovate, glabrous above, softly pubescent beneath, nerves 10 on either side of midrib, apex acute or subacute, base attenuate into short petiole; stipules shortly aristate.
Flowers white, in corymbs, 10 cm across; calyx pubescent, lobes triangular; corolla–tube c 10.5 mm long, pilose inside, lobes 5.5 mm long. Berries globose.

_Fls. & Frts._ : April–October.

_Distrib._ : Rare in deciduous forests. Bombay, Pune (Sant. & Merch. op. cit.).

_Note_ : The distinguishing characters are so densely overlapping that the two species viz., _P. crassicaulis_ and _P. stocksii_ appear to be one and the same. Bremekamp (op.cit.) suggested that _P. stocksii_ can possibly be a variety of the former and he gives Bombay and Poona as the localities. But specimens of this taxon have not yet been collected, though many botanists explored Bombay and Poona in the last few decades. Hence, it’s existence either as a species or as a variety is still doubtfull.


Small shrubs, 1–2 m tall; young parts tomentose. Leaves elliptic–ovate, 5–9 x 3–4 cm, pubescent beneath, apex acuminate, base narrowed. Flowers white, scented, in pubescent, dichotomously branched corymbose cymes. Berries 0.5 cm across, globose, black.

_Fls. & Frts._ : June–December.

_Illus._ : Wight, Ic. t. 1065. 1846 (_P. brunonis_).


**_Psychotria_** L. (nom. cons.)

1. Flowers with rufous hairs at base; stipules suborbicular, keeled, caudate ... _P. nigra_

1. Flowers without rufous hairs; stipules varies, not caudate :

2. Branches of inflorescence whorled; stipules over 1.0 cm long:

3. Flowers capitulate; bracts persistent ... _P. dalzellii_

3. Flowers not capitulate; bracts caducous or absent ... _P. truncata_

2. Branches of inflorescence opposite; stipules less than 1.0 cm long ... _P. flavida_

Evergreen shrubs, 2–4 m tall; branches terete, somewhat flattened, striate. Leaves 10–20 x 3.5 –7.5 cm, oblong, obovate or oblanceolate, thickly coriaceous, dark green, shining above, pale beneath, rounded and shortly apiculate at apex, base narrowed into a petiole. Flowers white; sessile or subsessile; corolla broadly campanulate; calyx–lobes obtuse and emarginate, broadly campanulate. Fruits of ovoid drupes, c 1 cm across, black, shining, fleshy.

**Fls. & Frts. :** June–March.


**Distrib. :** Occasional in shady places in deciduous forests. Ratnagiri, Sindhudurg.


Shrubs, 1.5–4.0 m tall; branches terete. Leaves 10–20 x 3–8 cm, elliptic or oblong, thinly coriaceous, shining, abruptly shortly acuminate at apex, cuneate at base, short petioled (1.0 cm); stipules caducous. Flowers white, in terminal corymbiform–cymes, 2.5–5.0 cm; corolla–tube villous in throat. Fruits of ellipsoid drupes, c 0.6 cm across, compressed, black, scarcely pulpy; cyme branches turning bright yellow in fruit; pyrenes plano–convex with a dorsal ridge.

**Fls. & Frts. :** May–February.

**Illus. :** Talb. op. cit.

**Distrib. :** Rare in moist deciduous forests. 'Konkan' (Cooke, op. cit.).


Shrubs, 2.5–4.0 m tall. Leaves 10–20 x 4–7 cm, elliptic, oblong, obovate–oblong or oblong–lanceolate, subcoriaceous, acuminate or acute at apex, attenuate at base; petioles 0.6–2.0 cm long. Flowers white, sessile in heads; calyx 0.3 cm long, lobes deciduous; corolla c 0.3 cm long, tube with few white hairs in the throat, lobes c 0.2 cm long, oblong, obtuse. Drupes 0.6–1.0 cm across, ellipsoid or subglobose, marked with a scar of fallen calyx limbs; pyrenes without furrows, plano–convex.

Shrubs, 3–4 m tall. Leaves 10–18 x 5.0–9.5 cm, obovate, green above, pale beneath, abruptly acuminate, base cuneate, margins slightly recurved; nerves 14–16 pairs, prominent; petioles 0.6–2.5 cm long, stout; stipules 2.5 cm or even longer, caducous. Flowers waxy white, c 0.5 cm across, sessile or shortly pedicelled in dense terminal cymes; calyx broadly campanulate, teeth absent or obscure; corolla tube c 0.3 cm long, straight, glabrous, without ring of hairs in throat, lobes 0.3 cm long, oblong, subacute. Drupes black when ripe, c 0.9 cm long, smooth, ellipsoid, crowned by truncate calyx; pyrenes plano–convex. Seeds dorsally ridged.


Perennials, prostrate, decumbent or climbing herbs; stems sharply 4–angled, retrorsely scabrid hairy on angles, on leaf nerves and margins. Leaves whorled, 6–8 at each node, 2.5–10 x 1.2–4 cm, elliptic, cordiform or ovate–lanceolate, apex acute, rounded or cordate at base; petioles 2.5–4.5 cm long. Inflorescence axillary; flowers in panicles of dichotomous cymes, greenish–yellow. Fruits bicarpellate, globose, smooth, shining, in umbels, purplish–black when ripe.

*Rubia L.*

**Fls. & Frts.** : March–April.

**Distrib.** : Rare in moist deciduous forests. ‘Konkan’ (Cooke, op. cit.).


Perennials, prostrate, decumbent or climbing herbs; stems sharply 4–angled, retrorsely scabrid hairy on angles, on leaf nerves and margins. Leaves whorled, 6–8 at each node, 2.5–10 x 1.2–4 cm, elliptic, cordiform or ovate–lanceolate, apex acute, rounded or cordate at base; petioles 2.5–4.5 cm long. Inflorescence axillary; flowers in panicles of dichotomous cymes, greenish–yellow. Fruits bicarpellate, globose, smooth, shining, in umbels, purplish–black when ripe.

**Fls. & Frts.** : April–May.


**Distrib.** : Infrequent in moist deciduous forests. Kolhapur, Ratnagiri, Satara, Sindhudurg.

**Rubia L.**

**Fls. & Frts.** : January–December.


**Distrib.** : Frequent in shady places in deciduous forests. Ahmednagar, Kolhapur, Nasik, Pune, Ratnagiri, Satara, Sindhudurg, Thane.
Rubia cordifolia L.
SAPROSMA BL.


Undershrubs or herbs, c 1 m tall, foetid smelling. Leaves glossy at tips, opposite, sessile or nearly so, one usually smaller, 4–12 x 1.5–4.0 cm, elliptic–ovate or obovate, apex acuminate, base rounded or subcordate. Flowers white, in axillary or terminal cymes. Drupes globose or ellipsoid, 1.0 x 0.7 cm, green to dark violet, 1–seeded.

*Fls. & Frts.* : February–October.

*Illus.* : Gang. op. cit.

*Distrib.* : Rare in shades in deciduous forests. Bombay (Gang. op. cit. p. 88).

SPERMACOCE L.

Deb & R. Dutta (1984) studied specimens extant in Indian herbaria and found that there is significant variation in dehiscence of fruit, tending to close up the distinction between *Spermacoce* and *Borreria*. No other important character was observed by which these could be separated and hence *Borreria* was relegated to a synonym. The same is followed here also.

1. Septum detaching from the coccus, remains entire, closing one or both coccus partially … *S. articularis*

1. Septum not detaching from coccus, splitting longitudinally or irregularly:

2. Corolla tube with a ring of hairs inside; lobes glabrous, stamens exserted … *S. pusilla*

2. Corolla tube glabrous; lobes with a ring of hairs inside; stamens not exserted … *S. ocymoides*

Annual herbs, 15–25 cm high. Leaves 1.2–5.0 x 7.8–2.0 cm, elliptic or oblong–lanceolate. Flowers white or pale pink to bluish–pink, in axillary whorls. Capsules 0.4–0.5 x 0.25 cm, oblong, ellipsoid, hairy in the upper half. Seeds 2, ellipsoid.

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


**Distrib.** : Common throughout.


Herbs, annual, much branched, 50–60 cm high, sometimes procumbent; stems narrowly winged and ciliate. Leaves 2–4 x 1.5–3 cm, ovate or elliptic, apex acute, sessile. Flowers white, in dense axillary or terminal clusters; calyx–lobes very unequal. Capsules 0.15 cm long, ovoid, glabrous.

**Fls. & Frts.** : March–August.

**Distrib.** : Occasional in open, moist places. Ratnagiri, Sindhudurg.


Herbs, annual, 10–35 cm high; stems 4–angled, angles scabrid. Leaves 2–4 x 0.4 – 1.2 cm, linear, oblong–lanceolate, scabrous above, apex acute. Flowers white, in whorls or globose heads, 0.2–0.3 cm long. Capsules ovoid, 0.2–0.3 cm long, upper half densely hairy. Seeds 2, 0.2–0.3 cm long, brown, oblong– ellipsoid, with a longitudinal ventral groove.

**Fls. & Frts.** : July–October.


**Distrib.** : Common throughout.
Spermacoce pusilla Wall.
Spermacctyon Roxb.


Shrubs, 3–5 m tall, with 3–chotomous branchlets; bark peeling off in papery flakes. Leaves opposite (3–nate), petioled, 4–17 x 3 cm, elliptic–ovate or elliptic–lanceolate, sometimes obovate, acute at apex. Flowers in 3–chotomously branched panicles or subumbellate cymes, 5–merous; corolla bluish or pinkish–white, fragrant, tubular, 1.0 cm long. Capsules 5–valved, c 1 cm (including crown of calyx–lobes). Seeds 5, 3–cornered, testa reticulate.

*Fls. & Frts.* : October–February.


*Distrib.* : Frequent in deciduous forests. Ahmednagar, Akola, Amravati, Aurangabad, Chandrapur, Dhule, Kolhapur, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

Tamilnadia Tirveng. & Sastre


Shrubs or small trees, 5–10 m tall; bark reddish–brown; spines short, branches 4–angled. Leaves c 12 x 7 cm, elliptic or oblanceolate, apex obtuse. Flowers white, 3–4 cm across, solitary, fragrant; calyx–lobes fleshy, green; corolla lobes broadly orbicular. Berries ovoid, 2–3 cm across, yellowish brown. Seeds compressed, closely packed in pulp.

*Fls. & Frts.* : March–April.

*Illus.* : Wight, Ic. t. 397. 1840.
**Distrib.** : Frequent in deciduous forests. Ahmednagar, Amravati, Bhandara, Chandrapur, Nasik, Raigad, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.

**Notes.** : This species was treated under *Randia* L. by Hook. f. (op. cit.) and Cooke (op. cit.). Keay (1958) observed that *Randia* is a very heterogenous pantropical assemblage of species (Maheshwari, 1962). He proposed that *Randia* sect. *Ceriscus* Hook. f. should be transferred to the genus *Xeromphis* Rafin. This separation was supported by pollen and floral morphology. Convinced by this argument, Maheshwari (op. cit.) affected the new combination *Xeromphis uliginosa* Maheshwari in Bull. Bot. Surv. India 3:92. 1962. However, Tirvengadum (1978) observed that this species is totally unrelated to *Xeromphis* and excluded it from the genus. Later Tirvengadum & Sastre (1979) decided to erect a new genus *Tamilnadia* to accommodate this species.

**TARENNA Gaertn.**


Shrubs, 1.5 –4.5 m tall. Leaves 10–15 x 3–4 cm, oblong–lanceolate, glossy above, pale beneath, coriaceous, acute at both ends; petiole 1.0–1.5 cm long. Flowers creamy, c 0.8 cm across, salver–shaped, fragrant, in trichotomous corymbose–cymes. Berries globose, black when ripe, 0.5 cm across, with a crown of calyx–lobes, 2 –celled.

**Fls.** : April–June & December – March. **Frts.** : Throughout the year


**Distrib.** : Occasional in deciduous forests. Chandrapur, ‘S’. Konkan (Cooke, op. cit.).

**THECAGONUM Babu**

Herbs, annual, erect, tetragonous, somewhat hairy; stems seldom branched. Leaves subsessile, 0.5 –8.0 x 0.3–3.0 cm, ovate–oblong, pubescent on nerves beneath, apex obtuse; upper leaves in whorls of four. Flowers white, in loose many–flowered corymbose–panicle; pedicels 0.5–1.5 cm long. Capsules hemispheric, crowned with subulate calyx–lobes. Seeds ovoid, globose, 0.04 x 0.05 cm, brown, pitted.

*Fls. & Frts.* : August–November.

*Illus.* : Bedd. Ic. t. 34. 1864–1874.

*Distrib.* : Rare in the under growth of forests. Amravati, Bhandara, Chandrapur, Nagpur, Yavatmal.

*Notes.* : This species was treated under the genus *Gonotheca* Bl. ex DC. Prodr. 4:429. 1830 non Rafin. 1880. Due to it being a later homonym, Babu op. cit. has provided a new name, *Thecagonum* which is an anagram of the former.

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**Wendlandia Bartl. ex DC.**

1. Leaves opposite; filaments exserted  ...  *W. heynei*
1. Leaves whorled; filaments not exserted  ...  *W. thyrsoidea*


Small trees, 4–5 m tall; bark dark brown. Leaves 7.5 –21.0 x 3.0–7.5 cm, elliptic–lanceolate or ovate–lanceolate, coriaceous, greyish pubescent beneath, more or less pubescent above, base acute and inequilateral; petioles 1.0–1.5 cm long, downy. Flowers white, fragrant, in pyramidal, tomentose panicles, 15–25 cm long. Capsules c 0.6 cm across, globose, pubescent.

*Fls. & Frts.* : March–September.

*Illus.* : Parkins. & Raiz. in Indian Forester 59: 357, t. 19, f. 5–5a 1933 (*Wendlandia exserta*).

Wendlandia heynei (R. & S.) Sant. & Merch.

Shrubs or small trees, 3–4 m tall; bark orange–red; branches, leaves and inflorescence pubescent. Leaves 10.5–14.5 x 3.5 –4.0 cm, elliptic–lanceolate, apex acuminate, base tapering into a short petiole of c 0.5 cm, glabrous above, tomentose below. Flowers white, fragrant, in dense pyramidal hirsute panicles, 15–30 cm long. Capsules globose, 0.2 cm across, pubescent, crowned with calyx–teeth.


Distrib. : Frequent along ghats. Ahmednagar, Kolhapur, Nasik, Ratnagiri, Satara, Sindhudurg.

CULTIVATED AND INTRODUCED SPECIES :


Evergreen spiny shrubs. Leaves ovate to obovate. Flowers solitary, axillary, yellow; corolla tube narrow below. Berry ovoid, yellow, edible.

Native of W. Indies. Recommended as a hedge plant.

* Chiococca racemosa* L. Syst. ed. 10, 917. 1759; Bailey, Std. Cycl. Hort. 1: 748. 1953 (Repr. ed.).

Climbing or trailing shrubs. Leaves ovate to lanceolate, thick, shining. Flowers in axillary panicles, yellowish–white, fragrant. Fruits white, 2–seeded.

Native of W. Indies. Found in Pune.


Evergreen trees with horizontal branches. Leaves elliptic, acute at apex, pubescent. Flowers in compact cymes, rose coloured, fragrant. Fruits oblong, compressed, c 2 x 1 cm. Seeds numerous, winged.

Native of Equador. Satara.


*Illus.* : Wight, Ic. t. 53. 1838.

Frequently cultivated in Amravati, Bombay, Pune, Satara and Thane.


Shrubs. Leaves longer than *C. arabica*. Flowers in a dense cluster; corolla segments usually 7. Berries larger and of finer flavour.

Native of Tropical Africa. Bombay, Sindhudurg.

**C. robusta** Linden, Cat. Pl. Econ. 64. 1900; Anon. Wealth of India 2 : 290, f. 104–105. 1950.

Plants much larger and vigorous than the above two species. Berries smaller, but in large numbers.

Native of Belgian Congo and introduced in India from Java. Pune, Satara.


Evergreen shrubs. Leaves lanceolate to obovate, short–acuminate. Flowers often double, solitary, white, fragrant.

Native of China. Pune, Sindhudurg.


Trees. Leaves elliptic, acuminate at apex. Flowers white, showy, waxy, very fragrant; calyx split at one side.

Native of S. Africa. Found in Pune.

Glabrous shrubs, up to 6 m tall. Leaves usually in whorls of 3, elliptic–ovate to oblong, acute or acuminate at apex. Flowers orange, sessile, in helicoid cymes; calyx segments short; corolla tube narrow.

Indigenous to tropical America. Commonly cultivated in Buldhana, Chandrapur, Nagpur, Osmanabad and Pune.


Native of Peru. Found in Pune.

**Ixora finlaysoniana** Wall. ex G. Don, Gen. Syst. 3 : 572. 1834.

Cultivated in gardens. Pune.

**I. lutea** Hutch. in Bot. Mag. t. 8439. 1912; Bailey, Std. Cycl. Hort. 2 : 1712. 1953 (Repr. ed.).


An ornamental planted in gardens. Pune.

**Manettia glabra** Cham. & Schlech. in Linnaea 4 : 159. 1829.

Twiners. Leaves cordate–ovate, acuminate at apex. Flowers solitary, red; corolla lobes small.


Climbers or trailers. Leaves ovate, acuminate at apex. Flowers in dense cymes; calyx–tube very short, with red lobes; corolla tube cylindrical, red–hairy. Fruits ovoid, red–hairy.

Native of Tropical Africa. Grown in gardens as an ornamental. Pune.

Slender, erect shrubs. Leaves ovate–lanceolate to oblong–lanceolate, acuminate at apex. Flowers in few–flowered cymes, with long tube, yellow; leafy calyx–lobe white or yellowish.

Native of Tropical Africa. Pune.


Medium sized trees, with smooth, greyish bark. Leaves large, broadly ovate or cordate. Flowers in globose heads, yellow or orange, fragrant. Fruits composite, globose, fleshy.

Native of Sri Lanka. Planted in gardens, Bombay,


Erect or decumbent shrubs. Leaves ovate, elliptic or oblong–lanceolate, more or less acute at apex. Flowers dimorphic, subsessile, in cymose clusters, pale purple; corolla very hairy at throat.

Native of Tropical Africa and Arabia. Planted for the flowers. Bombay, Pune,


Shrubs. Leaves ovate, elliptic or oblong, shortly petioled, often with revolute margins. Flowers in few to many–flowered terminal cymes, bright orange–red, with yellow throat; corolla–tube slender.

Native of Cuba and Panama. Cultivated for flowers.

**ASTERACEAE (COMPOSITAE)**

*(D. L. Shirodkar & P. Lakshminarasimhan)*

1. Achenes paired; heads unisexual; anthers free; female florets apetalous
   ...  **XANTHIUM**

1. Achenes single; heads homo–heterogamous; anthers connate; female florets petalous :

2. Heads exclusively homogamous, either ligulate or disciform, all bisexual :

3. Florets all ligulate; sap milky :

4. Prostrate, stoloniferous plants with basal, rosette of leaves  ...  **LAUNANA**
4. Erect, non-stoloniferous plants with cauline and radical leaves:

5. Leaves ovate or suborbicular; heads cylindric ... \textit{Lactuca}

5. Leaves lanceolate, deeply divided; heads campanulate ... \textit{Sonchus}

3. Florets all tubular; sap watery:

6. Heads spinescent; leaf margins dentate or spiny (except \textit{Goniocaulon})

7. Heads globose, 1–flowered ... \textit{Echinops}

7. Heads ovoid or cylindric, many–flowered:

8. Achenes silky–villous, 5–10–ribbed ... \textit{Dicoma}

8. Achenes glabrous, sometimes more than 10–ribbed:

9. Achenes closely ribbed (more than 20 ribs) ... \textit{Goniocaulon}

9. Achenes faintly ribbed:

10. Heads unisexual ... \textit{Brea}

10. Heads bisexual ... \textit{Tricholepis}

6. Heads not spinescent; leaf margins not as above:

11. Heads 1–5–flowered, subtended by bract like leaves:

12. Heads 3–5–flowered; bracts biseriate, free ... \textit{Elephantopus}

12. Heads 1–flowered; bracts uniseriate, connate below ... \textit{Lagascia}

11. Heads more than 5–flowered, not subtended by bract like leaves:

13. Leaves alternate:

14. Florets pink/purple; heads ebracteolate:

15. Leaves radical or cauline, base auriculate; bracts uniseriate; achenes angular ... \textit{Emilia}

15. Leaves cauline, base not auriculate; bracts many seriate; achenes smooth/ribbed, not as above:

16. Pappus absent ... \textit{Adenoon}

16. Pappus present:

17. Pappus long, copious ... \textit{Vernonia}

17. Pappus short, fugaceous:
18. Achenes ribbed ... Phyllocephalum

18. Achenes smooth ... Lamprachaenium

14. Florets yellowish; heads bracteolate:

19. Pappus hairy ... Crassocephalum

19. Pappus smooth (copious):

20. Undershubs; achenes glabrous ... Kleinia

20. Herbs; achenes not as above:

21. Achenes many–ribbed and papillose between ribs ... Gynura

21. Achenes not papillose between ribs ... Carthamus

13. Leaves opposite:

22. Pappus absent; florets yellow; heads solitary ... Spilanthes

22. Pappus present; florets not yellow; heads not solitary:

23. Pappus hairs 10, capillary ... Eupatorium

23. Pappus hairs 3–5–clavate:

24. Panicles in lax cymes; achenes curved, verrucose ... Adnemostemma

24. Panicles in dense corymbs; achenes straight, ribbed/angled ... Ageratum

2. Heads exclusively heterogamous, radiate or disciform–outer florets female, inner bisexual:

25. Female florets tubular, minutely toothed, multiseriate, filiform, inconspicuous, more than bisexual florets:

26. Heads globose, involucre intact throughout:

27. Branchlets winged; florets pink or purple:

28. Shrubs or undershrubs ... Pluchea

28. Herbs:

29. Heads sessile ... Nanothamnus

29. Heads not as above:

30. Heads more than 1 cm across ... Sphaeranthus
30. Heads less than 1 cm across

27. Branchlets not winged; florets creamy to yellowish:

31. Prostrate herbs:
   32. Plants c 15 cm long; corolla of bisexual florets 4–lobed
       ... Centipedes
   32. Plants c 30 cm long; corolla of bisexual florets 5–lobed
       ... Grangea

31. Erect herbs:
   33. Leaves sessile
       ... Cyathoclina
   33. Leaves petiolate... Dichrocephala

26. Heads campanulate; involucre reflexed after fruiting:

34. Stipule like basal leaves present; anther base obtuse; pappus absent or biseriate:
   35. Pappus absent; achenes smooth / faintly ribbed
       ... Artemisia
   35. Pappus biseriate; achenes pubescent... Conyza

34. Stipule like basal leaves absent; anther base saggitate or tailed (except Laggera); pappus uniseriate:

36. Heads densely aggregated in clusters; involucral bracts hyaline, woolly:
   37. Inflorescence racemose, leafy
       ... Gnaphalium
   37. Inflorescence cymose, leafless:
       38. Herbs
           ... Anaphalis
       38. Undershrubs
           ... Blepharispermum

36. Heads laxly aggregated, spreading; involucral bracts scarious to herbaceous, variously pubescent:
   39. Anther base tailed; involucral bracts slender
       ... Blumea
   39. Anther base subentire; involucral bracts rigid
       ... Laggera

25. Female bracts radiate, conspicuous, 1–2–seriate, less than bisexual florets:

40. Heads subsessile, axillary or at forks of dichotomy:
   41. Receptacles epaleaceous; heads 1–flowered, aggregated in cymes; corolla with stout hairs
       ... Flaveria
41. Receptacles paleaceous; heads many-flowered, solitary or few, in clusters; corolla glabrous or thinly papillose:

42. Heads not prickly; achenes lacerate-winged, not enclosed by inner involucral bracts

42. Heads prickly; achenes smooth, enclosed in inner involucral bracts:

43. Pappus absent

43. Pappus present

40. Heads stalked, solitary or in panicles:

44. Leaf blade pinnatifid:

45. Involucral bracts uniseriate; pappus present:

46. Leaflets filiform; pappus scanty

46. Leaflets not as above; pappus copious

45. Involucral bracts bi or multiseriate; pappus absent or reduced:

47. Ray florets white; pappus awns reflexed; receptacle convex

47. Ray florets yellow; pappus awns erect; receptacle flat:

48. Pappus minute, corona like

48. Pappus bristly corona like, not as above:

49. Plants spreading, non scapigerous

49. Erect plants, subscapigerous

44. Leaf blade entire (rarely deeply lobed):

50. Leaves 3–foliolate; pappus retrorsely barbellate

50. Leaves simple; pappus various, not barbellate:

51. Rays yellow:

52. Outer involucral bracts spreading, glandular; pappus absent; rays as long as or shorter than tube

52. Outer involucral bracts intact, eglandular; pappus present; rays much longer than tube:
53. Achenes with basal appendage; pappus scaly, ascending or erect :  
   ... Wedelia

53. Achenes without basal appendage; pappus filiform, erect :  
   54. Leaves opposite : Tridax

   54. Leaves alternate :  
      55. Bracts few, uniseriate; pappus biseriate : Pulicaria
      55. Bracts many-seriate; pappus uniseriate : Pentanema

51. Rays not yellow :  
   56. Leaves alternate; rays pink/white, receptacle epaleaceous :  
      57. Bracts biseriate; pappus hairs many : Erigeron
      57. Bracts uniseriate; pappus hairs few (2) : Caesulia
   56. Leaves opposite; rays white ; receptacle paleaceous :  
      58. Pappus present :  
         59. Pappus of 1–3 weak bristles; rays not exserted; achenes angled : Blainvillea
         59. Pappus upto 10, paleaceous; scales of rays exserted; achenes triquetrous : Galinsoga
   58. Pappus absent (if present not as above, a short minute ring) :  
      60. Paleae of receptacle flat, narrow : Eclipta
      60. Paleae of receptacle concave, embracing (broad) : Sclerocarpus

**Acanthospermum Schrank**

Annual herbs, c 50 cm tall, dichotomously branched, hispid, covered with spreading hirsute glandular hairs. Leaves opposite, elliptic, oblanceolate or obovate, attenuate at base. Heads yellow; ray flowers ligulate, disc flowers tubular 5–lobed. Achenes triangular, covered with stiff hooked bristles and with divergent awns at apex.

*Fls. & Frts.* : August–December.


*Distrib.* : Common throughout as a weed in open situations.

**ADENOON Dalz.**


Herbs, 20–50 cm tall, erect, glandular–hairy; stems simple below, branched above, angled and grooved. Leaves 3–5 x 2–4 cm, broadly elliptic to obovate, hairy on both sides, apex rounded. Heads c 1 cm across; involucral bracts elliptic–oblong, hairy; florets purple. Pappus absent. Achenes 0.2 – 0.3 cm long, cylindrical, 10–ribbed.

*Fls & Frts.* : August–December.

*Illus.* : Uniyal in Hajra et al. op. cit.

*Distrib.* : Kolhapur, Ratnagiri, Satara, Sindhudurg.

*Notes* : It is endemic to India.

**ADENOSTEMMA J. R. & G. Forst.**


Herbs, 60–100 cm tall, erect, branched; young branches glandular–pubescent; stems tinged with purple colour. Leaves variable, more or less hairy with acute apex, margins crenate–serrate. Heads c 0.6 cm across, in lax or dense panicles; corolla tube short, white. Achenes c 0.3 cm long, obovoid, 5–angled compressed, tuberculate or muricate.

*Fls. & Frts.* : August–February.
**Ageratum L.**

1. Involucral bracts glabrous; corolla shorter than awned pappus scales

   ... *A. conyzoides*

1. Involucral bracts pilose without; corolla as long as or longer than awned pappus scales

   ... *A. houstonianum*


Annual herbs, c 30 cm high, erect, hairy. Leaves ovate, more or less hairy on both sides, apex subacute. Heads small, in dense terminal corymbs, white or pale blue. Pappus paleaceous, awned or aristate, little longer than achenes, pappus scales 5, aristate, Achenes c 0.3 cm long, sharply 5–angled, black, sparsely spicate on angles.

*Fls. & Frts.*: July–February.


*Distrib.*: Common throughout along roadsides, waste places and forest edges.


Herbs, 30–60 cm high. Leaves 2.0–6.5 x 1–5 cm, deltoid, sparsely hairy. Heads purple. Achenes c 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. Jalgaon, Satara.

**Amberboa** (Pers.) Less (nom. cons.)

Annual herbs, erect or straggling, dichotomously branched; stems rough, white–tomentose. Leaves variable, obovate to oblanceolate, usually pinnatifid, lobed. Heads pale–purple, bottle shaped, tipped with weak spinules; involucral bracts many seriate, spinescent. Achenes dull brown, 3–4–angled.

_Fls. & Frts._ : January–March.


_Distib._ : Common in waste places in open situations and cultivated fields.

**ANAPHALIS DC.**

1. Leaves subamplexicanl and slightly decurrent at base; achenes thinly pubescent ... _A. subdecurrens_

1. Leaves adnate at base; achenes minutely scaly ... _A. lawii_


Herbs, up to 35 cm high, erect; stems clothed with white cottony tomentum. Leaves 1–6 x 0.2–0.4 cm, linear–oblong or linear–oblanceolate, acute–obtuse at apex, entire along margins, white woolly on both sides, 1–nerved. Heads in corymbs, c 3 mm across. Involucral bracts brown–white, tinged with pink. Achenes c 0.6 mm long, terete or angled.

_Fls. & Frts._ : September–March.

_Distrib._ : Maharashtra (Rao et al. op. cit. & Pant in Hajra et al. op. cit.).

_Notes._ : It is endemic to India.


*Fls. & Frts.*: August–March.

*Distrib.*: Satara (Bole & Almeida, op.cit.).

**Artemisia L.**

1. Leaves densely white tomentose beneath; disk flowers fertile ... *A. nilagirica*
1. Leaves glabrous or sparsely hairy; disk flowers sterile ... *A. japonica*


Shrubs, 1–2 m high. Leaves upto 3.0 x 0.7 cm: lower cuneate at base with a pair of stipule like appendages, toothed at apex; upper leaves minute, entire, lanceolate. Heads numerous, globose, in paniced racemes. Involucral bracts ovate, acute, margins scarious. Achenes ellipsoid, brown.

*Fls. & Frts.*: October – December.

*Illus.*: Wight, Ic t. 1111. 1846 (*A. glabrata* DC.); Naithani in Hajra et al. op. cit.

*Distrib.*: A few along forest edges. Raigad, Pune, Satara.


Shrubs, 80–90 cm high, villous. Lower leaves 3.5 –4.5 x 2.0 –2.5 cm, ovate, petioled; upper leaves 3–fid or entire, lanceolate. Heads greenish–yellow, sessile or shortly pedicelled, in spiciform racemes combined into panicles. Achenes c 0.1 cm long, ellipsoid.
**BIDENS L.**


Annuals herbs, upto 80 cm high, erect; stem quadrangular, ribbed, hairy. Leaves ternate or imparipinnate to bipinnate, ultimate leaflets ovate, acute. Heads yellow c 1.3 cm in diam., in terminal or leaf opposed peduncles. Pappus setae 2–4, retrorsely hispid, bristly. Achenes c 1.5 cm long, linear, black

**Fls. & Frts.** : August–December.

**Distrib.** : Common throughout as a weed in gardens and in waste places.

**BLAINVILLEA Cass.**


Annuals herbs,30–40 cm high, erect, hairy. Leaves ovate, ovate–lanceolate or ovate–rhomboid, hispid. Heads yellow or white, 0.5–1 cm in diam., in axillary and terminal cymes with long peduncles; ligules bifid. Pappus setae few, antrorsely barbed, upto 0.1 cm long. Achenes c 0.5 x 0.1 cm, hispidulous near top.

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

**Distrib.** : Common throughout along roadsides in fields and in gardens.
BLEPHARISPERMUM DC.


Undershrubs, c 90 cm high, erect; rootstock woody; branches striate, terete. Leaves ovate or elliptic, apex obtuse or subacute, entire.
Heads in large, terminal, globose clusters, 2.5–3.7 cm in diam., 5–10–flowered, with broad leafy bracts at base. Pappus pala or bristles unequal or with 2–3 stronger awns at angles or absent in sterile achenes. Fertile achenes compressed, black.

*Fls. & Frts.*: August–October.

*Illus.*: Wight, Ic. t. 1093. 1846.

*Distrib.*: Rare. Pune.

*Notes*: It is endemic to India.

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**BLUMEA DC. (nom. cons.)**

1. Plants with decurrent winged leaves ... *B. venkataramanii*

1. Plants not as above:

2. Plants densely white–wooly (In *B. lacera* rarely glabrate):

3. Female florets densely pubescent ... *B. malcolmii*

3. Female florets glabrous:

4. Heads compact–globose in spicate panicles ... *B. hieraciifolia* var. *macrostachya*

4. Heads not as above in lax panicles ... *B. lacera*

2. Plants glabrous or variously pubescent, never white wooly:

5. Scandent twining herbs ... *B. riparia*

5. Plants not as above:

6. Achenes ribbed or angled:

7. Receptacles glabrous:

8. Heads sessile ... *B. sessiliflora*

8. Heads pedunculate or subsessile:

9. Corolla purple:

10. Corolla of disc florets glabrous ... *B. mollis*
| 10. | Corolla of disc florets not glabrous | ... | *B. atropurpurea* |
| 9. | Corolla yellow : |
| 11. | Female florets pubescent | ... | *B. eriantha* |
| 11. | Female florets glabrous : |
| 12. | Leaves not membranous | ... | *B. virens* |
| 12. | Leaves membranous | ... | *B. membranacea* |
| 7. | Receptacle pilose : |
| 13. | Pappus purple or yellowish | ... | *B. lanceolaria* |
| 13. | Pappus white : |
| 14. | Heads sessile | ... | *B. fistulosu* |
| 14. | Heads not sessile : |
| 15. | Plants unbranched with cuneate leaves | ... | *B. clarkei* |
| 15. | Plants branched without cuneate leaves | ... | *B. lacinata* |
| 6. | Achenes neither ribbed nor angled : |
| 16. | Stems unbranched | ... | *B. belangeriana* |
| 16. | Stems branched : |
| 17. | Upper leaves distinctly subopposite | ... | *B. bifoliata* |
| 17. | Leaves not as above : |
| 18. | Erect herbs; female florets glabrous | ... | *B. obliqua* |
| 18. | Prostrate herbs, female florets pubescent | ... | *B. oxyodonta* |


Erect, glandular, pubescent herbs, 30–60 cm tall. Leaves ovate, oblanceolate, entire or distantly serrate towards apical half. Heads pink–purple, arranged in short, terminal, bracteate cymes on long peduncles.

**Fls. & Frts.** : December–January.

**Distrib.** : Rare along river banks and around fields. Amravati.

**Notes.** : It is endemic to India. S. Kumar in Hajra et al. Fl. India Vol. 12 (1995) has not mentioned this species.

Herbs, 30–60 cm tall, erect; stem terete, densely hairy at apex. Leaves 4–8 × 2–4 cm, obovate, hairy on both sides, margins serrate–dentate. Heads 0.5–0.6 cm across, dense; involucral bracts longer than florets; corolla of bisexual florets 0.4–0.5 cm long, lobes hairy. Achenes terete, oblong, pubescent.

**Fls. & Frts.**: February–May.

**Distrib.**: Occasional as undergrowth in forests along gullies. Ahmednagar, Chandrapur, Kolhapur, Nanded (Naik, 1998), Pune, Raigad, Ratnagiri, Satara, Thane.

**Notes**: It is endemic to India.


Herbs, 25–40 cm tall, annual, erect or decumbent, clothed with spreading hairs. Leaves 2–4 × 0.5–1.0 cm, elliptic–oblong to oblanceolate. Heads 1.0–1.2 cm across, terminal and axillary, solitary with yellow corolla. Achenes oblong, pubescent, smooth.

**Fls. & Frts.**: January–March.

**Distrib.**: Bombay (Randeria, op. cit.), 'Deccan' (Cooke, op. cit.), Aurangabad, Beed, Jalna, Latur, Nagpur, Nanded, Osmanabad & Parbhani (Naik, 1998).


**Fls. & Frts.**: September–May.

**Distrib.**: Rare. 'Bombay' (Randeria, op. cit.), 'Konkan' (Cooke, op. cit.).

Herbs, erect, perennial. Leaves 2.0–7.5 x 1–2 cm, lower leaves obovate, upper leaves elliptic-oblong, margins serrate. Heads yellow. Pappus white, longer than achenes, scanty. Achenes minutely hairy.

*Fls. & Frts.* : December–May.


*Distrib.* : Common throughout in fields and in open forests.

*Notes* : It is endemic to India.


Herbs, c 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, angled.


*Distrib.* : Occasional as forest undergrowth. Bombay (Randeria, op. cit.), 'Konkan' (Cooke, op. cit.), Nanded (Naik, 1998), Satara (Birdwood, Cat. Fl. Matheran & Mahableshwar 16. 1897; Randeria, op. cit.).


Herbs, erect or diffuse. Leaves radical and cauline, shortly dentate-serrate. Heads solitary, on slender peduncles or mostly in cymose clusters. Achenes minute, pilose.

*Fls. & Frts.* : December–February.
Distrib. : Raigad, Thane (Naik & Bhogaonkar, op. cit.).


Herbs, 25–80 cm tall, erect, aromatic; stem grooved, glandular–pubescent. Leaves 3–8 x 2–5 cm, obovate–oblong, incised or sometimes lyrately lobed, silky pubescent on both sides, margins serrate–dentate. Heads 0.4–0.6 cm across; involucral bracts 0.3–0.4 cm long, slightly longer than corolla. Achenes oblong, sparsely hairy, subangulate, terete.

**Fls. & Frts.** : October–May.

Distrib. : Occasional, on waste lands. Ahmednagar, Chandrapur, Kolhapur, Osmanabad, Pune, Ratnagiri, Satara, Thane, Yavatmal.


Herbs, annual c 1 m tall, stout, covered with dense, glandular pubescence. Leaves lyrately lobed. Heads in corymbs. Achenes 8–10–ribbed.

**Fls. & Frts.** : November–April.


Distrib. : Rare along banks of streams, nallahs, etc. Ahmednagar, Akola, Marathwada (Naik, 1998), Pune.


1. Receptacle pilose or glabrate; heads subsessile ... var. *lanceolaria*
1. Receptacle fimbrillate; heads pedunculate ... var *spectabilis*
Blumea laciniata (Roxb.) DC.: A- Habit; B- Achene with floret.
var. **lanceolaria.**

Shrubs, c 2 m high; branches puberulous. Leaves lanceolate to oblanceolate, apex acute, base tapering into petiole, margins shallowly serrate. Heads yellow, in elongate panicles, subtended by leafy bracts. Involucral bracts narrow, pubescent. Achenes subterete, silky; pappus red.

*Fls. & Frts.*: February–April.

*Illus.*: S. Kumar in Hajra et al. op. cit.

*Distrib.*: Bombay (Randeria, op. cit.).


Shrubs, c 2 m high; branches puberulous. Leaves lanceolate to oblanceolate, apex acute, base tapering into petiole, margins shallowly serrate. Heads yellow, 0.9–0.11 cm long, distinctly pedunculate in large panicles, subtended by leafy bracts. Achenes subterete, silky; pappus red.

*Fls. & Frts.*: February–April.

*Illus.*: S. Kumar in Hajra et al. op. cit.

*Distrib.*: Rare. 'Konkan' (Cooke, op. cit.), Satara.


Herbs, c 1 m high, decumbent or ascending strongly aromatic. Leaves 2.5–10 x 1.5–5 cm, obovate, sessile. Heads 1.5–2.0 cm across, terminal fasciculate, subsessile. Achenes dark brown, obscurely angled, sparsely pubescent.

*Fls. & Frts.*: October–May.

*Distrib.*: Ahmednagar, Jalgaon, Kolhapur, Nanded (Naik, 1998), Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

*Notes*: It is endemic to India.

**Blumea mollis** (D. Don) Merr.
B. membranacea var. muralis (DC.) Hook. f. op. cit.; Cooke, op. cit. B. membranacea var. gracilis Hook. f. op. cit. 'Maharbir'.

1. Plants pilose and slender; involucral bracts herbaceous ... var. membranacea

1. Plants robust and more or less strigose; involucral bracts rigid ... var. jaquemontii

var. membranacea.

Herbs, 1.0–1.5 m tall, annual, stout, striate, more or less glandular–pubescent. Leaves 5–13 x 2.0–4.5 cm, obovate or often lyrate or runcinate, thinly membranous, apex acute or obtuse, base tapering. Heads c 0.6 cm across, numerous, on slender, glandular–hairy, peduncles, in much branched, open panicles. Achenes oblong, ribbed, pubescent.

Fls & Frts. : March–June.

Distrib. : Common in forests along gulleys, in river beds and roadsides.


Heads 0.7–0.8 cm across with rigid involucral bracts, reddish–yellow; involucral–bracts 4–5 seriate, purple in colour. Achenes with a ring of minute hairs at top.

Fls & Frts. : January–May.

Illus. : Bhogaonkar & Devarkar, op. cit.

Distrib. : Frequent on high hills and on rocky soil. Amravati (Bhogaonkar & Devarkar, op. cit.), Bombay (Randeria, op. cit.), Nanded (Naik, 1998).

Notes : It is endemic to India.


Herbs, erect, aromatic; stems and branches villous. Leaves 2.5–7.5 x 1.6–3.5 cm, ovate–oblong, ovate, densely hairy beneath, base tapering into petiole, margins dentate–serrate. Heads 0.4–0.5 cm across, in spiciform panicles; florets purple. Achenes 5–angled, oblong, pubescent.
**Blumea obliqua** (L.) Druce: A- Habit; B- Floret.
Fls. & Frts. : December–May.


Distib. : Common, along gulleys in forests, on wastelands; in drying ditches, along river banks, etc.


Herbs, c 50 cm high, annual, aromatic. Leaves sessile, obovate, often deeply dissected, upper oblanceolate–lanceolate. Heads few, terminal, on hairy peduncles, rose–pink, 1.0–1.5 cm across. Achenes c 0.5 cm long; pappus white, oblong, pubescent.

Fls. & Frts. : January.


Distib. : Frequent, on waste lands along roadsides, in barren lands, etc.


Herbs, prostrate or decumbent, branched from base; branches whitish–silky hairy. Leaves crowded at base, 1.5–8.0 x 0.6–3.5 cm, obovate to obovate–oblong, silky hairy on both sides, apex spinulose–acute or apiculate. Heads 0.6 cm across; involucral bracts villous and glandular; corolla c 0.3 cm long, yellow, tubular. Achenes oblong, pubescent.

Fls. & Frts. : November–June.


Distib. : Common, on rocky and calcareous soil along roadsides, on wastelands and around fields.

Herbs upto 2 m tall; stems and branches glandular–villous. Leaves elliptic–ovate, acute or obtuse. Heads yellow, in terminal cymes. Achenes more or less 4–angled.

Fls. & Frts. : November – February.


Fls. & Frts. : December–February.


Herbs c 100 cm high, erect, annual; stems terete, clothed with hairs. Leaves spatulate, hairy on both surfaces, at base decurrent forming a false prominent ring, margins irregularly dentate or serrate, upper most leaves smaller, oblong–lanceolate or spathulate with decurrent base. Heads terminal and lateral, yellow, solitary or in clusters, pedunculate. Pappus as long as corolla, white. Achenes minute, 4–angled, minutely hairy, cupular at apex.

Fls. & Frts. : December & February.

Illus. : Rolla Rao & Hemadri (op. cit.).

Distrib. : Pune–Endemic.


Herbs, 40–100 cm tall, annual; stems striate. Leaves variable, 2–10 x 0.8–4.5 cm, oblanceolate, obovate or lyrately lobed (base ones),
glabrous above, sparsely glandular–hairy beneath. Heads 0.8–1.0 cm across, in lax panicles, florets yellow. Achenes oblong, ribbed, sparsely hairy.

*Fls. & Frts.* : January–May.


**BREEA Less.**


Herbs, up to 60 cm tall, stoloniferous stem striated, pubescent. Leaves alternate, sessile, 10–12 x 1.5–2 cm, linear, sublyrate, spinous–dentate along margins, grey–pubescent above, densely white–woolly beneath. Heads on short, axillary or terminal panicles, unisexual. Florets with pink–purple corollas. Achenes 4–5 mm long, oblong–obvoid, truncate at apex. Pappus of dirty white, plumose hairs, connate at base, deciduous.

*Fls. & Frts.* : October–November.

*Illus.* : Hajra in Hajra et al. op. cit.

*Distrib.* : Rare, along roadsides Aurangabad (Naik, op. cit.).

**CAESUILA Roxb.**


Herbs, prostrate or suberect, anual. Leaves sessile, oblong–lanceolate, acute at apex. Heads compound, c 1 cm across, globose, white or purplish. Pappus of 2 ovate scales. Achenes 0.3 x 0.2 cm, flat, obovate, slightly notched.
**Fls. & Frts.** : September–February.


*Distrib.* : Common throughout, in marshy places.

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**CARTHAMUS L.**


Herbs, 30–120 cm high, dichotomously branched, cottony, rigid, annual. Leaves hispid, radical leaves lyrate, cauline 3–6 cm long, ovate, amplexicaul, auricled, spinescent. Heads 9–11 x 5–6 cm, terminal and axillary. Flowers pale yellow. Achenes 4–5 x 3.0–3.5 mm, peripheral one without pappus, inner with copious pappus.

*Fls. & Frts.* : February.

*Illus.* : Bachulkar & Yadav, op. cit. 446, t. 1, figs. 1–6 & 447, figs. 1–12.

*Distrib.* : Naturalised at Jotiba hills near Panhala fort in Kolhapur district (Bachulkar & Yadav, op. cit.).

*Notes.* : This species might have come to Maharashtra mixed with some other seeds, most probably with *C. tinctorius* which is commercial crop in Maharashtra. It is cultivated in Tropical Africa & Kashmir. The possibilities of this species being used as oilseed crop in hilly tracts of Maharashtra appears worth testing (Bachulkar & Yadav, op. cit. 445–448).

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**CENTIPEDA Lour.**


Herbs, annual, prostrate; branches radiating. Leaves obovate, spatulate, margins toothed. Heads 0.2–0.4 cm across, yellow, axillary, sessile. Achenes small, 3–4–angled, hairy on angles.

*Fls. & Frts.* : April–May.
Illus. : Wight, Ic. t. 1610. 1850, (Dichrocephala schmidii).

Distrib. : Rare. Ratnagiri, Thane, Sindhudurg.

CHRYSANTHELLUM L. C. Rich.


Herbs, small, erect; branches procumbent. Leaves pinnatifid, segments oblong. Heads solitary, terminal, yellow. Achenes with minute corona, outer achenes tubercled, while inner flat and 2 winged.

Fls. & Frts. : July–October.

Illus. : H.J. Chowdhery in Hajra et al. op. cit.


CONYZA Less (nom. cons.)

1. Pappus hairs yellowish or dirty white:
   2. Leaves cuneate at base; achenes subglabrous; pappus hairs yellowish ... C. bonariensis
   2. Leaves attenuate at base; achenes sparsely pubescent; pappus hairs dirty white ... C. sumatrensis

1. Pappus hairs usually red:
   3. Heads pink ... C. leucantha
   3. Heads yellow or rarely white:
      4. Pappus biseriate ... C. japonica
      4. Pappus uniseriate:
         5. Plants viscid; heads 0.5–1 cm across ... C. aegyptiaca
         5. Present not viscid; heads 0.2–0.3 cm across ... C. stricta


Annual herbs c 80 cm tall erect; stem striate. Lower leaves lobulate; upper simple, lanceolate. Heads c 0.25 cm across, in terminal,
panicled corymb, heterogamous, disciform, yellow at first but later becoming white. Achenes oblong–obovoid, villous.


*Distrib.* : Nagpur (Ugemuge, 1986).


Herbs c 80 cm tall. Leaves sessile, appressed hairy. Heads c 0.25 cm across, white or yellow, in terminal corymbose cymes. Pappus uniseriate. Achenes c 0.1 x 0.4 cm, pale brown, flat, sparsely hairy.

*Fls. & Frts.* : April–May.


Herbs, c 75 cm tall Leaves c 9 x 4 cm, rounded with a decurrent base, margins crenate, hairy. Heads c 0.9 cm across. Achenes marginate, hairy.

*Fls. & Frts.* : October–February.

**Illus.** : Hajra in Hajra et al. op. cit.

*Distrib.* : Rare, grown in gardens, also escaped. Dhule (Varghese et al. op. cit.), Nanded & Parbhani (Naik, 1998).


Herbs, c 50 cm, tall, erect, branched; stems ribbed, glandular–crispy hairy especially at top. Leaves c 8 x 3 cm, elliptic–oblong, glandular–pubescent, narrowed at both ends, apex acute. Heads 0.8–1.0
cm across, in corymbose panicles; involucral bracts purple tinged along margins and at tip, glandular–pubescent. Pappus reddish when dry. Achenes compressed.

_Fls. & Frts._ : April–May.

_Distrib._ : Ahmednagar, Pune, Ratnagiri, Satara, Sindhudurg, Thane.


Herbs, c 75 cm high. Leaves c 2 x 0.2 cm, irregularly toothed. Heads yellow c 0.2 cm across, numerous in dense terminal corymbs. Pappus longer than achenes, plumose, connate at base, separating entirely. Achenes ovoid–oblong, tapering towards base, brownish, sparsely hairy.

_Fls. & Frts._ : September–May.


Herbs, c 1 cm high, annual; stems patently long hairy. Leaves 2–10 x 0.5–2 cm, linear–lanceolate, or oblanceolate, acute at apex, tapering at base, hairy. Heads yellow, in pyramidal, 2–5 cm long panicles. Achenes c 4 mm long, glabrescent, pappus hairy, dirty white.

_Fls. & Frts._ : May–November.

_Distrib._ : Occasional on hill slopes or weed of waste places and in cultivated fields. Ahmednagar, Satara.

**CRASSOCEPHALUM Moench.**

Cyathocline lutea Law ex Wight
A- Habit; B- Floral head; C- Achene.

Herbs c 1 m high; branches ribbed, pilose between ribs. Leaves subsessile or shortly petioled, spathulate or oblong, glabrous or sparsely pilose, margins serrate–dentate or irregularly lobed. Heads in terminal corymbs, brick red; outer involucral bracts short, free, inner linear–lanceolate, connate, ribbed. Achenes cylindrical, ribbed.

*Fls. & Frts.* : October–May.


*Distrib.* : Satara (Rare).

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**CYATHOCLINE Cass.**

1. Flowers purple ... *C. purpurea*
1. Flowers yellow ... *C. lutea*


Herbs, small, slender; stems scape like. Leaves mostly radical, sessile, glandular, forming a stellately spreading rosette; cauline leaves few. Heads c 0.4 cm across, few in terminal corymbose panicles. Achenes oblong, slender, thin, shining, smooth.


*Illus.* : Wight, Ic. t. 1150. 1846.

*Distrib.* : Ahmednagar, Nasik, Pune, Thane.

*Note* : It is endemic to India.


1. Florets white ... *var. alba*
1. Florets other than white :
   
   2. Florets pale to bright purple ... *var. purpurea*
   2. Florets purple at periphery and white at centre ... *var. bicolor*
var. **purpurea.**

Suberect herbs, viscid and glandular, silky hairy. Basal leaves radical and cauline, sessile, segments toothed. Heads 0.3–0.6 cm across, in terminal corymbose–panicles; involucral bracts linear, acute, hairy on margins. Achenes oblong.

*Fls. & Frts.* : September–March.

*Illus.* : Wight, Ic. t. 1098. 1846 (*C. lyrata*); Hajra in Hajra et al. op. cit.

*Distrib.* : Common throughout in wet places, also in the forests as undergrowth.


Differs from the typical variety in having pure white florets.

*Fls. & Frts.* : November–May.

*Distrib.* : Rare, in rice fields after harvesting. Pune (Sant. op. cit.) – Endemic.


Much smaller than in var **alba**. Plants are shorter than the type and larger than *Cyathocline lutea*.

*Fls. & Frts.* : November–March.

*Distrib.* : Rare, in rice fields. Pune (Sant. op. cit.) – Endemic.

**DICHROCEPHALA.** L’ Herit. ex DC.


Herbs, erect or decumbent, often creeping at base; stems branched from base. Leaves ovate, oblong or lyrate, pinnatifid in the lower part, sparsely hairy, margins irregularly dentate–serrate. Heads c 0.3 cm across; ray florets white, disc florets yellow. Achenes compressed.

Herbs, 15–30 cm high, annual, branched, white cottony wooly. Leaves sessile, linear or linear–obovate, apex obtuse to subacute, both sides cottony wooly. Heads c 2 cm across, axillary, solitary, leaf opposed, pale yellow. Pappus hairs biseriate, the inner flat, barbellate or feathery, the outer shorter, paleaceous or slender bristly. Achenes c 0.5 cm long, turbinate, 5–10–ribbed.


**Dyssodia Cav.**


Herbs, 15–20 cm high, annual, erect; stems finely pubescent. Leaves 2–5 x 1–3 cm, deeply pinnatisect; lobes somewhat filiform. Heads c 2 cm across, peduncled. Involucral bracts ciliate on margins; corolla yellow. Achenes black, 3–4 mm long, oblong–obconical, angled and ribbed. Pappus uniseriate, setose, unequal.

**Illus.** : R. R. Rao in Hajra et al. op. cit.
Dyssodia tenuifolia Loes.: A- Habit; B- Achene.
Distrib. : Native of C. America, naturalised. Maharashtra (R. R. Rao in Hajra et al. op. cit.).

**Echinops L.**


Herbs, 30–90 cm high, much branched, rigid, annual, 30–90 cm high. Leaves sessile, 2–10 cm long, oblong, deeply pinnatifid, glabrous or minutely pubescent. Heads c 1.5 cm across (excluding spines), white, surrounded by strong white bristles. Pappus short, yellow, forms a short cylindric tuft above achenes. Achenes 0.5 cm long, obconic, densely villous.


Distrib. : Common throughout in dry places under open situations.

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**Eclipta L. (nom. cons.)**


Annual herbs, erect or prostrate. Leaves sessile, oblong–lanceolate or oblong–elliptic, sparsely strigose on both surfaces. Heads c 0.5 cm across, solitary or 2–together, on unequal, axillary peduncles, yellow. Achenes oblong–obovate, tubercled all over, trigonous, brown to black.

*Fls. & Frts.* : July & February.


Distrib. : Common throughout in wet situations.

Notes : Linnaeus (1753) described *Verbesina prostrata* L. (p. 902), *V. alba* L. (p. 902) and *V. pseudo-acmella* L. (p. 901). It has been found that all the 3 names denote only a single species of which there are
many forms, although the forms do not merit even a varietal status. Again in 1771, Linnaeus reduced the above three species to two and described *Eclipta prostrata* and *E. erecta* L. The former name based on *Verbesina prostata* L. (1753) whereas the later dated only from 1771. Thus *Eclipta prostrata* is accepted here.

**ELEPHANTOPSIS L.**


Herbs, 20–30 cm, high, erect, softly pubescent. Leaves radical, obovate-oblong, few cauline. Heads arranged in terminal dichotomous cymes; flowers bluish. Pappus 5, paleaceous, scaly, produced into a fine aristae. Achenes c 0.3 cm long, oblong, ribbed, tapering at base, hairy in between ribs.

*Fls. & Frts.*: August–January.


*Distrib.*: Occasional under shade of trees. Ahmednagar, Aurangabad, Chandrapur, Kolhapur, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

**EMILIA Cass.**

1. Small, 3.5–20 cm tall herbs ... *E. scabra*
1. Herbs more than 20 cm tall :
2. Leaves only cauline ... *E. javanica*
2. Leaves both radical and cauline :
3. Leaves lyrately pinnatifid with triangular-ovate terminal lobe ... *E. sonchifolia*
3. Leaves linear-oblong or oblanceolate ... *E. zeylanica*


Herbs; stems pale brown, faintly ribbed, branched above. Leaves 2.5–1 x 0.3–3 cm, lanceolate, acute at apex, entire to distantly serrate
along margins, sessile and amplexicaul. Capitula reddish–magenta, in corymbs. Achenes pale brown, 2–3 mm long, cylindrical, deeply ribbed, white pubescent between ribs. Pappus of white hairs.

*Fls. & Frts.* : January–November.

*Distib.* : W. ghats, between 3000–4000 m. Maharashtra (Rao et al. op. cit. & R. Mathur in Hajra et al. op. cit.).


Herbs, 3.5–20.0 cm long; stems stramineous, slender, glabrescent, faintly ribbed. Leaves chiefly radical; cauline few, radical 2–2.5 x 0.5–1 cm, ovate–lanceolate, subobtuse at apex, lyrate to dentate at margins, scabrid on both sides; cauline 7–10 mm long, lanceolate, scabrid, all leaves sessile, amplexicaul. Capitula pink–purple; involucre dark brown. Achenes c 2 mm long, linear–oblong, dirty brown, deeply ribbed, hispid on angles. Pappus white.

*Fls. & Frts.* : April–November.

*Distib.* : Maharashtra (Rao et al. op. cit. & R. Mathur in Hajra et al. op. cit.).

**Notes**: It is endemic to India.


Herbs, erect or diffuse, sometimes decumbent. Leaves variable, lower with petioles, lyrate–pinnatifid, cauline. Heads small, in terminal, lax corymbose panicles, with purplish flowers. Pappus copious, white. Achenes c 3 mm long, narrow, 5–ribbed, obtuse with scabrid ribs, brown.

*Fls. & Frts.* : August–December.


*Distib.* : Common weed of cultivated fields and on wastelands. Pune, Raigad, Ratnagiri, Satara.
Notes: It is endemic to India.


1. Leaves linear–oblong or oblanceolate, tip acute ... var. zeylanica
1. Leaves linear, tip hooked ... var. paludosa

var. zeylanica.

Herbs, up to 60 cm high, erect, leafy. Leaves narrow, entire or subentire; upper cauline ones hastate, base sessile, auricled. Capitula few. Achenes long, white hispid on ribs. Pappus white.

Fls. & Frts. : November–December.

Distrib. : Maharashtra (Rao et al. op. cit. & R. Mathur in Hajra et al. op. cit.).


Fls. & Frts. : June–July.

Distrib. : Maharashtra (Rao et al. op. cit. & R. Mathur in Hajra et al. op. cit.).

Notes: It is endemic to India

EPALTES Cass.


Herbs, diffuse; branches divaricate and numerous. Leaves sessile, decurrent on stems, oblong, spathulate, apex rounded, mucronate, margins toothed. Heads 0.6–0.8 cm across; florets purple; involucral bracts ovate, scarious. Achenes oblong, ribbed.
Fls. & Frts. : September–November.


**ERIGERON L.**


Herbs, erect, annual. Leaves lanceolate, entire, hairy. Heads terminal, solitary, yellowish–white. Pappus uniseriate, yellowish, plumose, longer than achenes, connate at base. Achenes c 0.1 x 0.1 cm, obovoid, flat, brownish, sparsely hairy.


Distrib. : Occasional on wastelands along roadsides. Ahmednagar, Akola, Nasik, all districts of Marathwada (Naik, 1998), Pune.

**EUPATORIUM L.**


Fls. & Frts. : March–April.

Illus. : Uniyal in Hajra et al. op. cit.

Distrib. : It is a native of Mexico, occasional in grasslands. Satara.
Flaveria A. Juss.


Annual herbs, erect, 20–60 cm high. Leaves elliptic–lanceolate, ob lanceolate or spathulate. Heads 1–1.5 cm across. Flowers yellow. Achenes c 0.3 x 0.1 cm, ob lanceolate or subclavate, the ray achenes longer, 10 or more ribbed.

**Fls. & Frts.** : February–December.


**Distrib.** : Common weed in wet fields and on wastelands.

Galinsoga Ruiz & Pav.

1. Leaves glabrous on nerves; ligules deeply 3–lobed ... **G. quadriradiata**
1. Leaves glabrous; ligules shortly 3–lobed ... **G. parviflora**


Herbs, 30–40 cm high. Leaves ovate, sparsely hairy, margins crenate. Heads c 0.5 cm across, solitary or few together, yellow. Achenes angular c 0.2 cm long, black.

**Fls. & Frts.** : May–July.

**Illus.** : H. J. Chowdhery in Hajra et al. op. cit.

**Distrib.** : Introduced from tropical America, found near cultivated fields and in waste places. Pune, Raigad, Satara.


Herbs, c 60 cm high; stems sparsely pilose below, densely strigose above. Leaves 1.5–10 x 0.5 – 5.5 cm, ovate, apex acute or acuminate, base acute, margins ciliate. Heads 0.8 cm across. Achenes angular, strigose.
**Glossocardia Cass.**


Annual herbs, prostrate or erect. Leaves bipinnatisect. Heads 0.5–1.0 cm long, yellow. Pappus awns glabrous or setose, spreading at an acute angle or at right angles upto 0.3 cm long. Achenes c 0.5 cm long, flat, oblong, villous on angle and edges.

**Fls. & Frts. :** August–December.


**Distrib. :** Common throughout in open situations.

**Notes :** It is endemic to India. Pradhan (J. Econ. Tax. Bot. 6 : 477. 1985) treated *G. setosa* Blatt. & Hallb. as synonymous to *G. bosvallea* (L. f.) DC.

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**Glossogyne Cass.**


Perennial, branched, herbs Leaves pinnatifid, linear or linear–cuneate, apex acute. Heads white, terminal, in cymose branched peduncles. Achenes linear with retrorsely spreading awns.

**Fls. Frts. :** April–November.

**Illus. :** H. J. Chowdhery in Hajra et al. op. cit.
Gnaphalium luteo-album L. ssp. affine (D. Don) Koster:
A- Habit; B- Involucral bract; C- Marginal female floret;
D- Central bisexual floret.
Distrib. : Southern Maratha Country (Dalz. op. cit.).

Notes. : The occurrence of this species in Maharashtra is doubtful as there is no recent collections or any report from Maharasstra. On the basis of Dalz. & Gibs. (1861), it has been included here.

**GNAPHALIUM L**

1. Heads in leafless clusters ... *G. luteo-album*

1. Heads in leafy clusters :

2. Prostrate herbs ... *G. pulvinatum*

2. Erect herbs :

3. Stems striate ... *G. purpureum*

3. Stems not as above ... *G. polycaulon*


1. Involucral bracts pale to dark brown or reddish–brown ... ssp. *luteo-album*

1. Involucral bracts citrine to golden yellow ... ssp. *affine*

ssp. *luteo-album.*

Herbs, 15–45 cm high, erect or diffuse, densely clothed with white cottony wool. Leaves 2–10 x 0.5–1.5 cm, linear–oblong to oblanceolate, obtuse at apex, semi–amplexicaul at base, entire along margins, cottony pubescent on both sides. Heads larger, in dense, terminal corymbose panicles on leafless peduncles; marginal bracts pale to dark brown or reddish–brown. Achenes ellipsoid–oblong, c 1 mm long, pale brown, minutely papillose; pappus bristles 10, scabrid, united into a ring at base.

**Fls. & Frts.** : January–March.


Gnaphalium purpureum L.:
A- Habit; B- Involucral bract; C- Marginal female floret;
D- Central bisexual floret; E- Achene.
Similar to type except in having small heads and citrine to golden yellow involucral bracts.

_Fls. & Frts._ : January–March,

_Illus._ : S. Deshpande et al. _Fl. Mahabaleshwar_ 1: 315, f. 29. 1993; Pant in Hajra et al. op. cit.


Herbs c 30 cm high, densely white–pilose. Leaves c 3.0 x 1.5 cm, narrowly linear–obovate or spathulate. Heads in clusters of terminal spikes. Achenes oblong, papillose.

_Fls. & Frts._ : December–May.


_Distrib._ : Common throughout as a weed in waste places and along roadsides.


Annuals herbs c 10 cm high. Leaves narrow spathulate. Heads immersed in cottony wool, arranged in axillary or terminal leafy clusters. Achenes slender, oblong, minutely papillose.

_Fls. & Frts._ : January–March.


Herbs, 15–45 cm high, erect or ascending, cottony tomentose. Leaves 1–7 x 0.1–1 cm, narrowly spathulate or oblanceolate, broadly
rounded and shortly mucronate at apex, narrowing down into petiole, entire along margins. Heads in short spicate clusters, c 2 mm across, faint yellow with purple tinge, densely tomentose. Pappus bristles 15, united at base to form a ring. Ovary minutely papillate, stigmatic unequal. Achenes ellipsoid–oblong, minutely papillose.

**Fls. & Frts.** : December–February.

**Illus.** : Pant in Hajra et al. op. cit.; Bhogaonkar & Devarkar, op. cit.

**Distrib.** : Amravati (Naik & Bhogaonkar, op. cit.).

**GONIOCAULON Cass.**


Annual herbs c 45 cm high, erect. Leaves linear or oblong–ovate. Heads 2 cm long, with rose coloured flowers. Pappus paleaceous, scales unequal, linear or slightly obovate, subobtuse. Achenes c 0.5 cm long, closely ribbed, subcylindric.

**Fls. & Frts.** : September – February.

**Illus.** : Wight, *Ic. t. 479. 1841 (Amberboa indica DC. Prodr. 6:538. 1838).**

**Distrib.** : Common weed of jowar fields.

**GRANGEA Adans.**


Annual herbs; branches prostrate, pubescent, spreading c 30 cm long. Leaves subsessile, chartaceous, apex apiculate, decurrent at base, margins entire. Heads globose, solitary, axillary and terminal. Flowers yellow. Pappus tubular, with fimbriate margins. Achenes glandular, truncate, oblong.
Fls. & Frts. : December – May.


Distrib. : Frequent in marshes around tanks, along river–banks, etc.

**Gynura Cass.**

1. Leaves sessile ... *G. bicolor*
1. Leaves petioled:
   2. Capitula orange–red ... *G. nitida*
   2. Capitula yellow ... *G. travancorica*


Undershrubs, 1–2 m high; stem grooved. Leaves distantly toothed, variable, auricled or attenuated at base. Heads deep orange, in corymbs. Pappus copious, white, longer than bracts but shorter than corolla. Achenes oblong, glabrous, rarely papillose between ribs.

Fls. & Frts. : August May.

Illus. : R. Mathur in Hajra et al. op. cit.

Distrib. : Occasional on hill slopes and along moist grassy slopes near forest edges. Ahmednagar, Aurangabad (Naik, 1998), Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.


Herbs, stout; stems pale brown, stout, angular, grooved, sparingly pubescent, branched above inflorescence. Leaves 3–14 x 1–5 cm, obovate–lanceolate, acute or obtuse at apex, narrowed at base, coarsely toothed; uppermost leaves sessile. Capitula orange–red, campanulate, peduncle densely brownish–pubescent. Achenes greyish–black, oblong, 1–1.2 mm long, strongly ribbed, hispid between ribs. Pappus white.
Gynura bicolor (Roxb. ex Willd.) DC.
Fls. & Frts. : January–December.

Distrib. : Maharashtra (Rao et al. op. cit. & R. Mathur in Hajra et al. op. cit.).

Notes : It is endemic to India.


Herbs, 0.8–1.2 m tall, erect; stems stout, grooved, fulvous pubescent. Leaves 7–8 x 1.5 cm, elliptic–lanceolate, acute to subacute at apex, distantly serrate along margins, coriaceous, lower leaves with cuneate base; upper most leaves lanceolate, sessile, with amplexicaul, auricled base. Capitula 1.5–2 cm across. Achenes 4 mm long, cylindrical, greyish–black, ribbed, with dense yellow pubescence. Pappus white.

Fls. & Frts. : February–May.

Distrib. : Maharashtra (Rao et al. op. cit. & R. Mathur in Hajra et al. op. cit.).

Notes : It is endemic to India.

KLEINIA P. Miller

1. Pappus longer than florets ... K. grandiflora
1. Pappus not longer than florets ... K. balsamica


Fls. & Frts. : April–May.

Distrib. : Maharashtra (Rao et al. op. cit.) – Endemic.

Perennial undershrubs, 80–90 cm high, fleshy. Leaves sessile or subsessile, 4–11 x 1.5–4.5 cm, obovate or elliptic–lanceolate. Heads in corymbbs, few or many–flowered, pale yellow. Pappus hairs copious. Achenes 0.2–0.5 cm long, oblong, 10–striate.

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

**Illus.** : Wght, Ic. t. 484. 1841 (*Notonia grandiflora*).

**Distrib.** : Frequent on hill slopes on rocky soil. Aurangabad (Naik, 1998), Bombay, Dhule, Jalgaon, Nasik, Pune, Satara.

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**LACTUCA L.**


Herbs, c 20 cm high. Radical leaves obovate, apex obtuse, base cuneate, cauline narrow, semi–amplexicaul. Heads pinkish, cylindrical c 1 cm across; involucral bracts linear–oblong, scarious. Achenes c 0.7 cm long.

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

**Distrib.** : Frequent weed of cultivated fields Ahmednagar, Aurangabad & Jalna (Naik, op. cit.), Pune, Satara.

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**LAGASCEA Cav. (nom. cons.)**


Annual herbs, slender, laxly branched, villous. Leaves ovate, upper surface coarsely hairy, lower surface densely silky, acute at apex, margins entire or serrulate. Heads clustered at ends of branches on long peduncles. Pappus as a short fimbriate tuft. Achenes c 0.2 cm long, cuneate, enclosed within involucre, compressed.

**Fls. & Frts.** : July–December.

**Distrib.**: Common throughout as a weed.

**LAGGERA Sch.–Bip. ex Koch**

1. Stems wingless; corolla of bisexual florets pink; achenes subcompressed ... 
   **L. aurita**

1. Stems winged; corolla of bisexual florets bluish–purple; achenes faintly ribbed ... 
   **L. alata**


Annual herbs, 50–100 cm high, erect, suffruticose. Leaves decurrent–oblong, elliptic–obovate. Heads 1.0–1.75 cm across, axillary and terminal on leafy peduncles, pink rose with unequal, multiserial involucral bracts. Pappus c 0.5 cm long, white. Achenes 0.1 cm long, cylindrical, ribbed, hairy.

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

**Illus.**: Wight, Ic. t. 1101. 1846; S. Kumar in Hajra et al. op. cit.

**Distrib.**: 'Konkan' (Cooke, op. cit.), Pune.


Herbs, 40–65 cm high, stout, aromatic; branches many. Leaves sessile, 2–16 x 1–10 cm, ovate or elliptic, lower ones lyrate or irregularly lobed, narrowed at base, upper ones smaller, broadly serrate, all with large, free auricles at base, acute. Heads 8–12 mm across, axillary, solitary or in terminal lax corymbs. Marginal and central florets with pink corollas. Achenes oblanceolate, 1 mm long. brown, glabrescent. Pappus bristles many, scabrid, greyish.

**Fls. & Frts.**: December.

**Distrib.**: 'Konkan' (Cooke, op. cit.), in all districts of Marathwada (Naik, op. cit.).
Lamprachaenium microcephalum (Dalz.) Bth.
A- Habit; B- Achene
**LAMPRACHAENIUM Bth.**


Annual herbs, 75–100 cm high, erect. Leaves broadly elliptic–lanceolate, densely clothed with white cottony tomentum beneath, margins serrate. Heads 0.5–0.7 cm across, axillary, subsessile or on slender peduncles, purple. Pappus copious, white turning pink, fugaceous. Achenes 0.25–0.28 cm long, obovoid–ellipsoid, compressed, faintly striate.

*Fls. & Frts.*: October–November.

*Illus.*: Uniyal in Hajra et al. op. cit.

*Disrib.*: Common in waste places. Ahmednagar, Pune, Satara, Thane.

*Notes*: It is endemic to India.

**LAUNAEA Cass.**

1. Achenes 6–ribbed ... *L. acaulis*
2. Achenes glabrous ... *L. sarmenosa*
2. Achenes not glabrous ... *L. intybacea*
1. Achenes 4–ribbed ... *L. procumbens*


Herbs, erect, perennials, juice milky. Leaves in a radical rosette, c 10 x 2 cm linear–lanceolate or narrowly oblong, margins entire or remotely denticulate. Heads yellow, in terminal panicles. Achenes hardly beaked.

*Fls. & Frts.*: February–May.

Distrib. : Occasional in cultivated fields Aurangabad, Kolhapur, Parbhani, Raigad, Ratnagiri.

Notes : It is endemic to India.


Annual herbs, erect. Leaves sessile, mostly radical, runcinate or pinnatifid, c 11 x 5 cm, cauline leaves few. Heads yellow, sessile, solitary or in small distant clusters along leafless branches. Pappus copious, biseriate. Achenes muriculate, black, ribbed.


*Illus.* : Wight, Ic t. 1146. 1846.

Distrib. : Occasional, along road sides. Aurangabad, Jalgaon, Kolhapur, Nanded, Nasik, Pune, Satara.


Annual herbs. Leaves mostly radical, sessile, c 1 x 3.5 cm, obovate–oblong, pinnatifid. Heads yellow, terminal, in long branched or unbranched racemes. Pappus copious, multisertitate, caducous. Achenes c 0.1 cm long, brown.

*Fls. & Frts.* : August–October.


Distrib. : Common throughout in open situations, in waste places.

Perennials. Leaves radical, oblong, runcinate–pinnatifid or sinuate–toothed or lobed. Heads bright yellow, c 1 cm long, solitary. Achenes beaked above, minutely wrinkled.


*Distrib.* : Bombay, Kolhapur, Nasik, Pune, Raigad, Satara, Thane.

NANOTHAMNUS T. Thoms.


Herbs, prostrate, highly branched. Leaves subsessile, 0.5–2.0 x 0.3 cm, lower oblanceolate, upper lanceolate, densely wooly on both surfaces. Heads c 0.5 cm across, in dense clusters, yellow. Achenes black, prominent with 5–8 ribs, obovoid.

*Fls. & Frts.* : Feb.–May.


*Distrib.* : Ahmednagar, Nasik, Pune, Thane.

*Notes* : It is endemic to India.

PARTHENIUM L.


Herbs up to 1 m high; stems hairy, angular, branched. Leaves alternate, irregularly much dissected, margins entire, pubescent on both surfaces. Heads white, in terminal or axillary peduncles, bracteate. Achenes compressed, triquetrous, puberulous along sides.


Pentanema indicum (L.) Ling
Distrib.: Native of tropical America, naturalised and now has become a troublesome weed.

Note.: Though it was suspected by Rolla Rao, op. cit. as a new entrant to the Flora of India, Bennet et al. (Indian J For. 1:128–131. 1978) and Maiti (Ibid. 6:328. 1983) have established that this plant has been introduced in Indian Botanic Garden, Howrah around 1810. However its presence remain obscure and since Rolla Rao’s report, botanists have taken cognisance of this plant in various parts of India and have initiated studies on its obnoxious effects on man.

**Pentanema Cass.**

1. Leaves shortly petioled, cuneate at base; involucral bracts slender, outer involucral bracts long squarrose; ray flowers with pappus... *P. cernuum*

1. Leaves sessile at base; involucral bracts erect, short; ray flowers without pappus... *P. indicum*


Annual herbs, slender, erect. Upper leaves sessile or nearly so, 5–8 x 2.0–2.5 cm, elliptic– lanceolate, apex acute or acuminate, margins crenate–serrate, sparsely hairy. Heads 1–2 cm across, drooping on filiform peduncles, yellow. Achenes oblong, sparsely hairy.

Fls. & Frts.: October–February.

Distrib.: Common along forest margins. Ahmednagar, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Perennial herbs, erect, suffruticose, up to 90 cm high. Leaves sessile, 1.5 – 2.5 x 0.1 cm, linear or linear–lanceolate, appressed hairy. Heads yellow, 0.7 – 1.2 cm across, on slender peduncles. Pappus of disc florets scanty. Achenes c 0.2 cm long, brown, sparsely hairy.
Phyllocephalum ritchiei (Hook. f.) Narayana:
A- Habit; B- Outer involucral bract.
Fls. & Frts.: November – February.

Illus.: Wight, Ic. t. 1148. 1846; Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 395. 1982 (Vicoa indica); S. Kumar in Hajra et al. op. cit.

Distrib.: Common throughout as undergrowth in deciduous forests, also found as a weed in cultivated fields.

**Phyllocephalum Bl.**

Kirkman (1981) is of the view that Centratherum occurs in New World, Australia and Philippines and Phyllocephalum in India and Java.

1. Leaves not white beneath; outer involucral bracts shortest; pappus single ...
   - **P. hookeri**

1. Leaves white beneath; outer involucral bracts large, foliaceous; pappus hairs 1–many:
   2. Outer involucral bracts cordate at base ...
      - **P. ritchiei**
   2. Outer involucral bracts not cordate at base:
      3. Pappus hairs reddish ...
         - **P. tenue**
      3. Pappus hairs white or yellowish ...
         - **P. scabridum**


Herbs, up to 60 cm high; stems herbaceous, ashy pubescent, grooved. Leaves up to 5.5 x 1.2 cm, linear–lanceolate, acute at apex, obscurely toothed along margins, pubescent on both sides. Heads subcorymbose, 1.2–1.8 cm across; peduncle hairy pubescent; outer involucral bracts dense pubescent. Corolla red. Achenes c 3 mm long, linear–oblong, 10–ribbed. Pappus straw colored, deciduous.

Fls. & Frts.: November–December.

Distrib.: Maharashtra (Uniyal in Hajra et al. op. cit.)–Endemic.


Herbs, up to 60 cm high; stems ridged. Leaves up to 9 x 5 cm, elliptic or elliptic–lanceolate, acute or acuminate at apex, spinous...
toothed on margins, somewhat strigose above, white tomentose beneath. Heads solitary, axillary and terminal; outer involucral bracts foliaceous, white tomentose on outer surface, rough on inner surface, inner often purple tipped, white wooly on back. Achenes 10–ribbed. Pappus hairs reddish.

*Fls.*: September–November.

*Illus.*: Uniyal in Hajra et al. op. cit.

*Distrib.*: Maharashtra (Rao et al. op. cit. & Uniyal in Hajra et al. op. cit.)—Endemic to Maharashtra and Karnataka.


Herbs, erect, hispid. Leaves sessile as well as petioled, c 15 x 7 cm, elliptic to obovate, hispid above, white tomentose beneath, acute to acuminate at apex, attenuate at base, margins serrate. Heads c 1.5 cm across, purple, axillary—seriate, glabrous to long ciliate, greenish, innermost phyllaries linear, membranous, acute to cuspidate, intermediate ones membranaceous to foliaceous, outer ones foliaceous; pappus 1–2, equal or shorter than corolla tube, purplish, rarely white. Achenes c 3 cm long, cylindric to obconic, ribbed (faintly or strongly).

*Fls. & Frts.*: June–December.

*Illus.*: Wight, *Ic.* t. 1081. 1846 (*Decaneurum courtallense*).

*Distrib.*: Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

*Notes*: It is endemic to India.


Herb, up to 1.5 m tall, erect, dichotomously branched. Leaves upto 15 x 6 cm, broadly elliptic - lanceolate, acute to acuminate at apex, serrate along margins, short-hairy above, white woolly beneath; upper leaves sessile. Heads c 1.3 cm across; outer involucral bracts foliaceous, innermost scarious, white tomentose. Achenes faintly 10–ribbed. Pappus pale reddish.
Fls. & Frts. : October.

Distrib : Maharashtra (Uniyal in Hajra et al. op. cit.).

PLUCHEA Cass.

1. Heads subsolitary
   1. Heads in compound corymbs :
      2. Outer involucral bracts oblong, obtuse
         ... P. arguata
      2. Outer involucral bracts ovate, acute
         ... P. tomentosa


Shrubs, annual, stout, branched. Leaves sessile, elliptic–obovate or ovate, serrate–dentate. Heads yellow, solitary or subclustered, axillary on slender villous peduncles. Achenes minute, cylindric.


Illus. : Hook. Ic. Pl. 5:12, t. 1157.

Distrib. : Rare. Thane (Naik & Bhogaonkar, op. cit.).


Undershubs, up to 1.2 m tall, erect; stems and branches terete, obscurely striate, softly adpressed pubescent. Leaves 2–6 x 0.4– 1.0 cm, oblong or oblanceolate, apex obtuse, apiculate, base narrowed, margins obscurely dentate at apex, finely silky pubescent on both sides. Heads pink, in compound, pubescent corymbs. Receptacle flat, naked. Pappus hairs distinctly connate at base.

Fls. & Frts. : March–August.

Illus. : S. Kumar in Hajra et al. op. cit.

Distrib. : Maharashtra (S. Kumar in Hajra et al. op. cit.).

Pluchea lanceolata (DC.) C. B. Cl.
Shrubs, 1–4 m tall, branched, terete. Leaves sessile, obovate, obtuse or subacute. Flowers in compound, many headed corymbs, terminal or in upper axils of leaves. Peduncles glabrous. Achenes minutely angled.

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

**Illus.** : Shinde & S.M. Almeida, op. cit.

**Distrib.** : Rare in water logged marshy land Ahmednagar, Aurangabad & Nanded (Naik, 1998), Nasik, 'Konkan' (Cooke, op. cit.), Pune.

**Pulicaria** Gaertn.

1. Ray flowers tubular ... *P. foliolosa*
1. Ray flowers ligulate :
   2. Plants upto 60 cm high; peduncles thickened upwards ... *P. wightiana*
   2. Plants upto 30 cm high; peduncles not thickened upwards ... *P. angustifolia*


Annual herbs, softly pubescent; branches ascending. Leaves sessile, linear–oblong, pubescent, base amplexicaul, margins entire or sometimes slightly serrulate. Heads 1.2–1.5 cm across; florets yellow. Achenes terete, pappus in 2 series, white to reddish.

**Fls. & Frts.** : Feb. – Aug.

**Distrib.** : Occasional, on grassy hill slopes. Aurangabad, Bhandara, Dhule, Jalna, Nanded, Nagpur, Pune, Ratnagiri.


Fls. & Frts. : November–Pune.

Illus. : S. Kumar in Hajra et al. op. cit.

Distrib. : Frequent along margins of fields, in river beds, etc. Aurangabad, Beed & Nanded (Naik, 1998), Konkan (Cooke, op. cit.), Pune.


Annual herbs, 30–45 cm high. Leaves sessile, oblong, pubescent on both surfaces, usually serrate. Heads 1.5–2.0 cm across, solitary on long, leafy peduncles; florets yellow. Pappus 2 whorled, outer whorl a short paleaceous membranous, fimbriate cup, inner whorl caducous. Achenes c 0.1 x 0.1 cm, ribbed, linear–oblong, sparsely hairy, brown.

Fls. & Frts. : August–December.

Illus. : Wight Ic. t. 1089. 1846 [*Callistephus wightianus* (DC.) DC. Prodr. 5:225. 1836].

Distrib. : Common in grass lands and on hill slopes.

Notes : It is endemic to India.

**Sclerocarpus** Jacq.


Herbs, erect, hairy, Leaves ovate or ovate–oblong, appressed hairy. Heads solitary, terminal or leaf–opposed, 0.5–1 cm across, yellow. Achenes c 0.8 x 0.2 cm, ovoid, enclosed in boat shaped false receptacle, ribbed.

Fls. & Frts. : September–October.

Illus. : H. J. Chowdhery in Hajra et al. op. cit.

Distrib. : Common throughout in plains, along hill slopes and as forest undergrowth.
Senecio L.

1. Leaves clothed with cottony white tomentum beneath:
   2. Heads bracteolate:
      3. Pappus paleaceous ... *S. bombayensis*
      3. Pappus not as above:
         4. Suffruticose herbs ... *S. edgeworthii*
         4. Herbs not as above ... *S. dalselli*
   2. Heads ebracteolate:
      5. Pappus present; achenes glabrous ... *S. gibsonii*
      5. Pappus absent; achenes hairy ... *S. belgaumensis*

1. Leaves not as above:
   6. Leaves both radical and cauline ... *S. laetus*
   6. Leaves only radical ... *S. hewrensis*


Annual herbs, c 60 cm tall; stems and branches hairy. Leaves c 6 x 4 cm, rhomboid – ovate, with dentate margins. Heads yellow, in corymbs; ligules usually 8. Achenes c 0.2 cm long, turbinate, ribbed.

*Fls. & Frts.* : August–May.

*Illus.* : Wight, Ic. t. 1152. 1846.

*Distrib.* : Occasional along exposed hill slopes. Raigad, Ratnagiri, Satara, Thane.

*Notes* : It is endemic to India.


Herbs, c 30 cm tall, erect, much branched. Leaves c 4.5 x 2.0 cm, rhomboid–ovate, acute at apex, margins coarsely irregularly toothed. Heads yellow, in subcorymbs. Achenes c 0.3 cm long, ribbed, scabrid.

*Fls. & Frts.* : August – May
**Senecio bombayensis** Balakr.:  
A- Habit; B- Involucral bract; C- Ray floret with achene;  
D- Disc floret with achene; E- Achene with pappus; F- Pappus
Illus. : Wight, Ic. t. 1551. 1850 (S. grahamii); R. Mathur in Hajra et al. op. cit.

Distrib. : Ahmednagar, Akola, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

Notes : It is endemic to India.


Herbs, c 30 cm tall, branched. Leaves c 4.5 x 1.0 cm, linear–oblong or linear–lanceolate. Heads yellow, in dichotomously branched corymbs. Pappus biseriate. Achenes scabrid with short hairs.

Fls. & Frts. : September–October.

Distrib. : Ahmednagar, Nasik, Pune, Raigad, Satara, Thane.

Notes : It is endemic to India.


Herbs c 50 cm tall, erect. Leaves 5–10 x 2–3 cm, ovate or rhomboid, acute or obtuse at apex, cordate at base, Heads yellow, in lax corymbs on slender peduncles. Achenes oblong, faintly ribbed.

Fls. & Frts. : August–November.


Notes : It is endemic to India.


Herbs, erect, tall, much branched. Leaves sessile or shortly petioled c 5 x 3.5 cm, ovate–lanceolate or subrhomboid, margins irregularly toothed. Heads yellow, in lax dichotomous corymbs. Pappus hairs yellowish, rigid, unequal. Achenes obconic, ribbed.

Fls. & Frts. : April–November.
Distrib. : Rare along ghat\(s\). Pune, Satara.

Notes : It is endemic to India.


Herbs, annuals, c 12 cm high. Leaves oblong or obovate, coarsely toothed or pinnatisect, cauline leaves auricled at base. Heads yellow, on weak peduncles in lax corymbose cymes. Achenes c 0.3 x 1.0 cm, tapering at base, puberulous in between ribs only.

**Fls. & Frts.** : August–October.


Distrib. : Frequent, on gravelly soil of hill slopes. Ahmednagar, Aurangabad, Akola, Amravati, Beed, Dhule, Jalna, Nasik, Osmanabad, Parbhani, Pune.

Notes : It is endemic to India.


Scapigerous herbs; stem 60–90 cm high, grooved. Lower leaves in rosette, large, spatulate deeply pinnately divided, lobes dentate; cauline leaves alternate. Heads in peduncled, corymbose panicles. Ray florets yellow. Ray achenes epappose or with scanty pappus.

**Fls. & Frts.** : December–January.


Distrib. : Few along moist hill slopes. Amravati (Bhogaonkar & Devarkar, op. cit.).

**Siegesbeckia L.**

Herbs, woody; stem scabrid, red. Leaves ovate, pubescent on both surfaces, apex acute, base cuneate. Heads yellow, terminal, in axils of upper leaves. Achenes enclosed in a boat shaped bract, slightly rough, black.

*Fls. & Frts.* : October November.


*Distrib.* : Akola, Nasik, Pune, Satara.

**SONCHUS L.**

1. Involucral bracts glandular–hairy; achenes transversely subrugose, auricles of cauline leaves acute ...

   *S. brachyotus*

1. Involucral bracts mostly glabrous; achenes not as above; auricles of cauline leaves obtuse :

2. Leaves sharply toothed, auricles appressed to stem; achenes faintly ribbed, not tuberculate ...

   *S. asper*

2. Leaves minutely toothed, auricles spreading; achenes prominently ribbed and tuberculate ...

   *S. oleraceus*


Herbs c 1m high, Lower leaves entire or lobed c 15 x 5 cm, upper pinnatifid. Heads yellow; involucral bracts many seriate. Achenes compressed, ribbed, pappus multiseriate, hairy.

*Fls. & Frts.* : Jaunary–March.


*Distrib.* : Weed in gardens, along river banks, etc. All districts of Marathwada (Naik, 1998), Nagpur, Pune, Satara.


Herbs, c 120 cm tall, perennial, umbellately branched. Leaves mostly radical, spinous toothed, oblong–lanceolate, acute. Heads bright yellow, in umbellate panicles. Achenes brown, ribbed.
*Sphaeranthus L.*

1. Wings entire; glomeruli not more than 1 cm across; peduncles not pubescent; involucral bracts not ciliate at apex … *S. africanus*

2. Wings toothed; glomeruli up to 2.5 cm across; peduncles pubescent; involucral bracts ciliate at apex:
   1. Leaves double–dentate and with stalked glands … *S. indicus*
   2. Leaves single–dentate and with sessile glands … *S. senegalensis*


Annual herbs c 45 cm tall, erect. Leaves sessile, c 6 x 2 cm, oblanceolate or obovate, pubescent on both sides, decurrent, apiculate at apex. Heads c 1 cm across, terminal or axillary; florets purple. Achenes c 0.1 cm long, glandular, angled.

*Fls. & Frts.* : October–February.

*Distrib.* : Kolhapur, Ratnagiri, Thane.

Herbs, highly branched, spreading. Leaves c 4.5 x 1.5 cm, obovate–oblong, glandular–hairy, narrowed at base. Heads c 1 cm across on solitary glandular peduncles; florets purple. Achenes stalked.

**Fls. & Frts.** : November–May.


**Distrib.** : Common throughout in wet open places.


Herbs, procumbent, strongly aromatic; branched, terete, 15–45 cm long. Leaves 1–6 x 0.4–2 cm, obovate to oblanceolate, obtuse to subacute at apex, decurrent on stems, serrate–dentate along margins, glandular–pubescent. Heads compound, spherical 1–1.5 cm across, containing several, small, sessile, few–flowered simple heads. Marginal florets with purple corollas; central florets with dark purple corollas. Achenes ovoid–oblong.

**Fls. & Frts.** : November–February.

**Distrib.** : Common in drying ditches, harvested fields along river–banks. In all districts of Marathwada (Naik, op. cit.).

**Spilanthus Jacq.**

1. Pappus bristles present ... *S.paniculata*
1. Pappus bristles absent ... *S. calva*


Herbs, suberect. Leaves opposite, c 5 x 4 cm ovate, apex acute or subobtuse, base suddenly tapering, margins irregularly crenate–serrate. Heads yellow, 0.5–1.5 cm across, solitary or
subpanicled; involucral bracts uniseriate. Achenes oblong or obovoid, truncate, much compressed, nearly glabrous.

*Fls. & Frts.*: September–January.


*Distrib.*: Occasional, weed of wet fields and open lands Kolhapur, Nanded (Naik, 1998), Nasik, Satara.


*Fls. & Frts.*: September–January.


*Distrib.*: Frequent in wet fields undershade of tress, etc. Aurangabad, Beed, Kolhapur, Nagpur, Nanded, Osmanabad, Parbhani, Pune, Satara, Thane,

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**SYNEDRELLA** Gaertn. (nom. cons.)

1. Herbs, branched from base, spreading. ... *S. vialis*

1. Herbs, erect, not branched from base ... *S. nodiflora*


Herbs, 30–60 cm high, erect. Leaves c 3.0 x 1.5 cm, ovate or elliptic, apex acute, base cuneate, margins serrate. Heads pale yellow, axillary and terminal, solitary or clustered. Pappus of ray florets, paleaceous, toothed, pappus of disc florets 2 – awned, scabrid. Achenes of ray florets c 5 x 2.8 cm, achenes of disc florets ribbed, ribs torulose.

*Fls. & Frt.*: July–February.

Herbs, annual, branched from base, spreading and rooting at nodes, scabrid–hairy. Leaves simple, opposite, petiolate, ovate–lanceolate, acute at apex, cuneate at base, serrate, 3–nerved from base. Heads axillary, usually solitary or sometimes 2. Achenes dimorphic, those of ray florets dorsally compressed, narrowly winged, crowned with 2 spines, those of disc florets dorsally compressed and crowned with 2 spines or triquetrous and crowned with 3 spines, scabrid, shortly hairy.

Fls. & Frts.: July–September.

Illus.: Ahuja & Pataskar, op. cit.

Distrib.: Weed along roadsides. Pune.

Tricholepis DC.

1. Pappus copious:
   2. Stems sparsely leafy; receptacular bristles shorter than achenes; achenes smooth ... T. glaberrima
   2. Stems prominently leafy; receptacular bristles longer than achenes; achenes faintly ribbed ... T. radicans
1. Pappus absent ... T. amplexicaulis


Herbs, 60–100 cm high, annual, erect. Leaves oblong, semi–amplexicaul at base. Heads c 3 cm across, purple, in terminal, leafy peduncles. Achenes c 0.7 cm long, oblong–ovoid, smooth. Pappus paleaceous, caducous in fruiting.


Illus.: Chaudhary & Pandey, op. cit.
Distrib.: Ahmednagar, Pune, Satara, Thane.

Notes: It is endemic to India.


Herbs, 1–3 m high, erect; branches angled, ribbed. Leaves 2.5–9 x 0.5–1 cm, linear–oblong, linear–lanceolate or lanceolate, entire or serrate at margins, scaberulous. Heads 6–20 mm across, bluish–purple, solitary, axillary and terminal. Pappus yellowish–brown. Achenes c 5 mm long, oblong, brown.

*Fls. & Frts.:* September–October.

*Illus.:* Chaudhary & Pandey, op. cit.

Distrib.: Common, on bunds of fields on rocky soil of grasslands, etc.

Notes: It is endemic to India.


Herbs, erect. Leaves c 5 x 2 cm, lower leaves usually obovate, cauline ones oblong. Heads purple, in solitary peduncles. Pappus yellow. Achenes c 0.5 x 0.2 cm, oblong.

*Fls. & Frts.:* September & February.


Distrib.: Common throughout in fallow fields and low hill slopes.

Notes: It is endemic to India.

**EXCLUDED SPECIES:**

A coarser species. Leaves obovate–oblong, coarsely toothed or pinnatifid. Stigmas long and slender.

*Distrib.* : Along the Ghats (Dalz. & Gibs. op. cit.).

*Note.* : This species is described by Dalzell & Gibson (1861) but Hook. f. (1881) opines that the occurrence of this species is doubtful and he knows nothing about this species. He has included it as doubtfully and imperfectly known species. The recent workers also have not recollected this species from the state. Hajra in Hajra et al. Fl. India 12: 225. 1995, has treated it under excluded species.

**TRIDAX** *L.*


Annuals or perennials, erect or procumbent herbs, branched at base. Leaves opposite, ovate or lanceolate, margins serrate to coarsely incised dentate or trilobed. Heads heterogamous, produced on erect, retrorsely hirsute and sparsely glandular peduncles, 10–25 cm long; ray florets white, ligules mostly bilabiate, disc florets tubular–campanulate, yellow, 5–lobed. Pappus of many aristate bristles, unequal in length. Achenes c 0.3 cm long, narrowly obconical, blackish, terete or ribbed, sparsely scarious, truncate at apex.

*Fls. & Frts.* : Throughout the year.


*Distrib.* : Common throughout as a weed in waste places.

**VERNONIA** Schreb. (nom. cons.)

1. Achenes 10 ribbed :
   2. Achenes glabrous ... *V. indica*
   2. Achenes hairy between ribs ... *V. pyramidata*

1. Achenes not as above :
   3. Achenes 5–angled ... *V. anthelmintica*
   3. Achenes 2–4–angled :
      4. Pappus uniseriate : ... *V. divergens*
      4. Pappus biseriate : ... *V. cinerea*

Herbs, erect, annual. Leaves 6–12 x 1–6 cm, elliptic–lanceolate or obovate, pubescent on both surfaces. Heads 1.5 – 2.0 cm across, subsolitary, leaf–opposed on peduncles combined into terminal leafy corymbs. Pappus inner whorl cauducous, outer paleaceous. Achenes c 0.5 cm long, oblong–cylindric, black.

**Fls. & Frts.** : September–February.


Herbs, 30–50 cm high, erect. Leaves petioled, 2–6 x 1–3 cm, broadly elliptic or lanceolate, pubescent on both surfaces, obtuse or acute at apex. Heads 0.6–0.9 cm across, terminal or axillary, in corymbose cymes. Outer pappus small, connate at base, inner longer than achenes, plumose. Achenes c 0.1 x 0.1 cm, terete.

**Fls. & Frts.** : July–February.


**Distrib.** : Common throughout as a weed along roadsides, fields and in gardens.


Shrubs, upto 1.5 m tall. Leaves 6–11 x 3–5 cm, ellipitic, acute at apex. Heads purple c 0.7 cm long, in axillary and terminal, branched corymbs. Pappus slender, caducous, longer than achenes. Achenes 0.2–0.3 cm long, stout, obovoid, tapering towards base.
**Fls. & Frts.** : December–May.


**Distrib.** : Common along ghats. Ahmednagar, Chandrapur, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.


Shrubs, 1–2 m high, tomentose. Leaves subsessile, 4–10 x 1–6 cm, elliptic, margins serrate. Heads 0.5–0.7 cm across; bracts below heads lanceolate; involucral bracts ovate–oblong, mucronate, purple tipped. Achenes oblong, subcompressed, c 0.35 cm long, glandular between ribs.

**Fls. & Frts.** : October.

**Distrib.** : Occasional on grassy hill slopes. Pune, Satara (Cooke, op. cit).

**Notes** : It is endemic to India.


Herbs or undershrubs, scabrous hairy. Leaves 6–14 x 3–6 cm, elliptic or obovate, deeply serrate along margins, scabrous on nerves, subsessile. Heads in axillary and terminal, compact, corymbose panicles, many–flowered, c 2.5 cm across. Florets pink. Achenes c 3.5 mm long, strongly 10–ribbed, hairy between ribs. Pappus hairs white or with reddish tinge, uniseriate.

**Fls. & Frts.** : September–February.

**Illus.** : Uniyal in Hajra et al. op. cit.

**Distrib.** : Maharashtra (Uniyal in Hajra et al. op. cit.).

**Wedelia Jacq** (nom. cons.)

1. Leaves petioled, ovate; involucral bracts not larger than disk flowers:
2. Straggling shrubs; achenes up to 0.35 cm long ... *W. biflora*

2. Erect herbs; achenes not as above ... *W. urticaefolia*

1. Leaves subpetiolate, lanceolate–oblong; involucral bracts longer than disk flowers ... *W. chinensis*


Undershrubs, straggling; stems hairy or glabrescent. Leaves ovate, trinerved, appressed hispid on both sides, apex acute, margin serrate. Heads yellow, 1.5–1.9 cm across, in loose corymbs; involucral bracts ovate–elliptic, pubescent. Achenes c 0.35 cm long. Achenes of ray florets triquetrous and of disc florets compressed.

**Fls. & Frts.**: February.


**Distrib.**: On the sea coast, Konkan (Cooke, op. cit.) - Rare.


Herbs, procumbent, frequently rooting at nodes. Leaves oblanceolate, shortly appressed hispid on both surfaces, acute or apiculate at apex, trinerved, attenuate and subpetiolate at base, margins flat or narrowly inrolled. Heads yellow, solitary on terminal peduncles. Achenes 0.4–0.45 x 0.25–0.28 cm, rugulose, dark brown, achenes of ray florets triquetrous, those of disc florets compressed.

**Fls. & Frts.**: Feb. May.

**Illus**: Wight Ic. t. 1107. 1846 (*Wedelia calendulacea*).

**Distrib.**: Rare. ‘Konkan’ (Cooke, op. cit.).

Herbs, weak, erect, upto 1.5 m high. Leaves 6.5–16 x 2–5.5 cm, ovate, strigosely hispid on both surfaces, apex acute or acuminate. Heads yellow, 1.0–2.5 cm across, terminal, solitary or in simple cymes. Achenes c 0.5 x 0.3 cm, trigonous, sparsely and faintly tubercled or smooth in lower part, sparsely hairy in upper part, brown.

Fls. & Frts. : August – September.
Illus. : Wight, Ic. t. 1106. 1846.
Distrib. : Nasik, Raigad, Satara, Pune, Thane.
Notes : It is endemic to India.

XANTHIUM L.


Herbs, annual; stem rough with short hairs. Leaves broadly ovate, triangular, appressed hairy. Heads 0.4 –0.8 cm across, green (young), in terminal and axillary spikes. Fruits c 2 cm long, having 2 erect mucronate beaks, covered with hooked prickles. Achenes c 1 x 0.4 cm, oblong or ovoid, compressed, black.

Fls. & Frts. : January–May.
Illus. : Wight, Ic. t. 1104 1846; H. J. Chowdhery in Hajra et al. op. cit.
Distrib. : Common throughout as a weed along roadsides and in waste places.

CULTIVATED SPECIES : 


Fls. & Frts. : May–October.

Distrib. : The 'Yarrow' or 'Milfoil', a common plant is grown in gardens as ornamental (Cooke, op. cit.).


Perennial with lyrate leaves. Heads with tomentose outer involucral bracts, ray florets white with violet tinge outside.

Distrib. : The 'African Daisy' is native of Africa and Australia cultivated at Pune.


Erect, perennial herbs. Leaves radical, 3–fid or absent; cauline linear to lanceolate or linear–oblong, entire or toothed. Heads green–brown, in panicled racemes, sometime clustered in threes, horizontal or nodding with numerous florets. Disc florets dull brown.

Fls. & Frts. : July–October.

Distrib. : It is a native of Europe and grown in gardens. Pune.


Distrib. : Cultivated in Bombay (Naithani in Hajra et al. op. cit.).


Erect, perennial herbs. Leaves mostly radical, sessile, spatulate to oblanceolate. Heads in terminal, corymbose panicles. Ray florets blue or purple; central florets yellow, tubular. Achens linear, black. Pappus 2–seriate, of many bristles.

Fls. & Frts. : August–December.

Distrib. : The ‘Michaelmas Daisy,’ native of N.America is grown in gardens. Deccan (Cooke, op. cit.), Marathwada (Naik, op. cit.).

Stout perennials. Heads crowded, panicled; involucral bracts appressed, herbaceous. Ray florets blue or violet.

**Distrib.**: Native of America cultivated in gardens at Pune.


Herbs, 0.3–1.5 m high, erect, much branched; stem striate, glabrescent. Leaves opposite, ovate–lanceolate, deeply 3–6–lobed. Heads solitary, pedunculate, combined into corymbs. Marginal florets with golden–yellow ligulate corollas; central florets with yellow tubular corollas. Achenes fusiform, 4–angular, beaked with 2–4 retrorsely barbed awns.

**Fls. & Frts.**: September–December.

**Illus.**: H. J. Chowdhery in Hajra et al. op. cit.

**Distrib.**: A native of Central and South America, grown in gardens and also escaped. Marathwada (Naik, op. cit.), Pune.


Flowers blue and white.

**Distrib.**: ‘Swan River Daisy’, a native of Australia is grown in gardens (Cooke, op. cit.), as ornamental.


Herbs, 15–45 cm tall, annual, erect. Leaves 5–15 cm long, oblong to oblong–obovate, obtuse or acute at apex, semi–amplexicaul at base, entire along margins. Heads solitary, 3–5 cm across. Marginal and central florets with yellow corollas. Achenes oblong, curved, outer ones warty ribbed, inner ones prickly warty.

**Fls. & Frts.**: December–March.

**Illus.**: R. R. Rao in Hajra et al. op. cit.

**Distrib.**: ‘The Marigold’ a native of southern Europe is grown everywhere in gardens (Cooke, op. cit. & Naik, op. cit.).

Herbs, 15–60 cm tall, erect, hispid. Leaves deeply and broadly ovate, obovate or oblanceolate, sometimes even spatulate, deeply and irregularly toothed, narrowed and decurrent into a short petiole. Heads showy, solitary, terminal, pedunculate. Marginal florets with ligulate pink, blue, purple or white corollas; central florets with tubular, yellow corollas. Achenes obovoid, compressed, black.

*Fls. & Frts.*: March–June.

*Distrib.*: The well–known German or Chinese ‘Aster’– native of China and Japan is grown in gardens as ornamental (Cooke, op. cit. & Naik, op. cit.).


Herbs, 30–90 cm tall, erect. Leaves alternate, sessile or shortly petiolate, 3–15 x 1–5 cm, oblong–lanceolate or oblanceolate, obtuse with pungent apex, entire or dentate–lobed. Heads solitary, terminal, pedunculate. Corollas yellow, turning orange–red. Achenes obovoid, truncate at apex, 4–angular, ivory white, shining. Pappus with 5 unequal scales or often absent.

*Fls. & Frts.*: November–February.

*Distrib.*: The ‘Safflower’ a native of S.W. Asia is cultivated in the black soil districts of Bombay Presidency, for the use of dyers as well as for oil extracted from seeds (Cooke, op. cit.).


Herbs, annuals or biennials, branched. Lower leaves lanceolate, entire or lyrate–pinnatifid, acute, petiolate; upper linear–lanceolate, entire. Heads ovoid; outer florets blue; inner florets bluish–violet. Achenes grey silky. Pappus c 4 mm long.

*Fls. & Frts.*: March–June.
Distrib.: The well known ‘Corn Blue–bottle’, a native of Europe is often grown in gardens. Pune.

**Charieis heterophylla** Cass. in Bull. Soc. Philom. 68. 1817; Cooke, Fl. Pres. Bombay 2: 123. 1958 (Repr.).

The ray–flowers are blue, those of disc blue or yellow.

*Distrib.:* A native of S. Africa, cultivated in gardens (Cooke, op. cit.).


Herbs, perennial; stems erect. Heads yellow.

*Distrib.:* A few varieties of this plant, which is a native of China and Japan, are largely grown by market gardeners for cut flowers (Cooke, op. cit.). Ahmednagar, Pune.


Herbs, annual, decumbent. Leaves lanceolate or narrowly lanceolate, runcinate or pinnatifid, apex acute or obtuse, mucronate, base semi–amplexicaul. Heads clustered in axillary and terminal, compound heads. Outer involucral bracts somewhat hairy; inner hispid; ligules pale blue. Achenes obcompressed. Pappus pale.

*Fls. & Frts.:* February–May.

*Distrib.:* The ‘Garden Endive,’ cultivated but not nearly so extensively as lettuce, a native of Europe (Cooke, op. cit.).


Herbs, erect, appressed hairy with thick taproot. Lower leaves short petioled, lyrate–pinnatifid, oblong or spathulate, acute at apex, coarsely dentate along margins, upper ones sagittate with rounded or semi–amplexicaul base, entire or coarsely dentate at margins, thinly hairy on both sides. Heads usually solitary or clustered, terminal and axillary, all florets with ligulate, blue or pink corollas. Achenes 5–angular, truncate. Pappus scales short.
Fls. & Frts. : October–March.


Distrib. : 'Chicory' a native of Europe, N. Africa and continental Asia, introduced and naturalised. Deccan (Cooke, op. cit.), Marathwada (Naik, op. cit.), Nagpur, Pune.


Leaves deeply pinnatifid.

Distrib. : Cultivated (Cooke, op. cit.).


Fls. & Frts. : September–December.

Distrib. : A native of N. America, grown in gardens (Cooke, op. cit. & Naik, op. cit.).


Herbs, 1–2.5 m high, erect, annual. Leaves opposite, bipinnately cut into linear segments, minutely pubescent. Heads on long solitary peduncles or in loose panicles. Marginal florets with white, pink or crimson, ligulate corollas; central florets with yellow, tubular, 5–fid corollas. Achenes oblong–ellipsoid, abruptly beaked with 2–4 retrorsely, barbed awns.

Fls. & Frts. : August–November.

Distrib. : Native of Mexico, grown in gardens. Marathwada (Naik, op. cit.), Nasik.

Annuals, 30–90 cm high. Heads with rose or lilac rays; disc yellow. Achenes glabrous or rough with slender beak.

Distrib.: Native of America. Cultivated.


Leaves alternate, small, much divided, greenish–grey.

Distrib.: A small useful bedding plant, a native of China (Cooke, op. cit.).


Robust plant with leaves tomentose beneath and spiny. Heads purple flowered with spine tipped involucral bracts.

Distrib.: Grown in gardens (Cooke, op. cit.).


Herbs, 1–2 m tall, erect, perennial; roots tuberous. Leaves opposite, 2–pinnate or upper 1–pinnate; leaflets ovate, acuminate at apex, crenate–dentate along margins, green above, greyish beneath. Heads somewhat nodding, solitary, on long peduncles. Marginal florets variously coloured; central florets many, with yellow, tubular 5–fid corollas. Achenes oblong or obovoid, compressed, black. Pappus absent or obscurely 2–toothed.

Fls. & Frts.: September–December.

Distrib.: Native of Mexico, planted in gardens. Deccan (Cooke, op. cit.), Marathwada (Naik, op. cit.).

Herbs, prostrate or decumbent. Leaves radical, lower pinnatifid, upper entire. Heads solitary. Ray florets white to purplish or pink; disc florets yellow. Achenes sparsely puberulous. Pappus hairs whitish.

*Fls. & Frts.* : Almost throughout the year.

*Distrib.* : The *'Australia Daisy*', native of Mexico is cultivated in gardens as ornamental, rarely found as an escape. Pune, Raigad, Satara.


Perennials with short ciliate–entire leaves and basal ones are spatulate. Heads in terminal corymbs. Rays dark violet or lavender in colour.

*Distrib.* : Native of America, cultivated at Osmanabad.


Herbs or shrubs, up to 3 m tall; stems glandular–pubescent. Leaves opposite, deltoid–ovate, triangular or lanceolate, acute or acuminate at apex, entire or serrate–dentate at margins, pubescent and red glandular beneath. Heads in corymbs, terminating branches. Achenes 4–5–ribbed, bristly on ribs. Pappus hairs white, oblong.

*Fls. & Frts.* : November–May.

*Distrib.* : Native of C. America, cultivated in gardens. Bombay.


Herbs, 30–60 cm tall, erect, annual, much–branched; stem hispid. Leaves opposite, lanceolate, narrowed at both ends, hairy on both sides, 3–nerved from base. Heads corymbose at ends of branches. All florets bisexual with tubular, 5–fid, slatey blue coloured or white corollas. Achenes oblong to oblanceolate, 4–5–angled. Pappus of bristles.

*Fls. & Frts.* : More or less throughout the year.

Herbs, 30–75 cm high, erect, perennial, hirsute; stem much–branched, terete. Leaves alternate, lanceolate, oblong or spatulate, acute at apex, entire or sinuate–pinnatifid at margins, gland–dotted beneath. Heads solitary, peduncled. Involucral bracts green, hispid; marginal florets with ligulate, pure yellow corollas or with yellow and red mixed; central florets with tubular, purple corollas. Achenes oblong, densely villous. Pappus of 5–10, armed scales.

**Fls. & Frts.:** November–February.

**Distrib.:** Native of tropical America, cultivated as border plant in gardens. Bombay, Marathwada (Naik, op. cit.), Pune, Yavatmal.


Herbs, up to 30–90 cm high, thickly pubescent; stem much branched. Leaves alternate or basal, sessile, lower pinnatifid, upper entire, oblong–lanceolate or spatulate, pubescent. Heads solitary, peduncled. Ray florets are crimson tipped with bright yellow; central florets with yellow corollas. Achenes oblong, densely hairy. Pappus of scale–like bristles.

**Fls. & Frts.:** November–March.

**Distrib.:** Native of tropical America, grown in gardens (Cooke, op. cit.; Naik, op. cit.).


**Distrib.:** Cultivated at Pune.


Herbs, stout, erect, 30–100 cm tall; stems and branches hispid with white spreading hairs. Leaves opposite, lanceolate, ovate–lanceolate, acute at apex, amplexicaul at base, sparsely hairy on both sides. Heads solitary, on axillary peduncles. Marginal florets with bright yellow, 2–3–fid, ligulate corollas; central florets with tubular, 5–fid, reddish–yellow corollas; ovary tipped with a ring of hairs. Achenes black, of marginal florets 3–angled and of central florets 4–angled. Pappus absent.

*Fls. & Frts.*: September–December.


*Distrib.*: A native of tropical Africa, extensively cultivated for oil seeds. Ahmednagar, Bombay, Buldhana, Marathwada (Naik, op. cit.), Sindhudurg, Satara, Thane.


Herbs, perennial, robust, densely purplish hairy; stems much branched, leafy, stout, ribbed. Leaves lyrately pinnatifid, densely purplish hairy on both sides, conspicuously veined on upper side. Inflorescence terminal on long branches with 1–3 capitula on pubescent peduncles. Florets all tubular, yellow. Achenes pale brown, cylindrical, ribbed. Pappus of white hairs.

*Fls. & Frts.*: April–May.

*Distrib.*: Cultivated. Bombay.


Erect, woody annuals, 1–3 m high; stem hispid, branched above middle. Lower leaves opposite, upper alternate, broadly ovate, acute at apex, narrowed at base into a long petiole, hispid on both sides. Heads solitary, terminal on short peduncles. Involucral bracts strongly ciliate; marginal florets with ligulate yellow corollas; central florets with tubular, 5–fid, brownish–purple corollas. Achenes obovoid, black. Pappus of 2 scale like awns, deciduous.
Fls. & Frts.: September–December.

Distrib.: The Common ‘Sunflower’ native of Western USA, is cultivated throughout for oil seeds.


Herbs, 1–1.5 m tall, erect, hispid; stem mottled with brown spots. Leaves alternate, triangular–ovate, acute at apex, cordate at base, serrate along margins, hispid; petioles hispid. Heads solitary, terminal on slender peduncles. Marginal florets with yellow 2–3–dentate, spreading ligulate corollas; central florets with brownish–purple, tubular, 5–fid corollas. Achenes obovoid, black. Pappus of 2 deciduous scales.

Fls. & Frts.: September–December.

Distrib.: Native of western USA, grown in gardens for ornamental purpose. Marathwada (Naik, op. cit.).


Herbs 1–2 m tall, erect, perennial. Leaves ovate–lanceolate, gradually narrowed and decurrent on petioles, serrate along margins, hispid on both surfaces. Heads many, on short terminal peduncles. Marginal florets with deep yellow, 2–3–fid ligulate corollas; central florets with yellow, tubular, 5–fid corollas. Achenes obovoid, black. Pappus of two scales.

Fls. & Frts.: September–December.

Distrib.: Native of Western USA, grown in gardens for ornamental purposes. Marathwada (Naik, op. cit.).


Herbs, 0.4–1.2 m tall, erect, perennial; stems stout, hoary villous when young. Leaves mostly opposite, ovate, cordate and often clasping at base, finely toothed along margins, scabrous above, white tomentose beneath. Heads few, on short peduncles. Involucral bracts pubescent; marginal florets with yellow ligules; central florets with yellow tubular, 5–fid corollas. Achenes oblong, black. Pappus of two short scales.

Fls. & Frts.: October–November.
**Distrib.** : Native of Northern USA and Texas, occasionally grown in gardens. Marathwada (Naik, op. cit.).


Flowers heads upto 10 cm across. Ray florets of a deep golden and disc of a very dark chocolate colour.

**Distrib.** : The small ‘Sunflower’ a native of N.W. America, introduced into gardens at Pune (Cooke, op. cit.).


Herbs, 1–2 m tall, erect, perennial; stem hispid . Leaves opposite or upper alternate, ovate to ovate–oblong, abruptly contracted into winged petioles, serrate dentate along margins, scabrid above, pubescent beneath. Heads at ends of branches. Marginal florets with pale yellow ligules; central florets with deep yellow, tubular corollas. Achenes obovoid, black. Pappus of two lanceolate scales.

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

**Distrib.** : The ‘Jerusalem Artichoke’ –native of USA and Texas is occasionally grown in gardens (Cooke, op. cit.; Naik, op. cit.).


Flowers small, delicate, rose–coloured.

**Distrib.** : A native of Western Australia, grown in gardens as potted plants (Cooke, op. cit.).


Herbs, 30–60 cm high. Heads solitary, terminal, rose colored.

**Distrib.** : A native of S. Western Australia, grown in gardens (Cooke, op. cit.).

Herbs, annual or biennial; rootstock thick, woody; stems 30–80 cm high, erect, succulent, leafy. Leaves sessile, ovate-oblong, succulent, base acuminate, margins minutely spinulose–toothed. Heads on leafy panicle branches, many flowered; peduncles white. Ligules yellow. Achenes blackish–brown, oblanceolate, 6–8–ribbed. Pappus whitish.

*Fls. & Frts.* : March–November.

*Distrib.* : The ‘Garden Lettuce’ is cultivated throughout the Bombay Presidency (Cooke, op. cit.). Ahmednagar, Pune, Satara.


Herbs, 10–100 cm high, perennial erect, rootstock woody. Basal leaves glandular, broadly to narrowly spathulate, crenate to dentate; cauline leaves narrowly oblong to spathulate, crenate to dentate along margins. Heads solitary, pedunculate. Ray florets with white ligules; disk florets yellow, tubular. Achenes obconic–cylindric, usually prominently 10–ribbed, crowned by persistent style base. Pappus minute or auricle like or absent.

*Fls. & Frts.* : April–November.

*Distrib.* : Cultivated at Pune.


Perennials, with woolly leaf petioles. Leaves orbicular or reniform. Heads with light yellow coloured rays.

*Distrib.* : Native of Japan. Cultivated at Pune.


Flowers yellow.

*Distrib.* : A native of Tropical America, has become a weed in gardens in Pune (Cooke, op. cit.).

Shrubs, erect; young branches hairy, becoming glabrous and lenticellate at maturity. Leaves irregularly 3–7–lobed, pinnatipartite, serrate along margins, hispid above, glandular and hairy on nerves beneath; lobes acuminate. Heads in corymbs forming a hairy panicle. Ray florets with white corolla; disc florets with yellow corolla. Achenes obovoid. Pappus absent.

*Fls. & Frts.*: February–April.

*Illus.*: H. J. Chowdhery in Hajra et al. op. cit.

*Distrib.*: Cultivated at Pune.


*Distrib.*: The ‘Black salsify’ is grown in gardens at Pune (Cooke, op. cit.).

**Senecio sempervivus** Sch.–Bip. in Fl. 28: 500. 1845; Cooke, Fl. Pres. Bombay 2: 112. 1958 (Repr.).

*Distrib.*: A native of Arabia, is often grown as a pot plant about bungalows. (Cooke, op. cit.).


Herbs or undershrub, 1–1.5 m tall. Leaves alternate, sessile, lanceolate, or oblong–lanceolate, acute at apex, slightly narrowed and semi–amplexicaul at base, entire along margins, 3–nerved. Heads in dense, recurved, axillary racemes forming pyramidal panicles. Marginal florets with yellow ligules; central florets few, with yellow, tubular corollas. Achenes terete, black. Pappus bristles few, as long as achenes.

*Fls. & Frts.*: September–November.

*Distrib.*: Native of N. America grown in gardens for ornamental purpose. Jalgaon, Marathwada (Naik, op. cit.), Satara.


Pubescent plant with spathulate leaves. Heads in one sided spreading or recurved racemes, usually forms one sided panicles.

*Distrib.*: Native of America. Cultivated at Pune.

Herbs, 0.5–1.2 m high, stout, erect, annual. Leaves opposite or upper alternate, pinnately divided into lanceolate, serrate segments. Heads solitary, peduncled. Marginal florets with yellow or orange coloured ligules; central florets often with yellow, tubular corollas. Achenes linear–oblong, blackish. Pappus scales united.

**Fls. & Frts.** : September–October.

**Distrib.** : The ‘African Marigold’, a native of Mexico is grown abundantly in gardens (Cooke, op. cit.; Naik, op. cit.).


Herbs, 30–60 cm tall, erect, annual; stems with few scattered hairs. Leaves opposite or upper alternate, pinnately divided into lanceolate, serrate segments. Heads loosely corymbose, on 3–10 cm long peduncles. Marginal florets with yellow and orange coloured ligules; central florets often with yellow tubular corollas. Achenes linear–oblong, black, with 4 unequal pappus awns at top.

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

**Distrib.** : The ‘French Marigold’, a native of Mexico is often grown in gardens (Cooke, op. cit.; Naik, op. cit.). Ahmednagar, Raigad, Satara.


Herbs, 30–60 cm tall, much branched, annual. Leaves opposite, upper ones alternate, pinnately divided into narrowly elliptic segments. Heads in lax corymbs, pedunculate. Involucre with orange yellow glands. Marginal florets with yellow ligulate limb; central florets with yellow tubular corolla. Achenes oblong, appressed hairy with 3–4 unequal pappus awns at top.

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

**Distrib.** : Native of Mexico, grown in Marathwada (Naik, op. cit.).

Herbs, perennial; rootstock rhizomatous. Leaves radical, oblanceolate or oblanceolate–oblong, rarely linear, entire or toothed, pinnatifid or runcinate–pinnatifid, variously lobed, lobes acute, denticulate. Ligules yellow. Achenes yellowish, oblong or oblong–lanceolate, abruptly narrowed into a long beak. Pappus pale white.

*Fls. & Frts.*: March–November.


*Distrib.*: The ‘Dandelion’ whose roots furnish well known medicinal extract, is grown in gardens at Pune. (Cooke, op. cit.).


Undershubs, 1–2 m tall; stems underground. Leaves alternate, ovate or ovate–rhomboid, narrowed at base, often deeply alternately 3–lobed, lobes ovate–oblong or lanceolate, hairy and minutely glandular on both sides. Heads solitary on long peduncles. Involucral bracts hairy; marginal florets with yellow or orange, 3–dentate, spreading ligules; central florets with tubular, yellow corollas. Achenes obovoid, trigonous. Pappus of 2–3, membranous scales.

*Fls. & Frts.*: October–March.

*Illus.*: H. J. Chowdhery in Hajra et al. op. cit.

*Distrib.*: Native of Mexico and Central America, grown in gardens and also escaped. Aurangabad, Latur, Nanded, Osmanabad & Parbhani (Naik, op. cit.), Pune, Satara, Sindhudurg.


Shrubs, up to 1.8 m tall. Leaves alternate, deltate to triangular, 3–5–lobed, acute or acuminate at apex, attenuate at base, crenate or
serrate at margins, sparsely pubescent or villous on lower side. Heads heterogamous, solitary, pedunculate. Involucral bracts: outer densely pubescent, inner minutely pubescent; ray florets with orange & yellow corolla; disc florets with yellow corollas. Achenes of ray florets white, pappus absent or of short scales or arms; achenes of disc florets black, brown or mottled, pappus of fused squamellae with 2 awns.

**Fls. & Frts.** : July–January.

**Distrib.** : Native of Mexico, grown in gardens. Bombay, Pune.


Herbs, perennial; stems leafy with a solitary or branched scape. Leaves crowded from base upwards with broad sheathing base. Heads solitary.

**Distrib.** : The ‘White Salsify’ is grown in gardens at Pune (Cooke, op. cit.).


Trees reaching 12 m high; branches tomentose. Leaves 13.5–20 x 5–7.5 cm, elliptic, oblong–elliptic or ovate–elliptic, acuminate at apex, entire or sinuate at margins, densely wooly beneath. Heads in loose, terminal, ferruginous, pubescent panicles, 4–6–flowered. Flowers pale violet or white. Achenes angled or ribbed, glandular. Pappus white or pale.

**Fls. & Frts.** : September–March.

**Distrib.** : Occasionally grown in gardens, having been introduced probably from Bengal (Cooke, op. cit.).


Scandent shrubs; stem woody with divaricate branches; young parts pubescent. Leaves alternate, oblong–elliptic, acute or obtuse at apex, narrowed at base, entire along margins, glabrous above, minutely silky pubescent beneath. Heads in terminal corymbose panicles, pedunculate. All florets dull white, tubular. Pappus hairs dull white.

Branching annual with sessile leaves. Heads orange coloured.

**Distrib.** : Native of Mexico, cultivated at Pune.


Herbs, 30–90 cm high, annual. Leaves ovate or elliptic to elliptic–lanceolate, acute at apex, acute and 3–nerved from base, entire along margins, hispid on both surfaces. Heads solitary, terminal. Ray florets pink, achenes oblanceolate to cuneate; disc florets yellow, achenes laterally compressed.

**Fls. & Frts.** : August–December.

**Distrib.** : Native of Mexico, often grown in gardens, also found as an escape. Ahmednagar, Akola, Buldhana, Chandrapur, Marathwada (Naik, op. cit.), Nasik, Pune, Yavatmal.


**Fls. & Frts.** : Almost throughout the year.

**Distrib.** : Native of Mexico, commonly cultivated in gardens. Marathwada (Naik, op. cit.).

Herbs, 30–90 cm tall, annual, erect. Leaves opposite, sessile, linear–lanceolate to lanceolate, acute at apex, entire at margins, 3–5–nerved, glandular–punctate. Heads solitary, terminal, on stout peduncles. Ray florets red or orange; disc florets yellow. Achenes oblong–linear, 3–angled or compressed, with a single awn at emarginate apex.

*Fls. & Frts.* : August–November.

*Illus.* : Naik, op. cit.

*Distrib.* : Native of Mexico, Central America, South–Eastern Arizona, West Indies, Columbia and Equador to Peru and Argentina, naturalised on waste lands along roadsides, old forts and on walls. Marathwada (Naik, op. cit.), Nasik.

**GOODENIACEAE**

(A. N. Londhe)

**SCAEVOLA L.**


Shrubs, 1-3 m tall; branches cylindric. Leaves alternate, 11–20 x 3.5–8.5 cm, obovate, apex obtuse, base long tapering, with a tuft of white wool in its axil. Flowers white, in short axillary dichotomous cymes. Drupes c 2 cm across, subglobose, succulent, white when ripe.

*Fls. & Frts.* : June–December.

*Illus.* : Wight, Ic. t. 117. 1839.

*Distrib.* : Along sea coast, sometimes cultivated. Bombay (Cooke, op. cit.), Pune, Ratnagiri (Cooke, op. cit.).

**CAMPANULACEAE**

(A. N. Londhe)

1. Flowers solitary, white ...

   1. Flowers solitary or in lax cymes, coloured other than white:

   2. Capsules dehiscing at base or sides below calyx teeth ...

   2. Capsules not dehiscing loculicidally within calyx teeth:

   ... **LAURENTIA**

   ... **CAMPA NULA**
Campanula alphonsii Wall. ex A. DC.
3. Stems flexuose, more or less zigzag, dichotomously branched; leaves broadly ovate; corolla rotate, deeply divided; stigma capitate ... CEPHALOSTIGMA

3. Stems not as above, erect; leaves oblong; corolla campanulate; stigma lobed ... WAHLENBERGIA

CAMPANULA L.

1. Flowers violet–white; fruits subglobose ... C. dimorphantha

1. Flowers bluish–white or purple; fruits obovoid:

2. Stems straight; basal leaves obovate; flowers purple, dimorphic ... C. colorata

2. Stems spreading; leaves ovate–elliptic; flowers bluish–white, monomorphic ... C. alphonsii


Herbs, 8-20 cm high; stems decumbent, hairy. Leaves alternate, subsessile, upto 1.0 x 0.5 cm, hairy. Flowers in terminal, lax, corymbs; calyx tube campanulate, hairy, lobes triangular, acute with intermediate teeth; corolla half way divided, lobes oblong, subacute. Seeds ellipsoid, minute.

*Fls. & Frts.*: October–July.

*Illus.*: Wight, Ic. t. 1177. 1848.

*Distrib.*: Rare, Pune, Satara.


*Fls. & Frts.*: November–December.

*Distrib.*: Rare, Pune (Sant. op. cit.), Satara.

Herbs, annuals, erect; stems hairy. Leaves 2–3 x 1.0 –1.5 cm, radical narrowed into a short petiole, ovate–spathulate, cauline linear–lanceolate or oblong. Flowers sessile. Capsules hispidly hairy.

*Fls. & Frts.*: October–March.

*Illus.*: Bhogaonkar & Devarkar, op. cit.

*Distrib.*: Rare. Amravati (Bhogaonkar & Devarkar, op. cit.), Nasik, Pune.

**Cephalostigma A. DC.**


Herbs, 12–25 cm high, dichotomously branched. Leaves 2.0 –2.5 cm, apex subacute, base rounded. Flowers yellowish, in lax cymes; calyx tube densely hispid, lobes apiculate; corolla deeply 5–partite. Fruits conical, 2–3–valved.

*Fls. & Frts.*: October – March.

*Distrib.*: Kolhapur, 'Konkan' (Cooke, op. cit), Pune, Satara.

**Laurentia Mich. ex. Adans.**


Herbs, 50–65 cm tall, erect. Leaves alternate, subsessile, 10–17 x 3–3.8 cm, oblong-lanceolate or oblanceolate, base attenuated, margins dentate. Corolla tube cylindric, 7–9 x 2–3 cm. Capsules c 1.5 x 1.0 cm, ellipsoid, 10–nerved. Seeds ovoid.

*Fls. & Frts.*: March – August.

Herbs, 15 cm tall, hispid. Leaves 0.5–1.5 x 0.1 – 0.5 cm, oblong-elliptic. Flowers blue in lax cymes. Capsules obconical, hispid. Seeds ellipsoid, pale brown, compressed.

Fls. & Frts. : September–December


Distrib. : Rare. Ahmednagar, Nasik, Satara.


Herbs, 15–45 cm high. Leaves 1.5–3.5 x 0.2–1.0 cm, linear-oblong. Inflorescence in lax, cymose panicles. Flowers blue. Capsules 0.6 cm long, turbinate.

Fls. & Frts. : December – March.

Illus. : Wight, Ic. t. 1175. 1848 (W. agrostis); Moeliona & Tuyn in Steenis, op. cit. 116 & 117, f. 3 & 5.

Distrib. : Rare. Ahmednagar, Chandrapur, Nasik, Pune, Raigad, Satara, Thane.
Wahlenbergia marginata (Thunb.) A. DC.
LOBELIACEAE
(A. N. Londhe)

LOBELIA L.

1. Creeping herbs with terete stems ...  L. chinensis
1. Erect herbs with the trigonous stems or undershrubs with terete stems :
   2. Undershrubs 1–3 m tall; flowers in terminal racemes ...  L. nicotianaeefolia
   2. Herbs below 50 cm tall; flowers axillary, solitary :
      3. Two of anthers penicillate at tip; seeds ellipsoid ...  L. heyneana
      3. All anthers penicillate at tip; seeds trigonous ...  L. alsinoides


Herbs, 5–15 cm tall. Leaves 1.5–2.0 x 0.7–1.5 cm, ovate or oblong, apex acute or obtuse, base cordate, margins crenate. Flowers blue, forming lax, terminal, leafy racemes. Capsules c 0.4 cm long.

Fls. & Frts. : August–February.
Illus. : Wigth Ic. t. 1170. 1848 (L. trigona).

Distrib. : Ahmednagar, Bombay, Chandrapur, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.


Herbs. Leaves 9–14 x 1–4 mm, ovate–elliptic or lanceolate. Flowers 15–17 mm long, lilac; two anterior anthers hairy at tip, each with a hyaline seta.

Fls. & Frts. : August–December.

Lobelia alsinoides Lam.

Herbs, annuals, 20–40 cm tall. Leaves sessile, ovate or elliptic, margins crenate–serrate or dentate. Flowers axillary, pale blue to violet.

*Fls. & Frts.*: May–November.

*Illus.*: Moeliona & Tuyn in Steenis, op. cit. 132, f. 16 d.

*Distrib.*: Not common. Ahmednagar, Bombay (Cooke op. cit.), Kolhapur, Nasik, Pune, Raigad, Satara, Thane.


Herbs; stems hollow, stout, cylindrical. Leaves sessile, 10–25 x 4–6 cm, oblong–lanceolate. Flowers c 2 cm long. Capsules c 8 cm long, subglobose. Seeds many.

*Fls. & Frts.*: October–May.

*Illus.*: Moeliona & Tuyn, op cit. 125, f. 8 & 9.

*Distrib.*: Common. Ahmednagar, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**CULTIVATED SPECIES**:

**Lobelia erinus** L. Sp. Pl. 932. 1753.

Herbs, annual, 15–30 cm tall, leafy throughout. Lower leaves obovate or spathulate, crenate, upper leaves oblanceolate or oblong. Flowers light blue or violet with white or yellowish throat.


*Distrib.*: Few in gardens. Pune.
Lobelia heyneana R. & S.
Lobelia nicotianaefolia Roth ex R. & S.
Sphenoclea zeylanica Gaertn.
Sphenocleaceae

Sphenoclea Gaertn. (nom. cons.)


Herbs, annual, erect; stems fistular. Leaves 2.5–6.0 x 1.6–1.8 cm, lanceolate–oblong, tapering at both ends. Flowers greenish–white, sessile, compactly arranged in spikes. Capsules 0.4 cm wide, flat–topped, depressed–globose.

*Fls. Frts.*: September – February.


*Distrib.*: Common in damp places. Bombay, Raigad, Ratnagiri, Sindhudurg, Thane.

Plumbaginaceae

1. Calyx glandular

1. Calyx eglandular

DYEROPHYTUM O. Ktze.


Undershubs, 2–3 m tall. Leaves perfoliate, lower 2.5 x 5.5 cm, ovate, subobtuse, the upper 3.7–5.0 x 2.5–4.5 cm, elliptic, obtuse or orbicular, covered with scurfy scales. Flowers in dense, paniculate spikes. Capsules 0.6 – 0.8 cm long, circumcis at base, spliting into 5 valves. Seeds 0.4 cm long, smooth, pear shaped.

*Fls. & Frts.*: October – February.

*Distrib.*: Rare in deciduous forests along the ghats. Ahmednagar, Pune (Cooke, op. cit.).
PLUMBAGO L.


Undershubs, c 1.5 m tall, perennial, erect or scandent. Leaves 3–5 x 2–3 cm, ovate or ovate–lanceolate. Inflorescence of terminal spikes. Flowers white. Capsules 0.5 cm long, oblong, pointed with persistent calyx.

Fls. & Frts. : March–December.


Distrib. : Common throughout the state along the hill tops and in waste places in plains.

CULTIVATED SPECIES :


Undershurbs, erect. Leaves 3–4 x 1.5–2 cm, elliptic or obovate, base acute to attenuate, apex acute. Flowers pale blue.

Fls. & Frts. : Throughout the year.

Distrib.: Grown in gardens as ornamental. Pune, Satara, Thane.


Shrubs; stems striated. Leaves ovate–elliptic. Flowers in long racemes, purplish–red to scarlet.

Distrib. : Cultivated for ornamental purposes. Satara.

Notes. : Native of Sikkim & Khasia hills.

PRIMULACEAE

(A. N. Londhe)

Anagallis L.

1. Leaves sessile, opposite; corolla blue, longer than calyx; filaments villous ... A. arvensis
Plumbago zeylanica L.
Anagallis arvensis L.
1. Leaves subsessile, alternate; corolla white, shorter than calyx; filaments glabrous ... *A. pumila*


Herbs, annuals, 10–30 cm tall; stems and branches tetragonous. Leaves 1–2 x 0.3–1 cm, ovate–elliptic, acute, amplexicaul. Flowers axillary, solitary. Capsules c 0.3 cm wide, globose. Seeds brown, trigonous.

*Fls. & Frts.*: August–May.


*Distrib.*: Common. Ahmednagar Akola, Chandrapur, Kolhapur, Nasik, Pune, Raigad, Satara, Solapur, Yavatmal.


Herbs, 5–8 cm tall. Leaves 0.5–1.0 x 0.2–0.3 cm, ovate, acute. Flowers axillary, solitary; calyx and corolla divided up to base; corolla shorter than calyx. Capsules subglobose.

*Fls. & Frts.*: September–January.


*Distrib.*: Not common. Ahmednagar, Nasik, Osmanabad, Pune, Raigad, Ratnagiri, Satara, Thane.

**MYRSINACEAE**

(A. N. Londhe)

1. Calyx tube enclosing fruits; seeds many–seeded ... *MAESA*

1. Calyx tube not enclosing fruits; fruits 1–seeded:

2. Fruits cylindric; seeds elongate ... *AEGICEROS*
2. Fruits globose; seeds not elongate:
   3. Corolla lobes imbricate; anthers ovate-oblong  ...  Embelia
   3. Corolla contorted; anthers sagittate  ......  Ardisia

**AEGICERAS Gaertn.**


Shrubs or small trees, 1–2 m tall. Leaves 4–8 x 2.5–4.0 cm, obovate or obovate-oblong, shining above, glaucous beneath, base cuneate. Flowers white, fragrant, in leaf opposed or terminal umbels; calyx twisted; corolla deeply 5-lobed. Fruits reddish-brown.

*Fls. & Frts.* : Throughout the year.


**ARDISIA Swartz (nom. cons.)**


Shrubs, 1.5–3 m tall; branches stout. Leaves 8–16 x 4.0–6.5 cm, obovate-oblong or oblanceolate, subcoriaceous, apex acute or acuminate. Flowers 1.5–2.0 cm across, waxy pink, in axillary corymbose cymes; calyx free to base; corolla gland dotted. Drupes 0.7–1.3 cm wide.


*Illus.* : Wight, Ic. t. 212. 1846 (*A. humilis*).

EMBELIA Burm. f. (nom. cons.)

1. Shrubs or small trees ... E. basaal

1. Scandent or climbing shrubs:
   2. Flowers 5–merous ... E. ribes
   2. Flowers 4–merous ... E. drupacea


Shrubs or small trees, upto 3 m high. Leaves 3–20 x 2.0–8.0 cm, broadly elliptic, gland dotted. Inflorescence of axillary rusty–puberulous racemes. Flowers pentameric, greenish–yellow. Fruits 0.4 cm across, globose, apiculate with style, ripens red.

*Fls. & Frts.*: Throughout the year.

*Illus.*: Wight, Ic. t. 209. 1848.

*Distrib.*: Ahmednagar, Chandrapur, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Extensive climbing shrubs; branches lenticellate, warted. Leaves 4–22 x 3.0–8.5 cm, elliptic–oblong, coriaceous, punctate on both sides, apex obtuse to subacute. Flowers orange, dull due to papillae, in axils of fallen leaves with imbricate scales; calyx segments triangular, gland dotted; corolla elliptic–oblong. Fruits 0.6 – 0.8 cm wide, globose, reddish.

*Fls. & Frts.*: January–June.
Embelia basaal (R. & S.) A. DC.

Distrib. : Rare. Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg.


Shrubs; stems climbing; branches with long internodes. Leaves 4–10 x 2–4 cm, elliptic–lanceolate, thinly coriaceous, gland dotted beneath, apex acute. Flowers greenish–yellow; sepals hairy; petals papillose. Fruits 0.5 cm wide, globose.

**Fls. & Frts.** : February–June.

Illus. : Wight, Ic. t. 207. 1848.

Distrib. : Kolhapur, Ratnagiri, Satara, Sindhudurg.

**MAESA Forssk.**


Shrubs, 1.5–5.0 m tall; bark thin, lenticellate. Leaves 5–12 x 3.5–10.0 cm, elliptic–lanceolate to ovate–oblong, pilose to completely glabrous, margins serrate or dentate, apex acute or acuminate. Flowers 0.4–0.6 cm wide, white, in branched axillary racemes; calyx campanulate; corolla rotate. Fruits 0.5–0.7 cm across, globose, whitish.

**Fls. & Frts.** : Throughout the year.


**CULTIVATED SPECIES:**


Shrubs or small trees. Leaves alternate or crowded at tip of branches, c 6.5 x 1.8 cm, elliptic–oblong. Flowers in terminal, upto 6 cm

*Fls. & Frts.*: April–June.

*Distrib.*: Cultivated in gardens & along river banks. Bombay.


Herbs, erect up to 30 cm high. Leaves 2–6 x 1–2 cm, elliptic–lanceolate. Flowers in terminal racemes; corolla white, lobes obovate. Capsules 5–valved.

*Fls. & Frts.*: March–December.

*Distrib.*: Planted. Satara.

**SAPOTACEAE**

(S. G. Pradhan)

1. Corolla lobes 18–24:
   2. Calyx segments 8; staminodes hairy ... *Mimusops*
   2. Calyx segments 6; staminodes glabrous ... *Manilkara*

1. Corolla lobes not more than 8:
   3. Staminodes present ... *Xantolis*

3. Staminodes absent:
   4. Stamens 12 – 20 or more:
      5. Calyx segments 6; corolla dark red ... *Palaquium*
      5. Calyx segments 4; corolla cream–coloured ... *Madhuca*

4. Stamens 5 or 8:
   6. Calyx segments 4, 2–seriate; ovary 4–celled, hispid ... *Isonandra*
   6. Calyx segments 5–6, uni–seriate; ovary 5–6–celled ... *Chrysophyllum*

**CHRYSOPHYLLUM L.**

Trees, 13–16 m tall; young branches fulvous grey–pubescent. Leaves 6.5–9.5 x 3–5 cm, oblong–lanceolate, caudate–acuminate at apex. Flowers in head like clusters, numerous. Berries 2.5–3.5 cm wide, globose, faintly 5–6–angled. Seeds 5–6, compressed, ellipsoid, polished.

**Fls. & Frts.** : April–June.


_Distrib._ : Rare, in semi–evergreen forests. Kolhapur, Konkan (Cooke, op. cit.).

**ISONANDRA Wight**

1. Leaves obtuse at apex; shoots rusty silky ... _I. stocksii_

1. Leaves bluntly acuminate at apex; shoots not as above ... _I. perottetiana_


Trees. Leaves 5.0–6.5 x 2.5–3.0 cm, oblong–obovate. Flowers in head like inflorescence, clustered, sessile. Berries c 1.8 x 0.6 cm.

**Fls. & Frts.** : March–May.

_Illus._ : Wight, op. cit.

_Distrib._ : Rare in 'Ghat' (Cooke, op. cit.).


Trees. Leaves 9 x 7.5 cm, elliptic–obovate. Flowers sessile, on thick short, lateral shoots clustered at the ends of the branches.

_Distrib._ : Rare. 'Konkan' (Cooke, op. cit.).

**MADHUCA J. F. Gmel.**

1. Flowers and fruits tomentose ... _M. longifolia_

1. Flowers and fruits glabrescent or glabrous ... _M. neriifolia_
Madhuca neriifolia (Moon) H. J. Lam

1. Anthers 3–seriate ... var. latifolia
1. Anthers 2–seriate ... var. longifolia

var. longifolia.

Tall trees. Leaves 6.5–10.0 x 2.5 –3.0 cm, linear–lanceolate, acute at apex, tapering at base. Flowers in fascicles below leaves; corolla fleshy. Berries oblong, yellowish when ripe. Seeds 1–2, compressed, curved on one side.


Trees, 13–16 m tall. Leaves 6.5 –20 x 3.5 –10.0 cm, elliptic or elliptic–oblong, shortly acuminate at apex, rounded or acute at base. Flowers cream–coloured, in dense fascicles near tips of branches. Berries 2.5 –5.0 cm long, ovoid, fleshy, markedly hairy at base. Seeds 1–4.

Fls. & Frts. : February–May.


Distrib. : Common throughout the State–Economically important.


Trees c 10 m tall. Leaves 6–15 x 2.5 – 3.0 cm, oblong to lanceolate, coriaceous, subobtuse at apex, tapering at base. Flowers in fascicles
near ends of branches; corolla densely rufous hairy. Berries oblong–lanceolate.


*Distrib.* : Rare, in moist forests. Bombay (Oza, op. cit.).

**Manilkara** Adans. (nom. cons.)


Trees, evergreen, 15–18 m tall; bark deeply furrowed. Leaves 4.5–10.0 x 2.5–5.0 cm, obovate to obovate–oblong, dark glossy green above, rounded or emarginate at apex, acute at base. Flowers whitish, solitary, axillary or in fascicles; calyx rusty tomentose outside. Berries 1–seeded. Seeds ovoid, reddish, shining.

*Fls. & Frts.* : September–November.

*Illus.* : Wight, Ic. t. 1587. 1850.

*Distrib.* : Common in dry deciduous and moist deciduous forests. Ahmednagar, Bombay, Chandrapur, Jalgaon (Cooke, op. cit.), Pune, Raigad, Thane–Economic.

**Mimusops** L.


Trees, evergreen, 12–16 m tall. Leaves 5.0–9.5 x 3.0–5.0 cm, elliptic, shortly acuminate or acute at base. Flowers white, fragrant, 2.5 cm wide, solitary or in clusters of 2–6. Berries 2.5 cm long, ovoid, yellow when ripe. Seeds solitary, compressed, ovoid, shining, brown.

*Fls. & Frts.* : January–March.


**Palaquium Blanco**


Trees, 35 m tall; trunk straight. Leaves 7.5–10.0 x 3.0–6.5 cm, elliptic or obovate, obtusely acuminate at apex, acute at base. Flowers solitary or 2–3, axillary. Berries c 3.5 cm long, oblong.


*Distrib.* : Rare. Western Ghats from Bombay southwards (Cooke, op. cit.).

**Xantolis Raf.**


Trees, medium sized; twigs spiny. Leaves 4.5–9.0 x 2.0–9.5 cm, elliptic or obovate, subacute, rounded or retuse. Flowers white, in head like axillary fascicles. Berries 1.8–2.5 x 1.2–1.5 cm, yellowish–green. Seeds solitary, 1.2 cm long, polished.


**CULTIVATED SPECIES :**


Trees. Leaves 7–10 x 3.5–6.0 cm, elliptic–oblong, acute at base, obtuse or abruptly acuminate at apex, leathery, silky pubescent beneath, shortly pedicelled. Flowers minute, in fascicles; calyx with 5 sepals; corolla campanulate. Berries globose to oblong, 5–7 cm across, fleshy.
Fls & Frts. : August–October.

Distrib. : Native of W. Indies, planted in gardens, fruits edible.


Evergreen trees up to 10 m tall. Leaves alternate, 7–12 x 2.5–3.0 cm, elliptic to elliptic–lanceolate, acute at base, acute to acuminate at apex. Flowers white, solitary, axillary; calyx in 2 whorls of 3 sepals each, brown–hairy outside; corolla urceolate; staminodes petaloid. Berries 6–8 cm across, globose. Seeds ellipsoid, black.

Fls. & Frts. : More or less throughout the year.

Notes. : Native of West Indies and Tropical America. Cultivated in gardens for edible fruits.


Trees with straight upright stems. Leaves c 10 x 5 cm, obovate–elliptic, obtuse to subacute at apex, cuneate at base, silky white beneath, petiolate. Flowers clustered near the ends of branches, brownish tomentose. Berries 1.8–2.5 cm across, globose.

Notes. : Native of Tropical Australia. Occasionally grown in gardens.

**EBENACEAE**

*(S. G. Pradhan)*

**DIOSPYROS L.**

1. Calyx of male flowers subtruncate at apex ... *D. oocarpa*

1. Calyx of male flowers distinctly lobed :

2. Anthers awned ... *D. montana*

2. Anthers acute, acuminate, not awned :

3. Corolla urceolate :

4. Calyx of male flowers up to 0.1 cm long :
5. Staminodes 4  ...  D. sylvatica
5. Staminodes 7–9  ...  D. chloroxylon
4. Calyx of male flowers c 0.9 cm long  ...  D. paniculata

3. Corolla not urceolate:
   6. Stamens 40 or more  ...  D. peregrina
   6. Stamens up to 22:
      7. Calyx of female flowers with an elevated ring at mouth  ...  D. ebenum
      7. Calyx of female flowers not as above:
         8. Petals with a line of hairs on back  ...  D. buxifolia
         8. Petals pubescent on back or fulvous hairy:
            9. Mature leaves glabrous below  ...  D. candolleana
            9. Mature leaves densely pubescent or at least densely hairy on nerves below:
               10. Ovary glabrous  ...  D. cordifolia
               10. Ovary hairy:
                  11. Stamens 4–9, anthers acute; ovary 3–celled  ...  D. nigrescens
                  11. Stamens 12–16, anthers acuminate; ovary 4–8 celled:
                     12. Leaves broadly ovate, rounded at base, obtuse at apex; fruits glabrous when young; seeds 10–12 mm long  ...  D. exculpta
                     12. Leaves elliptic, narrowed at both ends; fruits pubescent when young; seeds 15–18 mm long  ...  D. melanoxylon


Trees, 30 m high, trunk buttressed at base. Leaves 2–5 x 1.2 – 2.0 cm, ovate–elliptic, obtusely acuminate at apex, tapering at base. Flowers unisexual: male flowers 1–4, in subsessile, axillary cymes; female flowers solitary, subsessile. Fruits 0.8–1.8 x 0.6–1.2 cm, oblong. Seeds usually solitary.

Fls. & Frts. : March–April.

Distrib. : Rare, in semi–evergreen forests. Ratnagiri.


Trees c 11 m tall. Leaves 10–14 x 4.0–5.5 cm, elliptic–oblong, obtusely acuminate at apex, rounded or cuneate at base. Male flowers sessile, in pubescent, axillary clusters; female flowers in 2–10–flowered axillary cymes. Fruits globose or ellipsoid; fruiting calyx shallowly cup–shaped, lobes with reflexed margins. Seeds 3–4.


Illus. : Wight, op. cit.


Trees, 8 m tall; branches sometimes spinescent. Leaves 2.5–3.0 x 1.2–3.0 cm, elliptic or elliptic–oblong, obtuse or subacute at apex, obtuse or acute at base. Male flowers 4–10, in subsessile, hairy penduncles; female flowers solitary, sessile. Fruits c 1.2 cm wide; fruiting calyx flat. Seeds 2–3.

Fls. & Fruts. : June–August.

Illus. : Wight, Ic. t. 1224. 1848 (male) & t. 1588 (bis.) 1850 [D. capitulata].

Distrib : Occasional in deciduous forest. Chandrapur, Nasik, Osmanabad, Pune, Yavatmal.

Trees, 8–10 m tall. Leaves 3.5–6.5 x 1.5–1.8 cm, oblong, obtuse at apex, rounded, cordate or subacute at base. Male flowers usually 3, axillary on peduncles; female flowers solitary. Fruits 1.2–2.5 cm wide.

*Fls. & Frts.*: March–April.

*Distrib.:* Rare. Thane.


Trees. Leaves 5–15 x 1.8–3.5 cm, oblong–lanceolate to elliptic–oblong, obtusely acuminate or obtuse at apex. Male flowers 3–12, subsessile, in cymes; female flowers solitary. Fruits 1.8 cm wide; fruiting calyx a woody cup. Seeds 3–4.

*Fls. & Frts.:* February–March.

*Illus.*: Wight, Ic. t. 188. 1839; Bedd. Fl. Sylv. t. 65 1870.

*Distrib.:* Rare. Pune, Satara (Birdwood, op. cit.).


Deciduous trees; young parts tomentose. Leaves 7–11 x 5–7 cm, ovate, obtuse or acute at base. Flowers unisexual: male flowers 4–6–merous in drooping paniculate cymes, calyx campanulate, hairy, corolla white, tubular, 4–6–lobed; female flowers solitary, 4–5–merous, corolla tubular, white. Fruits globose or ovoid on persistent calyx.

*Fls. & Frts.:* March–September.

*Distrib.:* Common in hill forests.
Diospyros montana Roxb.

Trees c 15 m tall. Leaves alternate or subopposite, 5.5–15.0 x 2.5–5.0 cm, elliptic to elliptic–oblong, obtuse to subacute at apex, usually acute at base. Male flowers 3–12, in tomentose, paniculate cymes; female flowers subsessile, solitary. Fruits 2.5–3.0 cm wide, globose or ovoid; fruiting calyx flat with thick undulate lobes. Seeds 2–8.

**Fls. & Frts.** : February–April.

**Illus.** : Wight, Ic. t. 1223. 1848 (*D. dubia* Wall. ex A. DC. in DC. Prodr. 8: 223. 1848).

**Distrib.** : Common in dry deciduous forests. Ahmednagar, Akola, Bombay, Chandrapur, Jalgaon, Nasik, Pune, Raigad, Satara, Thane, Yavatmal.


Trees, small or medium sized. Leaves 5.5–10.0 x 2.5 cm, ovate, oblong or elliptic, obtusely acuminate or subacute at apex, truncate, rounded or acute at base. Male flowers in few–flowered panicles; female flowers axillary, solitary. Fruits 2.5 – 3.5 cm wide, persistent calyx with reflexed, reddish–brown lobes. Seeds 2–8.

**Fls. & Frts.** : January–April.


**Distrib.** : Common. Chandrapur, Jalgaon, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.


Trees, 5–10 m tall. Leaves 3–7 x 1.2–2.5 cm, oblong–lanceolate, subacute at apex. Male flowers solitary or upto 5, in short cymes; female flowers 1–2 together. Fruits ellipsoid; fruiting calyx cup–shaped.

**Fls. & Frts.** : November–February.
**Illustrations:** Sald. in Sald. & Nicols. op. cit.

**Distribution:** Found in moist and semi-evergreen forests. Kolhapur, Raigad, Ratnagiri, Satara.


Trees, small or medium sized. Leaves 7–9 x 3.5 cm, ovate-elliptic, obtusely acuminate at apex, rounded at base. Male flowers 3–7, subsessile, in axillary, silky cymes; female flowers 1–3. Fruits 1.8–2.5 cm long, cylindric at first, becoming ellipsoid, rounded, apiculate, with persistent funnel-shaped calyx.

**Fls. & Frts.** January–March.

**Distribution:** Rare in moist and semi-evergreen forests. Ratnagiri.


Trees, 16 m tall. Leaves 7–20 x 3.5–7.5 cm, oblong, obtusely acuminate at apex. Male flowers numerous, in axillary, paniculate cymes; female flowers solitary, axillary. Fruits 1.8–3.0 cm long, ovoid with persistent calyx, more or less plicate, lobes auricled at base.

**Fls. & Frts.** November–December.


**Distribution:** Rare. ‘Konkan’ (Talb. op. cit.).


Trees, 8–15 m tall. Leaves 10–25 x 2.5–7.5 cm, oblong–lanceolate to oblong, obtuse or subacute at apex, tapering at base. Male flowers in 2–7-flowered, pubescent, drooping cymes; female flowers c 2.5 cm across, solitary, axillary, drooping. Fruits 3.5–7.5 cm wide, globose, with reflexed, accrescent calyx.

**Fls. & Frts.** March–May.

**Distrib.** : Found in moist & semi–evergreen forests. Ahmednagar, Chandrapur, Pune, Ratnagiri.


Trees c 20 m tall. Leaves 6–10  x 2.5–3.5 cm, elliptic, acute to acuminate at apex, acute at base. Male flowers in 6–10–flowered axillary cymes; female flower solitary. Fruits 1.2–1.8 cm wide, fruiting calyx enlarged, foliaceous.

**Fls. & Frts.** : January–February.

**Illus.** : Bedd. Ic. t. 121. 1874.


**CULTIVATED SPECIES** :


Deciduous trees up to 12 m tall; branches covered by appressed brownish hairs. Leaves 7–18 x 3.5–10 cm, elliptic to obovate, acuminate at apex, glabrous and shining above, pubescent beneath. Flowers yellowish–white, c 0.8 cm long, unisexual. Fruits conical, ribbed at base, 2.5–4 cm across.

**Distrib.** : Native of Khasia hills, China & Japan. Rarely cultivated in gardens.

**SYMPLOCACEAE**

(S. G. Pradhan)

**SYMPLOCOS Jacq.**

1. Bracteoles 3; fruits globose, ribbed ... **S. cochinchinensis**
   ssp. **laurina**

1. Bracteoles 2; fruits ovoid–oblong, not ribbed ... **S. racemosa**

**Symplocos cochinchinensis** (Lour.) S. Moore ssp. **laurina** (Retz.) Nooteb. Rev. Symplocac. in Old World 156. 1975; Ramam. in Sald. &
Symphlocos cochinchinensis (Lour.) S. Moore ssp. laurina (Retz.) Nooteb.

Shrubs or small trees, 3–5 m tall. Leaves 5–13 x 3.0–5.5 cm, elliptic to elliptic–lanceolate, acute to acuminate at apex, acute at base, margins subentire or crenate–serrate, coriaceous. Flowers yellowish, fragrant, often in branched spikes; calyx with rounded lobes; corolla divided up to base. Fruits 0.5–0.6 cm wide, globose.

*Fls. & Frts.* : September–March.


*Distrib.* : Frequent in moist deciduous and semi–evergreen forests along higher ghats. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.


Trees, 8–10 m tall. Leaves 5–15 x 3.5–5.5 cm, elliptic–oblong, narrowed at base, acute to acuminate at apex, margins glandular–serrate, crenate or subentire. Flowers white, fragrant, mostly in unbranched spikes or racemes; bracteoles foliaceous; calyx glabrous with subacute lobes; corolla in 1–2 series. Fruits 1.2 x 0.6 cm, ovoid-oblong.

*Fls. & Frts.* : November–April.


**OLEACEAE**

*(S. G. Pradhan)*

1. Fruits c 5 cm long, woody

2. Corolla tube orange–red; fruits capsular

1. Fruits less than 2.0 cm long, not woody:

   2. Corolla tube orange–red; fruits capsular

   ... *Nyctanthes*

   ... *Schrebera*
2. Corolla tube and fruits not as above:
   3. Corolla of distinct petals, free or connate in pairs......CHIONANTHUS
   3. Corolla when present not as above:
      4. Fruits drupaceous:
         5. Inflorescence terminal......LIGUSTRUM
         5. Inflorescence not as above......OLEA
      4. Fruit a berry......JASMINUM

CHIONANTHUS L.


Trees. Leaves 5–12 x 2.5–5.0 cm, elliptic–oblong, obtuse or abruptly and bluntly acuminate at apex, cuneate at base. Flowers yellowish–white, odorous, bracteate, in axillary fascicles. Drupes 0.8–1.2 x 0.6–0.8 cm, ellipsoid.

Fls. & Frts. : November–February.

Illus. : Wight, Ic. t. 1246. 1848 (Linociera malabarica) ; Bedd. Fl. Sylv. t. 239. 1872.

Distrib. : Mostly found in semi–evergreen tracts of the forests. Kolhapur, Pune, Ratnagiri, Satara.

JASMINUM L.

1. Leaves compound:
   2. Calyx and pedicels glabrous; corolla
      c 2.5 cm long......J. auriculatum
   2. Calyx and pedicels pubescent; corolla
      c 1.2 cm long......J. azoricum
1. Leaves simple:
   3. Bracts foliaceous:
      4. Bracts lanceolate–acute......J. rottlerianum
      4. Bracts oblong–ovate......J. multiflorum
3. Bracts not foliaceous:

5. Calyx glabrous
   ... \textit{J. ritchiei}

5. Calyx variously hairy:

6. Calyx teeth twice the length of calyx tube or even longer
   ... \textit{J. malabaricum}

6. Calyx teeth as long as or less than twice the length of calyx tube:

7. Calyx teeth linear, subclavate
   ... \textit{J. arborescens}

7. Calyx teeth minutely triangular
   ... \textit{J. roxburghianum}


Shrubs; young parts hairy. Leaves 7–11 x 3.5–5.0 cm, ovate, acute or acuminate at apex, rounded, cordate or truncate at base. Flowers white, bracteate, in trichotomous terminal cymes. Berries 1.2 x 0.6–0.8 cm, ellipsoid, black.

\textit{Fls. & Frts.}: February–April.

\textit{Illus.}: Wight, Ic. t. 699. 1843.

\textit{Distrib.}: Rare. Nasik, Osmanabad, Satara.


Shrubs; stems scandent. Leaflets: lateral ones small or absent, central one 1.5–3.0 x 0.9–1.5 cm, ovate to orbicular, obtuse, acute or acuminate or apiculate at apex, rounded at base. Flowers white, bracteate, in corymbose–cymes. Berries c 0.5 cm across, solitary.

\textit{Fls. & Frts.}: July–October.

\textit{Illus.}: Wight, Ic. t. 700. 1843.

\textit{Distrib.}: Chandrapur, 'Konkan' (Cooke, op. cit.), Pune, Satara, Yavatmal.

Jasminum azoricum L.
Extensive climbers; leaflets: terminal one 5–10 x 2.5–5.0 cm, elliptic–oblong or oblong–lanceolate, acute to acuminate at apex, subacute to rounded at base, lateral ones smaller in size. Flowers white, bracteate, in lax, paniculate, axillary cymes. Berries 1.5 cm long, ovoid, stalked.

*Fls. & Frts.*: March–April.

*Illus.*: Wight, Ic. t. 1253. 1848.

*Distrib.*: Found in semi–evergreen tracts of forests. Pune, Satara, Thane.


Shrubs; stems climbing. Leaves 7–4 x 5–6 cm, broadly ovate, acuminate at apex, rounded or cordate at base. Flowers white, fragrant, bracteate, in trichotomous, many–flowered, terminal cymes. Berries c 1 x 0.6 cm, ovoid, purplish–black.

*Fls. & Frts.*: March–June.


*Distrib.*: Common in moist deciduous forests. Ahmednagar, Akola, Bombay, Kolhapur Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.


Shrubs; stems scandent, young parts velvety pubescent. Leaves 3.5–6.5 x 1.5–3.5 cm, ovate, tomentose, acute, mucronate at apex, rounded or cordate at base. Flowers white, bracteate, sessile, in terminal capitate cymes. Berries c 0.6 cm across, 1–2.

*Fls. & Frts.*: December–June.


Shrubs; stems climbing, branched. Leaves 3.5–10.5 x 1.6–4.0 cm, elliptic, acuminate at apex, cuneate at base. Flowers white, in few-flowered, lax, cymes. Berries c 0.8 cm wide, solitary.

*Fls. & Frts.*: August–September.


Shrubs; stems climbing, fulvous hairy. Leaves 4.0–10 x 2.5–4.0 cm, elliptic, acute to acuminate at apex, rounded at base. Flowers white, in terminal cymes. Berries c 2 x 0.8 cm, ellipsoid.

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

*Illus.*: Wight, Ic. t. 1249. 1848.

*Distrib.*: Found in semi–evergreen forests. Ratnagiri, Satara.


Shrubs; stems climbing. Leaves 2.5–8.5 x 2.1–6.5 cm, ovate, acute or seldom acuminate at apex. Flowers in lax, densely villous cymes. Berries solitary, c 1.2 x 0.6 cm, ellipsoid, black.

*Fls. & Frts.*: March–May.

*Distrib.*: Found in deciduous forests. Dhule, Osmanabad, Pune, Satara, Solapur.

**Ligustrum L.**


Trees. Leaves 3.0– 7.5 x 1.8 – 5.0 cm, elliptic, obtuse, acute or acuminate at apex, acute at base. Flowers white, in terminal, thyrsoid panicles. Drupes c 0.9 x 0.5 cm, obovoid.
Fls. & Frts. : August – November.

Illus. : Wight, Ic. t. 1243 & t. 1244. 1848.


**Nyctanthes L.**


Trees or shrubs; branches quadrangular. Leaves 5–10 x 2.5–4.0 cm, ovate, acute to acuminate at apex, cuneate to rounded at base, margins entire or distantly dentate. Flowers white, bracteate, in terminal cymes. Capsules c 1.8 cm long, as broad as long, obcordate, flattened.

Fls. & Frts. : Almost throughout the year.


Distrib. : Rare, wild and abundant in dry deciduous forests at Pench (Nagpur). Also found in Ahmednagar (cultivated), Nasik, Pune (cultivated), Yavatmal.

**Olea L.**


Trees, 3–10 m tall. Leaves 7–10 x 3–5 cm, elliptic–lanceolate, leathery, acute to acuminate at apex, margins entire or distantly serrate. Flowers polygamous, in axillary or leaf–opposed panicles. Drupes 0.6–1.5 cm long, ellipsoid. Seeds ellipsoid, rugose.

Fls. & Frts. : January–April.


Schrebera Roxb.


Trees c 10 m tall. Leaves imparipinnate; leaflets c 4.0 x 1.5 cm, ovate, acute to acuminate at apex, oblique at base. Flowers yellowish–brown, many, in cymes. Capsules obovoid, pendulous, clothed with scabrous specks. Seeds 3–4 in each cell, winged.

*Fls. & Frts.*: April – June.


*Distrib.*: Found in deciduous forests. Ahmednagar, Akola, Chandrapur, Naik, Pune, Thane, Yavatmal.

**CULTIVATED SPECIES**:

**Chionanthus ramiflorus** Roxb. Fl. Ind. 1: 106. 1820.

Trees. Leaves 6–20 cm long, chartaceous; petioles 1.2–2.5 cm long. Flowers small. in intricately dichotomously branched panicles. Drupes 0.8–1.2 cm across.

*Notes*: Native of Pegu and Tenasserim, grown in gardens.


Twining shrubs, glabrous or nearly so. Leaves opposite, trifoliolate; leaflets 4–6 x 3–3.5 cm, ovate or elliptic, acute at both ends, petioles up to 2 cm long. Flowers white, in terminal panicles or cymes, bracteolate; calyx pubescent; corolla tube up to 1.5 cm long. Fruits globose, 0.5 cm across.

*Fls. & Frts.*: More or less throughout the year.

*Notes*: Native of Nilghiris, cultivated in gardens.


Evergreen, rambling shrubs. Leaves 3–foliolate; leaflets 2–7 x 1–2 cm, elliptic–lanceolate, obtuse to acute at apex, cuneate at base,
petioles up to 1–5 cm long. Flowers solitary, axillary, yellow with dark brown centre, 3–5 cm across; bracts foliaceous; corolla tube short, lobes spathulate.

**Fls. & Frts.** : March–June.

**Notes.** : Native of W. China, grown in gardens.

**J. odoratissimum** L. Sp. Pl. 7. 1753; Cooke, Fl. Pres, Bombay 2: 175. 1958 (Repr.).

Climbing shrubs. Leaves alternate, ternate or pinnate. Flowers yellow with 5 obtuse, oblong, corolla lobes.

**Notes.** : Native of Madeira, cultivated in gardens.


var. **officinale.** 'Chameli', 'Jai'.

Scandent shrubs; branches green. Leaves pinnate; leaflets 0.6–1.5 x 1–2 cm, elliptic to ovate, acute to acuminate at apex, acute at base, pubescent. Flowers fragrant, white, in lax, terminal and dichasial cymes, pedicelled; calyx accrescent in fruits; corolla tube up to 1.8 cm long, narrow. Fruits globose, c 0.4 cm across.

**Fls. & Frts.** : March–October.

**Notes.** : Native of China, grown in gardens.


Similar to var. **officinale** but flowers are larger and corolla streaked with purple.

**Fls. & Frts.** : March–September.

**Distrib.** : Grown in gardens.


Scandent shrubs; young parts pubescent. Leaves 4–10 x 2–5.5 cm, ovate to elliptic, acute to obtuse at base, acute at apex. Flowers odorous, pedicellate; calyx with subulate teeth; corolla white, c 1 cm long.
Fls. & Frts.: March–May.

Notes: Grown in gardens.


Trees, up to 9 m high. Leaves c 3.5 x 1.8 cm, with narrow ends, obtuse or subacute or even cuspidate at apex, coriaceous, lower surface with circular, peltate and toothed scales. Flowers small, bisexual, in panicles; petals deeply divided. Drupes c 0.8 cm across, ellipsoid.

Notes: Native of N. W. Himalya, Kashmir and Baluchistan, grown in gardens.


Trees, 7–8 m tall. Leaves 2.5–7.5 cm long, elliptic–oblong or lanceolate, silvery lepidote beneath. Flowers white, fragrant, in short panicles. Drupes subglobose or ovoid.

Notes: Native of Asia Minor & Greece, grown in gardens.


Evergreen shrubs, up to 9 m tall. Leaves 5–10 x 5 cm, elliptic to oblong–lanceolate, acute to acuminate at apex, cuneate at base, margins entire or sharply serrate. Flowers very fragrant; pedicels slender; corolla divided almost to base. Fruits c 1.2 x 1.8 cm.

Notes: Native of China & Japan, grown in gardens.

SALVADORACEAE

(S. G. Pradhan)

1. Flowers unisexual; petals united
   ... AZIMA

1. Flowers bisexual; petals free
   ... SALVADORA

AZIMA Lam.

Azima tetracantha Lam.
Shrubs, 1.0–1.5 m tall, armed with axillary spines. Leaves 2.5–4.2 \times 1.2–1.8 cm, elliptic, sharply mucronate at apex, acute at base, axillary spines usually 4, occasionally 1 or 7. Flowers greenish–yellow or greenish–white; male flowers in axillary clusters; female flower solitary or in pairs; calyx pubescent. Berries c 1.8 cm wide, globose, white.

*Fls. & Frts.* : December – March.

*Distrib.* : Usually found in thorny scrub vegetation. Ahmednagar ‘Konkan’ (Cooke, op. cit.).

**Salvadora L.**


Shrubs or trees, 2.0–3.5 m tall. Leaves 3.5–6.0 \times 0.6–3.0 cm, ovate or elliptic–lanceolate, acute or rounded at base, often mucronate at apex. Flowers greenish–yellow, in axillary and terminal, compound panicles; calyx glabrous with rounded lobes; corolla lobes oblong, deflexed. Drupes c 0.3 mm across, globose, ripening red.

*Fls. & Frts.* : November–February.

*Distrib.* : Often found along sea–shores.

**APOCYNACEAE**

*(S. G. Pradhan)*

1. Fruits drupaceous or berries :
   2. Corolla lobes overlapping to right … *Carissa*
   2. Corolla lobes overlapping to left :
      3. Stigma shortly 2–fid; disc absent; ovules 2 per carpel … *Rauvolfia*
      3. Stigma not as above; disc present; ovules 4 per carpel … *Cerbera*

1. Fruits follicular :
   4. Corolla with fimbriate corona … *Wrightia*
   4. Corolla without such corona :
      5. Filaments spirally coiled … *Parson sia*
6. Seeds arillate with red or orange aril … Tabernaemontana
6. Seeds not arillate :
7. Seeds comose :
8. Corolla 7 cm or more across :
9. Corolla campanulate or infundibuliform … Beaumontia
9. Corolla hypocretiform … Chonemorpha
8. Corolla less than 5 cm across :
10. Anthers spurred at base :
11. Calyx divided to base … Aganosma
11. Calyx not as above :
12. Follicles stout, c 1.8 cm thick … Anodendron
12. Follicles slender, cylindric, c. 0.4 cm thick … Quirvelia
10. Anthers not spurred at base :
13. Stamens inserted near base of corolla tube … Holarrhena
13. Stamens inserted near top of corolla tube :
14. Leaves usually whorled; anthers subacute at base … Alstonia
14. Leaves opposite; anthers appended at base … Vallaris
7. Seeds without coma, coma if present then very scanty & deciduous.
15. Flowers many, in 2–3–chotomously branched cymes … Kamettia
15. Flowers solitary or in pairs :
16. Calyx glabrous; seeds with muriculate ribs … Catharanthus
16. Calyx fulvous-hairy; seeds not as above … Quirvelia

**AGANOSMA G. DON**

Climbing shrubs; stems woody. Leaves 5–8 x 2.5–3.0 cm, elliptic, elliptic–lanceolate, acute to acuminate at apex, acute at base. Flowers creamy, in tomentose cymes. Follicles 15–20 x 0.5–0.6 cm, linear, cylindric. Seeds c 0.9 cm long, elliptic–oblong, flattened; coma c 3 cm long.


Illus. : Wight, Ic. t. 1306. 1848.

Distrib. : Kolhapur, Ratnagiri.

**Alstonia** R. Br. (nom. cons.)

1. Follicles 30–60 cm long ... *A. scholaris*

1. Follicles 8–13 cm long ... *A. venenata*


Trees, 13–20 m tall. Leaves whorled, 10–20 x 3.5–6.0 cm, obovate or oblong–oblanceolate, obtuse or shortly acuminate at apex, tapering at base. Flowers greenish–white, in umbellately branched, capitate cymes. Follicles 0.3 cm across, cylindric. Seeds c 0.6 cm long, compressed, rounded with hairy fringe at both ends.

Fls. & Frts. : December–March.

Illus. : Wight, Ic. t. 422. 1841.


Shrubs c 2 m tall or trees up to 5.5 m tall. Leaves whorled, 5–10 x 1.8–4.0 cm, oblong–oblanceolate, finely acuminate at apex, tapering at base. Flowers white, in terminal, subumbellate cymes. Follicles falcate, beaked. Seeds 0.9–1.2 cm long, linear–oblong, compressed; coma of short hairs.


Illus. : Wight, Ic. t. 436. 1841.
ANODENDRON A. DC.


Climbing shrubs; stems woody. Leaves 8–15 x 3.5–6.0 cm, elliptic or oblong, shortly and abruptly acuminate at apex, rounded at base. Flowers yellow, in branched, axillary and terminal paniculate cymes. Follicles 10–15 cm long, obtuse at apex, terete and woody. Seeds 8–12, elliptic–lanceolate, 2.5–3.0 cm long, beaked; coma 5 cm long, white.

Fls. & Frts. : December–March.


Notes. : Anodendron 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.

BEAUMONTIA Wall.


Climbing shrubs; stems woody. Leaves 15–20 x 5–11 cm, ovate–oblong, coriaceous, abruptly acuminate at apex, acute at base. Flowers white, 4–10 cm long, bracteate, in terminal cymes. Follicles 20–25 x 2.5–3.5 cm, cylindric. Seeds 1.2–2.1 cm long, ovate–lanceolate, compressed; coma 5.5 cm long, yellowish–white.

Fls. & Frts. : November–December.

Illus. : Wight, op. cit.

Distrib. : Found in semi–evergreen forests. Pune, Ratnagiri, (Cooke, op. cit.).
Carissa L. (nom. cons.)

1. Spines straight:
   2. Corolla tube up to 1.0 cm long, densely hairy at throat … C. opaca
   2. Corolla tube more than 1.0 cm long, glabrous at throat … C. congesta

1. Spines decurved … C. inermis


1. Berries ellipsoid, 4 or more–seeded … var. congesta
1. Berries almost spherical, usually 4–seeded … var. albida

var. congesta. ‘Karvand’, ‘Karvanda’.

Shrubs; stems with stout, horizontal spines, 2.5–3.0 cm long. Leaves 3–7 x 2.5–5.0 cm, elliptic or obovate, coriaceous, obtuse and mucronate at apex, subacute at base. Flowers white, in terminal corymbose cymes. Fruits 1.2–2.5 cm long, 4–seeded, dark purplish when ripe.

Fls. & Frts. : June–April.


Distrib. : Common throughout the state in dry deciduous forests.


Erect shrubs or small trees. Fruits first green at length, later pale greenish–yellow.


Distrib. : Rare. Pune.


Trees or shrubs, 3–4 m tall. Leaves 5–10 x 2.5–3.0 cm, elliptic to elliptic–lanceolate, acute to acuminate at apex, acute at base. Flowers white, bracteate, in terminal, corymbose cymes. Berries c 2.3 cm long, ellipsoid, purple when ripe.
**Catharanthus G. Don**


Herbs, 15–45 cm tall; branches quadrangular. Leaves 3.0–7.5 x 1.2–2.5 cm, lanceolate, tapering at base, acute at apex, with axillary, subulate gland. Flowers white, axillary. Follicles 3–5 cm long, slender, membranous. Seeds 0.25–0.3 cm long, cylindric with muriculate ribs.

**Fls. & Frts.** : July–September.

**Illus.** : Mahesh. Illus. Fl. Delhi f. 120. 1966.

**Distrib.** : Common in dry situations. Ahmednagar, Akola, Aurangabad, Chandrapur, Dhule, Nasik, Osmanabad, Ratnagiri, (Cooke, op. cit.), Satara, Solapur.

**Cerbera L.**

Shrubs or trees, 3–4 m tall. Leaves closely alternate, arranged at ends of branches, 10–20 x 3.5–8.0 cm, oblanceolate or lanceolate, abruptly acuminate at apex, tapering at base, petiolate. Flowers white with yellow throat, in terminal, peduncled, paniculate cymes. Drupes 5–10 cm long, subglobose. Seed solitary.


Distrib. : Uncommon, usually found along swamps, Ratnagiri.

CHONEMORPHA G. Don


Climbing shrubs. Leaves 15–30 x 12–25 cm, suborbicular or broadly elliptic, abruptly acuminate at apex, cordate at base, petiolate. Flowers white, 7 cm across. Follicles c 30 cm long, 3–4–gonous. Seeds c 1.8 cm long; coma c 5 cm long, silvery white.

Fls. & Frts. : April–September.

Illus. : Wight Ic. t. 432. 1841 (Chonemorpha macrophylla).


HOLARRHENNA R. Br.


Trees or large shrubs, 3–4 m tall. Leaves 10–20 x 5–11 cm, ovate to elliptic, obtuse at base, obtusely acuminate at apex. Flowers white, in terminal, corymbose cymes, bracteate. Follicles 15–30 x 0.6–0.8 cm, cylindric, mottled with white spots. Seeds c 0.8 cm long, linear–oblong; coma of brown, deciduous hairs.


Distrib. : Common throughout the state in dry deciduous and semi-evergreen forests.

Notes. : Kaul (1982) reports the usage of leaves of this plant as bidi rappers in some parts of Maharashtra and Goa which is called 'Kudabidi'.

KAMETTIA Kostel.


Climbing shrubs. Leaves 7–10 x 2.5–5.0 cm, elliptic–oblong, acuminate at apex, subacute or rounded at base. Follicles 5–10 cm long, cylindric, slightly recurved. Seeds c 3 cm long with membranous wings at ends and an elliptic, compressed nucleus.


Illus. : Wight, op. cit.

Distrib. : Rare in semi–evergreen forests. Ratnagiri (Cooke, op. cit.).

PARSONSIA R. Br. (nom. cons.)


Twining shrubs. Leaves 7.5–15 x 3.5–7.5 cm, elliptic to elliptic–oblong, acuminate at apex, rounded or acute at base. Flowers greenish in panicately corymbose cymes. Fruits 12–18 x 1.8 cm, cylindric, pointed. Seeds 1.2–1.5 cm long, straight, linear; coma upto 3.5 cm long.

Fls. & Frts. : April–May.

Illus. : Wight, Ic. t. 1306. 1848.

Rauvolfia serpentina (L.) Bth. ex Kurz
A - Twig; B - L. s. of flower; C - Fruits.
QUIRIVELIA Poir.


Climbing shrubs. Leaves 4.5–7.5 x 1.8–3.5 cm, elliptic–oblong, acute to acuminate at apex, rounded at base. Flowers greenish–white, in brownish–pubescent, paniculately branched cymes; corolla tube inflated in middle. Follicles 10–15 cm long, cylindric. Seeds 1.2–1.8 cm long, linear; coma white, scanty.

**Fls. & Frts.** : November–December.

**Illus.** : Wight, Ic. t. 430. 1840–1843; Mahesh. Illus. Fl. Delhi, f. 122. 1966; Bhogaonkar & Devarkar, op. cit.

**Distrib.** : Found in deciduous and semi–evergreen forests. Amravati (Bhogaonkar & Devarkar, op. cit.), Chandrapur, Nagpur, Ratnagiri, Solapur.

RAUVOFIA L.

1. Herbs c 50 cm high; calyx bright red; corolla tube inflated near middle; fruits purplish–black when ripe
   ... *R. serpentina*

1. Shrubs c 3 m high; calyx not as above; corolla tube inflated near mouth; fruits reddish when ripe
   ... *R. verticillata*


Shrubs, 30–40 cm tall. Leaves whorled, 3–4 at each node, 8–15 x 2.5–5.5 cm, lanceolate, acute to acuminate at apex, tapering at base. Flowers white, frequently tinged with violet, in 5–10 cm long peduncled, corymbose–cymes; pedicels bright red. Drupes of 2 pyrenes, connate at base.

**Fls. & Frts.** : March–May.


Shrubs c 3.5 m tall. Leaves 3–4–whorled, 7–20 x 2.5–6.0 cm, obovate or oblanceolate, acuminate at apex, tapering at base. Flowers white or pinkish, in lax corymbose–cymes. Drupes ellipsoid, solitary or in pairs, 0.8–1.2 cm long.

**Fls. & Frts.** : March–April.

**Illus.** : Wight, Ic. t. 1292. 1848 (*Ophioxylon zeylanicum*); Sulochana, op. cit.


**Tabernaemontana L.**


Shrubs, 2.5–4.0 m tall. Leaves 7–15 x 3.5–6.0 cm, oblong to oblong–lanceolate, acute at base, shortly acuminate at apex; petioles 1.2–1.8 cm long, base swollen. Flowers white, in many–flowered, peduncled cymes. Follicles 2.5–3.0 x 0.9–1.2 cm, curved. Seeds c 1.2 cm long.

**Fls. & Frts.** : March–April.

Distrib. : Apparently endemic to W. Peninsula as stated by Cooke, in semi–evergreen tracts. Pune, Raigad, Ratnagiri, Satara.

**Vallaris Burm. f.**

Shrubs, climbing; stems woody. Leaves 5–11 x 2.5–3.5 cm, elliptic–lanceolate to oblong–lanceolate, acuminate at apex, acute at base. Flowers white, in lax cymes. Fruits 5–15 x 3.5–5 cm, pointed. Seeds c 1.2 long, ovoid, beaked; coma silvery white.

Fls. & Frts.: December–April.

Illus.: Wight, Ic. t. 438. 1840–1843.

Distrib.: Usually found as hedge plant. Ahmednagar (cultivated), Raigad (planted), Solapur, Thane.

Notes.: Flowers fragrant.

WRIGHTIA R. Br.

1. Fruits white–tubercled, grooved, c 1.2 cm across
2. Fruits not as above, 0.6–0.8 cm across


Trees, 8–9 m tall; young parts tomentose. Leaves 7.5–15.0 x 3.5–7.0 cm, elliptic–oblong, acuminate at apex, acute at base. Flowers white, c 2.5 cm or more across, in terminal, corymbose cymes. Fruits 15–30 cm long, cylindric. Seeds 1.2–1.6 cm long with tapering apex; coma 2.5–3.5 cm long, white.

Fls. & Frts.: April–June.

Illus.: Wight, Ic. t. 443. 1841–43 (Wrightia tomentosa).


1. Corona segments glabrous near the base within, firmbriae usually simple
2. Corona segments puberulous near the base within, firmbriae compound
ssp. tinctoria. *Kala kuda*.

Trees, 3–4 m tall. Leaves 7.5–15.0 x 2.5–6.0 cm, acuminate at apex, rounded at base, pubescent along midrib below, occasionally glabrous. Flowers white, fragrant, in terminal cymes. Follicles paired, drooping, 25–45 x 0.6–1.2 cm, cylindric, apices connate. Seeds 1.2–1.8 cm long, pointed; coma 3–5 cm long.

*Fls. & Frts.*: March–May.


*Distrib.*: Common throughout the state in dry and moist deciduous forests.

*Notes.*: Flowers fragrant.


*Fls. & Frts.*: March–May.

*Illus.*: Wight, Ic. t. 1319. 1848 (*W. rothii*).

*Distrib.*: Akola (Ngan, op. cit.), Chandrapur (Ngan, op. cit.), Yavatmal.

**CULTIVATED SPECIES:**


Shrubs with thick stems and short, stout branches. Flowers bright rosy.

*Fls. & Frts.*: March–April.

*Notes.*: Native of dry habitat in Aden, rarely grown in gardens.

*Aganosma caryophyllata* G. Don, Gen. Syst. 4: 77. 1837; C.B.Cl. in Hook. f. Fl. Brit. India 3: 664. 1882; Dalz. & Gibbs Suppl. 51. 1861;

Rambling, evergreen shrubs; stems woody. Leaves opposite, 10–13 cm long, ovate, subcordate at base. Flowers fragrant, 4–5 cm across, in terminal tomentose cymes; calyx divided to base; corolla hypocrateriform, lobes lanceolate.

_Fls. & Frts._: June–September.

_Notes._: Native of S. Bengal, occasionally grown in gardens.

_A. aubletii_ Pohl, P. Bras. 1: 75. 1827; Dalz. Gibs. Suppl. 53. 1861.

_var. cathartica._

Scandent shrubs. Leaves in whorls of 3–4 or opposite, 10–15 x 4–6 cm, obovate–lanceolate, acuminate at apex, tapering at base, glabrous except on veins beneath, margins wavy. Flowers golden yellow, 7–8 cm long.

_Fls. & Frts._: Almost throughout the year.

_Notes._: Native of Guiana, grown in gardens.


Dwarf, compact plants with thin wiry stems, ovate–lanceolate leaves and lemon yellow flowers, 10–11 cm long.

_Notes._: Grown in gardens. Pune.


Shrubs. Leaves thick, leathery. Flowers yellow, 10–12 cm across.

_Notes_: Grown in gardens.


Shrubs, pubescent; twigs purple. Flowers bright yellow with white spot at base of lobes, 10–12 cm across.

_Notes._: Grown in gardens. Pune.

Erect, evergreen shrubs up to 80 cm tall or stems weak, straggling. Leaves in whorls of 5 or opposite, 7–12 cm long, elliptic or oblong, acuminate at apex, pubescent on veins beneath. Flowers golden yellow, 5–8 cm long, streaked inside with reddish–brown.

Notes. : Native of S. America, grown in gardens.


Evergreen trees up to 10 m high. Leaves whorled, 20–30 x 3.5 cm, oblanceolate, acute at apex, pubescent on nerves beneath. Flowers white, in subterminal, corymbose cymes; calyx pubescent without; corolla salver–shaped, pubescent without. Follicles up to 50 cm long, winged on one suture. Seeds brownish–tomentose.

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

Notes. : Native of Malaya, grown in gardens.


Shrubs, up to 2 m tall. Leaves 10–15 x 1.2–3.5 cm, narrowed into a short petiole, coriaceous, pubescent beneath, 3–4 in whorl, narrowly lanceolate and acuminate at apex. Flowers in slender, subumbellate cymes. Follicles slender, 10–15 cm long, sessile and beaked.

Notes. : Native of Tropical Himalaya, grown in gardens.


Lianas. Leaves opposite, 12–25 x 8–17 cm, obovate, oblong or elliptic, abruptly acuminate at apex, shortly petiolate, glabrous above, pubescent beneath. Flowers c 12 cm long, white, fragrant, in terminal cymes.

**Fls. & Frts.** : December–February.


Bushy shrubs, up to 5 m tall; stems and branches armed with divaricate, stout spines. Leaves 2.5–6.0 cm long, ovate, acute and mucronate at apex, rounded at base. Flowers c 1 cm across, white; sepals minutely ciliate; corolla lobes much shorter than the tube.

**Notes.** Native of S. Africa, grown in gardens.


Spreading shrubs upto 7 m tall; spines divaricate, stout upto 3.5 cm long. Leaves up to 7 cm long, ovate, acute at apex, rounded at base. Flowers white, fragrant c 5 cm across; corolla lobes twice or more longer than tube. Berries ovoid or ellipsoid, 2.5–5.0 cm long, scarlet–red.

**Notes.** Native of S. Africa, grown in gardens.


Evergreen shrubs or trees, 3–5 m tall. Leaves 8–11 x 0.5–0.8 cm, linear, lanceolate with narrow ends. Flowers bright yellow, 3–4 cm across, in subterminal cymes; calyx 1–1.5 cm long; corolla 6–7 cm long. Drupes 4–5 cm across with obscure angles.

**Fls. & Frts.** June–October.

**Notes.** Native of S. America and W. Indies, planted in gardens.


Perennial herbs, upto 90 cm high. Leaves 3.6 x 1.5–2.5 cm, elliptic–oblong, acute at base, obtuse and apiculate at apex. Flowers white or rosy, solitary or in pairs, shortly pedicelled; calyx hairy; corolla hairy near throat, lobes ovate–cuneate. Follicles upto 3 cm long, cylindric. Seeds black.

**Fls. & Frts.** Throughout the year.

**Notes.** Native of W. Indies, grown in gardens.

**Chonemorpha griffithii** C. B. Cl. in *Hook. f. in Fl. Brit. India* 3: 662. 1882.
Straggling shrubs with hispid branches. Leaves opposite. Flowers large, white in pseudolateral or terminal cymes.

Notes. : Native of Khasia hills and Sikkim Himalaya.


Shrubs upto 4 m tall. Leaves whorled, 10–20 x 1.5–2.0 cm, linear–lanceolate to lanceolate with tapering ends. Flowers white, pink or red, fragrant, 3.5–4 cm across, in terminal cymes; peduncles stout; calyx 5–partite; corolla with fimbriate scales near mouth upto 2.5 cm long. Follicles 10–15 cm long, lanceolate. Seeds villous, comose.

Notes. : Native of W. Himalayas and Nepal, grown in gardens for showy flowers, sometimes found as an escape.


Small trees, 3–5 m tall, with milky latex. Leaves alternate, crowned at ends of branches, 20–30 x 4–8 cm, oblanceolate, glabrous above, pubescent beneath. Flowers cream–coloured, fragrant, in terminal, peduncled corymbs; calyx with suborbicular sepals; corolla lobes oblanceolate, upto 8 cm long.

*Fls. & Frts.* : May–September.

Notes. : Native of Tropical America, grown in gardens.


Trees, 3–5 m tall. Leaves alternate, 20–30 x 5–13 cm, oblong–lanceolate or oblanceolate, narrowed at base, acuminate at apex. Flowers white or red, in terminally peduncled corymbs; calyx with suborbicular lobes; corolla c 4 cm long.

*Fls. & Frts.* : March–September.

Notes. : Native of Tropical America, planted near temples.

Shrubs, upto 1.5 m tall. Leaves whorled, 3–4, 5–8 x 3–4 cm, elliptic–ovate, densely pubescent beneath, subacute to acute at both apex and base. Flowers cream–coloured, c 0.3 cm across; calyx lobes subacute; corolla lobes ovate. Drupes connate to top, 0.6–0.7 cm across.

*Fls. & Frts.*: More or less throughout the year.

*Distr.*: Planted or as an escape.


Stout, stragging shrubs upto 6 m tall. Leaves opposite, elliptic, shining above. Flowers rose–coloured, c 5 cm across, in large terminal cymes; corolla tube with a ring of appendages, thick.

*Fls.*: Mostly throughout the year.

*Notes.*: Native of Tropical Africa, grown in gardens.


Scandent shrubs upto 5 m tall. Leaves 5–13 x 2–5 cm, elliptic, oblong or obovate, cuneate at base, acuminate at apex, dark green above. Flowers cream–coloured, in terminal divaricate cymes with bracts and bracteoles; calyx with 5 sepals, glandular within; corolla lobes with caudate apices.

*Fls. & Frts.*: March–April.

*Notes.*: Native of Khasia hills, grown in gardens.


Shrubs upto 8 m tall. Leaves 5–11 x 2.0–2.5 cm, obovate–lanceolate or elliptic–oblong, acuminate at base, shining above. Flowers white, in terminal cymes; corolla tubes upto 2 cm long.

*Fls. & Frts.*: Throughout the year.
Notes. : Native of West Indies, grown in gardens.


Similar to *T. citrifolia* but with dull green leaves, corolla doubled and calyx lobed to the middle.

**Fls. & Frts.** : Almost throughout the year.

**Notes.** : Grown in the gardens.

**ASCLEPIADACEAE**

*(A. P. Jagtap & Sujit Kumar Das Das)*

1. Pollen masses two in each anther–cell (20 in all) :

2. Corolla lobes valvate; style apex dome–shaped ... **GENIANTHUS**

2. Corolla lobes twisted towards left; style apex beaked ... **TOXOCARPUS**

1. Pollen masses one in each anther–cell (10 in all) :

3. Pollinia erect or horizontal :

4. Pollen masses pellucid on one margin or at apex; anthers without membranous appendages :

5. Corona double; corolline processes in the sinuses of the lobes, staminal annular ... **LEPTADENIA**

5. Corona single, staminal :

6. Leafless herbs with fleshy, four–angled stems and branches ... **CARALLUMA**

6. Leafy herbs with terete stems and branches (except *Ceropegia juncea*) :

7. Corolla rotate ... **FREKIA**

7. Corolla tubular :

8. Corolla–tube campanulate–rotate, with narrow lobes ... **BRACHYSTELMA**

8. Corolla–tube long, lobes usually cohering at tip ... **CEROPEGIA**

4. Pollen masses without pellucid margins; anthers with membranous appendages :

9. Corolla rotate :
10. Corolla–lobes valvate :
   11. Root climbers, often epiphytic and pendulous; leaves thick and fleshy ... *Hoya*
   11. Twining undershrubs; leaves subcoriaceous ... *Heterostemma*

10. Corolla–lobes overlapping :
   12. Staminal column as long as or longer than corolla tube; corona double ... *Cosmostigma*
   12. Staminal column shorter than corolla–tube; corona single :
      13. Calyx eglandular; pollinia horizontal, minute ... *Tylophora*
      13. Calyx glandular; pollinia erect, large ... *Wattakaka*

9. Corolla urceolate, campanulate or salver shaped :
   14. Corona corolline :
      15. Ridges of corona with fleshy processes protruding beyond mouth of corolla ... *Gymnema*
      15. Ridges of corona without fleshy processes ... *Bidaria*
   14. Corona staminal :
      16. Corolla base cylindrical, glabrous within; stems and leaves tomentose ... *Marsdenia*
      16. Corolla base inflated; stems and leaves glabrous or nearly so ... *Telosma*

3. Pollinia pendulous :
   17. Stems erect; corolla valvate :
      18. Leaves oblong, obovate or panduriform, glaucous, cordate at base ... *Calotropis*
      18. Leaves linear or lanceolate, not glaucous, base not cordate ... *Asclepias*
   17. Stems twining; corolla–lobes more or less over–lapping in bud :
      19. Corona single :
         20. Flowers large; corolla divided half way down :
            21. Corolla thin, with a pubescent ring at its base; corona dilated at base ... *Oxystelma*
            21. Corolla thick, glabrous; corona annular, fleshy ... *Holostemma*
         20. Flowers small; corolla–lobes divided nearly up to base :
22. Coronal processes laterally compressed with an upcurved spur at base
   ... Pentatropis
22. Coronal processes membranous plicate ring with lobed or toothed margin
   ... Cynanchum

19. Corona double:
23. Leafless, fleshy, straggling or pendulous branches
   ... Sarcostemma
23. Leafy twiners:
24. Leaves cordate; follicles lanceolate, echinate
   ... Pergularia
24. Leaves not cordate; follicles ovate–lanceolate, smooth
   ... Seshagiria

Asclepias L.


Undershubs, c 1 m high, erect; stems branched from base; branches purplish–red. Leaves petiolate, 8–12 x 1.0–2.5 cm, lanceolate, apex and base acute. Flowers 8–10, in extra–axillary, umbellate cymes; peduncles and pedicels puberulous; corolla reflexed–rotate; corona of 5 oblong lobes, each lobe forming a sort of hood over an incurved, subulate process. Follicles 10 cm long, in pairs, lanceolate, beaked.

Fls.: Throughout the year. Frts.: February–May.


Distrib.: Native of the West Indies, naturalized. It is common as a weed in moist river beds.

Bidaria (Endl.) Decne.

1. Calyx–lobes elliptic or orbicular, shorter than corolla–tube:
   2. Leaves broadly ovate, 7–9 cm broad, apex acute, densely puberulous; corolla puberulous on both sides
      ... B. khandalense
   2. Leaves oblong or elliptic–oblong, 3–6 cm broad, apex acuminate or cuspitate, glabrous; corolla hairy within
      ... B. cuspidata

1. Calyx–lobes linear–oblong or lanceolate, equalling or longer than corolla–tube:
3. Leaves broadly ovate or oblong, pubescent, at age pubescent along veins; calyx 3–5 mm long; corolla c 7 mm long ... *B. tingens*

3. Leaves ovate–oblong or oblong–lanceolate, glabrous; calyx 1 mm long; corolla c 4 mm long ... *B. montana*


Twining undershrubs. Leaves 7–12 x 3–6 cm, oblong, apex acuminate, base rounded. Cymes umbellate; peduncles 1–2 cm long, arising from in between petioles; calyx lobes glandular within, lobes c 2.5 x 1.5 cm; corona of 5 double villous ridges, adnate to lower half of corolla tube; gynostegium 3–5 mm long. Follicles 5–7 cm long, cylindrical, tapering to a sharp point.

*Fls. & Frts.* : September–October.


*Distrib.* : Rare. Bhandara.


Climbing shrubs; stems woody, cylindrical, young branches densely pubescent, slightly swollen at nodes. Leaves petiolate, 8–12 x 7–9 cm, broadly ovate, densely pubescent on upper surface, glabrous at length, tomentose on lower, with numerous glands at base of midvein on upperside, apex acute, base rounded. Flowers in lateral, umbellate cymes; peduncles, pedicels and calyx pubescent without; corolla yellow, c 5 mm across, campanulate, pubescent, tube c 2 cm long, lobes c 2 x 1 mm, ovate–deltoid, obtuse, ciliate on margins; corona of 5 hairy processes, arising from and adnate to corolla–tube, the ridge of corona not protruding beyond the mouth of corolla–tube; gynostegium c 2 mm long. Follicles 8–10 x 0.5 cm, lanceolate, densely pubescent.

**Bidaria khandalense** (Sant.) Jagatap & N. P. Singh

A - Fruiting branch; B - Inflorescence; C - Flower;
D - Corolla spread open; E - L. s. of flower; F - Seed

Distrib. : In ghat areas of Pune, Raigad. It is endemic to Maharashtra.


Twining shrubs; stems slender, smooth. Leaves petiolate, 7.5–11.0 x 3–5 cm, oblong or ovate–oblong, apex obtuse, acute or acuminate. Flowers in corymbose cymes, at length racemose; peduncles and pedicels pubescent; corolla campanulate, 2 cm long, corolla–tube c 1 cm long, lobes c 1 cm long, oblong, subacute; corona of 5 processes, adnate to corolla–tube alternating with lobes, apices of processes not protruding beyond mouth of corolla–tube. Follicles c 7 cm long.

Distrib. : Western ghats of ‘Konkan’ (Cooke, op. cit.), Pune, Satara.


Twining shrubs or undershrubs; stems branched, pubescent when young, glabrous at age; latex milky–white. Leaves 3.3–11.7 x 1–6 cm, oblong or ovate, caudate–acuminate at apex with obtuse or acute tip, cordate with incision c 2 mm deep at base, ciliolate at margins. Flowers extra–axillary, in corymbose cymes, many flowered; peduncles and pedicels pubescent; calyx 5–lobed, divided up to base, linear–oblong, margins ciliate, pubescent without, glandular within; corolla campanulate, tube 3.5 mm long, puberulous without, lobes 5, obliquely–oval, puberulous without; corona corolline, uniseriate, 5–ridged, adnate to corolla–tube, alternating with corolla–lobes, ridges of corona not protruding out of mouth of corolla–tube. Follicles single or paired, 10–11.5 x 1.5 cm, lanceolate, acute at apex and base, glabrous. Seeds many, 13.5–14.5 x 9–9.5 mm, oval, dark–brown with light–brown margin.

Fls. & Frts. : July–September.

Distrib. : Rare, under the shade of trees in forests. Nanded (Naik, op. cit.).
Brachystelma R. Br.

1. Leaves filiform or linear to lanceolate, acute:
   2. Plants up to 15 cm high; leaves up to 1 cm broad; flowers 1–2
      ... B. edulis
   2. Plants up to 30 cm high; leaves up to 2.5 cm broad; flowers usually 4
      ... B. malwanense

1. Leaves ovate–oblong to ovate–lanceolate, acuminate
   ... B. naorojii


Herbs c 12 cm high, erect, perennial; roots tuberous; stems terete with retrorse hairs. Leaves sessile or subsessile, 3–8 x 0.4–1 cm, linear or linear–lanceolate to narrowly elliptic. Flowers 1–2 on lateral side of scaly or foliaceous leaves; calyx c 1.5 x 0.5 mm, puberulous; corolla 0.6–1.2 cm long, lobes divided almost to base, dark purple and variegated on inner side, tips connate; corona biseriate, outer cupular of 5–bifid lobes, hairy on margins, inner 5 dark, procumbent, bent on stigma, trifid at apex. Follicles 5–11 cm long, paired, horn shaped, tapering at apex. Seeds elongated, coma silky.

_Fls. & Frts._: May–June.

_Illus._: Yadav et al. op. cit. 481, ff. 1–12.

_Distrib._: Borders of slopes on hillocks and in grasslands of Kolhapur.


Herbs, erect, perennial; roots tuberous; stems terete, 0.2–0.4 cm in diam., usually unbranched, hispid. Leaves sessile or subsessile, 4–9 x 0.5–2.5 cm, lanceolate or narrowly elliptic, acute. Flowering nodes with two opposite, subulate, scaly leaves, flowers 2 on either side of each scaly leaf, nodes 3–5, but usually 4–flowered; corolla–lobes broad at base, tapering at apex, connate or free, hairy on inner side, 0.6–1 cm long, corolla hairs purple, corolla margins recurved; corona biseriate, staminal, outer 2.2 mm in diam., cupular, 5–lobes, hairy, inner of 5 dark purple, procumbent, processes bent on stigma, glabrous. Follicles 10–15 cm long, paired, tapering at apex. Seeds comose.

_Fls._: March.  _Frts._: April.

_Illus._: Yadav et N.P. Singh, op. cit. on page 60.
Distrib. : Sindhudurg.


Slender, erect perennial herbs; roots tuberous, round or ovate, flattened in mature plants, fleshy, 7–9 x 4–6 cm; stems glaucous green, usually unbranched with deltoid leaf scales; latex watery, yellowish–green, bitter. Leaves sessile, 1.5–9 x 0.5–4 cm, lanceolate, ovate–oblanceolate, acuminate at apex, margins ciliate, hairs swollen at base, glabrous above and pale beneath. Flowers bracteate, 2, on either side of the scale leaf, green turning to brick red, reddish–violet and finally to reddish–purple, darker and puberulous within, hairs white; pedicels 5–7 mm long, sparsely hairy; calyx 5–partite, lobes 5, 1.5–2 mm long; corolla deeply 5–fid, lobes 0.9–1 cm long, thickly hairy on inner side; corona cupular, 5–lobed, lobes with long white hairs, margin dark purple, lower portion of the corona white, 2.3–3 x 3 mm, sparsely hairy, obtusely 5–angled, coronal lobes produced into 5 inner lobes incumbent and adpressed on the stamen. Follicles single or in pairs, 6 cm long, tapering at the apex. Seeds comose, 0.8–1 cm long, dark brown with light brown margin, coma silky white.

Fls. & Frts. : May–June.

Illus. : Tetali et al. op. cit. p. 76.

Distrib. : Rare, on partially degraded hill slopes and open hill tops among grasses. Satara.

**Calotropis R. Br.**

1. Corona lobes hairy, shorter than staminal column, curved on back above spur, apex rounded with 2 obtuse auricles just below it
2. Corona lobes glabrous, equal to or exceeding staminal column, straight or nearly so on acute, upcurved spur; apex bifid and without auricles

... C. gigantea

... C. procera


Erect shrubs, c 3 m high; stems woody, terete, branched. Leaves subsessile, 5–17 x 3–9 cm, broadly obovate or elliptic–oblanceolate, fugaciously pubescent on both sides, base cordate. Flowers in lateral,
umbellate or subcorymbose cymes; peduncle cottony pubescent; corolla 3–4 cm across, lobes spreading, divided two–third of way down; corona 5, laterally compressed, completely adnate to staminal column. Follicles 7.0–10.0 cm long in pairs, boat shaped with hooked tip, cottony pubescent. Seeds broadly ovoid, coma silky.


*Distrib.* : Common throughout.


Erect shrubs, c 2 m high; stems woody, cylindrical, branched. Leaves sessile or shortly petiolate, 10–14 x 5–11 cm, broadly ovate, obovate or obovate–oblong, fugaciously cottony on both sides, base cordate. Flowers in lateral, umbellate cymes; corolla 2.5–3.0 cm across, hemispherical in bud, lobes divided 2/3 of way down; corona 5, laterally compressed, lobes completely adnate to column, recurved at base. Follicles 7–9 cm long, in pairs, recurved. Seeds ovoid, coma silky–white.


*Distrib.* : Very common and abundant on wastelands. Common throughout.

**CARALLUMA R. Br.**

1. Flowers arise in axils of rudimentary and evanescent leaves all along distal portion of stem; stems more or less tapered distally:

2. Outer corona distinct, 10 in number, their filamentous apices widely spreading … *C. edulis*

2. Outer corona fused to form plate, 5 in number, divided towards apex forming filaments … *C. adscendens*

1. Flowers in terminal branched umbellate cymes; stems are of approximately uniform thickness throughout … *C. crenulata*

1. Corolla–lobes glabrous ... var. adscendens
1. Corolla–lobes hairy :
   2. Stems small, 12–20 cm high, and of about uniform thickness throughout and less branched ... var. fimbriata
   2. Stems up to 50 cm high, strongly attenuate and much branched distally ... var. attenuata

var. adscendens.

Herbs, succulent, perennials; stems fleshy, branched; latex watery. Leaves present on only young branches, reduced to scales, sessile, 1–2 mm long, subulate, tip pointed, glabrous. Flowers terminal or subterminal, solitary or paired; pedicels terete, 3–5 mm long, brown, glabrous; calyx five–lobed, divided up to base, glabrous; corolla campanulate, 8 mm long, tube c 1.5 mm long, lobes 5, lanceolate–oblong, 6–7 x 2–2.5 mm, apex apiculate, glabrous; corona staminal, biseriate, outer annular, with two filiform filaments, c 1.5 mm long, alternating with anther–lobes, c 1 x 0.4 mm, oblong, apex truncate. Follicles usually solitary, 5.5 x 12.3 cm x 3.5–4.5 mm, cylindrical, beaked with curved tip, glabrous. Seeds many, 9.5 x 4.5 mm, oblong to obovate, dark–brown with light–brown margin, coma silky white.


Distrib. : Maharashtra (Jagtap et N.P. Singh, op. cit.).


Herbs, dwarf, succulent, perennials. Leaves reduced to scales. Flowers terminal; corolla c 1.0 cm across, rotate, lobes divided 3/4 of way down, fringed purple hairy; corona biseriate. Follicles 9 cm long, paired, oblong–linear. Seeds oblong–obovoid, coma dull–white or brownish.
Herbs, dwarf, succulent perennials, sap watery. Leaves sessile, 1–2 mm long, reduced to scale-like structure, deltoid–ovate, ciliate. Flowers solitary, axillary, at upper nodes, hairy; calyx glandular within; corolla 1.3 cm across, rotate, lobes valvate, divided 3/4 of the way down, copiously hairy, hairs 3 mm long, spindle–shaped, purple; corona biseriate, outer divided into 5 deeply cleft lobes, each with two long, filamentous, divergent teeth, inner 5 lobed, adnate at base of outer corona, truncate, incumbent at tips over anthers. Follicles 10 cm long, paired, lanceolate, tapering to sharp point. Seeds brown, oblong, coma silky.


Herbs, succulent; stems erect, 4–angled. Leaves wedge–shaped or elliptical, perishable. Flowers 2 together, from axils of leaves; sepals acute with pellucid margins; corolla glabrous on both sides, with purple streaks at the base, tube swollen, hemispherical, lobes subulate, attenuate, reflexed; outer corona–lobes with 2 scythe–shaped subulate segments, hollowed on inner face, purplish, nectar bearing, inner corona–lobes longer than the outer corona–lobes, strap–shaped, incumbent on anthers.


Distrib. : Maharashtra (Jagtap et N.P. Singh, op. cit.).


Herbs; stems very stout, fleshy, 4–angled with rounded angles, glabrous; latex watery. Leaves reduced to scales. Flowers terminal, in branched umbellate cymes; peduncles, pedicels and bracts glabrous; calyx 5–lobed, divided up to base, lobes 3.5 x 1.5 mm, oblong–elliptic, glandular within, glabrous; corolla rotate, c 1.5 cm across, tube c 1.5 mm long, lobes 5 x 4.5 mm, ovate, with long scattered hairs all over inner surface, glabrous without; corona biseriate, outer 5–lobed, with 2 horn like appendages widely separated from each other, attached on back of anther arising from its base, inner corona 5–lobed, very small, usually pointed and often more or less trifid. Follicles single, 7 x 0.6–0.7 cm, cylindric, glabrous. Seeds many, ovate–oblong, brown with light–brown margin, coma silky–white, 2–3 cm long.

Fls. & Frts. : May–June.


Distrib. : Maharashtra (Jagtap et N.P. Singh, op. cit.).

CEROPEGIA Linn.

1. Erect herbs :

2. Leaves linear or linear–lanceolate, less than 15 mm broad :

3. Cymes usually 2–4–flowered ... C. noorjahaniae

3. Cymes usually 1–flowered :

4. Corolla lobes distinctly shorter than tube :

5. Herbs, 30–60 cm tall; corolla more than 4 cm long, lobes elongated, beaked ... C. mahabalei

5. Herbs, 5–15 cm tall; corolla less than 4 cm long, lobes short, not beaked ... C. pusilla
4. Corolla lobes almost equal to tube:
   6. Herbs 5–10 cm tall; stems and leaves glabrous; corolla less than 3 cm long ... C. jainii
   6. Herbs 10–50 cm tall; stem and leaves hairy; corolla more than 3 cm long ... C. attenuata

2. Leaves ovate or ovate–lanceolate, more than 15 mm broad:
   7. Corolla tube subcylindric, slightly enlarged at mouth:
      8. Corolla lobes linear–oblong ... C. rollae
      8. Corolla lobes ovate, obovate or elliptic:
         9. Leaves ovate–lanceolate, usually rounded at base; corolla tube slightly inflated at base ... C. lawii
         9. Leaves ovate, cordate at base; corolla–tube more inflated at base ... C. sahyadrica

7. Corolla tube narrow, cylindric, not enlarging at mouth:
   10. Corolla less than 2.4 cm long, lobes 2–3 mm long, tube more inflated ... C. maccannii
   10. Corolla more than 2.5 cm long, lobes 6–7 mm long, tube slightly inflated ... C. panchganiensis

11. Calyx segments longer than the corolla ... C. fantastica
11. Calyx segments shorter than the corolla:

12. Leaves fleshy:
   13. Leaves reduced or absent; corolla more than 3 cm long ... C. juncea
   13. Leaves over 2 cm long; corolla less than 3 cm long ... C. bulbosa

12. Leaves membranaceous:

14. Corolla lobes equal to or longer than tube:
   15. Corolla–tube flannel–shaped, completely hairy within ... C. vincaefolia
   15. Corolla–tube subcylindric, hairy within at mouth only:
      16. Corolla less than 1.5 cm long, tube glabrous within, lobes broadly ovate–cordate ... C. huberi
      16. Corolla more than 1.5 cm long, tube hairy within, lobes linear, oblong or lanceolate ... C. odorata

14. Corolla–lobes shorter than tube:
   17. Leaves and peduncles glabrous ... C. candelabrum
   17. Leaves or peduncles or both at least sparsely hairy:
18. Corolla–tube funnel–shaped above:
   19. Stem hirsute; corolla tube hairy inside; inner corona hooked at tips … \textit{C. hirsuta}
   19. Stem glabrous; corolla–tube glabrous inside; inner corona not hooked at tips … \textit{C. oculata}

18. Corolla–tube subcylindric, hardly dilated above:
   20. Corolla–lobes lanceolate, linear to subspathulate or broadly oblong … \textit{C. media}
   20. Corolla lobes broadly ovate or orbicular:
      21. Corolla less than 2 cm long, lobes orbicular, glabrous within; corona uniseriate … \textit{C. santapaui}
      21. Corolla 2.5–4.0 cm long, lobes broadly ovate, pubescent within; corona biseriate … \textit{C. evansii}


Herbs, tall, tuberous; stems branched, terete. Leaves minutely petiolate, 4–8 x 0.7–1.0 cm, linear. Flowers solitary or in pairs; pedicels and calyx small; corolla 5.0–7.5 cm long, tube up to 3.8 cm long, slightly inflated in the lower 1/3 part, enlarging near mouth, lobes up to 3.7 cm long, linear, partly pubescent within; corona biseriate, outer of 5 bifid, ciliate lobes, inner linear, erecto–divergent. Follicles c 7.5 cm long, single or paired, straight. Seeds ovoid–oblong, coma silky.

\textit{Fls.} : July–August. \textit{Frts.} : August–October.

\textit{Illus.} : Sant. & Irani, op. cit. 105, t. 2.

\textit{Distrib.} : Mumbai, Pune, Raigad, Ratnagiri, Thane.


1. Leaves orbicular, ovate … \textit{var. bulbosa}
1. Leaves linear to lanceolate … \textit{var. lushii}
Ceropegia bulbosa Roxb. var. bulbosa:
A - Branch;  B - Flower;  C - L. s. of flower.
var. **bulbosa.**

Tuberous twiners; stems 1–2 m long. Leaves 2–4 x 1.5–2.3 cm, long–petioled. Flowers in lateral, umbellate cymes; corolla greyish–purple, tube 1.0–1.7 cm long, inflated at base, narrow in middle, funnel–shaped above, lobes 5–8 mm long, linear, hairy inside and along margins; corona biseriate, outer saucer–shaped, entire or broadly shallow, inner slender, sickle–shaped or divergent.

*Fls. & Frts.*: July–October.

*Illus.*: Wight, Ic. t. 845. 1844–45.

*Distrib.*: Frequent, mixed with bushes on hill slopes. Akola, Aurangabad, Mumbai, Nanded, Pune, Raigad, Satara, Thane.


Tuberous twiners. Leaves 6–7 x 1.2–2.1 cm, acuminate. Flowers in axillary cymes; corolla 1.0–1.1 cm long; corona biseriate.

*Fls. & Frts.*: July–October.

*Distrib.*: Common in hilly regions. Akola, Aurangabad, Pune, Thane.


Twining herbs; stems slender. Leaves petiolate, 3–7 x 1.0–2.5 cm, ovate or elliptic or oblong, apiculate. Flowers many in lateral, umbellate cymes; corolla c 4.5 cm long, inflated in lower half; corona biseriate, outer 5 entire or truncate hairy lobes, inner erect, linear–spathulate. Follicles 10–14 cm long in pairs, cylindric, tapering to a fine point. Seeds ovoid–oblong, coma silky.

*Fls. & Frts.*: August–March.


*Distrib.*: Along ghats. 'Konkan' & Pune (Cooke, op. cit.).

Twining herbs; stems slender, terete, usually unbranched, glabrous or nearly so. Leaves petiolate, 7–14 x 3–7 cm, ovate to ovate–lanceolate, apex acute or shortly acuminate, base rounded or subcordate. Flowers few, in lateral, umbellate cymes; peduncles and pedicels more or less hispid; corolla curved, inflated at base, corona biseriate, outer of 5 deltoid–bifid hairy lobes, inner erect, linear. Follicles 15 cm long, straight. Seeds compressed, oblong, coma silky.

Fls. & Frts. : July–October.


Twiners; tubers subglobose; stems glabrous. Leaves ovate to lanceolate, glabrous on both surfaces, margins ciliate. Flowers in 4–7 flowered cymes; peduncles hairy; pedicels glabrous; corolla 2.5 cm long, dark purple, tube 2 cm long, subcylindric, somewhat funnel–shaped, ciliate inside in upper half, lobes 5 x 3.5 mm, ovate–oblong, ciliate within and on margins; corona biseriate, outer of 5 bifid, glabrous lobes, inner subclavate, erecto–divergent.

Fls. & Frts. : August–September.


Distrib. : On lateritic soil in open semi–evergreen forests, among shrubs. Maharashtra (Jagtap et N.P. Singh, op. cit.).


Twining herbs; stems terete, c 1 m long. Leaves petiolate, 5–6 x 3.5–3.8 cm, variable, lower ovate, those about middle ovate–lanceolate,
those near upper end lanceolate, acute, ciliate at margins, pilose on both sides. Flowers few, in lateral, umbellate cymes; peduncles, pedicels and calyx hairy; corolla c 5.8 cm long, tube 2–4 cm long, depressed inflated at base, funnel–shaped above, lobes 8–18 mm long, broadly oblong or oblong - obovate, hairy inside and along margins; corona biseriate, outer of 5 deltoid–bifid hairy lobes, inner linear, erect.

_Fls. & Frts._ : July–November.

_Illus._ : Sant. & Irani, op. cit. 106, t. 3; Ansari, op. cit.


Twining herbs; stems branched. Leaves petiolate, 2.0–6.8 x 1.5–2.8 cm, ovate to lanceolate, apex shallowly acuminate or acute, base rounded. Flowers many, in umbellate cymes; peduncles and pedicels hairy; corolla inflated near base, narrowed towards mouth; corona biseriate, outer entire, 5–lobed, glabrous, inner conical–elongated, hairy, convergent at apex.

_Fls. & Frts._ : August–October.

_Illus._ : Ansari, op. cit.


Erect herbs, dwarf; stems terete, sparsely hairy. Leaves shortly petiolate, 1.0–2.5 x 0.1–0.3 cm, elliptic or linear–elliptic, hairy above, acute at apex and base, ciliate at margins. Flowers single; pedicels hairy; corolla inflated at base, narrowed in middle, expanding upwards, glabrous inside; corona biseriate, outer of 5 bidentate, ciliate lobes, inner linear, erect.

_Fls._ : August.

_Illus._ : Ansari & Kulkarni, op. cit.


Herbs; stems cylindric, green. Leaves fleshy. Cymes few–flowered, umbellate; corolla tube inflated at base, funnel shaped above middle, hairy within near mouth; corona biseriate, outer of 5 bidentate–deltoid, ciliate lobes, inner linear, erect, hooked at apex.

*Fls.* : July–November.

*Distrib.* : Growing on hilly stopes. Satara.

*Notes.* : Very rare plant in Maharashtra.


Herbs, erect; stems terete, unbranched, pubescent above. Leaves petiolate, hispid, 5–10 x 0.7–2.2 cm, acuminate, ciliate on margins. Flowers many, in lateral, umbellate cymes; peduncles and pedicels hairy; corolla 3.0–3.5 cm long, glabrous, except for ring of hairs at bottom; corona biseriate, outer of 10 obtuse lobes, hairy, inner linear, erect, 3–4 times as long as outer. Follicles c 15 cm long, in pairs, erect. Seeds ovoid–oblong, coma silky.

*Fls.* : August–September.  
*Frts.* : September.

*Illus.* : Ansari, op. cit. 21, f. 10 & opp. page 26, t. 3:15.


Herbs, erect, tall; stems terete, pubescent above. Leaves petiolate, 1.5–6.5 x 0.3–2.5 cm, ovate to lanceolate, hairy above, apex acute, base rounded, ciliate on margins. Flowers 2–4; peduncles and pedicels hirsute; corolla with a ring of hairs at the bottom within, narrowly cylindric above; corona biseriate, outer of 5 shortly bifid, hairy lobes, inner subspathulate, hairy, divergent.
Herbs, erect, tall; stems terete, hairy. Leaves subsessile, linear–lanceolate, hairy above, acute. Flowers single; peduncles, pedicels and calyx hairy; corolla 5.5–10.0 cm long, base largely inflated, narrowed in neck, enlarging towards mouth, glabrous inside, lobes hairy within, connate at tips; corona biseriate, outer of 5 bidentate glabrous lobes, inner linear, erect.

Fls. & Frts. : August–September. Frts. : September–onwards

Illus. : Hem. & Ansari, op. cit. 106, fig. 1-4; Ansari, op. cit.


Herbs, erect, tall; stems terete, hairy. Leaves subsessile, linear–lanceolate, hairy above, acute. Flowers single; peduncles, pedicels and calyx hairy; corolla 5.5–10.0 cm long, base largely inflated, narrowed in neck, enlarging towards mouth, glabrous inside, lobes hairy within, connate at tips; corona biseriate, outer of 5 bidentate glabrous lobes, inner linear, erect.

Fls. : July–October. Frts. : July–October

Illus. : Ansari, op. cit.


Herbs, twining; stems slender, terete. Leaves petiolate, 4.2–11.0 x 1.3–3.0 cm, linear–lanceolate, puberulous above, apex acute. Flowers few, in cymes; peduncles and pedicels hairy; corolla 2.8 cm long, base slightly inflated; corona biseriate, outer of 5 lobes, entire or notched in the middle, glabrous without, hairy within, inner linear–shaped.

Fls. & Frts. : July–October.

Illus. : Huber, op. cit.


Herbs, erect; stems slender, weak, pubescent above. Leaves petiolate, 8.5–9.0 x 0.6 cm, linear–narrowly elliptic, hairy above, base and apex acute, ciliate on margins. Flowers usually 3, on short peduncles; corolla slightly curved; corona biseriate, outer of 5 obtusely bifid or emarginate lobes, inner erect, linear–subclavate.

Illus. : Ansari, op. cit.


Herbs, twining; stems sparingly branched, slightly swollen at nodes. Leaves petiolate, 10–15 x 5.5–9.0 cm, broadly ovate or ovate–oblong, sparingly pubescent above, apex acute or shortly acuminate, base rounded or cordate. Flowers few, in lateral,umbellate cymes; peduncles hairy; corolla 6.5 cm long, base inflated, narrow in neck, mouth funnel–shaped; corona biseriate, outer of 5 bifid, glabrous lobes, inner erect, linear–clavate.

Fls. & Frts. : July–October.

Illus. : Huber, op. cit.; Ansari, op. cit.

Distrib. : Ahmednagar, Amravati, Mumbai, Pune, Raigad, Ratnagiri, Satara.


Herbs, twining; stems slender, mostly glabrous. Leaves petiolate, 6–7 x 0.5–1.0 cm, linear or narrowly lanceolate,hispidly pubescent above and long nerves beneath, apex acuminate, base narrowed. Flowers bright yellow, fragrant, 3–10, in umbellate cymes; peduncles hirsute; corolla 3–4 cm long, inflated near base; corona biseriate, outer of 5 entire lobes, glabrous, inner linear or elongate–triangular, erect, divergent at apex.

Fls. : August–September.

Illus. : Huber, op. cit.; Sabnis & Bedi, op. cit.

Distrib. : Rare. Mumbai (Salsette Island, Stocks), Konkan (Hook. f. op. cit.).

Herbs, erect; stems terete, slender, slightly swollen at nodes. Leaves petiolate, 3.0–6.5 x 1.2–4.0 cm, ovate, apex acute, base rounded or subcordate, ciliate on margins. Flowers 3–4, in axillary, umbellate–cymes; peduncles and pedicels hairy; corolla 2.8–3.5 cm long, a ring of hairs inside at bottom, above narrow, cylindrical; corona biseriate, outer of 5 shortly bifid hairy lobes, inner erect, clavate, hairy.

*Fls.* : July–August.

*Illus.* : Ansari, op. cit.  21, f. 16 & opp. page 27, t. 4: 22.


Dwarf, erect, tuberous herbs; stems puberulous above. Leaves sessile, linear, crowded. Flowers in uni–flowered cymes; peduncles and pedicels hairy; corolla 2.5–2.8 cm long, tube 1.8–2 cm long, subcylindric, glabrous within, lobes 7–8 mm long, oblong–subspathulate, apex hairy; corona biseriate, outer corona of 5 bifid, narrowly deltoid lobes, ciliate, inner long, linear, erect.

*Fls.* : June–August.  
*Frts.* : September.

*Illus.* : Wight, Ic. t. 1261. 1848.

*Distrib.* : Maharashtra (Jagtap et N.P. Singh, op. cit.).


Herbs, erect; stems terete, pubescent. Leaves 1.9–5 x 1–2 cm, ovate, puberulous above and along veins below, apex acutely acuminate, base acute, ciliate on margins. Flowers many, in subaxillary or terminal cymes; peduncles and pedicels hirsute; corolla 2.3–2.5 cm long, base slightly inflated, a ring of hairs inside at its bottom, rest glabrous; corona biseriate, outer of 5 short, entire or notched lobes, ciliate, inner erect, sub–clavate.

*Fls.* : August–September.  
*Frts.* : October.
**Ceropegia panchganiensis** Blatt. et McC.

A - Habit;  B - Flower;  C - Inside view of inflated base showing ring of hairs at bottom;  D - Corona
Illus. : Hem. op. cit.

Distrib. : Along western ghats. Ahmednagar, Pune.

Notes. : The species is endemic to Maharashtra State & Critically Endangered.


Herbs, erect; stems terete, pubescent above. Leaves petiolate, 7.5–12 x 2.4–9.5 cm, elliptic, pubescent above, apex shortly acuminate, base acute or rounded, ciliate on margins. Flowers few to many in umbellate cymes; peduncles and pedicels hairy; corolla 3.5–5.5 cm long, slightly curved, cylindrical, a ring of hairs inside at the bottom, otherwise glabrous; corona biseriate, outer of 5 short, entire or notched lobes, hairy, inner erect, sparsely hairy at base.

Fls. & Frts. : August–October.

Illus. : Ansari & Kulkarni, op. cit.


Herbs, twining; stems terete, puberulous above, glabrous at age. Leaves petiolate, 1.5–5.4 x 0.8–1.5, ovate or lanceolate, puberulous above, glabrous below, apex subacuminate or acuminate, base rounded, ciliate at margins. Flowers few to many, in extra–axillary cymes; peduncles and pedicels hairy; corolla base inflated, glabrous inside; corona of 5, erect, elongated–conical processes, hairy outside, convergent at apex.

Fls. & Frts. : August–October.

Illus. : Wadhwa & Ansari, op. cit.; Ansari, op. cit.


Ceropegia sahyadrica Ansari & Kulkarni
A - Flowering twig; B - Tuber; C - Corona; D - Follicles
**Ceropegia santapau**i Wadhwa & Ansari
A - Whole plant; B - A flower; C - Dissected flower showing corolla lobes and part of tube with corona at base; D - Dorsal view of calyx and pedicel; E - Outer lateral view of corona; F - Inner view of dissected corona; G - Gynostegium; H - Pollinia; I - A seed with coma.
Herbs, twining; stems terete. Leaves petiolate, 6.0–6.7 x 2.4–2.6 cm, ovate–oblong, puberulous above, apex acuminated, base cordate, ciliate along margins. Flowers many, in axillary cymes; peduncles hirsute, pedicels glabrous; corolla 3–8 cm long, abruptly narrowed above, lobes pubescent inside and hairy on margins; corona biseriate, outer of 5 lobes, entire, elongate or shortly bifid, hairy, inner ligulate, ob lanceolate, glabrous.


Illus. : Hook. op. cit.; Ansari, op. cit.

Distrib. : Rare. Mumbai, Pune, Raigad, Satara, Thane – Endemic & Vulnerable.

Cosmostigma Wight


Climbing shrubs; stems branched, stout. Leaves petiolate, 5.5–14.0 x 5–12 cm, broadly ovate, apex acute or shortly acuminated, base rounded or slightly cordate, pubescent along nerves. Flowers in lateral corymbs; peduncles and pedicels puberulous; corolla rotate, lobes divided 3/4 of way down, lobes elliptic, c 3.5 x 2.5 cm, retuse; corona staminal, of 5 lobes, adnate to staminal column at its base, erect, membranous, truncate, glabrous scales, stigma slightly exerted beyond anthers. Follicles c 14 cm long, solitary or paired, ovoid–oblong. Seeds ovoid, coma silky.


Illus. : Wight, op. cit.; Sant. & Irani, op. cit. 108, t. 5.


Cynanchum L.

1. Leaves shallowly cordate; corolla pale brown; follicles winged ... *C. callialata*

1. Leaves broadly cordate; corolla greenish, tinged with pink; follicles not winged ... *C. tunicatum*

**Cynanchum callialata** Buch. – Ham. in Wight, Contrib. 56. 1834 et in Wight, Ic. t. 1279. 1848; Hook. f. Fl. Brit. India 4:24. 1883; Cooke,
Undershrubs, trailing or climbing; stems slender, branched, swollen at the nodes, glabrous or sparingly pubescent. Leaves petiolate, 1.3–10.0 x 0.25–5.0 cm, linear or elliptic–oblong, puberulous above, apex acute or acuminate, ciliolate on margins. Flowers spirally arranged towards apex of peduncles, in corymbose cymes; peduncles and pedicels puberulous; corolla rotate, lobes divided nearly to base, c 6 x 2 mm, oblong, obtuse; corona cupular, c 4 mm long, membranous, with 5, obtuse lobes at top, which are bifid at apex, alternating with 5, shorter lobes; gynostegium c 4 mm long. Follicles c 8 cm long, solitary or in pairs. Seeds ovoid–oblong, coma silky.


Distrib. : Widely distributed in Ahmednagar, Pune, Satara, Thane.


Undershrubs, twining; stems slender, terete, slightly swollen at nodes, glabrescent. Leaves petiolate, 4–7 x 3–4 cm, ovate–oblong, apex acute or shortly acuminate. Flowers in lateral, umbellate cymes; calyx glabrous or nearly so, ciliate on margins; corolla rotate, lobes divided nearly to base, c 4 x 1 mm, oblong, subacute at apex; corona adnate to base of staminal–column, much longer than it, membranous, tubular, 5 lobed at apex with 5, intermediate teeth; gynostegium 1.5 mm long.


Illus. : Wight, Ic. t. 354. 1840.

Distrib. : Not common. Konkan (Sant. & Irani), Pune.

**FREREA Dalz.**

Herbs or undershrubs, trailing or pendulous, sap watery; stems and branches green, fleshy, quadrangular, marked with scars of fallen leaves. Leaves shortly petiolate, 3–5 x 1.8–2.5 cm, oblong or elliptic, obtuse or mucronate at apex. Flowers solitary, extra–axillary; pedicels curved; corolla 2.0–2.5 cm across, fleshy, yellowish–green on outer side, deep purple on inner, with an irregularly shaped yellow spot at centre of each lobe, divided less than 1/2 way down, fringed with fine, deep purple hairs on the edges; corona staminal, outer bowl–shaped, with five, short, broad, sinuate–truncate lobes, inner arising from inner margin of outer corona, 5 linear, truncate lobes, incurved at apex.


Illus. : Sant. & Irani, op. cit. 110, t. 7.

Distrib. : Among the rocky crevices of hill cliffs from an altitude of 750 to 1347 m. Ahmednagar, Pune, Raigad, Satara – Endemic to Maharashtra and Critically Endangered. It is commonly associated with Euphorbia neriifolia.

Genianthus Hook. f.


Climbing shrubs; stems terete, striate. Leaves 5–8 x 2.5–3.5 cm, petiolate, elliptic, apex acuminate, base tapering, glands numerous at base of midvein on upper side. Flowers many in lateral, paniculate cymes; corolla campanulate, tube short, lobes c 1.5 mm long, oblong, subacute, glabrous without, villous within; corona staminal, uniseriate, free, 5–lobed, scale–like, adnate to base of staminal column; gynostegium c 1 mm long. Seeds many, coma silky dull white.

Fls. & Frts. : October–December.

Illus. : Wight, Ic. t. 588. 1842.

Distrib. : Rare. Konkan (Cooke, op. cit.), Mumbai.

Gymnema R. Br.

Gymnema sylvestre (Retz.) R. Br. ex Schultes
Twining shrubs; stems much branched, cylindrical, young branches densely pubescent. Leaves petiolate, 3–6 × 2.5–3.5 cm, ovate or elliptic–lanceolate or oblong, pubescent below, puberulous above, apex acute, base rounded. Flowers minute, in lateral, corymbose cymes; peduncles, pedicels and calyx pubescent; corolla campanulate, c 3.5 mm across, tube c 1.5 mm long, glabrous without, pubescent within, lobes 5, deltoid; corona of 5, fleshy processes, inserted on throat of corolla tube, alternating with lobes, produced downwards on tube as double villous ridges; gynostegium c 1.5 mm long.


Distrib. : Very common. Ahmednagar, Beed, Chandrapur, Mumbai, Nanded, Osmanabad, Pune, Raigad, Satara, Solapur, Sindhudurg, Thane.

**Heterostemma Wight & Arn.**

1. Flowers rotate :
   2. Corona–lobes with appendages … *H. alatum*
   2. Corona–lobes without appendages :
      3. Branches pubescent along two lines; leaves glabrous, lateral veins winged beneath … *H. tanjorense*
      3. Branches puberulous; leaves pubescent above, glabrous beneath, lateral veins not winged beneath … *H. dalzellii*

1. Flowers depressed–globose, urceolate or tubular–urceolate :
   4. Coronal scales entire with rounded tips … *H. deccanense*
   4. Coronal scales 3–toothed at tips … *H. urceolatum*


Twining shrubs; stems terete, slightly swollen at nodes, branches slender, puberulous. Latex milky–white. Leaves 1.1–17 × 0.2–9.7 cm, broadly ovate, ovate–oblong or ovate–lanceolate, subacute at apex of lower leaves, acute or slightly acuminate at apex of upper leaves, rounded or cordate with incision up to 3.5 mm deep at base, ciliate
along margins, sparingly appressedly hairy above, glabrous beneath. Flowers in lateral umbellate cymes; peduncles and pedicels pubescent; calyx 5-lobed, divided up to base, lobes 1–2 x 0.5 mm, ovate–lanceolate or lanceolate, margin ciliolate, pubescent without, glandular within; corolla rotate, c 8 mm across, lobes 5, ovate, transparent, glabrous; corona uniseriate, 5–lobed, c 0.5 x 0.5 mm, ovate–lanceolate, apex acuminate, with large concave, ovate–acute appendages from inner margin; gynostegium c 1.5 mm long. Follicles paired, divaricate, 5.8–10.5 x 0.4–0.7 cm, linear, cylindrical, tapering to acute or slightly blunt point. Seeds many, ovate–oblong, dark–brown with light pinkish margin, coma silky–white, 3.5–4 cm long.

**Fls.** : June–August. **Frts.** : July–February.

**Distrib.** : Maharashtra (Jagtap et N.P. Singh, op. cit.).


Twining shrubs; stems terete, swollen at nodes, sparingly branched, puberulous. Leaves petiolate, 16 x 13 cm, broadly ovate, apex subacute, base rounded, upper leaves 9–12 x 4–6 cm, ovate–oblong, sparingly appressed hairy above. Flowers in lateral, umbellate cymes; peduncles and pedicels pubescent; corolla 1.0–1.5 cm across, rotate, glabrous within, puberulous without, lobes divided 1/2 way down, c 4 x 3 mm, ovate, acute; corona of 5, large lobes, adnate to staminal column and projecting horizontally; gynostegium c 1 mm long. Follicles 9–10 cm long, gradually tapering at apex. Seeds orbiculate.

**Fls. & Frts.** : September–October.

**Distrib.** : Rare in undergrowth of forests. Mumbai, Pune, Ratnagiri.


Twining undershrubs; stems terete, sparingly branched, pubescent. Leaves petiolate, 12–14 x 9–10 cm, narrowly ovate–lanceolate to broadly ovate, pubescent above and along nerves below, apex acuminate, base cordate. Flowers in lateral, umbellate cymes, subsessile; pedicels and calyx pubescent without; corolla ovoid–urceolate, c 1.2 cm long, with a few, minute, upwardly pointed, appressed hairs without, glabrous within, lobes deltoid; corona 3mm
long, 5–lobed, fleshy, forming a cup around it, with entire, rounded margins.


_Illus._ : Swarupanandan & Mangaly, op. cit. f. 2 (C–E).

_Distrib._ : Rare, on rocky ground in open wastelands. Nasik, Pune, Thane.


Twining shrubs; stems branched, branches terete, ridged, pubescent; latex milky–white. Leaves 2.5–9.9 x 1–5 cm, elliptic or oblong, rounded–mucronate or acuminate at apex, acute or truncate at base, glabrous. Flowers in axillary umbellate cymes; pedicels slightly curved, glabrous; calyx 5–lobed, divided up to base, lobes 1.5 x 0.5 mm, oblong, apex acute, margins ciliate, pubescent without, glandular within; corolla rotate, c 8 mm across, lobes united up to c 1.5 mm, lobes 5, c 2.5 x 1.5 mm, ovate to obovate, apex obtuse or rounded, glabrous; corona uniseriate, 5–lobed, c 1 x 0.5 mm, concave, apex obtuse; gynostegium c 1.5 mm long. Follicles paired, 8.2–8.5 x 0.7 cm, linear, cylindrical, tapering from base to apex, tip slightly curved, glabrous. Seeds many, 11 x 5 mm, ovate, rounded at base, membranous, coma silky–white, 1.5–2 cm long.

_Fls._ : November–February.  _Frts._ : December onwards.


_Distrib._ : Maharashtra (Jagtap et N.P. Singh, op. cit.).


Climbing undershrubs; stems sparingly branched, minutely puberulous. Leaves shortly petiolate, 5–10 x 2.5–5.0 cm, ovate or ovate–lanceolate, apex acute, base subcordate. Flowers few, dense, sessile or shortly peduncled cymes; corolla ovoid–urceolate, ventricose at base, 5–fid, lobes slightly overlapping to right; corona 5 lobes, adnate
to staminal–column, broadly cyathiform, irregularly dentate, exceeding gynostegium.

*Fls.* : July–August.

*Illus.* : Bth. in Hook. op. cit.


**HOLOSTEMMA R. Br.**


Twining shrubs. Leaves petiolate, 7–17 x 5–15 cm, broadly ovate, glabrous, few glands at the base of midvein on the upper surface, acuminate at apex. Flowers fleshy, pinkish–red, in axillary, few–flowered, lax cymes; calyx rotate, broadly ovate; corolla c 3.5 cm across, subrotate, waxy, pinkish–white outside, deep wine red inside, lobes divided 3/4 way down; corona staminal, of a low, annular ring, adnate to base of column; gynostegium c 1 cm long. Follicles c 11 x 3.5 cm, ovoid. Seeds ovoid.

*Fls.* : June–October.  
*Ffrts.* : September–October.


*Distrib.* : Common along hilly regions. Aurangabad, Beed, Chandrapur, Dhule, Mumbai, Nanded, Nasik, Osmanabad, Parbhani, Pune, Raigad, Satara, Sindhudurg, Thane.

**HOYA R. Br.**

1. Leaves linear; flowers usually solitary ... *H. retusa*

1. Leaves ovate or elliptic; flowers in umbellate cymes :

2. Corolla glabrous or minutely puberulous within ... *H. wightii*

2. Corolla densely silky–villous within ... *H. alexicaca*

Twining shrubs; branches terete, sparsely hairy. Leaves 4.5–7.5 x 2.5–4.0 cm, ovate–oblong, thick, apex acute or acuminate, margins recurved. Flowers in lateral umbellate cymes; peduncles pubescent; pedicels sparsely hairy; corolla divided about half way down; corona uniseriate, 5–lobed, 3mm long, ovate–lanceolate. Follicles solitary, linear to linear–lanceolate, glabrous. Seeds many, coma silky–white, 4 cm long.

*Fls. & Frts.* : July–November.

*Illus.* : Wight, op. cit.

*Distrib.* : Rare in hilly tracts, hanging from trees. Ahmednagar, Raigad.

*Notes.* : The binomial *Hoya pendula* Wight & Arn. is illegitimate as it is based on the mixture of two elements, one by the description and other by the Wight (Wight, Ic. t. 474) referable to figure of different species. Bullock (1964) has pointed out the figure in op. cit. Wight, Ic. t. 474 actually refers to *H. alexicaca*.


Epiphytic climbers; stems closely intertwined, terete, swollen at nodes, sparingly pubescent near nodes. Leaves petiolate, 4.5 x 0.5 cm, gradually increasing in width from base to apex. Flowers axillary; corolla 1.2–1.4 cm across, white shining, waxy, rotate, lobes, divided 1/2 way down, 3–4 x 4 mm, deltoid, acute, velvety pubescent along margins; corona pink, c 5 mm across, of 5, fleshy lobes, lobes ovate–oblong, stellately spreading, adnate below to staminal column, inner margin produced into a tooth.

*Fls.* : July–August.

*Illus.* : Sant. & Irani, op. cit. 112, t. 9.

*Distrib.* : In moist forests of Mumbai.

Climbers, becoming epiphytic; stems terete, with numerous adventitious roots all over surface. Leaves petiolate, 5–9 x 2.0–4.5 cm, elliptic or elliptic–lanceolate, apex bluntly acuminate, base acute or subacute. Flowers many in lateral, drooping, umbellate cymes; corolla 1.7 cm across, rotate, lobes united up to 2–3 mm, five, c 7 x 6 mm, ovate–triangular, apex obtuse with slightly bifid at tip, minutely pubescent within; corona staminal, uniseriate, stellately spreading, adnate below to staminal column, with inner margin produced into a blunt point; gynostegium 3 mm long. Follicles 7–12 x 0.5 cm, linear, cylindrical. Seeds oblong, coma c 5 cm long.

**Fls. & Frts.** : May–January.


**Distrib.** : Common in ghats. Pune, Raigad, Satara, Thane.

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**Leptadenia R. Br.**

1. Erect, bushy shrubs, leafless or nearly so ...  *L. pyrotechnica*
1. Twining shrubs with leaves ...  *L. reticulata*


Shrubs, 0.5–2 m high; stems much branched, cylindric, glabrous or appressedly puberulous. Leaves absent or present on young shoots only, sessile, 1–3 x 0.5 cm, linear, appressedly puberulous on both sides, apex acute. Flowers small, in lateral, umbellate cymes; peduncles and pedicels puberulous; corolla rotate, tube 1.0–1.5 mm long, lobes c 2 mm long, lanceolate, pubescent on both sides; corolla double, corolline of 5 small scales, inserted at sinuses of corolla, staminal of undulate, fleshy ring, adnate to base of staminal column; gynostegium c 2 mm long. Follicles lanceolate. Seeds ovate–lanceolate, coma c 4 cm long.

Shrubs; stems much branched, swollen at nodes, appressedly puberulous. Leaves petiolate, 5–11 x 3–8 cm, ovate or ovate–lanceolate, densely pubescent on lower side, less on upper, apex acute, base rounded. Flowers many, small, in lateral, umbellate cymes; peduncles, pedicels and calyx pubescent without; corolla c 7 mm across, rotate, lobes divided 3/4 way down, c 3 x 1.5 mm, lanceolate, acute, pubescent on both sides; corona double, corolline of 5, small scales, inserted at mouth of corolla–tube, staminal fleshy ring, adnate to base of staminal column; gynostegium c 1.5 mm long. Follicles linear–oblong or broadly lanceolate.

*Fls.* : April–November.  
*Frts.* : October–March.


*Distrib.* : Common in hedges, along river–banks, etc. Common throughout.

*Notes.* : Leaves are used in Ayurvedic medicine. It is one of the ingredients of ‘Leptaden’.

**Marsdenia R. Br.**


Climbers, extensive or twining shrubs; stems cylindrical, sparingly branched, young branches tomentose. Leaves 5–25 x 6–15 cm, petiolate; petioles 4–10 cm long, tomentose; lamina broadly ovate, apex acuminate, base cordate, tomentose on both sides. Flowers in large drooping panicles, peduncles, pedicels and calyx tomentose without;
Leptadenia reticulata (Retz.) Wight & Arn.
corolla salver–shaped, hairy without, tube 3 mm long, pubescent, lobes divided more than 1/2 way down, c 5 x 3 mm, hairy without, glabrous within; corona staminal, 5–lobed, linear, acute, adnate below to the staminal column, free above; gynostegium 5 mm long. Follicles ovoid–lanceolate or cylindrical. Seeds broadly ovate.


Illus. : Wight, Ic. t. 590. 1842.

Distrib. : Forest Ghats of Dhule, Pune.

**Oxystelma R. Br.**


Twining herbs or undershrubs; stems branched, slender, terete, glabrescent. Leaves petiolate, 4–8 x 0.5–2.0 cm, linear or linear–lanceolate, apex mucronate, base truncate. Flowers attractive, few, in drooping lateral cymes; corolla c 2 cm across, subcampanulate or saucer shaped, white outside, pink inside, with purplish reticulations; corona staminal, biseriate, outer fleshy, cup shaped, completely adnate to base of staminal–column, inner of 5 lobes, ovate–lanceolate, 2–keeled within, produced above into incurved subulate tips. Follicles c 8 x 1.5 cm, ovoid–lanceolate. Seeds ovate or suborbicular.

Fls. & Frts. : May–February.


Distrib. : Growing along river banks. Ahmednagar, Aurangabad, Beed, Chandrapur, Kolhapur, Mumbai, Nanded, Parbhani, Pune, Raigad, Thane, Yavatmal.
Oxystelma esculentum (L. f.) R. Br. ex Schult.
PENTATROPIS Wight & Arn.

1. Corolla lobes deltoid, 3.5–6 mm long, not tailed; corona–lobes acute at base which curves outwards ... *P. capensis*

1. Corolla lobes linear, 8–13 mm long, tailed; corona–lobes rounded at base ... *P. nivalis*


Twining undershrubs; stems slender, terete, glabrescent or pubescent. Leaves petiolate, 2.5 x 1.5–2.5 cm, ovate or ovate–oblong, apex subacute or obtuse–mucronate, base subcordate. Flowers 3–4 in umbellate cymes; peduncles short; corolla c 1 cm across, rotate, pubescent within; corona curving outwards to base. Follicles 4–5 cm long, lanceolate. Seeds broadly ovate, coma silky.

*Fls.* : October–December.  

*Illus.* : Wight, Ic. t. 352. 1840 (Pentatropis microphylla).


Twining undershrubs; stems slender, terete, slightly swollen at nodes, sparingly pubescent. Leaves petiolate, 1.5 x 0.6–3.4 cm, ovate, ovate–lanceolate or elliptic–oblong, apex acute or obtuse, usually mucronate, base rounded. Flowers 5–7, in lateral umbellate cymes; peduncles, pedicels and calyx–lobes pubescent; corolla rotate, c 1.5 cm across, puberulous within, glabrous without. Follicles 7 cm long, lanceolate.

*Fls.* : January–October.  
*Ffrts.* : May–October.

Distrib. : On hedges of cultivated fields. Ahmednagar, Aurangabad, Beed, Jalna, Mumbai, Thane.

Pergularia L.


Twining undershrubs; stems terete, branched, densely pubescent. Leaves petiolate, 4–6 x 4 cm ovate, pubescent, on lower side, acuminate at apex. Flowers pale yellowish–green, drooping, corymbose or racemose; peduncles hairy; pedicels and calyx villous; corolla campanulate, tube c 4 mm long, slightly inflated, lobes c 12 x 4 mm, divided 2/3 way down, elliptic, membranous, oblong, pubescent within; corona double, outer of an annular 5–lobed, membranous, 5 mm long, inner alternating with outer corona, laterally compressed lobes. Follicles lanceolate. Seeds ovoid, coma 1 cm long.


Distrib. : Common throughout.

Sarcostemma R. Br.

1. Flowers in terminal umbels; style apex conical, not exserted beyond anthers

S. viminale

1. Flowers in terminal and lateral umbels; style apex oblong–fusiform, much exserted beyond anthers

S. intermedium


Shrubs; stems much branched, green. Flowers in lateral and terminal sessile umbels; pedicels pubescent; corolla c 1.4 cm across, subrotate; corona staminal, double, outer annular ring, membranous, inner 5–lobed, lobes oblong, acute; style apex oblong, produced beyond anthers.
Fls. : December.

Illus. : Wight, Ic. t. 1281. 1848.


1. Follicles 10.0–12.5 cm long, tapering at both ends, slightly divergent when 2 together
   
   **ssp. viminalis**

1. Follicles 5.5–8.8 cm long, not tapering towards base but tapering little towards apex, much divaricate

   **ssp. stocksii**

ssp. **viminalis**.

Straggling shrubs, much branched, green. Flowers many, in terminal sessile umbels, cream coloured; pedicels sparingly pubescent; calyx puberulous without; corolla 1.8 cm across, rotate; corona staminal, double, outer cupular, crenately 10 lobed on margins, inner of 5 erect, thick and fleshy lobes. Follicles 10 cm long, solitary, lanceolate.

Fls. & Frts. : June–October.

Illus. : Wight, Ic. t. 595. 1842; Bhandari, Fl. Indian Desert 227, f. 76. 1978.

Distrib. : In rocky soils. Ahmednagar, Aurangabad, Beed, Dhule, Mumbai, Pune, Satara.


Stems cylindrical, green, 3–7 mm across. Flowers in terminal umbels. Follicles 5.5–0.8 cm long, in pairs, cylindric, sometimes both follicles are in one straight line.

Fls. & Frts. : July–September.

Illus. : Ali, op. cit. 18, f. 5, F–H.
Distrib.: In rocky areas of Deccan, Poona (Ali, op. cit.).

Seshagiria Ansari & Hemadri


Twining, 2–4 m long; stems slender, terete. Leaves petiolate, 7–12 x 3.5–6.5 (19 x 9) cm, ovate or ovate–oblong, apex acuminate, base cordate. Flowers in subumbellate cymes; corolla vinaceous purple, fleshy, rotate, divided near to base; corona double, outer cupular, fleshy, 5–lobed, inner of 5 dilated, fleshy, subglobose masses. Folicles c 8 x 2.5 cm, ovate–lanceolate.


Illus.: Ansari & Hem. op. cit.

Distrib.: Along western ghats. Pune, Satara.

Telosma Coville


Twining undershrubs; stems branched, cylindric. Leaves petiolate, 5–9 x 3.5–6 cm, ovate, sparingly pubescent when young, apex shortly acuminate, base cordate. Flowers many, pale cream, in umbellate cymes; peduncles and pedicels pubescent; corolla salver–shaped, tube 8 mm long, slightly hairy within; lobes c 8 x 3 mm, linear; corona staminal of 5, erect lobes from base of staminal column; gynostegium 4–5 mm long. Folicles c 10 cm long, lanceolae.


Illus.: Wight, Ic. t. 585. 1842.

Distrib.: Not common, found in dry open wastelands. Akola, Mumbai, Nasik, Osmanabad.
TOXOCARPUS Wight & Arn.


Climbing shrubs; stems terete, slightly swollen at nodes, rusty–pubescent. Leaves petiolate, 6–8 x 3–4 cm, ellipitic, oblong or obovate, glabrous or subglabrous above, rusty–pubescent beneath, shortly acuminate at apex, acute or rounded at base. Flowers small, in lateral, dichotomous, paniculate cymes; peduncles and pedicels rusty–pubescent; corolla–tube c 2 mm long, lobes linear–oblong, 4–5 x 2 mm, obtuse; corona staminal, uniseriate, 5–lobed, erect, adnate to staminal column.

*Fls.* : May.

*Illus.* : Wight, Ic. t. 886. 1843.

*Distrib.* : Rare. Mumbai.

**Tylophora R. Br.**

1. Stems erect ... *T. fasciculata*

1. Stems suberect, trailing, twining or climbing :

2. Stems suberect, trailing along the ground, stock woody ... *T. rotundifolia*

2. Stems climbing or twining :

3. Calyx glabrous, lanceolate, acute ... *T. tetrapetala*

3. Calyx hirsute or pubescent :

4. Corolla less than 1 cm across; corona completely adnate to staminal column, without free point above ... *T. dalzellii*

4. Corolla 1–1.5 cm across; corona apex free ... *T. indica*


Twining herbs; stems terete, branched, pubescent when young, glabrous at length. Leaves petiolate, 5–10 x 2.5–5.0 cm, ovate–oblong, apex acute or shortly acuminate, base rounded, ciliolate on margins. Flowers small, many in lateral, umbellate cymes; peduncles pubescent; corolla c 9 mm across, lobes divided 3/4 way down, 3 x 11.5 mm, ovate;
corona of 5, fleshy, black–purple lobes, rounded at base and sloping a little upwards to top of staminal column. Follicles 8–9 cm long, lanceolate.

**Fls.** : April–November. **Frts.** : July–December.

**Illus.** : Sant. & Irani, op. cit. 114, t. 11.

**Distrib.** : Common and abundant. Ahmednagar, Kolhapur, Mumbai, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.


Twining undershrubs; stems several from rootstock, terete, densely pubescent. Leaves petiolate, 1.5–4.0 x 1–2 cm, ovate or lanceolate, glabrous above, puberulous on nerves beneath, acute or shortly acuminate at apex, rounded or cordate at base. Flowers small, chocolate–brown, in lateral, simple or branched, umbellate or racemose cymes; peduncles and pedicels pubescent; corolla c 5 mm across, pubescent within, lobes c 2 x 1 mm, divided 4/5 way down, elliptic–oblong, bifid at apex, ciliolate on margins; corona staminal, of 5, fleshy, deep purple, orbicular lobes narrowed to a point at apex, completely adnate to staminal–column. Follicles solitary, ovoid, swollen at base. Seeds broadly ovate.

**Fls.** : May–October. **Frts.** : August–December.

**Illus.** : Wight, Ic. t. 848. 1844–45.

**Distrib.** : Not common, grows in rocky grounds. Akola, Aurangabad, Chandrapur, Mumbai, Nanded, Pune, Satara, Thane, Yavatmal.


Twining undershrubs; stems terete, sparingly branched, pubescent. Leaves petiolate, 5–10 x 4–5 cm, ovate–oblong or elliptic–oblong, pubescent beneath when young, acute or apiculate at apex, rounded at base. Flowers many, in lateral umbels; peduncles, pedicels and calyx pubescent; corolla 1.0–1.5 cm across, yellowish
green, lobes 6 x 3 mm, elliptic, obtuse; corona of 5, small, fleshy, obovate–cuneate lobes. Follicles 6–7 cm long, in pairs, lanceolate, tapering to a point.


*Distrib.* : Common on hedges. Latur, Mumbai, Nanded, Nasik, Osmanabad, Pune, Ratnagiri, Thane.


Creepers; stems terete, sparingly branched, pubescent. Leaves shorty petiolate, 4.8 x 3.5–6.5 cm, broadly ovate or suborbicular, sparingly hairy near the margins, otherwise glabrous, subacute or rounded or often mucronate at apex, rounded or subcordate at base. Flowers many, in lateral umbellate cymes; peduncles, pedicels and calyx pubescent; corolla c 1 cm across, pubescent within, lobes c 4 x 3 mm, divided 3/4 way down, broadly ellipitic, 2–cleft at apex; corona of 5, fleshy, subglobose lobes. Follicles single, ovate, glabrous.


*Distrib.* : Rare on hill slopes, in forests. Aurangabad, 'Konkan' (Cooke, op. cit.), Nanded.


Twining undershrubs; stems branched, glabrescent. Leaves 2–6 x 1–1.5 cm, lanceolate, apex apiculate, base obtuse or rounded. Flowers small, deep scarlet, in lateral, much branched panicles; corolla 7 mm across, lobes c 3 x 2 mm, divided 3/4 way down, oblong, obtuse; corona of 5 gibbous or globose processes. Follicles 8 cm long, in pairs, slender, lanceolate, pointed.

WATTAKAKA Hassk.

1. Climbers; leaves broadly ovate, cordate or rounded at base ... W. volubilis
1. Suberect; leaves lanceolate, tapering or acute at base ... W. lanceolata


Suberect shrubs; stems densely pubescent, terete. Leaves petiolate, 3–4 x 1.0–1.2 cm, lanceolate, silky pubescent on both sides, acute at apex, tapering or acute at base. Flowers in lateral globose cymes; peduncles & pedicels pubescent; corolla rotate, lobes c 3 x 2 mm, broadly deltoid; corona, staminal of 5, fleshy lobes, round at top. follicles 6–8 x 4–5 cm, ovoid, obtuse.

Fls. & Frts. : May–September.
Distrib. : Rare on bunds of fields. Amednagar, Aurangabad, Beed, Jalna, Kolhapur, Nanded, Pune, Satara.
Notes. : It is endemic in Maharashtra.


Climbing shrubs; stems cylindrical, softly pubescent. Leaves petiolate, 6–11 x 5–7 cm, broadly ovate, sparsely pubescent, abruptly acuminate at apex, cordate or rounded at base. Flowers many, in lateral umbellate cymes; corolla rotate, lobes 5 x 4 mm, oblong, divided
3/4 way down, obtuse or retuse, ciliolate on margins; corona of 5, fleshy lobes, rounded on back and obliquely truncate at apex. Follicles 9 cm long, in pairs, ovoid, tapering to a very blunt point, fugaciously brown tomentose.


**CULTIVATED SPECIES :**


Erect shrubs; stems branched, pubescent when young, glabrous at age; latex milky–white. Leaves linear–lanceolate, acute at apex and base, glabrous. Flowers axillary or subterminal in umbels, many flowered; peduncles, pedicels and bracts pubescent; calyx 5–lobed, divided up to base, lanceolate, apex acuminate, margins ciliate, pubescent without, glandular within; corolla reflexed, lobes 5, united up to 1 mm, 8–9 x 4–5 mm, ovate–elliptic, apex obtuse, margins ciliate, glabrous; corona uniseriate, 5–lobed, cupular, compressed. Follicles solitary, 6.6 x 5.8 cm, ball–like, bloated, echinate. Seeds many, elliptic, dark brown with light–brown margins, coma silky–white, 2–4 cm long.

_Fls. & Frts._ : June–November.

_Distrib._ : A native of South and Tropical Africa, grown as garden plant. Pune.


Twining or climbing by means of roots, glabrous. Leaves ovate–oblone or elliptic–oblone, thick and fleshy. Flowers white with pink center, in pendulous umbels on short peduncles; corolla fleshy, bearded inside.


Climbing shrubs; stems stout, branched, glabrous. Leaves linear–oblong, acute or acuminate at apex, acute at base, margins recurved, membranous, glabrous. Flowers axillary or terminal in umbellate cymes; peduncles glabrous; pedicels hirsute; calyx 5–lobed, divided up to base, oblong, pubescent without, glandular within; corolla rotate–campanulate, lobes 5, ovate, glabrous; corona uniseriate, 5–lobed, erect, adnate to stamens, free above gymnostegium 3.5 mm long.

Fls. & Frts. : May–December.


Dwarf, succulent, perennial herbs; stems thick, fleshy, tomentose or velvety–pubescent, branching at the base, 4–angled. Leaves absent or minute and rudimentary. Flowers 1–3 together near the base of stem, successively developed upwards, all with a fairly strong carrion odour; pedicels tomentose; calyx tomentose on both sides, glandular within, 5–lobed, lobes lanceolate, tomentose, ciliolate on the margins; corolla rotate, 17–20 cm across, ovoid in bud, tomentose outside, floccosely velvety inside, purple with deep purple horizontal markings on the inner surface, lobes ovate–lanceolate, acute, densely ciliate on the margins; corona in two series arising from the staminal–column. Pollen masses ascending or subhorizontal, attached to the pollen–carriers by very short, stout caudicles.

Fls. : July–November.


Climbing shrubs; stems cylindric, warty, branched, branches glabrous. Leaves oblong or elliptic–oblong, thick, coriaceous, revolute on the margins, glabrous on both sides. Flowers in terminal, dichasia cymes, white, highly fragrant; peduncles and pedicels glabrous; calyx 5–lobed, divided to the base, broadly elliptic, glabrous; corolla tubular, tube cylindric, swollen at the base, glabrous without, hairy within, lobes oblong, adnate to the back of the anthers near the base, free above; ovary glabrous, style apex conical, exerted.
**Fls.**: April–May.

**Distrib.** A native of Madagascar, occasionally cultivated in gardens. Mumbai.


Twining shrubs or undershrubs; stems branched, glabrous or nearly so. Leaves 3–12.5 x 2–10.2 cm, ovate, acuminate or apiculate at apex, cordate with incision 0.3–3 cm deep, lobes rounded at base, pubescent beneath. Flowers axillary, in condensed, umbellate cymes; peduncles & pedicels pubescent; calyx 5–lobed, lobes free, lanceolate, margins ciliate, glabrous, glandular within; corolla tubular–campanulate, tube inflated at base, villous or pubescent above within, lobes 5, oblong, twisted towards right in bud, glabrous; corona uniseriate, 5–lobed, erect, arising from base of staminal column, forked into outer short and inner incurved pointed lobe at apex.

**Fls.**: July–September.

**Distrib.**: A native of Himalya, cultivated in some gardens of Mumbai on account of the fragrant flowers.

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**PERILOCAEAE**

(A. P. Jagtap & Sujit Kumar Das Das)

1. Woody climbers; corolla–tube as long as or longer than lobes … **CRYPTOSTEGIA**

1. Climbing shrubs or undershrubs; corolla–tube shorter than lobes:

2. Leaves with numerous lateral nerves united intramarginally; corolla–lobes overlapping to the right … **CRYPTOLEPIS**

2. Leaves with few (6–8) lateral nerves not united intramarginally; corolla–lobes valvate … **HEMIDESMUS**

**CRYPTOLEPIS** R. Br.

Cryptolepis buchanani Roem. & Schult.
Climbing shrubs; stems terete, glabrous or subglabrous, branched. Leaves 5–18 x 3–8 cm, elliptic–oblong, apex acute or shortly acuminate, base acute; lateral nerves at right angles to midrib. Flowers greenish–yellow, in axillary, paniculate cymes; corolla tubular, 10–13 mm long. Follicles in pairs, divaricate, triquetrous, 9–11 cm long, tapering to a point at apex. Follicles paired, lanceolate, ridged. Seeds many, ovate.

*Fls. & Frts.*: Almost throughout year.


*Distrib.*: Common throughout.

**Cryptostegia R. Br.**


Shrubs, suberect or climbing; stems terete, swollen at nodes. Leaves petiolate, 6–9 x 3–5 cm, elliptic–oblong, apex obtuse, base tapering. Flowers large, white or whitish, tinged with light purple in di or trichotomous cymes; peduncles and pedicels puberulous; corolla 6–7 cm long, velvety; corona corolline, 1.0–1.2 cm long, each divided into two long, filiform segments. Follicles 3–winged, 12–15 cm long. Seeds many, ovate, winged.

*Fls. & Frts.*: Throughout year.


*Distrib.*: Common throughout.

*Notes*: This species is a native of Tropical Africa almost naturalized in State.

**Hemidesmus R. Br.**

Cryptostegia grandiflora R. Br.
A - Flowering twig; B - Fruit.

1. Leaves glabrous beneath
2. Leaves pubescent beneath

var. *indicus*.

Undershrubs, twining; stems terete, swollen at nodes. Leaves petiolate, 6–11 x 0.8–4 cm, linear–lanceolate, elliptic–oblong or obovate–loblong, apex acute or apiculate, base rounded. Flowers in axillary, subsessile cymes. Follicles in pairs, slender, 11–17 cm long, tapering to a point at apex. Seeds many, elliptic–oblong, ventrally ridged.

*Fls. & Frts.*: July–May.


*Distrib.*: Common throughout.


Branchlets, leaves beneath and inflorescence pubescent. Leaves c 8 x 2.5 cm, elliptic–oblong.

*Fls. & Frts.*: August–December.


*Distrib.*: Common on bushes in forests and around fields. Aurangabad, Beed, Jalna, Latur, Nanded, Osmanabad, Parbhani.

**CULTIVATED AND INTRODUCED SPECIES**:


Climbing shrubs; stems branched, glabrous; latex milky–white. Leaves 6–8.5 x 3–5 cm, ovate or elliptic–oblong, shortly acuminate at apex, subacute or rounded at base, glabrous on both sides. Flowers terminal, in dichotomously branched cymes; peduncles and pedicels glabrous; calyx 5–lobed, divided up to base, 7.5–8 x 3.5 mm, lanceolate,
apex acute, margins ciliolate, puberulous without and above the middle within; corolla campanulate, 4.5–5 cm long, tube 2.2 cm long, glabrous, velvety, lobes 5, 2.3 x 1.8 cm, oblong, velvety, glabrous; corona corolline, 5–lobed, 5–7 x 1 mm, subulate, with incurved hooked tips; gynostegium ca 5 mm long.

*Fls.* : June–April.  
*Frts.* : January–March.

*Distrib.* : It is native of Madagascar, occasionally cultivated in gardens in Mumbai.

**LOGANIACEAE**  
*(C. R. Jadhav)*

1. Annual herbs :
   2. Flowers 4–merous; leaves 1–nerved  
      ...  
      **MITRASACME**
   2. Flowers 5–merous; leaves more than 3–nerved  
      ...  
      **MITREOLA**

1. Perennial woody plants :
   3. Corolla contorted, tube 25–50 mm long  
      ...  
      **FAGRAEA**
   3. Corolla valvate, tube 2–3 mm long  
      ...  
      **STRYCHNOS**

**FAGRAEA** Thunb.


Shrubs, epiphytic when young, later becoming a small tree; aerial roots branched; bark smooth, dark–grey, lenticellate. Leaves at ends of branches, somewhat fleshy, 10–15 x 5.0–7.5 cm, obovate–oblong or elliptic, shortly acuminate at apex, narrowed at base, velvety–tomentose beneath. Flowers white or cream coloured, in 1–5–flowered terminal cymes. Berries c 3.7 x 2.5 cm, ellipsoid, pointed. Seeds subglobose, slightly pitted.

*Fls.* & *Frts.* : July–September.

*Illus.* : Wight, Ic. t. 1316 (*F. coromandelina*) & t. 1317 (*F. malabarica*) 1848; Bedd. Fl. Sylv. t. 244. 1872 (*F. coromandelina*).

*Distrib.* : On trees in evergreen forests. 'Konkan' (Cooke, op. cit.).
MITRASACME Labill.


Herbs, tiny, erect, 8–10 cm tall; stems ribbed. Leaves sessile, 0.6–0.8 x 0.2–0.3 cm, ovate to lanceolate, acute at apex. Flowers white, solitary in upper leaf axils; calyx c 1/2 way connate; corolla thinly hairy in mouth. Capsules c 0.2 cm long, subglobose.

*Fls. & Frts.* : August–September.

*Illus.* : Wight, op. cit.

*Distrib.* : 'Konkan', 'Ratnagiri' (Cooke, op. cit.).

MITREOLA L.


Herbs, 15–30 cm high. Leaves 2–7 x 1–4 cm, ovate–elliptic, ovate–oblong or elliptic–lanceolate, membranous, subacuminate at apex. Flowers white or blue in 2–3–chotomous, terminal or axillary peduncled cymes, often unilateral. Capsules c 0.4 cm broad, laterally compressed, 2–horned, green. Seeds numerous minute.

*Fls. & Frts.* : August–October.


*Distrib.* : Frequent in moist and shady localities. Amravati, Aurangabad, Dhule, Nagpur, Nanded, Nasik, Pune, Ratnagiri, Sindhudurg, Thane, Yavatmal.
Mitreola petiolata (J. F. Gmel.) Torr. & A. Gray
Strychnos L.

1. Climbing shrubs:
   2. Ovary wholly glabrous; fruits many-seeded ... S. dalzellii
   2. Upper part of ovary hairy; fruits 1–2–seeded ... S. wallichiana

1. Trees:
   3. Fruits orange-red, usually many-seeded ... S. nux-vomica
   3. Fruits black, 1–2–seeded ... S. potatorum


Large climbers with clavate, ferruginous–pubescent tendrils. Leaves 7.5–12.5 x 3.5–5.6 cm, ovate, acute at apex, rounded or cuneate at base, 3–nerved. Flowers in short, dense, axillary and terminal subcapitate puberulous cymes. Berries 2.5–3.7 cm across, crustaceous. Seeds discoid.

Distrib. : 'Konkan' (Cooke, op. cit.).


Trees, 10–15 m tall; young parts glabrescent. Leaves 6–12 x 4.5–6.0 cm, broadly elliptic or elliptic–ovate, bluntly acuminate or obtuse at apex. Flowers greenish–white, in axillary or terminal cymes, pubescent; corolla–tube cylindric–elongate, hairy inside. Berries 3–8 cm across, globose. Seeds discoid, compressed.

Fls. & Frts. : February–November.


Distrib. : Scattered in forests, along roadsides and coasts. Kolhapur, Raigad, Ratnagiri, Sindhudurg.


Trees, c 5 m tall. Leaves 3–6 x 2.5–3.5 cm, ovate or elliptic, shining. Flowers white, 0.5–1.0 cm across, in short, axillary cymes. Berries 1.8–2.0 cm across. Seeds c 0.8 cm across, globose, yellow.

Strychnos dalzellii C. B. Cl.
Strychnos wallichiana Steud. ex DC.

**Distrib.** : Occasional in midbelt to base ghats, in sacred groves and in hilly forests. Chandrapur, Jalgaon, Nanded, Osmanabad, Raigad, Satara, Solapur, Yavatmal.


Climbing shrubs up to 10 m or more; tendrils simple or in pairs, thickened, circinate. Leaves 6–9 x 3–4 cm, ovate–lanceolate, subcoriaceous, 3–5–nerved, acute or rounded at apex. Flowers greenish–white, in axillary or terminal cymes; calyx glabrous or hairy; corolla 0.3–0.5 cm long, hairy inside. Berries 2–3 cm across, globose, yellowish–purple when mature.

**Fls. & Frts.** : October–June.


**Distrib.** Occasional in hilly forests and along ghats. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

**BUDDLEJACEAE**

*(C. R. Jadhav)*

**BUDDLEJA L.**


Shrubs, up to 4 m tall; young parts white tomentose. Leaves 4–11 x 1.5–3.0 cm, lanceolate to oblong–lanceolate, glabrous above, yellowish–white tomentose beneath, acuminate at apex, subentire along margins. Flowers white, subsessile in thyrsoid, spiciform panicles, fragrant; bracts lanceolate; calyx divided above middle, white hairy; corolla 0.8 cm long, tubular. Capsules 0.4–0.5 cm long, ellipsoid–oblong.

**Fls. & Frts.** : September–October.

Buddleja asiatica Lour.
Distrib. : Occasional along hill slopes and ghats. Ahmednagar, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

CULTIVATED SPECIES:


Shrubs upto 2 m tall; branches drooping. Leaves ovate–elliptic. Flowers dark purple, fragrant, in terminal panicles, zygomorphic. Fruits capsular, dehiscent.

*Fls. & Frts.* : June–October.

Distrib. : Native of China, grown in gardens for ornamental purposes. Marathwada region (Naik, op. cit.), Pune.


Shrubs, straggling upto 6 m; branchlets densely tomentose. Leaves ovate–oblong, white or yellow tomentose beneath. Flowers orange, in large terminal panicles.


GENTIANACEAE

*(C. R. Jadhav)*

1. Flowers regular; corolla lobes equal :

2. Ovary 2–celled

3. Ovary 1–celled :

4. Flowers glandular at base

5. Flowers eglandular :

6. Flowers sessile, in axillary clusters

7. Flowers pedicellate, in dichotomous cymes

1. Flowers irregular; corolla lobes unequal :

5. Flowers yellow; stigma obscurely lobed

5. Flowers not as above; stigma distinctly lobed
Canscora Lam.

1. Calyx winged:
   2. Bracts perfoliate ... C. perfoliata
   2. Bracts not as above:
      3. Branches 4-winged; cymes rigidly erect ... C. decussata
      3. Branches not winged; cymes slender ... C. concanensis

1. Calyx not winged (except C. diffusa var. tetraptera):
   4. Bracts perfoliate ... C. roxburghii
   4. Bracts not as above:
      5. Flowers in forks of cymes sessile, lateral flowers pedicellate ... C. heteroclita
      5. All flowers of cymes pedicellate:
         6. Pedicels 4-winged ... C. pauciflora
         6. Pedicels not winged:
            7. Calyx keeled ... C. khandalensis
            7. Calyx not keeled:
               8. Stems obtusely quadrangular, not or obsoletely winged ... C. diffusa
               8. Stems strongly 4-winged ... C. decurrens


Herbs, c 20 cm high, annual, erect; stems obscurely quadrangular, spreading branches profuse. Leaves sessile, 0.5–3.0 x 0.5–1.5 cm, ovate, acute at apex, 3–nerved. Inflorescence of terminal cymes. Flowers bluish–purple, c 1 cm long; bracts linear. Capsules c 0.5 cm long, oblong–ellipsoid, 2–valved. Seeds numerous, ovoid–oblong, reticulate.

Fls. & Frts.: September–December.

Illus.: Ahuja & Cherian, op. cit.

Distrib.: Rare in open grassland and rocky slopes. Kolhapur, Nasik, Satara, Thane.

Canscora decurrens Dalz.
Herbs, c 50 cm high, slender, much branched. Leaves variable, sessile, 1–4 x 1.0–2.5 cm, ovate, elliptic or lanceolate, thin, membranous, 3-nerved, acute at apex. Flowers pink, in subtrichotomous cymes; calyx c 0.4 cm long, lobes lanceolate; corolla c 0.6 cm long. Capsules ellipsoid, membranous.

*Fls. & Frts.*: September–February.

*Distrib.*: Common throughout in open, moist places and as a weed in cultivated fields.

*Note*: Dalz op. cit. had described the specimen with white coloured flowers.


Herbs, c 25 cm high, erect; stems 4-winged. Leaves opposite, sessile, c 2.0 x 0.7 cm, ovate to lanceolate, acute at apex, 3–5-nerved at base. Flowers white, 1.5 cm long. Capsules oblong.

*Fls. & Frts.*: September–October.


*Distrib.*: Rare in moist places. Chandrapur, Nagpur, Nanded, Pune, Yavatmal.


1. Calyx 4-winged ... var. tetraptera
1. Calyx not as above ... var. diffusa

*var. diffusa.*

Herbs, c 40 cm high, annual, highly branched. Leaves 0.5–2.0 x 0.5–1.0 cm (sometimes up to 9 cm long), upper sessile, broadly ovate, acute at apex, rounded at base, lower petiolate, elliptic. Inflorescence of lax, diffuse, paniculate–cymes. Flowers pink. Capsules c 0.5 cm long, membranous, narrowly oblong.

*Fls. & Frts.*: September–April.

*Ilus.*: Wight, Ic. t. 1327. 1848 (*C. lawii*).
Distrib. : Common throughout in moist, shady places.


Herbs, 15–20 cm high, annual, erect; stems 4–angled. Leaves sessile 1.2–3.0 x 0.8–1.5 cm, broadly ovate–lanceolate, conspicuously 3–nerved, those subtending the inflorescence 1.0–1.5 x 1.0–1.2 cm, broadly ovate, acute at apex, 5–nerved. Flowers in dichotomous or apparently unilateral cymes, 1.2–1.5 cm long. Capsules 0.5–0.6 x 0.15–0.20 cm, oblong, pubescent and with persistant style–base at apex, glabrous below, 2–valved. Seeds numerous, ovoid, granular, brown.


*Illus.* : Naik & Pokle, op. cit. 674, f. 3 (a–d).

Distrib. : Rare. Aurangabad (Naik & Pokle, op. cit.).


Herbs, 10–15 cm high; stems 4–winged. Leaves broadly ovate, obtuse at base, acutely apiculate at apex, upper ones linear–lanceolate. Flowers rose or bright pink, in cymes; bracts linear–lanceolate, herbaceous. Capsules oblong, compressed.

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


Distrib. : Rare on wet soil along gullies. Nanded (Naik, op. cit.).


Herbs, 8–20 cm high, annual, erect. Leaves ovate or elliptic–lanceolate. Flowers rose–red, in lax, dichotomous cymes, 0.8–1.3 cm long. Capsules 0.6–0.8 cm long. Seeds many, reticulated, brown.

*Fls. & Frts.* : September–October.
Canscora khandalensis Sant.
A- Habit; B- Flower; C- Fruit
Distrib. : Rare in rocky crevices of hilly forests. Pune, Raigad, Satara, Thane.


Herbs, 10–25 cm high, erect. Leaves sessile, oblong–ovate or obovate, obtuse or acute at apex, 3–nerved. Flowers pale pink to purple, in lax, dichotomous cymes; bracts small, linear, acute. Capsules c 0.5 cm long, narrowly oblong.

Fls. & Frts. : September–December.


Herbs, 15–40 cm high, annual, erect; stems 4–winged. Leaves sessile, 2–4 x 0.5–1.3 cm, oblong–lanceolate, acute or acuminate at apex. Flowers white or pale rose, in terminal, paniculate cymes; bracts circular. Capsules 0.8–2.0 cm long.

Fls. & Frts. : September–June.


Distrib. : Scattered along grassy slopes and in harvested rice fields. Chandrapur, Kolhapur, Osmanabad, Pune, Ratnagiri, Satara, Sindhudurg (Cooke, op. cit.).


Herbs, 20–40 cm high, annual; stems 4–winged. Leaves oblong. Cymes terminal, paniculate. Calyx scarious in fruit with 12 green nerves; corolla–lobes obovate, obtuse, rose–red.

Illus. : Wight, Ic. t. 1327 (middle fig.). 1848 [C. perfoliata Wall.].

Distrib. : Maharashtra (Garg, op. cit.).
Canscora pauciflora Dalz.
**CENTAURIUM Hill.**


Herbs, 10–20 cm high, erect. Radical leaves rosulate, 1.5–2.5 x 0.5 cm, obovate or oblong, obtuse at apex; cauline leaves c 0.5 x 0.1 cm, linear–oblong. Inflorescence of dichotomous cymes with pedicelled flowers in each fork. Flowers pale or dark pink. Capsules narrowly oblong.

*Fls. & Frts.*: February–May.

*Illus.*: Wight, Ic. t. 1325. 1848 (*Erythraea roxburghii*).

*Distrib.*: Common throughout in moist places and harvested rice fields.

**Enicostema BL.**


Herbs, 13–15 cm high, erect, perennial. Leaves sessile, 2–4 x 0.1–0.5 cm, linear–oblong, elliptic–oblong or lanceolate, strongly 3–nerved. Flowers white, in axillary clusters all along stem, c 1 cm long. Capsules c 0.4 cm long, ellipsoid, apiculate with remains of the style.

*Fls. & Frts.*: July–November.


*Distrib.*: Common throughout among grasses and in cultivated fields, in open situations.
Centaurium meyeri (Bunge) Druce
Exacum L.

1. Calyx winged:
   2. Leaves distinctly petiolate
      3. Corolla lobes less than 1 cm long:
         4. Pedicels stout, rigid; corolla lobes lanceolate, acute
            ... E. pedunculatum
         4. Pedicels filiform; corolla lobes suborbicular, obtuse
            ... E. pumilum
   2. Leaves upper ones sessile, lower most subsessile:
      3. Corolla lobes more than 1.5 cm long...
         ... E. tetragonum

1. Calyx not winged...E. lawii


Herbs, 6–25 cm high; stems quadrangular. Leaves 0.2–0.5 x 0.2–0.5 cm, ovate, acute or subobtuse at apex. Flowers bluish–purple, c 0.5 cm long, 1–6 on terminal peduncles. Capsules c 0.3 cm across, subglobose or ovoid.

_Fls. & Frts._: July–October.


_Distrib._: Frequent on hill tops and in moist grassy places. Ahmednagar, Amravati, Kolhapur, Nasik, Pune, Ratnagiri, Satara, Sindhudurg.


Herbs, 10–30 cm high, erect; stems quadrangular. Leaves 1.0–5.5 x 0.3–0.5 cm, elliptic–oblong or oblong–lanceolate. Inflorescence of terminal and axillary cymes. Flowers blue or pink, c 1 cm long. Capsules c 0.4 cm across, globose, smooth, shining.

_Fls. & Frts._: August–December.

Distrib. : Common throughout along ghats, open places and banks of nallahs.


Herbs, 15–30 cm high, annual, erect; stems quadrangular. Leaves 2.5–6.0 x 1.5–3.0 cm, broadly elliptic. Inflorescence of terminal and axillary cymes. Flowers bluish–violet. Capsules c 0.3 cm across, globose, smooth, shining.

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

**Illus.** : Wight, Ic. t. 1324, f. 2. 1848.

Distrib. : Frequent in moist forests and along roadsides. Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Herbs, 15–20 cm high, annual, erect; stems tetragonal. Lower leaves c 0.5 cm long, linear, acute at apex, 1–nerved, upper leaves 0.8–2.0 x 0.2–0.7 cm, lanceolate, 3–nerved. Inflorescence of lax cymes. Flowers blue, c 1 cm long. Capsules c 0.3 cm across, subglobose or ovoid.

**Fls. & Frts.** : August–October.


Distrib. : Frequent in open moist places amongst grasses. Ahmednagar, Amravati, Chandrapur, Dhule, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

Herbs, c 60 cm high, annual, erect; stems quadrangular. Leaves 1.5–17.0 x 0.5–5.0 cm, ovate, elliptic or lanceolate, acute or obtuse at apex, sometimes apiculate. Inflorescence of copious, terminal cymes. Corolla white with violet–blue patches towards edges. Capsules 0.8–1.3 cm long, ellipsoid, smooth, shining, tipped with remains of style, yellowish–brown.

*Fls. & Frts.:* August–February.


**Hoppea Willd.**

1. Corolla ventricose, shorter than calyx; capsules globose ... *H. dichotoma*
2. Corolla tubular, exceeding calyx; capsules ellipsoid ... *H. fastigiata*


Herbs, 3–12 cm high, erect, dichotomously branched; stems 4–winged. Leaves 0.3–0.6 x 0.2–0.4 cm, ovate. Flowers pale yellow, in terminal, dichasial cymes. Capsules c 0.4 cm across. Seeds many, minute, obscurely reticulate.

*Fls. & Frts.:* October–December.


*Distrib.* : Common throughout in open moist places amongst grasses.

Herbs; stems 4–winged. Leaves ovate. Flowers fastigiate; corolla tube 0.2 cm long, oblong, narrowed in the throat with the erect lobes in fruit; stigmas slightly clavate, subentire.

Fls. & Frts. : October–December.


Distrib. : Rare in pastures and grasslands. Marathwada region (Naik, op. cit.).

**Swertia L.**

1. Nectaries 2 at base of each petal ... *S. minor*
1. Nectary 1 at base of each petal :
   2. Flowers in elongate, paniculate cymes ... *S. angustifolia* var. *pulchella*
   2. Flowers in dense, corymbose or lax cymes :
      3. Nectary with covering scale ... *S. lawii*
      3. Nectary without covering scale ... *S. densifolia*


Herbs, 25–90 cm high, annual. Leaves lanceolate, narrowed at base. Panicle–branches sharply quadrangular. Flowers white or pale blue; petals with orbicular gland completely covered by a large scale with pubescent margin, petal–nerves deeper blue.

Illus. : Arn. in Wight, Illus. 2. 175, t. 157, bis, f. 3, b. 1850 (*Ophelia affinis*); Wight, l.c. t. 1331. 1848 (*Ophelia elegans*).

Distrib. : It has been included based on Garg, op. cit.


Herbs, 25–80 cm high, annual; stems erect, obtusely quadrangular, more or less 4–winged. Leaves sessile, approximately
**Swertia densifolia** (Griseb.) Kashyapa
decussate. Flowers 0.8–1.0 cm long, white with purple veins, many in dense cormbose–cymes. Capsules 0.6–1.0 cm long, ovoid, beaked, 2–valved. Seeds many, dark brown.

_Fls. & Frts._: December–January.

_Illus._: Wight, Illus. 2. 175, t. 157 bis, fig. 3, f. 1850 (*Ophelia alba*).

_Distrib._: A few on open slopes. Pune, Satara.


Herbs, c 25 cm high; stems erect, branching towards the top, 4–winged. Leaves sessile, base broad, rounded–truncate, distinctly 3–nerved. Flowers white, in lax cymes.

_Fls. & Frts._: September–November.

_Illus._: Wight, Illus. 2: 175, t. 157 bis, f. 3 c. 1850 (*Ophelia lawii*).

_Distrib._: Rare on exposed plateaus. Ahmednagar, 'Deccan' (Cooke, _op. cit._), Thane.


Herbs, 15 cm high, annual; stems 4–winged. Leaves 0.5–1.0 x 0.5 cm, ovate, acute at apex, obscurely 3–nerved. Flowers blue. Capsules c 0.5 cm long, ovoid. Seeds suborbicular, compressed.

_Fls. & Frts._: July–October.

_Illus._: Wight, _Ic._ t. 1332. 1848 (*Ophelia minor*).

_Distrib._: Frequent in hilly forests, cultivated fields and in crest of ghats. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Satara, Thane.

**DOUBTFUL VARIETIES:**

**Gentiana quadrifaria** Bl. var. _zeylanica_ (Griseb.) Kusn. in _Acta Horti Petrop._ 15:403. 1904.
Swertia corymbosa (Griseb.) Wight ex C.B.Cl. var. elatior
Griseb. in DC. Prodr. 9:125. 1845.

Garg (Indian Gentianaceae, 1988) included Maharashtra under
distribution of the above two varieties. There are no recent collections
of them. Hence distribution of these two varieties in Maharashtra
appears doubtful.

MENYANTHACEAE
(B. G. Kulkarni)

NYMPHOIDES Seguier

1. Leaves black gland–dotted beneath; seeds puberulous ... N. aurantiaca
1. Leaves eglandular; seeds glabrous :
2. Stems not rooting at nodes; leaves radical and cauline ... N. parviflora
2. Stems rooting at nodes; radical leaves only present:
3. Corolla lobes densely fimbriate on inner surface;
   style heterostylous ... N. indicum
3. Corolla lobes not fimbriate; style homostylous ... N. hydrophylla

Bot. 2. 136. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 132. 1883; Cooke,

Herbs, aquatic, perennial; rhizomes elongate; branches
purplish–red. Leaves 2–5 x 2–4 cm, ovate–orbicular, pale green above,
purplish–brown beneath, apex rounded, base deeply cordate–hastate.
Flowers yellow, in lax, 2–4–flowered fascicles; lobes ovate–oblung.
Capsules 0.4–0.6 cm across, depressed–globose, shorter than

Fls. & Frts. : September–December.

Distrib. : In shallow ponds. Sindhudurg (Cooke, op. cit.).

N. hydrophylla (Lour.) O. Ktze.Rev. Gen. Pl. 429. 1891; Cramer
hydrophylla Lour. Fl. Cochinch. 1:129. 1790. Limnanthemum

Herbs, aquatic; rhizomes short, erect; branches slender. Leaves floating, 4–12 x 3–9 cm, ovate–orbicular, pale green above, purplish, prominently veined beneath, apex rounded, base deeply cordate–hastate, margins shallowly crenate. Flowers white, in umbels, lobes 5–6, ovate–oblong with longitudinal, undulate crest along centre on upper surface. Capsules 0.3–0.4 cm across, broadly ovoid. Seeds globose, yellowish–white, occasionally lenticular, tuberculat.

Fls. & Frts.: December–April.


Distrib.: Infrequent in pools and ponds. Ahmednagar, Akola, Bhandara, Chandrapur, Pune, Raigad, Ratnagiri, Thane, Yavatmal.


Herbs, aquatic, rhizomatous; rhizomes oblique, thick, covered with scaly leaves. Floating leaves 4–20 cm, as long as broad, ovate–orbicular, apex rounded, base deeply cordate, margins coarsely crenate. Flowers white with yellow throat, 2.5–4.0 cm across, in umbels; lobes linear or oblong–lanceolate. Capsules 0.6–0.8 cm across, obovoid. Seeds globose, yellowish–white.

Fls. & Frts.: August–April.


Distrib.: In streams and ponds, infrequent. Chandrapur, Pune, Raigad, Satara (Cooke, op. cit.), Thane.

Herbs, aquatic or terrestrial; rhizomes short with slender, fibrous roots. Radical leaves 0.7–1.0 x 0.6–1.0 cm, broadly spatulate or deltoid, apex rounded, base cuneate; floating leaves 1–4 x 1–3 cm, broadly ovate to orbicular or obovate, apex obtuse, base deeply triangular. Flowers white, in 4–8–flowered fascicles; lobes 4, oblong–lanceolate. Capsules 0.2–0.35 cm long, obovoid to turbinate, longer than calyx. Seeds orbicular, muricate.


Distrib. : Occasional in open, moist grassy slopes or shallow ponds. Sindhudurg (Cooke, op. cit.).

HYDROPHYLLACEAE

Hydrolea L. (nom. cons.)


Herbs, aquatic or semi–aquatic, procumbent–ascending, rooting at lower nodes. Leaves 2–5 x 0.3–1.5 cm, lanceolate, membranous, apex acute, base tapering. Flowers bright blue, 1.0–1.2 cm across, in short racemes; calyx glandular hairy; corolla deeply divided. Capsules 0.4–0.6 cm long, ovoid, enclosed in persistent calyx. Seeds oblong, numerous.

Fls. & Frts. : November–February.


Distrib. : Frequent in wet situations and along banks of streams. Ahmednagar, Bombay, Chandrapur, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.
BORAGINACEAE
(B. G. Kulkarni)

1. Trees or shrubs, above 3 m tall:
   2. Styles dichotomously twice branched; calyx accrescent in fruits ... Cordia
   2. Styles once divided; calyx not accrescent in fruits ... Ehretia

1. Herbs or undershrubs, up to 2 m tall:
   3. Styles 2, divaricate; flowers usually solitary ... Coldenia
   3. Styles simple; flowers usually not solitary:
      4. Ovary entire or slightly 4-lobed:
         5. Stems virgate; stamens exserted beyond corolla ... Rotula
         5. Stems not virgate; stamens included in corolla ... Heliotropium
      4. Ovary deeply 4-lobed:
         6. Flowers more than 1 cm wide; calyx winged or auricled ... Trichodesma
         6. Flowers less than 1 cm wide; calyx not winged nor auricled:
            7. Nutlets glochidiate:
               8. Nutlets not or slightly margined, attached to receptacle towards apex ... Cynoglossum
               8 Nutlets prominently margined, attached to receptacle by almost whole inner surface ... Paracaryopsis
            7. Nutlets not glochidiate ... Sericostoma

Coldenia L.


Spreading herbs, white hairy. Leaves 1.2–3.5 x 0.6–1.9 cm, ovate–oblong or obovate–oblong, hairy on both sides, crisped, apex obtuse, base acute, oblique, margins crenate–dentate. Flowers white, 0.4–0.5 cm wide, subsessile, 4–merous; calyx–lobes ovate; corolla lobes 0.25 cm long, obovate, spreading. Drupes 0.3–0.4 cm long, beaked, 4–lobed and breaking into 4–pyrenes.

Fls. & Frts.: More or less throughout the year.

**Distrib.** : Frequent in open, moist situations and in fields as weed. Akola, Bombay, Raigad, Ratnagiri, Satara, Sindhudurg, Solapur, Thane.

**CORDIA L.**

1. Leaves subopposite, basal pair of nerves not opposite … *C. gharaf*
   1. Leaves alternate, basal pair of nerves opposite :
      2. Fruiting calyx ribbed :
         3. Filaments hairy at base; calyx teeth without tufts of hairs at apex … *C. macleodii*
         3. Filaments glabrous; calyx teeth with tufts of short hairs at apex … *C. domestica*
      2. Fruiting calyx not ribbed :
         4. Leaves densely stellate–fulvous beneath … *C. wallichii*
         4. Leaves glabrous beneath … *C. dichotoma*


Medium sized trees, 5–10 m high; bark rough. Leaves variable, 6–12 x 4–10 cm, broadly ovate, scabrous above, apex obtuse, base rounded or cordate. Flowers white, polygamous; male flowers larger than bisexual ones in cymose–panicles; calyx irregularly splitting; corolla–lobes oblong. Berries 0.6–2.5 cm long, ovoid, yellow or pink, glossy, supported by accescent calyx, pulp mucilaginous, edible.


**Distrib.** : Frequent in deciduous forests and also planted. Ahmednagar, Akola, Amravati, Bhandara, Chandrapur, Dhule, Nagpur, Nasik, Osmanabad, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.

**C. domestica** Roth, Nov. Pl. Sp 12. 1821; Gamble, Fl. Pres. Madras 2: 624. 1957 (Repr.). *C. fulvosa* Wight, Ic. t. 1380. 1848; Cooke,
Cordia macleodii (Griff.) Hook. f. & Thoms.
Shrubs or small trees; young parts fulvous pubescent. Leaves 2–5 x 1.0–2.5 cm, broadly ovate–elliptic, scabrous above, fulvous pubescent beneath, apex acute, base truncate to rounded, margins entire or crenate. Flowers white in dense, short, axillary or terminal cymes; calyx obconic, fulvous tomentose; corolla 1.5 cm across, lobes spreading. Drupes 1.0–1.5 cm long, ovoid.


Illus. : Wight, op. cit.

Distrib. : Infrequent in deciduous forest. 'Konkan' (Cooke, op. cit.).


Small trees, 5–8 m high. Leaves 5–8 x 2.0–3.5 cm, oblanceolate to oblong, glabrescent on both sides, apex subacute, base rounded to acute. Flowers white, 0.6–0.8 cm wide, in terminal or axillary cymes; calyx puberulous within; corolla lobes 4–5. Drupes 0.6–1.2 cm long, ovoid, yellow to reddish–brown, pellucid pulpy, 1–seeded.

Fls. & Frts. : April–October.

Illus. : Wight, Ic. t. 1379. 1848 (*Cordia rothii*).

Distrib. : Frequent in dry deciduous forests and often planted. Ahmednagar, Akola, Nasik, Osmanabad, Pune, Thane.


Trees, 8–10 m high; bark corky, grey. Leaves 5–15 cm as long as broad, ovate, scabrous, base cordate, margins crenate–dentate. Flowers white, in short terminal and axillary corymb; calyx densely tomentose; corolla lobes 0.6–0.8 cm long, oblong. Drupes 1.2–1.9 cm long, ovoid, acuminate at apex, seated on persistent calyx.
Fls. & Frts. : February–August.


Distrib. : Frequent in deciduous forests. Akola, Dhule, Kolhapur, Nagpur, Nasik, Pune, Raigad, Satara, Thane, Yavatmal.


Trees, 10–12 (15) m high. Leaves 6–12 cm as long as broad, orbicular–ovate, glabrescent above, apex obtuse to acute, base truncate to cordate. Flowers white, in terminal or lateral lax cymes; calyx irregularly splitting, 5–lobed; corolla 1–2–1.6 cm long. Drupes 3–4 cm across, ovoid.

Fls. & Frts. : February–May.

Illus. : Wight, Ic. t. 1378. 1848.

Distrib. : Occasional in deciduous forests. Ahmednagar (Cooke op. cit.).

*CYNOGLOSSUM* L.

1. Styles filiform; marginal appendages of nutlets form narrow wings ... *C. wallichii* var. *glochidiatum*

1. Styles fleshy thick; marginal appendages of nutlets not forming wings:

2. Leaves uniformly covered dorsally with hairs without tubercled bases ... *C. zeylanicum*

2. Leaves covered dorsally with unequal hairs with tubercled bases ... *C. lanceolatum*


Biennial or perennial herbs, 80–150 cm high; stems woody at base; branches greyish hairy. Basal leaves petiolate, 8–20 x 3–4 cm, lanceolate, nerves prominent beneath, apex acute, base attenuate; cauline leaves sub sessile, 5–10 x 1–2 cm, upper cauline leaves sessile. Flowers blue, 0.2–3.0 cm long, in axillary or terminal, branched cymes; calyx and corolla divided up to base. Nutlets 4, ovate, 0.1–0.2 cm as long as broad.

Erect, biennial herbs upto 80 cm high; stems and branches white hairy, branches divaricate. Basal leaves petiolate, 9–16 x 2.5–3.2 cm, lanceolate to obovate, hairy on both sides, apex obtuse to acute, base gradually narrowed; cauline leaves petiolate, subsessile to sessile, longer and broader than basal ones. Flowers pale to deep blue, 0.35–0.4 cm long in terminal or axillary, scorpoid cymes; calyx enlarged in fruits corolla tube divided up to base. Nutlets ovate, 0.25 x 0.2 cm, with few vertical appendages.


Erect herbs, 30–70 cm high; stem and branches clothed with white or yellowish hairs. Leaves 3.5–6.0 x 1.5–2.5 cm, elliptic–lanceolate, hairy on both sides (basal leaves bigger than cauline and with 8–10 cm long petioles). Flowers pale blue to lilac, throat violet, 0.5 cm long, in racemes; calyx divided up to 3/4 of its length; corolla infundibuliform. Nutlets 4, ovoid.
Ehretia indica (Dennst. ex. Kostel.) M. R. & S. M. Almeida
**Ehretia L.**

1. Flowers usually in terminal corymbose–cymes
   - *E. aspera*

1. Flowers in axillary or lateral or terminal lax cymes of unilateral spikes or racemes:
   2. Leaves symmetric, dark brown when dry; cymes longer than 1/2 the length of lamina
      - *E. indica*
   2. Leaves asymmetric, pale greenish when dry; cymes longer than lamina
      - *E. laevis*


Small trees, 3–5 m high; branches brownish. Leaves variable, 2.0–5.5 x 0.6–3.0 cm, oblong–elliptic or obovate, glabrous or slightly scabrous above, hairy beneath, apex rounded or shortly acuminate, base acute. Flowers white, 0.6–0.8 cm long; calyx 0.2 cm long, hairy outside, ciliate; corolla tube longer than calyx lobes, oblong. Drupes 0.4–0.6 cm across, depressed–globose, hard, of 4 pyrenes.

**Fls. & Frts.** : March–June.

**Distrib.** : Infrequent in dry deciduous forests. Jalgaon, Nasik, Pune.


Trees, 6–8 m high; branches brownish–grey. Leaves 5–10 x 3–5 cm, elliptic–lanceolate, glabrous on both sides, apex acuminate, base cuneate, sometimes rounded. Flowers white, in short axillary cymes; calyx campanulate, lobes ovate; corolla 0.5 cm long, lobes ovate. Drupes 0.5–0.6 cm across, ovoid, 4–seeded, indehiscent.

**Fls. & Frts.** : September–October.

**Illus.** : *E. laevis* Wight, Ic. t. 1382. 1848 non Roxb. 1796; Bedd. Fl. Sylv. t. 246. 1872.

**Distrib.** : Frequent along higher slopes of the ghats in semi–ever green forests. Ratnagiri, Sindhudurg.

Small trees, 4–8 m high; young parts glabrous or glabrescent. Leaves 4–10 x 4–6 cm, ovate–elliptic or obovate or even suborbicular, glabrous above, glandular pubescent beneath, apex acute, acuminate or obtuse to emarginate, base truncate to attenuate. Flowers white, sessile or subsessile in unilateral, compound spikes; calyx 0.1–0.2 cm long, hairy; corolla 0.2–0.4 cm long, subrotate. Drupes 0.3–0.4 cm across, 2–lobed, orange when mature.

Fls. & Frts. : March–July.


Distrib. : Frequent in deciduous forests. Ahmednagar, Chandrapur, Dhule, Kolhapur, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg.

HELIOTROPIUM L.

1. Leaves more than 2.5 cm broad 
   1. Leaves less than 2.5 cm broad :
      2. Calyx divided up to 1/4 the length, lobes short; fruits enclosed by calyx 
      3. Corolla tube hairy inside :
         4. Style absent; nutlets separating 
         4. Style present; nutlets not separating :
            5. Stigma subcapitate, stigmatic ring fleshy 
            5. Stigma elongate–conic, stigmatic ring not fleshy :
               6. Plants decumbent or prostrate; flowers sessile 
               6. Plants usually erect, sometimes decumbent; flowers pedicellate to subsessile :
                  7. Glandular and pubescent at corolla throat 
                  7. Not glandular, but hirsute at corolla throat 
         
   1. Leaves less than 2.5 cm broad :
      2. Calyx divided nearly to base, lobes free, long; fruits not enclosed by calyx :
         3. Corolla tube hairy inside :
            4. Style absent; nutlets separating 
            4. Style present; nutlets not separating :
               5. Stigma subcapitate, stigmatic ring fleshy 
               5. Stigma elongate–conic, stigmatic ring not fleshy :
                  6. Plants decumbent or prostrate; flowers sessile 
                  6. Plants usually erect, sometimes decumbent; flowers pedicellate to subsessile :
                     7. Glandular and pubescent at corolla throat 
                     7. Not glandular, but hirsute at corolla throat 

H. indicum

H. supium

H. ovalifolium

H. rariflorum

H. marifolium

H. strigosum

H. scabrum
3. Corolla tube glabrous inside:
   8. Nutlets quadrangular with blunt cornute processes … *H. cornutum*
   8. Nutlets not as above and without cornute processes:
      9. Corolla lobes caudate–acuminate; anthers oblong … *H. subulatum*
      9. Corolla lobes rounded or slightly obtuse; anthers ovate … *H. zeylanicum*


Prostrate herbs, greyish–green; stems many radiating from above taproot. Leaves 0.3–0.8 x 0.15–0.20 cm, ovate to oblong–lanceolate, appressed hairy on both sides, apex subacute, base attenuate to rounded. Flowers white or pinkish–white, in extra–axillary, few flowered cymes; calyx deeply 5 partite; corolla infundibuliform, lobes ovate–lanceolate. Fruits 0.3 x 0.2 cm, densely villous, conspicuously beaked.


*Distrib.* : Infrequent in open, moist areas along ghats and plains. Sindhudurg.


Erect or sometimes decumbent–ascending, annual herbs; branches hirsute. Leaves 3–8 x 2–4 cm, ovate–elliptic or ovate–oblong, sparsely hairy on both sides, apex acute, base sometimes contracted into partially winged petiole. Flowers white or bluish–white, sessile in 2–ranked, dense, scorpionoid cymes; corolla salver shaped. Fruits deeply bifid, nutlets beaked, angled.

*Fls. & Frts.* : July–June (almost throughout the year).


*Distrib.* : Frequent in open, moist places as weed. Bombay, Dhule, Nagpur, Nasik, Pune, Ratnagiri, Satara, Sindhudurg, Thane.

1. Leaves stout hairy; corolla throat less hairy ... **ssp. wallichii**
1. Leaves tubercled–based hairy; corolla throat densely hairy ... **ssp. marifolium**

**ssp. marifolium.**

1. Spikes crowded ... **var. marifolium**
1. Spikes lax ... **var. laxiflora**

**var. marifolium.**

Decumbent or prostrate perennial herbs; branches spreading, appressedly hairy. Leaves 0.6–1.2 x 0.15–0.3 cm, elliptic to lanceolate, stiff hairy on both surfaces, apex acute to subacute, base obtuse to acute. Flowers white, 0.25–0.35 cm long, in scorpionid cymes; calyx ovate–lanceolate, enlarged in fruits; corolla short, erect. Fruits subglobose, depressed.

*Fls. & Frts.*: June–October.

*Illus.*: Wight, Ic. t. 1389. 1848.

*Distrib.*: Infrequent along hill slopes in open areas and railway line. Ahmednagar, Akola, Pune, Ratnagiri, Sindhudurg (Cooke. op. cit.), Thane.


Erect herbs. Leaves lanceolate, densely appressed hairy, oblique towards midrib. Spikes lax, slender (all the characters are similar to original species excepting only inflorescence spike lax).

*Fls. & Frts.*: October–December.

*Distrib.*: Occasional in open areas on an island. Worli hill, Bombay (Cooke, op. cit.).

Prostrate herbs, much branched. Leaves 0.4–1.0 x 0.15–0.25 cm, lanceolate, sessile or petiolate, stout hairy on both surfaces. Flowers bracteate. Fruits densely stout hairy (all the characters similar excepting prostrate habit; leaves tubercle–based hairy, so also fruits and spikes longer than those of ssp. marifolium up to 4 cm long).

**Fls. & Frts.** : August–October.

**Illus.** : Wight, Ic. t. 1390. 1848.

**Distrib.** : Occasional in rocky soil of waste lands. Osmanabad (Naik, op. cit.), Yavatmal.


Herbs, annual, ascending or sometimes decumbent, 10–35 cm high; stems and branches clothed with greyish hairs. Leaves 0.6–2.0 x 0.4–0.9 cm, elliptic, ovate or oblanceolate, appressed hairy on both sides, apex rounded or obtuse, base acute or obtuse. Flowers white, 0.25–0.3 cm long, in slender, ebracteate, scorpioid cymes; calyx divided to the base; corolla campanulate, hairy outside. Fruits 0.2–0.3 cm long, nutlets convex on back, hairy, breaking into 4 equal nutlets.

**Fls. & Frts.** : June–March.


**Distrib.** : Frequent in open situations in fields and along road sides as weed. Ahmednagar, Akola, Beed, Chandrapur, Dhule, Kolahpur, Nagpur, Nasik, Osmanabad, Pune, Raigad, Satara, Solapur, Thane, Yavatmal.


Undershrubs, 15–50 cm high, perennial; stems and branches rigid, appressed hairy. Leaves sessile, 1.5–3.5 x 0.2–0.55 cm, linear or linear–lanceolate, stiff hairy on both sides, apex subacute, margins revolute. Flowers white, 0.15–0.2 cm long, sessile in extra–axillary and terminal bracteate spikes; calyx 5–partite; corolla cylindrical–campanulate. Fruits 4–lobed, appressed hairy.

**Fls. & Frts.** : April–June.
Heliotropium rariflorum Stocks
Distrib. : Scattered, infrequent in open, dry areas in deciduous forests. Bombay, Raigad,


Erect or procumbent herbs, up to 30 cm long; branches twiggy, radiating from root stock, hairy. Leaves 0.5–1.5 x 0.3–0.6 cm, ovate–lanceolate to linear–lanceolate, strigose hairy on both sides, apex acute, base narrowed, margins reflexed. Flowers white in axillary or terminal scorpoid cymes; calyx lobes 5, unequal, 0.15 cm long; corolla 0.2 cm long, campanulate. Fruits 2–4 lobed, appressed hairy.

Fls. & Frts. : August–September.


Distrib. : Infrequent in open areas in deciduous forests. Pune, Ratnagiri.


Suberect or spreading, perennial herbs; stems tufted, stems and branches appressed hairy. Leaves 0.6–2.0 x 0.2–0.3 cm, linear–lanceolate, stiff hairy on both sides, apex acute or obtuse, base narrowed. Flowers white or pale blue, solitary or in short spikes; calyx deeply 5 lobed, strigose; corolla 0.3 cm long, funnel–form or tubular. Fruits rounded or lobed, depressed–globose, appressed hairy, nutlets–4.

Fls. & Frts. : August–May.

Distrib. : Frequent in open areas and in fallow fields in plains in deciduous forests. Chandrapur, Sindhudurg.


Erect, up to 60 cm high, perennial herbs; stems and branches hispid hairy. Leaves 1–5 x 0.2–1.5 cm, lanceolate, tubercle–based hairy on both sides, usually narrowed at both ends, lower leaves petiolate, upper ones sessile. Flowers white or yellowish, 0.3–0.5 cm long; calyx deeply 5–lobed, hairy; corolla lobes caudate–acuminate. Fruits 0.2 cm across, nutlets–4, separating.

Fls. & Frts. : April–May.
Heliotropium strigosum Willd.

Prostrate, much branched, annual herbs; branches thickly clothed with soft hairs. Leaves 1.2–2.5 x 0.6–1.2 cm, ovate, obovate or elliptic, soft hairy on both sides, apex subobtuse. Flowers white, subsessile, in uniseriate villous cymes; calyx deciduous, enlarged in fruits, hairy; corolla 0.2 – 0.35 cm long, cylindrical. Fruits of usually 1 or 2, rarely 3 nutlets developed, dark brown, obscurely tuberculate on back.

**Fls. & Frts.** : August–April.


**Distrib.** : Frequent in open, moist places and fields. Ahmednagar, Amravati, Aurangabad, Chandrapur, Nagpur, Osmanabad, Pune, Raigad, Ratnagiri, Thane, Yavatmal.


1. Leaves 0.6–1.2 cm broad; calyx shorter than corolla  ...  **ssp. zeylanicum**
1. Leaves 0.1–0.3 cm broad; calyx equalling the corolla  ...  **ssp. paniculatum**

**ssp. zeylanicum.**

Erect, annual or perennial herbs, 40–60 cm high; branches scabrous, bulbous based hiry. Leaves shortly petiolate, subsessile, 2–5 cm long, lanceolate or linear, densely bulbous based hairy, apex acute, base tapering. Flowers white with yellow spot, sessile, in terminal or axillary, simple or forked elongated spikes; calyx divided up to base, subequal; corolla 0.3–0.4 cm long. Fruits 0.25 cm wide, compressed, lobed.

**Fls. & Frts.** : July–April.

**Distrib.** : Uncommon in open situations in deciduous forests. Dhule, Pune, Solapur.

Herbs; stems and branches appressed hairy. Leaves 0.6–2.5 cm long, linear, hairy on both sides or glabrous above. Flowers white, in spikes; calyx 0.25 cm long; corolla 0.3–0.4 cm long. Fruits globose (all the characters similar to species, but differs in broader leaves; calyx equalling corolla).

*Fls. & Frts.*: September–October.


*Distrib.*: Infrequent in open, dry places along road sides in deciduous forests. Dhule, Nagpur, Nasik, Pune, Solapur.

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**Paracaryopsis (H. Riedl) R. Mill.**

1. Flowers pale blue with dark centre; anthers included
   2. Stigma minute; nutlets 4
   3. Stigma capitate; nutlets 2 (2-suppressed)

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Erect branched, biennial or perennial herbs, 0.5–1 m tall; stems and branches reddish–purple, young parts subscabrous. Leaves : radical 12–20 x 8–18 cm, broadly ovate, apex acute, base cordate; cauline leaves 4–8 x 1.5–3.5 cm, ovate, scabrid on both sides, base cuneate. Flowers in forked racemes; calyx ciliate, persistent; corolla 0.6 cm long, campanulate, lobes 0.4–0.5 cm long. Nutlets ovate, 4, margins prominent.

*Fls. & Frts.*: September–November.

*Illus.*: Wight, Ic. t. 1394. 1848 [*Echinospermum coelestinum* (Lindl.) Wight].
Distrib. : Frequent in open situations from ghats to plains. Ahmednagar, Dhule, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Erect herbs, c 0.5 m high; branches rough, green. Leaves: radical 8–15 x 4–10 cm, ovate–lanceolate, light–green, bulbous based hairy, apex acute, base rounded; cauline leaves smaller in size, shape similar, sessile, apex acute, base narrowed. Flowers pale blue with dark centre, 0.8–1.2 cm across, in bracteate forked racemes; rhachis and pedicels hairy; calyx enlarged in fruits, softly hairy; corolla lobes suborbicular. Nutlets 1.2 x 2.2 cm, ovoid.

Fls. & Frts. : September–November.

Distrib. : Frequent in open areas along ghats. Raigad, Ratnagiri, Satara.


Stout branched herbs c 0.5 m high; branches tomentose. Leaves: radical 10–20 x 8–18 cm, broadly ovate, strigose above, softly hairy beneath, apex acute, base cordate; cauline leaves smaller in size, ovate, (as radical ones). Flowers uniformly blue, 1.5 cm wide, in terminal, dense racemes forming corymbs; calyx enlarged in fruits; corolla lobes rounded. Nutlets–4, 0.6 cm across, ovoid, glochidiate along margins.

Fls. & Frts. : September–November.


Distrib. : Frequent in open areas along the ghats. Ahmednagar, Nasik, Satara, Thane.

**Rotula Lour.**


Much branched, woody undershrubs, 0.5–1.4 m tall; branches black, glabrate. Leaves 0.8–2.5 x 0.3–0.6 cm, oblong–lanceolate, apex apiculate or rounded, base cuneate. Flowers pink to purple, in few flowered cymes; calyx hairy, slightly fleshy, divided unto base; corolla 0.8 cm long, lobes ovate–oblong. Fruits 0.2–0.3 cm wide, subglobose, 4–lobed and 4 seeded.

Fls. & Frts. : November–February.


Distrib. : Infrequent on river bed or along the banks among rocks. Chandrapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.

Sericostoma Stocks ex Wight


Perennial herbs or undershrubs; base woody; branches appressed hairy. Leaves sessile, 0.5–3.0 x 0.12–0.6 cm, linear or linear–lanceolate, appressed hairy on both sides, apex subacute or obtuse. Flowers 0.3–0.35 cm long, white in 2–6–flowered terminal racemes, becoming loose and longer with age; calyx deciduous at maturity, enlarged in fruit; corolla lobes broad at base, rounded–ovate, hairy. Nutlets ovoid–oblong, tuberculate, brownish.

Fls. & Frts. : October–December.

Illus. : Wight, op. cit.

Distrib. : Occasional in coastal areas. Thane.

Trichodesma R. Br. (nom. cons.)

1. Stamens included; corolla tube longer than lobes, lobes shortly acuminate, not recurved ... T. inaequale
1. Stamens exserted; corolla tube as long as, or shorter than lobes, lobes acuminate, recurved :
   2. Glandular spots on corolla lobes; calyx hastate or cordate ... T. indicum
   2. Glandular spots absent on corolla lobes; calyx rounded ... T. zeylanicum

Herbs, 30–60 cm high; stem and branches grey hairy. Leaves sessile or subsessile, 3–6 x 1.4–3.0 cm, scabrid on both sides (sparsely above), apex obtuse, base cordate, subamplexicaul. Flowers pale pink to pale lilac, solitary or few flowered in leaf opposed cymes; calyx upto 1.3 cm long, 5, broad and obtuse–auriculate at base; corolla irregular, 5–lobed. Fruits of 4 nutlets, smooth.

*Fls. & Frts.*: February–March.

*Illus.*: Banerjee & Pramanik, op. cit.

*Distrib.*: Frequent in open, dry areas along roadsides and as undergrowth along edges. Ahmednagar, Akola, Beed, Chandrapur, Nasik, Osmanabad, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.


Annual herbs, 15–60 cm high, erect; branches stems sparsely or densely hairy. Leaves 3–9 x 0.6 – 4.5 cm, ovate–oblung to oblong or ovate, ovate–lanceolate to lanceolate, hairy on both sides, apex acute or obtuse, base auriculate. Flowers pale blue, up to 1.8 cm long, solitary or in few flowered terminal cymes; calyx deeply divided, hispid hairy; corolla infundibuliform, lobes ovate to rounded. Nutlets c 0.5 cm long, ovoid, smooth on outer face, rugosely pitted on inner face.

*Fls. & Frts.*: October–February.

Distrib. : Common throughout in open dry situations, along road sides, waste lands and in fallow fields.


Erect, annual, herbs, upto 0.5 m high; stems and branches softly hairy. Leaves 4–10 x 1.2–2.5 cm, oblong-lanceolate, hispid hairy on both sides, apex acute or obtuse, base narrowed. Flowers light blue, in paniculate cymes, terminal; calyx divided upto base, softly hairy; corolla lobes campanulate, obovate. Nutlets 0.35–0.5 cm, ovoid, faintly margined, inner face spotted or rugose.

Fls. & Frts. : November–February.

Distrib. : Infrequent in plains and along road sides. Chandrapur, Kolhapur, Nagpur, Osmanabad, Pune, Raigad, Ratnagiri, Satara, Solapur, Yavatmal.

**CULTIVATED SPECIES**:

**Borago officinalis** L. Sp. Pl. 137.1753; Bailey, Man. Cult. Pl. 832. 1949 (2nd ed.).

Coarse hairy annual herbs, 0.5–0.8 m high. Leaves ovate–oblong. Flower blue–purplish; corolla segments ovate, acute, spreading stamens exserted. Nutlets verrucose.

Fls. & Frts. : June–September.

Distrib. : Occasionally grown in gardens. Pune.

Notes : Native of Europe.

**Cordia sebestena** L. Sp. Pl. 190. 1753; Cooke, Fl. Pres Bombay 2: 268. 1958 (Repr.).

Shrubs or small trees, upto 10m tall. Leaves 8–15 cm long, scabrous above, pubescent nerved beneath. Inflorescence of paniculate cymes. Flowers scarlet or orange–red; calyx tubular, lobed; corolla infundibuliform, lobed. Drupes ovoid.

Fls. & Frts. : January–July.

Distrib. : Occasionally grown in gardens.

Notes : A native of Cuba, West Indies, Florida.

Shrubs. Leaves ovate or oblong–lanceolate. Flowers in a close cyme, fragrant, violet or purple.

*Distrib.*: Occasionally planted in gardens.

*Notes.*: Native of Peru.

CONVOLVULACEAE

*(P. Venkanna & Sujit Kumar Das Das)*

1. Styles absent; stigma 1, conical or semiglobular, 5–10–rayed; corolla lobes bifid ... **ERYCIBE**

1. Styles present; stigmas 1 to 2 or 4, globose, ellipsoid, oblong or linear; corolla entire to subentire or lobed:

2. Styles 2, free or united near base:

3. Twiners; styles united below ... **BONAMIA**

3. Never twiners; styles free:

4. Corolla lobed, campanulate; capsules 2–valved ... **VOLVULOPSIS**

4. Corolla entire, subentire or divided half way down, infundibuliform; capsules 4–valved:

5. Petals imbricate; stamens exserted; stigmas 2 ... **CRESSA**

5. Petals contorted; stamens included; stigmas 4 ... **EVLVULUS**

2. Style 1, entire or with 2 minute branches, concealed by stigmas:

6. Fruits indehiscent:

7. Leaves rotundate; fruits 1–seeded ... **PORANA**

7. Leaves otherwise; fruits 2–4–seeded:

8. Corolla hairy outside; stigmas globose ... **ARGYBEIA**

8. Corolla glabrous outside; stigmas linear–lanceolate ... **RIVEA**

6. Fruits dehiscent:

9. Stems and leaves with stellate trichomes; stigmas ellipsoid to oblong:

10. Leaf base mostly hastate or sagittate; sepals obtuse; stigmas oblong or linear; capsules 4–valved ... **CONVOLVULUS**
10. Leaf base truncate, rounded or slightly cordate; sepals acute or acuminate; stigmas elliptic; capsules 8-valved ... *Jacquemontia*

9. Stems and leaves with stellate trichomes or glabrous; stigmas ellipsoid to oblong :

11. Stems usually winged; capsules circumscissile ... *Operculina*

11. Stems usually winged; capsules dehiscing irregularly or by valves :

12. Outer 2 or 3 calyx–segments enlarged, much longer and broader than inner:

13. Leaves variable; corolla purplish–yellow; ovary hairy, stigmas ovate–oblong; capsules depressed – globose ... *Hewittia*

13. Leaves oblong–lanceolate; corolla white; ovary glabrous, stigmas globose or oblong; capsules ovoid ... *Aniselia*

12. Outer and inner calyx segments mostly equal :

14. Corolla usually campanulate, rarely infundibuliform, usually yellow or yellowish–white :

15. Leaf blade oblong – lanceolate; calyx subequal; anthers mostly spiralled when dehisced; seeds rounded to truncate apically ... *Xenostegia*

15. Leaf blade oblong, ovate or orbicular; calyx unequal; anthers straight when dehisced; seeds obtuse to rounded apically ... *Merremia*

14. Corolla infundibuliform or hypocriptiform, rarely campanulate, variously coloured, but often purple :
16. Leaf blade with minute black glands beneath; calyx in fruit much enlarged, completely enclosing the ripe fruit; stigma biglobular ... *Stictocardia*

16. Leaf blade without black glands beneath; calyx enlarged or not enlarged in fruit, not enclosing the ripe fruit; stigma usually capitate or entire or often 2, rarely 3-globular ... *Ipomoea*

**ANISEIA** Choisy


Twiners, c 1.5 long; stems herbaceous, terete, appressed–pilose or glabrous. Leaves 3.5–7.0 x 1–5 cm, oblong–lanceolate, sparsely pilose on both sides, emarginate or mucronulate at apex, attenuate at base. Cymes 2–3-flowered; bracts small, linear–lanceolate; calyx reticulately veined, broadly ovate, sparsely pilose outside; corolla white, campanulate, 25–30 mm long. Capsules ovoid, 2 cm long, subtended by enlarged calyx. Seeds 4 or less, black, woody at edges.

*Fls. & Frts.*: September–December.


*Distrib.*: Rare along river banks in deciduous forests or in marshy, grass lands. Chandrapur, Konkan (Cooke, op. cit.).

**ARGYREIA** Lour.

1. Erect shrubs; leaves cuneate ... *A. cuneata*

1. Climbers or twiners; leaves not cuneate:

2. Corolla with densely hirsute bands on outside; ovary 2-celled:

3. Peduncles densely strigose; berries red ... *A. strigosa*

3. Peduncles glabrescent or slightly strigose; berries orange ... *A. elliptica*
2. Corolla densely hirsute throughout on outside; ovary 4–celled:
   
4. Leaves deeply cordate at base, densely white–
tomentose beneath; bracts large and broad:
   
5. Bracts with a long acumen, pubescent  
   outside, glabrous inside  
   ...  
   A. nervosa
5. Bracts subacute, hairy on both sides  
   ...  
   A. pilosa

4. Leaves not as above; bracts not as above:
   
6. Outer sepals lanceolate, distinctly acute,  
   patently hairy:
   
7. Flowers in subcapitate cymes; peduncles  
   c 10 cm long, hairy  
   ...  
   A. involucrata
7. Flowers in long, pedunculate cymes;  
   peduncles c 20 cm long, glabrous:
   
8. Stems grooved; bracts c 3 cm long  
   ...  
   A. boseana
8. Stems terete; bracts 1.0–1.5 cm long:
   
9. Bracts linear–oblong,  
   sparsely hairy  
   ...  
   A. hookeri
9. Bracts broad, orbicular,  
   densely tomentose  
   ...  
   A. imbricata

6. Outer sepals oblong, obtuse or rarely acute,  
   not patently hirsute:
   
10. Leave densely pubescent on both sides  
    with yellowish or reddish trichomes  
    ...  
    A. hirsuta
10. Leaves glabrous or strigosely pubescent  
    above:
   
11. Bracts large, ovate–oblong, silky with  
    parallel nerves  
    ...  
    A. sericea
11. Bracts linear, not silky, without  
    parallel nerves:
   
12. Leaves rhomboid at base  
    ...  
    A. lawii
12. Leaves cordate or rounded  
    at base  
    ...  
    A. cymosa

2: 255. 1905 [2: 325. 1958 (Repr.)] non C. B. Cl. 1883. 'Gaveli'.

Shrubs, large, climbing; stems glabrous or slightly pubescent.  
Leaves 10–13 x 8–10 cm, broadly ovate, acuminate at apex, cordate at  
base; lateral nerves 10–12 pairs; petioles 12–15 cm long. Flowers pink,  
in pedunculate, few flowered cymes; bracts oblong, subacute,  
puberulous; calyx ovate–lanceolate, faintly nervetd, sparsely hairy and
with membranous margins, recurved; corolla 7–9 cm long, tubular–campanulate. Berries globose, c 1 cm across, enclosed by persistent calyx. Seeds brown, glabrescent.

*Fls. & Frts.* : July–December.


*Distrib.* : A few along hilly tracts and in plains. Kolhapur, Ratnagiri, Satara.


Shrubs, silky; branchlets glaucous. Leaves 4–10 x 2–5 cm, subcoriaceous, strigose above, sericeous below, retuse or apiculate at apex, acute to cuneate at base. Cymes strigose. Flowers dark purple; calyx 5–lobed, unequal, hirsute without; corolla–tube 3.5 cm long; stamens 5, unequal; ovary 4–locular, style c 2 cm long. Berries ellipsoid, c 1.5 x 1 cm, fruiting calyx spreading or reflexed.

*Fls. & Frts.* : September–December.


*Distrib.* : Common on hill slopes of dry deciduous forests, occasional in plains along hedges. Pune, Satara.


Shrubs, scandent; stems terete, pubescent. Leaves 5–11 x 6–12 cm, ovate or suborbicular, pubescent on both sides, apex shortly acuminate, base cordate. Flowers in branched, corymbose–cymes, peduncles hairy; bracts suborbicular, persistent, softly pubescent; corolla pale pink, infundibuliform, densely hairy outside. Berries 1.8–2.0 cm across, globose, brown.

*Fls. & Frts.* : October–March.

*Illus.* : Wight, Ic. t. 839. 1845.
Distrib. : Common, along river-banks, in hedges of fields, around villages, along ghats of deciduous forests. Ahmednagar, Akola, Aurangabad, Beed, Jalna, Konkan (Cooke, op. cit.), Latur, Nanded, Osmanabad and Parbhani.


Lianas; stems herbaceous towards tip, woody at base. Leaves 5–17 x 2–5 cm, ovate–lanceolate, acuminate at apex, cuneate at base with scattered trichomes on both sides, caducous. Flowers with 3–10 cm long peduncles; calyx ovate, pubescent without, persistent in fruit; corolla dark purple, slightly strigose outside. Berries fleshy, indehiscent, 10–11 mm long.

Fls. & Frts. : September–April.

Illus. : Wight, op. cit.


Shrubs, climbing, pubescent with whitish woody indumentum. Leaves 10–20 cm across, apex acute or obtuse, base cordate. Inflorescence of compound cymes with many flowers; bracts 1–4 cm long, ellipt–lanceolate, pubescent; peduncles 10–30 cm long. Flowers purple. Berries yellow, c 1 cm long. Seeds less than 4, white.

Fls. & Frts. : August–November.

Illus. : Wight, Jc. t. 891. 1845 (Rivea hirsuta).

Distrib. : Restricted to elevated ghats between 700– 1200 m. Akola, Aurangabad, Chandrapur.

Twiners, robusts; stems strigose. Leaves 10–18 x 8–12 cm, broadly
ovate to orbicular, shortly acuminate or mucronulate, base  shallowly
cordate to truncate,  glabrous, scarcely hairy above, sparsely hairy
beneath, densely on the nerves; lateral nerves 15–17 on either side, 
minor nerves subparallel; petioles 4–7 cm long, pubescent.
Inflorescence of many–flowered cymes; peduncles stout, pubescent;
pedicles 5–8 mm long, terete; bracts lanceolate or oblong–lanceolate,
attenuate at base, caducous, sparsely hairy on back; corolla c 7 cm long,
pinkish–purple with deep purple throat, with bands hairy outside.
Berries succulent, 4–celled, globose, 2 cm across. Seeds brown.

**Fls. & Frts.** : July–February.


**Distrib.** : In thickets and thin forests. Kolhapur, Raigad, 
Ratnagiri, Sindhudurg.

*Lettsomia aggregata* Roxb. Fl. Ind. 2: 76. 1824; Wight, Ic. t. 1359. 1848; Cooke, Fl. Pres. 
Bombay 2:329. 1958 (Repr.).

Shrubs, climbing with soft, white or yellowish tomentum. Leaves
5–10 x 3–10 cm, ovate, obtuse, glabrous above, tomentose beneath;
petioles 2.5–5 cm long, tomentose. Flowers in dense, capitate cymes;
peduncles 1–6 cm long; bracts orbicular–ovate, tomentose outside,
glabrous inside, subpersistent; pedicels short or nil; calyx oblong, 
obtuse, silky; corolla pink, campanulate, tube deeply divided below
midline into 5–oblong, emarginate lobes with a hairy band outside. 
Berries 0.6–0.8 cm across, smooth, red, covered by persistent sepals. 
Seeds greyish–black, smooth.

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

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

**Distrib.** : Rare among bushes, in forest areas. Sindhudurg (S. M. 
Almeida, op. cit.).

*A. involucrata* C. B. Cl. in Hook. f. Fl. Brit. India 4: 187. 1883;

Twiners, large, shrubby; stems appressed with hairs. Leaves
10–20 x 8–12 cm, ovate, apex acute or acuminate,  base rounded or
shallowly cordate, rarely subrhomboid, glabrous above, sparsely
pubescent, beneath; lateral nerves 8–10 pairs  on either side of mid rib;
Argyreia involucrata C.B.Cl.
petioles 2.5–5 cm long, pubescent. Flowers pink with brownish–red bands inside the throat; peduncles 2–10 cm long, pubescent; bracts variable, oblong–lanceolate; calyx unequal; corolla c 7 cm long, infundibuliform; anther filaments hairy at base. Berries c 1.5 cm across, globose.

Fls. & Frts. : July–February.

Distrib. : Common along hill slopes. Deccan (Cooke, op. cit.), Ratnagiri, Satara, Sindhudurg.


Shrubs, twining; branches softly silky. Leaves 7.5–12.5 x 5–7.5 cm, ovate or rhomboid or rounded, acute or acuminate at apex, both sides more or less silvery white beneath; petioles 2.5–5 cm long. Flowers in long peduncled, dense, few flowered trichotomous cymes; bracts narrowly oblong, acute, pubescent, ciliate; peduncles 5–12.5 cm long; pedicels very short; calyx ovate–acute, 0.6 cm long, hairy; corolla c 5 cm long, tubular campanulate, hairy on the outside.

Fls. & Frts. : August–November.

Distrib. : Twiner along hedges in deciduous forests. Konkan (Cooke, op. cit.), endemic to South Western ghats.

Notes : Talb. (op. cit.) noticed that there is only one sheet of this species in the Kew herbarium marked 'North and South Konkan'.


Shrubs, large climbing; branches densely tomentose. Leaves 10–25 x 6–18 cm, ovate, apex acute, base cordate, glabrous above, persistently white tomentose beneath; petioles 6–10 cm long, pubescent. Flowers in subcapitate cymes; peduncles 7–10 cm long, stout, white–tomentose; bracts large, ovate–lanceolate, thin–veined, pubescent outside, glabrous inside; calyx white–tomentose outside, sepals oblong–elliptic, obtuse; corolla pinkish blue, 6–7 cm long, infundibuliform, the bands silky pubescent outside. Ovary glabrous. Berries globose, c 2 cm across. Seeds 2–4.
Fls. & Frts. : July–December.

Illus. : Wight, Ic. t. 851. 1845 (Argyreia speciosa).

Distrib. : Occasional along hedges near villages. Amravati, Aurangabad, Kolhapur, Mumbai, Nagpur, Pune, Raigad, Thane.

Notes : Cultivated in gardens for its handsom leaves and flowers.


Twiners, large, patently hirsute. Leaves ovate, densely hirsute on both sides with hairs raising from bulbous bases, 10–23 x 5–15 cm, apex acute, base cordate. Inflorescence of 2–6 – flowered capitate cymes; peduncles 1.4–8 cm long, hirsute; bracts linear; calyx 1–1.5 cm long, subequal, lanceolate, acute; corolla dark red or purple, 4–5 cm long, tubular, hirsute on bands. Berries orange–yellow, shortly apiculate, 1.2–1.6 cm across.

Fls. & Frts. : September–October.

Distrib. : Occasional along forest outskirts. Sindhudurg (S. M. Almeida, op. cit.).


Twiners, large, silky all over. Leaves 6.5–12.5 x 5–10 cm, broadly ovate, strigose above, densely silky beneath, apex acute, base cordate, nerves 8–10 pairs; petioles 2.5–5 cm long, densely silky. Flowers 6–8 in capitate or subcapitate cymes; peduncles 2.5–10 cm long, silky; calyx linear–oblong, densely hairy and ciliate; corolla pink, 5–6 cm long, tubes and bands hairy; filaments hairy at base, anthers sagittate. Berries c 1.5 cm across, orange coloured.

Fls. & Frts. : August–November.


Distrib. : Common along high hilly tracks in deciduous forests. Ahmednagar, Akola, Amravati, Chandrapur, Dhule, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Wardha.
Argyreia sericea Dalz. & Gibs.

Shrubs, 10–15 m long, climbing with milky latex; young branches sparsely hispid with yellowish hairs. Leaves 11–13 x 9.5–12 cm, broadly ovate, hairy beneath. Flowers in corymbose cymes, densely hairy, 10–15 flowered; calyx oblong–obtuse, densely silky tomentose; corolla pink, 4–5 cm long, campanulate, tube glabrous, lobed, with densely hairy band at back; stamens and styles exserted, filaments densely hairy at base. Berries c 1 cm across, subglobose, smooth. Seeds 4, greyish–black, smooth.


Distrib. : Common climber in deciduous forests as well as thorny scrub. Ahmednagar, Dhule, Kolhapur, Nanded, Nasik, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

Bonamia Thou. (nom. cons.)


Twiners, c 15 mm long; stems densely brown or reddish–brown tomentose. Leaves 6.5–15.0 x 4–10 cm, oblong–ovate, apex cuspidate, base cordate or truncate, tomentose on both sides, lateral nerves 5–6 on either side of midrib. Flowers in 2–5–flowered, umbellate cymes; peduncles with variable length; calyx ovate, subequal, 8–14 mm long, tomentose; corolla white, campanulate, 3–5 cm long. Capsules broadly ovoid to subglobose, 10–12 mm long, apically pubescent. Seeds 4, black.

Fls. & Frts. : September–December.

Illus. : Wight, Ic. t. 1370. 1848.

Distrib. : Frequent along hedges. Sindhudurg.
Convolvulus L.

1. Leaf base rounded, cordate or hastate:
   2. Stems prostrate and twining; leaves long petioled; seeds tuberculate... \( C. \) arvensis
   2. Stems neither prostrate nor twining; leaves sessile to sub sessile; seeds not as above:
      3. Leaves hairy... \( C. \) flavus
      3. Leaves glabrous or sparsely pubescent:
         4. Branches rigid; seeds glabrous... \( C. \) sindicus
         4. Branches not rigid; seeds pubescent... \( C. \) prostratus

1. Leaf base cuneate or attenuate... \( C. \) rottlerianus


Herbs, perennial, glabrous or sparsely pubescent. Leaves 2–5 x 1–3 cm, ovate or oblong, obtuse or apiculate at base. Inflorescence axillary, 1 or 2 or more flowered; pedicels much longer than calyx; bracts linear, c 3 mm long; calyx 3.5–5.0 mm long, slightly unequal, oblong–elliptic; corolla pinkish, nearly white, broadly infundibuliform, 2 cm long; stamens slightly unequal. Capsules 0.6–0.8 cm across, globose. Seeds 4, subtrigonal, dark reddish–brown.


*Illus.* Austin & Ghazanfar in Nasir & Ali, op. cit.

*Distrib.* : Common throughout in waste places, cultivated lands and along road sides and railway lines.


*Distrib.* : Rare among grasses on hill slopes. Amravati (Dhore & Joshi, op. cit.).

Herbs, 10–30 cm high, perennial with a woody base; branches fulvous–villous. Leaves 14–30 x 3–6 cm, linear to oblong, obtuse to mucronate at apex, villous, mid–vein prominent beneath. Flowers in 3–5 flowered axillary heads; peduncles c 20 mm long; bracts linear to ob lanceolate, bracteoles filiform; calyx 4–7 mm long, villous, ovate–lanceolate; corolla pinkish or white, 10–12 mm long; stigma 2–3 times longer than style, filiform. Capsules scarious, subglobose, 3 mm across. Seeds 2–4, brownish–black, 2 mm long.

*Fls. & Frts.*: November–March.

*Illus.*: Wight, Ic. t. 1367. 1848 (C. microphyllus); Austin & Ghazanfar in Nasir & Ali, op. cit.

*Distrib.*: Occasional along wastelands. Nagpur.


Herbs, 20–25 cm high, diffusely branched; branches appressed–pilose. Leaves 15–50 x 2–8 mm, linear or oblong–lanceolate, base attenuate, apex acute. Flowers axillary, 1–2, on slender peduncles, 20–40 mm long; bracts linear–oblanceolate, bracteoles linear; calyx 4–5 mm long, obovate, pilose; corolla 7–8 mm long, pink; style filiform, twice longer than stigma. Capsules c 5 x 4 mm, subglobose. Seeds 4, brownish–black, 2 mm long.

*Fls. & Frts.*: September–October.

*Illus.*: Austin & Ghazanfar, in Nasir & Ali, op. cit.

*Distrib.*: Scarcely found in hilly tracts. Aurangabad, Beed, Dhule, Jalna, Pune.

Convolvulus prostratus Forssk.
Undershubs, perennial, 30–60 cm high; branches densely pubescent, velutinous. Leaves 5–10 mm long, obovate to suborbicular, sometimes plicate, densely tomentose, slightly fleshy, margins undulated, veins furrowed. Flowers in fulvous-sericeous, subsessile heads, 15–20 mm across, bracts ovate–elliptic, densely rusty tomentose; calyx 6–8 mm long, lanceolate, densely rusty tomentose; corolla c 12 mm long, white with pink hairy bands. Seed 1, dark brown.

Fls. & Frts. : August–September.


Distrib. : Rare in dry and open situations. Dhule.

Cressa L.


Herbs, perennial, much branched, base woody; branches pilose. Leaves 2.5–9 x 1–6 mm, closely condensed, ovate–lanceolate, base cuneate, apex acute. Flowers terminal, subsessile, small, in bracteate clusters; calyx obovate, subequal, silky pubescent; corolla 5–6 mm long, white; stamens and styles exserted for 2–4 mm; ovary 2–celled, 4–ovuled. Capsule 3–4 mm long, ovoid, hairy at apex. Seed 1, shiny.

Fls. & Frts. : Throughout the year.


Erycibe Roxb.


Lianas, ascending up to 15 m; stems woody; branches covered with red tomentum when young, glabrescent. Leaves obovate, coriaceous, acute at base, obtuse to acuminate at apex, wavy along margins; lateral nerves and venation prominent beneath. Flowers in clusters or racemose; sepals ovate to rounded, subequal, densely tomentose; petals

**Fls. & Frts.**: October–April.

**Illus.**: Wight, Illus. 2:t. 180. 1850.

**Distrib.**: Found along the stream banks in deciduous and semi–evergreen forests up to 1,000 m altitude. Chandrapur, Kolhapur, Sindhudurg (Cooke. op. cit.).

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**Evolvulus L.**


Herbs, suffrutescent, prostrate or suberect, pubescent. Leaves 0.5–2.0 x 0.3–0.5 cm, elliptic–oblong, subsessile, appressed silky, acute to obtuse at base and also at apex. Flowers axillary, pedunculate in 1 to several flowered dichasia or solitary; calyx lanceolate, acute or acuminate, 2–3 mm long, pubescent; corolla rarely white, 3–7 mm across. Fruits capsular, 4 mm long, ovoid, 4–valved. Seeds 4, black.

**Fls. & Frts.**: July–November.


**Distrib.**: Common in grass lands, waste places and dry areas. Common throughout.

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**Hewittia Wight & Arn.**

Herbs, mostly prostrate or twining, often rooting at nodes, pubescent. Leaves variable, 3–10 x 2–6 cm, ovate to broadly ovate, sometimes angular or somewhat palmately lobed, base cordate, apex obtuse or acuminate, dentate to entire at margins, pubescent. Flowers mostly axillary, solitary, sometimes in several flowered, bracteate cymes; peduncles 2.5–12.0 cm long; calyx lanceolate to ovate, 7–17 mm long, slightly pubescent, outer 3 much longer than inner 2, conspicuously nervose in fruit; corolla purplish–yellow, 2.0–2.5 cm long, campanulate. Capsules depressed–globose, 0.8–1.0 cm long, pilose. Seeds black or brown, 5–6 mm long. glabrous or sparsely pubescent.

_Fls. & Frts._ : October–February.

_Illus._ : Wight, Ic. t. 835. 1845 (H. bicolor).

_Distrib._ : Rare in hilly areas along moist places. Chandrapur, Raigad, Ratnagiri, Sindhudurg.


**_IPOMOEA_ Jacq._**

1. Sepals distinctly awned; corolla salver shaped; stamens and styles exserted :
   
   2. Corolla up to 4.5 cm long, scarlet; outer sepals 2–4.5 mm long ... _I. hederifolia_  
   2. Corolla up to 6 cm long, white or purple; outer sepals 5–12 mm long ... _I. turbinata_  

1. Sepals not as above; corolla funnel shaped; stamens and styles mostly inserted :

3. Leaves entire, rarely 3–lobed :
   
   4. Outer sepals sagittate or cordate at base ... _I. sinensis_  
   4. Outer sepals not as above :
      
   5. Sepals enlarged in fruit ... _I. barlerioides_  

5. Sepals not as above :

6. Flowers mostly in sessile heads :
   
   7. Leaves ovate; capsules hairy; seeds glabrous or minutely foveolate ... _I. eriocarpa_  
   7. Leaves oblong–hastate; capsules glabrous; seeds glabrous or velvety ... _I. sindica_  

6. Flowers in pedunculate cymes or panicles :
8. Sepals hispid:

9. Leaves as broad as long, white woolly beneath:
   10. Outer bracts several; corolla less than 2.5 cm long ... *I. arachnosperma*
   10. Outer bracts few; corolla more than 2.5 cm long ... *I. nil*

9. Leaves longer than broad, not white woolly beneath:
   11. Heads enclosed in a large bract or bracts:
      12. Bracts one, boat shaped ... *I. pileata*
      12. Bracts two, not boat shaped, overlapping at bases ... *I. deccana var. lobata*
   11. Heads not as above ... *I. clarkii*

8. Sepals glabrous or finely pubescent:

13. Stems warty; corolla hypocrateriform:
   14. Sepals woody ... *I. trichosperma*
   14. Sepals not as above:
      15. Corolla 4–6 cm across ... *I. salsetensis*
      15. Corolla 8–10 cm across ... *I. violacea*

13. Stems and corolla not as above:

16. Leaves hastate:
   17. Flowers in dischasial cymes, more than 5 ... *I. carnea*
   17. Flowers 1–5, cymose ... *I. aquatica*
   16. Leaves not as above:

18. Corolla large, yellow, shaggy without ... *I. petaloidea*

18. Corolla not above:
   19. Sepals acute ... *I. obscura*
   19. Sepals obtuse:
      20. Flowers in corymbose cymes; corolla 7.5 cm long ... *I. campanulata*
20. Flowers in subumbellate cymes; corolla less than 5 cm long:

21. Corolla hypocrateriform; seeds with long hairs
   ... I. marginata

21. Corolla influndibuliform; seeds covered with short tomentum
   ... I. pallida

3. Leaves lobed or rarely entire:

22. Leaves 2–3–lobed:

23. Flowers solitary
   ... I. pes-caprae

23. Flowers in umbellate cymes
   ... I. triloba

22. Leaves palmately or digitately 3–9–lobed:

24. Sepals glabrous:

25. Flowers in paniculate cymes
   ... I. mauritiana

25. Flowers in 1–3–flowered cymes:

26. Sepals oblong to elliptic, 3–4 mm long; corolla 10–12 cm long
   ... I. coptica

26. Sepals elliptic or narrow elliptic or oblong–lanceolate, 6–10 mm long; corolla reaching 5–6 cm long
   ... I. diversifolia

24. Sepals hairy
   ... I. pes-tigridis


Herbs, procumbent or floating, rooting at nodes; stems thick, hollow. Leaves 4–8 x 3–6 cm, ovate, triangular or oblong–lanceolate, much variable in shape and size with acute or rounded basal lobes, apex acute or obtuse; petioles 5–8 cm long. Inflorescence axillary, solitary or few flowered cymes on 1–10 cm long peduncles; bracts minute, narrow, acute; flowers on 2–7 cm long pedicels, purple or white; calyx ovate–oblong, subequal, 7–8 mm long, obtuse or subacute at apex; corolla 4–5 cm long, funnel shaped; filaments unequal, hairy at base. Capsules globose, 0.8–1.0 cm long, glabrous or grey pubescent. Seeds 4, densely soft–pilose or glabrous.

**Fls. & Frts.** : Throughout the year.

Distrib. : Common along the margins of tanks and other moist bodies.


Twiners, extensive, patently hairy. Leaves 5.5–11.0 x 4.6–8.6 cm, broadly ovate, entire or shallowly 3–lobed, petiolate. Flowers pink in axillary, lax, bracteate cymes; peduncles 5–7 (15) cm long, secondary branches of peduncles 1.5–3.0 (–10) cm long; bracts c 7 x 2 mm; calyx lanceolate, 1.5–2.5 x 0.5–0.3 mm, bristly or setose and glandular; corolla pink or pale purple, with darker centre, 12–15 cm long, pubescent above, glabrescent within. Capsules 1.0–1.3 cm across, globose. Seeds 4, broadly ovoid, black, clothed with cottony hairs mixed with velvety pubescence.

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

Illus. : Wight, Ic. t. 837. 1845 (*I. pilosa*).

Distrib. : Rare on hedges along stream banks and on low shrubs. Aurangabad, Dhule, Thane.


Herbs, twining, perennial, hirsute; stems numerous. Leaves 2–5 x 1.0– 2.5 cm, ovate-oblong, base cordate, apex subacute or often mucronate; petioles 0–4 cm long, densely hairy. Flowers axillary, solitary on densely hairy peduncles, c 8 cm long; calyx c 2 cm long, lanceolate; corolla 5–7 cm long, purple, infundibuliform, attenuated into a long tube, narrow at base, pubescent outside, limb subenitre, plicate. Capsules c 1.5 cm long, ovoid, glabrous. Seeds c 0.8 cm long, oblong, villous or pubescent, margins with short hairs.

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

Distrib. : Rare in deciduous forests. Kolhapur.
Ipomoea archnosperma Welw.

Twiners, woody, rarely prostrate and rooting at nodes, nearly glabrous, young parts hoary. Leaves 6–16 x 3.5–14 cm, ovate or orbicular, rarely ovate–oblong, base shallowly cordate to truncate, apex acuminate or slightly mucronate, margins entire or undulate, slightly pubescent beneath, nerves 10–15 pairs; petioles slender, 3–10 cm, glabrous or pubescent. Inflorescence axillary, one to several flowered cymes; peduncles stout, 1–8 cm long, glabrous or rarely pubescent; pedicels 1–2.5 cm long, c 3 cm long in fruit, angular, thickened towards the calyx; calyx with slightly unequal margins; corolla reddish purple with a darker centre, tubular to funnel shaped; stamens and styles included; filaments hairy at apex. Capsules ovoid, c 1.5 cm long, brown, 2–celled, 4–valved. Seeds 4, 8–9 mm long, black, comose.

Fls. & Frts.: October–March.


Distrib.: Growing on thickets along hilly tracts of deciduous forests. Dhule, Nasik. Pune, Ratnagiri, Satara, Sindhudurg, Thane.


Shrubs, 1.0–2.5 m high, erect or ascending; young branches densely pubescent, glabrescent. Leaves 6–25 x 4–17 cm, ovate or ovate–oblong, base cordate to truncate, apex acuminate, puberulent mainly on nerves beneath; midrib below with 2 small glands at base of the leaf blade, lateral nerves 7–9 pairs, secondary nerves parallel. Inflorescence in axillary and terminal, many flowered cymes; peduncles stout; calyx subequal, orbicular, 5–6 mm long, puberulent; corolla pink or pale lilac, tubular to funnel shaped, 7.5–9 cm long. Capsules ovoid, mucronate, 1.5–2 cm long, pale brown, 4–valved. Seeds 4 or less, black, micro–villose.

Fls. & Frts.: Throughout the year.
Illus. Austin, op. cit.

Distrib. : Commonly introduced by villagers as fencing. Now naturalised in India as a weed and become troublesome. Native of South America from Mexico, Florida and the West Indies, south as far as Brazil and Paraguay.

Notes : Austin (1977) discussed on the nomenclature of I. fistulosa indicating that I. carnea subsp. fistulosa is the taxon growing in the tropics of the old world and I. carnea subsp. carnea Jacq. (op. cit.) growing in Central and South America with distinct, cordate to round leaves. Further as the taxon growing in India was also once introduced into the tropics of old world from the Central and South America region (types of both the species from South America & Brazil), it is very likely that both the leaf forms nearly acuminate or triangular and cordate to rounded may be growing in a mixed condition in India and other parts of the tropics of the old world.


Twiners, slender. Leaves 5–9 x 4–6 cm, broadly ovate, finely acuminate, hairy on both surfaces, base deeply cordate with rounded lobes; petioles 2.5–6.0 cm long. Inflorescence 1–3 flowered cymes; peduncles 2–4 cm long, slender; bracts minute, lanceolate, acute; pedicels 0.5–3 cm long; calyx 0.8–1.0 cm long, linear–lanceolate, acute, sparsely hairy and ciliate; corolla 3–4 cm long, infundibuliform. Capsules c 1.5 cm long, ovoid.

Fls. & Frts. : September–October.


Distrib. Rarely found in forests at high altitude. Nasik, Pune, Thane.

Ipomoea clarkei Hook. f.
Annual herbs; stems slender, trailing or twining, glabrous. Leaves 1–3 cm across, orbicular in outline, digitate, with 5 coarsely dentate or deeply and irregularly, once or sometimes twice pinnatifid segments, the middle segment larger than the lateral ones; petioles 0.3–2 cm long, with pseudostipules at base. Inflorescence axillary; peduncles cymosely 1–3 flowered; bracts lanceolate, 1.5–2.5 mm long, acute or sometimes palmately divided like the leaves; sepals subequal, oblong to elliptic, 3–4 mm long, minutely cuspidate, verruculose on the back; corolla funnel-shaped, 7–8 mm long, white. Capsules globose, 7–8 mm in diam., 3-celled. Seeds 6, densely grey tomentose, 2–2.5 mm long.


Distrib.: Rare, in wet rice fields. Nanded (Naik, op. cit.).


Herbs, twining; stems pubescent with spreading trichomes. Leaves ovate, cordate, 2–4 cm long, 3–7-lobed, sometimes nearly to base, apices acute, narrowed near their bases, base cordate, pubescent on both surfaces. Inflorescence in head-like cymose clusters, covered by boat-shaped involucral bracts, c 1.5 cm long, apically acute at apex; flowers sessile to subessile; calyx subequal, lanceolate–acuminate, 7–9 mm long, pubescent with spreading trichomes; corolla purplish, funnel form, 1.5–2 cm long. Capsules c 5 mm across, papery. Seeds ellipsoid, minutely fulvous silky.

Fls. & Frts.: October–November.

Illus.: Wight, Ic. t. 1374. 1848 non Cav. 1797 (I. bracteata Wight).

Distrib.: Rare weed in waste places, endemic to Maharastra and Kerala (Johari, op. cit.).


Herbs, annual; stems slender, trailing or twining. Leaves orbicular in outline, 1.0–2.5 (~5) cm across, digitate, irregularly dentate at margins; petioles shorter than the blade with pseudostipules. Inflorescence axillary; peduncles 7–20 mm long; bracts linear–lanceolate, c 3 mm long, very acute; calyx subequal, 6–10 mm long, cuspidate or acute at apex, more or less muricated at back; corolla tubular to funnel–shaped, reaching 5–6 cm long, white, purple inside at
tube; stamens and style included. Capsule subglobose, 8–10 mm across. Seeds short tomentose.

*Fls. & Frts.*: July–October.

* Distrib. :* Found in grasslands at low altitudes. Pune, Satara, Sindhudurg.


Herbs, twining or prostrate, retrorsely to patently pilose; stems herbaceous. Leaves mostly lanceolate to oblong or short pedunculate cymes or heads; calyx ovate–linear, acuminate, 7–8 mm long, pilose; corolla tubular, slightly longer than sepals, 7–9 mm long, pink or purple. Capsules broadly ovoid to globular, 5–6 mm long, pubescent. Seeds minutely reticulate.

*Fls. & Frts.*: August–October.


* Distrib. :* Common in plains and lower hills in grasslands, hedges and fields.


Twiners, slender, glabrescent; stems herbaceous, terete or slightly angular, often contorted, 2–5 m long. Leaves ovate to suborbicular, 2–15 cm long, base cordate, apex acute to acuminate. Flowers in few to several flowered cymes, sometimes solitary; calyx oblong to elliptic, 1.5–3.0 mm long, apically obtuse to truncate, the outer with a 1.6–6.0 mm long subterminal, fleshy arista; corolla red to orange, 2.5–4.5 cm long, salverform. Capsules subglobose, 6–8 mm long. Seeds dark brown or black pyriform.

*Fls. & Frts.*: August–November.

Distrib. : Along hedges in the outskirts of dry deciduous forests, generally grown in gardens as an ornamental plant and naturalised in many places. Common throughout.


1. Corolla pale or deep pink or nearly white with purple centre ... forma **marginata**
1. Corolla pure white ... forma **candida**

forma **marginata**.

Herbs, perennial; stems twining or prostrate, 1.0–2.5 m long, hirsute to glabrous. Leaves 2.5–6 x 2–5 cm, broadly ovate or orbicular, base deeply cordate, apex attenuate with minute hairs along margins above, margins purple. Inflorescence axillary, with thick peduncles, 5–12 cm long, few to several flowered; bracts minute, persistent; calyx equal, 4–6 mm long, coriaceous with thinner margins; corolla salver shaped, pale lilac, pink or nearly white, with a purple centre, 1.5–2.5 cm across. Capsules depressed–globular, 6–7 mm long. Seeds 4, covered with dense tomentum.

**Fls. & Frts.** : December–March.

Illus. : Wight, Ic. t. 838. 1844– 45 (*Ipomoea sepiaria*).

Distrib. : Occasional in moist grasslands, thickets, hedges, waste grounds and along roadsides. Amravati, Aurangabad, Beed, Jalna, Nanded, Raigad, Ratnagiri, Sindhudurg, Thane (Shah & Badrinath op. cit.), Yavatmal.

Notes : Ooststroom & Hoogland (1953) is of the view that the common Old World, *Ipomoea sepiaria* Roxb. is antedated by *I. maxima* (L. f.) Sweet. However, according to Verdcourt (1987), *Ipomoea sepiaria* dates from Hortus Bengalensis with the Holotype Rheede : 'Hortus Malabaricus' 11 : 109, f. 53. 1692. Desrousseaux published a name much earlier based on this same plate, viz., *Convolvulus marginatus* and as the specific epithet appeared to be available in *Ipomoea*, Verdcourt published a new combination *Ipomoea marginata*
for the common Old World *Ipomoea sepiaria*. Interestingly, Manitz (1974) had already effected a new combination based on *Convolvulus marginatus* Desr. and hence Verdcourt’s combination in isonymous.


**Fls. & Frts.** : September–July.

**Distrib.** : Frequent on forest floor under the shade of trees and along stream banks. Nanded.


Twiners, sometimes prostrate; roots tuberous; stems terete. Leaves 6–14 x 6–16 cm, palmately divided to or mostly beyond the middle, base cordate or truncate, segments 3–7 (~9), lanceolate, apex mucronulate; petioles slightly muricated, 3–10 cm long. Inflorescence axillary; peduncles terete, glabrous, few–many flowered; flower buds globular; calyx equal in length, coriaceous, 6–12 mm long; corolla pale reddish purple, tube dark inside, 5–6 cm long, 5–7 cm cross. Capsules ovoid, obtuse, 12–14 cm long, glabrous. Seeds 4, black with long, wooly, sericeous hairs.

**Fls. & Frts.** : October–January.

**Illus.** : Ooststr. in Steenis, op. cit.

**Distrib.** : Occasional in interior, moist deciduous forests. Nasik, Raigad, Ratnagiri, Sindhudurg, Thane, Yavatmal.


Twiners, annuals; stems bristly–pilose. Leaves c 8 x 8 cm, ovate, base cordate, 3–lobed, apex acuminate, mostly adpressed pilose on both sides; petioles bristly, 4 cm long. Flowers solitary or in lax, few flowered cymes; peduncles 4–5 cm long; pedicels c 1.2 cm long; calyx linear–lanceolate, 2.5–3.0 x 3.0–3.5 cm, alternate at apex, densely pilose at base; corolla magenta coloured, 6–7.5 cm long, funnel–shaped.
Capsules ovoid to globular, 3–celled, c 1 cm across. Seeds c 5 mm long, black with grey pubescence.

*Fls. & Frts.*: August–November.


*Distr.*: Common along hedges and thickets of deciduous forests.


1. Corolla white or pale yellow with purple centre ... *forma obscura*
1. Corolla uniformly pale yellow ... *forma concolor*

*forma obscura.*

Herbs, slender, prostrate or twining, 1–2 m long, glabrous or patentely hairy. Leaves 2–10 x 2–9 cm, ovate or orbicular, base cordate, apex attenuate or acuminate, entire or slightly undulate at margins, glabrous or sparsely pilose both sides; petioles c 9 cm long, sparsely hairy. Inflorescence of axillary, few flowered cymes; peduncles filiform, 1–14 cm long; calyx minutely verrucose, sepals subequal, ovate, 3–4 mm long; corolla funnel–shaped, white or pale yellow with a dark purple centre; stamens and styles included; filaments unequal. Capsules on reflexed pedicels, crowned by the style–base, ovoid–globose, glabrous, straw colored, 4–valved. Seeds 4, black, finely grey puberulent.

*Fls. & Frts.*: August–February.


*Distr.*: Common along the hedges of thin forests also in grasslands and waste places.

*Notes*: Worth introducing in gardens.


*Fls. & Frts.*: September–December.

*Distr.*: Frequent, in hedges, on bushes, etc. Nanded.

Twiners, perennials; stems slender, glabrous or more or less hairy. Leaves 2.5–5.0 x 2.2–5.0 cm, ovate, apex acute, entire along margins, base cordate, sinus wide; petioles 2.5–3 cm long. Flowers pure white in pedunculate, subumbellate cymes; staminal filaments hairy at the base. Capsules 0.8–1.0 cm long, ovoid, glabrous, 2–4–seeded.

*Fls. & Frts.*: August–October.

*Distrib.*: Occasional along forest outskirts among bushes. Mumbai (Sant. & Patel op. cit.), Thane (Cooke, op. cit.).


Herbs, prostrate; stems trailing and rooting at nodes, glabrous. Leaves often secund, variable in shape, ovate, obovate, elliptic, orbicular or transverse, elliptic to reniform, 3–10 cm long, truncate, base attenuate or cordate, apex deeply emarginate, mucronulate, fleshy, glabrous. Flowers usually solitary (Sometimes 2–3); sepals subequal or the outer shorter, the outer ovate to broadly elliptic, the inner mostly sub-orbicular, 5–11 mm long, obtuse, sub coriaceous; corolla limb pink to purple, 5–6 cm long. Capsules ovoid to depressed–globose, 12–17 cm long. Seeds black, densely short, brownish–tomentose.

*Fls. & Frts.*: November–February.

*Illus.*: Ooststr. in Steenis, op. cit.; Austin & Ghazanfar in Nasir & Ali, op. cit.

*Distrib.*: Common along coastal sand places. Mumbai, Raigad, Ratnagiri, Sindhudurg, Thane.

*Notes*: van Ooststr. (Fl. Males. 1, 4 : 475. 1953) has recognised two subspecies. Almeida (Fl. Savantwadi 1: 285. 1990) reported only subspecies *pes-caprae* which has been found in Maharashtra State. The other subspecies *brasiliensis*, reported by St. John (Bot. Jahrb. 89: 568. 1970) as an independent species, differs in having larger leaves with emarginate apices, truncate, rounded or slightly cordate base and shorter sepals and corolla. In the present treatment St. John’s opinion has been followed.

Large shrubby climbers. Leaves 4–8 x 2.5–6.0 cm, ovate–elliptic, shallowly cordate with rounded or retuse base. Flowers yellow, in 1–many flowered cymes.

Fls. : February.

Distrib. : Rare. Akola.


Herbs, annuals; stems twining, prostate or sprawling, patently pubescent with rigid trichomes. Leaves orbicular to transversely elliptic in outline, palmately divided nearly to the base, 3–5–7 (–9)–lobed, lobes oblong to elliptic, ends both attenuate to acuminate, apically pubescent with appressed or patent trichomes, 3–7.5 cm long, often wider than long. Flowers in involucrate cymes; calyx lanceolate or the inner narrowly lanceolate, 7–12 mm long; corolla funnel shaped, white 2–2.5 cm long. Capsules ovoid, c 8 mm long. Seeds grey tomentose, 4 mm long.

Fls. & Frts. : August – November.


Distrib. : Common throughout in open grounds or hedges, often in cultivated fields.


Herbs, annuals; stems twining, slender, pubescent to villous, c 8 m long. Leaf blade ovate–cordate, broader than long, 2.5–5 x 4–6 cm, base broadly cordate, apex acute, hairy or villous on both the surfaces; petioles 1.5–6.0 cm long, hairy. Inflorescence a dense head enclosed in a large, foliaceous bract; peduncles 3–6 cm long; flowers few to many, shortly pedicilate; involucral bract pubescent outside, much villous inside, c 5 cm across; calyx herbaceous, oblong to oblong–spathulate; corolla salver shaped, c 3 cm long, pink with darker centre or voilet,
**Ipomoea pileata** Roxb.

A- Branch; B- Bract; C & D - Sepals; E - Gynoecium.
tube c 2 cm across; stamens and styles included. Capsules small, globose. Seeds glabrous or thinly pubescent.

*Fls. & Frts.* : October–November.

*Illus.* : Wight, Ic. t. 1363. 1848; Sant. & Patel, op. cit.

*Distrib.* : Rare in open areas and along roadsides among bushes. Raigad, Sindhudurg (S. M. Alemeida, op. cit.).


Twiners, woody, perennial; stems glabrous, furrowed, minutely warty. Leaves 3.0–15.5 x 3.5–15.0 cm, broadly ovate or orbicular, entire or 3–5–lobed, apex acuminate or mucronate, base cordate; petioles 5–8 cm long, verrucose. Flowers white, in umbellate cymes, 3–6–flowered, rarely uniflorate; peduncles c 17 cm long; pedicels c 1.5 cm long; calyx tubular, 10–12 mm long, coriaceous, glabrous, deflexed in fruiting, outer sepals 10–11 mm long, obovate–oblanceolate, rounded or retuse and mucronate at apex, warted outside, inner sepals broader, smooth, with membranous margins, apex rounded and mucronate, mucro emerging from the outer part of sepal, below apex; corolla salver shaped, 8–10 cm long, white, tube 5–5.5 cm long, slender, minutely puberulous inside, limb 4–6 cm in diam., distinctly lobed; stamens subequal, filaments pilose. Capsules 1.5–1.7 cm across, depressed–globose, 4–valved, 2–celled. Seeds 6–8, tomentose.

*Fls. & Frts.* : September –October.


*Distrib.* : Infrequent. Mumbai (Sant. & Patel, op. cit.).


Herbs, prostrate or twining, c 50 cm long, internodes c 11 cm long; stems slender, hispid with spreading hairs. Leaves oblong–triangular, 2.5–8 x 1–6 cm, with rounded lobes, apex acute or acuminate, softly hairy on both surface or nearly glabrous above; petioles 0.6–1.8 cm long, hispid. Flowers solitary or in few flowered cymes; bracts shorter than the calyx, linear, hispid; calyx ovate–lanceolate, 0.4–0.6 cm long, acuminate, hispid, enlarged in fruit; corolla funnel shaped, white, minutely pubescent outside, 0.8–1 cm long, limb broadly 5–lobed. Capsules 0.5–0.6 cm long, subglobose. Seeds black.
Fls. & Frts. : August–October.


Distrib. : Rarely found in waste places and open forests among grasses and bushes. Aurangabad, Chandrapur, Dhule, Jalna.

Notes : This species resembles I. eriocarpa R. Br. which differs by its large flower heads and bracts, hairy capsules and glabrous seeds.


Herbs, perennial, twining; stems sparingly clothed with long, spreading hairs. Leaves 5.0–7.5 x 3.0–5 cm, ovate, base cordate, apex acute, entire along margins, hairy or nearly glabrous; petioles 1.5–3.0 cm long, slender, clothed with long, spreading hairs. Inflorescence of few flowered cymes; peduncles c 1.5 cm long; pedicels c 1.5 cm long; bracts c 0.6 cm long, linear; calyx unequal, ciliate, c 0.8 cm long in flower, enlarged in fruits, c 1.3 x 0.8 cm, lanceolate, hastate; corolla narrowly tubular, white or rose coloured. Capsules c 0.6 cm long, ovoid. Seeds villous, margins with long, silky hair.

Fls. & Frts. : October–November.


Distrib. : Occasionally found on hedges in deciduous forests. Aurangabad, Ahmednagar, Akola, Amravati, Beed, Dhule, Jalna, Konkan (Cooke, op. cit.), Nasik, Nanded, Parbhani, Pune.


Twiners; stems muricate. Leaves ovate, base cordate, sometimes lobed, apex acute. Flowers axillary, solitary on thick, short peduncles; sepals large, elliptic; corolla very large with wide tube. Capsules subglobose, 2.0–2.5 cm across. Seeds softly villous with shaggy margins.

Fls. & Frts. : March – April.

Distrib. : Rare. along bushes near river banks. Sindhudurg (S. M. Almeida, op. cit.).

Herbs, twining, 1.5–2.5 m long, glabrous or sparingly hispid, particularly at nodes. Leaves broadly ovate to orbicular, 2.5–7 x 2–5.5 cm, coarsely dentate, 3–lobed, base cordate, basal lobes angular, glabrous or sparsely pilose on both the sides; petioles slender, 5–12 cm long, glabrous or slightly muricate. Inflorescence axillary; peduncles 5–8 cm long, slightly verrucose towards apex, few–several flowered; flowers aggregate; pedicels minutely verrucose; calyx unequal, 7–10 mm long, mucronulate at apex; corolla funnel shaped, 18–20 mm long, glabrous, pink or pale red–purple. Capsules globose. Seeds glabrous or thinly pubescent.

Fls. & Frts. : October–November.

Illus. : Ooststr. in Steenis op. cit.

Distrib. : Rare along the moist places and in wastelands. Aurangabad, Chandrapur, Dhule, Mumbai, Nasik, Ratnagiri, Satara, Sindhudurg, Thane.


Twiners, annuals with a white, milky juice; stems herbaceous, terete or angular, muricated. Leaves orbicular or broadly ovate, 7–18 x 6.5–15 cm, base cordate with broadly rounded lobes, apex acuminate with a mucronulate column; petioles 4–12 cm long, muricated or glabrous. Inflorescence one–few–flowered cymes; peduncles muricated, 3–6 cm long; pedicels 10–20 mm long, smooth, thickened towards calyx; calyx outer ones ovate–oblong, more or less plicate at the top, inner ones obtuse or slightly emarginate, distinctly awned; corolla funnel to salver shaped with narrow, cylindric tube. Capsules ovoid, 18–20 mm long. Seeds 4, glabrous, black, 9–10 mm long.

Fls. & Frts. : January–March.

**Distrib.** : Common along hedges and waste places. Ahmednagar, Amravati, Aurangabad, Chandrapur, Mumbai, Nagpur, Nanded, Nasik, Osmanabad, Parbhani, Pune, Raigad, Ratnagiri.


Twiners; stems woody, terete or angular, often longitudinally wrinkled. Leaves orbicular or ovate, 5–16 x 5–14 cm, base deeply cordate; lateral nerves 7–8 on either side; petioles 3.5–16 cm long. Inflorescence axillary, one to few flowered; peduncles terete, 6–9 cm long; pedicels angular, 1.5–3 cm long; calyx orbicular, mucronulate at apex, outer ones 15–20 mm long, inner 18–25 mm long, coriaceous, enlarged in fruit; corolla white, salver shaped; stamens and styles included. Capsules globose, 2.5 cm long, pale brown. Seeds 4, black, hairy along margins.

**Fls. & Frts.** : September–December

**Illus.** : Gunn in Brittonia 24: 158, f. 3. 1972 (*Ipomoea macrantha*).

**Distrib.** : Common on the sea shores and along thickets in forests. Kolhapur, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.

**Jacquemontia** Choisy


Climbers, slender; stems pubescent with white tomentum. Leaves 4–7 x 2.5–5.0 cm, broadly ovate, apex acuminate, glabrescent above, sparsely pubescent beneath on nerves. Flowers axillary, few to several flowered, cymose clusters; peduncles c 6 cm long, pubescent; calyx ovate to broadly ovate, 6–9 mm long, acute at apex, pubescent; corolla campanulate or broadly infundibuliform, 8–10 mm long. Capsules globose, 4 mm long, brown. Seeds brownish to blackish, 1.5–2 mm long, minutely verrucose.
Fls. & Frts.: August–November.

Illus.: Wight, Ic. t. 834. 1845 (Batatas pentaphylla Wight); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 482. 1982.

Distrib.: A most frequent climber along deciduous forests paths and also along moist places. Ahmednagar, Akola, Aurangabad, Beed, Chandrapur, Jalna, Nagpur, Nanded, Nasik, Pune, Raigad, Thane, Yavatmal.

**MERREMA** Dennst.

1. Leaves digitately 5–partite; outer sepals much hirsute ... *M. aegyptia*

1. Leaves palmately 5–7–lobed; outer sepals slightly hirsute, glabrescent or glabrous:

2. Plants much hairy; leaf segments mostly dentate, crenate or lobed:

3. Stems stout; flowers in cymes ... *M. vitifolia*

3. Stems slender; flowers solitary ... *M. rhyncorhiza*

2. Plants glabrous, glabrescent or slightly hirsute;
leaves entire, crenate or at most 3–lobed:

4. Inflorescence subumbelliform; corolla pilose on upper portion ... *M. umbellata*

4. Inflorescence solitary or loosely cymose:

5. Plants twining or rarely prostrate;
peduncles longer than flowers ... *M. hederacea*

5. Plants prostrate; peduncles shorter than flowers ... *M. gangetica*


Herbs, climbing, hirsute with long, erect or suberect, yellowish trichomes. Leaves palmately compound; leaflets—5, 2.5–8 x 1–3 cm, elliptic, entire or dentate at margins, apex acute to acuminate, sparsely pubescent to glabrous; petioles slightly slender, 5–8 cm long. Inflorescence of axillary cymes; calyx oblong, 2 cm long; corolla white, funnel shaped, 2.5–3.5 cm long. Capsules subglobose, 1–2 cm across, subtended and partially surrounded by the calyx. Seeds brown.

Herbs, perennial, prostrate, rooting at nodes, sparsely hairy or glabrescent, 50–60 cm long. Leaves reniform, 2.5–3.5 cm across, base cordate with broadly rounded lobes, apex emarginate, coarsely crenate or entire, glabrous or sparsely appressed pilose; petioles 2–3 cm long, shortly hairy or minutely verrucose. Flowers axillary, solitary or 2–3 flowered cymose clusters; bracts ovate to linear, acute, hairy; calyx obovate to orbicular or subquadrate; corolla tubular–campanulate, 5–9 mm long, glabrous, yellow with paler base, limb slightly 5–lobed. Capsules subglobular, 5–6 mm across, crowned by thickened style. Seeds 4 or less, greyish–brown, dotted.


Herbs; stems smooth or minutely tuberculate, glabrous or sparsely pubescent. Leaves ovate, 1.5–5 cm long, base broadly cordate, obtuse at apex, margins entire or crenate, shallowly lobed or deeply 3–lobed, glabrous or pubescent. Flowers solitary or cymose; calyx broadly obovate to spatulate, notched at the apex, the outer two 3.5–4 mm
Merremia umbellata (L.) Hall. f.
long, the inner c 5 mm long, glabrous or pilose; corolla yellow, campanulate, 6–10 (12) mm long. Capsules broadly conical to depressed globose, somewhat angled, 5–6 mm long, the valves wrinkled. Seeds blackish, c 2.5 mm long, pubescent or nearly glabrous.

*Fls. & Frts.:* August–December.

*Illus.:* Wight, *Ic.* t. 157. 1839 (*Ipomoea chryseides*).

*Distr.:* Grows on thickets, grasslands, sandy places in the dry regions. Nagpur, Sindhudurg (Cooke, op. cit.).


Twiners; stems filiform. Leaves deeply palmately cut into 5–7 lobes, 4–5 cm across, middle lobe larger than others, sparsely hairy above and on nerves beneath, segments oblong, acute; petioles filiform, glabrous, 5–10 cm long; bracts 0.3–0.4 cm long, lanceolate, acute; pedicels 0.3–0.8 cm long; calyx unequal, oblong–lanceolate, acute; corolla yellow, 2.5–4.0 cm long, 4.5 cm across at mouth; anthers twisted, narrowly sagittate. Capsules oblong with persistent sepals.

*Fls. & Frts.:* October–November.

*Distr.:* Rare on rocky substratum in open areas on hill slopes. Sindhudurg (S. M. Almeida, op. cit.).


Climbers, 1–3 m long; young stems herbaceous with white milky juice, terete or slightly striate, softly pubescent or glabrescent to glabrous. Leaves narrowly triangular to broadly ovate, 4–12 cm long, truncate, base cordate to hastate, apex acuminate, entire along margins. Inflorescence umbelliform–cymose, rarely 1–flowered; peduncles 2–6 cm long, often pubescent; calyx oblong 6–8 cm long, rounded apically with scarious margins, glabrous or pubescent; corolla yellow or white, funnelform, 3–3.5 cm long. Capsules ovoid to conical, 10–12 mm long, glabrous or sparsely pubescent. Seeds dark brown, densely pubescent with short, entire trichomes, 5 mm long.
Fls. & Frts. : February–April.

Illus.: Ooststr. in Steenis, op. cit. (Seed only).

Distrib.: Found in thickets along forest edges. Kolhapur, Pune, Raigad, Satara, Thane.

Notes: van Ooststroom (op. cit.), Verdcourt (Fl. T. E. Africa 54. 1963) treated *M. umbellata* ssp. *orientalis* (Hall. f.) Ooststr. as separate taxon considering that this ssp. is less robust than ssp. *umbellata* with longer peduncles and many flowered cymes, sepals mostly 7–10 mm long, corolla always yellow. But the present treatment follows Austin (op. cit.) who merged the ssp. *orientalis* under the species *umbellata*.


Twiners; stems slender, terete, striate, patently hirsute with yellowish hairs, old stems woody, glabrescent and warted. Leaves palmately divided up to base, with 5–7, lanceolate, mucronulate lobes, margins coarsely dentate to irregularly, pinnately lobed segments, glabrous or hairy on veins beneath, the middle segment 2.5–10 x 0.5–3 cm, lateral ones smaller. Peduncles 5–10 cm long, patently hirsute; pedicels 1.5–2.0 cm long, thickened towards calyx; calyx subequal, 2.0–2.5 cm long, ovate–lanceolate, acute, mucronulate; corolla funnel shaped, 3.0–3.5 cm long, yellow. Capsules globose, 2–celled, 4–valved. Seeds normally 4, glabrous, black.

Fls. & Frts. : November–April.

Distrib.: Along the hedges in secondary forests, on river banks and waysides of deciduous forests. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**Operculina S. Manso**

1. Stems winged; peduncles longer than petioles; bracts 1.5–2 cm long, caducous; capsules depressed–globose ... *O. turpethum*

1. Stems not winged; peduncles shorter than petioles; bracts 2.3–2.8 cm long, persistent; capsules depressed–quadrangular ... *O. tansaensis*

Perennial, twining, subshrubs; stems terete, not winged, retrorsely puberulous–tomentose altogether, glabrescent on ageing. Leaves ovate to lanceolate–ovate, 9.5–2.5 x 3.5–13.5 cm, cordate at base, acute or shortly acuminate and mucronate at apex, densely pilose above, more or less shining and sericeo–tomentose below; petioles thick, terete, not winged, 10 cm long. Flowers in few–many flowered branched–cymes; peduncles 0.7–5 cm long, terete, pubescent–tomentose; pedicles glabrous; bracts obovate, 2.3–2.8 cm long, glabrous or sparsely puberulous outside, persistent; sepals deeply concave, subequal, outer ones 2.5–3 cm long, coriaceous, glabrous, the inner ones 1.8–2.2 cm long, membranous, glabrous; corolla broadly funnel–shaped, 4–4.5 cm long, pale yellow in bud, creamy white at anthesis, glabrous. Capsules depressed–quadrangular, 4–lobed, 1.6–1.8 cm in diam. Seeds broadly ovate, 7–8 mm long, obscurely blackish, glabrous.

**Distrib.** : Near Tansa Lake, Bombay (Sant. & Patel).

**Notes** : : It is endemic in Maharashtra.


Perennial twiners with long fleshy much branched roots; stems narrowly or broadly 3–5–winged, glabrous or sparsely hairy, younger parts sometimes tomentose. Leaves variable in shape, mostly orbicular or ovate or ovate–lanceolate, 5–15 x 1–14 cm, base cordate or hastate, apex obtuse or acuminate, mostly entire, glabrous above, pubescent beneath; petioles terete or winged, 2–7 cm long. Flowers in axillary, 1–few flowered cymes; peduncles 2–18 cm long, terete or winged; pedicels angular, pubescent; bracts elliptic–oblong, 1.5–2 cm long, pubescent, caducous; sepals broadly ovate, unequal, outer ones 1.5–2.5 cm long, pubescent, the inner ones c 2 cm long, glabrous; corolla funnel–shaped, 3–4.5 cm long, white or with yellowish base, glabrous or sometimes with minute yellowish glands outside. Capsules depressed–globose, 1.5–1.7 cm in diam. Seeds ovoid, 5–6 mm long, black, glabrous.

**Fls. & Frts.** : September–April.
Porana Burm. f.


Twiners, herbaceous; stems and branches slender, glabrous. Leaves 8–12 x 4–10 cm, ovate, base deeply cordate, apex acuminate or acute, glabrous or with a few, scattered hairs above, reticulately veined beneath; petioles 2–8 cm long, slender, glabrous. Flowers white, in lax racemes or panicles; bracts leafy, cordate, persistent; pedicels slender, 0.6–0.8 cm long; calyx 0.3–0.4 cm long, pubescent, narrowly ovate–oblong, subacute, persistent, often tinged with pink, strongly nerved; corolla c 2 cm long, divided about half way into 5 ovate, acute lobes. Capsules c 1 cm long, subcylindric, scarious, slightly depressed at apex. Seeds oblong, reddish–brown, glabrous.

Fls. & Frts. : October–November.


Distrib. : Rare along hill slopes in forests. Ahmednagar, Nasik, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

Rivea Choisy

1. Woody climbers; peduncles usually 1–flowered; corolla glabrous outside ... R. hypocrateriformis

1. Erect undershrubs or shrubs; peduncles usually 2–7–flowered; corolla appressedly hairy only along mid–petaline bands ... R. laotica

Climbers, woody; stems pubescent. Leaves 1.0–3.5 x 2–4 cm, rounded, cordate at base, apex obtuse, mostly glabrous above, densely appressed pubescent below. Flowers usually solitary, occasionally subsipicate; calyx unequal, ovate-elliptic, obtuse at apex, 10–12 mm long, densely villose; corolla white, salverform, 6–9 cm long. Capsules globose, 10–12 mm in diam., dark brown, glabrous. Seeds minutely pitted.

Fls. & Frts. : June–September.


Distrib. : Common throughout along streams & deciduous forests.


Undershubs or shrubs; stems several from woody base, terete or angular, densely appressed white hairy. Leaves 10–13 x 6–12 cm, orbicular–reniform, deeply cordate at base, rounded or slightly emarginate at apex, glabrous above, appressedly white–pubescent on the lower surface. Flowers in 2–7–flowered cymes; calyx-segments about equal in length, two outer ones 15 x 8 mm, oblong, appressed hairy with nearly glabrous flat margins, the two inner ones 16–17 x 9 mm, elliptic–oblong to narrowly obovate, appressedly hairy with glabrous margins; corolla white, salver–shaped, 6–8 cm long, glabrous except hairy mid–petaline bands. Capsules 4–seeded.

Fls. & Frts. : July–September.

Illus. : Ooststr. op. cit.

Distrib. : Occasional in deciduous forests and on bushes around fields. Ahmednagar, Mumbai, Nanded, Thane.

Notes : R. laotica Ooststr. is closely allied to R. ornata (Roxb.) Choisy. But. R. laotica Ooststr. is easily recognizable by the habit. Besides, outer two sepals are oblong, with a hairy central part outside and with flat and glabrous margins. The inner two sepals are elliptic–oblong to narrowly obovate. Whereas in R. ornata (Roxb.) Choisy, outer two sepals are ovate–oblong or oblong–lanceolate, with involute margins and are completely covered on their outer surface with dense short tomentum. Also the inner two sepals are ovate to elliptic–oblong.
STICTOCARDIA Hall. f.


Twiners, woody; young stems terete, pubescent, finally glabrescent. Leaves 6–20 x 5 x 20 cm, orbicular, base cordate, apex obtuse to mucronulate, both surfaces densely pubescent or sometimes nearly glabrous; lateral nerves 7–8 on each side. Inflorescence axillary, 1–3 flowered; peduncles pubescent; bracts minute, caducous; sepals orbicular, 12–18 mm long, pubescent; corolla funnel shaped, 8–10 cm long, reddish–purple with dark centre; anther filaments hairy at base. Capsules globose, 2.0–3.5 cm across. Seeds black or dark–brown, pubescent.


Distrib. : This species is fairly common on sandy soil in tidal areas along the sea–shore; it is rare in interior away from the shores. Mumbai, Ratnagiri, Sindhudurg.

VOLVULOPSIS Roberty


Herbs, perennial; stems prostrate, herbaceous, 15–30 cm long, radially spreading, pilose with short trichomes. Leaves broadly ovate to orbicular, 4–15 mm long, short petiolate, base rounded to subcordate, apex rounded to emarginate, glabrous or slightly pubescent beneath. Flowers axillary, solitary, cream–coloured; pedicels 2–6 mm long; calyx elliptic–ovate, 2.5–4.0 mm long, pubescent; corolla 5–7 mm across. Capsules globose, 3–4 mm across. Seeds brown to black, subglobose, slightly muricate.

Fls. & Frts. : July–December.

Distrib. : Common near moist places, forming dense, appressed, close matting with its leaves. Bhandara, Mumbai, Nagpur.

Notes : Native of South America, now naturalised in the Tropics like Africa, Madagascar, India, etc. The genus Volvulopsis Roberty was created by Roberty (op. cit.) carved out from Evolvulus L. in 1952. However, Ooststroom in Mon. Evolv. 114. 194 and in Steenis, Fl. Males. 1, 4: 58. 1958 and Austin in Dassan & Fosb. Rev. Handb. Fl. Ceylon 1: 311. 1980 retained the species in Evolvulus L. In the present treatment the name Volvulopsis Roberty has been followed.

XENOSTEGIA Austin & Staples


Herbs, prostrate with woody rootstock; branches 10–80 cm long, angular, glabrous. Leaves 4–20 (30) x 0.5 (1.5–4)–6 mm, apex acute and mucronulate. Flowers in 1–2 (–3)–flowered cymes; bracts minute, oblong, mucronulate; corolla yellowish or yellowish–white, glabrous or sparsely hairy at base. Capsules ovoid, 4–5 mm long, 4–valved, straw coloured. Seeds 4 or less, dull black.

Fls. & Frts. : August–April.

Distrib. Common in dry fields and also along the sandy coasts. Bhandara, Chandrapur, Dhule, Kolhapur, Nagpur, Nanded. Raigad, Ratnagiri, Sindhudurg, Yavatmal.

Notes : This species has been found to be anomalous in Merremia. Though it shares some characters with Ipomoea, it does not fit in that genus too. Hence, Austin & Staples (op. cit.) have established a new genus to accommodate this species. They have differentiated Ipomoea, Merremia and Xenostegia thus :
1. Anthers mostly spiral when dehisced; seeds rounded to truncate apically; pollens 3–12–colpate, smooth; stigmas undulate or lobed, the papillae clavate or cylindrical ... **Morremia**

1. Anthers straight when dehisced; seeds obtuse to rounded apically; pollens pantoporate, spinulose or smooth; stigmas smooth, lobed to undulate, papillae villiform :

   2. Stigmas lobed to undulate; pollen spinulose ... **Ipomoea**

   2. Stigmas neither undulate nor lobed; pollen smooth ... **Xenostegia**

**CULTIVATED SPECIES :**


Twiners; stems glabrescent, muricated, 5–10 m long. Leaves 6–9 x 5–8 cm, broadly ovate, cordate at base, acuminate at apex, entire, glabrescent on both surfaces. Flowers 6–10 cm long, on axillary, 1–5–flowered peduncles; peduncles 5–10 cm long; calyx glabrous; calyx-segments subequal, ovate, 10–12 mm long, mucronate; corolla snow–white, tube narrow, 6–8 cm long, limb spreading, mucronate, 6–10 cm across. Capsules ovoid–oblong, 2–2.5 cm long, acute. Seeds 4, irregularly 3–gonous, 10–12 mm long, glabrous, yellow or black.

*Fls. & Frts.* : October–November.

*Distrib.* : Native of America, now cultivated or naturalised in most of the tropical countries of the world. Cultivated in the gardens of Aurangabad, Chandrapur, Jalna, Nanded, Pune, Satara, Thane.


Creeping, perennial herbs with elongate, fusiform tuberous roots; stems terete, rooting at nodes. Leaves 4–15 x 4–10 cm, broadly ovate to orbicular in outline, angular or more often deeply 3–7–lobed, lobes ovate to linear–oblong, glabrous or sparsely pubescent. Flowers axillary, solitary or in few to many–flowered cymes; sepals subequal, elliptic–oblong, 7–10 mm long, acute, mucronate, fimbriate; corolla pale purple, 3–4.5 cm long, glabrous. Capsules ovoid, 2–4–locular, 2–4–seeded. Seeds trigonous–ovoid, black, glabrous.

*Fls. & Frts.* : Rare & irregular.

*Distrib.* : An American root–crop, grown in throughout the tropical and subtropical regions of the world. Cultivated for edible tuberous roots in Ahmednagar, Nagpur, Osmanabad, Pune, Thane.

Twining herbs; roots tuberous; stems terete, smooth, glabrous. Leaves 3–10 x 3–10 cm, ovate or orbicular in outline, cordate at base, palmately divided into 5–7 lobes, lobes ovate–lanceolate or elliptic, acuminate or mucronate. Flowers axillary, 1–few flowered cymes; sepals 4–6 mm long, ovate, mucronate; corolla funnel–shaped, blue, purple or pale pink, 4–6 cm long. Capsules subglobose, 10–12 mm in diam., 2–celled, 4–valved. Seeds 2–4, ovoid, hairy.

**Fls. & Frts.** : October–April.

**Illus.** : *I. pulchella* Wight, Ic. t. 156. 1839 non Roth, 1821.

**Distrib.** : An American species, now widely cultivated and naturalised in Africa and Asia. Planted in gardens, hedges, on walls, etc. for ornamental purposes. Ahmednagar, Kolhapur, Nagpur, Nasik, Osmanabad, Pune, Raigad, Satara, Solapur, Thane.


Twining herbs; stems subangular or striated, glabrous. Leaves reniform in outline, 5–7–lobed, unequal, 3–8 cm long, elliptic or lanceolate, glabrous on both surfaces. Flowers axillary, solitary; sepals 15–20 mm long, linear, appressed hairy or glabrous; sepals ovate, 6–8 mm long; corolla yellow with purple centre, 3.5–4 cm long, tube often purplish, limb with purple streaks.

**Fls. & Frts.** : August–October.

**Distrib.** : Aurangabad.


Herbaceous twiners; stems terete, densely pilose. Leaves broadly ovate to orbicular in outline, entire or 3–lobed, 4–10 x 3–10 cm, pilose above, densely hairy beneath. Flowers in axillary, umbellate cymes, 1–many; sepals 15–20 mm long, linear, appressed hairy or glabrous; corolla funnel–shaped, 5–8 cm long, bluish–purple with red mid petaline bands, glabrous.

**Fls.** : July–January.
**Distrib.** : It is native of Tropical America, grown in gardens. Satara.


A climber.

**Distrib.** : Native of Mexico. Cultivated in gardens as an ornamental. Aurangabad.


Twining herbs; stems hairy. Leaves broadly ovate to orbicular in outline, entire or 3–lobed, pubescent on both surfaces; petioles hirsute. Flowers in axillary, 1–few flowered cymes; sepals oblong–lanceolate, 1–1.5 cm long, margins narrow, scarious, bristly hairy near base; corolla purple–blue with red bands, funnelform, 5–6 cm long, tube white. Capsules globose, 6–8 mm in diam., straw coloured. Seeds obtusely 3–gonous, black, pilose.

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

**Distrib.** : Native of the American tropics, probably Mexico. Cultivated for their attractive flowers. Pune, Marathwada. (Naik, op. cit.).


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

**Distrib.** : Native of Mexico. Cultivated and naturalised in most of the tropical countries. Sometimes found as an escape on hedges. Common throughout.

Twining herbs; stems slender, narrowly winged, glabrous. Leaves ovate, 2–3 x 1.5–2.5 cm, glabrous on both surfaces. Flowers in axillary, long peduncled, 5–9–flowered cymes; sepals ovate–lanceolate, glabrous; corolla blue with pale mid petaline bands, shortly funnel shaped.

*Fls. & Frts.* : September–December.

*Distrib.* : Native of South America. Cultivated in gardens. Aurangabad, Beed, Jalna, Latur, Osmanabad & Parbhani (Naik, op. cit.).


Twining herbs; stems glabrous or sparsely hairy. Leaves ovate to broad–ovate, cordate to truncate at base. Flowers in few–to many–flowered umbelliform cymes; two outer sepals ovate, 7–10 mm long, long–acuminate, third sepal oblique, semi–ovate, two inner sepals much shorter, ovate to lanceolate, acuminate; corolla blue or blue–purple, white at the base, rarely entirely white.

*Distrib.* : Native of subtropical and Tropical America, cultivated in tropics as an ornamental. Nagpur, Pune.


Twining herbs; stems glabrous or hirsute. Leaves palmate, 5–7–lobed, divided below the middle, lobes oblanceolate, glabrous. Flowers in long–peduncled, few–flowered cymes; sepals elliptic–ovate, glabrous, enlarged in fruit; corolla white or pink with a purple throat, glabrous.

*Distrib.* : Native of Tropical America and West–Indies, introduced into Bombay by Nimmo. Jalgaon, Mumbai, Nagpur, Pune.


Twining herbs; stems slender, glabrous or hirsute. Leaves digitate; leaflets 5, elliptic–oblong to narrow–lanceolate, entire or coarsely dentate, glabrous. Flowers in axillary, 1–5–flowered cymes; sepals oblong–ovate, mucronulate, glabrous, enlarged in fruit; corolla pale yellow or whitish, funnel–shaped, glabrous. Capsules globose, straw–coloured. Seeds ovoid, greyish–black, hairy.

Herbaceous twiners; stems form a large underground tuber, terete, glabrous, often dark purple. Leaves orbicular in outline, palmately 5–7–lobed, lobes oblong–lanceolate, entire, acuminate. Flowers in axillary, 1–few flowered cymes; pedicels elongating in fruit; bracts triangular; outer two sepals broadly ovate, inner three ones oblong, all enlarging in fruit; corolla funnel–shaped, glabrous. Capsules depressed–globose, membranous–scarious. Seeds ovoid, black, pubescent along margins.


Herbaceous twiners; stems terete, glabrous. Leaves broadly ovate in outline, cordate at base, entire or mostly 3–lobed. Flowers in single or double cincinnus cymes; sepals oblong; corolla at first red, afterwards pale yellow or whitish. Capsules broadly ovoid.


Woody twiners; stems terete, greyish–tomentose especially when young. Leaves ovate, entire, acute or acuminate and shortly cuspidate at apex, pubescent on both surfaces. Flowers in axillary and terminal paniculate cymes; sepals linear, 1–1.5 mm long, densely grey tomentose, the three inner much enlarged in fruit; corolla white or pale yellow, funnel–shaped, shallowly lobed or crenate. Capsules ovoid, 4–5 mm long, glabrous. 

**Fls. & Frts.** : October–December.
Distrib.: Native of Northern India and Upper Burma, grown in gardens. Ahmednagar, Aurangabad, Pune.

**P. volubilis** Burm. f. Fl. Ind. 51, t. 21, f. 1. 1768; Ooststr. in Blumea 3: 87. 1938.

Woody twiners; stems 1–2 cm thick, adult branches pale brown or grey, often verrucose, young parts pilose. Leaves ovate, glabrous or sparsely hairy, often shining above. Flowers in broad panicles; sepals obovate to obvate, glabrous except apex and base or sparsely pilose on the whole surface, enlarged in fruit; corolla white, deeply 5–lobed, glabrous or short–pilose. Capsules broad–ovoid to globose, mucronate, glabrous. Seeds ovoid, purple–brown or black, minutely verrucose.

Distrib.: Burma and Indo–China to Malaysia, cultivated in India for ornamental purposes. Pune.


f. *corymbosa*.

Herbaceous or subwoody twiners; stems mostly glabrous. Leaves mostly ovate, cordate at base, acuminate at apex, entire. Flowers in axillary, few to many flowered, peduncled cymes, often united into panicles; sepals narrow–ovate to oblong; corolla white with a yellowish centre, campanulate, glabrous or sparsely pilose on the distinctly limited midpetaline bands. Capsules ovoid–oblong, mucronate by the style–base. Seeds puberulent.

Distrib.: Native of Tropical America. Probably this is the only species of Convolvulaceae which possesses narcotic and intoxicating properties. Cultivated in gardens, often as an escape along hedges. Mumbai, Pune.


A spring climber, pubescent. Leaves 10 x 7.5 cm, cordate, smooth. Flowers pale.

CUSCUTACEAE

(P. Venkanna & M. J. Kothari)

CUSCUTA L.

1. Style one; stigmas conical ... C. reflexa
1. Styles two; stigmas globose, peltate or capitate :
   2. Infrastaminal scales absent ... C. hyalina
   2. Infrastaminal scales present :
      3. Corolla lobes acute, corolla scales ovate ... C. campestris
      3. Corolla lobes obtuse, corolla scales short, deeply bifid :
         4. Calyx lobes overlapping, distinctly carinate; capsules, enclosed by corolla ... C. chinensis
         4. Calyx lobes neither overlapping nor carinate; capsules not enclosed by corolla ... C. australis


Stems slender, filiform, terete, pale brownish–yellow. Flowers 2–3 mm long, in compact clusters; bracts minute; peduncles and pedicels short or absent; calyx greenish, membranous, 1.5–1.75 mm long, lobes oblong–orbicular or broadly triangular–ovate; corolla 2–3 mm long, broadly funnel shaped, greenish–white, orbicular, erect; stamens shorter than corolla lobes, filaments short, subulate, anthers ovate, yellow, infrastaminal scales shorter than corolla tube, with 2–3 fimbriate. Capsules depressed–globose or obpyriform, brown. Seeds 2–4, ovoid, brown, minutely foveolate, hilum with a short diagonal line.

Fls. & Frts. : August–September.

Illus. : Pearson in Hook. Ic. Pl. 4:8, t. 2704. 1901 (C. hygrophilae); Yuncker, op. cit.; Sant & Patel, op. cit.

Distrib. : First reported from Australia, later from Turkestan and India to China, Japan, Malaya and New Guinea. Pune, Thane.

Notes : Found as a parasite on the flowering hosts, Setaria spp., Digitaria spp., Aeschynomene indica L., Solanum melongena L. and some herbaceous Asteraceae members. The plant is variable in shape and size of the floral parts.

Stems yellowish, slender, mostly 0.1–0.3 mm in diam. Flowers c. 1.5 mm long, greenish-yellow in compact cymose clusters; pedicels mostly shorter than flowers; calyx lobes obtuse or somewhat acute; corolla lobes triangular, acute, equalling corolla tube; stamens shorter than lobes, filaments c. 1 mm long, slender. Capsules depressed–globose, pale brownish straw coloured. Seeds c. 1 mm long.

_Fls. & Frts._: August–October.

_Illus._: Yuncker, _op. cit._

_Distrib._: A parasite on _Ipomoea, Clerodendrum, Malachra capitata, Chrysanthemum indium_, etc. Pune, Thane.


1. Scales oblong, fimbriate only on upper half
   1. Scales spatulate, truncate or rarely emarginate, fimbriate from near base

   _var. chinensis._

   Stems slender, filiform. Flowers white or pale yellow c. 2.5 mm long or slightly longer, shortly pedicellate or sessile, bracteate in compact few-flowered clusters; calyx loosely fitting round corolla, as long as corolla tube, fleshy, lobes equal or slightly unequal; corolla 2.5–3 mm long, urceolate or globular, acute, as long as or slightly longer than corolla tube, spreading; stamens shorter than corolla lobes, filaments as long as or longer than ovate anthers, infrastaminal scales reaching up to staminal filaments. Capsules 2.5–3 mm across, depressed–globose, somewhat 4–lobed. Seeds 1.0–1.5 mm long, brown, minutely foveolate.

   _Fls. & Frts._: August–October.


   _Distrib._: Common parasite mostly on _Lawsonia inermis_ L. and _Amaranthus oleraceus_ L. Akola, Bombay, Jalgaon Nasik, Pune, Raigad, Thane.

Stems slender, filiform. Flowers lateral, glomerulate or sometimes loosely panicked; minutely sessile or subsessile; calyx 5-lobed, lobes ovate-oblong, obtuse; corolla campanulate, 3.0–3.5 mm across, scarcely twice the sessile corolla tube, inserted on the throat, lobes of corolla often reflexed, sometimes lanceolate ovate or linear, acute; stamens exerted with short filaments; style straight or slightly divergent, withering on apex of capsule. Capsules round, corolla deciduous.

Fls. & Frts.: May–October.


Stems filiform. Flowers 2.5–3.5 mm long, pedicellate, bracteate, in distinct cymes; bracts triangular; calyx funnel shaped, 2.5–3.0 mm long, lobes narrowly triangular, tapering; corolla 3.0–3.5 mm long, campanulate, lobes lanceolate, reflexed in fruit; stamens shorter than corolla lobes, filaments inserted at base of sinuses. Capsules 3–4 mm across, globose or subglobose, brown, 2–celled with a narrow interstylar aperture, surrounded by persistent withered corolla. Seeds c 1.5 mm long, horizontal, oblong.

Fls. & Frts.: August–November.

Illus.: Wight, Ic. t. 371. 1848 (C. arabica); Yuncker, op. cit.; Sant. & Patel, op. cit.


Twiners; stems greenish–yellow, coarsely terete, verrucose with red marks. Flowers 6–8 mm long, shortly pedicellate, bracteate in
cymose or paniculate clusters, pedicels 3 mm long, fleshy, verrucose; bracts 1 mm long, broadly triangular; calyx cupulate, fleshy, lobes subequal, fleshy, verrucose outside; corolla white, tubular, fleshy, 6–8 mm long, margins wavy, stamens somewhat shorter than corolla lobes, filaments short, anthers Oblong, intrastaminal scales incurved with multicellular fimbriae. Capsules globose–conical, apiculate c 6 mm diam., circumcissile. Seeds 1–2, suborbicular, prostrate, minutely foveolate, hilum a transverse scar.

*Fls.* : November –February.  *Frts.* : April–May

*Illus.* : Yuncker, op. cit.; Sant & Patel, op. cit.

*Distrib.* : Common parasite on *Bauhinia* sp., *Ficus* sp., *Ziziphus* spp., etc.

**Solanaceae**

(K. Madhusudan Rao)

1. Anthers dehiscing by an apical pore or a short slit :
   2. Calyx cupular; apical pores of anthers facing inwards ... *Lychnanthus*
   2. Calyx lobed or with distinct teeth; apical pores of anthers facing upwards and outwards ... *Solanum*

1. Anthers dehiscing by a longitudinal long slit :
   3. Fruits enclosed in accrescent calyx :
      4. Flowers solitary :
         5. Flowers pale yellow; fruiting calyx not angled ... *Physalis*
         5. Flowers blue; fruiting calyx 5 angled ... *Nicandra*
      4. Flowers many, usually fascicled in sessile or subsessile umbellate cymes ... *Withania*
   3. Fruits not enclosed by calyx :
      6. Capsules tubercled or spiny ... *Datura*
      6. Capsules not as above ... *Nicotiana*

**Datura L.**

1. Corolla 4–10 cm long :
   2. Calyx as long as or little more than half the length of corolla :
      3. Spines on capsules uniform, slender; corolla 3–4 cm wide ... *D. stramonium*
Datura ferox L.
A - Habit; B - Calyx; C - Corolla; D - Gynoecium; E - Fruit; F - Seed
3. Spines on capsules unequal, stout; corolla c 2 cm wide ... *D. quercifolia*

2. Calyx less than half as long as corolla ... *D. ferox*

1. Corolla 15–27 cm long:
   4. Capsules without spines ... *D. suaveolens*
   4. Capsules spiny:
      5. Calyx evenly lobed; corolla limb with 5–6, short, acute deltoid lobes ... *D. metel*
      5. Calyx unevenly lobed; corolla limb toothed ... *D. inoxia*

**Datura ferox** L. Amoen Acad. 3: 403. 1756; Avery et al. in Blakeslee, Genus *Datura* 21, t. 4. 1959; Bhandari & Mehta in J. Bombay Nat. Hist. Soc. 76: 550, f. 5. 1980.

Undershubs, upto 1.5 m high. Leaves angular and sinuate. Flowers white, solitary, axillary; corolla 5–toothed, 4–6 cm long, 2–3 cm wide. Capsules ovoid, 5–8 x 4–6 cm, spines few, of unequal size.

*Fls. & Frts.*: August–September.

*Illus.*: Avery et al. op. cit.; Bhandari & Mehta, op. cit.

*Distrib.*: Rare in waste places near villages. Akola.


Undershubs, c 10 cm tall. Leaves 10–15 x 6–8.5 cm, ovate, very unequal sided at base, margins dentate. Flowers white, solitary in front of branches. Capsules globose, clothed with weak long spines. Seeds many, reniform.

*Fls. & Frts.*: September–March.

*Illus.*: Avery et al. in Blakeslee, op. cit.

*Distrib.*: Common as a weed in waste lands. Ahmednagar, Akola, Nagpur, Nasik, Osmanabad, Pune, Raigad, Solapur, Thane, Yavatmal.

*Notes:* The specific epithet is spelled *inoxia* in de Chazelles and Holandras translation of Miller’s ed. 8, vol. 3. 1787 and by most subsequent authors (Avery et al. op. cit.).

Herbs, erect, glabrous or subglabrous; stems often muricate and tinged with purple. Leaves 10–15 x 8–13 cm, broadly ovate–triangular, shallowly lobed. Flowers purple, axillary, solitary. Capsules 2.0–3.5 cm across, drooping, globose, nodding on curved pedicels. Seeds numerous, yellowish–brown.

*Fls. & Frts.* : September–December.


*Distrib.* : Frequent in waste lands.


Herbs, 60 cm high, erect, divaricately branched. Leaves 12–15 x 11–13 cm, ovate, more or less symmetrically lobed, slightly unequal at base. Flowers solitary, white. Capsules ovoid, 4–5 x 2–3 cm, covered with limited spines and supported on reflexed calyx. Seeds compressed, reniform, black, tubercled.

*Fls. & Frts.* : July–December.

*Distrib.* : Rare in waste places and on the rubbish heaps. Pune.


Herbs, 70 cm high, annuals or perennials, erect, profusely branched. Leaves ovate, margins shallowly many angled or lobed. Flowers white, solitary. Capsules 3.5–4.5 cm long, ovoid–ellipsoid, 4–valved, prickled. Seeds many, ovoid–reniform, black.

*Fls. & Frts.* : September–October.

*Illus.* : Vartak, op. cit.


Herbs, 1–2 m high. Leaves 19–25 x 7–10 cm, elliptic, glabrous above, hairy beneath, apex acute, base unequal. Flowers pale yellow or white; calyx tube 6–11 cm long, angular; corolla c 27 cm long, tube pubescent, plicate without.

*Fls. & Frts.* : January–March.

Distrib. : A few, as weed in waste lands. Satara.

**LYCIANTHUS** (Dunal) Hassl.


Undershubs, straggling or erect; branches zig–zag, quadrangular. Leaves 8–12 x 4–6 cm, elliptic–lanceolate, sparsely pubescent above, glabrous beneath. Flowers white or purple, in axillary fascicles. Berries subglobose c 0.7 cm across, reddish turning black.


Distrib. : Infrequent in shades of evergreen forests. Satara, Sindhudurg (Cooke, op. cit.).

**NICANDRA** Adans. (nom. cons.)


Herbs c 70 cm high, annual erect, much branched. Leaves 2.5–11.0 x 1.0–5.5 cm, ovate–elliptic. Flowers blue, extra axillary. Berries c 1.5 cm across. Seeds numerous, flat, minute, brown.

*Fls. & Frts.* : September–November.
Nicandra physalodes (L.) Gaertn.

Herbs, erect, glandular hairy, annual. Leaves: radical sessile, 24–60 x 10–25 cm, cauline smaller, margins repand. Flowers dull pinkish–white, hairy without. Capsules 0.8–1.0 x 0.4–0.5 cm, ovoid, acute at apex, valves bifid at apex. Seeds brown.

Fls. & Frts.: July–February.

Illus. Pardeshi & Pokle, op. cit.

Distrib.: Rare on bunds of fields. Aurangabad (Pardeshi & Pokle, op. cit.).


Herbs, 90–120 cm high; stems dichotomously branched, pubescent when young. Leaves 5–10 x 3.5–6.5 cm, ovate or oblong–ovate, glabrous above, puberulous beneath. Flowers solitary, axillary. Berries subglobose, smooth, orange coloured.

Fls. & Frts.: August–September.

Distrib.: An exotic weed naturalised in India in cultivated fields. Bombay (Sant. et al. op. cit.), Chandrapur, Nagpur, Pune (Sant. et al. op. cit.), Satara.

Physalis minima L.
Herbs c 30 cm high, annual, erect. Leaves 2.0–6.5 x 1.5–5.0 cm, ovate, elliptic or elliptic–oblong. Flowers axillary, solitary. Berries 1.2–2.5 cm long, ovoid or subglobose. Seeds numerous, orange–yellow.

*Fls. & Frts.* : July–April.


*Distrib.* : Common throughout in open situations.

**Solanum L.**

1. Plants armed :
   
   2. Leaves pinnately or bipinnately lobed ... *S. sisymbriifolium*

   2. Leaves sinuate to subpinnately lobed :
      
      3. Spines straight, usually exceeding 1–2 cm long ... *S. virginianum*

      3. Spines recurved, less than 1 cm long :
         
         4. Corolla white ... *S. stramonifolium*

         4. Corolla violet or bluish–violet :
            
            5. Ovary glabrous :
               
               6. Leaves more than 10 cm long :
                  
                  7. Calyx floccosely woolly ... *S. giganteum*

                  7. Calyx sparingly hairy ... *S. torvum*

               6. Leaves less than 5 cm long ... *S. trifoliatum*

            5. Ovary hairy at apex :
               
               8. Calyx lobes acute :
                  
                  9. Calyx prickly; berries 1.8–2.5 cm across ... *S. incanum*

                  9. Calyx not prickly; berries c 0.8 cm across ... *S. anguivi*

            8. Calyx lobes acuminate to caudate–acuminate :
               
               10. Leaves elliptic–rhomboid ... *S. hovei*

               10. Leaves 0.3 – 0.4 cm long, oblong, linear ... *S. elaeagnifolium*

1. Plants unarmed :

   11. Calyx lobes subulate ... *S. denticulatum*

   11. Calyx lobes not subulate :

      12. Calyx glabrous to glabrescent ... *S. nigrum*

      12. Calyx woolly tomentose ... *S. erianthum*
Solanum elaeagnifolium Cav.

Undershrubs or shrubs c 1.5 m high. Leaves 3–10 x 1.5–6.0 cm, broadly elliptic or elliptic–oblong or ovate, prickly on nerves. Inflorescence of extra–axillary, racemose cymes. Flowers blue. Berries globose, yellowish–red when ripe. Seeds orange, spherical, minutely pitted.

*Fls. & Frts.* : July–February.


*Distrib.* : Common in moist deciduous forests.

*Notes* : The name *S. indicum* L. (1753) belongs to the species known as *S. ferox* L. and hence the plant hitherto called as *S. indicum* has been provided with the name *S. anguivi* Lam. (Hepper, op. cit.).


Shrubs, 1.0–1.5 m high. Lower leaves solitary, upper in unequal pairs, 5–12 x 2.5–5.5 cm, elliptic–lanceolate, sparsely hairy above, glabrous beneath. Flowers in lateral lanceolates. Berries globose, c 1 cm across, red when ripe.

*Fls. & Frts.* : October–November.

*Illus.* : Wight, Ic. t. 1397. 1848.

*Distrib.* : Infrequent along the ghats. Satara.


Undershrubs or herbs, suberect, prickly, perennial. Leaves 4–12 cm long, oblong, linear, stellately hairy, subacute or obtuse at apex, rounded or tapering at base. Flowers violet, in 2–6–flowered corymbs. Berries globose, yellowish to pale brown when ripe. Seeds discoid, brown, smooth.

*Fls. & Frts.* : July–February.

*Illus.* : Raghavan & Wadhwa, op. cit.
**Distrib.** : Rare in waste places and on rubbish heaps. Pune.


Shrubs or small trees, 2–3 m tall; stem and branches clothed with stellate tomentum. Leaves 12–25 x 7–13 cm, ovate–elliptic, apex broadly acuminate. Flowers white, in leaf opposed dichotomous cymes. Berries globose, yellow, covered with stellate hairs.

**Fls. & Frts.** : July–January.

**Illus.** : Wight, Ic. t. 1398. 1848 (*S. verbascifolium*).

**Distrib.** : Frequent in deciduous forests. Osmanabad, Pune, Satara.


Shrubs, 2–3 m tall; prickles triangular. Leaves 10–20 x 3–6 cm, oblong–lanceolate, glabrous above, white hairy beneath, apex acute, base tapering. Flowers pale purple to violet, in corymbose, white woolly cymes. Berries globose, scarlet–red.

**Fls. & Frts.** : February–May.

**Illus.** : Wight, Ic. t. 893. 1844.

**Distrib.** : Frequent on hill slopes along thickets. Ahmednagar, Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg, Thane (Cooke, op. cit.).


Undershrubs, 0.5 m tall, scantily stellately pubescent, prickly. Leaves 5–10 x 2–5 cm, membranous, narrowly rhombic or elliptic. Flowers in infra–axillary, scorpioid cymes. Berries subglobose. Seeds subreniform, minutely pitted.

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

**Illus.** : Sengupta, op. cit.

**Distrib.** : Frequent in open situations, on plateaus. Dhule, Pune, Raigad.


*Fls. & Frts.* : January–June

*Distrib.* : Infrequent in dry deciduous forests. Akola, Jalgaon, Osmanabad, Pune.


Herbs c 30 cm high. Leaves 2.0–2.5 x 1 cm, broadly ovate or ovate–lanceolate, membranous, apex acute. Inflorescence of subumbellate cymes. Flowers white, pendulous. Berries globose, purplish–black when ripe. Seeds discoid, minutely pitted, yellow.


*Distrib.* : Common throughout as a weed in open situations.


*Fls. & Frts.* : June–September.


Herbs, densely hairy, armed, 0.6–1.2 m high. Leaves usually 2 at a node, unequal, 15.0–27.5 x 10–20 cm, broadly elliptic. Flowers solitary or in 2–6–flowered leaf opposed densely hairy cymes. Berries globose, densely covered with long fulvous hairs. Seeds rugose.

**Fls. & Frts.** : April–September.

**Distrib.** : Rare in forest undergrowth. ’Konkan’ (Cooke, op. cit.).


Shrubs, 2.5–3.6 m high, densely covered with stellate hairs; stem and petioles prickly. Leaves 15.5 x 10.0 cm, ovate, shallowly lobed, shortly acuminate at apex, subcordate at base. Flowers white, 1.5–2.0 cm across, many in dense cymes. Berries globose, shining yellow when ripe. Seeds brown.

**Fls. & Frts.** : September–January.

**Illus.** : Wight, Ic. t. 345. 1840; Bhogaonkar & Devarkar, op. cit.

**Distrib.** : Rare. Amravati (Bhogaonkar & Devarkar, op. cit.), Pune.

**S. trilobatum** L. Sp Pl. 188. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 4: 236. 1883; Cooke, Fl. Pres. Bombay 2: 337. 1958 (Repr.).


**Fls. & Frts.** : December–June.

**Illus.** : Wight, Ic. t. 854. 1844 –45.

**Distrib.** : Infrequent in open situations in plains. Ahmednagar, Kolhapur.

Solanum virginianum L.
Herbs, prostrate or decumbent–ascending, widely branched. Leaves 4.0–8.5 x 2.5–5.5 cm, ovate–elliptic, stellately hairy on both sides, prickly on nerves. Inflorescence of extra axillary, few–flowered cymes. Flowers purple. Berries yellow. Seeds numerous.

**Fls. & Frts.** : December–May.


**Distrib.** : Common throughout in waste places on sandy river beds and fields as a weed.

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**WITHANIA Pauq. (nom. cons.)**


Undershubs, c 90 cm high, much branched. Leaves 5–10 x 2.5–5.0 cm, ovate, more or less minutely stellately pubescent, apex subacute, Flowers yellow. Berries globose, smooth, red when ripe. Seeds oblong or nearly spherical.

**Fls. & Frts.** : March–July.


**Distrib.** : Frequent as a weed in waste places and roadsides. Ahmednagar, Kolhapur, Nagpur, Nasik, Osmanabad, Pune, Ratnagiri, Satara, Thane.

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**CULTIVATED SPECIES**:


Herbs. Leaves elliptic–ovate, 3–5 x 2–4 cm, base rounded, margins entire. Flowers blue, 2 cm across. Capsules ribbed.

**Distrib.** : Widely cultivated in gardens for blue or violet flowers. Pune, Satara.
Withania somnifera (L.) Dunal

Herbs, viscous and glandular–hairy, 30 cm high. Leaves short–petioled, ovate, rough–hairy on both sides. Flowers dark blue, lower solitary in axils, upper racemose.

*Distr*. : Introduced from S. America. Cultivated in gardens as an ornamental plant, also found as an escape. Pune, Satara.


Shrubs, 1.2–2.4 m tall. Leaves 3.5–6 cm long, elliptic to elliptic–ovate or obovate, entire. Flowers odorous with a long corolla tube, at first yellow, then turning white. Berries yellowish.

*Distr*. : A native of Tropical America. Planted for odorous flowers in gardens (Cooke, op. cit.).


var. *annuum*. ‘Mirchi’.

Herbs, erect. Leaves 3.5–6.0 x 1.5–2.0 cm, ovate–lanceolate. Flowers solitary, white. Berries c 8.5 x 0.8 cm, red when ripe. Seeds orbicular, flat.

*Fls. & Frts.* : July–August.


Herbs, 30–60 cm high, much branched. Leaves broadly ovate. Flowers dull–white. Berries ovoid or ellipsoid, rugose, red or yellow when ripe.

*Distr*. : Cultivated (Cooke, op. cit.) in the area for their fruits, which forms a major spice.

Herbs, annual or biennial, woody, erect. Leaves ovate–lanceolate. Flowers white, 1–3 cm long in lateral branches. Fruits linear, narrowed at tip, turning red at maturity. Seeds many, red or orange.

*Fls. & Frts.* ; August–October.


An erect herb, 45–60 cm high. Leaves thick. Flowers dull white. Fruits large, angular, ripens orange–yellow or red.

*Fls. & Frts.* : July–October.

*Distrib.* : Widely cultivated for its fruits, used as vegetable. Osmanabad, Pune.


var. *frutescens*. ‘Lovungi Mirchi’.

Herbs, 40–70 cm tall, annual, erect. Leaves ovate. Flowers white or greenish–white; pedicels usually 2 or more together. Fruits red, shorter, ovoid.


*Distrib.* : Cultivated for the fruits used as spice and condiment. Osmanabad (Naik, 1979), Pune, Thane.


Shrubs, much branched. Leaves ovate, acuminate, narrowing abruptly into petiole. Flowers greenish–white. Fruits globose or nearly so, changing from green to blackish–spotted, finally ripening to red or yellow.


*Distrib.* : Occasionally cultivated. Pune.

Shrubs, large. Leaves smooth, wavy, light–green glossy. Spikes of glowing orange–colour. Flowers c 2.5 cm long.

*Fls. & Frts.* : December–February.

*Distrib.* : A native of Guatemala, cultivated.


Shrubs, 1–1.3 m tall. Leaves elliptic–oblong or elliptic–lanceolate, membranous, thinly hairy beneath. Flowers ivory–white, in 1.5–6 cm long, terminal panicles. Berries deep–purple or nearly black.

*Fls. & Frts.* : Almost throughout the year.

*Distrib.* : Native of West–Indies. Cultivated in the gardens for sweet scented flowers. Pune, Satara, Thane.


Shrubs, scandent, 1.2–1.5 m high. Leaves ovate to ovate–lanceolate. Flowers purplish–red, in cymes at the end of branches. Berries c 0.7 cm across, fleshy, deep red–purple, 2–celled, 2–seeded.

*Fls. & Frts.* : September–December.

*Illus.* : Bor & Raiz. op. cit.

*Distrib.* : Cultivated in gardens.


Shrubs, erect, much branched, 2–4 m tall; branchlets angled. Leaves 8–15 x 3 cm, oblong–ovate to elliptic, acuminate at apex. Flowers in axillary or terminal, cymose panicles, sweet–scented. Berries ovoid. Seeds numerous, compressed.

*Fls. & Frts.* : November–February.
**Distrib.** : Native of West Indies. Planted along hedges and gardens. Ahmednagar, Jalgaon, Nagpur, Osmanabad, Pune, Raigad, Satara, Thane.


Shrubs, erect, much branched, 1.5–2 m tall; branchlets lenticellate. Leaves lanceolate, narrowed at base, acute. Flowers sessile, in umbellate cymes or panicles.

*Fls.* : More or less throughout the year. *Frts.* : Cold season.

*Illus.* : Bor & Raiz. op. cit.


**Distrib.** : Planted in gardens. ‘Deccan’ (Cooke, op. cit.).


Large shrubs, or small trees, 2–3 m tall. Leaves ovate–lanceolate, margins entire or obscurely lobed. Flowers pale–white with greenish nerves, solitary, axillary. Capsules broadly ovoid.


**Distrib.** : Planted along roadsides. Satara.


Herbs, erect, 24–60 cm high. Leaves sinuate–dentate or pinnatifid. Flowers greenish–yellow, 2.5–5 cm across, subsessile, erect, in terminal spikes. Seeds more or less compressed.

**Distrib.** : Cultivated for its medicinal value. Pune.


**Fls. & Frts.** : Throughout the year.


**Distrib.** : Native of tropical America, fruits used as vegetable. Cultivated. Ahmednagar, Jalgaon, Nasik, Osmanabad, Pune, Raigad, Satara, Thane, Yavatmal.


Undershubs, glandular–hairy, 90–150 cm tall; branches erect. Leaves lanceolate or oblong, 7.5–10 cm long, acute or obtuse at apex. Flowers yellowish–green, in lax, terminal racemes, opening at night and closing in cloudy weather.

**Distrib.** : Cultivated in gardens for its fragrant flowers. Pune.


Shrubs, 2.5–3 m tall, much branched from rootstock, perennial. Leaves 5–15 x 2–7 cm, ovate–lanceolate, acute to acuminate at apex. Flowers pale yellow–orange, in terminal and axillary panicles upto 4.5 cm long. Capsules c 1 cm long, completely enclosed in calyx, 4–valved. Seeds minute, numerous, black.

**Fls. & Frts.** : February–May.

**Distrib.** : Occasional along banks of rivers. Aurangabad (Pardeshi & Pokle op. cit.), Beed, Sangli (Kulkarni, op. cit.).

Herbs, 30–60 cm high, erect. Leaves 2–11 x 0.8–4.5 cm, linear to linear–lanceolate, sessile. Flowers 1.5–2.5 cm long. Capsules ovoid, smooth. Seeds minute, reddish–brown.

*Fls. & Frts.* : September–April.

*Distrib.* : A frequent weed in fields and gardens. Aurangabad, Nagpur, Nanded, Pune, Satara.


Herbs, erect, viscid, highly branched, up to 1.5 m high. Leaves 5–10 x 1.0–4.5 cm, ovate or elliptic, acute at apex, glandular–pubescent. Flowers pinkish, stalked; calyx c 1.5 cm long; corolla c 3.5 cm long. Fruits c 2 cm long, ovoid–globose.


*Distrib.* : A striking garden plant and also important commercially as the source of tobacco. Cultivated in some parts of the region. Jalgaon, Kolhapur, Nasik, Osmanabad (Naik, 1979), Pune, Raigad, Satara, Thane.


Herbs, erect and stout, 30–60 cm tall. Leaves large, ovate–oblong, thick. Flowers white, 5–6 cm long, fragrant.

*Distrib.* : Cultivated in gardens. Pune.


Fls. & Frts. : Spring season.

Distrib. : Planted in gardens for various coloured flowers. Nagpur, Osmanabad (Naik, op. cit.).


Herbs, viscidly pubescent, 20–30 cm tall. Leaves 1.5–4 x 0.5–2 cm, ovate to ovate–lanceolate, pubescent. Flowers pink or violet, solitary. Capsules 4–valved. Seeds minute, dark reddish–brown, rugose.

Fls. & Frts. : November–March.

Distrib. : Ornamental, also as an escape, native of southern parts of S. America. Planted in gardens. Pune, Satara.


Fls. & Frts. : August–November.

Distrib. : Native of America, naturalized in fields and gardens, etc. Thane.


Shrubs c 1 m high; branches striate, viscid–pubescent. Leaves 6–11 x 5–8 cm, ovate, entire or toothed, pubescent on both sides. Flowers pale–yellow, solitary, axillary. Berries 10–15 mm in diam., subglobose. Seeds compressed, rounded.


Distrib. : Native of tropical America, naturalized in wastelands and in and around the gardens. Cultivated for its edible fruits. Pune, Satara.

Shrubs, climbing, 2 m tall, pubescent. Leaves 5–10 cm long, ovate, entire or 3–lobed at base. Flowers violet, spotted with green. Fruits ovoid, scarlet.


Shrubs, slender, twining, 3 m tall. Leaves 2.5–6.5 cm long, ovate–lanceolate, simple, entire. Flowers white, in corymbose panicles.

*Distrib.* : Native of South America. Cultivated rarely in the gardens. Pune.


Shrubs, large. Leaves large, armed with prickles. Flowers purple, changing to white.

*Distrib.* : A native of Mexico. Cultivated in the gardens for its showy and large flowers.


var. *melongena*. *Vangi*.

Shrubs, grey stellate–tomentose. Leaves 3–10 x 3–7 cm, ovate or ovate–oblong, pinnatifid, stellate–pubescent. Flowers 1.0–1.5 cm long, violet, in short, extra axillary racemes.

*Fls. & Frts.* : Throughout the year.

*Distrib.* : Native of East Indies. Widely cultivated for its fruits, used as vegetable. Ahmednagar, Akola, Beed, Jalgaon, Nasik, Pune, Osmanabad, Raigad, Ratnagiri, Satara, Thane, Yavatmal.


Herbs, prickly, c 75 cm high. Leaves angulate, 7–12 x 6–8 cm, thick, acute. Flowers purple to violet, 1–4, extra axillary. Berries oblong–globose. Seeds minutely pitted.
Fls. & Frts. : Throughout the year.

Distrib. : Cultivated in plains and wastelands. Ahmednagar, Dhule, Wardha,


Fls. & Frts. : October–May.


Shrubs, climbing, densely stellately tomentose. Leaves 15–20 x 7–10 cm, ovate–oblong, apex acute to acuminate, base subtruncate. Flowers white, in terminal, corymbose cymes. Berries 0.7 cm across, globose, sparsely stellately hairy, turning yellow. Seeds minutely papillose.

Fls. & Frts. : Throughout the year.

Illus. : Bor. & Raiz. op. cit.


Herbs, 30–75 cm high, erect. Leaves compound; leaflets 3–4 pairs, ovate or elliptic. Flowers white to bluish, few in long–peduncled forking clusters.

Fls. & Frts. : January–March.

Distrib. : Introduced from America. Mostly cultivated for edible tubers, cooked as vegetable. Pune, Satara. (Cooke, op. cit.).

Solanum tuberosum L.

*Fls. & Frts.*: April–May.

*Distri.*: A native of Costa Rica, sometimes cultivated in Indian gardens. Pune, Satara.

**SCROPHULARIACEAE**

*(Archana Godbole & V. P. Prasad)*

<table>
<thead>
<tr>
<th>1. Leaves alternate</th>
<th>...</th>
<th><em>VERBASCUM</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Leaves all opposite or at least lower :</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Corolla subrotare; seeds biconvex</td>
<td>...</td>
<td><em>VERONICA</em></td>
</tr>
<tr>
<td>2. Corolla and seeds not as above :</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Corolla distinctly bilabiate; lobes subequal :</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Capsules opening by pores :</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Corolla spurred at base</td>
<td>...</td>
<td><em>KICKXIA</em></td>
</tr>
<tr>
<td>5. Corolla not spurred at base</td>
<td>...</td>
<td><em>ANTIRRHINUM</em></td>
</tr>
<tr>
<td>4. Capsules opening by valves :</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Perfect stamens 2, upper 2 reduced to staminodes or absent :</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Plants prostrate or creeping</td>
<td>...</td>
<td><em>LINDERNIA</em></td>
</tr>
<tr>
<td>7. Plants erect or ascending :</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Seeds longitudinally ribbed</td>
<td>...</td>
<td><em>BONAYODES</em></td>
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<tr>
<td>8. Seeds tuberculate</td>
<td>...</td>
<td><em>DOPATRIUM</em></td>
</tr>
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<td>6. Perfect stamens more than 2 :</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Perfect stamens 4–6</td>
<td>...</td>
<td><em>ALECTRA</em></td>
</tr>
<tr>
<td>9. Perfect stamens 4:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Calyx spathaceous, split on one side</td>
<td>...</td>
<td><em>PEDICULARIS</em></td>
</tr>
<tr>
<td>10. Calyx not as above :</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Calyx lobes dissimilar, posterior lobe largest; anther cells parallel :</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Anther cells stipitate</td>
<td>...</td>
<td><em>MECARDONIA</em></td>
</tr>
<tr>
<td>12. Anther cells not stipitate</td>
<td>...</td>
<td><em>BACOPA</em></td>
</tr>
<tr>
<td>11. Calyx lobes not as above; anther cells divergent :</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
13. Calyx winged or keeled ... TORENIA
13. Calyx not as above :
14. Plants root parasites; calyx ribbed ... STRIGA
14. Plants not as above; calyx smooth :
15. Corolla throat and lip with palate; anther cells confluent at apex :
16. Plants glandular–hairy ... LINDENBERGIA
16. Plants not as above ... MIMULUS
15. Corolla throat and lip not with palate; anther cells distinct:
17. Filaments appendaged; seeds rugose :
18. Anther cells stipitate; capsules 4–valved ... LIMNOPHILA
18. Anther cells not as above; capsules 2–valved :
19. Stout herbs; calyx lobes broad ... ARTANEMA
19. Slender herbs; calyx lobes narrow ... LINDERNIA
17. Filaments not appendaged; seeds not rugose ... STEMODIA
3. Corolla not bilabiate, tube enlarged at throat :
20. Perfect stamens 2 :
21. Prostrate herbs :
22. Calyx tubular, 5 – lobed :
23. Anther cells confluent; leaves narrow ... MICROCARPAEA
23. Anthers one celled; leaves broad ... PEPLIDIUM
22. Calyx campanulate, 3–4–lobed ... GLOSSOSTIGMA
21. Erect herbs ... BUCHNERA
20. Perfect stamens 4 :
24. Plants minute herbs ... MAZUS
24. Plants not as above :
25. Plants viscid hairy ... SUTERA
25. Plants not as above :
26. Corolla 2.5 to 3.5 cm long :
27. Calyx not ribbed; anthers not in pairs, 1–celled ... RHAMPHICARPA
27. Calyx ribbed; anthers in pairs, 2–celled ... SOPUBIA
26. Corolla less than 2 cm long:

28. Calyx spathaceous, splitting on one side ... Centranthera
28. Calyx tubular, 4–5–partite ... Scoparia

Alectra Thunb.

1. Inflorescence branched; filaments hairy ... A. thomsoni
1. Inflorescence unbranched; filaments glabrous ... A. parasitica


Erect herbs, up to 25 cm high; stem dark purple, angular; rhizome orange–red. Floral leaves or bracts scale–like. Flowers yellow, with red to brown streaks, in terminal spikes or racemes. Capsules subglobose, c 0.5 cm across, loculicidal.

Fls. & Frts. : August–November.


Distrib. : Rare under the shade of Vitex negundo and Barleria spp. Akola.


Erect parasitic herbs, up to 60 cm tall; rhizome orange–red. Floral leaves or bracts scale–like, elliptic–ovate to linear–lanceolate, sparsely serrate. Flowers yellow, streaked with brown, in terminal branched racemes. Capsules broader than long. Seeds numerous, cuneiform.

Fls. & Frts. : July–September.


Distrib. : Rare in shade of Barleria spp. Akola; Aurangabad & Beed (Naik, 1998).

Antirrhinum L.

Herbs, 15–45 cm high, glandular–hairy. Leaves sessile, 2.5–5.0 x 0.2–0.3 mm, linear, apex subacute. Flowers white with purple streaks, in spiciform racemes; calyx glandular–pubescent. Capsules c 1 cm long obliquely ovoid, hairy.

*Fls. & Frts.* : December–May.

*Distrib.* : Found as a weed. Satara.

**Artanema D. Don**


Herbs up to 1 m tall. Leaves 4–15 x 1–3 cm, ovate–lanceolate, scabrid, apex acuminate, base tapering, margins entire or serrate. Flowers pale violet–purple, in 15–40 cm long racemes. Capsules 0.5–1.0 cm across, globose. Seeds many, truncate, papillose.

*Fls. & Frts.* : June–October.

*Distrib.* : Rare in open situations. Kolhapur, Konkan (Cooke, op. cit.).

**Bacopa Aubl. (nom. cons.)**

1. Leaves ovate–oblong or spatulate; capsules ovoid ... *B. monnieri*
1. Leaves linear–lanceolate; capsules globose:
   2. Flowers sessile, solitary ... *B. hamiltoniana*
   2. Flowers pedicellate, 1–3 in axils ... *B. floribunda*


Herbs, c 15 cm high, slender, erect. Leaves 1.2–3.2 x 0.15–0.30 cm, apex acute or rounded, margins entire or serrate. Flowers whitish–purple; calyx imbricate, outer sepals longer; corolla 0.3–0.4 cm long. Capsules 0.3 cm long. Seeds brown.
Fls. & Frts.: September–January.


Herbs, 10–20 cm high, procumbent, ascending or erect, slender. Leaves subsessile, 1.2–2.5 x 0.3–0.5 cm, margins entire or serrate. Flowers blue or purple; sepals 5, unequal; corolla c 0.4 cm long. Capsules c 0.3 cm across. Seeds yellowish.

Fls. & Frts.: September–October.

Distrib.: In moist, water logged areas. Ratnagiri, Sindhudurg, Thane.


Herbs, creeping–ascending, succulent. Leaves sessile, c 0.9 x 0.3 cm, apex obtuse. Flowers pale violet or blue, axillary, solitary. Capsules c 0.6 x 0.3 cm. Seeds oblong, striate.

Fls. & Frts.: Almost throughout the year.


Distrib.: Frequent in moist places, throughout Maharashtra.

**Bonnayodes Blatt. & Hallb.**


Annual herbs, erect or ascending; stems many–branched, more or less quadrangular, turning red. Leaves opposite, turning red; uppermost up to 15 mm long, generally divided up to base into 2–3 linear segments; segments further divided at secondary or tertiary
**Bacopa hamiltoniana** (Bth.) Wettst.
level. Flowers axillary, usually solitary; calyx 5 mm long, divided nearly to base into 5 lobes; corolla campanulate, 8–9 mm long; stamens 2, staminodes 2; style subflattened, pale violet. Capsules twice longer than broad, obtuse at apex, bivalvate, scarious. Seeds minute, numerous, subcylindrical or falcate.

*Fls. & Frts.* : Not known.


*Distrib.* : Endemic to Lonavala region in the Western Ghats of Maharashtra.

*Notes.* : An endangered species known only from the type collection deposited in Blatter Herbarium, Mumbai.

**Buchnera L.**


Herbs, c 30 cm high, erect, hispid. Leaves 2.5–4.5 x 0.2–1.5 cm; lower crowded, obovate or oblong; upper ones narrower, linear–lanceolate. Inflorescence of terminal, spike–like racemes. Flowers blue or bluish–purple. Capsules oblong, shorter than calyx. Seeds reticulate.


*Illus.* : Wight, Ic. t. 1413. 1849.


**Centranthera R. Br.**


Herbs, 10–20 cm tall, erect or diffuse, scabrid, hairy; stems 4–angled. Leaves nearly sessile, 1.2–3.0 x 0.3–0.8 cm, oblong–lanceolate, hispid hairy on both sides, apex acute or obtuse.
Flowers reddish–purple, axillary, solitary or in terminal spikes; calyx densely hairy. Capsules c 0.9 cm long, oblong.

_Fls. & Frts._ : September–November.

_Illus._ : Wight, Illus. 2: 194, t. 165, f. 79. 1850.

_Distrib._ : Frequent in open, moist places among grasses. Ahmednagar, Nagpur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

_Notes_ : Though Naik (1998) treated _C. nepalensis_ D. Don as a distinct species, here it is preferred to treat it conspecific to _C. indica_ (L.) Gamble.

**Dopatrium** Buch.–Ham.

1. Capsules linear–oblong ... _D. nudicaule_
1. Capsules globose :
   2. Pedicels erect in fruit, upto 1.2 cm long ... _D. junceum_
   2. Pedicels spreading in fruit, upto 2.5 cm long ... _D. lobelioides_


Herbs, 10–20 cm high, slightly fleshy. Leaves basal, sessile, 1.2–2.5 x 0.4–0.6 cm, elliptic–oblong or obovate; upper leaves small. Flowers voilet, axillary, solitary; calyx 5–partite; corolla tubular, lobes 5, subequal. Capsules dialated upward, c 0.2 cm across, enclosed in persistent calyx.

_Fls. & Frts._ : August–December.

_Distrib._ : Frequent in ponds in plains. Almost throughout Maharashtra.


Small, erect, herbs, 10–15 cm high; stems slender, fleshy. Leaves few, opposite. Flowers solitary, axillary, white or faint violet; bracteoles absent; calyx 5–lobed; corolla bilabiate, tube slender, dilate at throat, upper lip 2–lobed and lower lip 3–lobed; perfect stamens 2. Capsules loculicidal, oblong; stalk upto 6.5 cm long, spreading. Seeds many.
**Dopatrium junceum** (Roxb.) Buch.– Ham. ex Bth.

Illus.: Bhogaonkar & Devarkar, op. cit.

Distrib.: Moist soil along the margin of water bodies. Melghat, Amravati (Bhogaonkar & Devarkar, op. cit.).


Herbs, slender. Leaves crowded at base of stem, with 2–3 distant pairs above, 0.2–0.7 x 0.1–0.35 cm, apex obtuse to subacute. Flowers axillary or binate, dull blue. Capsules c 0.3 cm long, bluntly pointed at apex, with a transparent wall. Seeds cuneiform, c 0.03 cm long, rugose, black.

Fls. & Frts.: September–December.

Distrib.: Grows among grasses in wet places, on rocky surfaces with *Eriocaulon* spp. and *Rotala densiflora*. Pune; Satara (Bachulkar & Yadav, op. cit.).

**GLOSSOSTIGMA** Wight & Arn. (nom. cons.)


Herbs, tiny, creeping, tufted. Leaves 0.2–0.6 x 0.2–0.4 cm, linear–spathulate, base narrowed into petiole. Flowers pinkish–white, axillary, solitary; calyx campanulate, 3–4-lobed; corolla tubular, lobes 5, subequal. Capsules 0.2 cm across, globose, enclosed in persistent calyx.

Fls. & Frts.: October–February.

Distrib.: Occasional in ponds or marshy areas. Kolhapur, Nanded (Naik, 1998), Satara, Sindhudurg, Pune, Yavatmal.
KICKXIA Pennell

1. Flowers axillary, solitary on filiform c 1 cm long pedicels ... K. incana
1. Flowers axillary, solitary or passing into terminal racemes or spikes ... K. ramosissima


Herbs, hairy, much branched; rootstock woody. Leaves c 1.2 x 0.8 cm, triangular–ovate, pubescent. Flowers yellow with purple spots; calyx densely hairy. Capsules c 0.3 cm across, ovoid or subglobose. Seeds angular, rugose.

**Fls. & Frts.**: September–December.

**Distrib.**: Pune (Sant. op. cit.), Satara, Sindhudurg.

**Notes.**: Rare herbs on rocky walls. Cooke (op. cit.) has placed this plant under excluded species as there was no authentic specimen from Bombay Presidency. However Santapau (op. cit.) collected it from Purandhar and also the other present collections confirm its occurrence in Maharashtra State [S. M. Almeida (op. cit.)].


Herbs, 25–35 cm tall, perennial, much branched from base, suberect. Leaves variable: the lower 5–7–lobed, 1.5–3.5 x 1–2 cm, triangular–hastate; the upper lanceolate–sagittate. Flowers yellow; calyx and corolla hairy. Capsules c 0.4 x 0.2 cm, ovoid or subglobose. Seeds echinulate.

**Fls. & Frts.**: August–December.


**Distrib.**: Frequent as epiphyte on old walls and rocks. Ahmednagar, Akola, Amravati, Aurangabad, Jalgaon, Kolhapur, Nagpur, Nasik, Osmanabad, Thane.
LIMNOPHILA R. Br.

1. Leaves pinnately nerved, and not whorled, pinnatifid or multifid:
   2. Calyx straite in fruits:
      3. Flowers sessile
         4. Flowers sessile or subsessile:
            5. Upper leaves on aerial flowering stems divided; corolla blue, violet to purple
               ... L. sessiliflora
            5. Upper leaves on aerial flowering stems undivided; corolla pale pink
               ... L. heterophylla
   4. Flowers pedicellate, pedicels usually longer than calyx:
      5. Stems 1–2; corolla 1–2 cm long or more ...
         6. Stems 3–8; corolla 0.5–1 cm long ...


Herbs, semi–aquatic; stems stout. Leaves on aerial stem opposite or 3–4–verticillate, sessile, 3–5 x 0.6–1.2 cm, linear to lanceolate, punctate; submerged leaves multifid, segments capillary. Flowers pale violet to white, in axillary or terminal racemes; calyx glabrous or glandular; corolla infundibuliform, hairy inside. Capsules 0.3–0.4 cm long, subglobose.

Fls. & Frts.: October–April.

Illus.: Wight, Ic. t. 861. 1844–45.

Distrib.: Infrequent in open moist places and in ponds. Bombay, Chandrapur, Kolhapur, Raigad, Sindhudurg.

Herbs, erect; stems decumbent at base, rooting at lower nodes, stout, terete, spongy, 25–50 cm long. Leaves lanceolate, oblong–lanceolate, apex acute, margins sharply serrate. Flowers axillary, solitary or in axillary or terminal racemes; calyx glandular, lobes lanceolate, acute; corolla purplish, 1.5 cm long. Capsules ovoid–oblanceolate, covered in calyx. Seeds truncate at both ends.

*Fls. & Frts.* : August–December.

*Distrib.* : Rare along margins of ponds. Sindhudurg (S.M. Almeida, op. cit.).


Herbs, 15–40 cm long. Upper leaves c 2.0 x 0.8 cm, lanceolate, acute, 3-nerved; lower pinnatifid, segments narrow, linear. Flowers subsessile, axillary, solitary. Capsules subglobose, c 0.4 cm across. Seeds small, angular.

*Fls. & Frts.* : August–December.

*Distrib.* : Rare in water logged areas. Nagpur, Satara.


Herbs, aquatic or marshy, 15–20 cm high, rooting at nodes. Leaves on aerial stems, 0.5–1.9 x 0.15–0.3 cm, linear–elliptic or linear–oblong. Flowers pink or pale white, with violet–blue spots on lobes, solitary, axillary. Capsules 0.3 x 0.2 cm, subglobose. Seeds black, truncate or rounded at both ends.

*Fls. & Frts.* : August–April.


*Distrib.* : Common throughout Maharashtra, in open water–logged areas or in marshy places.

Herbs, erect or procumbent, annual. Stems spongy, usually prostrate or floating with long roots from nodes. Leaves opposite, 1.9–3.2 x 0.13–0.9 cm, elliptic–lanceolate, margins serrate, thick, punctate, base narrowed. Flowers axillary, solitary or in short spikes; bracteoles linear, subulate; calyx acute, tips spreading; corolla violet–pink, c 0.5 cm long. Capsules broadly ellipsoid.

*Fls. & Frts.* : September–November.

*Distrib.* : In open marshy areas and along river banks. Chandrapur, Dhule, Ratnagiri, Sindhudurg.


Herbs, c 75 cm high, erect, aromatic. Leaves 2.5–7.0 x 1.3–3.5 cm, elliptic–lanceolate, apex acute or subobtuse, crenulate. Flowers in axillary, pedunculate heads; corolla bluish–purple with yellow mouth, less than 2 cm long, lower lip with yellow hairs in throat. Capsules ellipsoid. Seeds angular, truncate.

*Fls. & Frts.* : August–September.

*Distrib.* : In marshy open situations. Chandrapur, Sindhudurg (S.M. Almeida, op. cit.).


Herbs, perennial, glabrous or pubescent. Leaves dimorphic, sessile: lower dissected, pinnatisect; upper lanceolate, apex acute. Flowers axillary, solitary or in terminal short racemes; calyx membranous, clothed with gland tipped hairs, segments lanceolate, very acute; corolla c 2 cm across, pink. Capsules subglobose. Seeds truncate at both ends.

*Fls. & Frts.* : September–November.

*Distrib.* : In open muddy situations. Ratnagiri, Satara, Sindhudurg, Thane.
Lindenbergia muraria (Roxb.) Bruhl
Lindenbergia Lehmb.

1. Leaves more than 1.5 cm long; petioles 0.6–2.5 cm long ... L. muraria

1. Leaves c 1.5 cm long; petioles less than 0.5 cm long ... L. indica


Herbs, annual, 10–15 cm high, glandular–villous. Leaves ovate, elliptic or oblong, apex subacute. Flowers 2.5 cm long, yellow, solitary, in terminal, leafy racemes. Capsules 0.4 x 0.2 cm, densely pilose. Seeds many, dark brown, oblong, minute.

*Fls. & Frts.* : September–December.


Herbs, c 20 cm high, glandular hairy. Leaves 2–5 x 1.5–3 cm, ovate–lanceolate or elliptic, margins crenate–serrate. Flowers c 0.8 cm long, yellow. Capsules ovoid, hairy, slightly beaked. Seeds ellipsoid, pale brown, muriculate, ribbed.

*Fls. & Frts.* : August–November.


Lindernia All.

1. Capsules twice as long as or longer than calyx:

2. Fertile stamens 4:

3. Calyx in flowers divided less than 1/2 its length ... *L. nummularifolia*

3. Calyx in flowers divided up to base:
4. Leaves ovate, base subcrenate  
   ...  L. anagallis
4. Leaves linear–elliptic, base narrow  
   ...  L. angustifolia

2. Fertile stamens 2:

5. Leaves penninerved:

6. Leaves closely and deeply serrate:
   7. Leaves sessile, margins spinous–serrate  
      ...  L. ciliata
   7. Leaves petioled, margins finely serrate  
      ...  L. ruellioides

6. Leaves distinctly and shallowly serrate:

8. Flowers over 1 cm long  
   ...  L. antipoda
8. Flowers c 0.5 cm long:
   9. Leaves fleshy; bracts subulate  
      ...  L. tenuifolia
   9. Leaves not fleshy; bracts not subulate:
      10. Staminodes clavate, curved;  
          flowers blue  
          ...  L. oppositifolia
      10. Staminodes absent; flowers pink  
          ...  L. estaminodiosa

5. Leaves parallel nerved:

11. Corolla 3–4 times longer than calyx  
    ...  L. hyssopiodes
11. Corolla as long as or twice the calyx:

12. Leaves 1–3–nerved  
    ...  L. parviflora
12. Leaves 3–5–nerved  
    ...  L. procumbens

1. Capsules as long as or shorter than calyx:

13. Leaves parallel nerved  
    ...  L. rotundifolia
13. Leaves penninerved:

14. Calyx divided up to 1/2 length or less:

15. Flowers axillary, solitary; pedicels up to  
    10mm long  
    ...  L. crustacea
15. Flowers in axillary and terminal umbellate  
    cymes; pedicels more than 10 cm long  
    ...  L. molluginoides

14. Calyx divided 3/4 the length or more:

16. Flowers 1 cm long  
    ...  L. pusilla
16. Flowers 0.5 cm or less long:

17. Plant glabrous; fruiting calyx shorter  
    than capsules  
    ...  L. multiflora
17. Plants pubescent; fruiting calyx longer  
    than capsules  
    ...  L. viscosa

Herbs, decumbent, rooting at nodes; stems glabrous or hairy. Leaves subsessile to shortly petiolate, 1.2–1.9 x 0.4–1.0 cm, ovate, margins obscurely serrate or entire. Flowers pale pink, axillary, solitary; calyx 0.4–0.6 cm long, lanceolate; corolla c 1 cm long. Capsules cylindrical, beaked with persistent style.

**Fls. & Frts.** : May–December.

**Distrib.** : Frequent in moist places. Bombay, Chandrapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Herbs, 20–30 cm high, ascending, rooting at nodes; branches quadrangular. Leaves shortly petioled, 1.0–3.5 x 0.5–1.5 cm, margins serrate. Flowers purple with darker streaks on upper lip; calyx deeply divided, linear–lanceolate. Capsules oblong, c 1 cm long.

**Fls. & Frts.** : August–November.

**Illus.** : Wight, Ic. t. 1411. 1849 (*Bonnaya veronicaefolia*).

**Distrib.** : Frequent on dry stream beds and other open areas. Nanded, Raigad, Ratnagiri, Satara, Sindhudurg.


Herbs, 7–15 cm high, diffusely branched. Leaves sessile, 1–3 x 0.3–0.8 cm, oblong, elliptic–oblong or obovate, apex subacute or obtuse. Flowers in lax, terminal racemes, bluish–pink. Capsules c 0.6 cm long, narrowly oblong, acute. Seeds truncate at both ends.
Fls. & Frts.: August–September.

Illus.: Philcox, op. cit.

Distrib.: Common among grasses and in dry rice fields.


Herbs, suberect or diffuse. Leaves 1.0–1.5 x 0.5–1.0 cm, broadly ovate to elliptic, apex subacute, margins crenate–serrate or subentire. Flowers pink, axillary, solitary and in terminal racemes. Capsules c 0.5 cm long, ellipsoid–oblong, obtuse. Seeds ellipsoid.

Fls. & Frts.: July–November.


Distrib.: Common in cultivated fields & waste lands.


Herbs, annual, erect; stems quadrangular, purple tinged when old. Leaves subsessile, opposite, decussate, oblong–lanceolate, margins serrate. Flowers pink in colour, leaf–opposed below, racemose above, staminodes absent or minute when present. Capsules over 1 cm long, ellipsoid. Seeds ovoid or spherical, pitted.

Fls. & Frts.: May–June.

Distrib.: Rare in cultivated fields. Sindhudurg.

Herbs, annual; stems simple or branched. Leaves sessile, distant, 0.6–1.9 x 0.3–0.6 cm, oblong or oblong–lanceolate. Flowers pale purple to white, axillary, solitary on filiform pedicels; calyx 0.15–0.2 cm long; corolla 0.5–1.0 cm long. Capsules 0.4–0.6 cm long, ovoid or ellipsoid.

*Fls. & Frts.*: February–March.

*Illus.*: Wight, Ic. t. 857. 1843.

*Distrib.*: Frequent in open areas and drying paddy fields. Pune, Ratnagiri, Raigad, Satara, Sindhudurg.


Annual herbs, erect or decumbent, 10–40 cm high. Leaves opposite, subsessile, ovate–lanceolate or oblong, 6–15 x 4–8 mm, cuneate or obtuse at base, obtuse or subacute at apex. Flowers solitary, axillary or in terminal umbellate cymes; calyx 4–5 mm long; corolla 5–8 mm long, 2–lipped, purplish; stamens 4. Capsules oblong–ellipsoid, 3–4 x 2 mm, apiculate at apex. Seeds oblong, pale brown, rugulose.

*Fls. & Frts.*: September–November.

*Distrib.*: Along gullies in hill forests and in pastures. Nanded (Naik, op. cit.).


Herbs, annual, up to 15 cm high, simple or branched from base. Leaves petiolate to subsessile, ovate, 1.5–3 x 1–1.5 cm, margins subentire serrate, gland ciliate. Inflorescences of axillary or terminal racemes. Corolla 4–5 mm long, white to pale purple; posterior lip truncate at apex, brown. Capsules ovoid or ellipsoid, 0.25–0.35 cm long. Seeds rugose.

*Fls. & Frts.*: April–May; September–November.

*Illus.*: Sant. et al. op. cit.; Philcox, op. cit.


Herbs, 6–10 cm high, erect, annual; stems 4–angled, retrorsely hispid. Leaves sessile, 0.5–1.5 x 0.5–1 cm, ovate–orbicular, margins serrate. Flowers pale pink–purple to white, sessile or pedicellate. Capsules c 0.5 x 0.1 cm, green, oblong–ellipsoid, beaked, 2–valved. Seeds numerous, warty–rugose, brown.

Fls. & Frts. : April–October.


Herbs, annual, erect or suberect. Leaves sessile, 1.2–3.0 x 0.2–0.4 cm, elliptic–lanceolate or linear–oblong, apex acute or obtuse, margins crenate–serrate. Flowers pale blue or purple, in axillary or terminal racemes; calyx c 0.35 cm long; corolla 0.4–0.6 cm long. Capsules ellipsoid, 0.6–0.8 cm long.

Fls. & Frts. : August–March.

Distrib. : Frequent in open situations along ghats and in plains among grasses. Pune, Raigad, Sindhudurg, Thane.


Herbs, erect or decumbent–ascending. Leaves sessile, 0.5–1.0 x 0.1–0.5 cm, ovate, apex acute. Flowers white, axillary, solitary, forming leafy racemes. Capsules c 0.5 cm long, ovoid or ellipsoid. Seeds minute, granular.
Fls. & Frts.: June–March.

Illus.: Wight Ic. t. 857. 1846 non Bth. 1831 (Bonnaya hyssopioides).

Distrib.: Frequent in moist open situations, throughout Maharashtra.


Herbs, c 20 cm high; branches divaricate. Leaves sessile, 1.2 x 0.4–0.7 cm, oblong, 3–5-nerved, margins entire or obscurely crenate. Flowers white; pedicels twice as long as leaves. Capsules ellipsoid, c 0.4 cm long.

Fls. & Frts.: August.

Illus.: Philcox, op. cit.

Distrib.: Occasional in open areas. Pune, Satara.


Prostrate, annual herbs; stems and branches densely to sparsely pubescent with long hairs. Leaves 0.8–1.9 x 0.5–1.0 cm, ovate to suborbicular, sessile to shortly petiolate, hairy on both sides, sparsely above, margins crenate. Flowers white, axillary, solitary, sometimes in pairs; calyx c 0.3 cm long, hispid; corolla c 0.15 cm long. Capsules globose, equalling calyx.

Fls. & Frts.: February–May.

Illus.: Philcox, op. cit.

Distrib.: Occasional in moist open situations, paddy fields in plains. Ratnagiri, Satara, Sindhudurg.

1. Plants slender; flowers tiny  
   1. Plants stout; flowers large  

var. **rotundifolia**.

Herbs; stems decumbent and rooting at lower nodes. Leaves 0.5–1.3 x 0.4–1.2 cm, broadly ovate to orbicular, obtuse at apex, truncate at base. Flowers bluish–white, solitary, axillary; corolla twice as long as calyx. Capsules ovoid–globose, 0.25–0.35 cm long. Seeds oblong with transverse bars along sides, pale brown.

*Fls. & Frts.*: August–September.

*Distrib.*: Frequent in wet places in plains. Sindhudurg.


Prostrate herbs. Leaves ovate or elliptic. Flowers pale blue or white; all characters as in typical species but differs in flowers being small up to 0.4 cm long.

*Fls. & Frts.*: August.

*Distrib.*: Occasional, in wet places. Sindhudurg.


Herbs, prostrate, creeping, rooting at nodes. Leaves 0.7–3 x 0.4–2 cm, elliptic–oblong, margins deeply serrate. Flowers in axillary and terminal racemes; corolla light purple, 1.6 cm long. Capsules 1.5–2.5 cm long, ellipsoid, slender. Seeds yellow.

*Fls. & Frts.*: August–September.

*Distrib.*: Rare in open areas. South Konkan (Cooke, op. cit.).

Herbs, succulent, tuffed, erect, c 15 cm high. Leaves sessile, linear, 4 x 0.4 cm, fleshy, margins entire. Flowers pale blue, axillary, solitary or in terminal racemes. Capsules 0.8–1 cm long, linear, 2–3 times longer than calyx.

*Fls. & Frts.*: July–September.


*Distrib.*: Rare among grasses. Ratnagiri, Sindhudurg.


Herbs, erect or decumbent, c 10 cm tall, branching from the base; stems angular, hairy. Leaves sessile, 1–3 x 0.5–1.5 cm, ovate or oblong–elliptic, hairy on both sides, apex obtuse, margins shallowly serrate. Flowers pale purple to white with throat yellow, in lax racemes; calyx 0.3–0.5 cm long, hairy, with prominent nerves; corolla c 0.5 cm long. Capsules 0.2–0.3 cm long, globose to orbicular.

*Fls. & Frts.*: August–October.

*Distrib.*: Infrequent in open, moist areas on old, wet house wall and in waste places. Nagpur, Raigad, Ratnagiri, Sindhudurg.

**Mazus** Lour.

Annual erect herbs, ascending, multicauline, non-stoloniferous. Basal leaves in a rosette, oblanceolate-ovate to spatulate. Flowers in lax, glandular racemes, pale blue or white; calyx acute, spreading in fruit. Capsules globose, 0.35–0.4 cm long. Seeds minute, pale yellow.

*Fls. & Frts.*: October–December.

*Distrib.*: Occasional as weed in gardens. Nagpur, Pune, Satara.

**MECARDONIA Ruiz & Pavon**


Annual, prostrate herbs; stems 4–angled, rooting at nodes. Leaves opposite, ovate-rounded or ovate-lanceolate, 7–15 cm long. Flowers solitary, axillary; calyx segments unequal; corolla lemon–yellow, with hairy throat. Capsules cylindrical, c 6 mm long. Seeds reticulate.


**MICROCARPÆA R. Br.**


Tiny, spreading herbs; stems inter-laced, rooting at nodes. Leaves sessile, obovate-oblong, apex obtuse, margins entire. Flowers pale pink to white, sessile, axillary, solitary; calyx tubular, enlarged in fruits; corolla shorter than calyx tube. Capsules globose or ovoid, bursting irregularly. Seeds ovoid, angular.

*Fls. & Frts.*: April–May.


*Distrib.*: Common herb in drying rice fields & in wet marshy places. Sindhudurg.
**MIMULUS L.**


Herbs, 15–50 cm tall, perennial, erect–ascending, much branched. Leaves sessile, 3.5–8 x 1–2 cm, linear–oblong, apex obtuse, base semi–amplexicaule. Flowers white, throat violet, axillary, solitary. Capsules c 0.5 cm long, obovoid, included in slightly enlarged calyx. Seeds oblong–ellipsoid, smooth.

*Fls. & Frts.*: June–October.

*Distrib.*: Rare in open areas. Amravati.

**PEDICULARIS L.**


Herbs, 15–30 cm high; stems erect, leafy. Leaves: lower shortly petioled, 1.5–4.0 x 0.6–1.5 cm, oblong–lanceolate, glabrous above, pubescent beneath, margins crenate; upper ones small, sessile. Flowers in elongate lax racemes, bracteate; corolla rose–pink, tube cylindric, upper lip slightly beaked, entire, lower lip 3–lobed. Capsules c 1 cm long, obliquely ovate–falcate. Seeds numerous, reticulate.

*Fls. & Frts.*: October.

*Illus.*: Wight, Ic. t. 1419. 1849.

*Distrib.*: Rare along the ghats. 'Konkan' & Satara (Cooke, op. cit.).

**PEPLIDIUM Del.**


Herbs, decumbent; stems 8–16 cm long, slender. Leaves subsessile, 0.6–1.2 x 0.3–0.6 cm, obovate–oblong or spatulate to orbicular, apex rounded, base tapering, succulent. Flowers white, axillary, solitary, sessile or 1–3 in fascicles; calyx c 0.2 cm long, ribbed, membranous; corolla short, included in calyx. Capsules 0.2–0.4 cm long, globose or ovoid–oblong. Seeds oblong.
RHAMPHICARPA Bth.


Herbs, 15–20 cm high, erect. Leaves pinnatisect, 2.5–3.0 cm long, segments filiform. Flowers white, axillary, shortly pedicellate or sessile. Capsules c 1.2 cm long, obliquely ovoid. Seeds oblong, many, brownish.

Fls. & Frts. : August–October.

Illus. : Wight, Ic. t. 1415. 1840.

Distrib. : Frequent in wet open places among grasses and edges of rice fields. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

SCOPARIA L.


Herbs, erect, branched, c 40 cm high. Leaves c 1.5 x 0.5 cm, elliptic–lanceolate or obovate, margins coarsely serrate, apex acute, base cuneate. Flowers white, axillary, solitary or 2–3 in fascicles, pedicillate. Capsules c 0.4 cm across, globose. Seeds obovoid, brownish.

Fls. & Frts. : Throughout the year.


Distrib. : Frequent along road sides & in waste lands. Amravati, Bombay, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.
Sopubia Buchanan.–Ham. ex D. Don

1. Calyx-teeth filiform, longer than calyx-tube; sterile anther cells acuminate ... S. delphinifolia

1. Calyx-teeth deltoid-ovate, equalling calyx tube; sterile anther cells obtuse ... S. trifida


1. Calyx 1.6 cm long, lobes glabrous; corolla c 3 cm long ... var. delphinifolia

1. Calyx 0.5–0.6 cm long, lobes minutely hairy; corolla c 1.3 cm long ... var. parviflora

var. delphinifolia.

Herbs, c 45 cm high, erect, branched. Leaves pinnatisect, 2.0–3.5 cm long, segments filiform. Flowers pale purple or white, axillary, solitary or in terminal racemes. Capsules c 0.7 cm long, ovoid, 2–valved, blackish-brown. Seeds numerous, cuneate-oblong, striate.


Distrib. : Common throughout among grasses.


Herbs, 20–40 cm tall; stems erect. Leaves 2–4 cm long, finely dissected, segments linear. Flowers pale pink, axillary, solitary or in terminal racemes. Capsules 0.3–0.5 cm long. Seeds numerous, longitudinally striate.

Fls. & Frts. : September–December.

Distrib. : Ahmednagar.


Herbs, 30–50 cm high. Leaves sessile, lower trifid, 1.0–2.5 cm long, lobes linear passing into linear floral bracts. Flowers yellow with
purple spot, in terminal racemes; calyx woolly inside. Capsules c 0.5 cm long, ellipsoid, emarginate at tip. Seeds cuneate–oblong, striate.

*Fls. & Frts.* : September–October.


*Distrib.* : Pune (Sant. op. cit.), Satara (Cooke, op. cit.).

**Stemodia L.**

1. Stems terete; leaves petiolate, not amplexicaule … *S. verticillata*
1. Stems quadrangular; leaves sessile, amplexicaule :
   2. Flowers pedicelled; corolla twice as long as calyx … *S. viscosa*
   2. Flowers subsessile; corolla scarcely longer than calyx … *S. serrata*


Herbs, c 20 cm high, robust, annual, erect, viscidly pubescent; stems 4–angled. Leaves sessile, c 3 x 1 cm, apex acute, obovate, base amplexicaul, margins serrulate. Flowers pale purple, axillary, solitary. Capsules linear–oblong. Seeds oblong–ellipsoid, minute.

*Fls. & Frts.* : November–February.

*Distrib.* : Common in open moist situations, among grasses. Raigad, Thane.


*Fls. & Frts.* : July–December.
**Distrib.** : Occasional on cultivated grounds and gardens along with *Mecardonia procumbens* (Mill.) Small near Kolhapur and Satara city (Bachulkar & Yadav, op. cit.).


Herbs, c 80 cm high, erect, aromatic, viscous, much branched. Leaves variable, sessile 1–5 x 0.3–1.5 cm, oblong or elliptic–oblong, acute at apex, base cordate or amplexicaul. Flowers violet, axillary, solitary or in few–flowered, terminal racemes. Capsules c 0.5 cm long, ovoid–oblong, slightly longer than calyx. Seeds oblong–ellipsoid, minute, blackish.

**Fls. & Frts.** : November–March.


**Distrib.** : In cleared off cultivated fields and along river banks. Almost throughout Maharashtra.

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**STRIGA Lour.**

1. Calyx 4–5–ribbed, 1-rib running to apex of each calyx tooth:
   2. Usually parasitic on roots, whole plant reddish–brown; roots tuberous; leaves scale–like ... *S. gesnerioides*
   2. Not parasitic, whole plant green; roots not tuberous; leaves linear ... *S. densiflora*

1. Calyx 10–15–ribbed :
   3. Ribs of calyx mostly 10; secondary ribs ending at sinus ... *S. asiatica*
   3. Ribs of calyx 15; secondary ribs not ending at sinus :
      4. Calyx tube exserted; corolla white ... *S. angustifolia*
      4. Calyx tube not exserted; corolla yellow ... *S. sulphurea*


Herbs, annual, 15–20 cm high, branched, scabrid. Leaves sessile, 1–4 x 0.2–0.4 cm, linear, scabrous. Inflorescence of long, lax, erect
spikes. Flowers sessile or shortly pedicelled; corolla exceeding calyx.
Capsules c 0.4 x 0.2 cm, oblong–ellipsoid. Seeds obovoid, black, striate.

*Fls. & Frts.*: August–January.

*Illus.*: Wight, Ic. t. 855. 1844–45 (*Striga euphrasioides*).

*Distrib.*: Infrequent among grasses in hilly forests. Almost throughout Maharashtra.


Herbs, 10–15 cm high, erect, slender, parasitic; stems ribbed, hispid hairy. Leaves sessile, 0.5–2.0 x 0.1 cm, linear. Flowers axillary, solitary or in spikes. Capsules c 0.4 x 0.2 cm, oblong, loculicidal. Seeds dark brown.


*Distrib.*: Frequent in plains and hilly forests among grasses. Throughout Maharashtra.


Herbs, c 30 cm high, scabrid. Leaves sessile, 1.5–2.5 x 0.1 cm, margins crustaceous–glandular. Inflorescence of slender spikes in axil of floral bracts. Flowers white; calyx–lobes crustaceous–glandular. Capsules 0.2–0.4 cm long, 2–valved, included in calyx. Seeds many, minute, striate, dark brown.

*Fls. & Frts.*: August–January.

*Distrib.*: Scattered among grasses in open areas. Throughout Maharashtra.

1. Flowers few, c 0.6 cm across; bracteoles ciliolate ... var. gesnerioides
1. Flowers numerose, 0.25–0.35 cm across; bracteoles glabrous or sparsely ciliolate ... var. minor

var. gesnerioides.

Herbs, erect, simple or branched. Leaves ovate–oblong, 0.4–0.7 x 0.15–0.2 cm. Inflorescences of dense terminal spikes. Flowers purple or lilac, numerous, sessile; corolla–tube 0.8–1.2 cm long, curved in middle. Capsules c 0.6 cm long, ellipsoid, tipped with style base. Seeds oblong, striate.

Fls. & Frts. : August–December.

Illus. : Wight, Ic. t. 1414. 1849 (Striga orobanchoides).

Distrib. : Common in open areas on roots of Lepidagathis spp. and Hygrophila spp. hosts, throughout Maharashtra.


Herbs, c 5 cm tall; stems erect, purple, more or less unbranched. Leaves scaly. Flowers white or purplish, 0.25–0.35 cm across, glabrous or sparsely hairy.


Distrib. : Ahmednagar.


Herbs, erect, slender, scabrous; stems scarcely branched, 4–angled. Leaves sessile, 2.0–3.5 x 0.1–0.15 cm, linear, apex acute. Flowers axillary; calyx ribbed, ribs scabrous. Capsules less than 0.6 cm long, oblong. Seeds oblong, cuneate, minute.

Fls. & Frts. : September–December.

Distrib. : In open situations on rocks. Kolhapur, Konkan (Cooke, op. cit.), Pune.
Sutera Roth


Herbs, suberect or diffuse, 10–25 cm long, profusely branched from base, glandular–hairy. Leaves 0.5–2.0 x 0.3–1.2 cm, ovate, pinnatifid or variously lobed. Flowers whitish with yellow tube, axillary, solitary or uppermost racemose. Capsules 0.4–0.5 cm long, ovoid, 2–valved. Seeds minute, rugose.

*Fls. & Frts.* : September–April.


*Distrib.* : Occasional in wet areas along streams. Almost throughout Maharashtra.

Torenia L.

1. Calyx broadly winged ... *T. indica*

1. Calyx narrowly winged :

2. Fruiting calyx ribbed :

3. Flowers solitary :

4. Calyx hirsute; corolla pale blue with dark patches on lower lip ... *T. vagans*

4. Calyx not hirsute; corolla purple with no dark patches on lower lip ... *T. bicolor*

3. Flowers in clusters ... *T. thouarsii*

2. Fruiting calyx not ribbed ... *T. lindernioides*


Herbs, decumbent, annual, with angled stems, rooting at nodes. Leaves 1–2 x 0.5–1.2 cm, ovate or deltoid, margins serrate. Flowers dark violet, lower lip white, axillary, solitary or 1–3–together; calyx tubular; corolla tube curved 0.8–1.2 cm long, oblone.
**T. indica**  

Herbs, 10–15 cm high, sparsely hairy. Leaves 1.5–3 x 0.5–1.5 cm, ovate or ovate–lanceolate. Flowers blue, solitary or in subumbellate cymes. Capsules c 0.5 x 0.3 cm, oblong, acute, enclosed in persistant calyx. Seeds truncate at both ends.

**T. lindernioides**  

Procumbent or suberect herbs. Leaves ovate, acute at apex, subcordate at base, crenate–serrate. Flowers axillary, solitary, pedicillate; corolla white–pinkish. Capsules ellipsoid, included in calyx.

*Nortenia thouarsii* Cham. & Schlecht in Linnaea 3: 18. 1828.  
Erect or procumbent annual herb; stem 4–angled. Leaves opposite, decussate, ovate, serrate, penninerved. Flowers in axillary fascicles, pink. Capsules narrow, elongated. Seeds numerous, minute, pitted.

**Fls. & Frts. :** September–October.

**Distrib. :** Rare plant in wet fields. Sindhudurg.


A diffuse, trailing and rooting herb; stem 4 angled. Leaves distantly serrate. Flowers axillary, solitary, long peduncled; calyx narrow, 5–winged, hirsute; corolla darker; stigma large, round.

**Fls. & Frts. :** May–September.

**Distrib. :** Fairly common in wet soils in shady places. Sindhudurg.

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**Verbascum L.**


Herbs, annual, 60–90 cm high. Radical leaves 5.0–7.5 x 2–3 cm, petiolate, lyrately pinnatifid; lower cauline similar; upper smaller, sessile. Inflorescence of simple or branched terminal raceme; flowers yellow. Capsules c 0.6 cm across, subglobose. Seeds oblong, truncate, warted.

**Fls. & Frts. :** September–June.

**Illus. :** Wight, Ic. t. 1406. 1849 (*Celsia coromandeliana*).

**Distrib. :** Throughout Maharashtra.

**Notes. :** This species has been described under the name *Verbascum coromandelianum* (Vahl) O. Ktze. Rev. Gen. Pl. 1: 468. 1891 by Santapau in J. Bombay nat. Hist. Soc. 49: 25. 1950, the basionym being *Celsia coromandeliana* Vahl, Sant. (op. cit.) has copiously quoted Pennell’s work (Scrophulariaceae of Western Himalayas pp. 39. 1943) to justify that name. However, the latter found that Linnaeus's specific epithet was the earliest and effected the necessary combination.
Veronica L.

1. Flowers in elongate racemes; capsules oblong  ...  V. anagallis-aquatica
1. Flowers in capitate racemes; capsules obcordate  ...  V. javanica


Herbs, erect, succulent. Leaves 1.6–3.0 x 0.6 cm, oblong or lanceolate, apex obtuse or subacute, serrate. Inflorescence of axillary, lax, slender racemes. Flowers white. Capsules orbicular, oblong, emarginate. Seeds ellipsoid, oblong, biconvex.

*Fls. & Frts.*: February–March; July–September.

*Distrib.*: Almost throughout Maharashtra.


*Fls. & Frts.*: April.

*Distrib.*: Weed along margins of cultivated fields and in wastelands. Satara.

**CULTIVATED SPECIES:**


Erect, annual herbs, 30–60 cm high. Leaves lanceolate or oblong–lanceolate, acute at apex. Flowers in terminal spikes or racemes; calyx lobed almost to the base, pubescent outside; corolla glandular–hairy outside, red, purple or white. Capsules ovoid or globose, 10–15 mm across. Seeds numerous, black.

A native of Mediterranean region, S. Europe and N. Africa; grown in gardens in Aurangabad (Naik,1998), Nagpur, Pune,Osmanabad.

Erect; perennial herbs, 50–60 cm high; stems much branched, sticky or glandular–pubescent. Leaves subsessile, linear–oblong to lanceolate. Flowers in long, leafy, bracteate racemes; calyx–lobes linear; corolla cup–like, 5–lobed, white with violet spots.

Cultivated in gardens of Bombay and Pune.


Perennial, climbing herbs with slender, spreading branches. Leaves alternate, cordate, acuminate at apex; petioles long and coiled. Flowers solitary, axillary, on long pedicels; sepals glandular–pilose, long attenuate; corolla with pale tube and with violet and purple shades in limb. Fruit a subglobose capsule.

A handsome climber native to Mexico, named after Robert Barclay who collected it from Mexico. Cultivated in gardens in Pune.


A native of Mexico. Cultivated in gardens of Satara.


Much–branched erect shrubs, up to 120 cm high. Leaves opposite or whorled, broadly ovate, acute at apex, cuneate at base. Flowers in short– peduncled, axillary or terminal cymes, dark red; calyx deeply 5–lobed; corolla tubular, dark red. Capsules subglobose, enclosed in calyx cup. Seeds many, black.

A native of tropical America. Occasionally grown in gardens of Nagpur; Marathwada region (Naik, op. cit.).

Much–branched, bushy shrubs, 60–150 cm high. Leaves opposite, ovate or linear– lanceolate, often reduced to minute scales. Flowers in axillary or terminal long–peduncled cymes; calyx deeply divided into lobes; corolla tubular, 5– lobed, scarlet; stamens 4. Capsules ovoid–globose, 2–3 mm long. Seeds many, minute, black.

A native of Mexico and tropical America. Grown in gardens of Bombay, Nagpur, Pune, Osmanabad and Marathwada region (Naik, op. cit.).

**R. rotundifolia** Cav. Icon. 5: 9, t. 415. 1799; Cooke, Fl. Pres. Bombay 2: 383. 1958 (Repr.).

Undershubs. Leaves opposite, sessile, cordate or suborbicular. Flowers scarlet, in axillary and terminal racemes.

A showy plant native to Mexico. Cultivated for ornamental purpose.


A diffusely branching annual, creeping below. Leaves opposite, ovate, subcordate or lanceolate, serrate. Calyx tubular; corolla bluish–purple, with dark violet lateral lobes. Stamens 4, perfect, in 2 pairs of equal length. Capsules oblong, septicidally dehiscent.

Indigenous to Nilgiris, grown in gardens. Some times found wild as an escape. Sindhudurg.

**T. fournieri** Lind. ex Fourn. in Illustr. Hortic. 23:129, t. 249.1876.

Perennial, erect herbs, up to 30 cm high; stems much – branched, 4–angled. Leaves ovate or ovate–cordate, 3.5–5 cm long. Flowers solitary, axillary or in terminal racemes; calyx rather inflated, broadly 5–winged; corolla showy, with pale blue upper lip and purple or violet lower lip.

A native of Vietnam; cultivated in gardens of Pune.
1. Flowers few or solitary, large on top of naked scape; calyx spathaceous ... 
   **Aeginetia**

1. Flowers numerous in racemes or spikes; calyx not spathaceous:
   2. Calyx unequally 4–fid or 2–partite, sepals lanceolate, cuspidate ... 
      **Orobanchie**

   2. Calyx tubular or tubular–campanulate, terete or angular with subequal lobes or teeth, sepals acute or acuminate:
      3. Anthers spurred or appendaged, not villous ... 
         **Christisonia**

      3. Anthers villous, neither spurred nor appendaged ... 
         **Cistanche**

**Aeginetia L.**


Herbs, erect, root parasites, purplish–green; rhizomes tuberous, root–like stolons bear haustoria. Flowers purple, solitary, axillary; spathaceous calyx encloses corolla–tube partly; corolla–lobes suborbicular or reniform. Capsules 1.5–2.0 cm long, ovoid.

**Fls. & Frts.** : August–February.


**Distrib.** : Bombay (Cooke, op. cit.), Chandrapur, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**Christisonia Gardn.**

1. Pedicels short, less than 1.5 cm long ... 
   **C. lawii**

1. Pedicels long, sometimes exceeding 5 cm in length ... 
   **C. calcarata**

Aeginetia indica L.
Herbs, root parasites; stems simple, scaly; scales broadly ovate, obtuse. Flowers white, in racemes. Capsules up to 1.0 cm across, globose, crowned by persistent calyx-teeth. Seeds minute, reticulate, ovoid or subglobose.

**Fls. & Frts.** : June–September.

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

**Distrib.** : Infrequent in hilly forests. Bombay (Cooke, op. cit.), Kolhapur, Pune, Raigad, Ratnagiri, Thane.


Herbs, root parasites; stems several, stout, thickened upwards, densely clothed with imbricate scales. Flowers from upper scales; pedicels less than 1.5 cm in length; calyx tubular, 5-toothed, triangular, acute; corolla dull white, limbs bluish outside, yellow inside; stamens didynamous, lower pair much shorter than upper.

**Fls. & Frts.** : June–August.

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

**Distrib.** : Bombay (Cooke, op. cit.), Pune, Thane (Cooke, op. cit.).

*Cistanches* Hoffm. & Link


Herbs, scapigerous, root parasites with scales. Flowers yellow in terminal spikes. Capsules c 2.3 x 1.3 cm, ovoid or ovoid-oblong, beaked.

**Fls. & Frts.** : April.

**Illus.** : Grah. op. cit. f. 1/65.

**Distrib.** : Rare. Thane.
Orobanchie L.


Scapigerous root parasites; scales scattered, ovate to ovate–lanceolate. Flowers in dense terminal spikes; corolla–tube white, lobes purple. Capsules 0.5–1.0 cm long, ellipsoid or ovoid. Seeds ovoid, reticulate, black.

Fls. & Frts. : January–March.

Illus. : Wight, op. cit.

Distrib. : Occasional in deciduous forests. Osmanabad (Naik, 1979), Nagpur.

LENTIBULARIACEAE

(A.N. Londhe)

UTRICULARIA Dalz.

1. Aquatic herbs:

2. Lower lip more or less 2–lobed; spur as long as or slightly longer than lower lip ..... U. exoleta

2. Lower lip not 2–lobed; spur shorter than lower lip :

3. Primary foliar segments one or two ..... U. australis

3. Primary foliar segments three or more :

4. Peduncles with a whorl of spongy floats below inflorescence ..... U. stellaris

4. Peduncles without floats ..... U. aurea

1. Terrestrial herbs:

5. Flowers yellow:

6. Scapes erect; fruiting pedicels erect; spur curved upwards ..... U. bifida

6. Scapes twining; fruiting pedicels reflexed; spur curved downwards ..... U. scandens

5. Flowers other than yellow :

7. Leaves orbicular or reniform; seeds glochidiate ..... U. striatula

7. Leaves more or less linear; seeds reticulate :
Ultricularia albocaerulea Dalz.
8. Bracts attached by their middle ... U. caerulea
8. Bracts attached by their bases :
9. Scapes twining, flexuose ... U. reticulata
9. Scapes erect, not flexuose :
10. Pedicels reflexed or recurved in fruits :
11. Sepals unequal ... U. praeterita
11. Sepals subequal :
12. Spur shorter than lower lip, straight, conical ... U. albocaerulea
12. Spur about equalling lower lip, falcately curved, linear–subulate ... U. purpurascens
10. Pedicels not reflexed or recurved in fruits:
13. Bracts ovate; spur at right angles to axis of flowers ... U. uliginosa
13. Bracts lanceolate; spur curved but not at right angles to axis of flower ... U. graminifolia


Herbs, 8–16 cm high, erect; stolons bear a few bladders. Leaves 0.2–0.4 cm long, spatulate, bearing bladders, deciduous. Scapes erect, 1–2 (rarely 4–5)–flowered. Flowers bluish–purple, pedicels flat, spur curved; upper lip white, notched at apex. Capsules bag–shaped, enclosed in persistent calyx.

Fls. & Frts. : July–December.

Illus. : Janarthanam & Henry, op. cit.


Herbs, aquatic, stoloniferous. Leaves 3–6 cm long, in whorls, filiform, globose bladders near base of each pinna. Flowers yellow, in erect racemes; peduncles 20–22 cm long. Capsules 0.4 cm wide, globose, beaked. Seeds discoid.
**Fls. & Frts.** : November–March.

**Illus.** : Wight, Ic. t. 1568. 1850 (*U. fasciculata* Roxb. Fl. Ind. 1: 143. 1820); Janarthanam & Henry, op. cit.

**Distrib.** : Frequent in areas near streams. Bombay, Chandrapur, Pune (Cooke, op. cit.).


Submerged floating herbs; branches botryform; stolons c 35 cm long. Leaves c 2 cm long, primary segments dichotomously divided. Traps 1–2 mm across. Racemes c 12 cm long, up to 10–flowered.

**Fls.** : March–April.

**Illus.** : Janarthanam & Henry, op. cit.

**Distrib.** : Infrequent. Pune.


**Fls. & Frts.** : February.

**Illus.** : Janarthanam & Henry, op. cit.

**Distrib.** : Rare in wet open muddy places. Chandrapur.


**Fls. & Frts.** : August–September.
Illus. : Wight, Ic. t. 1583. 1850; Janarthanam & Henry, op. cit.

Distrib. : Infrequent in watery areas. Nagpur, Raigad, Ratnagiri, Satara, Sindhudurg.


_Fls. & Frts._ : September–May.

Illus. : Janarthanam & Henry, op. cit.

Distrib. : Infrequent in ponds and lakes. Nagpur, Pune, Ratnagiri (Cooke, op. cit.).


_Fls. & Frts._ : August–March.

Illus. : Wight, Ic. t. 1573 (U. uliginoides), t. 1575 (U. conferta) & t. 1578, f. 2. 1850 (U. pedicillata); Janarthanam & Henry, op. cit.

Distrib. : In swampy places. Ratnagiri, Satara.


Herbs, 5–15 cm high. Scapes 1–4–flowered; scales lanceolate; bracts ovate; bracteoles linear. Flowers bluish–purple; calyx lobes unequal; corolla 0.5–0.8 cm long, upper lip obtuse–emarginate, lower lip orbicular, obtuse; spur 0.2–0.4 cm long, acute, curved upwards. Capsules globose, c 0.2 cm wide, calyx much enlarged. Seeds ellipsoid.

**Illus.** : P. Taylor, op. cit.; Janarthanam & Henry, op. cit.

**Distrib.** : In moist places in Panchgani (Satara district) only.


Herbs, with radical leaves, 0.5–1.0 cm long. Scapes 7–20 cm long. Flowers bluish–purple, 0.5–1.0 cm long; pedicels recurved in fruits; sepals oblong–ellipsoid, rounded at both ends, minute. Capsules c 0.8 cm across, subglobose, enclosed in enlarged sepals.

**Fls. & Frts.** : August–October.

**Illus.** : Wight, op. cit.; Janarthanam & Henry, op. cit.


Herbs, with linear–oblong deciduous leaves. Scapes 15–30 cm tall; bracts acute, attached by their bases. Flowers in racemes, bluish–purple; calyx ovate, acuminate, enlarged and covering fruits; upper lip of corolla obovate. Capsules ellipsoid.

**Fls. & Frts.** : August–November.

**Distrib.** : Frequent in moist places and in rice fields. Ahmednagar, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.


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

**Illus.** : Wight, op. cit.; Janarthanam & Henry, op. cit.
Distrib. : In moist places. Pune.


Aquatic herbs, floating by spongy floats below inflorescence. Leaves submerged, pinnately cut; pinnae bear bladders near their bases. Flowers yellow, 6–12 on scape; calyx subequal, lobes orbicular; upper lip of corolla truncate–emarginate; spurs appressed to lower lip. Capsules globose.

**Fls. & Frts.** : October–November.

**Illus.** : Wight, Ic. t. 1567. 1850; Janarthanam & Henry, op. cit.

Distrib. : Infrequent in ponds and lakes. Nagpur, Pune, Sindhudurg (Cooke, op. cit.), Thane.


**Fls. & Frts.** : July–October.

**Illus.** : Taylor, op. cit.; Janarthanam & Henry, op. cit.

Distrib. : Epiphytic or on rocks in damp places. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Herbs, c 7 cm high. Leaves 0.4–0.7 cm long. Scapes slender, erect. Flowers bluish–purple; calyx enlarged in fruits, broadly ovate or suborbicular; upper lip of corolla oblong or obovate–oblong, notched; spurs straight, conic. Capsules ovoid.

**Fls. & Frts.** : August–October.
Illus. : Wight, Ic. t. 1580, f. 1. 1850 (U. affinis); Janarthanam & Henry, op. cit.

Distrib. : Frequent in open moist places. Ahmednagar, Kolhapur, Nasik, Pune, Ratnagiri, Satara, Sindhudurg, Thane.

GESNERIACEAE

(A. N. Londhe)

1. Epiphytic undershrubs; seeds tipped with long hairs
   1. Herbs not epiphytic; seeds not tipped with long hairs:

2. Capsules long or linear–lanceolate and exserted from calyx:
   3. Leaf one only; capsule less than 2 cm long, straight
      3. Leaves two only; capsule more than 2 cm long, curved

2. Capsules oblong or oblong–ellipsoid and included within calyx:
   4. Leaves distinctly oblique at base, apex acuminate
      4. Leaves subequal at base, apex acuminate

Aeschynanthus Jack (nom. cons.)


Undershrubs, woody, rooting at nodes. Leaves subsessile, 4–9 x 2–3 cm, lanceolate, fleshy, apex acuminate, venation obscure. Flowers 4–5 cm long, scarlet, showy in cymes; calyx narrowly 5–partite; corolla tube curved. Capsules 10–18 cm long, linear, loculicidally 2–valved.

Fls. & Frts. : August–March.

Illus. : Wight, Ic. t. 1347. 1848 (A. ceylanica).

Distrib. : Kolhapur, Satara, Sindhudurg (Cooke, op. cit.).

Chirita Buch.–Ham.

Herbs, annual, 30–50 cm tall. Leaves subequall, 8–15 x 5–10 cm, ovate or elliptic, thin, apex acute, margins crenulate; peduncles adnate to petioles. Corolla tube whitish, limb pale blue or rosy. Capsules curved, rugose.

Fls. & Frts. : September–October.

Distrib. : Rare in moist places. 'Konkan' (Cooke, op. cit.).

**Didimocarpus** Wall.


Herbs; stem 4–25 mm tall, slender. Leaves elliptic–ovate, 2.5 x 2 cm or much smaller, oblique, obtuse at both ends, thin. Sepals linear, 5–partite; corolla tubular, white; stamens 2–fertile, 2–rudimentary; ovary and style villous, stigma oblique, emarginate. Capsules upto 18 mm long, 2–valved. Seeds ellipsoid.

Fls. & Frts. : August–September.

Distrib. : Rare on soft, moist shady substrata of vertically cut faces of river banks. Amravati (Dhore & Joshi, op. cit.), Bhandara (S. Panda & A.P. Das, op. cit.).

**Epithema** Bl.


Herbs, succulent, 5–20 cm tall. Leaves 1–few, upper opposite, subsessile, lower alternate, petiolate, 3–15 cm long, elliptic or ovate, apex obtuse, margins serrate. Flowers in close scorpioid cymes, solitary or 2–5–together, axillary or terminal; bracts leafy, cucullate, dentate; corolla blue. Capsules c 0.2 cm across, globose. Seeds oblong, with distinct funicle, acute at both ends, spirally striate.

Fls. & Frts. : July–November.

Illus. : Wight, Ic. t. 1354. 1848.

Distrib. : Scattered on tree trunks and rocks. Kolhapur, Sindhudurg.
Rhynchoglossum obliquum Bl. var. obliquum.
**Rhynchoglossum Bl.**

1. Calyx winged; perfect stamens 4
   
   R. notonianum

1. Calyx wingless; perfect stamens 2
   
   R. obliquum


Herbs, annual. Leaves 5–20 x 2–6 cm, ovate–oblong, base unequal sided, apex acuminate. Flowers numerous, in 10 cm long racemes; calyx with 5–angled tube; corolla blue. Capsules 3 cm across, concealed in calyx.

*Fls. & Frts.*: August–October.

*Illus.*: Wight, Ic. t. 1353. 1848 (*Klugia notoniana*).

*Distrib.*: Infrequent in open moist areas. Kolhapur (Cooke, op. cit.), Pune, Raigad, Ratnagiri, Satara, Sindhudurg.


1. Lower lip of corolla ovate, 2–3 times longer than upper
   
   var. obliquum

1. Lower lip narrower, hardly twice as long as upper
   
   var. parviflora

var. **obliquum**.

Herbs, 5–50 cm high. Leaves 5–15 x 2–6 cm, elliptic–oblong, thinly membranous, apex acuminate, base unequal sided. Flowers in pubescent racemes, c 10 cm long; corolla blue. Capsules c 3 cm across.

*Fls. & Frts.*: September–October.

*Distrib.*: Uncommon in moist places. Pune, Satara.


*Fls. & Frts.*: June–November.
Distrib. : Infrequent in open moist places. Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

CULTIVATED SPECIES:

**Achimenes hirsuta** DC. Prodr. 7: 536. 1838.

Herbs c 60 cm tall. Leaves ovate–oblong, coarsely serrate. Corolla reddish with yellow eye and spotted throat.

Distrib. : Grown in gardens.

Notes. : Native of Brazil.

**A. longiflora** DC. Prodr. 7: 536. 1838.

Herbs, c 60 cm tall. Rhizomes root–like, filiform. Leaves opposite or whorled, oval or ovate–oblong. Flowers solitary, axillary; corolla violet–blue above and whitish beneath.

Distrib. : Cultivated in gardens. Pune.

Notes. : Native of Tropical America.


Herbaceous plant. Leaves ovate, subcordate, crenate, ciliate, richly marbled. Flowers axillary, solitary with long pedicels; corolla bright–scarlet having long tube.

Distrib. : Grown in gardens.

Notes. : Native of Colombia.


Herbaceous plant. Leaves subcordate, petiolate, dark olive–green with bronzy sheen above. Flowers numerous and fascicled in axils, yellow.

Distrib. : Grown in gardens.

Notes. : Native of Peru.

**Gesneria douglasii** Lindl. in Trans. Hort. Soc. 7:62. 1830.

Herbaceous plant. Leaves 5–7 in a whorl, ovate, crenate–serrate, ciliate, downy, glossy on both sides. Corolla tubular, pink or orange with blood–red spots on borders.
Distrib. : Planted in gardens.

Notes. : Native of Brazil.


A simple spotted stemmed plant. Radical leaves 15 x 10 cm, ovate, cordate, obtuse, doubly toothed, green and shining above and reddish beneath. Inflorescences of racemes. Corolla pale blue, tubular.

*Fls. &Frts.* : October–November.


Notes. : Native of S. America.

**Noegelia zebrina** Regel in Flora 31: 249. 1848.

Herbaceous plant c 60cm tall. Leaves suborbicular, cordate, deep green marbled. Flowers long pedicelled, in racemes or panicles; corolla orange–scarlet above and pale–orange below, limb segments equal, pale–orange and spotted red.

Distrib. : Grown in gardens.

Notes. : Native of Mexico.

**Sinningia speciosa** Hiern. in Kjob. Vidensk. Meddel 91. 1877–78.


Distrib. : Grown in gardens.

Notes. : Native of Brazil.

**S. tubiflora** Fritsch. in Engl. & Prantl. Pflanzenf. 4, 3B: 182. 1894.

Herbs c 60 cm tall. Leaves c 12 cm long, oblong–lanceolate, subacuminate, ciliate and green with darker markings. Corolla white or pale–yellow.

Distrib. : Cultivated in gardens.
1. Capsules winged on both margins ... \textit{Pajanelia}

1. Capsules not winged:

2. Capsules falcately curved:

3. Inflorescence a few–flowered raceme ... \textit{Dolichandrone}

3. Inflorescence a lax panicle ... \textit{Stereospermum}

2. Capsules straight:

4. Capsules velvety when young ... \textit{Heterophragma}

4. Capsules not velvety:

5. Leaflets subsessile ... \textit{Radermachera}

5. Leaflets petiolate ... \textit{Oroxyllum}

\textbf{Dolichandrone (Fenzl) Seem. (nom. cons.)}

1. Leaflets obovate to suborbicular, up to 4.5 cm long, cuneate at base; capsules falcate ... \textit{D. falcata}

1. Leaflets elliptic–ovate > 5 cm long, base obliquely truncate; capsules arcuate ... \textit{D. atrovirens}


Trees up to 19 m tall; young parts velvety pubescent. Leaflets 3–5, 6–10 x 4–6 cm, elliptic, acuminate at apex. Flowers in corymbose racemes, white, fragrant; calyx puberulous when young; corolla lobes crenate. Capsules c 50 cm long, subterete. Seeds broadly winged.

\textit{Fls. & Frts.} : March–December.

\textit{Distrib.} : Occasional.


Trees c 15 cm tall. Leaflets opposite, 1.0–4.5 x 0.5–3 cm, obovate–suborbicular, apex obtuse, base cuneate. Flowers white, c 5 cm long; calyx softly pubescent; corolla–tube c 3 cm long, narrow. Capsules c 20–40 x 1.0–2.5 cm, yellowish–brown, falcate. Seeds 3–4 x 0.7–1.0 cm, winged.
**HETEROPHRAGMA DC.**


Trees, 5–15 m tall. Leaflets imparipinnate, 5–12 x 2–6 cm, tomentose when young, elliptic–oblong, apex shortly acuminate, base oblique. Inflorescence in terminal panicle, densely fulvous tomentose. Flowers 3–5 cm long, white, fragrant. Capsules c 30 x 7 cm, linear, pointed, oblong, velvety when young, 3.5 x 1.5 cm.

*Fls. & Frts.* : January–June.


*Distrib.* : Frequent in hilly forests. Ahmednagar, Bombay, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**OROXYLUM Vent.**


Trees, 5–10 m tall. Leaflets 5–15 x 5–10 cm, ovate or ovate–elliptic, apex acuminate, base rounded or cordate. Inflorescences of numerous flowered racemes c 60 cm long, pubescent. Flowers c 9 cm long yellowish–purple. Capsules 30–60 x 5–9 cm, flat, tapering at both ends. Seeds c 6 x 3 cm including wings.

*Fls. & Frts.* : June–December.

*Illus.* : Wight, Ic. tt. 1337 & 1338. 1848 (*Calosanthes indica* Bl.).

*Distrib.* : Infrequent in deciduous forests in plains. Amravati, Bombay, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.
Note: The root bark is used in medicine in India as a tonic and astringent in diarrhoea and dysentery. The root bark powder is mixed with turmeric used as an application to sore backs of horses and bullocks (Cooke, op. cit.).

**Pajanelia A.P.DC.**


Trees c 18 m tall. Leaflets 10–20 x 3.5–7.5 cm, ovate–elliptic, apex acute or acuminate, base oblique. Inflorescences 30–45 cm long. Flowers 6–10 cm long, dull purple. Capsules 30–50 x 6–9 cm, straight, compressed. Seeds 2.0 x 0.6 – 1.5 cm, compressed, with hyaline wings.

*Fls. & Frts.*: November–June.

*Illus.*: Wight, op. cit.

*Distrib.*: Rare, in moist deciduous forests. Kolhapur.

**Radermachera Zoll. & Moritzi**


Trees, 10–15 m tall. Leaflets 4–9 x 2–5 cm, elliptic–oblong, apex acute or acuminate, base rounded. Inflorescence a terminal panicle, erect, pubescent. Flowers c 6 cm long, yellowish–white; calyx pubescent without. Capsules 30–90 cm long, cylindric, slightly curved, rough with numerous hard tubercles. Seeds flat, with a membranous wing on either side.

*Fls. & Frts.*: February–October.


*Distrib.*: Frequent in deciduous forests. Ahmednagar, Amravati, Pune, Raigad, Ratnagiri, Sindhudurg (Cooke, op. cit.), Thane.
**Stereospermum Cham.**

1. Panicle branches viscid hairy
   - *S. chelenoides*

1. Panicle branches glabrous:
   2. Leaflets caudate at apex; corolla wooly at base
      - *S. colais var. colais*
   2. Leaflets acuminate at apex; corolla not wooly at base
      - *S. colais var. angustifolium*


Trees, up to 15m tall; young parts viscid hairy. Leaflets 7–15 x 5–8 cm, broadly ovate–obovate, acuminate at apex, rounded at base. Flowers in lax panicles, dull purple, fragrant; calyx campanulate; corolla 2–lipped. Capsules 20–50 x 1.5–2 cm, rough, with white tubercles. Seeds 3.0 x 0.6 cm, furrowed in the middle.

**Fls. & Frts.** : March–September.

**Illus.** : Wight, Ic. t. 1342. 1848.

**Distrib.** : Occasional in deciduous forests. Chandrapur, Nagpur, Nanded, Pune, Raigad & Satara (Cooke, op. cit.).


var. *colais* 'Paral'.

Trees up to 15 m tall. Leaflets 5–14 x 2.5–5.0 cm, elliptic, caudate at apex rounded at base. Flowers in lax, terminal panicles, yellow; calyx campanulate; corolla pubescent outside. Capsules 30–50 x 0.8–1.2 cm, curved, tetragonal.

**Fls. & Frts.** : February–September.

Distrib. : Occasional in hilly forests. Ahmednagar, Amravati, Chandrapur, Dhule, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Sholapur, Thane.


Similar to var. colais but differs in having oblong–lanceolate leaflets with acuminate apex and terete capsules.


Distrib. : Rare in hilly forests. Nanded (Naik, 1998).

Notes. : Chandrasekaran in Fl. Tamilnadu Analysis (2: 137. 1987) and Naik in Fl. Marathwada (2: 649. 1998) proposed combinations for S. colais var. angustifolium unaware of the combination already done by Bennet & Raizada in 1981 (op. cit.). Hence, the later combinations proposed are isonymous.

CULTIVATED SPECIES :


Lianas; tendrils 3–partite; stem and branches densely hairy. Leaves opposite; leaflets broadly ovate–orbicular, 2.5–15 cm across, glabrescent above and densely white tomentose below. Panicles c 40 cm long. Flowers tubular, purple or violet; calyx cupular; corolla limb bilabiate.

Fls. : September–November.

Distrib. : Grown in gardens in Marathwada region (Naik, op. cit.).


Scandent shrubs. Leaves ternate, terminal leaflet of the upper leaves modified into tendril. Flowers deep purple.
**Distrib.** : Occasionally planted in gardens.

**Notes.** : Native of Guiana.

**B. megapotamica** Spreng. Syst. Veg. 4: 237. 1827.


**Fls.** : April–September.

**Distrib.** : Occasionally planted.

**Notes.** : Native of Tropical America.


Deciduous woody climbers. Leaflets ovate or ovate–lanceolate. Inflorescences of terminal cymose clusters. Flowers scarlet or orange; calyx 5–lobed; corolla campanulate. Fruit a capsule. Seeds with 2 translucent wings.

**Fls. & Frts.** : June–January.

**Distrib.** : Occasionally grown in gardens. Pune.

**Notes** : Native of China and Japan.


**Fls. & Frts.** : June–December.

**Illus.** : Bor. & Raiz. op. cit.

**Distrib.** : An extensive climber, frequently grown in gardens. Pune.

**Notes** : Native of North America.

Shrubs upto 5 m high. Flowers cauliflorus; corolla with reddish veins and yellow coloured inside.

Distrib. : Occasionally planted in gardens.

Notes : Native of Madagascar.


Large shrubs or small trees. Leaves fascicled, trifoliolate; petiole winged. Flowers yellow; calyx 5–toothed; corolla tubular, 5–lobed; stamens 4, didynamous. Fruits baccate, with a woody shell.

Fls. & Frts. : March–July

Distrib. : Occasionally planted as ornamental plant. Pune.


Stunted trees with spreading branches. Leaves broadly oblanceolate, clustered on branches at intervals. Flowers yellowish–purple; calyx bipartite; corolla constricted below middle. Fruit a berry with a hard rind. Seeds many, wingless, surrounded by pulp.

Fls. & Frts. : March–July.

Distrib. : Planted in gardens.

Notes : Native of Tropical America.


Trees, upto 12 m tall; branchlets and inflorescences covered with deciduous pubescence. Leaflets 7–11. Flowers yellowish–brown or purple; calyx densely woolly; corolla foetid. Capsules velvety–tomentose.

Distrib. : Occasionally planted in gardens. Pune.

Notes : Native of Rangoon and Pegu.

Trees, up to 15 m tall; young shoots brownish–tomentose. Leaflets 5–7, 12–30 x 8–15 cm, elliptic. Flowers in terminal panicles, yellow–brown, tomentose; calyx campanulate, irregularly lobed; corolla densely wooly tomentose outside. Capsules up to 90 cm long, cylindric, ribbed. Seeds winged.

*Fls. & Frts.* : September–April.

*Distrib.* : Occasionally planted as avenue trees and also grown in gardens. Bombay, Raigad.

*Notes* : Native of Burma.


Trees, 10–15 m tall. Leaves 2–pinnate, 40 x 20 cm, pinnae subopposite, terminal odd pinnule is larger than paired. Inflorescences of lax panicles. Flowers blue; calyx 5–toothed; corolla limb 2–lipped; stamens 4, didynamous. Capsules orbicular. Seeds winged.

*Fls. & Frts.* : April–December.

*Distrib.* : Commonly planted in gardens as ornamental tree.

*Notes* : Native of Brazil and N.W. Argentina.


Trees, up to 15 m tall. Leaves 1–pinnate; leaflets 5–7, 5–12 x 3–6 cm, ovate–oblanceolate or elliptic–ovate. Flowers in lax panicles, dark purple with yellow tinge; calyx campanulate; corolla bilabiate. Capsules up to 50 cm long, woody, sausage shaped.

*Fls. & Frts.* : March–December.

*Distrib.* : Commonly planted as avenue trees and also grown in gardens.

*Notes* : Native of Tropical Africa.

Extensive, evergreen climbers; tendrils with 3 claw–like curved arms. Leaves 2–3–foliolate; leaflets 3–7 x 1–3 cm, ovate–lanceolate, acuminate at apex, rounded at base. Flowers axillary, solitary or in pairs, bright yellow; calyx cup shaped, 5–lobed; corolla tube c 4 cm long. Capsules enclosed in persistent calyx. Seeds winged.

*Fls. & Frts.* : December–May.

*Distrib.*: Commonly grown in gardens. Nagpur, Pune.

*Notes.*: Native of South America.

**Markhamia platycalyx** Sprague in Hook. Ic. Pl. t. 2800. 1905.

Evergreen trees up to 15 m tall. Leaflets 5–9, elliptic–oblung, subserrate along margins; stipular suborbicular. Flowers bright yellow; calyx tube obliquely divided up to base; corolla lepidote inside. Capsules 30–60 cm long, linear, irregularly twisted at maturity. Seeds thin, winged.

*Fls. & Frts.* : December–April.

*Distrib.*: Occasionally planted as avenue tree.

*Notes*: Native of Uganda.


Trees, c 20 m tall. Leaves 2–3 –pinnate; leaflets 3–5 x 1.5–4 cm, elliptic–ovate, often oblique. Flowers in axillary and terminal corymbose panicles, white, fragrant; calyx cupular; corolla tubular, 5–lobed; stamens 4, exserted.

*Fls. & Frts.* : September–December.

*Distrib.*: Planted as avenue trees and also grown in gardens, throughout state.

*Notes*: Native of S.E. Asia and Malesia.

Woody climbers. Leaflets. 3–7 x 1.5–3 cm, ovate–oblong. Flowers in axillary panicles, pink purple or mauve coloured; calyx cupular; corolla limb 2–lipped. Capsules 15–20 x 1–1.5 cm, linear, flat. Seeds winged.

*Fls. & Frts.* : Throughout the year.

*Distrib.* : Grown in gardens in Marathwada region (Naik, op. cit.).

*Notes.* : Native of Brazil.


Evergreen twining shrubs. Leaves opposite, odd pinnate; leaflets 3–7, 5–7 x 1.5–2 cm, ovate–lanceolate. Inflorescences of many flowered corymbose panicles. Flowers white, with pinkish tinge or pale bluish; truncate; corolla campanulate, 5–lobed; stamens 4, didynamous.

*Fls.* : Throughout the year.


*Notes.* : Native of Australia.


Small trees. Leaves trifoliolate; petioles narrowly winged. Flowers white or pale pink; calyx spatheaceous.

*Fls.* : July–September.

*Distrib.* : Planted along the hedges of gardens. Bombay, Pune.

*Notes.* : It is a native of Panama.


Scandent shrubs; stems angled. Leaves opposite, compound; leaflets 3–6 x 2–4 cm, ovate or ovate–oblong, terminated with a branched tendril. Flowers in corymbose cymes or racemes, crimson–bright orange; calyx cupular, truncate; corolla tubular, two lipped, lobes 5, reflexed; stamens 4, didynamous.
**Fls.** : December–March.

**Distrib.** : Occasionally cultivated in gardens.

**Notes** : It is a native of Brazil.


Scandent shrubs. Leaves opposite; leaflets obovate–oblanceolate, acuminate at apex, truncate at base. Inflorescences of few flowered axillary panicles. Flowers reddish–violet; calyx cupular; corolla funnel shaped, lobes broadly ovate.

**Fls. & Frts.** : Throughout the year.

**Distrib.** : Grown in gardens.


**Fls. & Frts.** : July–March.

**Distrib.** : Commonly planted as avenue tree.

**Notes** : Native of Tropical Africa.


Trees, c 8 m tall. Leaves opposite, digitate; leaflets 5, 5–20 x 2–7 cm, elliptic–oblong, silver scaly above. Flowers in terminal racemes, bright yellow; calyx cupular; corolla infundibuliform, limb irregularly lobed.

**Fls.** : March–May.

**Distrib.** : Occasionally planted in gardens.

**Notes**: It is a native of Paraguay.

Shrubs or small trees, c 7 m tall. Leaves opposite, 1–5–foliolate; leaflets 10–15 x 3–8 cm, elliptic–oblong. Flowers few, in racemes, pink or white; calyx tubular, lobed; corolla limb irregularly lobed.

Fls. & Frts. : March–May.

Distrib. : Occasionally planted in gardens.

Notes : Native of West Indies.

T. rosea (Bertol.) DC. Prodr. 9; 215. 1845. Tecoma rosea Bertol. Fl. Guatimal. 25. 1840.

Trees, c 15 m tall, densely foliaceous. Leaves digitate; leaflets 5, 8–30 x 2–15 cm, oblong–obovate. Flowers in terminal panicles, pink; calyx campanulate, bilabiate; corolla infundibuliform.

Fls. : December–April.


Semierect or scendent shrubs; leaflets 2–9, 1.5–3 x 1–2.2 cm, ovate–elliptic. Flowers in terminal racemes, orange–red; calyx cupular, lobes triangular; corolla infundibuliform, limb 2–lipped. Capsules up to 7 cm long, linear.

Fls. & Frts. : Throughout the year.

Distrib. : Occasionally planted in gardens.

Notes : It is a native of South Africa.


Shrubs or small trees, c 7 m tall. Leaves opposite, odd pinnate; leaflets 5–11, 4–12 x 2–3 cm, ovate–lanceolate. Flowers yellow, in corymbose racemes; calyx campanulate; corolla 2–lipped. Capsules linear. Seeds winged.

Trees, c 7 m tall, with drooping branches. Leaves 3–11 x 1–4 cm, oblong–lanceolate. Flowers orange–yellow in few flowered corymbose racemes; calyx and corolla campanulate; stamens 4, exserted. Capsules linear–oblong, laterally compressed, beaked at apex.

**Distrib.** : Widely planted in gardens and along hedges, often found as an escape.

**Notes** : Native of Tropical South America.

**Fls. & Frts.** : February–May.

**Distrib.** : Commonly cultivated in gardens for its showy flowers.

**PEDALIACEAE**

(A.N. Londhe)

1. Erect herbs; flowers yellow; capsules 4–angled, spinous ... *PEDALIUM*

1. Prostrate herbs; flowers purple; capsules 2–valved, spineless ... *SESAMUM*

**PEDALIUM L.**


Herbs, 30–40 cm, erect, pubescent. Leaves 2–5 x 1.9–3.5 cm, broadly ovate or orbicular, fleshy, glabrous above, glandular beneath, margins coarsely crenate. Flowers yellow, axillary, solitary; calyx 5–partite. Capsules 1.2–1.5 cm across, pyramidal–ovoid, 4–angled, spines horizontal, sharp.

**Fls. & Frts.** : September–January.

**Illus.** : Wight, Ic. t. 1615. 1850.

**Distrib.** : Bombay (Cooke, op. cit.), Kolhapur, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.
Sesamum L.

1. Plants prostrate or procumbent with deeply pinnatifid or laciniate leaves; pedicels glandular; flowers pink or white ... S. orientale

1. Plants erect with entire or palmately lobed leaves; pedicels eglandular; flowers dark purple ... S. laciniatum


Herbs, 30–90 cm tall. Leaves variously lobed and laciniate, 1.0–3.5 cm long, narrowly as broad as long, orbicular or elliptic. Flowers purple with yellow palate, solitary, axillary. Capsules 1.5 x 0.8 cm, scabrous–pilose, 2–valved, compressed, rounded and strongly mucronate at apex. Seeds obovoid–oblong, foveolate.

*Fls. & Frts.*: August–December.

*Illus.*: Wight, Ic. t. 1345. 1848.

*Distrib.*: A few in the open dry rocky ground amidst grasses. Akola, Kolhapur, Sangli.


Herbs, annual, 1.5 m tall, glandular–pubescent. Lower leaves opposite, long–petioled, trifoliolate or palmatisect, upper shortly petioled, ovate–lanceolate or oblong. Inflorescence of terminal, leafy racemes. Flowers 3.2–3.5 cm long, pink. Capsules 1.8–2.2 x 0.5 cm, 4–angled, beaked, glandular–pubescent. Seeds reticulately rugose.

*Fls. & Frts.*: September–October.

*Illus.*: Wight, Illus. Ind. Bot. t. 163. 1850 (*S. indicum*).

*Distrib.*: Commonly cultivated and also found wild.

*Note.*: According to Babu (op. cit. p. 373) *S. mulayanum* appears to be a seed variant of their polymorphic taxon, in which the surface of the seed varies from smooth to rugose. Experimental studies are needed to throw light on the relationships among *S. mulayanum*, *S. orientale* and *S. radiatum* Schum. & C. Thonn. an African species. Graham (Cat Pl. Bombay 126. 1839) appears to be the first to unite both *S. indicum* and *S. orientale* and adopted the latter name for the combined taxa.
Martynia annua L.
CULTIVATED SPECIES:

*Ceratotheca triloba* E. Mey ex Bernh. in *Linnaea* 16: 29. 1842.

A showy, annual. Flowers purple or lilac.

*Distrib.*: Planted in gardens. Pune.

MARTYNIACEAE

*(A. N. Londhe)*


Herbs, 30–90 cm high, viscidly pubescent. Leaves 4–14 x 3–15 cm, broadly ovate or suborbicular, viscid pubescent. Racemes axillary, 3–5 cm long. Flowers rose coloured, ill-smelling. Drupes c 3 cm long with stout, hooked, upturned beak which splits into two.

*Fls. & Frts.*: August–December.


*Distrib.*: Ahmednagar, Akola, Amravati, Chandrapur, Kolhapur, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Sangli, Sindhudurg, Solapur, Thane, Yavatmal.

ACANTHACEAE

*(S. Moorthy)*

1. Seeds supported on hard, upward curved retinacula:

2. Corolla without an upper lip; lower lip large, expanded, 3-lobed:

3. Plants typical of salt marsh; leaf margins spinous toothed ... *ACANTHUS*

3. Plants not as above; leaf margins not spinous:

4. Leaves in pseudo-whorls of (3)4; flowers in various types of inflorescence but never in axils of vegetative leaves; bracts entire, toothed, never 3-fid; corolla limb hairy beneath; seeds with branched hygroscopic hairs ... *BLEPHARIS*
4. Leaves opposite; flowers solitary or paired in the axils of vegetative leaves, each supported by 2 pairs of bracts; outer pair entire, inner pair trifid; corolla limb glabrous beneath; seeds covered in trigonous tubercles ... Cynarospermum

2. Corolla 2-lipped or with 5 subequal lobes:

5. Corolla lobes twisted to left in bud:

6. Ovules more than 2 in ach cell; capsules normally with 6 or more seeds:

7. Corolla distinctly 2-lipped:

8. Stamens 4 ... Hygrophila

8. Stamens 2 ... Synnema

7. Corolla subequally 5-lobed:

9. Inflorescence axillary, solitary, in triads or cymes:

10. Inflorescence in lax, axillary cymes, at times forming large, terminal panicles ... Ruellia

10. Inflorescence of single, axillary flower or in triads or 2–3 flowers superposed ... Dipteracanthus

9. Inflorescence of spikes:

11. Inflorescence of capituliform compound spikes surrounded by four large, ovate bracts ... Gentelbua

11. Inflorescence of more or less elongated, simple spikes provided with one kind of bracts ... Hemigraphis

6. Ovules 2 in each cell; capsules with 4 or fewer seeds:

12. Placentas separating elastically from base of ripe capsules:

13. Bracteoles absent ... Phaulopsis

13. Bracteoles large, reticulately veined ... Petalidium

12. Placentas not separating elastically from base of ripe capsules:

14. Anthers minutely mucronate or spurred at base ... Dyschoriste

14. Anthers not spurred at base:

15. Corolla deeply 2-lipped ... Calacanthus

15. Corolla subequally 5-lobed:
16. Corolla tube long, linear, slender; stamens 2: *Eranthemum*

16. Corolla tube narrow below, usually infundibuliform upwards; stamens usually 4:

17. Pollen grains globose, echinulate, the spinules thickened at base: *Thelepaepale*

17. Pollen grains ellipsoid:

18. Bands on pollen grains punctate:

19. Bands on the pollen grains wavy: *Mackenzia*

19. Bands on the pollen grains not wavy: *Nilgiriantus*

18. Bands septate:

20. Flowers bracteolate: *Plecaulis*

20. Flowers ebracteolate: *Carvia*

5. Corolla lobes imbricate in bud:

21. Ovules 3–10 in each cell:

22. Capsules subterete; seeds much compressed: *Gymnostachyum*

22. Capsules compressed at right angles to septum; seeds ovoid, hardly compressed:

23. Flowers in unilateral racemes, often panicled, without axillary cladodes:

24. Capsules ovoid; seeds 4: *Indoneesialla*

24. Capsules otherwise; seeds 8–14:

25. Capsules oblong–ellipsoid; seeds 8–12: *Andrographis*

25. Capsules subquadrangular; seeds 12–14: *Phlogacanthus*

23. Flowers clustered in the midst of axillary cladodes: *Haplanthodes*

21. Ovules 2 or rarely one in each cell:

26. Corolla lobes 5, subequal:

27. Anthers 1–celled: *Crossandra*

27. Anthers 2–celled:

28. Calyx segments 5, subequal:

29. Corolla tube long, slender; stamens 2: *Pseuderanthemum*

29. Corolla tube inflated above; stamens 4: *Asystasia*

28. Calyx segments less than 5, various:

30. Calyx 2–lipped, 5–lobed: stamens 4: *Neuracanthus*

30. Calyx 4–partite, the 2 opposite outer sepals much larger than the inner; stamens 2 only perfect: *Barleria*
26. Corolla distinctly 2–lipped:

31. Stamens 4:
   32. Style recurved ... LEPIDAGATHIS
   32. Style linear ... SUPUSPA

31. Stamens 2:
   33. Anthers 1–celled ... HYPOGYES
   33. Anthers 2–celled:

34. Placentas separating elastically from valves from the base upwards:
   35. Bracts in unilateral spikes ... RUNGIA
   35. Bracts clustered in leaf axils or laxly cymose ... DICLIPTERA

34. Placentas not separating elastically from the valves:
   36. Bracts large, imbricate; anther cells parallel, subequal ... ECBOLIUM
   36. Bracts not as above; anther cells one higher than the other:

37. Anther cells at least the lower with a basal spur like appendage:
   38. Calyx 5–partite, lobes equal or subequal ... JUSTICIA
   38. Calyx 4–partite or if 5, then the posterior one much smaller than others ... ROSTELLULARIA

37. Anther cells not spurred at base:
   39. Bracts and bracteoles small, subequal; corolla white ... RHINACANTHUS
   39. Bracts larger than bracteoles in opposite, valvate pairs; corolla rose or purple ... PERISTROPHE

1. Seeds not supported on hard retinacula:
   40. Calyx 5–partite; stamens 4 ... STAUROGYNE
   40. Calyx 4–partite; stamens 2:

41. Bracts herbaceous; spikes sessile or if pedunculate, peduncles without scales ... NELSONIA
41. Bracts rigid; peduncles of spikes covered with alternate scales ... ELTRARIA
ACANTHUS L.


Subshrubs, armed, scarcely branched. Leaves 8–12 x 4–6 cm, pinnatifid, coriaceous, apex acuminate, base attenuate, lobes zig–zag, spine–tipped. Flowers bluish–purple, sessile, in opposite pairs, in terminal, crowded or interrupted 10–40 cm long spikes. Capsules c 2.5 cm long, oblong, obtuse, apiculate, brown, smooth, shining. Seeds c 0.6 cm across, broadly ovoid or suborbicular, much compressed.

**Fls. & Frts.** : December–June.


ANDROGRAPHIS Wall. ex Nees


Herbs, upto 1 m tall, annual, erect, branched; branches sharply quadrangular, often narrowly winged in upper portions. Leaves lanceolate, slightly undulate, apex acute, base tapering. Flowers white with pinkish tinge, small, solitary, distant, in lax, spreading, axillary and terminal racemes or panicles, the whole forming a large, pyramidal, paniculate inflorescence. Capsules c 2 x 0.3 cm, acute at both ends. Seeds subquadrate, osseous, rugosely pitted, yellowish–brown.

**Fls. & Frts.** : December–April.


**Distrib.** : As a forest undergrowth. Frequent. Amravati, Bhandara, Bombay, Chandrapur, Kolhapur, Jalna, Nagpur, Nanded, Sindhudurg, Yavatmal.
Asystasia chelonoides Sant.
Asystasia Bl.

1. Bracts and bracteoles large; inflorescence of close spikes ... A. mysurensis

1. Bracts and bracteoles small; inflorescence secund, consisting of lax racemes:
   2. Leaves glabrescent on either side; flowers purple, violet to pink ... A. chelonoides
   2. Leaves either glabrous, puberulous or grey–pubescent on both sides; flowers white or yellow :
      3. Branches and leaves green, glabrous or slightly pubescent; bracts c 6 mm long ... A. dalzelliana
      3. Branches and leaves grey–puberulous; bracts c 3 mm long ... A. gangetica


Subshrubs, usually subscandent. Leaves 8–12 x 3–5 cm, elliptic–obovate, apex acuminate, base gradually narrowed, entire. Flowers in solitary, 7–10 cm long racemes. Capsules c 1.5 x 0.6 cm, thinly pubescent. Seeds c 0.5 cm across, angular.

Fls. & Frts. : December–May.

Distrib. : As an escape in the outskirts of forests and found planted also. Bombay, Pune.


Herbs, suffruticose; stem ascending, jointed, striate, obtusely quadrangular. Leaves 5–15 x 2–6 cm, elliptic–lanceolate, apex acute, base attenuated. Flowers secund in solitary or twin terminal racemes. Capsules 2.5–3.0 cm long, clavate, pointed, pubescent with striate solid base. Seeds c 0.5 cm long, obovoid–oblong, tuberculate.

Fls. & Frts. : November–March.


Herbaceous, erect or procumbent, sometimes climbing on bushes; stem much branched, obtusely quadrangular. Leaves 2.5–6.0 x 2–4 cm, ovate–elliptic, base usually rounded or subcordate, rarely acute, apex acute, dark green. Capsules 2.5–3.0 cm long with solid base, clavate, pointed, pubescent, usually constricted about the middle of the enlarged part. Seeds 4, 0.5 cm across, tuberculate.

Fls. & Frts. : November–April.


Herbs, 0.5–1 m tall; stems quadrangular, grooved, nodose, thinly hairy. Leaves 3.5–10.0 x 2.5–4.5 cm, elliptic–oblong, slightly hairy on nerves on upper side, more densely so beneath, base acute, sometimes unequal sided apex acute. Flowers white, in 2–5 cm long, terminal, substrobiliform spikes. Capsules 2 cm long, glandular–pubescent, clavate with solid base, enlarged part constricted in middle between seeds. Seeds obliquely ovoid, flat, compressed with dentate margins, faces tuberculate and with hexagonal areolae along edges.

Fls. & Frts. : August–December.

Distrib. : Frequent. Aurangabad, Dhule, Kolhapur, Nanded, Pune.
BARLERIA L.

1. Plants armed; leaf–apex spine–tipped:
   2. Leaves elliptic, obovate or suborbicular; outer sepals not spine–tipped; capsules more than 2–seeded ... B. buxifolia
   2. Leaves elliptic or ovate; outer sepals spine–tipped; capsules 2–seeded:
      3. Leaves chartaceous, subsessile; outer calyx lobes lanceolate ... B. cuspidata
      3. Leaves subcoriaceous, petiolate; outer calyx lobes ovate–obovate ... B. prionitis

1. Plants unarmed; leaf–apex not spine–tipped:
   4. Seeds hairy:
      5. Outer calyx lobes (margins) spiny ... B. cristata
      5. Outer calyx lobes not spiny:
         6. Corolla 7.5 cm long or even longer:
            7. Corolla white:
               8. Stems appressedly hairy; leaves elliptic, base tapering, apex acuminate; corolla 7–10 cm long ... B. lawii
               8. Stems densely pubescent; leaves ovate, base rounded, apex acute; corolla 12–16 cm long ... B. longiflora
            7. Corolla blue with reddish–purple tube ... B. involucrata var. elata
         6. Corolla less than 7.5 cm long:
            9. Inflorescence glandular–hairy ... B. courtallica
            9. Inflorescence not glandular–hairy or glabrous:
               10. Inflorescence glabrous ... B. montana
               10. Inflorescence hairy:
                  11. Inflorescence softly villous ... B. sepalosa
                  11. Inflorescence strigosely hairy:
                     12. Entire plants less strigosely hairy; inflorescence axillary, occasionally terminal, often glomerate, always secund; bracts patently reflexed, ebracteolate ... B. strigosa
                     12. Entire plants densely strigosely hairy; inflorescence terminal, occasionally axillary, dense, short spikes; bracts not so, bracteolate ... B. terminalis
4. Seeds glabrous:

13. Outer sepals exceeding 3.7 cm long; capsules c 3.7 cm long:
   14. Flowers white; capsules glandular–pubescent ... *B. grandiflora*
   14. Flowers mauve; capsules glabrous ... *B. gibsonioides*

13. Outer sepals less than 3.7 cm long; capsules c 2.2 cm long:
   15. Stems slender; leaves thin; flowers solitary, axillary or in short, terminal spikes or racemes ... *B. prattensis*
   15. Stems stout; leaves coriaceous; flowers in terminal spikes or racemes ... *B. gibsoni*


Undershubs, prickly. Leaves subsessile, 0.8–1.8 x 0.6–1.2 cm, hairy, apex acute or obtuse, mucronate, base usually acute. Flowers white or rose coloured, axillary, solitary. Capsules 1.5–1.8 cm long. Seeds 4, broadly ovoid, silky hairy.

*Fls. & Frts.* : January–June.


*Distrib.* : Infrequent. 'Konkan' (Cooke, op. cit.).


Shrubs, 1–2 m tall. Leaves 10–17 x 4.5–6.5 cm, elliptic–lanceolate, apex long–acuminate, base tapering into a petiole. Flowers subsecund in dense, axillary and terminal narrow spikes. Capsules 2.0–2.5 cm long, oblong, pointed, pubescent at tip. Seeds 4, c 0.4 cm across, broadly ellipsoid, compressed, silky–hairy.

*Fls. & Frts.* : February–May.


*Distrib.* : Not common. Pune, Sindhudurg (Cooke, op. cit.).

*Notes.* : The colour of corolla, blue limb and yellow tube, seems to be a distinguishing feature of this taxon.

1. Flowers purplish–pink or bluish–violet ... var. cristata
1. Flowers white ... var. dichotoma

var. **cristata**. 'Gokarn'.

Herbs, suffruticose. Leaves 6–10 x 2.5–4.5 cm, elliptic–oblong, hairy on both surfaces, apex acute or acuminate, base tapering. Flowers in axillary and terminal, short, ovate, dense spikes. Capsules c 1.5 cm long, ellipsoid, acute at both ends. Seeds 4, c 0.4 cm across, orbicular, compressed, silky hairy.

**Fls. & Frts.** : December–May.


**Distrib.** : Common. Akola, Aurangabad, Beed, Bombay, Chandrapur, Dhule, Kolhapur, Jalna, Latur, Nagpur, Nanded, Osmanabad, Parbhani, Pune, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.


Undershrubs, erect or diffuse. Leaves 5–10 x c 2.5 cm, elliptic–oblong, apex acute or acuminate, base tapering. Flowers white, in axillary and terminal, dense spikes. Capsules 1–1.5 cm long, ellipsoid, acute at both ends. Seeds orbicular.

**Fls. & Frts.** : December–May.

**Distrib.** : Often cultivated, rarely wild, occasionally escape from cultivation. Aurangabad, Kolhapur, Nanded, Nasik, Osmanabad, Raigad.


Shrubs, low; stems and branches terete or obscurely 4–gonous. Leaves 3.0–6.5 x 0.5–1.2 cm, oblong–lanceolate, entire, bristle–tipped. Flowers yellow, solitary in opposite axils. Capsules 1.5–2.0 cm long, ovoid, with a solid beak. Seeds 2, c 0.8 cm across, compressed, silky with appressed hairs.

Herbs, suffrutescent. Leaves 10–18 x 5–10 cm, elliptic, apex acuminate, base rounded or subacute. Flowers pink. Capsules c 2 cm long, acuminate. Seeds c 0.6 x 0.5 cm, ellipsoid, black.

**Fls. & Frts. : September–March.**

**Distrib. :** Infrequent. Raigad, Thane.


Shrubs, c 1 m tall; stems quadrangular, obscurely winged. Leaves variable in size, c 20 x 10 cm, broadly ovate or almost rounded, leathery or papery, base rounded or tapering, margins finely spinous hairy. Flowers in dense, imbricate, terminal, 10 cm long spikes, rarely solitary, axillary. Capsules oblong, tip conical, shining, smooth. Seeds 4, disc-shaped.

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

**Illus. :** Blatt, op. cit.

**Distrib. :** Infrequent. Satara–Endemic.


Shrubs; branches terete. Leaves 13–18 x 3.5–5.5 cm, elliptic–lanceolate, apex acuminate, base acutely tapering. Flowers white, 8–12 cm long, axillary, solitary. Capsules oblong, acuminate. Seeds broadly ellipsoid, subobtuse, compressed.

**Fls. & Frts. :** November–February.

**Distrib. :** Infrequent. Ratnagiri, Sindhudurg.

Shrubs, 2–3 m tall; stems branched, terete, appressedly hairy, swollen at nodes. Leaves 10–22 x 3.5–7.5 cm, broadly elliptic–lanceolate, more or less pubescent, apex acuminate, base tapering into petiole. Flowers in terminal, raceme–like cymes often forming large, terminal panicles. Capsules c 2.5 x 0.8 cm, narrowed at both ends, pubescent at apex. Seeds c 1 cm long, nearly as broad as long, broadly ellipsoid, obtuse, silky hairy.

Fls. & Frts. : October–March.

Distrib. : Infrequent. Ahmednagar, Pune, Sindhudurg, Thane.


Shrubs; branches terete, appressedly hairy. Leaves 10–14 x 3–5 cm, elliptic, glabrous or slightly hairy and lineolate above, hairy on nerves beneath, apex acuminate, base tapering. Flowers white, solitary, axillary or in short, raceme like cymes, often forming terminal panicles. Capsules 2.0–2.5 x 0.6–0.8 cm, obovoid, compressed, pointed, narrowed at base. Seeds 0.5–0.6 cm long, nearly as broad, obtuse, silky hairy.

Fls. & Frts. : October–March.
Illus. : Bedd. Ic. t 2, t. 258. 1874 (B. beddomei T. And. ex Bedd.).


Undershubs or shrubs, 60–110 cm tall. Leaves 7–11 x 3.5–7 cm, entire, grey tomentose when young, glabrescent above with age; petioles 0.6–1.5 cm long. Flowers white, axillary, solitary or in terminal, few flowered spikes; outer pair of sepals ovate–lanceolate, acuminate, veined with purple, scarious and prominently nervet in fruit. Capsules 2–2.5 cm long, obovoid. Seeds 4, suborbicular, appressed–hairy.

Shrubs, c 1 m tall, erect. Leaves 7–15 x 3.5–7.0 cm, elliptic, apex acuminate, base attenuated and decurrent. Flowers pink to purple, (sometimes streaked), solitary, axillary and running into terminal spikes or racemes. Capsules c 2 cm long, oblong, acuminate. Seeds 4, c 0.6 cm across, densely clothed with silky hairs.


Herbs, suffruticose; stems and branches terete or more or less quadrangular. Leaves 6–12 x 2–5 cm, membranous, ovate or elliptic, subglabrous, minutely punctate with numerous raphides irregularly scattered on upper surface, apex acuminate, base decurrent into petiole, entire along margins. Flowers rosy–purple. Capsules c 2 cm long, attenuated at apex. Seeds 4, c 0.4 cm across, compressed, black.


1. Anthers 0.2–0.35 cm long
1. Anthers 0.5–0.6 cm long

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**Fls. & Frts. :** September–February.

**Distrib. :** On barren hills on rocky areas. Frequent. Aurangabad, Beed (Naik, op cit.).

**Notes. :** Flowers said to be fragrant.
ssp. prionitis. ‘Kate–Koranti’, ‘Koranta’.

Shrubs, 1–2 m tall, much branched; stems and branches terete or obsoletely quadrangular. Leaves 6–12 x 2–4 cm, elliptic, glabrous or more or less pubescent, apex acuminate, bristle–tipped, base tapering into petiole, entire. Flowers yellow, sessile, often solitary in lower axils, becoming spicate above. Capsules 2.0–2.5 cm long, ovoid, with a long, tapering, solid beak. Seeds 2, c 0.8 cm across, compressed, clothed with silky appressed hairs.

Fls. & Frts. : October–March.


Shrubs, upto 1.5 m tall. Leaves upto 17 x 5.5 cm, spines 0.7–1.5 cm long. Flowers in terminal heads or short spikes and also often in axillary clusters below stem apex. Bracteoles 1.2–2.0 cm long; sepals 1.6–2.2 cm long, linear–lanceolate, gradually narrowed into a terminal spine, usually with stiff appressed hairs down their middle and stalked glands towards the apex. Corolla 4.5–7.0 cm long, pubescent or glabrous out side.

Fls. & Frts. : October–February.

Distrib. : Coastal areas and on foot hills. Bombay, Pune.

Notes. : This ssp. differs from typical ssp. in their much larger floral parts and in their sepals being less constricted in the upper third and usually furnished with straight appressed hairs at least down their middle.


Shrubs; branches densely villous. Leaves upto 8 x 3 cm, elliptic–lanceolate, hairy above with short, bulbous based hairs, shortly fulvous–hairy beneath, apex acute, mucronulate, base subacute. Flowers solitary or in 2–3–flowered, axillary cymes. Capsules c 2 cm
Barleria strigosa Willd. emend. Malhotra et Moorthy
A– Twig with inflorescence; B– Bract; C & D– Outer sepals; E & F– Inner sepals; G– Seed
long, oblong, narrowed at both ends. Seeds c 0.6 cm long, as broad as long, broadly ellipsoid, flattened, obtuse, densely silky hairy.

*Fls. & Frts.*: October–February.

*Distrib.*: Infrequent ‘Konkan’ (Cooke, op. cit.).


1. Leaves lineolate above, fulvous strigose on the nerves beneath; spikes always secund; bracts patently reflexed to one side ... var. *strigosa*

1. Leaves fulvous hirsute above, somewhat glaucescent beneath; spikes and bracts not as above ... var. *polystachya*

var. *strigosa*.

Herbs, suffruticose to shrubs upto 1.5 m tall, sparsely strigose. Leaves 15–25 x 3–10 cm, broadly ovate–elliptic, appressedly glabrescent on upper surface, similar but intermixed and acumilated with bulbous based hairs on main nerves, apex slightly curved and shortly acuminate, base narrowed into petiole. Flowers bluish–violet, coerulate. Capsules c 2 cm long. Seeds 4, ovate, cordate, hygroscopically densely hairy.

*Fls. & Frts.*: September–March.

*Illus.*: Malhotra & Moorthy, op. cit. 451, pl. 2.

*Distrib.*: In Deccan and to eastwards. Frequent. Chandrapur.


Shrubs. Leaves large, fulvous hirsute above, somewhat glaucescent beneath. Spikes densely agglomerated, yellow hirsute.

*Fls. & Frts.*: October–February.

*Distrib.*: Infrequent ‘Konkan’ (Cooke, op. cit.).

Barleria terminalis Nees emend. Malhotra et Moorthy
A– Twig with inflorescence; B– Bract; C & D– Bracteoles;
E & F– Outer sepals; G & H– Inner sepals; I– Seed
Shrubs, c 1 m tall, much strigose. Leaves 10–22 x 2–8 cm, ovate–elliptic, apex acuminate, base decurrent on petiole. Flowers blue in terminal, occasionally densely strigose spikes. Capsules c 2 cm long. Seeds 4, suborbicular or triangular, hygroscopically less hairy on surface and with long hairs along margins.

*Fls. & Frts.* : October–March.

*Illus.* : Malhotra & Moorthy, op. cit. 450, pl. 1.


**BLEPHARIS A.L. JUSS.**

1. Leaves petiolate, thin, acute  
2. Leaves subsessile, thick, fleshy, obtuse  


Herbs, 15–50 cm long, prostrate rooting at nodes; branches divaricate, pubescent. Leaves unequal, 2.5–5.5 x 1–3 cm, thinly membranous, elliptic or slightly obovate, appressedly pubescent above, pale and glabrous beneath, apex acute, finely apiculate, entire or with a few coarse, distant serratures on margins, ciliate. Flowers pale blue with yellow spot on lower lip, axillary, solitary or 2–3–together. Capsules 0.6–0.8 cm long, ovoid. Seeds 2, echinate with obtuse spines.

*Fls. & Frts.* : October–March.


*Distrib.* : Frequent. Akola, Aurangabad, Beed, Bombay, Dhule, Jalgaon, Jalna, Nagpur, Nanded, Nasik, Pune, Thane.


Herbs, prostrate, slender, wiry, more or less hispid. Leaves 0.8–2.5 x 0.4–0.8 cm, oblong–obovate, minutely scabrous, usually obtuse,
Carvia callosa (Wall.) Bremek.
mucronate, entire. Flowers blue, sessile, solitary, axillary. Capsules c 0.6 cm long, ellipsoid, compressed, enclosed in persistent sepals. Seeds 2, c 0.4 cm long, broadly ellipsoid, compressed, hygroscopically long hairy than nucleus.

Fls. & Frts. : October–March.


Distrib. : Not common. Akola, Aurangabad, Beed, Bombay, Jalna, Latur, Nagpur, Nanded, Osmanabad, Parbhani, Pune.

Notes. : Bennet (1987) treated this species synonymous to the preceding species.

**CALACANTHUS T. Anders.**


Shrubs, 1–2 m high, gregarious; stems quadrangular. Leaves 12–20 x 5–7.8 cm, elliptic, base tapering, apex acuminate, entire, slightly ciliate. Flowers bluish-purple, in 3–15 cm long terminal spikes from upper axils. Capsules 1.5–2.0 x c 0.8 cm, obovoid, compressed, base narrowed, apex acute, pubescent. Seeds c 0.7 cm across, hairy, yellowish.

Fls. & Frts. : October–March.

Illus. : Bedd. Ic. 54, t. 226. 1874 (Lepidagathis grandiflora).

Distrib. : Frequent. Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**CARVIA Bremek.**

Cynarospermum asperrimum (Nees) Vollesen
Shrubs, erect, 2–4 m tall; stems rigid, glabrate. Leaves 10–25 x 3.5–7.5 cm, one of each pair often smaller than opposite one, elliptic–lanceolate, strongly lineolate above, more or less hairy on nerves beneath, apex acute or acuminate, base tapering into wing like petiole, margins crenate and ciliate. Flowers bluish–purple in axillary, simple or branched, ovoid, pedunculate subtetragonal spikes. Capsules c 2 x 0.6 cm, obovoid, acute, apiculate, narrowed at base. Seeds 2, c 1.2 x 0.9 cm, broadly ovate, acute, densely clothed with white appressed hairs except on the oblong nucleus.

**Fls. & Frts.** : September–June.


**Distrib.** : In the higher slopes of the ghats. Common. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**CROSSANDRA R.A. Salisb.**


Subshrubs up to 1 m tall. Leaves 5–10 x 2–4 cm, elliptic–oblong, acute at both ends. Flowers orange–yellow, sessile, in dense terminal and axillary spikes. Capsules c 1.5 cm long, oblong, subacute. Seeds 0.4–0.5 cm across, compressed, densely clothed with fringed scales.

**Fls. & Frts.** : December–May.

**Illus.** : Wight, Ic. t. 460. 1841 (*C. axillaris*).


**CYNAROSPERMUM Vollesen**

Herbs, suberect or prostrate and rooting at nodes. Leaves 5–8 x 2.0–4.5 cm, ovate–lanceolate, rough on both surfaces with sharp, bulbous based hairs, apex acute or acuminate, finely apiculate, base tapering, entire or spinous–dentate. Flowers blue or white, solitary or paired, sessile in upper axils or in terminal, short spikes. Capsules c 1 cm long, oblong, apiculate. Seeds 2, c 0.3 cm long, ovoid, compressed, covered closely with trigonous tubercles rather than hygroscopic hairs.

**Fls. & Frts.** : October–March.

**Illus.** : Wight, Ic. t. 1534. 1850; Vollesen, op. cit. 174. f. 1.

**Distrib.** : Common. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**Dicliptera A.L. Juss.**

1. Tubercles on seeds glochidiate:
   2. Capsules pubescent only at apex ... **D. verticillata**
   2. Capsules evenly pubescent all over:
      3. Flowers deep rose or pink:
         4. Capsules ellipsoid, acute at both ends ... **D. nasikensis**
         4. Capsules obovoid, truncate or rounded, shortly mucronate at apex ... **D. foetida**
      3. Flowers white or light lilac;
         5. Plants leafless while flowering; leaves more than 2 cm wide; capsules less than 0.5 cm long ... **D. spinulosa**
         5. Plants not as above; leaves less than or hardly reaching 2 cm width; capsules more than 0.5 long ... **D. heterostegia**

1. Tubercles on seeds not glochidiate:
   6. Flowers in clusters ... **D. leonotis**
   6. Flowers in axillary or terminal, lax panicles:
      7. Stems and branches glabrous or nearly so ... **D. cuneata**
      7. Stems and branches densely woolly–tomentose ... **D. ghatica**

Herbs; stems terete or obscurely tetragonal. Leaves 3.5–7.5 x 2.0–3.5 cm, ovate or elliptic, apex acuminate, base acute or rounded. Flowers pink, in lax, terminal panicles. Capsules 0.6–0.8 x 0.25–0.30 cm, compressed, densely pubescent at tip with short, glandular hairs. Seeds 4, more or less obovoid, compressed.

Fls. & Frts.: December–March.


Distrib.: Infrequent. Pune.


Herbs, prostrate or subscandent, glabrous or hairy or densely wooly; branches 4 or 6–sided. Leaves 3.5–12.0 x 2–7 cm, ovate–elliptic lineolate, glabrous or somewhat scabrid above, paler and more or less hairy on nerves beneath, apex shortly acuminate, base acute. Flowers deep rose or pink in axillary and terminal umbel–like, few flowered, sometimes clustered cymes. Capsules c 0.6 cm long, densely pubescent all over.

Fls. & Frts.: December–May.

Illus.: Wight, Ic. t. 1551. 1849 (D. bivalvis Nees).

Distrib.: Frequent. Ahmednagar, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.


Herbs, erect; stems and branches subtetragonal. Leaves ovate, more or less pubescent on both sides, apex acute or subacuminate, base rounded, margins ciliate. Flowers pinkish. Capsules obovoid, base obtuse to rounded and acuminate apiculate at apex, densely hairy. Seeds minutely tuberculate.

Fls. & Frts.: April–June.

Illus.: Sant. op. cit. (facing p. 81).

Distrib.: Gregariously grows in large patches in forest clearings. Pune.
Dicliptera nasikensis Lakshmi. & Sharma
A – Habit; B – Cyme bract; Ca & b – Flower head bract;
D – Bracteole; E – Calyx; F a & b – Two lipped corolla;
G – Stamen; H – Gynoecium; I a & b – Capsule; J a – Seed;
J b – Seed surface enlarged
**D. heterostegia** Nees in DC. Prodr. 11: 478. 1874; Balkwill et al. in Kew Bull. 51: 24. 1996.

Herbs, 0.5 m high. Leaves 3–6 x 1.5–2 cm, ovate, occasionally elliptic, apex acute, base cuneate and attenuate. Flowers white or light lilac in umbellately arranged inflorescence. Capsules 0.5–0.7 x 0.3–0.7 cm, pubescent. Seeds 0.2–0.3 cm, rough and tuberculate, tubercles hooked.

*Fls. & Frts.*: October–May.

*Distrib.*: Infrequent. Bombay (Dalzell, s. n.), Concan (Stocks, s. n.).

*Notes.*: A native of Tropical Africa.


Herbs, c 1 m tall, erect, glabrous or nearly so; stems 6 angular. Leaves 5–8 x 2.0–2.5 cm, elliptic–lanceolate, glabrous or pubescent, apex acute or subacuminate, base attenuated. Flowers pinkish–purple in clusters of small, subsessile, umbel–like cymes at ends of branches. Capsules c 0.6 x 0.3 cm, obovoid, mucronate, much compressed, hairy all over. Seeds 4, obovoid–oblong, rounded at apex, tubercled.

*Fls. & Frts.*: December–March.

*Distrib.*: Infrequent. Nasik, Solapur, S. ‘Konkan’ (Cooke, op. cit.).


Herbs, suffruticose, upto 28 cm high, sparsely or densely hairy. Leaves 0.5–1.0 x 0.4–0.5 cm, elliptic–ovate, pubescent, acute at apex. Flowers pink. Capsules 0.5–0.7 x 0.2–0.3 cm, ellipsoid, beaked. Seeds orbicular, base minutely notched.

*Fls. & Frts.*: April–May.


*Distrib.*: Rare in fallow fields in the shade of *Madhuca longifolia* var. *latifolia*. Nasik.

*Note*: Pollen type 3-zoni colporate. Six pseudo colpi between the 3 colpi. Shape is prolate.

Herbs, 60 cm tall annuals. Leaves 3.5–5.5 x 2–3 cm, ovate–acuminate, base cuneate and attenuate, rapidly deciduous, eventually leafless while flowering. Flowers lilac, umbellately arranged, often compounded in leaf axils. Capsules 0.3–0.4 x 0.15–0.17 cm, eglandular. Seeds rough and with long hooked tubercles.

Fls. & Frts. : November–March.


Herbs, 15–45 cm tall, erect; branches angular. Leaves 4.5–9.0 x 2.0–4.5 cm, ovate or elliptic, apex acuminate, base rounded or acute. Flowers purplish in axillary clusters of usually 3–5 or in umbel–like cymes. Capsules c 0.4 x 0.15 cm, ellipsoid, compressed, subacute. Seeds 4, less than 0.1 cm across, orbicular, echinate with small tubercles with stellately radiating tips.

Fls. & Frts. : October–May.

Distrib. : Frequent. Ahmednagar, Akola, Aurangabad, Beed, Dhule, Jalna, Latur, Nanded, Nasik, Osmanabad, Parbhani, Pune, Thane, Yavatmal.

**DIPTERACANTHUS** Nees emend Bremek.

1. Plants prostrate; leaves acute at apex; ovary and capsules pubescent ... *D. prostratus*

1. Plants erect; leaves obtuse at apex; ovary and capsules glabrous ... *D. patulus*


Herbs. Leaves ovate or elliptic or almost orbicular, apex obtuse, often apiculate, appressed–hirsute, base rounded or sometimes shortly and abruptly narrowed. Flowers blue to violet or purplish–blue, solitary or 2–3–together. Capsules 1–2 cm long, clavate. Seeds suborbicular, nearly glabrous on faces, margined with hygroscopic, white hairs.
**Fls. & Frts.** : November–June.


Herbs. Leaves 2–8 x 1.5–4.5 cm, ovate or elliptic, sparsely hairy. Flowers blue to violet, axillary, solitary or few together. Capsules c 2 cm long, clavate, pointed. Seeds 16–20, c 0.3 cm across, orbicular, almost glabrous on faces with dense, fringe of hygroscopic hairs along margin.

**Fls. & Frts.** : September–March.


**DYSCHORISTE Nees**

1. Corolla not or scarcely exceeding the calyx

1. Corolla much longer than the calyx:

2. Corolla less then 2.5 cm long; anther cells with long spurs at the base

2. Corolla more than 2.5 cm long; anther cells with minute spurs or almost spurless at the base

Dyschoriste dalzellii (T. And. ex Bedd.) O. Ktze.
Shrubs, whole plant except capsules glandular–pubescent; stems obtusely subquadrangular. Leaves 2.5–5 x 1–3 cm, ovate, base rounded or subacute, apex acute, margins subcrenate. Flowers bluish, solitary or a few flowered cymes on short, axillary peduncles. Capsules 1–1.5 cm long, oblong, pointed, glabrous. Seeds broadly ellipsoid, densely clothed with glistening hygroscopic hairs.

Fls. & Frts. : August–February.


Distrib. : Not common. Akola, Nasik, Pune, Thane.

*Dipteracanthus nagchana* Nees in Wall. Pl. Asiat. Rar. 3: 82. 1832. 

Herbs, suffruticose; stems and branches subquadrangular, often prostrate, rooting at nodes. Leaves 2–5 x 1.2–2.5 cm, broadly elliptic or obovate, apex acute or obtuse, if obovate, base tapering into petiole. Flowers pale violet–pink, subsessile, 1–4 in axillary clusters. Capsules c 1 cm long, bluntly pointed. Seeds 4, broadly ellipsoid, densely clothed with hygroscopic hairs.

Fls. & Frts. : March–June.


Distrib. : Frequent. Aurangabad, Chandrapur, Jalgaon, Jalna, Nagpur, Nasik, Pune, Yavatmal.

Notes. : Sant. in Univ. Bombay Bot. Mem. 2: 31. 1952 treats this as *Dyschoriste erecta* (Burm. f.) O. Ktze. Rev. Gen. Pl. 485. 1891 based on *Ruellia erecta* Burm. f. Fl. Ind. 135, t. 41, f. 3. 1768 which is referable to *Hygrophila ringens* (L.) R. Br. ex Steud. Nom. 1: 418. 1821 with basionym as *Ruellia ringens* L. Sp. Pl. 635. 1753 as cited in Dan H. Nicols., Suresh & Manilal, Interp. van Rheede Hort. Malab. 39. 1988. However, Long in J. Arnold Arbor. 51: 295. 1970 has remarked thus “*Ruellia erecta* is typified by a reference of Burm. f. to a plate and description by van Rheede (Hortus malabaricus)” Unfortunately, the plant illustrated and described has alternate lanceolate leaves, annual roots and an apparently one–lipped corolla. The calyx is described as four–parted, with two segments larger than the other. It is apparently not acanthaceous, but its true identity is uncertain.

Shrubs, diffuse, sometimes climbers, stems obtusely quadrangular. Leaves 3.5–6.5 x 2–3 cm, ovate, more or less pubescent on both surfaces, apex acute, base rounded or tapering into petiole. Flowers bluish, axillary, solitary or in 2–6–flowered, shortly pedunculate cymes. Capsules c 1 cm long, oblong, pointed. Seeds broadly ellipsoid, densely clothed with glistening hygroscopic hairs.

*Fls. & Frts.* : September–March.

*Illus.* : Wight, op. cit.


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**Ecbolium Kurz**


Undershubs; stems and branches terete. Leaves 10–20 x 3.5–7.5 cm, lanceolate or elliptic–lanceolate, apex acuminate, base acute. Flowers greenish in dense, terminal spikes. Capsules c 2.5 x 1.0 cm, acutely pointed at apex, pubescent all over. Seeds c 0.8 cm across, broadly ovoid, much compressed.

*Fls. & Frts.* : October–May.


ELYTRARIA Michaux.


Herbs, acaulescent. Leaves radical, 10–20 x 4.5–7.5 cm, obovate to lanceolate or spatulate, apex obtuse, base tapering, margins more or less crenate. Flowers white with pinkish tinge or pale blue in simple or branched spikes; scapes several, usually exceeding the length of leaves. Capsules c 0.5 cm long, ovoid, acute, valves recurved. Seeds ovoid.

**Fls. & Frts.**: October–December.


**Distrib.**: Infrequent. Dhule, Jalgaon, Nagpur, Nanded, Thane, Yavatmal.

**ERANTHEMUM L.**

1. Bracts white with green nerves; calyx scarious:
   2. Bracts ovate–elliptic, cuspidate, nearly glabrous; spikes upto 7.5 cm long in close panicles
      ...  *E. pulchellum*
   2. Bracts obovate, obtuse, mucronate or shortly apiculate, glandular–strigose; spikes 7.5 to 15 cm long, subinterrupted in elongate panicles, often solitary
      ...  *E. roseum*
   1. Bracts green, rarely whitish when old; calyx not as above:
      3. Bracts prominently many nerved, white ciliate on margins, scarious
         ...  *E. purpurascens*
      3. Bracts few nerved, viscidly gland hispid
         ...  *E. capense var. concanense*


Herbs, 60–90 cm high. Leaves 6–13 x 2.5–5.0 cm, elliptic–lanceolate, apex acuminate, base usually attenuated into petiole. Flowers pale blue in 3.5–5.0 cm long, interrupted spikes forming a compound, terminal panicles. Capsules 1.5–2.0 cm long or
Eranthemum roseum (Vahl) R. Br.
more, clavate, pointed, much narrowed at long, solid base, hairy. Seeds orbicular.

**Fls. & Frts.** : October–March.

**Distrib.** : Infrequent. ‘Konkan’ (Cooke, op. cit.).


Shrubs, 1–2 m tall. Leaves often upto 20 x 10 cm, ovate, lineolate, apex acuminate, base shortly acuminate, entire or obscurely crenulate. Flowers blue in uninterrupted spikes often forming a terminal panicle. Capsules c 1.2 cm long, solid, cylindric, base short. Seeds c 0.4 cm across, orbicular.

**Fls. & Frts.** : October–March.

**Distrib.** : Found as an escape, commonly planted in gardens. Kolhapur.

**Notes.** : The plant is native of N. Bengal and Tirhut.


Shrubs, 1–1.5 m tall, leafy. Leaves 5–20 x 2.5–8.5 cm, ovate, lineolate on both surfaces, apex acuminate, base rounded or shortly cordate or decurrent on petiole. Flowers blue, in dense, 2–8 cm long spikes usually solitary or sometimes 1–3, forming a terminal panicle. Capsules c 1 cm long, clavate–oblong, pointed. Seeds c 0.4 cm long, broadly ellipsoid, densely hygroscopically hairy.

**Fls. & Frts.** : October–March.

**Distrib.** : Infrequent. Chandrapur, Kolhapur, Nagpur; Nanded, Raigad, Thane.

Gantelbua urens (Heyne ex Roth) Bremek.
Shrubs, 0.5–2 m high. Leaves 12–20 x 3.5–7.5 cm, oblong–lanceolate, lineolate on both surfaces, apex acuminate, base tapering, often decurrent into the petiole, margins entire or obscurely crenulate. Flowers blue in often c 15 cm long, subinterrupted, lax, axillary and terminal spikes, solitary or occasionally 2 or 3 together forming a terminal panicle. Capsules c 1 cm long, clavate, pointed. Seeds 0.3–0.4 cm across, hygroscopically hairy, very densely so on the margin.

_Fls. & Frts._ : October–March.

_Distrib._ : Common throughout the State. Akola, Aurangabad, Bombay, Chandrapur, Dhule, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Yavatmal.

**GANTELBUA Bremek.**


Herbs, procumbent or diffuse, densely bristly or almost prickly from strong, sharp bristles. Leaves 2.5–3.5 x 0.9–1.2 cm, oblong, apex obtuse, base attenuated into a short petiole, margins subcrenate, hispid with long hairs. Flowers blue in dense, many flowered heads, densely clothed with white and yellowish–brown hairs. Capsules c 1 cm long, linear–oblong, pointed, grooved.

_Fls. & Frts._ : December–March.


**GYMNOSTACHYUM Nees emend Roth**

1. Corolla less than 2 cm long; anthers puberulous ... _G. canescens_

1. Corolla more than 2.5 cm long; anthers glabrous:

2. Flowers in axillary racemes or panicles; capsules glabrous ... _G. latifolium_

2. Flowers in terminal spikes or racemes; capsules glandular–hairy ... _G. glabrum_

Undershrubs, erect, 0.5–1 m tall; branches glandular–pubescent. Leaves 8–18 x 5–7.5 cm, ovate, base decurrent, apex acute or acuminate, margins serrulate, pubescent on both the surfaces. Flowers bluish or pale violet, crowded in axillary and terminal, glandular–hairy cymes. Capsules 1–1.5 cm long, linear, glandular–hairy.

*Fls. & Frts.*: November–March.

*Illus.:* Wight, Ic. t. 1495. 1849 (*Cryptophragmium canescens*).

*Distrib.:* Infrequent. Bombay.


Undershurbs; stems obtusely subquadrangular. Leaves 10–18 x 5–7 cm, elliptic–lanceolate, base tapering, often decurrent into petiole, apex acute, margins undulate, crenate or dentate. Flowers white, sessile or subsessile in terminal, branched, 15–25 cm long spikes or racemes in rather distant clusters along a glandular–pubescent rachis. Capsules c 1.5 cm long, subcylindric, bluntly pointed. Seeds much compressed, finely hairy when wetted.

*Fls. & Frts.*: December–March.

*Illus.:* Bedd. Ic. t. 251. 1874.

*Distrib.:* Frequent. Bombay, Kolhapur, Ratnagiri, Satara, Sindhudurg.


Undershurbs, c 1 m tall; stems erect, quadrangular. Leaves 8–20 x 7–15 cm, broadly ovate, apex acute, base rounded or truncate. Flowers greenish yellow in axillary racemes or panicles often from axils
of fallen leaves. Capsules c 2 x 0.25 cm, linear, bluntly pointed, striate. Seeds 24, less than 0.1 cm across, suborbicular, much compressed, hairy when wetted.

*Fls. & Frts.* : November–March.

*Illus.* : Wight, Ic. t. 1537. 1850 (*Phlogacanthus latifolius*); Bedd. op. cit.

*Distrib.* : Rare. Dhule.

**Haplanthodes O. Ktze.**

The genus *Haplanthus* Nees ex And. (1867) is a later homonym of *Haplanthus* Nees (1847) non Nees (1832). Hence O. Kuntze proposed the epithet *Haplanhodes* in Lexicon 265. 1904. Unaware of this sreemadhavan proposed a superfluous name *Brenekamphia* in Bull. Bot. Surv. India 6: 323. 1965. Santapau proposed to conserve the generic name *Haplanthus* Nees ex And. in Taxon 16:250. 1967. However it has been rejected by the committee for spermatophyta (cf. Taxon 17:465. 1968) as the name *Haplanthodes* is available and as it resembles *Haplanthus* in spelling and in sound.

1. Cladodes stout, quadrangular, more than 2 cm long; capsules glabrous, shining ... *H. verticillatus*

1. Cladodes slender, subquadrangular, less than 1.8 cm long; capsules pubescent, dull :

2. Inflorescence in whorls mostly collected in terminal spikes ... *H. neilgherryensis*

2. Inflorescence whorls all along stem and branches and not collected in terminal spikes :

3. Calyx densely hispid hairy, subplumose ... *H. plumosa*

3. Calyx hairy but bot densely hispid hairy , not subplumose ... *H. tentaculatus*


Herbs, prostrate, slender, annuals. Leaves 7–14 x 2–4 cm, elliptic–lanceolate, apex acute, base attenuated. Flowers violet, upto 1
Herbs, suberect or prostrate, wooly tomentose. Leaves 5–12 x 1–3 cm ovate or narrowly lanceolate, sparsely glandular pubescent, apex acute, base tapering. Flowers blue to purple amidst c 2 cm long spines (cladodes). Capsules c 1 cm long, oblong, mucronate, pubescent.

Fls. & Frts. : January–June.


Herbs, 50–75 cm tall, erect; stems more or less quadrangular; cladodes slender, 1.5–3.5 cm long. Leaves ovate, acuminate, decurrent into petiole. Flowers bluish or lilac, sessile in midst of cladodes. Capsules c 0.8 cm long, pointed, pubescent.

Fls. & Frts. : December–May.
Distrib. : Frequent. Ahmednagar, Bombay, Nasik, Pune, Raigad, Satara, Sindhudurg, Thane.

Haplanthodes verticillata (Roxb.) R. B. Majumdar

Herbs, robust, glandular. Leaves 5–15 x 2–4 cm, ovate–lanceolate, apex acute, base cuneate or tapering into a long petiole. Flowers light to deep violet, amidst 2–3 cm long, axillary spines (cladodes). Capsules 1 cm long, narrowly oblong, acute, grooved, brownish–yellow. Seeds 0.25–0.3 x 0.12 cm long, compressed, yellowish brown, hygroscopically densely hairy.

**Fls. & Frts.** : December–June.

**Distrib.** : Frequent. Ahmednagar, Dhule, Jalgaon, Kolhapur, Nanded, Nasik, Parbhani, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Yavatmal.

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**Hemigraphis Nees emend T. And.**

1. Corolla limb ventricose; lower anther filaments hairy below; seeds 12 ...  *H. hirta*

1. Corolla limb not ventricose but funnel shaped; lower anther filaments densely bearded in their upper half; seeds 10 or less :
   2. Bracts of inner flowers longer than calyx; seeds 8–10 ...  *H. crenata*
   2. Bracts of inner flowers not longer than calyx; seeds 6:
      3. Plants with soft white hairs ...  *H. latebrosa*
      3. Plants more rigid and pubescent, often viscidly so ...  *H. rupestris*


Herbs, diffuse; stems subquadrangular, viscidly pubescent. Leaves 2.5–4.5 x 2–3 cm, ovate, or elliptic, apex subobtuse, margins crenate. Flowers bluish in glandular hairy heads. Capsules c 0.8 cm long, pubescent. Seeds densely clothed with hygroscopic, white hairs.

**Fls. & Frts.** : December – March.

**Distrib.** : Infrequent. 'Konkan' (Cooke, op. cit.), Nanded, Nasik, Satara.

Herbs, creeping, hairy. Leaves 1.3–2.8 x 0.8–1.2 cm, ovate, sessile. Flowers bluish in condensed terminal heads. Capsules linear–ovoid. Seeds ellipsoid or suborbicular, yellowish–brown, hairy.

*Fls. & Frts.* : September–December.


1. Leaves smaller, hairy; hairs stiff, almost bristly esp–ecially on the leaves beneath  
   1. Leave comparatively larger, sparsely hairy often with short, bulbous based hairs on both the surfaces

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var. **latebrosa**.

Herbs, weak, diffuse; stems slender, obtusely subquadrangular. Leaves 2.5–7.5 x 2.0–4.5 cm, ovate, sparsely hairy on both surfaces often with short, bulbous based hairs, acuminate, coarsely crenate–serrate. Flowers bluish in axillary and terminal heads. Capsules 0.6 cm long, minutely pubescent. Seeds 6, broadly ellipsoid or suborbicular, yellowish–brown, clothed with white hairs.

*Fls. & Frts.* : December–March.

*Illus.* : Wight, Ic. t. 1504. 1850.

*Distrib.* : Common throughout the state as an undergrowth, especially in shady places. Ahmednagar, Akola, Chandrapur, Jalgaon, Kolhapur, Nagpur, Nanded, Osmanabad, Parbhani, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.

Herbs. Leaves 2.0–3.8 x 1.0–2.5 cm, broadly ovate, acute or sub-obtuse. Flowers bluish. Capsules 0.6–0.8 cm long, pubescent. Seeds 6.

_Fls. & Frts._: November–March.

_Distrib._: Infrequent. Thane.

**Notes.** Although, Cooke, op. cit. has made the combination as variety, based on Dalzell's species (1850) Dalz. himself merged it with _H. latebrosa_ in 1961 (Dalz. & Gibson Bombay Fl. 1861). Besides, Ellis (Fl. Nallamalai's 2: 316. 1990) after studying the specimens at MH & CAL is of the opinion that the varieties may not stand as they imperceptively merge with one another. Sant., op. cit. (25–28) too is rather sceptical about the varieties for he states 'I find it very difficult to distinguish between the three plants _viz._ _H. latebrosa_ vars. _heyneana, ebracteata_ and _H. rupestris_' (p. 27) Hence a monographers pronouncement is required on these.


Herbs, erect; stems tetragonous. Leaves 2–10 x 1–6 cm, ovate, apex acuminate, base obtuse, margins serrate. Flowers bluish in axillary and terminal, shortly pedunculate, spicate heads. Capsules c 0.5 cm long, oblong, subquadrangular, acuminate at apex, sub–pubescent.

_Fls. & Frts._: December–March.

_Distrib._: Infrequent. 'Konkan' (Cooke, op. cit.).

**HYGROPHILA R. Br. emend. Heine**

1. Erect herbs; leaves rather large :
   2. Flowers in terminal spikes ... _H. stocksii_
   2. Flowers axillary, whorled :
      3. Plants armed ... _H. schulli_
      3. Plants unarmed :
         4. Leaves dissected, pinnatifid ... _H. pinnatifida_
         4. Leaves not dissected, simple ... _H. ringens_
1. Procumbent herbs; leaves small :
   5. Fertile stamens 2; seeds 20 or more ... _H. polysperma_
5. Fertile stamens 4; seeds 8–15:

6. Leaves obovate, apex obtuse or subacute  
   ...  *H. phlomoides*  
   var. roxburghii

6. Leaves oblong–subovate or ovate–orbicular:

7. Leaves oblong–subovate  
   ...  *H. heinei*

7. Leaves ovate or orbicular–reniform  
   ...  *H. serpyllum*


Herbs, erect or decumbent; stems pubescent. Leaves subsessile c 2.5 x 0.8 cm, oblong or subovate, entire or crenate. Flowers rosy–purple or white in 2–8 cm long spikes. Capsules c 0.5 cm long, minutely pilose upwards.

*Fls. & Frts.* : September–December.

*Distrib.* : Found in wet places. Pune.


Herbs, upto 50 cm; stems striate, glandular–pubescent. Leaves 1–5 x 0.9–2.5 cm, usually obovate, elliptic–oblong, oblongate or spatulate, sparsely hairy above, pubescent on nerves below, apex obtuse or subacute, base cuneate, upper portion of margins irregularly serrate dentate. Flowers pale purple with dark purple streaks at throat in subsessile to peduncled, 3–flowered cymes, one in the axil of each leaf. Capsules 1.3–1.6 x 0.2 cm, oblong linear, apex dialated and mucronate, base slightly narrowed, shining. Seeds 10–15, 0.15–0.18 x 0.06–0.07 cm, ovoid, abruptly acuminate, compressed, margined, slightly puberulous.

*Fls. & Frts.* : November–March.


*Distrib.* : Around dried areas of lakes, etc. Infrequent. Bombay.

Hygrophila pinnatifida (Dalz.) Sreem.
Herbs, 30–60 cm, aquatic, slender, glandular–pubescent; stems obtusely tetragonous. Leaves 5–10 x 1.0–2.5 cm, oblong–lanceolate, deeply pinnatifid, glandular pubescent, entire, serrulate, apex subobtuse. Flower purple–yellow, solitary in opposite axils. Capsules c 0.8 cm long, narrowly oblong, pointed, glabrous.

_Fls. & Frts._ : January–May.


Herbs, procumbent; branches often rooting near base. Leaves 1.0–3.5 x 0.5–1.2 cm, narrowly oblong to ovate, apex subobtuse, base entire or nearly so. Flowers pale blue in terminal, dense, oblong, 2–10 cm long spikes. Capsules c 1 cm long, narrowly oblong, shortly apiculate. Seeds 20–30, orbicular.

_Fls. & Frts._ : September–December.

_ILLUS._ : Wight, Ic. t. 1492. 1849 (_Hemiadelphis polysperma_ Nees).


Herbs; stems 30–90 cm tall, erect. Leaves 2.5–10.0 x 0.2–4.5 cm, lanceolate, lineolate, apex obtuse or acute, base rounded or abruptly cuneate. Flowers pink to violetish, axillary, whorled. Capsules 2.0 – 2.5 cm long. Seeds 8–12, c 0.7 mm across, orbicular.

_Fls. & Frts._ : November–May.

**Distrib.** Infrequent. Nagpur, Osmanabad, Raigad, Sindhudurg.

**Notes:** Some authors treat *H. obovata* (Roxb.) Nees ex Wight & *H. quadrivalvis* (Buch.–Ham.) Nees as distinct and separate from this species.


Herbs, 0.5 – 1.5 m high, erect, stout; branches subquadrangular. Leaves sessile, 5.0–17.5 x 0.6–3.0 cm, appear whorled with 6 sharp, yellow spines, oblong–lanceolate or oblanceolate, sparsely hispid on both surfaces. Flowers purple–blue in a whorl at each node. Capsules c 0.8 cm long, linear–oblong, pointed. Seeds 4–8, c 0.3 cm across, orbicular.

**Fls. & Frts.** November–June.


**Distrib.** Throughout the state in swampy places and other wet waste places. Common. Ahmednagar, Akola, Aurangabad, Beed, Bombay, Chandrapur, Dhule, Jalna, Kolhapur, Latur, Nagpur, Nanded, Nasik, Osmanabad, Raigad, Ratnagiri, Parbhani, Pune, Satara, Sindhudurg, Thane, Yavatmal.

**Notes:** *Barleria longifolia* L. Amoen. Acad. 4: 320. 1759 & Sp. Pl. ed. 2, 2: 887. 1763, is the earliest name available for this plant. However that specific epithet is not available as it is transferred to *Hygrophila* and is proccupied by *Hygrophila longifolia* Nees in Mart. Fl. Bras. 9: 21. 1847.


_Rantewan_  

1. Plants slender; leaves ovate–acute  
2. Plants robust; leaves orbicular to reniform  

**var. serpyllum.**  

Herbs, procumbent; root–stocks woody; stems glabrous or sparsely hairy. Leaves 1–3 x 0.5–1.5 cm, more or less hairy on both surfaces, entire. Flowers white or with a slight pinkish tinge in terminal, dense or lax spikes. Capsules c 0.6 cm long, linear-oblong, pointed, glabrous or hairy at least on upper half. Seeds ovoid–orbicular.  

*Fls. & Frts.* : September–March.  

*Illus.* : Wight, Ic. t. 1493. 1849.  (*Physichilus serpyllum*).  


Herbs, robust. Leaves variable, c 2.5 cm across, orbicular, more often reniform, apex obtuse, actue or subacute, sessile or shortly petiolate, with minute, white, bristly hairs. Flowers white or light pinkish in dense or lax, terminal spikes. Capsules c 0.6 cm long, linear oblong, pointed. Seeds 8–10, orbicular.  

*Fls. & Frts.* : September–March.  

*Distrib.* : Infrequent. 'Konkan' (Cooke, op. cit.), Raigad.  


Herbs, upto 50 cm, tall, stout, internodes 5–8 cm long. Leaves c 9 x 3 cm, elliptic spathulate; petioles 1.5 cm long. Flowers light purple in ovate or shortly oblong spikes.  

*Fls.* : November.
Distrib. : Infrequent. 'Konkan'.

Notes. : Although Cooke, op. cit. has cited under excluded species Sant. op. cit. is of the opinion that until a set of intermediary stages connecting H. stocksii with H. serpyllum appears, it should be treated as a separate species. However fresh collection of the species is worthwhile for its detailed studies and to know its present status of distribution.

**HYPOESTES Soland ex R. Br.**


Undershurbs; stems geniculate, ascending. Leaves 7–15 x 3.0 – 6.5 cm, elliptic–lanceolate, apex acuminate, base acute, decurrent along petiole, enire. Flowers light purple in axillary and terminal in wooly tomentose, c 15 cm long, interrupted leafy spikes running upwards into terminal panicles. Capsules 1.0 – 1.5 cm long, with a long solid stalk, pubescent, narrowly clavate, pointed. Seeds c 0.3 x 0.2 cm, oblong, rounded at apex, tuberculare.

*Fls. & Frts.* : October – February.

*Distrib* : Rare. Raigad, Ratnagiri.

**INDONEESIELLA Sreem.**


Herbaceous, 15–45 cm long; stems quadrangular, grooved; branches spreading with spreading hairs. Leaves sessile, 3–8 x 1–2.5, oblong to oblanceolate, more or less sparsely hairy, ciliate on margins, base cuneate, apex obtuse. Flowers white or pink, numerous, placed along upper side of a slender, glandular–hairy, rachis in axillary racemes shorter than leaves. Capsules 0.8–1.2 cm long, half broad as long, ellipsoid, lanceolate, compressed, acute at both ends, hairy. Seeds c 0.25 x 0.12 cm, oblong, rugosely pitted.

*Fls. & Frts.* : August–December.


Justicia L.

1. Shrubs; leaves upto 2.5 cm long; flowers 2.5 cm long or longer:
   2. Plants upto 1 m tall; inflorescence 15–40 cm long; lower anthers with a long, acute, white spur ... J. santapau
   2. Plants 2–3 m tall; inflorescence up to 10 cm long; longer anthers minutely apiculate but not as above ... J. adhatoda

1. Herbs or at the most undershrubs; leaves upto 10 cm long; flowers 1–1.5 cm long:
   3. Undershurb; bracts inconspicuous:
      4. Leaves ovate–elliptic or elliptic–lanceolate:
         5. Capsules glabrous ... J. latispica
         5. Capsules pubescent at least at apex ... J. wynaadensis
      4. Leaves orbicular:
         6. Erect or diffuse herbs; spikes 1–2 cm long ... J. orbiculata
         6. Procumbent herbs; spikes 2–5 cm long ... J. nagpurensis

3. Herbs; bracts conspicuous:
   7. Bracts green, orbicular–spathulate, glandular–ciliate, more or less pubescent ... J. glauca
   7. Bracts white, ovate or lanceolate, glabrous
      8. Stems procumbent; leaves less than 5 cm long ... J. trinervia
      8. Stems erect; leaves more than 5 cm long ... J. betonica


Shrubs, bushy, 1–2.5 m tall. Leaves 7–20 x 3.5–7 cm, elliptic lanceolate, apex acuminate, base tapering, minutely puberulous when
young, glabrous at length, apex acuminate. Flowers white in short, dense axillary, 2–8 cm long, pedunculate spikes, towards the ends of the branches. Capsules c 2 x 0.8 cm, clavate, subacute, shortly and bluntly pointed, pubescent. Seeds 0.6 x 0.5 cm, orbicular, oblong, tuberculare, verrucose, glabrous.

_Fls. & Frts._ : August–March.


_Distrib._ : Usually found as a hedge plant along roadsides. Ahmednagar, Aurangabad, Beed, Chandrapur, Dhule, Jalgaon, Jalna, Latur, Kolhapur, Nagpur, Nanded, Osmanabad, Parbhani, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Undershubs, diffusely branched, more or less decumbent; stems cylindric striate; Leaves 5 x 10 x 2.0–4.5 cm, ovate, apex acute or acuminate, base rounded, entire, subcrenate or slightly toothed. Flowers white or pale pink in terminal or rarely axillary spikes, simple or panically branched, often at the ends of short, lateral branches. Capsules c 1 cm long, broadly clavate, softly pubescent. Seeds 4, c 0.4 cm across, suborbicular.

_Fls. & Frts._ : October–March.


Herbs, diffusely branched; stems puberulous. Leaves 2.5 – 4.5 x 2.0 – 2.5 cm, ovate, apex subacute, more or less pubescent, base usually rounded. Flowers spotted with purple, in 2–10 cm long spikes, terminal or from upper axils. Capsules c 0.8 x 0.4 cm, oblong, tip slightly pubescent, pointed. Seeds 4, c 0.25 cm across, densely clothed with more or less triangular, actue tubercles.

_Fls. & Frts._ : August–December.

Herbs, 15–60 cm tall annuals, erect or ascending, pubescent. Leaves 3–10 x 0.5–2.0 cm, narrowed at both ends, entire, pubescent on both surfaces. Flowers pink in terminal, cylindric 3–6 cm long spikes. Capsules 0.5–0.6 cm long, oblong, acute at apex, glabrous. Seeds 4, ovoid, tubercled, pale brown.

**Fls. & Frts.** : September–February.

**Distrib.** : Frequent. Beed, Chandrapur, 'Konkan' (Cooke, op. cit.), Nanded, Parbhani, Yavatmal.


Herbs, small, upto 20 cm long, pubescent, diffuse, prostrate or straggling, often rooting at nodes; branches slender, zigzag. Leaves very small, under 1.0 cm across, elliptic or orbicular, obtuse or subacute, hairy; hairs white, jointed, long and spreading. Flowers pink, in spikes upto 50 x 4 mm, close and cylindrical; bracts 0.1 – 0.2 cm long, elliptic or broadly lanceolate, fulvous hirsute. Capsules 0.6 cm long, pointed, pubescent at apex. Seeds scarcely 0.1 cm across, orbicular.

**Fls. & Frts.** : October – January.

**Distrib.** : On rocky soils of hill slopes. Rare. Nanded.

**Notes** : Naik, op. cit. opines that this is probably stunted form of *J. japonica* Thunb. with variable leaf shape, size and length of spikes.

Herbs, up to 0.5 m tall, erect or diffuse; stems often woody at base, hispid. Leaves 1–2.5 cm across, broadly ovate or orbicular, base rounded or cuneate, apex rounded, entire, pubescent on both surfaces. Flowers pink in terminal, dense, 1–2 cm long spikes. Capsules 0.3–0.4 cm long, ellipsoid, acute, finally pubescent. Seeds scarcely 0.1 cm across, pale brown, orbicular, rugose.

*Fls. & Frts.* : July–December.

*Distrib.* : Occasional on wastelands around villages, forts, etc. Aurangabad.


Shrubs, 0.5 – 1.0 m high; stems erect, subtetragonal. Leaves 15–25 x 5.0–8.5 cm, elliptic–lanceolate, apex acute, base attenuated into petiole. Flowers white, clustered in large, terminal, paniculate, sometimes thyrsoid spikes or racemes. Capsules c 2.5 cm long, clavate, pubescent. Seeds 4, c 0.4 cm across, suborbicular.

*Fls. & Frts.* : January–June.

*Illus.* : Wight, Ic. t. 1538. 1850 (*Hemichoriste montana*).

*Distrib.* : Frequent at higher elevations. Kolhapur, Raigad, Ratnagiri, Satara, Sindhudurg.


Herbs, procumbent; root–stock woody. Leaves 1.0–3.5 x 0.6–0.9 cm, elliptic–oblong or obovate–oblong, apex obtuse, base tapering. Flowers in continuous, somewhat lax, 2.5–12.5 cm long spikes. Capsules c 1.2 x 0.5 cm, oblong–clavate, shortly pointed, pubescent. Seeds 4, c 0.3 cm across, densely clothed with acute tubercles.

*Fls. & Frts.* : October–March.
Distrib. : Frequent. Raigad, Satara, Sindhudurg.


Undershubs; stems slender, terete, striate. Leaves 6.5–11.5 x 2.5–4.5 cm, elliptic or elliptic–lanceolate, rarely rounded, apex acuminate, base acute, densely lineolate, glabrous or pubescent on nerves beneath. Flowers rosy, solitary, opposite along a glandular–hairy rachis in elongate, drooping, interrupted, axillary and terminal 5–10 cm long spikes. Capsules c 1.5 x 1.4 cm, densely hairy, narrowed into a stalk, acutely mucronate. Seeds 4, c 0.25cm across, rugose with small, obtuse tubercles.

**Fls. & Frts.** : November–March.

**Illus.** : Wight, Ic. t. 1545. 1850. (*Adhatoda wynaadensis* Nees).

**Distrib.** : Infrequent. Ratnagiri, Satara, Sindhudurg.

**LEPIDAGATHIS Willd.**

1. Seeds 2:
   2. Calyx 4–partite:
      3. Bracts not spinous pointed ...
      ... *L. mitis*
      3. Bracts spinous pointed:
      4. Leaves less than 5 cm long; lower sepal bifid above middle:
      5. Inflorescence mostly in globular, subradical heads:
      6. Bracts and sepals densely covered with soft hairs ...
      ... *L. cristata*
      6. Bracts and sepals glabrescent but ciliate with long, stiff, white hairs ...
      ... *L. subarmata*
      5. Inflorescence in 4 sided, simple terminal spikes ...
      ... *L. clavata*
      4. Leaves more than 5 cm long; lower sepal bifid for more than half its length ...
      ... *L. hamiltoniana*
   2. Calyx 5–partite:
      7. Leaves spinous tipped ...
      ... *L. prostrata*
      7. Leaves not spinous tipped:
8. Bracteoles dimorphous ... \textit{L. bandraensis}

8. Bracteoles uniform:

9. Bracts softly hairy with straight, apical spines ... \textit{L. lutea}

9. Bracts glabrous with long, recurved spines ... \textit{L. trinervis}

1. Seeds 4:

10. Leaves longer, longitudinally folded ... \textit{L. rigida}

10. Leaves shorter, not folded:

11. Erect undershrubs ... \textit{L. cuspidata}

11. Prostrate herbs:

12. Leaves entire or nearly so ... \textit{L. incurva} \textit{var. mucronata}

12. Leaves crenate or crenate–serrate ... \textit{L. fasciculata}


Herbs. Leaves opposite, sessile, elliptic–lanceolate, 3–nerved, spinous serrulate along margins and on midrib beneath. Flowers arranged in dense, unilateral spikes. Spikes many, densely fasciculate near root or a little higher up in the part of branches which are leafless; bracts densely imbricate, fertile, one glabrous, the rest hairy; bracteoles dimorphous, calyx 5–partite nearly to base, segments spinous at the apex, all hairy inside, the smallest one also on margins and though less densely so on outside upper lip entire, lower lip 3 lobed, the middle lobe crisped, the lateral ones waved or subentire; stamens included, anthers acuminate at base, style being at base and in an ascending line. Capsules ovate, conico–acute. Seeds 2, covered with white, mucilaginous elastic hairs.

\textit{Fls. & Frts.} : November–March.

\textit{Distrib.} : Infrequent. Amaravathi, Bombay, Nanded (Kinwat, Zate 529).

\textit{Notes.} : According to Sant. op. cit. the type specimen Hallb. 74501 from Bandra, Bombay seems to have perished and it is not there in Blatter Herbarium, Bombay and he himself has not seen this new species. He further adds that Blat. op. cit. on p. 349 states that there is no doubt that this species belongs to the group of \textit{Lepidagathis} which comprises the spp. \textit{cristata} Willd. \textit{hamiltoniana} Wall. and \textit{mitis} Dalz. It combines characters which are peculiar to each, but does not agree in
the totality of characters with any of them. It is a very distinct species. Apart from many other details it can certainly be distinguished by the dimorphous bracts and bracteoles. There are no specimens in Botanical Survey of India, Western circle, Pune (BSI) too. However, Naik, op. cit. reported it from Amravati, Nanded and hence the inclusion of the species here.


Herbs, perennial; roots woody, stems numerous, erect, 15–35 cm high, tetragonal. Leaves decussate 2.0–2.5 x 0.6–0.9 cm, ovate–oblong, apex acuminate, more or less recurved, margins entire. Flowers rose or purplish in terminal, 4 sided, usually simple, hairy 5–10 cm long spikes. Capsules c 0.9 cm long, ovoid, lanceolate, acutely pointed. Seeds c 0.5 x 0.3 cm, ovoid, acute with short, hygroscopic hairs.

**Fls. & Frts.**: January–June.

**Distrib.**: Infrequent 'Konkan (Cooke, op. cit.).

**Notes**: Appears to be an endemic plant in the state.


Herbs; root–stock perennial; stem scarcely any; branches numerous, spreading on all sides, close to the ground, sometimes rooting, slender, quadrangular. Leaves opposite, sessile, 2.0–3.5 x 0.3–0.9 cm, linear–oblong or lanceolate–oblong, lineolate above, hairy on nerves beneath. Flowers white or pale pink, dotted with purple spots in globose heads. Capsules c 0.5 cm long, obovoid, subacute. Seeds 2, c 0.3 cm long, ovoid–oblong, rounded, densely clothed with long, hygroscopic mucilaginous hairs.

**Fls. & Frts.**: October–May.


**Distrib.**: Frequent. Ahmednagar, Akola, Aurangabad, Bombay, Chandrapur, Dhule, Jalna and probably elsewhere also (Naik, op. cit.), Kolhapur, Nagpur, Nasik, Satara, Yavatmal.

Undershubs, erect; stems and branches quadrangular, glandular–pubescent upwards. Leaves of branches are smaller than main stem, leaves of main stem 6–12 x 2.0 –4.5 cm, oblong–lanceolate, apex acute or acuminate, usually mucronate, base acute, cuneately tapering and decurrent into the petiole nearly to its base. Flowers white with darker lines in terminal spikes often terminating in short, axillary branches. Capsules c 0.8 cm long, ovoid–lanceolate, acute. Seeds 4, c 0.25 cm long, nearly as broad as long, ovoid, compressed, rounded at apex, hygroscopically hairy, especially on margins with hairs shorter than nucleus.

*Fls. & Frts.* : March–May.


Herbs, weak, diffuse; stems slender, quadrangular, geniculate, softly hairy. Leaves often in unequal pairs, 2.5–6.5 x 1.0–2.5 cm, ovate or elliptic, apex subacute, more or less softly pubescent, base cuneate, suddenly decurrent into the petiole. Flowers white, spotted with purple, few in terminal often paniculately arranged leafy spikes. Capsules c 0.6 cm long, oblong–lanceolate, pubescent at tip. Seeds c 0.1 cm across, suborbicular, shortly hygroscopically hairy.


Herbs, diffuse; root–stock woody, stems upto 0.5 m long, 4–angled. Leaves upto 9 x 1 cm subsessile, base rounded, margins scabrid–ciliate, apex acute, pubescent on both surfaces. Flowers purple with brown
blotches on the limb and yellow pubescent tube in axillary and basal, fascicled spikes forming 2–6 cm across, prickly cushion. Capsules 0.5–0.6 cm long, acute, ellipsoid, somewhat compressed, glabrous. Seeds 0.5–0.2 cm across, hygroscopically hairy.

Fls. & Frts.: September–January.

Distrib.: Along road sides on black soil, frequent. Aurangabad, Nanded, Parbhani.


Herbs, perennial, prostrate; stems slender, obtusely quadrangular, glabrous or nearly so. Leaves variable in size, 2.5–7.5 x 2–4.5 cm, elliptic or elliptic–lanceolate, lineolate, glabrous or pubescent, apex acute, base tapering and decurrent into petiole. Flowers white in axillary and terminal, one sided, often clustered, 1–2 cm long, softly hairy spikes. Capsules c 0.5 cm long, oblong–lanceolate, acute, pubescent at tip. Seeds 4, broadly ovoid or suborbicular, shortly hygroscopically hairy.

Fls. & Frts.: January – June.

Distrib.: Infrequent. 'Konkan' (Cooke, op. cit.).


Herbs; root–stocks woody; stems numerous, suberect, quadrangular, filiform, pubescent or nearly glabrous. Leaves 2.5 – 5.0 x 0.25–0.4 cm, linear, apex acute or subobtuse, base slightly tapering. Flowers yellow in velvety pubescent spikes. Capsules c 0.6 cm long, ovoid–lanceolate. Seeds 2, with long, hygroscopic, mucilaginous hairs longer than nucleus.

Fls. & Frts.: November – March.

Distrib.: Infrequent. Aurangabad, Kolhapur, Ratnagiri, Sindhudurg.

Herbs; stems short; branches diffusely spreading, subquadrangular. Leaves sessile, 2.5–4.5 x 0.5–1.2 cm, linear–oblong, apex subacute or obuse, base narrowed, lineolate above, more or less hairy on nerves beneath; margins usually ciliolate. Flowers white to pale pink, copiously dotted with yellowish brown spots in 5–8 cm across globose heads. Capsules c 0.5 cm long, ovoid, subacute. Seeds 2.

_Fls. & Frts._ : November–March.

_Distrib._ : Frequent. Aurangabad, Jalna, Konkan (Stocks! Cooke, op. cit.), Nagpur, Ratnagiri, Sindhudurg (Phunda Ghat-Cooke, op. cit.).


Undershubs prostrate; stems rooting near base, obtusely quadrangular; young branches softly tomentose. Leaves 1.0–2.5 x 0.6–0.8, oblong–lanceolate, rigid, subcomplicate, base somewhat cuneate' pubescent on both surfaces apex spinous–pointed, recurved. Flowers rose or yellowish white, upper lip marked with transverse lines in simple, erect, softly pubescent, 1–5 cm long spikes, usually terminal or short, lateral ascending branches. Capsules 1 cm long, ovoid–lanceolate compressed. Seeds 2, c 0.25 cm long, broadly ovoid, shortly hygroscopically hairy.

_Fls. & Frts._ : December–March.


Undershurbs, erect, rigid; stems quadrangular, slender, softly hairy with glandular and simple hairs. Leaves 6.5–12.5 x 0.6–1.5 cm glandular pubescent on both sides, apex acute, base long attenuate into an obscure petiole. Flowers yellowish white, spotted with brown or purple in dense, glandular–hairy, terminal, cylindric simple or compound, 2.5–6.5 cm long spikes on short, lateral branches. Capsules c 0.6 cm long, ovoid–lanceolate. Seeds c 0.25 cm long, ovoid, subacute, clothed with short, hygroscopic hairs.

_Fls. & Frts._ : December–March.


Undershubs; branches 15–40 cm long, spreading from the base, 4-angled, glabrous or minutely pubescent, often tinged purple. Leaves 2–5 x 0.5–1.5 cm, sessile, ovate–oblong or elliptic–oblong, base narrowed, margins broadly and shallowly crenate, apex subacute, glabrous or pubescent beneath. Flowers pale pink with brown blotches in globose heads of dense, 3–6 cm across spikes at the base of the stem. Capsules upto 0.5 cm long, ovoid, apex acute, glabrous. Seeds 0.2–0.3 cm long, ovoid–oblong, densely clothed with hygroscopic hairs.

**Fls. & Frts.** : September–February.

**Distrib.** : On gravelly slope amidst grasses, very common in all districts, Marathwada.

**Notes.** : Naik op. cit. opines that this species is ‘Intermediate’ between *L. cristata* Willd. and *L. mitis* Dalz. with short spinous pointed bracts, bracteoles and sepals.


1. Leaves 2.5–4.5 x 0.3–0.6 cm, glabrous or only margins scabrous ... var. *trinervis*
1. Leaves c 0.8 x 0.2 cm, scabrous ... var. *asperrima*

var. *trinervis*.

Herbs, suffruticose, diffuse, rootstocks woody; branches slender, quadrangular. Leaves sessile, linear, apex subacute, base slightly tapering, margins entire. Flowers white, spotted with yellow, brown and purple in axillary, sessile, 1–2 cm long spikes usually two or more, closely packed together so as to appear like a single head. Capsules c 0.6 cm long, ovoid, lanceolate, subacute, compressed. Seeds 2, 0.25–0.3 cm long, oblong, rounded at apex clothed with long, mucilaginous, hygroscopic hairs, many times longer than nucleus.

**Fls. & Frts.** : November–May.

**Distrib.** : Common, Ahmednagar, Akola, Bombay, Dhule, Jalgaon, Jalna, Nasik, Parbhani, Pune, Raigad, Ratnagiri, Sindhudurg, Solapur, Thane.
Mackenziea integrifolia (Dalz.) Bremek.

Herbs c 15 cm tall, stems stoutly lignescent, much branched, nodes short. Leaves c 0.8 x 0.2 cm, mucronate, scabrous.

Fls. : December.

Distrib. : Infrequent. Aurangabad, Dhule, 'Konkan' (Cooke, op. cit.).

Notes. : Cooke (op. cit.) says that "the plant should perhaps have specific rank accorded to it". However, the fresh collections from the reported localities of this worthy species are warranted for detailed studies and elaborative description.

Mackenziea Nees


Shrubs, 1–1.5 m tall, nearly glabrous except the inflorescence; stems terete. Leaves 10–20 x 3.0–6.5 cm, elliptic–lanceolate, apex much acuminate, base tapering, decurrent into petiole forming a wing along to its insertion, forming auriculate nature, sparingly toothed or entire. Flowers blue in axillary and terminal, simple or compound, strong smelling, 5–13 cm long spikes. Capsules c 1 x 0.5 cm, obovoid, compressed, mucronate. Seeds 2, c 0.4 cm long, ovoid, shaggy, areoles small.

Fls. & Frts. : December–May.

Illus. : Wight, op. cit.


Nelsonia R. Br.

Herbs, softly villous, diffuse. Leaves lower large, 10–20 cm long, upper small, 1–5 cm long, opposite, elliptic–oblong, pubescent or canescent. Flowers purplish in ovate or cylindric, 1–5 cm long spikes. Capsules c 0.5 cm long, ovoid–conic, the valves recurved at apex. Seeds broadly ellipsoid, brown, granular.

**Fls. & Frts.** : January–June.

**Distrib.** : Frequent. Chandrapur, Raigad, Ratnagiri, Sindhudurg.

**Neuracanthus Nees**

1. Flowers in elongated, 4-sided spikes; corolla 2-lipped ... *N. trinervius*

1. Flowers in dense, spherical or globose, axillary, occasionally terminal spikes, corolla entire ... *N. sphaerostachyus*


Herbs, 45–60 cm high; stems erect, numerous from a perennial root, simple, obtusely quadrangular, more or less scabrous–pubescent. Leaves 6–10 x 3.5–5.5 cm, subsessile, elliptic–oblong, lineolate on both sides, apex obtuse, shortly acuminate. Flowers white with bluish tinge. Capsules c 1 x 0.5 cm, ovoid, subacute, shortly attenuated at base. Seeds c 0.4 cm across, orbicular, densely silky.

**Fls. & Frts.** : September–June.

**Illus.** : Wight, Ic. t. 1531. 1850. (*Neuracanthus lawii*).


Shrubby, 0.5–1.0 m high, erect; stems slender, glabrous or nearly so. Leaves 8–13 x 3.0–4.5 cm, sessile, elliptic–lanceolate, apex acute, base rounded or acute. Flowers bluish in axillary, hairy, 2–15 cm long spikes. Capsules 0.6–0.8 x c 0.2 cm, oblong, acuminate. Seeds 0.2–0.25 cm long, broadly ovoid, compressed, silky.

**Fls. & Frts.** : December–June.
**Illus.** : Wight, op. cit. (Cooke, op. cit. comments that Wight’s figure shows the calyx lips reversed the 3 lobed lip being shown immediately beneath the bract instead of the 2 lobed one).

**Distrib.** : Frequent. Bombay, Nasik, Pune, Raigad, Ratnagiri, Thane.

### **Nilgrianthus Bremek.**

<table>
<thead>
<tr>
<th>1.</th>
<th>Stamens 2</th>
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<th><em>N. reticulatus</em></th>
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<td>1.</td>
<td>Stamens 4 :</td>
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<td>2.</td>
<td>Flowers ebracteolate :</td>
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<td>3.</td>
<td>Bracts glabrous or nearly so</td>
<td>...</td>
<td><em>N. heyneanus</em></td>
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<td>3.</td>
<td>Bracts hairy</td>
<td>...</td>
<td><em>N. lupulinus</em></td>
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<td>2.</td>
<td>Flowers bracteolate :</td>
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<tr>
<td>4.</td>
<td>Stems usually winged; bracteoles longer than calyx</td>
<td>...</td>
<td><em>N. barbatus</em></td>
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<tr>
<td>4.</td>
<td>Stems not winged; bracteoles shorter than calyx :</td>
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<td>5.</td>
<td>Leaves membranous</td>
<td>...</td>
<td><em>N. membranaceus</em></td>
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<td>5.</td>
<td>Leaves coriaceous:</td>
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<td>6.</td>
<td>Bracts glabrous</td>
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<td><em>N. ciliatus</em></td>
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<td>6.</td>
<td>Bracts glandular hairy :</td>
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<td>7.</td>
<td>Seeds glabrous</td>
<td>...</td>
<td><em>N. warreensis</em></td>
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<tr>
<td>7.</td>
<td>Seeds hairy</td>
<td>...</td>
<td><em>N. asper</em></td>
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</table>


Shrubs, 60–120 cm high, thinly hairy or glabrous all over. Leaves 5–12 x 2.0 – 6.5 cm, broadly ovate, apex acuminate, base shortly tapering, margin crenate, green above, glaucous beneath, not at all or only obscurely lineolate, rhaphides obscure, fairly, densely hairy, especially on nerves on both surfaces. Capsules c 0.8 cm long. Seeds c 0.2 cm across, orbicular, elastically hairy, areoles prominent.

**Fls. & Frts.** : December–May.

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

**Distrib.** : Infrequent. Raigad.

Shrubs, 3–4 m, subscandent; stems and branches quadrangular. Leaves 10–25 x 5–10 cm, elliptic–lanceolate, shining, densely lineolate above, apex acuminate, base tapering, crenulate or subentire. Flowers white in axillary and terminal, 2–5 cm long, dense heads or spikes. Capsules 1.0–1.6 cm long, clavate. Seeds 2, c 0.6 cm long, broadly ellipsoid, apex acute, very thin, yellow.

*Fls. & Frts:* October–March.

*Illus.*: Bedd. op. cit.

*Distrib.*: Infrequent. Bombay (Cooke. op. cit), Sindhudurg.


Shrubs, small; stems and branches terete or subquadrangular, often fimbriate at nodes. Leaves 10–18 x 2–5 cm, lanceolate, densely lineolate above, glabrous or nearly so below, apex acuminate, base attenuated into petiole, serrate. Flowers white in axillary, slender, 2–8 cm long spikes.

*Fls.*: October onwards.

*Illus.*: Bedd. Ic. t. 211. 1874. (*Strobilanthes ciliatus*).

*Distrib.*: Infrequent. Sindhudurg.


Shrubs, small; stems hirsute. Leaves 9–15 x 3–7 cm, broadly elliptic, hairy above with short, stiff bulbous based hairs, softly hairy on veins beneath, lineolate on both surfaces, strongly so on upper surface acuminate at both ends, closely crenate–serrate. Flowers pale blue in axillary, simple or branched spikes. Capsules c 0.8 cm long, oblong, subacute. Seeds 4, c 0.3 cm long, ovoid, flattened.
Fls. & Frts.: November–March.

Illus.: Wight, Ic. t. 1619. 1850 (Strobilanthes rugosus).

Distrib.: Frequent. Ahmednagar, Kolhapur, Nasik, Raigad, Ratnagiri, Sindhudurg.


Shrubs, erect; stems and branches woody, the older warted and glabrous, the younger hairy. Leaves 10–15 × 6–9 cm, broadly elliptic, apex acuminate, base cuneate, densely lineolate, usually rough above with stiff, short hairs, crenate–serrate. Flowers in axillary and terminal, simple or umbellately branched, 3.5–4.0 cm long spikes. Capsules c. 0.9 cm long, oblong–clavate. Seeds 4, c. 0.3 cm long, broadly ellipsoid or suborbicular, flat, thin, yellowish.

Fls. & Frts.: October–May.


Shrubs, stout, gregarious; branches subquadrangular, grooved thickened at nodes, glabrescent or hairy. Leaves 5–18 × 2.5–10.0 cm, broadly ovate, thin, membranous, rugulose, hispidulous and strongly lineolate, apex acuminate, base unequal, narrowed into petiole, crenate–serrate. Flowers white with purple tinge in axillary, peduncled in simple, ovoid, densely viscous–hairy, 2.5–3.7 cm long heads. Capsules c. 0.8 cm long, pointed, 4 sided. Seeds c. 0.25 cm across, yellow, exarculate, shining.

Fls. & Frts.: November–February.

Illus.: Talb. op. cit.


Notes: Cooke, op. cit. has dealt this under the species not seen for Bombay Presidency. Sant. op. cit. though not included in the key (p. 39) covered the species on p. 43 with the present Karnataka state localities. Later Karthikeyan & Sharma in J. Econ. Tax. Bot. 4 (2): 386.
1983. also have cited the localities from Karnataka state only that were available in BSI. This species is reported in flora of Raigad (1993) based only on the collections of Irani from Matheran available in Blatter herbarium, Bombay. The present report from Sauraisada to Dajipur in Bison Sanctuary area near Radhanagari in Kolhapur district confirms its specific occurrence in Maharashtra and also serves as a new record for Maharashtra state besides bridging the gap between the earlier known distribution in Karnataka state to Raigad district in Maharashtra State.


Shrubs, small; stems shortly strigose, subquadrangular. Leaves 2.5–7.5x 2.0–3.7 cm, ovate, densely lineolate and with short, stiff hairs on upper surface, pale and strigose on nerves and veins beneath, apex acute, base rounded or subcordate, subentire. Flowers bluish in ovate, shortly pedunculate, c 2 cm long spikes from axils of upper leaves. Capsules c 1 x 0.3 cm, oblong, tapering at both ends.

*Fls. & Frts.* : October–March.


*Distrib.* : Frequent. Ahmednagar, Nasik, Pune, Sindhudurg, Thane.


Shrubs, 1–2 m high, erect; stems obtusely quadrangular or subterete. Leaves 10–15 x 2.5–5.0 cm, lanceolate, densely lineolate above, apex long acuminate, base tapering and decurrent into petiole, crenate or subserrate. Flowers white in axillary, pedunculate, 2.5 – 7.5 cm long spikes. Capsules 1–2 cm long, oblong, subacute, minutely pubescent. Seeds 4, ellipsoid–oblong, apex rounded, flat, striate, yellow.

*Fls. & Frts.* : October–March.

*Illus.* : Bedd. Ic. t. 197. 1874 (*Strobilanthes parviflorus*).

*Distrib.* : Infrequent. Sindhudurg.
Peristrophe Nees

1. Leaves up to 8 x 4 cm; corolla 0.8–1.2 cm long ...  *P. paniculata*

1. Leaves up to 18 x 7 cm; corolla 5–7 cm long ...  *P. montana*


Herbs or undershrubs, erect; stems nearly terete. Leaves chiefly near the top, elliptic, long–acuminate, subglabrous. Flowers pink in cluster of axillary or terminal, 3–5 branched cymes. Capsules ellipsoid, stalked, more or less dusky pubescent. Seeds glandular–papillose.

*Fls. & Frts.* : November–March.

*Illus.* : Wght, Ic. t. 1553. 1850.


*Notes.* : A handsome plant said to be bracts also often coloured.


Herbs, 0.5–1.0 m. tall; stems and branches usually 6–angled, more or less hairy. Leaves 5–8 x 2.5–3.7 cm, ovate, densely lineolate, more or less hairy above, somewhat densely so on nerves and veins beneath apex acuminate, base usually rounded. Flowers rosy in trichotomous cymes in large, lax, divaricate, pubescent panicles. Capsules c 0.25 cm, narrowed into a cylindric stalk, pointed, pubescent. Seeds c 0.25 cm across, orbicular, papillose and slightly rugose.

*Fls. & Frts.* : October–February.


*Distrib.* : Common. Ahmednagar, Akola, Aurangabad, Bombay Chandrapur, Dhule, Jalgaon, Kolhapur, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Thane, Yavatmal.
Petalidium barlerioides (Roth) Nees
**PETALIDIUM Nees**


Shrubs, 0.5–1.5 m. high; stems numerous, subterete. Leaves 5–10 x 3.5–6.5 cm broadly ovate, apex acuminate, base usually rounded, crenate serrate. Flowers white, solitary, usually crowded on abbreviated, lateral, strongly nerved and reticulately veined, green at first, becoming pale–brown and scarious in age, ciliolate. Capsules 1.2–1.5 cm long, clavate, pointed. Seeds usually 2, reaching 0.5 cm across, orbicular, softly villous especially on the margin.

*Fls. & Frts.* : January–June.


**PHAULOPSIS Willd.**


Herbs, spreading; young parts softly glandular–hairy. Leaves 2.5–7.0 x 1.5–4.0 cm, ovate–elliptic, apex acute, base obliquely acute, entire to bluntly crenate. Flowers white in terminal or axillary, dense leafy, 1–sided spikes. Capsules c 0.7 x 0.3 cm, oblong, acute, ciliate. Seeds 4, c 0.2 cm across, orbicular.

*Fls. & Frts.* : December–May.

*Illus.* : Wight, Ic. t. 1533. 1850 (*Aetheilema reniforme*).


**PHLOGACANTHUS Nees**

Phaulopsis imbricata (Forssk.) Sw.

Shrubs, 1–2 m. tall. Leaves 10–18 x 2.0–4.5 cm, lanceolate, densely punctulate, tapering at both ends, subentire. Flowers orange in elongate, dense, villous, 10–30 cm long thyrses, solitary or several in terminal or semiaxillary on lateral branches. Capsules c 3 x 0.4 cm, subquadrangular. Seeds 12–14, much compressed, orbicular, hygroscopically densely, shortly hairy.

**Fls. & Frts.** : November–May.

**Distrib.** : Infrequent. Bombay, Pune.

**PLEOCAULUS Bremek.**


Undershrubs; stems erect, quadrangular, usually hairy. Leaves sessile or nearly so, 2–3 cm long, nearly as broad as long, ovate, lineolate and hairy above, nearly glabrous except on the nerves which are bristly beneath, apex acute, base rounded or often cordate. Flowers purple in strobiliform, axillary and terminal, pedunculate or subsessile, 2–8 cm long spikes, often 3 together at tops of branches. Capsules c 1 cm long, linear, oblong, acute, glabrous or with a few, minute, glandular hairs at top. Seeds c 0.25 cm across, suborbicular, hygroscopically brown hairy all over.

**Fls. & Frts.** : September–March.


**PSEUDERANTHEMUM Radlk.**


Undershrubs, erect; stems and branches terete. Leaves 8–13 x 3.0– 5.5 cm, ovate or elliptic, rather thick, apex acute or acuminate, base tapering, faintly minutely lineolate and shining above, crenulate.
Pleocaulus ritchiei (C. B. Cl.) Bremek.
Flowers white in opposite clusters of 1–3 on long, slender glandular–puberulous, 10–22 cm long, interrupted spikes. Capsules c 2 cm long, clavate, pointed, glandular–pubescent. Seeds suborbicular, compressed, reticulato–rugose.

_Fls. & Frts._ : December–May.


**RHINACANTHUS Nees**


Undershubs, 1–2 m high; stems subterete or obscurely angled, glabrous or pubescent. Leaves usually 5–10 x 2–5 cm or larger occasionally. Flowers white, sessile or shortly pedicillate, solitary or 2 to 3 together, distant on divaricate branches on large, lax, terminal panicles. Capsules c 2 cm long, narrow, pointed, velvety–pubescent. Seeds c 0.25 cm across, tuberculate, glabrous, black.

_Fls. & Frts._ : October–May.


**ROSTELLULARIA Reichenb.**

1. Spikes cylindric; bracts and bracteoles as long as or longer than calyx lobes : 
   
   2. Leaves with raphides irregularly arranged in the middle, transversely near the margins ... _R. crinita_
   
   2. Leaves with raphides concentrically transverse and curved :
      
      3. Bracts and bracteoles broadly ovate, prominently scarious margined, softly hairy ... _R. japonica_
      
      3. Bracts and bracteoles narrowly scarious margined, hirsutely hairy ... _R. procumbens_

1. Spikes linear; bracts and bracteoles shorter than calyx lobes :
   
   4. Cystoliths on leaves long, faintly bent in the middle, ascending from the midrib ... _R. diffusa_
4. Cystoliths on leaves minute, straight, ascending from the midrib or parallel to midrib:

5. Calyx lobes and bracteoles ovate, puberulous; cystoliths on leaves numerous; capsules puberulous ...  R. vahlii

5. Calyx lobes and bracteoles spatulate or oblanceolate, glabrous; cystoliths on leaves sparse; capsules glabrous ...  R. quinqueangularis


Herbs, erect, up to 60 cm high. Leaves 2.5–6 x 1.5–3 cm, elliptic–ovate to obovate; sparsely hairy, apex acute, base cuneate or rounded, margins entire or undulate. Flowers pink in spikes, terminal or at forks of dichotomy. Capsules c 4 mm long, oblong. Seeds c 1 mm across, flattened finely ridged.

Fls. & Frts.: August–March.


Distrib.: Frequent. Ahmednagar, Akola, Aurangabad, Jalna, Kolhapur, Nagpur, Nasik, Pune, Ratnagiri, Satara, Sindhudurg.


1. Plants prostrate or decumbent often rooting at nodes, drying green; leaves generally orbicular or broadly ovate with cystoliths parallel to the midrib in the centre and transverse along margin ... var. prostrata

1. Plants erect, not rooting at nodes, drying greenish–grey; leaves ovate, oblong or elliptic with cystoliths irregularly ascending from the midrib ... var. diffusa

var. diffusa.

Herbs erect, 30–60 cm high. Leaves 2.5–4.5 x 1–2 cm, apex actue or acuminate, base cuneate. Flowers pink in axillary and terminal spikes. Capsules 4–5 x 1 cm, oblong, shortly pointed, grooved on back. Seeds c 1 mm across, flattened, tuberculate.

Herbs, prostrate, decumbent; stems faintly angular, sparsely hairy. Leaves 1–3 x 0.5–2 cm, apex obluse, apiculate, base rounded or cuneate. Flowers pink in spikes terminal or at the forks of dichotomy. Capsules c.4 x 1.2 mm, clavate. Seeds flattened, faintly tuberculate.


Herbs, 15–55 cm high; branches slender, quadrangular, grooved, more or less hairy. Leaves 2–5 x 1–2.5 cm ovate or elliptic–oblong, strongly lineolate, glabrous or hairy, apex subobtuse, base cuneate. Flowers pink to lilac in dense, terminal and axillary spikes, 2–10 cm long. Capsules 3–6 mm long, oblong, pubescent at apex. Seeds 1 mm across, concentrically rugose.


Herbs, 15–55 cm high; branches slender, quadrangular, grooved, more or less hairy. Leaves 2–5 x 1–2.5 cm ovate or elliptic–oblong, strongly lineolate, glabrous or hairy, apex subobtuse, base cuneate. Flowers pink to lilac in dense, terminal and axillary spikes, 2–10 cm long. Capsules 3–6 mm long, oblong, pubescent at apex. Seeds 1 mm across, concentrically rugose.
**Rostellularia diffusa** (Willd.) Nees
var. **prostrata** (Roxb. ex C.B.Cl.) Ellis
Distrib. : Common. Akola, Amaravati, Aurangabad, Chandrapur, Dhule, Nagpur, nanded, Nasik, Osmanabad, Parbhani, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.


Herbs, c 30 cm high, procumbent; stems rooting at lower nodes Leaves 1–3.5 x 0.6–2 cm, elliptic or ovate, softly pubescent on both sides, apex obtuse, base rounded. Flowers pale violet to pink in rather dense, terminal, cylindrical, spikes, 1–4 cm long. Capsules c 4 mm long, oblong, shortly pointed, pubescent at tip. Seeds finely tuberculate.

Fls. & Frts. : October–March.


Distrib. : Frequent. Ahmednagar, Aurangabad, Kolhapur, Nagpur, Nasik, Osmanabad, Parbhani, Pune, Raigad, Satara, Sindhudurg, Thane.


1. Leaves under 1 cm broad, linear–oblong or linear–lanceolate, subobtuse, sessile or petioles up to 0.3 cm long; spikes slender, elongate ... var. quinqueangularis

1. Leaves broader, reaching up to 2.5 cm, oblong or elliptic–oblong, obtuse; spikes short and broader ... var. peploides

var. quinqueangularis.

Herbs, 40–45 cm high; stems 4–5 angular, deeply grooved lineolate. Leaves 2.5–7.5 x 0.3–0.9 cm, linear–oblong or linear–lanceolate, slightly lineolate, apex subobtuse, base rounded or cuneate. Flowers rose coloured in slender, elongate, terminal 2.5–11.5 cm long spikes. Capsules c 0.8 x 0.25 cm, oblong, acutely pointed, slightly narrowed into a stalk. Seeds 4, reticulately rugose.

Fls. & Frts. : September–March.
Rostellaria quinqueangularis var. peploides (Nees) Raiz.
**Ruellia L.** emend. Bremek.


Herbs, c 40 cm high. Leaves 4 x 1.5 cm, ovate–oblong, apex obtuse, base cuneate or rounded. Flowers pinkish–purple with purple streaked throat in slender, terminal spikes. Capsules 0.6–0.7 cm long, acute.

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


**Distrib.** : Infrequent. Nagpur, Nanded, Nasik, Parbhani, Pune, Yavatmal.

**Notes.** : This variety is distinguishable from the typical variety by ovate–oblong leaves, longer petioles and shorter spikes.


Herbs, upto 70 cm high, erect or decumbent. Leaves 2–3.5 x 0.5–1 cm, narrowly linear–lanceolate, lineolate; petioles puberulous to tomentose. Flowers pale purple in axillary and terminal spikes. Capsules c 3 mm long, oblong. Seeds slightly flattened, prominently tuberculate.

**Fls. & Frts.** : October–December.

**Distrib.** : Rare. Ahmednagar. Common in Marathwada, in all districts (Naik, op. cit.).

**RUHELLIA** L. emend. Bremek.
Herbs, 20–50 cm high, erect; tender parts hispid, nodes purplish. Leaves ovate–obovate or elliptic, apex obtuse, acute or subacute, base tapering and decurrent into a short petiole. Flowers blue to violetish in axillary or terminal cymes. Capsules c 2.5 x 0.4 cm, oblong, more or less uniformly cylindric for most of their length, glabrous or scabrous, minutely beaked at apex. Seeds c 24, c 0.2 cm across, flattened, orbicular, hairy.

Fls. & Frts.: September–May.


Distrib.: Naturalised as a weed in waste places and gardens. Ahmednagar, Bombay, Nagpur, Pune, Raigad, Ratnagiri.

Notes.: Native of West Indies, grown in gardens and naturalised in some parts (Naik, op. cit.).

Rungia Nees

1. Bracts uniform; upper lip of corolla notched or emarginate:
   2. Spikes perfectly 1–sided; bracts herbaceous; corolla reaching 0.8 cm long … R. linifolia
   3. Stems erect, densely hairy; capsules obovoid, obtuse
   3. Stems decumbent and rooting at nodes, nearly glabrous, capsules ovoid, acute … R. repens

1. Bracts dimorphic; upper lip of corolla acute, not notched:
   4. Barren bracts 0.8–1.2 cm long, corolla 1.2 cm long … R. crenata
   4. Barren bracts 0.4 cm long; corolla 0.5 cm long:
      5. Floral bracts villous; barren bracts prominently pectinately arranged … R. pectinata
      5. Floral bracts pubescent at apex only; barren bracts not as above … R. parviflora


Herbs; stems and branches slender, terete or obscurely quadrangular, glabrous or nearly so. Leaves 2.5–6.5 x 1.0–2.5 cm, elliptic, lanceolate, lineolate, sparsely bulbous based hairy, apex
Flora of Maharashtra State

subacute, base acute. Flowers blue in 1-sided, 0.25–0.3 cm long, ovoid, acute, pubescent at the apex. Seeds ellipsoid.

*Fls. & Frts.*: September–February.

*Distrib.*: Frequent. Kolhapur, Ratnagiri, Sindhudurg.


Herbs, 15–40 cm high; stems somewhat angular. Leaves 3.5–5.5 x 1.0–3.5 cm, elliptic–lanceolate, apex acute or acuminate, base usually rounded. Flowers bluish in sessile, terminal, 2–5 cm long spikes. Capsules 0.4–0.5 x 0.25–0.3 cm truncate, shortly mucronate. Seeds broadly oblong and rounded at apex or suborbicular, rugose with concentric furrows, yellow or brown.

*Fls. & Frts.*: September–March.

*Distrib.*: Common throughout the state. Ahmednagar, Akola, Aurangabad, Chandrapur, Dhule, Jalgaon, Kolhapur, Nagpur, Nanded, Nashik, Satara, Yavatmal.


Herbs, suberect; stems slender, almost with filiform branches. Leaves 1.0–2. 5 x 0.6–1.2 cm, elliptic lanceolate, apex acute or subobtuse, liniolate, base usually tapering. Flowers pale purple in narrow, pedunculate, terminal, slender, quadrifarious, 1–4 cm long, secund spikes. Capsules oblong, hispid.

*Fls. & Frts.*: October–February.

*Illus.*: Wight, Ic. t. 1541. 1850.

*Distrib.*: Infrequent. Kolhapur, ‘Konkan’ (Cooke, op. cit.).


Herbs, suberect or decumbent. Leaves 2.2–4.5 x 1.2–2.0 cm, elliptic–lanceolate or oblong, apex rounded or acute, base acute. Flowers blue or violet in terminal and axillary spikes. Capsules c 0.5 cm long, compressed, hairy near top. Seeds 4, flattened, orbicular, concentrically ridged.
Fls. & Frts. : November–March.

Illus. : Bedd. Ic. t. 266. 1874 (Rungia longifolia Bedd. non Nees).


Herbs, suberect or straggling, stems subterete, glabrous or pubescent. Leaves 1.5–5.0 x 0.4–4.0 cm, elliptic–lanceolate or oblong–lanceolate, apex acute or subobtuse, lineolate, base acute. Flowers blue in terminal and axillary, 1–sided, subsessile spikes, sometimes 2–3 together. Capsules 0.25 x 0.1 cm, ovoid, acute, compressed, pubescent at tip. Seeds 2–4, orbicular, minutely echinulate, yellow.

Fls. & Frts. : October–March.


Distrib. : Common. Ahmednagar, Akola, Aurangabad, Bombay Chandrapur, Dhule, Kolhapur, Nagpur, Nanded, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.


Herbs, decumbent, often rooting near base; branches slender, subterete, glabrous or puberulous. Leaves 2.5–5.0 x 1–2 cm, oblong–lanceolate lineolate, on both sides, base usually tapering, less commonly rounded and unequal sided. Flowers white, blue or pink with darker spots in erect, terminal, usually pubescent, imperfectly, 1–sided, 2.5 – 6.5 cm long spikes. Capsules 0.4–0.5 cm long, ovoid, oblong, acute, compressed. Seeds suborbicular, rugose with concentric furrows, pale brown.

Fls. & Frts. : November–March.

**Distrib.** : Frequent, Ahmednagar, Akola, Aurangabad, Beed, Jalgaon, Jalna, Kolhapur, Latur, Nanded, Nasik, Osmanabad, Parbhani, Pune, Satara, Sindhudurg, Solapur, Thane, Yavatmal.

**Staurogyne Wall.**

1. Stems short, less than 30 cm long, not viscous–pubescent; branches trailing ... *S. zeylanica*
2. Stems 30–40 cm high, viscous–pubescent; branches not trailing ... *S. glauca*


Herbs, 30–40 cm high, erect. Leaves 3.5–5.0 x 1.0–1.5 cm, spatulate, apex obtuse, attenuated. Flowers pale violet or purplish striped rose or yellow in 5–15 cm long spikes. Capsules c 0.5 cm long, oblong, obtuse, shortly apiculate, membranous. Seeds c 10, minute, globose, papillate.

**Fls. & Frts.** : November–March.

**Illus.** : Wight, Ic. t. 1488. 1849.

**Distrib.** : Infrequent. Chandrapur, Konkan (Cooke, op. cit.).


Herbs; stems short, usually with long, procumbent, trailing branches. Leaves 1.0–7.5 x 0.8–2.8 cm elliptic or slightly obovate, more or less pubescent, pale beneath, apex subobtuse, base attenuated. Flowers purplish with rose or yellow stripes in 2–5 cm long, dense spikes. Capsules c 0.5 cm long, narrowly oblong, apiculate. Seeds subglobose or ellipsoid, distantly pitted.

**Fls. & Frts.** : December–March.

**Distrib.** : Infrequent. Kolhapur, Sindhudurg.

**SUPUSHPA Suryan.**

Staurogyne glauca (Nees) O. Ktze.

Shrubs. Leaves 5.0–7.5 x 2.0–2.5 cm, elliptic–lanceolate, unequal sided, apex acuminate, densely lineolate, especially on the upper side, otherwise nearly glabrous, base tapering. Flowers whitish–blue in numerous subsessile spikes on naked branches from axils of fallen leaves. Capsules c 1 cm long, lanceolate, acute, 4–sided. Seeds 0.25–0.3 cm long, ovoid, subacute, hygroscopically hairy and with dense fringe on margin.

*Fls. & Frts.*: November–March.

*Distrib.*: Infrequent. Ratnagiri, Satara, Sindhudurg.

**Synnema Benth.**


Herbs, prostrate; stems subquadrangular. Leaves subsessile, 2.8 x 1.1 cm, upper surface hairy, lower less so but midrib below with a few, long stiff hairs. Flowers c 0.5 cm long, white, distant, solitary, axillary, sessile. Capsules c 0.7 cm long, c 0.12 cm across, minutely pubescent at tip. Seeds 10–12 in two rows, more or less tetragonal, light brown, margins hygroscopically hairy, sometimes also the surfaces partly.

*Fls. & Frts.*: October–December.

*Distrib.*: Infrequent. Bombay, Pune.

*Notes*: According to Sant. (1952) op. cit. the specimens from the above mentioned localities are not traceable in Blatter herbarium, Bombay. He further states (1967) that the occurrence of this plant is given on the authority of Blatter. He also states that from the description of the plant given by Blatter, it is very doubtful if the plant belongs to this genus at all; but in the absence of the actual type specimens it is scarcely possible to settle the position of the plant.

**Thelepaepale Bremek.**


Shrubs, straggling; branches terete. Leaves 6–18 x 3–6 cm, one of each pair usually smaller, elliptic–lanceolate, densely lineolate on both sides, the upper side and the nerves beneath rough with short, stiff hairs apex acuminate, base cuneate, often unequal sided margins crenate. Flowers white in pedunculate, ovoid, viscid, 1.0–3.5 cm long spikes. Capsules c 1 cm long, obovoid, compressed, mucronate. Seeds 2, c 0.5 cm long, ovoid, subacute, flattened, hygroscopically hairy, very densely so on the margins.

*Fls. & Frts.* : November–March.

*Illus.* : Wight, Ic. t. 1523. 1849 (*Strobilanthes neesiana*); Bedd. Ic. 47, t. 203. 1874 (*Strobilanthes ixiocephala*).


**CULTIVATED AND INTRODUCED SPECIES :**


Undershubs, softly wooly. Leaves elliptic. Flowers pale blue or violet–purple in clusters of 3–8 on c 30 cm long, panicle; bracts 0.2 cm long; calyx 5–lobed, segments linear, almost equal; corolla 2.5 cm long, tube nearly straight, widened suddenly near middle, segments 5, nearly equal.

*Fls. & Frts.* : November–April.


Shrubs, 1 m tall. Leaves 10–15 cm, ovate–elliptic or oblong, acuminate, entire, more or less undulate or wavy, strongly veined, light–green beneath and deep green above. Flowers deep orange, sometimes tinged scarlet, the lower lip with large oval pointed declined lobes; bracts serrate.

Distrib.: Grown in gardens. Pune.

Notes.: Native of Mexico, S. America.


Shrubs 1 m tall, rather straggling, branches nearly glabrous. Leaves 10–20 x 4–6 cm, ovate–elliptic, rounded or acute at base, sometimes decurrent, margins entire or subcrenate, acuminated at apex, glabrous above, pubescent beneath, petioles 1–4 cm long. Flowers 5–7 cm long, red, sessile in dense, tetragonal, axillary and terminal 5–20 cm long spikes. Capsules oblong, smooth, shining. Seeds fewer, flat, suborbicular.

Fls. & Frts.: September–December.


Notes.: Native of W. Indies.


Shrubs, 60 cm high with nodal spines. Leaves 10 cm long, narrow lanceolate. Flowers yellow, in terminal, ovoid–oblong hop–like spikes with large, broadly ovate bracts, overlapping corolla tube straight, 2.5 cm long; bracts ovate, overlapping.

Fls. & Frts.: August–December.


Notes.: Native of Mauritius.

### B. rosea

Is also said to be grown in gardens. Bombay.


Undershubs; stems 4–gonous, striated; nodes swollen. Leaves opposite, 3.5–8 x 1.5–3 cm, ovate–oblong, narrowed at base, margins
entire, acute or sub–acute at apex, thinly pubescent above, densely so beneath, petioles 0.5–2 cm long. Flowers white with purple tinge in axillary and terminal, short peduncled 5–15 cm long spikes. Capsules 1.5–2 cm long, ellipsoid, hairy, apiculate. Seeds 4, compressed, smooth, shining.

*Fls. & Frts.* : August–October.


*Notes.* : Native of Mexico.


1. Stem and leaves thinly pubescent or glabrescent; corolla orange–red with yellow throat … var. *crocea*

1. Stem and leaves densely grey–pubescent; corolla salmon pink with deep red throat … var. *salmonea*

var. *crocea* Trin.

Herbs, 0.3–1 m tall; stems terete, at the top. Leaves 3–12 x 1.5–5 cm (excluding decurrent base), finely densely pubescent. Spikes erect or erecto–patent, robust, 4–12 cm long, acutely tetragonal peduncles; bracts 1.3–1.6 cm long, ovate–oblong. Flowers 2.5–8 cm long, bright orange with yellow throat; corolla tube 1.75–2.25 cm long, pale densely pubescent above the widened hard base, limb 2.5–4 cm across, often bearing 4–6 expanded flowers at time.

*Fls. & Frts.* : November–December.

*Illsus.* : Wight, Ic. t. 460. 1840–43.

*Distrib.* : Grown in home gardens in the state.

var. *salmonea* Bremek.

Herbs; stems densely grey pubescent. Leaves densely grey pubescent. Flowers salmon–pink with deep–red throat.

*Fls. & Frts.* : November–December.

*Distrib.* : Grown in home gardens in the state.

**Dianthera secunda** Greseb. in Goett. Abh. 7: 246. 1857.
Herbs. Leaves elliptic, slender-pointed. Flowers pinkish-red in terminal 1-sides, loose, many flowered racemes.

**Fls. & Frts.** : October–December.

**Distrib.** : Grown in gardens. Pune.

**Notes.** : Probably a native of West Indies, Panama.


Undershrubs. Leaves 22 x 6.5 cm, elliptic, acuminate at both ends, undulate–crenulate, rhaphides sunk, obscure; petioles 1–3.5 cm long. Flowers reddish-pink, subsessile often fascicled, tube crimson, 3.3 cm long, linear, limb 2, lipped, lobes of lip wider than those of the upper, eye often more intensely crimson, sometimes yellowish spot on the lower midlobe of the lower lip in spikes rather short rigidly panicled fuscous–puberulous.

**Fls. & Frts.** : November–December.


**E. cooperii** Hook.


**E malaccense** C. B. Cl. in Hook. f. Fl. Brit. India. 4: 498. 1884.

Undershrubs, 1 m tall. Leaves c 13.5 x 3 cm, broadly lanceolate, base cuneate, apex acuminate, obscurely or obsolescently lineolate, minutely pilose on the middle beneath. Flowers pale blue or purple in 5–15 cm long spikes. Capsules young, ones sparsely pilose, soon glabrous.

**Fls. & Frts.** : November–December.

**Distrib.** : Grown in gardens. Pune.

**Notes.** : It seems plentiful at Malacca and probably occurs in Malay Isles.

**E. pictum**

**Fls. & Frts.** : October–December.

E. rubrum

*Fls. & Frts.*: October–December.


Gendarussa Nees


Shrubs, c 1 m tall, much branched; stems violet–brown glabrous or finely pubescent. Leaves 5–20 x 1–3.5, lanceolate, base cuneate, apex acute or acuminate dark green with dark violet veins. Flowers white or rose with purple blotch and streaks in axillary spikes or 3–12 cm long terminal panicles.

*Fls. & Frts.*: November–April.

*Distrib.*: Grown as border or edging in shady situations. Kolhapur, Marathwada (Naik, op. cit.), Raigad, Ratnagiri, Satara, Sindhudurg.

*Notes.*: Plant smells scented, probably a native of China.

Graptophyllum Nees


Shrubs, 3 m erect. Leaves 10–15 cm, elliptic, more or less tapering to a short petiole of c 0.6 cm, acuminate or short acute, entire, purplish or crimson, variously marked and blotched yellow. Flowers dark purple or crimson, c 3.7 cm long, widely gaping and strongly 2–lipped with side lobes of lower lip turned down; stamens exserted ascending and prominent. Capsules oblong, hard, contracted into a long stalk. Seeds usually 2, orbicular or subquadrate, compressed, flat, lacunose–rugose.

*Fls. & Frts.*: October–December.

Notes: Probably of New Guinea widely cultivated in warm regions as a foliage plant.


Herbs, scapigerous; stems 2.5–7.5 cm, villous. Leaves 7.5 x 3.0 cm, elliptic–lanceolate, apex obtuse, base acuminate, margins undulate–crenate, pubescent beneath especially on nerves, glabrate, lineolate above; petioles 3 cm long. Flowers 2 cm long with peduncles; panicles 12–22 x 2 cm; cymes small, subfascicled. Capsules 2 cm, long.

*Fls. & Frts.*: November–March.

*Illus.*: Bedd. Ic. Pl. Ind. or. t. 265. 1868–1874.

*Distrib.*: Grown in gardens. Pune, Sindhudurg.

**Jacobinia ghiesbreghtiana** Hemsl. (*Justicia ghiesreghitiana* Lem.).

Shrubs, 1.5–2 m tall, glabrous or pubescent; nodes somewhat swollen, much branched. Leaves 7.5–15 cm, lanceolate to narrow elliptic, tapering at both ends, short petioled, entire. Flowers orange to crimson, mostly 2 together and sessile in forking axillary peduncled open little panicles with small bracts smaller than calyx, corolla 3.7 cm long, lipped about one third distance from apex, c 0.6 cm broad at widest part, broad lower lip deflexed and becoming coiled; calyx with broad but acute lobes c 0.3 cm long.

*Fls. & Frts.*: October–December.

*Distrib.*: Grown in gardens. Pune.

**Justicia lobii**

*Fls. & Frts.*: December – February.


Herbs, erect. Flowers in 2–5 cm subsessile spikes. Capsules c 0.6 x 0.4 cm, clothed with somewhat deflexed hairs. Seeds c 0.3 cm across, orbicular, flat, yellow.
Fls. & Frts. : November–December.


Shrubs, upto 1 m tall with underground stolons; stems angled striated. Leaves 7–15 x 2–6 cm, ovate or elliptic–oblong, base obtuse or rounded, margins sinuate–dentate, apex acuminate; petioles c 1.2 cm long. Flowers bright red in terminal shortly peduncled, dense 10–15 cm long spikes.

Fls. & Frts. : March–April.

Distrib. : Grown in gardens for ornamental purpose. Aurangabad.

Notes. : Native to French Guyana.

**Peristrophe salicifolia** Miq. (*P. angustifolia* Nees var. *aureavariegata* Hort.).

Leaves variegated at the centre with yellow.


Notes. : Useful for vases and basket bouquet.


Shrubs, 60–120 cm tall; stems terete, much branched. Leaves 5–12 x 3–6, ovate, base rounded or subacute, margins entire or shallowly crenate, apex acuminate, green or variegated with white. Flowers white blotched with pink–purple in axillary, 1–3 flowered cymes or combined into terminal panicle.

Fls. & Frts. : September–October.

Distrib. : Grown in gardens for ornamental purpose. Osmanabad (Naik, op. cit.).
Notes. : Native of Philippine gardens.


Shrubs, 60–120 cm tall; stems terete, much branched. Leaves 5–12 x 3–6, ovate, base rounded or subacute, margins entire or shallowly crenate, apex acuminate, dark red, variegated with pink. Flowers pink–purple, blotched with dark purple in axillary 1–3–flowered cymes or combined into terminal panicle.

Fls. & Frts. : September–October.

Distrib. : Grown in gardens (Naik op. cit.).

Notes. : Native of Melanesia (Naik, op. cit.). Naik, op.cit. opines that this species is ‘very similar to P. bicolor (Schrank.) Radlk. ex Lindau’ differing only in dark red, variegated with pink leaves and corolla pink–purple with darkdots.


Undershrubs, 30–90 cm tall, nearly glabrous, erect or decumbent, nodes thickened. Leaves opposite, 6–15 x 0.5–2 cm, nearly oblong to linear, base and apex acute, margins entire or distantly and shallowly crenate, minutely pubescent, green above, yellowish beneath; petioles absent or very short. Flowers lavender blue in axillary, lax 3–6 cm long angled, peduncled cymes. Capsules 2–3 cm long, linear–fusiform, acute. Seeds many, orbicular, compressed, hygroscopically hairy.

Fls. & Frts. : June–October.

Distrib. : Grown as border in gardens. Aurangabad, Sindhudurg.

Notes. : Native of Mexico.


Shrubs upto 1 m tall; stems quadrangular, thickened at nodes. Leaves 10–25 x 5–12 cm, ovate or elliptic–oblong, base acute, margins coarsely serrate, apex acuminate, petioles 2.5 cm long. Flowers violet–red in terminal branched spikes.

Fls. & Frts. : September–October.

Shrubs c 1 m tall. Leaves 10–30 x 5–12 cm, ovate–oblong, base tapering and forming a distinct wing along the petiole, margins entire, apex acute or acuminate; midrib and lateral veins yellow. Flowers yellow, tinged with red in terminal, erect, sparingly branched spikes.

**Fls. & Frts.**: September–October.

**Distrib.**: Planted in gardens. Marathwada (Naik, op. cit.).

**Notes.**: Native of Equador.

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**THUNBERGIACEAE**

*(S. Moorthy)*

**THUNBERGIA** Retz. (nom. cons.)

1. Flowers yellow … *T. mysorensis*
2. Flowers white:
   1. Basal half of the leaf–blade, on each side, with two patent lobes; ovary and capsule glabrous … *T. fragrans*
   2. Basal half of the leaf–blade, on each side, with a single patent lobe; ovary and capsule puberulous … *T. laevis*


Twiners, slender, herbaceous. Leaves 5–7 x 1–3.5 cm, ovate–lanceolate to oblong, base subcordate, hastate or truncate, apex, obtuse or subacute, margins subentire–sinuate, scabrid or at maturity glabrate on upper surface. Flowers white, upto 3 cm. Capsules 2–2.5 cm long, glabrous, shining. Seeds 0.4–0.5 cm, rugose.

**Fls. & Frts.**: September–December.

**Illus.**: Bor. & Raiz. op. cit.

**Distrib.**: Frequent. Ahmednagar, Bombay, Kolhapur, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

Herbs, perennials; stems long, slender, twining, swollen at nodes, sparingly hairy. Leaves 5–8 x 2–4 cm, deltoid–ovate with a single patent lobe on each side at base, margins entire, apex acute, apiculate; petioles 0.5–3 cm long. Flowers white in axillary, solitary or 2–together; pedicels 2–5 cm long. Capsules 2–2.5 cm long, clavate, beaked, puberulous. Seeds 4, 0.3–0.4 cm across, hemispheric, orbiculate–rugose.

**Fls. & Frts. :** August–December.

**Distrib. :** As an undergrowth near stream banks, occasional. Also grown in gardens. Aurangabad, Jalna, Nanded, Osmanabad.

**Notes. :** Although thickened nature of pedicels of fruits given as a character for *T. laevis* it is not dependable as it is not uniform with all the pedicels in one and the same specimen.


Climbers, extensive; branches slender. Leaves opposite, 7.5–12.5 x 2.5–3.5 cm, elliptic–lanceolate, base rounded, margins toothed, apex acuminate. Flowers yellow, 5–7 cm long, in lax, pendant racemes. Corolla tube 5 cm long, shortly conical below, swelling above and ending in four lobes; the upper lobe erect with reflexed side lobes; the lower lip of 3 subequal spreading lobes. Capsules c 3 cm long, glabrous. Seeds rugose.

**Fls. & Frts. :** December onwards.

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

**Distrib. :** Found planted, sometimes, an escape also. Pune, Satara, (Cooke, op. cit.).

**Notes. :** This plant is reported to be wild in south India in western ghats (Nilgiris), S. Canara and Mysore to Travancore and Tirunelvelly upto 1000 m, cultivated in the plains throughout India.
Thunbergia laevis Nees
CULTIVATED AND INTRODUCED SPECIES:


Twiners, herbaceous; stems thinly hairy. Leaves 3–15 x 2.5–10 cm, ovate, base sagittate or hastate, margins entire or remotely dentate, apex acute and pointed, pubescent above, densely so beneath; petioles 2–3 cm long, winged to the base. Flowers orange–yellow with dark purple or brown centre or entirely orange, sometimes milky white, solitary or paired in the leaf–axils. Capsules 1.5–2 cm long, clavate with a solid stalk. Seeds 4, subglobose, irregularly reticulately ribbed.

*Fls. & Frts.* : September–December.

*Distrib.* : Grown as hedges in gardens. Amravati, Aurangabad, Kolhapur, Pune.

*Notes.* : Native of Tropical Africa. The plants often called "black eyed Susan" by Anglo Indians owing to dark coloured eye at the base of the corolla limb.


Climbers, woody, glabrous; branches 4–angled. Leaves 7.5–12.5 cm, ovate–lanceolate to broadly ovate, subcordate or hastate at base, acuminate–pointed at apex, –5 nerved from base, upper margins entire or somewhat sinuate–dentate. Flowers scarlet with yellow throat in pendulous mostly large terminal and axillary racemes; calyx very small and indistinctly toothed; corolla lobes reflexed, limb, calyx and corolla tube covered by the large spathe like bracts.

*Fls. & Frts.* : December–April.


*Notes.* : A native of India, outer Himalayas from Kumaon east–wards, Khasia hills but cultivated in gardens throughout India.

Shrubs, 1–2 m tall; branches many from the base, more or less glabrous. Leaves 2–6 x 1–3 cm, ovate, base obtuse or cuneate, margins entire or coarsely toothed in the upper half, apex acute or rather obtuse; petioles 0.2–0.5 cm long. Flowers yellowish–white with blue–purple limb, solitary, axillary; pedicels 1–2 cm long.

*Fls.* : September–October.

*Distrib.* : Grown in gardens, Marathwada (Naik, op. cit.); Bombay, Nagpur, Pune, Sindhudurg.

*Notes* : Native of Tropical Africa.


Shrubs with underground stolons; stems twining, young parts pubescent. Leaves 6–15 x 5–15 cm, broadly ovate, shallowly or deeply palmatifid, base cordate, margins broadly dentate, apex acute or obtuse, pubescent on both surfaces; petioles 3–12 cm long. Flowers large, pale or deep blue with white tube or rarely entirely white in terminal, lax, long racemes; pedicels 4–15 cm long. Capsules 2–5 cm long, shaped like a bird’s head.

*Fls. & Frts.* : September–October.


*Notes.* : Native of Bangladesh or S.E. Asia.


Climbers, woody, large; shoots 4–angled, hairy. Leaves toothed or lobed, base rounded. Flowers 7.5 cm long, blue, white with yellow throat in axillary whorls or in a raceme in which they are also clustered or whorled; corolla with a wide, oblique trumpet shaped tube and a long 5–lobed limb.

*Fls. & Frts.* : October–February.

*Distrib.* : Infrequent. Amravati (Melghat).
VERBENACEAE
(P. V. Prasanna)

1. Inflorescence of cylindric or capitate spikes:
   2. Erect shrubs...
      LANTANA
   2. Prostrate or erect undershrubs or herbs:
      3. Stems rooting at nodes; leaves spathulate...
         PHYLA
      3. Stems not as above; leaves obovate–elliptic:
         4. Suffrutescent undershrubs; flowers sunk in the thickened rachis...
            STACHYTARPHETA
         4. Erect herbs; flowers not as above:
            5. Leaves pinnatifid; pyrenes 1–seeded...
               VERBENA
            5. Leaves not as above; pyrenes 2–seeded...
               PRIVA

1. Inflorescence cymose:
   6. Dwarf undershrubs; stems rhizomatous...
      PYGMAEOPREMINA
   6. Erect or scandent shrubs or trees; stems not as above:
      7. Leaves digitate...
         VITEX
      7. Leaves simple:
         8. Corolla bilipped; stamens didynamous...
            CLERODENDRUM
         8. Corolla regular; stamens equal:
            9. Flowers c 3.5 cm long...
               GMELINA
            9. Flowers c 0.5 cm long:
               10. Inflorescences axillary...
                   CALLICARPA
               10. Inflorescences terminal:
                   11. Branches stellately tomentose; stamens 5–6...
                       TECTONA
                   11. Branches glabrous; stamens–4...
                       PREMNA

CALLICARPA L.


Shrubs or small trees, 5–10 m tall, much branched. Leaves 10–20 x 5–12 cm, ovate, apex acuminate, base rounded, upper surface glabrous, lower surface densely tomentose. Cymes stellately tomentose.
Flowers 0.4 cm long, pale pink, sessile; calyx densely tomentose. Drupes 0.2–0.4 cm across, globose, black.


*Distrib.* : Frequent in semi evergreen and moist deciduous forests. Ahmednagar, Bombay, Kolhapur, Nasik, Parbhani, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**Clerodendrum L.**

1. Inflorescence in axillary cymes, few–flowered ... *C. inerme*
2. Leaf margins distinctly serrate; flowers bluish or bluish–purple ... *C. serratum*
3. Drupes obovoid, 4–lobed; calyx enlarged in fruits ... *C. multiflorum*
4. Drupes globose, entire; calyx not as above ... *C. viscosum*


Shrubs, c 2.5 m tall, much branched, straggling. Leaves 2–5 x 1.0–2.5 cm, elliptic–obovate, apex obtuse, base attenuate. Flowers c 3.5 cm long, white, with pink tinge; filaments hairy at base. Drupes 0.8–1.2 cm long, pyriform, black when mature, encircled by persistent calyx.

*Fls. & Frts.* : May–December.


*Distrib.* : Common in deciduous forests and village outskirts, usually grown as hedge plant.

Trees or scandent shrubs, c 9 m tall; branches pubescent. Leaves 3–9 x 0.5–4 cm, ovate to subrhomboid, apex obtuse or acute, margins crenate–dentate. Inflorescences of terminal panicles, pubescent. Flowers c 4 cm long, pinkish–white; corolla minutely pubescent. Drupes c 0.7 cm long, calyx lobes persistent.

**Fls. & Frts.**: November–March.


**Distrib.**: Common in deciduous forests.


Shrubs, c 3 m tall. Leaves 8–30 x 3–14 cm, elliptic–ovate or oblong, apex acute or sharply acuminate. Inflorescences of pubescent panicles. Flowers 12.5 cm long. Drupes c 0.8 x 0.6 cm, obovoid.

**Fls. & Frts.**: July–December.


**Distrib.**: Common in deciduous forests.


Shrubs, c 3 m tall, woody; branches yellow, villous. Leaves 5–20 x 3.5–15 cm, broadly ovate, villous on both sides, apex acuminate, base cordate or rounded. Panicles terminal. Flowers white, with pinkish tinge. Drupes c 0.8 cm across, black.

**Fls. & Frts.**: June–November.

**Illus.**: Wight, Ic. t. 1471. 1849 (*C. infortunatum*).

**Distrib.**: Common in moist deciduous to semi–evergreen forests.

**Notes**: The leaves of this plant have been used as a cheap substitute for 'Chiretta' as a tonic and antiperiodic (Cooke, op. cit.).
Gmelina arborea


Trees, c 15 m tall. Leaves 4–18 x 3–13 cm, broadly ovate, apex acuminate, base cordate. Inflorescences in terminal panicles, branches densely fulvous hairy. Flowers light yellowish–brown. Drupes 2–2.5 x 1 cm, obovoid or pyriform, green to yellow when ripe.

Fls. & Frts.: February–July.


Distrib.: Common in deciduous forests.

G. asiatica


Shrubs, c 2 m tall. Leaves 1–3.5 x 0.4–2.5 cm, ovate, apex obtuse, base acute, margins obscurely lobed. Inflorescences of terminal pubescent racemes. Flowers yellow. Drupes c 1.8 cm long, ovoid or obovoid.

Fls. & Frts.: November–June.


Distrib.: Frequent in deciduous forests. Bombay, Pune, Nagpur, Raigad, Ratnagiri, Thane, also occasionally grown in gardens. Aurangabad, Beed & Nanded (Naik, 1998).

Lantana L.

1. Shrubs; leaves scabrous pubescent

L. camara

var. aculeata

1. Undershrubs; leaves velvety pubescent

L. salvifolia

Shrubs, 2–3 m tall, much branched. Leaves 2.5–7 x 1.5–5 cm, ovate–elliptic, apex acute, base rounded, margins crenate–serrate. Inflorescence of terminal and axillary spikes. Flowers c 1.5 cm long, orange–red, turning into scarlet. Drupes c 0.4 cm across, globose, fleshy, black coloured when ripe.

*Fls. & Frts.*: Throughout the year.


*Distrib.*: Common in waste places and scrub forests.


Undershubs, 1.5–3 m tall. Leaves 2–9 x 1–5 cm, ovate–elliptic, apex acute, base rounded, margins crenate. Inflorescences in capitate spikes. Flowers c 1 cm long, white or purple tinged with yellow throat. Drupes c 0.4 cm across, obovoid, subglobose.

*Fls. & Frts.*: Throughout the year.

*Illus.*: Wight, Ic. t. 1464. 1849.

*Distrib.*: Infrequent in the sandy soils. Akola, Aurangabad, Buldhana, Chandrapur, Jalna, Pune.

**Phyla Lour.**


Herbs, prostrate; stems appressed hairy. Leaves 0.3–2.5 x 0.1 cm, elliptic–obovate, upper half serrate, appressed hairy, base attenuate. Inflorescences of axillary spikes. Flowers c 0.3 cm long, whitish–pink. Drupes c 0.2 x 1.5 cm, ellipsoid.

*Fls. & Frts.*: August–December.
**Premna L. (nom. cons.)**

1. Scandent shrubs; leaves coriaceous; flowers white
   - ... *P. coriacea*

   1. Erect shrubs or trees; leaves membranous; flowers greenish–white :
      2. Older branches armed; leaves appressed pilose on midrib and veins
         - ... *P. obtusifolia*
         - var. *pubescens*
         - f. *serratifolia*
      2. Older branches unarmed; leaves glabrous
         - ... *P. latifolia*
         - var. *viburnoides*


Shrubs; stems covered with corky lenticels. Leaves 8–18 x 3–12.5 cm, ovate to broadly elliptic, apex caudate, base rounded. Inflorescences of terminal, compound corymbs. Flowers c 0.4 x 0.15 cm. Drupes c 0.4 cm long, obovoid.


Shrubs, c 8 m tall; bark corky, light yellow. Leaves 4–9 x 3–6 cm, ovate, apex acute–apiculate, base rounded, margins serrate. Inflorescences of terminal corymbose panicles. Flowers greenish–white. Drupes light green at maturity, black when dry.

*Fls. & Frts.* : April–August.


Woody shrubs. Leaves 5–8.5 x 3–6.5 cm, ovate or broadly elliptic, apex acuminate, base subcordate. Inflorescences corymbose. Flowers 0.3–0.4 cm, greenish–white. Drupes c 0.4 cm across, subglobose.  

*Fls. & Frts.* : July–May.  


**Priva** Adans.  


Herbs, 30–90 cm tall; stems strigose with small, hooked hairs. Leaves 2–7 x 1–5 cm, ovate–elliptic, apex obtuse, base subtruncate, margins uniformly serrate, pubescent on lower surface. Inflorescences of terminal, spicate racemes. Flowers 1–2 cm long, white, strigose. Pyrenes c 0.5 x 0. 4 cm, obcordate, densely hirsute.  


*Distrib.* : Infrequent. Aurangabad, Beed, Bombay, Jalna, Raigad, Osmanabad.

**Pygmaeopremna** Merr.  


**Fls. & Frts.:** April–August.

**Distrib.:** Infrequent. Nagpur.

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**STACHYTARPHETA Vahl**


Undershubs, c 1 m tall. Leaves 3–7 x 1.5–4 cm, broadly elliptic, apex acute, base oblique, margins sharply serrate. Inflorescences spiciform c 30 cm long, terminal. Flowers bluish–violet. Drupes c 0.4 cm long, oblong, splitting into 2 pyrenes.

**Fls. & Frts.:** June–December


**Distrib.:** It is a native of America, occasionally planted in gardens as an ornamental. Commonly naturalised.

**Notes:** According to Rajendran & Daniel (op. cit. p. 165–173) *Stachytarpheta indica* (L.) Vahl, a native of north western Africa, does not occur in India. The name *S. indica* is found to have been misapplied mostly to *S. jamaicensis* (L.) Vahl and rarely to *S. urticifolia* Sims by Indian authors.

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**TECTONA L. f. (nom. cons.)**


Trees, c 50 m tall. Leaves 30–60 x 15–30 cm, elliptic or obovate, apex acute or acuminate, base cuneate, upper surface glabrous and rough, lower surface stellate grey or tawny tomentose. Inflorescences of erect, terminal panicles. Flowers white. Drupes subglobose.

**Fls. & Frts.:** August–December.


**Distrib.:** Common in deciduous forests.
VERBENA L.


Herbs, 40–65 cm tall. Leaves 3–10 cm long, oblong or ovate, apex acute, base narrowed, margins toothed. Inflorescences in simple or branched spikes, c 20 cm long. Flowers pale purple. Drupes splitting into 4, oblong, rugose, brown pyrenes.

**Fls. & Frts.** : December–August.

**Distrib.** : Infrequent, naturalised along roadsides. Osmanabad (Naik, op. cit.).

VITEX L.

1. Shrubs :
   2. Leaves 1–3–foliolate; leaflets sessile ... *V. trifolia*
   3. Leaves 3–5–foliolate; leaflets with petiolules ... *V. negundo*

1. Trees :
   3. Common petiole winged; leaflets subsessile, obovate ... *V. altissima*
   3. Common petiole not winged; leaflets petiolulate, oblong–elliptic ... *V. leucoxylon*


1. Petioles broadly winged ... var. *alata*
1. Petioles narrowly winged ... var. *altissima*

var. *altissima*. 'Balage', 'Bavalge'.

Trees, c 20 m tall; young shoots villous. Leaves 3–foliolate; leaflets 5–14 x 2–5 cm, chartaceous, apex acuminate, pubescent above when young, glabrous at maturity, sparsely pubescent beneath, margins slightly repand–undulate. Inflorescences of racemose panicles, terminal or axillary from upper leaves. Flowers c 0.9 cm long, blue–lilac. Drupes c 0.5 x 0.4 cm, black, globose, fruiting calyx enlarged, fulvous villous.

**Fls. & Frts.** : March–August.

**Distrib.** : Frequent. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**Uses** : It is used for building purposes and for making furniture and carts (Cooke, op. cit.).


**Fls. & Frts.** : April–May.

**Illus.** : Rheede, Hort. Malab, 5: t. 1. 1685; Wight, Ic. t. 1466. 1849.

**Distrib.** : Rare along hill slopes. Raigad, Satara, Sindhudurg.


Trees, c 20 m tall; young shoots pubescent. Leaves 3–5–foliolate (when 5–foliolate, basal pair of leaflets much smaller); leaflets 2–10 x 0.8–4 cm, petiolulate, glabrous above, sparsely pubescent beneath, apex obtuse–acute, base acute. Inflorescences of axillary, corymbose cymes. Flowers c 1.5 cm long, white with purple tinge; calyx cupuliform, pubescent; corolla pubescent at throat. Drupes c 1.8 x 0.7 cm, green, enclosed by enlarged flattened persistent calyx.

**Fls. & Frts.** : April–June.


**Distrib.** : Frequent on banks of streams and in forests. Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

1. Leaflets acute at apex ... var. *intermedia*
2. Leaflets acuminate at apex:
   1. Leaflets entire along the margins ... var. *negundo*
   2. Leaflets incised–serrate along the margins ... var. *incisa*

**var. negundo.** 'Nigad', 'Nirgudi', 'Nirgundi', 'Nirguri'.

Shrubs, 5 m tall; branches greyish–white with fine tomentum. Leaflets 3–10 x 1–2.5 cm, ovate–lanceolate, base acute, margins entire–sinuate with few scattered teeth in middle above. Inflorescences of terminal, compound, pyramidal, paniculate cymes, branches tomentose. Flowers c 0.4 cm long, bluish–purple; calyx white tomentose. Drupes c 0.4 x 0.3 cm, ovoid, enclosed by campanulate fruiting calyx.

*Fls. & Frts.*: January–June.

*Illus.*: Wight, Ic. t. 519. 1842.

*Distrib.*: Common throughout the state as hedges along fields.

*Note*: The leaves are agreeably aromatic when bruised and are employed in native medicine. A pillow stuffed with the leaves is placed under the head to relieve headache. Leaves are also employed as remedy in inflammatory swellings of joints (Cooke, op. cit.).


Shrubs Leaflets 3–5, elliptic or oblong, c 7.5 x 3 cm, bluntly acuminate; lateral leaflets sessile

*Fls. & Frts.*: January–June.

*Distrib.*: Occasional along hedges. Ratnagiri, Satara.

Vitex trifolia L.
Shrubs, upto 3 m tall. Leaves 3–foliolate; leaflets tomentose below, lateral 2 leaflets subsessile or shortly petioluled. Inflorescences of terminal, cymose panicles. Drupes black.


*Distrib.* : Occasional along the hedges. Ratnagiri.


Woody shrubs upto 4 m tall; young vegetative parts greyish–tomentose. Leaflets 3–7 x 1–3 cm, terminal leaflet subsessile, lateral leaflets sessile, apex obtuse to subacute, base cuneate–attenuate, white tomentose beneath, glabrous above. Inflorescence of terminal, tomentose panicles c 13 cm long. Flowers c 1.3 cm long, white. Drupes c 0.5 x 0.4 cm, globose.

*Fls. & Frts.* : August–February.


**CULTIVATED SPECIES :**


Trees; branches drooping. Leaves 10-15 x 4-6 cm, elliptic or lanceolate, obtuse at apex, cuneate at base, puberulous on veins of lower surface. Flowers white, fragrant, in drooping racemes; calyx cupular, pubescent above; corolla white; stamens included. Fruits fleshy, orange coloured.

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


*Notes.* : Native of West Indies.


Armed shrubs, up to 4 m tall. Leaves 1-5 x 1-2 cm, oblong-elliptic or ovate, acute at apex. Flowers white, fragrant, in axillary cymes; stamens exserted. Drupes obovoid, breaking into 2 pyrenes at maturity.
Fls. & Frts. : August-April.

Distrib. : Planted in gardens. Pune.

Notes. : Native of West Indies.


Erect shrubs; branches drooping. Leaves 2-5 x 2-3 cm, ovate, margins deeply crenate-serrate, pubescent on both surfaces. Flowers in lax panicles; calyx hairy outside, 5-partite; corolla white, pubescent outside. Drupes 1-1.5 cm across, globose.

Fls. & Frts. : September-December.


Erect or scrambling shrubs. Flowers in globose terminal heads, white.

Fls. & Frts. : February–March.

Distrib. : Cultivated in gardens. Thane.

Notes. : A native of Africa.


Erect shrubs up to 5 m tall. Leaves opposite or whorled, ovate, glabrous above and gland dotted beneath. Flowers white, in corymbose terminal panicles; corolla finely puberulous.


Shrubs, up to 2.5 m high. Leaves elliptic–lanceolate, verticillate, acute at apex. Flowers white, in terminal panicles; corolla tube curved. Drupes obovoid, enclosed by enlarged calyx.

Shrubs, erect, pubescent throughout. Leaves 5-25 x 3-20 cm, broadly ovate, acute-acuminate at apex, cuneate at base. Flowers pinkish–white, in terminal corymbose panicles; calyx 5-partite; corolla white-pink. Fruits drupaceous.

**Fls. & Frts.**: July–October.

**Distrib.**: Grown in gardens as ornamental. Aurangabad, Nasik, Pune, Ratnagiri, Thane.

**Notes.**: This is native of China.


Shrubs; stems bluntly 4–angled. Leaves cordate–ovate, opposite; petioles hairy. Inflorescences in panicles. Flowers bright scarlet; calyx short toothed; corolla tube c 2.5 cm long. Drupes scarlet.

**Fls. & Frts.**: July–October.

**Distrib.**: Occasionally cultivated in gardens.


Scandent shrubs; stems tomentose. Leaves 6–10 x 4–8 cm, ovate–oblong, acute at apex, cordate at base, pubescent on nerves beneath, punctate all over. Flowers in much branched cymose panicles; calyx 5–partite; corolla scarlet–red, tube slender.

**Fls. & Frts.**: September–December.

**Distrib.**: Grown as ornamental. Aurangabad, Pune.

**Notes.**: Native of Tropical Africa.

**C. thomsoniae** Balf. in Edinb. Phil. J. II. 15: 233. 1862; Bor & Raiz. Some Beautiful Indian climbers and shrubs 160. 1990 (Repr.).
Evergreen climbing shrubs. Leaves ovate-oblong, apex acuminate. Flowers in forking racemes, axillary or terminal, crimson coloured; calyx angled, white; corolla lobes spreading.

*Distrib.*: Cultivated as ornamental plant. Bombay, Pune.

*Notes.*: Native of Tropical Africa.


Shrubs. Leaves elliptic-lanceolate. Flowers white, in pendulous paniced cymes; calyx accrescent; corolla tube obovate. Drupes deep purple.

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

*Distrib.*: Occasionally cultivated.


Bushy shrubs; branches spiny. Leaves 4-8 x 2-4 cm, ovate or elliptic-oblong, acute at apex, cuneate at base, minutely gland dotted below. Flowers in terminal panicles; calyx pubescent; corolla white or bluish-violet, corolla tube pubescent inside. Fruits drupaceous, orange coloured.

*Fls. & Frts.*: Throughout the year.

*Distrib.*: Planted along hedges. Common.

*Notes.*: Native of America.


Scandent shrubs; branches with or without spines. Leaves 4-10 x 3-5 cm, acute or obtuse at apex, cuneate at base, scaly between pubescent nerves. Flowers in panicles, branches drooping; bracts broadly ovate; calyx 5-toothed; corolla yellow, pubescent outside. Fruits drupaceous, yellow when ripe.

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

Straggling shrubs; branches puberulous. Leaves 6–10 x 3–5 cm, ovate–oblong, acute or acuminate at base, subcordate or cuneate at base, pubescent along nerves beneath. Flowers in axillary and terminal racemes, red coloured; calyx saucer shaped; corolla pubescent outside, brick red, slightly curved. Fruits drupaceous, black.

Distrib. : Grown in gardens as ornamental. Ahmednagar, Aurangabad, Bombay, Nagpur, Pune, Thane.

Notes. : Native of Tropical Himalayas.


Rambling shrubs; branches grey–tomentose. Leaves opposite, grey tomentose or pubescent beneath. Inflorescence of axillary or terminal panicles, pyramidal. Flowers white; calyx and corolla pubescent. Capsules obovoid, 4–winged.


Lianas; stems covered with greyish pubescence. Leaves 6–12 x 3–7 cm, elliptic–oblong or ovate–lanceolate, acute at apex, cuneate at base, densely scaberulous on upper surface, pubescent on nerves beneath; calyx campanulate, petaloid; corolla deep violet or purplish, often deciduous, sparsely pubescent.

Distrib. : Grown as ornamental in gardens. Ahmednagar, Aurangabad, Bombay, Nagpur, Pune.

Notes. : A native of Tropical America.

Herbs, woody at base; branches pubescent. Leaves ovate–oblong, acuminate at apex, cuneate at base. Inflorescences of stout, terminal, spikes. Flowers crimson–rose; calyx 4–toothed; corolla limb 5–lobed.

*Fls. & Frts.* : June–October.

*Distrib.* : Cultivated in plains.

*Notes.* : Native of Tropical America.

**Verbena bipinnatifida** Schauer. in DC. Prodr. 11: 553. 1847; Bailey, Man. Cult. Pl. 840. 1949.

Herbs, stems hirsute. Leaves deeply pinnatifid, hirsute on both surfaces. Flowers in dense, corymbose, capitate heads; calyx 5–toothed; corolla white or pink–purple. Fruits schizocarpic, splitting into nutlets.

*Fls. & Frts.* : November–February.


*Notes.* : A Native of Europe.


Herbs; stems creeping at base, hairy throughout. Leaves oblong–ovate, apex obtuse. Inflorescences glandular. Flowers red–pink or variegated; calyx short toothed; corolla tube hairy inside and glandular pubescent outside.


Herbs, c 30 cm high; stems creeping at base, ascending, 4–angled. Leaves oblong–lanceolate, rigid, hispid, acute at apex. Inflorescences of terminal panicles. Flowers bluish–purple; calyx hairy; corolla thinly villous outside. Fruits ovoid, enclosed in persistent calyx, separating into 4 pyrenes.

*Fls. & Frts.* : Throughout the year.

*Distrib.* : Grown as ornamental. Ahmednagar, Pune.

*Notes.* : Indigenous from Brazil to Argentina.


*Distrib.*: Grown as ornamental. Raigad.

**SYMPHOREMATACEAE**

*(P. V. Prasanna)*

**Symphorema** Roxb.

1. Leaves pubescent beneath; foliar bracts thinly pubescent ... *S. involucratum*

1. Leaves stellate tomentose beneath; foliar bracts densely pubescent ... *S. polyandrum*


Climbing shrubs. Leaves 5–10 x 3–5.5 cm, ovate–elliptic, apex acute to sharply acuminate, base rounded, margins crenate–serrate. Inflorescences of capitate, pubescent cymes. Flowers c 1 cm long, pale green to pale creamy or white; bracts 6, foliar, 1.5–4 x 0.5–1.5 cm, form an involucre around cyme, spathulate. Drupes subglobose.

*Fls. & Frts.*: March–May.


*Distrib.*: Frequent. Bombay, Pune, Raigad, Satara, Thane.


Climbing shrubs; young vegetative parts densely fulvous–pubescent. Leaves 3–12 x 2–8 cm, ovate or suborbicular, apex acute, base rounded. Inflorescences in capitate, pedunculate pubescent cymes. Flowers c 1.8 cm long, white, tomentose; involucral bracts foliar, c 3.5 cm long. Drupes 0.6–0.8 cm across, enclosed in persistent calyx.

*Fls. & Frts.*: February–July.

*Illus.*: Wight, op. cit.

AVICENNIACEAE
(P. V. Prasanna)

AVICENNIA L.

1. Stems blackish; inflorescence spicate; capsules ellipsoid ... A. alba
1. Stems greyish; inflorescence umbellate; capsules ovoid:
   2. Trees 10–20 m tall; capsules beaked ... A. officinalis
   2. Shrubs or small trees up to 6 m tall; capsules apiculate ... A. marina


Trees, up to 5 m tall; bark lenticelled. Leaves 5–12 x 1–3 cm, lanceolate, silvery papillose below, acute at apex, cuneate at base. Flowers in axillary or terminal spikes, yellow, fragrant. Capsules 3–5 cm long, ellipsoid, shortly beaked at apex.

Fls. & Frts.: March–August.
Illus.: Wight, Ic. t. 1482. 1849; Banerjee et al. op. cit.

Distrib.: Frequent along river banks near coastal aras. Bombay, Thane.


1. Trees, 3–5 m tall; leaves petiolate ... var. marina
1. Shrubs, 0.5–2 m tall; leaves subsessile or sessile ... var. acutissima

var. marina.

Trees, up to 5 m tall; bark lenticellate in younger parts. Leaves 2–6 x 1–3 cm, elliptic–oblong or elliptic–ovate, glabrous above, tomentose beneath. Flowers in condensed terminal cymes, pale yellow; calyx hairy; ovary villous. Capsules ovoid, greyish–tomentose.

Fls. & Frts.: April–August.
Illus. : Banerjee et al. op. cit.

Distrib. : Occasional in the intertidal areas in the estuarine mangrove swamps. Bombay, Raigad, Ratnagiri, Sindhudurg, Thane.


Shrubs, 5–10 m tall. Leaves 5–7 x 2–3 cm, elliptic. Leaves sharply acuminate at apex, cuneate at base. Flowers yellow. Capsules ovoid.


Distrib. : Occasional along elevated tidal flats. Bombay (Banerjee et al. op. cit.).


Trees, c 2 m tall. Leaves 3–8 x 2.5–3.5 cm, broadly ovate–elliptic or oblong, glabrous above, thinly tomentose beneath, base tapering. Flowers 0.4–0.6 cm across, yellow, sessile in axillary cymes; calyx ciliate on margins. Drupes ovoid, compressed, beaked. Seeds compact.

Fls. & Frts. : April–August.


LAMIACEAE

(B.G. Kulkarni & Sujit Kumar Das Das)

1. Calyx lobes/teeth 6–10 :
   2. Flowers white ... Leucas
   2. Flowers scarlet–red ... Leonotis

1. Calyx lobes/teeth 5 or less :
   3. Calyx 2–lipped :
      5. Calyx 2–lobed, upper lip of calyx persistent, with a teeth at each side near base, pouch or scale absent ... Platystoma
5. Calyx 2–lobed, upper lip of calyx deciduous with a pouch or scale, tooth near base present ... SCUTELLARIA

4. Calyx lobes/teeth 5 :

6. Upper lip of calyx simple, lower lobed :

7. Calyx in fruit deflexed :

8. Lower lip of corolla declinate, not concave ... OCIMUM

8. Lower lip of corolla not declinate but concave ... ANISCHILUS

7. Calyx in fruit not deflexed :

9. Upper corolla lip 4–lobed, lower entire :

10. Upper lip of calyx oblong; lower lip of corolla equal to upper ... ACROCEPHALUS

10. Upper lip of calyx suborbicular; lower lip of corolla longer than upper ... BASILICUM

9. Upper corolla lip oblong, obtuse, lower lip 3–lobed ... SALVIA

6. Both upper and lower lips of calyx lobed :

11. 2–lower lip of calyx teeth awned; stigma clavate or subclavate ... ORTHOSIPHON

11. Lower lip of calyx teeth not as above; stigma not clavate :

12. Calyx 15–nerved; upper lip of corolla notched at tip or 2–fid ... NEPETA

12. Calyx not 15–nerved; upper lip of corolla 4–fid :

13. Corolla–tube decurved, lower lip boat shaped and narrowed into neck ... PLECTRANTHUS

13. Corolla–tube not decurved, lower lip obovate, obtuse, not narrowed ... GENIOSPORUM

3. Calyx not 2–lipped :

14. Corolla subequally 4–lobed :

15. Corolla 2–lipped :

16. Upper lip of corolla 3–lobed, lower flat, spreading ... POGOSTEMON

16. Upper lip of corolla entire, lower 3–lobed :

17. Upper lip of corolla notched at tip ... MICROMERIA

17. Upper lip of corolla not as above :

18. Lower lip of corolla 3–lobed, midlobe large, 2–fid or emarginate ... ANISOMELES
18. Lower lip of corolla 3–fid, midlobe obcordate ... LEONURUS

15. Corolla not 2–lipped ... COLEBROOKIA

14. Corolla 5–lobed :

19. Lower lip of corolla solitary :

20. Lower lip of corolla boat shaped, not saccate nor deflexed ... ISODON

20. Lower lip of corolla not boat–shaped, but saccate, deflexed ... HYPTIS

19. Lower lip of corolla 3–partite ... LAVANDULA

ACROCEPHALUS Bth.


Herbs, erect, slender, 20–40 cm high, pubescent; stems and branches angled. Leaves 1.5–3.0 x 0.3–1.5 cm, thin, narrowly ovate, lanceolate, apex acute or subacute, base cuneate, margins remotely serrate. Flowers white or tinged with purple, in terminal or axillary whorls, subtended by a pair of foliar bracts; calyx 0.2–0.3 cm long, gibbous, later tubular and suberect in fruits; corolla c 0.3 cm long, tube short, sparsely hairy at tip. Nutlets compressed, smooth.

Fls. & Frts. : September–November.


Distrib.: Frequent in open, moist situations along road–ducts and on slopes from ghats to plains. Amravati, Bhandara, Chandrapur, Mumbai, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.

ANISOCHILUS Bth. ex Wall.

1. Upper lip of calyx covering mouth of calyx, entire, apex acute :  
   2. Calyx pubescent outside, not silky villous at mouth ... A. carnosus  
   2. Calyx densely silky villous at mouth, glabrous at base ... A. eriocephalus  

1. Upper lip of calyx not covering mouth of calyx, entire or notched or sometimes bluntly acuminate ... A. verticillatus
Anisochilus eriocephalus Bth.

Herbs, 30–50 cm high; stems quadrangular, often red tinged, glabrous or puberulous. Leaves 2–6 x 1.2–5.0 cm, broadly ovate, glabrous or villous above, puberulous beneath, margins deeply crenate. Flowers pale purple, in 2–7 cm long, peduncled spikes; calyx c 0.3 cm long (0.8 cm in fruits), glandular–ciliate; corolla c 0.6 cm long, puberulous outside, tube broad above, narrowed below. Nutlets suborbicular, compressed, brown, smooth.

Fls. & Frts. : June–November.


Herbs, 20–40 cm high, erect; stems quadrangular. Leaves 1.5–3.0 x 1.2–2.8 cm, orbicular–ovate, thick, glandular–pubescent, apex obtuse, base cordate, margins shallowly crenate. Flowers pale purple, in heads on slender, 2–6 cm long peduncles; calyx c 0.3 cm long, villous and glandular hairy; corolla 0.4–0.5 cm long, pubescent. Nutlets compressed, suborbicular, smooth.

Fls. & Frts. : August–October.

Distrib. : Infrequent in open areas in plains. Mumbai, Nasik.


Herbs, erect, up to 1 m high; roots tuberous; stems angled, white–tomentose. Leaves in whorls of 3–6, occasionally opposite, 3–7 x 0.8–2.5 cm, sessile, oblong–lanceolate, hairy on both sides, apex subacute or rounded, base narrowed, margins entire or serulate. Flowers pale purple, in dense, cylindric tomentose spikes, 4–20 cm long;
Anisochilus verticillatus Hook f.
calyx c 0.2 cm long (0.4–0.5 cm in fruits), densely white pubescent and glandular, truncate; corolla 0.8–1.0 cm long, pubescent, lips spreading. Nutlets suborbicular, 0.1 cm across, smooth, compressed.

Fls. & Frts. : August–October.

Distrib. : Infrequent in deciduous forests in open situations. Pune, Ratnagiri, Satara, Sindhudurg.

**Anisomeles R. Br.**

1. Filaments bearded; stems acutely 4–angled:
   2. Calyx in fruit glabrous  ...  **A. heyneana**
   2. Calyx in fruit hispid  ...  **A. indica**
1. Filaments pubescent; stems obtusely angled  ...  **A. malabarica**


Tall herbs or undershrubs, up to 1.5 m high; stems and branches glabrous or sparsely hairy. Leaves 4–10 x 2–5 cm, ovate or ovate–lanceolate, thin, glabrous or sparsely hairy, apex acuminate, base cuneate, margins crenate–serrate. Flowers white or greenish–white, lower lip tinged with pink, in few flowered, unilateral cymes; calyx 0.5–0.7 cm long, teeth acuminate, strongly reticulate; corolla–tube 0.6–0.8 cm long, upper lip 0.5 cm long, lower lip 0.9–1.2 cm long. Nutlets 0.2 cm or less long, oblong.

Fls. & Frts. : October–March.

Distrib. : Scattered in open situations along the ghats and in plains. Ahmednagar, Akola, Bhandara, Mumbai, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Undershrubs, annual or perennial, 50–100 cm high, suffruticose; stems densely pubescent. Leaves 3–8 x 2.5–6.0 cm, ovate, softly pubescent on both sides, apex acuminate, base truncate–cordate or rounded, rarely cuneate, margins serrate. Flowers bluish–white to
pink, crowded in whorls in axillary cymes, appearing terminal due to reduction of leaves; calyx c. 0.5 cm long, hirsute; corolla 1.0–1.5 cm long. Nutlets 0.25 cm long, broadly ovoid, shining black.

*Fls. & Frts.*: October–February.


*Distrib.*: Common throughout the State.


Undershubs, up to 1 m high; stems and branches densely tomentose or thickly–woolly with white appressed hairs. Leaves 3.5–10.0 x c 3.5 cm, lanceolate or obleng–lanceolate, tomentose on both sides, more on lower sides, pale above, whitish beneath, apex acute, base rounded or narrowed, margins crenate–serrate. Flowers pinkish, fragrant, in dense whorls of terminal spikes; calyx c. 0.8 cm long, teeth equalling tube; corolla c 2 cm long, pubescent outside. Nutlets c 0.2 cm long, ellipsoid, compressed, polished brown.

*Fls. & Frts.*: October–January.


*Distrib.*: Occasional in ghats and in open, moist situations. Latur, Mumbai, Nanded, Nasik, Pune, Yavatmal.

**BASILICUM Moench.**


Herbs, annual, up to 90 cm high; stems 4–angled, erect, slender. Leaves 1.5–3.0 x 0.8–2.0 cm, ovate, apex acuminate, base rounded or subcordate, margins crenate–serrate; petioles up to 2.5 cm long. Flowers white, in close or distant whorls of 6–10, forming slender, axillary or terminal spicate clusters; calyx in fruits c. 0.3 cm long, pubescent outside; corolla 0.2–0.3 cm long. Nutlets broadly ellipsoid, compressed, brown.
**COLEBROOKEA Sm.**


Shrubs, branched, 1–3 m high; branches subquadrangular, grooved, verticillate, usually in threes, young branches downy. Leaves up to 14.5 x 4.0 cm, crowded at ends of branches, opposite or verticillate, oblanceolate, pubescent on both sides, acute at both ends, margins crenate or serrate. Flowers white, numerous in paniculate spikes, up to 10 cm long; calyx 0.2–0.3 cm long. Nutlets obovoid–oblong, pubescent, tip hairy.

**Fls. & Frts. :** November–May.  

**Distrib. :** Common throughout the State.

**GENIOSPORUM Wall.**


Herbs, prostrate or procumbent, much branched; stems from woody rootstock, glabrous or soft, deflexed hairy. Leaves 2–5 x 0.8–1.9 cm, linear–oblanceolate or obovate–oblanceolate, apex acute or obtuse, base tapering, sparsely hairy on both sides; floral leaves broadly ovate, reflexed. Flowers pinkish or white, in 5–12 cm long, many–flowered racemes arranged in whorls; calyx with upper most lip/lobe ovate–reniform, rest triangular, of these 2–lower most longer (in fruits); corolla c 0.3 cm long, tube short. Nutlets ellipsoid, smooth, blackish, compressed.
**HYPTIS Jacq. (nom. cons.)**


Undershubs, erect, much branched, 0.5–1.5 m high, strongly aromatic; stems hirsute, quadrangular. Leaves 3–6 x 2–4 cm, ovate, sparsely pubescent above, densely pubescent beneath, apex acuminate, base acute, margins serrulate. Flowers bluish–violet, in contracted 1–5–fascicled cymes; calyx 0.3–0.5 cm long (0.8–1.0 cm in fruits), 10–ribbed, mouth villous; corolla c 0.6 cm long. Nutlets ovoid, rugose.

**Fls. & Frts.** : October–February.


**Distrib.** : Common throughout the State.

**ISODON (Bth.) Schrad. ex Spach**

1. Fruiting calyx indistinctly 2–lipped, shortly 5–toothed :
   2. Corolla pale violet, tube deflexed ... **I. coesta**
   2. Corolla white with purple spots, tube straight ... **I. lophanthoides**
  1. Fruiting calyx distinctly 2–lipped or subequally 5–toothed ... **I. rugosus**


1. Stems retrorsely pubescent or subglabrous; leaves hispidulous along midrib and nerves, other wise sparsely subglabrous on both sides ... **var. coesta**
1. Stems densely puberulous; leaves densely pilose above, floccose–pilose beneath ... **var. cavaleriei**
var. **coesta.**

Herbs or undershrubs, erect, 0.5–1.5 high; stems and branches obtusely 4–angled, sulcate, strongly aromatic. Leaves petiolate, 3–9 x 1.5–6.0 cm, ovate, apex acuminate, base cuneate, margins crenate. Flowers purple or purplish–blue, in terminal and axillary paniculate–cymes; bracts ovate–lanceolate, 0.3–0.4 cm long; calyx campanulate, pubescent and glandular outside, fruiting calyx tubular–campanulate, 10–ribbed; corolla pubescent outside, upper lip 4–lobed, reflexed, lower one ovate, boat–shaped. Nutlets 0.1 cm across, obovoid, brown.

*Fls. & Frts.* : November–February.


*Distrib.* : Infrequent in open, moist areas and forest edges. Pune, Satara.


Herbs or undershrubs. Leaves ovate. Flowers purple or purplish–blue, in terminal or axillary paniculate–cymes. All the characters are similar to species but differs in stems being densely puberulous and leaves densely pilose above and floccose–pilose beneath.

*Fls. & Frts.* : December–February.


*Distrib.* : Occasional in open areas, and forest edges. Satara (as habitat mentioned by Li op. cit. 1630–2300 m alt.).


1. Corolla tube exceed in calyx :  
2. Leaves obtuse at apex ... var. **gerardianus**
2. Leaves acuminate at apex

1. Corolla tube included in calyx

**var. lophanthoides.**

Herbs, slender, perennial; stems 20–100 cm high, erect or ascending, 4–angled, sulcate, puberulous or pilose. Leaves 2–8 x 0.8–3.0 cm, broadly ovate or oblong–ovate, thin, chartaceous, upper surface olive–green, densely septate–hirtellous, lower surface greenish, septate–hirtellous, dotted with brown glands, base cuneate or cuneate–rounded, margins crenate. Flowers white or rose with purple spots on limbs; bracts sessile; calyx campanulate, c 0.2 cm long, sparsely villous on lower part, dotted with red–brown glands, fruiting calyx 0.4–0.5 cm long; corolla c 0.7 long, limb 2–lipped, upper lip reflexed, 4–fid at apex, lower lip broadly ovate. Nutlets c 0.1 cm long, compressed–ovoid, brown, smooth.

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

**Distrib. :** Frequent in moist places along ghats and hilly areas. Ahmednagar, Mumbai, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Herbs, perennial. Leaves ovate, up to 20 x 8.5 cm. Flowers white or rose coloured. All characters are similar to species but differs in plants being taller (0.3–1.5 m high). Leaves up to 20 x 8.5 cm, apex acuminate and base cuneate.

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


All the characters are similar to species but differs in corolla–tube being very short and wide, scarcely exceeding calyx.

**Fls. & Frts. :** September–November.
**Distrib.** : Occasional at an altitude of 1200 m and above in Khasia, Churra, Sikkim (Hook. f. op. cit.). This variety is now reported from Sindhudurg (Maharashtra) which is an addition to the flora and also indicates Southern extension of distribution (S. M. Almeida, op. cit.).


Undershubs, up to 1.5 m high, much branched; branches subcylindrical, grey–brown, stellate–tomentose, branchlets obtusely quadrangular, finely striate and densely stellate–tomentose. Leaves 1.5–4.0 x 0.5–2.0 cm, ovate or elliptic, chartaceous, rugose, densely tomentose, apex obtuse, base broadly cuneate or subrotund, margins crenate above, base entire. Flowers white with tinged rose or dark lilac upper lip, in terminal panicles or composed of axillary cymes; calyx campanulate, c 0.2 cm long, densely stellate–tomentose outside, fruiting calyx c 0.3 cm long; corolla c 0.7 cm long, upper lip reflexed, 4–lobed at apex, lower one broadly ovate. Nutlets c 0.15 cm long, oblong, triquetrous, dark brown.

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

**Distrib.** : Infrequent in open, moist situations along slopes of ghats. Amravati.

**Lavandula L.**

1. Leaves petioled; bracts ovate–lanceolate, not awned ... *L. lawii*
2. Leaves sessile or subsessile; bracts shortly ovate, with long, capillary awns ... *L. bipinnata*


1. Bracts awned or aristate :
   2. Bracts equal to or shorter than calyx ... var. bipinnata
   2. Bracts longer than calyx ... var. rothiana
1. Bracts not awned nor aristate ... var. intermedia
var. **bipinnata.**

Herbs, erect, 20–50 cm high; stems slender, simple or branched, 4–angled, pubescent. Leaves 2–8 cm, as long as broad, pinnatipartite, deeply lobed, lobes linear, entire or cut or toothed, glabrous or pubescent above, pale and pubescent beneath. Flowers pale blue or white, in solitary or panicled—spikes; calyx tubular, curved, hairy (0.5 cm long in fruits); corolla pubescent outside, more than 1.2 cm long, tube slightly dilated above. Nutlets c 0.2 cm long, ellipsoid, smooth, hygroscopic, black.

*Fls. & Frts.* : October–February.

*Illus.* : Wight, Ic. t. 1438. 1849.

*Distrib.* : Common throughout the State.


Other characters as in species, except bracts lanceolate, shortly acuminate, almost equaling the calyx.

*Distrib.* : Infrequent. Bombay & ‘Concan’ (Mukerjee, op. cit.).


All the other characters similar excepting bracts ovate or lanceolate, apex aristate, longer than the calyx.

*Distrib.* : Aurangabad (Mukerjee, op. cit.), Bombay (Mukerjee, op. cit.), Beed, Jalna, Latur, Nanded, Osmanabad, Parbhan, Purandhar–Pune (Sant. op. cit.).


Herbs, 25–70 cm high; stems quadrangular, villous, usually simple. Leaves 3–12 cm long, decrease in size upwards, pinnatisect, lobes broad, oblong, pinnatifid or toothed, villous on both sides. Flowers pale blue to white, in dense, simple or branched, villous spikes; calyx
tubular, villous (more than 0.6 cm long in fruits); corolla 1.2 cm long, tube slightly dialated above. Nutlets ellipsoid, smooth, hygroscopic, black.

*Fl. & Frts.*: October–March.

*Illus.*: Wight, op. cit.

*Distrib.*: Infrequent in open areas along ghats and plains. Mumbai, Pune, Satara.

**Leonotis R. Br.**


Herbs or undershrubs, 50–150 cm high; stems stout, slightly angled, with long internodes, pubescent. Leaves 5–12 x 3–10 cm, broadly ovate, membranous, pubescent on both sides, apex acute, base cuneate, margins coarsely serrate. Flowers in axillary, many flowered, dense whorls; calyx up to 1.9 cm long, ribbed, incurved, teeth very unequal, tipped with slender spines; corolla 2.0–2.5 cm long, tube glabrous at base, hairy in the upper half. Nutlets c 0.4 cm long, ovoid, pitted at apex.

*Fls. & Frts.*: October–February.


*Distrib.*: Common throughout the State.

**Leonurus L.**


Herbs, erect, 40–100 cm high; stems stout, slightly angled, furrowed, puberulous. Leaves 3–10 cm long, pinnatifid, lobes linear–lanceolate, segments incised, glabrous above, pubescent especially on nerves beneath. Flowers red, in axillary whorls; calyx 0.5–0.7 cm long, slightly pubescent, teeth spinose; corolla c 1.2 cm long, tube and limbs equal in length, annular ring present inside. Nutlets 0.15–0.2 cm long, triquetrous, smooth.

Distrib.: Naturalized exotic occurs in open areas. 'Konkan' (Cooke, op. cit.), Mumbai.

**Leucas R. Br.**

1. Whorls lax, 2–4–flowered

1. Whorls compact, more than 4–flowered:

2. Mouth of calyx–tube oblique:

3. Lower side of calyx mouth longer

3. Upper side of calyx mouth longer:

4. Calyx–tube pubescent inside:

5. Calyx–tube glabrous below, villous above:

6. Leaves broadly elliptic or ovate; floral bracts ovate or elliptic; calyx teeth exceeding the villi; nutlets obovoid

6. Leaves linear–lanceolate or oblong–lanceolate; floral bracts linear; calyx teeth not exceeding the villi; nutlets oblong

4. Calyx–tube not pubescent inside:

5. Calyx–tube uniformly pubescent:

7. Bracts lanceolate, ciliate; calyx tube abruptly decurved, strongly ribbed

7. Bracts linear, villous; calyx tube slightly curved, not strongly ribbed:

8. Leaves sessile; calyx prominently nerved; corolla up to 10 mm long

8. Leaves sub sessile; calyx not prominently nerved; corolla up to 18 mm long

9. Calyx mouth not villous, tube contracted; bracts bristle tipped:

10. Calyx–tube lower half glabrous, upper half ribbed, hispid or scabrid, teeth bristle tipped

10. Calyx–tube uniformly pubescent, teeth not bristle tipped

9. Calyx mouth villous, tube not contracted; bracts not bristle tipped:
11. Bracts linear–lanceolate or subulate; calyx teeth lanceolate, upper most tooth twice as long as rest ... L. martinicensis

11. Bracts linear or filiform; calyx teeth subulate, longest upper most slightly longer than rest:

12. Calyx–tube 1.2 cm long, teeth 0.15 cm long ... L. stricta
12 Calyx–tube 0.6 cm long, teeth 0.3 cm long ... L. clarkei

2. Mouth of calyx tube not oblique:

13. Calyx teeth stellately spreading (in fruits as in L. ciliata), mouth villous:

14. Upper lip of corolla densely bearded with rufous hairs; calyx teeth lanceolate ... L. ciliata
14. Upper lip of corolla densely bearded with white hairs; calyx teeth not lanceolate:

15. Calyx–tube pubescent or tomentose, glandular, teeth linear ... L. stelligera
15. Calyx–tube glabrous below, villous above the middle, teeth subulate ... L. eriostoma

13. Calyx teeth not stellately spreading (in fruits–even), mouth not villous:

16. Calyx pubescent or villous inside and outside as well:

17. Calyx–tube silky outside, pubescent upper 1/2 inside, teeth alternately shorter:

18. Hairs on branches erect; leaves sessile or subsessile ... L. lanata
18. Hairs on branches deflexed; leaves shortly petioled:

19. Bracts 0.2–0.3 cm long; leaf apex obtuse; petioles 0.3–0.8 cm long ... L. montana
19. Bracts 0.3–0.5 cm long; leaf apex acute; petioles up to 2.5 cm long ... L. mollissima

17. Calyx–tube villous inside, teeth all equal in length:

20. Calyx tubinate–campanulate, villous–annulate inside; leaves pubescent on both sides ... L. longifolia
20. Calyx tubular, not annulate inside; leaves pilose and silky above, lanate beneath ... L. marrubioides
16. Calyx glabrous inside, strigose hairy on ribs outside


Erect, diffuse, annual herbs, 25–50 cm high; stems and branches hispid with spreading hairs. Leaves 3–6 x 0.8–1.5 cm, narrowly lanceolate or oblong–lanceolate, subsessile, membranous, pubescent on both sides, apex obtuse or rarely acute, base narrowed, margins crenate. Flowers white in terminal or axillary (in upper axils) whorls; bracts narrowly lanceolate; calyx 0.8–1.0 cm long, 10–nerved, 10–toothed, tube pilose; corolla 1.0–1.5 cm long, strongly curved, upper lip densely velutinous, lower pubescent. Nutlets ovoid, smooth.

**Fls. & Frts.** : September–March.


**Distrib.** : Common throughout the State in open situations on sandy and gravelly soils, around cultivated fields, open grasslands and along road–sides.


1. Plants pubescent; pedicels 0.08–0.3 cm long ... **var. biflora**
1. Plants glabrous or nearly so; pedicels 0.5 cm long ... **var. procumbens**

**var. biflora.**

Herbs with a perennial root stock; stems often procumbent, much branched, with long internodes. Leaves 1.5–3.5 x 1.0–2.2 cm, ovate to elliptic, hairy on both sides, apex obtuse to subacute, base truncate or rounded, margins coarsely serrate or crenate. Flowers white, in axillary whorls; bracts setaceous, c 0.2 cm long; calyx c 0.8 cm long, campanulate, ribbed, hispid, teeth subulate; corolla 1.0–1.2 cm long, tube annulate inside, upper lip 0.6–0.7 cm long, lower ovate–oblong. Nutlets irregularly tuberculate, brown.
Fls. & Frts. : August–April.


Distrib. : Common throughout the State in the undergrowth of deciduous forests in plains and in rocky areas.


Herbs, procumbent, up to 0.75 m tall; stems and branches slender. Leaves elliptic–lanceolate; other characters as in var. biflora excepting those mentioned in key i.e. narrower leaves and longer pedicels.

Fls. & Frts. : August–November.

Distrib. : Occasional in the undergrowth of deciduous forests. Ahmednagar, Osmanabad.


Herbs, erect, 30–100 cm high; stems short, pubescent; branches obtusely 4–angled, hairy. Leaves 3–8 x 1.2–3.5 cm, ovate or ovate–lanceolate or broadly elliptic, softly hairy above, pubescent beneath, apex subacute, base tapering, margins crenate–serrate. Flowers white, sessile, in 3–5 cm across globose heads; bracts foliaceous, 1.5–2.5 cm long; calyx c 2 cm long; corolla up to 2.5 cm long, lower lip slightly longer than upper. Nutlets c 0.3 cm long, obovoid, smooth, brown.

Fls. & Frts. : September–November.

Illus. : Wight, Ic. t. 337. 1840.

Distrib. : Common throughout the State in the undergrowth and in open situations.


Herbs or undershrubs, 30–100 cm high; stems and branches obtusely 4–angled, with brownish hairs. Leaves 3–9 x 2.5–4.0 cm, ovate or lanceolate, sparsely hairy on both sides, membranous, apex acute,
base cuneate, margins serrate. Flowers white, in dense, globose whorls; bracts equalling calyx, slender, spinulose; calyx 1.2–1.8 cm long, tubular, hairy outside, ring of hairs at mouth; corolla 1.8–2.0 cm long, tube annulate inside. Nutlets oblong–obovoid, smooth, brown.

**Fls. & Frts.** : August–May.

**Distrib.** : Frequent along the ghats and in plains along forest edges. Ahmednagar, Dhule, Kolhapur, Mumbai, Satara, Sindhudurg, Thane.


Erect herbs, 25–40 cm high, annuals; stems slender, sparsely appressedly pubescent, branches erect, scabrid. Leaves 2–5 x 0.2–0.9 cm, linear or linear–lancaolate, narrowed at both ends, margins remotely toothed. Flowers in terminal, subglobose whorls, 1.6–2.5 cm across; calyx densely pubescent, calyx–teeth squarrose, scabrid; corolla–tube included in calyx, upper lip short, lower lip widely spreading. Nutlets smooth, rounded, 1–seeded.

**Fls. & Frts :** September–November.

**Distrib.** : Occasional, in open grasslands, rocky localities and wastelands. Aurangabad, Beed, Jalna, Latur, Nanded, Osmanabad & Parbhani (Naik, op. cit.).

*L. deodikarii* Billore & Hemadri in Indian Forester 96: 858. 1970.

Herbs or undershrubs, 0.5–1.0 m high, perennial, erect, ascending, rootstock woody; stems obtusely quadrangular, shallow to deeply grooved, strigose hairy. Leaves 5–16 x 3.0–7.5 cm, including petioles, broadly ovate or lanceolate, membranous, apex acute, base truncate and narrowed, strigose on both sides, margins crenate. Flowers white, 1.6 cm long, in many–flowered, axillary heads; calyx 0.9–1.4 cm long, campanulate, straight, 10–ribbed, strigose on ribs, reticulately veined inside, teeth 0.15–0.7 cm long, triangular; corolla–tube glabrous inside, hairy outside, upper lip concave, bearded, lower 3–lobed, midlobe large, emarginate. Nutlets triquetrous, obovoid, brownish.

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

**Illus.** : Billore & Hemadri, op. cit. 859, ff. 1–4.
Distrib. : Infrequent in moist deciduous forests in the undergrowth. Ahmednagar, Nasik, Pune, Thane.


Herbs, diffusely branched; branches slender, clothed with short appressed and long spreading hairs. Leaves sessile, 2–5.5 x 0.2–0.8 cm, linear or linear–lanceolate or oblong–lanceolate, apex obtuse or subacute, margins entire or subentire, glabrescent above, tomentose or glabrous beneath. Flowers in few–flowered terminal whorls; bracts linear; calyx–tube curved, ribbed, hispid and bristly, densely villous within, with exserted villi, teeth small, 1–1.5 mm long, triangular; corolla white, 0.8–1 cm long. Nutlets 2.5–3 mm long, oblong, smooth, dark brown.

Fls. & Frts. : September–November.

Distrib. : Common on bunds, around fields. Aurangabad, Beed, Nanded & Parbhani (Naik, op. cit.).


Undershubs, 0.5–1.5 m high; stems stout, branches terete, variously pubescent. Leaves 3–10 x 0.5–2.0 cm, narrowly lanceolate, brownish, hispid on both sides, apex obtuse, base narrow, margins coarsely serrate. Flowers white, in many–flowered whorls in upper axils; bracts as long as calyx; calyx 0.6–1.2 cm long, tube straight, ring of white hairs at mouth; corolla–tube included in calyx, pilose annulate inside. Nutlets 0.2 cm long, oblong.

Fls. & Frts. : September–October.

Distrib. : Occasional in the undergrowth in forests. ‘Konkan’ (Mukerjee op. cit.), Satara.

Leucas eriostoma Hook. f.
Herbs, 30–50 cm high, erect, annual; stems and branches slender, 4–angled, finely pubescent. Leaves 3–7 x 0.6 –1.2 cm, linear–lanceolate, membranous, appressed hairy on both sides, apex acute or acuminate, base tapering, margins sub serrate. Flowers white, in terminal or axillary, many–flowered, verticillate clusters; bracts linear, puberulous; calyx 0.6–0.9 cm long, pubescent, 8–10–ribbed and toothed; corolla 1.0–1.2 cm long, upper lip woolly, shorter than lower. Nutlets c 0.2 cm long, oblong, apex rounded.


Distrib. : Common in plains and ghats. Ahmednagar, Aurangabad, Dhule, Kolhapur, Nasik, Pune, Raigad, Rataganagi, Sindhudurg, Thane.


Herbs, 25–75 cm high, perennial, much branched from woody root stock; branches softly erect, woolly or subsilky, obtusely 4–angled. Leaves 3–6 x 1.2–3.0 cm, ovate, thick, tomentose or softly silky on both sides, apex acute or obtuse, base rounded or cuneate, margins crenate–serrate. Flowers white, in many–flowered, axillary whorls; bracts setaceous, shorter than calyx; calyx c 0.8 cm long; corolla 1.2 cm long or more, tube equalling calyx, annulate inside. Nutlets 0.1–0.15 cm long, oblong–ovoid, truncate at apex.

Fls. & Frts. : September–November.

Distrib. : Uncommon as an undergrowth in deciduous forests. Mumbai, Pune.


Herbs, 25–50 cm high, rigid, annual with perennial rootstock; stems and branches 4–angular, hirsute or retrorsely pubescent below, less hirsute or scaberulous above. Leaves 3–6 x 0.2–0.4 cm, linear to linear–lanceolate, finely pubescent on both sides, apex subacute, base tapering, margins entire. Flowers white, subsessile, in few–4–8–flowered whorls; bracts c 0.2 cm long, subulate, long ciliate; calyx 0.5–0.6 cm long, annulate inside, hairs exserted, white; corolla 0.8–1.2
Leucas lanata Bth.
cm long, tube finely pubescent above, upper lip very short, lower one wide, 3–lobed. Nutlets 0.2–0.25 cm long, rounded at top.

**Fls. & Frts.** : August–October.

**Distrib.** : Common throughout the state in open, moist situations.


Herbs, perennial; stems stout, 30–80 cm high (sometimes more); branches diffuse, obtusely 4–angled, woody below, semi–succulent above, densely silky–lanate. Leaves 2.5–8 x 1.5–6.0 cm, broadly ovate, sessile or subsessile, with faintly impressed nerves above, silky lanate beneath, apex acute or subacute, base subtruncate to rounded, margins coarsely dentate–serrate. Flowers white, in globose heads throughout length of flowering branches; bract linear–lanceolate, 0.4–0.8 cm long; calyx 0.7–1.0 cm long, 8–10–nerved, densely velutinous outside, villous inside above; corolla–tube faintly striped, villous outside above, pectinate–annulate inside. Nutlets c 0.15 cm long, ovoid, truncate at top, brown.

**Fls. & Frts.** : August–November.


**Distrib.** : Appears to be rare. Concan (Mukerjee, op. cit.).


Herbs, 60–120 cm high, stout, annual; stems and branches 4–angled, grooved, hirsute, angles rounded. Leaves 5–10 x 2.5–4.0 cm, ovate or oblong–lanceolate, membranous, hirsute on both sides, apex obtuse, base cuneate, margins coarsely crenate. Flowers white, sessile, in 2–3 cm across globose heads, numerous, distant; bracts up to 0.8 cm long, spinous–pointed; calyx 0.9–1.5 cm long, tubular, tube pubescent outside, glabrous inside, teeth–10 ; corolla 0.8–1.0 cm long, lower lip spreading, upper lip erect, white–villous. Nutlets 0.2–0.25 cm long, ovoid, apex obliquely truncate, dark brown, shining.

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

Herbs, slender, annual or perennial; stems and branches straggling or ascending, 80–130 cm high, branches diffuse, hoary appressed–hairy, internodes fairly long. Leaves 2–6 x 1.0–4.5 cm, ovate, or ovate–lanceolate, appressed hairy above, lanate–tomentose beneath, apex acute, base subacute to truncate, margins serrate. Flowers white, subsessile, in 6–10–flowered whorls; bracts filiform; calyx 0.6–0.8 cm long, broadly campanulate, densely hairy outside; corolla c 1.5 cm long, tube linear, upper lip densely villous on back, lower orbicular–spathulate. Nutlets 0.15–0.2 cm long, ovoid, smooth.

**Fls. & Frts.**: September–February.

Distrib. : Infrequent along gravelly slopes and in plains. Amravati, Buldhana, Ratnagiri, Sindhudurg.


Straggling undershrubs, weak, much branched; branches densely, softly hairy, quadrangular. Leaves 2.5–5.0 x 1.2–3.5 cm, ovate or slightly orbicular, apex obtuse, base rounded, truncate or subcordate, sparsely appressed hairy above, softly hairy beneath, margins crenate. Flowers white, in distant, globose heads; bracts filiform; calyx 0.6–0.8 cm long, tubular–campanulate, silky villous outside; corolla c 1.2 cm long, tube annulate inside. Nutlets 0.15–0.2 cm long, obovoid, trigonous.

**Fls. & Frts.**: September–January.


Herbs, 15–25 cm high, annuals; branches diffuse, starting from near base, stems and branches 4-angled, laxly hirsute. Leaves 2–5 x 0.6–2.5 cm, oblong or oblong-lanceolate, pubescent on both sides, gland-dotted, apex obtuse, base narrowed, margins closely serrate. Flowers white, in many-flowered, terminal or subterminal whorls; bracts 0.5–0.8 cm long; calyx 0.8–1.0 cm long, strongly ribbed, hispid outside; corolla up to 1.5 cm long, lower lip longer than upper one, 3-lobed, midlobe large. Nutlets c 0.3 cm long, ellipsoid, apex rounded.

**Fls. & Frts.** : August–October.


**Distrib.** : Occasional in rocky areas in scrub jungle, weed of wastelands near fields. Amravati, Nagpur, Nanded & Osmanabad (Naik, op. cit.).


Herbs, up to 1 m high; stems and branches hairy with erect and spreading hairs, quadrangular. Leaves 4–8 x 1.8–2.5 cm, elliptic-lanceolate or narrowly lanceolate, softly hairy on both sides, apex subacute, base tapering, margins serrate. Flowers white, in dense, many-flowered, axillary and terminal heads; bracts up to 0.6 cm long, linear; calyx 0.5–0.8 cm long; corolla 0.8–1.2 cm long, tube annulate inside. Nutlets c 0.2 cm long, ovoid, smooth.

**Fls. & Frts.** : November–April.

**Distrib.** : Frequent in open situations in deciduous forests and along road sides from ghats to plains. Ahmedhagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Herbs, 15–30 cm high; stems and branches obtusely angled, grooved, hispidly hairy. Leaves 2.5–6.0 x 0.4–1.2 cm, linear-oblong or oblong-lanceolate, hispid hairy on both sides, glandular beneath, apex obtuse, base narrowed, margins entire. Flowers white, in terminal, solitary, many-flowered whorls; bracts 0.4–0.5 cm long, filiform, rigid; calyx 0.8–1.0 cm long, narrowly funnel-shaped, pubescent outside, mouth densely villous inside; corolla 1.5–2.0 cm long, tube annulate inside, lower lip large, much longer than upper one. Nutlets 0.25–0.3 cm long, rounded at top, smooth.

Herbs, 15–30 cm high, erect, annuals; stems and branches obtusely 4–angled, hoary–pubescent, Leaves 3–7 x 2.0–3.5 cm, ovate or lanceolate, hoary–pubescent or glabrous, apex obtuse, base cuneate, margins coarsely serrate. Flowers white, in dense, many–fowered, globose whorls, usually axillary; bracts 0.4–0.6 cm long, linear–lanceolate; calyx 0.8–1.2 cm long, reticulately veined, pubescent or villous outside; corolla–tube c 0.5 cm long, slender, upper lip concave and glandular at top. 


Herbs, erect, much branched, pubescent and scaberulous. Leaves 3–7 x 0.3–0.5 cm, linear or linear–lanceolate or narrowly lanceolate, apex obtuse or subacute, margins entire or very distantly and obscurely serrate, hispid on both surfaces. Flowers in axillary and terminal whorls, close above, often forming a cylindric spike; bracts linear, villous and ciliate; calyx tubular, 5–6 mm long, prominently nervet with bulbous based hairs, mouth oblique, teeth triangular, sharp; corolla white, small, the upper lip woolly, shorter than lower lip. Nutlets 1.5–2 mm long, oblong, truncate and glandular at top.
Leucas zeylanica (L.) R. Br.

Herbs, 15–50 cm high, erect, annuals, much branched; branches quadrangular, diffuse, hispidulous. Leaves 3–6 x 0.5–1.2 (rarely 1.5) cm, linear–lanceolate to lanceolate, scabrid, with impressed nerves above, densely hispidulous, glandular–punctate beneath, apex acute, base tapering, margins distantly, shallowly serrate or entire. Flowers white, sessile or subsesile, in 6–8–flowered, usually terminal whorls, occasionally axillary; bracts 0.4–0.5 cm long, linear; calyx 0.5–0.8 cm long, turbinate, tube 10–11–nerved, hirtellous; corolla 1.2–1.5 cm long, tube pectinate–annulate inside. Nutlets 0.3–0.35 cm long, obvoid to trigonous, black.

*Fls. & Frts.* : October–February.

*Illus.* : Wight, Illus. t. 176. 1840.

*Distrib.* : Infrequent in open plains, along forest paths. Amravati, Bhandara, Chandrapur, Nasik, Pune, Thane.

**Micromeria Bth.**


Herbs, 20–50 cm high, aromatic, slender, root stock woody; stems quadrangular, pubescent. Leaves 1.2–2.5 x 0.6–1.5 cm, ovate or ovate–oblong, apex obtuse, base rounded or cuneate, pubescent on both sides, gland–dotted, margins entire or crenate–serrate. Flowers violet, 0.3–0.4 cm long, in distant, cymose–whorls, axillary whors forming a spicate–raceme; bracts–lanceolate, hairy; calyx 0.2 (0.4 cm in fruits) cm long, hairy and glandular, teeth as long as tube; corolla 0.3–0.4 cm long, hairy outside, tube as long as calyx or little longer. Nutlets less than 0.1 cm long, ellipsoid, smooth, brown.

*Fls. & Frts.* : March–May.

*Distrib.* : Occasional on hill slopes and along stream banks. ‘Concan’ (Mukerjee op. cit.), Mumbai, Satara.

**Nepeta L.**

1. Stems and leaves covered with long and spreading hairs; calyx c 0.6 cm long

... *N. bombaiensis*
1. Stems and leaves covered with short hairs (pubescent); calyx c 0.4 cm long... \(N. \) hindostana


Herbs, 15–30 cm high, erect, annual; stems and branches obtusely 4–angled. Leaves 3–8 x 2.5–3.2 cm, rounded–ovate, pubescent on both sides, apex subacute or rounded, base cordate or truncate, margins coarsely crenate. Flowers pale blue with purple spots, in pedunculate, axillary, 6–8–flowered cymes; bracts c 0.8 cm long, linear–lanceolate; calyx equal to bracts, pubescent; corolla–throat inflated, tube not annulate inside, upper lip notched, lower 3–fid. Nutlets c 0.15 cm long, ellipsoid, smooth, dotted with white spots.

**Fls. & Frts.** : August–October.

**Distrib.** : Endemic to Shivneri Fort, Pune (Junnar) in open moist places.


1. Calyx 0.4 cm long; corolla exserted... \(\) var. hindostana

1. Calyx c 0.6 cm long; corolla not exserted... \(\) var. woodrowii

var. hindostana.

Herbs, 10–40 cm high, annual; stems slender or stout, branches erect or ascending, obtusely angled and grooved. Leaves 1.2–5.0 x 0.6–3.0 cm, broadly ovate to suborbicular, hoary or greenish on both sides, apex obtuse or subacute, base cordate or truncate, margins crenate. Flowers purplish–blue, in dense, long peduncled cymes, forming a slender panicle or an interrupted spike; bracts 0.4–0.6 cm long, linear–lanceolate or setaceous; calyx villous, mouth oblique; corolla 0.6 cm long, upper lip oblong, 2–fid, hairy, lower 3–lobed. Nutlets 0.1–0.15 cm long, oblong, mucilaginous.

**Fls. & Frts.** : August–November.

**Distrib.** : Infrequent in open, moist situations. Amravati, ‘Konkan’ (Cooke, op. cit.), Pune (Purandhar–Cooke, op. cit.), Thane (Bassein–Cooke, op. cit.).
Nepeta bombaiensis Dalz.


Herbs, 10–30 cm high, annual, branched from base; branches ascending or erect, pubescent. All other characters as in species but differs from it due to calyx c 0.6 cm long; corollas equalling calyx; nutlets 0.1–0.2 cm long, narrowly ellipsoid, smooth, brown.

**Fls. & Frls.** : August–November.


**Distrib.** : Occasional in open, moist areas. Ahmednagar, Akola, Bombay, Nasik, Pune, Thane.

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**Ocimum** L.

1. Leaves subacuminate or acuminate at apex; median lobes of lower lip of fruiting calyx shorter than upper lip  ...  *O. gratissimum*

1. Leaves acute or rounded at apex; median lobes of lower lip of fruiting calyx as long as or longer than upper lip:
   2. Calyx–tube hairy inside, fruiting calyx c 0.3 cm long  ...  *O. tenuiflorum*
   2. Calyx–tube glabrous inside, fruiting calyx 0.4–0.5 cm long  ...  *O. americanum*

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Herbs, 30–60 cm high, erect, annuals; stems and branches striate and pubescent, subquadrangular. Leaves 2.0–3.5 x 0.9–1.5 cm, ovate or ovate–oblong, glabrous or scaberulous above, sparsely pilose along nerves and gland–dotted beneath, margins serrulate. Flowers white, in whorls, in spiciform, 5–10 cm long racemes; bracts 0.5 cm long, ovate, clawed; calyx campanulate, dotted with oil globules; corolla 0.5–0.6 cm long, tube glabrous, upper lip ovate–oblong, lower one ovate–oblong. Nutlets c 0.15 cm long, ovoid, sub–trigonous, smooth.

**Fls. & Frls.** : September–February.


**Distrib.** : Common throughout the State, in open situations.
Nepeta hindustana var. woodrowii (T. Cooke) Sant.

Herbs or undershrubs, 0.5–2.0 m high, much branched; young parts pubescent. Leaves 4–10 x 3–5 cm, ovate or ovate–elliptic, membranous, pubescent and gland–dotted on both sides, margins crenate–serrate. Flowers greenish–yellow, in softly hairy whorls, in simple or branched racemes; bracts decussate, 0.5–0.6 cm long, broadly ovate–lanceolate; calyx campanulate, tube sparsely hispidulous or strigose and dotted with oil globules; corolla 0.5–0.7 cm long, upper lip up to 0.35 cm long, lower one 0.2–0.3 cm long. Nutlets c 0.2 cm across, subglobose.

*Fls. & Frts.* : August–November.


Herbs or undershrubs, annual or perennial, much branched; stems and branches purplish, subquadrangular, young parts soft, spreading hairy. Leaves 1.5–4.0 x 0.9–2.5 cm, ovate–oblong or elliptic–oblong, puberulous above, hirtellous beneath, dotted with oil glands on both surfaces, obtuse at both ends, margins entire, undulate or serrate. Flowers reddish–pink or purplish, in close whorls, in racemes up to 12 cm long; bracts c 0.2 x 0.3 cm, suborbicular, cuspidate; calyx c 0.3 cm long, campanulate, densely dotted with oil globules; corolla tubular–campanulate, up to 0.45 cm long, tube dotted with oil glands, lobes of upper lip oblong–orbicular, lower one ovate–oblong. Nutlets 0.15 cm long, ellipsoid, minutely warty, dark brown.

*Fls. & Frts.* : September–February.

\textit{Distrib.} : Usually grown in or near house, sometimes found as an escape. Ahmednagar, Akola, Chandrapur, Dhule, Jalgaon, Mumbai, Nasik, Osmanabad, Pune, Raigad, Ratnagiri, Satara, Thane.

**ORTHOSIPHON Bth.**

1. Stamens much exserted ... \textit{O. aristatus}

1. Stamens included :

2. Corolla–tube equal to calyx ... \textit{O. pallidus}

2. Corolla–tube much longer than calyx:

3. Leaves petiolate; petioles up to 3.5 cm long; leaf–margins serrate ... \textit{O. thymiflorus}

3. Leaves sessile or subseessile; leaf–margins serrate–denatate ... \textit{O. rubicundus}


Undershubs, erect, pubescent, 30–50 cm tall; stems slender, 4–angled. Leaves 5–8 x 0.5–1.5 cm, base cuneate, apex acuminate, margins coarsely toothed, pubescent on both surfaces. Flowers in lax, terminal, thyrsoïd racemes; bracts ovate, 1–2 mm long, acute; calyx campanulate, 3.5–4 mm long, upper lip broadly ovate, lower lip with two lower teeth subulate; corolla purplish–pink or purplish–white, 2–2.5 cm long, glabrous, tube slender, 12–15 mm long, upper lip 4–lobed, lower lip ovate–oblong. Nutlets oblong, 1.5–2 mm long, rugulose, black.

\textit{Fls. & Frts.} : September–November.

\textit{Distrib.} : Rare in crevices of rocks, on rocky soil, etc. Nanded (Naik, op. cit.).

\textit{Notes.} : This is the 1st record of its occurrence on the Deccan plateau.

Herbs or undershrubs, 15–35 cm high, diffuse; branches arise from woody root stock, 4–angled, glabrous or pubescent. Leaves 1.0–3.5 x 0.6–2.0 cm, ovate, gland–dotted, apex acute or obtuse, base cuneate, margins entire or coarsely toothed or crenate. Flowers white or pale lilac, in 6–flowered whorls, in short racemes; bracts up to 0.1 long, hairy; calyx c 0.3 long in flower, double enlarged in fruits, hairy below outside; corolla upper lip shorter than lower lip. Nutlets subglobose or ovoid, yellowish–brown.

**Fls. & Frts.** : June–October.


**Distrib.** : Frequent in open situations. Ahmednagar, Akola, Aurangabad, Beed, Buldhana, Chandrapur, Dhule, Jalna, Latur, Mumbai, Nagpur, Nanded, Nasik, Osmanabad, Parbhani, Pune, Raigad, Satara, Yavatmal.


Herbs, 25–50 cm high, erect, much–branched with stout root–stock and roots furnished with fusiform tubers. Leaves up to 10 cm long, 5 cm broad, ovate–oblong or ovate–lanceolate, upper leaves smaller and sessile, sometimes glaucous beneath, apex acute, base cuneate. Flowers white or pinkish, in 6–flowered distant whorls in racemes; bracts minute; calyx 0.4–0.6 cm long, 4 lower teeth subulate; corolla 0.8–1.5 cm long, pubescent. Nutlets c 0.2 cm long, oblong or obovoid or suborbicular, compressed, punctulate, smooth.

**Fls. & Frts.** : June–August.


**Distrib.** : Frequent in hilly areas, known from Amravati, Akola, Aurangabad, Mumbai, Nagpur, Nanded, Yavatmal.


Herbs, 30–60 cm high, perennial, woody at base; stems and branches quadrangular. Leaves 3–6 x 2.0–4.5 cm, broadly ovate or
ovate–elliptic, glabrous above, glandular–punctate beneath, apex acute, base unequal sided, acute or subobtuse. Flowers pale purple, in whorls, in terminal racemes; bracts c 0.3 cm long, ovate; calyx 0.5–0.6 cm long, tubular–campanulate, pubescent, glandular, 2 central teeth of lower lip with upcurved awns; corolla 0.8–1.2 cm long, tube slightly incurved, puberulous, lower lip ovate, much longer than 3–lobed upper lip. Nutlets c 0.15 cm long, ellipsoid or subglobose, minutely tuberculate, brown.

_Fls. & Frts._ : August–October.


_Distrib._ : Infrequent in open situations and on the outskirts of deciduous forests. Chandrapur, Mumbai, Raigad, Ratnagiri, Sindhudurg, Thane.

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**PLATYSTOMA Beauv.**


Herbs or undershrubs, up to 1 m high, erect, annual; stems quadrangular, pubescent. Leaves 1.2–3.0 x 0.8–1.5 cm, ovate, membranous, apex acute, base narrowed, margins serrate. Flowers greenish to pale lilac, in whorls in racemes; bracts c 0.2 cm long, ovate; calyx equalling bracts, campanulate, upper lip ovate, longer than lower one; corolla hardly longer than calyx, campanulate. Nutlets ovoid, brownish, minutely reticulate.

_Fls. & Frts._ : September–November.

_Distrib._ : Infrequent in open areas in deciduous forests. ‘Konkan’ (Cooke, op. cit.), Mumbai.

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**PLECTRANTHUS L’ Herit.**

1. Stamens fused into a sheath around style:

2. Upper lip of calyx distinctly decurrent on tube:

   3. Inflorescences lax; upper lip of calyx ovate, longer than lower; bracts with a long mucro ... _P. barbatus_

   3. Inflorescences compact; upper lip of suborbicular, shorter than lower; bracts scarcely mucronate ... _P. caninus_
2. Upper lip of calyx continuous with or subdecurrent on tube:
   4. Stamens much exserted beyond lower lip of corolla; upper lip of calyx continuous with tube ... *P. amboinicus*
   4. Stamens included in lower lip of corolla; upper lip of calyx subdecurrent on tube:
   5. Leaves green; corolla mauvish–pink ... *P. rotundifolius*
   5. Leaves variegated above; corolla blue ... *P. scutellarioides*

1. Stamens entirely free:
   6. Lower lip of calyx longer than round upper one, teeth incurved and aristate ... *P. mollis*
   6. Lower and upper lips of calyx nearly equal, teeth not aristate ... *P. subincisus*


Herbs, 40–80 cm high, succulent, aromatic; stems rooting at lower nodes, branches diffuse, 4–angled, villous–hirsute in upper parts, dotted with glands, basal part glabrous and woody. Leaves 3–6 x 2.6–4.5 cm, broadly ovate, apex rounded, base rounded to truncate, hirsute and gland–dotted, lanate–tomentose beneath, margins crenulate. Flowers pinkish or lilac, in terminal pseudo–spikes, in distant verticels; bracts c 0.5 cm long, broadly ovate; calyx campanulate, 0.15–0.2 cm long; corolla 1.0–1.2 cm long, tube infundibular above, geniculate below, villous–hirtellous outside, upper lip erect, lower one declined. Nutlets globose.

**Fls. & Frts.** : August–November.

**Distrib.** : Usually grown in gardens, found as an escape. Nagpur, Pune.

Herbs, 25–50 cm high, perennial; stems decumbent, rooting at lower nodes, 4–angled, semi-succulent, densely hirsute, glandular. Leaves 3–8 × 1.6–4.0 cm, ovate-oblong or obovate, pilose on both surfaces, gland dotted, apex obtuse, base obliquely cuneate, margins crenate-serrate. Flowers purplish-blue to occasionally bluish-white; bracts 0.1–0.12 cm long, ovate-lanceolate; calyx broadly campanulate, 10-nerved, hispid outside with a tuft of longer, deflexed hairs at base, annulate inside; corolla 1.0–1.7 cm long, upper lip ovate, glandular, lower one ovate-orbicular, stipitate, sparsely hirsutulous outside, also glandular. Nutlets c 0.12 cm across, globose, granulate, blackish-brown.

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

**Illus.** : Wight, Ic. t. 1432. 1849.

**Distrib.** : Infrequent in open, dry, waste places and in dry shallow lowlands. Ahmednagar, Mumbai, Nasik, Pune, Satara.


Herbs, scented, perennial, fleshy; stems subquadrangular, softly hairy, ascending from procumbent base, simple or branched. Leaves 2–5 × 0.5–2.5 cm, obovate, subsessile, fleshy, apex obtuse, base narrowed, hairy on both sides, margins entire or crenate. Flowers pale lilac, in whorls in densely packed, woolly racemes; calyx 0.3–0.4 cm long, woolly outside and in throat, lobes 5, irregular; corolla 0.5–0.8 cm long, tube bent downwards. Nutlets c 0.1 cm long, subglobose, black, shining, smooth.

**Fls. & Frts.** : October–February.

**Illus.** : Wight, Ic. t. 1431. 1849.

**Distrib.** : Occasional in open, moist situations on sandy & rocky areas. Mumbai, Nasik, Thane.


Herbs, up to 80 cm high, annual; stems succulent and stout at base, finely pubescent above. Leaves 4–9 x 3–7 cm, ovate, membranous, finely pubescent on both sides or glabrescent above, apex acute or acuminate, base deeply cordate, margins crenate. Flowers pale lilac to light blue; calyx 0.4–0.5 cm long (1 cm in fruits), broadly campanulate, upper lip short, rounded, reflexed, lower with 4 or 5 acutely pointed teeth; corolla c 1 cm long, tube slightly decurved, lower lip subhemispheric, boat shaped, pubescent. Nutlets c 0.2 cm across, subglobose, with purplish-brown spots.

*Fls. & Frts.*: September–November.


*Distrib.*: Common throughout the State in open situations, on wastelands.


Herbs, 30–60 cm high; roots tuberous, tubers globose; stems acutely quadrangular, ascending, retrorsely pubescent. Leaves 3–6 x 2–5.5 cm, broadly ovate or ovate-oblong, scaberulous above, more so prominent on nerves, and amber-coloured gland dotted beneath, apex obtuse or rounded, base rounded or slightly truncate, margins crenate. Flowers dotted with yellowish glands in racemes in lax, 6 or more flowered, verticils; bracts c 0.3 cm long, broadly ovate, glandular; calyx broadly campanulate, scaberulous and glandular outside; corolla 0.9–1.2 cm long, tube sigmoid at base, hirsutulous outside, upper lip 3-lobed, lower ovate-orbicular.

*Fls.*: September.

*Distrib.*: Occurrence doubtful in the State. Bombay (Cooke, op. cit.).

Herbs, 40–80 cm high, perennial; stems obtusely 4–angled, semisucculent, finely tomentose. Leaves 4–9 x 2–5 cm, ovate–deltoid to broadly ovate, scabrid and hirtellous on prominent nerves beneath, also gland dotted and pale green, apex acute or acuminate, base truncate or rounded, margins coarsely crenate. Flowers hirtellous and glandular outside, in terminal racemes, in lax, 10 or more–flowered verticels; bracts c 0.5 cm long, broadly ovate; calyx obliquely campanulate, hirtellous, upper lip pubescent and glandular outside, lower one lobed; corolla 1.0–1.2 cm long, infundibular and laterally compressed above, narrowed below, hirtellous and glandular outside, tube whitish, upper lip lobed, lower one oval–orbicular, strigose and glandular.

*Fls.* : More or less throughout the year.

*Distrib.* : Usually cultivated in Marathwada (Naik, op. cit.), may be found also as an escape. Mumbai.


Herbs, erect, annual, flaccid, up to 30 cm high; stems 4–angled, thickened at base, grooved on opposite sides, glabrous or sparsely pubescent. Leaves 3–6 cm (sometimes 10 cm as well), broadly ovate to orbicular–ovate, apex obtuse or subacute, base cordate, sparsely pubescent above, glabrous and gland dotted beneath, margins sinuate–crenate. Flowers whitish, in long panicles arranged in cymose–racemes; bracts c 0.25 cm long, acute; calyx campanulate, up to 0.6 cm long in fruits, declinate, sparsely pubescent outside, gland dotted, upper lip broadly ovate, lower one 3–lobed; corolla c 0.4 cm long, tube pubescent, decurved. Nutlets c 0.1 cm long, subglobose, pitted.

*Fls. & Frts.* : September–November.

*Distrib.* : Occasional in open areas (Cooke, op. cit. has excluded this species commenting that it is not indigenous in Bombay Presidency). Pune.
POGOSTEMON Desf.

1. Leaves verticillate or whorled:
   2. Leaves 4 in a whorl, petiolate ... *P. quadrifolius*
   2. Leaves 5–10 or more in a whorl, sessile:
      3. Calyx strongly 5–ribbed; corolla glabrous ... *P. stocksii*
      3. Calyx not strongly ribbed; corolla hairy outside:
         4. Stems from creeping root–stock, slender, internodes short:
            5. Corolla less than 2 mm long, exserted portion of filament exceeding it in length ... *P. stellatus*
            5. Corolla more than 2 mm long, exserted portion of filament equalling it in length ... *P. deccanensis*
         4. Stems erect, not creeping, internodes long ... *P. erectus*

1. Leaves in opposite pairs:
   6. Inflorescence an unbranched verticillaster:
      7. Stems procumbent and rooting at the nodes ... *P. auricularius*
      7. Stems erect:
         8. Leaves linear to linear–lanceolate, petioles 0.5 mm long; calyx campanulate ... *P. salicifolius*
         8. Leaves ovate, petioles up to 25 mm long; calyx not campanulate:
            9. Bracts linear or filiform; calyx infundibular, very hairy outside; nutlets orbicular ... *P. mollis*
            9. Bracts ovate to palmate; calyx tubular, hairy outside with long hairs; nutlets ellipsoid to ellipsoid–oblong ... *P. purpurascens*

6. Inflorescence branched with two or more lateral verticillasters:
   10. Leaves subsessile, petioles less than 5 mm long ... *P. myosuroides*
   10. Leaves petiolate, petioles more than or equal to 5 mm long:
      11. Inflorescence lax, at least below:
         12. Inflorescence normally less than 50 mm long; calyx infundibular; corolla up to 6 mm long; nutlets ellipsoid–oblong ... *P. paniculatus*
12. Inflorescence normally more than 50 mm long; calyx tubular–inflated; corolla up to 8.7 mm long; nutlets obovoid ... \( P. \text{benghalensis} \)

11. Inflorescence dense:

13. Calyx teeth shallow; corolla up to 8 mm long, lower lip relatively narrow, shorter than or equal to the upper lip ... \( P. \text{plectranthoides} \)

13. Calyx teeth deep; corolla up to 4.8 mm long, lower lip relatively wide, longer than the upper lip ... \( P. \text{heyneanus} \)


Herbs, hirsute; stems procumbent and rooting at the nodes, stems and branches 4–angled. Leaves 2.5–6.0 x 1.2–3.0 cm, elliptic–oblong, apex obtuse or subacute, base rounded, margins serrate. Flowers pale violet, in verticels in terminal, up to 10 cm long racemes; bracts c 0.3 cm long, lanceolate, densely ciliate; calyx c 0.1 cm long, puberulous, teeth triangular, minute; corolla 0.2–0.3 cm long, 4–lobed, lobes oblong. Nutlets ellipsoid, smooth.

**Fls. & Frts.** : November–December.


**Distrib.** : ‘Konkan’ (Cooke, op. cit. mentions, occurrence is doubtful).

Herbs, or undershrubs, 0.5–1.5 m high; stems and branches rounded or subquadrangular, glabrous or slightly pubescent, purple. Leaves 5–12 x 3–6 cm, ovate or ovate–lanceolate, glabrous or slightly pubescent, apex acute or acuminate, base cuneate, margins coarsely and irregularly crenate–dentate. Flowers white with purple tinge, in terminal, pubescent, panicked–spikes; bracts elliptic–ovate; calyx c 0.4 cm long, puberulous, glandular; corolla c 0.8 cm long, upper lip 3–subequally lobed, lower one entire. Nutlets obovoid, brownish.

Fls. & Frts. : November–February.

Illus. : Bhatti & Ingrouille, op. cit.

Distrib. : Infrequent in open situations from ghats to plains. Akola, Bhandara, Dhule, Mumbai, Nasik (Cooke, op. cit.), Pune, Raigad, Ratnagiri, Satara, Sindhudurg (Cooke, op. cit.), Thane.

Notes. : Pogostemon benghalensis has previously been recorded as a synonym of P. plectranthoides. But, according to Bhatti & Ingrouille (op. cit.) they are distinct. However, it is possible that many records of this species from southern India and Sri Lanka are referable to P. plectranthoides. Pogostemon benghalensis has a corolla with a narrower cylindrical tube and a verticillaster which is generally less crowded than in P. plectranthoides.


Herbs, 10–20 cm high, aquatic, gregarious; stems simple or branched, softly pubescent or glabrescent. Leaves 0.5–1.0 cm long, linear, sessile, pubescent on both sides or glabrous, apex obtuse or acute, margins entire, revolute. Flowers pink, in 2.5–6.0 cm long, villous spikes, whorls close and crowded; bracts linear, as long as flowers; calyx 0.15–0.2 cm long, hemispheric or campanulate, pubescent; corolla c 0.2 cm long, hairy outside. Nutlets ellipsoid, yellowish–brown, smooth.

Fls. & Frts. : September–December.
Illus. : Bhatti & Ingrouille, op. cit.

Distrib. : Frequent in open, watery places, rice fields, roadside ponds and on river beds from ghats to plains. Ahmednagar, Chandrapur, Kolhapur, Pune, Raigad, Ratanagiri, Satara, Sindhudurg, Thane.


Herbs, 15–30 cm high; stems hispid hairy, simple or sparingly branched. Leaves 9–12 in a whorl, 0.6–1.2 cm long, narrowly linear, apex acute or obtuse, papillose and rough on both sides, gland dotted beneath, margins distantly and minutely toothed towards apex. Flowers pink, in 2.5–5.0 cm long spikes; bracts linear, densely ciliate, longer than calyx and corolla; calyx hemispheric, up to 0.1 cm long, villous; corolla up to 0.2 cm long, upper lip smaller and entire. Nutlets ellipsoid, smooth.


Illus. : Bhatti & Ingrouille, op. cit.

Distrib. : Infrequent in moist, open situation and in rice fields, from ghats to plains. Mumbai (Bhatti & Ingrouille, op. cit.), Sindhudurg (Cooke, op. cit. – ‘Malwan’).


Herbs or undershrubs, 50–150 cm high; stems more or less softly hairy, thickened at base, branches horizontal, obtusely 4–angled, puberulous or strigose. Leaves 3–10 x 1.5–8 cm, ovate to ovate–rhomboid, sparsely scabrid above, hairy beneath, apex acute to subacuminate, base truncate or cuneate, margins irregularly dentate–crenate. Flowers lilac or white, in spikes in up to 14 cm long
panicles; bracts lanceolate, as long as calyx; calyx 0.4–0.6 cm long, tubular, hirtellous outside; corolla 0.45–0.48 cm long, upper lip lobed, lower simple. Nutlets orbicular, c 0.1 cm across, glabrous.

**Fls. & Frts.** : November–January.


**Distrib.** : Cooke (op. cit.) mentions that the plant is grown in gardens, but often it has been found as an escape. Mumbai, Raigad, Thane.


Herbs or undershrubs; stems solid, terete. Leaves 3 x 2.5 cm, ovate, rounded at base, obtuse at apex, margins double dentate, hairy on both sides. Flowers in a 5.5 cm long, single spike, lax below and dense above; bracts linear or filiform; calyx infundibular, c 3.5 x 4.0 mm, glabrous within, very hairy without, teeth ciliate; corolla up to 5.5 mm long, upper lip hairy. Nutlets orbicular, reticulate–foveolate.

**Illus.** : Bhatti & Ingrouille, op. cit.

**Distrib.** : Concan, Mumbai & Western ghats (Bhatti & Ingrouille, op. cit.).


Herbs, 14–40 cm high, erect, much branched, perennial, root stock woody; stems and branches terete, silky–tomentose. Leaves 2.4–4.8 x 0.3–0.6 cm, elliptic–oblong or linear–oblong, subsessile or sessile, silky–villous on both sides, apex subacute or obtuse, margins denticulate. Flowers reddish, in simple or branched, tomentose, cylindric spikes, 2.5–8.0 cm long; bracts c 0.1 cm long, linear–oblong; calyx 0.1–0.12 cm long, densely tomentose; corolla tube included, lobes 4, oblong. Nutlets ellipsoid, granulate.

**Fls. & Frts.** : November–January.

**Illus.** : Bhatti & Ingrouille, op. cit.

**Distrib.** : Infrequent in open areas along ghats. Mumbai, Satara.

Herbs or undershrubs, 50–100 cm high; stems and branches slender, laxly hairy or pubescent. Leaves 2.5–9.0 x 1.2–7.0 cm, ovate to ovate–elliptic, membranous, in unequal pairs, appressed hairy on both sides, apex acuminate, base cuneate, margins inciso–serrate. Flowers white or bluish, in axillary or terminal, 10–20 cm long spikes forming lax panicles; bracts c 0.6 cm long, obliquely ovate; calyx c 0.5 cm long, infundibular, pubescent; corolla 0.4–0.6 cm long, tube slender. Nutlets broadly ovoid, brownish–black, smooth.

**Fls. & Frts.** : November–January.


**Distrib.** : Infrequent in open areas ‘Konkan’ (Cooke, op. cit.).


Undershrubs, 0.5–1.5 m high, aromatic; stems and branches subquadrangular or rounded, dark purple, grey hairy. Leaves 5–10 x 3–5 cm, ovate or ovate–lanceolate, glabrescent above, white tomentose beneath, apex acute, base truncate, margins double dentate. Flowers purple, in white tomentose panicled–spikes, whorls subtended by foliar bracts; calyx 0.4–0.5 cm long, pubescent, tubular–inflated; corolla 0.6–0.8 cm long, upper lip 3–lobes, lower one entire. Nutlets obovoid, smooth.

**Fls. & Frts.** : February–May.


**Distrib.** : Frequent, from ghats to plains in open areas and along forest edges. Ahmednagar, Amravati, Dhule, Mumbai, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

Herbs, 20–60 cm high, branched, villous with spreading hairs; stems and branches quadrangular. Leaves in unequal pairs, 4–8 x 3–6 cm, ovate to ovate-lanceolate, membranous, softly hairy on both sides, apex acute, base cuneate, margins irregularly crenate-serrate. Flowers white to purplish-white, in dense, villous spikes in close, many-flowered whorls; bracts ovate-lanceolate, slightly falcate; calyx 0.4–0.5 cm long, pubescent, tube angled; corolla 0.5–0.6 cm long, upper lip 3–lobed, lower one white, broadly ovate. Nutlets ellipsoid to ellipsoid-oblong, reticulate with punctate walls.

**Fls. & Frts.** : October–May.

**Illus.** : Bhatti & Ingrouille, op. cit.

**Distrib.** : Frequent in the undergrowth in deciduous forests from ghats to plains. Buldhana, Kolhapur, Mumbai, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.


Undershubs, 25–120 cm high, erect, stout; root-stock woody, camphor like odorous; stems and branches tomentose or softly pubescent. Leaves 2–10 x 0.3–0.8 cm, linear-oblong or linear-lanceolate, softly pubescent on both sides, apex acute or obtuse, base narrowed, margins subentire or usually serrate. Flowers rosy in dense, 7–15 cm long, tomentose spikes; bracts c 0.15 cm long, obconic, pubescent; corolla c 0.3 cm long, lobes oblong. Nutlets very small, ellipsoid, black.

**Fls. & Frts.** : February–April.

**Illus.** : Bhatti & Ingrouille, op. cit.

**Distrib.** : Infrequent in rocky areas. Sindhudurg (Cooke, op. cit.).
Pogostemon salicifolius (Dalz. ex Hook. f.) El-Gazzar & Watson

Herbs, 15–50 cm high, erect; stems reddish, much branched, terete, branches terete or subquadrangular. Leaves 2.5–7.0 x 0.4–1.2 cm, lanceolate or linear–lanceolate, opposite, sessile or subsessile, membranous, glabrous, gland dotted, apex acute, base narrowed–acute, margins distinctly serrate or subentire. Flowers purplish, in dense, villous, 3–8 cm long, spikes; bracts c 0.4 cm long, lanceolate, hairy; calyx c 0.2 cm long, villous, teeth as long as tube; corolla c 0.3 cm long, equal to bracts, lobes oblong. Nutlets ellipsoid, smooth, shiny.

Fls. & Frts. : January–April.

Illus. : Bhatti & Ingrouille, op. cit.

Distrib. : Frequent along streams in moist areas. Mumbai (Bhatti & Ingrouille, op. cit.), Pune, Satara.


Herbs; stems solid, terete, with short internodes, puberulent. Leaves in whorls of up to 10, 9 x 2 mm, linear, base truncate, apex acuminate, margins entire, revolute, hairy. Flowers in a single terminal spike; bracts linear–clavate or spathulate; calyx campanulate, tube and teeth hairy within and with white hairs outside, teeth ciliate, incurved in fruit; corolla c 1.7 mm long, lower lip c 0.6 x 0.6 mm, upper lip 1.5 mm across, central lobe c 0.5 x 0.5 mm, upper and lower lip hairy without. Nutlets oblong, tan, smooth.

Illus. : Bhatti & Ingrouille, op. cit.

Distrib. : Mumbai (Bhatti & Ingrouille op. cit.).

Herbs, erect, stout; stems decumbent below, branches suberect. Leaves 9–20 in a whorl, 0.8–1.6 x 0.2–0.25 cm, linear, sessile, apex obtuse, margins recurved. Flowers pale purple in 5–8 cm long, dense-flowered, slender spikes, rachis hairy; bracts filiform, club shaped at tips; calyx 0.1–0.15 cm long, densely pubescent, tube and teeth equal; corolla c 0.2 cm long, lobes rounded. Nutlets ellipsoid, smooth, brown, enclosed in calyx.

*Fls. & Frts.*: December–March.

*Distrib.*: Occasional in moist situations. ‘Konkan’ & Mumbai (Bhatti & Ingrouille, op. cit.).

**Salvia L.**

1. Leaves pectinately lobed; calyx villous with long hairs; corolla exannulate  ...  *S. santolinaefolia*

1. Leaves margins crenate or serrate; calyx pubescent; corolla annulate within :

   2. Erect herbs; calyx shortly pubescent, upper lip of calyx entire  ...  *S. plebeia*

   2. Straggling undershrubs; calyx with gland tipped hairs; upper lip of calyx 3–toothed  ...  *S. aegyptiaca*


Undershrubs; branches straggling, divaricate, rigid, pubescent. Leaves sub sessile, 1.5–2 x 0.2–0.5 cm, linear–lanceolate, base cuneate, apex acute, margins crenate, rugose, nerves and veins prominent, gland dotted beneath. Flowers in 2–4–flowered whorls along 10–15 cm long thyrsoid panicles; calyx 3–4 mm long, accrescent, covered with gland tipped hairs, upper lip 3–toothed, the lateral teeth bent towards the middle one, lower lip 2–toothed, longer than the upper lip; corolla
Salvia santolinaefolia Boiss.
tubular, 5 mm long, dull blue or dull purple–violet, annulate within, upper lip slightly notched, lower lip 3–lobed, middle one longer. Nutlets oblong–ellipsoid, 2 mm long, bluish–black, smooth.

_Fls. & Frts._ : September–November.

_Distr._ : Rare, on rocky soil of wastelands. Aurangabad (Naik, op. cit.).


Herbs, 30–50 cm high, erect; stems suffruticose, subquadrangular, grooved, hairy, sparingly branched. Leaves 4–9 x 2–4 cm, ovate or oblong–lanceolate, apex subacute or obtuse, base acute, decurrent into petiole, glabrous, margins crenate. Flowers white or lilac, in whorls in spicate–racemes in panicles; bracts linear–spathulate; calyx 0.2–0.3 cm (up to 0.5 cm long in fruits), hairy, 2–lipped, upper lip entire, lower one longer, 2–fid; corolla 0.4–0.5 cm long, upper lip oblong, lower one 3–lipped. Nutlets up to 0.1 cm long, ovoid, smooth, brown.

_Fls. & Frts._ : October–March.

_Distr._ : Common throughout the State in open, moist situations.


Undershrubs, stunted; branches many, hoary pubescent, rigid, 4–angled. Leaves 0.3–2.5 x 0.2 cm, linear or linear–lanceolate, very rigid and rugose, subsessile to shortly petiolate, pectinately lobed, lobes rounded, margins revolute. Flowers white, in 2–3–flowered whorls in slender spikes; bracts elliptic; calyx–tube campanulate, upper lip 3–toothed, lower one 2–toothed; corolla up to 0.5 cm long, upper lip oblong, lower one 3–lobed.

_Fls._ : October–November.


**Scutellaria L.**

Scutellaria discolor Wall. ex Bth.

Herbs, elegant, 10–50 cm high, annual, pubescent, rooting at base. Leaves chiefly radical, sometimes subradical, 3.5–9.0 x 2.0–3.5 cm, elliptic–orbicular or ovate, sparsely hairy on both sides, purple beneath, apex obtuse–rounded, base cordate, margins crenate. Flowers pale blue to dark violet in terminal, slender, 5–15 cm long racemes (rarely branched); calyx 0.2–0.3 cm long, cup–shaped, pubescent; corolla 1.0–1.2 cm long, 2–lipped. Nutlets minutely tuberculate, brown.

Fls. & Frts. : August–November.

Distrib. : Occasional in shady places in moist deciduous forests along ghats. Pune, Ratnagiri, Satara, Sindhudurg.

CULTIVATED SPECIES :


Shrubs or small trees; branches stout, terete, densely or laxly, white tomentose or woolly, rarely glabrous. Leaves elliptic–lanceolate, cuneate at base, acuminate at apex, subentire or obscurely crenate along margins, glabrous above, densely tomentose beneath, with white or greyish or brown tomentum, rarely green and glabrous; petioles densely tomentose. Flowers in terminal spikes; calyx campanulate, decurved, hoary or tomentose, teeth short rounded; corolla white or pinkish–red, tubular–campanulate, 5–lobed, upper longest, tomentose along the margins. Nutlets brown.

Distrib. : Planted in gardens.


Herbs, hairy or glabrous. Leaves shortly petioled or sessile, oblong–ovate or lanceolate, cuneate at base, acute at apex, obtusely or acutely serrate along margins, sparsely hairy with minute hairs or almost glabrous. Flowers in axillary capitate whorls; calyx campanulate, hairy, teeth triangular or lanceolate, acuminate, fruiting calyx scarcely enlarged, pink in colour; corolla white, puberulous on both sides, tube as long as the calyx or slightly exserted, lobes spreading.

Distrib. : Cultivated in gardens for aromatic leaves. Thane.

Herbs; stems erect or ascending, branched, reddish. Leaves petioled, lanceolate or ovate–lanceolate or ovate–oblong, acute at apex, sharply serrate along margins, glabrous or pubescent on veins beneath, punctate with minute oil–globules. Flowers in thick terminal spikes; calyx resinous–dotted, glabrous below, teeth sharp which usually ciliate; corolla purple, glabrous.

*Distrib.*: It is native of America, usually grown in gardens. Pune.


Herbs; stems mostly ascending, much branched. Leaves petioled, round–oval, entire or slightly crenate along margins, pubescent. Flowers in dense axillary whorls; calyx mouth closed by hairs; corolla bluish–lilac, upper lobe notched.

*Fls.*: May (also August–September).

*Distrib.*: Cultivated in gardens. Pune.


Annual herbs; stems erect, quadrangular, glabrous. Leaves sessile, linear–lanceolate, narrowed at base, acute at apex, distantly serrate along margins. Flowers whorled in terminal thyrsoid panicles; calyx tubular–campanulate, appressed hairy outside, teeth 5, subequal, lanceolate–subulate, ciliate; corolla purple or lilac, lobes 4, obovate, emarginate, rather unequal.

*Fls. & Frts.*: September–January.

*Distrib.*: It is native of Europe, commonly cultivated in gardens throughout the State.


Erect, aromatic, annual or perennial herbs; stems mostly obtusely angled, soft pubescent to glabrate. Leaves ovate to ovate–lanceolate. Flowers in dense capitate clusters, terminal or sometimes axillary, mostly bracteate; bracts whitish or rarely purplish, the inner mostly hirsute–ciliate; calyx conspicuously and densely bearded at throat; corolla purple or purplish dotted, pubescent at least on the upper lip.
Distrib.: Cultivated in gardens as an ornamental. Pune.


var. basilicum.

Erect, aromatic herbs; stems much branched, more or less pubescent, dense hairy on nodes. Leaves ovate or ovate–lanceolate, entire or crenate–serrate along margins, sparsely pubescent on both surfaces. Flowers whorled in thyrsoid racemes; floral bracts broadly ovate or suborbicular, pubescent and ciliate with long white hairs; calyx tubular, accrescent, upper lip ovate or suborbicular, ciliate or glabrous on the back; corolla white–pubescent outside. Nutlets ellipsoid, faintly rugose or pitted, black.

*Fls. & Frts.*: August–November.

Distrib.: Commonly grown in gardens and round about religious places. Almost common throughout the state.


Erect herbs; stems purple, almost glabrous. Leaves ovate–lanceolate, glabrous on both surfaces. Flowers in short and dense thyrsoid racemes of whorls; corolla pink–purplish.

*Fls. & Frts.*: August–November.

Distrib.: It is planted in gardens, almost throughout the State.


Erect or prostrate aromatic herbs; stems stoloniferous, sometimes dichotomously or corymbosely branched, villous or glabrate. Leaves petioled, broadly ovate, obtuse at apex, entire or rarely toothed along margins. Cymes in corymbose heads; flowers polygamous, larger ones bisexual, smaller ones pistillate; calyx campanulate, enlarged in fruit, equally 5–toothed, throat hairy at the mouth; corolla pink, tube longer than the calyx, upper lip flat, notched, lower 3–lobed, spreading. Nutlets smooth, brown.

Distrib.: Often grown in gardens as aromatic herb. Pune

Herbs; stems stout, branches pyramidal. Flowers cobalt–blue.

*Distrib.* : Cultivated as an ornamental in gardens. Pune.


Erect, pubescent herbs; stems acutely 4–angled, covered with white, short, recurved and long patent hairs. Leaves ovate or ovate–oblong, cordate and deeply sinuate or cuneate at base, acute to acuminate at apex, pubescent on both the surfaces. Flowers arranged in whorls; calyx tubular–compansulate, bi–lipped, upper lip entire, dark greenish–purple along its length, lower lip green, ultimately stramineous in fruits; corolla deep scarlet, tubular, pubescent outside. Nutlets ellipsoid, rugose, blackish.

*Fls. & Frts.* : Almost throughout the year.

*Distrib.* : Native of Central and South America, grown in gardens as an ornamental. Common throughout the State.


Perennial herbs; stems much branched from base. Leaves ovate–lanceolate to ovate or lanceolate to oblong–lanceolate, glabrous above, puberulous along nerves beneath. Flowers in racemes; calyx oblong–campanulate, glabrous within, soft dense tomentum without; corolla violet–blue, without a hairy ring inside, tube ventricose above, upper lip villous without.

*Distrib.* : Native of Texas. Cultivated as an ornamental in gardens. Ahmednagar, Pune.


Shrubs; branches subterete with white deciduous wool. Leaves lanceolate–linear, pubescent above, tomentose beneath. Flowers in thyrsoid racemes of many–flowered whorls; calyx funnel shaped with about equal lobes, densely violet to lavender–lanate; corolla white, without a hairy ring within, upper lip much exceeding the lower.

*Fls.* : March–May.
**Distrib.** : Native of Mexico, planted in gardens as an ornamental. Osmanabad, Satara.


Subshrubs; branches more or less white–woolly. Leaves petioled, oblong, entire or finely crenate, rugose. Flowers in nearly simple racemes; calyx membranous, campanulate, purplish–tinged, 2–lipped; corolla purple, blue or white, with a hairy ring inside.

**Distrib.** : Occasionally grown in gardens. Mumbai, Pune.


Erect, much branched, annual herbs; stems 4–angled, shortly hairy in the upper half. Leaves ovate, obtusely crenate–serrate along margins, glabrous or sparsely pubescent on nerves beneath. Flowers in 2–flowered whorls on pubescent axis; calyx campanulate, 2–lipped, 7–9–nerved, strongly reticulate; corolla scarlet, tubular, without a hairy ring inside, pubescent without. Nutlets oblong, triquetrous, smooth, mottled with black.

**Distrib.** : Native of Brazil, grown in gardens as an ornamental. Aurangabad, Pune.


Annual herbs, erect, more or less villous all over. Leaves ovate–oblong, more or less densely pilose. Flowers in 6–flowered, distantly disposed whorls on simple racemes; bracts broadly ovate, almost as long as the flowers; calyx tubular, shortly bilabiate, granular hairy on nerves, upper lip 3–toothed, teeth very unequal, lower lip 2–cheft; corolla tubular, without hairy ring within, upper lip pink, violet or white, lower one pale.

**Fls.** : September–November.

**Distrib.** : Native of S. Europe, planted in gardens for its beautiful flower and coloured floral bracts. Marathwada (Aurangabad, Beed, Jalna, Latur, Nanded, Osmanabad & Parbhani).

Erect herbs; branches slender, pinkish, woody below, finely hispid with white hairs. Leaves oblong–linear or lanceolate, glabrous above, sparsely hairy below, with deep pitted glands on both sides. Flowers in small axillary cymes; calyx campanulate, hairy, glandular, teeth 5, aristate, subequal, ciliate; corolla rose, sparsely pubescent, upper lip bifid, lower lip trilobed, middle one larger. Nutlets black.

_Distrib._ : Cultivated in gardens. Mumbai.


Much branched shrubs; branches prostrate or ascending, hairy or glabrous, strongly aromatic; rootstock woody. Leaves subsessile, elliptic–oblong or oblong–ovate or lanceolate, conspicuously gland dotted on both surfaces. Flowers in compact capitate spikes, polygamous, male flowers larger; calyx tubular–campanulate, hairy outside and at the mouth inside, upper lip 3–toothed, lower 2–toothed, teeth linear, ciliate; corolla purple, tube as long as the calyx. Nutlets smooth, mounted upon a short gynophore.

_Distrib._ : Native of Europe, grown in gardens as an ornamental. Pune.

**PLANTAGINACEAE**

_(S. Moorthy)_

**PLANTAGO L.**

1. Leaves rosette, ovate–elliptic to oblong ... _P. erosa_

1. Leaves not rosette, usually linear :

2. Flowers in capitate axillary spikes ... _P. exigua_

2. Flowers in ovoid, cylindric or elongated spikes :

3. Inflorescence spikes under 5 cm long ;
seeds smooth, yellowish–brown ... _P. ovata_

3. Inflorescence spikes 5–15 cm long;
seeds rugulose, dull black ... _P. major_

Herbs with short rhizomes, scapigerous perennials. Leaves in basal rosettes 5–20 x 3–15 cm, ovate–elliptic to oblong, base decurrent and attenuate, margins entire, remotely dentate, apex rounded, obtuse or acute; petioles 4–15 cm long, narrowly winged. Flowers white or dull yellow in terminal 1–30 cm long, terete or ribbed spikes or scape like 4–20 cm long peduncles. Capsules 0.3–0.4 cm long, ovoid, transversely dehiscent with a conical lid. Seeds 4–8, globose-angular, minute, rugulose.

**Fls. & Frts.** : September–January.

**Illus.** : Naik, op. cit. 732, f. 90, a–e & plate 55 (between pages 734. 735).

**Distrib.** : Along river beds and around fields, occasional. Aurangabad, Nanded.

**Notes.** : According Naik op. cit. This is probably a recent introduction along with crop seeds. It is fast naturalising around irrigated fields very variable in size of habit, leaves and inflorescence.


Herbs, 10–20 cm tall, erect or decumbent, often branching from the base, glabrous or minutely glandular–pubescent. Leaves apparently whorled upper sometimes alternate 2–3.5 x 0.1–0.15 cm, base sheathing and connate with revolute, ciliate margins, apex acute. Flowers white in condensed, axillary 2–4 cm long spikes. Capsules 0.2–0.3 cm across, subglobose, brown, membranous. Seeds 2, boat–shaped, brownish.

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


Herbs, perennial. Leaves radical, alternate, 2.5–7.5 cm long, variable in width, ovate to ovate–oblong, base tapering decurrent and sheathing, apex obtuse or subacute, margins entire or toothed, nearly glabrous. Flowers scattered or crowded in long, slender, rather lax spikes. Capsules 0.3–0.4 cm long, circumscissile. Seeds 4–8, angled.

**Fls. & Frts.** : September–March.
Distrib.: Along the river banks or introduced. Bombay, Pune, Satara, Konkan (Cooke, op. cit.).


Woody annuals. Leaves 7.5–22 x 0.5 cm, narrowly linear or filiform, base attenuated, apex finely acuminate, margins entire or distantly toothed. Flowers in scapes of ovoid or cylindric spikes. Capsules c 0.8 cm long, ellipsoid, obtuse. Seeds c 0.3 cm long, ovoid–oblong, boat shaped.

Fls. & Frts.: October–December.

Distrib.: Doubtfully indiginous, as an escape, introduced or imported. Bombay (Cooke, op. cit.), Pune.

CULTIVATED SPECIES:


Herbs, perennials, aculescent, upto 60 cm tall. Leaves 10–40 x 1–5 cm, narrowly lanceolate–elliptic, 5–nerved, membranous, glabrous or slightly pilose, acute at the base, narrowed into a narrow petiole. Scapes erect, 15–60 cm long, sulcate, sparsely covered with white hairs. Spikes dense, conic–cylindrical subglobose to globose, 1–4 cm long, bracts broadly ovate, narrowly ovate–ovate. Seeds 2, smooth.

Fls. & Frts.: October–March.

Distrib.: Planted. Satara

Notes: Very variable species, distributed over vast areas in Africa, Europe and Asia, introduced all over the world. Seeds used as a purgative and haemostatic. Leaves are applied on wounds.

NYCTAGINACEAE

(S. Moorthy)

1. Armed, scandent shrubs
   ... *Pisonia*

1. Unarmed, erect or trailing herbs or shrubs:
   2. Anthocarps less than 0.3 cm long, 5–ribbed
      ... *Boerhavia*
   2. Anthocarps more than 0.7 cm long, 10–ribbed, with wart–like appendages
      ... *Commicarpus*
1. Shrubs, erect:
   2. Fruits clavate:
      3. Fruits ribbed, furnished with a row of glands ... *B. fruticosa*
      3. Fruits with quite glabrous obtuse ribs ... *B. rubicunda*
   2. Fruits truncate, non–glandular ... *B. erecta*
1. Herbs, diffuse or subscandent ... *B. repens*


Shrubs; young stems purplish. Leaves simple, opposite pairs unequal, 1–4 x 0.5–3 cm, linear–lanceolate to ovate, apex rounded, apiculate, base rounded or acute, margins wavy undersurface whitish. Flowers purplish when young, whitish at maturity in groups of 1–3 in much branched, umbelliform clusters. Anthocarps obconical with a truncate crown.

*Fls. & Frts.* : October–February.


*Distrib.* : As a weed in gardens or in waste places and along railway tracks. Bombay, Jalna, Pune.


Shrubs, erect, viscid glandular hairy. Leaves 3–5 x 1.5–3.5 cm, ovate or deltoid–ovate, glandular hairy on both sides, apex acuminate, base usually truncate. Flowers pink in umbels which are usually solitary on the top of peduncle, but sometimes superposed. Anthocarps c 0.3 cm long, ribbed, furnished with a row of glands along the ribs.

*Fls. & Frts* : October–March.

*Distrib.* : Infrequent. ‘Konkan’ (Cooke, op. cit.), Pune.

*Notes* : Hook. f. op. cit. is of the opinion that this is probably an African species.

1. Flowers in strict axillary cymes, barely exceeding the foliage ... **var. repens**
1. Flowers in diffuse terminal panicles, well exceeding the foliage... **var. diffusa**

**var. repens. 'Punarnava'.**

Herbs, perennials, prostrate; branches 15–45 cm long, glabrous or pubescent. Leaves 0.8–2 x 0.5–1 cm, ovate–lanceolate, acute at apex, oblique at base, margins crisped along, green and glabrous above, paler and thinly pubescent beneath. Fruits 3.5–4 mm long, 5–ribbed, glandular all over.

**Fls. & Frts. :** July–March.

**Distrib. :** Common on dry gravelly soils throughout the state.


Herbs diffuse; roots fusiform; stems prostrate or ascending, divaricately branched, often purplish. Leaves, the larger 2.5–3.5 cm, the smaller 1–2 cm long, both nearly as broad as long, broadly ovate or sub–orbicular, base rounded or subcordate, margins wavy. Flowers pink, 4–10 together in small umbels arranged in slender, long stalked, corymbose, axillary and terminal panicles. Anthocarps c 0.3 cm long, clavate, rounded, broadly and bluntly ribbed, very glandular.

**Fls. & Frts. :** November–March.,


**Distrib. :** A troublesome weed along the railway tracks, road sides and in waste places throughout the state.


Shrubby, 45–60 cm high; root–stocks woody. Leaves 2–4.5 x 0.5–0.9 cm sub–sessile, linear–oblong or oblong–lanceolate, obtuse, often mucronulate, fleshy, rugose and crescent beneath. Flowers in very
large, lax, much branched, trichotomous, leafless panicles. Anthocarps c
0.3 cm long with 5 obtuse ribs, minutely hairy between the ribs.

Fls. & Frts. : October–March.

Distrib. : In the outskirts of forests, Rare. Buldhana (169383).

Notes. : The leaves are curiously mottled with white when dry.

COMMICARPUS Standley

1. Perianth campanulate with an inconspicuous basal tube; flowers (including anthocarps) under 0.7 cm long; with a ring of wart–like gland at the apex ... C. boissieri

1. Perianth infundibuliform with a conspicuous basal tube; flowers (including anthocarps) over 0.7 cm long, uniformly tuberculate ... C. chinensis


Decumbent, often climbing. Leaves thick, 3.5–5.5 cm long, nearly as broad as or sometimes broader than long, broadly ovate or suborbicular, apex acuminate, base cordate, mucronate. Flowers white in long, pedunculate, recemes arranged in few flowered, distant whorls along a slender rachis. Anthocarps 0.4 cm long, clavate.

Fls. & Frts. : August–December.

Illus. : Wight, op. cit.

Distrib. : In plains and on hills. Ahmednagar, Aurangabad, Beed, Buldhana, Dhule, Jalna, Konkan, (Woodrow), Nasik.

Herbs, diffuse, subscandent. Leaves 3.5–7.0 x 3.5 cm, deltoid–ovate, apex acute or acuminate, base cordate or truncate, repand–sinuate, glabrous above, pubescent beneath. Flowers pink in 3–8 flowered umbels on 2.0–5.5 cm long slender peduncles. Anthocarps c 0.6 cm long, clavate, faintly ribbed, rough with glandular knobs.

**Fls. & Frts.** : October–February.


**Distrib.** : Along the hedges. Ahmednagar, Akola, Aurangabad, Beed, Bombay, Buldhana, Chandrapur, Jalna, Latur, Nanded, Nasik, Osmanabad, Parbhani, Pune, Thane.

**PISONIA L.**


Shrubs, scandent with many, axillary, nearly opposite, curved, sharp, spines. Leaves 2.5–7.5 x 1.2–3.7 cm. elliptic or elliptic–lanceolate, apex obtuse, base tapering, entire, glabrous or nearly so. Flowers greenish in small, dense, cymose, pubescent clusters, combined into small, pedunculate, axillary panicles. Fruits long pedicillate, oblong or clavate, 5–ribbed, pubescent between the ribs, each rib muricate with one or two vertical rows of stalked viscous glands.

**Fls. & Frts.** : January–June.

**Illus.** : Wight, Ic. tt. 1763 – 1764. 1852.

**Distrib.** : Along the coastal regions. Infrequent. Konkan, (Cooke, op. cit.).

**CULTIVATED SPECIES** :


Climbers, unarmed though not entirely free from spines; spiny hooks upto 1 cm long, slightly curved. Leaves 4–10 x 1.7–5 cm ovate, acute or shortly acuminate at apex, cordate at base, sparsely pubescent; petioles 0.3–1 cm long. Bracts 3, 3.5–4 mm long, ovate, acuminate,
veined, magenta coloured. Flowers 3, c 2 cm long; sepal 5, acute, c 2.5 mm long, tip villous, yellow above, lilac beneath, alternating with 5 irregular and adnate yellow lobed appendages; pedicel subsessile, c 3.5 mm long, adnate to the bract; filaments 8–13 mm long, unequal, inserted. Ovary 2 mm long, more or less elongated, style 1 mm long, stigma 2.5 mm long, plumose.

_Fls. & Frts._ : Throughout the year.

_Distrib._ : Planted. Thane.

_Notes._ : Native of Brazil, widely cultivated in subtropics and tropics. Much profusely flowered climber as an ornamental in plains and also grown as dwarf pot plant.


Shrubs, straggling, large, thorny; thorns straight or recurved, 0.5–5 cm long; branchlets pubescent. Leaves 2–10 x 1–6 cm, ovate–elliptic to oblong, apex acuminate, base acute or subcordate, margins entire, more or less pubescent on both surfaces; petioles 0.5–2.5 cm long. Flowers variable in triads 1–7 together in peduncled cymes united into leafy terminal panicles. Perianth 2–3 cm long, tubular, pale yellow or white within, purplish black and pubescent outside.


_Distrib._ : In gardens as a covering to trellises, archways and the like. Common. Ahmednagar, Bombay, Chandrapur, Osmanabad, Pune, Thane, Yavatmal.


Herbs upto 1 m tall; roots moniliform; stems thickened at nodes. Leaves 3–15 x 2–9 cm, ovate–triangular apex acute, base cuneate, rounded, truncate or slightly cordate, margins undulate. Flowers variously coloured, red, pink, white, yellow or variegated in corymbs crowded at the ends of branches; pedicels short. Fruits 0.6–0.8 cm across, glabose–rugose black.
Fls. & Frts.: August–January.

Distrib.: Grown in garden. Ahmednagar.

Notes.: Native of Mexico.


Shrubs or small trees, up to 2–12 m tall; young shoots and inflorescence pubescent. The older leaves are lettuce–green acute the longer younger yellowish–white. Anthocarps clavate, 5–ribbed, the angles with only one row of prickles.

Fls. & Frts.: February–May.


Notes.: The ‘Lettuce’ or the ‘Mollucean Cabbage’ whose leaves are said to be eaten by natives in Bali.

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**AMARANTHACEAE**

*(P. Lakshminarasimhan & Archana Godbole)*

1. Leaves alternate:
   2. Fertile flowers subtended by sterile modified flowers .... **DIGERA**
   2. Fertile flowers not as above:
      3. Ovary with 4–20 ovules .... **CELOSIA**
      3. Ovary uniovulate:
         4. Pseudostaminodes present .... **AERVA**
         4. Pseudostaminodes absent:
            5. Stamens 1–2 .... **NOTOSAERVA**
            5. Stamens 3–5:
               6. Flowers bisexual .... **ALLMANIA**
               6. Flowers unisexual .... **AMARANTHUS**

1. Leaves opposite:
   7. Fertile flowers subtended by modified sterile flowers:
      8. Pseudostaminodes present .... **CYATHULA**
      8. Pseudostaminodes absent .... **PUPALIA**
7. Fertile flowers not as above:

9. Anther filaments fused at top … Gomphrena

9. Anther filaments fused at base or free:

10. Pseudostaminodes absent … Notosaerva

10. Pseudostaminodes present:

11. Capsules longitudinally dehiscent at maturity … Trichuriella

11. Capsules indehiscent or irregularly dehiscent:

12. Flowers in dense, sessile, axillary heads … Alternanthera

12. Flowers in elongate, pedunculate spikes … Achyranthes

Achyranthes L.

1. Inflorescence of terminal spikes, simple or branched; flowers greenish–white … A. aspera

1. Inflorescence first erect, later patent, finally deflexed and appressed to rachis; flowers rosy or purplish … A. coynei


1. Leaves thick, velvety tomentose or silky; rachis stout … var. aspera

1. Leaves membranous, glabrous or sparsely pubescent; rachis slender … var. porphyristachya

var. aspera. ‘Aghada’, ‘Aghara’.

Herbs, woody, 30–80 cm high, erect. Leaves 2.5–9.0 x 1.5–6.0 cm, elliptic–oblong, ovate or obovate, apex acuminate. Inflorescence of elongate terminal spikes. Flowers greenish–white. Utricles oblong–cylindric, truncate, enclosed in hardened perianth.

Fls. & Frts. : September–October.


Distrib. : Common in open areas, forest edges.

Herbs, woody, erect, 30–90 cm high. Leaves 4.5–15.0 x 2–7 cm, broadly elliptic, lanceolate, apex acuminate. Flowers greenish–purple, in terminal, simple or branched spikes. Utricles truncate at apex.

Fls. & Frts.: September–February.

Distrib.: Common, weed of wastelands, around fields, etc.


Perennial shrubs, erect, 0.9–3.5 m high; stems terete, woody, branches patent. Leaves dimorphic, lower ones c 23.5 x 9.0 cm, upper ones gradually decrease in size, all elliptic or lanceolate, pubescent or subpubescent, decurrent. Spikes axillary as well as terminal. Flowers at first erect, later patent, rosy or purplish. Capsules c 0.5 cm long Seed one, brown, smooth.

Fls. & Frts.: October–February.

Illus.: Bhogaonkar & Devarkar, op. cit.
Distrib.: Endemic to Maharashtra. Amravati, Pune, Raigad, Sindhudurg, Thane.

AERVA Forssk.

1. Spikes axillary and terminal:

2. Plants erect; leaves alternate; flowers unisexual, dioecious ... A. javanica

2. Plants climbing; leaves alternate or opposite; flowers bisexual ... A. sanguinolenta

1. Spikes all axillary:

3. Erect or clambering; stem and branches densely white wooly; leaves broadly elliptic or obovate, acute; two inner tepals obtuse ... A. lanata

3. Bushy, procumbent; stem and branches glabrate or sparsely tomentose; leaves oblong–lanceolate to oblanceolate, obtuse; all tepals aristate ... A. wightii

Herbs, 30–50 cm, high, pubescent. Leaves sessile, 2–5 x 0.5–1.0 cm. Flowers in tomentose spikes; bracteoles ovate, acute, hyaline; Perianth lobes elliptic, oblong, woody on back. Utricles orbicular–ovoid. Seeds lenticular, black, shining.

*Fls. & Frts.*: February.

*Illus.*: Wight, Ic. t. 876. 1845.

*Distrib.*: Infrequent in open areas, field edges, along rivers. Ahmednagar, Bombay, Pune, Raigad, Satara.


Herbs, erect or prostrate. Leaves 0.5–1.5 x 0.2–1.0 cm, pubescent above, white cottony beneath. Flowers greenish–white. Utricles 0.1 x 0.1 cm, broadly ovoid, acute.

*Fls. & Frts.*: December–February


*Distrib.*: Common along roadsides, waste places, on walls of old forts, under the shade of trees and in open cleared areas.


Herbs c 1.5 m high, erect or suffruticose. Leaves 1.5–5.0 x 0.7–1.5 cm, elliptic–lanceolate, appressed hairy. Flowers white. Seeds black.

*Fls. & Frts.*: October–May.
Illus. : Wight Ic. t. 724. 1843 (Aerva scandens).

Distrib. : Common in open situations, forest edges.


Herbs, 15–30 cm high; branches woody. Leaves c 2.5 cm long, narrowed into a short petiole. Clusters densely wooly; flowers c 0.1 cm long.

**Fls. & Frts.** : June–September.

Distrib. : Rare, under the shade of trees. Nanded (Naik, op. cit.).

**ALLMANIA R. Br. ex Wight**


Erect or ascending, annual herbs, 15–50 cm high; stems branched from base. Leaves variable, elliptic to linear–lanceolate, oblanceolate or ovate, 2.0–6.4 x 0.5–2.2 cm, acute, obtuse or rounded and mucronate at apex. Flowers in 0.5–2.0 cm long spikes; tepals with green or purple midrib and shining margins. Capsules 1.5–3.5 mm long, subglobose or ovoid, membranous, circumscissile. Seed orbicular, c 1 mm across, shining, black, with pale brown aril at base.

**Fls. & Frts.** : August–October.

Illus. : **Allmania dichotoma** (Roth) Wight, Ic. t. 1771. 1852 & **Chamissoa aspera** Wight, Ic. t. 1772. 1852.

Distrib. : Occasional in open areas, roadsides and wastelands. Ahmednagar, Akola, Amravati, Chandrapur, Nanded (Naik, op. cit.), Pune, Satara.

**ALTERNANTHERA Forssk.**

1. Bracts and bracteoles glabrous :
   2. Heads spinescent; tepals dissimilar ... *A. pungens*
   2. Heads not as above; tepals equal ... *A. sessilis*
1. Bracts and bracteoles barbellately hairy :
3. Erect tufted herbs ...  \( A. \) bettzichiana

3. Prostrate herbs ...  \( A. \) paronychioides


Erect or semierect, much branched perennial herbs up to 50 cm high. Leaves 1.2–7.6 x 0.5–4.0 cm, elliptic, oblanceolate, rhomboid–ovate, acute or acuminate at apex, attenuate at base; petioles hairy. Heads 1–5–together, globose, sessile. Tepals 5, unequal. Utricle c 1.5 mm long, obovoid.

**Fls. & Frts.** : Almost throughout the year.

**Illus.** : Chaudhury & Bhattacharyya, op. cit.

**Distrib.** : It is a native of Brazil, naturalised, found near waste places around gardens, along stream–banks, in fields, etc. Ahmednagar, Aurangabad, Hingoli, Jalna, Latur, Nanded & Parbhani (Naik, op. cit.), Raigad. Ornamental forms are found in gardens borders.


Herbs, perennial, prostrate, hairy with stout root–stock. Leaves 2.0–3.5 x 0.5 cm. Flowers white, in dense clusters; tepals unequal, outer–3 larger, inner–2 narrower. Seeds faintly reticulate.

**Fls. & Frts.** : October–March.

**Illus.** : Chaudhary & Bhattacharyya, op. cit.

**Distrib.** : Frequently growing as weed in open areas. Aurangabad, Chandrapur, Kolhapur, Nagpur, Pune.


Herbs, prostrate, spiny c 50 cm high. Leaves c 3.5 x 3.0 cm, obovate or orbicular. Flowers greenish–white, in short axillary spikes. Utricles one seeded, compressed, narrowly winged. Seeds discoid–lenticular.

_Fls. & Frts._: March–December.


_Distrib._: Native of Central America, naturalised. Common in open areas, along road sides, near fields and rubbish heaps.


Herbs, spreading, rooting at nodes. Leaves 0.5 – 5.0 x 0.3 – 1.0 cm, linear. Flowers white. Utricles c 0.15 cm long, with thickened margins. Seeds orbicular.

_Fls. & Frts._: Throughout the year.


_Distrib._: Common in moist places along streams, cultivated fields and waste places.

**AMARANTHUS L.**

1. Stamens 5; tepals 5:
   2. Leaf axils with spines ... *A. spinosus*
   2. Leaf axils without spines:
      3. Bracts and bracteoles spinous tipped, as long as or longer than tepals:
         4. Plants dioecious ... *A. palmeri*
         4. Plants monoecious:
5. Bracts and bracteoles 2–4 times longer than tepals  
   ... A. hypochondriacus

5. Bracts and bracteoles 1 1/2–2 times longer than tepals:
   6. Bracts and tepals ovate–acuminate  
      ... A. cruentus
   6. Bracts ovate, mucronate; tepals obovate, acuminate  
      ... A. caudatus

3. Bracts and bracteoles not spinous tipped, shorter than tepals:
   7. Tall, stout, erect herbs; flowers in axillary clusters and in terminal and axillary interrupted spikes or panicles  
      ... A. dubius
   7. Short diffuse herbs; flowers in axillary clusters only  
      ... A. polygonoides

1. Stamens and tepals less than 5:
   8. Stamens 2; tepals 2  
      ... A. tenuifolius
   8. Stamens 3; tepals 3:
   9. Bracts and bracteoles shorter than tepals:
      10. Flowers in axillary clusters and terminal, panicked, slender spikes; fruits prominently rugose, indehiscent  
          ... A. viridis
      10. Flowers in axillary clusters only; fruits slightly rugose or wavy, usually circumcisile  
          ... A. roxburghianus

9. Bracts and bracteoles as long as or longer than tepals:
   11. Flowers mostly in axillary clusters, sometimes in short, terminal spikes or panicles; stigmas short and straight  
       ... A. tricolor
   11. Flowers in axillary clusters as well as in long terminal spiciform panicles; stigmas long and curved, feathery  
       ... A. caturus


Herbs, 1–2 m high, stout, erect, branched; stem striate, pubescent. Leaves 5–15 x 2–5 cm, lanceolate or rhomboid, acute and cuspidate at apex, cuneate and decurrent at base, entire, minutely pubescent beneath. Tepals transparent with green midrib, shortly awned. Fruits globose, 1.0–1.5 mm across, circumcisile.

**Fls. & Frts.**: August–November.

**Distrib.** : Rare, on wasteland around villages. Osmanabad (Naik, op. cit.).

Herbs, 30–120 cm high, erect, annual; stem obtusely angled, minutely pubescent. Leaves 2.5–4.5 x 1.5–2.7 cm, ovate–lanceolate, acute or obtuse and mucronate at apex, cuneate at base. Flowers in dense, axillary clusters and along terminal drooping panicles; tepals green or purple. Fruits ovoid, 1.5 mm across, circumscissile. Seed discoid, 1.0–1.2 mm across, black, smooth, shining.

**Fls. & Frts.** : August–December.

**Distrib.** : Frequent, on wastelands along roadsides. Aurangabad, Beed, Jalna & Nanded (Naik, op. cit.). It is known as 'Love–lies–bleeding', is often cultivated in gardens in the Presidency (Cooke, op. cit.).


Herbs, annual, 30 cm high, stout. Leaves 2.5–11.0 x 1–4 cm, elliptic–lanceolate, apex acute. Utricles 0.1 x 0.1 cm, ovoid, circumscissile. Seeds subglobose, dark brown or black.

**Fls. & Frts.** : July–August.

**Illus.** : Wight, Ic. t 720. 1843 [A. frumentaceus Buch.–Ham. in Roxb. Fl. Ind. (Carey ed.) 3: 609. 1832].

**Distrib.** : Usually cultivated, found as an escape.


Herbs, 30–90 cm tall, erect, much branched. Leaves 4–15 x 1–7 cm, ovate or broadly lanceolate, apex acute or emarginate and minutely mucronate, base cuneate. Flowers green. Utricles smooth, irregularly dehiscent.

**Fls. & Frts.** : July–November.

**Distrib.** : Common in wastelands around fields and on old walls. In all districts of Marathwada (Naik, op. cit.).

Herbs, 30–90 cm high, erect, much branched; stem striate, often tinged with purple. Leaves 2.5–4.5 x 1.0–2.5 cm, ovate, acute, mucronate. Flowers in axillary, short clusters and in terminal, 30–50 cm long, simple or branched spikes; tepals green or tinged with purple–red. Fruits ovoid–oblong, 1.5 mm long, circumscissile. Seeds discoid, 1 mm across, black.

*Fls. & Frts.*: August–December.

*Distrib.*: Occasional on wastelands and around fields. Aurangabad & Beed (Naik, op. cit.). Cultivated as an ornamental plant in gardens and it known as *The Prince’s Feather* (Cooke, op. cit.).


Herbs, 0.9–2.2 m tall, erect, annuals; stem pale green, sometimes tinged pink at nodes, sulcate–angular. Leaves 12 x 7 cm, ovate, rhombic to lanceolate, apex obtuse, mucronate, base oblique, margins entire, undulate, pubescent when young, glabrous at maturity, prominently nerved and paler beneath. Flowers small, green, in terminal branched spikes and in small axillary or rarely extra axillary spicate clusters. Capsules subglobose, 2–beaked, rugose at top, upto 2 mm long excluding beaks, dehiscence circumscissile. Seed solitary, rounded to ovoid, shining, dark red–brown.

*Fls. & Frts.*: September–December.

*Distrib.*: Naturalised in neglected corners of fields, wasteland and along roads in exposed sunny places and under partial shade. Dhule (D.A. Patil, op. cit.).


Herbs, 15–40 cm tall, sparingly branched. Leaves 1–3 x 0.5–1.5 cm, lanceolate to rhomboid, acute with a mucronate apex. Flowers pale green, clustered in leaf axils. Utricles ovoid, 1.0–1.5 mm long, faintly rugose. Seed discoid, 1 mm across, black, smooth, shining.

*Fls. & Frts.*: August–October.

*Distrib.*: Common as weed in open situations.

Herbs, 20–30 long, prostrate, annual with striate stem. Leaves 1–3 x 0.6-20 cm, elliptic or obovate, apex obtuse, often notched, base tapering towards apex, rugose. Seed lenticular, l, smooth, shining black.

Fls. & Frts. : December–March.

Illus. : Wight, Ic. t. 512 & 719. 1843 (A. polygonoides Willd.)

Distrib. : Common in waste lands, on old walls, etc.


Herbs c 30 cm high, erect. Leaves 2–6 x 0.5–3.5 cm, ovate, rhomboid or oblong. Spikes pale green, 2.0–9.5 cm long, simple or branched. Utricles 1.0–1.5 mm long, conical, thickened at top, rugose. Seeds shining, discoid, c 1 mm across.

Fls. & Frts. : July–February.


Distrib. : Common in open areas and waste places as a weed.


Herbs, prostrate, 15–45 cm long, spreading. Leaves 1.2–2.5 x 0.4–0.6 cm, oblong or oblong–lanceolate, rounded and usually notched at apex. Flowers in small, axillary clusters. Utricles c 0.1 cm across, orbicular, compressed, shining, brown.

Fls. & Frts. : August–April.

Distrib. : Common weed. Dhule.

1. Plants when cut down several times, a new crop of shoots spring up; branching from base of stem ... var. tristis
1. Plants not as above; branching from middle af stem ... var. tricolor

var. tricolor. ‘Chaulai’, ‘Tandulja’.

Herbs, c 30 cm high. Leaves 1.2 – 5.0 x 3.0 cm, ovate, rhomboid or ovate–elliptic. Spikes greenish–yellow. Utricles 2–3 mm long, flask shaped, rugose, crowned. Seeds black, smooth, lenticular.


Distrib. : Common in open areas as weed.


Herbs, 45–60 cm high, erect or diffuse. Leaves 3–8 x 2–6 cm, broadly ovate, margins undulate; petioles long, tapering. Flowers green, in dense, axillary clusters. Utricles ovoid, circumscissile, rugulose, membranous.


Distrib. : Cultivated as a pot–herb (Cooke, op. cit.; Kamble & Pradhan, op. cit.). Also occurs as a weed in Akola (Kamble & Pradhan, op. cit.).


Herbs, much branched, 30–60 cm tall. Leaves 2–8 x 1–5 cm, ovate or deltoid, apex obtuse, usually notched, base truncate or cuneate. Flowers pale green in axillary clusters and also in terminal and axillary panicked spikes. Fruits ovoid, 1.5 mm long, shortly beaked. Seeds 0.1 cm across, compressed, smooth, black, shining.
**Fls. & Frts.** : September–December.

**Illus.** : Wight, Ic. t. 717. 1840 [A. fasciatus Roxb. Fl. Ind. (Carey ed.) 3: 609. 1832].

**Distrib.** : Frequent in open situations and forest edges.

**Celosia L.**


Herbs, erect or procumbent, 30–90 cm high. Leaves 0.5–2.0 x 0.3–1.5 cm, broadly ovate, lanceolate, elliptic or linear. Inflorescence of dense, terminal spikes. Flowers white or pink. Utricles ellipsoid, tapering at apex into style.

**Fls. & Frts.** : August–February.

**Illus.** : Wight, Ic. t. 1767. 1852.

**Distrib.** : Common throughout as weed of wet and harvested fields, in wastelands, etc.

**Cyathula Bl. (nom. cons.)**


Herbs, creeping–ascending, rooting at basal nodes. Leaves 2–4 x 1–2 cm, ovate, elliptic or rhomboid, membranous, sessile, hairy on both sides, apex subobtuse or rounded. Flowers in long terminal spikes in stalked clusters; perianth of perfect flowers calycine, oblong, scarious, 5 of imperfect flowers converted into rigid hooks. Utricles ovoid, thin walled, indehiscent.

**Fls. & Frts.** : October–May.


**Distrib.** : Occasional along the ghats. Bombay, Ratnagiri, Sindhudurg.
**Digera Forsk.**


Herbs, annual, 30 cm high. Leaves 2–4 x 1.5–3.0 cm, ovate or elliptic, apex acute or rounded. Flowers greenish–pink. Utricles c 0.2 cm across, globose, mucronate. Seeds yellowish–brown.

*Fls. & Frts.*: July–December.


*Distrib.*: Common in open areas as weed.

**Gomphrena** L.

1. Spikes terminal and axillary; bracteoles crested only at apex; anthers included ... *G. serrata*

1. Spikes terminal; bracteoles crested throughout; anthers exerted ... *G. globosa*


Herbs, tall, branched, annual. Leaves elliptic or ovate–obleng. Flowers in large, globose, yellowish–white or crimson heads; bracts leafy, bracteoles pinkish–purple. Fruits ovoid, 2.0–2.5 mm long. Seed reniform, turgid.

*Fls. & Frts.*: August–March.

*Illus.*: Wight, Ic. t. 1784. 1852.

*Distrib.*: Native of Tropical America, grown in gardens, found as escape, infrequent in open areas. Aurangabad, Bombay, Chandrapur, Pune, Raigad, Satara, Thane.

Herbs, prostrate. Leaves 1–3 × 0.5 cm, elliptic–oblong or ovate–oblong, upper surface glabrous, lower densely pilose. Flowers white. Utricles indehiscent, smooth. Seeds notched on one side.


Distrib. : Native of tropical America, common throughout in open situations.

**Nothosaerva Wight**


Herbs, erect, slender. Leaves 2.0–3.5 × 1–2 cm, elliptic – lanceolate, apex acute or sub obtuse. Flowers white. Fruits enclosed in hardened perianth. Seeds black, shining.

Fls. & Frts. : August–February.


Distrib. : Bombay, Chandrapur, Dhule, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.

**Pupalia A. L. Juss.**


1. Leaves ovate or elliptic, c 8 cm long; flower awns yellow ... var. *lappacea*
1. Leaves suborbicular, 2–3 cm long; flower awns brown ... var. *orbicular*

var. *lappacea*.

Shrubs, large, scandent. Leaves 4.5–5.5 × 2.5–3.5 cm, ovate–elliptic, apex obtuse. Flowers green, in close or distant spinous clusters. Utricles oblong with a constriction near the apex, membranous.
Fls. & Frts. : September–February.


Distrib. : Common along road sides & waste places.


Fls. & Frts. : September–November.


Distrib. : ‘Konkan’ (Cooke, op. cit.).

Trichuriella Bennet


Herbs, perennial, hardy, tomentose; branches prostrate or whorled. Leaves 0.5–2.0 cm long, narrowly linear, spinous pointed. Flowers pale pink, bisexual, crowded in dense cylindric spikes. Utricles ovoid, membranous. Seeds ellipsoid, pale brown.

Fls. & Frts. : September–March.

Illus. : Wight, Ic. t. 725. 1843 (Aerva monsoniae).

Distrib. : Infrequent in field, open areas and road sides. Amravati, Beed, Bhandara, Chandrapur, Nanded, Osmanabad, Pune, Yavatmal.
CULTIVATED SPECIES:


Leaves ovate–lanceolate, green or variegated with red. Flowers in cristate–feathered or fascicled convolute comb–like inflorescence; tepals 4–6 mm long, variously coloured.

*Fls.* : March.

*Distrib.* : The familiar ‘Cock’s comb’, is planted in gardens.


Herbs, 30–60 cm high, erect, much branched; stem thickened at nodes; young parts pubescent. Leaves broadly ovate–orbicular or obovate, 2.5–8.0 cm across, apex subacute or emarginate, base obtuse, rounded or truncate, unequal, dark red with light colored veins or green with yellow viens, appressed hairy on both sides. Flowers in terminal or higher axillary panicles; rachis red, densely clothed with long hairs; perianth yellowish–white, clothed with long white hairs at base.

*Fls.* : September–December.

*Distrib.* : Native of Brazil, grown as pot herb in gardens.


Herbs. Leaves 2.5–4.5 x 0.7–1.3 cm, elliptic, puberulous. Flowers white, in c 5 cm long, shortly pedunculate spikes.

*Fls.* : September.

*Distrib.* : Cultivated in gardens for its crimson coloured leaves. Satara (S. Deshpande et al. op. cit.).

**CHENOPODIACEAE**

*(P. Lakshminarasimhan & S.Y. Kamble)*

1. Embryo spiral

1. Embryo annular or horseshoe–shaped:
2. Stems leafy, not jointed nor fleshy:
   3. Flowers all similar, hermaphrodite; leaves flat ... CHENOPDIUM

3. Flowers dimorphic, the males, ebracteolate with 3–5 sepals, the females 2-bracteolate without sepals ... ATRIPLEX

2. Stems leafless, jointed, fleshy:
   4. Flowers in scales of cone-like spikes; albumen fleshy ... ARTHROCNEMUM

   4. Flowers in cavities of successive joints; albumen absent ... SALICORNIA

ARTHROCNEMUM Moq.


Suffruticose, diffuse perennial, prostrate herbs; branches numerous, with woody cone, erect or ascending, fleshy, clavate, thick, spongy. Flowers small, in 1–2 cm long spikes; anthers oblong–ovoid. Seeds trigonous, much compressed; testa yellow.

Fls. & Frts. : December–February.

Illus. : Wight, Ic. t. 737. 1844 (Salicornea indica).

Distrib. : Common on salt ground near coast. Bombay, Thane.

ATRIPLEX L.


Shrubby perennials, 15–45 cm tall, monoecious; stem suberect. Leaves 1.2– 2.5 x 0.6–1.5 cm, fleshy, elliptic, oblong or obovate, obtuse at apex, acute at base. Flowers unisexual; male flowers in axillary fascicles. Utricles membranous, enclosed in persistent orbicular bracteoles. Seeds suborbicular, compressed, smooth.

Fls. & Frts. : December–April.

Illus. : Wight, op. cit.

Distrib. : Rare along road sides. Ahmednagar.
CHENOPODIUM L.

1. Aromatic glandular herbs; stigma 5; seed margins obtuse ... C. ambrosioides

1. Scentless or slightly foetid, glandular herbs; stigma 2; seed margins acute:
   2. Scentless herbs; leaves reaching 15 cm long; tepals keeled; seeds smooth, shining ... C. album
   2. Slightly foetid herbs; tepals often less than 3 cm long; tepals scarcely keeled; seeds rugose, dull ... C. murale


A tall herb, 35–75 cm (sometimes more) high, erect or ascending; stems often striped. Leaves variable in size, oblong, deltoid or lanceolate, margins entire or toothed. Flowers in clusters forming paniculate–spikes; tepals 0.15–0.2 cm long, oblong–lanceolate; stigmas 2. Fruits enclosed by tepals, depressed–globose, 1.5–2.0 mm across. Seeds 0.15 cm across, orbicular, compressed, smooth; embryo completely annular.

Fls. & Frts. : November–February.
Distrib. : A frequent weed of roadsides, wastelands and cultivated fields.


Tall, erect, much branched herbs with camphoraceous odour, puberulous and glandular; stems and branches striate, glandular–pubescent. Leaves 4–8 x 0.6–2.5 cm, oblong–lanceolate, upper leaves almost entire, base tapering. Flowers minute, clustered, forming paniculate leafy spikes; tepals orbicular–ovate, concave, obtuse, covering fruit; stigma usually 5. Seeds orbicular, smooth, shining.

Fls. & Frts. : August–April.
Illus. : Wight, t. 1786. 1852.

Herbs, erect or ascending, 15–40 cm high, branched. Leaves deltoid–ovate, apex acute or obtuse, irregularly lobulate with cuneate base; petioles 7 cm long. Flowers clustered in cymes forming axillary racemes or panicles; tepals oblong, subacute, covering fruit; stigmas 2. Fruits depressed–globose, 1.2–1.5 mm across. Seeds orbicular, 0.15 cm across, compressed, rugose, margins acute; embryo completely annular.

Fls. & Frts. : August–November.
Illus. : Naik, op. cit.
Distrib. : Frequent weed in gardens and cultivated fields.

SALICORNIA L.


Much branched annual herbs c 30 cm high; main stems woody; branches jointed, greenish–red, ascending, succulent. Leaves absent. Flowers pale yellow, minute in slender cylindric spikes; bracteoles 2; perianth calycine, obpyramidal. Utricles ovoid, membranous, enclosed in a spongy perianth. Seeds erect, compressed.

Fls. & Frts. : January.
Illus. : Wight, Ic. t. 738. 1844.
Distrib. : Scattered in saline coastal areas. Thane.

Suaeda Forssk. ex Scop. (nom. cons.)

1. Perennials; seeds erect:
   2. Flowers hermaphrodite; stigmas 3:
      3. Bracteoles entire with toothed margins ... S. fruticosa
      3. Bracteoles with pectinate margins ... S. nudiflora
   2. Flowers unisexual; stigmas 2–5 ... S. monoica
1. Annuals; seeds horizontal ... S. maritima

Erect or diffuse perennial herbs, subfruticose; branches 15–40 cm long, spreading, stems woody at base, glaucous–green. Leaves sessile, 0.6–1.5 cm long, subterete, fleshy. Flowers minute, deep green, in dense, axillary, globose clusters; bracts ovate, subacute, membranous. Utricles minute, ovoid, smooth. Seeds obovoid, slightly beaked and compressed, smooth, shiny.

**Fls. & Frts.** : June–November.

**Distrib.** : Found along marshy coasts. Bombay, Thane.

**Uses** : The tender roots and succulent leaves are at times eaten by local people as vegetables.


Herbs, erect, annual; stems woody at base, much branched. Leaves 0.5–1.0 cm long, linear, fleshy. Flowers in globose clusters forming spikes; perianths rounded covering utricles; stigmas slender, 2. Seeds obliquely ovoid, black, shining.

**Fls. & Frts.** : April–June.

**Illus.** : Wight, Ic. t. 1793. 1852 (as *Chenopodina indica* Wight).

**Distrib.** : In swamps along coast. Bombay, Sindhudurg (S.M. Almeida, op. cit.).


Erect bushy herbs c 1.5 m high; branches marked with numerous leaf scars. Leaves fleshy, linear, obtuse or subacute, c 1.5 x 0.2 cm. Flowers buds depressed, flowers 1.5 cm across; bracteoles with entire margins. Utricles included in perianth. Seeds ovoid, erect.

**Fls. & Frts.** : May–December.


**Distrib.** : Frequent along the coastal swamps. Bombay, Raigad.

Erect–procumbent herbs or undershrubs. Leaves linear or oblong, often obovate, semi–terete, fleshy. Flowers in axillary clusters, forming dense spikes. Utricles ovoid, 0.1 cm across, dark brown–black, shining.

*Fls. & Frts.* : November–April.

*Illus.* : Wight, l.c. t. 1796. 1852 (*Suaeda indica* Moq.).

*Distrib.* : Frequent along the coastal mangroves. Bombay, Thane.

**CULTIVATED SPECIES:**


Herbs, 0.5–1.0 m high, stout, erect; branches striate, tinged with red. Lower leaves opposite, upper alternate, 3–12 x 2–6 cm, triangular or rhomboid, acute or acuminate at apex, cuneate at base, angled or dentate along margins, young ones often tinged red; petioles striate. Flowers in axillary and terminal, panicled racemes, 10–30 cm long; bracteoles absent in male flowers, in females 2, accrescent, enlarged in fruits; perianth in male flowers green, in females absent. Fruits membranous.

*Fls. & Frts.* : October–February.

*Distrib.* : Largely cultivated as a vegetable crop.


Herbs; roots napiform, 5–10 cm in diam., purple–red within; stem 30–60 cm high, erect, furrowed, dark purple. Lower leaves 3–20 x 1.5–15.0 cm, broadly ovate, obtuse or subacute at apex, cordate and shortly cuneate at base, undulate along margins, upper leaves rhomboid, ovate or lanceolate, much smaller. Flowers solitary or in cymose clusters in terminal panicled spikes; tepals green, thickened at base in fruit. Fruits globose.

*Fls. & Frts.* : October–February.

*Distrib.* : Cultivated in many parts for fleshy roots used in salad, vegetables, etc.

Herbs, 30–90 cm high, erect, annual. Leaves: radical ones 4–15 x 2–8 cm, oblong to ovate, acute or obtuse at apex, cuneate and with projecting lobes at base on either sides, entire or broadly pinnatifid; cauline smaller, lanceolate. Male flowers mostly in spikes or panicles; tepals green. Female flowers in axillary clusters; perianth green, much enlarged and enclosing fruit. Fruits compressed; fruiting perianth with 2–3 dorsal spines.

Fls. & Frts.: November–April.

Distrib.: Cultivated as a leafy vegetable.

PHYTOLACCACEAE

(P. Lakshminarasimhan)

CULTIVATED SPECIES:


Herbs, 40–120 cm high, erect, much-branched; stem woody at base, young parts pubescent. Leaves 4–12 x 1.5–4.0 cm, ovate-oblong or ovate-lanceolate, long acuminate at apex, obtuse, rounded or subcordate at base, entire, glabrous above, shortly pubescent on nerves beneath; petioles pubescent. Inflorescences of 4–10 cm long, erecto-patent, pubescent racemes. Tepals white or pinkish. Fruits globose, 3.5–4.0 mm across, bright red, fleshy. Seed solitary, globose, 2 mm across, hairy.

Fls. & Frts.: September–January.

Illus.: Naik, op. cit.

Distrib.: Native of Tropical America, grown in gardens (Naik, op. cit.).

BASELLACEAE

(S. Moorthy)

BASELLA L.

Herbs, perennial, rhizomatous stems turning to the right, slender, succulent, very long. Leaves 5–15 x 2.5–7.5 cm, broadly ovate, base often cordate, narrowing into the petiole, apex acute or acuminate; petioles up to 2.5 cm long. Flowers white or red, 0.3 cm across sessile, few in lax, 2–15 cm long, pedunculate spikes. Pseudoberries red, white or black, globose or lobed, 0.6 cm across.

_Fls. & Frts._ : October–December.

_Illus._ : Wight, _Ic. t._ 896. 1844–1845; Matthew, _Illus. Fl. Tamilnaldud Carnatic 2: t._ 596. 1982 (_B. rubra_).

_Distrib._ : As an escape throughout the State. Also grown extensively as vegetable and makes a good spinach.

**PETIVERIACEAE**

*(P. Lakshminarasimhan)*

**PETIVERIA L.**


Herbs, c 1m high, erect, annual; stem cylindrical, pubescent. Leaves 13.0–18.5 x 5.0–7.5 cm, ovate to lanceolate, membranous, apex acuminate, base cuneate, margins entire; petioles 1–3 cm long. Flowers c 5 mm long in axillary and terminal lax spikes, 13–16 cm long. Fruits c 1 cm long with 4 spines curved downwards.

_Fls. & Frts._ : September–October.

_Illus._ : Tandyekkal, Mathew Dan & P. Mathew, op. cit.

_Distrib._ : Grows under shade of leaves in waste places in Sangli city (Bachulkar & Yadav, op. cit.).

_Notes._ : It is a native of Central America. Earlier it was known to occur in wild in West Bengal. Although Tandyekkal et al. (op. cit. 37–39) reported it as a new record for Peninsular India from Kerala, it was first reported from Maharashtra by Bachulkar & Yadav, op. cit.
POLYGONACEAE

(C. R. Jadhav)

1. Perianth–lobes 6, inner–3 accrescent in fruit; stigmas fimbriate ...
   RUMEX

1. Perianth–lobes 3–5, not accrescent in fruit; stigmas capitate or capitellate:

2. Flowers axillary, solitary or in clusters; ocreae hyaline ...
   POLYGONUM

2. Flowers terminal, in simple or panicked spiciform racemes or heads; ocreae membranous or chartaceous ...
   PERSICARIA

PERSICARIA (L.) Mill. (nom. cons.)

1. Flowers in heads:

2. Heads with involucral leaf at base; petioles winged ...
   P. nepalensis

2. Heads without involucral leaf at base; petioles not as above:

3. Stems sparsely armed with minute recurved prickles; nuts biconvex ...
   P. dichotoma
   var. angustissima

3. Stems unarmed; nuts trigonous ...
   P. auriculata

1. Flowers in simple or panicked spiciform–racemes:

4. Racemes stout, compact; bracts closely imbricate:

5. Ocreae with a spreading or recurved scabrid limb ...
   P. limbata

5. Ocreae not as above:

6. Ocreae and bracts both glabrous, ciliate at mouth ...
   P. glabra

6. Ocreae and/or bracts variously hairy, ciliate at mouth:

7. Nuts biconvex ...
   P. pulchera

7. Nuts trigonous:

8. Leaves drying green, rounded at base ...
   P. salicifolia

8. Leaves drying brown, acute or attenuate at base ...
   P. barbata

4. Racemes slender, lax; bracts more or less interrupted:

9. Leaves glabrous or hairy on nerves beneath ...
   P. hydropiper

9. Leaves strigously hairy beneath ...
   P. pubescens
   var. acuminata

Persicaria auriculata (Meissn.) Dixit, Datta & Roy
Herbs or undershrubs, rambling with woody base. Leaves 4–13 x 2–6.5 cm, ovate or elliptic or oblong–ovate, glabrous above, hairy on nerves beneath, acute or shortly acuminate at apex, variable at base, entire or crenulate along margins; petioles 0.5–1.5 cm long, auricled at base; ocreae obliquely divided near base, glabrous, membranous. Heads corymbose–paniculate; peduncles glandular–hairy. Flowers 0.3–0.6 cm long; perianth white. Nuts 0.3–0.5 cm long, black.

**Fls. & Frts. :** October–April.

**Distrib. :** Frequent in open moist areas. Ahmednagar, Bombay, Dhule, Kolhapur, Pune, Ratnagiri, Satara, Thane.


1. Stems strigose hairy; leaves pubescent–hispid
   2. Stems stout
   2. Stems slender

var. **barbata.**

Herbs, 1m high. Leaves 6–10 x 1–2 cm, lanceolate or linear–lanceolate, hairy on mid–rib beneath, acuminate at both ends; ocreae 1–2 cm long. Racemes slender. Perianth white, eglandular. Nuts c 0.2 cm long.

**Fls. & Frts. :** October–April.


**Distrib. :** Infrequent in marshy areas along streams. Buldhana, Kolhapur, Ratnagiri, Satara.

Herbs c 1 m high, erect or procumbent–ascending. Leaves 5–16 x 0.5–1.5 cm, lanceolate or linear–lanceolate, subsessile, appressed–hairy on both sides or sometimes glabrous, acute or acuminate at apex; ocreae 1–3 cm long, strigose–hairy. Racemes erect; peduncles hairy. Perianth white or pinkish; bracts ciliate at mouth, eglandular. Nuts c 2 cm long, brown, granulate.

Fls. & Frts. : More or less throughout the year.


Distrib. : Frequent in moist places along streams. Ahmednagar, Chandrapur, Kolhapur, Pune, Ratnagiri, Thane.


Herbs, annual; stems simple or branched; stock 40–90 cm long, pubescent or glabrous. Racemes 2–5 cm long. Perianth white or tinged with pink, eglandular. Nuts 0.2 cm long, smooth.


Illus. : Naik, Fl. Marathwada 2: 761, f. 95. 1998 [Polygonum barbatum subsp. barbatum var. stagninum (Buch.–Ham. ex Meissn.) Steward].

Distrib. : Occasional in wet, open areas. Bombay, Osmanabad.


Herbs. 10–20 cm tall, annual, erect; stems grooved. Leaves 5–10 x 0.6–1.5 cm, linear–lanceolate or oblong–lanceolate, acute or acuminate at both ends, scabrid or slightly ciliolate along margins; ocreae membranous, obliquely truncate. Heads dichotomous, cymosely paniculate; peduncles slender, glandular–hairy. Perianth pink or white; bracts glabrous. Nuts orbicular, compressed.

Fls. & Frts. : October–February.

Illus. : Wight, Ic. t. 1802 A. 1852.
**Distrib.** : Occasional in moist situations. Kolhapur, Ratnagiri, Satara.


Herbs, semiaquatic or aquatic, stoloniferous. Leaves 6–23 x 0.7–3.5 cm, lanceolate, finely acuminate at apex, tapering at base, gland–dotted; ocreae conspicuously veined, truncate at mouth. Perianth pink. Nuts c 0.3 cm across, ovoid or suborbicular, compressed, biconvex, brown to black, shining.

**Fls. & Frts.** : Throughout the year.

**Illus.** : Wight, Ic. t. 1799. 1852; Mahesh. Illus. Fl. Delhi f. 188. 1966 (*Polygonum glabrum*).

**Distrib.** : Frequent throughout along river banks and low lying marshy places.


1. Leaves and perianth very glandular; bracts eciliate at mouth ... *ssp. hydropiper*
1. Leaves and perianth eglandular; bract ciliate at mouth ... *ssp. mite*

**ssp. hydropiper.**

Herbs, 30–45 cm tall, annual, branched. Leaves 5–10 x 1–1.5 cm, lanceolate, acuminate at base and apex, shortly petiolate; ocreae 1–2 cm long, glabrous, shortly ciliate at mouth. Flowers c 0.3 cm long; perianth pink. Nuts trigonous, rarely, compressed.

**Fls. & Frts.** : October–December.

**Illus.** : Sald. Fl. Karnataka 1: 176, f. 22 A. 1984 (*Polygonum hydropiper*).

**Distrib.** : Occasional in wet areas. Nagpur, Satara.

Herbs, c 50 cm tall, slender; branches reddish. Leaves 4–9 x 0.5 –1 cm, linear–lanceolate or linear–oblong, subsessile, acute at apex, hairy on nerves, ciliolate along margins; ocreae c 1.5 cm long; tube appressed hairy, ciliate at mouth. Racemes 1.5 –3.5 cm long. Perianth pink c 0.2 cm long, biconvex, black, shining.

*Fls. & Frts.* : September–December.

*Distrib.* : Occasional in moist places along streams and wet fallow fields. Satara, Sindhudurg.


Herbs, erect. Leaves 10–20 x 2.5 –3.7 cm, lanceolate, scaberulous on both surfaces, tapering at base; ocreae strigose. Flowers in short, erect, paniculate racemes. Nuts orbicular, compressed with rounded margins and convex faces.

*Distrib.* : Rare. 'Konkan' (Cooke, op. cit.).


Herbs, 30–60 cm long, prostrate, annual; branches ascending, glabrous, grooved, rooting at the lower nodes. Leaves deltoid–ovate, acute or subobtuse at apex, subtruncate or subcordate, shortly cuneate at base, minutely punctate; ocreae obliquely cleft, acute or obtuse, hairy at base, eciliate along margins. Peduncles glandular–hairy at apex below head. Perianth whitish–pink. Nuts c 0.2 cm across, broadly ovoid, biconvex, minutely punctate, black.

*Fls. & Frts.* : August–November.


Herbs, annual, erect–ascending. Leaves 5–12 x 1–2 cm, lanceolate or ovate–lanceolate, acuminate at apex, narrowed at base; ocreae 1–2 cm long, strigose, ciliate at mouth. Perianth white or pink, glandular. Nuts 0.2–0.3 cm long, trigonous, brown to black, minutely granulate.

*Fls. & Frts.* : August–December.


Herbs, annual, silky tomentose; stems 30–100 cm long, pubescent or glabrous. Leaves 8–20 x 2.5–4 cm, lanceolate or elliptic–lanceolate, finely acuminate at apex, cuneate at base, silky pubescent on both sides; ocreae 1–2 cm long. Flowers c 0.4 cm across; perianth white. Nuts orbicular, compressed.

*Fls. & Frts.* : November–May.


Herbs, c 1m high. Leaves 7–12 x 1–1.5 cm, linear, subsessile, acute at apex, sparsely hairy, ciliate along margins; ocreae truncate, strigose. Perianth white, glandular. Nuts 0.2 cm long, shining, smooth.

Fls. & Frts.: March.

Distrib.: Rare in open, moist places. Satara.

**Polygonum L.**


1. Leaves oblong or linear ... var. plebeium

1. Leaves obovate or obovate–oblong:

2. Branches stout; perianth lobes narrow ... var. brevifolia

2. Branches slender; perianth lobes broad ... var. indica

var. plebeium.

Herbs, diffuse; stems branched, slender, stout or with woody root–stock. Leaves 0.3–2.5 x 0.1–0.4 cm, sessile or subsessile, acute or apiculate at apex, often recurved along margins, with bulbous based hairs; ocreae small, laciniate. Flowers in axillary clusters, sessile, among stipules rarely exserted; perianth pink. Nuts c 0.1 cm long, trigonous.

Fls. & Frts.: More or less throughout the year.


Distrib.: Common throughout.


Herbs; root–stock woody, branches with very short internodes concealed by leaves and stipules (ocreae). Leaves 0.3–0.6 cm long, acute or apiculate at apex, coriaceous. Perianth pink. Nuts trigonous.

Fls. & Frts.: April–June.

Distrib.: Bombay, Dhule, Nasik, Pune, Thane.

Herbs, prostrate; branches much spreading all round. Leaves 0.3 – 2 x 0.2–0.5 cm, obtuse or apiculate at apex; ocreae scarious along margins. Perianth pink. Nuts c 0.3 cm long, trigonous, brown to black.

*Fls. & Frts.* : February–November.


*Distrib.* : Akola, Satara, Thane.

**Rumex L.**

1. Inner fruiting tepals with narrow margins and few or no teeth ...  
   1. Inner fruiting tepals with broad much toothed wing : 
      2. Wings of fruiting perianth pectinately toothed; teeth hooked at tip ...  
         2. Wings of fruiting perianth irregularly toothed; teeth straight (not hooked) ... 


Herbs, erect, annual; stems branched, red. Leaves 4–10 x 2–3 cm, oblong, obtuse at apex, rounded or cordate at base. Flowers in distinct whorls, in terminal racemes. Nuts 0.2 – 0.3 cm long, acutely trigonous, black.

*Fls. & Frts.* : September–April.

*Distrib.* : Akola, Amravati, Osmanabad, Pune, Thane.


Herbs, perennial, branched. Radical leaves large, oblong, ovate–oblong or triangular–ovate, acute or obtuse at apex, cordate at base. Flowers in distinct whorls in elongate terminal racemes. Nuts c 0.3 cm long.


*Distrib.* : Bhandara, Pune.

Herbs, erect, annual, 60–90 cm tall. Lower leaves oblong, upper ones lanceolate, acute. Flowers clustered in terminal, leafy panicles, green; tepals 2–whorled, inner whorl larger, grooved and tubercled on back, entire or 2–dentate. Nuts trigonous, enclosed in accrescent perianth.

*Fls. & Frts.* : February–April.

*Distrib.* : Rare along river banks. Nanded (Naik, op. cit.).

**CULTIVATED SPECIES :**


Climbers, tendrillar. Leaves cordate or ovate–triangular. Flowers pink, in axillary fasciculate racemes or panicles, showy.

*Fls. & Frts.* : August–May.


*Distrib.* : Native of Mexico. Grown in gardens mostly throughout the state.


Annuals, erect. Leaves broadly ovate, acuminate at apex, cordate at base. Flowers pink or white, in axillary and terminal cymes. Nuts acutely angular, polished, trigonous.

*Fls. & Frts.* : January.

*Distrib.* : Occasionally grown in fields (Cooke, op. cit.).


Shrubs, erect; branchlets flat. Leaves linear–lanceolate. Flowers white or pink, in sessile clusters. Fruits globose.

*Fls. & Frts.* : April–September.


*Pls. & Frts.*: January–March.

*Distrib.*: It is said to be indigenous in Western Punjab. Cultivated as a vegetable & for its medicinal properties. Ahmednagar, Chandrapur, Marathwada (Naik, op. cit.), Nasik, Pune, Raigad, Thane.

**PODOSTEMACEAE**

(C. R. Jadhav)

1. Capsules oblique, unisolobus, smaller one deciduous and bigger one persistent lobes:
   2. Capsules smooth; pollen in monads
   3. Capsules ribbed; pollen in dyads
   1. Capsules not as above

**Cladopus H. Moller**


Herbs, aquatic with thallus algiform, lichen–like, poly–morphous, cup–like or rotate, completely attached to the rock, sometimes running. Leaves distichous. Flowers scattered on thallus or submarginal, in funnel–shaped spathe, irregularly ruptured at tips, solitary on pedicels (fruiting pedicel 0.3 – 0.5 cm long); stamens 2, united; staminodes 2, on either side of stamens. Capsules globose.

*Pls. & Frts.*: October–February.

*Illus.*: Wight, Ic. t. 1918, f. 4. 1852 (*Mniopsis hookeriana*).

*Distrib.*: Frequent on rocks in streams. Bombay, Kolhapur, Pune, Ratnapuri, Shindudurg, Thane.
POLYPLEURUM (Tayl. ex Tul.) Warming

1. Thallus narrow, ribbon-like, flattened, attached at base, free floating above; pedicels about 2 cm long ... *P. dichotomum*

1. Thallus broad, algiform, freely branched, creeping or floating from an attached base; pedicels up to 4 cm long ... *P. stylosum*


Herbs, submerged; stems floating, flowering branches flexuous. Leaves filiform. Flowers on marginal secondary shoots, solitary, zygomorphic, naked, enclosed in small spathe; stamens 2, staminodes 2, linear at side of the staminal column. Capsule walls mostly remain after dehiscence.

*Fls. & Frts.* : November.


*Distrib.* : On rocks in rapid water. Thane.


Herbs, submerged with a habit of sea-weeds (*Fucus*); stems long, ramous, exogenously branched, compressed; branches floating, green or red, lateral margins floriferous. Flowers from secondary shoots, solitary, zygomorphic, naked, with scaly bracts and involucre of leaves, subulate (due to splitting of spathe); stamens 2, with two linear staminodes at the side of its column. Capsules ellipsoid, 8–ribbed.

*Fls. & Frts.* : October–November.

*Illus.* : Wight, op. cit.

*Distrib.* : Frequent in streams on rocks. Pune, Ratnagiri, Satara, Sindhudurg.

**ZEYLANIDIUM** (Tul.) Engl.

1. Thallus crustaceous, rarely ribbon like, entirely appressed to rocks ... *Z. lichenoides*

1. Thallus filiform, partly appressed to rocks ... *Z. subulatum*

Herbs, tiny, aquatic, with flabelliform thallus. Leaves upto 3 cm long, linear, with spathaceous base. Flowers solitary, zygomorphic, naked, with short pedicels; stamens 2 (rarely 1). Capsules ellipsoid. Seeds numerous.

Fls. & Frts. : September–October.

Distrib. : Occasional on rocks in streams. Pune, Satara.


Herbs, small, tufted, aquatic. Leaves 5–8 cm long, subulate with spathaceous base. Flowers solitary, zygommorphic, naked, sessile or subsessile, with 1 or 2 linear staminodes; stamens 2. Capsules ellipsoid, ribbed, short stalked. Seeds many.

Fls. & Frts. : September–October.

Illus. : Subr. op. cit.

Distrib. : Rare, on rocks in streams. Pune.

TRISTICHACEAE

(C. R. Jadhav)

DALZELLLA Wight

Herbs, lithophytic; thallus spreading, branched; lobes ribbon-like or flabelliform. Leaves 0.5–1.5 cm long. Flowers numerous, closely crowded at apices of thallus lobes, emerging from short leafy cupules. Capsules c 2 mm long, ovoid or obovoid, ribbed, light brown; fruiting pedicels very variable. 0.5–3.0 cm long. Seeds numerous, very minute.

**Fls. Frts.**: October–May.

**Illus.**: Wight, op. cit. tt. 1919, 1920. 1852 (Tulasnea all species except ramosissima).

**Distrib.**: Frequent on rocks in streams. Ahmednagar, Bombay, Kolhapur, Nasik, Pune, Ratnagiri, Raigad, Sindhudurg, Thane.

### ARISTOLOCHIACEAE

*(P. Lakshminarasimhan & Archana Godbole)*

| 1. Perianth 3–lobed; seeds trigonous, pitted | ... | THOTTEA |
| 1. Perianth 2–lipped; seeds flat, winged | ... | ARISTOLOCHIA |

### ARISTOLOCHIA L.

| 1. Stems prostrate; leaves glaucous beneath; bracts large, orbicular | ... | A. bracteolata |
| 1. Stems twining; leaves green beneath; bracts small, ovate or oblong: |
| 2. Leaves reaching 4–8 cm long, rounded at base; racemes few flowered | ... | A. indica |
| 2. Leaves reaching 8–14 cm long, deeply cordate at base; racemes many flowered | ... | A tagala |


Herbs, slender, perennial; stems weak, prostrate, branches striate. Leaves as broad as long, 4–7 x 5–9 cm, reniform or broadly ovate, cordate at base with a wide shallow sinus. Flowers solitary; pedicels with a large sessile orbicular bract at base; perianth tube cylindric with a trumpet shaped mouth, lip linear, dark purple, with revolute margins. Capsules oblong–ellipsoid, 12–ribbed, glabrous. Seeds deltoid with slightly cordate base.
Fls. Frts.: July–November.


Distrib.: Scattered weed on black cotton soil. Ahmednagar, Akola, Aurangabad, Beed, Bombay, Buldhana, Jalna, Nanded, Parbhani, Pune, Satara, Solapur.


Variable twining shrubs with slender woody, grooved stems. Leaves linear–oblong to obovate–oblong or subpanduriform, apex acuminate, base cuneate or rounded, margins entire. Flowers in axillary racemes; bracts ovate, acuminate, opposing the pedicels, white with globose inflated base, then bent at right angle and suddenly narrowed into cylindric tube with oblique trumpet shaped mouth, gradually passing into long, narrow, brownish lip. Capsules 6–valved.

Fls. Frts.: November.

Illus.: Wight, Ic. t. 1858. 1852 (A. lanceolata).

Distrib.: Infrequent in deciduous forests. Beed, Bombay, Chandrapur, Dhule, Latur, Nagpur, Nanded, Parbhani, Pune, Raigad, Thane.


Climbing shrubs; stems ribbed. Leaves 5–16 x 3–10 cm, ovate–oblong, apex acuminate, base deeply cordate. Flowers purple, in lax, fascicled, short racemes; perianth 3–5 cm long, tube and lobes equal in length. Capsules 2–3 cm long, 6–valved, globose or ellipsoid.

Fls. & Frts.: February–April.

Illus.: Wight, Ic. t. 771. 1844 [A. acuminata Roxb. Fl. Ind. (Carey ed.) 3: 489. 1832].

Distrib.: Rare plant. Satara, Sindhudurg.
**Thottea Rottb.**


Undershubs, 30–60 cm tall; young parts minutely hairy. Leaves 8–16 x 3–5 cm, elliptic–lanceolate, subsessile, glabrous above, hairy beneath, apex acute. Flowers chocolate–brown, in axillary cymes; bracts small; perianth campanulate, 0.8–1.0 cm across, lobes broadly ovate. Capsules 4–6 cm long, 4–valved, torulose, brownish.

*Fls. & Frts.*: November–March.

*Illus.*: Wight, Ic. t. 520. 1842.

*Distrib.*: Rare plant. Sindhudurg.

**CULTIVATED SPECIES:**


*Distrib.*: It is a native of Brazil and cultivated in gardens. Pune.

**A. fimbriata** Cham. in Linnacea 7: 210, t. 6. 1832; Cooke, Fl. Pres. Bombay 3: 17. 1958 (Repr.).

Flowers solitary, axillary, greenish–white, c 5 x 2.5 cm.

*Distrib.*: Pretty plant grown in gardens. Pune.


*Distrib.*: Cultivated in gardens. Pune.

Twiners, slender, perennial; branches numerous, striate. Leaves 5–10 cm across, broadly ovate to subreniform, obtuse at apex, cordate at base with broad sinus, undulate at margins. Flowers solitary on long axillary pedicels; perianth ash grey or white, with inflated base and yellowish–green cylindric tube. Capsules 3–4 x 2.0–2.5 cm, ovoid–oblong, 6–grooved, greenish–brown. Seeds 2–3 mm long, ovoid, flat, black.

*Fls. & Frts.* : August–December.

*Distrib.* : Native of Brazil, grown in gardens.

**PIPERACEAE**

*(Archana Godbole & P. V. Prasanna)*

1. Leaves opposite, pellucid–punctate ... *Peperomia*
1. Leaves alternate, not punctate ... *Piper*

**Peperomia Ruiz. & Pavon**

1. Leaves 5–7–nerved ... *P. pellucida*
1. Leaves 3–5–nerved ... *P. wightiana*


Erect, succulent herbs, 8–15 cm tall. Leaves 0.6 – 1.8 x 0.3 1.2 cm, broadly ovate, shining above, base rounded or cordate. Flowers pale green, solitary, sunk in fleshy green rachis.

*Fls. & Frts.* : August–September.

*Distrib.* : Amravati, Bombay (Cooke, op. cit.), Pune, Raigad, Ratnagiri, Sindudurg.


Succulent herbs; stems procumbent or ascending. Leaves alternate or opposite, suborbicular, gland dotted, apex obtuse. Flowers in slender, pedunculate, erect spikes, much exceeding the leaves. Berries globose, slightly rough.

*Fls. & Frts.* : July–October.
**Piper L.**

1. Flowers enclosed in globose sacs of connate bracts ... *P. trichostachyon*

   1. Flowers not as above :

   2. Flowers in slender spikes ... *P. hookeri*

   2. Flowers in slightly interrupted spikes of variable length ... *P. nigrum*

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Climbing shrubs; branches stout, branchlets hairy. Leaves opposite, ovate or oblong–lanceolate, brown when dry, 5–7–nerved. Flowers in slender spikes; male spikes 5–10 cm long, bracts of male flowers orbicular, stamens 2. Berries globose.

**Fls. & Frts.** : April–September.


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Stout climbers. Leaves coriaceous, broadly ovate, acuminate, glabrous 5–9–nerved. Flowers in spikes of variable length, dioecious or polygamous; bracteoles forming a semi–lunar ring above ovary; stamens 2; stigmas 2–4. Berries globose, at first yellow, red at maturity.

**Fls. & Frts.** : November–January.


**Distrib.** : Pune, Raigad, Ratnagiri, Satara.

Woody climbers, rooting at nodes. Leaves 5–10 x 3–5 cm, elliptic-lanceolate, shining and dark green above, pale beneath, apex acuminate. Flowers pale green, in pubescent or downy spikes; bracts whitish–green; stamens 2. Berries globose, yellow when ripe.

*Fls. & Frs.* : August–April.

*Illus.* : Wight, Ic. t. 1944. 1858 (*Muldera trichostachya*).

*Distrib.* : Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**CULTIVATED SPECIES :**


Stemless, rosette, shaped low herbs. Leaves broadly ovate, peltate, glossy, green–bluish, tainted with showy bands. Flowers minute, in whitish catkins.

*Distrib.* : Occasionally grown in gardens. Pune.

*Notes.* : Native of Brazil.


Dioecious climbers; stems producing clinging roots at aerial nodes. Leaves 10–18 x 5–10 cm, ovate–oblong to broadly ovate, acute or broadly acuminate at apex, cuneate, truncate or subcordate at base; petioles grooved. Male flowers in narrow, cylindric, 4–15 cm long spikes. Female spikes long–peduncled, fruiting short, pendulous.

*Fls.* : March–April.


Knema attenuata (Wall. ex Hook. f. & Thoms.) Warb.
Robust scandent shrubs. Leaves 2–7 x 0.5–3 cm, cordate, lower leaves petiolate; upper leaves sessile. Spikes 3–6 cm long, bracts peltate. Flowers dioecious in whitish catkins. Stamens 2. Berries blackish–green, red when ripe.

*Fls. & Frts.* : October–March.

*Illus.* : Wight, op. cit.

*Distrib.* : Occasionally cultivated.

**MYRISTICACEAE**

*(A. N. Londhe)*

1. Perianth 3–lobed ...  **MYRISTICA**
1. Perianth deeply cleft ...  **KNEMA**

**KNEMA** Lour.


Trees, 8–15 m tall. Leaves 10–22 x 3–10 cm, elliptic–oblong to oblong–lanceolate, thinly coriaceous, dark green above, glaucous beneath. Flowers brown–pubescent, dioecious; male flowers 3–6, fascicled on axillary peduncles, c 0.6 cm across; female flowers similar, fewer; perianth tubular, 3–lobed, reddish. Drupes ellipsoid, 3.5–4.0 cm long, densely red–tomentose, aril red.


**MYRISTICA** Grovon. (nom. cons.)

1. Fruits subglobose; aril red ...  **M. dactyloides**
1. Fruits elongate; aril yellow ...  **M. malabarica**

Trees, 15–20 m high. Leaves 15–21 x 7–8 cm, elliptic or oblong–lanceolate, coriaceous, base rounded. Flowers cream coloured: male flowers in pedunculate cymes, perianth ovoid, rusty tomentose; females in few–flowered, axillary cymes, perianth cuneate. Drupes 6 x 4 cm, yellow–tomentose.

_Fls. & Frts._: April–September.

_Illus._: Bedd. op. cit.

_Distrib._: Rare in semi–evergreen forests along ghats. Bombay, Raigad, Satara, Sindhudurg.


Trees, 10–15 m tall. Leaves 8–12 x 3–5 cm, oblong or elliptic–lanceolate, chartaceous, shining above, dull brown below, apex acute, base cuneate. Flowers dioecious; male flowers in cymes; females in few but longer, axillary umbels. Drupes 5–6 cm long, brown pubescent.

_Fls. & Frts._: November–March.

_Illus._: Sincl. op. cit.


**CULTIVATED SPECIES:**


An evergreen tree, 9–12 m tall. Main axis of male inflorescence is slender & branches dichotomously at top into two equal branches. Unbranched female axis bears only one flower.
Distrib. : Cultivated in gardens. Sindhudurg.

Notes. : Native of Moluccas and is known by the name ‘Nutmeg’.

Lauraceae

(A. N. Londhe)

1. Leafless parasitic plants ... Cassytha

1. Plants with leaves, not parasitic:

2. Flowers unisexual:

3. Leaves 3–nerved; perianth segments 4 ... Neolitsea

3. Leaves penninerved; perianth segments 6:

4. Flowers clustered in densely imbricating (not whorled) bracts ... Actinodaphne

4. Flowers in umbellate heads supported by 4–6–whorled bracts ... Litsea

2. Flowers bisexual (rarely polygamous):

5. Perianth glabrescent ... Aalseodaphne

5. Perianth pubescent or silky pubescent:

6. Leaves 3–nerved:

7. Fruits completely enclosed in perianth tube; anthers 2–celled ... Cryptocarya

7. Fruits resting on perianth; anthers 4–celled ... Cinnamonum

6. Leaves penninerved:

8. Perianth glabrous, deciduous ... Beilschmedea

8. Perianth silky pubescent, persistent ... Persea

Actinodaphne Nees


Trees, 10–15 m tall. Leaves in two whorls of three each, 10–18 x 4.5–7.0 cm, elliptic–lanceolate, coriaceous, apex finely acuminate, base acute. Flowers yellowish, arising from naked branches; males in clusters. Berries 1.0–1.2 cm long, ellipsoid, red when ripe, seated on cup shaped, enlarged, perianth tube.
Fls. & Frts. : October–May.


**Alseodaphne Nees**


var. **semicarpifolia**

1. Young leaves rufous–hoary ... var. rufa
1. Young leaves not as above :
   2. Panicles as long as leaves ... var. angustifolia
   2. Panicles longer than leaves ... var. semicarpifolia


Trees. Leaves 7.5–12.5 x 2.5–3.7 cm, oblong–lanceolate, glaucous beneath, apex obtuse or subacute. Berries c 3 cm across, rather narrow.
Distrib. : Konkan (Cooke, op. cit.).


Distrib. : Rare. Konkan (Cooke, op. cit.).

**Beilschmiedia Nees**


Trees, 8–15 m tall. Leaves 5–15 x 2.5–6.0 cm, elliptic–ovate to ovate–lanceolate, leathery, glabrous above, reticulately veined beneath. Flowers greenish–brown, in axillary panicles; perianth 6; stamens 9, outer 2 whorls introrse, 3rd whorl extrorse, staminodes in 4th whorl. Fruits up to 3.5 x 1.6 cm, ovoid, ellipsoid, smooth, dark brown when dry.

*Fls. & Frts.* : November–June.

Distrib. : Rare in semi–evergreen and moist deciduous forests along ghats. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**Cassytha L.**


Climbers, parasitic, herbaceous; stems wiry, slender, green, branched, attached to host by suckers, glabrous or hairy. Flowers white, in lax spikes; perianth lobes 6, in 2 rows; stamens 9, in 3 rows and staminodes in 4th row. Drupes globose, enclosed in enlarged perianth.

*Fls. & Frts.* : June–September.
CINNAMOMUM Schaeff.

1. Panicles longer than leaves ... C. verum
1. Panicles shorter than leaves ... C. nitidum


Fls. & Frts.: March–April.

Illus.: Wight, Ic. t. 130. 1839 (C.iners).

Distrib.: Rare in semi–evergreen forests along ghats. Pune, Satara, Sindhudurg.


Trees, 5–10 m tall; young parts glabrous, leaves and bark aromatic and pungent. Leaves 5–20 x 3–6 cm, ovate–oblong or elliptic–ovate, coriaceous, shining above, pale beneath, 3–5–ribbed. Flowers greenish to creamy, in lax, silky hairy panicles. Berries ovoid–oblong, purplish.

Fls. & Frts.: February–June.
Cinnamomum verum J. S. Presl
Cryptocarya R. Br.


Trees, 10–15 m tall; young parts rusty–pubescent; bark with large corky lenticels. Leaves 10–20 x 3–10 cm, ellliptic–oblong, coriaceous, whitish beneath, apex shortly acuminate, base subacute or rounded. Flowers yellowish, numerous, in spreading, axillary, pubescent panicles. Berries c 1 cm long, oblong or ellipsoid, often with slight constriction in middle.

**Fls. & Frts.** : December–May.

**Illus.** : Wight, Ic. t. 1839. 1852 (C. floribunda).

**Distrib.** : Rare in semi–evergreen forests along ghats. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

Litsea Lam. (nom. cons.)

1. Perianth segments obscure or absent:
   2. Leaves thick, tomentose beneath; umbels solitary many–flowered ... *L. deccanensis*
   2. Leaves thin, glabrous or so beneath; umbels corymbose or racemose, few–flowered ... *L. glutinosa*

1. Perianth segments present:
   3. Leaves glaucous beneath; filaments glabrous ... *L. josephii*
   3. Leaves pubescent or rusty tomentose beneath; filaments hairy or villous:
      4. Perianth segments deciduous; stamens 6 ... *L. fuscata*
      4. Perianth segments persistent; stamens more than 9 :
5. Umbels solitary ... *L. ghatica*

5. Umbels 4–6–fid:

6. Leaves chartaceous; fruits on small perianth base ... *L. monopetala*

6. Leave coriaceous; fruits on stoutly pedicelled perianth tube ... *L. wightiana*


Shrubs or small trees, 2–10 m high; young branches softly yellow–tomentose. Leaves 5–20 x 2.5–8.0 cm, elliptic–lanceolate, apex acute or acuminate. Flowers white or yellow, in simple, umbellate heads, 2.0–2.5 cm across; umbels 4–5–flowered; stamens 18–20, filaments hairy. Berries c 1.5 cm across, globose, ripens black.

*Fls. & Frts.*: December–September.

*Illus.*: *Tetranthera tomentosa* Roxb. ex Wall. ex Wight, Ic. t. 1834. 1852.

*Distrib.*: Frequent in moist deciduous forests. Kolhapur, Pune, Satara, Sindhudurg, Thane.


Trees c 6 m high; young branches rusty–tomentose. Leaves 7–10 x 2.5–5.0 cm, elliptic, glabrous above, silky beneath. Perianth funnel–shaped, villous. Fruits globose.

*Distrib.*: Rare. Satara.


Shrubs or small trees, c 4 m tall; young shoots tomentose. Leaves 5.0–22.5 x 2.5–11.0 cm, obovate to ob lanceolate or elliptic to elliptic–oblung, apex abruptly shortly acuminate, base cuneate; lateral nerves 10–12 pairs; petioles tomentose. Umbels lateral and axillary, greenish–white to yellow, faintly odoriferous; bracts tomentose outside. Perianth lobes in males glabrescent; filaments hairy at base. Berries globose, c 1 cm across, ripens black.
Litsea deccanensis Gamble

Trees, 5–10 m tall. Leaves 12–20 x 4.5–9.0 cm, ovate or elliptic–lanceolate, apex obtuse, base acute. Flowers white or yellowish, c 0.6 cm across. Berries globose, ripens purple.

Fls. & Frts. : March–September.

Distrib. : Rare along ghats and forest edges. Amravati, Bombay, Kolhapur, Sindhudurg, Yavatmal.


Trees, 5–8 m tall. Leaves alternate or subopposite, 10–20 x 5–8 cm, coriaceous, glaucous beneath, elliptic–oblanceolate, apex obtuse or subacute, base acute, margins revolute. Flowers greenish, in heads or racemes, axillary and from old scars. Perianth enlarged in fruits c 1.2 cm long. Berries ellipsoid, green, speckled with white, dark purple when ripe.

Fls. & Frts. : October–April.


Trees, 6–12 m tall; branches stout. Leaves alternate, 7.5–40.0 cm long, elliptic–oblong or obovate, pinninerved, chartaceous, softly pubescent beneath. Umbels 5–6–fid, clustered and subcorymbose on short peduncles. Berries globose–ellipsoid on a small perianth base.

Fls. & Frts.: June.

Distrib.: Frequent in moist deciduous forest. Pune, Sindhudurg.


Trees c 8 m high. Leaves 7–15 x 2.5–6.0 cm, elliptic–lanceolate. Flowers creamish in axillary, 3–7 cm long racemes; bracts coriaceous; perianth silky–tomentose. Fruits ellipsoid, 1–2 cm long.

Fls. & Frts.: August–November.

Illus.: Wight, Ic. t. 1833. 1852 (*C. wightiana*).

Distrib.: Rare in evergreen forests. Satara.

**Neolitsea** (Bth.) Merr. (nom. cons.)


Trees, 5–8 m tall. Leaves crowded towards tips of branches, 5–15 x 3.0–6.5 cm, elliptic–lanceolate, thinly coriaceous, apex obtuse or acuminate. Flowers greenish, sessile, clustered, in 4–5–flowered umbels. Berries 1.2 cm across, oblong or globose.

Fls. & Frts.: September–June.

Illus.: Wight, Ic. t. 1839 & 1854. 1852 (*Litsea zeylanica*).

Persea Mill.


Trees, 15–20 m tall. Leaves 8–18 x 1.5–6.5 cm, oblong to elliptic–lanceolate, variable in shape, coriaceous, glaucous beneath. Flowers yellow, in panicles in upper axils. Berries 1–2 cm across, ovoid, smooth, dark green, dotted with, ultimately turning black.

*Fls. & Frts.* : January–June.


**CULTIVATED SPECIES** :


Trees, moderate sized c 10 m tall. Leaves alternate, penninerved. Buds enclosed in large orbicular concave silky scales.

*Distrib.* : Cultivated for 'Camphor', also as an ornamental tree in gardens. Satara.


Shrubs or small trees, 2–3 m tall. Leaves crowded at stem apices, ovate–elliptic, 9–12 x 4–6 cm entire, coriaceous. Flowers crowded in many–flowered panicles at apices; corolla greenish–yellow.


*Distrib.* : Cultivated in gardens. Pune.
HERNANDIACEAE
(incl. GYROCARPACEAE)

(P. G. Diwakar)

GYROCARPUS Jacq.


Trees, 8–12 m high; bark smooth, greenish–white. Leaves 10–15 cm as long as broad, ovate–orbicular. Flowers white, in terminal clusters, branches cymose. Drupes pubescent, globose–ovoid, 1.2–2.0 cm across, crowned with long wing like persistent perianth–lobes.

Fls. & Frts. : June–September.


Distrib. : Rare in deciduous forests. Ratnagiri.

PROTEACEAE

(A. N. Londhe)

CULTIVATED SPECIES:


Trees, robust with hoary or rusty tomentose young branches. Leaves fern like. Flowers greenish–yellow, in secund, one–sided showy racemes. Fruits coriaceous

Fls. & Frts. : March–July.


Trees c 10 m tall and having very dense foliage. Leaves in whorls, glabrous shining, oblong or lanceolate, entire or serrate with prickly teeth. Flowers in racemes, ivory–white. Follicles 2–valved.

Distrib. : Grown in gardens. Ahmednagar, Buldhana, Pune.

Notes. : Native of Australia.
Gnidia glauca (Fresen.) Gilg.
GNIDIA L.


Shrubs, 1.5–4.0 tall. Leaves 4–8 x 1.5–2 cm, linear–oblong to oblong–lanceolate, subsessile, apex acute. Flowers bright–yellow, in dense showy heads; bracts silky; perianth hairy, lobes 4–5. Fruits 0.8–1.2 cm long, dry, ellipsoid, enclosed by base of persistent perianth.

**Fls. & Frts.** : October–June.

**Illus.** : Wight, Ic. t. 1859. 1852; Talb. For Fl. Bombay Pres. & Sind 2: 400, f. 466. 1911 (*L. eriocephalus*).

**Distrib.** : Frequent along slopes of the ghats. Ahmednagar, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

ELAEAGNACEAE

(A. N. Londhe)

**ELAEAGNUS L.**


Shrubs, scandant, armed with spiny branches. Leaves 4–8 x 1.5–4.0 cm, elliptic to obovate, lower surface glistening, silvery–white. Inflorescence of 1–many flowered fascicles. Nuts c 2.5 cm long, ellipsoid, 8–ribbed, pinkish with small whitish scabrous spots.

**Fls. & Frts.** : November–May.

**Illus.** : Wight, Ic. t. 1856. 1852; Talb. For Fl. Bombay Pres. & Sind 2: 403, f. 467. 1911 (*E. latifolia*).

**Distrib.** : Frequent along ghats. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.
Elaeagnus conferta Roxb.
LORANTHACEAE

(A. N. Londhe)

1. Flowers unisexual ... VISCUM

1. Flowers hermaphrodite :

2. Flowers with a pair of bracteoles within bracts ... MACROSOLEN

2. Flowers without pairs of bracteoles within bracts:

3. Bracts forming large, campanulate, toothed involucre ... TOLYPANTHES

3. Bracts solitary, not as above:

4. Corolla 4 cleft:

5. Petals free ... HELIXANTHERA

5. Petals fused ... SCURRULA

4. Corolla 5 cleft:

6. Corolla–lobes spirally coiled ... HELICANTHES

6. Corolla–lobes not spirally coiled :

7. Flowers irregular ... TAXILLUS

7. Flowers regular ... DENDROPHTHEO

DENDROPHTHOE Mart.

1. Flowers in axillary, short, unilateral racemes ... D. falcata

1. Flowers not as above:

2. Corolla tube dilated below middle ... D. trigona

2. Corolla tube not dilated below middle :

3. Flowers in axillary umbels ... D. memecylifolius

3. Flowers in fascicles on nodes ... D. neelgherrensis


1. Leaves broadly ovate, petiole and midrib purple at base ... D. falcata var. coccinea

1. Leaves elliptic–oblong, petiole and midrib not as above :
2. Style projecting beyond corolla tube
   D. falcata
   var. pubescens

2. Style as long as corolla tube
   D. falcata
   var. falcata

var. falcata. 'Bandgul', 'Kawarak'.

Bushy, stem parasites. Leaves 3.5–11.0 x 1.5–5.0 cm, broadly elliptic–oblong, almost amplexicaul, sessile. Flowers in axillary, solitary or fascicled racemes. Berries c 0.6 x 0.2 cm, red, covered by cupular calyx.

Fls. & Frts. : September–May.


Distrib. : Frequent as parasite on trees.


Parasites, well branched, woody; stem and branches stout, lenticellate. Leaves broadly ovate or ovate–elliptic. Flowers scarlet, in short, axillary racemes.

Fls. & Frts. : November.


Distrib. : Occasional parasite. Ahmednagar, Sindhudurg, Thane.


Leaves oblong or elliptic–oblong. Peduncle, pedicel, calyx and corolla in bud stage pubescent.


Parasitic shrubs. Leaves 2–8 cm long, oblong or elliptic, opposite and alternate, coriaceous, dark brown, narrowed into a short petiole; petiole erect. Corolla straight, scarlet, acute in bud, lobes reflexed; filaments shorter than anthers; stigma capitate. Fruits oblong with cupular calyx limb.

*Fls. & Frts.*: October–December.

*Distrib.*: Rare on forest trees. Sindhudurg (S.M. Almeida, Fl. Savantwadi 1: 368. 1990).


Shrubs, parasitic; branches smooth. Leaves 8–15 x 4–10 cm, opposite, alternate, coriaceous, orbicular, narrowed into petiole; petioles stout. Flowers sessile; corolla slender, straight, lobes longer than tube, reflexed above middle; anthers long; stigma capitate. Fruits oblong, smooth.

*Fls. & Frts.*: October–December.

*Illus.*: Wight. Ic. t. 1020. 1845.


Bushy, robust parasites; stems dichotomously branched, woody. Leaves 6–12 x 3–6 cm, broadly elliptic, leathery, apex obtuse or subacute. Flowers in racemes; bracts small; calyx cupular, truncate; corolla–tube reddish–pink, lobes greenish, spatulate. Drupes c 1 cm long, ellipsoid, pale reddish.

*Fls. & Frts.*: November–March.


*Distrib.*: Infrequent in forest areas. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.
HELICANthes Danser


Undershubs, dichotomously branched, woody, parasitic; stems terete. Leaves 3.5–6.5 x 1.8–3.0 cm, ovate or elliptic, coriaceous, sessile. Flowers 2.0–2.5 cm long, sessile, in fascicles at nodes; calyx cupular, scarlet; corolla–tube greenish–white, 5–lobed, reddish, spirally twisted. Drupes 1.0–1.2 cm long, ovoid.

*Fls. Frts.* : August–February.


*Distrib.* : Frequent in forest on Mangifera and Artocarpus trees. Bombay, Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg.

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**Helixanthera** Lour.

1. Rusty pubescent parasites; inflorescences of spikes . . . *H. hookerianus*

1. Glabrous parasites; inflorescences of racemes :

2. Petals less than 0.5 cm long . . . *H. wallichiana*

2. Petals more than 1 cm long:

3. Buds subcylindrical; ovary smooth . . . *H. intermedia*

3. Buds 4 angled; ovary rugulose . . . *H. obtusata*


*Fls. & Frts.* : May.

*Distrib.* : Rare in forest areas. Sindhudurg (S.M. Almeida, Fl. Savantwadi 1: 369. 1990).

Undershrubs, parasitic on branches of host trees. Leaves shortly petioled, 9–16 x 4–8 cm, elliptic, narrowed at both ends. Flowers pinkish; petals 4, 1.0–1.5 cm long, linear–spathulate. Berries spherical.

*Fls. & Frts.* : January–June.

*Distrib.* : Rare in forest area. Kolhapur.


Herbs, stout; young parts pubescent. Leaves subopposite, 6–12 x 3.5–8.0 cm, broadly ovate or elliptic, coriaceous, apex obtuse, base rounded or acute. Flowers red outside and dark purple inside, in axillary, many flowered racemes. Berries 0.4–0.5 cm long, ovoid, truncate at apex, tuberculate.

*Fls & Frts.* : February–June

*Distrib.* : Infrequent on hosts like *Xyilia* and *Knema*. Kolhapur, Pune, Satara.


Herbs, woody, parasitic; branches terete. Leaves 4–10 x 2.5–4.5 cm, elliptic or ovate, coriaceous, apex obtuse or subacute. Flowers red, 0.3–0.5 cm long, in racemes, 2–3–together; bracts small; calyx globose, cupular, red; corolla 4–lobed. Berries ovoid.


*Illus.* : Wight, Ic. t. 143.1839 (*Loranthus wallichianus*). 

*Distrib.* : Occasional as parasite in forest areas. Pune, Ratnagiri, Sindhudurg, Thane.
MACROSolen (Bl.) Reichenb.

1. Flowers 3–4–together on short peduncle; corolla less than 2.5 cm long ... M. capitellatus

1. Flowers in axillary spikes; corolla more than 2.5 cm long ... M. parasiticus


Herbs or undershrubs, woody, parasitic; branches terete. Leaves 4–8 x 2.5–4.0 cm, ovate to ovate–lanceolate, coriaceous. Flowers reddish or green, streaked with purple, sessile, in axillary umbels, ovate–orbicular; calyx cylindric, truncate; corolla c 2.6 cm long, lobes 6–angled in bud. Berries globose.

*Fls. & Frts.* : March–August.

*Illus.* : Wight, Ic. t. 304. 1840 (*Loranthus capitellatus*).

*Distrib.* : Frequent in forest areas on different hosts. Bombay, Kolhapur, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Bushy, much branched, parasites. Leaves opposite, ovate–oblanceolate, acuminate, rounded at base and narrowed into petiole. Flowers few, bracteate, bracts ovate; stamens 6 stigma subglobose. Berries green, ellipsoid.

*Fls. & Frts.* : May–August.


**SCURrula L.**

1. Flowers subsessile, 1–3 together, c 2 cm long ... *S. stocksii*

1. Flowers pedicellate, in subracemose fascicles, 2.5 cm long ... *S. parasitica*


Undershrubs or shrubs, woody. Leaves opposite, 3.5–7.5 x 2.5–5.0 cm, broadly elliptic. Inflorescence with short peduncles, rusty or grey tomentose, axillary, subracemose fascicles. Berries 0.6–1.0 cm long, tomentose.

*Fls. & Frts.* : August–June.


*Distrib.* : Frequent in forests on trees. Akola, Kolhapur, Nasik, Pune, Ratnagiri, Satara, Thane.


Herbs, woody, parasitic; stems and branches lenticellate. Leaves 2–5 x 1.2–3.5 cm, elliptic–oblong, buff tomentose when young, apex obtuse, base subcordate or rounded. Flowers rusty–tomentose, in fascicles; calyx subglobose, orange–red, hairy; corolla 1.5 cm long, rusty–tomentose, tube cylindric, lobes 4, 0.5 cm long, tomentose pyriform.

*Fls. & Frts.* : November onwards.

*Distrib.* : Rare in forest on trees. Ratnagiri, Sindhudurg (Cooke, op. cit.).

**Taxillus van Tiegh.**

1. Branchlets tawny–tomentose; bracts larger than calyx ... *T. tomentosus*

1. Branchlets not as above; bracts as long as or shorter than calyx ... *T. cuneatus*

Taxillus cuneatus (Roth) Danser
Herbs or undershrubs. Leaves alternate, 2–4 x 1.0–2.2 cm, obovate, apex rounded, base cuneate, entire. Flowers greenish, in axillary, sessile or pedunculate fascicles. Berries 0.5–11.0 cm long, green, turning red, obconic, truncate, crowned by calyx teeth.

*Fls. & Frts.*: September–June.

*Illus.*: Fyson, Fl. South Indian Hill St. 2: t.446. 1932.

*Distrib.*: Infrequent in forests on trees. Ahmednagar, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Thane.


Shrubby parasites. Leaves sessile, 5.0 x 2.5 cm, obovate or oblanceolate, rusty–villous below, drying black above. Flowers greenish, rusty–villous. Berries 0.8 cm long, ovoid, pink.

*Fls. & Frts.*: October–February.


**TOLYPANTHUS Bl.**


Undershubs or shrubs, woody, much branched; branches lenticelled. Leaves 4.0–4.5 x 3.0–3.5 cm, elliptic, apex obtuse. Flowers in fascicles on naked branches; involucre c 2 cm long, red; corolla 3.5 cm long, red. Berries 1.0 x 0.7 cm, ovate–oblong, yellow to orange with red or purplish top.

*Fls. & Frts.*: June–September.


*Distrib.*: Occasional in forests on trees. Bombay, Kolhapur, Nasik,
Pune, Raigad, Ratnagiri, Satara, Thane.

**Viscum L.**

1. Leafy parasites:
   2. Leaves more than 5 cm long, 3–5-nerved:
      3. Leaves oblique, apex acute ... *V. monoicum*
      3. Leaves not oblique, apex obtuse ... *V. orientale*
   2. Leaves less than 3 cm long or sometimes absent, 3-nerved ... *V. capitellatum*

1. Leafless parasites:
   4. Internodes flattened; leaves scaly ... *V. articulatum*
   4. Internodes terete or 4-angled; leaves absent ... *V. angulatum*


Herbs, leafless, woody, parasitic; stems and branches pendulous. Flowers green, sessile, in fascicles, axillary or terminal, central one female, lateral ones male; perianth lobes 4, fused. Berries globose, yellowish.

*Fls. & Frts.*: May–October.

*Illus.*: Wight, Ic. t. 1017. 1845.

*Distrib.*: Frequent in forests on trees. Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg, Thane.


Shrubs, dichotomously branched, pendulous; branches articulated, yellowish–green, longitudinally furrowed, narrow at both ends. Flowers minute in axillary clusters. Berries 0.1–0.5 cm across, globose, smooth, greenish–yellow.

*Fls. & Frts.*: July–December.

Viscum angulatum Heyne ex DC.

Parasitic shrubs; branches stout, terete or angular. Leaves few, 0.6–2.5 x 0.6–2.5 cm, obovate–spathulate or suborbicular, concave above, sometimes 2 lobed at apex, base cuneate. Flowers sessile or so, in threes or fours. Berries c 0.6 cm long, ovoid–oblong, slightly rough with small prominences, pale greenish or white.

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

**Distrib. :** Frequent in forests on trees. Akola, Amravati, Bombay, Buldhana, Chandrapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Herbs, leafy, pendulous, parasitic, branches longitudinally wrinkled and grooved. Leaves sessile, 3–7 x 0.8–3.0 cm, obleng–lanceolate, leathery, falcate, apex acute, base tapering, 3–5–nerved. Flowers greenish, in axillary fascicles; bracts truncate; outer flowers of triads female, inner males, perianth lobes 4. Berries c 0.6 long, ovoid, smooth, with whitish lines.

**Fls. & Frts. :** November–May.

**Distrib. :** Rare in forests. Pune.


Branched, leafy parasites. Leaves 3–5 x 1.2–2.5 cm, elliptic or elliptic–lanceolate, apex obtuse, base tapering into a short often obscure petiole. Flowers in axillary, sessile or shortly pedunculate clusters of 3–5. Berries ovoid or subglobose, c 0.6 cm long.

**Fls. & Frts. :** September–January.

**Distrib. :** Rare in forests. Ratnagiri, Satara, Sindhudurg.
1. Trees; leaves opposite; stamens with interposed processes ... SANTALUM

1. Shrubs; leaves alternate; stamens without interposed processes ... OSYRIS

OSYRIS L.


Much branched shrubs; young branches sharply triangular. Leaves subsessile, coriaceous, elliptic–oblong, apex mucronate. Flowers yellowish–green, axillary; male flowers in long pedunculate, shortly pedicellate, 5–10–flowered umbels, the peduncles of bisexual flowers carrying 1–3 flowers and elongating in fruit, perianth of 3 triangular lobes. Drupes yellow, subglobose.

Fls. & Frts. : January–May.

Illus. : Wight, op. cit.

Distrib. : Ahmednagar, Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg, Thane.

SANTALUM L.


Evergreen trees with slender drooping branches. Leaves 1.5–6.0 x 0.5–3.0 cm, elliptic to elliptic–lanceolate, apex subacute, entire. Flowers brownish–purple, in terminal and axillary paniculate–cymes shorter than leaves. Drupes globose, c 7 x 5 mm, purplish–black.

Fls. & Frts. : March–August.


Distrib. : Ahmednagar, Akola, Buldhana, Nasik, Pune, Ratnagiri, Raigad, Solapur, Thane, Yavatmal.

BALANOPHORACEAE

(S. Moorthy)

1. Male and female flowers in the same inflorescence ... B. abbreviata

1. Male and female flowers in different inflorescences:

2. Male flowers sessile; perianth yellowish–brown ... B. elkinsi

2. Male flowers pedicellate; perianth white ... B. fungosa

ssp. indica


Root parasites, fleshy leafless; root–stocks tuberous, warty. Scapes many, cylindrical, 10–20 cm high with 2–6 spathaceous scales, creamy or pale yellow, turning brownish–purple. Flowers monoecious on the same scape in ellipsoid–ovoid heads, 1.4–3.0 x 1–2 cm, spadices c 0.7 cm long, shortly slender–stalked, pyriform.

Fls. & Frts. : October.

Illus. : Reddi, op. cit.

Distrib. : Infrequent. Pune.


Root–stock tuberous, light brown, warted. Male peduncles c 5.5 cm long; heads c 2.5 cm across; bracts ovate–oblong or strap shaped, yellow with purple tip; female flowers covered with small, clavate, brown bodies c 5 cm across.

Fls. & Frts. : January.

Illus. : Blatt. op. cit.

Distrib. : Infrequent. Satara.

Notes. : Found in dense thickets parasitic on Syzygium cumini.

Herbs, root parasites, 10–15 cm high; rhizomes tuberous, branched, pale brown, finely warted all over. Leaves scaly, broad based, spiral. Flowers whitish or purplish in ovoid heads: male flowers in ovoid–oblong heads with ovate–oblong, yellow or orange scales, perianth lobes linear, reflexed; female flowers in purplish – brown, globose heads, perianth absent. Fruits minute, crustaceous. Seeds globose.

*Fls. & Frts.*: October–December.


*Distrib.*: Frequent. Kolhapur, Pune, Satara.

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**EUPHORBIACEAE**

*(A. N. Londhe)*

1. Plants growing on marshy places, with milky latex ...
   - **EXCOECARIA**

1. Plants not growing on marshy places, with or without milky latex:

   2. Vines, usually with stinging hairs:

      3. Leaves eglandular; flowers in spikes; stamens 3; styles free ...
         - **TRAGIA**

      3. Leaves glandular near petiole; flowers in involucrate clusters; stamens more than 20; style connate ...
         - **DALECHAMPIA**

2. Plants not as above:

   4. Erect or prostrate herbs, rarely undershrubs:

      5. Plants with cyathia inflorescence; males and females enclosed by common involucres; stamen 1 ...
         - **EUPHORBIA**

   5. Plants not as above:

      6. Flowers in racemose inflorescence:

         7. Stamens united ...
            - **CHROZOPHORA**

         7. Stamens free:

            8. Stamens 8–10, anthers twisted ...
               - **ACALYPHA**

            8. Stamens 2–5, anthers not twisted ...
               - **SEBASTIANA**

6. Flowers not in racemose inflorescence:
9. Tepals 3; seeds globose ... Micrococca
9. Tepals 4–6; seeds 3–gonous ... Phyllanthus (p.p.)

4. Shrubs or trees:
10. Scandent or climbing or straggling shrubs:
   11. Leaves 2.5 cm or more long; corolla present at least in one of sex ... Bridelia (p.p.)
   11. Leaves 2 cm or less long; corolla absent in both sexes ... Phyllanthus (p.p.)

10. Erect shrubs or trees:
   12. Plants with 3–foliolate leaves ... Bischofia
   12. Plants not as above ...

13. Flowers of both sexes in axillary fascicles or clustered:
   14. Flowers dioecious:
      15. Leaves coriaceous; petals present in both sexes ... Bridelia (p.p.)
      15. Plants not as above ... Securinega
   14. Flowers monoecious:
      16. Petals present:
         17. Calyx of 5 segments, valvate; capsules deeply 3–lobed at top ... Cleistanthus
         17. Plants not as above ... Actephila
      16. Petals absent:
         18. Disc present ... Emblica
         18. Disc absent:
            19. Main nerves of leaves 5 pairs; calyx of male flowers turbinate or hemispheric ... Breynia
            19. Main nerves of leaves 6–10 pairs; calyx of male flowers not as above ... Glochidion

13. Flowers in spikes or racemes or panicles, sometimes subumbellate:
   20. Disc present:
   21. Petals present:
      22. Orbicular and silvery scales on young parts, inflorescence are densely clothed with white tomentum:
         23. Stamens 10 or more:
      24. Orbicular and silvery
scales on young parts, inflorescence, etc. ... Croton

24. Young parts and inflorescence densely clothed with white tomentum ... Givotia

23. Stamens 8 or less ... Jatropha

22. Plants not as above:

25. Male flowers in catkin like inflorescence; petals shorter than calyx; capsules glabrous ... Agrostistachys

25. Plants not as above ... Dimorphaclayx

21. Petals absent (at least in females):

26. Petals present in females only and shorter than calyx ... Blachia

26. Petals absent in both sexes:

27. Stamens 3–4:

28. Flowers dioecious ... Antidesma

28. Flowers monoecious:

29. Filaments free; styles long with 2–3 filiform arms ... Epiprinus

29. Filaments united in a column; styles short ... Sauropus

27. Stamens many (20 or more):

30. Leaves sinuate toothed, upper one lanceolate, lower large, 3–5–lobed ... Baliospermum

30. Plants not as above ... Cleidion

20. Disc absent:

31. Plants with milky latex ... Sapium

31. Plants without milky latex:

32. Stamens 2–23:

33. Leaves peltate; females in simple panicles ... Macaranga

33. Leaves and females not as above:

34. Males in spikes; drupes pointed at tip, glabrous ... Aporosa

34. Males and drupes not as above ... Drypetes

32. Stamens numerous:

35. Leaves linear – lanceolate or linear–oblong; inflorescence and young leaves pubescent ... Homonoia

35. Leaves and inflorescence not as above:
Acalypha L.

1. Bracts longer than the capsules:
   2. Spikes elongate, longer than 2.5 cm long ... A. indica
   3. Spikes less than 2.5 cm long:
      3. Bracts of female flowers bordered with gland tipped hairs ... A. malabarica
      4. Capsules hispid ... A. brachystachya
      4. Capsules glabrous ... A. ciliata

1. Bracts shorter than the capsules ... A. lanceolata


Annual, erect herbs, c 40 cm high. Leaves 2–6 x 1–2.7 cm, ovate–cordate, apex acute–acuminate, base cordate, margins crenate–serrate, sparsely hairy on both surfaces; petioles c 5 cm long. Spikes axillary, sessile c 1.2 cm long, androgynous. Flowers green: male flowers in minute clusters, on apex of spikes; female flowers hispid, present at base of spikes. Capsules 0.1 x 0.1 cm, hispid, enclosed by bracts.

**Fls. & Frts.:** August–September.


**Distrib.:** Scarce. Pune, Satara.


Herbs, erect c 60 cm tall; younger branches pubescent, older stems striate. Leaves 2–10 x 1–5 cm, ovate–lanceolate, apex caudate–acuminate, base rounded, margins serrate. Spikes c 2.5 cm long, axillary, androgynous. Flowers green: male flowers few, minute at top of spike; female flowers large, crowded at base, bracts campanulate, c 6 mm long, many nerved, nerves ending in filiform, hispid teeth.
Capsules 1.5–2 mm across, subglobose, trigonous. Seeds ovoid, reddish–brown.

*Fls. & Frts.* : August–December.


*Distrib.* : Common.


Annual, erect, herbs, 30–60 cm tall; branches finely pubescent. Leaves 2–7 x 1.8–4.5 cm, ovate–rhomboid, apex acute or subobtuse, base cuneate, margins crenate–serrate. Spikes axillary. Male flowers minute at apex of spikes, spikes 2.5–7.5 cm long, c 1 mm across; ovary hispid. Capsules c 2 x 2.5 mm, hispid, enclosed by bracts. Seeds ovoid, smooth.

*Fls. & Frts.* : June–November.


*Distrib.* : Common.


Annual, erect, herbs, c 40 cm tall. Leaves 1–5 x 0.4 cm, ovate–lanceolate, apex subacute, base acute, margins crenate–dentate, sparsely hairy on nerves. Spikes axillary. Male flowers c 1.5 mm across, yellow–red in colour; female flowers 2–2.5 mm across, green. Capsules 1.5–2 mm long, hispid with glandular based hairs. Seeds ovoid, acute.

*Fls. & Frts.* : July–October.


Annual, erect, herbs, 15–30 cm tall; stems pubescent. Leaves 1–5 x 0.3–2.5 cm, elliptic–ovate or elliptic–lanceolate, base acute, apex subacute, margins crenate–serrate, sparsely pubescent. Spikes c 2 cm long axillary, andrognynous. Female flowers green; male flowers yellow, in axils of gland–tipped hairy bracts. Capsules 1–2 x 0.5–1 mm,
Acalypha malabarica Muell. – Arg.

_Fls. & Frts._ : August–December.

_Distrib._ : Frequent.

**ACTEPHILA Bl.**


Shrubs or small trees, 1–2 m tall; bark greyish–brown, branches terete. Leaves 7–18 x 3.5–8 cm, elliptic or obovate, coriaceous, apex acute, base acute, margins entire, inturned. Flowers greenish–white, monoecious, male and female flowers arranged in axillary clusters. Capsules 2–3 cm across, depressed–globose. Seeds 1–3 cm long, obtusely trigonous.

_Fls. & Frts._ : October–April.


**AGROSTISTACHYS Dalz.**


Shrubs, c 2 m tall. Leaves 10–25 x 3.5–8 cm, oblong–lanceolate, acute at apex and base, margins sharply serrate. Spikes supra–axillary. Flowers minute, solitary in axils of small ciliate bracts; male flowers sessile; female flowers pedicellate. Capsules 1–1.2 cm across, globose.

_Fls. & Frts._ : September–April.


**ANTIDESMA L.**

1. Stamens inserted in hollows (between lobes) of disc:
2. Stamens 2
   ... A. acidum

2. Stamens 3–4
   ... A. montanum

1. Stamens inserted within disc:

3. Leaf apex rounded or emarginate, softly fulvous
tomentose beneath; spikes rusty pubescent
   ... A. ghaesembilla

3. Leaf apex acuminate, shining; spikes glabrous
   ... A. bunius


Shrubs, erect, c 3.5 m tall, dioecious; young vegetative parts glabrous or rusty pubescent. Leaves 3–13 x 2–5 cm, obovate–elliptic, apex and base acute, slightly acuminate, glabrous or slightly pubescent. Flowers greenish–yellow, in pubescent racemes; male flowers pedicellate with cup–shaped calyx and horse–shoe shaped 2 stamens; female flowers with calyx deeply lobed. Drupes 0.4–0.5 cm long, purple–red.

**Fls. & Frts.** : June–August.

**Illus.** : T. Chakrab. & Gang. op. cit.

**Distrib.** : Frequent. Bhandara, Bombay, Chandrapur, Kolhapur, Pune, Raigad, Ratnagiri, Sindhudurg, Thane, Yavatmal.


Small evergreen trees c 5 m tall; bark greyish–brown. Leaves c 7–18 x 3–6.5 cm, elliptic–oblong or elliptic–lanceolate, apex acuminate, base tapering. Spikes glabrous–pubescent; female spikes simple; male spikes compound. Flowers reddish. Drupes c 8 mm across, globose–ovoid, red turning black.

**Fls. & Frts.** : May–July.

**Illus.** : Wight, Ic. t. 819. 1845; T. Chakrab. & Gang. op. cit.

**Distrib.** : Scarce. Konkan (Cooke, op. cit.).

'Bujada', 'Jondhra'.

Trees, c 6 m tall; bark grey, branches fulvous tomentose. Leaves 3–12 x 1.5–9 cm, broadly elliptic, apex rounded or emarginate, base rounded, glabrous above, tomentose beneath. Spikes paniculate, axillary and terminal, rusty pubescent. Flowers green. Capsules c 0.5 cm across, subglobose, green, reddish–purple.

**Fls. & Frts.**: April–September.

**Illus.**: T. Chakrab. & Gang. op. cit.

**Distrib.**: Few. Bhandara, Bombay, Chandrapur, Nasik, Pune, Ratnagiri, Sindhudurg, Thane.


Shrubs or small trees, c 5 m tall; young branches velvety pubescent. Leaves 7–16 x 3–6 cm, elliptic–oblong, shining above, apex acute–acuminate, base rounded. Flowers pale green–yellow, in paniculate racemes; stamens inserted in between lobes of disc. Drupe c 0.4–0.7 x 0.1–0.4 cm, ovoid, red when ripe.

**Fls. & Frts.**: March–July.


**Distrib.**: Scarce. Ratnagiri, Sindhudurg.

APOROSA Bl.


Trees, c 8 m tall; young shoots pubescent. Leaves 6–13 x 3–5 cm, elliptic–oblong, apex acuminate, base acute. Flowers yellowish–green, arranged in spikes; male flowers sessile; female flowers pedicelled. Capsules 0.9–1.2 cm across, globose, orange–red, pointed with persistent style.
Aporosa lindleyana (Wight) Baill.
**Fls. & Frts.**: November–June.

**Illus.**: Wight, op. cit.; Bedd. Fl. Sylv. t.296. 1872.

**Distrib.**: Scarce. Kolhapur, Raigad, Ratnagiri, Sindhudurg, Thane.

**Baliospermum Bl.**


Leafy shrubs, c 2 m tall. Leaves 5–20 x 3–10 cm, variable, upper leaves smaller, lanceolate, lower leaves large, ovate, base rounded or cuneate. Flowers pale yellow–green, arranged in axillary racemes or in condensed panicles, c 4 cm long. Capsules 0.7–1.2 cm long, obovoid, hairy. Seeds ellipsoid.

**Fls. & Frts.**: January–April.

**Illus.**: B. polyandrum Wight, Ic. t. 1885. 1852.

**Distrib.**: Common.

**Bischofia Bl.**


Trees, c 25 m tall. Leaves 3–foliolate; leaflets 7–16 x 3.5–8 cm, alternate, ovate–elliptic, apex acuminate, margins crenate. Flowers green in axillary and lateral pedunculate, paniculate racemes. Berries 0.6–0.8 cm across, globose. Seeds 3–4, smooth, shining, brown.

**Fls. & Frts.**: March–July.

**Illus.**: Wight, Ic. t. 1880. 1852 (*Microelus roperianus* Wight & Arn. Edinburgh New Philos. J. 14. 298. 1833);

**Distrib.**: Few. Kolhapur, Ratnagiri.

**Blachia Baill.**

**Blachia denudata** Bth. in J. Linn. Soc. 17: 226. 1880; Hook. f. Fl.

Shrubs or small trees, 2–8 m tall. Leaves highly variable, 5–15 x 2–6 cm, ovate to oblong–lanceolate, apex acute, acuminate, base acute. Flowers greenish–white, in terminal racemes; male flowers at top; female few at base. Capsules ellipsoid or subglobose, 3–lobed.

Fls. & Frts. : September–March.


BREYNIA J.R. & J. G. A. Forst. (nom. cons.)

1. Calyx of female flowers enlarged in fruit
   B. retusa
1. Calyx of female flowers not as above
   B. vitis–idaea


Shrubs, c 1.5 m tall. Leaves 0.5–3 x 0.3–2 cm, elliptic, distichous, base oblique, apex obtuse. Flowers minute, greenish, appear with young leaves, axillary. Capsules c 0.8 cm across, globose, depressed, orange–red when ripe, 3–lobed. Seeds triquetrous, orange–yellow.

Fls. & Frts. : April–September.


Distrib. : Frequent. Ahmednagar, Bombay, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

Shrubs, 2.5–6 m tall. Leaves 1.5–6.5 x 0.8–3.5 cm, ovate-elliptic, shining above, pale beneath, apex obtuse or subacute, base subacute. Male flowers c 0.6 cm long, pale–yellow in small fascicles; female flowers c 0.6 x 0.2 cm, greenish–yellow. Capsules 0.5–0.7 cm across, globose, depressed, yellow–red.

*Fls. & Frts.* : April–November.


**BRIDELIA Willd.**

1. Scandent shrubs :

2. Young branches brownish hairy with spines; drupes ovoid ... *B. scandens*

2. Young branches glabrous and without spines; drupes globose ... *B. hamiltoniana*

1. Shrubs to small trees :

3. Flowers in terminal spikes ... *B. retusa*

3. Flowers not as above :

4. Leaf apex obtuse–emarginate; drupes 0.4–0.8 cm across :

5. Leaf tomentose beneath when old; drupes 0.7–0.8 cm across, purple–black ... *B. crenulata*

5. Leaf not as above; drupes 0.4 cm across, green, white–speckled ... *B. montana*

4. Leaf apex acute–acuminate, glabrous beneath when old; drupes 0.8–1.1 cm across ... *B. squamosa*


Trees, c 8 m tall; bark brown, scaly, young branches rufous–puberulous. Leaves 5–9 x 2.5–4.5 cm, broadly elliptic or ovate–elliptic, apex obtuse or emarginate, base obtuse or cordate. Flowers in axillary clusters. Drupes 7–9 mm across, dark black.

*Fls. & Frts.* : June.
1951.

Distrib. : Scarce. Thane.


Straggling shrubs, c 3.5 m tall; bark black. Leaves 3.9 x 1.8–4 cm, rhomboid or elliptic, apex obtuse, base attenuate. Flowers in minute, axillary, spicate sessile clusters. Drupes c 0.6 cm across, globose, ripens greenish or black.

*Fls. & Frts.* : August.


Shrubs, bushy c 1.5 m high. Leaves c 4.5 x 3.0 cm, rhomboid–obovate to oblanceolate, apex obtuse. Flowers monoecious, pale greenish–yellow. Drupes green, white speckled, globose, c 4 mm across.

*Fl. & Frt.* : October–December.

Distrib. : Rare in open slopes & grows in crevices & forests. Yavatmal.


Shrubs or small trees, 6–10 m tall. Leaves 7–20 x 3.5–10.5 cm, ovate–elliptic or broadly oblong, apex obtuse or subacute, base rounded. Flowers in axillary or subterminal spikes, greenish–yellow or whitish. Drupes c 0.6 cm across, subglobose, seated on enlarged perianth, ripens greenish–purplish to black.

*Fls. & Frts.* : June–December.

Illus. : Sant. op. cit.
**Distrib.** : Common.


Shrubs with spines when young; younger branches brownish hairy. Leaves 2.5–10 x 1.25–5 cm, elliptic–oblong or obovate, apex obtuse, base rounded, glabrous above, fulvous pubescent beneath. Flowers monoecious in sessile axillary clusters, densely hairy, greenish–yellow. Drupes 0.6–0.8 cm long, ovoid, black.

**Fls. & Frts.** : October–April.


Trees, 3.5–10.0 m high. Leaves 5–13 x 2.0–5.5 cm, elliptic. Flowers greenish–yellow or pink. Drupes globular, greenish–red.

**Fls. & Fts.** : April–December.

**Illus.** : Sant. op. cit. opp. page 308, f. 2.

**Distrib.** : Frequent. Ahmednagar, Akola, Bombay, Dhule, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**CHROZOPHORA A.L. Juss.**

1. Prostrate–procumbent herbs; leaf base subcordate; racemes short
   
   *C. prostrata*

1. Erect herbs; leaf base truncate or cuneate; racemes elongate
   
   *C. rottleri*


Herbs, prostrate; branches stellate tomentose. Leaves 1–3 x 0.5–2.5 cm, broadly ovate–oblong or orbicular, base subcordate, apex acute or obtuse, upper surface finely pubescent with bullate and stellate hairs, lower surface densely woolly. Inflorescence of few–flowered axillary racemes. Flowers 0.3–0.4 cm across, yellowish. Capsules 0.5–0.7 cm across, densely stellately woolly.
Bridelia squamosa (Lam.) Gehrm.

Erect herbs or undershrubs c 80 cm tall; stems diffusely branched, densely hispid or stellate tomentose. Leaves 2–8 x 1–6 cm, highly variable, cauline, broadly ovate–orbicular to oblong, apex acute or obtuse, base truncate or cuneate, stellately hairy on both sides. Flowers 0.3–0.4 cm long, in axillary or terminal racemes, greenish–yellow. Capsules 0.4–1 cm across, subglobose, stellately tomentose.


**Distrib.** : Common.

**CLEIDION Bl.**


Trees, 8–15 m tall. Leaves 5–15 x 3–5 cm, elliptic or elliptic–lanceolate, apex acuminate, base acute, margins toothed. Flowers monoecious or dioecious: male flowers in axillary racemes; female flowers solitary, on a axillary peduncle, 5–10 cm long. Capsules 2–2.5 cm across, globose, 2–lobed, each splitting into 2–valved cocci.


**Distrib.** : Scarce. Kolhapur, Pune, Ratnagiri, Sindhudurg (Cooke, op. cit.).

**CLEISTANTHUS Hook. f. ex Planch.**
1. Leaves obovate or elliptic, apex rounded or retuse; capsules 1.6–2.5 cm across … C. collinus

1. Leaves oblanceolate, apex acuminate; capsules 1.25 cm across … C. malabaricus


Deciduous trees 2–4 m tall; bark black. Leaves 3.5–11 x 2–7.5 cm, alternate, broadly obovate or elliptic, apex rounded or retuse, base oblique or rounded, glaucous beneath. Flowers monoecious in small axillary, spicate clusters. Capsules 1.6–2.5 cm across, woody, subglobose, dark brown, shining.

*Fls. & Frts.*: December–April.


*Distrib.*: Scarce. Bhandara, Chandrapur, Nagpur, Yavatmal.


Large shrubs or small trees, 2–3 m tall; young branches densely rufous–villous. Leaves 6–15 x 2–4.5 cm, oblanceolate, apex acuminate, base acute, glaucous and sparsely hairy beneath, narrowed into rufous–villous petiole. Flowers few in axillary clusters. Capsules c 1.25 cm across, sparsely fulvous hairy, 3 (sometimes 4)–celled, deeply 3–lobed at apex and sides, subglobose. Seeds rugose, 3–angled.

*Fls. & Frts.*: November–January.

*Distrib.*: Infrequent in wet deciduous forests. Raigad.

**Croton L.**

1. Leaves clothed beneath with silvery scales; capsules with reddish–brown stellate hairs and scales … C. zeylanicus

1. Leaves and capsules not as above :

2. Capsules with warty outgrowths … C. bonplandianus

2. Capsules not as above :

3. Leaves glabrous with few stellate hairs; capsule with stellate hairs … C. gibsonianus

3. Leaves and capsules not as above :
4. Leaves oblong–lanceolate, narrowed at base, upto 25 cm long ... *C. roxburghii*

4. Leaves broadly ovate or orbicular–cordate at base, upto 12 cm long ... *C. aromaticus*


Shrubs. Leaves c 6.5 cm broad, broadly ovate or orbicular–cordate, crenulate. Flowers solitary or in racemes. Capsules c 1.2 cm across, subglobose.

*Fls. & Frts.*: January–December.


*Distrib.*: Bombay (T. Chakrab. & Balakr. op. cit.).


Much branched erect herbs, c 50 cm tall. Leaves 3–4.5 x 0.8–1.7 cm, lanceolate, apex acuminate, margins crenate–serrate. Flowers c 0.4 cm long in monoecious spikes, greenish–white. Capsules c 0.5 cm across, oblong, depressed at apex. Seeds carunculate.

*Fls. & Frts.*: Almost throughout the year.


*Distrib.*: Few. Ahmednagar, Akola, Buldhana, Chandrapur, Dhule, Kolhapur, Nagpur, Pune, Ratnagiri, Thane.


Shrubs. Leaves 7.5–17.5 x 3.1–6.5 cm, elliptic–oblong, apex acuminate, base rounded, usually with stipulate glands. Inflorescence of slender racemes; males fascicled, female solitary at base of racemes. Capsules c 1.25 cm across, globose, 3–lobed, stellately hairy.

*Fls. & Frts.*: November–December.
Illus. : T. Chakrab. & Balakr. op. cit.

Distrib. : Rare. Ahmednagar, Bhandara (Cooke, op. cit.), Nasik.


Trees, c 5 m tall. Leaves 3.5–11 cm brand, oblong–lanceolate, apex subacute, base acute. Flowers pale yellowish–green, solitary or fascicled in axils of minute bracts on long, erect, often fascicled racemes. Capsules c 9 mm across, globose, slightly 3–lobed.

**Fls. & Frts.** : February–April.


Shrubs, 3–5 m tall. Leaves c 5.0 x 2.5 cm, elliptic–lanceolate, apex acute–acuminate, base acute or rounded, with a pair of stipulate glands at base. Flowers in terminal racemes, clothed with silvery scales, female flowers at base of racemes. Capsules c 1.3 cm long, ovoid–oblong, slightly 3–lobed. Seeds pinkish–brown mottled with white.

**Fls. & Frts.** : October–April.


**Dalechampia** Linn.


Vines c 4 m tall. Leaves 3–foliolate; leaflets chartaceous, apex
shortly acuminate, base acute to rounded, margins serrate, central leaflet obovate, longer than lateral ones. Peduncle c 8 cm long, involucral bracts 2.5 x 3 cm, outer one divided to below middle. Flowers yellowish–green: male 0.5 mm across, tepals 4(5) lanceolate, 4 mm, reflexed, folded; female 3 mm across, tepals c 12, unequal, lanceolate, 5 mm, margins glandular hairy.


*Distrib.* : Rare. Dhule.

**Dimorphocalyx Thw.**


Trees, c 2.5 m tall; branchlets whitish. Leaves 6–16 x 3–7 cm, elliptic–lanceolate, apex obtusely acuminate, base acute. Flowers monoecious, female flowers larger and different from males; sepals in female flowers dissimilar, glandular, enlarged in fruits. Capsules 1–1.25 cm across, depressed, globose.


**Drypetes Vahl**

1. Fruits obovoid, 3–angled, 7.5 cm across

1. Fruits ellipsoid, not angled, 1–2 cm across


Trees, medium sized, 10–15 m tall. Leaves 4–9 x 2–4 cm, elliptic–oblong, apex obtuse or acute to acuminate, margins entire or serrulate. Flowers dioecious in axillary clusters; sepals 3–6–lobed;
petals absent. Drupes with 1–2 cm long pedicels, hard.

**Fls. & Frts.** : April–October.

**Illus.** : Wight, Ic. t. 1876. 1852; Bedd. Fl. Sylv. t. 275. 1872 (*Putranjiva roxburghii*).


Trees, 6–8 m tall, evergreen; branches drooping. Leaves 5–11 x 2.5–5 cm, elliptic–oblong, apex acute or acuminate. Flowers dioecious, in axillary clusters or solitary (female). Fruits pubescent, 1.9–2.2 cm long.

**Fls. & Frts.** : November–April.

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


**EMBLICA Gaertn.**


Trees, c 5 m tall. Leaves pinnate; leaflets subsessile, c 1.0 x 0.2 cm, closely set, distichous, linear. Flowers greenish–yellow. Fruits 1.0–1.5 cm across, fleshy, globose, yellow, edible.

**Fls. & Frts.** : February–October.


**Distrib.** : Common.

**EPIPRINUS Griff.**

**Epiprinus mallotiformis** (Muell.–Arg.) Crozatin in J. Arnold

Trees, 8–10 m tall. Leaves 8–15 x 3–8 cm, elliptic–oblong, coriaceous, apex more or less bluntly pointed or abruptly acuminate or mucronate, base shortly rounded or narrowly cordate, entire. Flowers greenish–yellow, in lateral and terminal, interrupted, 10 cm long spikes. Capsules 1.5–2.2 cm across, ovoid, green, 3–lobed, scabrous.

*Fls. & Frts.*: December–March.


*Distrib.*: Rare. Kolhapur.

**EUPHORBIA L.**

1. Shrubs or small trees:
   2. Unarmed plants
   3. Branches terete or angular, not winged:
      4. Branches distinctly angular
      5. Branches and branchlets 3–winged
   2. Armed plants:
      3. Branches terete or angular, not winged:
         4. Branches distinctly angular
         5. Branches and branchlets 3–winged
   1. Herbs:
      5. Leaves all radical:
         6. Cymes 3 or more than 3 times dichotomous:
            7. Cymes 3 times dichotomous; bracts triangular–acute or triangular–lanceolate
               8. Cymes 4–5 times dichotomous; bracts broadly triangular
      6. Cymes once dichotomous
      7. Stems weak, filiform, prostrate or decumbent:
         8. Stems glabrous or scarcely hairy:
            9. Leaves as broad as long; involucrese numerous; capsules glabrous; seeds smooth
            10. Leaves, involucrese, capsules and seeds not as above:
               11. Limb of involucral gland conspicuous:
12. Cocci winged ... *E. notoptera*

12. Cocci wingless :

13. Leaves oblong; prominent ridges present along sutures of capsules ... *E. concanensis*

13. Leaves obliquely obovate or linear–spathulate; capsules without prominent ridges along sutures ... *E. rosea*

11. Limb of involucral gland inconspicuous or 0 :

14. Stems puberulous; stipules linear, pilose and laciniate toothed ... *E. prostrata*

14. Stems and stipules not as above ... *E. clarkeana*

9. Stems hispidly pubescent or villous :

15. Stipules linear–lanceolate; inflorescence villous ... *E. coccinea*

15. Stipules fimbriate or laciniate; inflorescence pubescent:

16. Prostrate herbs; branches absent or 1–2 from nodes; limbs of glands as much or less than glands; capsules mature within involucre; seeds closely furrowed ... *E. thymifolia*

16. Decumbent herbs; branches 3–6 from each node; limb of glands distinctly larger than glands; capsules maturing outside the involucre; seeds smooth or obscurely furrowed ... *E. sebastinei*

8. Stems erect :

17. Leaves alternate, exstipulate below, opposite above or all alternate :

18. Stems geniculate–(at least in the fresh state or zig–zag) ... *E. geniculata*

18. Stems not as above :

19. Floral leaves broad and short, almost orbicular, different from lower leaves :

20. Lower leaves 6 x 1.5 cm; bracts free ... *E. laeta*

20. Lower leaves 0.25 x 5 mm only; bracts connate at base ... *E. perbracteata*

19. Floral leaves just slightly broader than lower ones ... *E. dracunculoides*

17. Leaves all opposite, stipulate or if stipules absent then opposite pairs of leaves joined by inter–petiolar line :
<table>
<thead>
<tr>
<th></th>
<th>Cocci winged</th>
<th>E. notoptera</th>
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</thead>
<tbody>
<tr>
<td>21.</td>
<td>Cocci not winged:</td>
<td></td>
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<tr>
<td></td>
<td>Capsules glabrous:</td>
<td></td>
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<tr>
<td></td>
<td>Cocci angled not keeled</td>
<td>E. zornioides</td>
</tr>
<tr>
<td>22.</td>
<td>Cocci rounded, subkeeled or keeled only:</td>
<td></td>
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<tr>
<td></td>
<td>Cocci rounded and subkeeled</td>
<td>E. katrajensis</td>
</tr>
<tr>
<td>23.</td>
<td>Cocci keeled:</td>
<td></td>
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<tr>
<td></td>
<td>Capsules pubescent or hairy:</td>
<td></td>
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<tr>
<td></td>
<td>Glands of involucre without a petaloid limb or limb inconspicuous</td>
<td>E. hirta</td>
</tr>
<tr>
<td>25.</td>
<td>Floral leaves distichously imbricating, secund, concealing involucres</td>
<td>E. pycnostegia</td>
</tr>
<tr>
<td>22.</td>
<td>Floral leaves not as above</td>
<td>E. erythroclada</td>
</tr>
<tr>
<td>26.</td>
<td>Glands of involucre with a conspicuous petaloid limb:</td>
<td></td>
</tr>
<tr>
<td>27.</td>
<td>Inflorescence axillary, solitary only</td>
<td>E. laciniata</td>
</tr>
<tr>
<td>27.</td>
<td>Inflorescence terminal and axillary, many:</td>
<td></td>
</tr>
<tr>
<td>28.</td>
<td>Inflorescence many, terminal only</td>
<td>E. elegans</td>
</tr>
<tr>
<td>28.</td>
<td>Inflorescence axillary and terminal also:</td>
<td></td>
</tr>
<tr>
<td>29.</td>
<td>Involucres solitary or 2–4</td>
<td>E. corrigioloides</td>
</tr>
<tr>
<td>29.</td>
<td>Involucres more than 4</td>
<td>E. parviflora</td>
</tr>
</tbody>
</table>


Shrubs or small trees; branches jointed, more than 2 cm thick, 3–5–winged, stipular spines in pairs, corky tubercles. Leaves 2–2.5 cm long, obovate–oblong, rounded or subtruncate at apex, early deciduous. Cyathia in lax cymes. Stamens red; style bifid at apex.

*Fls. & Frts.*: November–January.

*Illus.*: Wight, Ic. t. 897. 1844–45.

*Distrib.*: Ratnagiri (Dalz & Gibs. Bombay Fl. 226. 1861).


Herbs; stem 7–15 cm long, filiform, prostrate. Leaves 0.3–6.0 x 0.2–2.5 cm, linear–oblong, rounded at apex, base oblique, distichous,
margins entire or toothed. Involucres axillary, solitary, campanulate, lobed; gland without a limb. Flowers unisexual. Capsules c 0.01 cm across, trigonous, cocci keeled. Seeds 4–angled, transversely rugose.

**Fls. & Frts.** : August–November.

**Distrib.** : Scarce. Bombay.


Filiform; stem purple, villous with white hairs. Leaves 0.4–1.0 x 0.2–0.6 cm, subsessile, broadly elliptic or obovate–oblong, obtuse, entire, coriaceous, densely white pilose beneath, base auricled on one side. Involucres in axils of crowded, small, orbicular, terminal leaves, campanulate, forming small villous heads of 2–4 flowers. Capsules c 0.25 cm long, white woolly, truncate at base, keeled.

**Fls. & Frts.** : July–December.

**Distrib.** : Rare. Ahmednagar, Beed, Pune, Solapur.


Perennial decumbent herbs, 10–30 cm long. Leaves opposite, 5–11 x 3–5 mm, oblong, acute to obtuse at apex, oblique at base, serrulate along margins. Cyathia terminal, solitary; involucre turbinate, red. Capsules c 2 x 3 mm, ovoid, trigonous, distinctly keeled, 3–seeded, maturing outside cyathia. Seeds c 1.1 x 0.8 mm, obtusely tetragonous, truncate at base, rounded or slightly pointed at apex, tuberculate on faces, grey.

**Fls. & Frts.** : August–November.

**Illus.** : Janarthanam & Yadav, op. cit.

**Distrib.** : Rare on laterite rocks and red soil, amidst grasses and around fields. Sindhudurg (Janarthanam & Yadav, op. cit.).


Herbs with stout, woody rootstock. Leaves opposite, 5–10 x 3–6 mm, oblong–elliptic, rounded at apex. Involucres solitary or 2–4 in short cymes, on very short pedicels; glands of involucres with petaloid, white, obovate or orbicular short limbs. Capsules keeled.

**Fls. & Frts.** : July–January.

Herbs, erect, 30–45 cm tall; stems dichotomously much branched. Leaves opposite, sessile, 3–7 x 0.3–0.6 cm, linear or linear–lanceolate, subacute; floral leaves broader at base and shorter. Involucres broadly campanulate, subsessile, solitary, 2 mm across at mouth. Capsules 3–4 mm across, pale−yellow.


Distrib. : Scarce. Osmanabad.


Herbs, erect; branches covered with deciduous hairs. Leaves 0.6–3.0 x 0.4–1.5 cm, elliptic or elliptic–oblong, apex obtuse, margins serrulate. Flowers in hairy involucres, at ends of branches, limbs of glands pink, c 2.5 cm long. Capsules hairy, cocci globose. Seeds parallel–grooved.

Fls. & Frts. : September–November.


Herbs, annual, erect. Leaves 0.5–2.5 x 0.3–0.7 cm, in distant opposite pairs, obliquely oblong or obovate or elliptic–oblong. Involucres turbinate. Capsules red c 0.2 cm across, subpyramidally 3–lobed, cocci sparsely hairy along keels.

Fls. & Frts. : October–November.

Euphorbia fusiformis Buch. – Ham. ex D. Don

Leaves 18–23 x 7.5–10.0 cm, obovate or oblanceolate, obtuse at apex, decurrent at base, fleshy. Flowers pinkish on long, pedunculate cymes from root stock crown when leafless. Capsules c 0.7 cm. across. Seeds ovoid, smooth.

*Fls. & Frts.* : March–May.

*Distrib.* : Nasik, Pune, Ratnagiri, Thane.

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Herbs, annual, erect. Leaves 3.0–4.5 x 1.3 cm, broadly elliptic or obovate, upper surface glabrous, lower hairy. Inflorescence of terminal branched cymes. Capsules 3–celled. Seeds grey.

*Fls. & Frts.* : July–December.


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Herbs, annual, prostrate. Leaves 0.4–0.6 cm nearly as broad as long, obliquely oblong or rounded, apex subtruncate and retuse, base rounded or shortly cuneate, margins pink. Involucres numerous, axillary, 0.1 cm long, broadly compamulate. Capsules 0.15 cm across, keeled. Seeds c 0.1 cm long, obtusely quadrangular, smooth, mucilaginous when wet.

*Fls. & Frts.* : April–December.


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Herbs, perennial, erect, diffuse or prostrate; branches densely or sparsely clothed with spreading hairs. Leaves 1.0–2.5 x 0.5–1.0 cm, elliptic or ovate–oblong. Capsules c 0.1 cm long, appressed hairy. Seeds reddish–brown, faintly transverse, rugose.

**Fls. & Frts.** : July–December.


**Distrib.** : Frequent.


Herbs, 15–40 cm high, annual, erect. Leaves oblong–elongate, margins serrate. Cyathia axillary, solitary, petaloid, white. Capsules c 0.25 x 0.3 cm. Seeds c 0.2 cm long, broadly ovoid–tetrogonal.

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

**Distrib.** : Rare. Dhule, Pune, Ratnagiri, Thane.


Rootstock upto 70 x 10 cm, simple or sparingly branched, underground. Leaves 30 x 11 cm. Involucres reddish, sometimes green also. Inflorescences purplish, c 14 x 10 cm. Coci rounded. Seeds perfectly spherical or globose.

**Fls. & Frts.** : January–May.

**Distrib.** : Rare. Pune.


Herbs, erect or procumbant. Leaves 0.5–1.5 x 0.5–1.0 cm, ovate with apex obtuse, margins finely serrate. Involucres densely white villous. Cyathia solitary, axillary and shortly pedunculate. Capsules c 0.2 cm across, globose.


Distrib.: Few. Akola, Dhule, Nasik, Pune.


Herbs, 1.0–1.5 m tall; stems cylindric, reddish–brown tinged, densely leafy. Leaves alternate, sessile, 6–10 x 0.5–1.5 cm, apex acute, mucronulate, base tapering. Flowers solitary, axillary in upper axils in umbellate crowns. Capsules c 0.6 cm across. Seeds 0.3–0.5 cm long, oblong, semi–cylindric, rounded at base, grooved.

Fls. & Frts.: September–December.

Illus.: Wight, Ic. t. 1864. 1852 (*E. rothiana*).

Distrib.: Few. Ahmednagar, Buldhana, Pune, Raigad, Ratnagiri, Satara.


Fls. & Frts.: November–April.


Distrib.: Frequent. Ahmednagar, Akola, Amravati, Bhandara, Buldhana, Dhule, Kolhapur, Nasik, Raigad, Ratnagiri, Yavatmal.


Shrubs or small trees c 8 m tall; spines short, paired c 5 cm long. Leaves alternate, 10–15 x 3–7 cm, subsucculent, obovate, obtuse.
Cyathia usually paired in subterminal, lax cymes. Involucres broadly cupular, 0.5 x 1 mm, coriaceous. Male florets bracteolate along with sterile florets; female florets pendulous. Capsules 0.5 cm across. Seeds 4–angular, smooth.

*Fls. Frts.* : December–April.

*Illus.* : Wight, Ic. t. 1862. 1852.


Herbs, erect or ascending, slender; stem and branches terete, nodes swollen. Leaves 1.5–2.5 x 0.2–0.5 cm, linear–oblong, shining above, pale beneath, apex mucronate, margins serrulate. Involucres in axillary cymes, limbs of glands whitish or rarely pale pink, unequally cordate. Capsules globose, c 0.2 cm across, cocci with 2 dorsal wings. Seeds papillose.

*Fls. & Frts.* : April–August.


Succulent; root stock cylindric. Leaves broadly or narrowly lanceolate or oblong with wavy margins, appearing after flowers. Cyathia 6 cm long, stout, fleshy, pale purple or pink. Involucres c 0.6 cm across, glands oblong. Fruits 0.4–0.7 cm broad, 3–lobed, cocci rounded. Seeds globose.

*Fls. & Frts.* : February–April.

*Distrib.* : Ratnagiri, Satara, Sindhudurg.


Herbs, annual, 15–30 cm high, erect, sometimes spreading. Leaves 0.5–2.5 x 0.5–2.5 cm, elliptic–oblong, apex obtuse, base rounded.
Involucres with white or rarely pinkish–red petaloid limbs. Capsules c 0.1 x 0.1 cm, subglobose, hairy. Seeds reddish–brown.

**Fls. & Frts.** : July–February.

**Distrib.** : Frequent.


Herbs upto 40 cm tall; stems terete, irregularly leafy, roots woody. Leaves sessile, 2–6 x 0.2–0.5 cm, linear, membranous. Involucres campanuliform, glabrous outside. Capsules 0.4 x 0.5 cm, subpyramidally trilobed. Seeds c 0.3 x 0.2 cm, subglobose–ovoid, smooth, pale yellowish–brown.

**Fls. & Frts.** : September–November

**Distrib.** : Few. Ahmednagar, Akola, Kolhapur, Pune, Yavatmal.


Herbs, weak, prostrate or erect, perennial. Leaves oblique. Cyathia axillary, 1–3 together, limbs of involucre glands rosy. Capsules 0.25 cm long with spreading hairs on keel. Seeds brown, rugulose or 3–4, furrowed.

**Fls. & Frts.** : More or less throughout the year.


**Distrib.** : Frequent. Ahmednagar, Amravati, Bhandara, Chandrapur, Pune, Yavatmal.


Herbs, annual, dichotomously branched, 30–60 cm high. Leaves 2.5–3.5 x 1–1.5 cm, oblong, apex obtuse or subacute. Involucres stalked, turbinate with 4, often white petaloid limbs, subequal and of similar shape.

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

**Distrib.** : Few. Ahmednagar, Kolhapur, Nasik, Pune, Ratnagiri, Satara, Sindhudurg, Thane.

Herbs, perennial; roots longer, woody, tapering. Leaves 1.0–1.5 x 0.5 cm, obliquely obovate or linear–spathulate. Involucres subcampanulate, two upper limbs of involucre glands much larger than two lower ones. Capsules c 0.2 cm long.

*Fls. & Frts.* : December–April.


**E. sebastinei** Binojkumar & Balakr. in Rheedea 3: 26, f. 27. 1993.

Annual herbs, 10–20 cm high; stems many from a thick rootstock, rigid. Leaves subsessile, crowded towards apex, 5–10 x 3–5 mm, oblong to elliptic–oblung, acute or apiculate at apex, oblique at base, serrate along margins, pubescent on both surfaces. Cyathia terminal, solitary or rarely 2; limbs of glands white or pink. Capsules c 1.5 x 1.5 mm, ovoid, acutely keeled, hairy on keels. Seeds c 1 x 0.5 mm, oblong, obtusely tetragonus.

*Fls. & Frts.* : Throughout the year.

*Illus.* : Binojkumar & Balakr. op. cit.

*Distrib.* : Rare in moist gravely soil, at an altitude of 200–850 m. Pune (Binojkumar & Balakr. op. cit.). Endemic to India.


Herbs, prostrate, annual. Leaves c 0.04 cm long, obliquely oblong or ovate, glabrous above, appressedly hairy beneath, apex obtuse, margins serrulate. Involucre axillary, hairy; limbs of glands stipitate. Capsules ovoid, cocci hairy.

*Fls. & Frts.* : June–September.


*Distrib.* : Common.

Stems green, articulated, succulent. Leaves linear–oblong, only at end of branches, deciduous, sap milky. Cyathia few, terminal.

\textit{Fls. \& Frts.} : August–September.


\textit{Distrib.} : Frequent. Ahmednagar, Aurangabad, Bombay, Buldhana, Pune, Ratnagiri, Thane.


Herbs, 30–60 cm, high. Leaves 1.0–3.5 x 0.5–1.0 cm, linear–oblong, obtuse at apex, margins finely serrulate. Involucres with 4, white or pinkish, unequal petaloid limbs. Seeds ovoid, papillose

\textit{Fls. \& Frts.} : July–December.

\textit{Distrib.} : Scarce. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Thane.

\textbf{EXCOECARIA L.}


Shrubs with milky latex. Leaves alternate, 4–10 x 2.5–4.0 cm, ovate–elliptic or oblong–elliptic, coriaceous, apex acuminate. Flowers greenish–yellow; male flowers in axillary compact spikes; female flowers in racemes; sepals serrulate. Capsules deeply lobed, smooth.

\textit{Fls. \& Frts.} : February–September.

\textit{Illus.} : Wight, Ic. t. 1865. 1852.


\textbf{GIVOTIA Griff.}

Trees, 5–10 m tall, medium sized; stem soft wooded. Leaves 10–15 x 10–15 cm, broadly ovate, irregularly incised, coriaceous, densely clothed beneath, acute at apex, with deep sinus at base. Panicles axillary, 10–20 cm long. Flowers dioecious. Drupes 2–2.5 cm across, subglobose.

*Fls. & Frts.*: May–October.

*Illus.*: Wight, Ic. t. 1889. 1852; Bedd. Fl. Sylv. t. 285. 1873.

*Distrib.*: Scarce. Pune.

**GLOCHIDION J. R. & J. G. A. Forst. (nom. cons.)**

1. Anthers 4 or more:
   2. Capsules hairy or pubescent:
      3. Style entire, inconspicuous:  ...  *G. hirsutum*
      3. Style 4–8 cleft, conspicuous:
         4. Sepals in female flowers cuspidate; glabrous; capsules c 2 cm across:  ...  *G. lanceolarium*
         4. Sepals in female flowers not cuspidate; pubescent; capsules less than 2 cm across:  ...  *G. tomentosum*
   2. Capsules glabrous:  ...  *G. zeylanicum*

1. Anthers 3:
   5. Stipules lanceolate or subulate:
      6. Stipules lanceolate; calyx lobes irregularly 4–6–toothed or lobed:  ...  *G. johnstonei*
      6. Stipules subulate; calyx not as above:  ...  *G. malabaricum*
   5. Stipules triangular–hastate or triangular–cuspidate:
      7. Stipules triangular–hastate; female flowers pedicelled; styles pubescent:  ...  *G. velutinum*
      7. Stipules triangular–cuspidate; female flowers sessile; styles glabrous:  ...  *G. ellipticum*


Trees, 3–9 m tall, evergreen, monoecious. Leaves 5–8 x 2–4 cm, elliptic–oblong to elliptic–lanceolate, apex acuminate, base acute, often oblique, shortly petiolate. Flowers unisexual: male flowers
greenish–yellow with capillary pedicels; female flowers few, sessile, in clusters. Capsules 0.5–0.8 cm across, 6–8–lobed, depressed–globose. Seeds red, smooth.

*Fls. & Frts.* : February–November.


Small trees c 5 m high, with watery latex; branches densely pubescent. Leaves simple, petiolate, 17.0 x 7.5 cm, ovate or elliptic, acuminate, base rounded or slightly cordate, oblique, entire, rusty tomentose beneath. Inflorescence shortly pedunculate and supra–axillary, few–flowered. Petals 6 in both sexes, anthers 6 in male flowers; ovary globose, hairy, style conical. Capsule subglobose, obscurely lobed, c 0.5 cm across, pubescent with persistent style and perianth.

*Fls. & Frts.* : September–April.


*Distrib.* : Rare. Maharashtra (Panda & A. P. Das, op. cit.).


Trees, 10–15 m tall; bark dark coloured, branches tomentose. Leaves 10–15 x 3–4 cm, oblong or elliptic–oblong, apex obtuse or acuminate; stipules deciduous. Flowers in axillary clusters: male flowers pedicellate; female sessile. Capsules 0.75–1.0 cm across, depressed–globose, irregularly and slightly 3–lobed, lobes faintly emarginate.

*Fls. & Frts.* : February–October.

Distrib. : Scarce. 'Konkan' (Cooke, op. cit.).


Trees, middle sized, evergreen, c 15 m tall; branches angular. Leaves 5–15 x 2–5 cm, elliptic–oblung or elliptic–lanceolate, apex acuminate. Female flowers sessile; sepals unequal, coriaceous, ovary hairy. Capsules orbicular, depressed, 12–lobed.

*Fls. & Frts.* : October–March.


Shrubs or small trees, c 6 m tall. Leaves 7–13 x 3–5 cm, elliptic–oblung or elliptic–lanceolate, apex acuminate, base subacute. Flowers greenish, in dense clusters. Capsules exceeding 1 cm across, orbicular, depressed, 3–5–lobed, pubescent, shortly pedicellate.

*Fls. & Frts.* : January–May.


Trees, 5–10 m tall. Leaves 5–15 x 2–6 cm, elliptic–oblung or ovate–oblung, acute or acuminate at apex, rounded at base. Male and female flowers pedicellate, pubescent, fascicled; ovary spherical, style stout, conical at tip with 4–5–cleft. Capsules 0.5–0.8 cm across, depressed–globose, obscurely 10–12–lobed, pubescent.


Distrib. : Rare. 'Konkan' (Cooke, op. cit.).


Trees, c 10 m tall, velvety pubescent on undersurface of leaves, petioles and inflorescence. Leaves 3–8.5 x 2–4 cm, elliptic–oblung or elliptic–lanceolate, apex acute or obtuse, base acute. Male and female flowers axillary, clustered together. Capsules c 0.5 cm across, orbicular, depressed, 4–8–lobed. Seeds bright red.

Trees, 10–12 m tall; branches drying black. Leaves 5–12 x 2–5 cm, oblong, apex obtuse or acuminate, shining above, base oblique or rounded. Male and female flowers clustered together in umbels, supra–axillary. Capsules c 0.25 cm across, subglobose, beaked.

**Fls. & Frts.**: September–June.


**Distrib.**: Few. Bhandara, Chandrapur, Pune, Ratnagiri, Sindhudurg.

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**Homonoia Lour.**

1. Plants pubescent; leaves 7–15 cm long, linear–oblong
2. Plants glabrous; leaves 2–5 cm long, obovate

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Shrubs, 1–1.5 m tall. Leaves 2–5 x 1–2 cm, subsessile, coriaceous, glabrous above and sparsely glandular beneath; nerves 6–10 pairs. Flowers sessile, in short spikes, dioecious; sepals glabrous in male, pubescent in female. Capsules 2–4 mm across, globose, hairy.

**Fls. & Frts.**: October–April.


**Distrib.**: Few. Chandrapur, Pune, Yavatmal.


Shrubs, c 2.5 m tall. Leaves closely set, 7–15 x 1–2 cm, glabrous
above and clothed beneath; main nerves 10–30 pairs. Flowers dioecious, sessile in 5–15 cm long, axillary spikes; sepals 3 in male flowers and 5 in female flowers. Capsules 2–4 mm across, globose hairy, 3–ribbed with persistent style.

*Fls. & Frts.*: Throughout the year.


*Distrib.*: Common.

**Jatropha L.**

1. Leaves with glandular hairs on margins:

2. Petioles clothed with numerous fascicled and branched gland tipped bristles ... *J. gossipifolia*

2. Petioles not as above ... *J. glandulifera*

1. Leaves not as above:

3. Petals free; stamens 8, connate in lower half ... *J. nana*

3. Petals coherent upto middle; stamens 10, 5 inner connate into central column ... *J. curcas*


Shrubs, 1.5–2.5 m tall. Leaves 4–8 x 3.5–7.0 cm, ovate–cordate, entire or 3–5–lobed or angled. Flowers greenish–yellow, sepals and petals 5 each. Capsules 2–3 cm long, ellipsoid, black, indehiscent.

*Fls. & Frts.*: March–August.


*Distrib.*: Frequent.


Trees, 3–5 m tall with dichotomously branched trunk. Leaves 6–12.5 cm long, palmately 3–5–lobed below middle; stipules very long, divided into many filiform segments. Flowers greenish–yellow, in glandular, corymbose–cymes. Capsules c 0.8 cm long, ellipsoid–obleng,
smooth, 3–lobed. Seeds ellipsoid–oblong, smooth and shining, black.

*Fls. & Frts.* : August–November.


*Distrib.* : Scarce. Chandrapur, Pune, Raigad, Solapur, Thane.


Shrubs, 2–3 m tall; stems and branches dark coloured. Leaves 3–8 cm as long as broad, 3–5–lobed, lobes obovate. Flowers monoecious, in terminal, long peduncled cymes; male flowers red and female flowers green. Sepals and petals 5 each. Capsules c 1.5 cm long, subglobose, green, reticulate.


Shrubs, 30–45 cm high; roots woody. Leaves 7.5–12.5 x 7.5–12.5 cm, broadly ovate, entire or 3–lobed from above middle. Flowers pedicellate, in few flowered terminal, paniculate–cymes. Capsules c 1 cm long, obovoid–oblong, flattened at top, slightly 6–lobed.


**MACARANGA Thou.**

Macaranga peltata (Roxb.) Meull. – Arg.
Trees, c 5 m tall. Leaves 6.5–24 x 6–18 cm, deltoid–ovate or orbicular, acuminate at apex. Male flowers minute, in dense sessile heads, rusty tomentose; female flowers in panicles. Capsules c 0.6 cm across, globose, hairy, glandular.

Fls. & Frts. : January–June.


MALLOTUS Lour.

1. Straggling or climbing shrubs...
   1. Erect shrubs or trees :
      2. Stamens 20 or less ...
      2. Stamens 50 or more :
         3. Shrubs; leaves opposite; calyx spathaceous ...
         3. Trees; leaves alternate; calyx not spathaceous :
            4. Leaves white tomentose beneath; in female flowers calyx hemispheric; ovary densely clothed with stellate hairs ... M. tetracoccus
            4. Leaves, calyx and ovary in female flowers not as above ...


Shrubs, 1.5–2.5 m tall; young parts pubescent. Leaves 5–15 x 3–6 cm, lanceolate or oblanceolate, glabrous above, clothed with yellow glands beneath, apex acuminate, margins widely dentate. Flowers greenish–yellow, in pubescent racemes; female flowers with calyx splitting into unequal lobes. Capsules 1.0–1.2 cm across, globose, cocci 3–4, echinate.

Fls. & Frts. : October–November.


Trees, much branched, 2–9 m high. Leaves 4–14 x 2.5–9.5 cm, ovate or ovate–lanceolate. Inflorescence of rusty pubescent spikes. Flowers greenish–yellow. Capsules c 1 cm across, 3–lobed, loculicidally 3–valved, covered with bright red powder of minute stellate hairs and fine grain of resinous substance.

*Fls. & Frts.* : July–March.


*Distrib.* : Common.


Climbing shrubs, dioecious; stem fluted, white scaly, covered with large spines, branchlets, petioles, underside of leaves and inflorescence with stellate tomentum. Leaves alternate, ovate or rhomboid–ovate, acuminate, base truncate or cuneate, entire or sinuate–toothed. Capsules didymous, stellately fulvous–tomentose, c 1.2 cm across. Seeds globose, black.

*Fls. & Frts.* : September–November.


*Distrib.* : Infrequent in moist deciduous forests. Raigad.


Shrubs, 1.5–2.0 m tall; young parts covered with yellow glands. Leaves 5–15 x 2.5–5.5 cm, ovate or elliptic–lanceolate, glabrous above, covered with yellow glands beneath, apex obtusely acuminate, margins entire or widely sinuate–dentine. Flowers in slender racemes, shorter than leaves. Capsules brown, deeply 3–lobed, echinate.


Trees, c 5 m tall; branchlets, petioles, undersides of leaves and inflorescences densely clothed with grey stellate–tomentum. Leaves 10–20 x 10–20 cm, broadly ovate or orbicular–ovate, apex acuminate, entire or with shallow lobes. Flowers dioecious in axillary and terminal panicles; male flowers in distant clusters; females shortly pedicellate, crowded. Capsules loculicidally 4–valved, c 1.5 cm across, globose, echinate with soft woody spines, white–tomentose. Seeds rounded on back, angular on face, black.

*Fls. & Frts.*: September–December.

*Illus.*: *Rottlera peltata* Wight, Ic. t. 1873. 1852.

*Distrib.*: 'Konkan' (Cooke, op. cit.).

**Micrococca Bth.**


Herbs, 15–20 cm tall, erect, annual. Leaves 2–4 x 1.2–2.5 cm, ovate, thin, apex acute, margins crenate. Flowers greenish: male flowers in axillary racemes, sepals 3, stamens 5–10; female flowers solitary in racemes. Capsules globose, cocci–3, hairy.

*Fls. & Frts.*: August–October.


*Distrib.*: Scarce. Ratnagiri, Sindhudurg.

**Phyllanthus L.**

1. Herbs, sometimes suffruticose :

2. Stipules peltate :

3. Leaves scattered, cuneate–obovate ... *P. maderaspatensis*

3. Leaves not as above :
4. Capsules echinate; seeds transversely furrowed ...  \textit{P. urinaria}
4. Capsules and seeds not as above ...  \textit{P. virgatus}

2. Stipules not peltate:
5. Stamens 5 ...  \textit{P. tenellus}
5. Stamens 3:
6. Seeds with parallel ribs on back:
7. Branches and leaves hispidly hairy; style distinct ...  \textit{P. scabrifolius}
7. Branches and leaves not hispidly hairy; style minute ...  \textit{P. fraternus}
6. Seeds with irregular ribs on back or vertically muriculate:
8. Leaves distichous, obtuse or rounded at apex, style minute, 2–lobed; seeds vertically muriculate ... \textit{P. amarus}
8. Leaves not as above; style 2, distinct with reflexed and recurved arms; seeds with irregular ribs on back ... \textit{P. debilis}

1. Shrubs or trees:
9. Flowers dioecious ...  \textit{P. indicus}
9. Flowers monoecious:
10. Stamens 5 ...  \textit{P. reticulatus}
10. Stamens 3:
11. Nerves of leaves distinct; stipules ovate–lanceolate ...  \textit{P. polyphyllus}
11. Nerves of leaves obscure; stipules minute, setaceous ...  \textit{P. lawii}


Herbs, erect, c 40 cm tall. Leaves c 1 x 0.5 cm, oblong, obtuse, slightly oblique at base and glaucous beneath. Flowers axillary, minute, greenish–white. Capsules c 0.2 cm across, depressed–globose, scarcely lobed.

\textit{Fls. & Frts.} : July–August.

\textit{Illus.} : Wight, Ic. t. 1894. 1852.


*Fls. & Frts.*: August–October.

*Distrib.*: Few. Amravati, Nagpur, Pune, Ratnagiri, Solapur, Thane, Yavatmal.


Herbs, annual, 30–60 cm tall. Leaves 0.6–1.2 x 0.3–0.6 cm, distichous, elliptic–oblong. Flowers whitish or yellowish, axillary. Capsules c 0.2 cm across, depressed–globose. Seeds trigonous, yellowish–brown.

*Fls. & Frts.*: July–December.


*Distrib.*: Common.


Trees, 9–12 m tall; bark white. Leaves 4.5–15.0 x 3.5–7.5 cm, distichous, elliptic or elliptic–lanceolate, apex obtuse, acute or acuminate, often apiculate, base acute. Flowers pale green: males in fascicles, axillary; females in umbellate–clusters. Capsules c 1 cm across, globose, reticulately rugose, 2 seeded. Seeds 3–gonous and with aril.

*Fls. & Frts.*: April–June.

*Distrib.*: Rare. ‘Konkan’ (Cooke, op. cit.).

Phyllanthus maderaspatensis L.
Shrubs, 1.5–2 m tall; branches grooved. Leaves 0.3–0.5 x 0.2–2.5 cm, linear–oblong, apex rounded, often apiculate, base rounded or subcordate. Flowers greenish, axillary; males either one or few; females solitary. Capsules c 0.4 cm across, globose. Seeds 0.25 cm long trigonous, rounded on back.

_Fls. & Frts._ : September–May.


Herbs, 20–40 cm high. Leaves 0.6–1.5 x 0.3–0.5 cm, obovate–cuneate. Flowers greenish–white, axillary, solitary or in few–flowered clusters. Capsules c 0.3 cm across, depressed–globose. Seeds trigonous, brown.

_Fls. & Frts._ : July–September.


_Distrib._ : Common.


Shrubby; branches terete. Leaves 1.2–1.8 x 0.3–0.4 cm, linear–oblong, apex obtuse or apiculate, base rounded or subcordate. Flowers pedicelled, subsolitary. Capsules c 0.5 cm across, depressed, 3–lobed, epicarp thin, cocci subglobose, crustaceous. Seeds remotely foveolate.

_Fls. & Frts._ : December–April.

_Illus._ : Wight, Ic. Pl. Ind. Orient. t. 1895, f. 2. 1852.

_Distrib._ : Rare. Bombay.


Shrubs, scandent; branchlets drooping, pubescent. Leaves 1.5–3.5 x 0.5–2.0 cm, elliptic–obovate or oblong, shining above, glaucous beneath, reddish when young. Flowers greenish–yellow, in 2–6–flowered, axillary fascicles; female flowers solitary, sepals 5, unequal. Berries globose, smooth, purple–black when ripe.
Fls. & Frts.: January–June.

Illus.: Wight, Ic. t. 1899. 1852.

Distrib.: Few. Ahmednagar, Akola, Bombay, Dhule, Kolhapur, Pune, Ratnagiri, Sindhudurg, Solapur, Thane, Yavatmal.


Annual, leafy, 15–25 cm high. Leaves 0.9–1.2 x 0.6 cm, elliptic or obovate, apex rounded. Flowers green, shortly pedicellate. Capsules c 0.3 cm across, depressed–globose. Seeds trigonous, rounded.

Fls. & Frts.: September.

Distrib.: Few. Ahmednagar, Beed, Dhule, Nasik, Osmanabad, Pune.


Annuals, 20–60 cm tall, erect; main stem obtusely 4–gonous and usually channelled above. Leaves 0.5–1.8 x 0.3–0.9 cm, obovate to oblanceolate, obtuse or subacute at apex, cuneate at base. Flowers in axillary, bisexual cymes on deciduous branchlets. Capsules c 0.17 cm across, obovate, rounded. Seeds trigonous, semicircular on back, minutely and closely capitate in rows.

Fls. & Frts.: September–October.

Illus.: Webster, op. cit.; R.L. Mitra, op. cit.

Distrib.: Rare. Bombay (R.L. Mitra, op. cit.).


Erect herbs, 20–50 cm tall. Leaves 0.5–1.5 x 0.5 cm, obovate or elliptic–oblung, apex rounded. Flowers yellow, axillary, solitary. Capsules c 0.3 cm across, globose. Seeds 3–gonous, rounded on back.

Fls. & Frt.: July–May.

Illus.: Wight, Ic. t. 1895, f. 4. 1852 (*P. laprocarpus*).

Distrib.: Frequent. Ahmednagar, Bhandara, Bombay, Chandrapur, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.

Erect, c 50 cm tall. Leaves distichous, 1.2–1.8 x 0.3 –0.6 cm, linear–oblong. Flowers greenish–white, on slender, axillary pedicels. Capsules c 0.2 cm across, globose. Seeds 3–gonous, rounded on back.

*Fls. Frts.* : August–February.


*Distrib.* : Common.

**Sapium** P. Browne.


Trees, 10–15 m tall. Leaves 15–22 x 5–8 cm, clustered at end of branches, elliptic–lanceolate or oblong–lanceolate. Inflorescence of spikes, pendulous. Capsules c 0.7 cm across, globose–ovoid. Seeds ovoid, compressed.

*Fls. & Frts.* : December–May.


**Sauropus** Bl.


Shrubs or undershrubs; branches angular. Leaves 1.2–2.2 x 0.6–1.0 cm, elliptic or suborbicular, apex acute or obtuse. Flowers greenish–yellow in axillary clusters; female flowers solitary; sepals narrowly triangular. Fruits depressed–globose, cocci 3–gonous.

*Fls. & Frts.* : February–August.

*Illus.* : Wight, Ic. t. 1900. 1852 (*Ceratogynum rhamnoides* Wight); T. Chakrab. & Gang. op. cit.
**Distrib.** : Rare. Bombay, Ratnagiri (Cooke, op. cit.).

**SEBASTIANA Spr.**


Herbs, c 30 cm high, erect, annual; branches slender, grooved. Leaves 1.5–5 x 0.4–1.0 cm, elliptic–oblong or linear–oblong, membranous, apex subacute or obtuse, margins serrulate. Flowers yellowish–green, monoecious, in short spikes; female flowers solitary at base. Capsules crustaceous, cocci 3 with 2 rows of spines.

**Fls. & Frts.** : November–April.


**SECURINEGA Comm. ex A. Juss. (nom. cons.)**

1. Branches end in spines; leaves less than 2.5 cm long ...  *S. leucopyrus*
1. Branches not end in spines; leaves more than 2.5–7.5 cm long ...  *S. virosa*


Shrubs, 1.5 m high, slender. Leaves 1.0–2.5 cm broad, obovate or obcordate. Flowers white. Capsules c 0.3 cm across, globose, smooth, ripens white, 3–celled.

**Fls. & Frts.** : March–August.


**Distrib.** : Frequent. Bhandara, Bombay, Dhule, Kolhapur, Nasik, Pune, Ratnagiri, Sindhudurg.


Shrubs, 2–4 m high, spreading. Leaves elliptic or obovate, apex rounded or obtuse. Flowers greenish–yellow. Capsules c 0.4 cm across, globose, ripens white. Seeds rounded on back, minutely punctate.
Fls. & Frts.: April–October.


Distrib.: Common.

TRAGIA L.

1. Leaves palmately 3–partite
   1. Leaves not palmately 3–partite:
      2. Leaves cordate at base:
         3. Fruiting calyx with 4–8 pairs of teeth
            3. Fruiting calyx with more than 8 pairs of teeth
               2. Leaves acute at base

   2. Leaves not palmately 3–partite:
      3. Fruiting calyx with 4–8 pairs of teeth

   3. Fruiting calyx with more than 8 pairs of teeth


Climbers. Leaves 3.5–7.0 x 1–3 cm, oblong or ovate, base cordate, apex acuminate, margins serrate. Flowers in leaf opposed, 3–7 cm long racemes; bracts lanceolate, acute; male flowers at apex of racemes perianth globose–ovoid, stamens 3; female flowers: perianth lobes 6, accrescent in fruiting, styles 3, connate at base Capsules 3–valved, hispid.

Fls. & Frts.: November–April.

Distrib.: Few. Ratnagiri, Satara.


Herbs, perennial, hispid with scattered stinging hairs; stems twining. Leaves 2.5–10.0 x 2–5 cm, oblong–lanceolate to broadly ovate, apex acuminate, base rounded or cordate, margins serrate, hairy. Flowers shortly pedicellate, in terminal, axillary and leaf opposed, hairy racemes, 2.5–5.0 cm long; males yellowish, in upper part; females few in lower part of racemes. Capsules c 0.8 cm across, 3–lobed, white more or less hispid. Seeds globose, smooth.


Distrib.: Few. Ahmednagar, Chandrapur, Pune, Raigad,
Ratnagiri.


Climbers, herbaceous; stems and branches stinging hairy. Leaves 2.5–10 x 2.0–4.5 cm, elliptic–oblong or oblong–lanceolate, hairy on both sides, apex acute or acuminate, margins serrate. Flowers monoecious, male yellowish–green in leaf–opposed racemes; female flowers in lower part, sepals 3–6. Capsules globose, cocci–3 in accrescent calyx, hispid.

*Fls. & Frts.* : August–March.


Climbers. Leaves c 8 cm long. Racemes 2–4 cm long; bracts lanceolate, acute; male flowers: perianth lobes 3, stamens 3; female flowers : perianth lobes 6, hispid, styles 3, spreading. Capsules globose, hispid.

*Fls. & Frts.* : August–September.


**TREWIA L.**

1. Female flowers 1 or 3 together; style glabrous; fruits indehiscent ... *T. nudiflora*

1. Female flowers in racemes, more than 3; style papillose all over; fruits dehiscent ... *T. polycarpa*


Trees, c 8 m tall, deciduous. Leaves 7–18 x 5–14 cm, ovate, acuminate, base cordate, entire. Flowers dioecious. Racemes 7–20 cm
long in males. Drupes woody, globose, 2.5–3.5 cm across, tomentose when young. Seeds smooth, polished, dark brown.

*Fls. & Frts.* : December–March.

*Illus.* : Wight, Ic. t. 1870. 1852 (Male flowers only).


Trees c 9 m tall. Leaves 15–20 x 15–20 cm, broadly ovate, apex acuminate. Flowers dioecious. Drupes c 1.3 x 1.3 cm, globose–ovoid, densely tomentose, pericarp loculicidal. Seeds rounded at both ends.

*Fls. & Frts.* : January–June


**CULTIVATED SPECIES:**


Undershrubs, evergreen, c 1.5 m tall. Leaves 8–16 x 6–13 cm, broadly ovate or suborbicular, acuminate at apex, cordate or subcordate at base. Female flowers in bright red, c 25 cm long pendulous.


*Distrib.* : Cultivated in gardens. Ahmednagar, Buldhana, Pune.

*Notes.* : Native of New Guinea.


Trees, evergreen, 8–10 m tall with milky latex. Leaves polymorphous, ovate to lanceolate or rhomboid and 3–7–lobed. Fruits brownish–green, hard, 5–6 cm across. Seeds edible.

*Fls. & Frts.* : April–May.


*Notes.* : Native of Malaya & Pacific Islands.

Shrubs, bushy, 1–1.5 m tall; branching zigzag, often dark red. Leaves 2.5 x 1.3 cm, ovate–elliptic. Flowers solitary or clustered in upper leaf axils. Fruits depressed–globose, 8–10 mm across.

*Fls. & Frts.* : September–December.


Shurbs or small trees, evergreen, 1–3 m tall. Leaves variable in shape with pale red or yellow spots. Flowers in 10–25 cm long racemes of male and female. Fruits globose, c 7 mm long, pale.

*Fls. & Frts.* : October–February.

*Distrib.* : Commonly cultivated in gardens. Osmanabad, Pune.

*Notes.* : Native of Molucca Island.


An annual bushy herb. Leaves green towards apex, scarlet, crimson or rose–coloured towards base.

*Fls. & Frts.* : September–March.


*Notes* : Native of N. America.


Shrubs, c 1 m tall, armed. Leaves obovate–oblong. Inflorescence dichotomously branched; bracts petaloid, crimson coloured.

*Fls. & Frts.* : Throughout the year.

*Distrib.* : Cultivated in the gardens. Ahmednagar, Pune.

*Notes* : Native of Madagascar.

An unarmed shrub with woody branches. Upper floral leaves opposite, brightly coloured, crimson or occasionally yellowish–white.


Undershrubs c 1.5 m tall. Leaves simple, elliptic. Flowers in racemes, small; tepals subequal. Capsules of 3 cocci.

*Fls. & Frts.* : September–December.


**J. podagarica** Hook. in *Curtis, Bot. Mag.* t. 4376. 1848.

Shrubs, xerophytic, 0.3–1.5 m tall. Leaves 10–15 cm across, broadly ovate, 5–lobed. Peduncles and pedicels red. Male perianth orange–red. Capsules c 1.5 cm long.

*Fls. & Frts.* : October–December.


Shrubs, 2–3.5 m tall. Leaves alternate, crowded at ends of branchlets, membranous, ovate–orbicular except upper ones. Flowers in lax racemes and are in fascicles of 3–5 at apex of branches; males yellowish. Fruits 6–winged, globose–ellipsoid, 2 cm long. Seeds ellipsoid.

*Fls. & Frts.* : August–December.


Fls. & Frts. : March–July.
Distrib. : Native of N. Brazil, known as Ceara rubber tree.


Shrubs, c 90 cm tall, succulent. Leaves 5 x 3 cm, alternate, broadly ovate, fleshy. Flowers in terminal cymes. Fruits capsular.

Distrib. : Planted as hedge in gardens and along road sides and cultivated fields. Bombay, Dhule, Kolhapur, Nasik, Pune, Ratnagiri, Thane.

Notes. : Native of S. Africa.


Trees, robust, deciduous with pinnate leaves. Flowers reddish, small, densely clustered. Fruits globose, fleshy.

Fls. & Frts. : February–March.
Notes. : Native of Malay Islands and Madagascar.


Shrubs, c 3.5 m tall. Phyllodia lanceolate to linear–lanceolate, c 9.5 x 1.5 cm, acuminate. Flowers reddish, born in truncate notches.

Distrib. : Grown in gardens.
Notes. : Native of Jamaica.
ULMACEAE

(P. Venkanna & P. V. Prasanna)

1. Leaves palmately veined:
   2. Leaves distinctly canescent beneath ... TREMA
   2. Leaves glabrous or slightly pubescent beneath ... CELTIS
1. Leaves pinnately veined ... HOLOPTELEA

CELTIS L.

1. Leaves with strong primary nerves above basal ribs, nearly entire, equal sided ... C. tetrandra
1. Leaves without strong primary nerves, crenate or serrate, unequal sided ... C. timorensis


Medium sized trees; bark grey. Leaves ovate–lanceolate, acuminate at apex. Flowers in paniculate cymes. Drupes subglobose or ovoid, solitary or binate.

*Fls. & Frts.* : February–March.

*Illus.* : Wight, Ic. t. 1570. 1850 (*C. seratina*).

*Distrib.* : Infrequent in hilly forests. Raigad.


Trees, 8–15 m tall; young twigs ferruginous tomentose, young foliage pinkish–red. Leaves 8 x 4 cm, ovate, apex acuminate, base equal, entire along margins, 3–nerved. Flowers greenish–yellow in paniculate cymes, polygamous; tepals 5; stamens 5. Fruits ovoid, beaked, scarlet when mature.

*Fls. & Frts.* : January–July.

Distrib. : Occasional in forest areas along ghats. Ahmednagar, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**Holoptelea** Planch.


Deciduous trees, 8–10 m high. Leaves elliptic–acuminate, 4–11 x 3–6 cm, base rounded or cordate. Flowers brownish, polygamous, in axillary, short racemes or panicles on leafless branches. Fruits winged, samaroid, orbicular, wing of fruit emarginate at tip and crowned by persistent styles.

**Fls. & Frts.** : January–June.

**Illus.** : Wight. Ic. t. 1968. 1853; Bedd. Fl. Sylv. t. 310. 1873 (both under *Ulmus integrifolia*).

Distrib. : Common in deciduous forests.

**TREMA** Lour.

1. Branchlets scabridly hairy

1. Branchlets villous–tomentose or appressed pubescent :

2. Leaf base 3–7–nerved

2. Leaf base 3–4–nerved


Trees; branches villous or tomentose. Leaves usually large, ovate–oblong, crenate–acuminate, serrulate, scaberulous or pubescent above, silky tomentose beneath. Cymes usually large, compact and exceed petiole.

**Fls. & Frts.** : January–June.

**Distrib.** : Rare in deciduous forests. Pune.

Trema orientalis (L.) Bl.
Trees, 3–5 m high; bark ash coloured; young branchlets and stipules white pubescent. Leaves obliquely ovate, canescent beneath, scabrid above, 5–14 x 0.8–1.5 cm, apex acuminate, serrulate along margins; petioles c 1.5 cm long. Flowers in axillary cymes, greenish–yellow or creamy–white; perianth simple, calycine 4–5–partite; stamens 4–5, erect in bud; pistillode small, ovary sessile, style central with linear arms. Drupes ovoid or sub globose, c 0.3 cm across, ripens black.

_Fls. & Frts._ : January–October.


_Distrib._ : Common in forest clearings.


Trees; bark brownish, branches clothed with rough hairs. Leaves 4–5 x 2.5–2.7 cm, stipulate, 3–4–nerved, alternate, oblique or cordate or rounded, both surfaces scabrid; petioles 2–3 mm long; stipules longer than the petioles, deciduous. Flowers in axillary racemes, compact and shorter.

_Fls. & Frts._ : August–October.

_Distrib._ : Occasional along foot hills of deciduous forests and stream banks. Amravati, Aurangabad, Buldhana, Nanded.

### URTICACEAE

_URTICACEAE_  
_(C. R. Jadhav)_

1. Plants with stinging hairs:
   2. Flowers in interrupted racemes; ovary oblique ... _LAPORTEA_
   2. Flowers in heads; ovary straight ... _GHARDINIA_

1. Plants without stinging hairs:
   3. Stigmas penicillate:
      4. Leaves opposite:
         5. Flowers in heads ... _LECHANTHUS_
         5. Flowers in cymes ... _PILEA_
Trema politoria Planch.
4. Leaves alternate:
   6. Stipules present:
      7. Stipules simple ... ELATOSTEMA
      7. Stipules 2-fid ... DEBREGASHIA
      6. Stipules absent ... PARIETARIA

3. Stigmas filiform (not penicillate):
   8. Leaves entire along margins; female perianth often beaked; stigma jointed, deciduous ... POUZOLZIA
   8. Leaves serrate, serrulate or crenulate along margins; females perianth not beaked; stigma persistent ... BOEHMERIA

**BOEHMERIA** Jacq.

1. Leaves elliptic–lanceolate; flowers in axillary, sessile clusters ... *B. glomerulifera*
1. Leaves broadly ovate; flowers in pisiform clusters on simple or paniculate axillary, erect spikes ... *B. macrophylla*


Shrubs or small trees; bark thin, greyish–brown; stems and branches pubescent. Leaves 10–20 x 3–9 cm, alternate, subequal or alternately large and small, rounded, subacute or cordate at base, crenulate or subentire along margins, acuminate or caudate at apex, membranous, glabrous or pubescent beneath; petioles 2–7.5 cm long. Flowers greenish–white, unisexual, male and female in different axils. Achenes minute, ovoid.

*Fls. & Frts.*: November–February.


*Notes*: Rare, in deciduous forests.

Boehmeria macrophylla Hornem.
Undershubs or shrubs, 0.8–1.5 m high, erect; branches more or less grooved, strigously hairy. Leaves 5–22 x 2.5–18 cm, usually opposite, rounded or cordate at base, acuminate at apex, serrate along margins, appressed–pubescent. Flowers greenish–white, unisexual. Achenes c 0.1 cm long, ovoid or ellipsoid, compressed.


_Illus._ : Wight, Ic. t. 691. 1843 (Urtica scabrella).

_Distrib._ : Common throughout the state.

**Debregeasia Gaud.**

1. Leaves lanceolate or oblanceolate
   
   2. Leaves entire along margins

1. Leaves broadly round–ovate or orbicular–ovate :

2. Leaves dentate along margins


Trees; stem with fallen leaf scars. Leaves 12–18 x 7–15 cm, simple, rounded at base, shortly acuminate or acute at apex, dark above, white tomentose beneath, 3–nerved from base; petioles 8–25 cm long, striate, grooved. Flowers unisexual, sessile, in globose heads arranged on axillary branched cymes.

_Fls. & Frts._ : September–October.


_Notes_ : Rare, in ghat areas. Hooker gives Ceylon as the locality for this species. Gamble mentions it as a very little known species in South India.


Shrubs, erect; branches pubescent. Leaves orbicular–ovate, cuspidate at apex, rounded at base, scabrid above, ashy–tomentose beneath, shortly acuminate at apex, long petioled. Flowers unisexual, in short dichotomous cymes with slender divaricate branches. Fruits orange–red when ripe.

_Fls. & Frts._ : December–March.

Notes : Rare, noticed only at one spot near water falls.


Shrubs or small trees, 3–8 m tall; branches rough. Leaves 5–19 x 2–6 cm, rounded or narrowed at base, acuminate at apex, serrate along margins, rugose above, white soft tomentose beneath; petioles 1–5 cm long. Flowers in compact heads, arranged in lateral dichotomous cymes or branched spikes; stamens exserted, greenish. Fruits c 0.8 cm across, yellow when ripe.

**Fls. & Frts.** : October–May.

**Illus.** : Wight, Ic. t. 1959. 1853 (*Conocephalus niveus*).

**Distrib.** : Frequent. Kolhapur, Ratnagiri, Satara, Sindhudurg.

### ELATOSTEMA Forst.

1. Leaves coarsely serrate from the base to the tip along margins … *E. sessile* var. *cuspidata*

1. Leaves coarsely crenate or serrate above the middle or from little below the middle along margins (rarely entire) :

2. Leaves rounded or subacute at apex … *E. cuneatum*

2. Leaves acuminate or caudate at apex :

3. Small herbs, 5–12 cm high; normal leaves subtended by a small filiform or linear leaves … *E. surculosum*

3. Herbs or undershrubs, 0.8–1.2 m high; normal leaves not subtended by filiform or linear leaves … *E. liniolatum*


Herbs, annual, slender, more or less pubescent. Leaves 1–3.5 x 0.6–1.5 cm, elliptic or obovate, inequilateral, falcately cuneate at base,
sparsely hairy on both sides, sometimes with a minute, opposite leaflet at base. Female flowers in axillary, solitary, sessile heads. Male flowers not seen. Achenes ellipsoid, ribbed, yellow.

_Fls. & Frts._: July–October.

_Illus._: Wight, op. cit.

_Distrib._: Frequent. Dhule, Kolhapur, Ratnagiri, Sindhudurg, Thane.


Herbs or undershrubs, pubescent or tomentose. Leaves 5–14 x 2–4.5 cm, very variable, oblong or oblong–lanceolate or cuneately obovate or linear–oblong, acute or cuneate at base; stipules linear–lanceolate. Flowers on sessile, capitate, unisexual receptacles. Achenes ellipsoid, acute.

_Illus._: Wight, op. cit.

_Distrib._: Konkan (Cooke, op. cit.).


Herbs. Leaves obliquely oblanceolate, inequilateral, caudate at apex, membranous, hairy on both the surfaces. Flowers sessile, axillary, crowded on sessile or shortly peduncled, unisexual receptacles.

_Fls. & Frts._: August–October.

_Illus._: Wight, op. cit.


Herbs, 5–6 cm high; stems succulent, hairs in two rows along the stem, decurrent with leaves. Leaves alternate, subsessile, oblique, inequilateral. Flowers crowded in unisexual involucrate sessile heads, tetramerous; male flowers with acute, curved, mucronate tepals; stamens 4, opposite the perianth; female flowers smaller than males; perianth obtuse. Achenes ellipsoid, acute, ribbed. Seeds glabrous.
**Girardinia Gaud.**

*Girardinia diversifolia* (Link) Friis in Kew Bull. 36: 45. 1981.  
'Aagya', 'Motha–Khajoti'.

Herbs, perennial, c 1.5 m high, robust; stems and branches furrowed. Leaf–blades 5–18 cm long and often as broad, broadly ovate or suborbicular, toothed, 3–5–lobed or unlobed. Flowers green, the males in lower and the females in upper axils. Fruiting cymes stout, densely clothed with slender stinging hairs. Achenes c 0.3 x 0.2 cm, obliquely ovate, much compressed.

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

**Illus.** : Wight, Ic. t. 687. 1843 (*Urtica heterophylla* Willd.).

**Distrib.** : Frequent. Ahmednagar, Amravati, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

**Laportea Gaud. (nom. cons.)**

*Urtica interrupta* L. Sp. Pl. 985. 1753.  
'Aagya'.

Herbs, annual, 20–60 cm high, densely hairy; stems furrowed. Leaf–blades 2.6–11 x 1.5–7 cm, broadly ovate, acuminate at apex, hispid; petioles as long as or longer than leaf–blade; stipules bifid. Flowers green or white. Achenes c 0.1 cm long, obovoid, compressed.

**Fls. & Frts.** : July–October.

**Illus.** : Wight, Ic. t. 1975. 1853 (*Fleurya interrupta*).

**Distrib.** : Common. Ahmednagar, Bhandara, Bombay, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.
LECANTHUS Wedd.


Herbs, very variable in size, from a weak little herb, 2.5–5 cm high with thread like stem to a stout branched herb upto 30 cm high. Leaves 3.5–9 x 1.5–4.5 cm, ovate to ovate–lanceolate, oblique, acute at base, acute or acuminate at apex, subentire or toothed or serrate along margins, hairy above and beneath. Receptacles solitary, axillary, pedunculate, bracteate, flat or turbinate. Achenes minute, ovoid, compressed.

*Fls. & Frts.* : August–November.


*Distrib.* : Chandrapur, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane (Cooke, op. cit.).

PARIETARIA L.


Herbs, 15–50 cm high, diffuse, flaccid, pubescent; stems slender, straggling. Leaves 1–4 x 1–2.5 cm, very variable in shape and size, broadly ovate or suborbicular, rounded or cuneate at base, obtuse at apex; petioles filiform. Flowers polygamous, in axillary, 3–7–flowered cymes. Male and bisexual flowers few; female flowers numerous. Achenes ovoid, enclosed in persistant perianth.

*Fls. & Frts.* : September.


*Distrib.* : Pune (Cooke, op. cit.).
Lecanthes peduncularis (Wall. ex Royle) Wedd.
PILEA Lindl.

1. Monoecious herbs; leaves elliptic–obovate, 1–nerved, entire along margins …  *P. microphylla*

1. Dioecious shrubs or undershrubs; leaves obovate–lanceolate, 3–nerved, serrate along margins …  *P. melastomoides*


Herbs, subsucculent, creeping, profusely branched. Leaves minute to 1 x 0.8 cm, subacute to obtuse, simple, petiolate. Flowers in pedunculate, umbellate clusters. Achenes c 1 mm long, ellipsoid.

*Fls. & Frts.*: August–February.

*Distrib.*: Common. Ahmednagar, Amravati, Bombay, Kolhapur, Nagpur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

*Notes*: A South American species now mostly naturalised and growing along moist waste places.

POUZOLZIA Gaud.

1. Stamens 3–4:

2. Male perianth lobes abruptly inflexed above the middle, transversely folded at flexure …  *P. integrifolia*

2. Male perianth lobes convex or gibbous on back, not inflexed …  *P. zeylanica*
Pilea microphylla (L.) Liebm.
1. Stamens 5:

3. Stems terminating in a bracteate spike ... *P. pentandra*

3. Stems not terminating in a bracteate spike ... *P. bennettiana*


Herbs, c 1 m high. Leaves 2–5 x 0.5–1.5 cm, elliptic–lanceolate or ovate–lanceolate, rounded or subcordate at base, entire, hairy along margins and beneath, pilose above, acute at apex, alternate or opposite, whorled, sessile. Flowers in dense, axillary cymose clusters; male perianth lobes 5, with transverse dorsal ridge at flexure; female perianth tubular, ribbed, accrescent in fruit; styles filiform. Achenes 0.1 cm long, black.

*Fls. & Frts.*: October–November.

*Illus.*: Wight, op. cit.

*Distrib.*: Rare. Satara, Sindhudurg (Almeida, 1990).


Herbs, suffruticose, 90–120 cm high; stems compressed, grooved. Leaves 5–9 x 1–2.5 cm, triangular–lanceolate, nearly pubescent on both surfaces, 3–5–nerved, truncate, cordate or rounded at base, hairy along margins. Flowers in dense, axillary clusters; the males numerous; sepals ciliate at flexure; the females few; perianth ribbed or 2–3–winged in fruit. Achenes ovoid, acute, brown, shining.

*Fls. & Frts.*: October.

*Illus.*: Wight, *Ic.* t. 1979 (left hand side figure) 1853.

*Distrib.*: Kolhapur & Konkan (Cooke, op. cit.).


1. Leaves lanceolate or linear–oblung ... var. *pentandra*

1. Leaves ovate, cordate–ovate:

2. Stems and branches glabrous; leaves glabrous but hispid along margins ... var. *stocksii*
2. Stems and branches hispid; leaves pubescent above, glabrous beneath, hispid along margins ... var. ramosissima

var. pentandra.

Herbs, 60–100 cm high; stems terete below, angular above, diffusely branched. Lower leaves oblong–lanceolate, mostly opposite, sessile or subsessile, cordate at base, acute or acuminate at apex, hispid along margins, 3–nerved; the upper floral leaves reduced upto 0.5 cm long, linear–oblong or ovate, acuminate or cuspidate, mostly alternate, sessile. Flowers clustered in axils of floral leaves of erect or nodding terminal spikes reaching upto 45 cm long; male flowers pedicellate, ciliate; perianth 5–partite; female perianth with 2–3 lateral wings.

Fls. & Frts. : September–November.

Illus. : Wight, Ic. t. 2096, f. 20. 1853.

Distrib. : Kolhapur, Nagpur, Pune, Satara.


Herbs, erect, much branched; branches ascending. Leaves cordate, acuminate at apex. Female perianth in fruits 2–3–winged, middle wing thicker than others. Fruits prominently ribbed between wings.

Illus. : Wight, op. cit.

Distrib. : Konkan (Cooke, op. cit.).


Herbs, straggling, ramous, seeking support and then ascending (Wight, 1853); stems and branches four–angled. Leaves ovate to cordate–ovate, obtuse at apex. Flowers few, axillary. Fruits ovoid, ribbed or 2–3–winged.

Illus. : Wight, Ic. t. 41. 1853 (P. stocksii).

Distrib. : Konkan (Cooke, op. cit.).


Herbs, perennial–rooted, 10–40 cm high; stems slender, erect or prostrate, simple or branched. Leaves 1.7 x 0.5–2.5 cm, ovate or ovate–lanceolate or elliptic–lanceolate, acute or rounded at base, obtuse, acute or acuminate at apex, entire along margins, opposite or alternate, hairy; petioles 0.2–2.5 cm long. Flowers white or greenish–white, in small axillary, androgynous clusters. Achenes c 0.1 cm long, broadly ovoid, smooth, shining.

**Fls. & Frts.** : July–November.

**Illus.** : Wight, Ic. t. 1980, f. l. & t. 2100, f. 40. 1853 (**P. indica**).

**Distrib.** : Bombay, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.

**CULTIVATED SPECIES** :


Shrubs, upto 1.5 m high. Leaves alternate, 8–15 cm long, broadly ovate, coarsely toothed along margins, subscabrid above, white beneath. Flowers small in axillary panicles, monoecious. Panicles shorter than petioles.

**Distrib.** : It is native of Malay Islands, China and Japan. Grown in gardens for its ornamental leaves.


Extensive climbers. Male heads in shortly peduncled dichotomous cymes. Female heads 2.5 cm in diam. Flowers sweet scented.

**Distrib.** : Grown in gardens.


Herbs. Leaves large, showy, with purplish rib and veins variegated, sometimes one–half, being creamy–white.

CANNABACEAE
(C.R. Jadhav)

CULTIVATED SPECIES:

Herbs, up to 2 m high, erect, annual; stems and branches angular. Leaves alternate or the lower opposite, upper 1–3–partite and lower 5–11–partite, serrate, palmatinerved; leaflets lanceolate or linear–lanceolate, acuminate. Flowers small, axillary, dioecious. Achenes compressed, crustaceous.

Fls. & Frts.: August–October.

Distrib.: Rarely cultivated in parts of the State under Government’s permission for the intoxicating drugs known as Ganja, Charas and Bhang.

MORACEAE
(P. Lakshminarasimhan & P. Venkanna)

1. Flowers in syconia
1. Flowers exposed:
   2. Leaves with many transverse inter costal veins:
      3. Leaves spirally arranged
      3. Leaves distichous
   2. Leaves with few or no transverse inter costal veins:
      4. Shrubs or small trees
      4. Climbers

Ficus
Artocarpus
Antiaris
Streblus
Plecospermum

ANTIARIS Lesch. (nom. cons.)

Trees, c 5 m high, deciduous, often buttressed; bark greyish–white, smooth; latex creamy–white. Leaves 5–20 x 2.5–10.0 cm, elliptic or subovate, base cordate or cuneate, apex acute or subacuminate, denticulate to entire along margins, veins hispid with brown hairs; stipules 10–11 mm long, densely hairy, caducous; veins 7–12 pairs, curved ascending; petioles 3–11 mm long. Receptacles on new twigs with the young leaves. Males discoid to reflexed pulvinate, 1–2 cm wide; involucral bracts linear, short; tepals spathulate, cucullate anthers yellow. Females 1–flowered, subpedunculate, with several bracts; tepals minute. Drupes 12–25 x 11–20 mm, ellipsoid to pyriform, ripening red to crimson, purple and finally black. Seeds 10–16 mm long.

Receptacles: August–September.

Illus.: Wight, Ic. t. 1958. 1853 (Antiaris saccidora); Talb. op. cit.; Corner, op. cit.

Distrib.: In evergreen forests, rare. Sindhudurg (S.M. Almeida, op. cit.).

Artocarpus J.R. & J. G. A. Forst. (nom. cons.)

1. Syncarp velvety, globose; male heads globose:
   2. Leaves broadly ovate, grey–pubescent beneath ... A. gomezianus
      ssp. zeylanicus
   3. Leaves oblong, usually tomentose beneath ... A. lakoocha

1. Syncarp warted or somewhat spinous, cylindric; male heads cylindric:
   2. Young shoots, petioles and stipules hairy ... A. hirsutus
   3. Young shoots, petioles and stipules not hairy ... A. heterophyllus


Trees, c 20 m high, evergreen; bark grey, scaly. Leaves elliptic–ovate or oblong, shiny, 11–25 x 7–16 cm, base widely cuneate to subcordate, apex acuminate, margins upcurved; lateral veins 10–13 pairs, whitish–beneath; petioles 1–3 cm long. Inflorescence axillary, mostly solitary. Male heads 8–10 mm wide, globose; peduncles 5–18 mm long, perianth with 3–4 free tepals, stamens c 0.5 mm long. Female heads stouter, stigma bifid. Syncarp 2–3 cm wide, subglobose, green, later turned to orange.

Evergreen trees, cauliflorus with massive syncarps. Leaves elliptic or obovate, dark green, 5–25 x 3.5–12.0 cm, base cuneate or subdecurrent, apex obtuse or subacuminate; lateral veins 6–10 pairs, petioles 8–15 mm long. Inflorescence solitary, axillary. Male heads 25–70 x 8–28 mm, narrowly clavate; peduncles 12–50 cm long. Syncarp 30–100 x 25–50 cm, green, round with conical acute processes; fruiting perianth yellow to light orange. Seeds 25–30 x 15–20 mm.

**Fls. & Frts.** : March–April.


**Distrib.** : Commonly cultivated, but naturalised. Bombay, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.


Large, evergreen trees. Leaves broadly elliptic–ovate or lanceolate, c 25 x 14 cm, base rounded, apex acuminate; nerves 7–11 pairs, hispid hairy beneath; stipules lanceolate. Male flowers axillary, pendulous, 10–11 cm long. Female flowers erect. Syncarp 10–15 cm across, cylindric–ellipsoid, echinate with long processes, apex perforate, orange when ripe. Seeds 1.5–2.0 cm long, ovoid.

**Fls. & Frts.** : January–May.

**Illus.** : Wight, Ic. t. 1957. 1853; Talb. op. cit.


Large deciduous trees, 15–20 m high; branchlets softly tomentose or villous. Leaves oblong–elliptic or subovate, 10–30 cm long, thinly coriaceous, glabrous or softly tomentose above, pubescent beneath, base rounded, apex cuspidate; young leaves often serrate at margins; nerves 8–12 pairs; petioles 1.5–2.5 cm long, stipules lanceolate. Inflorescence shortly peduncled. Male heads 1.5–2.5 cm across, oblong or globose, pubescent; bracteoles clavate, puberulous. Female flowers with anthocarps completely united. Syncarp 5.0–7.5 cm across, lobulate, smooth, velvety, wrinkled. Seeds oblong.

Fls. & Frts. : March–April.

Illus. : Wight, Ic. t. 681. 1853; Talb. op. cit.


FICUS L.

1. Monoecious; figs often with inter floral bracts :

2. Leaves with a gland at the back of the petiole–apex or none; stamen–1 :

3. Ovary wholly red–brown or in the upper half; male flowers ostiolar or disperse :

4. Figs with internal bristles :

5. Lamina very stiffly coriaceous; figs in small clusters below the leaves \( \ldots \) \( F. \) geniculata

5. Lamina thinly coriaceous; figs axillary \( \ldots \) \( F. \) virens

4. Figs without internal bristles :

6. Lateral nerves 8–14 pairs; figs axillary or clustered \( \ldots \) \( F. \) tsjahela

6. Lateral nerves 4–9 pairs; figs in pairs, axillary \( \ldots \) \( F. \) religiosa

3. Ovaries white or with a red mark at base; male flowers disperse :

7. Venation with intercostals; ovary white :

8. Leaf apex caudate–acuminate; basal bracts 2–3 \( \ldots \) \( F. \) rumphii

8. Leaf apex acute or cuspidate; basal bracts 3 \( \ldots \) \( F. \) amplissima
7. Venation with or without intercostals; ovary with a red mark at base:

9. Figs pedunculate, sessile or pedicillate:

10. Figs ripening green, brown or brownish-orange:

11. Intercostals 2(–4), vague; basal bracts short … F. talbotii

11. Intercostals numerous; basal bracts distinct … F. arnottiana

10. Figs ripening yellow to red:

12. Figs oblong or pyriform, pedicillate; basal bracts often small or concealed … F. drupacea var. pubescens

12. Figs subglobose to ellipsoid; basal bracts well developed:

13. Leaves white to rusty tomentose … F. mollis

13. Leaves glabrous to thinly hairy … F. benghalensis

9. Figs mostly sessile:

14. Secondary lateral nerves prominent … F. benjamina

14. Secondary lateral nerves not prominent … F. microcarpa

2. Leaves with a gland in the axil of ten main basal nerves or none; stamens 2(–3) or 1, often with a pistillode:

15. Tepals entire; inter floral bracts often present:

16. Lamina scabrid beneath; male flowers dimorphous … F. callosa

16. Lamina scabrid beneath; male flowers not dimorphous … F. nervosa

15. Tepals laciniate–denticulate; inter floral bracts absent … F. racemosa

1. Dioecious; figs often without inter floral bracts:

17. Lamina with a basal gland; perianth separate:

18. Figs with a collar of 3 basal bracts; stamens 2 or more … F. palmata

18. Figs without a collar of basal bracts; stamens 1 or 2:

19. Leaves distichous; male flowers with gall ovary … F. tinctoria ssp. parasitica

19. Leaves variously arranged; male flowers without gall ovary:
20. Tepals and ovary red or white; receptacles globose; seeds lenticular ... *F. exasperata*

20. Tepals and ovary white; receptacles spherical to elongate pyriform; seeds shortly oblong ... *F. heterophylla*

17. Lamina without basal glands; perianth gamophyllous:

21. Leaves acute or cuspidate; lateral nerves 3–5 pairs; receptacles fascicled on old wood or leafy branches ... *F. hispida*

21. Leaves acuminate; lateral nerves 9–14 pairs; receptacles in pairs or clusters on scaly usually leafless branches ... *F. semicordata*


Well branched trees, c 15 m high; main trunk gregarious, often marked with vertical clefts, bark smooth, light coloured, pale–green, whitish or greyish. Leaves ovate or ovate–lanceolate, bright green, shining above, 5–12 x 2–6 cm, base rounded, apex acute or cuspidate, entire along margins, 3–nerved, membranous. Figs axillary, sessile, globose in pairs, c 1.5 cm across; basal bracts 3, ovate, glabrous or puberulous. Tepals 2–3, reddish, ovate–acute, free. Male flowers : few, pedicels 0.2 mm long. Female flowers : sessile, tepals 3–4, ovary white.

**Receptacles** : April–September.

**Illus.** : Wight, Ic. t. 668. 1840 & Talb. op. cit. (F. tsiela); Corner, op. cit.

**Distrib.** : In forest areas, common.


Trees, c 10 m high; bark grey–brown. Leaves spirally arranged; veins and petioles bright pink, ovate–cordate or elliptical, 6–14 x 5–9
cm, base deeply cordate, apex caudate–acuminate with c 20 mm long acumen, entire along margins, coriaceous; veins 5–7 pairs. Figs in axillary pairs and raised below leaves, ripening yellowish–brown, red or purple with green spots; peduncle 2–5 mm long; bracts blunt, caducous. Tepals red, fleshy. Male flowers sessile; stamen 1. Female flowers sessile or shortly stalked, ovary sessile.

Receptacles: February–June.

Illus.: King, op. cit.; Talb. op. cit.; Corner, op. cit.

Distrib.: Common in open forests in dry zones or on hillsides and rocky places.


Trees, with numerous aerial roots from spreading branches; twigs, stipules, petioles and leaves beneath puberulous at early stage, later glabrescent. Leaves ovate, coriaceous, 10–30 x 7–20 cm, base cordate or rarely cuneate; lateral veins 5–6 pairs, with c 10 intercostals, prominent on both sides; stipules stout; petiole 1.5–7.0 cm long. Figs sessile, axillary, paired, ripening orange to red, depressed–globose; basal bracts obtuse; internal bristles none. Tepals free, 2–3 in male, 3–4 in galls and female flowers; anthers shortly mucronate.

Receptacles: April–June.


Distrib.: Along road sides in towns and villages also found in low land forests, common.


Evergreen trees, with few or no aerial roots from branches; twigs brownish, bark grey, smooth. Leaves subdistichous, often thinly white puberulous, elliptic, lanceolate or ovate–elliptic, 3–12 x 1.5–6.0 cm, base cuneate, rounded or subcordate, apex acute or acuminate; stipules
paired, lanceolate; lateral veins 6–11 pairs, paired on both sides, petioles 0.4–1.6 cm long. Figs sessile, axillary, paired, ripening yellow to orange and dark red. Tepals 3 in male, 3–4 in galls and females. Female flowers sessile.

**Receptacles** : April–May.

**Illus.** : King, op. cit.; Corner, op. cit.


Trees, c 45 m high, buttressed; bark grey, smooth; young parts finely puberulous, later glabrous. Leaves elliptic, ovate or obovate, 10–30 x 5–15 cm, base cordate or rounded and widely cuneate, apex subacute or obtusely subacuminate, entire, thinly coriaceous, finely scabrid beneath; lateral veins 7–16 pairs, slightly raised on both sides, stipules 12–30 mm long, petiole 20–70 cm long. Figs axillary, solitary, rarely paired, puberulous or finely villous, glabrescent, ripening yellow, basal bracts persistent. Tepals 4–6, red, entire, free, lanceolate–acute in sessile flowers. Male flowers sessile with 2 stamens. Galls and female flowers sessile or pedicellate; stigma bifid. Seeds c 1.5 mm long, shortly oblong, slightly keeled.

**Receptacles** : June–July.

**Illus.** : King, op. cit.; Corner, op. cit.


Trees, with descending aerial roots around the trunk; bark grey or brownish, smooth. Leaves first densely pilose or strigose, later glabrous, coriaceous, elliptic, oblong–elliptic or ovate, 8–26 x 3–13 cm, base cuneate, rounded or subcordate, apex shortly acuminate; lateral
veins 9–15 pairs, distinctly raised on both sides, petiole 4.5 cm long, stipules 12–20 mm long. Figs sessile, axillary, paired, ripening yellow or orange to dull red, basal bracts 2–6 x 4–8 mm, densely brown pilose. Tepals free. Male flowers few, pedicels c 4 mm long; tepals 2–3, filaments bristly at base; anthers wide. Female flowers sessile, tepals 3–4.

Receptacles: April–May.

Illus.: Corner, op. cit.; Talb., op. cit.

Distrib.: Found in dry zones, occasional. Bombay, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg.


Shrubs to small trees, c 8 m high; bark greyish. Leaves variable in size and shape, ovate–elliptic or more or less 3–lobed, scabrid, 6–19 x 3–9 cm, base cuneate, more or less symmetric, apex acute to acuminate with a tip c 15 mm long, denticulate or sinuate–crenate to serrate along margins. Receptacles solitary, axillary, c 1.5 cm across, greenish to yellow and reddish at maturity. Tepals white, free, rarely 1–2–joined, puberulous or hispidulous upwards; internal bristles copious, white. Male flowers ostiolar, sessile; tepals 3–4 or 6; stamen 1. Female and gall flowers sessile to pedicellate; tepals 4–7, linear–spathulate. Seeds 1.2–1.5 x 0.8–1.0 mm, shortly oblong, slightly keeled.

Receptacles: January–June.

Illus.: Wight, Ic. t. 633. 1840 (F. asperrima); King, op. cit.; Talb. op. cit.; Corner, op. cit.

Distrib.: Undergrowth of deciduous forests, common along streams.


Trees. Leaves 10.0–47.5 x 6.7–10.0 cm, broadly elliptic or ovate–rotund, base rounded or narrowed, apex cuspidately acuminate, subundulate along margins. Receptacles crowded, shortly peduncled or
sessile in groups of 2–4 at the scars of fallen leaves, depressed–globose, 0.6–0.7 cm across, reddish with dots when ripe; basal bracts 3, broadly ovate.

**Distrib.** : Thane.


Creeping or often prostrate shrubs, c 3 m long; twigs reddish–brown, thinly pubescent with short, white, spreading hairs, subscabrid. Leaves distichous, oblong or narrowly elliptic to subovate, often lanceolate, 5–15 x 2–5 cm, base widely cuneate or rounded, apex acute to acuminate, dentate to subentire along margins, membranous to sub coriaceous; lateral veins 4–7 pairs. Figs solitary, axillary, rarely paired, ripening orange to dark red; basal bracts 3, ovate–subacute, small. Tepals white, free, entire; internal bristles none. Male flowers in 2–3 rings, tepals 3–4, linear–oblong. Females and gall flowers pedicellate, tepals 4–5, lanceolate. Seeds slightly keeled, smooth.

**Receptacles** : May–June.

**Illus.** : Wight, Ic. t. 659. 1840; King, op. cit.; Corner, op. cit.; Talb. op. cit.


Shrubs to small trees, c 5 m high, well branched; bark grey, smooth; latex white. Leaves opposite, ovate, oblong or subovate, base cordate to cuneate, apex acuminate, crenate–serrate along margins; stipules 10–25 mm long, caducous. Figs obovate, axillary to cauliflorous on short, tubercled branches, ripening pale yellow; basal bracts 3, subtriangular, internal bristles 0. Male flowers in 1–2 rows, stamen 1. Galls and female flowers sessile or pedicellate; style hispid. Seed slightly keeled, tuberculate, with prominent hilum.
Receptacles: January–July.

Illus.: King, op. cit.; Talb. op. cit.; Corner, op. cit.

Distrib.: Common in forest under growth and along the streams or in moist localities.


Trees, with few conspicuous, slender, aerial roots; bark grey. Leaves subdistichous, elliptic–obovate, slightly inequilateral, base widely to narrowly cuneate, apex subacute to bluntly subacuminate, thinly coriaceous; lateral veins 5–9 pairs, petioles c 2 cm long, petioles and basal bracts puberulous, triplinerved. Figs paired, axillary, sessile, ripening pink to mauve, purple and black. Tepals 3, spathulate–obovate, free. Male flowers few, sessile or subtisipitate. Gall with c 1.2 mm long pedicels. Females sessile.

Receptacles: March–June.


Distrib.: In deciduous to semi–evergreen forests, common.


Trees; young branchlets tomentose. Leaves spirally arranged, obovate, often ovate, 8–14 x 4–8 cm, base truncate–cordate, apex bluntly acute or acuminate, persistently grey–tomentose beneath; lateral veins 5–6 pairs, petiole c 3.5 cm long, with glandular patch at the junction with midrib beneath. Figs sessile, in axillary pairs, globose, tomentose, c 1 cm across; basal bracts 3, tomentose; apical bracts 3. Tepals 3–4, reddish, free. Male flowers disperse, pedicellate. Galls sessile or pedicellate. Females sessile.
Receptacles: March–September.

Illus.: Wight, Ic. t. 647. 1840; King, op. cit.; Corner, op. cit.

Distrib.: In deciduous forests, frequent. Konkan (Cooke, op. cit.).


Large trees with white, milky juice. Leaves oblong–lanceolate to obovate, elliptic, base narrowed or rounded, apex acuminate, undulate along margins, 3–nerved; petioles c 4 cm long. Receptacles axillary, pedunculate in pairs, depressed–globose, yellow when ripe; basal bacts 3, c 1 mm long, bracteoles subtending the flowers; internal bristles 0. Male flowers disperse, sessile to pedicellate, tepals 2–3, red, free, stamens 1 or 2. Galls and females sessile to pedicellate; tepals 3–5, red, free or shortly gamophyllous.

Receptacles: December–May.

Illus.: Wight, Ic. t. 660. 1840 (*F. angustifolia* Roxb. Fl. Ind. 3: 554. 1832); King, op. cit.; Talb. op. cit.; Corner, op. cit.


Shrubs or small trees; young branches tomentose–pubescent, later glabrous. Leaves orbicular–ovate, 3.7–12.5 cm, apex acute or apiculate, toothed or serrate or obtusely 3–5–lobed, subscabrous above, scabrid or shortly tomentose beneath; lateral nerves 3. Receptacles 1.2–2.5 cm across, solitary, axillary, subglobose to pyriform, base constricted.

Distrib.: Dhule.

Trees, 4–10 m high, much branched, often with well spreading canopy; bark greyish–white or pinkish, smooth. Leaves ovate–oblanceolate, elliptic–lanceolate, 3.6–6.2 x 2–4 cm, base cuneate or rarely subcordate, apex subacute or subacuminate, entire, subcoriaceous; lateral veins 4–8 pairs, petioles 2–7 cm long. Receptacles in large clusters on the main branches and trunks, c 3 cm across, obovoid, pyriform, pale green to red to purplish on ripening; peduncles 0.3–1.2 cm long, perianth with 3–4 dentate–lacerate lobes joined below, red. Male flowers in 2–3 rings, sessile, much compressed; stamens 1–2 or rarely 3. Galls long stalked. Females sessile or shortly stalked, ovary sessile or substipitate. Seeds c 1 mm long, lenticular, smooth.

**Receptacles**: February–June.

**Illus.**: Wight, Ic. t. 1967. 1853 (*F. glomerata*); King, op. cit.; Talb. op. cit.; Corner op. cit.

**Distrib.**: Along streams and also along rocky hill–slopes, common.


Trees c 10 m high, occasionally epiphytic. Leaves coriaceous, ovate–rotund, base truncate, apex caudate–acuminate with 1–5 cm long acumens, margins often sinuous; lateral veins 6–9 pairs, petioles 1.3–3.5 cm long. Receptacles axillary, paired, sessile, pink, purple or black when ripe; basal bracts 3, silky puberulous; internal bristles none. Male flowers sessile in 1 ring; tepals 2, red, free, ovate–lanceolate. Galls and females sessile; tepals 3–4, free.

**Receptacles**: March–August.

**Illus.**: Wight, Ic. t. 1967. 1853 [under *Urostigma religiosum* (L.) Gasp.]; King, op. cit.; Talb. op. cit.

**Distrib.**: Forest outskirt, mostly near villages and usually planted near temples. Worshipped by Buddhists and Hindus.


Deciduous, glabrous trees, 8–10 m tall, epiphytic in early stage. Leaves broadly ovate, subcoriaceous, 7–15 x 5–10 cm, apex subcordate
apex, caudate–acuminate, entire along margins; petioles 10–15 cm long, stipules ovate–lanceolate. Receptacles axillary, sessile, or shortly peduncled in pairs, globose, c 1 cm across, glabrous, white with dark spots when young, black when ripe; basal bracts 3, rounded. Male flowers near the mouth; tepals spatulate; stamen 1. Galls and female flowers sessile; tepals 3, lanceolate.

Receptacles: May–June.

Illus.: Wight, t. 640. 1840 (F. cordifolia Roxb. Fl. Ind. 3: 548. 1832 non Bl. 1825); King, op. cit.

Distrib.: Found in deciduous forests, frequent. Ahmednagar (Talb. op. cit.), Kolhapur, Pune (Talb. op. cit.), Raigad, Satara (Talb. op. cit.).


A small or medium–sized evergreen tree. Leaves oblong, semi–saggitate, hispid above, petioles scabrid. Receptacles in pairs or clusters on leaflets, drooping branches, ripens reddish–brown.

Receptacles: May–June; also August–September.

Illus.: Khanna & Uniyal in Mudgal et al. op. cit.

Distrib.: Rare in valleys and streams (Dhore & Joshi, op. cit.).


A large tree; young shoots yellowish, aerial roots few or absent. Leaves laxly spiral, ovate or elliptic, thinly coriaceous, pale beneath, base rounded or subacute, apex caudate–acuminate; lateral nerves c 10 pairs, distinct, petioles 2.0–2.5 cm long, stipules pubescent, ovate, c 0.6 cm long. Receptacles sessile, binate, obovoid, depressed at apex, yellowish–green, dotted when ripe, basal bracts 3, ovate–acute. Male flowers few, sessile, tepals 3, broadly ovate. Galls and female flowers with yellowish–white ovaries, stigma simple. Achenes ovoid or obovoid.

Receptacles: November–May.

An epiphytic straggler or shrub, with copious aerial roots, often enclosing the host tree with a net work of branches. Leaves oblong, ovate–lanceolate, 10–20 x 3.5–10.0 cm, base often unequal sided, apex obtuse, acute or subcaudate, hispid above, minutely beneath; basal nerves 3, petioles 0.6–1.3 cm long, stipules ovate–lanceolate. Receptacles axillary in pairs, globose, scabrid; basal bracts 3. Male flowers near orifice; tepals linear, fleshy, hairy; stamen 1. Achenes obliquely ovoid, papillose.

Receptacles: April–May.


A large, deciduous tree. Leaves ovate–oblong, coriaceous, brightly green and shining above, base rounded or subacute, apex shortly, often abruptly acuminate; lateral nerves 10–12 pairs, petiole 4–5 cm long, stipules ovate–lanceolate; bud–scales numerous, linear– lanceolate, caducous. Receptacles sessile, in clusters of 2–6, 0.5 cm across; basal bracts 3, broad, bífid. Male flowers sessile, scanty near orifice, tepals 3, ovate–acuminate; stamen 1. Galls and females with 3–4 tepals. Achenes obovate, style long; stigma cylindric.

Receptacles: April–May.
Illus. : King, op. cit.; Talb. op. cit.


1. Figs pedunculate
   1. Figs sessile


   Trees, with aerial roots. Leaves elliptic or ovate–lanceolate, 15–17 x 5.0–6.5 cm, base rounded to truncate, apex acuminate, often undulate at margins; basal nerves 6–10 pairs, petioles c 7 cm long. Figs axillary, in pairs, with peduncles 1–7 cm long, globose, c 1.5 cm across; basal bracts 3, ovate, glabrous or puberulous; internal bristles abundant, white. Male flowers sessile; tepals 2–3, free or shortly gamophyllous. Galls with spatulate to linear–lanceolate tepals. Females with red–brown ovary, sessile or stalked.

   Receptacles : October–August.

   Illus. : Wight, Ic. t. 665. 1840; King, op. cit.; Talb. op. cit. (F. *infectoria*).


   Large deciduous trees with few or numerous tufts of aerial roots closely pressed to trunk and with thicket of suckers from base. Leaves variable, spirally arranged, ovate–elliptic to elliptic, 8–19 x 3.5–9.0 cm, base rounded to cuneate, apex obtusely acuminate with often sinuous
margins. Figs axillary, paired, ripening whitish, then pink to purple and black, basal bracts 3, persistent. Male flowers sessile, in 2–3 rings; tepals 2–3, acute, free. Galls sessile or shortly pedicellate; tepals 3–4, reddish, free. Females sessile, tepals 3–4, free.

_Distrib._: Frequent in deciduous forests. Chandrapur, Dhule, Jalgaon, Pune, Raigad, Satara, Thane.

**Plecospermum** Trecul


Large, woody climbers; trunks c 15 cm across; bark fuscous brown, fissured, rugged, transversely cracked; latex white, new shoots with scale leaves and reflexed axillary spines. Leaves elliptic–obovate, base cuneate, apex acute or subobtuse, entire along margins, subcoriaceous; lateral veins 4–7 pairs, petiole 4–9 mm long, stipules minute. Male heads c 10 mm across peduncles 12–20 cm long, puberulous or glabrous; bracts lanceolate, subulate, puberulous; flowers sessile. Female heads with 1 style, 1–2–seeded. Syncarp 10–15 mm across, bluish–white, subglobose with fibrous endocarp.

_Fls. & Frts._: February–April.

_Illus._: Corner, op. cit.

_Distrib._: In low land forests, rare. Bombay.

**Streblus** Lour.


Small, rigid, evergreen trees; branchlets pubescent or tomentose. Leaves ovate, obovate or rhomboid, 2.5–10.5 x 1.5–3.0 cm, scabrid on both sides, base acute apex acute or acuminate, irregularly toothed along margins in upper half; lateral nerves 4–6 pairs, petioles 0.5 cm long, stipules obliquely lanceolate. Flowers dioecious; males 2–3 bracteolate, in short, peduncled, globose heads; sepals 4, pubescent; stamens 4; females axillary, solitary or fascicled, 2–bracteolate;
perianth 6–fid. Fruits yellow, of 1–seeded berries, enclosed in persistent perianth.


*Distrib.* : In dry open forests usually along river banks, in hedges, common. Bombay, Chandrapur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg (S.M. Almeida, 1990), Thane.

**CULTIVATED SPECIES :**


Medium sized trees; branches spreading. Leaves pinnately lobed, 10–30 x 6–12 cm, ovate, coriaceous. Inflorescences of axillary spikes; male spikes 15–20 cm long, female spikes ovoid. Flowers greenish. Fruits acuminate.


*Distrib.* : Probably native of Pacific Islands, New Guinea, widely cultivated in the tropics, planted in parks and gardens. Well known as *‘Bread fruit tree’*, fruits are eaten as vegetables. Bombay, Raigad, Ratnagiri, Sindhudurg, Thane.


Trees, 12–15 m tall; branchlets subtomentose. Leaves 7.5–20.0 cm long, obliquely ovate or oblong, acuminate at apex, entire or sinuately 2–3–lobed or toothed along margins, membranous, scabrid above, pubescent beneath. Males spikes 5.0–7.5 cm long, cylindric, pubescent. Female spikes capitate, tomentose. Achenes fleshy, red, shining.


*Distrib.* : Cultivated in gardens. Pune.

Trees, c 30 m tall. Leaves up to 57 x 25 cm, oblong or oblong–obovate, acuminate at apex, cordate at base, stiffly membranous to coriaceous; lateral nerves 12–16 pairs. Male heads usually bigeminate in groups of 4. Female heads subsessile. Syncarps 5–9 x 1.5–2.5 cm, orange–red, pulpy. Seeds straw colour.

*Illus.* : Corner, op. cit.

*Distrib.* : It occurs from Mexico to Columbia. Known as 'Panama rubber'.Introduced in India for rubber and also as avenue tree. Thane.


A large deciduous tree c 15 m tall. Leaves oblong–elliptic, densely and finely puberulous beneath.

*Distrib.* : Cultivated in gardens. Thane.


Small, much–branched trees; bark dull white, trunk with distant horizontal wrinkles. Leaves 10–20 x 5–10 cm, ovate–lanceolate, acute or bluntly acuminate at apex, cuneate and forming a pouch at base, entire along margins; petioles 3–10 cm long.


*Distrib.* : Plant with pouched leaves, grown in gardens. Marathwada (Naik, op. cit.).


Trees, large; crown umbrella–like, branches drooping. Leaves 6.0–12.5 x 2.5–6.0 cm, elliptic–ovate, abruptly acuminate at apex,
rounded at base, entire along margins, coriaceous. Receptacles solitary, subglobose to pyriform. Male flowers shortly pedicellate; female flowers sessile; gall flowers pedicellate.

*Fls. & Frts.*: February–April.

*Distrib.*: Planted in gardens. Marathwada (Naik, op. cit.).


Trees, 5–10 m tall, deciduous; branches pubescent. Leaves 8–13 x 8–17 cm, broadly ovate, thick, cordate at base, usually 3–5–lobed, hairy on both sides. Receptacles pyriform, 3–5 cm across, in axils of leaves, ripens greenish–purple, finely hairy outside. Achenes 1.5–2.0 cm long, ovoid, brown.

*Receptacles*: March–May.

*Distrib.*: It is a native of Syria and Palestine, grown on small scale in orchards. Ahmednagar, Marathwada (Naik, op. cit.), Pune, Satara.


Small or medium sized, evergreen trees. Leaves 15–20 x 7–10 cm, elliptic, subacute at apex, rounded or acute at base, coriaceous, deep glossy green or variously variegated; petioles 2–3 cm long. Receptacles axillary and on twigs below leaves, ripening yellow–ochre. Seeds subrugose.

*Illus.*: King, op. cit.; Corner, op. cit.

*Distrib.*: Known as ‘Indian rubber tree’. It is a native of Himalaya, Assam and Malaya, grown in gardens. Bombay, Marathwada (Naik, op. cit.), Pune, Raigad, Sindhudurg (S.M. Almeida, 1990).


Small trees or epiphytes. Leaves upto 2.5–10 cm, orbicular or broadly elliptic–ovate, abruptly acuminate at apex, rounded to cordate at base, entire along margins, membranous. Receptacles axillary, solitary, occasionally paired, 1.2–2.5 cm across, globose or pyriform, ripens greenish–yellow, smooth, puberulous or tomentose, hispid within.
Illus. : King, op. cit.; Corner, op. cit.

**Distrib.** : Distributed in Ceylon, India, Burma, South China to Sumatra, Java and Borneo. Cultivated in gardens. Bombay.


Perennial, woody climbers. Leaves : lower ones 1.5–3.5 x 1.0–2.5 cm, ovate or ovate–oblong, acute at apex, cordate and unequal sided at base, petioles 6–10 mm long; upper ones often much longer, up to 8 x 4 cm, petioles longer. Receptacles axillary, mostly solitary, ripening purple to black. Seeds subterete.

Illus. : King, op. cit.

**Distrib.** : It is a native of China and Japan, cultivated as a cover on walls. Marathwada (Naik, op. cit.), Sindhudurg (S.M. Almeida, 1990).


Trees, 6–12 m tall, deciduous; young parts pubescent. Leaves 5–15 x 3–12 cm, ovate, membranous, glabrous above, pubescent on nerves beneath, cordate to base, toothed along margins, entire or 3–lobed in upper half; petioles 1–4 cm long. Inflorescence of drooping, axillary, 1–3 cm long catkins. Tepals green, persistent and becoming fleshy in females. Sorosis cylindric, 1–3 cm long, dark purple or black.

**Fls. & Frts.** : July–March.

Illus. : Naik, op. cit.


Medium sized trees; shoots, stipules and peduncles softly hairy. Leaves 7.5–17.5 cm long, ovate or ovate, cuspidate, shortly acuminate at apex, rounded or cordate at base, finely serrate–toothed along
margins, membranous; petioles pubescent. Male spikes 10.0–12.5 cm long, villous. Female spikes as long as male. Fruits hispid, yellowish–white, sweet.

Fls. & Frts. : March–April.


CASUARINACEAE
(P. Venkanna & M. J. Kothari)

CASUARINA L. ex Adans.


Tall trees, c 10 m high; branches modified into cladodes. Leaves reduced to scales, in whorls of 6–7. Flowers small, unisexual, monoecious; males in 1–3 cm long spikes and branches in heads; perianth 1–2, scarious in male and absent in female flowers. Carpophores pubescent, cone like.

Fls. & Frts. : February–March.


Distrib. : Widely distributed from south East Asia to Pacific Islands to North and North East Australia. Cultivated widely in tropics, mostly naturalised in India.

Notes : Fosberg & Sachet (Smithsonion Contrib. Bot. 24: 4. 1975) treated this species as a synonym under Casuarina litorea L. But Friis (l.c.) has shown that the name Casuarina equisetifolia L. was validly published by Linnaeus in 1759. According to Friis (l.c.), "Casuarina litorea L. ex Fosberg & Sachet appears to be an illegitimate superfluous name, under Art. 63.1 (ICBN); it includes the type of a name (C. equisetifolia L.) which ought to have been adopted under the rules."

CULTIVATED SPECIES :

Casuarina glauca Sieber ex A. DC. in DC. Prodr. 16(2): 334. 1868.
Trees, up to 15 m high. Leaf sheath with 10–15 teeth. Male spikes 1.2–2.5 cm long. Fruit cones subglobose, ovoid or oblong, c 1.2 cm in diam.

Notes: An Australian species, often cultivated along river banks and swampy places. Thane.

SALICACEAE

(P. Venkanna & M. J. Kothari)

SALIX L.

1 Capsules glabrous ... S. tetrasperma
1. Capsules densely woolly ... S. ichnostachya


Deciduous trees, much branched, 6–12 m high; bark rough with deep vertical furrows; young shoots silky, later becoming glabrous. Leaves 7.5–15 x 2.5–5.0 cm, lanceolate or elliptic–lanceolate, base acute, apex acute or acuminate, serrulate along margins, glaucous beneath. Catkins densely woolly, sessile or pedicelled, mostly androgynous, males sparsely flowered, females dense. Male flowers: stamens 6–8, bracts ovate–oblong, obtuse, concave, densely woolly. Female flowers: bracts much smaller than in male, suborbicular, ovary sessile, stigma short, 2–fid. Capsules globose–ovoid.

Fls. & Frts.: October–December.

Illus.: Wight, Ic. t. 1953. 1853.

Distrib.: Rare along river banks. 'Konkan' (Cooke, op. cit.).


Evergreen shrubs, c 1 m high; branches drooping, young shoots glabrous to densely greyish–white, hairy; stipules small, early caducous. Leaves elliptic–lanceolate, 8–16 x 2.5–6 cm, subcoriaceous, glaucous below, base narrowed to rounded, apex acute to acuminate, margins serrulate–denticulate, rarely subentire; petiole 1–3 cm long. Catkins on short twigs, 0.5–2 cm long, lax–flowered, males pendulous, females straight. Male flowers: stamens free, 4–15, filaments thin,
white–haired at base. Female flowers: ovary conical with round base, short haired. Fruits c 7 mm long, hairs white–silky, c 5 mm long. Seeds 4, ellipsoid, c 2 mm long, greyish–black with lighter rhaphe.

*Fls. & Frts.* : September–December.


**CERATOPHYLLACEAE**

(P. Venkanna & M. J. Kothari)

**CERATOPHYLLUM L.**

1. Leaves 2–times forked, segments 2, 3 or 5, stiff; fruits with 1 apical and 2 basal spines ... *C. demersum*
1. Leaves 3–4 times forked, segments 7–12, flaccid; fruits with 1 apical spine only ... *C. submersum*


Herbs, aquatic entirely submerged, branching, 15–90 cm long. Roots lacking. Leaves whorled, 6–10 at a node, dissected, 1.2–2.5 cm long. Flowers solitary in the axil of one leaf of a whorl. Perianth segments 8–12 cleft, arranged as involucre. Male flowers with 10–15 perianth segments, with a convex receptacle and 10–20 extrorse, 4–locular stamens with short filaments bearing large, sessile, oblong–linear anthers. Female flowers with a solitary pistil, covered by 10–15 bristle pointed segments; ovary ovate, 1–locular, with pendulous ovule; style filiform. Fruit a laterally compressed achene, 5–7 mm long, smooth, muricate or minutely tubercled.

*Fls. & Frts.* : January–April.


Herbs, submerged, rootless, monoecious, aquatic c 1 m long, much branched, pale green, rough; stem cylindrical, with 0.5–2.8 cm long internodes. Leaves 1.75–2.5 cm long, 6–10 in whorl, 3–5–palmatipartite, with filiform, minutely toothed segments. Flowers unisexual, axillary, solitary. Male flowers: perianth segments 6–10, membranous; stamens 2–9, free. Female flowers: perianth segments 6–10, style short, persistent. Fruit a nut, c 4 mm long, ellipsoid or oval, compressed, lenticulate, minutely tubercled, the style thickened into a 0.5 mm long apical, soft, spine–like structure, purple, black when ripe.

*Fls. & Frts.* : October–November.


*Distrib.* : Submerged in shallow water. Thane (Billore, op. cit.).
ADDENDA & CORRIGENDA

(P. Lakshminarasimhan)

DICOTYLEDONES

ZYGOPHYLLACEAE


Undershrubs, prostrate to suberect; branches quadrangular, sulcate, striate, glandular–pubescent. Leaves opposite, 1 and 3–foliolate, glandular–hairy; leaflets 0.4–1.5 cm long, ovate–oblong, sometimes slightly falcate, fleshy, long mucronate; stipular spines straight, rarely slightly curved, glandular–pubescent. Flowers c 1.1 cm across, pale pink, fading white, solitary, axillary; sepals glandular–hairy. Capsules c 4 x 3 mm, pyramidal, pubescent, separating into five 1–seeded cocci when dry, tipped with persistent style.

*Fls. & Frts.*: February–May.

*Distrib.*: Dhule (D. A. Patil, op. cit.).

FABACEAE


Climbers, much branched. Leaves 8–12 cm long; leaflets opposite, membranous, 12–16 pairs, 2–4 x 0.6–0.8 cm, oblong, apex rounded, apiculate, glabrous above, sparsely silky on undersurface. Flowers pink or pale blue, in many flowered long peduncled lax racemes. Pods 5–6 x 0.9–1 cm, linear, flat, incurved. Seeds 8–12, c 4 x 3 mm, oblong, compressed, black.


*Illus.*: Almeida, op.cit.
Distrib. : Sindhudurg (Almeida, op.cit.).


Herbs, 15–20 cm high. Leaves 2.5–5 cm long, oblong–lanceolate, obtuse at apex. Pods 1–2–jointed, included in calyx or slightly exserted.

**Fls. & Frts.** : September–October.

Distrib. : Bombay, Pune & Ratnagiri (Almeida, op.cit.).


Herbs, 1.5–2 m high, robust, annual. Leaves oblong, mucronate at apex. Racemes axillary, compact.

**Fls.** : September–October.

Distrib. : Bhandara, Bombay, Chandrapur, Khandesh, Nasik, Raigad, Ratnagiri & Thane (Almeida, op.cit.).


Herbs, up to 40 cm high, erect, branched; stems striate, with few scattered brown hairs. Leaves 2.5–5 x 0.5–0.8 cm, oblong–lanceolate, acute at apex, rounded at base, hairy on nerves beneath. Flowers alternate, binate, on distant raised collars on rachis, bracteate. Pods moniliform, 4–5–segmented, segments almost fully exserted except basal one segment which is partly covered by persistent calyx lobes.

**Fls. & Frts.** : December–January.

**Illus.** : Almeida, op.cit. opp. p. 17, f.

Distrib. : Chandrapur (Almeida, op.cit.).


This variety differs from typical variety in hairy erect herbaceous nature of plants, leaflets being linear–lanceolate, racemes being slender, bracts pubescent outside and pods exserted.
**Fls. & Frts.**: October–November.

**Distrib.**: Rare species known from a single specimen (Almeida, op.cit.).


Trees, 5–6 m tall, armed; stem weak with vertical fissures. Leaves sessile, alternate; leaflets usually 5, aggregated, obovate, retuse at apex. Flowers bright orange, in fascicles at ends of branches. Pods jointed, each joint single seeded.

**Fls. & Frts.**: Throughout the year.

**Distrib.**: Cultivated in Victoria gardens, Bombay (Almeida, op.cit.).


Woody climbers, upto 6 m long, perennial. Leaves 3–foliolate; leaflets coriaceous, 1.9–4.2 x 1.5–3.4 cm, obovate or rounded, apex obtuse or subacute, base cuneate, ventral surface pubescent. Racemes lax, 1–4–flowered. Flowers orange or yellow; calyx pubescent; ovary with short hairs. Pods 1.5–3.5 x 0.7–1.2 cm, oblong, densely hairy.

**Fls. & Frts.**: October–January (April).

**Illus.**: Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 82. 1982 (*Atylosia albicans*).

**Distrib.**: Bombay (Almeida, op.cit.).


Herbs, slender, erect, finely downy upwards. Leaflets rigidly subcoriaceous, the end one 2.5–4 x 0.6–1.2 cm, with two linear or lanceolate spreading or slightly ascending 2–3–nerved halves, apex bristle tipped, broadly emarginate. Joints of pods 4–5.

**Fls. & Frts.**: August.
**Distrib.** : Cultivated in gardens (Almeida, op.cit.).


This variety differs from the typical variety in having lanceolate leaves with somewhat acuminate apices.

*Fls.* : September–October.


*Distrib.* : Bombay (Almeida & Chaturvedi in Almeida, op.cit.).


Shrubs, small; branches ascending, arcuate. Leaflets obovate, thick and fleshy, obtuse at apex, cuneate at base. Racemes terminal and lateral, 20–30–flowered, up to 15 cm long. Calyx silky hairy; corolla yellow. Pods shortly stalked, 10–20—seeded.

*Fls.* & *Frts.* : January.

*Distrib.* : Bombay (Almeida, op.cit.).


Herbs, prostrate or procumbent, branched from base; branches densely hairy. Leaves simple, alternate, c 2 x 0.5 cm, rounded, shortly acute at apex, cordate–deltoid, slightly grooved at base, hairy. Flowers few, 1–2 arising on slender branches from axils of leaves towards apical portion of branches; calyx hairy.

*Fls.* : September.


*Distrib.* : Pune (M.R. & S.M. Almeida in Almeida, op.cit.).

*Notes* : It differs from typical variety in leaves being deltoid–cordate in shape and not being mucronulate at apex.


*Fls.* : October.
Distrib. : Bombay (Almeida, op.cit.).

Notes : There is only one specimen in BLAT which is devoid of flowers and fruits. It has only few leaves. It is a Brazilian species (Almeida, op.cit.).


Herbs, 15–60 cm high, annual; branches copious, firm, clothed with appressed hairs. Leaves oblanceolate, obtuse at apex, subcuneate at base, with short silky hairs. Racemes terminal, elongated, 6–20–flowered, 15–30 cm long. Calyx silky brown; corolla pale yellow. Pods ovoid–oblong, as long as calyx, 8–10–seeded, black.

**Fls. & Frts.** : August–November.


**Distrib.** : Bombay (Almeida, op.cit.).


Herbs, diffuse, profusely branched. Leaves trifoliolately compound, stipulate; leaflets 2–2.5 x 0.1–0.13 cm, linear–oblong, acute at apex and base, entire along margins. Flowers axillary or terminal on slender pedicels on slender branches. Pods stalked, 1.2 x 0.8 cm, rounded, veined along sutures, compressed, flattened, grooved, brown. Seeds 5–6, flattened, grooved on one side.

**Fls. & Frts.** : December.


**Distrib.** : Pune (M.R. & S.M. Almeida in Almeida, op.cit.).

Notes : It differs from typical variety in having lanceolate or linear–oblong leaflets and lamina being almost glabrous on both sides.


Undershrubs, 1–1.5 m tall, erect. Leaves sessile, 8–10 cm long, oblanceolate–oblong, obtuse or subacute at apex, cuneate at base, shining on both sides with silky hairs. Flowers few at ends of branches; standard silky on back. Pods oblong, bright brown, as long as calyx, 5–6–seeded.

Herbs, 0.5–1 m tall, erect, perennial, branched. Leaves trifoliolate; leaflets 1–2.5 cm long, obovate–oblong, apex obtuse, often deeply emarginate, glabrous above, obscurely silky below. Racemes copious, terminal and lateral, 10–15 cm long, 12–40–flowered. Calyx finely silky; corolla yellow. Pods 4 mm long, subquadrangular, sessile, silky.

**Fls. & Frts. : October.**

**Illus. :** Wight, Ic. t. 421. 1841.

**Distrib. :** Aurangabad & Pune (Almeida, op.cit.).


Herbs, 0.6–1 m tall, suffruticose, perennial; branches with fine hairs. Leaves trifoliolate; leaflets 0.9–1 cm long, apex obtuse, emarginate, silky on both sides. Racemes copious, terminal and lateral, 3–6–flowered; bracts persistent. Corolla yellow. Pods 4 mm long, pubescent.

**Distrib. :** Aurangabad (Almeida, op.cit.).


Herbs, erect, branched, hairy; stems striate. Leaves simple, alternate, 5.5–6 x 0.8–1 cm, oblong, minutely mucronate at apex, shortly petioled. Inflorescences of terminal racemes, more than 10–flowered. Standard white; ovary with appressed hairs. Pods shortly stalked, 1.3–1.5 x 0.8 cm, dorso–ventrally compressed, brown with velvety hairs all over, grooved in between seeds. Seeds 2–3, with brownish black integument.

**Fls. & Frts. :** October–November.

**Illus. :** M.R. & S.M. Almeida in Almeida, op.cit.
**Distrib.** : Pune (M.R. & S.M. Almeida in Almeida, op.cit.).

**Notes** : It differs from *C. madurensis* Wight in having white vexillum and pods with 2–3 seeds as compared to 10–12 seeds in *C. madurensis*. It differs from *C. berteroanum* DC. in having mucronulate leaf apex, glabrous vexillum and exserted pods.


Shrubs, climbing. Leaves alternate, imparippinate, stipulate; leaflets 7–9, opposite, 6–11.3 x 3–5.5 cm, obovate, apex obtuse, occasionally shortly cuspidate, cuneate at base, entire along margins, subcoriaceous to coriaceous; lateral nerves 8–10 pairs. Inflorescences racemose. Pods flat, 5–12 x 2.2 – 2.7 cm, oblong, winged on both sutures, faintly veined, 1–3–seeded.

**Fls. & Frts.** : April–May.

**Distrib.** : Danoli, Sindhudurg Dt. (Almeida, op.cit.).


Climbers, large, perennial. Leaves compound; leaflets 9, long–stalked, 4–5 cm long, oblong, membranous, apex obtuse, emarginate. Racemes copious, axillary, c 15 cm long. Flowers brightly red coloured.

**Illus.** : Almeida, op.cit.

**Distrib.** : Rare. Konkan (Almeida, op.cit.).


Herbs, c 30 cm high, straggling, branched from base; stems and branches slender, slightly hairy. Leaves trifoliolate, ovate– lanceolate. Flowers white with bluish tinge, in axillary and terminal lax panicles. Pods 2–3 cm long, reticulately veined, indented, deeply on both sutures, 3–4–seeded.

**Fls. & Frts.** : August–October.

**Illus.** : Almeida, op.cit.
**Distrib.** : Pune (Almeida, op.cit.).


Shrubs; branches terete, woody, clothed with short spreading hairs when young. Leaves 1–3–foliolate; leaflets 2.5–5 cm long, rotundate–cordate, subcoriaceous, glabrous above, densely hairy below with white silky hairs. Racemes copious, simple, axillary and terminal, subsessile, c 2.5 cm long. Pods 9–12 mm long, obscurely hairy, 3–5–jointed.

**Fls. & Frts.** : August–October.

**Distrib.** : Rare in Maharashtra (Almeida, op.cit.).


Herbs, twining; stems filiform, finely downy. Leaflets round–rhomboidal, glabrescent above, obscurely downy and gland–dotted beneath, terminal 2.5–4 x 2.5 – 4 cm, subacute at apex. Flowers 1–4, on a short peduncle, in axils of leaves; calyx grey–downy; corolla reddish. Pods 4–5 x 1 cm, linear, recurved. 6–8–seeded.

**Fls. & Frts.** : August–September.

**Distrib.** : Maharashtra (Almeida, op.cit.).


Trees; branches with few prickles. Leaves trifoliolate; leaflets as broad as long, membraneous, terminal sometimes 45–50 cm broad, acuminate at apex, truncate, cordate at base. Flowers red. Pods firm, curved, 15–20 x 2 cm, 4–6–seeded, narrowed at both ends.

**Fls. & Frts.** : March.

**Distrib.** : Bombay (Almeida, op.cit.).

Trees; branches pale green, prickles black. Leaves trifolilolate; leaflets twice as long as broad, subcoriaceous, terminal up to 15 cm long, ovate or obovate–oblong, obtuse or subacute at apex. Calyx velvety; standard deep scarlet. Pods 15 cm long, distinctly torulose, narrowed into stalk, 6–8–seeded.

Fls. & Frts.: January–March.

Illus.: Wight, Ic. t. 47. 1840 (E. ovalifolia).

Distrib.: Victoria garden, Bombay (Almeida, op.cit.).


This variety comes intermediate between typical variety and var. tenella as regards to the length of pedicels and size of bracts. Pedicels in this variety are shorter than in varieties tenella and longer than typical variety. Bracts are fewer than typical variety and more than variety tenella.

Fls.: October–November.

Distrib.: Bombay, Nasik & Thane (Almeida, op.cit.).


1. Herbs; stems prostrate ... var. uniflora
1. Undershrubs; stems erect ... var. aspalathoides

var. aspalathoides.

Undershrubs, 30–40 cm high, erect; branches woody, rigid, terete. Leaves imparipinnate; leaflets 1–5, 2–6 x 0.5–2 mm, linear, oblanceolate to obovate–oblong. Flowers dark pink, 3–4 mm long, solitary or sometimes paired, axillary. Pods 1.2 – 1.5 x 0.1–0.2 cm, linear, turgid, 6–8–seeded.
Fls. & Frts.: June–December.

Illus.: Wight, Ic. t. 332. 1840; Sanj. in Hajra et al. op.cit.

Distrib.: Deccan (Almeida, op.cit.).


Herbs, perennial, prostrate; stems purple. Leaves sessile, 3–7 (rarely 1) –foliolate; leaflets 3–9 x 1–2 mm, linear, oblanceolate, acute or obtuse at apex, cuneate at base, with a few appressed hairs. Flowers red or pink, solitary on long, filiform pedicels. Pods 0.9–1.3 x 0.2–0.3 cm, linear or subcylindrical. Seeds 4–7, cubical, yellowish–brown, smooth.

Fls. & Frts.: October–December.

Illus.: Wight, Ic. t. 333. 1840; Sanj. in Hajra et al. op.cit. (I. uniflora).

Distrib.: Maharashtra (?) – Sanjappa (op.cit.).


Undershubs, 30–120 cm high, erect, canescent; branches slender. Leaflets membranous, obovate, mucronate at apex, sparsely villous, terminal petiolate, glands prominent. Racemes up to 6 mm long. Flowers solomon red, 3–3.5 mm long. Pods 1.2–1.5 cm long, linear or slightly moniliform, brown with appressed white pubescence, torulose, with sharp, recurved apex. Seeds 2–4, brown.

Fls. & Frts.: September–October.

Illus.: Sanj. in Hajra et al. op.cit.

Distrib.: Osmanabad (Almeida. op.cit.).


*Fls. & Frts.* : July–September.


*Fls. & Frts.* : September–December.


Shrubs, 0.5–1.5 m tall; branches erect, striate, covered with appressed hairs. Leaves 5–7.5 cm long; leaflets 11–13, opposite, 1–2 x 0.5–0.6 cm, obovate or narrowly elliptic, obtuse or mucronate at apex, obtuse to cuneate at base. Racemes axillary, sessile. Flowers pinkish or red, 3.5–4.5 mm long; calyx pubescent. Pods 1–1.5 x 0.25–0.3 cm, deflexed, subcylindrical, curved upwards, 4–5–seeded with broad sutures; endocarp red, spotted. Seeds subcylindric, truncate at both ends, reddish–brown.

*Fls. & Frts.* : August–December.

*Distrib.* : Powai, Victoria garden–Bombay (Almeida, op.cit.).


*Fls.* : July.

*Distrib.* : Cultivated in gardens. Bombay (Almeida, op.cit.).


Herbs, 40–60 cm high, perennial, pubescent. Flowers generally blue, also pink and white. Pods 4 cm long.


*Distrib.* : A native of America. Victoria garden–Bombay (Almeida, op.cit.).


Herbs, up to 1.5 cm long, perennial. Flowers purplish with blue wings, in compact racemes. Pods 4 cm long, woody.

*Fls. & Frts.* : June–September.

*Distrib.* : Pune (Almeida, op.cit.).


Herbs, annual; stems 30–40 mm long. Leaflets 6–9 cm long, obovate, cuneate at base. Peduncles 1–2–flowered. Pods 3 mm broad, subglobose, with 4–5 sharply muricated spirals.

*Fls. & Frts.* : March–April.

*Distrib.* : Pune (Almeida, op.cit.).

Twiners, woody, perennial. Leaves up to 18 cm long; leaflets 6–12 x 3–8 cm, elliptic–oblong or ovate–oblong, thinly coriaceous, acuminate at apex. Flowers in short, 10–15–flowered racemes or panicles; calyx downy and with a few orange coloured bristles. Pods 8–12 x 3–5 cm, winged along both sutures with 10–14 parallel plaits, clothed with orange–coloured irritant bristles. Seeds usually 2 (rarely 1), broadly ellipsoid, hilum extending half round the edge.

_Fls. & Frts._ : October–December.

_Distrib._ : S. Konkan (Almeida, op.cit.).


Trees, 10–15 m tall; branches drooping. Leaves alternate, pinnate; leaflets alternate 8–10, oblong, apiculate at apex. Flowers white with yellowish spots on standard, in racemes arising from axils of leaves. Pods 8–9 cm long, obliquely spatulate, winged, indehiscent with a single seed at apex. Seeds kidney shaped.

_Fls. & Frts._ : April–May.

_Distrib._ : It is a native of San Salvador and Peru. Cultivated in gardens. Bombay (Almeida, op.cit.).


Trees, tall; branches ascending. Leaves 15–20 cm long; leaflets 7–11, 5–10 cm long, ovate, acute to acuminate at apex, rounded or deltoid at base. Racemes terminal and axillary, clothed with brown pubescence. Calyx finely brown silky; corolla yellow. Pods orbicular, c 5 cm across, winged and beaked.

_Fls. & Frts._ : March–May.

_Illus._ : Wight, Ic. t. 246. 1840 (_P. dalbergioides_ Roxb. ex DC. Prodr. 2: 418. 1825); Bedd. Fl. Sylv. t. 23. 1870.

_Distrib._ : Mostly cultivated. Bombay (Thoth. op.cit.), Dhule (Almeida, op.cit.), Thane (Thoth. op.cit.).

Undershrubs; branches erecto–patent, shortly hairy. Leaflets 2.5–5 cm long, obovate or oblong, obtuse or subacute at apex, thinly pilose. Flowers in pairs; pedicels with small persistent bract at base; calyx densely silky. Pods 1–2 cm long, oblong, turgid, 2–seeded.

**Fls. & Frts.** : September–October.

**Distrib.** : Pune & Satara (Almeida, op.cit.).


Woody shrubs or small trees, 4–6 m tall; stem and leaves covered with velvety–silvery pubescence. Leaves 14–30 cm long; leaflets subopposite, subsessile, 0.5–3.5 x 0.2–0.8 cm, linear–oblong or linear–lanceolate, rounded at apex, tapering at base, entire along margins, deeply appressed hairy. Flowers yellow, 2–5 cm across, in 10–12 cm long axillary racemes. Pods tetragonous, thickened on angles, shortly beaked. Seeds subquadrate, shining.

**Fls. & Frts.** : November–February.

**Distrib.** : Bombay (Almeida, op.cit.).


Herbs, 1–1.5 m high, erect, branched; stems white, slightly woody at base; branches slender, distant. Leaflets 40–60, shortly stalked, ovate, entire, with a single midvein with a prominent pulvinus at base. Inflorescences of axillary racemes. Flowers large, yellow with a purple centre on vexillum. Pods linear, raised on stalks, acuminate, sutures thickened. Seeds many, light brown.

**Fls. & Frts.** : August.

**Distrib.** : Weed in RCF campus Thal, Mahadesbhaatle, Sindhudurg dt. (Almeida, op.cit.).

Shrubs, up to 2 m tall, spinescent; branches spreading, pubescent. Leaves 2.5–3 cm long, shortly petioled; leaflets 11–15, sessile elliptic, obtuse and mucronate at apex, pubescent beneath. Flowers in short 6–12–branched racemes on terminal short branchlets; calyx violet. Pods c 5 cm long, long beaked.

*Fls. & Frts.*: June–July.

*Distrib.*: Native of China, cultivated in gardens (Almeida, op.cit.).


Small trees, 9–10 m tall, branched. Leaves 10–15 cm long; leaflets 7–9, 2.5–6 cm long, elliptic or obovate–oblong to oblong, rounded or emarginate at apex, cuneate at base, silky pubescent when young, dark yellowish–green above. Inflorescences of one sided racemes, 5–8 cm long. Flowers violet–blue, standard marked near base with a few dark spots, fragrant. Pods white, 2.5–18 to 1–2 cm, tomentose, terete. Seeds bright scarlet.

*Fls. & Frts.*: July–August (also January–March)

*Distrib.*: Native of Texas and Mexico, cultivated in gardens (Almeida, op.cit.).


Shrubs; branches divaricate, argenteo–canescent. Leaves 2.5–4 cm long; stipules hairy; leaflets 1–3 x 0.6–0.7 cm, oblanceolate, apex deeply emarginate, base cuneate, light green and glabrous above, argenteo–canescent with appressed hairs beneath. Flowers usually 1–2, in axils of leaves; pedicels silky hairy; calyx silky outside; standard densely hairy on bark; ovary densely hairy. Pods 4–5 x 0.5 cm, linear, flattened, much curved upwards, densely hairy, apiculate. Seeds 6–8, 3–4 mm long, oblong–ellipsoid.

*Fls. & Frts.*: August–November.
Distrib. : Akola, Aurangabad, Konkan & Solapur (Almeida, op.cit.).


Herbs, erect, stout; stems and branches covered with short brownish silky hairs. Leaves imparipinnately compound; leaflets opposite, c 2 x 0.4 cm, linear, spathulate, rounded at apex, narrowing to base into short petiole, entire along margins, erect hairy all over; midvein prominent on ventral surface, covered by short, stiff, erect yellowish hairs all over; lateral veins 10–12, prominent on upper surface. Inflorescence of axillary and terminal racemes. Vexillum velvety–hairy all over outside. Pods 5–6 x 0.5 cm, broadly flattened, slightly curved at apex, densely hairy.

**Fls. & Frts.** : July.

**Illus.** : Almeida, op.cit. back of p. 145, f. A–F.

**Distrib.** : Mumbai (Almeida, op.cit.).

**Notes** : It is allied to *T. villosa* Pers. but is having unequal calyx lobes and almost straight pod. It is also allied to *T. noctiflora* Baker but differs from it in size and shape of leaflets.


Herbs, c 60 cm high, annual. Leaflets oblong. Flowers white or yellowish–white, in globular heads.

**Fls.** : Throughout the year.

**Distrib.** : Pune (Almeida, op.cit.).


Herbs, prostrate, spreading, perennial, up to 30 cm long; stems numerous, rooting at nodes. Leaves trifoliolate; leaflets 1–1.5 x 1.5–2 cm, obovate, emarginate at apex, denticulate along margins. Flowers white, 1 cm long in dense clusters on pubescent, axillary peduncles; calyx ribbed with bristles; petals white, at times with a pinkish tinge. Pods usually enveloped in calyx–tube. Seeds 2–4, ovoid.

**Fls. & Frts.** : Throughout the year.
Distrib. : Victoria garden, Bombay (Almeida, op.cit.).


Herbs, twining; stems stout. Leaflets 6–6.5 x 3–4 cm, ovate, deltoid, acute–acuminate at apex, cuneate at base. Racemes 2–many, tubercled, 4–12 cm long. Corolla reddish; style bearded below stigma. Pods up to 9 cm long, compressed, slightly recurved, 6–8–seeded.

**Fls. & Frts. :** October–November.

Distrib. : Sindhudurg (Almeida, op.cit.).


Herbs, c 1 m high or more, annual. Leaflets ovate, acuminate at apex. Flowers yellow. Pods 10 cm long. Seeds green.

**Notes :** Included on the authority of Almeida (op.cit.) who has not given any locality.


**Notes :** It has been included on the authority of Almeida (op.cit.) who has not given any locality.


Climbers up to 15 m tall, deciduous. Leaves alternate, imparipinnate, up to 30 x 20 cm, petioles silky; leaflets 7–11, ovate to elliptic, acuminate at apex, cuneate at base, densely pubescent when
young, less so when old, even leaflets 6–10 x 3–4 cm, odd 10–12 x 4–5 cm. Calyx densely adpressed–pubescent; petals blue to lilac; ovary pubescent. Pods 10–16 x 2–3 cm, ob lanceolate, flattened, velvety. Seeds orbicular, flattened.

*Fls. & Frts.* : February–March.

*Illus.* : Bor & Raiz. op.cit.

*Distrib.* : Native of China, cultivated in Victoria garden, Bombay (Almeida, op.cit.).

**CAESALPINIACEAE**


Trees, up to 15 m tall. Leaves bipinnate, pinnae up to 8; leaflets 10–12, sessile, 6–10 cm long, oblong, oblique at base, subcoriaceous. Flowers in dense simple racemes on leafless branches. Pods long stalked, thin, flat, with a wing on upper suture, many seeded.

*Fls. & Frts.* : February–March.

*Distrib.* : Cultivated by Forest Department at many places. Kolhapur and Sindhudurg (Almeida, op.cit.).


Trees, 10–12 m tall, erect; stem stout, bark ash–grey. Leaves abruptly pinnate; leaflets 6–8, opposite, 15–30 cm long, oblong, acuminate at apex, subcoriaceous. Flowers in axillary pendulous racemes; petals mixed brilliant red yellow. Pods 25 x 4 cm, truncate, 4–6–seeded.

*Fls. & Frts.* : February–April.

*Distrib.* : University of Bombay & Victoria Garden, Bombay (Almeida, op.cit.).

Shrubs, climbing; branches with copious circinate tendrils. Leaves thin, deeply cordate, variously cleft, 5–7–nerved. Racemes 5–15 cm long, in axillary and terminal panicles; pedicels erecto–patent, finely downy; petals white. Pods 4–5 cm long, oblong, thin flat, indehiscent, 1–2–seeded.

*Distrib.*: Western peninsula (Almeida, op.cit.).


This differs from typical *forma* in absence of red or purple blotch at base of petals.

*Fls. & Frts.*: August–September.

*Distrib.*: Osmanabad (Mahabale, op.cit.).


*Fls. & Frts.*: February–March (September).

*Distrib.*: Mahalaxmi, Bombay (Almeida, op.cit.).


Trees, 4–5 m tall; branches drooping. Leaves paripinnate; leaflets c 12 pairs, lanceolate or oblanceolate, 15–17 cm long, caudate to shortly acuminate at apex, rounded at base, entire along margins, leathery. Flowers red, c 2 cm across and dense leaf–opposed cymose heads. Pods red, compressed, rusty–hairy.

*Fls. & Frts.*: February–March.

*Distrib.*: Victoria garden, Bombay (Almeida, op.cit.).


Climbing or straggling shrubs or small trees. Leaves many pinnate; ultimate leaflets 6–10 x 2–3 mm, narrowly oblong, black–punctate on lower side near margins. Inflorescences densely glandular, racemose, terminal. Flowers light yellow with brilliant red stamens protruding. Pods up to 10 x 2 cm.

**Fls. & Frts.:** January–February.

**Distrib.:** It is a native of South America. Victoria garden, Bombay (Almeida, op.cit.).


Shrubs, 1.5–3 m tall, much branched, bushy; stems slightly yellowish–rusty coloured, with short appressed rusty coloured hairs. Leaves *paripinnately* compound; leaflets 6–10 pairs, opposite, broadly oblong or obovate–oblong, obtuse and mucronulate at apex, minutely hairy. Flowers golden yellow on 2–4–flowered peduncles which are shorter than leaves, softly hairy. Pods c 7.5 cm long, oblong–linear or narrower, membranaceous.

**Fls. & Frts.:** October–December.

**Distrib.:** Native of South America, introduced in gardens in Bombay (Almeida, op.cit.).


Evergreen shrubs or small trees, up to 3.5 m tall; tender parts pubescent, glabrous when old. Leaves pinnate, up to 40 x 10 cm; leaflets 8–16 pairs, 4–7 x 2–2.5 cm, oblong, mucronate at apex, oblique at base; stipules pubescent. Flowers large, yellow, axillary in many–flowered spike–like racemes, peduncles pubescent; petals yellow; ovary densely pubescent. Pods 8–10 x 2 cm, flat, sutures raised, depressed between seeds. Seeds 9–15 per pod, flattened.

**Fls. & Frts.:** April–September

**Distrib.:** Cultivated in gardens. Pune (Almeida, op.cit.).

Shrubs or small trees; branches clothed with dense yellowish pubescence. Leaflets 10–16 pairs, 2.5–4 x 0.4–1 cm, oblong, obtuse with a long conspicuous macro at apex, glabrous or nearly so above, paler and sparsely clothed with yellowish hairs beneath. Flowers in corymbose racemes, axillary and forming terminal panicles; pedicels clothed with long yellowish hairs; calyx finely puberulous outside; petals yellow. Pods 8–12 x 1 cm, flat, stalked, tapering at base and pointed at apex. Seeds 12–20.

*Fls. & Frts.*: August–October.

*Distrib.*: Kolhapur (Almeida, op.cit.).


*Fls.*: August–September.

*Notes*: It is included on the authority of Almeida (op.cit.) who has not given any locality.


Herbs, up to 1 m high, annual; branches terete, downy–tomentose to glabrous. Leaflets up to 30 pairs, 6–12 cm long, linear–lanceolate, obtuse at apex, entire along margins. Flowers solitary or in pairs from axils of leaves. Pods 2.5–3 cm long, slightly curved, with a mucro at apex on inner side margin of pod.

*Fls. & Frts.*: September–October.

*Distrib.*: Bombay, Raigad & Thane (Almeida, op.cit.).


Small trees. Leaves bipinnate, pinnae opposite, 2–3 pairs with a terminal odd one; leaflets usually 4–5 pairs, 0.7–1.5 x 0.6 cm, oblong–elliptic to orbicular, base inequilateral. Inflorescence terminal, of simple or branched racemes, up to 11 cm long, covered with brown pubescence. Flowers orange–yellow, pedicels pubescent; sepals pubescent; filaments hirsute.

Trees, 4–6 m tall; bark smooth, shining. Leave alternate, paripinnately compound; leaflets 2, obliquely oblong–elliptic, coriaceous. Flowers white, in elongated, axillary or terminal paniculate racemes. Pods 3–5 cm long, oblong or obovoid, 1–2–seeded.

Fls. & Frts. : September.

Distrib. : Native tree of Madagascar and Seachell Islands, cultivated in Victoria Garden, Bombay (Almeida, op.cit.).

MIMOSACEAE


Large climbers; branches and leaf rhachises densely pubescent. Leaves bipinnate, 15–20 cm long, petioles glandular; leaflets slightly downy below. Pods 7–17 x 2–2.5 cm, coriaceous.

Fls. & Frts. : September

Distrib. : Thane (Almeida, op.cit.).


Shrubs, bushy; branches smooth, brown. Leaves bipinnate, stipular spines 2–4 pairs; leaflets 5–10 pairs, minute, linear. Flowers yellow, fragrant, in axillary, small, globose heads. Pods 5–8 x 1 cm, straight–flat, 5–6–seeded.

Fls. & Frts. : December–April

Distrib. : Amravati (Almeida, op.cit.).

Small trees; branchlets grey or reddish. Leaves bipinnate, pinnae 2–4 pairs, stipular spines small, hooked; leaflets 6–12 pairs, sessile 2–5 cm long, oblong, obtuse at apex, rigidly subcoriaceous. Flowers yellowish–white, in axillary, short peduncled spikes 8–10 cm long, bracteate. Pods 15–20 x 2 cm, sutures thickened, winged, spiny, 6–9–seeded.

Fls. & Frts. : April–May.

Distrib. : Amravati (Almeida, op.cit.).


Trees, medium sized; branchlets green, triangular. Phyllodes leaf like, inequilateral. Inflorescence of axillary elongated spikes. Petals yellow; stamens yellow.

Fls.: June–July.

Distrib. : Native of Moluccas. Cultivated as a fast growing by Social Forestry in New Bombay (Almeida, op.cit.).


Trees, 4.5–6 m tall, evergreen; branches terete. Leaves simple, phyllodes laterally flattened, 10–13 x 1.5–2 cm, semilunate or sickle shaped or obliquely–elliptic, obtuse at apex, narrowed below into a stipe. Inflorescence of spikes, axillary, usually in pairs, rarely solitary. Flowers scented, yellow. Fruits 1 cm broad, coiled.

Fls.: July–October Frts. : January–February.

Distrib. : Native of Argentina, grown in gardens and along roadsides. Bombay (Almeida, op.cit.).


It differs from typical subspecies in having hairy branches, petioles and peduncles.

Fls.: October–December.


Fls. & Frts.: January–February.

Distrib.: Jeur grant Medical College, Solapur (Almeida, op.cit.).


Trees, 3–7 m tall; stem prickly; branches flexuose, glaucous—grey, young shorts pubescent. Leaves 2–pinnate, main rhachis pubescent, stipular spines usually 3; pinnae 3–5 pairs; leaflets 8–15 pairs, 2–3 x 2 mm, linear, subobtuse at apex. Flowers fragrant, in spikes, 5–10 cm long; corolla white. Pods shortly stalked, 8 x 2 cm, linear–oblong, thin, flat, attenuated at both ends, reticulately veined, ripens pale brown. Seeds 5–6.

Fls. & Frts.: November–March.

Distrib.: Victoria Garden, Bombay (Almeida, op.cit.).


Trees, 2–2.5 m tall. Leaves 2–pinnate, alternate, spines stipular, pinnae 4–5 pairs; leaflets 8–10 pairs, oblong, acute or obtuse at apex, inequilateral. Inflorescences of globose heads. Flowers 2 mm long, yellow. Pods turgid, red.

Fls. & Frts.: January–February.

Distrib.: Amravati, Pune & Solapur (Almeida, op.cit.).

Spreading shrubs or small trees; branches pubescent. Phyllodes in whorls or often scattered, 1–1.5 x 0.3 cm, linear, subulate, ending in sharp point, 1–nerved. Flowers in spikes, concealing the phyllodes. Pods 5–7 x 0.3 cm, flat. Seeds longitudinal.

_Fls. & Frts._: March–April.

_Distrib._: Native of Australia, cultivated in Victoria garden (Almeida, op.cit.).


Trees, large; bark lenticelled, young parts rusty–tomentose. Leaves bipinnate, rhachis downy tomentose when young, glabrous at maturity with elongated gland at base of petiole, pinnae 3–8 pairs; leaflets 20–22 pairs, 1–2 x 0.6–0.8 cm, apex minutely mucronate, base unequal, rigidly coriaceous. Flowers greenish–white or yellowish in corymbbs, 4–6–together on long peduncles; corolla silky without. Pods 10–15 x 2–2.5 cm, strap shaped, dark brown, 6–10–seeded.

_Fls. & Frts._: April.

_Distrib._: Nanded (Almeida, op.cit.). It is endemic to India.


Leaves bipinnately compound, paripinnate; leaflets ovate, emarginate or mucronulate at apex, entire along margins, slightly puberulous on upper surface, turning black upon drying. Flowers in terminal panicles; filaments white. Fruits flat, strap–like, acute at tip narrower near base, turning black on drying.

_Notes._: It is included on the authority of Almeida (op.cit.) who has not given any locality. It differs from typical variety in having leaflets which are slightly emarginate or mucronate, white filaments and mature dried specimens turning black.


Trees, 15–25 m tall, evergreen. Leaves bipinnate, alternate, stipulate, rhachis puberulous with 2 glands, pinnae 10–14 pairs; leaflets 50–100 pairs, 7 x 1 mm, linear, subacute at apex. Flowers

**Fls. & Frts.** : April–May.

**Distrib.** : Mahalaxmi, Bombay (Almeida, op.cit.).


Small shrubs. Leaves with several, uneven leaflets. Inflorescence of small, globular heads. Stamens red.

**Distrib.** : Native of Mexico, cultivated in gardens as an ornamental plant. Bombay (Almeida, op.cit.).


Shrubs, 2–3 m tall; branches densely pubescent with brown hairs. Leaves bipinnate, alternate, rhachis villous with brown spreading hairs, pinnae 10–11 pairs; leaflets many pairs, 7–8 x 1–1.5 mm, acute at apex, pilose below. Flowers sessile, arranged in racemes. Pods strap–shaped.

**Fls. & Frts.** : July–December.

**Distrib.** : Cultivated in gardens (Almeida, op.cit.).


Shrubs. Leaves bipinnate, alternate, pinnae single pair; leaflets many pairs, oblong–linear, falcate, obtuse at apex. Flowers in heads; peduncles axillary or in terminal panicles. Pods flat, coriaceous.

**Fls. & Frts.** : April–July.

**Distrib.** : A Native of America, cultivated in gardens as an ornamental plant (Almeida, op.cit.).

Small trees or shrubs; leaflets single pair. Flowers in heads; stamens red above, white below.

**Fls.** : Throughout the year.

**Distrib.** : Cultivated in Bombay gardens (Almeida, op.cit.).


Shrubs or small trees; branches puberulous, whitish when young, armed with numerous, sharp, slender, pale–yellow prickles. Leaves bipinnate, main rhachis finely downy; leaflets 8–12 pairs, subsessile, 3–6 x 1–2 mm, oblong, oblique at base, ciliate along margins, closely downy beneath. Flowers yellow, in axillary spikes, longer than leaves. Pods stalked, 1–2.5 x 0.9–1 cm, oblong, obtuse, black, pulp soft.

**Fls. & Frts.** : November–December.

**Distrib.** : Rajapur, Sindhudurg Dt. (Almeida, op.cit.).

**ROSACEAE**


Shrubs, 1.3–2.3 m tall, bushy; branches green and ridged. Leaves simple, alternate, stipulate, 5–10 cm long, ovate to ovate–lacneolate, long acuminate at apex, serrate along margins, sparsely pubescent on both surfaces, becoming glabrous on dorsal surface, shortly petiolate. Flowers golden–yellow, 2–5 cm across, solitary. Achenes small.

**Fls. & Frts.** : October–December.

**Distrib.** : Victoria garden, Bombay (Almeida, op.cit.).


Stipules glandular–ciliate. Flowers small, red or pink, rarely white, odourless. Fruits top–shaped.

**Fls. & Frts.** : Throughout the year.

Shrubs, up to 2.5 m tall, erect and diffuse; stems unarmed or with sparse prickles. Leaves 3–5 or sometimes 7–foliolate, glabrous on upper surfaces and grey–tomentose on lower side; leaflets 8–10 cm long, broadly ovate or oblong–ovate, abruptly and shortly acuminate at apex, cordate at base, sharply serrate along margins. Flowers white, in axils of leaves, 1–6–together. Fruits cone–shaped.

*Fls. & Frts.*: November–December.

*Distrib.*: Victoria garden, Bombay (Almeida, op.cit.).

**GROSSULARIACEAE**


Shrubs; stem terete. Leaves alternate, petiolate, 5–10 x 4 cm, obovate, sometimes oblong or ovate, obtuse or rounded at apex, acute at base, entire or crenulate along margins. Flowers on axillary, solitary corymbbs. Fruits a 5–gonous drupe, ovoid.

*Fls. & Frts.*: March.

*Distrib.*: Victoria garden, Bombay (Almeida, op.cit.).

**SAXIFRAGACEAE**


Shrubs; branches opposite. Leaves 2.5–5 cm long, oblong–lanceolate or elliptic–lanceolate, grey tomentose beneath with stellate hairs. Corymbs few–flowered; calyx tube hairy tomentose with stellate hairs. Capsules hemispherical or ovoid. Seeds minute, ovoid–ellipsoid.

*Fls. & Frts.*: May.

*Distrib.*: Victoria garden, Bombay (Almeida, op.cit.).
CRASSULACEAE


Herbs, perennial, succulent, stemless. Leaves numerous in compact rosette, offset in long flowering stalk, 2.5–5 cm long, obovate, thick and turgid, glaucous. Flowers 5–10, in secund cymes; petals pinkish with yellow tips.

*Fls.* : February–May.

*Distrib.* : It is a native of Mexico, cultivated in gardens (Almeida, op.cit.).


Herbs, stout, erect, perennial. Leaves on stem 2 cm long, elliptic, crenate along margins, shortly petiolate. Cymes densely glandulose–pubescent. Flowers white; petals hair pointed.

*Fls.* : October–November.

*Distrib.* : North Deccan hills (Almeida, op.cit.).


Herbs, erect or prostrate, perennial, branched. Leaves 7–15 cm long, obovate or oblong–obovate, coarsely crenate along margins, glaucous, light green blotched with purple. Flowers in simple cymes, tube of corolla greenish below, white above.

*Fls.* : December–March.

*Distrib.* : Native of Abyssinica. Bombay gardens (Almeida, op.cit.).


Herbs, 50–70 cm high, erect, succulent, pubescent. Leaves long petiolate, 10 cm long, oblong–ovate, apex blunt, margins crenate. Flowers 6 mm long, salmon pink to yellow, in terminal cymes.

*Fls. & Frts.* : December–March.
Distrib. : Native of Tropical Africa. Bombay Gardens (Almeida, op.cit.).


Herbs, perennial; stems creeping, tufted. Leaves crowded, small, sessile, ovate, fleshy, swollen at base. Carpels 4–5; follicles free, many seeded.

*Fls. & Frts.* : December–March.

*Distrib.* : Cultivated in gardens as a hanging-basket plant (Almeida, op.cit.).


Herbs, perennial, prostrate; shoots rooting at tips. Leaves ternate, 1–2.5 cm long, broadly lanceolate, acute at apex, spurred at base, entire along margins. Flowers sessile, c 1.5 cm across, yellow, often 3–together on forked racemes. Fruits longer than persistent calyx.

*Fls. & Frts.* : April–May.

*Distrib.* : Bombay gardens (Almeida, op.cit.).

**COMBRETACEAE**


Trees, middle sized; branches clothed with silky pubescence. Leaves 2.5–4 x 2–2.5 cm, elliptic, apex obtuse, apiculate or shortly cuspidate, almost glabrous above at maturity, clothed in lower side and nerves beneath with silky pubescence; main nerves 4–6 pairs, petioles pubescent. Flowers in globose heads, 1–2 cm in diam. in long, axillary, simple peduncles which often bear leafy bracts; calyx densely pubescent. Fruits c 5 x 6 mm (including wings), densely pubescent, crowned by pubescent calyx tube and sometimes also by subpersistent limb; wings pubescent in upper part, jagged on margins.

*Fls. & Frts.* : February–April.

Trees, large. Leaves scattered, up to 23 x 12 cm, ovate or ovate-oblong, coriaceous, pubescent on both sides, young ones tawny-woolly- tomentose; nerves irregular, petioles with 2 glands at apex below blade. Spikes axillary, solitary, densely tawny pubescent, shorter than leaves. Lower flowers fertile, shortly pedicelled, upper male, sessile, all densely woolly inside with a bad odour. Fruits 1–2 cm across, ovoid, ellipsoid or spherical, faintly 5–ridged when dry, minutely brown-tomentose.

*Fls. & Frts.*: March–April.

*Distrib.*: Konkan (Dalz. op.cit.; Almeida, op.cit.).

*Notes*: According to Gangopadhyay & Chakrabarty (op.cit.), the type is not traceable. All specimens in Indian Herbaria (examined by them) identified and distributed as *T. gella* are actually referable to *T. chebula*. They place it under Doubtful/ Excluded/ Imperfectly known taxa.

**LECYTHIDACEAE**


Trees, 10–12 m tall. Leaves sessile, 30–40 x 12–17 cm, obovate, obtuse at apex, narrowed at base, entire along margins. Racemes short; bracts foliaceous. Petals white. Fruits c 8 x 8 cm, quadrangular or ovoid, 1–seeded.

*Fls. & Frts.*: Throughout the year.

*Illus.*: Wight, Ic. t. 547. 1839 (*Barringtonia speciosa*); Almeida, op.cit. f. opp. page 257.

*Distrib.*: Cultivated in gardens. Bombay & Thane (Almeida, op.cit.).

Trees, 8–10 m tall, emitting foul smell, branched from base. Leaves subsessile, clustered at ends of branches, obovate or oblanceolate. Flowers pink or white, fragrant, in terminal cymes, 2–4—together. Berries obconic with a depression at apex, c 5 cm wide, greenish, hard.

_Fls. & Frts._ : April–August.

_Distrib._ : ‘Stink Wood’ a native of tropical America found in cultivation in Victoria garden, Bombay (Almeida, op.cit.).


_Fls. & Frts._ : February–March.

_Distrib._ : Victoria garden, Bombay (Almeida, op.cit.).

**MYRTACEAE**


Trees, up to 20 m tall, spreading; bark brownish. Leaves: juvenile opposite for 3–4 pairs, alternate later, c 6.5 x 6 cm, elliptic to orbicular; adult alternate, 8–14 x 1.5–3 cm, lanceolate. Inflorescences of axillary umbels or terminal panicles. Fruits 10–15 x 5–10 mm, ovoid–urceolate, contracted towards orifice; valves 3, deeply enclosed.

_Fls. & Frts._ : July–August.

_Distrib._ : ‘Sugar gum’ is cultivated. Parbhani (Almeida, op.cit.).


Trees, c 15 m tall; bark smooth, pale pink or white, decorticating in large flakes. Leaves alternate, upper ones somewhat opposite, lanceolate or linear–lanceolate. Inflorescences of paniculate umbels of 5–8 flowers. Fruits urceolate or ovoid.
Fls. & Frts. : July–August.

**Distrib.** : ‘Spotted blue gum’ a native of Australia, found in cultivation in Bombay (Almeida, op.cit.).


Trees, 10–25 m tall; bark deeply furrowed. Leaves: juvenile 3–4 lower pairs opposite, rest alternate, 6–8 x 3–4 cm, broadly lanceolate to ovate; mature alternate, 8–20 x 2–5 cm, lanceolate, oblique at base, coriaceous. Inflorescences of 5–15–flowered axillary umbels. Fruits 7–10 cm long, pyriform.


**Distrib.** : Cultivated. Satara & Sindhudurg (Almeida, op.cit.).


Trees, 25–30 m tall; bark deeply furrowed, dark in colour, hard. Leaves opposite when young, but alternating at maturity, linear or narrowly lanceolate, falcate, slightly glaucous. Flowers in terminal, paniculate, 3–7–flowered umbels. Fruits pyriform to ovoid, truncate, opening by 3–4 valves.

Fls. & Frts. : July–August.

**Distrib.** : Native of Australia, cultivated in Victoria Garden, Bombay (Almeida, op.cit.).


Trees, large; branches somewhat angular, bark flaky–fibrous, branches smooth, brownish. Leaves: juvenile 5–6 x 2.5–3 cm, broadly lanceolate, undulate along margins; mature c 11 x 2 cm, narrowly lanceolate, somewhat undulate and falcate, tapering at apex. Inflorescences of paniculate umbels. Fruits conoid, occasionally hemispherical, c 5 mm across.

Fls. & Frts. : November–December.

**Distrib.** : Native of New South Wales, cultivated in Bombay Gardens (Almeida, op.cit.).

Trees, small; bark deeply furrowed, dark–grey, deepening to lead colour. Leaves: juvenile 7–8 x 2 cm, broadly oblong, obtuse at apex, undulate along margins; mature 7–13 x 1.5–2 cm, oblong–lanceolate to falcate–lanceolate. Inflorescences axillary or somewhat racemose. Fruits semi–ovoid to somewhat campanulate, truncate.

Fls. & Frts. : February–March.

Distrib. : Native of Australia and Northern Queensland, cultivated in Bombay Gardens (Almeida, op.cit.).


Trees, small; bark smooth, branchlets terete, pale. Leaves 4–6 x 2–4 cm, elliptic, bluntly acuminate or subobtuse at apex, tapering at base, slightly recurved along margins, coriaceous, finely pellucid–dotted; main nerves 15–20 pairs. Flowers white, c 1 cm across, axillary, solitary or in fascicles of 2 or more or in terminal heads at ends of short, abortive branches; calyx finely pubescent or tomentose outside, lobes ciliate at margins, gland dotted. Fruits globose, c 1 cm across, crowned with persistent calyx lobes. Seeds 1–2.

Fls. & Frts. : March–May.

Distrib. : Mahabaleshwar, Satara Dt. (Almeida, op.cit.).


Fls. & Frts. : February–March.

Distrib. : Konkan (Cooke, op.cit.; Almeida, op.cit.).

Trees, up to 10 m tall. Leaves c 15 cm long, oblong to oblong–lanceolate, leathery; veins prominent on ventral side. Flowers white, c 6 mm across. Fruits c 6 mm across, dark brown.

**Fls. & Frts.** : February.

**Distrib.** : ’Allspice’, ’Pimento’, is a native of West Indies, Central America and Mexico, grown in gardens. Bombay (Almeida, op.cit.).


Fruits globose or ovoid.

**Fls. & Frts.** : Throughout the year.

**Distrib.** : Cultivated in gardens (Almeida, op.cit.).


Leaves ovate, acuminate. Fruits c 1 cm long, irregular in shape.

**Fls. & Frts.** : March–May.

**Illus.** : Wight, Ic. t. 553. 1842 (Eugenia caryophyllifolia); Almeida, op.cit. f. opp. page 270.

**Distrib.** : Bombay, Pune, Raigad & Sindhudurg (Almeida, op.cit.).


Pedicels solitary from extreme axils, 1–flowered.

**Fls.** : December.

**Distrib.** : Deccan (Cooke, op.cit.). It is endemic to India.

**MELASTOMATACEAE**

Shrubs; stems bristly. Leaves simple, 10–20 cm long, broadly ovate, 5–nerved. Flowers rose–red, in terminal panicles. Fruit a berry.

Distrib. : Victoria garden, Bombay (Almeida, op.cit.).

**LYTHRACEAE**


Fls. : January

Distrib. : Bhusaval, Jalgaon Dt. (Almeida, op.cit.).


Shrubs, 30–60 cm high, erect, more or less setose hairy or almost glabrous. Leaves 5–12 cm long, lanceolate to oblong–lanceolate, acute at apex, shortly petioled. Flowers yellowish with scarlet at base, extra axillary, in long, terminal, leafy racemes; calyx tube broad and hairy.

Fls. : February

Distrib. : Cultivated in Bombay gardens (Almeida, op.cit.).


Trees, 5–8 m tall. Leaves opposite–decussate, obovate, emarginate at apex, coriaceous. Flowers white, in terminal racemes.

Fls. & Frts. : October–December.

Distrib. : Victoria gardens, Bombay (Almeida, op.cit.).


Trees, 8–10 m tall. Leaves opposite, oblong or elliptic–oblong, rarely ovate. Inflorescences of terminal, pyramidal panicles, c 30 cm long. Calyx tube with 6 sharp ribs. Capsules oblong–ellipsoid, sparsely pubescent near apex, 6–valved.
Fls. & Frts.: September–October.

Illus.: Furtado & Srisuko, op. cit.

Distrib.: Indigenous tree of Malaya and Siam. Borivali, Malabar Hill and Victoria garden, Bombay (Almeida, op.cit.).


Leaves 7.5 cm long, lanceolate, glabrous above, stellately fulvous–tomentose beneath, midrib tomentose. Panicles lax, tomentose. Calyx in buds with dense brown stellate wool. Capsules c 2 mm long.

Fls. & Frts.: October–November.

Distrib.: Deccan (Almeida, op.cit.).


Trees. Flowers light pink in colour.

Fls.: April–June.

Distrib.: Cultivated in gardens (Almeida, op.cit.).

**NESEAEX Commerson ex K. Kunth** (nom.cons.)


Herbs, annuals; stem up to 35 cm high, erect, 4–gonous in upper part. Leaves 10–30 x 2.5 – 10 mm, acute or obtuse at apex, whitish along margins. Flowers 1–3, in dichasial cymes, bracteate. Capsules globose, red when mature.

Fls. & Frts.: October.

Distrib.: Chandrapur (Almeida, op.cit.).


Herbs, annual, amphibious; stems procumbent, profusely branched, rooting at nodes. Leaves opposite–decussate, 1.5 x 0.2–0.4 cm, angustate, microscopically truncate at apex. Flowers axillary,
solitary, sessile, crimson, less than 1.5 mm across, trimerous. Fruits less than 1.5 mm across, subspherical, crimson, half-exserted, splitting vertically into 3 valves. Seeds 10–15, crimson, obovoid, exalbuminous.

_Fls. & Frts._ : October–November.

_Distrib._ : Ratnagiri (Almeida, op.cit.).

**ONAGRACEAE**


Herbs, up to 1 m high, annual. Leaves 6–7 cm long, ovate-lanceolate, sometimes elliptic. Flowers deep pink or lavendar coloured.

_Fls._ : September–October.

_Distrib._ : Known as 'Red ribbons'. Parbhani (Almeida, op.cit.).


Herbs, annual; stem red. Leaves ovate to ovate-lanceolate. Flowers purple or rose-coloured or rarely white, solitary or in racemes. Capsules sessile, 4-angled.

_Fls. & Frts._ : September–October.

_Distrib._ : Cultivated in gardens (Almeida, op.cit.).

**EPILOBIUM L.**


Herbs, up to 1.5 m high, perennial, hairy all over. Leaves opposite, up to 7.5 cm long, lanceolate. Flowers purple, c 2.5 cm across, solitary or in short racemes.

_Fls._ : October–December.

_Distrib._ : Parbhani (Almeida, op.cit.).

Shrubs. Leaves ovate, dentate along margins. Flowers of various colours in drooping racemes; calyx crimson; petals purple, rose or white. Fruit a berry.

*Fls. & Frts.*: November–December.

*Distrib.*: Cultivated in gardens (Almeida, op.cit.).

**PASSIFLORACEAE**


Climbers, wiry; stems terete. Leaves alternate, 9–10 x 12–13 cm, subrotund, 3–lobed, lobes oblong, middle one 5–6 x 3.5–4 cm, lateral ones 5 x 3 cm; petioles with 2–5 glands; stipules foliaceous; tendrils axillary. Flowers solitary, axillary, 3.5–4.5 cm across, white. Berries subglobose, 5–6 cm long.

*Fls. & Frts.*: March–May.

*Distrib.*: Known as 'Madagascar Passion flower'. It is a native of Madagascar, cultivated in gardens (Almeida, op.cit.).


Climbers; stems terete. Leaves alternate, trilobed, terminal lobe longer, c 5 cm long, elliptic–obtuse, hairy; petioles with golden hairs; stipules laciniate. Flowers axillary, pedicellate, solitary; involucral bracts 3, foetid when bruised; sepals greenish outside; petals reddish or pink; corolla variegated white and purple. Fruits 1–1.2 cm long, ellipsoid, enclosed in involucral bracts.

*Fls. & Frts.*: June–September.

*Distrib.*: Native of West Indies, cultivated in gardens (Almeida, op.cit.).

Climbers; stems terete. Leaves alternate, bluntly 3–lobed, shallowly cordate at base, thinly membranous, glaucous with 2 glands at or below middle; tendrils axillary; stipules minute. Flowers axillary, solitary, with a pair of glandular bracts; calyx tube green, tinged with pale violet on margins; petals whitish or greenish. Fruits c 2.5 cm long, ellipsoid, globose, purple.

_Fls. & Frts._: August – September.

_Distrib._: Native of Brazil, cultivated in gardens (Almeida, op.cit.).


Climbers; stems hirsute. Leaves simple, semi–orbicular or slightly 3–lobed, glabrous above, more or less hairy beneath; tendrils simple, axillary, stout. Flowers white, in pairs in axils or in panicles. Fruits ovoid.

_Fls. & Frts._: October–November.

_Distrib._: Cultivated in Ravinagar Forest Nursery, Nagpur (Ugemuge, op.cit.; Almeida, op.cit.).


Climbers, winged; stem angled, pubescent. Leaves alternate, crescent shaped, bilobed with 2 rounded blunt lobes, shallowly cordate at base with row of glands arranged in a 'V' shaped between midrib and central nerves of lobes. Flowers solitary or in pairs from axils of leaves with 3 filiform bracts; sepals greenish–white, corona mauve, branded with purple and white bands; gynophore pale green, spotted with purple; filaments yellowish–green. Fruits oblong.

_Fls. & Frts._: Throughout the year.

_Distrib._: A native of Jamaica and Mexico. Victoria garden (Bombay) & Pune (Almeida, op.cit.).


Shrubs, climbing; shoots covered with crisped hairs. Leaves up to 10 x 5 cm, ovate, elliptic–ovate or oblong, entire or 1–2–lobed; petioles terete, grooved above, covered above with crisped white hairs with a pair of stalked glands above middle; tendrils axillary; stipules linear–setaceous. Flowers small and inconspicuous, on solitary
peduncles in axils of leaves; perianth brownish–green. Berries 1–2 cm long, ovoid or globose, blue or purple.

**Fls. & Frts.** : May–September.

**Distrib.** : It is a native of Tropical America. Cultivated in Bombay gardens (Almeida, op.cit.).


Herbs, twining; stem angled, hairy. Leaves alternate, ovate–cordate, 3–lobed, lobes ovate–acute, teeth ending in glands; petioles bearing 2 stalked glands; stipules foliaceous, hairy; tendrils axillary, slender, hairy. Flowers axillary, solitary, pedicellate; bracteoles 3; calyx tube pubescent; petals absent. Fruits globose.

**Fls. & Frts.** : July–September.

**Distrib.** : It is a native of Brazil, cultivated in gardens (Almeida, op.cit.).

**CUCURBITACEAE**

**CERASILOCARPUM Hook. f.**


1. Leaves lobed or hastate at base; petioles 6–7 cm long; fruits transversely oblong ... var. *bennettii*

1. Leaves cordate; petioles 2.5–3 cm long; fruits globose ... var. *deshmukhii*

var. *bennettii.*

Climbers, tuberous, monoecious; stem slender. Leaves 6–15 x 3–7 cm, acute or acuminate at apex, emarginate at base, subentire or sinuate–dentate along margins, membranaceous, scabrid on upper surface, glabrous and smooth on lower surface; tendrils filiform. Racemes 2–6 cm long, lax, 6–40–flowered, sharply pilose. Corolla lobes pilose; staminal filaments long villous. Fruits scarlet, 7–10 x 10–15 mm, smooth. Seeds grey.

**Fls. & Frts.** : July–August.

Climbers, monoecious; stems slender, striate. Leaves 5–7 x 4–6 cm, pale grey above, ash–coloured beneath, clothed with minute white hairs on both sides, cordate at base, deeply palmately 3–5–lobed, lobes oblong–lanceolate, acute or acuminate at apex; tendrils simple, slender. Male flowers 6–15 at apex of slender peduncles. Female flowers fascicled or subspicate. Fruits conical–oblong, orange–red, base green, cup shaped. Seeds pyriform, turgid, dark brown.

Fls. & Frts. : June – August.

Distrib. : Bombay (Dalz. & Gibbs. op. cit.; Almeida, op.cit.). It is endemic to India.


Herbs, prostrate, sulcate. Leaves 2–3 cm long, broadly suborbicular, hirsute–villous, trilobed, lobes broadly ovate, obtuse at apex, rounded at base, denticulate along margins; tendrils wiry. Male flowers 4–9–flowered, 3–5 cm long, shortly villous; corolla yellowish. Female flowers solitary. Fruits c 12 x 6–7 mm, ovoid–oblong, truncate at base, 5–6–seeded, beaked.

Fls. & Frts. : May–August.

Illus.: Almeida, op.cit. f. after page 313.

Distrib.: Pune & Sindhudurg (Almeida, op.cit.). It is endemic to India.

*Fls.* : August–September.

*Distr.* : Sindhudurg (Almeida, op.cit.).

**Notes** : This variety differs from the typical variety in having narrower and much segmented lamina with spinulose petiole and somewhat larger flowers.


Fruits smaller, tapering at both ends.

*Fls.* & *Frts.* : May–August.

*Distr.* : Bombay (Almeida, op.cit.).


Climbers, dioecious; roots tuberous; stems robust, angular. Leaves 10–17 x 10–17 cm, suborbicular, base cordate, margins near base furnished with umbilicate glands, divided into 3 (rarely 5) lobes, lobes ovate or oblong–lanceolate, acute or acuminate at base, entire or faintly toothed along margins; tendrils simple, stout, angled. Male flowers: peduncles 1–flowered, pubescent; bracts pubescent or scabrid; calyx hirsute or scabrid; corolla white, tinged with yellow, pubescent. Female flowers: peduncles with a small bract at middle. Fruits 10–15 cm long, ovoid, pointed, red, fleshy, terete, covered with raised points. Seeds numerous, ovoid, compressed, sculptured.

*Fls.* & *Frts.* : June–August.

*Distr.* : Pune gardens (Almeida, op.cit.).

Dioecious; stem slender, branched, furrowed. Leaves 5–10 x 4–9 cm, broadly ovate, membranous, acute at apex, deeply cordate, entire or 3–5–lobed, remotely denticulate along margins. Male flowers: peduncles solitary, 1–flowered, pubescent; bracts cucullate, pubescent on both sides, margins ciliate; calyx dark purplish, lobes glandular; corolla yellow. Fruits 5–8 cm long, ellipsoid, attenuated at both ends, densely and softly echinate, obscurely ribbed.

*Fls. & Frts.:* July–February.

*Distrib.:* Ratnagiri (Almeida, op.cit.).

**SECHIUM P. Br. (nom.cons.)**


Climbers, perennials; roots tuberous. Leaves 10–20 x 10–20 cm, upper surface scabrid, punctate, lower surface shortly hairy especially on nerves, basal sinus deeply emarginate, 3–5–angular or lobed, margins entire or denticulate; tendrils robust, sulcate, 3–5–fid. Male peduncles 20–30–flowered in fascicles. Fruits c 10 x 7 cm, green, obovoid, deeply 5–sulcate, sparsely spinulose, 1–seeded.

*Fls. & Frts.:* September–December.

*Distrib.:* Maharashtra (Chakr. op.cit.; Almeida, op.cit.).


Fruits c 90 x 7.5 cm.

*Fls. & Frts.:* July–December.

*Distrib.:* Bombay (Almeida, op.cit.), Nagpur (Ugemuge, op.cit.), Osmanabad.

Notes: ‘The Snake Gouard’ is cultivated as a rainy season crop throughout the Bombay Presidency, but is not known in the wild state (Cooke, op.cit.).

Herbs. Leaves ovate, 3–lobed, lobes divided a little above middle, membranaceous, acuminate at apex; tendrils slender, bifid, short. Female flowers solitary, axillary; corolla white.

*Fls.* : November.

*Distrib.* : Sindhudurg (Almeida, op.cit.). It is endemic to India.

**CACTACEAE**


Large shrubs, 3–4 m tall; stem 3–4–angled, winged; areoles echiniate; spines unequal. Leaves absent. Flowers sessile, up to 15 cm across; sepals indefinite, outer greenish–white, inner white.

*Fls.* : April–May.

*Distrib.* : It is a native of Tropical America and Australia, occasionally grown as a hedge plant. Sindhudurg (Almeida, op.cit.).


Large shrubs; branches flat, leaf like. Flowers c 30 cm long, white, night blooming.

*Fls.* : May.

*Distrib.* : Common in cultivation in gardens. Bombay (Almeida, op.cit.).


Shrubs, erect; branches leaf like or cylindrical. Flowers opening at night; outer sepals brownish, inner pure white.

*Fls.* : May.

*Distrib.* : It is a native of Cuba. Bombay gardens (Almeida, op.cit.).

Plants arborescent, flat and oblong stemmed; trunk cylindrical, spineless. Flowers with erect petals.

*Fls.* : October–December.

*Distrib.* : It is a native of Mexico. Malabar Hill, Bombay (Almeida, op.cit.).


Undershubs, 1–2 m tall; areoles wooly, brown; spines 1–3 per areole, unequal. Leaves c 4 mm long, subulate, lanceolate, early deciduous. Flowers c 8 cm across; outer tepals yellow with pinkish shade, inner yellow. Berries c 6 mm long, obovoid.

*Fls. & Frts.* : December–May.

*Distrib.* : Malad, Bombay (Almeida, op.cit.).

**APIACEAE**

**Arracacia esculenta** DC. Prodr. 4: 244. 1830; Almeida, Fl. Mah. 2: 351. 1998.

Herbs, stout, perennial; roots starchy, yellowish. Leaves bipinnate or ternate. Flowers dark purple, in compound umbels. Fruits compressed.

*Distrib.* : It is a native of Mexico and Peru. Cultivated at Savantwadi, Sindhudurg district (Almeida, op.cit.).

*Notes.* : Thick fleshy roots are edible (Almeida, op.cit.).


Plants slender, creeping; stem rooting at nodes. Leaves petiolate, almost orbicular, 5–20 cm broad, pubescent on vertical surface, 7–9–veined. Flowers 3–10 in an umbel, subsessile. Fruits orbicular, c 1 mm broad.
Illus. : Wight, Ic. t. 564. 1842 (H. rotundifolia).

Distrib. : It is a native of Mauritius. Occasionally grown in gardens. Bombay, Sindhudurg (Almeida, op.cit.).

ARALIACEAE


Shrubs, large, prickles and bristles scattered. Leaves c 1 m long, bipinnate; leaflets 7–14 x 2.5–4 cm, simple or biserrate, narrowly ovate or cordate at base, acuminate at apex, ciliate. Umbels in a compound spreading panicle, c 20 cm long. Fruits slightly 10–ribbed.

Fls. & Frts. : April–May.

Distrib. : Cultivated in gardens. Malabar hill, Bombay (Almeida, op.cit.).

Dizygotheca elegantissima Vig. & Guill. in Lecomte, Nat. Syst. 2: 258. 1912; Almeida, Fl. Mah. 2: 365. 1998.

Perennial shrubs or small trees. Leaves digitately lobed, petioles mottled white; leaflets 7–10, filiform.

Distrib. : Cultivated in gardens (Almeida, op.cit.).


Large shrubs or small trees. Leaves pinnate; leaflets 5–13, c 12 x 4 cm, oblong, acuminate or attenuated at both ends, thickened along margins. Panicles narrowly oblong.

Illus. : Wight, op. cit.

Distrib. : Cultivated in gardens (Almeida, op.cit.).


Shrubs up to 2 m tall. Leaves triangular, decompound; leaflets deeply incised and toothed, oblong–obovate to broadly ovate.
Distrib.: It is a native of Brazil, cultivated in gardens (Almeida, op.cit.).


Shrubs, strong, erect; lenticels large, branchlets purplish. Leaves variable: in young plants leaflets long lanceolate or narrowly oblong–lanceolate, narrowed at base and deeply pinnatifid, in mature plants leaflets broadly ovate or broadly oblong, thick, nearly entire, base broad or truncate or even subcordate.

Distrib.: Native of Pacific Isles, cultivated in gardens (Almeida, op.cit.).


Leaflets orbicular, margins subentire or with small remote teeth, base cordate.

Distrib.: Goregaon, Bombay (Almeida, op.cit.).


Fls. & Frts.: July–August.

Distrib.: The ‘Umbrella tree’ a native of Australia is grown in gardens. Bombay University garden and Thane garden (Almeida, op.cit.).

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**CAPRIFO NIACEAE**


Shrubs, climbing. Leaves 6–7 cm long, ovate, young leaves tinged with purple. Flowers in pairs, fragrant, c 4 cm long, carmine coloured without. Fruits black.
Fls. & Frts. : June

Distrib. : Victoria garden, Bombay (Almeida, op.cit.).


Climbers, twining, shrubby. Leaves shortly petiolate, 6–7 cm long, ovate, acute at apex, grey–green in colour, pubescent beneath. Flowers white, changing to yellow, c 4 cm long, in short panicles, fragrant; ovary pubescent. Fruits black.

Fls. & Frts. : July–August.

Distrib. : Cultivated in gardens (Almeida, op.cit.).


Climbing shrubs. Leaves shortly petioled, 6–7 cm long, ovate, acuminate at apex, rounded or tapering at base, greyish and pubescent below. Flowers c 2 cm long, in axillary pairs, yellowish or creamy–white in colour. Fruits translucent white.

Fls. & Frts. : April.

Distrib. : It is a Himalayan plant. Bageshwar (Almeida, op.cit.).


Shrubs, 2–3 m tall. Leaves 6–7 cm long, obovate or ovate, serrate in upper part. Flowers c 7 cm across, in cymes. Fruits scarlet.

Fls. & Frts. : October.

EUPHORBIACEAE


Shrubs up to 2.5 m tall. Leaves digitately lobed. Capsules c 1 cm across, globose, spinous.

Two varieties, the one larger with green & the other small with ed stem & flowers which is commonly grown in gardens.

Fls. & Frts. : May - June.

Distrib. : Widely planted and also grown in gardens.
MONOCOTYLEDONES

ORCHIDACEAE

Prabha Bhogaonkar & Vinod Devarkar in Add. Fl. Melghat 49. 1999 have reported *Eulophia pratensis* Lindl. as first record for Maharashtra from Core area between Chikhaldara – Semadoh, along moist, humus rich slopes of Amravati District. But this species is a synonym of *Eulophia ramentacea* Lindl. ex Wight (cf. Lakshminarasimhan in Sharma et al. Fl. Maharashtra State: Monocotyledones 31. 1996). *E. ramentacea* was earlier known from Kolhapur, Osmanabad, Pune, Raigad and Satara.

ZINGIBERACEAE

Prabha Bhogaonkar & Vinod Devarkar in Add. Fl. Melghat 49. 1999 have recorded *Zingiber nimmonii* (Grah.) Dalz. from Melghat, Amravati stating it to be first report for Maharashtra outside Konkan. Santapau in Rec. Bot. Surv. India 16 (1): 274–275. 1967 (3rd Rev. ed.) comments under *Zingiber cernuum* Dalz. that "I have had great difficulty in identifying this plant; the cause of the difficulty is that my plants from Khandala seem to show a mixture of the characters that Dalzell attributes to *Z. nimmonii* and *Z. cernuum". According to Dalzell *Z. cernuum* has glabrous leaves and variegated (white and red) lip whilst *Z. nimmonii* has pubescent leaves and yellow lip. Santapau’s collections shows pubescent leaves together with variegated midlobe of lip but with yellow side lobes of lip. Dr. S.K. Mukerjee of Sibpur Herbarium identified all Santapau’s collections as *Z. nimmonii*. Hence under distribution of *Z. nimmonii* Pune has been also given (Lakshminarasimhan in Sharma et al. Fl. of Maharashtra State: Monocotyledones 85. 1996).


*Distrib.*: Near Film City at Goregaon, Mumbai (M.R. & S.M. Almeida, op.cit.).

*Notes*: It is growing side by side with the typical variety of the species and differs from it in having corolla rose–pink and labellum pink throughout (M.R. & S.M. Almeida, op.cit.).
HYPOXIDACEAE

MOLINERIA Colla


Perennial herbs; roots thick, fibrous, rhizome erect, stoloniferous. Leaves 20–40 cm long, broadly lanceolate, petioles sheathing at base; leaf blade 15–30 x 3–9 cm, plicate, gradually acuminate at apex, narrowed at base, up to 20–nerved. Scapes axillary, solitary, 3–6 cm long; racemes 4–5 cm long, 5–10–flowered. Flowers yellow, lower bisexual, upper male, pedicellate.

*Fls.*: October (Under cultivation).

*Illus.*: S.R. Yadav & Bhuskute, op.cit.

*Distrib.*: Bhandara (S.R. Yadav & Bhuskute, op.cit).

*Notes*: The genus *Molineria* is closely allied to *Curculigo* Gaertn. but differs in some characters as keyed out (S.R. Yadav & Bhuskute, op.cit.).

ARACEAE


Herbs, stout, suberect, rhizomatous, spinous, perennial; rhizomes prickly. Leaves when young sagittate or sagittate–hastate, 12–30 x 6–16 cm, in mature plants pinnatifid, 24–41 x 30–48 cm; veins prominent on abaxial side bearing scattered prickles; petioles with scattered upturned prickles, basally sheathing. Inflorescence with long peduncle, peduncles prickly; spathe opening at base, longer than cylindrical spadix. Flowers bisexual in close spirals; tepals pink. Berries c 1.5 x 1.4 cm, densely and minutely muricate at apex. Seeds laterally compressed, subobconic.
**Fls. & Frts**: April–June.

**Illus.**: Wight, Ic. t. 77. 1844; S.K. Malhotra & K.M. Rao, op.cit. (*Lasia heterophylla*); Sivadasan & Sajeev, op.cit.

**Distrib.**: Rare along streams in thick forest. Bhandara.

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**ERIOCAULACEAE**


Herbs, c 2.5 cm high, erect, acaulescent, tufted. Leaves rostrate, 0.5–1 x 0.1–0.2 cm, linear, acuminate at apex, sheathing at base. Peduncles few, 2–2.7 cm long, ribbed, sheath c 7 mm long. Heads c 1.5 mm in diam., obovoid, pale yellow, receptacle concave. Involucral bracts oblong–obovate, chartaceous. Floral bracts oblong–oblanceolate, sparsely hairy at apex. Male flowers: sepals connate into spathe, 3–lobed, lobes hairy at base; petals 3, minute, anthers white with dark pollen. Female flowers: sepals 3, free, hairy at apex; petals 3, with a black gland at apex, hairy at tip. Seeds c 1 x 0.6 mm, oblong–ellipsoid, brown.

**Fls. & Frts**: September–October.

**Illus.**: Yadav, Gaikwad & Sardesai, op.cit.

**Distrib.**: Rare on lateritic plateaus along temporary pond margins and in wet grounds. Ratnagiri (Yadav, Gaikwad & Sardesai, op.cit.).

**Notes**: It resembles with *E. palghatense* Ansari & Balakr. and *E. trilobum* Buch.–Ham. ex Koern. in its general appearance but readily distinguished by its pale yellow heads. It also differs from *E. trilobum* in its linear–lanceolate sepals of female flower, white anther and seeds without appendages.

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**CYPERACEAE**


Herbs, perennial, 10–30 cm high, leafless, densely tufted; rhizomes stoutish, stolons bright golden brown; culms terete, distinctly

Annuals, c 25 cm high; roots fibrous; stems tufted, compressed, striate. Leaves shorter than or as long as stem, 6–18 x 0.1 cm, linear, abruptly acuminate at apex, margins infolded and thickened on upper surface, smooth; sheaths chartaceous, striate; ligule a fringe of short hairs; orifice membranous, minutely ciliate. Inflorescence lax, 0.8–1.5 cm long and as wide with 3–12 spikelets; involucral bracts 2–3. Spikelets solitary, rarely paired, 3–4 x 1.5–2 mm, ovoid to oblong–lanceolate, acute at apex, brown, few flowered; rachilla winged; stamen 1. Nuts c 1 x 0.6 mm, trigonous, obovoid, umbonulate, shortly stipitate, smooth, creamish–white.

Fls. & Frts : September.

Illus. : Prasad & N.P. Singh, op.cit.

Distrib. : Common on top of the fort, Pune.

Notes : It is allied to F. cappiliculmis Ohwi, a Malesian species, but differs in a few characters, as tabulated (Prasad & N.P. Singh, op.cit.).


Annuals, 30 cm high; roots fibrous, stems tufted, strongly...
compressed, angular. Leaves mostly basal, shorter than stems, 0.7–1 mm wide, scabrous on margins towards apex, upper leaves highly reduced, with a short lamina; sheaths papery; ligule a fringe of short hairs; orifice membranous. Inflorescence simple to subcompound, 1.5–2 x 1–1.5 cm, with 3–8 spikelets; invulucral bracts 3. Spikelets ovoid, c 3 x 1.2 mm, acute at apex, faintly angled, yellowish–brown, few–flowered; rachilla winged; stamens 1. Nuts c 0.7 x 0.5 mm, trigonous, with convex faces, broadly obovoid, minutely stipitate, whitish, verruculose.

_Fls. & Frts_: August.

_Illus._: Prasad & N.P. Singh, op.cit.

_Distrib._: Sparsely found in the College of Science premises, Nagpur (Prasad & N.P. Singh, op.cit.).

_Notes_: It is allied to *F. dauciformis* Govind. and *F. tenera* R. & S. but differs as given (Prasad & Singh, op.cit).


Annuals, 6–10 cm high; stems tufted, compressed, trigonous. Leaves up to half the length of stem, 1.5–5 x 0.03–0.08 cm, linear; sheaths chartaceous, striate, ligule a fringe of short hairs. Inflorescence usually reduced to a single spikelet, at times an additional peduncled spikelet. Invulucral bract 1, few–flowered, brownish; stamens 2. Nuts trigonous, c 0.8 x 0.5 mm, obovoid, umbonulate, minutely stipitate, sparsely verruculose, creamish–white.

_Fls. & Frts_: August.

_Illus._: Prasad & N.P. Singh, op.cit.

_Distrib._: Frequent on rocks, growing along with *Lindernia* spp. and *Murdannia* spp. Sindhudurg.

_Notes_: Although allied to *F. woodrowii* C.B. Cl. it can be easily be distinguished by the very short habit, much slender stems and the inflorescence usually of a single spikelet as tabulated (Prasad & Singh, op.cit).

**Note on Fimbristylis ultragluma** :

Prasad and Singh in *J. Econ. Tax. Bot.* 24: 446. 2000 have given erroneously distribution of *Fimbristylis ultragluma* Govind. as
endemic to Maharashtra whereas it has been described based on Santapau's collection No. 13672 (BLAT) from Rajkot, Pradumna Park which comes under Gujarat (Govindarajalu in Rheedea 7(2): 119–120. 1997).

**Scirpus naikianus** Wadood Khan in Rheedea 8: 71, f. 1. 1998.

Annuals, 10–30 cm high, densely tufted; stem terete, deeply grooved to one side. Leaf sheaths herbaceous; blades of first sterile leaves thin, 4–5 mm wide, flat, ultimately deciduous, those of stems reduced to sheaths. Inflorescences pseudolateral, sessile, with clusters of 2–10 spikelets near base of stems; involucral bracts solitary. Spikelets 8–10 x 2.5 – 3 mm, ellipsoid, angular, greenish to stramineous, tinged with brown, acute or subacute; rachilla rigid, stamens 2. Nuts biconvex, broadly obovoid or almost suborbicular, 1–1.3 mm across, yellowish to chestnut brown, shining, apiculate.


*Illus.*: Wadood Khan, op. cit.

*Distrib.*: Rare along marshes near margins of tank with dimorphic culms. Nanded (Wadood Khan, op. cit.).

*Notes*: It is a distinct species belonging to the section *Schoenoplectus* Reichb. of the genus *Scirpus* L. (s.l.) and is similar to *Scirpus wallichii* Nees but differing in having the inflorescence always very near base of stems, smaller boat–shaped glumes, papillose anther tips and smooth nuts without hypogynous bristles. It also resemble *S. lateriflorus* Gmel. but differs in having basal inflorescence and biconvex, smooth nuts.


Herbs, diffusely branched; roots fibrous, purplish; stem triquetrous, 3–10 cm long, ribbed, grooved on one face. Leaves all cauline, bractiform; sheaths loose, dialated below inflorescence, blades up to 3 x 0.25 cm, linear, apex acuminate to caudate. Inflorescences of axillary clusters of 6–20 spikelets; involucral bracts 2–3. Spikelets unisexual, greenish tinged with white; male spikelets few, linear–oblong, stamens 3; female spikelets many, ellipsoid–oblong. Nuts 0.4–0.5 x 0.2–0.3 mm, obtusely trigonous, ovoid or ellipsoid, often with 10–12 vertical striations in between 3 main roots, white to pale brownish.

*Fls. & Frts*: October–November.

Herbs, annual; culms erect, much branched. Inflorescences of axillary clusters; peduncles often cellurally spongy papillose, white. Spikelets unisexual; male ones few, oblong, 1–2–flowered; female ones several, turbinate or ovoid. Nuts 0.7–1 mm long and broad, obtusely trigonous, subglobose, greyish.

**Fls. & Frts:** October–November.

**Illus.:** Wadood Khan, op.cit.

**Distrib.:** Rare in wet, open grasslands, paddy fields and forest clearings on hill slopes. Gadchiroli.

**Notes:** This species can be distinguished from its closely allied species viz., *S. reticulata* (Holtt.) Kern and *S. caricina* (R. Br.) Bth. by its turbinate or ovoid female spikelets having smaller, 3–lobed and distinctly several–nerved glumes and by larger, etuberculate–reticulate nuts with sparsely hispidulous apex.

**POACEAE**


Plants perennial; culms 0.4–1 m tall. Leaves flat, 8–25 x 0.3–0.8 cm, apex obtuse margins pectinate with bulbous based hairs. Panicles with few spikelets, 8–20 x 2.5 cm, castaneous. Sessile spikelets c 10 mm long, callus pungent; pedicelled spikelets with 1 male floret; glumes green, muticous.

**Fls. & Frts.:** September–October.

**Illus.:** Veldk. & Salunkhe, op.cit.
Distrib. : Rare in open grasslands at an altitudinal range between 725–1310 m, usually in association with species of *Dimeria*, *Glyphochloa* and *Ischaemum*. Satara & Sindhudurg (Veldk. & Salunkhe, op.cit.).

Notes. : This species is particularly exceptional because of the few–spikeled, lax panicle, the glabrous pedicels of the pedicelled spikelets more than half as long as the sessile spikeled and in the very long awns. The glumes of the sessile spikelet are deeply castaneous, glossy and distally minutely tuberculate (Veldk. & Salunkhe, op.cit.).
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★★★
## EMENDATUS

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<td>086</td>
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<td>(Kew Gawl.) (Ker-Gawl.)</td>
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<td>Nopalea cochenillifera</td>
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Combretum albidum G. Don

Sonneratia caseolaris (L.) Engl.

Ixora brachiata Roxb. - Endemic

Pavetta crassicaulis Bremek.
Jasminum malabaricum Wight - Endemic
Courtesy: Dr. P. Tetali, N. G. C. P. R.

Carissa congesta Wight
Ceropegia evansii McC. - Endemic
Courtesy: Dr. P. Tetali, N. G. C. P. R.

Ceropegia jainii Ansari & Kulkarni - Endemic
Courtesy: Dr. P. Tetali, N. G. C. P. R.

Brachystelma malwanense Yadav et al. - Endemic
Courtesy: Dr. S. R. Yadav, S. U. K.

Ceropegia fantastica Sedgw. - Endemic
Courtesy: Dr. S. R. Yadav, S. U. K.

Ceropegia malparaense Yadav et al. - Endemic
Courtesy: Dr. S. R. Yadav, S. U. K.
Ceropegia noorjahaniae Ansari - Endemic

Ceropegia oculata Hook. - Endemic

Ceropegia sahyadrica Ansari & Kulkarni - Endemic

Frerea indica Dalz. - Endemic
Courtesy: Dr. P. Tetali, N. G. C. P. R.
Oxystelma esculentum (L. f.) R. Br.

Swertia densifolia (Griseb.) Kashyapa

Courtesy: Dr. P. Tetali, N. G. C. P. R.
Datura metel L.
Courtesy: Dr. P. Tetali, N. G. C. P. R.

Bacopa monnieri (L.) Penn.
**Acanthus ilicifolius** L.  
Courtesy: Dr. P. Tetali, N. G. C. P. R.

**Barleria lawii** T. And.  
Courtesy: Dr. P. Tetali, N. G. C. P. R.

**Barleria gibsonioides** Blatt. - Endemic  
Courtesy: Dr. P. Tetali, N. G. C. P. R.

**Carvia callosa** (Wall.) Bremek. - Endemic  
Courtesy: Dr. P. Tetali, N. G. C. P. R.
Aerva lanata (L.) A. L. Juss. ex Schult.

Beilschmiedia dalzellii (Meissn.) Kosterm.

Euphorbicia laevis Hayne et Roth


Courtesy: Dr. P. Tetali, N. G. C. P. R.