Flora of India
Series 2

FLORA OF MAHARASHTRA STATE

DICOTYLEDONES

VOLUME 2

Editors
N. P. Singh,
P. Lakshminarasimhan,
S. Karthikeyan
&
P. V. Prasanna



BOTANICAL SURVEY OF INDIA

FLORA OF MAHARASHTRA STATE

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(Combretaceae to Ceratophyllaceae)

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

Back Jacket : **Ceropegia sahyadrica** Ansari & Kulkarni

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PREFACE

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)

Group	Wild							Cultivated Taxa
	Families	Genera	Species	Sub-species	Varieties	Sub-varieties	Formae	
DICOTYLEDONES	167	841	2221	25	137	--	07	796
MONOCOTYLEDONES	34	256	913	03	39	01	01	145
TOTAL	**201**	**1097**	**3134**	**28**	**176**	**01**	**08**	**941**

EDITORS

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We wish to record our sincere gratitude and appreciation to :

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★ ★ ★

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Combretum albidum G. Don



Sonneratia caseolaris (L.) Engl.



Ixora brachiata Roxb. - Endemic



Pavetta crassicaulis Bremek.



Senecio bombayensis Balakr.



Campanula alphonsii Wall. ex A. DC. - Endemic
Courtesy : Dr. S. R. Yadav, S. U. K.



Jasminum malabaricum Wight - Endemic
Courtesy : Dr. P. Tetali, N. G. C. P. R.



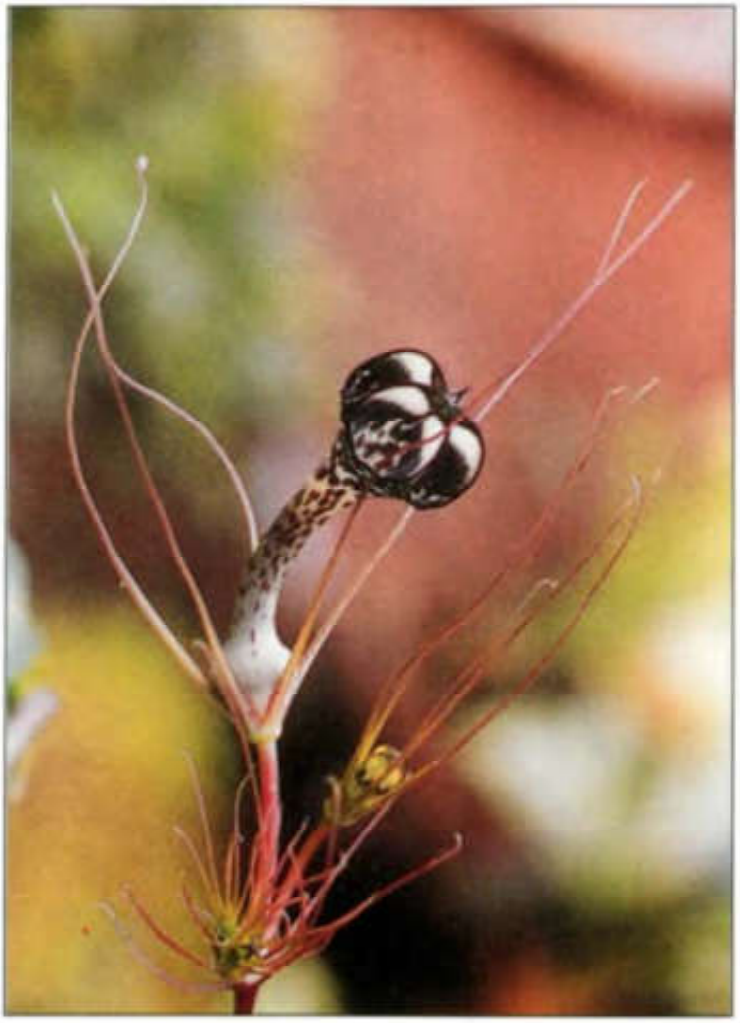
Carissa congesta Wight



Brachystelma malwanense Yadav et al. - Endemic
Courtesy : Dr. S. R. Yadav, S. U. K.



Ceropegia evansii McC. - Endemic
Courtesy : Dr. P. Tetali, N. G. C. P. R.



Ceropegia fantastica Sedgw. - Endemic
Courtesy : Dr. S. R. Yadav, S. U. K.



Ceropegia jainii Ansari & Kulkarni - Endemic
Courtesy : Dr. P. Tetali, N. G. C. P. R.



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.



Paracaryopsis malabarica (C. B. Cl.) Mill. - Endemic
Courtesy : Dr. P. Tetali, N. G. C. P. R.



Argyreia cuneata (Willd.) Ker - Gawl. - Endemic
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.



Centranthera indica (L.) Gamble
Courtesy : Dr. P. Tetali, N. G. C. P. R.



Martynia annua L.



Acanthus ilicifolius L.
Courtesy : Dr. P. Tetali, N. G. C. P. R.



Barleria gibsonioides Blatt. - Endemic
Courtesy : Dr. P. Tetali, N. G. C. P. R.



Barleria lawii T. And.
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.

Courtesy : Dr. P. Tetali, N. G. C. P. R.



Euphorbia concanensis Janarthanam & Yadav - Endemic
Courtesy : Dr. S. R. Yadav, S. U. K.



Euphorbia laeta Heyne ex Roth

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 ... CALYCOPTERIS

ANOGEISSUS (DC.) Guill. & Perr.

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

Anogeissus acuminata (Roxb. ex DC.) Guill. & Perr. Fl. Seneg. Tent. 1: 280. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 2:450. 1878; Scott in Kew Bull. 33: 563. 1979; Gang. & T. Chakrab. in J. Econ. Tax. Bot. 21 : 284. 1997. *Conocarpus acuminatus* Roxb. ex DC. Prodr. 3:17. 1828. *Anogeissus pendula* Edgew. Cat. Pl. Banda 47. 1851 & in J. Asiat. Soc. Bengal 21: 171. 1873; C. B. Cl. in Hook. f. op. cit 451.; Cooke, Fl. Pres. Bombay 1: 513. 1958 (Repr.). *'Dhankra', 'Dhao', 'Kardahi'*.

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.

Illus. : Bedd. Fl. Sylv. t. 16. 1869.

Distrib. : Bombay, Chandrapur (Scott, op. cit.), Thane.

A. latifolia (Roxb. ex DC.) Wall. ex Guill. & Perr. Fl. Seneg. Tent. 1:280. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 2:450. 1878; Cooke, Fl. Pres. Bombay 1:512. 1958 (Repr.); Scott in Kew Bull. 33:560. 1979; Gang. & T. Chakrab. in J. Econ. Tax. Bot. 21. 288. 1997. *Conocarpus latifolia* Roxb. ex DC. Prodr. 3:17. 1828. *'Dabria', 'Dhawda', 'Dhawra'*.

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.

Illus. : Wight, Ic. t. 994. 1845 (*Conocarpus latifolia*); Talb. For. Fl. Bombay Pres. & Sind 2: 23, f. 301. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic, 2: t. 261. 1982.

Distrib. : Common throughout in dry deciduous forests.

CALYCOPTERIS Lam.

Calycopteris floribunda (Roxb.) Poir. in Lam. Encycl. Suppl. 2:41. 1811; C.B.Cl. in Hook. f. Fl. Brit. India 2:449. 1878; Cooke, Fl. Pres. Bombay 1:512. 1958 (Repr.); Gang. & T. Chakrab. in J. Econ. Tax. Bot. 21 : 294. 1997. *Getonia floribunda* Roxb. Pl. Cor. t. 87. 1798. *'Baguli', 'Ukshi'.*

Shrubs; young parts rusty puberulous. Leaves 3.5–9.0 x 1.5 cm, elliptic–oblong or ovate–lanceolate, 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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:21, f. 300. 1911.

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

COMBRETUM Loefl. (nom. cons.)

1.	Flowers with 5–calyx lobes; fruits 5–winged	...	*C. album*
1.	Flowers with 4–calyx lobes; fruits 4–winged:		
2.	Calyx tube funnel shaped and longer than ovary	...	*C. latifolium*
2.	Calyx tube campanulate, equalling ovary	...	*C. albidum*

Combretum albidum G. Don in Trans. Linn. Soc. London 15:429. 1824; Gang. & T. Chakrab. in J. Econ. Tax. Bot. 21 : 301. 1997. *C. ovalifolium* Roxb. Fl. Ind. 2:226. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 2:458. 1878; Cooke, Fl. Pres. Bombay 1:515. 1958 (Repr.). *'Madbel'.*

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:26, f. 303. 1911; Ic. Roxb. Fasc. 7, t. 5. 1976 (Repr. ed.); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 263. 1982.

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

C. album Pers. Syn. Pl. 1 : 411. 1805; Gang. & T. Chakrab. in J. Econ. Tax. Bot. 14 : 23. 1990 & Ibid. 21 : 304, f. 8 B.1997. *C. roxburghii* Spr. Syst. 2 : 331. 1825; Sant. & Wagh in Bull. Bot. Surv. India 5 : 106. (1963) 1964. *C. decandrum* Roxb. Pl. Cor. 1 : 43, t. 59. 1796 non Jacq. 1760; C. B. Cl. in Hook. f. Fl. Brit. India 2 : 452. 1878.

Shrubs; bark grayish–white, corky. Leaves oblong. Flowers white, in terminal panicles with large conspicuous bracts turning creamy–white. Fruits indehiscent, oblong, 5–winged.

Fls. & Frts. : January–May.

Distrib. : Occasional in deciduous forests. Buldhana, Chandrapur.

C. latifolium Bl. Bijdr. 641. 1825; Gang. & T. Chakrab. in J. Econ. Tax. Bot. 21: 311. 1997. *C. extensum* Roxb. ex G. Don in Trans. Linn. Soc. London 15:414. 1827; C.B.Cl. in Hook. Fl. Brit. India 2:458. 1878; Cooke, Fl. Pres. Bombay 1:515. 1958 (Repr.). *C. macrophyllum* Roxb. Fl. Ind. 2: 231. 1832; Almeida, Fl. Mah. 2: 250. 1998. *'Piluki'*.

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.

Illus. : Wight, Ic. t. 227. 1839 (*C. wightianum* Wall. ex. Wight & Arn. Prodr. 317. 1834).

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

LUMNITZERA Willd.

Lumnitzera racemosa Willd. in Ges. Naturf. Fr. Berlin Neue Schr. 4:187. 1803; C.B.Cl. in Hook. f. Fl. Brit. India 2:452. 1878; Cooke, Fl. Pres. Bombay 1: 514; 1958 (Repr.); Exell in Steenis, Fl. Males. 1, 4:588. 1954; Gang. & T. Chakrab. in J. Econ. Tax. Bot. 21 : 326. 1997.

Small trees or shrubs, upto 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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 24, f. 302. 1911.

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*

Terminalia bellirica (Gaertn.) Roxb. Pl. Cor. 2:54, t. 198. 1805 (*'bellerica'*); C.B.Cl. in Hook. f. Fl. Brit. India 2:445. 1878; Cooke, Fl. Pres. Bombay 1: 508. 1958 (Repr.); Gang. & T. Chakrab. in J. Econ. Tax. Bot. 21: 338. 1997. *Myrobalanus bellirica* Gaertn. Fruct. 2:90, t. 97. 1791. *Terminalia bellirica* var. *laurinoides* C.B.Cl. in Hook. f. op. cit. *'Behda', 'Bellirina', 'Hela'.*

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.

Illus. : Wight, Ic. t. 91. 1838; Bedd. Fl. Sylv. 19. 1869; Talb. For. Fl. Bombay & Sind 2:13, f. 294. 1911.

Distrib. : Common throughout.

T. chebula Retz. Obs. Bot. 5:31. 1788; C.B.Cl. in Hook. f. Fl. Brit. India 2:446. 1878; Cooke, Fl. Pres. Bombay 1: 509. 1958 (Repr.); Gang. & T. Chakrab. in J. Econ. Tax. Bot. 21: 345, f. 19B. 1997. *T. chebula* var. *tomentella* (Kurz) C.B.Cl. in Hook. f. op. cit.; Almeida, Fl. Mah. 2: 254. 1998. *'Hirad', 'Hirda'.*

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:15, f. 295. 1911; Gang. & T. Chakrab. op. cit.

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

T. cuneata Roth, Nov. Pl. Sp. 379. 1821; Gang. & T. Chakrab. in J. Econ. Tax. Bot. 16 : 556. 1922 & Ibid. 21 : 349, f. 20 B. 1997. *T. arjuna* (Roxb. ex DC.) Wight & Arn. Prodr. 314. 1834; C. B. Cl. in Hook. f. Fl. Brit. India 2 : 447. 1878; Cooke, Fl. Pres. Bombay 1 : 1958 (Repr.). *T. arjuna* var. *angustifolia* (Roxb.) C. B. Cl. in Hook. f. op. cit.; Cooke, op. cit. *'Arjun sadada', Kahu', 'Sadada'.*

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.

Illus. : Bedd. Fl. Sylv. t. 28. 1869; Talb. For. Fl. Bombay Pres. & Sind 2:17, f. 296. 1911 (*T. arjuna*); Gang. & T. Chakrab. op. cit.

Distrib. : Common throughout.

T. elliptica Willd. Sp. Pl. 4 : 969. 1806; Gang. & T. Chakrab. in J. Econ. Tax. Bot. 16 : 601. 1992 & Ibid. 21 : 351, f. 21 A. 1997. *T. alata* Roth, Nov. Sp. Pl. 379. 1821. *T. crenulata* Roth, Nov. Sp. Pl. 380. 1821. *T. coriacea* (Roxb.) Wight & Arn. Prodr. 315. 1834 non Rottl. ex Spr. 1807. *T. tomentosa* (Roxb. ex DC.) Wight & Arn. Prodr. 314. 1834 non Mart. 1829; C. B. Cl. in Hook. f. Fl. Brit. India 2 : 447. 1878; Cooke, Fl. Pres. Bombay 1 : 510. 1958 (Repr.). *T. tomentosa* var. *crenulata* (Roth) C. B. Cl. in Hook. f. op. cit. 448. *T. tomentosa* var. *coriacea* (Roxb.) C. B. Cl. in Hook. f. op. cit.

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.

Illus. : Wight Ic. t. 195. 1839; Bedd. Fl. Sylv. t. 17. 1869 & Talb. For. Fl. Bombay Pres. & Sind 2 : 18, f. 297. 1911 (*T. tomentosa*); Gang. & T. Chakrab. op. cit.

Distrib. : Frequent in deciduous forests.

T. paniculata Roth, Nov. Pl. Sp. 383. 1821; C.B.Cl. in Hook. f. Fl. Brit. India 2: 448. 1878; Cooke, Fl. Pres. Bombay 1: 510. 1958 (Repr.); Gang. & T. Chakrab. in J. Econ. Tax. Bot 21: 357, f. 22 B. 1997. *'Honal', 'Kindal', 'Kinjal'.*

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 panicled–spikes. Drupes brownish–red, with unequal wings.

Fls. & Frts. : April–August.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:20, f. 229. 1911; Gang. & T. Chakrab. op. cit.

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

CULTIVATED SPECIES :

Combretum coccineum Lam. Encycl. 1 : 734. 1784; Cooke, Fl. Pres. Bombay 1 : 516. 1958 (Repr.); Gang. & T. Chakrab. in J. Econ. Tax. Bot. 21 : 362. 1997.

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.

Quisqualis indica L. Sp. Pl. ed. 2 : 556. 1762; C. B. Cl. in Hook. f. Fl. Brit. India 2 : 459. 1878; Cooke, Pres. Bombay 1 : 517. 1958 (Repr.); Gang. & Chakrab. in J. Econ. Tax. Bot 21 : 357, f. 22 B. 1997. *'Baramasi', 'Lalchameli', 'Rangoonvel'.*

Large, straggling shrubs. Leaves 5–18 x 2.5–9.0 cm, elliptic–oblong, 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.

Illus. : Gang. & T. Chakrab. op. cit.

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

Terminalia catappa L. Syst. Nat. ed. 2 : 674. 1767; C.B.Cl. in Hook. f. Fl. Brit. India 2: 444. 1878; Cooke, Fl. Pres. Bombay 1: 511. 1958 (Repr.); Gang. & T. Chakrab. in J. Econ. Tax. Bot. 21: 343, f. 18 B. 1997. *'Badam', 'Deshi–badam', 'Hirani–badam', 'Jangli–badam'.*

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.

Illus. : Wight Ic. t. 172. 1839; Gang. & T. Chakrab. op. cit.

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*

Eugenia macrosepala Duthie in Hook. f. Fl. Brit. India 2:501. 1879; Cooke, Fl. Pres. Bombay 1:524. 1958 (Repr.).

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.

E. vartakii S. M. Almeida, Fl. Savantwadi 1: 170. 1990. *Eugenia bracteata* (Willd) Roxb. ex DC. Prodr. 3: 264. 1828 non Rich, 1792; Cooke, Fl. Pres. Bombay 1: 526. 1958 (Repr.). *E. bracteata* var. *roxburghii* (DC.) Duthie in Hook f. Fl. Brit. India 2: 502. 1879. *E. heynei* (Spr.) Rathakr. & N.C. Nair in J. Econ. Tax. Bot. 5: 232. 1984.

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.

Psidium guajava L. Sp. Pl. 470. 1753; Duthie in Hook. f. Fl. Brit. India 2:468. 1878; Cooke, Fl. Pres. Bombay 1:529. 1958 (Repr.). *'Jamb', 'Peru'*.

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 tetragonous; 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. tamilnadensis*
                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*

Syzygium caryophyllatum (L.) Alst. in Trim. Handb. Fl. Ceylon 6:116. 1931; Gandhi in Sald. & Nicols. Fl. Hassan Dt. 280. 1976. *Myrtus caryophyllatus* L. Sp. Pl. 472. 1753. *Eugenia corymbosa* Lam. Encycl. 3:199. 1789; Cooke, Fl. Pres. Bombay 1:522. 1958 (Repr.). *E. caryophyllaea* Wight, Ill. 2: 15. 1850; Duthie in Hook. f. Fl. Brit. India 2:490. 1878. *'Bhedas', 'Nimbuli', 'Ranlavang'.*

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 calyptrate. 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.

S. cumini (L.) Skeels in U. S. Dept. Agric. Bur. Pl. Industr. Bull. 248:25. 1912. *Myrtus cumini* L. Sp. Pl. 471. 1753. *Eugenia jambolana* Lam. Encycl. 3:198. 1789; Duthie in Hook. f. Fl. Brit. India 2:499. 1879; Cooke, Fl. Pres. Bombay 1:523. 1958 (Repr.). *'Jambhal'*.

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 calyptrate. Berries 1.5–2.2 x 1.0–1.5 cm, oblong or ovoid, purple, fleshy.

Fls. & Frts. : March–June.

Illus. : Wight, Ic. t. 535. 1842; Talb. For. Fl. Bombay Pres. & Sind 2:42, f. 313. 1911 (*Eugenia jambolana*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t 271. 1982.

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

S. hemisphericum (Wight) Alst. in Trim. Handb. Fl. Ceylon 6:115. 1931; Ashton in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 430. 1981. *Eugenia hemispherica* Wight, Ic. t. 525. 1842; Duthie in Hook. f. Fl. Brit. India 2:477. 1878; Cooke, Fl. Pres. Bombay 1:519. 1958 (Repr.).

Trees, 10–15 m high; bark smooth, blackish. Leaves 7–12 x 3–6 cm, elliptic–oblong, ovate–lanceolate or oblanceolate, 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.

Illus. : Wight, op. cit.; Talb. For. Fl. Bombay Pres. & Sind 2: 33, f. 306. 1911.

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

S. heyneanum (Duthie) Wall. ex Gamble, Fl. Pres. Madras 482. 1919 [1:341. 1967 (Repr.)]. *Eugenia heyneana* Duthie in Hook. f. Fl. Brit. India 2:500. 1879; Cooke, Fl. Pres. Bombay 1:524. 1958 (Repr.). *'Bhedas', 'Par–jambhal'.*

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.

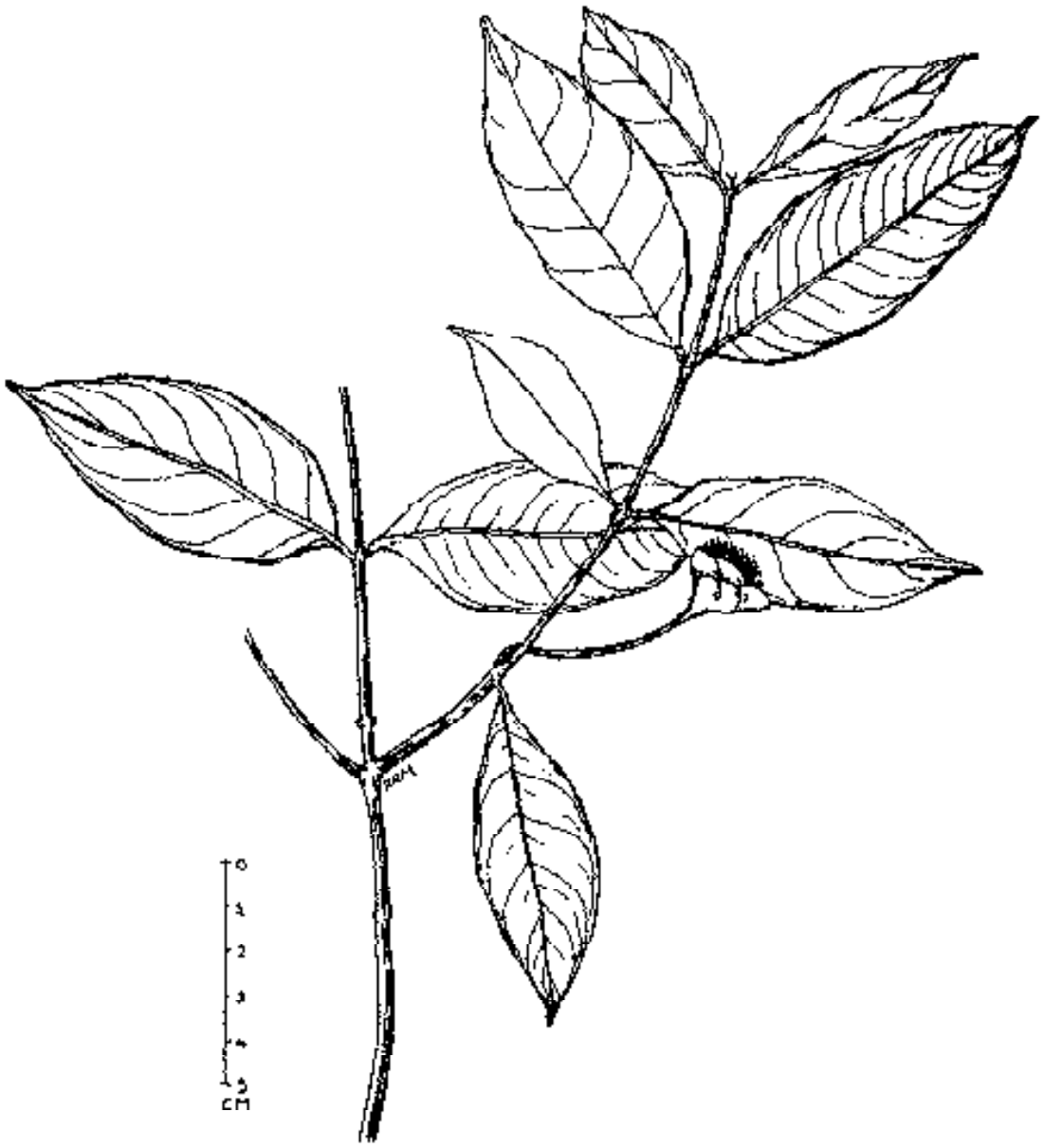
var. **alternans** (Duthie) B. G. Kulkarni & Lakshmi., comb. nov.

Eugenia heyneana var. *alternans* Duthie in Hook. f. Fl. Brit. India. 2:500. 1879; Cooke, Fl. Pres. Bombay 1:524. 1958 (Repr.).

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.).

S. laetum (Buch.–Ham.) Gandhi in Sald. & Nicols. Fl. Hassan Dt. 282. 1976. *Eugenia laeta* Buch.–Ham. in Wern. Trans. Soc. 5:338. 1824; Duthie in Hook. f. Fl. Brit. India 2:479. 1878; Cooke, Fl. Pres. Bombay 1:519. 1958 (Repr.).



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 c 2.5 x 1.6 cm, ovoid to ellipsoid, reddish–brown.

Fls. & Frts. : January–May.

Illus. : Wight, Ic. t. 526. 1842; Talb. For. Fl. Bombay Pres. & Sind 2:35, f. 307. 1911 (*Eugenia pauciflora* Wight).

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

S. lanceolatum (Lam.) Wight & Arn. Prodr. 330. 1834; Gandhi in Sald. & Nicols. Fl. Hassan Dt. 282. 1978 (II Repr.). *Eugenia lanceolata* Lam. Encycl. 3:200. 1789; Cooke, Fl. Pres. Bombay 1: 520. 1958 (Repr.). *E. wightiana* Wight, Ic. t. 529. 1842; Duthie in Hook. f. Fl. Brit. India 2:485. 1878.

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.).

S. phillyraeoides (Trim.) Sant. in Kew Bull. 1948:276. 1948 & in Rec. Bot. Surv. India 16(1):92. 1967 (3rd Rev. ed.). *Eugenia phillyrioides* Trim. in J. Bot. 23:207. 1885. *E. mooniana* Wight, Ic. t. 551. 1842; Duthie in Hook. f. Fl. Brit. India 2:505. 1879; Cooke, Fl. Pres. Bombay 1:525. 1958 (Repr.).

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 phillyreoides (Trim.) Sant.

Illus. : Wight, op. cit.

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

Notes : Sometimes this taxon is placed under *Eugenia* L. as *E. thwaitesii* Duthie, reference : Rathakrishnan & Nair in J. Econ. Tax. Bot. 5: 232. 1984 and also as *E. cotinifolia* Jacq. ssp. *phyllyraeoides* Ashton in Dassanayake & Fosberg, Rev. Handb. Fl. Ceylon 2: 413. 1981.

S. rubicundum Wight & Arn. Prodr. 330. 1834; Gamble, Fl. Pres. Madras 1:339. 1967 (Repr.). *Eugenia rubicunda* Wight, Ic. t. 538. 1842; Duthie in Hook. f. Fl. Brit. India 2: 495. 1878; Cooke, Fl. Pres. Bombay 1: 521. 1958 (Repr.). *E. lissophylla* (Thw.) Duthie in Hook. f. op. cit. 488.*'Lendi Jambhal'*.

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.

S. stocksii (Duthie) Gamble, Fl. Pres. Madras 481. 1919 [1:340. 1957 (Repr.)]. *Eugenia stocksii* Duthie in Hook. f. Fl. Brit. India 2:498. 1879; Cooke, Fl. Pres. Bombay 1:522. 1958 (Repr.).

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.).

S. tamilnadensis Radhakr. & Chithra in Nair & Henry, Tamilnadu St. Fl. Anal. 1: 158. 1983. *S. montanum* (Wight) Gamble, Fl. Pres. Madras 479. 1919 [1: 339. 1957 (Repr.)] non Thw. 1859. *Eugenia montana* Wight, Ic. t. 1060. 1846 non Aubl. 1775; Duthie in Hook. f. Fl. Brit. India 2: 488. 1878.

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.

S. zeylanicum (L.) DC. Prodr. 3:260. 1828; Henry et al. in Manilal, Bot. & Hist. Hort. Malab. 160. 1980. *Myrtus zeylanica* L. Sp. Pl. 675 1753. *Eugenia zeylanica* (L.) Wight, Illus. 2:15. 1850; Duthie in Hook. f. Fl. Brit. India 2:485. 1878 p.p. *E. spicata* Lam. Encycl. 3:201. 1789; Cooke, Fl. Pres. Bombay 1:521. 1958 (Repr.). *'Pitkuli'*.

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:

Callistemon citrinus (Curtis) Skeels in U.S. Dept. Agric. Bur. Pl. Ind. Bull. 282: 49. 1913; Raiz. Suppl. Fl. Upper Gang. Plains 72. 1976. *Metrosideros citrina* Curtis, Bot. Mag. t. 260. 1794. *Callistemon lanceolatus* (Sm.) Sweet, Fl. Aust. Sub. t. 29. 1827; Bailey, Man. Cult. Pl. 725. 1949 (2nd ed.). *C. linearis* DC. Prodr. 3: 323. 1828.

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.

Eucalyptus alba Reinw. Fl. Ned. Indie 1101. 1826; Ashton in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2 : 463. 1981.

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.

E. botryoides Sm. in Trans. Linn. Soc. London 3: 286. 1791; Walters in Tutin et al. Fl. Europaea 2: 304. 1968; Ashton in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2 : 460. 1981.

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.

E. camaldulensis Dehnh. Cat. Pl.Hort. Camald. 20. 1832; Mahesh. Fl. Delhi 159 1963; Ashton in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2 : 460. 1981.

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.

Distrib. : Planted trees. Jalgaon, Pune.

E. citriodora Hook. in Mitch. J. Trop. Australia 235. 1848; Mahesh. Fl. Delhi 159. 1963; Ashton in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2 : 460. 1981.

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.

Illus. : Anon. Wealth of India 3: 211, f. 133. 1952.

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

E. globulus Labill. Rel. Voy. Rech. Perouse 1: 153, t. 13. 1799; Bailey, Man. Cult. Pl. 727. 1949 (2nd ed.); Ashton in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2 : 460. 1981.

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.

E. paniculata Sm. in Trans. Linn. Soc. London 3: 287. 1797; Mahesh. Fl. Delhi 159. 1963; Ashton in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2 : 460. 1981.

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.

E. pilularis Sm. in Tras. Linn. Soc. London 3: 284. 1797; Ashton in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 468. 1981.

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.

E. resinifera Sm. in White, J. Voy, N.S. Wales 231. 1790; Walters in Tutin et al. Fl. Europaea 2: 304. 1968.

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.

E. robusta Sm. in Bot. N. Holl. 39. 1793; Parker, For. Fl. Punjab (with Hazara & Delhi) 249. 1956 (3rd ed); Ashton in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2 : 460. 1981.

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.

E. terreticornis Sm. Bot. N. Holl. 41. 1793 et in Trans. Linn. Soc. London 3: 284. 1797; Parker, For. Fl. Punjab (with Hazara & Delhi) 251. 1956 (3rd ed); Matthew & Britto in Matthew, Fl. Tamilnadu Carnatic 3(1) : 591. 1983.

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.

E. torelliana F. Muell. Fragm. 10: 106. 1876; Matthew & Britto in Matthew, Fl. Tamilnadu Carnatic 3(1): 591. 1983.

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.

E. umbellata Dum. Cours. Bot. Cult. ed. 2, 7: 279. 1874; **Anon.** Wealth of India 3: 216. 1952; Mukherjee in Verma et al. Fl. Madhya Pradesh 1: 464. 1993.

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.

E. viminalis Labill. Nov. Holl. Pl. Spec. 2: 12, t. 151. 1806; Gamble, Man. Ind. Timb. (ed. 2) 352. 1902; Bailey, Man. Cul. Pl. 728. 1949 (2nd ed.); Ashton in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2 : 463. 1981.

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.

Eugenia uniflora L. Sp. Pl. 470. 1753; Duthie in Hook. f. Fl. Brit. India 2: 505. 1879; Bailey, Man. Cult. Pl. 730. 1949 (2nd ed.); Ashton in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2 : 409. 1981.

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.

Melaleuca leucodendron (L.) L. Mant. 105. 1767; Bailey, Man. Cult. Pl. 726. 1949 (2nd ed.); Duthie in Hook. f. Fl. Brit. India 2 : 465. 1878. *Myrtus leucodendron* L. Mant. 105. 1771. *'Cajuput tree', 'Kayaputi', 'Punk tree'.*

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.

Distrib. : Ornamental trees, grown in gardens. Bombay.

Myrtus communis L. Sp. Pl. 471. 1753; Cooke, Fl. Pres. Bombay 1: 529. 1958 (Repr.); Bailey, Man. Cult. Pl. 730. 1949 (2nd ed.).

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.

Syzygium aromaticum (L.) Merr. & Perry in Mem Amer. Acad. Arts. 18: 196. 1939; Bennet, Name Changes Flower. Pl. India & Adj. Reg. 549. 1987. *Caryophyllus aromaticus* L. Sp. Pl. 515. 1753.

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.

S. jambos (L.) Alst. in Trim. Handb. Fl. Ceylon 6 (Suppl.): 116. 1931; Sant. in Rec. Bot. Surv. India 16(1): 93. 1967 (3rd ed.). *Eugenia jambos* L. Sp. Pl. 470. 1753; Cooke. Fl. Pres. Bombay 1: 526. 1958 (Repr.). *Jambosa vulgaris* DC. Prodr. 3: 286. 1828; Duthie in Hook. f. Fl. Brit. India 2: 474. 1878. *'Gulab–jamb'*.

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.

Fls. & Frts. : October–January.

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

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

S. malaccensis (L.) Merr. & Perry in J. Arnold Arbor. 19: 215. 1938; Bennet, Name Changes in Flower. Pl. India & Adj. Reg. 551. 1987. *Eugenia malaccensis* L. Sp. Pl. 470. 1753; Duthie in Hook. f. Fl. Brit. India 2: 471. 1878; Cooke, Fl. Pres. Bombay 1: 526. 1958 (Repr.). *'Malaka Jamb'*.

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.

S. samarangense (Bl.) Merr. & Perry in J. Arnold Arbor. 19: 115. 1938; Varma, Fl. Bhagalpur–Dicotyledons 158. 1981. *Myrtus samarangensis* Bl. Bijdr. 1084. 1826. *Eugenia javanica* Lam. Encycl. 3: 200. 1789; Duthie in Hook. f. Fl. Brit. India 2: 474. 1878.

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.

Distrib. : Planted in gardens. Bombay.

LECYTHIDACEAE

(S. G. Pradhan)

CAREYA Roxb. (nom. cons.)

Careya arborea Roxb. Pl. Cor. 3:14, t. 218. 1819; C.B.Cl. in Hook. f. Fl. Brit. India 2: 511. 1879; Cooke, Fl. Pres. Bombay 1:528. 1958 (Repr.); Manna & D. C. S. Raju in Bull. Bot. Surv. India 36:225. (1994) 1997. *'Kumbhi'*, *'Kumbohya'*.

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.

Illus. : Bedd. Fl. Sylv. t. 205. 1872; Talb. For. Fl. Bombay Pres. & Sind 2:49, f. 316. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 274. 1982.

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

CULTIVATED SPECIES :

Couroupita guianensis Abul. Pl. Gui. 2 : 708, t. 282. 1775; Bailey, Man. Cult. Pl. 722. 1949. *'Cannon ball tree'.*

Evergreen trees, upto 15 m tall. Leaves 20–25 cm long, oblong, Flowers cauliflorous, i.e. borne on trunk and larger branches in racemes upto 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, upto 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*

Barringtonia acutangula (L.) Gaertn. Fruct. 2: 97, t. 101. 1791; C.B.Cl. in Hook. f. Fl. Brit. India 2:508. 1879; Cooke, Fl. Pres. Bombay 1;528. 1958 (Repr.); Payens in Blumea 15: 226. 1967. *Eugenia acutangula* L. Sp. Pl. 421. 1753. *'Ingli', 'Tivar'.*

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.

Illus. : Bedd. Fl. Sylv. t. 204. 1872; Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 273. 1982.

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

B. racemosa (L.) Spr. Syst. Veg. 3:127. 1826; C.B.Cl. in Hook. f. Fl. Brit. India 2:507. 1879; Cooke, Fl. Pres. Bombay 1:527. 1958 (Repr.); Payens in Blumea 15:192. 1967. *Eugenia racemosa* L. Sp. Pl. 471. 1753. *'Nivar', 'Samudra–phal'.*

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 ... MEMECYLON

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.

Melastoma malabathricum L. Sp. Pl. 390. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 523. 1879; Cooke, Fl. Pres. Bombay 1: 532. 1958 (Repr.). *'Palore'*.

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 51, f. 317. 1911.

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

MEMECYLON L.

1. Leaves sessile ... *M. randeriana*
1. Leaves petiolate:
   2. Flowers sessile ... *M. talbotianum*
   2. Flowers pedicelled:
      3. Leaves lanceolate, nerves prominent ... *M. heyneanum*
      3. Leaves ovate–elliptic, nerves obscure ... *M. umbellatum*

Memecylon heyneanum Bth. ex Wight & Arn. Prodr. 319. 1834; C.B.Cl. in Hook. f. Fl. Brit. India 2:560. 1879; Gamble, Fl. Pres. Madras 1:355. 1957 (Repr.); S. M. Almedia, Fl. Savantwadi 1:175. 1990.

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, Ic. t. 277. 1840 (*Memecylon jambosoides*).

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

M. randeriana S. M. Almeida, Fl. Savantwadi 1:175. 1990. *M. malabaricum* Cogn. in DC. Monogr. Phan. 7:148. 1891 non Kostel. 1834; Cooke, Fl. Pres. Bombay 1: 535. 1958 (Repr.). *'Limba'*, *'Limtoli'*.

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.*).

M. talbotianum Brandis in Talb. Trees, Bombay ed. 2.1902 (Append.); Cooke, Fl. Pres. Bombay 1:536. 1958 (Repr.).

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 54, f. 320. 1911.

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

M. umbellatum Burm. f. Fl. Ind. 87. 1768; Cooke, Fl. Pres. Bombay 1:535. 1958 (Repr.). *M. edule* Roxb. Pl. Cor. 1: 59, t. 82. 1798; C.B.Cl. in Hook. f. Fl. Brit. India 2: 563. 1879 p.p.

1. Peduncles 0.3–1.0 cm long ... var. *umbellatum*

1. Peduncles c 2.5 cm long ... var. *capitellata*

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:52 & 53, f. 318 & f. 319. 1911 (*M. edule*).

Distrib. : Found in moist and semi–evergreen forests. Ahmednagar, Bombay, Chandrapur, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

var. **capitellata** (C.B.Cl.) T. Cooke, Fl. Pres. Bombay 1:504. 1903 [1: 536. 1958 (Repr.)]. *M. edule* var. *capitellata* C.B.Cl. in Hook. f. Fl. India 2: 564. 1879.

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 ... *O. muralis*
1. Stamens attenuate or beaked at apex; fruits more than 8–ribbed:
   2. Plants glabrate or sparsely hairy, length of hairs usually less than 0.1 cm ... *O. zeylanica*
   2. Plants densely hairy, length of hairs usually more than 0.1 cm ... *O. parviflora*

Osbeckia muralis Naud. in Ann. Sci. Nat. Bot. 3, 14:56. 1850. *O. truncata* D. Don ex Wight & Arn. Prodr. 322. 1834 p.p.; C.B.Cl. in Hook. f. Fl. Brit. India 2:514. 1879; Cooke, Fl. Pres. Bombay 1:530. 1958 (Repr.).

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, Ic. t. 375. 1840.

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

O. parviflora Arn. in. Hook. Comp. Bot. Mag. 2:308. 1837; C.B.Cl. in Hook. f. Fl. Brit. India 2:515. 1879. *O. cupularis* D. Don ex Wight & Arn. Prodr. 322. 1834 nom. illeg. p.p.; C.B.Cl. in Hook. f. op. cit. 514; Cooke, Fl. Pres. Bombay 1:531. 1958 (Repr.).

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.).

O. zeylanica L. f. Suppl. 215. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 2:516. 1879.

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*

Sonerila rheedei Wight & Arn. Prodr. 321. 1834; Cooke, Fl. Pres. Bombay 1:533. 1958 (Repr.). *S. wallichii* sensu C.B.Cl. in Hook. f. Fl. Brit. India 2:538. 1879 p.p.

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.).

S. scapigera Hook. in London J. Bot. 7: 672, t. 23. 1848; C.B.Cl. in Hook. f. Fl. Brit. India 2:538. 1879; Cooke, Fl. Pres. Bombay 1:533. 1958 (Repr.).

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*

Ammannia auriculata Willd. Enum. Pl. Hort. Berol 1: 7, t. 7. 1806; Naik, Fl. Marathwada 1: 379. 1998. *A. senegalensis* DC. Prodr. 3: 77. 1828 non Lam. 1791; C.B.Cl. in Hook. f. Fl. Brit. India 2: 570. 1979.

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 situatious. Aurangabad & Nanded (Naik op. cit.).

A. baccifera L. Sp. Pl. 120. 1753 & ed. 2, 1:175. 1762; C.B.Cl. in Hook. f. Fl. Brit. India 2:569. 1879; Cooke, Fl. Pres. Bombay 1:541. 1958 (Repr.); Koehne in Engl. Pflanzenr. 17:54. 1903; Sant. in Rec. Bot. Surv. India 16(1):97. 1967 (3rd Rev. ed.); Fernandez in Launert, Fl. Zambesiaca 4: 308. 1978. *'Bhar jambhal'.*

1. Leaves narrow at base ... ssp. *aegyptiaca*
1. Leaves rounded or cordate at base ... ssp. *baccifera*

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.

Illus. : Tadul. & Venkatan. Handb. S. Indian Weeds 174, f. 68. 1955 (Rev. ed.).

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

ssp. aegyptiaca (Willd.) Koehne in Engl. Bot. Jahrb.1: 258. 1880. *A. aegyptiaca* Willd. Fl. Enum. Hort. Berol. 1:6, t. 6. 1803. *A. salicifolia* Hiern in Oliv. Trop. Alfr. 2: 478. 1871 excl. syn. non Monti ex Bl. 1856; C.B.Cl. in Hook. f. Fl. Brit. India 2: 569. 1879; Cooke, Fl. Pres. Bombay 1: 542. 1958 (Repr.).

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.

Illus. : Naik, Fl. Marathwada 1 : 381, f. 51. 1998.

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

A. multiflora Roxb. Fl. Ind. 1:447. 1820; C.B.Cl. in Hook. f. Fl. Brit. India 2:570. 1879; Cooke, Fl. Pres. Bombay 1:541. 1958 (Repr.).

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.

Illus. : Ic. Roxb. Fasc. 7, t. 19. 1979 (Repr. ed.).

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

A. nagpurensis Matthew & Nayar in Bull. Surv. India 31:158, f. 1 a–d. (1989) 1992.

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.).

A. octandra L. f. Suppl. 127. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 2: 571. 1879; Cooke, Fl. Pres. Bombay 1: 540. 1958 (Repr.).

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–ellipsiod, enclosed in the calyx.

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

A. senegalensis Lam. Illus. 1: 312, t. 77, f. 2. 1791; Sant. in Rec. Bot. Surv. India 16(1): 97. 1967 (3rd Rev. ed.); Shah & Deshpande in Bull. Bot. Surv. India 11:281. 1969.

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.

forma **indica** Blatt. & Hallb. in J. Bombay nat. Hist. Soc. 26:214. 1918.

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*

Lagerstroemia microcarpa Wight, Ic. t. 109. 1839; Furtado & Srisuko in Gard. Bull. Singapore 24:192, fig. 2 a–b. 1969. *L. lanceolata* Wall. ex C.B.Cl. in Hook. f. Fl. Brit. India 2: 576. 1879; Cooke, Fl. Pres. Bombay 1: 545. 1958 (Repr.). *'Nana–Bondara'.*

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.

Illus. : Wight, op. cit.; Talb. For. Fl. Bombay Pres. & Sind 2: 63, f. 324. 1911 (*L. lanceolata).*

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

L. parviflora Roxb. Pl. Cor. 1:47, t. 66. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 2:575. 1879; Cooke, Fl. Pres. Bombay 1: 545. 1958 (Repr.); Furtado & Srisuko in Gard. Bull. Singapore 24: 195, f. 3a–b. 1969. *'Bondara'*.

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 panicled–cymes. Capsules 2–3 x 1.5–2.0 cm, ellipsoid, 3–4–valved.

Fls. & Frts. : June–October.

Illus. : Wight, Ic. t. 69. 1840; Bedd. Fl. Sylv. t. 31. 1869; Talb. For. Fl. Bombay Pres. & Sind 2:61, f. 323. 1911; Furtado & Srisuko, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 279. 1982.

Distrib. : Common in hill forests and also planted.

L. reginae Roxb. Pl. Cor. 1 : 46, t. 65. 1795; Furtado & Srisuko in Gard. Bull. Singapore 24: 261, f. 29 B. 1969. *L. flos–reginae* Retz. Obs. Bot. 5: 25. 1788; C.B.Cl. in Hook. f. Fl. Brit. India 2: 577. 1879; Cooke, Fl. Pres. Bombay 1: 546. 1958 (Repr.). *L. flos–reginae* var. *angusta* C.B.Cl. in Hook. f. op. cit. *'Mota–bondara', 'Tamas'*.

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.

Nesaea lanceolata (Heyne ex C.B.Cl.) Koehne in Engl. Bot. Jahrb. 3: 325. 1882 & Pflanzenr. 17: 226, f. 43 b. 1903; Panigr. in Bull. Bot. Surv. India 18: 186. (1976) 1979. *Ammannia lanceolata* Heyne ex C.B.Cl. in Hook. f. Fl. Brit. India 2: 570. 1879.

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 equalling 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 exserted 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*

Rotala densiflora (Roth ex R. & S.) Koehne in Engl. Bot. Jahrb. 1:164. 1880; C.D.K. Cook in Boissiera 29: 82, f. 17 A–H. 1979. *Ammannia densiflora* Roth ex R. & S. Syst. Veg. 3: 306. 1818. *A.*

pentandra sensu C.B.Cl. in Hook. f. Fl. Brit. India 2: 568. 1879 p.p. non Roxb. 1820; Cooke, Fl. Pres. Bombay 1: 539. 1958 (Repr.). *'Jalmukhi'*.

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.

Illus. : C.D.K. Cook, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 282. 1982.

Distrib. : Frequent in moist places, along streams.

R. fimbriata Wight, Ic. t. 217. 1839 Koehne in Engl. Bot. Jahrb. 1:166. 1880 et Pflanzenr. 17:37. 1903; C.D.K. Cook in Boissiera 29: 108, f. 16. 1979; S.M. Almeida, Fl. Savantwadi 1:180. 1990. *Ammannia pentandra* var. *fimbriata* C.B.Cl. in Hook. f. Fl. Brit. India 2:569. 1879.

Erect herbs, 8–10 cm tall. Leaves opposite, sessile, oblong–ovate, apex acute, base amplexicaul. Flowers pale pink to white axillary, solitary; sepals–5, triangular, appendages alternating with sepals. Capsules oblong, 3–valved. Seeds yellowish, smooth.

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.).

R. floribunda (Wight) Koehne in Verh. Bot. Vereins Prov. Brandenburg 19 (Sit. 2. 41): 49. 1877; C.D.K. Cook in Boissiera 29: 43, f. 6. 1979. *Nimmonia floribunda* Wight in Madras J. Lit. Sci. 5: 312, t. 20. 1837. *Ammannia floribunda* (Wight) C.B.Cl. in Hook. f. Fl. Brit. India 2: 567. 1879; Cooke, Fl. Pres. Bombay 1: 539. 1958 (Repr.).

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.

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

Distrib. : Rare, in rocky areas. Satara.

R. illecebroides (Arn. ex. C.B.Cl.) Koehne in Bot. Jahrb. 1:161. 1880; C.D.K. Cook in Boissiera 29: 72, f. 14 F–I. 1979. *Ammannia pentandra* Roxb. var. *illecebroides* C.B.Cl. in Hook. f. Fl. Brit. India 2: 569. 1879. *Rotala decussata* DC. Prodr. 3:76. 1828; S. M. Almeida, Fl. Savantwadi 1:180. 1990.

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.

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

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

R. indica (Willd.) Koehne in Engl. Bot. Jahrb. 1:172. 1880; C.D.K. Cook in Boissiera 29:108, f. 25. a–f. 1979. *Peplis indica* Willd. Sp. Pl. 2:244. 1799. *Ammannia peploides* Spr. Syst. Veg. 1:444. 1824; C.B.Cl. in Hook. f. Fl. Brit. India 2: 566. 1879; Cooke, Fl. Pres. Bombay 1:538. 1958 (Repr.).

Erect, annual herbs, ascending upto 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.

Illus. : Wight, Ic. t. 257 A. 1840 [*Ameletia indica* (Willd.) DC. in Mem. Soc. Phys. Nat. Hist. Geneve 3:82, t. 3, f. A. 1826]; C.D.K. Cook, op. cit.

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

R. macrandra Koehne in Engl. Bot. Jahrb. 1:176. 1880 & Pflanzenr. 17:42. 1903; C.D.K. Cook in Boissiera 29: 54, f. 9 E–H. 1979.

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.

R. mexicana Cham. & Schlecht. in Linnaea 5 : 567. 1830; C.D.K. Cook in Boissiera 29: 33. 1979; Naik, Fl. Marathwada 1 : 386. 1998. *Ammania pygmaea* Kurz in Seem. J. Bot. 5 : 376. 1876; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 568. 1879.

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.).

R. occultiflora Koehne in Engl. Bot. Jahrb. 1:152. 1880 et Pflanzenr. 17:30. 1903; Blatt. & Hallb. in J. Bombay nat. Hist. Soc. 26:705. 1918; C.D.K. Cook in Boissiera 29:41, f. 5 A–I. 1979.

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.

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

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

R. ritchiei (C.B.Cl.) Koehne in Bot. Jahrb. 4:386. 1883; C.D.K. Cook in Boissiera 29: 71, f. 14A–E. 1979. *Ammannia ritchiei* C.B.Cl. in Hook. f. Fl. Brit. India 2:5. 1879; Cooke, Fl. Pres. Bombay 1:540. 1958 (Repr.).

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.

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

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

R. rosea (Poir.) C.D.K. Cook in Boissiera 29:86, f. 18A–H. 1979. *Ammannia rosea* Poir. in Lam. Encycl. Suppl. 1:329. 1810. *A. pentandra* Roxb. Fl. Ind. 1:448. 1820; C.B.Cl. in Hook. f. Fl. Brit. India 2:568. 1879 p.p.; Cooke, Fl. Pres. Bombay 1: 539. 1958 p.p. (Repr.). *Rotala leptopetala* (Bl.) Koehne in Engl. Bot. Jahrb. 1:162. 1880 & Pflanzenr. 17:34. 1903; Kulkarni & Singh in Bull. Bot. Surv. India 21:212. 1981.

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.

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

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

R. rotundifolia (Buch.–Ham. ex D. Don.) Koehne in Engl. Bot. Jahrb. 1:175. 1880 et Pflanzenr. 17:41. 1903; C.D.K. Cook in Boissiera 29:49, f. 9A–D. 1979. *Ammannia rotundifolia* Buch.–Ham. ex Roxb. Fl. Ind. 1 : 446. 1820; C.B.Cl. in Hook. f. Fl. Brit. India 2:566. 1879; Cooke, Fl. Pres. Bombay 1:540. 1958 (Repr.).

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.

R. serpyllifolia (Roth) Bremek. in Acta Bot. Neerl. 3:149. 1954; C.D.K. Cook in Boissiera 29:61, f. 11F–H. 1979. *Micranthus serpyllifolius* Roth, Nov. Pl. Sp. 282. 1821. *Ammannia tenuis* (Wight) C.B.Cl. in Hook. f. Fl. Brit. India 2:567. 1879; Cook, Fl. Pres. Bombay 1:538. 1958 (Repr.).

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.

Fls. & Frts. : October–March.

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

Distrib. : Common in wet areas and on riverbeds.

R. verticillaris L. Mant 2: 175. 1771 non Hiern, 1871; C.D.K. Cook in Boissiera 29: 23, f. 1 A–E. 1979. *Ammannia rotala* C.B.Cl. in Hook. f. Fl. Brit. India 2:567. 1879; Cooke, Fl. Pres. Bombay 1: 539. 1958 (Repr.).

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–December.

Illus. : Wight, Ic. t. 260 A. 1840; C.D.K. Cook, op. cit.

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

WOODFORDIA Salisb.

Woodfordia fruticosa (L.) Kurz in J. Asiat. Soc. Bengal 40: 56. 1871; Woward & Jayaweera in Baileya 10:14. 1962. *Lythrum fruticosum* L. Sp. Pl. ed. 2, 641. 1762. *Woodfordia floribunda* Salisb. Parad. Lond. t. 42. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 2: 572. 1879; Cooke, Fl. Pres. Bombay 1: 543. 1958 (Repr.). *'Dhauri', 'Dhayati'.*

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.

L. tomentosa Presl, Bot. Bemerk. 142. 1844; C. B. Cl. in Hook. f. Fl. Brit. India 2 : 578. 1879; Naik, Fl. Marathwada 1 : 382. 1998.

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, glabrescent with crown of reflexed calyx teeth. Seeds compressed, winged at one end.

Fls. & Frts. : February–June.

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

Lawsonia inermis L. Sp. Pl. 349. 1753; Cooke, Fl. Pres. Bombay 1: 544. 1958 (Repr.); Bole & Almeida in J. Bombay Nat. Hist. Soc. 79: 312. 1982. *L. alba* Lam. Encycl. 3: 106. 1789; C.B.Cl. in Hook. f. Fl. Brit. India 2: 573. 1879.

Shrubs, spiny. Leaves sessile, lanceolate, apex acute. Flowers white, in terminal and axillary cymes. Capsules globose.

Fls. & Frts. : June–December

Distrib. : Commonly cultivated.

SONNERATIACEAE

(P. Lakshminarasimhan & P. Venkanna)

Sonneratia L. f.

1. Leaves linear–oblong; calyx 4–6–lobed, petals absent; stamens included or slightly exserted; style shorter than stamens; stigma umbrella shaped ... *S. apetala*

1. Leaves oblong or obovate–elliptic, calyx 6–lobed; petals 6; stamens much exserted; style longer than stamens; stigma not umbrella shaped ... *S. caseolaris*

Sonneratia apetala Buch. – Ham. in Symes, Emb. Ava 3: 313, t. 25. 1800; C.B.Cl. in Hook. f. Fl. Brit. India 2: 579. 1879; Cooke, Fl. Pres. Bombay 1: 547. 1958 (Repr.).

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 66, f. 327. 1911.

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

S. caseolaris (L.) Engl. Pflanzenwelltost–Afrikas C: 286. 1895; Hoogl. in Taxon 37:981. 1988. *Rhizophora caseolaris* L. in Stickmann, Herb. Amb. 13. 1754. *Sonneratia acida* L. f. Suppl. 252. 1782; C.B.Cl in Hook. f. Fl. Brit. India 2:579. 1879; Cooke, Fl. Pres. Bombay 1:547. 1958 (Repr.). *'Kandal'*.

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.

Illus. : Wight, Ic. t. 340. 1840; Talb. For. Fl. Bombay Pres. & Sind 2: 67, f. 328. 1911.

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

CULTIVATED SPECIES :

Duabanga grandiflora (Roxb. ex DC.) Walp. Rep. 2: 114. 1843; Jayaweera in J. Arnold Arbor. 48: 96. 1967. *Lagerstroemia grandiflora* Roxb. ex DC. in Mem. Soc. Hist. Nat. Genev. 32: 84. 1824 & Prodr. 3: 93. 1828. *Duabanga sonneratioides* Buch.–Ham. in Trans. Linn. Soc. 17: 178. 1835; C.B.Cl. in Hook. f. Fl. Brit. India 2 : 579. 1879.

Trees, c 15m 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:

Punica granatum L. Sp. Pl. 472. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 2: 581. 1879. *'Anar', 'Dalim', 'Dalimb'.*

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.

Illus. : Bailey, Man. Cult. Pl. 721. 1949; Anon. Wealth of India 8: opp.p. 318, t. 9. 1969.

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 spathulate; 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*

Ludwigia adscendens (L.) Hara in J. Jap. Bot. 28:291. 1953; Raven in Reinwardtia 6:387. 1963. *Jussiaea adscendens* L. Mant. Pl. 1: 67. 1767. *J. repens* L. Sp. Pl. 388. 1753 non *Ludwigia repens* Forst. 1771; C.B.Cl in Hook. f. Fl. Brit. India 2:587. 1879; Cooke, Fl. Pres. 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.

Fls. & Frts. : June–January.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 285. 1982.

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

L. erecta (L.) Hara in J. Jap. Bot. 28: 292. 1953; Raven in Reinwardtia 6: 348. 1963; Sreem. in Indian Forester 96: 451. 1970. *Jussiaea erecta* L. Sp. Pl. 388. 1753.

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.

Fls.& Frts. : October–January.

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

L. hyssopifolia (G. Don) Exell in Garcia de Orta 5:471. 1957; Raven in Reinwardtia 6:385. 1963; Babu in J. Bombay Nat. Hist. Soc. 69: 227. 1972. *Jussiaea hyssopifolia* G. Don, Gen. Syst. 2 : 693. 1832.

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.

Fls. & Frts. : December–January.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 277. 1982.

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

L. octovalvis (Jacq.) Raven in Kew Bull. 15:476. 1962 & in Reinwardtia 6:356. 1963. *Oenothera octovalvis* Jacq. Enum. Syst. Pl. 19. 1760.

1. Leaves subovate ... ssp. *sessiliflora*
1. Leaves lanceolate or linear ... ssp. *octovalvis*

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 278. 1982.

Distrib. : Common in moist places and in cultivated fields. Bombay (Raven, op. cit.), Sindhudurg.

ssp. **sessiliflora** (Micheli) Raven in Kew Bull. 15:476. 1962 & in Reinwardtia 6:362, f. 3. 1963. *Jussiaea octonervia* var. *sessiliflora* Micheli in Mart. Fl. Bras. 13:180. 1875. *J. suffruticosa* L. Sp. Pl. 388. 1753 non *Ludwigia suffruticosa* Walt. 1788; C.B.Cl. in Hook. f. Fl. Brit. India 2:587. 1879; Cooke, Fl. Pres. Bombay 1:549. 1958 (Repr.). *'Panlavang'*.

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.

Illus. : Raven, op. cit. (Seed only).

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

L. perennis L. Sp. Pl. 119. 1753; Raven in Reinwardtia 6: 367. 1963. *L. parviflora* Roxb. Fl. Ind. 1: 440. 1820; C.B.Cl. in Hook. f. Fl. Brit. India 2: 588. 1879; Cooke, Fl. Pres. Bombay 1: 550. 1958 (Repr.).

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.

Illus. : Ic. Roxb. Fasc. 7, t. 20. 1976 (Repr. ed.); Tadul. & Venkat. Handb. S. Indian Weeds 177, t. 69. 1955 (Rev. ed.); Mahesh. Illus. Fl. Delhi f. 85. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 286. 1982.

Distrib. : Common throughout in wet places.

L. prostrata Roxb. Fl. Ind. 1: 441. 1820; C.B.Cl. in Hook. f. Fl. Brit. India 2: 588. 1879; Raven in Reinwardtia 6: 374, t. 7. 1963.

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.

Fls. & Frts. : June–January.

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

Distrib. : Rare in moist rice fields. Raigad.

CULTIVATED SPECIES:

Xylopleurum roseum (W. Ait.) Raimann. in Engl. & Prantl, Pflanzenfam. 11: 7, 214. 1893; Deshpande et al. Fl. Mahabaleshwar 1: 249. 1993. *Oenothera rosea* W. Ait. Hort. Kew ed. 1, 2: 3. 1789; C. B. Cl. in Hook. f. Fl. Brit. India 2: 582. 1879; Cooke, Fl. Pres. Bombay 1: 552. 1958 (Repr.).

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.

Trapa natans L. var. **bispinosa** (Roxb.) Makino in Iinuma, Somoku–Dzusetzii ed. 3. 1: 137. 1907; Gopalan in N. C. Nair et al. Fl. Tamilnadu Anal. 1: 168. 1983. *T. bispinosa* Roxb. Pl. Cor. 3: 29, t. 234. 1815; C.B.Cl. in Hook. f. Fl. Brit. India 2: 590. 1879; Cooke, Fl. Pres. Bombay 1: 551. 1958 (Repr.). *'Shingada'*.

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.

Turnera ulmifolia L. Sp. Pl. 271. 1753; Backer in Steenis, Fl. Males. 1. 4(3): 231, f. 2. 1951; Brizicky in J. Arnold Arbor. 42: 208. 1961.

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,

appressed hairy. Flowers yellow, in axillary cymes. Capsules globose. Seeds subterete, pitted.

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.

var. **elegans** (Otto) Urbo. Monogr. Turn. 139. 1883; Almeida, Fl. Mah. 2: 301. 1998. *T. elegans* Otto in Nees, Hort. Phys. Berol. 36. 1820.

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.

Adenia hondala (Gaertn.) de Wilde in Blumea 15: 265. 1967. *Granadilla hondala* Gaertn. Fruct. 2: 480, t. 180, f. 10. 1791. *Modecca palmata* Lam. Encycl. 4: 209. 1797; Mast. in Hook. f. Fl. Brit. India 2: 603. 1879; Cooke, Fl. Pres. Bombay 1: 556. 1958 (Repr.).

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–oblong, ciliate; stamens distant; female flowers : calyx & corolla as in males. Capsules 15 cm across, globose, shortly stalked. Seeds compressed.

Fls. & Frts. : April–May.

Illus. : Wight, Ic. t. 201. 1839 [*Adenia palmata*(Lam.) Engl. in Bot. Jahrb. Syst. 14 : 375. 1891.].

Distrib. : Occasional in deciduous forests. Sindhudurg.

PASSIFLORA L.

Passiflora foetida L. Sp. Pl. 959. 1753; Cooke, Fl. Pres. Bombay 1:557. 1958 (Repr.). *'Veli–ghani'.*

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 289. 1982.

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

CULTIVATED SPECIES:

Passiflora caerulea L. Sp. Pl. 959. 1753; Bor & Raiz. Some Beautiful Indian Climbers & Shrubs 249, f. 145. 1954. *'Krishna Kamal', 'Passion flower'.*

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.

P. edulis Sims in Curtis Bot. Mag. t. 1989. 1818; Cooke, Fl. Pres. Bombay 1 : 557. 1958 (Repr.); Bor & Raiz. Some Beautiful Indian Climbers & Shrubs 254, f. 148. 1954. *'Krishna Kamal'.*

Woody climbers. Leaves 9–17 x 10–15 cm, deeply 3–lobed, terminal lobe broadly elliptic, side lobes obovate, serrate. Flowers terminal or axillary, purple, with whitish tinge; corona in 4–5 whorls. Berries ovoid–oblong, purple dotted.

Fls. & Frts. : March–October

Illus. : Bor & Raiz. op. cit.; Naik, Fl. Marathwada 1: 391, f. 53. 1998.

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

P. holosericea L. Sp. Pl. 958. 1753; Cooke, Fl. Pres. Bombay 1: 557. 1958 (Repr.); Bor & Raiz. Some Beautiful Indian Climbers & Shrubs 257, f. 150. 1954.

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.

P. incarnata L. Sp. Pl. 959. 1753; Bor & Raiz. Some Beautiful Indian Climbers & Shrubs 252, f. 92. & 147. 1954. *'Wild Passion flower'.*

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.

Fls. : April–September. *Frts.* : November–February.

Illus. : Bor & Raiz. op. cit.

Distrib. : Cultivated as ornamental. Sindhudurg.

P. laurifolia L. Sp. Pl. 956. 1753; Cooke, Fl. Pres. Bombay 1: 557. 1958 (Repr.).

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.).

P. quadrangularis L. Syst. Nat. ed. 10: 1248. 1759.

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.

Fls. & Frts. : Throughout the year.

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

Distrib. : Cultivated. Sindhudurg.

P. racemosa Brot. in Trans. Linn. Soc. 12. 1817; Cooke, Fl. Pres. Bombay 1:557. 1958 (Repr.); Bor & Raiz. Some Beautiful Indian Climbers & Shrubs 261. 1954.

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.

Fls. & Frts. : April–August.

Distrib. : Commonly cultivated.

P. raddiana DC. Prodr. 3: 329. 1828; Cooke, Fl. Pres. Bombay 1: 557. 1958 (Repr.).

Slender climbers. Leaves shallowly cordate. Flowers bright red.

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

P. stipulata Aubl. Pl. Guiana 2: 830. 1775.

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 :

Carica papaya L. Sp. Pl. 1036. 1753; Cooke, Fl. Pres. Bombay 1:557. 1958 (Repr.); Bailey Man. Cult. Pl. 692, f.137. 1949. *'Papaya', 'Popai'.*

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.

Fls. : November–March. *Frts.* : January–December.

Illus. : Bailey, op. cit.; Naik, Fl. Marathwada 1 : 396, f. 54. 1998.

Distrib. : Widely cultivated throughout. the state.

Note : It is a native of Tropical America.

CUCURBITACEAE

(K. Madhusudan Rao)

1. Petals fimbriate ... TRICHOSANTHES
1. Petals not as above :
   2. Ovules pendulous ... ZANONIA
   2. Ovules otherwise, not pendulous :
      3. Calyx with scales; male flowers with spathaceous bracts ... MOMORDICA
      3. Calyx without scales; male flowers not as above :
         4. Tendrils branched :
            5. Male flowers in racemes ... LUFFA
            5. Male flowers solitary or clustered :
               6. Tendrils bifid; seeds belted at centre ... DIPLOCYCLOS
               6. Tendrils 2–3–fid; seeds not as above ... CITRULLUS
         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 ... CUCUMIS
                  9. Calyx connective of anthers not produced; lobes triangular ... BRYONIA
               8. Corolla campanulate, divided up to 1/2 the length; filaments of anthers connate ... COCCINIA
            7. Anther cells not flexuose :
               10. Style inserted on a prominent disc :
                  11. Leaf base amplexicaul ... SOLENA
                  11. Leaf base not as above :
                     12. Fruits globose :

13. Fruiting peduncles 0–6 mm long; seeds grey or ashy ... MUKIA

13. Fruiting peduncles 5–10 mm long; seeds brown ... ZEHNERIA

12. Fruits not as above :

14. Anthers ciliate; fruits c 6–costate, puberulous ... ZEHNERIA

14. Anthers not as above; fruits not costate, hirsute ... CUCUMELLA

10. Style base naked, not inserted on a disc or disc obscure :

15. Fruits dehiscing by an operculum ... CORALLOCARPUS

15. Fruits indehiscent or if dehiscent then not dehiscing by an operculum :

16. Petioles bracteate at base ... CTENOLEPIS

16. Petioles ebracteate at base :

17. Connectives 2–fid or 2–partite, produced beyond cell ... KEDROSTIS

17. Connectives not branched and not produced beyond cell :

18. Male flowers in racemes ... BRYONIA

18. Male flowers solitary or in fascicles ... DICAELOSPERMUM

BRYONIA L.

Bryonia dioica Jacq. Fl. Austr. 2:59, t. 199. 1773; Chakr. in Fasc. Fl. India 11:14. 1982.

Herbs, twiners, dioecious; roots fleshy, tendrils slender. Leaves 6–12 cm long, 5–lobed, as broad as long, margins undulate–denticulate. Male inflorescence: peduncles 10–15–flowered, bluish–yellow; female inflorescence corymbose : peduncles 4–7–flowered. Fruits baccate, globose, greenish, red or yellow at maturity. Seeds yellowish, finely rugulose, thinly margined.

Fls. & Frts. : May – September.

Distrib. : Infrequent. Bombay (Chakr. op. cit.).

CITRULLUS Schrad. (nom. cons.)

Citrullus colocynthis (L.) Schrad. in Linnaea 12:414. 1838; C.B.Cl. in Hook. f. Fl. Brit. India 2:620. 1879; Cooke, Fl. Pres. Bombay 1:571. 1958 (Repr.); Jeffrey in Kew Bull 34: 791. 1980; Chakr. in Fasc. Fl. India 11: 20, f. 1–7. 1982. *Cucumis colocynthis* L. Sp. Pl. 1011. 1753. *'Kadu–indrayan'*.

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. Ahmędnagar, Aurangabad, Bombay (Cooke, op. cit.), Osmanabad, Parbhani, Pune, Satara, Solapur.

COCCINIA Wight & Arn.

Coccinia grandis (L.) Voigt, Hort. Suburb. Calc. 59. 1845; Chakr. in Fasc. Fl. India 11:24, f. 1–9. 1982. *Bryonia grandis* L. Mant. Pl. 1:126. 1767. *Coccinia indica* Wight & Arn. Prodr. 347. 1833; Cooke, Fl. Pres. Bombay 1:572. 1958 (Repr.). *Cephalandra indica* (Wight & Arn.) Naud in Ann. Sci. Nat Bot 5, 5:16. 1859; C.B.Cl. in Hook. f. Fl. Brit. India 2: 621. 1879. *'Tondli'*.

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.

Illus. : Ic. Roxb. Fasc. 8, t. 18. 1978 (Repr. ed.); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 293. 1982; Chakr. op. cit.

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

CORALLOCARPUS Welw.

Corallocarpus epigaeus (Rottl.) C.B.Cl. in Hook. f. Fl. Brit. India 2: 628. 1879; Cooke, Fl. Pres. Bombay 1: 578. 1958 (Repr.); Chakr. in Rec. Bot. Surv. India 17:171. 1959 & Fasc. Fl. India 11: 28. 1982; Jeffrey in Kew Bull. 34: 793. 1980. *Bryonia epigaea* Rottl. in Neue. Schr. Ges. Naturf. Fr. Berl. 4: 212. 1803. *'Karmugli' 'Karvina' 'Muguss–kanda'.*

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.

Illus. : Wight, Ic. t. 503. 1841; Ic. Roxb. Fasc. 8, t. 26. 1978 (Repr. ed.).

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

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*

Ctenolepis cerasiformis (Stocks) Hook. f. in Oliv. Fl. Trop. Afr. 2: 558. 1871; C.B.Cl. in Hook. f. Fl. Brit. India 2: 630. 1879; Jeffrey in Kew Bull. 34:793. 1980. *Zehneria cerasiformis* Stocks in Hook. J. Bot. Kew Gard. Misc. 4:149. 1852. *Blastania fimbristipula* (Fenzl.) Kotschy & Peyr. Pl. Tinn. 15:t. 7. 1865; Cooke, Fl. Pres. Bombay 1: 576. 1958 (Repr.); Chakr. in Rec. Bot. Surv. India 17:174. 1959 & in Fasc. Fl. India 11: 12. 1982.

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.

C. garcinii (Burm. f.) C.B.Cl. in Hook. f. Fl. Brit. India 2:629. 1879; Jeffrey in Kew Bull. 34:793. 1980. *Sicyos garcinii* Burm. f. Fl. Ind. 211. 1768. *Blastania garcinii*. (Burm. f.) Cogn. in DC. Monogr. Phan. 3:629. 1881; Cooke, Fl. Pres. Bombay 1:576. 1958 (Repr.); Chakr. in Rec. Bot. Surv. India 17:175. 1959 & in Fasc. Fl. India 11:13. 1982.

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 87. 1966 (*Blastania garcinii*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 295. 1982.

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

CUCUMELLA Chiov.

Cucumella ritchiei (Chakr.) Jeffrey in Kew Bull. 19:215. 1965. *Melothria ritchiei* Chakr. in J. Bombay Nat. Hist. Soc. 50:898. 1952 & in Rec. Bot. Surv. India 17:155, f. 70. 1959 & in Fasc. Fl. India 11:86. 1982.

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 ... *C. melo*
1. Fruits bristly setose or echinate :
   2. Fruits bristly setose ... *C. setosus*
   2. Fruits echinate ... *C. prophetarum*

Cucumis melo L. Sp. Pl. 1011. 1753; Jeffrey in Kew Bull. 34:793. 1980; Chakr. in Fasc. Fl. India 11: 32, f. 1–10. 1982. *C. pubescens* Willd. Sp. Pl. 4:614. 1805; C.B.Cl. in Hook. f. Fl. Brit. India 2:619. 1879. *C. trigonus* Roxb. Fl. Ind. 3:722. 1832; C.B.Cl. in Hook. f. op. cit.; Cooke, Fl. Pres. Bombay 1:569. 1958 (Repr.). *C. melo* var. *agrestis* Naud. in Ann. Sci. Nat. 4, 11:73. 1859; Cooke, op. cit.; Chakr. op. cit. 35. 1982. *C. callosus* (Roettl.) Cogn. in Engl. Das. Pflanzenr. 88: 129. 1924; Chakr. op. cit. 31. *'Mekk'*, *'Shendad'*.

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.

Illus. : Ic. Roxb. Fasc. 8, t. 19. 1978 [Repr. ed. (*C. callosus)*]; Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 296. 1982; Chakr. op. cit.

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

C. prophetarum L. Cent. 1:32 1775; C.B.Cl. in Hook. f. Fl. Brit. India 2: 619. 1879; Cooke, Fl. Pres. Bombay 1:570. 1958 (Repr.); Chakr. in. Rec. Bot. Surv. India 17: 109. 1959 & in Fasc. Fl. India 11: 35. 1982; Jeffrey in Kew Bull. 15: 350. 1962 & Ibid. 34: 794. 1980.

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.

Illus. : Bhogaonkar & Devarkar, Additions to the Fl. of Melghat 17, figs. A–G. 1999.

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

C. setosus Cogn. in A. & C. DC. Mon. Phan. 3:491. 1881; Chakr. in Rec. Bot. Surv. India 17:106, f. 44. 1959 & in Fasc. Fl. India 11:38. 1982; Hemadri in Indian Forester 94:808. 1968; Jeffrey in Kew Bull. 34:794. 1980. *'Mekanya'*, *'Meki'*.



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.

Dicaelospermum ritchiei C.B.Cl. in Hook. f. Fl. Brit. India 2: 630. 1879; Cooke, Fl. Pres. Bombay 1: 580. 1958 (Repr.); Chakr. in Rec. Bot. Surv. India 17: 177. 1959 & in Fasc. Fl. India 11:47. 1982; Jeffrey in Kew Bull. 34: 796. 1980. *'Gogara'*

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.

Diplocyclos palmatus (L.) C. Jeffrey in Kew Bull. 15: 352. 1962 & Ibid. 34: 800. 1980; Chakr. in. Fasc. Fl. India 11: 48. 1982. *Bryonia palmata* L. Sp. Pl. 1012. 1753. *Bryonia laciniosa* L. Sp. Pl. 1013. 1753. *Bryonopsis laciniosa* (L.) Naud. in Ann. Sci. Nat. 4, 12: 141. 1859; Cooke, Fl. Pres. Bombay 1: 568. 1958 (Repr.); Chakr. op. cit. 16, f. 1–10. *'Kavdoli, 'Shanker–vel', 'Sivalingi'.*

Herbs, slender, monoecious, extensive climbers. Leaves 2.5–8.0 x 3–10 cm, palmately 3–7–lobed, membranous, base broadly sinuate, upper surface punctate. Male & female flowers creamy–white, in axillary fascicles; calyx & corolla campanulate. Fruits baccate, spherical, variegated smooth. Seeds obovoid, white or pale yellow.

Fls. & Frts. : December–January.

Illus. : Wight, Ic. 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.

Kedrostis foetidissima (Jacq.) Cogn. in A. & C. Mon. Phan. 3: 634. 1881; Jeffrey in Kew Bull. 34:792. 1980. *Trichosanthes foetidissima* Jacq. Collect 2: 341. 1789. *Kedrostis rostrata* (Roettl.) Cogn. in DC. Monogr. Phan. 3: 636. 1881; Cooke, Fl. Pres. Bombay 1: 577. 1958 (Repr.); Chakr. in Fasc. Fl. India 11:64. 1982. *Rhynchospora foetida* sensu C.B.Cl. in Hook f. Fl. Brit. India 2: 627. 1879 non Schrad. 1838. *'Nurakvel'*.

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.

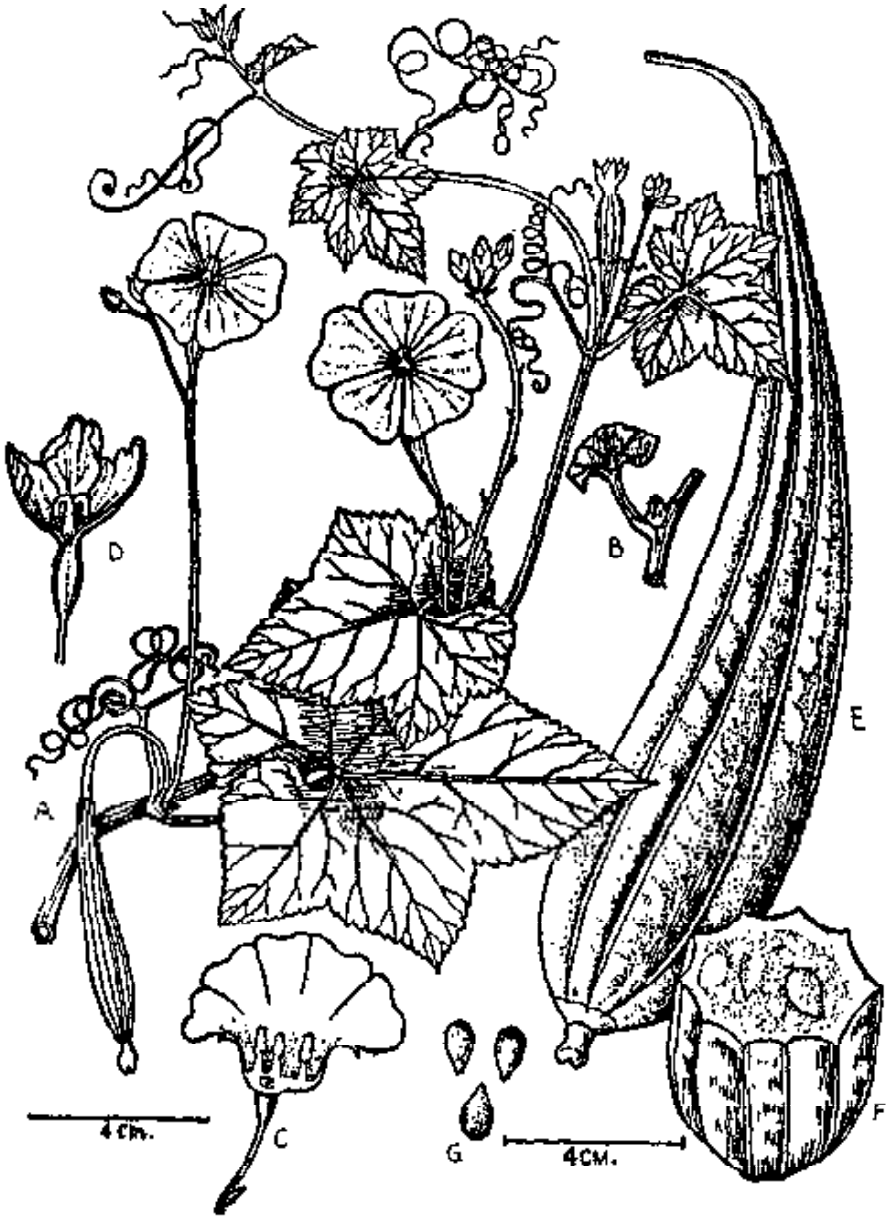
Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 298. 1982.

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

LUFFA Mill.

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

Luffa acutangula (L.) Roxb. Fl. Ind. 3:713. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 2:615. 1879; Cooke, Fl. Pres. Bombay 1: 556. 1958 (Repr.); Jeffrey in Kew Bull. 34:792. 1980; Chakr. in Fasc. Fl. India 11: 67, f. 1–7. 1982. *Cucumis acutangula* L. Sp. Pl. 1:1011. 1753. *Luffa acutangula* var. *amara* (Roxb.) C.B.Cl. in Hook. f. op. cit.; Cooke, op. cit. 567; Chakr. op. cit. *L. amara* Roxb. Fl. Ind. 3:715. 1832. *'Kadu–dodka'. 'Ran–dodka', 'Ranturai'*.



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–obovoid 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.

L. echinata Roxb. Fl. Ind. 3:716. 1832; C.B.Cl. in Hook. f. Fl. Brit. India. 2: 615. 1879; Cooke, Fl. Pres. Bombay 1:567. 1958 (Repr.); Chakr. in Rec. Bot. Surv. India 17: 77. 1959 & in Fasc. Fl. India 11: 71. 1982; Jeffrey in Kew Bull. 34:791. 1980. *L. echinata* var *longistyla* C.B.Cl. in Hook. f. Brit. India. 2: 615. 1839. *'Devadali', 'Devadangri', 'Kukadvel'.*

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.

Illus. : Engl. Pflanzenr. 88:73, fig 9A–L. 1924; Almeida, Fl. Mah. 2: opp.p. 322, f. 1998.

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

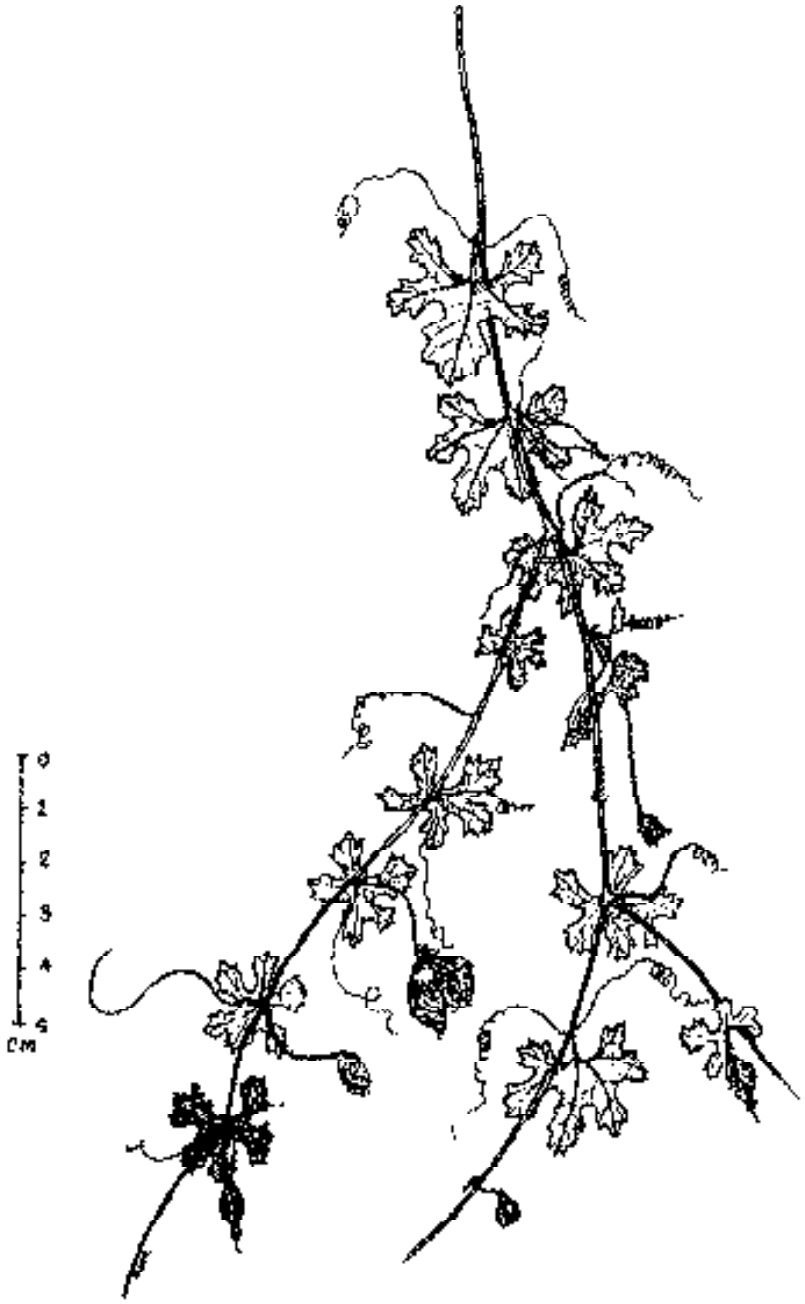
L. graveolens Roxb. Fl. Ind. 3:716. 1832; C.B.Cl. in Hook. f. Fl. Brit. Ind. 2:614. 1879; Jeffrey in Kew Bull. 34: 791. 1980; Chakr. in Rec. Bot. Surv. India 17:74. 1959 & in Fasc. Fl. India 11:72. 1982.

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.

MOMORDICA L.

1.	Roots tuberous	...	*M. cymbalaria*
1.	Roots not tuberous :		
2.	Plants monoecious	...	*M. balsamina*
2.	Plants dioecious	...	*M. dioica*

Momordica balsamina L. Sp. Pl. 1009. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 617. 1879; Cooke, Fl. Pres. Bombay 1: 562. 1958 (Repr.); Jeffrey in Kew Bull. 34: 790. 1980; Chakr. in Rec. Bot. Surv. India 17: 90. 1959 & in Fasc. Fl. India 11: 88. 1982.

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.

Illus. : Bhogaonkar & Devarkar, Additions to the Fl. of Melghat 19, figs. A–B. 1999.

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

M. cymbalaria Hook. f. in Oliv. Fl. Trop. Afr. 2: 540. 1871; C.B.Cl. in Hook. f. Fl. Brit. India 2:618. 1879; Cooke, Fl. Pres. Bombay 1:564. 1958 (Repr.) ; Jeffrey in Kew Bull. 34: 789. 1980. *Luffa tuberosa* Roxb. Fl. Ind. 3:717. 1832; Chakr. in Rec. Bot. Surv. India 17: 81. 1959 & in Fasc. Fl. India 11:74. 1982. *'Kadvanchi'*.

Climbers , perennial; stems herbaceus, 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.

M. dioica Roxb. ex Willd. Sp. Pl. 4:605. 1805; C. B. Cl. in Hook. f. Fl. Brit. India 2:617. 1879(excl. syn); Cooke, Fl. Pres. Bombay 1: 563. 1958 (Repr.); Jeffrey in Kew Bull 34 : 790. 1980. *'Kartoli'*, *'Kartoll'*.

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.

Illus. : Wight, Ic. tt. 505–506. 1841; Ic. Roxb. Fasc. 8, t. 17. 1978 (Repr. ed.).

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*

Mukia leiosperma (Wight & Arn.) Wight in Ann. Mag. Nat. Hist. 1, 8:208. 1842; C.B.Cl. in Hook. f. Fl. Brit. India 2: 623. 1879; Jeffrey in Kew Bull 34:794. 1980. *Bryonia leiosperma* Wight & Arn. Prodr. 1:345. 1834. *Melothria leiosperma* (Wight & Arn.) Cogn. in A & C. DC. Mon. Phan. 3:622. 1881; Cooke Fl. Pres. Bombay 1:573. 1958 (Repr.); Chakr. in Rec. Bot. Surv. India 17:140. 1959 & in Fasc. Fl. India 11: 81. 1982.

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.

M. maderaspatana (L.) Roem. Syn. Monogr. 2: 47. 1846; Jeffrey in Kew Bull. 34: 795. 1980. *Cucumis maderaspatanus* L. Sp. Pl 1012. 1753. *Mukia scabrella* (L.f.) Arn. in Hook. J. Bot. 3: 276. 1841; C. B. Cl. in Hook. f. Fl. Brit. India 2: 623. 1879. *Melothria maderaspatana* (L.) Cogn. in A. & C. DC. Mon. Phan. 3. 623. 1881; Cooke, Fl Pres. Bombay 1: 573. 1958 (Repr.); Chakr. in Rec. Bot. Surv. India 17: 141. 1959 & Fasc. Fl. India 11: 83. 1982. *'Chirati'*, *'Chirbut'*, *'Ghugri'*.

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.

Illus. : Wight, Ic. t. 501. 1841 (*Bryonia scabrella* L.f. Suppl. 424. 1781); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 302. 1982.

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 Lour.

Solena amplexicaulis (Lam.) Gandhi in Sald. & Nicols. Fl. Hassan Dt. 179. 1976; Jeffrey in Kew Bull. 34: 793. 1980. *Bryonia amplexicaulis* Lam. Encycl. 1: 496. 1785. *Solena heterophylla* Lour. Fl. Cochinch. 1: 514. 1790. *Zehneria umbellata* Thw. Enum. Pl. Zeyl. 125. 1859; C.B.Cl. in Hook. f. Fl. Brit. India 2: 625. 1879 p.p. *Melothria heterophylla* (Lour.) Cogn. in A. & C. DC Mon. Phan. 3: 618. 1881; Cooke, Fl. Pres. Bombay 1: 575. 1958 (Repr.); Chakr. in Rec. Bot. Surv. India 17: 159. 1959 & in Fasc. Fl. India 11: 79. 1982. *M. amplexicaulis* (Lam.) Cogn. in DC. Monogr. Phan 3: 621. 1881; Chakr. op. cit. 146 & op. cit. 77; Panigr & Mishra in J. Econ. Tax. Bot. 5: 416. 1984. *M. angulata* Chakr. in J. Bombay nat. Hist. Soc. 5; 899. 1952; in Rec. Bot. Surv. India 17: 165. 1959 & in Fasc. Fl. India 11: 78. 1982. *'Gomati', 'Gometta'.*

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 303. 1982 (*Solena heterophylla*).

Distrib. : Frequently occurring in the state. Ahmednagar, Akola, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

TRICHOSANTHES L.

1. Male flowers in racemes; anthers connate :
   2. Leaf margins entire ... *T. nervifolia*
   2. Leaf margins lobed :
      3. Bracts in male racemes minute ... *T. cucumerina*
      3. Bracts in male racemes large, conspicuous :
         4. Sepals entire ... *T. wallichiana*
         4. Sepals dentate or laciniate ... *T. tricuspidata*
1. Male flowers 1 or 2; anthers free ... *T. dioica*

Trichosanthes cucumerina L. Sp. Pl. 1008. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2:609. 1879; Cooke, Fl. Pres. Bombay 1: 560. 1958 (Repr.); Kundu in J. Bombay nat. Hist. Soc 43: 372. 1942; Chakr. in Rec. Bot. Surv. India 17:31. 1959 & in Fasc. Fl. Ind. 11:112. 1982; Jeffrey in Kew Bull. 34: 796. 1980. *'Jangli padvel', 'Ranachar Padvel'*

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, ovoid–fusiform, scarlet to orange when ripe. Seeds ovoid, undulate, compressed, truncate.

Fls. & Frts. : August–October.

Illus. : Mahesh. Illus. Fl. Delhi f. 88. 1966.

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

T. dioica Roxb. Fl. Ind. 3 : 701. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 2:609. 1879; Jeffrey in Kew Bull. 34: 798. 1980; Chakr. in Fasc. Fl. India 11:114. 1982. *'Padval'.*

Climbers; stems herbaceous, slender. Leaves 7–10 x 4–8 cm, ovate–oblong, sparsely scabrous, apex acute, margins sinuate, dentate. Flowers white : male and female flowers in same or different axils; male flowers in 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.).

Distrib. : Frequent. Thane.

T. nervifolia L. Sp. Pl. 1008. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2:609. 1879; Cooke, Fl. Pres. Bombay 1: 559. 1958 (Repr.); Chakr. in Rec. Bot. Surv. India 17: 30. 1959 & in Fasc. Fl. India 11:119. 1982; Jeffrey in Kew Bull. 34: 796. 1980.

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.).

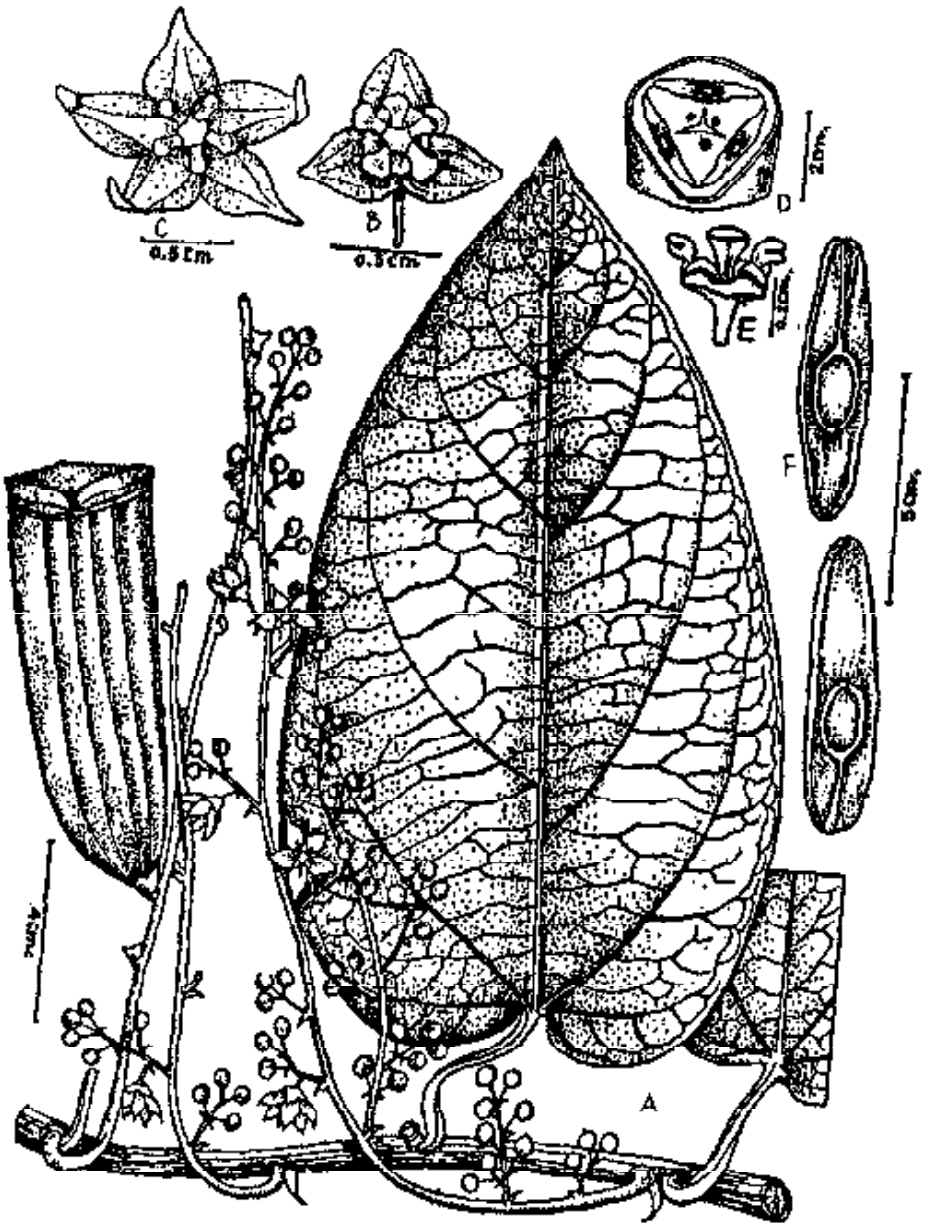
T. tricuspidata Lour. Fl. Cochinch. 589. 1790; Jeffrey in Kew Bull. 34: 797. 1980. *T. palmata* Roxb. Fl. Ind. 3: 704. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 2: 606. 1879; Cooke, Fl. Pres. Bombay 1: 560. 1958 (Repr.). *T. palmata* var. *tomentosa* Heyne ex C.B.Cl. in Hook f. op. cit. 607. *T. bracteata* (Lam.). Voigt, Hort. Suburb. Calc. 58. 1845; Kundu in J. Bombay Nat. Hist. Soc. 43: 379. 1942; Chakr. in Fasc. Fl. Ind. 11: 109. 1982. *T. bracteata* var. *tomentosa* (Heyne ex C.B.Cl.) Chakr. in Rec. Bot. Surv. India 17: 47. 1959 & in Fasc. Fl. India 11: 110. 1982.

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.

Illus. : Ic. Roxb. Fasc. 8, t. 5. 1978 [Repr. ed. *(T. bracteata)*]; Matthew, Illus. Fl. Tamilnadu. Carnatic 2: tt. 304 & 971a. 1982.

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).

T. wallichiana (Seri.) Wight in Ann. & Mag. Nat. Hist. 8: 270. 1842; Jeffrey in Kew Bull. 34: 797. 1980; Chakr. in Fasc. Fl. India 11: 123. 1982. *Involucraria wallichiana* Seri. in Mem. Soc. Phys. Geneve 3(1): 25, t. 5. 1825. *Trichosanthes multiloba* C.B.Cl. in Hook. f. Fl. Brit India 2: 608. 1879. *T. palmata* Roxb. var. *scotanthus* C.B.Cl. in Hook. f. op. cit. 607.

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.

Zanonia indica L. Sp. Pl. ed. 2. 1457. 1763; C.B.Cl. in Hook. f. Fl. Brit. India 2:633. 1879; Cooke, Fl. Pres. Bombay 1:581. 1958 (Repr.); Chakr. in Rec. Bot. Surv. India 17: 181. 1959 & in Fasc. Fl. India 11:124, f. 1–6. 1982; Jeffrey in Kew Bull. 34: 800. 1980. *'Chiriabuti', 'Chirpota', 'Chirpoti'.*

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, clavate, truncate, pale yellowish–brown. Seeds oblong, much compressed, with yellowish wings.

Fls. & Frts. : October–January.

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*

Zehneria mucronata (Bl.) Miq. Fl. Ind. Bat. 1: 656. 1855; Jeffrey in Kew Bull. 34: 795. 1980. *Bryonia mucronata* Bl. Bijdr. 923. 1826. *Melothria mucronata* Bl. Cogn. in A. & C. DC. Mon. Phan. 3: 608. 1881; Chakr. in Fasc. Fl. India 11: 84. 1982.

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.).

Zehneria scabra (L. f.) Sond. in Harv. & Sond. Fl. Cap. 2:486. 1862; Jeffrey in Kew Bull. 15:369. 1962. *Bryonia scabra* L. f. Suppl. 423. 1781. *Zehneria hookeriana* Wight & Arn. in Hook. J. Bot. 3:275. 1841; C.B.Cl. in Hook. f. Fl. Brit. India 2:624. 1879. *Melothria perpusilla* (Bl.) Cogn. in DC. Monogr. Phan. 3:607. 1881; Cooke, Fl. Pres. Bombay 1:574. 1958 (Repr.); Chakr. in Rec. Bot. Surv. India 17:146. 1959 & in Fasc. Fl. India 11: 85. 1982. *M. scabra* (L. f.) Panigr & Mishra in J. Econ. Tax. Bot. 5:417. 1984. *'Chirati'*.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 305. 1982.

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*.

Z. thwaitesii (Schweinf.) C. Jeffrey in Kew Bull. 15: 371. 1962 & Ibid. 34: 796. 1980. *Melothria thwaitesii* Schweinf. Reliqu. Kotschy. 44, t. 29. 1868. *M. zeylanica* C.B.Cl. in Hook. f. Fl. Brit. India 2: 626 1879; Chakr. in Rec. Bot. Surv. India 17: 154. 1959 & in Fasc. Fl. India 11: 87. 1982.

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 :

Benincasa hispida (Thunb.) Cogn. in A. & C. DC. Monogr. Phan. 3: 513. 1881. *Cucurbita hispida* Thunb. Fl Jap. 322. 1784. *Benincasa cerifera* Savi, Bibl. Ital. 9: 158. 1818, C.B.Cl. in Hook. f. Fl. Brit India 2: 616. 1879; Chakr. in Rec. Bot. Surv. India 17: 84. 1959.*'Bhura–Kola', 'Kohala'.*

Herbs; stem branched. Leaves broadly ovate, 5–7–lobed, margins irregularly dentate; tendrils tender. Flowers yellow, monoecious, axillary, solitary. Fruits fleshy, hairy when young, waxy, bloom when mature. Seeds yellowish, compressed, ovoid.

Fls. & Frts. : June–October.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 291. 1982.

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

Citrullus lanatus (Thunb.) Mats & Nakai. in Cat. Semet Spor. Hort. Bot. Univ. Imp. Tokyo 1916: 30. 1916; Jeffrey in Kew Bull. 34: 791. 1980; Chakr. in Fasc. Fl. India 11: 22. 1982. *Momordica lanata* Thunb. Prodr. Pl. Cap. 13. 1800.

var. **lanatus.** *'Kalingad'.*

Herbs, prostrate or suberect, softly hairy. Leaves pubescent, lobed, petiolate. Flowers pale yellow, axillary, solitary. Berries olive–green with dark–green longitudinal stripes. Seeds obovoid–oblong, black, compressed.

Fls. & Frts. : November–May.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 292. 1982.

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

var. **fistulosus** (Stocks) Chakr. in Fasc. Fl. India 11: 23. 1982. *C. fistulosus* Stocks in Hooker's Kew J. Bot. 3: 74, t. 3. 1851. *Colocynthis citrullus* (L.) O. Ktze. var. *fistulosus* (Stocks) Chakr. in Rec. Bot. Surv. Ind. 17(1): 116. 1959.

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.

Cucumis melo var. **momordica** Duthie & Fuller in Field & Gard. Crops 2: 50, t. 49. 1882; Duthie, Fl. Gangetic Plain 1: 372. 1903. *C. melo* L. var. *melo* sensu Chakr. in Fasc. Fl. India 11: 34. 1982 p. p. non L. 1753. *C. melo* L. var. *culta* Kurz in J. As. Soc. Beng. 46(2): 102. 1877.

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. : Common in sandy soil. Cultivated for its fruits. Native of Tropical Africa. Pune.

C. sativus L. Sp. Pl. 1012. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 620. 1829; Cooke, Fl. Pres Bombay 1: 570. 1958 (Repr.); Jeffrey in Kew Bull 34: 794. 1980; Chakr. in Rec. Bot Surv. India 17: 105. 1959 & in Fasc. Fl. India 11: 36. 1982. *'Kakadi'.*

Climbing herbs, hirsute. Leaves densely hairy, lobes triangular Flowers yellow : male flowers fasciculate; female flowers solitary or fasciculate. Fruits ovoid, green. Seeds white, oblong.

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

Cucurbita maxima Duch. ex Lam. Encycl. 2: 151. 1786; C.B.Cl. in Hook. f. Fl. Brit. India 2: 622. 1879; Jeffrey in Kew Bull. 34: 799. 1980; Chakr. in Fasc. Fl. India 11: 40. 1982. *'Tamda Bhopla'*.

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.

C. pepo L. Sp. Pl. 1010. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 622. 1879; Jeffrey in Kew Bull. 34: 798. 1980; Chakr. in Fasc. Fl. India 11: 43. 1982. *'Kashi–Bhopla'*.

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.

C. moschata (Duch. ex Lam.) Duch. ex Poir. Dict. Sci. Nat. 11: 234. 1818; C. B. Cl. in Hook. f. Fl. Brit Ind. 2: 622. 1879; Jeffrey in Kew Bull. 34: 799. 1980; Chakr. in Fasc. Fl India 11: 41, f. 1–6. 1982. *C. pepo* var. *moschata* Duch. ex Lam. Encyl. 2: 152. 1786. *'Kala bhopla'*.

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.

Lagenaria siceraria (Mol.) Standl. in Publ. Field Mus. Nat. Hist. Chicago Bot. ser. 3: 435. 1930; Jeffrey in Kew Bull. 34: 790. 1980; Chakr. in Fasc. Fl. India 11: 65. 1982. *Cucurbita siceraria* Mol. Sagg. Chile 133: 335. 1782. *Lagenaria leucantha* Rusby in Mem. Torr. Bot. Cl. 6: 43. 1896 nom. illeg. superfl. *Lagenaria vulgaris* Seringe, Mem. Soc. Phys Hist. Nat. Geneve. 3(1): 25, t 2. 1825; C.B.Cl. in Hook. f. Fl. Brit. India 2: 613. 1879. *'Dudhi bhopla'*.

Herbs, annual, climbing, softly pubescent. Leaves angular, 10–40 cm long and broad. Flowers white. Fruits clavate, greenish–yellow, turning brown. Seeds white.

Fls. & Frts. : August–February.

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

Luffa cylindrica (L.) M. J. Roem. Syn. Mon. 2: 63. 1846; Chakr. in Rec. Bot. Surv. India 17: 75. 1959 & in Fasc. Fl. India 11: 70. 1982; Jeffrey in Kew Bull. 15: 355. 1962 & Ibid. 34: 791. 1980. *Momordica cylindrica* L. Sp. Pl. 1009. 1753. *Luffa aegyptiaca* Mill. Gard. Dict. ed. 8. 1768; C.B.Cl. in Hook. f. Fl. Brit India 2: 614. 1879; Cooke, Fl. Pres. Bombay 1: 565. 1958 (Repr.). *'Ghosale'*.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 300. 1982.

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

Momordica charantia L. Sp. Pl. 1009. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 616. 1879; Duthie, Fl. Gangetic Plain 1: 369. 1903; Jeffrey in Kew Bull. 34: 789. 1980; Chakr. in Fasc. Fl. India 11: 89, f. 8–10. 1982. *'Karla'*.

Herbs, climbing or trailing Leaves deeply 5–9–lobed, membranous, glabrous. Flowers bright yellow, solitary, axillary. Berries fusiform, tuberculate. Seeds flat, yellowish–brown.

Fls.–Frts. : April–October.

Illus. : Chakr. op. cit.

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

Trichosanthes anguina L. Sp. Pl. 1008. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 610. 1879; Chakr. in Fasc. Fl. India 11: 108. 1982. *Cucumis anguina* L. Syst. ed. 10. 1279. 1759. *'Padvel'*.

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.

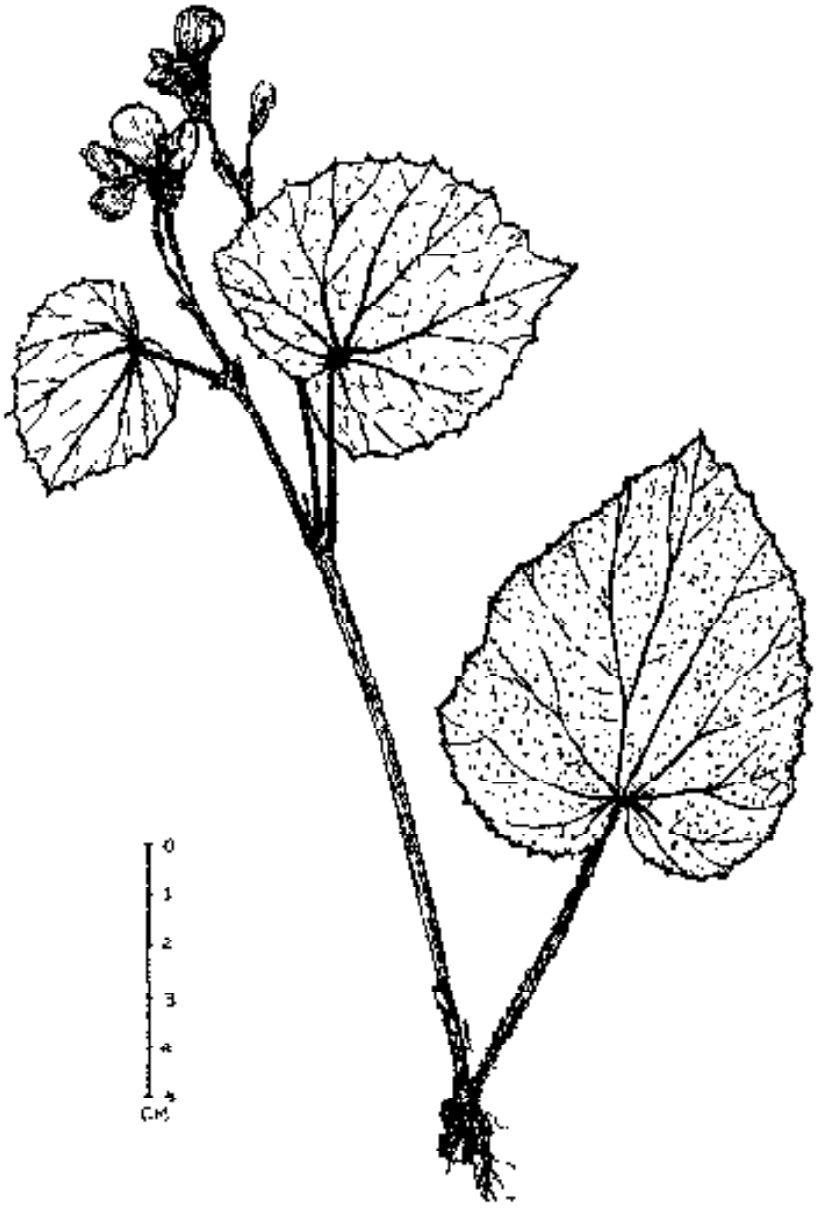
Distrib. : Cultivated throughout the state for its edible fruits, cooked as vegetable.

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.

Begonia concanensis A. DC. Prodr. 15(1):314. 1864; C.B.Cl. in Hook f. Fl. Brit. India 2:658. 1879; Cooke, Fl. Pres. Bombay 1:585. 1958 (Repr.).

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, dentate 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.

Illus. : Kothari & Moorthy, Fl.Raigad Dt. 169, f. 1993.

Distrib. : Infrequent along the ghats. Kolhapur, Pune, Raigad.

B. crenata Dryand. in Trans. Linn. Soc. Lond. 1:164, t. 14, f. 3. 1791; C.B.Cl. in Hook. f. Fl. Brit. India 2:651. 1879; Cooke, Fl. Pres. Bombay 1:584. 1958 (Repr.). *'Amabadi', 'Kapru', 'Mutia'.*

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.

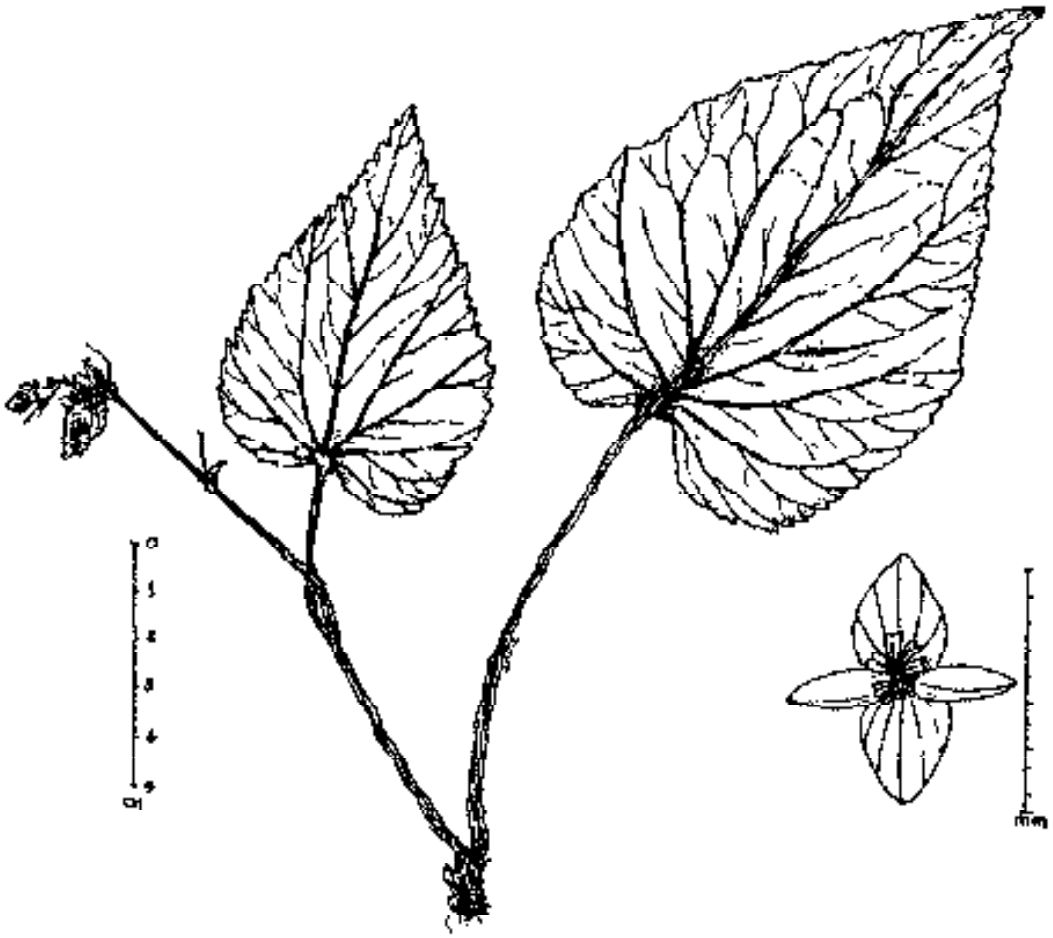
Fls. & Frts. : September–October.

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.

B integrifolia Dalz. in Hook. J. Bot. Kew. Gard. Misc. 3:230. 1851; C. B. Cl. in Hook. f. Fl. Brit. India. 2:648. 1879; Cooke Fl. Pres. Bombay 1:584. 1958 (Repr.).

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.

Fls. & Frts. : August–October.

Distrib. : Rare along the ghats. 'Konkan' (Cooke, op. cit.).

B. malabarica Lam. Encycl. 1 : 393. 1785; C.B.Cl. in Hook. f. Fl. Brit. India 2: 655. 1879; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 14. 1897.

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.

Illus. : Ramam. in Sald. & Nicols. Fl. Hassan Dt. f. 35 B. 1976; Matthew, Illus. Fl. Tamilnadu, Carnatic 2:t. 306. 1982.

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

B. phrixophylla Blatt. & McC. in J. Indian Bot. Soc. 10: 27, t. 1–5. 1931.

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.).

B. picta J. E. Sm. Exot. Bot. 2: 81, t. 101. 1805; C.B.Cl. in Hook. f. Fl. Brit. India 2:638. 1879; Anand Kumar in Bull. Bot. Surv. India 20: 185. (1978) 1979.

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.

Illus. : Collett, Fl. Siml. 202, f. 61 1902; Ghazanfar in Nasir & Ali, Fl. W. Pak 96: 2, f. 1. A.–E. 1976.

Distrib. : Infrequent on hill tops. Nasik.

B. roxburghii A. DC. in DC Prodr. 15 (1): 398. 1864; C.B.Cl. in Hook. f. Fl. Brit. India 2: 635. 1879; Cooke, Fl. Pres. Bombay 1: 583. 1958 (Repr.).

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.).

B. trichocarpa Dalz. in Hook. J. Bot. Kew Gard. Misc. 3: 230. 1851; C.B.Cl. in Hook. f. Fl. Brit. India 2:653. 1879; Cooke, Fl. Pres. Bombay 1:585. 1958 (Repr.).

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.

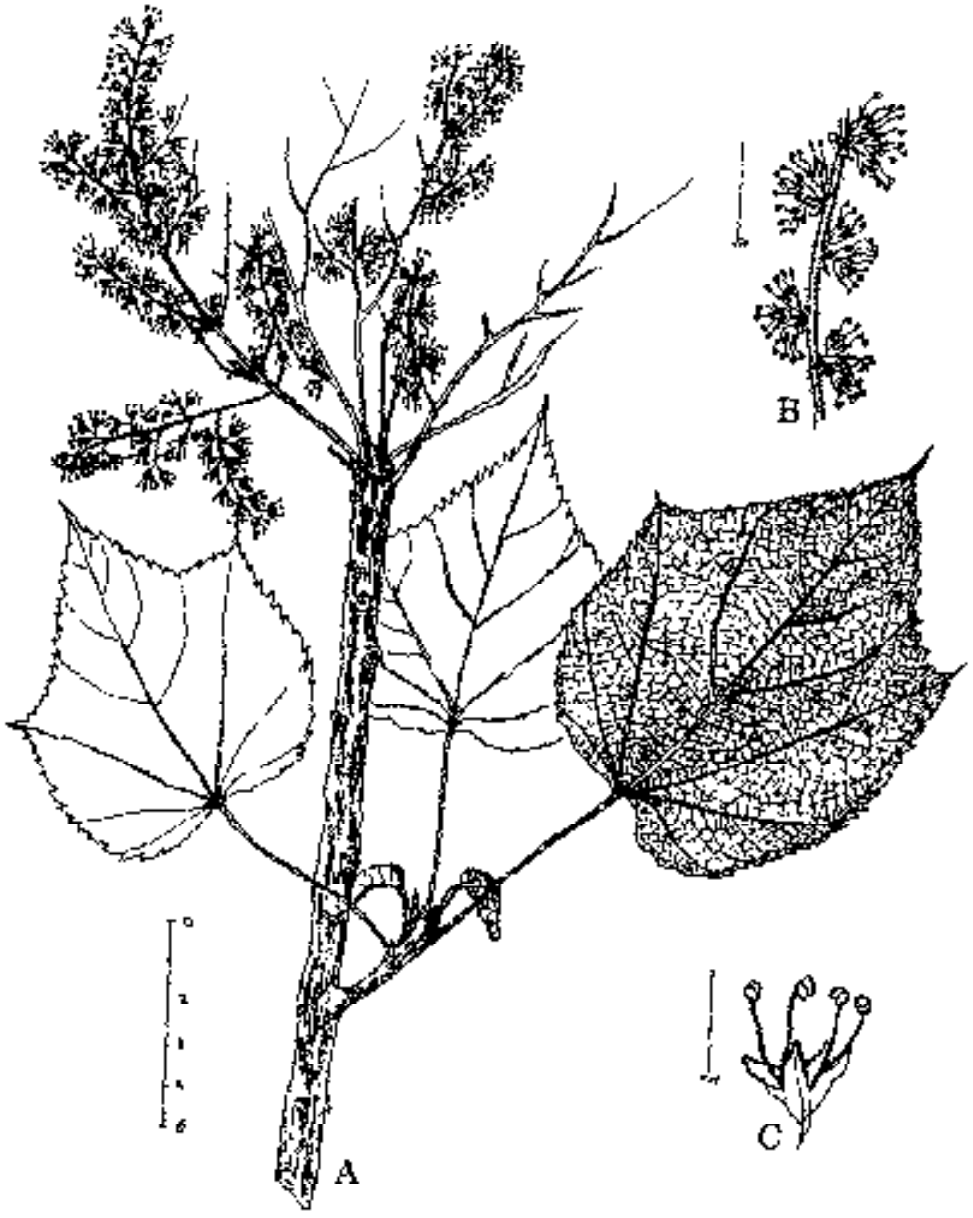
Distrib. : Rare in shaded areas along western ghats. 'Konkan' & 'Western Ghats' (Cooke, op. cit.).

CULTIVATED SPECIES :

Begonia cuculata var. **hookeri** Sm. & Schubert in Darwiniana 5: 104. 1941; Jayasuriya in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 4: 149. 1983.

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.

B. ricinifolia A. Dietr. Allg. Gartenz. 15: 282. 1847; Bailey, Man. Cult. Pl. 699. 1949 (ed. 2).

Herbs. Leaves with short triangular lobes, bronzy–green with ciliate margins. Flowers many, rose–pink on tall peduncles.

Distrib. : Pune.

TETRAMELACEAE

(S. Y. Kamble & P. Lakshminarasimhan)

TETRAMELES R. Br.

Tetrameles nudiflora R. Br. in Benn. Pl. Java Rar. 79, t. 17. 1838; C. B. Cl. in Hook. f. Fl. Brit. India 2:657. 1879; Cooke, Fl. Pres. Bombay 1:586. 1958 (Repr.). *'Bhend', 'Bhendsa', 'Ugad'.*

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.

Illus. : Wight, Ic. t. 1956. 1853 (*T. grahamiana*).

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 exserted ... NOPALEA

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

ERIOCEREUS Berg.

Eriocereus bonplandii (Parm. ex Pfeiff) Rice in Boll. Ort. Bot. Palermo 8: 238. 1909; Bailey, Man. Cult. Pl. 713. 1949; Naik, Fl. Marathwada 1:413. 1998. *Cereus bonplandii* Parm. ex Pfeiff. Enum. Diagn. Cact. 108. 1837.

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

Nopalea cochenillifera (L.) Salm.–Dyck, Cact. Hort. Dyck. ed. 2: 64. 1850; Bailey, Man. Cult. Pl. 703. 1949; Naik, Fl. Marathwada 1: 413.1998. *Cactus cochenillifera* L. Sp. Pl. 468. 1753.

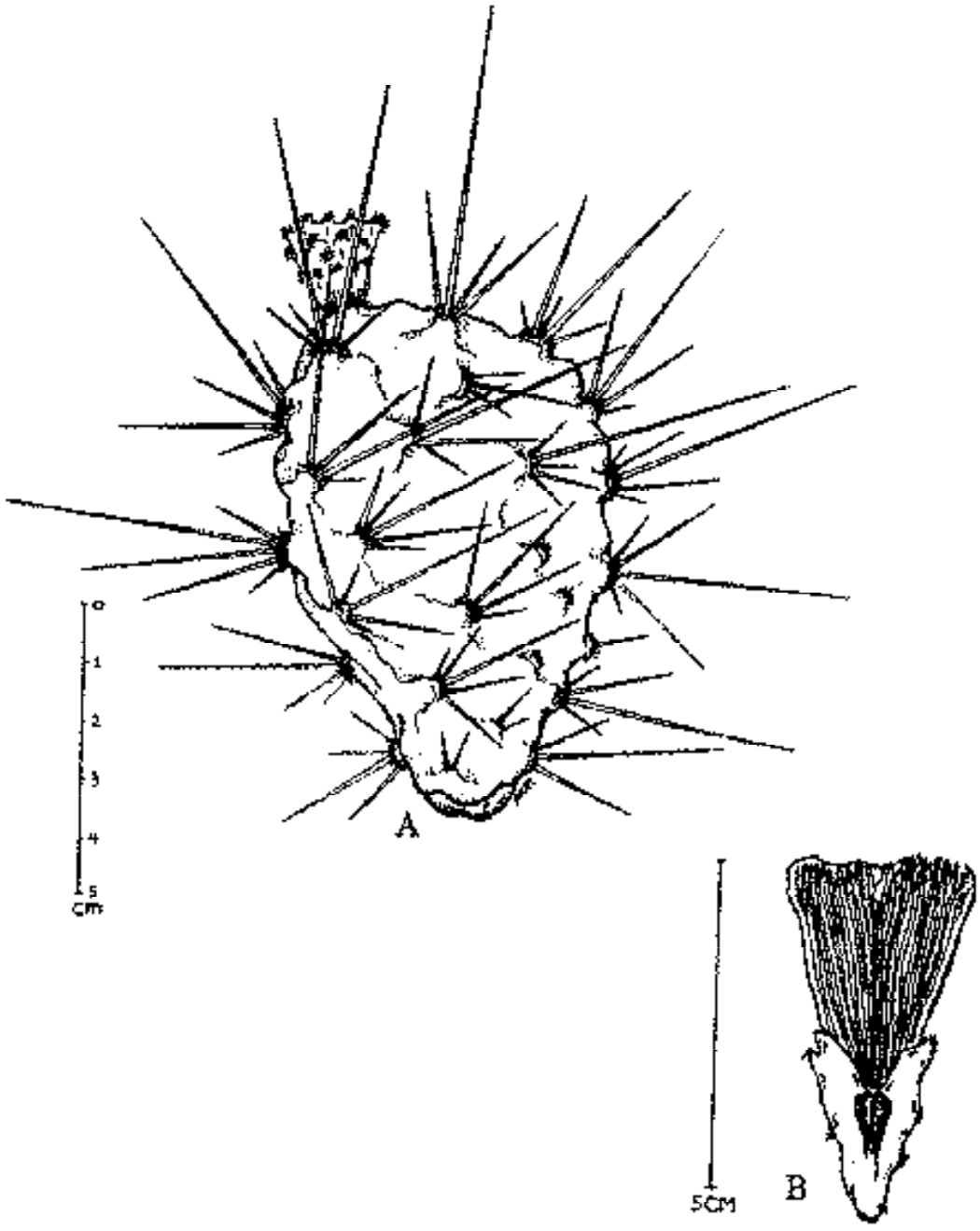
Erect shrubs, 3–5 m tall. Leaves 2–3 cm long, subulate, caducous. Flowers 4–5 cm long, borne on upper edge of joints; sepals and petals scarlet; stamens pinkish. Fruits globose–ellipsoid, 3.5–4.5 cm long, red. Seeds many, ovoid, brown.

Fls. & Frts. : March–June.

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

OPUNTIA Mill.

Opuntia elatior Mill. Gard. Dict. ed. 8, n. 4. 1768; Ramam. in N. C. Nair et al. Fl. Tamilnadu 1:176. 1983. *O. dillenii* Grah. ex Dalz. & Gibs. Bombay Fl. Suppl. 39. 1861; C. B. Cl. in Hook f. Fl. Brit. India 2:657. 1879 p.p. *O. nigricans* Woodr. in Rec. Bot. Surv. India 1:89. 1895 non Haw. 1819; Cooke, Fl. Pres. Bombay 1:587. 1958 (Repr.). *'Nivdung'*.



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.

Illus. : Anon. Wealth of India 7 : 102, t. 6. 1966.

Distrib. : Frequent in open places.

CULTIVATED SPECIES :

Cereus peruvianus Mill. Gard. Dict. ed. VIII. n. 4. 1768; Bailey, Man. Cult. Pl. ed. 2. 711. 1949.

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, upto 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.

Opuntia ficus–indica Mill. Gard. Dict. ed. VIII. no. 2. 1768; Bailey, Man. Cult. Pl. ed. 2. 704. 1949.

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.

O. stricta (Haw.) Haw. var. **dillenii** (Ker Gawl.) L. Benson, Cact. Succ. J. Los Angeles 41: 126. 1969; Matthew, Fl. Tamilnadu Carnatic 3(1): 661. 1983. *Cactus dillenii* Ker Gawl. Bot. Reg. 3: t. 255. 1818. *Opuntia dillenii* (Kew Gawl.) Haw. Suppl. Pl. Succ. 79. 1819; Hook. f. Fl. Brit. India 2: 657. 1879.

Shrubs, upto 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.

Illus. : Wight. Ill. Ind. Bot. t. 114. 1850 (*O. dillenii*).

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

Pereskia grandiflora Haw. Rev. Pl. Succ. 85. 1819; Bailey, Man. Cult. Pl. ed. 2. 702. 1949.

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.

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.

Gisekia pharnaceoides L. Mant. 562. 1771; C. B. Cl. in Hook. f. Fl. Brit. India 2:664. 1879; Cooke, Fl. Pres. Bombay 1:595. 1958 (Repr.).

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.

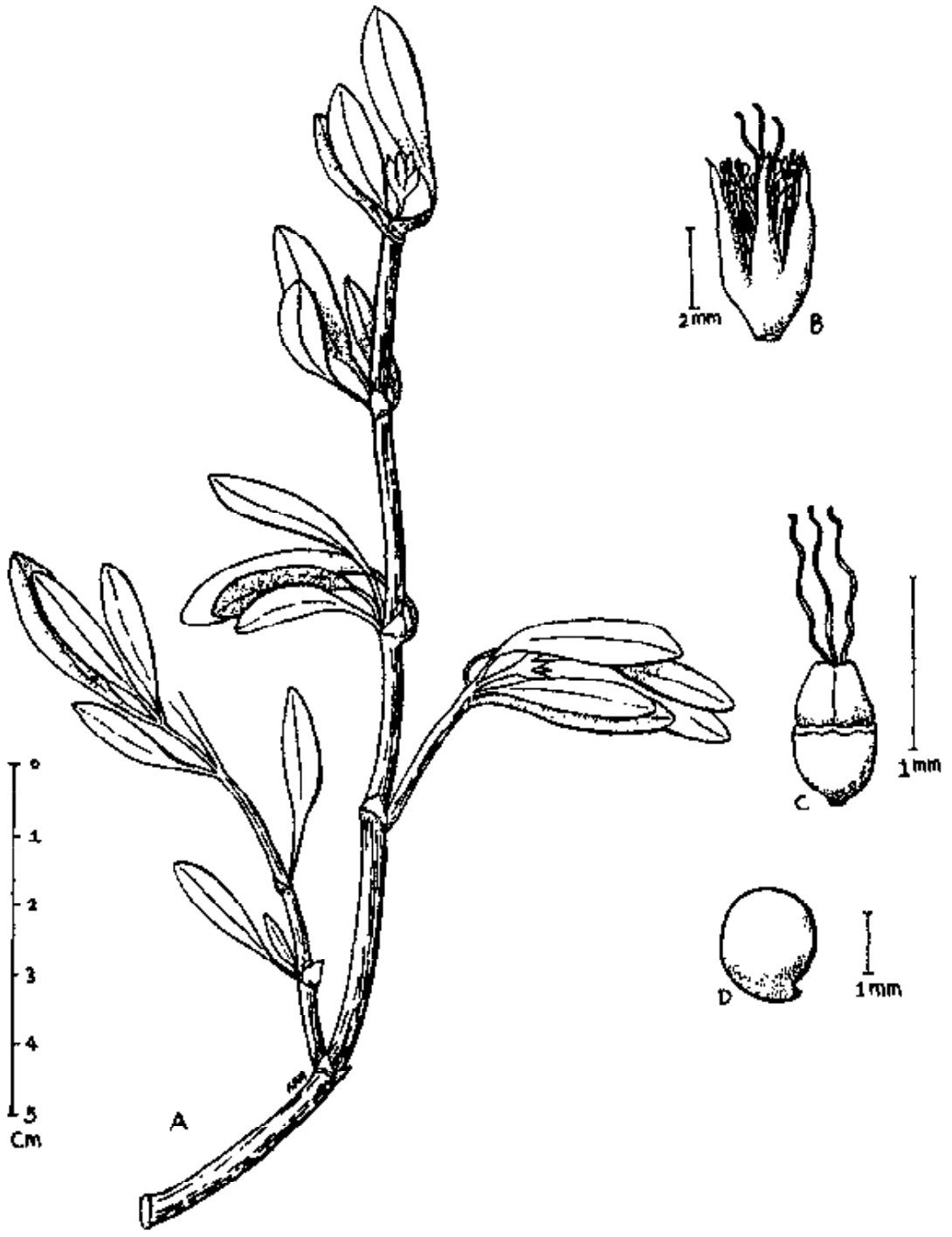
Illus. : Wight, Ic. t. 1167. 1848; Jeffrey in Hubb. & Milne–Redhead Fl. Trop. E. Afr. Aizoaceae 4, f. 1. 1961.

Distrib. : Occasional in open moist places. Raigad.

SESUVIUM L.

Sesuvium portulacastrum (L.) L. Syst. ed. 10, 1058. 1759; C. B. Cl. in Hook. f. Fl. Brit. India 2: 659. 1879; Cooke, Fl. Pres. Bombay 1: 589. 1958 (Repr.); Jeffrey in Hubb. & Milne Redhead, Fl. Trop. E. Afr. Aizoaceae 21, f. 7. 1961. *Portulaca portulacastrum* L. Sp. Pl. 446. 1753. *'Daula', 'Dhapa'.*

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 filiorm; 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

Fls. & Frts. : November–January.

Illus. : Jeffrey, op. cit.

Distrib. : Found along sea coast. Bombay, Raigad, Thane.

TRIANTHEMA L.

1. Flowers axillary, solitary; stamens 10–20 ... *T. portulacastrum*

1. Flowers axillary, glomerulate; stamens 5 ... *T. triquetra*

Trianthema portulacastrum L. Sp. Pl. 223. 1753; Jeffrey in Kew Bull. 14:235. 1960. *T. monogyna* L. Mant. 1: 69. 1767; C.B.Cl. in Hook. f. Fl. Brit. India 2: 660. 1879; Cooke, Fl. Pres. Bombay 1: 589. 1958 (Repr.). *'Ghol', 'Pundharighentui'.*

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, petiolate, 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.

Illus. : Wight Ic. t. 288. 1840 *[T. obcordata* Roxb. Fl. Ind. (Carey ed.) 2:445 1832]; Mahesh. Illus. Fl. Delhi f. 93. 1966.

Distrib. : Common weed in waste places.

T. triquetra Rottl. ex Willd. in Ges. Naturf. Fr. Berlin Neue Schr. 4:181. 1803; Cooke, Fl. Pres. Bombay 1:500. 1958 (Repr.). *T. crystallina* auct. non Vahl, 1790; C.B.Cl. in Hook. f. Fl. Brit. India 2: 660. 1879.

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.

Illus. : Jeffrey in Hubb. & Milne Redhead, Fl. Trop. E. Afr. Aizoaceae 24, f. 8 (6–8). 1961.

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

ZALEYA Burm. f.

1.	Capsules 4–seeded; stamens 10	...	*Z. decandra*
1.	Capsules 2–seeded; stamens 5	...	*Z. pentandra*

Zaleya decandra (L.) Burm f. Fl. Ind. 110, t. 31. 1768. *Trianthema decandra* L. Mant. 1: 70. 1767; C.B.Cl. in Hook. f. Fl. Brit. India 2: 661. 1879; Cooke, Fl. Pres. Bombay 1: 591. 1958 (Repr.).

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.

Z. pentandra (L.) Jeffrey in Kew Bull. 14: 238. 1960; Almeida, Fl. Mah. 2: 348. 1998. *Trianthema pentandra* L. Mant. 1: 70. 1767; C.B.Cl. in Hook. f. Fl. Brit. India 2: 660. 1879. *Zaleya govindia* (Buch.–Ham. ex G. Don) Nair in Bull. Bot. Surv. India 8: 86. 1966. *Trianthema govindia* Buch.–Ham. ex G. Don, Gen. Syst. 3: 72. 1834; Melville in Kew Bull. 1952: 264. 1952.

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

var. **pentandra.**

Diffuse, much branched, upto 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.).

var. **flava** (Blatt. & Hallb.) Almeida, Fl. Mah. 2: 349. 1998. *Trianthema pentandra* var. *flava* Blatt. & Hallb. in J. Bombay Nat. Hist. Soc. 26: 531. 1919. *T. decandra* var. *flava* (Blatt. & Hallb.) Sant. in J. Bombay Nat. Hist. Soc. 56: 280. 1959.

Fls. & Frts. : October–November.

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

var. **rubra** (Blatt. & Hallb.) Almeida, Fl. Mah. 2: 349. 1998. *Trianthema pentandra* var. *rubra* Blatt. & Hallb. in J. Bombay Nat. Hist. Soc. 26: 530. 1919. *T. decandra* var. *rubra* (Blatt. & Hallb.) Sant. in J. Bombay nat. Hist. Soc. 56: 279. 1959.

Diffuse herbs, 20–40 cm long. Leaves elliptic, oblong, sometimes obovate, glabrous. Flowers 1–many, in axillary clusters, pink. Capsules 4–5 mm long, circumscissile, few–seeded, red. Seeds reniform–orbicular, compressed, rugose.

Fls. & Frts. : October–November.

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

CULTIVATED SPECIES :

Mesembryanthemum crystallinum L. Sp. Pl. 480. 1753; Almeida, Fl. Mah. 2: 346. 1998.

Herbs, procumbent, annual; papillae glistening. Leaves 3–8 x 0.5–2.0 cm, spathulate, 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.).

Tetragonia expansa Murr. in Comm. Gotting. VI. 13. 1783; Bailey, Man. Cult. Pl. ed. 2. 361. 1949. *T. tetragonodes* (Pallas) O. Ktze. Rev. Gen. 264. 1891.

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.

MOLLUGINACEAE

(S. Y. Kamble & P. Lakshminarasimhan)

1.	Calyx tube 5–partite; capsules loculicidal	...	GLINUS
1.	Calyx not as above; capsules circumscissile	...	MOLLUGO

GLINUS L.

1.	Plants densely stellate pubescent	...	G. *lotoides*
1.	Plants nearly glabrous	...	G. *oppositifolius*

Glinus lotoides L. Sp. Pl. 463. 1753; Sant. in Bull. Bot. Surv. India 3:17. 1961. *Mollugo hirta* Thunb. Prodr. Fl. Cap. 24. 1794; C. B. Cl. in Hook f. Fl. Brit. India 2: 622. 1879; Cooke, Fl. Pres. Bombay 1:593. 1958 (Repr.). *'Dasara–sag', 'Kotrak'*.

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. Fruting calyx 0.5–0.8 x 0.25–0.4 cm. Capsules ovoid.

Fls. & Frts. : February–May.

Illus. : Mahesh. Illus. Fl. Delhi f. 90. 1966; Jeffrey in C. E. Hubb. & Milne Redhead, Fl. Trop. E. Afr. Aizoaceae 14, f. 5 (1–7). 1961.

Distrib. : Common throughout.

G. oppositifolius (L.) A. DC. in Bull. Herb. Boiss. 2, 1:559. 1902; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 96, f. 17 Ba & Bb. 1976. *Mollugo oppositifolia* L. Sp. Pl. 89. 1753; Cooke, Fl. Pres. Bombay 1:593. 1958 (Repr.). *M. spergula* L. Syst. Nat. ed. 10, 881. 1759; C.B.Cl. in Hook. f. Fl. Brit. India 2:662. 1879.

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, appendaged, dark brown.

Fls. & Frts. : September–November.

Illus. : Jeffrey in C.E. Hubb. & Milne Redhead, Fl. Trop. East. Afr. Aizoaceae 14, f. 5 (8–9). 1961; Ramam. in Sald. & Nicols. op. cit.

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*

Mollugo cerviana (L.) Seringe in DC. Prodr. 1: 392. 1824; C.B.Cl. in Hook. f. Fl. Brit. India 2: 663. 1879; Cooke, Fl. Pres. Bombay 2: 594. 1958 (Repr.); Naik Fl. Marathwada 1: 418. 1998. *Pharnaceum cerviana* L. Sp. Pl. 272. 1753. '*Pada*'.

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.

Illus. : Ramam. in Sald. & Niclos. Fl. Hassan Dt. 96, f. 17A, Aa, Ab. 1976.

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

M. nudicaulis Lam. Encycl. 4:234. 1797; C.B.Cl. in Hook. f. Fl. Brit. India 2: 664. 1879.

Herbs, erect, slender, annual. Basal leaves 1–4 x 0.2–3.0 cm, in a rosette, spathulate 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

Illus. : Anon. Wealth of India 6:397, f. 166. 1962; Naik, Fl. Marathwada 1: 421, f. 58. 1998.

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

M. pentaphylla L. Sp. Pl. 89. 1753; Cooke, Fl. Pres. Bombay 1: 594. 1958 (Repr.); Sivar. & Usha in Taxon 32: 123. 1983. *M. stricta* sensu C.B.Cl. in Hook. f. Fl. Brit. India 2: 663. 1879 non L. 1762.

1. Leaves obovate, apex obtuse or acute ... var. *pentaphylla*
1. Leaves linear, apex apiculate ... 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.

Illus. : Ramam. in Sald. & Nicols. Fl. Hassan Dt. 96, f. 17 C–Cb. 1976.

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

var. **rupestris** T. Cooke, Fl. Pres. Bombay 1 : 558 1903 [1 : 594. 1958 (Repr.)].

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.

M. stricta L. Sp. Pl. ed. 2: 131. 1762; C.B.Cl. in Hook. f. Fl. Brit. India 2: 63. 1879 p.p.; Sivar. & Usha in Taxon 32 : 125.1983; Naik, Fl. Marathwada 1: 422. 1998.

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.).

APIACEAE (UMBELLIFERAE)

(S. G. Pradhan)

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

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 c 0.3 cm long ... POLYZYGUS

9. Roots not tuburous; fruits c 0.9 cm long ... PEUCEDANUM

8. Ovary pubescent :

10. Fruits densely hairy ... SESELI

10. Fruits glabrate at length :

11. Exterior petals of marginal flowers diaproportionately dialated; lateral ribs of mericarps not winged ... PINDA

11. Exterior petals of marginal flowers not diaproportionately dialated; lateral ribs of mericarps winged ... HERACLEUM

AMMI L.

Ammi majus L. Sp. Pl. 243. 1753; Walters Ball in Tutin et al. Fl. Europea 2: 353. 1968; P.K.Mukh. & Constance, Umbelliferae (Apiaceae) of India 84. 1993.

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.

Illus. : Matthew & Britto in Matthew, Fl. Tamilnadu Carnatic 3(1): 675, t. 49. 1983.

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

BUPLEURUM L.

Bupleurum mucronatum Wight & Arn. Prodr. 370. 1834; C.B.Cl. in Hook. f. Fl. Brit. India 2: 676. 1879 non Brouss. ex Spreng. in R & S. 1820; P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 57. 1993. *B. falcatum* var. *ramosissmum* (Wight & Arn.) Dalz. & Gibs. Bombay Fl. 108. 1861. *B. mucronatum* var. *ramosissimum* (Wight & Arn.) C.B.Cl. in Hook. f. op. cit.

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.)

Centella asiatica (L.) Urban in Mart. Fl. Bras. 11:287, t. 78, f. 1. 1879; Buwalda in Blumea 2: 134. 1946; P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 15. 1993. *Hydrocotyle asiatica* L. Sp. Pl. 234. 1753.; C.B.Cl. in Hook. f. Fl. Brit. India 2: 668 1879; Cooke, Fl. Pres. Bombay 1:598. 1958 (Repr.). *'Brahmi'.*

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 ... *H. grande*
   2. Plants hairy ... *H. dalgadianum*
1. Petals white, emarginate or 2–lobed :
   3. Ovary glabrous ... *H. aquilegifolium*
   3. Ovary pubescent ... *H. sprengelianum*

H. aquilegifolium C.B.Cl. in Hook. f. Fl. Brit. India 2:715. 1879; Cooke, Fl. Pres. Bombay 1:607. 1958 (Repr.); P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 241. 1993.

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.

H. dalgadianum Almeida in Indian Forester 111:158, f. 1–5. 1985; P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 242. 1993.

Herbs; stems 1–5 m tall, roots tuberous. Leaves imparipinnate; radical leaves long petiolate; petioles upto 30 cm long; leaflets 1–2 pairs, 5–6 cm broad, ovate–lanceolate, 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.

H. grande (Dalz. & Gibs.) P.K. Mukh. in Sci. & Cult. 39: 542. 1973; P.K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 242. 1993. *Pastinaca grande* Dalz. in Dalz. & Gibs. Bombay Fl. 107. 1861. *Peucedanum grande* (Dalz.) C.B.Cl. in Hook. f. Fl. Brit. India 2:710. 1879; Cooke, Fl. Pres. Bombay 1:605. 1958 (Repr.). *Heracelum grandis* Almeida in Indian Forester 111: 160. 1985. *'Baphali'*.

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.

Distrib. : Found on hill slopes in ghats, in moist situations. Ahmednagar, Bombay, Nasik, Pune, Raigad, Satara, Sindhudurg, Thane.

Notes. : Endemic to Western ghats of Peninsular India.

H. sprengelianum Wight & Arn. Prodr. 372. 1834. C.B.Cl. in Hook. f. Fl. Brit. India 2:716. 1879; Cooke, Fl. Pres. Bombay 1:607. 1958 (Repr.); P. K. Mukh. & Constance, Umbelliferae (Apiacae) of India 241. 1993.

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, Ic. t. 1008. 1845 *(Pastinaca sprengelianum).*

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

HYDROCOTYLE L.

Hydrocotyle javanica Thunb. Diss. Hydrocot. 3, 20. no. 17, t. 2. 1798; C.B.Cl. in Hook. f. Fl. Brit. India 2: 667. 1879; Cooke, Fl. Pres. Bombay 1: 597. 1958 (Repr.); P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 11. 1993.

Procumbent to erect herbs, 15–40 cm tall. Leave 2–12 cm across, orbicular–reniform, margins lobed, crenate–toothed, stipulate, petiolate. Flowers greenish–white or yellowish, in 15–50–flowered, bracteate, pedúncled umbels. Fruits reddish–brown.

Fls. & Frts. : Mostly throghout the year.

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

PEUCEDANUM L.

Peucedanum dhana C.B.Cl. var. **dalzellii** C.B.Cl. in Hook f. Fl. Brit. India 2:709. 1879; Cooke, Fl. Pres. Bombay 1:605. 1958 (Repr.); P.

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 ... *P. heyneana*
                5. Primary rays 1–2 ... *P. rollae*
            4. Ridges on mericarps prominent ... *P. wallichiana*
        3. Fruits not as above :
            6. Fruits ovoid, hispid–hairy ... *P. wallichiana*
            6. Fruits narrow–oblong with attenuate apex, covered with white scales ... *P. tomentosa*
    2. Bracts 2–3 ... *P. adscendens*

Pimpinella adscendens Dalz. in Hook. J. Bot. Kew Gard. Misc. 2:261. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 2:689. 1879; Cooke, Fl. Pres. Bombay 1:603. 1958 (Repr.); P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 151. 1993.

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.

P. heyneana (Wall. ex DC.) Kurz in J. Asiat Soc. Bengal 46: 115. 1877; C.B.Cl. in Hook. f. Fl. Brit. India 2:684. 1879; Cooke, Fl. Pres. Bombay 1:601. 1958 (Repr.); P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 145. 1993. *Helosciadium heyneanum* Wall. ex DC. Prodr. 4:106. 1830. *Pimpinella multiradiata* Sant. in Kew Bull. 1949: 485. 1949.

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.

Illus. : Gandhi in Sald. & Nicols. Fl. Hassan Dt. 415, f. A–Ac. 1976.

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

P. rollae Billore & Hemadri in Indian Forester 108:712. 1982.

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.

P. tomentosa Dalz. ex C.B.Cl. in Hook. f. Fl. Brit. India 2:689. 1879; Cooke, Fl. Pres. Bombay 1: 602. 1958 (Repr.); P. K. Mukh. &

Constance, Umbelliferae (Apiaceae) of India 149. 1993. *Heracleum tomentosum* Dalz. & Gibs. Bombay Fl. 108. 1861.

Herbs, 50–80 cm tall; stems erect, pubescent. Lower cauline leaves 2–3–pinnatipartite, 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.

P. wallichiana (Miq. ex Hohen.) Gandhi in Sald. and Nicols. Fl. Hassan Dt. 417. 1976; P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 150. 1993. *Helosciadium wallichianum* Miq. ex Hohen. Bot. Zeit. 7:775. 1849. *Pimpinella monoica* Dalz. in Hook. J. Bot. & Kew Gard. Misc. 3:212 1851; C.B.Cl. in Hook. f. Fl. Brit. India 2:687. 1879; Cooke, Fl. Pres. Bombay 1:602. 1958 (Repr.). *P. katrajensis* R.S. Rao & Hemadri in Indian Forester 102: 232, f. 1–7. 1976. *P. candolleana* sensu Cooke, Fl. Pres. Bombay 1:565. 1903 [1: 601. 1958 (Repr.)] non Wight & Arn. 1834.

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.

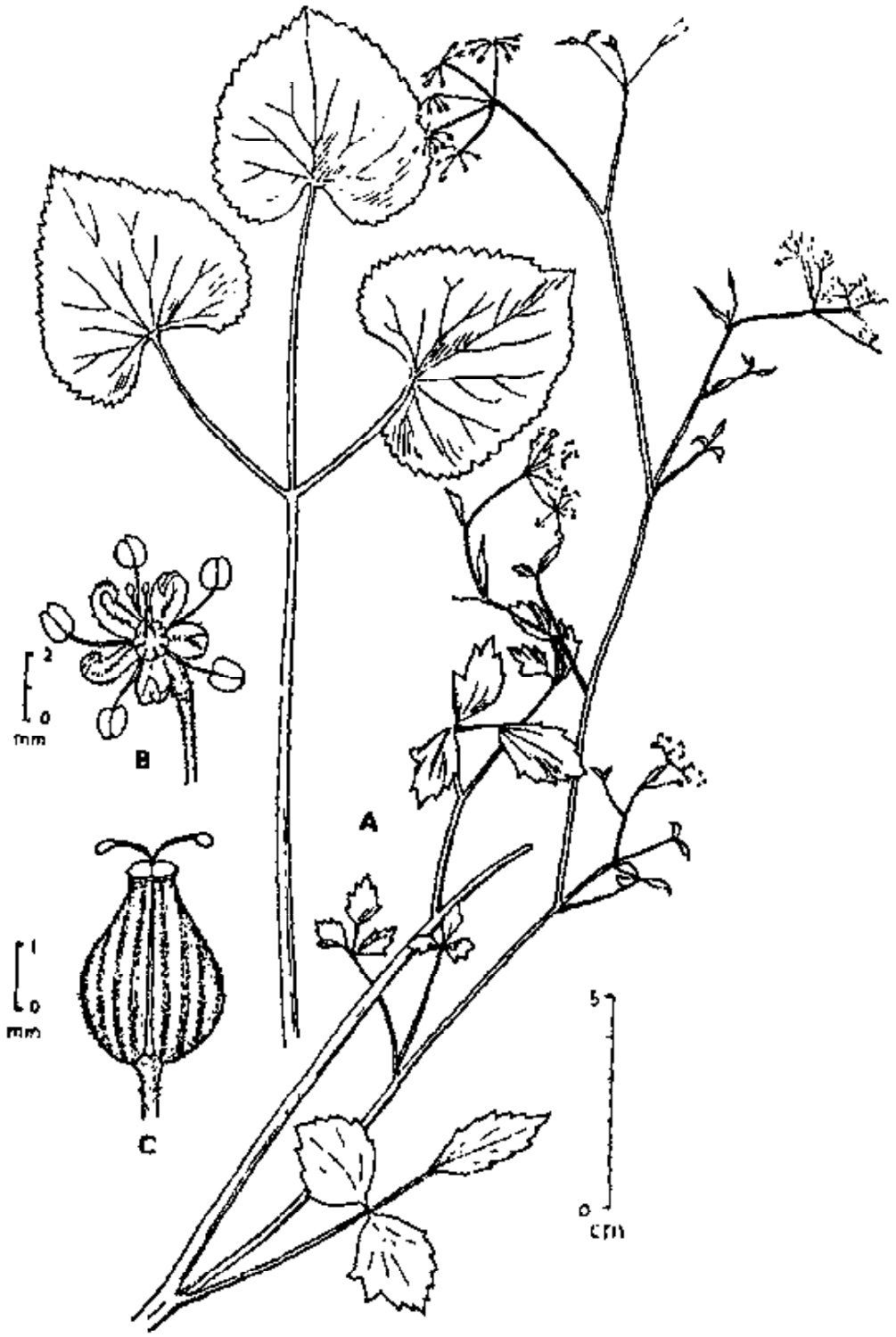
Fls. & Frts. : September–December.

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

Pinda concanense (Dalz.) P. K. Mukh. & Constance in Kew Bull. 41:226, f. 1. 1986 & Umbelliferae (Apiaceae) of India 248. 1993. *Heracleum concanense* Dalz. in Hook. J. Bot. & Kew Gard. Misc. 2:260.



Pimpinella wallichiana (Miq. ex Hohen.) Gandhi :
A– Flowering branch; B– Flower; C– Fruit.

1850; C.B.Cl. in Hook. f. Fl. Brit. India 2:716. 1879; Cooke, Fl. Pres. Bombay 1: 608. 1958 (Repr.). *H. pinda* Dalz. & Gibs. Bombay Fl. 107. 1861; C.B.Cl. in Hook. f. op. cit.217; Cooke op. cit. 108. *H. grandiflorum* Dalz. & Gibs. op. cit. 108.

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.

Illus. : P. K. Mukh. & Constance, op. cit.; Kothari & Moorthy, Fl. Raigad Dt. 175, f. 1993.

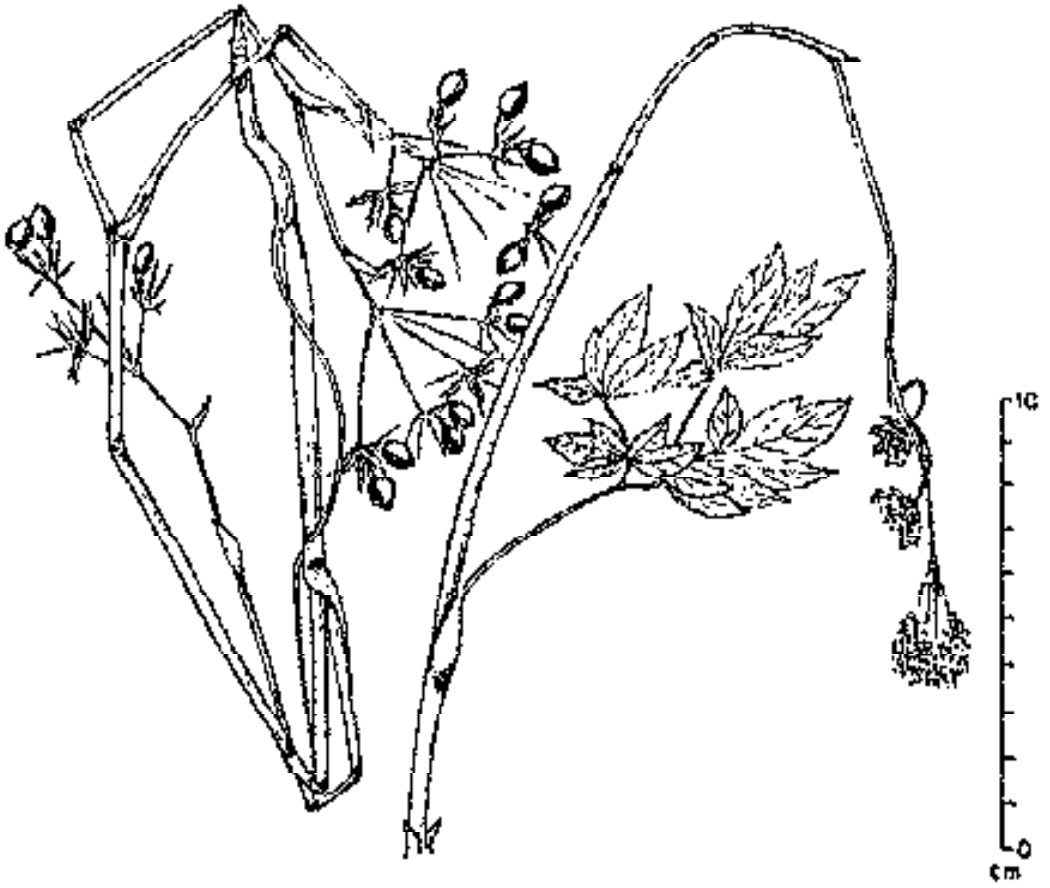
Distrib. : Common, in ghat areas. Ahmednagar, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

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 Dalz.

Polyzygus tuberosus Dalz. ex Walp. in Ann. Bot. Syst. 2: 715. 1852; C. B Cl. in Hook. f. Fl. Brit. India 2:698. 1879; Cooke, Fl. Pres. Bombay 1:603. 1958 (Repr.); P. K. Mukh. & Constance in Kew Bull. 41: 228, f. 2. 1986 & Umbelliferae (Apiaceae) of India 247. 1993. *Heracleum concanense* Dalz. var. *stocksii* C.B.Cl. in Hook. f. Fl. Brit. India op cit. 716; Cooke, op. cit. 608.

Herbs, upto 45 cm tall, glabrescent to glabrous. Lower leaves deltoid, tri–ternate; leaflets pinnatisect, margins bristly serrate. Flowers white, in compound umbels; bracts 0 to 1. Fruits ovoid, many–ribbed.



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.

Scandix stellata Banks & Soland in H. Russell, Nat. Hist. Aleppo ed. 2, 2:249. 1794. *S. pinnatifida* Vent. Jard. Cels. f. 14. 1800; Sant. in Rec. Bot. Surv. India 16 (1) :112. 1967 (3rd. Rev. ed.).

Herbs upto 30 cm tall. Leaves 1–3–pinnate; segments narrow–linear. Flowers white, in 1–3 bracteate, compound umbels. Fruits narrowly oblong with a hispid beak.

Fls. & Frts. : February–March.

Distrib. : Rare. Pune (Sant. op. cit.).

SESELI L.

Seseli diffusum (Roxb. ex J. E. Sm.) Sant. & Wagh in Bull. Bot. Surv. India 5:108. 1963; P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 166. 1993. *Ligusticum diffusum* Roxb. ex J. E. Sm. in Rees, Cyclop. 21:11. 1812. *Seseli indicum* Wight & Arn. Prodr. 371. 1834; C.B.Cl. in Hook. f. Fl. Brit. India 2: 693. 1879.

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*

Trachyspermum ammi (L.) Sprague in Kew Bull. 1929: 228. 1929; P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 162. 1993. *Sison ammi* L. Sp. Pl. 252. 1753. *Carum copticum* Bth. ex C.B.Cl. in Hook. f. Fl. Brit. India 2: 682. 1879; Cooke, Fl. Pres. Bombay 1: 600. 1958 (Repr.).

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.

T. roxburghianum (DC.) Craib. Fl. Siam. Enum. 1: 788. 1931; P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 163. 1993. *Ptychotis roxburghiana* DC. Prodr. 4: 109. 1830. *Carum roxburghianum* (DC.) Kurz in J. Asiat. Soc. Bengal 46(2): 114. 1877; C.B.Cl. in Hook. f. Fl. Brit. India 2: 682. 1879. *Pimpinella lateriflora* Dalz. in Dalz. & Gibs. Bombay Fl. 106. 1861 non Link 1821. *P. dalzellii* P. K. Mukh. in Indian Forerter 95: 567. 1969. *Carum stictocarpum* C.B.Cl. in Hook. f. op. cit. 681; Cooke, Fl. Pres. Bombay 1: 600. 1958 (Repr.). *Trachyspermum stictocarpum* (C.B.Cl.) Wolff in Engl. Pflanzenr. 43: 89. 1927; R.S. Rao & Hemadri in J. Bombay nat. Hist. Soc. 67: 351. 1970. *Carum stictocarpum* var. *hebecarpa* C.B.Cl. in Hook. f. op. cit. 682. *Trachyspermum stictocarpum* var. *hebecarpum* (C.B.Cl.) Wolff in Engl. op. cit.

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 :

Anethum graveolens L. Sp. Pl. 263. 1753; P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 210. 1993. *Peucedanum graveolens* (L.) Hiern, Fl. Trop. Afr. 3: 19. 1877; C.B.Cl. in Hook. f. Fl. Brit. India 2: 709. 1879 non S. Wats. 1871.

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–oblong, 0.4–0.5 x 0.2–0.3 cm.

Fls. & Frts. : June–August.

Distrib. : Widely cultivated.

Apium graveolens L. Sp. Pl. 264. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 679. 1879; Cooke, Fl. Pres. Bombay 1: 609. 1958 (Repr.); P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 86. 1993.

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.

Coriandrum sativum L. Sp. Pl. 256 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 717. 1879; Cooke, Fl. Pres. Bombay 1: 609. 1958 (Repr.); P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 31. 1993. *'Dhana', 'Kothimbir'.*

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.

Cuminum cyminum L. Sp. Pl. 254. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 218 1879; Cooke, Fl. Pres. Bombay 1: 609. 1958 (Repr.); P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 29. 1993. *'Jire'*.

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

Fls. & Frts. : February–March.

Distrib. : Widely cultivated thoughout the state.

Daucus carota L. Sp. Pl. 242. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 718. 1879; Cooke, Fl. Pres. Bombay 1 : 609. 1958 (Repr.); P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 27. 1993. *'Gajar'*.

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 thoughout the state for its fleshy edible roots.

Foeniculum vulgare Mill. Gard. Dict. ed. 8. *Foeniculum*, No. 1. 1768; C.B.Cl. in Hook. f. Fl. Brit. India 2: 695. 1879; P. K. Mukh. & Constance, Umbelliferae (Apiaceae) of India 47. 1993. *'Badishep'*.

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. : Ocober–December.

Distrib. : Cultivated throughout the state for its fruits.

Heracleum graveolens (Bth. & Hook. f.) S.M. Almeida, Fl. Savantwadi 1: 197. 1990. *Peucedanum graveolens* Bth. & Hook. f. Gen. Pl. 919. 1865; C.B.Cl. in Hook. f. Fl Brit. India 2: 709. 1879.

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.

Pastinaca sativa L. Sp. Pl. 262. 1753; Bailey, Man. Cult. Pl. 753. 1949.

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.

Hedera nepalensis K. Koch, Hort. Dendrol 284. 1853; Sant. Fl. Purandhar 59. 1958. *H. helix* sensu C.B.Cl. in Hook. f. Fl. Brit. India 2:739. 1879 non L. 1753.

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

oblique, 60 with midrib ... *S. roxburghii*

1. Leaflets coriaceous; main nerves much prominent than secondary and reticulations much oblique, 30 with midrib ... *S. elliptica*

Schefflera elliptica (Bl.) Harms in Engl. Prantl. Pflanzenfam. 38:39. 1894; Shang in Candollea 39:468. 1984. *Sciadophyllum ellipticum* Bl. Bijdr. 878. 1826. *Schefflera venulosa* (Wight & Arn.) Harms in Engl. & Prantl. op. cit.; Mahesh in Bull. Bot. Surv. India 2: 376. 1976. *Heptapleurum venulosum* Seem. in J. Bot. 3: 80. 1865; C.B.Cl. in Hook. f. Fl. Brit. India 2: 729. 1879 p.p.; Cooke, Fl. Pres. Bombay 1: 610. 1958 (Repr.). *'Rawanito'*, *'Waghchavad'*.

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:77, f. 332. 1911.

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

S. roxburghii Gamble, Fl. Pres. Madras 570. 1919 [1: 402. 1957 (Repr.)]. *Heptapleurum venulosum* Seem. in J. Bot. 3:80. 1885; C.B.Cl. in Hook. f. Fl. Brit. India 2:729. 1879 p.p.

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 :

Hedera helix L. Sp. Pl. 202, 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 739. 1879; Bailey, Man. Cult. Pl. 746. 1949; Cooke, Fl. Pres. Bombay 1: 611. 1958 (Repr.).

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

base. Inflorescence an umbel, yellowish–green. Flowers greenish. Berries 6 mm across, globose, black when ripe. Seeds 3–5, ovoid.

Fls. & Frts. : November–April.

Illus. : Bailey, Cycl. Hort. 2 : 1438, f. 1789. 1915.

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.

Polyscias balfouriana Bailey in Rhodora 18 : 153. 1916 & Man. Cult. Pl. 744. 1949; Naik Fl. Marathwada 1 : 429. 1998. *Aralia balfouriana* Hort. in Cat. Pl. Jard. Aclim. Orotova 29. 1923 nom. nud.; Macmillan, Trop. Gard. Plant. ed. 3, 119. 1925.

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.).

P. fruticosa (L.) Harms in Engl. & Prantl. Pflanzenfam. III, 8 : 45. 1845; Bailey, Man. Cult. Pl. 744. 1949. *Panax fruticosa* L. Sp. Pl. ed. 2: 1513. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 725. 1879; Cooke, Fl. Pres. Bombay 1 : 610. 1958 (Repr.).

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.

Illus. : Bailey, Cycl. Hort. 3:2746, f. 3113. 1929.

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

P. guilfoylei (Cog. & March.) Bailey in Rhodora 18:153. 1916 & Man. Cult. Pl. 744. 1949; Naik, Fl. Marathwada 1:429. 1998. *Aralia guilfoylei* Cogn. & March. Pl. Ornem. 2: t. 58. 1874.

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.).

Tetrapanax papyrifer (Hook.) C. Koch. in Koch & Fint. Wochenschr 2: 371. 1859; Bailey, Man. Cult. Pl. 746. 1949. *Aralia papyrifera* Hook. in Kew. Journ. 4: 50. 1852.

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–meorus. Fruit a berry, subglobose.

Fls. & Frts. : November–May

Distrib. : Grown for the ornamental purposes. Pune.

Trevisia palmata Vis. Mem. Acad. Torino. 2, 4: 262. 1842; C. B. Cl. in Hook. f. Fl. Brit. India 2: 732. 1879; Cooke, Fl. Pres. Bombay 1: 611. 1958 (Repr.).

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.)

Alangium salvifolium (L. f.) Wangerin in Engl. Pflanzenr. 41: 9, f. 2A–E. 1910; Mukerjee in Bull. Bot. Surv. India 10:330. 1968; Matthew in Nayar et al. Fasc. Fl. India 19: 4. 1988. *Grewia salvifolia* L. f. Suppl. 409. 1781. *Alangium lamarkii* Thw. Enum. 133. 1859; C.B.Cl. in Hook. f. Fl. Brit. India 2:741. 1879; Cooke, Fl. Pres. Bombay 2:1. 1958 (Repr.).

1. Drupes ± 1 cm long; leaf apex acute ... ssp. *salvifolium*
1. Drups ± 2 cm long; leaf apex acuminate ... ssp. *hexapetalum*

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.

Illus. : Wight, Ic. t. 194. 1839 (*A. decapetalum* Lam. Encycl. 1:174. 1783).

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

ssp. **hexapetalum** (Lam.) Wang. in Engl. Pflanzenr. 4: 9. 1910; S. M. Almeida, Fl. Savantwadi 1: 99. 1990. *A. hexapetalum* Lam. Engl. 1: 175. 1783. *A. lamarkii* Thw. var. *glandulosum* (Thw.) C.B.Cl. in Hook. f. Fl. Brit. India 2: 742. 1879; Mukerjee in Bull. Bot. Surv. India 10: 330–31. 1968.

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.

MASTIXACEAE

(A. N. Londhe)

MASTIXIA Bl.

Mastixia arborea (Wight) Bedd. Fl. Sylv. t. 216. 1872; Matthew in Blumea 23: 87. 1976. *Bursinopetalum arboreum* Wight, Ic. t. 956. 1845. *Mastixia pentandra* auct. non Bl. 1825; Cooke, Fl. Pres. Bombay 2: 2. 1958 (Repr.).

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.).

CAPRIFOLIACEAE

(A. N. Londhe)

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, rarey 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 ... OXYCEROS

18. Ovary 1–celled :

23. Unarmed shrubs or trees ... GARDENIA

23. Armed shrubs or trees ... CERISCOIDES

17. Inflorescence axillary ... DISCOSPERMUM

1. Ovules solitary in each cell :

24. Leaves with stipules :

25. Radicle superior :

26. Fruit of 2 mericarps, separating from columella; 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. Stipuels inter-petiolar ... SAPROSMA
                33. Slender creeping herbs ... GEOPHILA
            32. Style branches 3–9 :
                36. Fruit a capsule ... SPERMADICTYON
                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 ... HYDROPHYLAX
            38. Fruit of 2 or 1 cocci, dehiscing ventrally; stipules pectinate ... SPERMACOCE
24. Leaves without stipules ... RUBIA

ARGOSTEMMA Wall.

Argostemma verticillatum Wall. in Roxb. Fl. Ind. (ed. Carey & Wall.) 2: 325. 1824; Hook. f. Fl. Brit. India 3: 43. 1880; Cooke, Fl. Pres. Bombay 2: 13. 1958 (Repr.).

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.

Benkara malabarica (Lam.) Tirveng. in Taxon 32: 440. 1983. *Randia malabarica* Lam. Encycl. 3: 25. 1789; Hook. f. Fl. Brit. India 3: 111. 1880; Cooke, Fl. Pres. Bombay 2: 28. 1958 (Repr.).

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, Ic. 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*

Canthium angustifolium Roxb. Fl. Ind. 2: 169. 1824; Hook. f. Fl. Brit. India 3: 135. 1880; Sant. & Merch. in Bull. Bot. Surv. India 3 : 108. 1961. *C. rheedii* DC. Prodr. 4: 474. 1830; Hook. f. op. cit. 134. *Plectronia rheedei* (DC.) Bedd. Fl. Sylv. t. 134. 1872; Cooke, Fl. Pres. Bombay 2: 34. 1958 (Repr.). *'Shengali'*.

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. : Februarv–Mav.

Illus. : Wight, Ic. t. 826. 1845 [*C. leschenaulti* (DC.) Wight & Arn. Prodr. 426. 1834].

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

C. coromandelicum (N. Burm.) Alston in Trimen, Handb. Fl. Ceylon 6 : 152. 1931; Nicols. et al. van Rheede, Hort. Malab. 218. 1988. *Gmelina coromandelica* N. Burm. Fl. Ind. 132. 1768. *C. parviflorum* Lam. Encycl. 1: 602. 1785; Hook. f. Fl. Brit. India 3: 136. 1880. *Plectronia parviflora* (Lam.) Bedd. Fl. Sylv. S. India t. 124. 1872; Cooke, Fl. Pres. Bombay 2: 35. 1958 (Repr.). *'Kirni'*.

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.

Illus. : Bedd. op. cit. & Talb. For. Fl. Bombay Pres. & Sind 2: 109, f. 347. 1911 *(Plectronia parviflora)*.

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

C. dicoccum (Gaertn.) Teijsm. & Binn. var. **umbellatum** (Wight) Sant.& Merch. in Bull. Bot. Surv. India 3: 107. (1961) 1962. *C. umbellatum* Wight, Ic. t. 1034. 1845; Hook. f. Fl. Brit. India 3: 132. 1880. *Plectronia wightii* T. Cooke, Fl. Pres. Bombay 1: 606. 1903 [2: 34. 1958 (Repr.).]. *Canthium dicoccum* sensu S. M. Almeida, Fl. Savantwadi 1: 203. 1990. *'Arsul'*, *'Tupa'*.

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.

Illus. : Wight, op. cit.; Bedd. Fl. Sylv. t. 221. 1872.

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. (1767) 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. (1767) 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 pulblished 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).

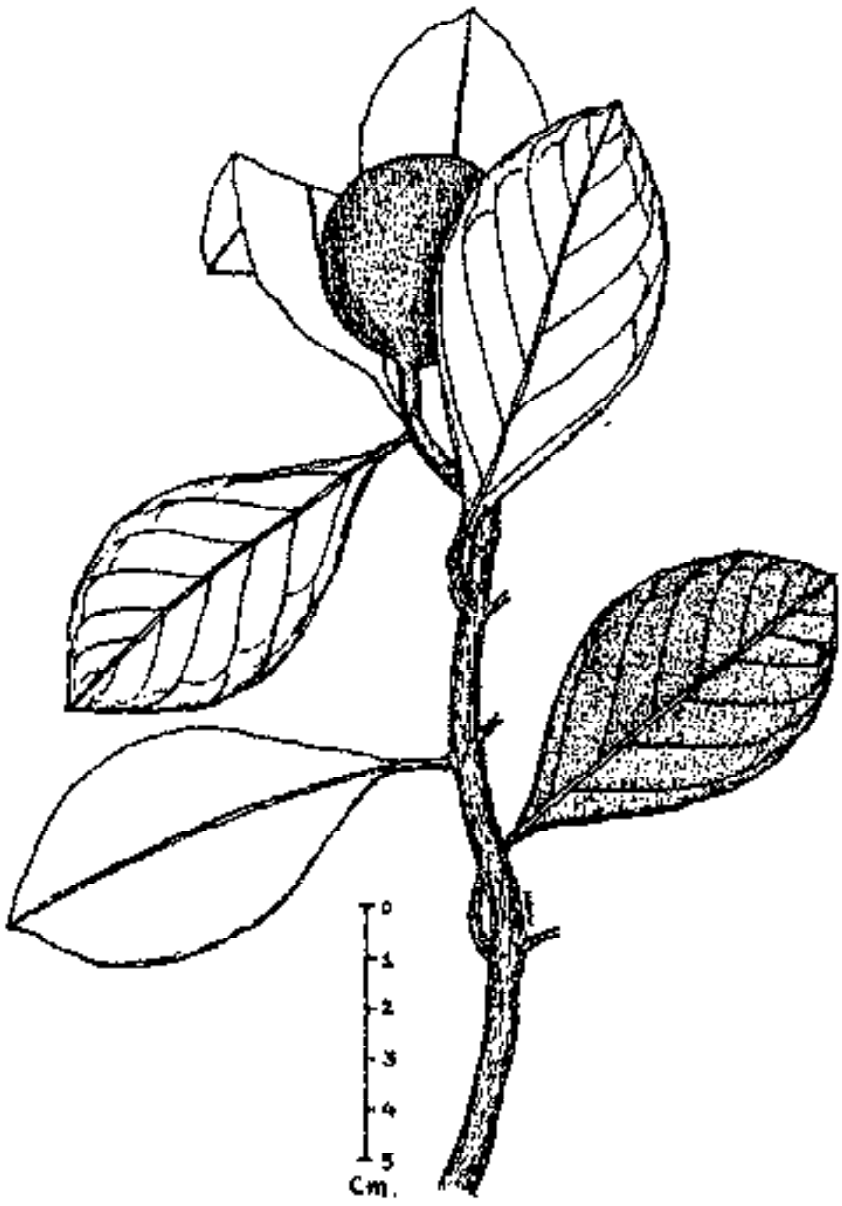
Catunaregam spinosa (Thunb.) Tirveng. in. Bull. Mus. Hist. Nat. Paris 3, 35: 13. 1978 & in Taxon 27: 515. 1978; Verdc. in Kew Bull. 41 : 44. 1986. *Gardenia spinosa* Thunb. Diss. Gard. no. 7. 1780. *Randia dumetorum* (Retz.) Poir. in Lam. Encycl. Suppl. 2: 829. 1811; Hook. f. Fl. Brit. India 3: 110. 1880; Cooke, Fl. Pres. Bombay 2: 27. 1958 (Repr.). *Xeromphis spinosa* (Thunb.) Keay in Bull. Jard. Bot. Brux. 28 : 37. 1958. *'Gehela', 'Gel'.*

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. Berrics 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.

Ceriscoides turgida (Roxb.) Tirveng. in Bull. Mus. natn. Hist. nat. Paris, 3e 521, Bot. 35: 15. 1978. *Gardenia turgida* Roxb. Fl. Ind. 2:557. 1832; Hook. f. Fl. Brit. India 3:118. 1880. *G. turgida* var. *montana* (Roxb.) Hook. f. op. cit.; Cooke, Fl. Pres. Bombay 2: 29. 1958 (Repr.). *'Phetra'*.

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.

Illus. : Wight, Ic. t. 577. 1842 (*G. montana* Roxb. Fl. Ind. 1 : 709. 1832); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 971. 1982.

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

CHASSALIA Comm. ex Poir.

Chassalia curviflora (Wall.) Thw. var. **ophioxyloides** (Wall.) Deb & Krishna in Deb, Fl. Tripura 2: 44. 1983 & in Bull. Bot. Surv. India 24: 222. (1983) 1982. *Psychotria ophioxyloides* Wall. in Roxb. Fl. Ind. 2: 167. 1824. *C. curviflora* sensu Kurz, For. Fl. Brit. Burma 2: 14. 1877; Hook. f. Fl. Brit. India 3: 176. 1880 p.p.; Cooke, Fl. Pres. Bombay 2: 47. 1958 (Repr.).

Undershrubs, 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.

Illus. : Wight, Ill. t. 127. 1839 (*Psychotria atribigua* Wight & Arn.); Talb. For. Fl. Bombay Pres. & Sind 2: 130, f. 362. 1911.

Distrib. : Infrequent in the undergrowth along ghats. Ratnagiri, Sindhudurg.

DENTELLA J. R. & G. Forst.

Dentella repens (L.) J. R. & G. Forst. Char. Gen. Pl. Inst. 26, t. 13. 1776; Hook. f. Fl. Brit. India 3: 42. 1880; Cooke, Fl. Pres. Bombay 2: 12. 1958 (Repr.); Subr. & Sharma in Bull. Bot. Surv. India 10: 386, f. 1–6. 1968. *Oldenlandia repens* L. Mant. 1: 40. 1767.

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

1. Leaves glabrous; fruits glabrous ... 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.

Fls. & Frts. : June–January.

Illus. : Subr. & Sharma, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 330. 1982.

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

var. **serpyllifolia** (Wall. ex Craib.) Verdc. in Kew Bull. 37: 545. 1983. *D. serpyllifolia* Wall. ex Craib. Fl. Siam. Enum. 2: 27. 1932; Malhotra & Moorthy in J. Bombay nat. Hist. Soc. 70: 600. 1974. *D. repens* sensu Hook. f. Fl. Brit. India 3 : 42. 1880 p.p.

Herbs with subsessile, glabrous, oblong–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 ... *D. apiocarpa*

1. Flowers fascicled; stamens sessile ... *D. sphaerocarpa*

Discospermum apiocarpa Dalz. in Hook. J. Bot. 2: 257. 1850. *Diplospora apiocarpa* (Dalz.) Hook. f. Fl. Birt. India. 3: 123. 1880; Cooke, Fl. Pres. Bombay 2: 32. 1958 (Repr.). *Tricalysia apiocarpa* (Dalz.) Gamble, Fl. Pres. Madras 620. 1921 {2:437. 1957 (Repr.)}.

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.

Fls. : June–August. *Frts.* : August–January.

Illus. : Bedd. Fl. Sylvt. t. 223. 1872 & Ic. t. 40. 1874.

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

D. sphaerocarpa Dalz. in Hook. Kew J. Bot. 2: 257. 1850. *Diplospora sphaerocarpa* (Dalz.) Hook. f. Fl. Brit. India 3:123. 1880; Cooke, Fl. Pres. Bombay 2:32. 1958 (Repr.). *Tricalysia sphaerocarpa* (Dalz.) Gamble, Fl. Pres. Madras 620. 1921 [2: 437. 1957 (Repr.)].

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 106, f. 346. 1911 *(Diplospora sphaerocarpa).*

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*

Gardenia gummifera L. f. Suppl. 164. 1781; Hook. f. Fl. Brit. India. 3: 116. 1880; Cooke, Fl. Pres. Bombay 2: 31. 1958 (Repr.). *'Dikemali', 'Kamarri'.*

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.

G. latifolia Soland. in Ait. Hort. Kew (ed. 1) 294. 1789; Hook. f. Fl. Brit. India 3: 116. 1880; Cooke, Fl. Pres. Bombay 2: 30. 1958 (Repr.). *G. enneandra* Koen. ex Wight & Arn. Prodr. 394. 1834. *'Kala hatera', 'Pendro'.*

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.

Illus. : Wight Ic. t. 574. 1842 *(G. enneandra)* & t. 759. 1844; Talb. For. Fl. Bombay Pres. & Sind 2: 102, f. 343 & 344. 1911.

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

G. resinifera Roth, Nov. Pl. Sp. 150. 1821. *G. lucida* Roxb. Fl. Ind. 2: 553. 1824; Hook. f. Fl. Brit. India 3: 115. 1880; Cooke, Fl. Pres. Bombay 2: 30. 1958 (Repr.). *'Dikamali', Dikemali'.*

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.

Illus. : Wight, Ic. t. 575. 1842 *(G. lucida);* Matthew, Illus. Fl. Tamilnadu Carnatic 2 : t. 332. 1982.

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

GEOPHILA D. Don (nom. cons.)

Geophila repens (L.) I. M. Johnst. in Sargentia 8: 281. 1949; Fosb. in Dassan. & Fosb. Rev. Handb. Fl. Ceyl. 6: 320. 1987. *Rondeletia repens* L. Syst. Nat. ed. 10: 928. 1758-1759. *Geophila reniformа* D. Don, Prodr. Fl. Nep. 136. 1825; Hook. f. Fl. Brit. India 3: 178. 1880; Cooke, Fl. Pres. Bombay 2: 49. 1958 (Repr.).

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.).

HALDINA Ridsd.

Haldina cordifolia (Roxb.) Ridsd. in Blumea 24: 361. 1978. *Nauclea cordifolia* Roxb. Pl. Cor. 1: 40, t. 53. 1796. *Adina cordifolia* (Roxb.) Hook. f. ex Brandis, For. Fl. 263, t. 33. 1874; Hook f. Fl. Brit. India 3: 24. 1880; Cooke, Fl. Pres. Bombay 2: 7. 1958 (Repr.). *'Hed', 'Hedi, 'Hedu'.*

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, pubscent.

Fls. & Frts. : May–August.

Illus. : Bedd. Fl. Sylv. t. 33. 1869 (*Nauclea cordifolia*); Talb. For. Fl. Bombay Pres. & Sind 2: 85, f. 334. 1911 (*Adina cordifolia*); Matthew, Illus. Fl. Tamilnadu Carnatic. 2: t. 333. 1982.

Distrib. : 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 & Bakhuzen, 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. nagpurensis*
     - 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*

Hedyotis affinis R. & S. Syst. Veg. 3: 194. 1818; Rao & Hemadri in Indian Forester 99: 374. 1973. *Oldenlandia affinis* (R. & S.) DC. Prodr. 4: 428. 1830; Sant. & Merch. in Bull. Bot. Surv. India 3: 109. (1961) 1962. *O. dichotoma* (Koen. ex Roth) Hook. f. Fl..Brit. India 3: 67. 1880 non Spreng. 1815; Cooke, Fl. Pres. Bombay 2: 17. 1958 (Repr.). *'Kajuri'*.

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.

H. aspera Heyne ex Roth, Nov. Pl. Sp. 94. 1821. *Oldenlandia aspera* (Heyne ex Roth) DC. Prodr. 4: 428. 1830; Hook. f. Fl. Brit. India 3: 68. 1880; Cooke, Fl. Pres. Bombay 2: 18. 1958 (Repr.). *Kohautia aspera* (Heyne ex Roth) Bremek. in Verh. K. Nederl. Akad. Wet. Afd. Naturk. 2, 48 (2): 113. 1952.

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.

Illus. Tadul. & Venkata. Handb. S. Indian Weeds 202, f. 78. 1955 [Rev. ed. (*Oldenlandia aspera*)].

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

H. auricularia L. Sp. Pl. 101. 1753; Hook. f. Fl. Brit. India 3: 58. 1880; Cooke, Fl. Pres. Bombay 2: 13. 1958 (Repr.); Rao & Hemadri in Indian Forester 99: 375. 1973. *Oldenlandia auricularia* (L.) K. Schum. in Engl. & Prantl, Pflanzenfam. 4:25. 1891.

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.

H. coerulea Wight & Arn. Prodr. 412. 1834; Hook. f. Fl. Brit. India 3: 60. 1880; Cooke, Fl. Pres. Bombay 2: 14. 1958 (Repr.).

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.

Illus. : Bedd. Ic. t. 30. 1874; Matthew, Fl. Tamilnadu Carnatic 3: 726, t. 51. 1983.

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

H. corymbosa (L.) Lam. Encycl. 1: 272. 1792; Rao & Hemadri in Indian Forester 99:375. 1973; Sivar. & Biju in Taxon 39. 671, t. 10. 1990. *Oldenlandia corymbosa* L. Sp. Pl. 119. 1753; Hook. f. Fl. Brit. India 3: 64. 1880 p.p.; Cooke, Fl. Pres. Bombay 2: 15. 1958 (Repr.). *'Pitpapda'*.

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 96. 1966; Sivar. & Biju, op. cit.

Distrib. : Common throughout.

H. diffusa Willd. Sp. Pl. 1 (2) : 566. 1798; Sivar. & Biju in Taxon 39 : 672. 1990. *Oldenlandia diffusa* (Willd.) Roxb. Fl. Ind. 1: 444. 1820; Hook. f. Fl. Brit. India 3 : 65. 1880; Cooke, Fl. Pres. Bombay 2 : 16. 1958 (Repr.); S. M. Almeida, Fl. Savantwadi 1: 211. 1990.

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.).

H. gracilis Wall. in Roxb. Fl. Ind. 1: 371. 1820; Rao & Hemadri in Indian Forester 99: 376. 1973. *Oldenlandia gracilis* (Wall.) Hook. f. Fl. Brit. India 3: 68. 1880; Cooke, Fl. Pres. Bombay 2: 19. 1958 (Repr.).

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.

H. herbacea L.Sp. Pl. 102. 1753; Rao & Hemadri in Indian Forester 99: 376. 1973. *Oldenlandia herbacea* (L.) Roxb. Fl. Ind. 1: 424. 1820; Cooke, Fl. Pres. Bombay 2:16. 1958 (Repr.). *O.heynei* R. Br. ex G. Don, Gen. Syst. 3: 531. 1834; Hook. f. Fl. Brit. India 3: 65. 1880. *'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 peduncles in corymbs. 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.

H. nagporensis (Brace ex Haines) Rao & Hemadri in Indian Forester 99: 373. 1973. *Oldenlandia nagporensis* Bruce ex Haines, Bot. Bihar & Orissa 2: 448. 1922 [2: 470. 1961 (Repr.)]. *Kohautia nagporensis* (Brace ex Haines,) Sant. & Merch. in Bull. Bot. Surv. India 3:108. 1961. *Oldenlandia senegalensis* Hook. f. Fl. Brit. India 3: 68. 1880 non Hiern 1877; Cooke, Fl. Pres. Bombay 2: 19. 1958 (Repr.).

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.

H. nitida Wight & Arn. Prodr. 412. 1834; Hook. f. Fl. Brit. India 3: 61. 1880; Cooke, Fl. Pres. Bombay 2: 14. 1958 (Repr.).

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. Ic. t. 36. 1874 (*H. glabella*).

Distrib. : Scattered in open areas. Kolhapur.

H. pinifolia Wall. ex G. Don, Gen. Syst. 3: 525. 1834; Hook. f. Fl. Brit. India 3: 60. 1880; Kulkarni & Singh in Bull. Bot. Surv. India 21: 212. 1979.

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.

H. puberula (G. Don) Arn. Pugill. Pl. Ind. Or. 342. 1836; Deb & Dutta in J. Bombay nat. Hist. Soc. 81:232. 1984. *Oldenlandia puberula* G. Don, Gen. Syst. 3: 530. 1834. O. *umbellata* L. Sp. Pl. 119. 1753; Hook. f. Fl. Brit. India 3: 66. 1880; Cooke, Fl. Pres. Bombay 2: 17. 1958 (Repr.). *'Chirval'.*

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.

Illus. : Matthew, Fl. Tamilnadu Carnatic 3: 730, t. 52. 1983.

Distrib. : Infrequent in open moist areas. Chandrapur, Pune, Solapur (Cooke, op. cit.).



Hedyotis pinifolia Wall. ex G. Don

H. pumila L. f. Suppl. 119. 1781; Rao & Hemadri in Indian Forester 99:377. 1973. *Oldenlandia crystallina* Roxb. Fl. Ind. 1:443. 1820 p.p.; Hook. f. Fl. Brit. India 3:65. 1880; Cooke, Fl. Pres. Bombay 2:16. 1958 (Repr.). *O. pumila* (L. f.) DC. Prodr. 4:425. 1830.

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.

H. racemosa Lam. Encycl. 3:80. 1786; Rao et al. Fl. W. Godavari Dist. 226. 1986. *Oldenlandia biflora* auct. non L. Sp. Pl. 119. 1753 p.p.; Hook. f. Fl. Brit. India 3:70. 1880; Kothari & Moorthy in J. Bombay nat. Hist. Soc. 80: 260. 1983. *O. paniculata* L. Sp. Pl. ed. 2, 1667. 1763; Hook. f. op. cit. 69 p.p. non L. 1753.

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.

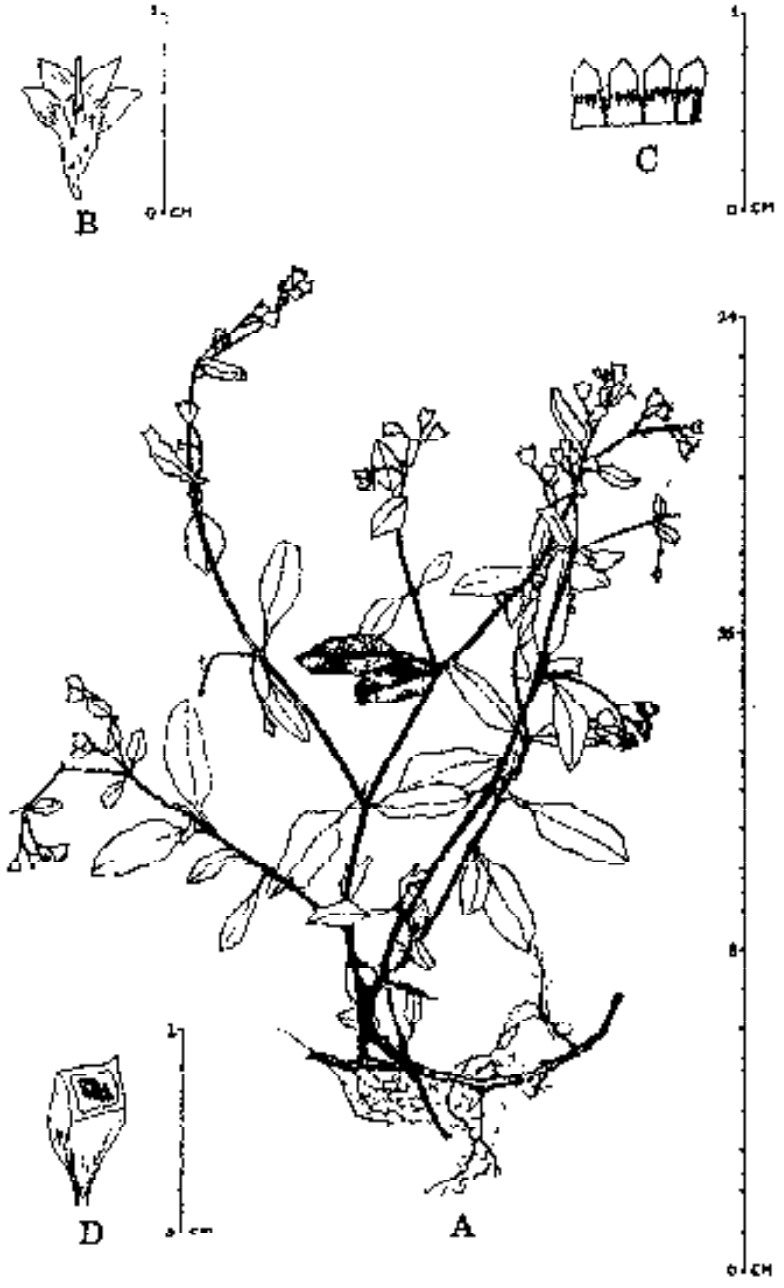
Fls. & Frts. : September–October.

Illus. : Wight Ic. t. 312. 1840; Kothari & Moorthy, Fl. Raigad Dt. Mah. State 190, f. a–d. 1993 (*Oldenlandia biflora*).

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

H. stocksii (Hook. f. & Thoms.) Rao & Hemadri in Indian Forester 99:378. 1973; Deb & Dutta in J. Bombay nat. Hist. Soc. 81:232. 1984. *Oldenlandia stocksii* Hook. f. & Thoms. in Hook. f. Fl. Brit. India 3:67. 1880. *O. maheshwarii* Sant. & Merch. in J. Indian Bot. Soc. 42 A : 213, tt. 1–6. 1964. *Hedyotis maheshwarii* (Sant. & Merch) Rao & Hemadri; op. cit. 376.

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.

Fls. & Frts. : September–November.

Illus. : Sant. & Merch. op. cit.

Distrib. : Occasional in open areas among grasses. Ahmednagar, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

Notes. : Sant. & Merch. (op. cit.) described *O. maheshwarii* from Mahableshwar, differentiating it from *O. stocksii* on the basis of pubescent stems, solitary flowers, ovate–oblong to oblong calyx–teeth longer than corolla which is white or pink. Deb & Dutta (op. cit.) studied the type of *O. stocksii* which shows intermediate forms with all characters given for *O maheshwarii,* the only difference being flower colour, which is blue in *O. stocksii.* Therefore, they merged it under *O. stocksii* as only flower colour cannot be a differentiating character at the specific level.

H. trinervia (Retz.) R. & S. Syst. 3:197. 1819; Rao & Hemadri in Indian Forester 99:378. 1973. *Oldenlandia trinervia* Retz. Obs. Bot. 4:23. 1786; Hook. f. Fl. Brit. India 3 : 66. 1880; Cooke, Fl. Pres. Bombay 2:17. 1958 (Repr.).

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.

Hydrophylax maritima L. f. Suppl. 126. 1781; Hook. f. Fl. Brit. India 3:191. 1880; Cooke, Fl. Pres. Bombay 2:51. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 760. 1844.

Distrib. : Rare in sandy areas along coast. Raigad.

HYMENODICTYON Wall.

1. Leaves pubescent; flowers pedicelled; capsules pendulous on decurved peduncles ... *H. orixense*

1. Leaves glabrous; flowers sessile; capsules erect ... *H. obovatum*

H. obovatum Wall. in Roxb. Fl. Ind. 2:153. 1824; Hook. f. Fl. Brit. India 3: 36. 1880; Cooke, Fl. Pres. Bombay 2:10. 1958 (Repr.); Deb in J. Econ. Tax. Bot. 13: 677, f. 2. 1989. *'Kadva-sirid'.*

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.

Illus. : Wight, Ic. t. 1159. 1846; Talb. For. Fl. Bombay Pres. & Sind 2:91, f. 337. 1911; Deb, op.cit.

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

H. orixense (Roxb.) Mabb. in Taxon 31:66. 1982; Deb. in J. Econ. Tax. Bot. 13:679, f. 3. 1989. *Cinchona orixensis* Roxb. Bot. Descr. Swietenia 21. 1793 & Med. Facts Obs. 6:152. 1795. *Hymenodictyon excelsum* (Roxb.) Wall. in Roxb. Fl. Ind. 2:149. 1824; Hook. f. Fl. Brit. India 3: 35. 1880; Cooke, Fl. Pres. Bombay 2:9. 1958 (Repr.). *'Bhorsal', 'Kadav', 'Kala Kaddu'.*

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.

Illus. : Wight, Ic. t. 79. 1838. (*Hymenodictyon excelsum);* Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 336. 1982; Deb. op. cit.

Distrib. : Infrequent in decidouous 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*

Ixora alba L. Sp. Pl. 110. 1753; Nicols. et al. Interp. van Rheede Hort. Malab. 224. 1988. *I. barbata* Roxb. Fl. Ind. 1: 384. 1820; Hook f. Fl. Brit. India 3: 148. 1880; S. M. Almeida, Fl. Savantwadi 1: 206. 1990.

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.).

I. brachiata Roxb. Fl. Ind. 1:391. 1820; Hook. f. Fl. Brit. India 3:142. 1880; Cooke, Fl. Pres. Bombay. 2:39. 1958 (Repr.). *'Bhoma', 'Gorbale', 'Lokhandi'.*

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.

I. coccinea L. Sp. Pl. 110. 1753; Hook. f. Fl. Brit. India. 3:145. 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. Brit. India 3:141. 1880; Cooke, Fl. Pres. Bombay 2:38. 1958 (Repr.).

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.).

I. nigricans R. Br. ex Wight & Arn. Prodr. 428. 1834; Hook. f. Fl. Brit. India 3:148. 1880; Cooke, Fl. Pres. Bombay 2: 38. 1958 (Repr.); Bremek. in J. Bot. 75 : 296. 1937. *I. nigricans* var. *arguta* (Br.) Hook. f. op. cit. 149. *'Kat–kuda'.*

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.

Distrib. : Frequent in moist deciduous forests in shades. Kolhapur, Ratnagiri, Satara, Sindhudurg.

I. pavetta Andr. Bot. Rep. t. 78. 1799; Swaminathan in A. N. Henry et al. Fl. Tamilnadu Anal. 2:11. 1987. *I. arborea* Roxb. ex J. E. Sm. in Ress, Cyclop. 19: 5. 1811; Sant. in Rec. Bot. Surv. India 16 (1): 199. 1967 (3rd Rev. ed.). *I. parviflora* Vahl, Symb. 3:11, t. 52. 1794 non Lam. 1791; Hook. f. Fl. Brit. India 3:142. 1880; Cooke, Fl. Pres. Bombay 2:39. 1958 (Repr.). *'Lokhandi', 'Raikuda'.*

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.

Illus. : Wight, Ic. t. 711. 1843; Bedd. Fl. Sylv. t. 222. 1872; Talb. For. Fl. Bombay Pres. Sind 2:114, f. 350. 1911 (*I. parviflora);* Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 337. 1982.

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

I. polyantha Wight, Ic. 3(4) : 4, t. 1066. 1846; Hook. f. Fl. Brit. India 3:140. 1880; Cooke, Fl. Pres. Bombay 2:37. 1958 (Repr.).

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.

Knoxia mollis R. Br. in Wall. Cat. 820. 1828; Mabb. in Manilal, Bot. Hist. Hort. Malab. 85. 1980. *K. corymbosa* Willd. Sp. Pl. 1: 582. 1797; Hook. f. Fl. Brit. India 3: 128. 1880; Cooke, Fl. Pres. Bombay 2:33. 1958 (Repr.). *K. sumatrensis* sensu Bhattacharjee & Deb in J. Econ. Tax. Bot. 6: 89. 1985 non (Retz.) DC. 1830.

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.

Econ. Tax. Bot. 6: 92. 1985. *K. mollis* sensu Hook. f. Fl. Brit. India 3 : 129. 1880 non R. Br. ex Wight & Arn. Prodr. 439. 1834.

This variety can be distinquished 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.

Fls. : July–December *Frts.* : August–January.

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 Jack (nom. cons.)

1.	Calyx teeth glabrous	...	*L. acuminatus*
1.	Calyx teeth hairy	...	*L. sessilis*

Lasianthus acuminatus Wight in Calc. J. Nat. Hist. Soc. 6: 511. 1845; Hook. f. Fl. Brit. India 3:185. 1880; Deb & Gang. in J. Econ. Tax. Bot. 15:274, f. 1. 1979.

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.

Distrib. : Occasional in moist deciduous forests. Kolhapur, Ratnagiri, Satara.

L. sessilis Talb. List Trees & Shrubs Bombay 114. 1894 & For. Fl. Bombay Pres. & Sind 2 : 131, f. 363. 1911; Cooke, Fl. Pres. Bombay 2: 49. 1958 (Repr.); Deshpande et al. Fl. Mahabaleshwar and adjoinings 1 : 281. 1993; Deb & Gang. in J. Econ. Tax. Bot. 15: 295, f. 8. 1991.

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.

LITOSANTHES Bl.

Litosanthes venulosus (Wight & Arn.) Deb & Gang. in Candollea 44: 220, f. 6, A–F. 1989. *Santia venulosa* Wight & Arn. Prodr. 422. 1834. *Lasianthus venulosus* (Wight & Arn.) Wight in Calc. J. Nat. Hist. 6 : 508. 1845 & in Ic. t. 1032. 1845; Hook. f. Fl. Brit. India 3 : 190. 1880; Cooke, Fl. Pres. Bombay 2: 50. 1958 (Repr.).

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.).

Distrib. : Rare in semi evergreen forests. Satara (Bole & Almeida in J. Bombay nat. Hist. Soc. 79 : 320. 1982)

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 & Gangopadhyay in their revision of *Lasianthus* (J. Econ. Tax. Bot. 15: 265 – 308. 1991) made no mention about this species.

MEYNA Roxb. ex Link

Meyna laxiflora Robyns in Bull. Jard. Bot. Brux. 11:228. 1928; Sant. in Bull. Bot. Surv. India 3:20. (1961) 1962. *Vangueria spinosa* Roxb. Fl. Ind. 2: 172. 1824 p.p. excl. type; Hook. f. Fl. Brit. India 3:136. 1880; Cooke, Fl. Pres. Bombay 2: 36. 1958 (Repr.). '*Helu*'.

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.

Illus. : Talb. For Fl. Bombay Pres. & Sind 2: 110, f. 348. 1911 (*Vangueria spinosa*).

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.)

Mitragyna parvifolia (Roxb.) Korth. Obs. Naucl. Ind. 19. 1839; Cooke, Fl. Pres. Bombay 2:8. 1958 (Repr.). *Nauclea parvifolia* Roxb. Pl. Cor 1:40, t. 52. 1795. *Stephegyne parvifolia* Korth. in Verh. Nat. Ges. Bot. 161. 1840; Hook. f. Fl. Brit. India 3: 25. 1880. '*Kadam*'.

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.

Illus. : Bedd. Fl. Sylv. t. 34. 1809; Talb. For Fl. Bombay Pres. & Sind 2:87, f. 335. 1911 (*Stephegyne parvifolia);* Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 340. 1982.

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*

Morinda citrifolia L. Sp. Pl. 76. 1753; Hook. f. Fl. Brit. India 3: 155. 1880; Cooke, Fl. Pres. Bombay. 2:42. 1958 (Repr.). *M. citrifolia* var. *bracteata* Hook. op. cit.; Cooke, op. cit. *'Al', 'Bartondi'.*

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.

Illus. : Bailey, Std. Cyclop. Hort 2:2067, f. 2398. 1915.

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

M. pubescens J. E. Sm. in Rees, Cyclop. 24, n. 3. 1813; Verdc. in Kew Bull. 37:543. 1983. *M. tinctoria* Roxb. var. *tomentosa* (Heyne ex Roth) Hook. f. Fl. Brit. India 3:156. 1880; Cooke, Fl. Pres. Bombay 2:43. 1958 (Repr.). *M. tomentosa* Heyne ex Roth, Nov. Pl. Sp. 147. 1821. *'Ahjhl', 'Al.*

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:122, f. 356. 1911.

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

Mussaenda belilla Buch.–Ham. in Trans. Linn. Soc. London 14:203. 1824; Ridsd. in Manilal, Bot. Hist. Hort. Malab. 131. 1980. *M. laxa* (Hook. f.) Hutch. ex Gamble, Fl. Pres.Madras 610. 1921 [2:430. 1957 (Repr.)]; Jayaweera in J. Arnold Arbor. 44:242. 1963. *M. frondosa* var. *laxa* Hook. f. Fl. Brit. India 3:89. 1880.

Climbing shrubs, densely tomentose; stem lenticular. Leaves broadly ovate, abruptly acuminate at apex, the transverse nervules 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.

M. glabrata (Hook. f.) Hutch. ex Gamble, Fl. Pres. Madras 610. 1921. [2:430. 1957 (Repr.)]; Jayaweera in J. Arnold. Arbor. 44:241. 1963. *M. frondosa* var. *glabrata* Hook. f. Fl. Brit. India 3:90. 1880. *M frondosa* L. Sp. Pl. 177. 1753; Hook. f. op. cit. 89; Cooke, Fl. Pres. Bombay 2:24. 1958 (Repr.). *'Bhutkes', 'Sarvad'.*

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 denesly hairy; lobes orange–red. Berries green, subglobose or obovoid, 0.7–0.8 cm across.

Fls. & Frts. : February–September.

Distrib. : Infreqent in deciduous forests. Ahmednagar, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

NEANOTIS W. H. Lewis

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*
            5. 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*

Neanotis calycina (Wall. ex Hook. f.) W. H. Lewis in Ann. Miss. Bot. Gard. 53: 37. 1966. *Anotis calycina* Wall. ex Hook. f. Fl. Brit. India 3: 73. 1880; Sant. Fl. Purandhar 61. 1958.

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. : Occassional in moist open places. Ahmednagar, Pune, Ratnagiri, Satara, Thane.

N. carnosa (Dalz.) W. H. Lewis in Ann. Miss. Bot Gard. 53: 37. 1966. *Hedyotis carnosa* Dalz. in Hook. Kew. J. Bot. 2:135. 1850. *Anotis carnosa* (Dalz.) Hook. f. Fl. Brit. India 3:74. 1880; Cooke, Fl. Pres. Bombay 2:21. 1958 (Repr.).

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.

Illus. : Nayar & Sastry, Red data Book Ind. Pl. 3: 217, f. 221. 1990.

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

N. decipiens (Hook. f.) W. H. Lewis in Ann. Miss. Bot. Gard. 53: 37. 1966. *Anotis decipiens* Hook. f. Fl. Brit. India. 3: 72. 1880.

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.

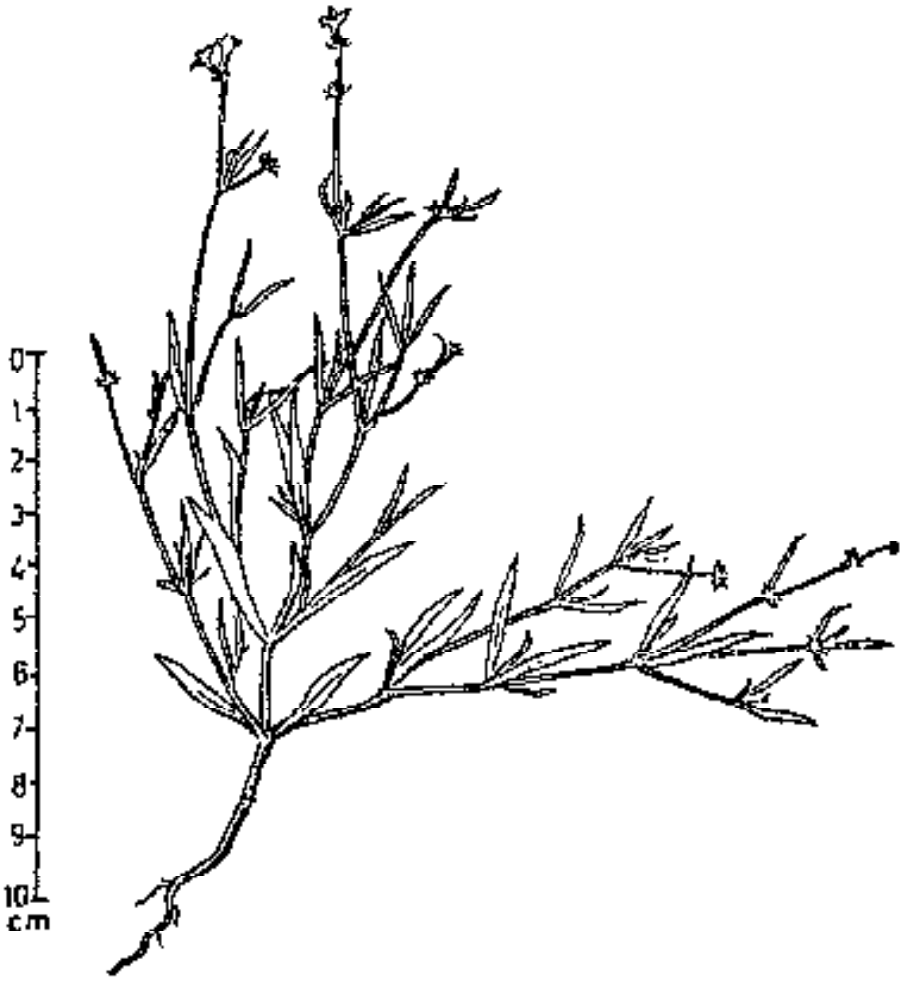
Fls. & Frts. : Not reported.

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.

N. foetida (Hook. f.) W. H. Lewis in Ann. Miss. Bot. Gard. 53: 38. 1966. *Anotis foetida* Hook. f. Fl. Brit. India 3:74. 1880. *Hedyotis foetida* Dalz. in Hook. Kew. J. Bot. 2: 134. 1850 non (Forst.) Spr. 1815. *Neanotis hohenackerii* Daniel & Vajravelu in J. Econ. Tax. Bot. 3:675. 1982. '*Gundun*'.

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

Fls. & Frts. : July–January.

Illus. : Lakshmi. & Sharma, Fl. Nasik Dt. 248, f. 15. 1991.

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.

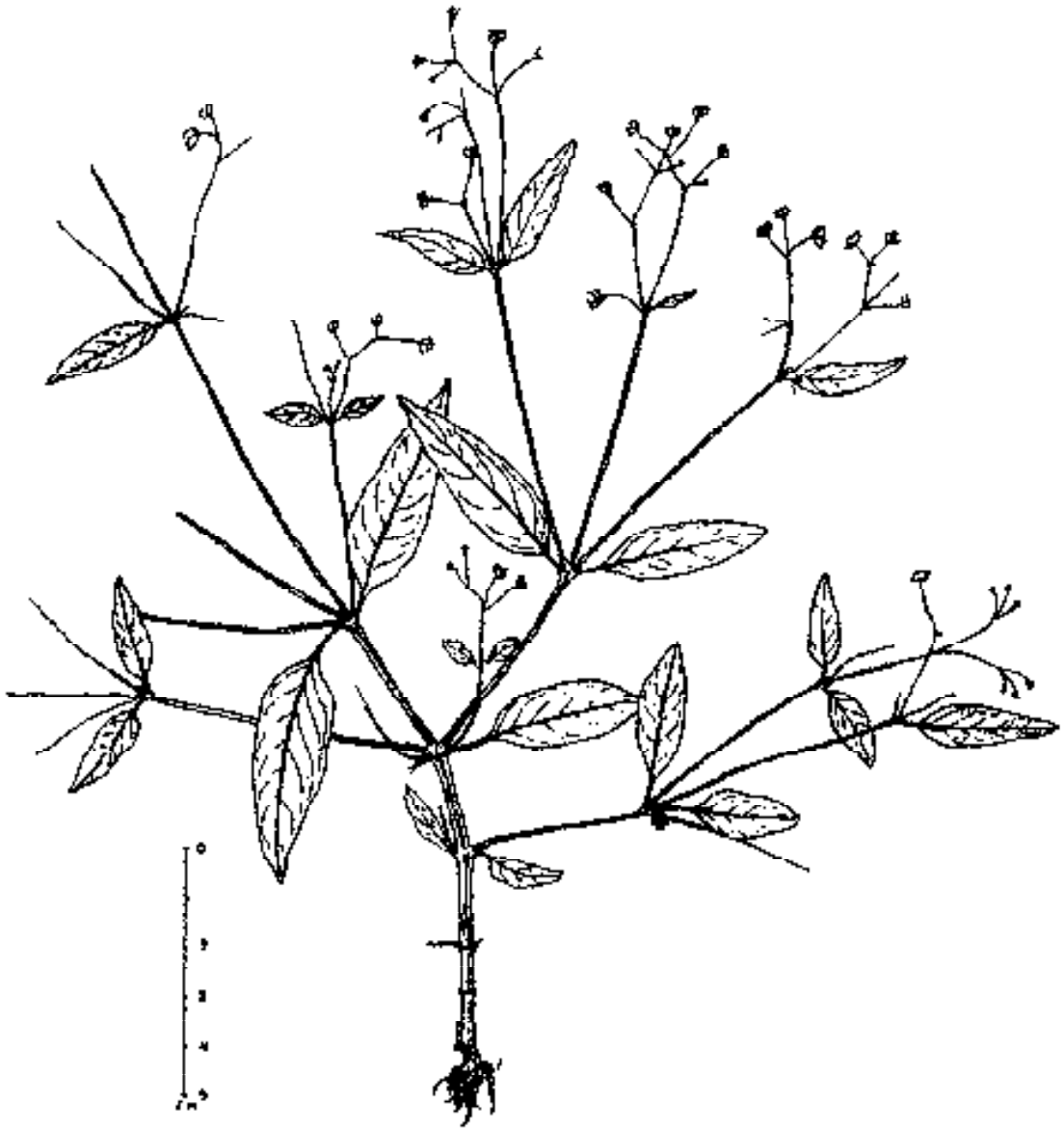
N. lancifolia (Hook. f.) W. H. Lewis in Ann. Miss. Bot. Gard. 53:39. 1966. *Anotis lancifolia* Hook. f. Fl. Brit. India 3:73. 1880; Cooke, Fl. Pres. Bombay. 2:20 1958 (Repr.). *Hedyotis lancifolia* Dalz. in Hook. Kew. J. Bot. 2 : 135. 1850 non Schum. in Schum. & Thonn. 1827. *Neanotis concanensis* Daniel & Vajravelu in J. Econ. Tax. Bot. 3:675. 1982.

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 lancifola* 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 transfered by Lewis, op. cit.

N. latifolia (Dalz.) Deb. & Dutta in J. Bombay nat. Hist. Soc. 87: 333. 1990. *Hedyotis latifolia* Dalz. in J. Bot. 2 : 133. 1850 et in Dalz. & Gibs. Bombay Fl. 116. 1861; Hook. f. Fl. Brit. India 3 : 73. 1880 in syn. non *Anotis rheedei* Wight & Arn. 1834. *Anotis rheedei* sensu Cooke, Fl. Pres. Bombay 2 : 21. 1903 [2:21. 1958 (Repr.)].



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.

N. monosperma (Wall. ex Wight & Arn.) W. H. Lewis in Ann. Miss. Bot. Gard. 53: 39. 1966; S.M. Almedia, Fl. Savantwadi 1: 209. 1990. *Hedyotis monosperma* Wall. ex Wight & Arn. Prodr. 410. 1834. *Anotis monosperma* (Wall. ex Wight & Arn.) Hook. f. Fl. Brit. India 3:75. 1880.

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.).

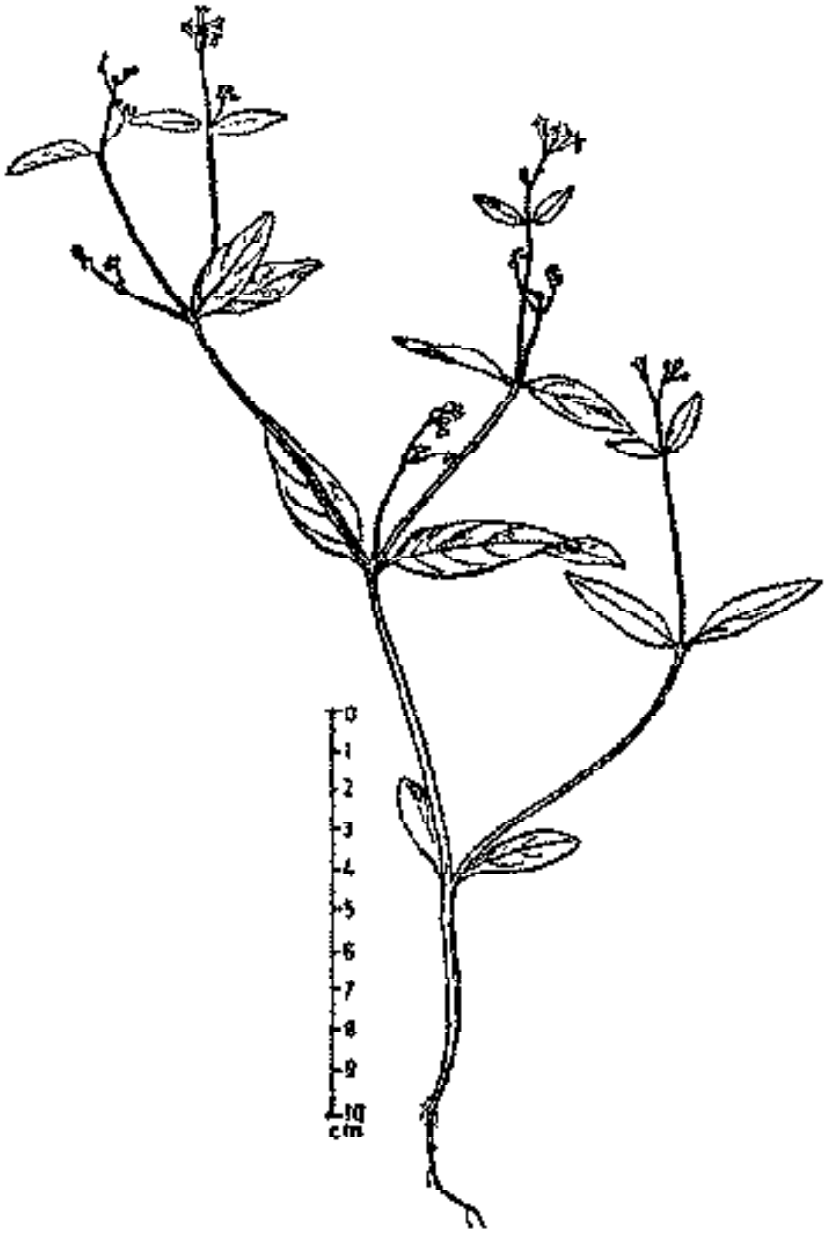
N. montholoni (Hook. f.) W. H. Lewis in Ann. Miss. Bot. Gard. 53:39. 1966. *Anotis montholoni* Hook. f. Fl. Brit. India 3:73. 1880; Cooke, Fl. Pres. Bombay 2:22. 1958 (Repr.).

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.

Illus. : Lakshmi. & Sharma, Fl. Nasik Dt. 250, t. 16. 1991.

Distrib. : Frequent in open, moist, situations. Akola, Amravati, Aurangabad, Beed, Jalgaon, Kolhapur, Nasik, Osmanabad, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Yawatmal.



Neanotis monthrolonii (Hook. f.) W. H. Lewis

N. sahyadrica Billore & Mudaliar in J. Econ. Tax. Bot. 3:321, t. 1. 1982.

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.

N. tubulosa (G. Don) Mabb. in Taxon 29:606. 1980 & in Manilal, Bot. Hist. Hort. Malab. 92. 1980. *Oldenlandia tubulosa* G. Don, Gen. Syst. 3:531. 1834, excl. syn. *Neanotis quadrilocularis* (Thw.) W. H. Lewis in Ann. Miss. Bot. Gard. 53:40. 1966. *Anotis quadrilocularis* (Thw.) Hook. f. Fl. Brit. India 3:74. 1880; Cooke, Fl. Pres. Bombay 2:22. 1958 (Repr.).

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. Inforescence 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.

Illus. : Bedd. Ic. t. 28. 1874 (*Hedyotis quadrilocularis* Thw. Enum. Pl. Zeyl. 144. 1859).

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

NEOLAMARCKIA Bosser

Neolamarckia cadamba (Roxb.) Bosser in Bull. Mus. natn. Hist. nat., Paris, 6, sect. B, Adansonia 3: 247. 1984. *Nauclea cadamba* Roxb. Fl. Ind 2: 121. 1824. *Anthocephalus chinensis* (Lam.) A. Rich. ex Walp.

Rep. 2: 491. 1843; Ridsd. in Blumea 24:334. 1970. *A. cadamba* (Roxb.) Miq. Fl. Ind. Bat. 2: 135. 1856; Hook. f. Fl. Brit. India 3: 23. 1880. *A. indicus* A. Rich. in Mem. Soc. Hist. Nat. Paris 5: 238. 1834; Cooke, Fl. Pres. Bombay 2: 6. 1958 (Repr.). *'Kadam', 'Nit'.*

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.

Neonauclea purpurea (Roxb.) Merr. Int. Rumph. Herb. Aneb. 483. 1917; Ridsd. in Blumea 24: 340. 1978. *Nauclea purpurea* Roxb. Pl. Cor. 1:41, t. 54. 1796; Hook. f. Fl. Brit. India 3:26. 1880; Cooke, Fl. Pres. Bombay 2:7. 1958 (Repr.); Talb. For; Fl. Bombay Pres. & Sind 2:89, f. 336. 1911. *'Dev–phanas'.*

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.

Illus. : Bedd. Ic. t. 19. 1874 non Dalz. & Gibs. (*Nauclea elliptica*).

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

Ochreinauclea Ridsd.

Ochreinauclea missionis (Wall. ex G. Don) Ridsd. in Blumea 24:332. 1978. *Nauclea missionis* Wall. ex G. Don, Gen. Syst. 3:467. 1834; Hook. f. Fl. Brit. India 3:27. 1880. *Sarcocephalus missionis* Havil. in J. Linn. Soc. Bot. 33: 32. 1897; Cooke, Fl. Pres. Bombay 2: 5. 1958 (Repr.). *'Phuga'.*

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.

Illus. : Nayar & Sastry, Red data Book Ind. Pl. 3: 222, f. 224. 1990.

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

OPHIORRHIZA L.

Ophiorrhiza rugosa Wall. var. **prostrata** (D. Don) Deb & Mondal in Bull. Bot. Surv. India. 24:228. (1982) 1983. *O. prostrata* D. Don, Prodr. Fl. Nep. 136. 1825; Sant. & Merch. in Bull. Bot. Surv. India 3: 109. (1961) 1962. *O. harrisiana* Heyne ex Wight & Arn. Prodr 405. 1834; Hook. f. Fl. Brit. India 3: 78. 1880; Cooke, Fl. Pres. Bombay 2: 23. 1958 (Repr.).

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. harrisiana).*

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

OXYCEROS Lour.

Oxyceros rugulosus (Thw.) Tirveng. in Nord. J. Bot. 3:466. 1983. *Griffithia rugulosa* Thw. Enum. Pl. Zeyl. 159. 1864. *Randia rugulosa* (Thw.) Bedd. For. Man. Bot. 133. 1871; Hook. f. Fl.Brit. India 3:113. 1880; Cooke, Fl. Pres. Bombay 2:28. 1958 (Repr.).

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*

Pavetta concanica Bremek. in Feddes Repert. 37. 81. 1934; Sant. & Merch. in Bull. Bot. Surv. India 3:109. 1962; Sant. in Rec. Bot. Surv. India 16 (1) 199. 1967 (3 rd Rev. ed.).

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.

P. crassicaulis Bremek. in Feddes Repert. 37: 112. 1934 & 47: 25. 1939; Sant. & Merch. in Bull. Bot. Surv. India 3:109. (1961) 1962. *P. indica* auct. non L. 1753; Hook. f. Fl. Brit. India 3: 150. 1880; Cooke, Fl. Pres. Bombay 2: 41. 1958 (Repr.). *'Asaval', 'Papat', 'Papti'.*

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.

Illus. : Wight, Ic. t. 148. 1839; Talb. For. Fl. Bombay Pres. & Sind 2:117, ff. 353 & 354. 1911 *(P. indica).*

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.

P. siphonantha Dalz. in Hook. J. Bot. 2:133. 1850; Bremek. in Feddes Repert. 37:90. 1934. *P. hispidula* Wight & Arn. var. *siphonantha* Hook. f. Fl. Brit. India 3:151. 1880; Cooke, Fl. Pres. Bombay 2:41. 1958 (Repr.).

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–Novmber.

Illus. : Bedd. Fl. Sylv. t. 134. 1874; Talb. For. Fl. Bombay Pres. & Sind 2 : 120, f. 355. 1911 (*P. hispidula* var. *siphonantha)* .

Distrib. : Infrequent in deciduous forests. Kolhapur, Pune, Ratnagiri, Sindhudurg.

P. stocksii Bremek. in Feddes Repert. 37: 113. 1934; Sant. & Merch. in Bull. Bot. Surv. India 3:110. (1961) 1962.

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.

P. tomentosa Roxb. ex J. E. Sm. in Rees. Cyclop. 26:52. 1813. *P. indica* L. var. *tomentosa* (Roxb. ex J. E. Sm.) Hook. f. Fl. Brit. India 3:15. 1880; Cooke, Fl. Pres. Bombay 2:41. 1958 (Repr.).

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).*

Distrib. : Occasional in deciduous forests. Chandrapur, Dhule, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

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 capitate; bracts persistent ... *P. dalzellii*

      3. Flowers not capitate; bracts caducous or absent ... *P. truncata*

   2. Branches of inflorescence opposite; stipules less than 1.0 cm long ... *P. flavida*

Psychotria dalzellii Hook. f. Fl. Brit. India 3:163. 1880; Cooke, Fl. Pres. Bombay 2:45. 1958 (Repr.).

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.

Illus. : Talb. For. Fl. Bombay Pres. Sind 2:126, f. 358. 1911.

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

P. flavida Talb. Trees & Shrubs, Bombay ed. 1 : 113. 1894 & For. Fl. Bombay Pres. & Sind 2:127, f. 359. 1911; Cooke, Fl. Pres. Bombay 2:45. 1958 (Repr.).

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.).

P. nigra (Gaertn.) Alst. in Trimen, Handb. Fl. Ceylon 6 (Suppl.) 152. 1931. *Grumilea nigra* Gaertn. Fruct. 1:138, t. 28. 1788. *P. thwaitesii* Hook. f. Fl. Brit. India 3:162. 1880; Cooke, Fl. Pres. Bombay 2:44. 1958 (Repr.).

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.

Fls. & Frts. : March–April.

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

P. truncata Wall. in Roxb. Fl. Ind. 2:162. 1824; Hook. f. Fl. Brit. India 3:163. 1880; Cooke, Fl. Pres. Bombay 2:44. 1958 (Repr.).

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.

Fls. & Frts. : April–May.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:125, f. 357. 1911.

Distrib. : Infrequent in moist deciduous forestts. Kolhapur, Ratnagiri, Satara, Sindhudurg.

RUBIA L.

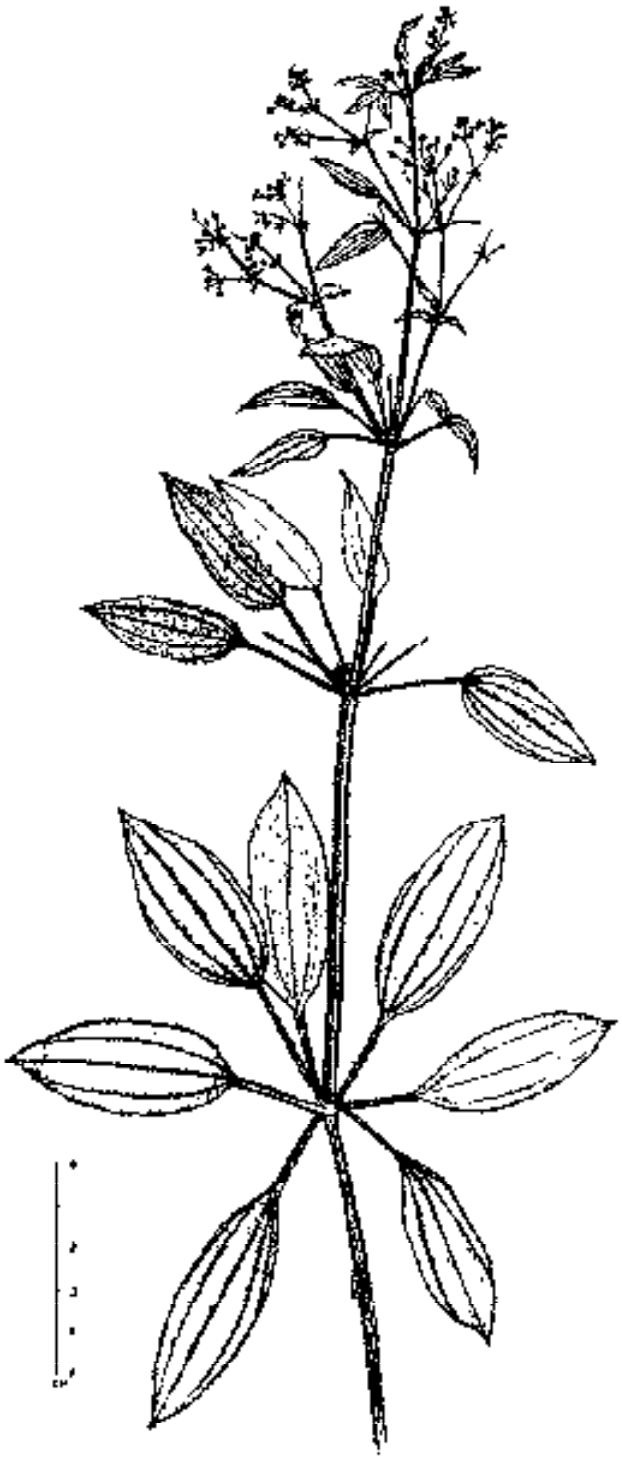
Rubia cordifolia L. Syst. Nat. ed. 12, 3 (App.) 229. 1768; Hook. f. Fl. Brit. India 3:202. 1881; Cooke, Fl. Pres. Bombay 2: 54. 1958 (Repr.); Deb & Malick in Bull. Bot. Surv. India 10: 6. 1968. *'Ilta', 'Manjisth'.*

Perennial, 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. Inflorescense axillary; flowers in panicles of dichotomous cymes, greenish–yellow. Fruits bicarpellate, globose, smooth, shining, in umbels, purplish–black when ripe.

Fls. & Frts. : January–December.

Illus. : Wight, Ic. t. 187. 1839. (*R. munjista* Roxb. Fl. Ind. 1: 383. 1820); Fyson, Fl. Nilgiri Pulney Hill tops 2:t. 144. 1915 (Repr. ed.); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 347. 1982.

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



Rubia cordifolia L.

SAPROSMA Bl.

Saprosma glomeratum (Gardn.) Bedd. For. Man. Bot. 134, 11. 1872; Sant. & Merch. in Bull. Bot. Surv. India 3:110. (1961) 1962; Gang. in J. Econ. Tax. Bot. 15 : 86, f. 10. 1991. *Dysodidendron glomeratum* Gardn. in Calcutta J. Nat. Hist. 7: 3. 1847. *Saprosma indicum* Dalz. in Hook. Kew. J. Bot. 3: 37. 1851; Hook. f. Fl. Brit. India 3:192. 1880; Cooke, Fl. Pres. Bombay 2: 48. 1958 (Repr.).

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 debiscence 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*

Spermacoce articularis L. f. Suppl. 119. 1782; Sivar. et al. in Proc. Indian Acad. Sci. (Pl. Sci.) 97: 349. 1987. *Borreria articularis* (L. f.) F. N Williams in Bull. Bot. Herb. Boiss. 2, 5 956. 1905. *Spermacoce hispida* auct. mult. non L. 1753; Hook. f. Fl. Brit. India 3:200. 1881; Cooke, Fl. Pres. Bombay 2:53. 1958 (Repr.); Deb & R. Dutta in J. Econ. Tax. Bot. 5: 1046. 1984 p.p. *'Madanghanti'*.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 327. 1982 (*Borreria articularis*); Sivar. et al. op. cit. 350, f. 5–10.

Distrib. : Common throughout.

S. ocymoides Burm. f. Fl. Ind. 34, t. 13, f. 1. 1768; Hook. f. Fl. Brit. India 3: 200. 1881; Sivar. et al. in Proc. Indian Acad. Sci. (Pl. Sci.) 97:356. 1987. *Borreria ocymoides* (Burm. f.) DC. Prodr. 4: 544. 1830.

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.

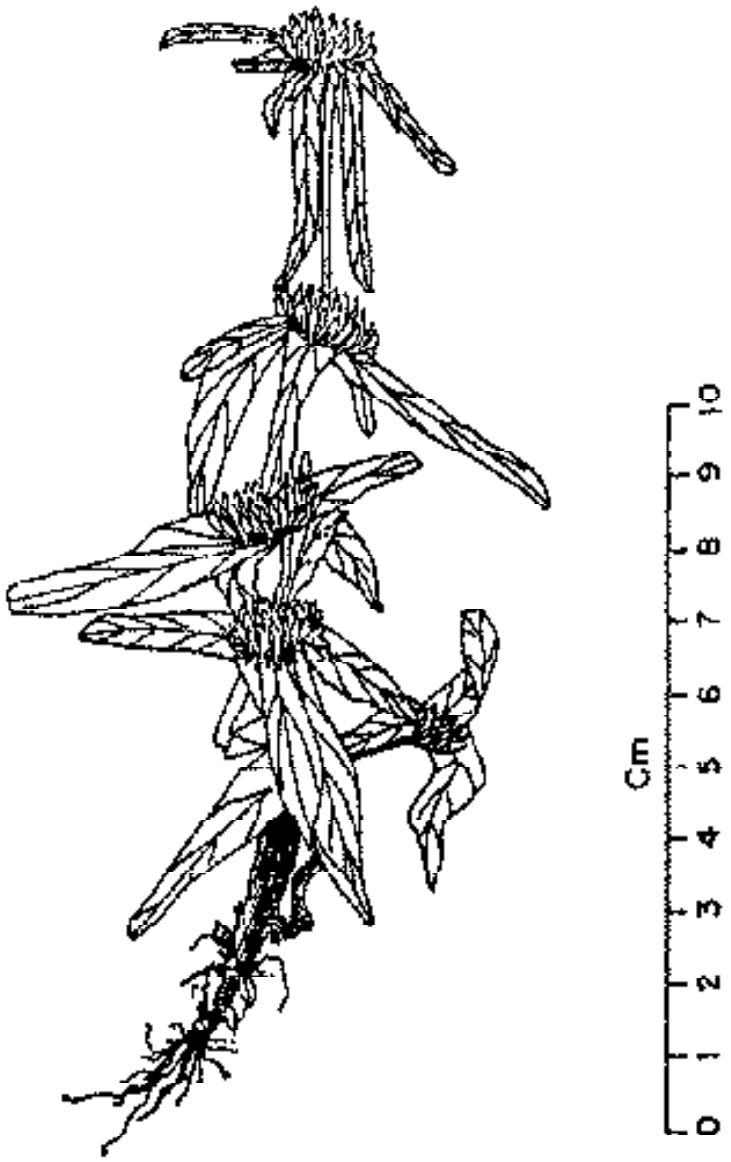
S. pusilla Wall. in Roxb. Fl. Ind. 1: 379. 1820; Deb & R. Dutta in J. Econ. Tax. Bot. 5 : 1057. 1984; Sivar. et al. in Proc. Indian Acad. Sci. (Pl. Sci.) 97:356. 1987. *S. stricta* L. f. Suppl. Pl. 120. 1781 (non *Borreria stricta* G. F. W. Mey 1818); Hook. f. Fl. Brit. India 3: 200. 1881; Cooke, Fl. Pres. Bombay 2: 52. 1958 (Repr.). *Borreria pusilla* (Wall.) DC. Prodr. 4: 543. 1830; Gandhi in Sald. & Nicols. Fl. Hassan Dt. 574. 1976. *B. stricta* (L. f.) Mey, Prim. Fl. Eseq. 83: t. f. 1–3. 1818.

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.

Illus. : Deb & R. Datta, op. cit. 1058, f. 8. A–H; Sivar. et al. op. cit. 351, f. 19–25.

Distrib. : Common throughout.



Spermacoce pusilla Wall.

SPERMADICTYON Roxb.

Spermadictyon suaveolens Roxb. Pl. Cor. 3:32, t. 236. 1815; Sant. & Merch. in Bull. Bot. Surv. India 3:110. (1961) 1962. *Hamiltonia suaveolens* Roxb. Fl. Ind. 1:554. 1832; Hook. f. Fl. Brit. India 3:197. 1880; Cooke, Fl. Pres. Bombay 2:51. 1958 (Repr.). *'Gidas', 'Gidasawwa', 'Gides'.*

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:135, f. 364. 1911 (*Hamiltonia suaveolens*).

Distrib. : Frequent in deciduous forests. Ahmednagar, Akola, Amravati, Aurangabad, Chandrapur, Dhule, Kolhapur, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

TAMILNADIA Tirveng. & Sastre

Tamilnadia uliginosa (Retz.) Tirveng. & Sastre in Mauritius Inst. Bull. 8 (4): 85. 1979. *Gardenia uliginosa* Retz. Obs. Bot. 2: 14. 1781. *Randia uliginosa* (Retz.) DC. Prodr. 4: 386. 1830; Hook. f. Fl. Brit. India 3:110. 1880; Cooke, Fl. Pres. Bombay 2: 27. 1958 (Repr.). *Xeromphis uliginosa* (Retz.) Mahesh. in Bull. Bot. Surv. India 3: 92. (1961) 1962; Tirveng. in Bull Mus. natn. Hist. nat. Paris, 3e, 521, Bot. 35: 19. 1978. *Catunaregam uliginosa* (Retz.) Sivar. in Manilal & Sivar. Fl. Calicut 132. 1982. *'Pandhara'*

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 specie 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.

Tarenna asiatica (L.) O. Ktze. ex K. Schum. Bot. Tidsskr. 24: 332. 1902. *Rondeletia asiatica* L. Sp. Pl. 172. 1753. *Webera corymbosa* Willd. Sp. Pl. 1. 1224. 1798; Hook. f. Fl. Brit. India 3: 102. 1880. *Tarenna zeylanica* Gaertn. Fruct. 1:139, t. 28. 1788; Cooke Fl. Pres. Bombay 2: 25. 1958 (Repr.).

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

Illus. : Wight, Ic. t. 309. 1840 & t. 584. 1842 *[Stylocoryne webera* (A. Rich.) Wight & Arn.]; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 348. 1982.

Distrib. : Occasional in deciduous forests. Chandrapur, 'S'. Konkan (Cooke, op. cit.).

THECAGONUM Babu

Thecagonum ovatifolium (Cav.) Babu in Bull. Bot. Surv. India 11:214. (1969) 1971. *Hedyotis ovatifolium* Cav. Ic. 6:52. 1801. *Oldenlandia nudicaulis* Roth, Nov. Pl. Sp. 95. 1821; Hook. f. Fl. Brit. India 3:70. 1880. *O. sedgwickii* Blatt. in J. & Proc. As. Soc. Bengal (n. s.) 26 : 344. 1930. *Gonotheca ovatifolia* (Cav.) Sant. & Merch. in Bull. Bot. Surv. India 5 : 107. 1963.

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.

WENDLANDIA Bartl. ex DC.

1.	Leaves opposite; filaments exserted	...	*W. heynei*
1.	Leaves whorled; filaments not exserted	...	*W. thyrsoidea*

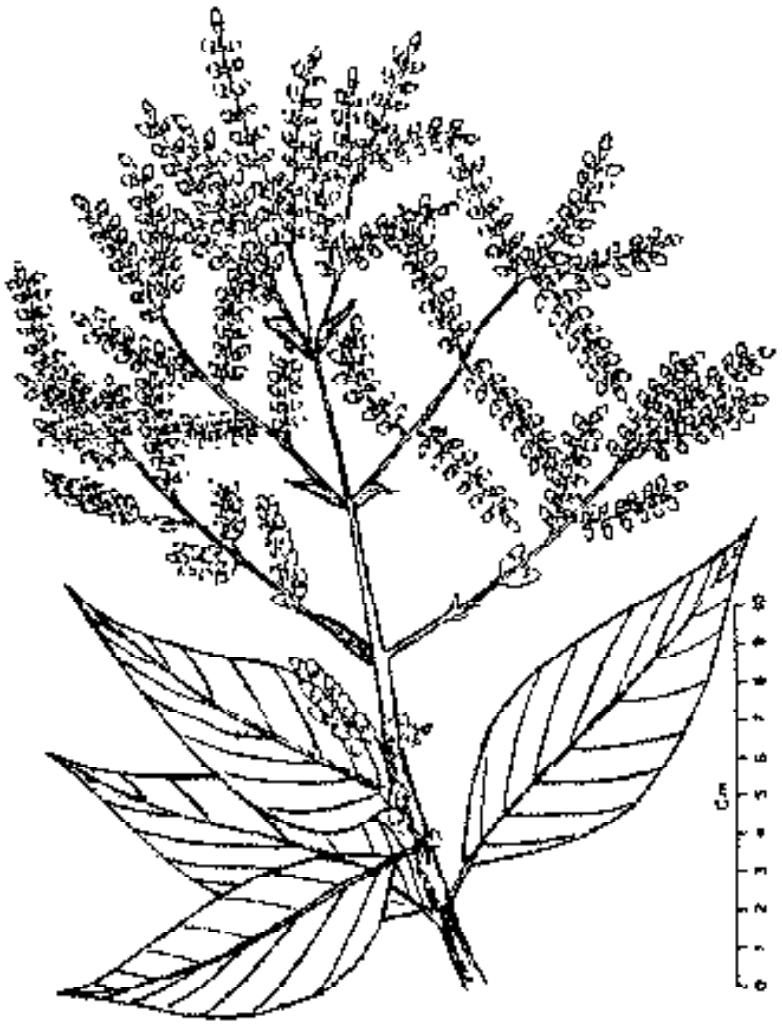
Wendlandia heynei (R. & S.) Sant. & Merch. in Bull. Bot. Surv. India 3:110. (1961) 1962. *Rondeletia heynei* R. & S. Syst. 5:234. 1819. *Wendlandia exserta* (Roxb.) DC. Prodr. 4:411. 1830; Hook f. Fl. Brit. India 3:37. 1830; Cooke, Fl. Pres. Bombay 2: 10. 1958 (Repr.). *'Til'*, *'Tilya'*.

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).*

Distrib. : Occasional (Cooke, op. cit.). Nasik, Raigad, Satara, Thane.



Wendlandia heynei (R. & S.) Sant. & Merch.

W. thyrsoidea (R. & S.) Steud. Nom. ed. 2, 2:786. 1841; Raiz. in Indian Forester 92:326. 1966. *Canthium thyrsoideum* R. & S. Syst. 6:207. 1820. *Wendlandia notoniana* Wall. ex Wight & Arn. Prodr. 403. 1834; Hook. f. Fl. Brit India 3:40. 1880; Cooke, Fl. Pres. Bombay 2:11. 1958 (Repr.).

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.

Fls. & Frts. : February–June.

Illus. : Wight, Ic. t. 1033. 1845; Bedd. Fl. Sylv. t. 224. 1872; Talb. For. Fl. Bombay Pres. & Sind 2:93, f. 338. 1911 (*Wendlandia notoniana);* Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 349. 1982.

Distrib. : Frequent along ghats. Ahmednagar, Kolhapur, Nasik, Ratnagiri, Satara, Sindhudurg.

CULTIVATED AND INTRODUCED SPECIES :

Catesbaea spinosa L. Sp. Pl. 109. 1753; Bailey, Std. Cycl. Hort. 1: 686. 1953 (Repr. ed.). *'Prickly Apple'.*

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.

Cinchona succirubra Pav. ex Klotzsch. in Abh. Akad. Wissh. Physs. Math. Kl. 60. 1857; Brandis, For. Fl. 265. 1874; Gamble, Fl. Pres. Madras 2: 416. 1957 (Repr.). *'Red bark'.*

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.

Coffea arabica L. Sp. Pl. 172. 1753; Hook. f. Fl. Brit. India 3 : 153. 1880; Bailey, Man. Cult. Pl. 929. 1949 (2nd ed.).

Evergreen shrubs with horizontal branches. Leaves elliptic, abruptly acuminate. Flowers in axillary clusters, white, fragrant. Berry oblong, flattened, red when ripe. Seeds 2, flattened along adjacent faces.

Illus. : Wight, Ic. t. 53. 1838.

Frequently cultivated in Amravati, Bombay, Pune, Satara and Thane.

C. liberica Bull ex Hiern in Trans. Linn. Soc. Ser. 2, 171, t. 24. 1879; Anon. Wealth of India 2 : 289. 1950; Bailey, Std. Cycl. Hort. 1 :823. 1953 (Repr. ed.). *'Liberian coffee'*.

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 speices. Berries smaller, but in large numbers.

Native of Belgian Congo and introduced in India from Java. Pune, Satara.

Gardenia angusta (L.) Merr. Interpret. Rumpl. Herb. Amb. 485. 1917; Manilal & Sivar. Fl. Calicut 145. 1982. *Varneria angusta* L. Amoen Acad. 4 : 136. 1759. *Gardenia jasminoides* Ellis in Phil. Trans. 51 (2) : 935. 1761. *'Cape Jasmine'*.

Evergreen shrubs. Leaves lanceolate to obovate, short–acuminate. Flowers often double, solitary, white, fragrant.

Native of China. Pune, Sindhudurg.

G. thunbergia L. f. Suppl. 162. 1782; Bailey. Man. Cult. Pl. 933. 1949 (2nd ed.).

Trees. Leaves elliptic, acuminate at apex. Flowers white, showy, waxy, very fragrant; calyx split at one side.

Native of S. Africa. Found in Pune.

Hamelia patens Jacq. Enum. Pl. Carib. 16. 1760; Bailey, Man. Cult. Pl. 933. 1949 (2nd ed.).

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.

H. sphaerocarpa Ruiz & Pav. Fl. Per. 2 : 69, t. 221. 1799; Bailey, Std. Cycl. Hort. 1 : 1431. 1953 (Repr. ed.).

Shrubs, hirsute. Leaves usually in whorls of 3, oblong, acute at apex, hirsute on both sides. Flowers in large terminal cymes, orange–yellow. Fruits subglobose, hirsute, purplish–black.

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.).

Shrubs. Leaves oblong. Flowers pale yellow; corolla–lobes ovate–rhomboid.

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.

Native of S. America. Grown in gardens for its flowers. Bombay.

Mussaenda erythrophylla Schum. & Thonn. Beskr. Guin. Pl. 116. 1827; Bailey, Std. Cycl. Hort. 2 : 2089. 1953 (Repr. ed.).

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.

M. luteola Delile, Cent. Pl. Meroe 65, t. 62. 1826; Bailey, Std. Cycl. Hort. 2 : 2089. 1953 (Repr. ed.).

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.

Nauclea orientalis L. Sp. Pl. ed. 2, 243.1762; Anon. Wealth of India 7:6.1966.

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,

Pentas lanceolata (Forssk.) Schum. in Engl. & Prantl. Nat. Pflanzenfam. 4 : 29. 1891; Bailey, Man. Cult. Pl. 931. 1949 (2nd ed.). *Ophiorrhiza lanceolata* Forssk. Fl. Aegypt.–Arab. 42. 1775.

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,

Rondeletia odorata Jacq. Enum. Pl. Carib. 16. 1760; Bailey Man. Cult. Pl. 932. 1949 (2nd ed.).

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 ... LAUNAEA

4. Erect, non–stoloniferous plants with cauline and radical leaves :

5. Leaves ovate or suborbicular; heads cylindric ... LACTUCA

5. Leaves lanceolate, deeply divided; heads campanulate ... SONCHUS

3. Florets all tubular; sap watery :

6. Heads spinescnet; leaf margins dentate or spiny (except *Goniocaulon*)

7. Heads globose, 1–flowered ... ECHINOPS

7. Heads ovoid or cylindric, many–flowered :

8. Achenes silky–villous, 5–10–ribbed ... DICOMA

8. Achenes glabrous, sometimes more than 10–ribbed :

9. Achenes closely ribbed (more than 20 ribs) ... GONIOCAULON

9. Achenes faintly ribbed :

10. Heads unisexual ... BREEA

10. Heads bisexual ... 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 ... ELEPHANTOPUS

12. Heads 1–flowered; bracts uniseriate, connate below ... LAGASCEA

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 ... EMILIA

15. Leaves cauline, base not auriculate; bracts many seriate; achenes smooth/ribbed, not as above :

16. Pappus absent ... ADENOON

16. Pappus present :

17. Pappus long, copious ... 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. Undershrubs; 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 ... ADNENOSTEMMA

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 ... EPALTES

27. Branchlets not winged; florets creamy to yellowish :

31. Prostrate herbs :

32. Plants c 15 cm long; corolla of bisexual florets 4–lobed ... CENTIPEDA

32. Plants c 30 cm long; corolla of bisexual florets 5–lobed ... GRANGEA

31. Erect herbs :

33. Leaves sessile ... CYATHOCLINE

33. Leaves petiolate ... DICROCEPHALA

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 ... SYNEDRELLA

42. Heads prickly; achenes smooth, enclosed in inner involucral bracts :

43. Pappus absent ... ACANTHOSPERMUM

43. Pappus present ... AMBERBOA

40. Heads stalked, solitary or in panicles :

44. Leaf blade pinnatifid :

45. Involucral bracts uniseriate; pappus present :

46. Leaflets filiform; pappus scanty ... DYSSODIA

46. Leaflets not as above; pappus copious ... SENECIO

45. Involucral bracts bi or multiseriate; pappus absent or reduced :

47. Ray florets white; pappus awns reflexed; receptacle convex ... PARTHENIUM

47. Ray florets yellow; pappus awns erect; receptacle flat :

48. Pappus minute, corona like ... CHRYSANTHELLUM

48. Pappus bristly awned, not as above :

49. Plants spreading, non scapigerous ... GLOSSOCORDIA

49. Erect plants, subscapigerous ... GLOSSOGYNE

44. Leaf blade entire (rarely deeply lobed) :

50. Leaves 3–foliolate; pappus retrorsely barbellate ... BIDENS

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 ... SIEGESBECKIA

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

Acanthospermum hispidum DC. Prodr 5: 522. 1836; Stuessy in Rhodora 72: 106. 1970; Rao et al. Fl. Ind. Enum. Aster. 1. 1988.

Annual herbs, c 50 cm tall, dichotomously branched, hispid, covered with spraeding 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.

Illus. : Tadul. & Venkat. Handb. S. Ind. Weeds 230, f. 91. 1955 (Rev. ed.); Matthew, Illus Fl. Tamilnadu Carnatic 2 : t. 350. 1982.

Distrib. : Common throughout as a weed in open situations.

ADENOON Dalz.

Adenoon indicum Dalz. in Hook. J. Bot. & Kew Gard. Misc. 5: 344. 1850; Hook. f. Fl. Brit. India 3: 229. 1881; Cooke, Fl. Pres. Bombay 2: 64. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 1. 1988; Uniyal in Hajra et al. Fl. India 13: 331, f. 101. 1995. *'Mothasunki'*.

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.

Adenostemma lavenia (L.) Ktze. Rev. Gen. Pl. 1: 304. 1891; Panigr. in Kew Bull. 30: 648. 1975; Rao et al. Fl. Ind. Enum. Aster. 1. 1988. *Verbesina lavenia* L. Sp. Pl. 902 1753. *Adenostemma viscosum* J. R. & G. Forst. Chav. Gen. Pl. 90, t. 45. 1776; Hook. f. Fl. Brit. India 3: 232. 1881; Cooke, Fl. Pres. Bombay 2:69. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 1087. 1846; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 351. 1982.

Distrib. : Chandrapur, Nagpur, Pune, Ratnagiri, Satara, Sindhudurg.

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*

Ageratum conyzoides L. Sp. Pl. 839. 1753; Hook. f. Fl. Brit. India 3: 243. 1881; Cooke, Fl. Pres. Bombay 2: 70. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 2. 1988. *'Burandu', 'Osadi', 'Sahadevi'.*

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 spiculate on angles.

Fls. & Frts. : July–February.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 352. 1982.

Distrib. : Common throughout along roadsides, waste places and forest edges.

A. houstonianum Mill. Gard. Dict. ed. 8, n. 2. 1768; Wadhwa et al. in M. V. M. Patrika 6: 29, f. 1 – 4. 1971; Giri & Majumdar in J. Bombay Nat. Hist. Soc. 80: 853, f. A–C. 1983; Rao et al. Fl. Ind. Enum. Aster. 2. 1988.

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 & Mujumdar, op. cit.

Distrib. : Weed in waste places. Jalgaon, Satara.

AMBERBOA (Pers.) Less (nom. cons.)

Amberboa ramosa (Roxb.) Jafri in Scientist 3: 29. 1959; Rao et al. Fl. Ind. Enum. Aster. 2. 1988. *Cardus ramosus* Roxb. Fl. Ind. 3: 407.1832. *Volutarella divaricata* (DC.) Bth. & Hook. f. Gen. Pl. 2: 476.

1873; Hook. f. Fl. Brit. India 3: 383. 1881; Cooke Fl. Pres. Bombay 2: 115. 1958 (Repr.). *'Lih–Katmanda'*.

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.

Illus. : Wight, Ic. t. 1139. 1846 *(Tricholepis procumbens)*; Mahesh. Illus. Fl. Delhi f. 114. 1966; Hajra in Hajra et al. Fl. India 12: 154, f. 44. 1995.

Distirb. : 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*

Anaphalis lawii (Hook. f.) Gamble, Fl. Pres. Madras pt. 4. 696. 1921 [2: 489. 1957 (Repr.)]; Rao et al. Fl. Ind. Enum. Aster. 4. 1988; Pant in Hajra et al. Fl. India 13: 66. 1995. *A. oblonga* var. *lawii* Hook. f. Fl. Brit. India 3: 283. 1881.

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.

A. subdecurrens (DC.) Gamble, Fl. Pres. Madras pt. 4. 695. 1921 [2: 489.1957 (Repr.)]; Grierson in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1:194. 1980; Rao et al. Ind. Enum. Aster. 5. 1988; Pant in Hajra et al. Fl. India 13: 75. 1995. *Gnaphalium subdecurrens* DC. in Wight,

Contrib. Bot. Ind. 21. 1834. *Anaphalis oblonga* DC. Prodr. 6:274. 1838; Hook. f. Fl. Brit. India 2: 283. 1881 p.p.; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79: 596. 1982.

Herbs. Leaves oblong–lanceolate, pilose above, tomentose beneath, base semi–amplexicaul. Heads c 0.4 cm across. Involucral bracts oblanceolate–oblong, pink. Achenes terete, sparsely hairy.

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*

Artemisia japonica Thunb. Fl. Jap. 310. 1784; Rao et al. Fl. Ind. Enum. Aster. 7. 1988; Naithani in Hajra et al. Fl. India 12: 28, f. 10. 1995. *A parviflora* Roxb. ex D. Don, Prodr. Fl. Nepal. 181. 1825: Hook. f. Fl. Brit. India 3: 322. 1881; Cooke Fl. Pres. Bombay 2:104. 1958 (Repr.). *'Tel–davana'*.

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 panicled 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.

A. nilagirica (C.B.Cl.) Pamp. in Nuov. Giorn. Bot. Ital. n.s. 33:452. 1926; Sant. in Bull. Bot. Surv. India 3:12. (1961) 1962; Rao et al. Fl. Ind. Enum. Aster. 8. 1988. *A. vulgaris* var. *nilagirica* C.B.Cl. Comp. Ind. 162. 1876. *A. vulgaris* auct. non L. 1753; Hook. f. Fl. Brit. India 3:253. 1881; Cooke, Fl. Pres. Bombay 2:105. 1958 (Repr.). *'Dhor–davana', 'Pisola'*.

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.

Fls. & Frts. : October–November.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 354. 1982.

Distrib. : Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Satara, Thane.

Bidens L.

Bidens biternata (Lour.) Merr. & Sherff. in Bot. Gaz. 88: 293. 1929; Rao et al. Fl. Ind. Enum. Aster. 13. 1988. *Coreopsis biternata* Lour. Fl. Cochinch. 508. 1790. *Bidens pilosa* auct. non L. 1753; Hook. f. Fl. Brit. India 3: 309. 1881 p.p.; Cooke, Fl. Pres. Bombay 2:101. 1958 (Repr.).

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.

Blainvillea acmella (L.) Philipson in Blumea 6: 350, f. 1. 1950; Rao et al. Fl. Ind. Enum. Aster. 14. 1988; H. J. Chowdhery in Hajra et al. Fl. India 12: 377, f. 101. 1995. *Verbesina acmella* L. Sp. Pl. 901. 1753. *Blainvillea latifolia* (L. f.) DC. ex Wight, Contrib. Bot. Ind. 71. 1834; Hook. f. Fl. Brit. India 3: 305. 1881. *B. rhomboidea* Cass. Dict. Sci. Nat. 29: 493. 1823; Cooke, Fl. Pres. Bombay 2:97. 1958 (Repr.)

Annuals herbs,30–40 cm high, erect, hairy. Leaves ovate, ovate–lanceolate or ovate–rhomboid, bispid. 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.

Illus. : Philipson, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 336. 1982; H.J. Chowdhery in Hajra et al. op. cit.

Distrib. : Common throughout along roadsides in fields and in gardens.

BLEPHARISPERMUM DC.

Blepharisperum subsessile DC. in Wight, Contrib. 12. 1834; Hook. f. Fl. Brit. India 3:276. 1891; Cooke, Fl. Pres. Bombay 2:85. 1958 (Repr.) ; Rao et al. Fl. Ind. Enum. Aster. 14. 1988; Pant in Hajra et al. Fl. India 13: 42. 1995.

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 palea 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.

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. malcolmi*
        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. fistulosa*

14. Heads not sessile :

15. Plants unbranched with cuneate leaves ... *B. clarkei*

15. Plants branched without cuneate leaves ... *B. raciniata*

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*

Blumea atropurpurea Haines, Bot. Bihar & Orissa 469. 1922 [2:492. 1961 (Repr.)]; Rao et al. Fl. Ind. Enum. Aster. 14. 1988; Naik & Bhogaonkar in J. Econ. Tax. Bot. 14: 732. 1990.

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.

B. belangeriana DC. Prodr. 5: 444. 1836; Hook. f. Fl. Brit. India 3: 266. 1881; Cooke, Fl. Pres. Bombay 2:78. 1958 (Repr.); Randeria in Blumea 10:277. 1960; Rao et al. Fl. Ind. Enum. Aster. 15. 1988.

Herbs, 30–60 cm tall, erect; stem terete, densely hairy at apex. Leaves 4–8 x 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.

B. bifoliata (L.) DC. in Wight, Contrib. 14. 1834; Hook. f. Fl. Brit. India 3:261. 1881; Cooke Fl. Pres. Bombay 2: 75. 1958 (Repr.); Randeria in Blumea 10:288. 1960; Rao et al. Fl. Ind. Enum. Aster. 15. 1988. *Conyza bifoliata* L. Sp. Pl. ed. 2. 1207. 1753.

Herbs, 25–40 cm tall, annual, erect or decumbent, clothed with spreading hairs. Leaves 2–4 x 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).

B. clarkei Hook. f. Fl. Brit. India 3:267. 1881; Randeria in Blumea 10:252. 1960; Rao et al. Fl. Ind. Enum. Aster. 15. 1988; S. Kumar in Hajra et al. Fl. India 13: 121. 1995. *B. malabarica* Hook. f. op. cit.; Cooke, Fl. Pres. Bombay 2: 79. 1958 (Repr.).

Herbs, perennial, erect with terete branches. Leaves subsessile, distantly serrate. Heads in small, axillary clusters. Involucral bracts linear, acute. Achenes oblong, ribbed.

Fls. & Frts. : September–May.

Distrib. : Rare. 'Bombay' (Randeria, op. cit.), 'Konkan' (Cooke, op. cit.).

B. eriantha DC. in Wight, Contrib. Bot. Ind. 15. 1834; Hook. f. Fl. Brit. India 3: 266. 1881; Cooke, Fl. Pres. Bombay 2: 78. 1958 (Repr.); Randeria in Blumea 10:279. 1960; Rao et al. Fl. Ind. Enum. Aster. 15. 1988. *'Buradi', 'Nimurdi'.*

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.

Illus. : Lakshmi. & Sharma, Fl. Nasik Dt. 261, f. 17. 1991; S. Kumar in Hajra et al. Fl. India 13: 123, f. 38. 1995.

Distrib. : Common throughout in fields and in open forests.

Notes : It is endemic to India.

B. fistulosa (Roxb.) Kurz in J. Asiat. Soc. Bengal 46(2): 187. 1877; Randeria in Blumea 10:256. 1960; Rao et al. Fl. Ind. Enum. Aster. 15. 1988; S. Kumar in Hajra et al. Fl. India 13: 124. 1995. *Conyza fistulosa* Roxb. Fl. Ind. 3: 429. 1832. *Blumea glomerata* DC. in Wight, Contrib. 15. 1834; Hook. f. Fl. Brit. India 3:262. 1881; Cooke, Fl. Pres. Bombay 2:76. 1958 (Repr.). *'Bhamburda'.*

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.

Fls. & Frts. : December–January.

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.).

B. hieraciifolia (D. Don) DC. var. **macrostachya** (DC.) Hook. f. Fl. Brit. India 3: 263. 1881; Randeria in Blumea 10: 248. 1960; Rao et al. Fl. Ind. Enum. Aster. 16. 1988; Naik & Bhogaonkar in J. Econ. Tax. Bot. 14: 732. 1990; S. Kumar in Hajra et al. Fl. India 13: 126. 1995. *B. macrostachya* DC. Prodr. 5:442. 1836.

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.).

B. lacera (Burm. f.) DC. in Wight, Contrib. Bot. Ind. 14. 1834; Hook. f. Fl. Brit. India 3: 263. 1881; Cooke, Fl. Pres. Bombay 2:76. 1958 (Repr.); Randeria in Blumea 10: 264. 1960; Rao et al. Fl. Ind. Enum. Aster. 16. 1988. *Conyza lacera* Burm. f. Fl. Ind. 180, t. 59, f. 1. 1768. *Blumea subcapitata* DC. Prodr. 5: 439. 1936; Hook. f. op. cit. 261. *B. lacera* var. *cinerascens* Hook. f. op. cit. 263. *'Burando'*

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.

B. laciniata (Roxb.) DC. Prodr. 5:436. 1836; Hook. f. Fl. Brit. India 3:264. 1881; Cooke, Fl. Pres. Bombay 2:80. 1958 (Repr.); Randeria in Blumea 10:258. 1960; Rao et al. Fl. Ind. Enum. Aster. 16. 1988. *Conyza laciniata* Roxb. Fl. Ind. 3: 428. 1832. *Blumea sinuata* (Lour.) Merr. Trans. Amer. Phil. Soc. 24: 388. 1935.

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.

Illus. : S. Kumar in Hajra et al. Fl. India 13: 129, f. 39. 1995.

Distrib. : Rare along banks of streams, nallahs, etc. Ahmednagar, Akola, Marathwada (Naik, 1998), Pune.

B. lanceolaria (Roxb.) Druce, Rep. Bot. Exch. Club. Brit. Isles 4: 609. 1917; Rao et al. Fl. Ind. Enum. Aster. 17. 1988; S. Kumar in Hajra et al. Fl. India 13: 130, f. 40. 1995. *Conyza lanceolaria* Roxb. Fl. Ind. 3: 432. 1832. *Blumea myriocephala* DC. Prodr. 5: 445. 1836; Hook. f. Fl. Brit. India 3: 269. 1881.

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.).

var. **spectabilis** (DC.) Randeria in Blumea 10: 220. 1960; Rao et al. Fl. Ind. Enum. Aster. 17. 1988. *B. spectabilis* DC. Prodr. 5: 445. 1836; Hook. f. Fl. Brit. India 3: 269. 1881; Cooke, Fl. Pres. Bombay 2:79. 1958 (Repr.). B. *spectabilis* var. *longifolia* Hook. f. 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.

B. malcolmii (C.B.Cl.) Hook. f. Fl. Brit. India 3:266. 1881; Cooke, Fl. Pres. Bombay 2:78. 1958 (Repr.); Randeria in Blumea 10: 278. 1960; Rao et al. Fl. Ind. Enum. Aster. 17. 1988. *Pluchea malcolmii* C.B.Cl. Comp. Ind. 95. 1876.

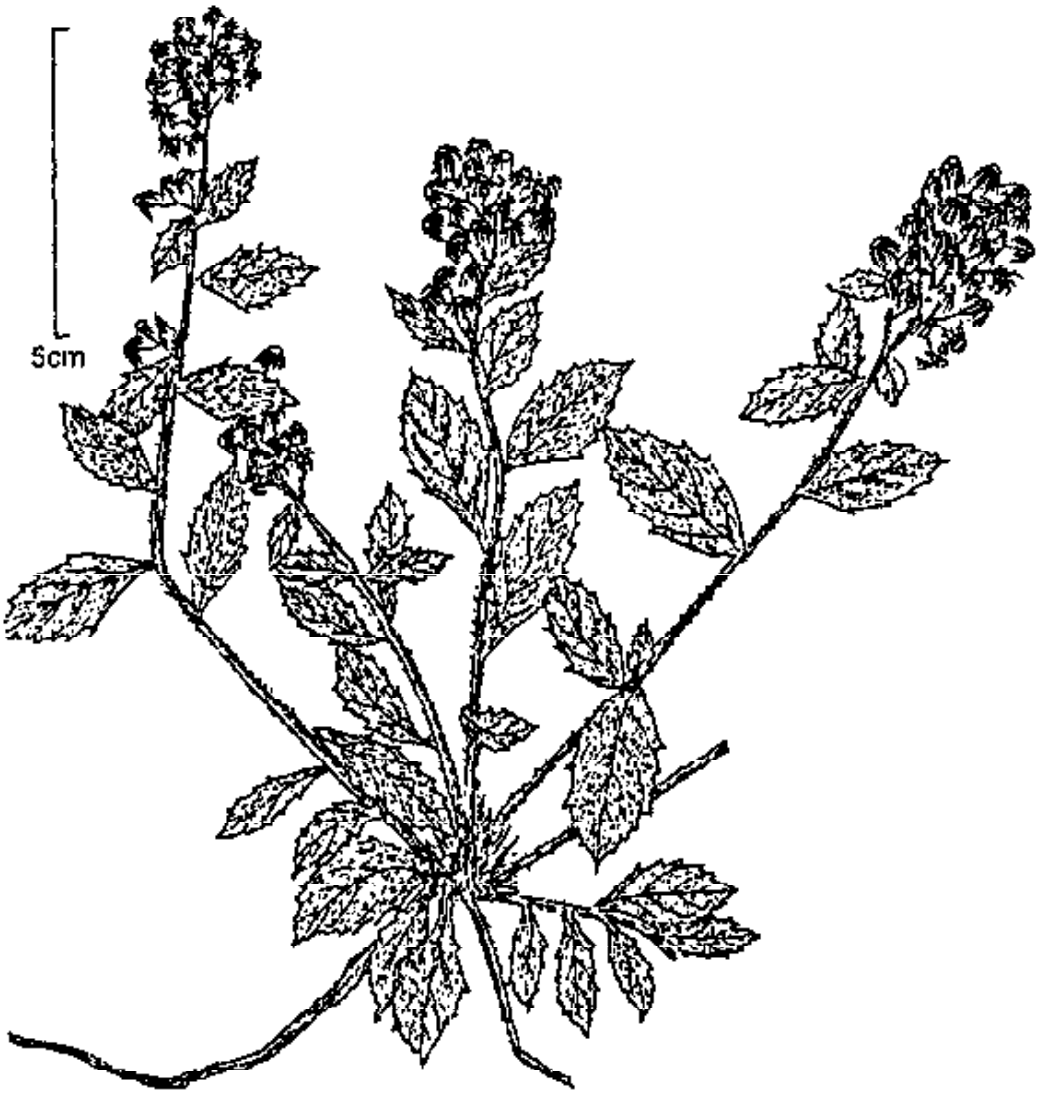
Herbs, c 1 m high, decumbent or ascending strongly aromatic. Leaves 2.5–10 x 1.5–5 cm, obovate, sessile. Heads 1.5–2.0 cm across, terminal fasciculate, subsessile. Achenes dark brown, obscurely angled, sparsely pubescent.

Fls. & Frts. : October–May.

Distrib. : Ahmednagar, Jalgaon, Kolhapur, Nanded (Naik, 1998), Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

Notes : It is endemic to India.

B. membranacea DC. Prodr. 5:440. 1836; Hook. f. Fl. Brit. India 3:265. 1881; Cooke, Fl. Pres. Bombay 2:77. 1958 (Repr.); Randeria in Blumea 10:269. 1960; Rao et al. Fl. Ind. Enum. Aster. 17. 1988.



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.

var. **jacquemontii** (Hook. f.) Randeria in Blumea 10:271. 1960; Rao et al. Fl. Ind. Enum. Aster. 17. 1988. *B. jacquemontii* Hook. f. Fl. Brit. India 3:265. 1882; Bhogaonkar & Devarkar, Additins to the Fl. of Melghat 21, figs. A-F. 1999.

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.

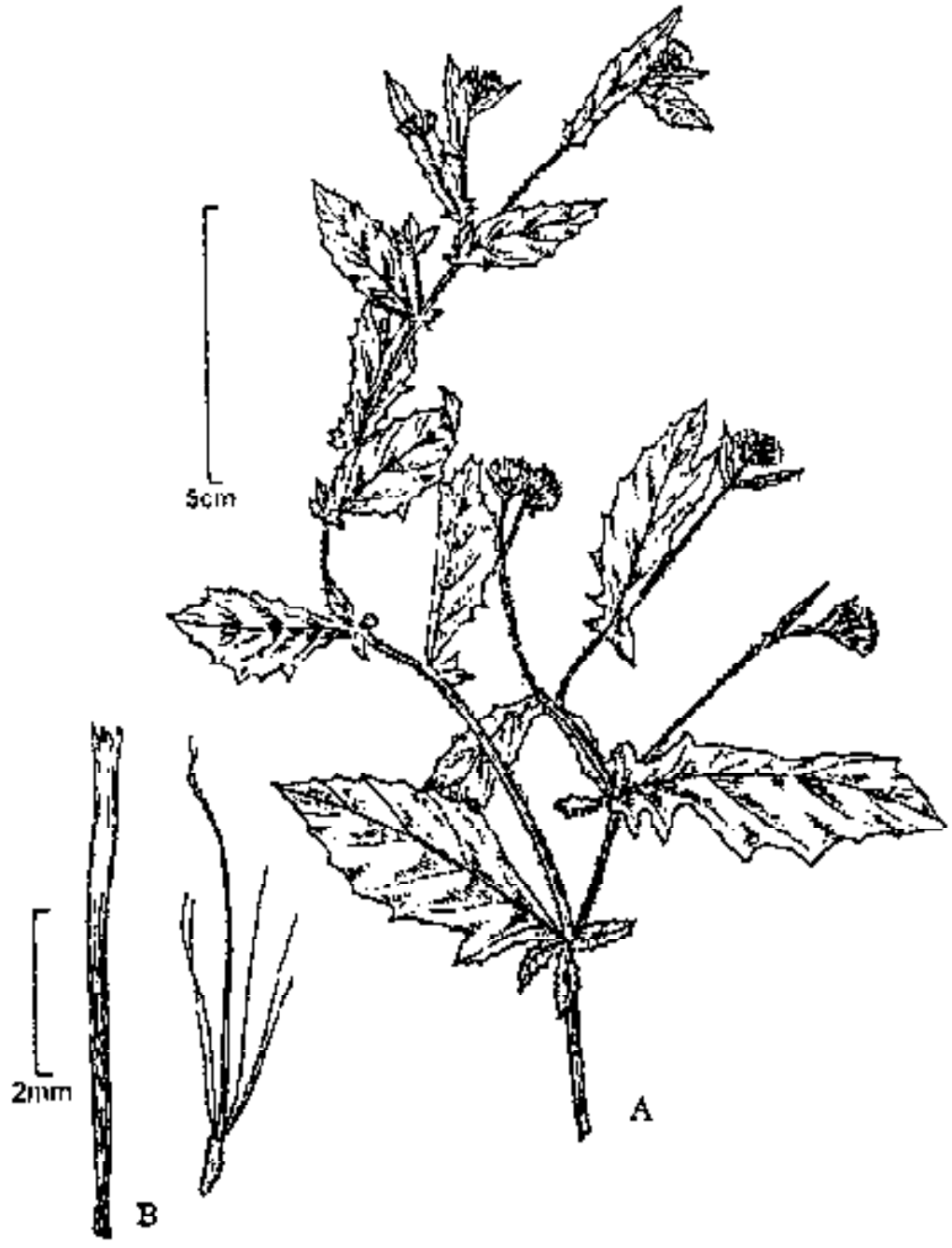
Illus. : Bhogaonkar & Devarkar, op. cit.

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.

B. mollis (D. Don) Merr. in Philip. J. Sci. (Bot.) 5: 395. 1910; Randeria in Blumea 10: 261. 1960; Rao et al. Fl. Ind. Enum.Aster. 18. 1988. *Erigeron* molle D. Don, Prodr. 172. 1825. *Blumea wightiana* DC. in Wight, Contrib. Bot. Ind. 14. 1834; Hook. f. Fl. Brit. India 3:261. 1881; Cooke, Fl. Pres. Bombay 2:75. 1958 (Repr.).

Herbs, erect, aromatic; stems and branches villous. Leavs 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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: f. 357, 1982; S. Kumar in Hajra et al. Fl. India 13: 136, f. 41. 1995.

Distib. : Common, along gulleys in forests, on wastelands; in drying ditches, along river banks, etc.

B. obliqua (L.) Druce, Rep. Bot. Exch. Club. Brit. Is. 4:609. 1916; Randeria in Blumea 10:286. 1960; Rao et al. Fl. Ind. Enum. Aster. 18. 1988. *Erigeron obliquum* L. Mant. 2:573. 1771. *Blumea amplectens* DC. in Wight, Contrib. Bot. Ind. 13. 1834; Hook. f. Fl. Brit. India 3:260. 1881; Cooke, Fl. Pres. Bombay 2:75. 1958 (Repr.).

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.

Illus. : S. Kumar in Hajra et al. Fl. India 13: 138, f. 42. 1995.

Distrib. : Frequent, on waste lands along roadsides, in barren lands, etc.

B. oxyodonta DC. in Wight, Contrib. Bot. Ind. 15. 1834; Hook. f. Fl. Brit. India 3: 266. 1881; Cooke, Fl. Pres. Bombay 2:77. 1958 (Repr.); Randeria in Blumea 10: 280. 1960; Rao et al. Fl. Ind. Enum. Aster. 18. 1988.

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.

Illus. : S. Kumar in Hajra et al. Fl. India 13: 140, f. 42. 1995.

Distrib. : Common, on rocky and calcareous soil along roadsides, on wastelands and around fields.

B. riparia (Bl.) DC. Prodr. 5:444. 1836; Randeria in Blumea 10:213. 1960; Rao et al. Fl. Ind. Enum. Aster. 18. 1988. *Conyza riparia* Bl. Bijdr. 899. 1826 non H. B. & K. *Blumea chinensis* DC. Prodr. 5:444. 1836 p.p. non *Conyza chiensis* L.; Hook. f. Fl. Brit. India 3:268. 1881.

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.

Distrib. : Amravati (Naik & Bhogaonkar in J. Econ. Tax. Bot. 14:733. 1990).

B. sessiliflora Decne. in Nouv. Ann. Mus. Rar. 3: 140. 1834; Randeria in Blumea 10: 257. 1960; Rao et al. Fl. Ind. Enum. Aster. 19. 1988.

Erect, pubescent herbs. Leaves obovate to oblanceolate, radical lyrate, pinnatifid, shortly petioled, sharply dentate. Heads yellow, clustered in axils of bractiform leaves. Achenes pilose, 5–angled.

Fls. & Frts. : December–February.

Distrib. : Rare. Amravati (Naik & Bhogaonkar in J. Econ. Tax. Bot. 14 : 733. 1990).

B. venkataramanii Rolla Rao & Hemadri in Curr. Sci. 42(19): 693. 1973; Rao et al. Fl. Ind. Enum. Aster. 19. 1988.

Herbs c 100 cm high, erect, annual; stems terete, clothed with hairs. Leaves spathulate, 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.

B. virens DC. in Wight, Contrib. Bot. Ind. 14. 1834; Hook. f. Fl. Brit. India 3:264. 1881; Cooke, Fl. Pres. Bombay 2:77. 1958 (Repr.); Randeria in Blumea 10:272. 1960; Rao et al. Fl. Ind. Enum. Aster. 19. 1988.

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.

Illus. : S. Kumar in Hajra et al. Fl. India 13: 144, f. 44. 1995; Bhogaonkar & Devarkar, Additions to the Fl. of Melghat 23, figs. A–I. 19909.

Distrib. : Akola, Amravati, Beed (Naik, 1998), Bombay (Randeria, op. cit.), Kolhapur, Nanded (Naik, 1998), Pune, Raigad, Ratnagiri, Satara.

Breea Less.

Breea arvensis (L.) Less. Syn.Comp. 9. 1832; Rao et al. Fl. Ind. Enum. Aster. 20. 1988; Hajra in Hajra et al. Fl. India 12: 155, f. 46. 1995. *Serratula arvensis* L. Sp. Pl. 820. 1753. *Cirsium arvensis* (L.) Scop. Fl. Carn. ed. 2, 2: 126. 1772; Naik, Fl. Marathwada 1: 470. 1998. *Cnicus arvensis* (L.) Hoffm. Deutsch. Fl. ed. 2, 2: 130. 1804; Hook. f. Fl. Brit. India 3: 362. 1881.

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–wooly beneath. Heads on short, axillary or terminal panicles, unisexual. Florets with pink–purple corollas. Achenes 4–5 mm long, oblong–obovoid, 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.

Caesullia axillaris Roxb. Pl. Cor. 1:64, t. 93. 1795; Hook. f. Fl. Brit. India 3:291. 1881; Cooke Fl. Pres. Bombay 2: 92. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 20. 1988.

Herbs, prostrate or suberect, anuual. 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.

Illus. : Wight, Ic. t. 1102. 1846; S. Kumar & P.C. Pant in Hajra et al. Fl. India 13: 3, f. 1. 1995.

Distrib. : Common throughout, in marshy places.

CARTHAMUS L.

Carthamus lanatus L. Sp. Pl. 830. 1753; Hook. f. Fl. Brit. India 3: 386. 1881; Rao et al. Fl. Ind. Enum. Aster. 22. 1988; Bachulkar & Yadav in J. Econ. Tax. Bot. 17: 445. 1993.

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).

CENTIPEDA Lour.

Centipeda minima (L.) A. Br. & Aschers. Ind. Sem. Fl. Berol. App. 6. 1867; Rao et al. Fl. Ind. Enum. Aster. 23. 1988. *Artemisia minima* L. Sp. Pl. 849. 1753. *Centipeda orbicularis* Lour. Fl. Cochinch. 2:493. 1790; Hook. f. Fl. Brit. India 3:317. 1881; Cooke, Fl. Pres. Bombay 2:103. 1958 (Repr.).

Herbs, annual, prostrate; branches radiating. Leaves obovate, spathulate, 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.

Chrysanthellum americanum (L.) Vatke, Abh. Nat. Ver. Brem. 9: 122. 1887; H. J. Chowdhery in Hajra et al. Fl. India 12: 379, f. 102. 1995. *Artemisia americana* L. Sp. Pl. 895. 1753. *Chrysanthellum indicum* DC. Prodr. 5:631. 1836. Hook. f. Fl. Brit. India 3: 310. 1881; Rao et al. Fl. Ind. Enum. Aster. 24. 1988.

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.

Distrib. : Occasional in hilly forests on gravelly soil. Aurangabad (Naik, 1998), Nagpur, Nanded (Naik, 1998), Wardha, Yavatmal.

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*

Conyza aegyptica (L.) W. Ait. Hort. Kew ed. 1: 3. 183. 1789; Hook. f. Fl. Brit. India 3:258. 1881; Rao et al. Fl. Ind. Enum. Aster. 27. 1988. *Erigeron aegyptiacus* L. Mant. 1: 112. 1767 *('aegyptiacum')*.

Annual herbs c 80 cm tall erect; stem striate. Lower leaves lobulate; upper simple, lanceolate. Heads c 0.25 cm across, in terminal,

panicled corymbs, heterogamous, disciform, yellow at first but later becoming white. Achenes oblong–obovoid, villous.

Fls. & Frts. : May–June.

Distrib. : Nagpur (Ugemuge, 1986).

C. bonariensis (L.) Cronq. in Bull. Torrey Bot. Cl. 70:632. 1943; Rao et al. Fl. Ind. Enum. Aster. 27. 1988. *Erigeron bonariensis* L. Sp. Pl. 863. 1753. *E. linifolius* Willd. Sp. Pl. 3:1955. 1803; Hook. f. Fl. Brit. Inda 3:254. 1881.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2 : t. 359. 1982.

Distrib. : Native of Europe, grown in gardens, also escaped from cultivation. Ahmednagar, Aurangabad (Naik, 1998), Kolhapur, Nagpur, Nanded (Naik, 1998), Nasik, Parbhani (Naik, 1998), Pune.

C. japonica (Thunb.) Less. ex DC. Prodr. 5: 380. 1836; Rao et al. Fl. Ind. Enum. Aster. 27. 1988; Varghese et al. in J. Econ. Tax. Bot. 14 : 732. 1990; Hajra in Hajra et al. Fl. India 12: 105, f. 31. 1995. *Erigeron japonicum* Thunb. Fl. Jap. 312. 1784; Hook. f. Fl. Brit. India 3:258. 1881.

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).

C. leucantha (D. Don) Ludlow & Raven in Kew Bull. 17: 71. 1963; Rao et al. Fl. Ind. Enum. Aster. 27. 1988. *Erigeron leucanthus* D. Don, Prodr. Fl. Nep. 171. 1825. *Conyza viscidula* Wall. ex DC. Prodr. 5:383. 1836; Hook. f. Fl. Brit. India 3:258. 1881.

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.

C. stricta Willd. Sp. Pl. 3:1922. 1803; Hook. f. Fl. Brit. India 3:258. 1881; Cooke, Fl. Pres. Bombay 2: 73. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 28. 1988.

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.

Illus. : Fyson, Fl. Nilgiri Pulney Hill–tops 3: t. 380. 1920 (Repr. ed. 1975); Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 350. 1982.

Distrib. : Few in grass lands. Ahmednagar, Amravati, Beed, (Naik, 1998), Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane, Sindhudurg.

C. sumatrensis (Retz.) E. H. Walker in J. Jap. Bot. 46: 72. 1971; Rao et al. Fl. Ind. Enum. Aster. 37. 1988; Hajra in Hajra et al. Fl. India 12: 109. 1995. *Erigeron sumatrensis* Retz. Obs. Bot. 5: 28. 1789. *E. floribundus* (H.B. & K.) Sch.–Bip. in Bull. Soc. Bot. France 12: 81. 1865; Burtt in Kew Bull. 1948: 372. 1948.

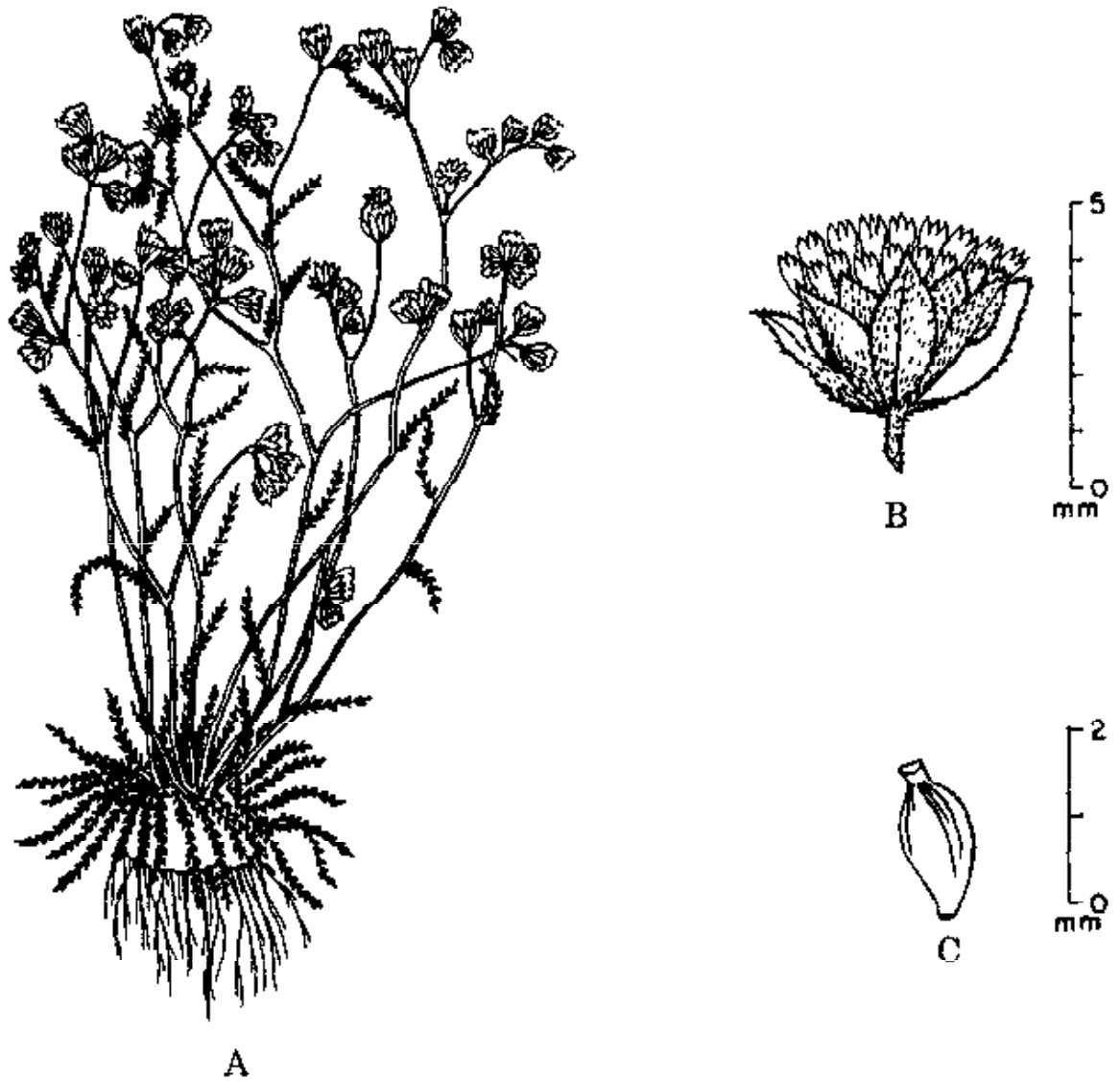
Herbs, c 1 cm high, annual; stems patently long hairy. Leaves 2–10 x 0.5–2 cm, linear–lanceolate, or oblanceolate, acute at apex, tapering at base, hairy. Heads yellow, in pyramidal, 2–5 cm long panicles. Achenes c 4 mm long, glabrescent, pappus hairy, dirty white.

Fls. & Frts. : May–November.

Distrib. : Occasional on hill slopes or weed of waste places and in cultivated fields. Ahmednagar, Satara.

CRASSOCEPHALUM Moench.

Crassocephalum crepidioides (Bth.) S. Moore in J. Bot. 50:211. 1912; Koster in Blumea 26:237. 1980; Nair & Srinivasan in J. Econ. Tax. Bot. 3:290. 1984; Londhè & Pradhan, Ibid. 5:151. 1984; Rao et al.



Cyathocline lutea Law ex Wight
A- Habit; B- Floral head; C- Achene.

Fl. Ind. Enum. Aster. 29. 1988. *Gynura crepidioides* Bth. in Hook. f. Fl. Niger. 438. 1849.

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.

Illus. : R. Mathur in Hajra et al. Fl. India 13: 202, f. 64. 1995.

Distrib. : Satara (Rare).

CYATHOCLINE Cass.

1. Flowers purple ... *C. purpurea*

1. Flowers yellow ... *C. lutea*

Cyathocline lutea Law ex Wight in Calc. J. Nat. Hist. 7:158. 1847; Hook. f. Fl. Brit. India 3:246. 1881; Cooke, Fl. Pres. Bombay 2:71. 1958, (Repr.); Rao et al. Fl. Ind. Enum. Aster. 32. 1988.

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.

Fls. : October–January.

Illus. : Wight, Ic. t. 1150. 1846.

Distrib. : Ahmednagar, Nasik, Pune, Thane.

Note : It is endemic to India.

C. purpurea (Buch.–Ham. ex D. Don) O. Ktze. Rev. Gen. Pl. 333. 1891; Rao et al. Fl. Ind. Enum. Aster. 32. 1988; Hajra in Hajra et al. Fl. India 12: 111, f. 32. 1995. *Tanacetum purpureum* Buch.–Ham. ex D. Don, Prodr. Fl. Nepal. 181. 1825. *Cyathocline lyrata* Cass. in Ann. Sci. Nat. 1, 17:420. 1829; Hook. f. Fl. Brit. India 3:246. 1881; Cooke, Fl. Pres. Bombay 2:71. 1958 (Repr.).

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.

var. **alba** Sant. in Kew Bull. 1948:490. 1949 & in Rec. Bot. Surv. India 16 (1) : 124. 1967 (3 rd Rev. ed.); Rao et al. Fl. Ind. Enum. Aster. 32. 1988.

Differs from the typical variety in having pure white florets.

Fls. & Frts. : Novmber–May.

Distrib. : Rare, in rice fields after harvesting. Pune (Sant. op. cit.)– Endemic.

var. **bicolor** Sant. in Kew Bull. 1948: 490. 1949 & in Rec. Bot. Surv. India 16 (1) : 125. 1967 (3rd. Rev. ed.); Rao et al. Fl. Ind. Euum. Aster.33. 1988.

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.

Dichrocephala integrifolia (L. f.) O. Ktze. Rev. Gen. Pl. 1: 333. 1891; Rao et al. Fl. Ind. Enum. Aster. 33. 1988; Hajra in Hajra et al. Fl. India 12: 114, f. 33. 1995. *Hippia integrifolia* L. f. Suppl. 389. 1781. *Dichrocephala latifolia* (Lam.) DC in Wight, Contrib. Bot. Ind. 11. 1834; Hook. f. Fl. Brit. India 3:245. 1881; Cooke, Fl. Pres. Bombay 2: 70. 1958 (Repr.).

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.

Fls. & Frts. : June–May.

Illus. : Wight, Ic. t. 1096. 1846. (*Dichrocephala latifolia*); Matthew Illus. Fl. Tamilnadu Carnatic 2:t. 362. 1982; Hajra in Hajra et al. op. cit.

Distrib. : Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg.

DICOMA Cass.

Dicoma tomentosa Cass. in Bull Sci. Soc. Philom. Paris 12: 47. 1818; Hook. f. Fl. Brit. India 3:387. 1881; Cooke, Fl. Pres. Bombay 2:116. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 33. 1988. *'Navarangi'*.

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.

Fls. & Frts. : August–Novmber.

Illus. : Wight, Ic. t. 1140. 1846 *(D. lanuginosa* DC in Wight, Contrib. Bot. Ind. 26. 1834); Rao in Hajra et al. Fl. India 13: 172, f. 53. 1995.

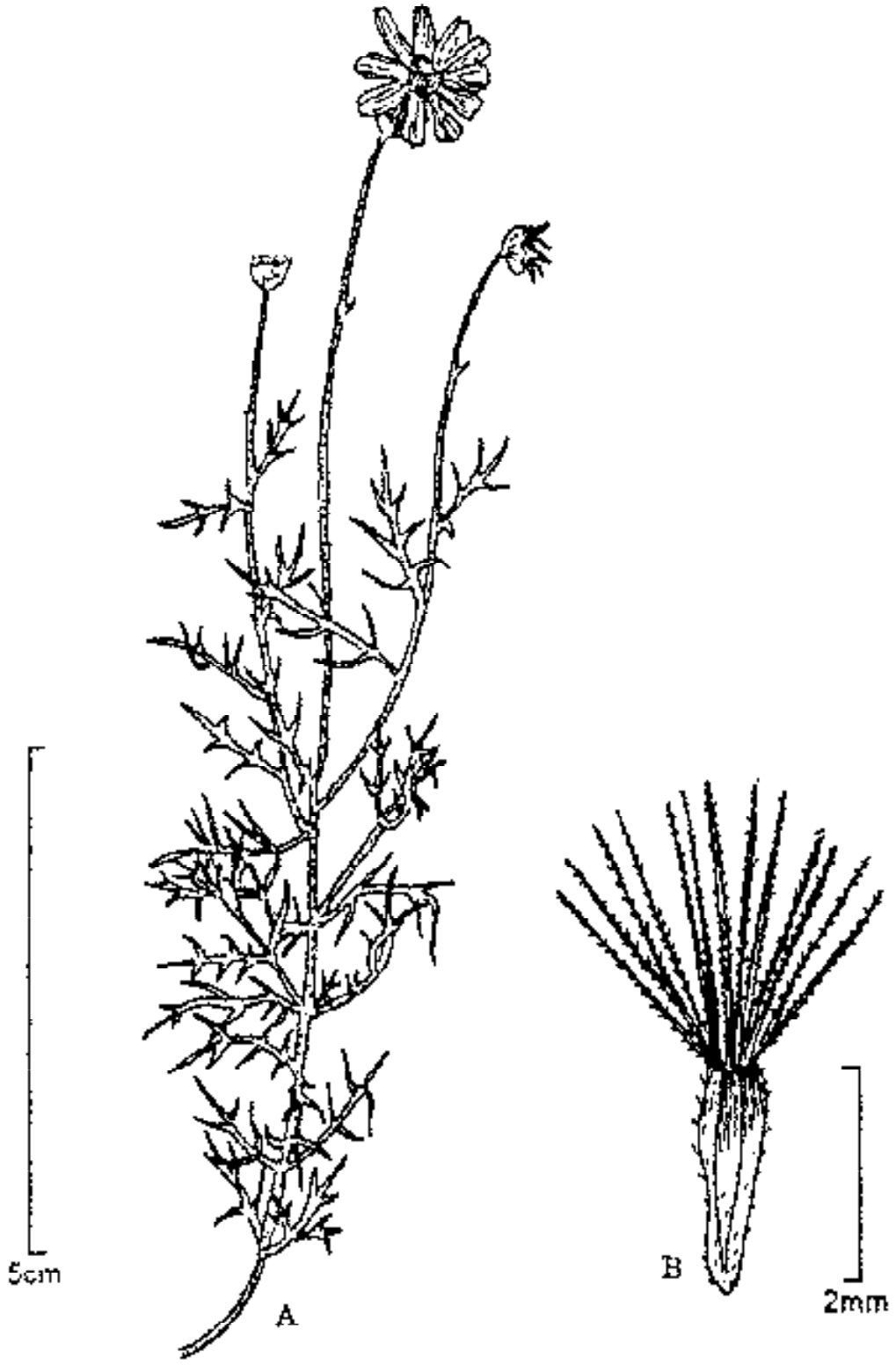
Distrib. : Occasional on gravelley slopes of barren hills. Ahmednagar, Aurangabad, Dhule, Jalgaon, Jalna, Nasik, Osmanabad, Parbhani, Pune, Solapur.

DYSSODIA Cav.

Dyssodia tenuifolia Loes. in Bull. Herb. Boiss. 2, 6: 866. 1906; R.R. Rao in Hajra et al. Fl. India 13: 325, f. 99. 1995. *Hymenatherum tenuifolia* Cass. Dict. Sc. 22: 313. 1821–22; Randeria in J. Bombay Nat. Hist. Soc. 53: 216. 1956; Rao et al. Fl. Ind. Enum. Aster. 44. 1988.

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.

Echinops echinatus Roxb. Fl. Ind. 3:447. 1832; Hook. f. Fl. Brit. India 3:358. 1881; Cooke, Fl. Pres. Bombay 2:112. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 34. 1988. *'Utanti', 'Utkatkar'.*

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.

Fls. & Frts. : September–January.

Illus. : Matthew, Illus, Fl. Tamilnadu Carnatic 2:t. 364. 1982.

Distrib. : Common throughout in dry places under open situations.

ECLIPTA L. (nom. cons.)

Eclipta prostrata (L.) L. Mant. 2:286. 1771; Sant. in J. Bombay Nat. Hist. Soc. 54:476. 1957; Rao et al. Fl. Ind. Enum. Aster. 34. 1988. *Verbesina prostrata* L. Sp. Pl. 902. 1753. *Eclipta alba* (L.) Hassk. Fl. Jav. Rar. 528. 1848; Hook. f. Fl. Brit. India 3:304. 1881. *E. erecta* L. Mant. 2: 286. 1771; Cooke, Fl. Pres. Bombay 2: 112. 1958 (Repr.). *'Bhangra', 'Maka'.*

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.

Illus. : Tadul. & Venkatan. Handb. S. Indian Weeds, 234, f. 92. 1955 [Rev. ed. *(Eclipta alba)*]; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 365. 1982)

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.

ELEPHANTOPUS L.

Elephantopus scaber L. Sp. Pl. 814. 1753; Hook. f. Fl. Brit. India 2:242. 1881; Cooke, Fl. Pres. Bombay 2 : 68. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 34. 1988.

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.

Illus. : Wight, Ic. t. 1086. 1846; Uniyal in Hajra et al. Fl. India 13: 334, f. 102. 1997.

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*

Emilia javanica (Burm. f.) C. Robinson in Philipp. J. Sci. 3: 217. 1908; R. Mathur in Hajra et al. Fl. India 13: 210. 1995. *Hieracium javanica* Burm. f. Fl. Ind. 174, t. 57, f. 1. 1768. *Emilia flammea* Cass. Dict. Sci. Nat. 14: 406, t. 5. 1825; Hook. f. Fl. Brit. India 3: 336. 1881. *E. sagittata* (Vahl) DC. Prodr. 6 : 302. 1838; Rao et al. Fl. Ind. Enum. Aster. 35. 1998

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–magneta, in corymbs. Achenes pale brown, 2–3 mm long, cylindrical, deeply ribbed, white pubescent between ribs. Pappus of white hairs.

Fls. & Frts. : January–November.

Distrib. : W. ghats, between 3000–4000 m. Maharashtra (Rao et al. op. cit. & R. Mathur in Hajra et al. op. cit.).

E. scabra DC. Prodr. 6: 303. 1838; Rao et al. Fl. Ind. Enum. Aster. 35. 1988; R. Mathur in Hajra et al. Fl. India 13: 211. 1995. *E. sonchifolia* var. *scabra* (DC.) Hook. f. Fl. Brit. India 3: 336. 1881.

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.

Distrib. : Maharashtra (Rao et al. op. cit. & R. Mathur in Hajra et al. op. cit.).

Notes : It is endemic to India.

E. sonchifolia (L.) DC. in Wight, Contrib. Bot. Ind. 24. 1834; Hook. f. Fl. Brit. India 3: 336. 1881; Cooke, Fl. Pres. Bombay 2:107. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 35. 1988. *Cacalia sonchifolia* L. Sp. Pl. 836. 1753. *'Dhamapan', 'Sadamandi'.*

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.

Illus. : Fyson, Fl. Nilgiri Pulney Hill tops 3: t. 394. 1920 (Repr. ed. 1975); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 367. 1982; R. Mathur in Hajra et al. Fl. India 13: 214, f. 67. 1995.

Distrib. : Common weed of cultivated fields and on wastelands. Pune, Raigad, Ratnagiri, Satara.

Notes : It is endemic to India.

E. zeylanica C.B.Cl. Comp. Ind. 175. 1876; Hook f. Fl. Brit. India 3: 336. 1881; Rao et al. Fl. Ind. Enum. Aster. 35. 1988; R. Mathur in Hajra et al. Fl. India 13: 213. 1995.

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.).

var. **paludosa** Gamble, Fl. Pres. Madras 716. 1921 [2: 504. 1957 (Repr.)]; Rao et al. Fl. Ind. Enum. Aster. 35. 1988; R. Mathur in Hajra et al. Fl. India 13: 215. 1995.

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.

Epaltes divaricata (L.) Cass. in Bull. Sci. Soc. Philom. Paris 139. 1818; Hook. f. Fl. Brit. India 3: 274. 1881; Cooke, Fl. Pres. Bombay 2: 83. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 35. 1988; S. Kumar in Hajra et al. Fl. India 13: 147. 1995. *Ethulia divaricata* L. Mant. 1 : 110. 1767.

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.

Distrib. : Occasional in harvested rice fields. Nanded (Naik, 1998), Pune, Raigad, Ratnagiri, Satara.

ERIGERON L.

Erigeron sublyratus DC. in Wight, Contrib. Bot. Ind. 9. 1834; Rao et al. Fl. Ind. Enum. Aster. 37. 1988. *E. asteroides* Roxb. Fl. Ind. ed. 2. 3:432. 1832 non Andrz. ex Besaer nec Link, 1822; Hook. f. Fl. Brit. India 3:254. 1881; Cooke, Fl. Pres. Bombay 2:73. 1958 (Repr.). *'Maredi', 'Sonali'.*

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.

Fls. & Frts. : June–January.

Illus. : Tadul. & Venkatan. Handb. S. Indian Weeds, 216, f. 85. 1955 (Rev. ed.).

Distrib. : Occasional on wastelands along roadsides. Ahmednagar, Akola, Nasik, all districts of Marathwada (Naik, 1998), Pune.

EUPATORIUM L.

Eupatorium adenophorum Spreng. Syst. 3: 420. 1826; Uniyal in Hajra et al. Fl. India 12: 350, f. 91. 1995. *E. glandulosum* Kunth in H. B. & K. Nov. Gen. Sp. 4: 122, t. 346. 1820; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79: 600. 1982. *Ageratina adenophora* (Spreng.) King & Robinson in Phytologia 20 : 204. 1970; Rao et al. Fl. Ind. Enum. Aster. 2. 1988.

Herbs, diffuse; stems with stalked glands. Leaves triangular or rhomboid–ovate, crenate–serrate along margins. Heads in dense clusters. Florets white. Achenes black, 5–angled. Pappus hairs 10, dirty white.

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.

Flaveria trinervia (Spr.) C. Mohr in Contrib. U. S. Nat. Herb. 6: 810. 1901; Powell in Ann. Miss. Bot. Gard. 65: 628. 1928; Rao et al. Fl. Ind. Enum. Aster. 39. 1988; H.J. Chowdhery in Hajra et al. Fl. India 12: 386 1995. *Oedera trinervia* Spr. Bot. Gart. Halle 63. 1800. *Flaveria contrayerba* auct. non Pers. 1807; Cooke; Fl. Pres. Bombay 2:125. 1958 (Repr.).

Annual herbs, erect, 20–60 cm high. Leaves elliptic–lanceolate, oblanceolate or spathulate. Heads 1–1.5 cm across. Flowers yellow. Achenes c 0.3 x 0.1 cm, oblanceolate or subclavate, the ray achenes longer, 10 or more ribbed.

Fls. & Frts. : February–December.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 370. 1982.

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*

Galinsoga parviflora Cav. Ic. et Descr. Pl. 3:41, t. 281. 1795; Hook. f. Fl. Brit. India 3:311. 1881; Rao et al. Fl. Ind. Enum. Aster. 39. 1988; H. J.Chowdhery in Hajra et al. Fl. India 12: 388, f. 105. 1995.

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.

G. quadriradiata Ruiz & Pavon, Syst. Veg. 1:198. 1798; Rao et al. Fl. Ind. Enum. Aster. 40. 1988; H. J. Chowdhery in Hajra et al. Fl. India 12: 388, f. 106. 1995.

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.

Fls. & Frts. : September–April.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 371. 1982; H. J. Chowdhery in Hajra et al. op. cit.

Distrib. : Garden weed, Satara. It is native of Mexico.

GLOSSOCARDIA Cass.

Glossocardia bosvallea (L. f.) DC. in Wight, Contrib. Bot. Ind. 19. 1834; Rao et al. Fl. Ind. Enum. Aster. 40. 1988. *Verbascena bosvallea* L. f. Suppl. 379. 1781. *Glossocardia linearifolia* Cass. in Dict. Sci. Nat. 19 : 62. 1821; Hook f. Fl. Brit. India 3: 308. 1881; Cooke, Fl. Pres Bombay 2: 100. 1956 (Repr.). *G. setosa* Blatt. & Hallb. in J. Bombay nat. Hist. Soc. 26 : 536. 1919; Rao et al. op. cit. 41. *'Mirg', 'Phattarsuva', 'Pipada'.*

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.

Illus. : Wight, Ic. t. 1110. 1846; Mahesh. Illus. Fl. Delhi f. 109. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 372. 1982.

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.

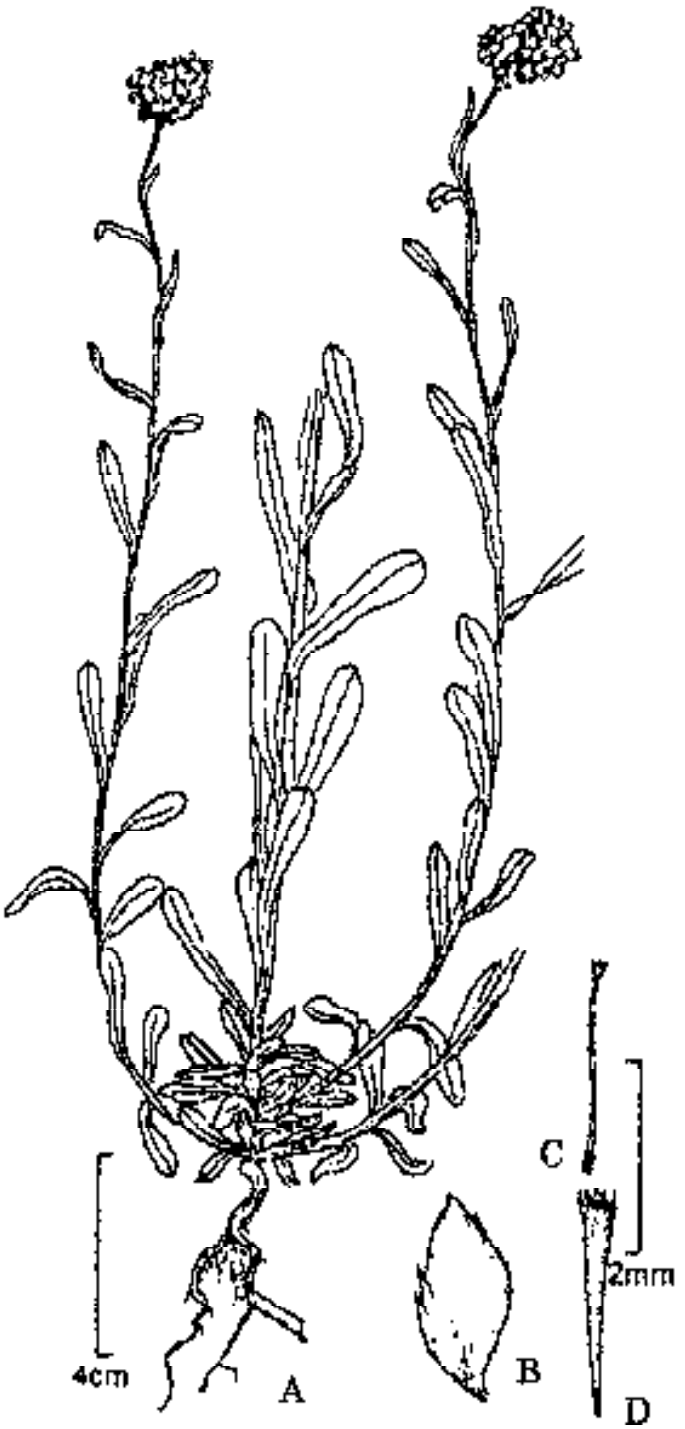
GLOSSOGYNE Cass.

Glossogyne bidens (Retz.) Alst. in Trimen, Handb. Fl. Ceylon 6 : 168. 1931; Rao et al. Fl. Ind. Enum. Aster. 41. 1988; H. J. Chowdhery in Hajra et al. Fl. India 12: 393, f. 108. 1995. *Zinnia bidens* Retz. Obs. 5:28. 1789. *Glossogyne pinnatifida* DC. in Wight, Contrib. 19. 1834; Dalz & Gibs. Bombay Fl. 133. 1861; Hook f. Fl. Brit. India 3 : 310. 1881.

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 Maharastra. 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*

Gnaphalium luteo-album L. Sp. Pl. 851. 1753; Hook. f. Fl. Brit. India 3: 288. 1881; Cooke, Fl. Pres. Bombay 2: 86. 1958 (Repr.); Pant in Hajra et al. Fl. India 13: 87. 1995.

1.	Involucral bracts pale to dark brown or reddish–brown	...	ssp. *luteo-album*
1.	Involucral bracts citrine to golden yellow	...	ssp. *affine*

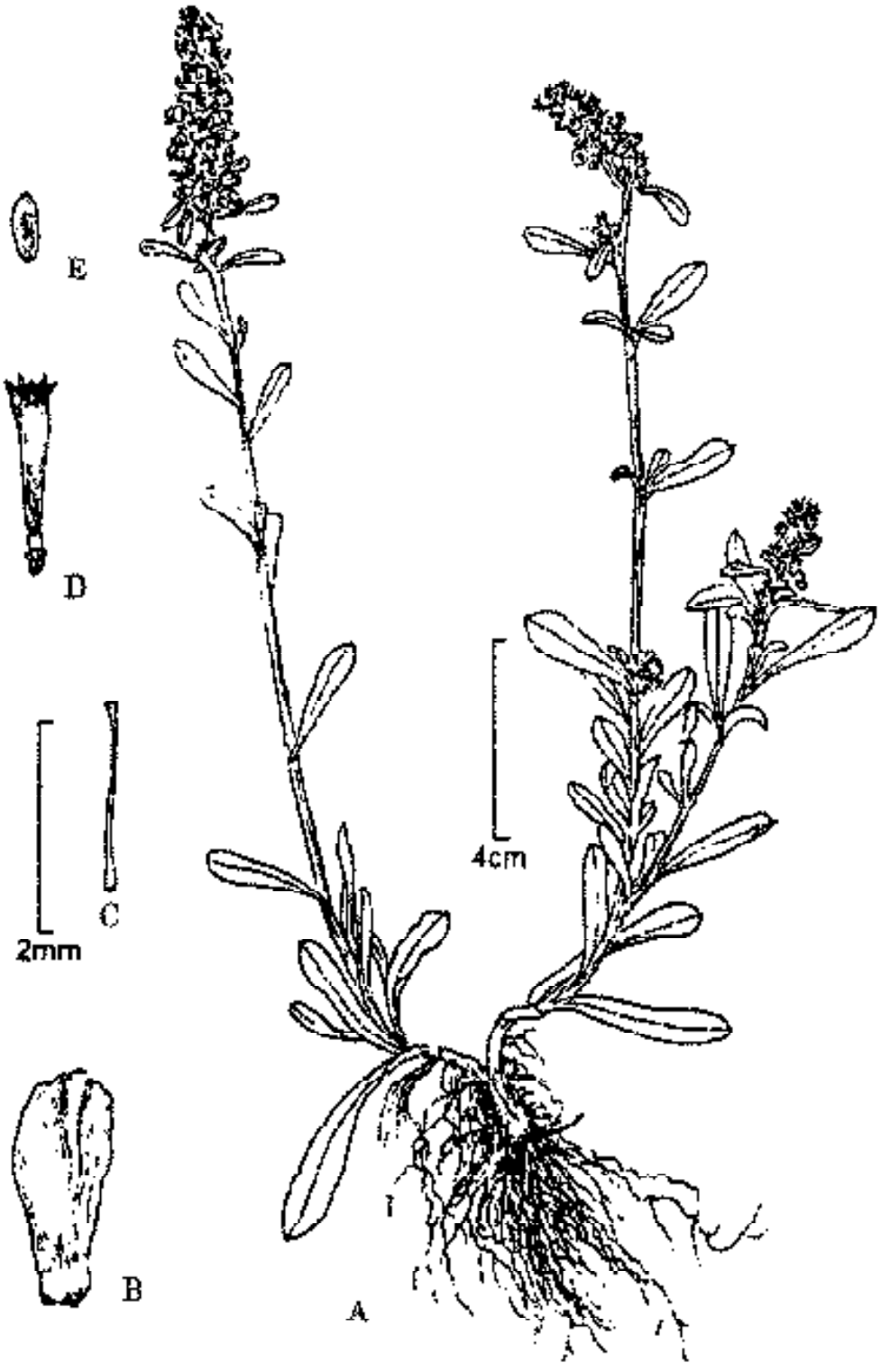
ssp. **luteo-album.**

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.

Distrib. : Occasional in drying ditches. Aurangabad & Beed (Naik, Fl. Marathwada 1: 481. 1998), Pune, Raigad.

ssp. **affine** (D. Don) Koster in Blumea 4: 484. 1981; Pant in Hajra et al. Fl. India 13: 89, f. 28. 1995; Naik, Fl. Marathwada 1: 481. 1998. *G. affine* D. Don, Prodr. Fl. Nepal. 173. 1825; Rao et al. Fl. Ind. Enum. Aster. 41. 1988. *G. luteo–album* var. *multiceps* DC. Prodr. 6: 222. 1838; Hook. f. Fl. Brit. India 3: 288. 1881.



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.

Distrib. : Occasional in dried marshes of lakes, ponds and river beds. Aurangabad, Beed & Nanded (Naik, op. cit.), Nagpur, Satara.

G. polycaulon Pers. Syn. Pl. 2: 421. 1807; Grierson in Notes R. B. G. Edinb. 31:137. 1972; Rao & Jain in Indian Forester 105 :567. 1979. Rao et al. Fl. Ind. Enum. Aster. 41. 1988. *G. indicum* auct. non L. 1753; Hook. f. Fl. Brit. India 3:289. 1881; Cooke, Fl. Pres. Bombay 2 :87. 1958 (Repr.).

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 373. 1982.

Distrib. : Common throughout as a weed in waste places and along roadsides.

G. pulvinatum Del. Fl. Egypt. 122, t. 44, f. 1. 1812; Hook. f. Fl. Brit. India 3: 289. 1881; Cooke, Fl. Pres. Bombay 2:87. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 41. 1988.

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.

Distrib. : Occasional in moist areas, in ghats and on plains. Akola, Aurangabad & Nanded (Naik, 1998), Nagpur, Pune.

G. purpureum L. Sp. Pl. 854. 1753; Hook. f. Fl. Brit. India 3: 289. 1881; Rao et al. Fl. Ind. Enum. Aster. 41. 1988; Naik & Bhogaonkar in J. Econ. Tax. Bot. 14: 734. 1990; Pant in Hajra et al. Fl. India 13: 92, f. 30. 1995. *G. pensylvanicum* sensu Bhogaonkar & Devarkar, Fl. Additions to the Fl. of Melghat 26, figs. A–H. 1999 non Willd. 1809.

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.

Goniocaulon indicum (Klein ex Willd.) C. B. Cl. Comp. Ind. 236. 1876; C. Jeffrey in Kew Bull. 22: 134. 1968; Shah & Yogi in J. Bombay Nat. Hist. Soc. 69:446. 1972. *Serratula indica* Klein ex Willd. Sp. Pl. 3:1642. 1803. *Goniocaulon glabrum* Cass. in Bull. Soc. Philom. 1817: 34. 1817; Hook. f. Fl. Brit. India 3: 377. 1881; Cooke, Fl. Pres. Bombay 2:113. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 42. 1988; Hajra in Hajra et al. Fl. India 12: 181. 1995. *'Kadkusumba'*

Annual herbs c 45 cm high, erect. Leaves linear or oblong–obovate. 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.

Grangea maderaspatana (L.) Poir. in Lam. Encycl. (Suppl. 2.) 825. 1812; Hook. f. Fl. Brit. India 3 : 247. 1881; Cooke, Fl. Pres. Bombay 2:72. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 42. 1988. *Artemisia maderaspatana* L. Sp. Pl. 849. 1753. *'Mashipatri'*.

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.

Illus. : Wight, Ic. t. 1097. 1846; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 374. 1982; Hajra in Hajra et al. in Fl. India 12: 128, f. 37. 1995.

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*

Gynura bicolor (Roxb. ex Willd.) DC. Prodr. 6:299. 1838; R. Mathur in Hajra et al. Fl. India 13: 218, f. 68. 1995. *Cacalia bicolor* Roxb. ex Willd. Sp. Pl. 3 : 1731. 1803. *G. angulosa* DC. Prodr. 6 : 298. 1836; Hook f. Fl. Brit. India 3:334. 1881; Cooke, Fl. Pres. Bombay 2 : 106. 1958 (Repr.). *G. cusimbia* (D. Don.) S. Moore in J. Bot. 50: 212. 1912; Rao et al. Fl. Ind. Enum. Aster. 42. 1988.

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.

G. nitida DC. in Wight, Contrib. Bot. Ind. 24. 1834; Hook f. Fl. Brit. India 3: 333. 1881; Rao et al. Fl. Ind. Enum. Aster. 42. 1988; R. Mathur in Hajra et al. Fl. India 13: 221. 1995.

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.

G. travancorica W.W. Sm. in Rec. Bot. Surv. India 6: 29. 1914; Rao et al. Fl. Ind. Enum. Aster. 43. 1998; R. Mathur in Hajra et al. Fl. India 13: 224. 1995.

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*

Kleinia balsamica (Dalz. & Gibs.) P. Halliday in Kew Bull. 42:442. 1987; Rao et al. Fl. Ind. Enum. Aster. 47. 1988; R. Mathur in Hajra et al. Fl. India 13: 225. 1995. *Notonia balsamica* Dalz. & Gibs. Bombay Fl. 133. 1861; Hook. f. Fl. Brit. India. 3: 337. 1881.

Suffruticose, glaucous shrubs c 1.2 m high. Leaves rather fleshy, petioled, lanceolate, attenuated at base. Heads in corymbs , 2–3–flowered. Achenes cylindric, muticous, smooth, striated.

Fls. & Frts. : April–May.

Distrib. : Maharashtra (Rao et al. op. cit.) – Endemic.

K. grandiflora (Wall ex. DC.) N. Rani in Matthew, Fl. Tamilnadu Carnatic 2:801. 1983; Rao et al. Fl. Ind. Enum. Aster. 47. 1988; R. Mathur in Hajra et al. Fl. India 13: 216. 1995. *Notonia grandiflora*

Wall. ex DC. Arch. Bot (Paris) 2:518. 1833; Hook. f. Fl. Brit. Ind. 3 : 337. 1881; Cooke, Fl. Pres. Bombay 2:107. 1958 (Repr.). *'Vandar roti'*.

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 corymbs, 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.

LACTUCA L.

Lactuca remotiflora DC. in Wight, Contrib. 26. 1834; Hook. f. Fl. Brit. India 3 : 403. 1881; Cooke, Fl. Pres. Bombay 2:118. 1958 (Repr.); S.K. Mamgain & R.R. Rao in Hajra et al. Fl. India 12: 283 1995. *Launaea remotiflora* (DC.) Stebbins in Ind. For. Rec. 1(6): 240. 1939; Naik, Fl. Marathwada 1: 490. 1998. *'Pathari'*.

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.

LAGASCEA Cav. (nom. cons.)

Lagascea mollis Cav. in Anal. Sci. Nat. 6:332, t. 44. 1803; Hook. f. Fl. Brit. India 3:302. 1881; Cooke, Fl. Pres. Bombay 2:93. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 49. 1988. *'Tharvad'*.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 378. 1982.

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*

Laggera alata (D. Don) Sch.–Bip. ex Oliver in Trans. Linn. Soc. Lond. 29:94. 1873; Hook. f. Fl. Bri. India 3:271. 1881; Cooke, Fl. Pres. Bombay 2:80. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 50. 1988; S. Kumar in Hajra et al. Fl. India 13: 148, f. 46. 1995. *Erigeron alatum* D. Don, Prodr. Fl. Nepal. 171. 1825.

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, multiseriate 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.

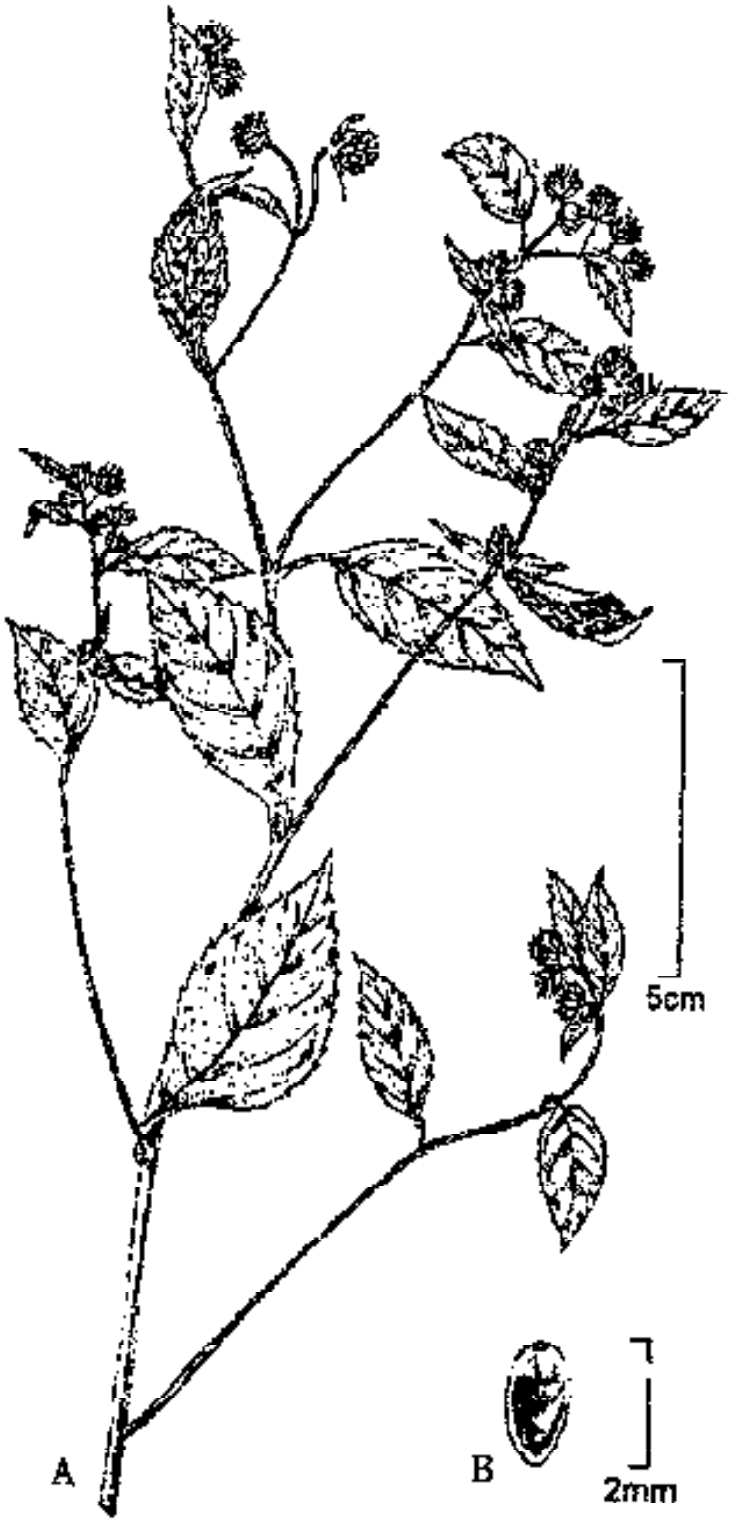
Distrib. : 'Konkan' (Cooke, op. cit.), Pune.

L. aurita (L.f.) Bth. ex C.B.Cl. Comp. Ind. 42. 1876; Hook. f. Fl. Brit. India 3: 271. 1881; Cooke, Fl. Pres. Bombay 2: 80. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 50. 1988; S. Kumar in Hajra et al. Fl. India 13: 150 1995. *Conyza aurita* L. f. Suppl. 367. 1781. *Blumea obliqua* var. *aurita* (L. f.) Naik & Bhogaonkar in Acta Bot. Ind. 20: 49. 1992; Naik, Fl. Marathwada 1: 463. 1998 syn. nov.

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.

Lamprachaenium microcephalum (Dalz.) Bth. in Bth & Hook. f. Gen. Pl. 2:226. 1873; Hook. f. Fl. Brit. India 3:229. 1881; Cooke, Fl. Pres. Bombay 2:64. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 50. 1988; Uniyal in Hajra et al. Fl. India 13: 337, f. 104. 1995. *Decaneurum microcephalum* Dalz. in Hook. Kew J. Bot. 3:231. 1851.

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 turing pink, fugaceous. Achenes 0.25–0.28 cm long, obovoid–elliposid, 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*

Launaea acaulis (Roxb.) Babc. ex Kerr. in Craib. Fl. Siam. Enum. 2 : 229. 1936; Rao et al. Fl. Ind. Enum. Aster. 50. 1988. *Prenanthes acaulis* Roxb. Fl. Ind. ed. 2. 3:403. 1832. *Lactuca glabra* DC. in Wight, Contrib. Bot. Ind. 26. 1834; Hook. f. Fl. Brit. India 3:396. 1881.

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.

Illus. : Wight, Ic. t. 1145. 1846; S.K. Mamgain & R. R. Rao in Hajra et al. Fl. India 12: 305, f. 78. 1995.

Distrib. : Occasional in cultivated fields Aurangabad, Kolhapur, Parbhani, Raigad, Ratnagiri.

Notes : It is endemic to India.

L. intybacea (Jacq.) Beauv. in Bull. Soc. Bot. Geneve 2, 2 :114. 1910; Jeffrey in Kew Bull. 18:472. 1966. *Lactuca intybacea* Jacq. Ic. Pl. Rar. 1: 16, t. 12. 1784. *L. runcinata* DC. in Wight, Contrib. Bot. Ind. 26. 1834; Hook. f. Fl. Brit. India 3 : 403. 1881; Cooke, Fl. Pres. Bombay 2:118. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 49. 1988; S.K. Mamgain & R. R. Rao in Hajra et al. Fl. India 12: 284. 1995. *L. heyneana* DC. Prodr. 7:140. 1838; Hook. f. op. cit. *'Pathari', 'Umdirachakan'.*

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.

Fls. & Frts. : December–June.

Illus. : Wight, Ic t. 1146. 1846.

Distrib. : Occassional, along road sides. Aurangabad, Jalgaon, Kolhapur, Nanded, Nasik, Pune, Satara.

L. procumbens (Roxb.) Ramayya & Rajagopal in Kew Bull. 23 : 465. 1969; Rao et al. Fl. Ind. Enum. Aster. 51. 1988. *Prenanthes procumbens* Roxb. Fl. Ind. 3: 404. 1832. *Launaea nudicaulis* sensu auct. plur. (India) non *L. nudicaulis* (L.) Hook. f. sensu stricto Fl. Brit. India 3 : 416. 1881; Cooke, Fl. Pres. Bombay 2:122. 1958 (Repr.). *'Pathari', 'Pathurli'.*

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, multiseritate, caducous. Achenes c 0.1 cm long, brown.

Fls. & Frts. :. August–October.

Illus. : Mahesh, Illus. Fl. Delhi f. 99. 1966. *(Launea nudicaulis).*

Disrib. : Common throughout in open situations, in waste places.

L. sarmentosa (Willd.) Sch.–Bip. ex O. Ktze. Rev. Gen. Pl. 1:350. 1891; Rao et al. Fl. Ind. Enum. Aster. 51. 1988. *Prenanthes sarmentosa* Willd. Phyto. 10, t. 6, f. 2. 1794 & Sp. Pl. 3:1540. 1803. *Launaea pinnatifida* Cass. in Ann. Sci. Nat. 1, 23:85. 1831; Hook. f. Fl. Brit. India 3: 416. 1881; Cooke, Fl. Pres. Bombay 2:122. 1958 (Repr.).

Perennials. Leaves radical, oblong, runcinate–pinnatifid or sinuate–toothed or lobed. Heads bright yellow, c 1 cm long, solitary. Achenes beaked above, minutely wrinkled.

Fls. & Frts. : July–January.

Illus. : Wight Ic. t. 133. 1846; Matthew, Illus. Fl. Tamilnadu Carnatic 2:. t. 380. 1082.

Distrib. : Bombay, Kolhapur, Nasik, Pune, Raigad, Satara, Thane.

NANOTHAMNUS T. Thoms.

Nanothamnus sericeus T. Thoms. in J. Linn. Soc. 9 : 342, t. 3. 1867; Hook. f. Fl. Brit. India 3:273. 1881; Cooke, Fl. Pres. Bombay 2 : 83. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 55. 1988; S. Kumar in Hajra et al. Fl. India 13: 153. 1995. *'Burand'.*

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.

Illus. : Lakshmi. & Sharma, Fl. Nasik. Dt. 273, f. 18. 1991.

Distrib. : Ahmednagar, Nasik, Pune, Thane.

Notes : It is endemic to India.

PARTHENIUM L.

Parthenium hysterophorus L. Sp. Pl. 988. 1753; Rolla Rao in J. Bombay Nat. Hist. Soc. 54:218, t. 1. 1956; Rao et al. Fl. Ind. Enum. Aster. 56. 1988; S. Kumar in Hajra et al. Fl. India 12: 403. f. 113. 1995. *'Chatakchanani', 'Gajargavat'.*

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.

Fls. & Frts. : September–January.

Illus. : Rolla Rao, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 382. 1982; S. Kumar in Hajra et al. op. cit.



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*

Pentanema cernuum (Dalz.) Ling in Acta Phyt. Sin. 110:180. 1965; Rao et al. Fl. Ind. Enum. Aster. 56. 1988; S. Kumar in Hajra et al. Fl. india 13: 28. 1995. *Vicoa cernua* Dalz. in Dalz. & Gibs. Bombay Fl. 126. 1861; Hook. f. Fl. Brit. India 3:297. 1881; Cooke, Fl. Pres. Bombay 2: 89. 1958 (Repr.).

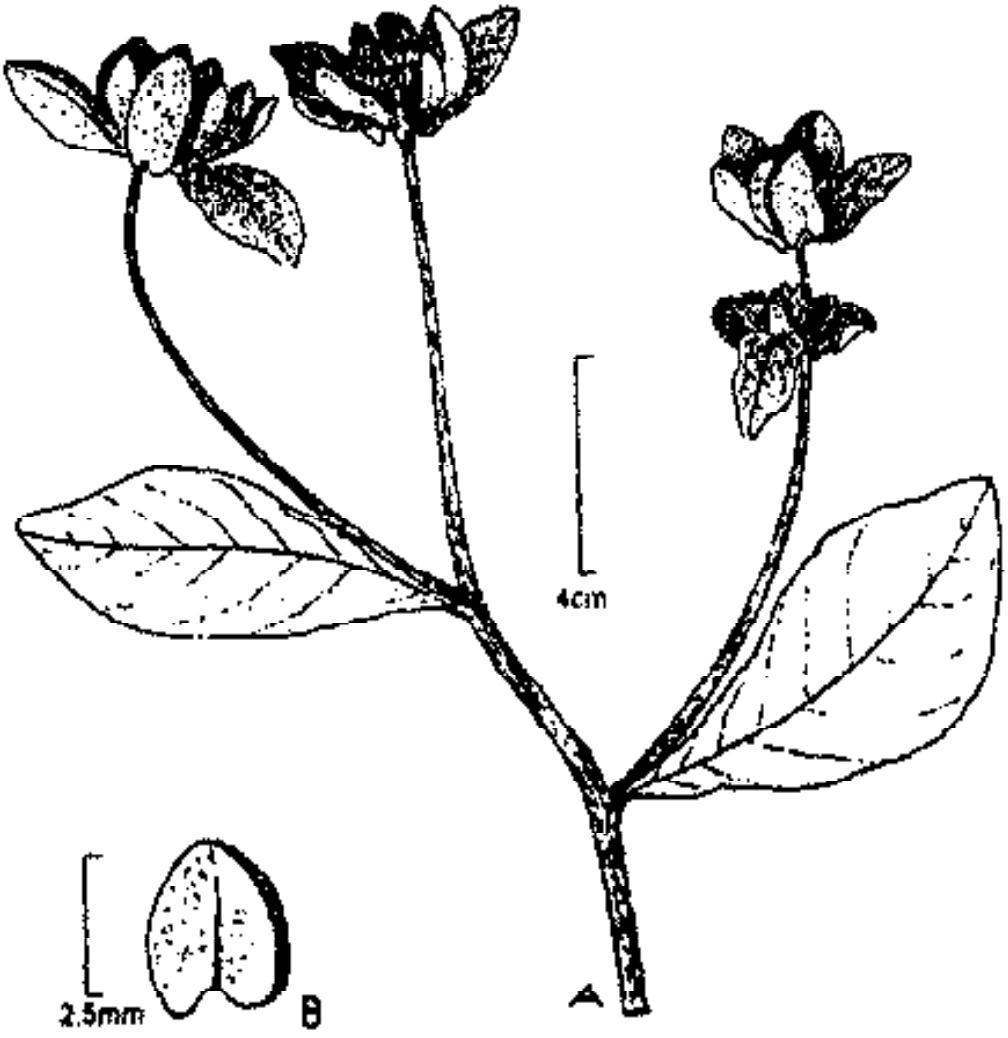
Annual herbs, slender, erect. Upper leaves sessile or nearly so, 5–8 x 2.0–2.5 cm, elliptic– lanceolate, apex acute or acuminate, margins crenate–serrate, sparsely hairy. Heads 1–2 cm across, drooping on filiform peduncles, yellow. Achenes oblong, sparsely hairy.

Fls. & Frts. : October–February.

Distrib. : Common along forest margins. Ahmednagar, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

P. indicum (L.) Ling in Acta Phyt. Sin. 10:179. 1965; Rao et al. Fl. Ind. Enum. Aster. 56. 1988; S. Kumar in Hajra et al. Fl. India 13: 28, f. 9. 1995. *Inula indica* L. Sp. Pl. ed. 2, 1236. 1763. *Vicoa indica* (L.) DC. in Wight, Contrib. Bot. Ind. 10. 1834. *V. auriculata* Cass. in Ann. Sci. Nat Paris 1, 17: 418. 1829; Hook. f. Fl. Brit. India 3:287. 1881; Cooke, Fl. Pres. Bombay 2:38. 1958 (Repr.). *'Sonkadi'*.

Perennial herbs, erect, suffruticose, upto 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*

Phyllocephalum hookeri (C.B.Cl.) Uniyal in Hajra et al. Fl. India 13: 339. 1995. *Centratherum hookeri* C.B.Cl. Comp. Ind. 3. 1876; Hook. f. Fl. Brit. India 3: 228. 1881.

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.

P. ritchiei (Hook. f.) Narayana in Curr. Sci. 51: 438. 1982; Rao et al. Fl. Ind. Enum. Aster. 57. 1988; Uniyal in Hajra et al. Fl. India 13: 341, f. 106. 1995. *Centratherum ritchiei* Hook. f. Fl. Brit. India 3: 228. 1881.

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.

P. scabridum (DC) Kirkman in Rhodora 83: 10. 1981; Rao et al Fl. Ind. Enum. Aster. 57. 1988; Uniyal in Hajra et al. Fl. India 13: 344. 1995. *Decaneurum scabridum* DC. in Wight, Contrib. Bot Ind. 7. 1834. *Centratherum molle* Bth. & Hook. f. Gen. Pl. 2: 225. 1873 & in Hook. f. Fl. Brit. India 3: 227. 1881. *C. courtollense* (Wight) Bth & Hook. f. in Hook. f. op. cit.

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.

P. tenue (C. B. Cl.) Narayana in Curr. Sci. 51 : 439. 1982; Uniyal in Hajra et al. Fl. India 13 : 345. 1995. *Centratherum tenue* C. B. Cl. Comp. Ind. 4. 1876; Hook. f. Fl. Brit. India 3 : 228. 1881.

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	...	*P. arguta*
1.	Heads in compound corymbs :		
2.	Outer involucral bracts oblong, obtuse	...	*P. lanceolata*
2.	Outer involucral bracts ovate, acute	...	*P. tomentosa*

Pluchea arguta Boiss. Diagn. 2, 3:5. 1856; Hook. f. Fl. Brit. India 3:273. 1881; Cooke, Fl. Pres. Bombay 2:82. 1958 (Repr.); Naik & Bhogaonkar in *J.* Econ. Tax. Bot. 14:734. 1990; S. Kumar in Hajra et al. Fl. India 13: 154. 1995.

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.

Fls. & Frts. : December–January.

Illus. : Hook. Ic. Pl. 5:12, t. 1157.

Distrib. : Rare. Thane (Naik & Bhogaonkar, op. cit.).

P. lanceolata (DC.) C.B.Cl. Comp. Ind. 94. 1876; Rao et al. Fl. Ind. Enum. Aster. 58. 1988; S. Kumar in Hajra et al. Fl. India 13: 155, f. 48. 1995. *Berthelotia lanceolata* DC. Prodr. 5: 376. 1836; Hook. f. Fl. Brit. India 3: 272. 1881. *'Rasuna'.*

Undershrubs, 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.).

P. tomentosa DC. in Wight, Contrib. Bot. Ind. 16. 1834; Hook. f. Fl. Brit. India 3:272. 1881; Cooke, Fl. Pres. Bombay 2:81. 1958 (Repr.); Shinde & S. M. Almeida in J. Bombay Nat. Hist. Soc. 84:466, f. 3. (1987)



Pluchea lanceolata (DC.) C. B. Cl.

1988; Rao et al. Fl. Ind. Enum. Aster. 58. 1988; S. Kumar in Hajra et al. Fl. India 13: 155. 1995.

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*

Pulicaria angustifolia DC. Prodr. 4: 476. 1836; Hook. f. Fl. Brit. India. 3:299. 1881; Cooke, Fl. Pres. Bombay 2:90. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 60. 1988; S. Kumar in Hajra et al. Fl. India 13: 33. 1995.

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.

P. foliolosa DC. Prodr. 5:480. 1836; Hook. f. Fl. Brit. India 3: 298. 1881; Cooke, Fl. Pres. Bombay 2:91. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 60. 1988; S. Kumar in Hajra et al. Fl. India 13: 35, f. 12. 1995.

Annual herbs, erect. Leaves sessile, linear–oblong or oblanceolate, base amplexicaul. Ray florets 3–toothed, tubular. Pappus in 2 series. Achenes minute, oblong, terete, sparsely hairy.

Fls. & Frts. : Novmeber–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.

P. wightiana (DC) C.B.Cl. Comp. Ind. 128. 1876; Hook. f. Fl. Brit. India 3:298. 1881; Cooke, Fl. Pres. Bombay 2:90. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 60. 1988; S. Kumar in Hajra et al. Fl. India 13: 40. 1995. *Poloa wightiana* DC. in Guill. Arch. Bot. (Paris) 2:515. 1833.

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.

Sclerocarpus africanus Jacq. in Ic. Pl. Rar. 1: 17, t. 176. 1780–1784; Hook. f. Fl. Brit. India 3: 305. 1881; Cooke, Fl. Pres. Bombay 2: 96. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 67. 1988; H. J. Chowdhery in Hajra et al. Fl. India 12: 405. f. 114. 1995.

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. dalzellii*
   2. Heads ebracteolate :
         5. Pappus present; achenes glabrous ... *S. gibsonni*
         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*

Senecio belgaumensis (Wight) C.B.Cl. Comp. Ind 200. 1876; Hook. f. Fl. Brit. India 3:348. 1881; Cooke, Fl. Pres. Bombay 1:111. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 68. 1988; R. Mathur in Hajra et al. Fl. India 13: 243. 1995. *Madacarpus belgaumensis* Wight in Cal. J. Nat. Hist. 7:157. 1847. *'Sonki'*.

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.

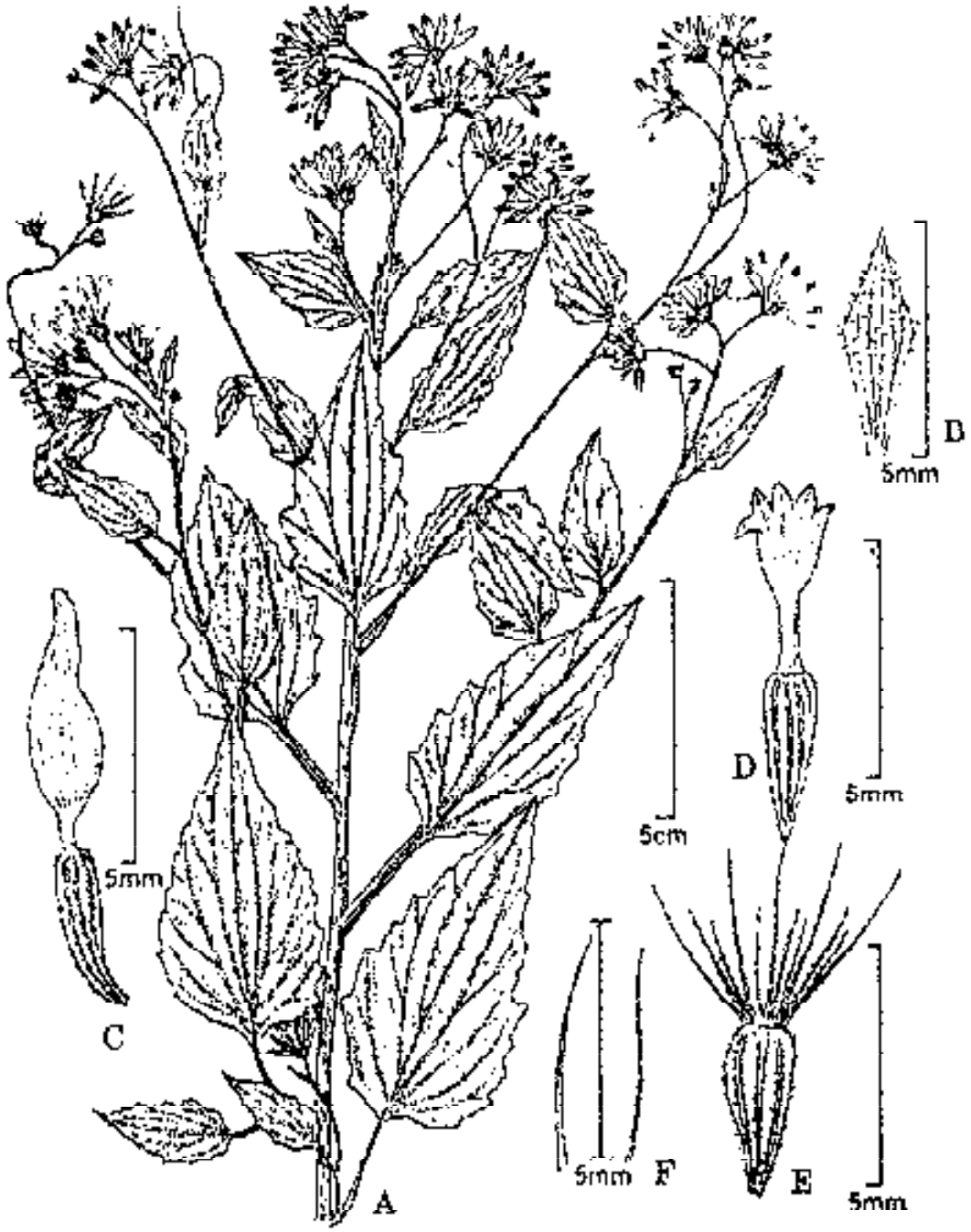
Distrib. : Occasional along exposed hill slopes. Raigad, Ratnagiri, Satara, Thane.

Notes : It is endemic to India.

S. bombayensis Balakr. in J. Bombay Nat. Hist. Soc. 57:61. 1970; Rao et al. Fl. Ind. Enum. Aster. 68. 1988; R. Mathur in Hajra et al. Fl. India 13: 244, f. 72. 1995. *S. grahamii* Hook. f. Fl. Brit. India 3:347. 1881 non Bth. 1857; Cooke, Fl. Pres. Bombay 2: 110. 1958 (Repr.). *'Sonki'*.

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.

S. dalzellii C.B.Cl. Comp. Ind. 201. 1876; Hook. f. Fl. Brit. India 3 : 346. 1881; Cooke, Fl. Pres. Bombay 2 : 110. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 68. 1988; R. Mathur in Hajra et al. Fl. India 13: 248. 1995. *S. lawii* C. B. Cl. op. cit.; Hook. f. op. cit. 347. *'Sonki'.*

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.

S. edgeworthii Hook. f. Fl. Brit. India 3: 346. 1881; Cooke, Fl. Pres. Bombay 2: 109. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 68. 1988; R. Mathur in Hajra et al. Fl. India 13: 250. 1995.

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.

Illus. : Wight, Ic. t. 1151. 1846 (*Doronicum tomentosum* Wight in Calc. J. nat. Hist. 7:155. 1847).

Distrib. : Occasional, in crevices of rocks. Ahmednagar, Aurangabad, Beed (Naik, 1998), Dhule, Kolhapur, Nasik, Pune, Ratnagiri, Satara.

Notes : It is endemic to India.

S. gibsoni Hook. f. Fl. Brit. India 3: 347. 1881; Cooke , Fl. Pres. Bombay 2 : 111. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 68. 1988.

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 ghats. Pune, Satara.

Notes : It is endemic to India.

S. hewrensis (Dalz.) Hook, f. Fl. Brit. India 3:346. 1881; Cooke, Fl. Pres. Bombay 2 : 109. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 69. 1988; R. Mathur in Hajra et al. Fl. India 13: 256. 1995. *Doronicum hewrense* Dalz. in Dalz. & Gibs. Bombay Fl. 130. 1861.

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.

Illus. : Lakshmi. & Sharma, Fl. Nasik Dt. 278, f. 19. 1991; R. Mathur in Hajra et al. op. cit.

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.

S. laetus Edgew. in Trans. Linn. Soc. Bot. 20: 74. 1846; Rao et al. Fl. Ind. Enum. Aster. 69. 1998; R. Mathur in Hajra et al. Fl. India 13: 263, f. 81. 1995. *S. chrysanthemoides* DC. Prodr. 6: 365. 1838; Hook. f. Fl. Brit. India 3: 339. 1881; Bhogaonkar & Devarkar, Additions to Fl. Melghat 29, figs. A–G. 1999.

Scapigerous herbs; stem 60–90 cm high, grooved. Lower leaves in rosette, large, spathulate 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.

Illus. : R. Mathur in Hajra et al. op. cit.; Bhogaonkar & Devarkar, op. cit.

Distrib. : Few along moist hill slopes. Amravati (Bhogaonkar & Devarkar, op. cit.).

SIEGESBECKIA L.

Siegesbeckia orientalis L. Sp. Pl. 900. 1753; Hook. f. Fl. Brit. India. 3 : 304. 1881; Cooke, Fl. Pres. Bombay. 2 : 94. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 71. 1988. *'Katampu'*

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.

Illus. : Wight, Ic. t. 1103. 1846; Fyson, Fl. Nilgiri Pulney hill–tops 2:t. 1668. 1915 (Repr. ed. 1974).

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*

Sonchus asper (L.) Hill. Herb. Brit. 1. : 47, f. 2. 1769; Hook. f. Fl. Brit. India 3: 414. 1881; Cooke, Fl. Pres. Bombay 2 : 120. 1958 (Repr.); Rao et. al. Fl. Ind. Enum. Aster. 72. 1988. *S. oleraceus* var *asper* L. Sp. Pl. 794. 1753. *'Mhatra'.*

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.

Illus. : S. K. Mamgain & R. R. Rao in Hajra et al. Fl. India 12: 319, f. 82. 1995.

Distrib. : Weed in gardens, along river banks, etc. All districts of Marathwada (Naik, 1998), Nagpur, Pune, Satara.

S. brachyotus DC. Prodr. 6:136. 1838; Rao et al. Fl. Ind. Enum. Aster. 72. 1988; Naik, Fl. Marathwada 1: 495, f. 61. 1998. *S. arvensis* auct. non L. 1753; Hook. f. Fl. Brit. India 3 : 414. 1881; Cooke, Fl. Pres. Bombay 2 : 120. 1958 (Repr.).

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.

Fls. & Frts. : September–March.

Illus. : Wight, Ic. t. 1142. 1849; Naik, op. cit.

Distrib. :Occasional, in wet fields. Dhule, Nagpur, Nanded (Naik, op. cit.), Pune.

S. oleraceus L. Sp. Pl. 794. 1753; Hook. f. Fl. Brit. India 3. 414. 1881; Cooke, Fl. Pres. Bombay 2 119. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 72. 1988. *'Mhatara'*.

Annual herbs c 90 cm high, erect. Leaves sessile, oblong or obovate. Heads c 1.5 cm long, yellow, in terminal umbellate cymes. Achenes ovoid.

Fls. & Frts. : September–May.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 385. 1982; S.K. Mamgain & R. R. Rao in Hajra et al. Fl. India 12: 322, f. 83. 1995.

Distrib. : Common, on wet lands around fields.

SPHAERANTHUS L.

1. Wings entire; glomeruli not more than 1 cm across; peduncles not pubescent; involucral bracts not ciliate at apex ... *S. africanus*

1. Wings toothed; glomeruli up to 2.5 cm across; peduncles pubescent; involucral bracts ciliate at apex :

   2. Leaves double–dentate and with stalked glands ... *S. indicus*

   2. Leaves single–dentate and with sessile glands ... *S. senegalensis*

Sphaeranthus africanus L. Sp. Pl. ed. 2, 1314. 1762; Hook. f. Fl. Brit. India 3:275. 1881; Cooke. Fl. Pres. Bombay 2:84. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 72. 1988; S. Kumar in Hajra et al. Fl. India 13: 159. 1995.

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.

S. indicus L. Sp. Pl. 1314. 1753; Hook. f. Fl. Brit. India 3 : 275. 1881 p. p.; Cooke, Fl. Pres. Bombay 2 : 84. 1958 (Repr.); Rao et al. Fl.

Ind. Enum. Aster. 73. 1988; S. Kumar in Hajra et al. Fl. India 13: 160. 1995. *'Gorakhmun', 'Mundi'.*

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.

Illus. : Wight, Ic. t. 1094. 1846 (*S. hirsutus* Wild Sp. Pl. 3: 1395. 1802); Matthew. Illus. Fl. Tamilnadu Carnatic 2:t. 386. 1982; S. Kumar in Hajra et al. op. cit.

Distrib. : Common throughout in wet open places.

S. senegalensis DC. Prodr. 5: 370. 1836; Rao et al. Fl. Ind. Enum. Aster. 73. 1988; S. Kumar in Hajra et al. Fl. India 13: 162, 1995; Naik, Fl. Marathwada 1: 497. 1998. *S. indicus* auct. non L. 1753; Hook. f. Fl. Brit. India 3: 275. 1881 p.p.; Naik, Fl. Osmanabad 174. 1979. *'Gorakh–Mundi'.*

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*

Spilanthus calva DC. in Wight, Contrib. Bot. Ind. 19. 1834; Koster & Philip. in Blumea 6: 354. 1950; Rao et al. Fl. Ind. Enum. 73. 1988. S. *acmella* auct. non Murr. 1774; Hook f. Fl. Brit. India 3: 307. 1881; Cooke Fl. Pres. Bombay 2 : 99. 1958 (Repr.). *'Akkalkara'.*

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 387. 1982.

Distrib. : Occasional, weed of wet fields and open lands Kolhapur, Nanded (Naik, 1998), Nasik, Satara.

S. paniculata Wall. ex DC. Prodr. 5: 625. 1836:Koster & Philip. in Blumea 6:354. 1950; Bole & Almeida in J. Bombay Nat. Hist. Soc. 79 : 60; Rao et al. Fl. Ind. Enum. Aster. 73. 1988. *S. acmella* var. *paniculata* (DC.) C.B.Cl. Comp. Ind. 139. 1876; Hook. f. Fl. Brit. India 3: 307. 1881. *'Akkalkhar', 'Akkalkara'.*

Herbs, decumbent, glabrescent. Leaves ovate, base narrowed into petiole, serrate along margins. Heads yellow, in panicles, axillary; involucral bracts 2–seriate, elliptic–lanceolate, sparsely pubescent. Achenes obovoid, sparsely scabrid.

Fls. & Frts. : September January.

Illus. : Wight, Ic. t. 1109. 1848; H. J. Chowdhery in Hajra et al. Fl. India 12: 411, f. 116. 1995.

Distrib. : Frequent in wet fields undershade of tress, etc. Aurangabad, Beed, Kolhapur, Nagpur, Nanded, Osmanabad, Parbhani, Pune, Satara, Thane,

SYNEDRELLA Gaertn. (nom. cons.)

1.	Herbs, branched from base, spreading.	...	*S. vialis*
1.	Herbs, erect, not branched from base	...	*S. nodiflora*

Synedrella nodiflora (L.) Gaertn. Fruct. 2: 456, t. 171, f. 7. 1791; Hook. f. Fl. Brit. India 3 : 308. 1881; Rao et al. Fl. Ind. Enum. Aster. 74. 1988. *Verbesina nodiflora* L. Cent. Pl. 1: 28. 1755.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 388. 1982.

Distrib. : Kolhapur, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

S. vialis (Less.) A. Gray in Proc. Amer. Acad. 17:217. 1882; Ahuja & Pataskar in Indian Forester 95: 267, t. 1. 1969; Rao et al. Fl. Ind. Enum. Aster. 74. 1988. *Calytocarpus vialis* Less. Syn. 221. 1832.

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*

Tricholepis amplexicaulis C. B. Cl. Comp. Ind. 240. 1876; Hook. f. Fl. Brit. India 3: 381. 1881; Cooke, Fl. Pres. Bombay 2 115. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 84. 1988; Chaudhary & Pandey in Rheedea 4: 41, fig. 1. 1991. *'Dahan'*.

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–obovoid, smooth. Pappus paleaceous, caducous in fruiting.

Fls. & Frts. : October–January.

Illus. : Chaudhary & Pandey, op. cit.

Distrib. : Ahmednagar, Pune, Satara, Thane.

Notes : It is endemic to India.

T. glaberrima DC. Prodr. 6: 754. 1837; Hook. f. Fl. Brit. India 3: 381. 1881; Cooke, Fl. Pres. Bombay 2: 114. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 85. 1988; Chaudhary & Pandey in Rheedea 4: 43, figs. 2. A–G 1994; Hajra in Hajra et al. Fl. India 12: 222. 1995.

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.

T. radicans (Roxb.) DC. Prodr. 6:584. 1838; Hook. f. Fl. Brit. India 3: 381. 1881; Cooke, Fl. Pres. Bombay 2 : 114. 1958. (Repr.); Rao et al. Ind. Enum. Aster. 85. 1988; Chaudhary & Pandey in Rheedea 4:46, fig. 2D–F. 1994. *Carduus radicans* Roxb. Fl. Ind. 3: 408. 1832. *'Dhhan'*.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 390. 1982; Chaudhary & Pandey, op. cit.

Distrib. : Common throughout in fallow fields and low hill slopes.

Notes : It is endemic to India.

EXCLUDED SPECIES :

T. montana Dalz. & Gibs. Bombay Fl. 131. 1861; Hook. f. Fl. Brit. India 3 : 382. 1881.

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.

Tridax procumbens L. Sp. Pl. 900. 1753; Hook. f. Fl. Brit. India 3:311. 1881; Cooke, Fl. Pres. Bombay 2:102. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 85. 1988. *Dagadi pala.*

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 391. 1982.

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*

Vernonia anthelmintica (L.) Willd. Sp. Pl. 3:1634. 1803; Hook. f. Fl. Brit. India 3 : 236. 1881; Cooke, Fl. Pres. Bombay 2:66. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 86. 1988; Uniyal in Hajra et al. Fl. India 13: 357, f. 111. 1995. *Conyza anthelmintica* L. Sp. Pl. ed. 2, 1207. 1763. *Centratherum anthelminticum* (L.) O. Ktze. Rev. Gen. Pl. 1: 320. 1891. *'Kadujera', 'Kadu–Karla', 'Kale–Jire'.*

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 393. 1982; Uniyal in Hajra et al. op. cit.

Distrib. : Weed of black soil. Akola, Chandrapur, Marathwada (Naik, 1998), Nasik, Pune, Thane.

V. cinerea (L.) Less. in Linnaea 4:291. 1829; Hook. f. Fl. Brit. India 3 : 233. 1881; Cooke, Fl. Pres. Bombay 2 : 65. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 87. 1988; Uniyal in Hajra et al. Fl. India 13: 367. 1995. *Conyza cinerea* L. Sp. Pl. 862. 1753. *'Sahadevi'.*

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 101. 1966.

Distrib. : Common throughout as a weed along roadsides, fields and in gardens.

V. divergens (Roxb.) Edgew. in J. Asiat. Soc. Bengal 21:172. 1853; Hook. f. Fl. Brit. India 3 : 234. 1881; Cooke, Fl. Pres. Bombay 2:67. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 88. 1988; Uniyal in Hajra et al. Fl. India 13: 370. 1995. *Eupatorium divergens* Roxb. Fl. Ind. 3:414. 1832. *'Bundar'*

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.

Illus. : Wight, Ic. t. 1084. 1846 [*Decaneurum divergeus* (Roxb.) DC. Prodr. 5:68. 1836]; Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 247. 1982.

Distrib. : Common along ghats. Ahmednagar, Chandrapur, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

V. indica Wall. ex C.B.Cl. Comp. Ind. 16. 1876; Hook. f. Fl. Brit. India 3: 238. 1881; Cooke, Fl. Pres. Bombay 2: 67. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 88. 1988; Uniyal in Hajra et al. Fl. India 13: 372. 1995.

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.

V. pyramidata (D. Don) S. N. Mitra in Indian Forester 99: 100. 1973; Uniyal in Hajra et al. Fl. India 13: 380, f. 118. 1995. *Eupatorium pyramidata* D. Don, Prodr. Fl. Nepal. 170. 1825. *Vernonia roxburghii* Less. in Linnaea 6: 674. 1831; Hook. f. Fl. Brit. India 3: 232. 1881.

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 shurbs; achenes upto 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*

Wedelia biflora (L.) DC. in Wight, Contrib. Bot. Ind. 18. 1834; Hook. f. Fl. Brit. India 3: 306. 1881; Cooke, Fl. Pres. Bombay 2:99. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 91. 1988. *Verbesina biflora* L. Sp. Pl. ed. 2. 1272. 1763. *'Solanki'*.

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.

Illus. : Wight, Ic.t. 1108. 1846 *(Walstonia biflora)*; H. J. Chowdbery in Hajra et al. Fl. India 12: 423, f. 121. 1995.

Distrib. : On the sea coast, Konkan (Cooke, op. cit) - Rare.

W. chinensis (Osbeck) Merr. in Philipp. J. Sci. Bot. 12: 111. 1917; Rao et al. Fl. Ind. Enum. Aster. 91. 1988. *Solidago chinensis* Osbeck, Dagb. Ostind. Tesa. 241. 1757. *Wedelia calendulacea* (L.) Less. Syn. Gen. Comp. 222. 1832; Hook. f. Fl. Brit. India 3:306. 1881; Cooke, Fl. Pres. Bombay 2: 98. 1958 (Repr.). *'Pivla bhangra'*

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.).

W. urticaefolia DC. in Wight, Contrib. Bot. Ind. 18. 1834; Hook. f. Fl. Brit. India. 3: 306. 1881; Cooke, Fl. Pres. Bombay 2 . 98. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 91. 1988.

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.

Xanthium indicum Koen. in Roxb. Fl. Ind. 3: 601. 1832; H. J. Chowdhery in Hajra et al. Fl. India 12: 427, f. 123. 1995. *X. strumarium* L. Sp. Pl. 987. 1753; Hook. f. Fl. Brit. India 3:303. 1881; Cooke, Fl. Pres. Bombay 2:94. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 91.1988. *'Shankeshvar'*.

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 :

Achillea millefolium L. Sp. Pl. 899. 1753; Hook. f. Fl. Brit. India 3: 312. 1881; Cooke, Fl. Pres. Bombay 2: 126. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 1. 1988; Naithani in Hajra et al. Fl. India 12: 5, f. 1. 1995. *'Rojmari'*.

Perennial herbs. Both radical and cauline leaves 3–pinnatisect. Heads simple with compound corymbs. Ray florets white or pale pink; disc florets yellow, tubular. Achenes oblong, flattered, shining. Pappus absent.

Fls. & Frts. : May–October.

Distrib. : The *'Yarrow'* or *'Milfoil'*, a common plant is grown in gardens as ornamental (Cooke, op. cit.).

Arctotis stoechadifolia Berg. Desc. Pl. Cap. 324. 1767; Bailey, Man. Cult. Pl. 1011. 1949.

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.

Artemisia dracunculus L. Sp. Pl. 849. 1753; Hook. f. Fl. Brit. India 3: 321. 1881; Rao et al. Fl. Ind. Enum. Aster. 6. 1988; Naithani in Hajra et al. Fl. India 12: 18. 1995.

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.

A. pallens Wall. ex DC. Prodr. 6: 120. 1838; Hook. f. Brit. India 3 : 329. 1881; Rao et al. Fl. Ind. Enum. Aster. 9. 1988; Naithani in Hajra et al. Fl. India 12: 74. 1995. *'Davana'.*

Distrib. : Cultivated in Bombay (Naithani in Hajra et al. op. cit.).

Aster amellus L. Sp. Pl. 873. 1753; Cooke, Fl. Pres. Bombay 2: 123.1958 (Repr.); Bailey, Man. Cult. Pl. 1010. 1949; Naik, Fl. Marathwada 1: 455. 1998.

Erect, perennial herbs. Leaves mostly radical, sessile, spathulate 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.).

A. laevis L. Sp. Pl. 876. 1753; Bailey, Man. Cult. Pl. 1010. 1949.

Stout perennials. Heads crowded, panicled; involucral bracts appressed, herbaceous. Ray florets blue or violet.

Distrib.: Native of America cultivated in gardens at Pune.

Bidens sulphurea (Cav.) Sch.–Bip. in Seemann, B. Voy. Herald 308. 1856; Rao et al. Fl. Ind. Enum. Aster. 14. 1988; H. J. Chowdhery in Hajra et al. Fl. India 12: 373, f. 99. 1995. *Cosmos sulphureus* Cav. Ic. Decr. Pl. 1: 56, t. 79. 1791; Bailey, Man. Cult. Pl. 999. 1949; Naik, Fl. Marathwada 1: 472. 1998.

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.

Brachycome iberidifolia Bth. in Enum. Pl. Hueg. 59. 1837; Cooke, Fl. Pres. Bombay 2: 123. 1958 (Repr.).

Flowers blue and white.

Distrib. : *'Swan River Daisy'*, a native of Australia is grown in gardens (Cooke, op. cit.), as ornamental.

Calendula officinalis L. Sp. Pl. 921. 1753; Hook. f. Fl. Brit. India 3: 357. 1881; Cooke, Fl. Pres. Bombay 2: 126. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 21. 1988; R.R. Rao in Hajra et al. Fl. India 12: 148, f. 43. 1995; Naik, Fl. Marathwada 1: 467. 1998.

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.).

Callistephus chinensis (L.) Nees, Gen. et Sp. Ast. 222. 1833; Bailey, Man. Cult. Pl. 1004. 1949; Naik, Fl. Marathwada 1: 467. 1998. *Aster chinensis* L. Sp. Pl. 877. 1753. *Callistephus hortensis* Cass. in Dict. Sc. Nat. 37: 491. 1825; Cooke, Fl. Pres. Bombay 2: 124. 1958 (Repr.).

Herbs, 15–60 cm tall, erect, hispid. Leaves deeply and broadly ovate, obovate or oblanceolate, sometimes even spathulate, 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.).

Carthamus tinctorius L. Sp. Pl. 830. 1753; Hook. f. Fl. Brit. India 3: 386. 1881; Cooke, Fl. Pres. Bombay 2: 126. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 22. 1988; Hajra in Hajra et al. Fl. India 12: 163. 1995; Naik, Fl. Marathwada 1: 468. 1998. *'Kardai', 'Kardi', 'Kusumba'.*

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.).

Centaurea cyanus L. Sp. Pl. 911. 1753; Cooke, Fl. Pres. Bombay 2: 126. 1958 (Repr.); Hajra in Hajra et al. Fl. India 12: 165. 1995. *C. lanata* Roxb. Fl. Ind. 3: 644. 1832; Hook. f. Fl. Brit. India 3: 384. 1881.

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.).

Chrysanthemum indicum L. Sp. Pl. 889. 1753; Cooke, Fl. Pres. Bombay 2: 126. 1958 (Repr.); Naithani in Hajra et al. Fl. India 12: 75. 1995. *'Gul–dandi'*.

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.

Cichorium endivia L. Sp. Pl. 813. 1753; Cooke, Fl. Pres. Bombay 2: 127. 1958 (Repr.); Mamgain & R. R. Rao in Hajra et al. Fl. India 12: 247. 1995. *'Kasini'*.

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.).

C. intybus L. Sp. Pl. 813. 1753; Hook. f. Fl. Brit. India 3: 391. 1881; Cooke, Fl. Pres. Bombay 2: 127. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 25. 1988; Mamgain & R. R. Rao in Hajra et al. Fl. India 12: 248, f. 60. 1995; Naik, Fl. Marathwada 1: 469. 1998. *'Kasai'*.

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 wih 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.

Illus. : Mamgain & R. R. Rao, in Hajra et al. op. cit.

Distrib. : *'Chicory'* a native of Europe, N. Africa and continental Asia, introduced and naturalised. Deccan (Cooke, op. cit.), Marathwada (Naik, op. cit.), Nagpur, Pune.

Coreopsis aristosa Michx. Fl. Bor. Am. 5: 140. 1803; Cooke, Fl. Pres. Bombay 2: 125. 1958 (Repr.).

Leaves deeply pinnatifid.

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

C. tinctoria Nutt. in J. Acad. Philad. 2: 114. 1821; Cooke, Fl. Pres. Bombay 2: 125. 1958 (Repr.); Bailey, Man. Cult. Pl. 1003. 1949; Rao et al. Fl. Ind. Enum. Aster. 28. 1988; Naik, Fl. Marathwada 2: 472. 1998.

Herbs, 30–60 cm high, annual, much–branched; stem often tinged with purple. Leaves much dissected, opposite, lower petiolate, 5–15 cm long, upper sessile or with winged petiole; segments linear. Heads 3–5 cm across, loosely panicled. Corollas of marginal florets yellow with purple blotch at base; central florets with brownish–purple, 5–fid corollas. Achenes oblong, black. Pappus absent.

Fls. & Frts. : September–December.

Distrib. : A native of N. America, grown in gardens (Cooke, op. cit. & Naik, op. cit.).

Cosmos bipinnatus Cav. Ic. 1: 10,t. 14. 1791; Cooke, Fl. Pres. Bombay 2: 125. 1958 (Repr.); Bailey, Man. Cult. Pl. 999. 1949; Rao et al. Fl. Ind. Enum. Aster. 28. 1988; Naik, Fl. Marathwada 1: 472. 1998.

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.

C. diversifolium Otto in Knowles & Westc. Flor. Cab. 2, 3: t. 47. ; Bailey, Man. Cult. Pl. 999. 1949.

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.

Crassostephium artemisoides Less. in Linnaea 6: 220. ; Cooke, Fl. Pres. Bombay 2: 126. 1958 (Repr.).

Leaves alternate, small, much divided, greenish–grey.

Distrib. : A small useful bedding plant, a native of China (Cooke, op. cit.).

Cynara cardunculus L. Sp. Pl. 827. 1753; Cooke, Fl. Pres. Bombay 2: 126. 1958 (Repr.); Bailey, Man. Cult. Pl. 1029. 1949.

Robust plant with leaves tomentose beneath and spiny. Heads purple flowered with spine tipped involucral bracts.

Distrib. : Grown in gardens (Cooke, op. cit.).

Dahlia pinnata Cav. Ic. 1: 57, t. 80. 1791; Bailey, Man. Cult. Pl. 1000. 1949; Rao et al. Fl. Ind. Enum. Aster. 33. 1988; Hajra et al. Fl. India 12: 430. 1995; Naik, Fl. Marathwada 1: 473. 1998. *D. variabilis* (Willd.) Desf. Cat. Hort. Par. ed. 3. 182. 1829; Cooke, Fl. Pres. Bombay 2: 125. 1958 (Repr.).

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.).

Erigeron karvinskianus DC. Prodr. 5: 285. 1836; Rao et al. Fl. Ind. Enum. Aster 37. 1988; Hajra in Hajra et al. Fl. India 12: 122. 1995. *Vittadinia australis A. Rich.* Ess. Fl. Nouv. Zel. 251. 1832; Cooke, Fl Pres. Bombay 2: 123. 1958 (Repr.).

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.

E. speciosus DC. Prodr. 5: 284. 1836; Bailey, Man. Cult. Pl. 1008. 1949.

Perennials with short ciliate–entire leaves and basal ones are spathulate. Heads in terminal corymbs. Rays dark violet or lavender in colour.

Distrib. : Native of America, cultivated at Osmanabad.

Eupatorium odoratum L. Syst. Nat. ed. 10 (2) : 1205. 1759; Hook. f. Fl. Brit. India 3: 244. 1881; Uniyal in Hajra et al. Fl. India 12: 354. 1995. *Chromolaena odorata* (L.) King & Robinson in Phytologia 20 : 204. 1970; Rao et al. Fl. Ind. Enum. Aster. 24. 1988.

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.

E. triplinerve Vahl, Symb. Bot. 3: 97. 1794; Cooke, Fl. Pres. Bombay 1: 123. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 39. 1988; Uniyal in Hajra et al. Fl. India 12: 356. 1995; Naik, Fl. Marathwada 1: 478. 1998. *E. ayapana* Vent. Malm. 2, t. 3. 1804; Hook. f. Fl. Brit. India 3. 244. 1081.

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.

Distrib. : Native of tropical America, cultivated as border plant in gardens. Bombay, Marathwada (Naik, op. cit.), Pune, Yavatmal.

Gaillardia aristata Pursh, Fl. Am. Sept. 2: 573. 1814; Cooke , Fl. Pres. Bombay 2: 126. 1958 (*Repr.*); Bailey, Man. Cult. Pl. 1014. 1949; Naik, Fl Marathwada 1: 479. 1998.

Herbs, 30–75 cm high, erect, perennial, hirsute; stem much–branched, terete. Leaves alternate, lanceolate, oblong or spathulate, 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, grown in gardens (Cooke, op. cit.; Naik, op. cit.).

G. pulchella Foug. Mem. Acad. Sci. 1786: 5, t.1. 1788; Cooke, Fl. Pres.Bombay 2: 126. 1958 (*Repr.*); Rao et al. Fl. Ind. Enum. Aster. 39. 1988; Hajra et al. Fl. India 12: 430. 1995; Naik, Fl. Marathwada 1: 480. 1998. *G. pulchella* var. *picta* (Sweet) Gray ; Naik, op. cit. 479.

Herbs, up to 30–90 cm high, thickly pubescent; stem much branched. Leaves alternate or basal, sessile, lower pinnatifid, upper entire, oblong–lanceolate or spathulate, 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.).

Gerbera jamesonii Bolus ; Bailey, Man. Cult. Pl. 985. 1949.

Hairy herbs. Leaves woolly–beneath. Heads with showy orange–flame coloured strap–shaped rays.

Distrib. : Cultivated at Pune.

Guizotia abyssinica (L.f.) Cass. in Dict. Sci. Nat. 59: 248. 1829; Hook. f. Fl. Brit. India 3: 308 1881; Cooke, Fl. Pres. Bombay 2: 125. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 42. 1988; H. J. Chowdhery in Hajra et al. Fl. India 12: 395, f. 109. 1995, Naik, Fl. Marathwada 1:

484. 1998. *Polymia abyssynica* L. f. Suppl. 383. 1781. *'Kala-til' 'Karala', 'Khurasini', 'Ram-tid'.*

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 375. 1982; H. J. Chowdhery in Hajra et al. op. cit.

Distrib. : A native of tropical Africa, extensively cultivated for oil seeds. Ahmednagar, Bombay, Buldhana, Marathwada (Naik, op. cit.), Sindhudurg, Satara, Thane.

Gynura aurantiaca (Bl.) DC. Prodr. 6: 300. 1838; R. Mathur in Hajra et al. Fl. India 13: 217. 1995. *Cacalia aurantiaca* Bl. Bijdr. 908. 1826.

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.

Helianthus annuus L. Sp. Pl. 904. 1753; Cooke, Fl. Pres. Bombay 2: 124. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 43. 1988; Hajra et al. Fl. India 12: 431. 1995; Naik, Fl Marathwada 1: 485. 1998. *'Surajmukhi', 'Suryaphool'.*

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.

H. cucumerifolius Torr. & Gray, Fl. N. Amer. 2: 319. 1842; Bailey, Man. Cult. Pl. 948. 1949; Rao et al. Fl. Ind. Enum. Aster. 43. 1988; Hajra et al. Fl. India 12: 431. 1995; Naik, Fl. Marathwada 1: 485. 1998.

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.).

H. laetiflorus Pers. Syn. Pl. 2: 476. 1807; Bailey, Man. Cult. Pl. 998. 1949; Naik, Fl. Marathwada 1: 486. 1998.

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.).

H. mollis Lam. Encycl. 3: 85. 1789; Bailey, Man. Cult. Pl. 998. 1949; Naik, Fl. Marathwada 1: 486. 1998.

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.).

H. rigidus Desf. Cat. Hort. Par. ed. 3, 184. ; Cooke, Fl. Pres. Bombay 2: 124. 1958 (Repr.).

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.).

H. tuberosus L. Sp. Pl. 905. 1753; Cooke, Fl. Pres. Bombay 2: 124. 1958 (Repr.); Bailey Man. Cult. Pl. 998. 1949; Rao et al. Fl. Ind. Enum. Aster. 43. 1988; Hajra et al. Fl. India 12: 431. 1995; Naik, Fl. Marathwada 1: 486. 1998.

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.).

Helipterum manglesii F. Muell. ex Bth. Fl. Austr. 3: 640. 1873; Cooke, Fl. Pres. Bombay 2: 124. 1958 (Repr.).

Flowers small, delicate, rose–coloured.

Distrib. : A native of Western Australia, grown in gardens as potted plants (Cooke, op. cit.).

H. roseum Bth. Fl. Austr. 3: 640. 1873; Cooke, Fl. Pres. Bombay 2: 124. 1958 (Repr.).

Herbs, 30–60 cm high. Heads solitary, terminal, rose colored.

Distrib. : A native of S. Western Australia, grown in gardens (Cooke, op. cit.).

Lactuca sativa L. Sp. Pl. 795. 1753; Rao et al. Fl. Ind. Enum. Aster. 49. 1988; Mamgain & R. R. Rao in Hajra et al. Fl. India 12: 300. 1995. *L. scariola* L. var. *sativa* Boiss. Fl. Orient. 3: 809. 1875; Hook. f. Fl. Brit. India 3: 404. 1881; Cooke, Fl. Pres. Bombay 2: 119. 1958 (Repr.).

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 paniculate 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.

Leucanthemum vulgare Lam. Fl. Fr. 2: 137. 1779; Naithani in Hajra et al. Fl. India 12: 55. 1995. *Chrysanthemun leucanthemum* L. Sp. Pl. 888. 1753.

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.

Ligularia kaempferi Sieb. & Zucc. Fl. Jap. 1: 77, t. 35. 1839; Bailey, Man. Cult. Pl. 1018. 1949.

Perenniais, with woolly leaf petioles. Leaves orbicular or reniform. Heads with light yellow coloured rays.

Distrib. : Native of Japan. Cultivated at Pune.

Melampodium paludosum H.B. & K. Nov. Gen. et Sp. Pl. 4: 273. 1820; Cooke, Fl. Pres. Bombay 2: 124. 1958 (Repr.).

Flowers yellow.

Distrib. : A native of Tropical America, has become a weed in gardens in Pune (Cooke, op. cit.).

Montanoa bipinnatifida C. Koch. in Wochensch Vereinses Befard. Gartn Konigl. Preuss. Staaten 7: 406. 1864; Rao et al. Fl Ind. Enum. Aster. 54. 1988; H.J. Chowdhery in Hajra et al. Fl India 12: 399, f. 111. 1995.

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.

Scorzonera hispanica L. Sp. 791. 1753; Cooke, Fl. Pres. Bombay 2: 127. 1958 (Repr.).

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 bunglows. (Cooke, op. cit.).

Solidago canadensis L. Sp. Pl. 878. 1753; Bailey, Man. Cult. Pl. 1005. 1949; Rao et al. Fl. Ind. Enum. Aster. 71. 1988; Hajra in Hajra et al. Fl. India 12: 142. 1995; Naik, Fl. Marathwada 1: 494. 1998.

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.

S. remoralis Ait. ; Bailey, Man. Cult. Pl. 1004. 1949.

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.

Tagetes erecta L. Sp. Pl. 887. 1753; Cooke, Fl. Pres. Bombay 2: 125. 1958 (Repr.); Bailey, Man. Cult. Pl. 1013. 1949; Rao et al. Fl. Ind. Enum. Aster. 247. 1988; R. R. Rao in Hajra et al. Fl. India 13: 327. 1995; Naik, Fl. Marathwada 1: 499. 1998. *'Zendu'*.

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.).

T. patula L. Sp. Pl. 887. 1753; Cooke, Fl. Pres. Bombay 2: 125. 1958 (Repr.); Bailey, Man. Cult. Pl. 1013. 1949; Rao et al. Fl. Ind. Enum. Aster. 76. 1988; R.R. Rao in Hajra et al. Fl. India 13: 329. 1995; Naik, Fl. Marathwada 1: 500. 1998. *'Guljaphri'*, *'Machamul'*, *'Zendu'*.

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.

T. tenuifolia Cav. Ic. 2: 54, f. 169. 1753; Bailey, Man. Cult. Pl. 1013. 1949; Naik, Fl. Marathwada 1: 500. 1998.

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.).

Taraxacum officinale Weber in Wiggers, Prim. Fl. Holoset 56. 1780; Hook. f. Fl. Brit. India 3: 401. 1881; Cooke, Fl. Pres. Bombay 2: 127. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 81. 1988; Mamgain & R. R. Rao in Hajra et al. Fl. India 12: 252–253, f. 61. 1995.

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.

Illus. : Mamgain & R. R. Rao in Hajra et al. op. cit.

Distrib. : The *'Dandelion'* whose roots furnish well known medicinal extract, is grown in gardens at Pune. (Cooke, op. cit.).

Tithonia diversifolia (Hemsl.) A. Gray in Pres. Amer. Acad. Arts 19: 5. 1883; Bailey, Man. Cult. Pl. 997. 1949; Rao et al. Fl. Ind. Enum. Aster. 84. 1988; 1997; H. J. Chowdhery in Hajra et al. Fl. India 12: 416, f. 118. 1995; Naik, Fl. Marathwada 1: 501. 1998.

Undershrubs, 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.

T. rotundifolia (Mill.) S.F. Blake in Contrib. Gray. Herb. n.s. 52: 41. 1917; Rao et al. Fl. Ind. Enum. Aster. 84. 1988; H.J. Chowdhery in Hajra et al. Fl. India 12: 416. 1995. *Tagetes rotundifolia* Mill. Gard. Dict. ed. 8. 4. 1768. *Tithonia tagetiflora* Lam. Encycl. 2: 284, t. 708. 1797; Cooke, Fl. Pres. Bombay 2: 124. 1958 (Rerp.).

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.

Tragopogon porrifolium L. Sp. Pl. 789. 1753; Cooke, Fl. Pres. Bombay 2: 127. 1958 (Repr.).

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.).

Vernonia arborea Buch.–Ham. in Trans. Linn. Soc. London 14: 218. 1825; Hook. f. Fl. Brit. India 3: 239. 1881; Cooke, Fl. Pres. Bombay 2: 68. 1958 (Repr.); Rao et al. Fl. Ind. Enum. Aster. 86. 1988; Uniyal in Hajra et al. Fl. India 13: 359. 1995.

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.).

V. elliptica DC. in Wight, Contrib. Bot. Ind. 5. 1834; Uniyal in Hajra et al. Fl. India 13: 370. 1995. *V. elaeagnifolia* DC. Prodr. 5: 22. 1836; Hook. f. Fl. Brit. India 3: 237. 1881; Rao et al. Fl. Ind. Enum. Aster. 88. 1988; Naik, Fl. Marathwada 1: 505. 1998.

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.

Fls. & Frts. January–April.

Distrib. : Occasionally grown in gardens as *'Curtain plant'*. Marathwada (Naik, op. cit.).

Zinnia angustifolia H.B. & K. Nov. Gen. et Sp. Pl. 4: 251. 1820; Bailey, Man. Cult. Pl. 1002. 1949.

Branching annual with sessile leaves. Heads orange coloured.

Distrib. : Native of Mexico, cultivated at Pune.

Z. elegans Jacq. Coll. 3: 152. 1789; Cooke, Fl. Pres. Bombay 2: 124. 1958 (Repr.); Bailey, Man. Cult. Pl. 507. 1949; Rao et al. Fl. Ind. Enum. Aster. 92. 1988; Hajra et al. Fl. India 12: 431. 1995; Naik, Fl. Marathwada 1: 507. 1998.

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.

Z. linearis Bth. Pl. Hartw. 17. 1840; Bailey, Man. Cult. Pl. 1001. 1949; Rao et al. Fl. Ind. Enum. Aster. 96. 1988; Hajra et al. Fl. India 12: 431. 1995; Naik, Fl. Marathwada 1: 507. 1998.

Herbs, 30–60 cm tall, much–branched, diffuse; young branches angular. Leaves opposite, sessile, linear–lanceolate, acute or obtuse at apex, entire along margins, hispid. Heads solitary at ends of branches, pedunculate. Central florets with yellow, tubular corollas. Achenes of marginal florets trigonous, those of central florets obovoid, compressed, black with ciliate margins. Pappus absent.

Fls. & Frts. : Almost throughout the year.

Distrib. : Native of Mexico, commonly cultivated in gardens. Marathwada (Naik, op. cit.).

Z. peruviana (L.) Syst. ed. 10, 1221. 1759; Naik in Indian Forester 92: 279, t. 1. 1966 & Fl. Marathwada 1: 507. 1998; Rao et al. Fl. Ind. Enum. Aster. 93. 1988.

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.

Scaevola sericea Vahl, Symb. Bot. 2: 37. 1791; Jeffrey in Kew Bull. 34: 543. 1980. *S. koenigii* Vahl, op. cit. 3: 36. 1794; C.B.Cl. in Hook. f. Fl. Brit. India 3: 421. 1881; Cooke, Fl. Pres. Bombay 2: 128. 1958 (Repr.).

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

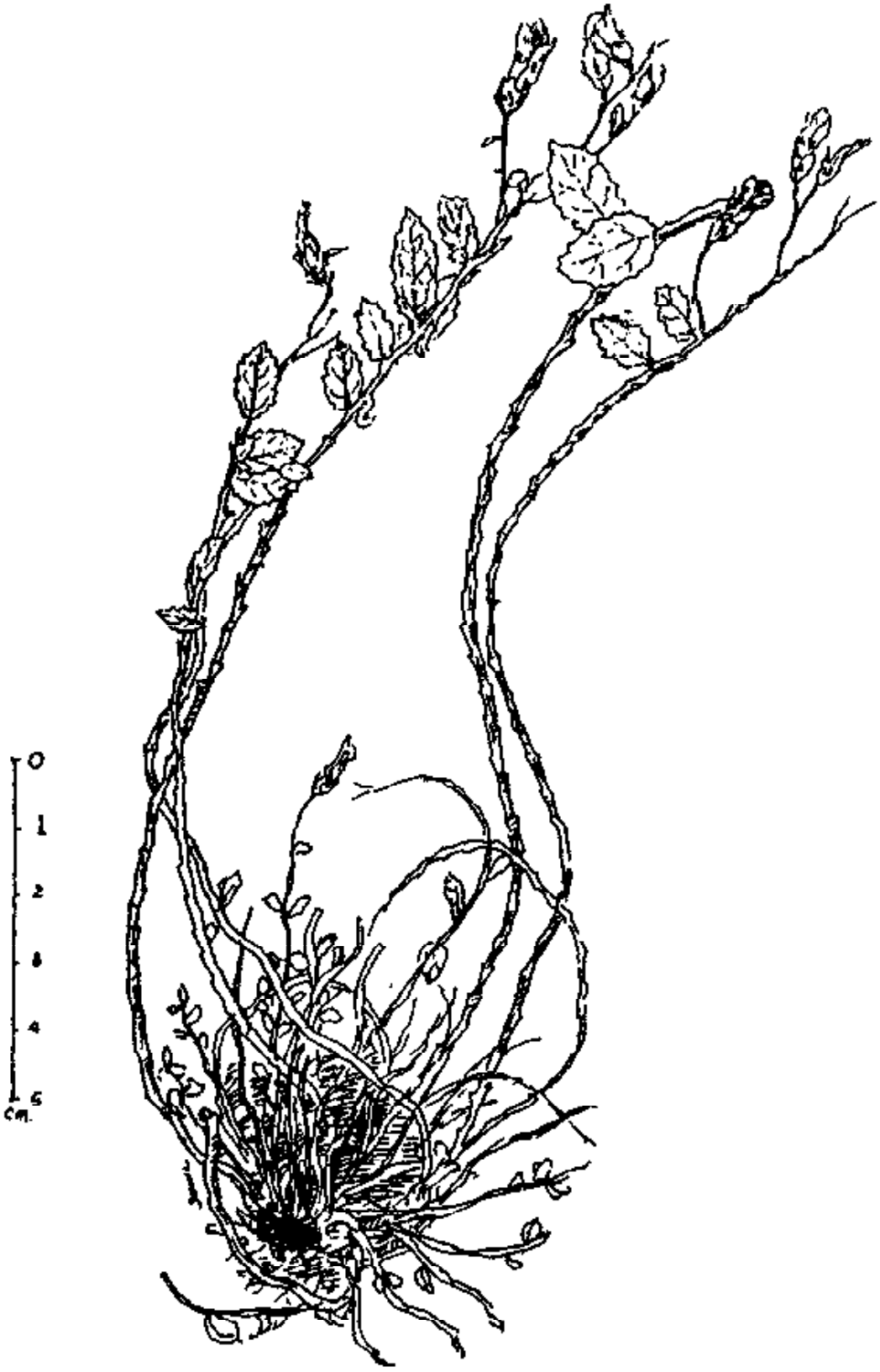
(A. N. Londhe)

1. Flowers solitary, white ... LAURENTIA

1. Flowers solitary or in lax cymes,coloured other than white :

   2. Capsules dehiscing at base or sides below calyx teeth ... CAMPANULA

   2. Capsules not dehiscing loculicidally within calyx teeth :



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*

Campanula alphonsii Wall. ex A. DC. in DC. Prodr. 7:473. 1839; C. B. Cl. in Hook. f. Fl. Brit. India 3: 440. 1881; Cooke, Fl. Pres. Bombay 2:134. 1958 (Repr.).

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.

C. colorata Wall. in Roxb. Fl. Ind. (Carey ed.) 2:101. 1832; S. Deshpande et al. Fl. Mahabaleshwar 1: 336. 1993. *C. ramulosa* Wall. in Roxb. op. cit.; C.B.Cl. in Hook. f. Fl. Brit. India. 3: 440. 1881; Sant. Fl. Purandhar 74. 1958.

Herbs, 15–40 cm high, hispid. Lower leaves subsessile, upper leaves sessile, linear–lanceolate, pubescent. Flowers purple, in spiciform panicles, in some corolla or stamens wanting. Capsules hairy. Seeds many.

Fls. & Frts. : November–December.

Distrib. : Rare. Pune (Sant. op. cit.), Satara.

C. dimorphantha Schweinf. Beitr. Fl. Aethicop 140. 1867; Sabnis & Bhatt in Geobios New Rep. 3: 157. 1984. *C. canescens* Wall. ex DC. Prodr. 8:473. 1839 non Roth, 1821; C. B. Cl. in Hook. f. Fl. Brit. India 3: 439. 1881. *C. wallichii* Babu in J. Bombay nat. Hist. Soc. 65: 808. 1968. *C. benthamii* Wall. ex Ritamura, Fl. Afg. 377. 1960; Bhogaonkar & Devarkar, Add. Fl. Melghat 32, f. 1999.

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.

Cephalostigma flexuosum Hook. f. & Thoms. in J. Linn. Soc. 2:9. 1858; C.B.Cl. in Hook. f. Fl. Brit. India 3:428. 1881; Cooke, Fl. Pres. Bombay 2:132. 1958 (Repr.).

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.

Laurentia longiflora (L.) Endl. Gen. Pl. 512. 1838; Sant. in J. Bombay nat. Hist. Soc. 53 : 156, t. 1. 1955; Cramer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 4:177.1983. *Lobelia longiflora* L. Sp. Pl. 930. 1753.

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.

Illus : Sant. op. cit.

Distrib. : Rare. Bombay (Sant. op. cit.), Pune.

WAHLENBERGIA Schrad. ex Roth (nom. cons.)

1. Annuals; branches angular, hispid; leaves subsessile with undulate, hispid subdentate margins; corolla divided to base into narrow lobes; stigma lobes broad ... *W. erecta*

1. Perennials; branches not angular, glabrous; leaves sessile with dentate margins; corolla divided up to middle into broad lobes; stigma lobes narrow ... *W. marginata*

Wahlenbergia erecta (Roth ex R. & S.) Moeliona & Tuyn in Steenis, Fl. Males. 1,6: 113. 1960. *Dentella erecta* Roth ex R. & S. Syst. Veg. 5:25. 1819. *Cephalostigma schimperi* Hochst. ex Rich. Tent. Fl. Abyss. 2:2. 1951; C. B. Cl. in Hook. f. Fl. Brit. India 2:428. 1881; Cooke, Fl. Pres. Bombay 2:132. 1958 (Repr.).

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

Illus. : Wight, Ic. t. 842. 1844–45 *(Wahlenbergia perotifolia);* Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 400. 1982.

Distrib. : Rare. Ahmednagar, Nasik, Satara.

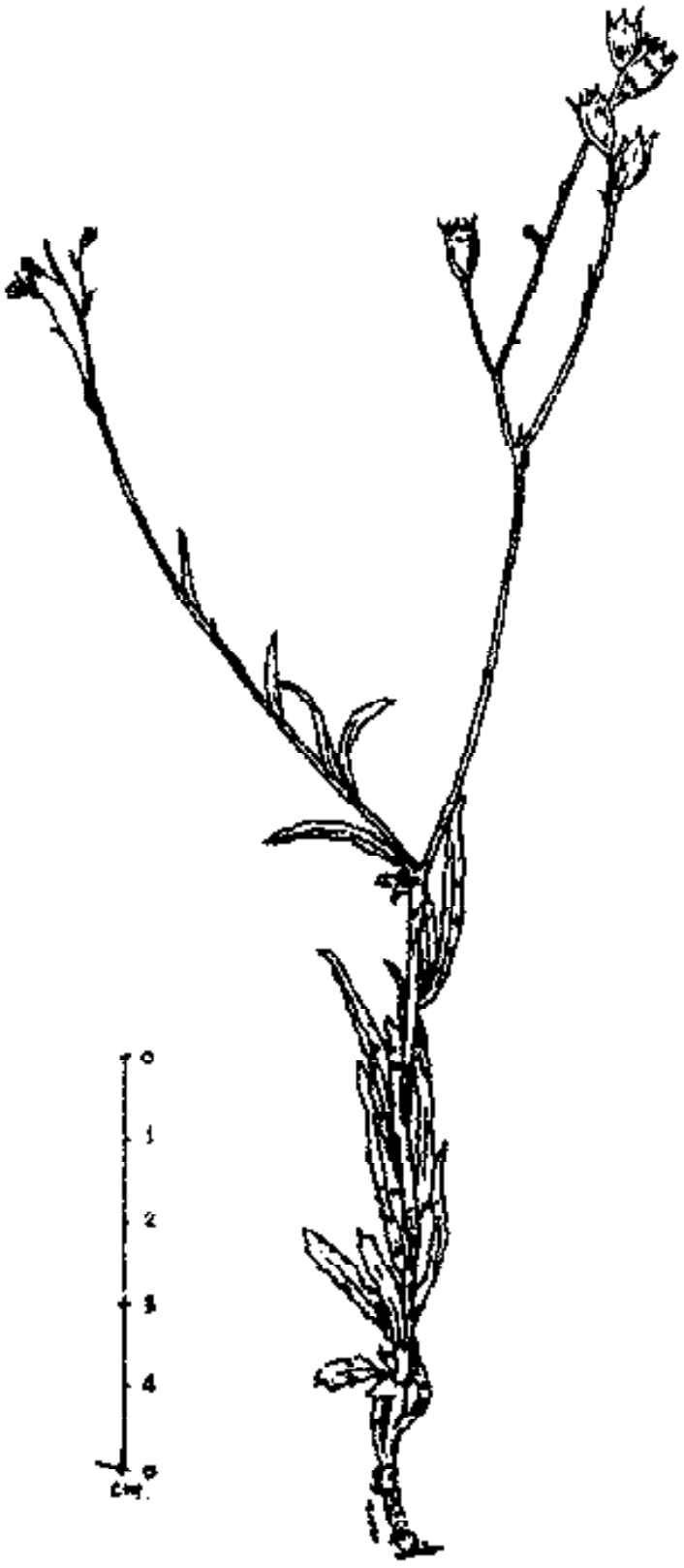
W. marginata (Thunb.) A. DC. Monogr. Campanulaceae 143. 1830; Moeliona & Tuyn in Steenis, Fl. Males, 1, 6:115. 1960. *Campanula marginata* Thunb. Fl. Jap. 89. 1784. *Wahlenbergia gracilis* Schrad. Blumenb. 38. in Obs. 1827; C. B. Cl. in Hook. f. Fl. Brit. India 3:429. 1881; Cooke, Fl. Pres. Bombay 2: 133. 1958 (Repr.).

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. nicotianaefolia*
   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*

Lobelia alsinoides Lam. Encycl. 3: 588. 1792; Moeliona & Tuyn in Steenis, Fl. Males 1, 6: 126. 1960. *L. trigona* Roxb. Fl. Ind. 2: 111. 1824; C.B.Cl. in Hook. f. Fl. Brit India 3: 423. 1881; Cooke, Fl. Pres. Bombay 2: 130. 1958 (Repr.); Haridasan et al. in Nayar et al. Fasc. Fl. India 19: 42. 1988.

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.

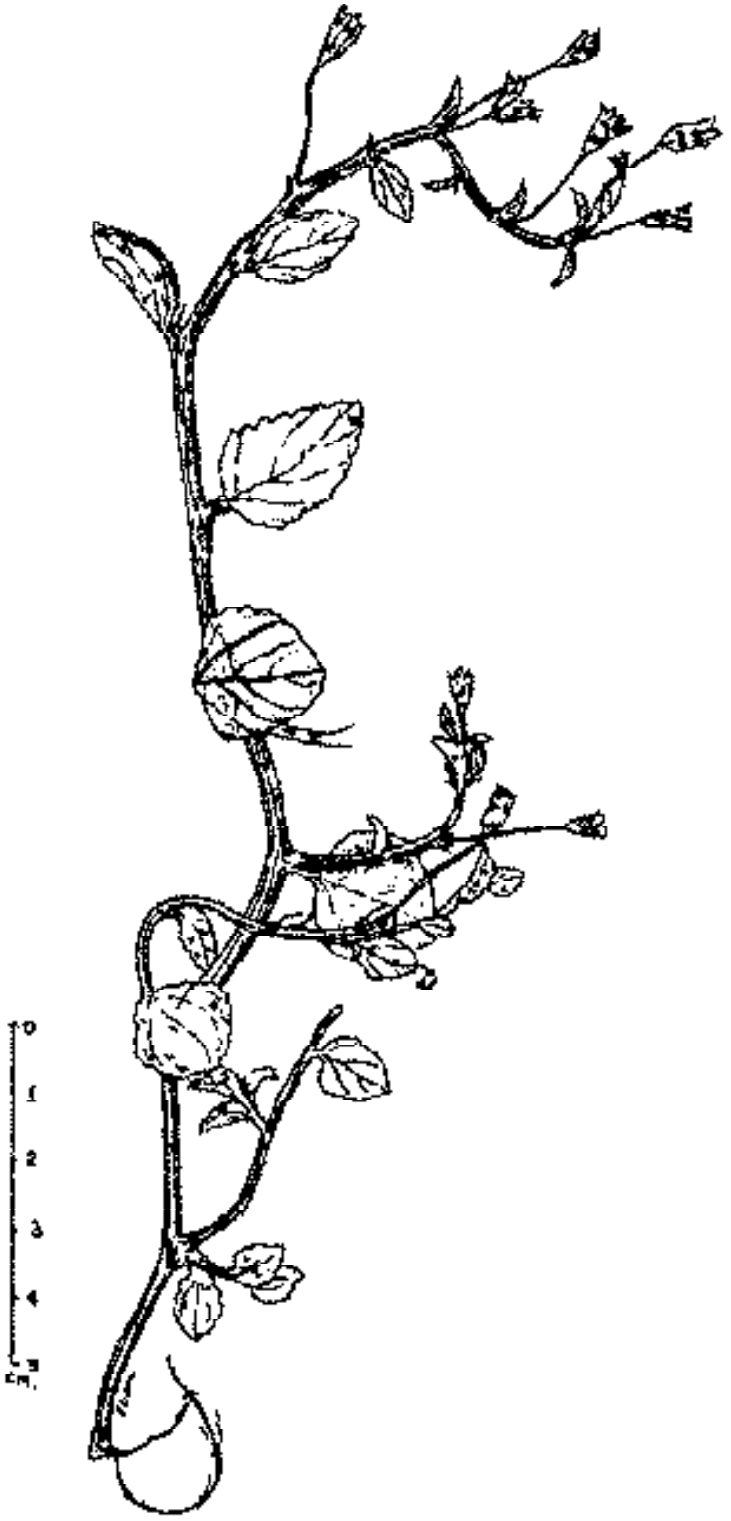
L. chinensis Lour. Fl. Cochinch. 514. 1790. *L. radicans* Thunb. in Trans. Linn. Soc. 2: 330. 1794; C.B.Cl. in Hook. f. Fl. Brit. India 3: 425. 1881.

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.

Illus. : Shah in Curr. Sci. 32: 236, f. 1963.

Distrib. : Rare. Bombay (Shah, op. cit.). Nagpur (Balapure in J. Bombay nat. Hist. Soc. 73: 243. 1976).



Lobelia alsinoides Lam.

L. heyneana R & S. Syst. Veg. 5: 50. 1819 non Spr. 1825; Moeliona & Tuyn in Steenis, Fl. Males. 1, 6: 129. 1960. *L. trialata* Buch.-Ham. ex D. Don, Prodr. 157. 1825; C.B.Cl. in Hook. f. Fl. Brit. India 3: 425. 1881; Cooke, Fl. Pres. Bombay 2: 130. 1958 (Repr.).

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.

L. nicotianaefolia Roth ex R. & S. Syst. Veg. 5 : 47. 1819; C.B.Cl. in Hook. f. Fl. Brit. India 3: 427. 1881; Cooke, Fl. Pres. Bombay 2: 131. 1958 (Repr.); Moeliona & Tuyn in Steenis, Fl. Males. 16: 123. 1960.

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.

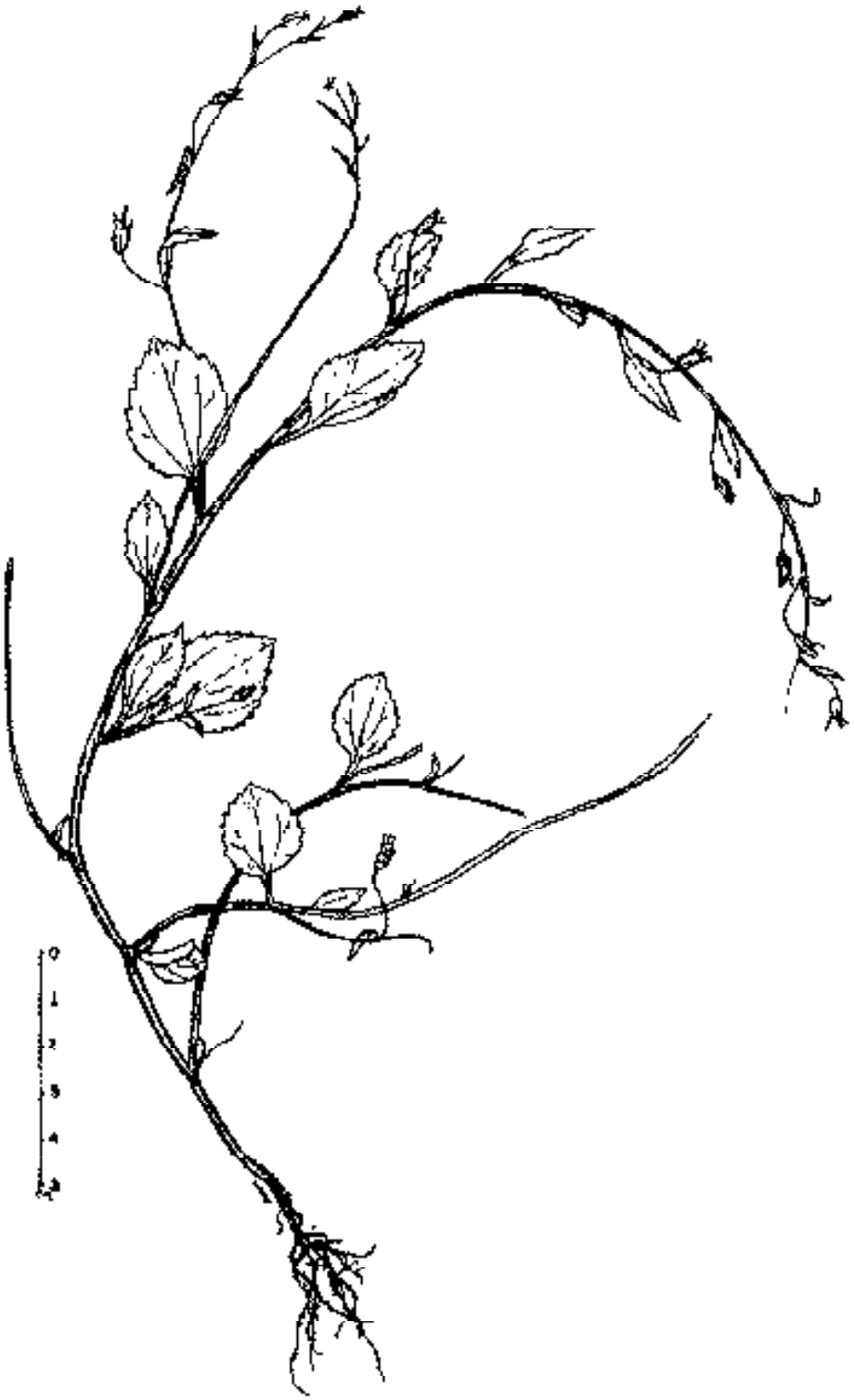
CULTIVATED SPECIES :

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.

Illus. : Bailey, Man. Cult. Pl. 970, f. 193. 1949.

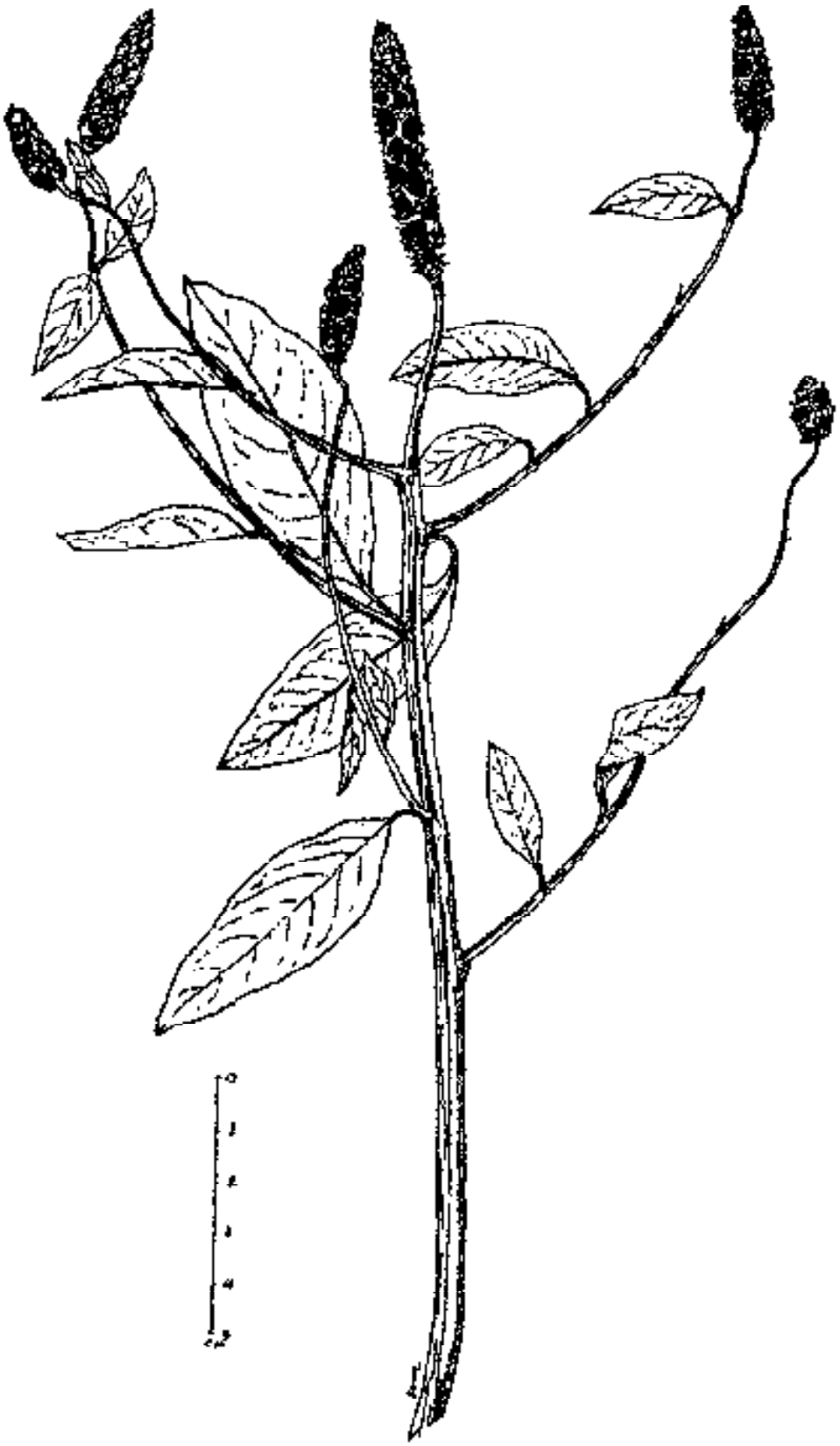
Distrib. : Few in gardens. Pune.



Lobelia heyneana R. & S.



Lobelia nicotianaefolia Roth ex R. & S.



Sphenoclea zeylanica Gaertn.

SPHENOCLEACEAE

(A. N. Londhe)

SPHENOCLEA Gaertn. (nom. cons.)

Sphenoclea zeylanica Gaertn. Fruct. 1: 113, t. 24, f. 5. 1788; C.B.Cl. in Hook. f. Fl. Brit. India 3: 438. 1881; Cooke, Fl. Pres. Bombay 2: 134. 1958 (Repr.).

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.

Illus. : Wight, Ill. 2: t. 138. 1850 (*S. pongatium* DC. Prodr. 7: 548. 1839).

Distrib. : Common in damp places. Bombay, Raigad, Ratnagiri, Sindhudurg, Thane.

PLUMBAGINACEAE

(A. N. Londhe)

1. Calyx glandular ... PLUMBAGO
1. Calyx eglandular ... DYEROPHYTUM

DYEROPHYTUM O. Ktze.

Dyerophytum indicum (Gibs. ex. Wight) O. Ktze. Rev. Gen. Pl. 3: 394. 1891. *Vogelia indica* Gibs. ex Wight in Calc. J. Nat. Hist. Soc. 7: 17. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 3: 481. 1882; Cooke, Fl. Pres. Bombay 2: 138. 1958 (Repr.).

Undershrubs, 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, circumciss 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.

Plumbago zeylanica L. Sp. Pl. 151. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 3:480. 1882; Cooke, Fl. Pres. Bombay 2: 136. 1958 (Repr.). *'Chitrak'*.

Undershrubs, 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.

Illus. : Wight, Illus. t. 179. 1850; Mahesh. Illus. Fl. Delhi f. 116. 1966.

Distrib. : Common throughout the state along the hill tops and in waste places in plains.

CULTIVATED SPECIES :

Plumbago auriculata Lam. Encycl. 2: 270. 1786; Steenis, Fl. Males. 1, 4: 111. 1949. *P. capensis* Thunb. Prodr. Fl. Cap. 33. 1794; Cooke, Fl. Pres. Bombay 2: 137. 1958 (Repr.); Bor & Raiz. Beautif. Ind. Climbers, Shrubs 163. 1954. *'Kala Chitrak'*.

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.

P. indica L. in Stickmann, Herb. Amboin. 24. 1754; Bole & Almeida in J. Bombay nat. Hist. Soc. 99 : 606. 1982.

Shrubs; stems striated. Leaves ovate–elliptic. Flowers in long racemes, purplish–red to scarlet.

Distrib. : Cultivated for ornamental purposes. Satara.

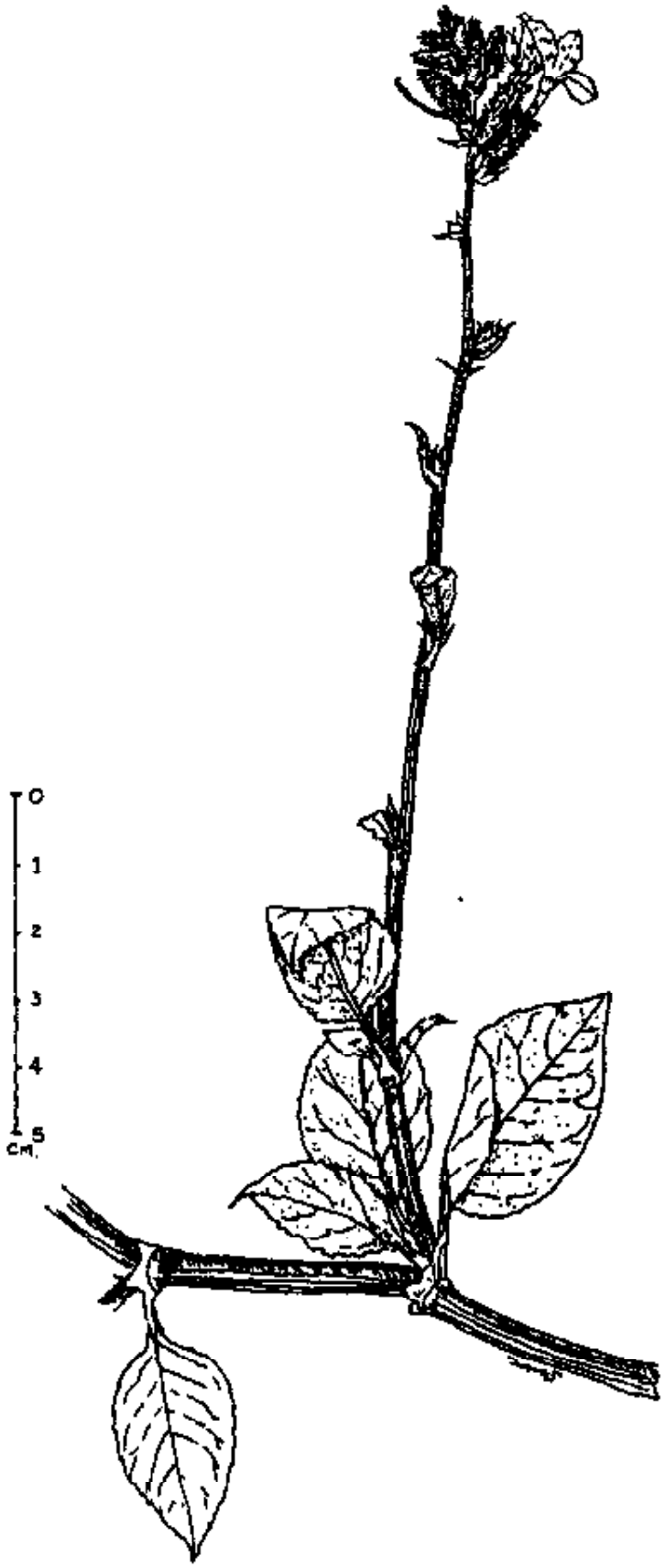
Notes. : Native of Sikkim & Khasia hills.

PRIMULACEAE

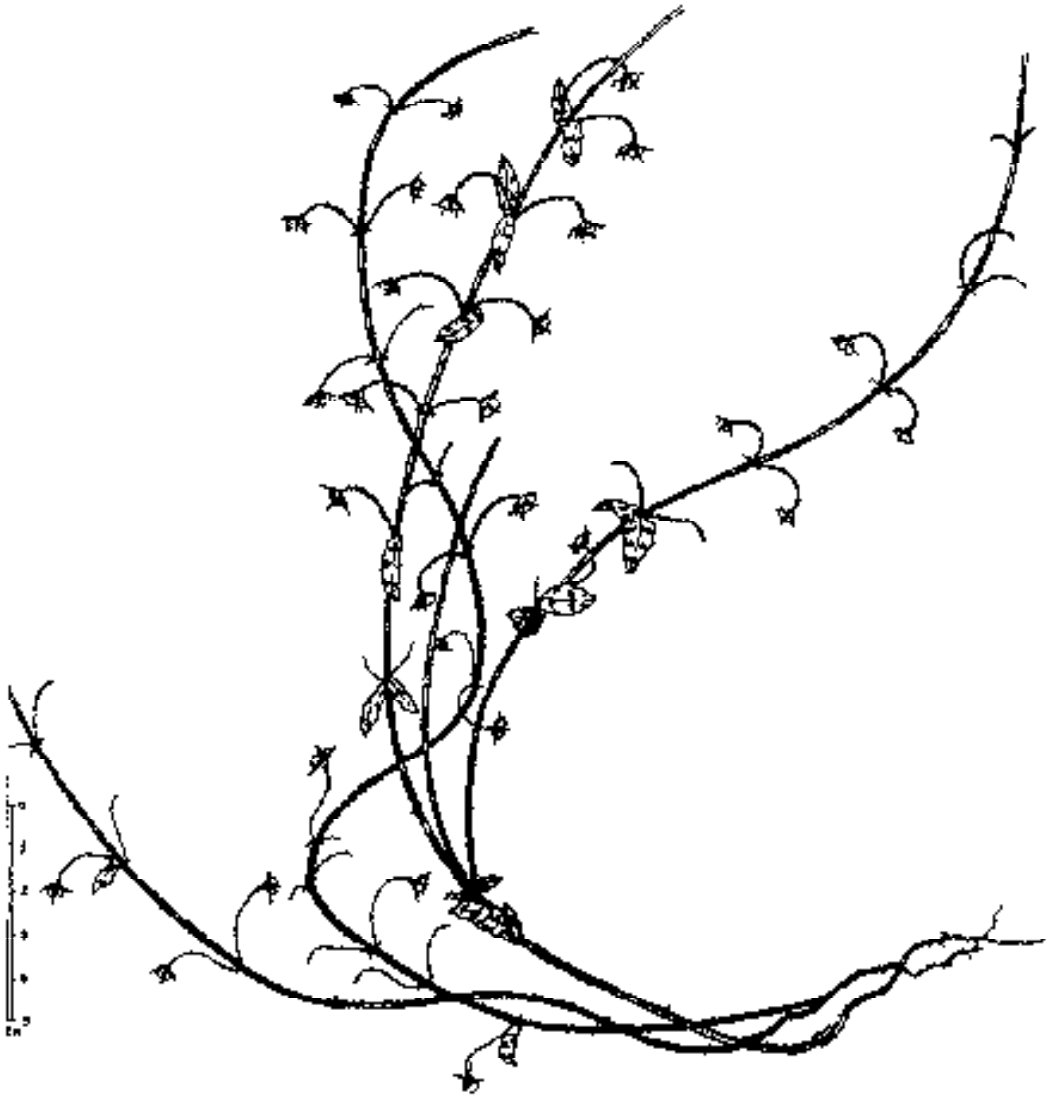
(A. N. Londhe)

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*

Anagallis arvensis L. Sp. Pl. 211. 1753; Hook. f. Fl. Brit. India 3: 506. 1882; Cooke, Fl. Pres. Bombay 2: 139. 1958 (Repr.); P. Taylor in Kew Bull. 1955 : 329. 1955.

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.

Illus. : Wight, Ic. t. 1205. 1848 (*A. latifolia* L. op. cit. 149); Mahesh. Illus. Fl. Delhi f. 117. 1966; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 204, f. 44 A–Ad. 1976; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t 404. 1982.

Distrib. : Common. Ahmednagar Akola, Chandrapur, Kolhapur, Nasik, Pune, Raigad, Satara, Solapur, Yavatmal.

A. pumila Swartz, Prodr. Veg. Ind. Occ. 1:40. 1778; P. Taylor in Kew Bull. 1955: 342. 1955. *Centunculus tenellus* Duby in DC. Prodr. 8: 72. 1844; Hook. f. Fl. Brit. India 3: 506. 1882; Cooke, Fl. Pres. Bombay 2: 140. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 2000. 1853 (*Centunculus tenellus*); Ramam. in Sald. & Nicols. Fl. Hassan Dt. 204, f. 44 B–Ba. 1976; Matthew Illus. Fl. Tamilnadu Carnatic 2: t. 405. 1982.

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.

Aegiceras corniculatum (L.) Blanco, Fl. Filip. 1: 79. 1837; Jafri and Guiser in Nasir & Ali, Fl. W. Pakisan 89: 7, f. 2 C & D. 1975. *Rhizophora corniculata* L. in Stickm. Herb. Amb. 13. 1754 & Amoen. Acad. 4: 123. 1762. *Aegiceras majus* Gaertn. Fruct 1: 216, t. 46. 1788; C.B.Cl. in Hook. f. Fl. Brit. India 3: 533. 1882 ; Cooke, Fl. Pres. Bombay 2: 147. 1958 (Repr.). *'Cheep', 'Kajla'.*

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.

Illus. : Wight, Ill. 2: t. 146. 1850; Talb. For. Fl. Bombay Pres. & Sind. 2:151, f. 369. 1911 (*Aegiceras majus*); Jafri & Guiser in Nasir & Ali), op. cit.

Distrib. : Frequent. Bombay, Raigad, Ratnagiri, Sindhudurg, Thane.

ARDISIA Swartz (nom. cons.)

Ardisia solanacea Roxb. Pl. Cor. 1: 27, t. 27. 1795; Cooke, Fl. Pres. Bombay 2: 146. 1958 (Repr.). *A. humilis* auct. non Vahl, 1794; C.B.Cl. in Hook. f. Fl. Brit. India 3: 529. 1882. *'Bugdi', 'Dikna'.*

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.

Fls. & Frts. : March–January.

Illus. : Wight, Ic. t. 212. 1846 (*A. humilis*).

Distrib. : Frequent. Bombay, Kolhapur, Pune, Ratnagiri, Sindhudurg.

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*

Embelia basaal (R & S.) A. DC. Trans. Linn. Soc. 17: 131. 1837; Panigr. & S.M. Almeida in J. Bombay nat. Hist. Soc. 84: 472. (1987) 1988. *Ardisia basaal* R & S. Syst. Veg. 4: 517 1819. *E. tsjerium–cottam* sensu Sant. in Rec. Bot. Surv. India. 16(1): 141. 1967 (3rd Rev. ed.) p. p. quoad. syn. *E. basaal* non (R & S.) A. DC. 1837. *E. robusta*. auct. plur. non Roxb. 1820; C.B.Cl. in Hook. f. Fl. Brit. India. 3: 515. 1882 p.p. quoad *E. basaal;* Cooke, Fl. Pres. Bombay 2: 143. 1958 (Repr.) p.p. quoad *E. basaal. E. acutipetalum* (Lam. ex Hassk.) S. M. & M. R. Almeida in Bombay. nat. Hist. Soc. 81: 741. (1984) 1985 nom. superf. illeg. *'Ambaldange', 'Ambati', 'Elang', 'Vowding'.*

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 pentamerous, greenish–yellow. Fruits 0.4 cm across, globose, apiculate with style, ripens red.

Fls. & Frts. : Throughout the year.

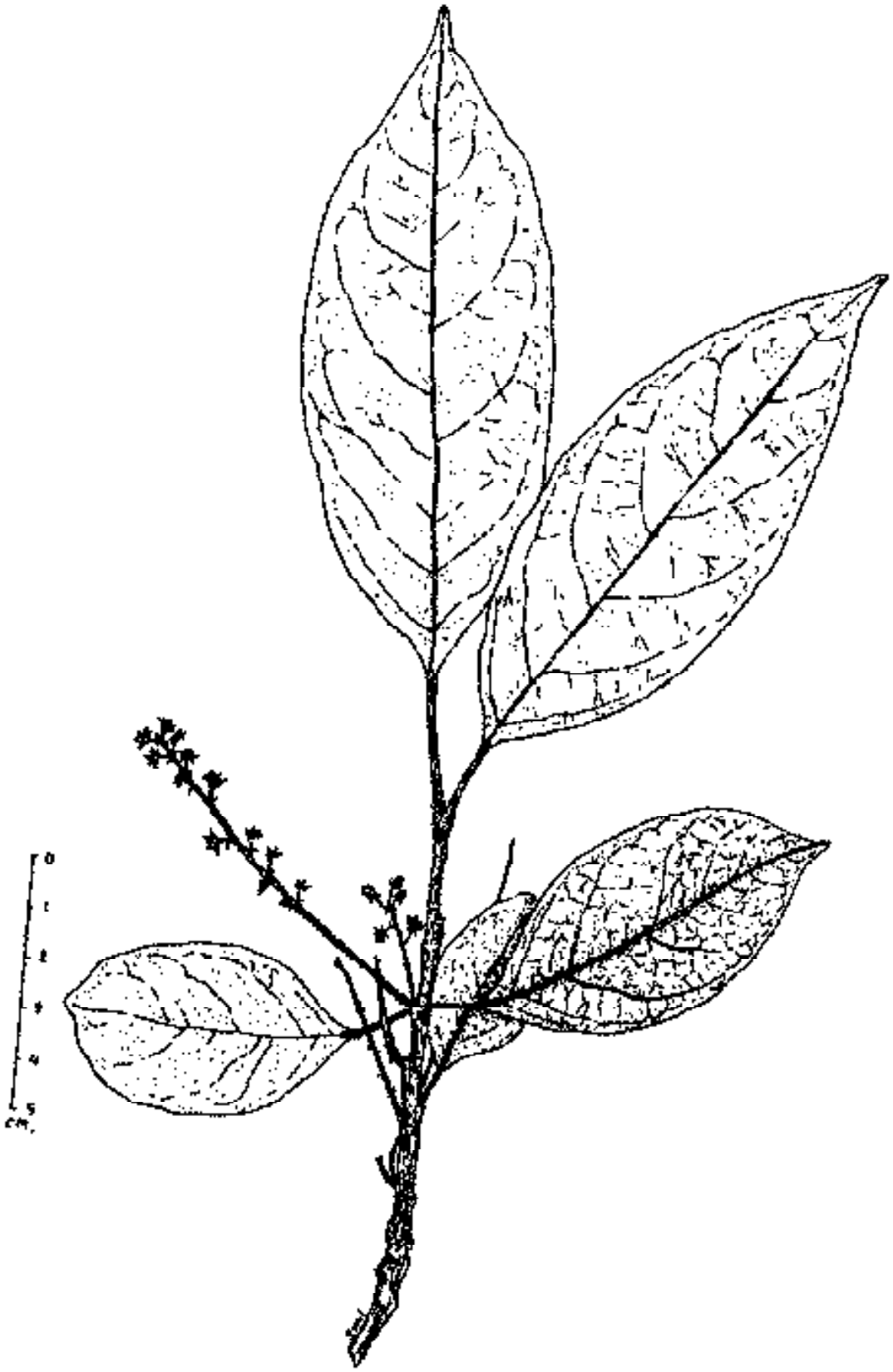
Illus. : Wight; Ic. t. 209. 1848.

Distrib. : Ahmednagar, Chandrapur, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

E. drupacea (Dennst.) M. R. & S. M. Almeida in J. Bombay Nat. Hist. Soc. 90. 426. (1993) 1994. *Pothos drupaceus* Dennst. Schlussel 15, 24, 33. 1818. *Embelia viridiflora* Scheft. Myrs. Arch. Ind. 45. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 3: 516. 1882; Cooke Fl. Pres. Bombay 2: 145. 1958 (Repr.). *'Ambat'.*

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.

Illus. : Wight, Ic. t. 1591. 1850 *(Samara rheedei);* Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 408. 1982.

Distrib. : Rare. Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg.

E. ribes Burm. f. Fl. Ind. 62, t. 23. 1768; C.B.Cl in Hook. f. Fl. Brit. India 3: 513. 1882; Cooke, Fl. Pres. Bombay 2: 143. 1958 (Repr.). *'Karkanni', 'Murudvel', 'Vaivarang', 'Vavding'.*

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.

Maesa indica (Roxb.) A. DC. in Trans. Linn. Soc. London 17:134. 1834; C.B.Cl. in Hook. f. Fl. Brit. India 3: 509. 1882; Cooke, Fl. Pres. Bombay 2: 141. 1958 (Repr.). *Baeobotrys indica* Roxb. Fl. Ind. 2: 230. 1824. *Maesa dubia* (Wall.) A. DC. op. cit.; C.B.Cl. in Hook. f. op cit. 510; Cooke, op. cit. *M. indica* var. *perrottetiana* (A. DC.) C.B.Cl. in Hook. f. op. cit. 509. *'Atki'.*

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind. 2:144, f. 367. 1911

Distrib. : Scarce. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

CULTIVATED SPECIES :

Jacquinia ruscifolia Jacq. Enum. Syst. Pl. Carib. 15. 1760.

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

long, racemes; corolla bright orange. Berrics many –seeded. Seeds immersed in mucilage.

Fls. & Frts.: April–June.

Distrib. : Cultivated in gardens & along river banks. Bombay.

Lysimachia candida Lindl. subsp. **obovata** (Buch.–Ham. ex Hook. f.) Kunth in Engl. Planzenr. 22: 301. 1905. *L. obovata* Buch.–Ham. ex Hook. f. Fl. Brit. India 3: 502. 1882.

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.

Chrysophyllum roxburghii G. Don, Gen. Syst. 4: 33. 1838; Gamble, Fl. Madras 2: 533. 1957(Repr.); Ramam.in Sald. & Nicols. Fl. Hassan Dt. 193. 1976.

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.

Illus. : Bedd. Fl. Sylv. t. 236. 1873; Talb. For. Fl. Bombay Pres. & Sind 2: 153, f. 370. 1911; Ramam. in Sald. & Nicols. op. cit. 192, f. 40A – Ab. 1976.

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*

Isonandra perottetiana DC. Prodr. 8: 188. 1844; C.B.Cl. in Hook. f. Fl. Brit. India 3: 539. 1881. *I. candoliana* Wight, Ic. t. 1220. 1850; C.B.Cl. in Hook. f. op. cit.; Cooke, Fl. Pres. Bombay 2:150. 1958 (Repr.).

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.).

I. stocksii C.B.Cl. in Hook. f. Fl. Brit. India 3: 539. 1882; Cooke, Fl. Pres. Bombay 2: 151. 1958 (Repr.).

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 glabrouss	...	*M. neriifolia*



Madhuca neriifolia (Moon) H. J. Lam

Madhuca longifolia (Koen.) Mac Bride, Contr. Gray. Herb. Har. Univ. n. s. 53:17. 1918; van Royen in Blumea 10:53 1960. *Bassia longifolia* Koen. in L. Mant. 2: 563. 1771; C.B.Cl. in Hook. f. Fl. Brit. India. 3: 544: 1882; Cooke, Fl. Pres. Bombay 2: 152. 1958 (Repr.).

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.

Fls. & Frts. : November – January.

Distrib. : Occasional in moist forests. Thane (Shah & Badrinath in J. Econ. Tax. Bot. 6: 30. 1985)

var. latifolia (Roxb.) Chev. in Rev. Bot. Appl. 23: 149. 1943; Oza in Indian Forester 97: 652. 1971. *Bassia latifolia* Roxb. Pl. Cor. 1:20. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 3: 544. 1882; Cooke, Fl. Pres. Bombay 2: 152. 1958 (Repr.). *'Mahua', 'Mohva'.*

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:157, f. 372.1911 *(Bassia latifolia).*

Distrib. : Common throughout the State–Economically important.

M. neriifolia (Moon) H. J. Lam in Bull. Jard. Bot. 3, 7: 182, 265. 1925 p. p.; van Royen in Blumea 10: 98. 1960; Oza in Indian Forester 97: 653. 1971. *Bassia neriifolia* Moon, Cat. Pl. Ceyl. 36. 1824; C.B.Cl. in Hook. f. Fl. Brit. India 3: 545. 1882. *B. malabarica* Bedd. For. Man. 40. 1870; C.B.Cl. in Hook. f. op. cit. 544; Cooke, Fl. Pres. Bombay 2: 153. 1958 (Repr.).

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.

Fls. & Frts. : November–January.

Distrib. : Rare, in moist forests. Bombay (Oza, op. cit.).

MANILKARA Adans. (nom. cons.)

Manilkara hexandra (Roxb.) Dub. in Ann. Mus. Col. Mars. 3,3:9, f. 2. 1915; van Royen in Blumea 7: 408. 1953. *Mimusops hexandra* Roxb. Pl. Cor. 1: 16, t. 15. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 3: 549. 1882; Cooke, Fl. Pres. Bombay 2: 155. 1958 (Repr.). *'Khirni', 'Rajani'.*

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.

Mimusops elengi L. Sp. Pl. 349. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 3: 548. 1882; Cooke, Fl. Pres. Bombay 2: 155. 1958 (Repr.); Oza in J. Bombay nat. Hist. Soc. 72: 601. 1975. *'Bacul'.*

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.

Illus. : Wight, Ic. t. 1586. 1850; Talb. For. Fl. Bombay Pres. & Sind 2:162, f. 375. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 414. 1982.

Distrib. : Found in semi–evergreen forests. Bombay (Cooke, op. cit.), Nasik, Osmanabad, Pune, Raigad, Ratanagiri, Yavatmal. Planted along roadsides and in gardens for its fragrant flowers and edible fruits.

PALAQUIUM Blanco

Palaquium ellipticum (Dalz.) Baill. Traite Bot. Med. Phan 1500. 1884; Cooke, Fl. Pres. Bomnay 2: 154. 1958 (Repr.). *Bassia elliptica* Dalz. in Hook. f. J. Bot. & Kew Misc. 3: 36. 1851. *Dichopsis elliptica* Bth. & Hook. f. Gen. Pl. 2:658. 1876; C.B.Cl. in Hook. f. Fl. Brit. India 3: 542. 1882. *'Panchoti-palla.*

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.

Fls. Frts. : February.

Distrib. : Rare. Western Ghats from Bombay southwards (Cooke, op. cit.).

XANTOLIS Raf.

Xantolis tomentosa (Roxb.) Raf. Sylv. Tell. 36. 1838; van Royen in Blumea 8:226. 1957. *Sideroxylon tomentosum* Roxb. Pl. Cor. t. 28. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 3: 538. 1882; Cooke, Fl. Pres. Bombay 2: 150. 1958 (Repr.). *'Kunvala', 'Numbal'*

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.

Fls. & Frts. : May –January.

Illus. : Wight, Ic. t. 1218. 1848; Talb. For. Fl. Bombay Pres. & Sind 2:154, f. 371. 1911 *(Sideroxylon tomentosum).*

Distrib. : Common. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

CULTIVATED SPECIES :

Chrysophyllum cainito L. Sp. Pl. 192. 1753; Cooke, Fl. Pres. Bombay 2: 149. 1958 (Repr.); Bailey, Man. Cult. Pl. (ed. 2). 791.1949. *C. roxburghii* Woodr. in J. Bombay Nat. Hist. Soc. 12: 163. 1898 non G. Don, 1837.

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.

Manikara zapota (L.) van Royen in Blumea 7: 410. 1953; Moore & Stearn in Taxon 16: 383. 1967; Naik, Fl. Osmanabad 193. 1979. *Achrus zapota* L. Sp. Pl. 2: 1190. 1753, quoad typum synonymis sloqnei & Plukenetii exclusis. *A. sapota* L. Sp. Pl. ed. 2: 470. 1762; C.B.Cl. in Hook. f. Fl. Brit. India 3: 534. 1882. *Manikara achras* (Mill.) Fosb. in Taxon 13: 255. 1964. *'Chikku'*.

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 ellpsoid, black.

Fls. & Frts. : More or less throughout the year.

Notes. : Native of West Indies and Tropical America. Cultivated in gardens for edible fruits.

Mimusops kautii L. Sp. Pl. 497. 1753; Hook. f. Fl. Brit. India 3: 349. 1982; Cooke, Fl. Pres. Bombay 2: 156. 1958 (Repr.). *'Adam's apple'*.

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 upto 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 pubesent 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*

Diospyros buxifolia (Bl.) Hiern, Trans. Camb. Phil. Soc. 12:218. 1873. *Leucoxylum buxifolium* Bl. Bijdr. 1169. 1827. *Diospyros*

microphylla Bedd. For. Man. Bot. 145. 1872; C.B.Cl. in Hook. f. Fl. Brit. India. 3: 559. 1882; Cooke, Fl. Pres. Bombay 2: 164. 1958 (Repr.). *'Dula', 'Kare-Kuncha'.*

Trees, 30 m high, trunk butressed 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.

D. candolleana Wight, Ic. tt. 1221 & 1222. 1843; C.B.Cl. in Hook. f. Fl. Brit. India 3: 366. 1882; Cooke, Fl. Pres. Bombay 2:161. 1958 (Repr.). *'Karigida'.*

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.

Fls. & Frts. : February–June.

Illus. : Wight, op. cit.

Distrib. : Found in moist & semi–evergreen forests. Kolhapur, Pune, Ratnagiri.

D. chloroxylon Roxb. Pl. Cor. 1:38, t. 49. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 3: 60 1882; Cooke, Fl. Pres. Bombay 2: 166. 1958 (Repr.). *'Mensi', 'Nimai'.*

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.

D. cordifolia Roxb. Pl. Cor. 1: 38, t. 50. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 3:555. 1882; Cooke, Fl. Pres. Bombay 2:165. 1958(Repr.).

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. Frutis 1.2–2.5 cm wide.

Fls. & Frts. : March–April.

Distrib. : Rare. Thane.

D. ebenum Koen. ex Retz. Phys. Salsk. Handl. 1:176. 1780; C.B.Cl. in Hook. f. Fl. Brit. India 3:558. 1882; Cooke, Fl. Pres. Bombay 2:163. 1958 (Repr.). *D. assimilis* Bedd. Madras For. Rep. 20, t. 1. 1866; Birdwood, Cat. Fl. Matheran & Mahabaleshwar 17. 1897. *'Abnus', 'Kare', 'Malya'.*

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.

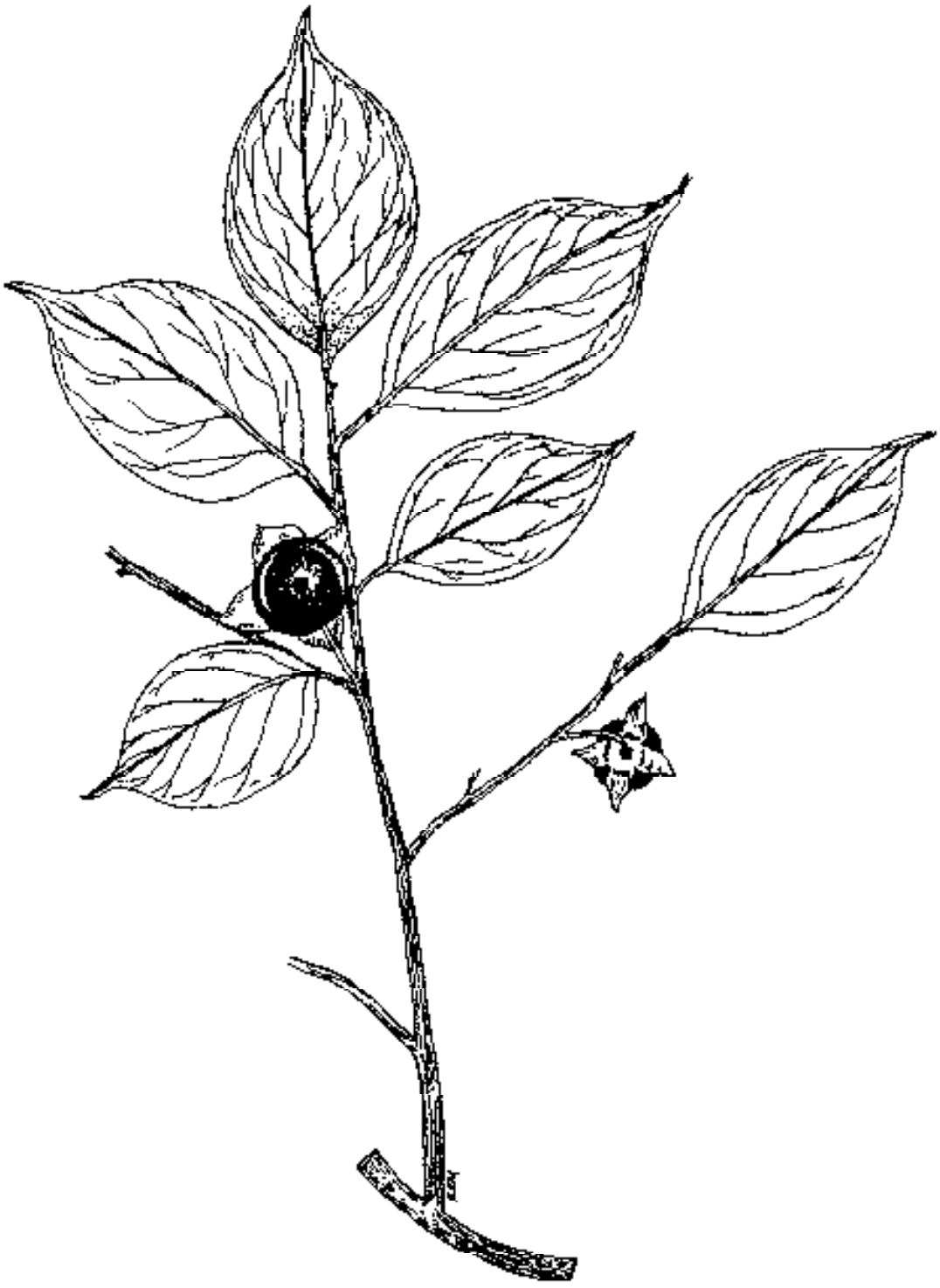
Distrib. : Rare. Pune, Satara (Birdwood, op. cit.).

D. exculpta Buch.–Ham. in Trans. Linn. Soc. Lond. 15: 110. 1827 non Dalz. 1861 nec. Bedd. 1870; Naik, Fl. Osmanabad. 194. 1979 et Fl. Marathwada 2: 519.1998. *D. tupra* Buch.–Ham. in Trans. Linn. Soc. Lond. 15: 111. 1827; C.B.Cl. in Hook. f. Fl. Brit. India 3: 563. 1882. *D. melanoxylon* C.B.Cl. in Hook. f. Fl. Brit. India 3: 563. 1882, p.p. non Roxb. 1795. *D. tomentosa* Roxb. Fl. Ind. 2: 532. 1832 non Poir. 1804; Gamble, Fl. Pres. Madras 2: 541. 1957 (Repr.).

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.

D. melanoxylon Roxb. Pl. Cor. 1: 36, t. 46. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 3:564. 1882; Cooke, Fl. Pres. Bombay 2:159. 1958 (Repr.). *'Tamraj', 'Tamrang', 'Temru'.*

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.

D. montana Roxb. Pl. Cor. 1: 37, t. 48. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 3: 555. 1882; Cooke Fl. Pres. Bombay 2: 165. 1958 (Repr.). *'Kudal'.*

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.

Illus. : Wight, Ic. t. 1225. 1848; Talb. For. Fl. Bombay Pres. & Sind 2: 170, f. 377. 1911.

Distrib. : Common. Chandrapur, Jalgaon, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

D. nigrescens (Dalz.) Sald. in Sald. & Nicols. Fl. Hassan Dt. 197, f. 41, A–AD. 1976. *Maba nigrescens* Dalz. in Dalz. & Gibs. Bombay Fl. 142. 1861; C.B.Cl. in Hook. f. Fl. Brit. India. 3:551. 1882; Cooke, Fl. Pres. Bombay 2:157. 1958 (Repr.). *'Rakta–roda'.*

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.

Illus. : Sald. in Sald. & Nicols. op. cit.

Distrib. : Found in moist and semi–evergreen forests. Kolhapur, Raigad, Ratnagiri, Satara.

D. oocarpa Thw. Enum. Ceyl. Pl. 180. 1860; C.B.Cl. in Hook. f. Fl. Brit. India 3: 560. 1882; Cooke, Fl. Pres. Bombay 2: 162. 1958 (Repr.).

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.

Distrib. : Rare in moist and semi–evergreen forests. Ratnagiri.

D. paniculata Dalz. in Kew J. Bot. 4(2) : 109. 1852; C.B.Cl. in Hook. f. Fl. Brit. India 3: 570. 1882; Cooke, Fl. Pres. Bombay 2: 163. 1958 (Repr.).

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:178, f. 381. 1911.

Distrib. : Rare. 'Konkan' (Talb. op. cit.).

D. peregrina (Gaertn.) Guerke in Engl. & Prantl, Pflanzenf. 4(1): 164. 1891. *Embryopteris peregrina* Gaertn. Fruct. 1: 145, t. 29, f. 2. 1788. *Diospyros embryopteris* Pers. Syn. 2:624. 1807; C.B.Cl. in Hook. f. Fl. Brit. India 3: 556. 1882; Cooke, Fl. Pres. Bombay 2:167. 1958 (Repr.). *'Temburni'*.

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 171, f. 378. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 416. 1982.

Distrib. : Found in moist & semi–evergreen forests. Ahmednagar, Chandrapur, Pune, Ratnagiri.

D. sylvatica Roxb. Pl. Cor. 1: 34, t. 47. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 3: 559 1882; Cooke, Fl. Pres. Bombay 2: 160. 1958 (Repr.).

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.

Distrib. : Found in semi–evergreen forests. Pune, Raigad, Satara.

CULTIVATED SPECIES :

Diospyros kaki L. f. Suppl. 439. 1781; Hook. f. Fl. Brit. India 3: 555. 1882; Cooke, Fl. Pres. Bombay 2: 168. 1958 (Repr.); Bailey, Man. Cult. Pl. (ed. 2). 792. 1949.

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. &



Symplocos cochinchinensis (Lour.) S. Moore ssp. **laurina** (Retz.) Nooteb.

Nicols. Fl. Hassan Dt. 198. 1976; Hore in Nayar et al. Fasc. Fl. India 20: 146. 1990. *Myrutus laurina* Retz. Obs. Bot. 4: 26. 1786. *Symplocos spicata* Roxb. Fl. Ind. 2: 541. 1832; C.B.Cl in Hook. f. Fl. Brit. India 3: 573. 1882; Cooke, Fl. Pres. Bombay 2: 169. 1958 (Repr.). *'Mirjoli'*.

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 upto base. Fruits 0.5–0.6 cm wide, globose.

Fls. & Frts. : September–March.

Illus : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 417. 1982; Hore in Nayar et al. op. cit. 147, t. 31.

Distrib. : Frequent in moist deciduous and semi–evergreen forests along higher ghats. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

S. racemosa Roxb. Fl. Ind. 2: 539. 1832; C.B.Cl. in Hook f. Fl. Brit. India 3: 576. 1882; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 200. 1976; Hore in Nayar et al. Fasc. Fl. India 20: 166. 1990. *S. beddomei* C.B.Cl. in Hook. f. op. cit. 3: 582. 1882; Cooke, Fl. Pres. Bombay 2: 169. 1958 (Repr.). *S. stocksii* Brand. in Engl. Pflanzenr. Heft. 6: 59. 1901; Cooke, op. cit. 170. *'Lenda'*.

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 181, f. 382. 1911.

Distrib. : Scattered in moist deciduous and semi–evergreen forests. Ahmednagar, Pune, Ratnagiri, Satara, Sindhudurg, Thane.

OLEACEAE

(S. G. Pradhan)

1. Fruits c 5 cm long, woody ... SCHREBERA

1. Fruits less than 2.0 cm long, not woody:

   2. Corolla tube orange–red; fruits capsular ... NYCTANTHES

2. Coralla 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.

Chionanthus mala-elengi (Dennst.) P. S. Green in Bull. Bot. Surv. India 26: 124. 1984. *Forsythia mala-elengi* Dennst. Schiuss. Hort. Malab. 12, 21 & 31. 1818; Mabb. in Taxon 26: 539. 1977. *Linociera malabarica* Wall. ex G. Don, Gen. Syst. 4: 53. 1838; C.B.Cl. in Hook. f. Fl. Brit. India 3: 607. 1882; Cooke, Fl. Pres. Bombay 2: 178. 1958 (Repr.). *Chionanthus malabarius* (Wall. ex. G. Don) Bedd. For. Man. Bot. 154. 1872 & Fl. Sylv. t. 239. 1872; Nair & Janardh. in J. Bombay nat. Hist. Soc. 78: 331. 1981; Panigr. in Ind. J. For. 8: 56. 1985. *'Heddi'*.

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 ... *J. ritchiei*

5. Calyx variously hairy :

6. Calyx teeth twice the length of calyx tube or even longer ... *J. malabaricum*

6. Calyx teeth as long as or less than twice the length of calyx tube :

7. Calyx teeth linear, subclavate ... *J. arborescens*

7. Calyx teeth minutely triangular ... *J. roxburghianum*

Jasminum arborescens Roxb. Fl. Ind. Carey & Wall ed. 1: 93. 1820; C.B.Cl. in Hook. f. Fl. Brit. India. 3: 594. 1882; Cooke, Fl. Pres. Bombay 2: 173. 1958 (Repr.). *J. arborescens* var. *latiolia* (Roxb.) C.B.Cl. in Hook. f. op. cit.

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.

Fls. & Frts. : February–April.

Illus. : Wight, Ic. t. 699. 1843.

Distrib. : Rare. Nasik, Osmanabad, Satara.

J. auriculatum Vahl, Symb. Bot. 3: 1. 1794; C.B.Cl. in Hook. f. Fl. Brit. India. 3: 600. 1882; Cooke, Fl. Pres. Bombay 2: 174. 1958 (Repr.). *'Jai'.*

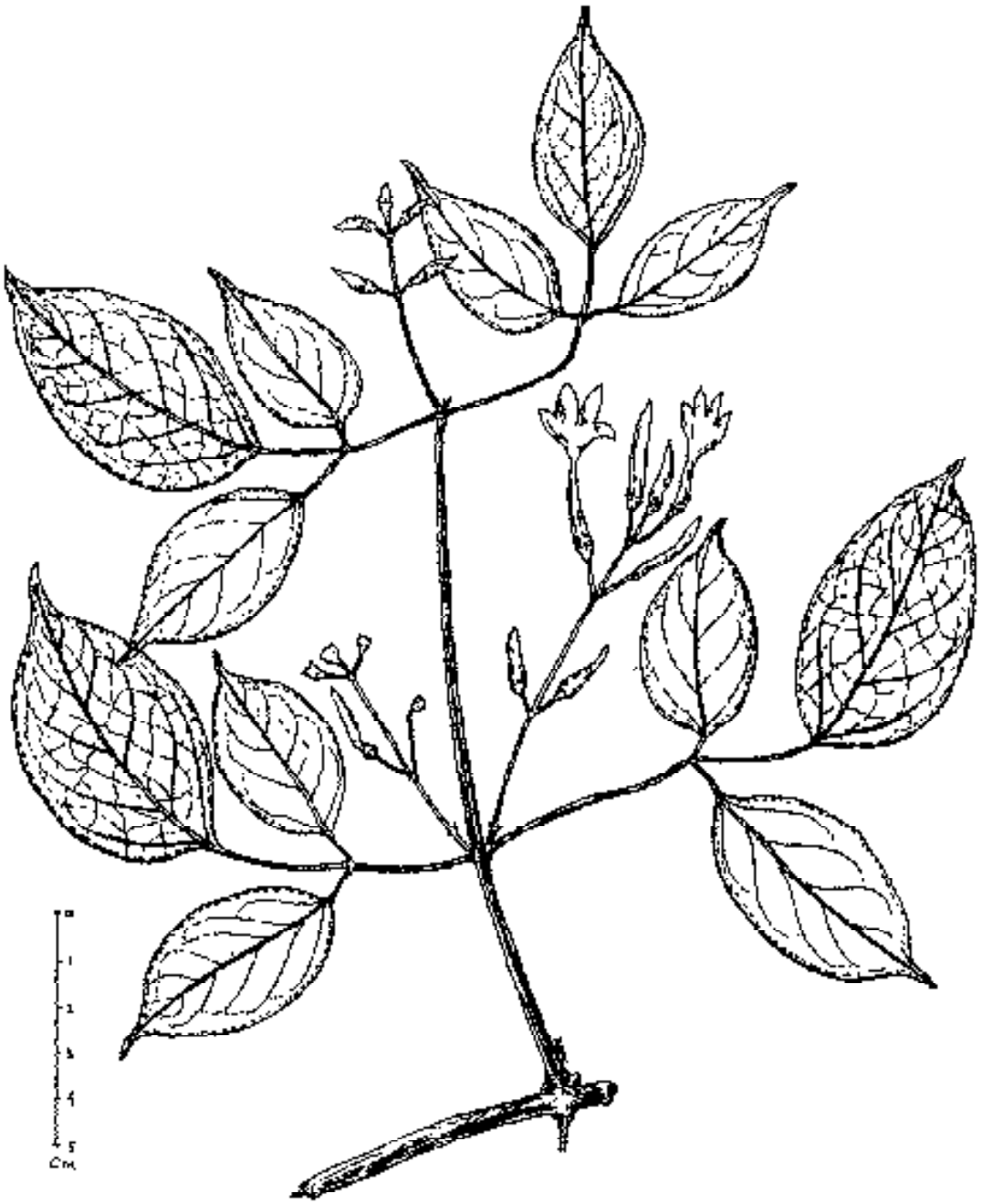
Shrubs; stems scandent. Leaflets: lateral ones small or absent, central one 1.5–3.0 x 0.9–1.5 cm, ovate to orbicular, obtuse, acute or acuminate or apiculate at apex, rounded at base. Flowers white, bracteate, in corymbose–cymes. Berries c 0.5 cm across, solitary.

Fls. & Frts. : July–October.

Illus. : Wight, Ic. t. 700. 1843.

Distrib. : Chandrapur, 'Konkan' (Cooke, op. cit.), Pune, Satara, Yavatmal.

J. azoricum L. Sp. Pl. 7. 1753; Backer & Bakh. f. Fl. Java 2: 217. 1965. *J. flexile* Vahl, Symb. Bot. 3: 1. 1794; C.B.Cl. in Hook. f. Fl. Brit. India 3: 601. 1852; Cooke, Fl. Pres. Bombay 2: 175. 1958 (Repr.). *'Chameli–jui.'*



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.

J. malabaricum Wight, Ic. t. 1250. 1848; C.B.Cl. in Hook. f. Fl. Brit. India. 3: 594. 1882; Cooke, Fl. Pres. Bombay 2: 172. 1958 (Repr.). *'Kasur'.*

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.

Illus. : Wight, op. cit.; Talb. For. Fl. Bombay Pres. & Sind 2:187, f. 384. 1911.

Distrib. : Common in moist deciduous forests. Ahmednagar, Akola, Bombay, Kolhapur Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

J. multiflorum (Burm. f.) Andr. Bot. Rep. 8, t. 496. 1807; Kobuski in J. Arnold Arbor. 13: 172. 1932. *Nyctanthes multiflora* Burm. f. Fl. Ind. 5, t. 3, f. 1. 1768. *Jasminum pubescens* Willd. Sp. Pl. 1: 37. 1797; C.B.Cl. in Hook. f. Fl. Brit. India 3: 592. 1882; Cooke, Fl. Pres. Bombay 2: 173. 1958 (Repr.). *'Ran–Mogra'.*

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.

Illus. : Wight, Ic. 1248. 1848 *(J. bracteatum* Roxb. Fl. Ind. 1:92. 1820); Talb. For. Fl. Bombay Pres. & Sind 2: 188, f. 335. 1911 *(Jasminum pubescens).*

Distrib. : Common in moist deciduous forests. Bombay, Dhule, Jalgaon, Nasik, Pune. Raigad, Satara, Thane.

J. ritchiei C.B.Cl. in Hook. f. Fl. Brit. India 3:598. 1882; Cooke, Fl. Pres. Bombay 2:174. 1958 (Repr.).

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.

Distrib. : Found in semi–evergreen tracts. Kolhapur, Ratnagiri.

J. rottlerianum Wall. ex A. DC. Prodr. 8: 305 1844; C.B.Cl. in Hook. f. Fl. Brit. India 3: 593. 1882; Cooke, Fl. Pres. Bombay 2: 173. 1958. (Repr.).

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.

J. roxburghianum Wall. ex DC. Prodr. 8: 305. 1844; C.B.Cl. in Hook. f. Fl. Brit. India 3: 595. 1882; Cooke, Fl. Pres. Bombay 2: 174. 1958 (Repr.).

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.

Ligustrum perrottetii A. DC. in DC. Prodr. 8: 294. 1844; C.B.Cl. in Hook. f. Fl. Brit. India 3: 615. 1882. *L. neilgherrense* Wight var. *obovata* (Decne.) C.B.Cl. in Hook. f. op. cit.; Cooke, Fl. Pres. Bombay 2: 181. 1958 (Repr.).

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.

Distrib. : Common in moist deciduous & semi–evergreen forests. Ahmednagar, Kolhapur, Ratnagiri, Satara, Thane.

NYCTANTHES L.

Nyctanthes arbor–tristis L. Sp. Pl. 6. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 3: 603. 1882; Cooke, Fl. Pres. Bombay 2: 176. 1958 (Repr.). *'Parijat'.*

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 192, f. 387. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 421. 1982.

Distrib. : Rare, wild and abundant in dry deciduous forests at Pench (Nagpur). Also found in Ahmednagar (cultivated), Nasik, Pune (cultivated), Yavatmal.

OLEA L.

Olea dioica Roxb. Fl. Ind. 1. 106. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 3: 612. 1882; Cooke, Fl. Pres. Bombay 2: 129. 1958 (Repr.). *'Karamb', 'Parjambul.'*

Trees, 3–10 m tall. Leaves 7–10 x 3–5 cm, elliptic–lanceolate, leathery, acute to acumiate 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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 197, f. 390. 1911.

Distrib. : Common in moist deciduous and semi–evergreen forests. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

SCHREBERA Roxb.

Schrebera swietenioides Roxb. Pl. Cor. 2:1, t. 101. 1799; C.B.Cl. in Hook. f. Fl. Brit. India 3: 604. 1882; Cooke, Fl. Pres. Bombay 2: 177. 1958 (Repr.). *'Goki', 'Makiri', 'Mokha'.*

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:194, f. 388. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t 423. 1982.

Distrib. : Found in deciduous forests. Ahmednagar, Akola, Chandrapur, Naik, Punc, 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.

Jasminum calophyllum Wall. ex C.B.Cl. in Hook. f. Fl. Brit. India 3: 602. 1882; Naik, Fl. Osmanabad 196. 1979.

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.

J. mesny Hance in J. Bot. 20: 37. 1862; Kobuski in J. Arnold Arbor. 13: 152. 1932; Bailey, Man. Cult. Pl. (ed. 2). 798. 1949; Naik, Fl. Marathwada 2. 522. 1998.

Evergreen, rambling shrubs. Leaves 3–foliolate; leaflets 2–7 x 1–2 cm, elliptic–lanceolate, obtuse to acute at apex, cuneate at base,

petioles upto 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.

J. officinale L. Sp. Pl. 7. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 3: 603. 1882; Naik, Fl. Osmanabad 196. 1979.

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.

var. **grandiflorum** (L.) Bailey, Man. Cult. Pl. (ed. 2). 789. 1949; Naik, Fl. Osmanabad 196. 1979. *J. grandiflorum* L. Sp. Pl. ed. 2, 9. 1762; C.B.Cl. in Hook. f. Fl. Brit. India 3: 603. 1882.

Similar to var. *officinale* but flowers are larger and corolla streaked with purple.

Fls. & Frts. : March–Septemer.

Distrib. : Grown in gardens.

J. sambac (L.) Ait. Hort. Kew 1: 8. 1789; C.B.Cl. in Hook. f. Fl. Brit. India 3: 591. 1882; Bailey, Man. Cult. Pl. (ed. 2). 798. 1949; Naik, Fl. Osmanabad 195. 1979. *Nyctanthes sambac* L. Sp. Pl. 6. 1763.

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.

Olea cuspidata Wall. Cat. 2817. 1828; C.B.Cl. in Fl. Brit. India 3: 611. 1882; Cooke, Fl. Pres. Bombay 2: 180. 1958 (Repr.).

Trees, upto 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.

O. eurpaea L. Sp. Pl. 8. 1753; Cooke, Fl. Pres. Bombay 2: 180. 1958 (Repr.); Bailey, Man. Cult. Pl. (ed. 2). 795. 1949.

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. : Naive of Asia Minor & Greece, grown in gardens.

Osmanthus fragrans Lour. Fl. Cochinch. 1: 29. 1790; C.B.Cl. in Hook. f. Fl. Brit. India 3: 606. 1882; Cooke, Fl. Pres. Bombay 2: 181. 1958 (Repr.); Bailey, Man. Cult. Pl. (ed. 2). 795. 1949.

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.

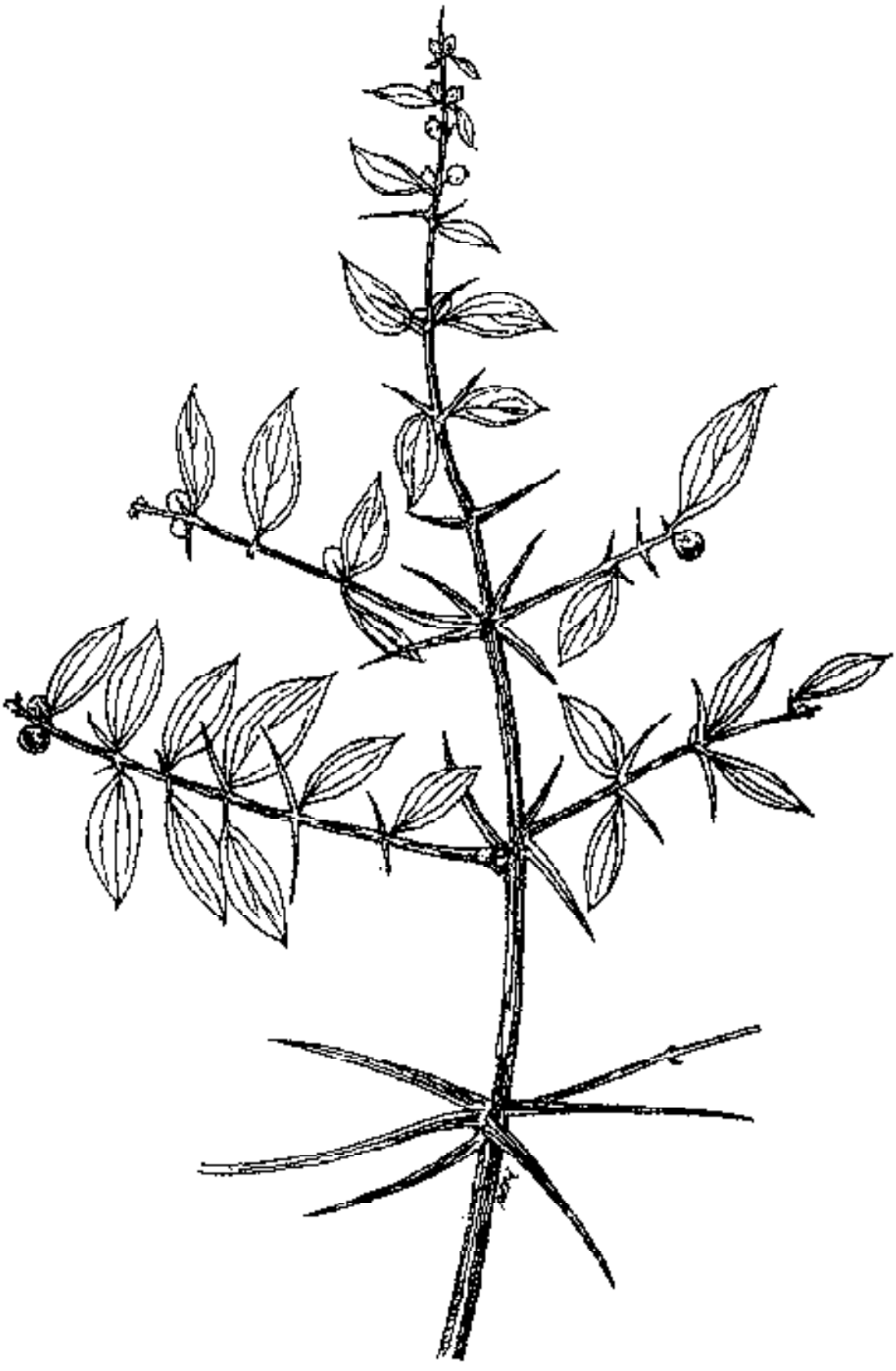
SALVADORACEAE

(S. G. Pradhan)

1. Flowers unisexual; petals united ... AZIMA
1. Flowers bisexual; petals free ... SALVADORA

AZIMA Lam.

Azima tetracantha Lam. Encycl. 1:343. 1783; C.B.Cl. in Hook. f. Fl. Brit. India 3: 620. 1882; Cooke, Fl. Pres. Bombay 2: 184. 1958 (Repr.). *'Satiapat'*.



Azima tetracantha Lam.

Shrubs, 1.0–1.5 m tall, armed with axillary spines. Leaves 2.5–4.2 x 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.

Salvadora persica L. var. **wightiana** (Planch. ex. Thw.) Verdc. in Kew Bull. 19: 150. 1964. *S. wightiana* Planch. ex Thw. Enum. Pl. Zeyl. 190. 1860. *S. persica* sensu Roxb. Fl. Ind. 1: 389. 1837 non L. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 3: 619. 1882; Cooke, Fl. Pres. Bombay 2: 182. 1958 (Repr.). *'Khatau', 'Pilu', 'Pivla'*.

Shrubs or trees, 2.0–3.5 m tall. Leaves 3.5–6.0 x 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 ... PARSONSIA
      5. Filaments not as above :

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 hypocrateriform ... CHONEMORPHA

8. Corolla less than 5 cm across :

10. Anthers spured 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 ... QUIRIVELIA

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 appendaged at base ... VALLARIS

7. Seeds without coma, coma if present then very scantly & 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 ... QUIRIVELIA

AGANOSMA G. DON

Aganosma cymosa (Roxb.) G. Don, Gen. Syst. 4: 77. 1837–38; Hook. f. Fl. Brit. India 3: 665. 1882; Cooke, Fl. Pres. Bombay 2: 203. 1958 (Repr.). *Echites cymosa* Roxb. Fl. Ind. 2: 16. 1832.

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.

Fls. & Frts. : April–June.

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*

Alstonia scholaris (L.) R. Br. Mem. Wern. Nat. Hist. Soc. 1: 76. 1811; Hook. f. Fl. Brit. India 3: 642. 1882; Cooke, Fl. Pres. Bombay 2: 194. 1958 (Repr.); Markgraf in Blumea 22: 23. (1974) 1975. *Echites scholaris* L. Mant. Pl. 53. 1767. *'Satvin'.*

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.

Distrib. : Common in moist semi–evergreen tracts. Kolhapur, Pune, Raigad, Ratnagiri, Thane.

A. venenata R. Br. Mem. Wern. Nat. Hist. Soc. 1: 77. 1811; Hook. f. Fl. Brit. Inida 3: 642. 1882; Cooke, Fl. Pres. Bombay 2: 195. 1958 (Repr.).

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.

Fls. & Frts. : November–January.

Illus. : Wight, Ic. t. 436. 1841.

Distrib. : Rare in semi–evergreen tracts. 'Konkan' (Cooke, op. cit.), Pune.

ANODENDRON A. DC.

Anodendron manubriatum Merr. in Philipp. J. Sci. 7:333. 1912; Huber in Abeyw. Rev. Handb. Fl. Ceylon 1:26. 1973. *A. paniculatum* (Roxb.) A. DC. in DC. Prodr. 8: 444. 1844; Hook. f. Fl. Brit. India 3: 668. 1882; Cooke, Fl. Pres. Bombay 2: 204. 1958 (Repr.). *'Lamtani'.*

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 c 5 cm long, white.

Fls. & Frts. : December–March.

Illus. : Wight, Ic. t. 396. 1840; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 428. 1982.

Distrib. : Found in semi–evergreen forests. Pune, Raigad, Ratnagiri, Satara, Thane.

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.

Beaumontia jerdoniana Wight, Ic. tt. 1314 & 1315. 1848; Hook. f. Fl. Brit. India 3: 661. 1882; Cooke, Fl. Pres. Bombay 2: 201. 1958 (Repr.).

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 upto 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*

Carissa congesta Wight, Ic. t. 1289. 1848. *C. carandas* auct. non L. 1767; Hook. f. Fl. Brit. India 3: 630. 1882 p.p.; Cooke, Fl. Pres. Bombay 2: 186. 1958 (Repr.); Naik, Fl. Marathwada 2: 530. 1998.

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.

Illus. : Wight, op. cit.; Talb. For. Fl. Bombay Pres. & Sind 2:206, f. 393. 1911 *(C. carandus).*

Distrib. : Common throughout the state in dry deciduous forests.

var. **albida** Sant. in Kew Bull. 1948: 90. 1949 & in Rec. Bot. Surv. India 16(1) 146. 1967 (3rd Rev. ed.). *'Safed karvand'.*

Erect shrubs or small trees. Fruits first green at length, later pale greenish–yellow.

Fls. & Frts. : February–June.

Distrib. : Rare. Pune.

C. inermis Vahl, Symb. Bot. 3: 43. 1794; Cooke, Fl. Pres. Bombay 2: 187. 1958 (Repr.). *C. suavissima* Bedd. ex Hook. f. Fl. Brit. India 3: 632. 1882; Cooke, op. cit.

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.

Fls. & Frts. : January–February.

Distrib. : Found in semi–evergreen tracts. Kolhapur, Ratnagiri, Satara, Sindhudurg.

C. opaca Stapf ex Haines in Ind. For. 47: 378. 1921; Chowdhery et Wadhwa, Fl. Himachal Pradesh 2: 457. 1984. *C. spinarum* auct. mult. non L. 1771; C.B.Cl. in Hook. f. Fl. Brit India 3: 631. 1882; Naik, Fl. Marathwada 1: 531. 1998. *'Karawand'.*

Evergreen shrubs up to 6 m tall; thorns upto 5 cm, long, often divaricate. Leaves subsessile, coriaceous, 3.0–5.0 x 2–3 cm, elliptic, acute at base, obtuse and mucronate at apex. Flowers white, in terminal corymbose cymes; calyx teeth ciliate; corolla tube longer than lobes. Berries c 1.5 cm long, ellipsoid.

Fls. & Frts. : March–July.

Distrib. : Aurangdabad, Beed, Nanded, Parbhani.

Catharanthus G. Don

Catharanthus pusillus (Murr.) G. Don, Gen. Syst. 4: 95. 1836; Sant. in Bull. Bot. Surv. India 3:15. (1961)1962. *Vinca pusilla* Murr. Comm. Gotting, 3: 66, t. 2, f. 1. 1773; Hook. f. Fl. Brit. India 3:640. 1882. *Lochnera pusilla* (Murr.) K. Schum. in Engl. & Prantl, Pflanzenf. 4(2):145. 1895; Cooke, Fl. Pres. Bombay 2: 191. 1958 (Repr.). *'Sangkhi', 'Sunkaphi'.*

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.

Cerbera manghas L. Sp. Pl. 208. 1753. *C. odollam* Gaertn. Fruct. 2:193. 1791; Hook. f. Fl. Brit. India 3:638. 1882; Cooke, Fl. Pres. Bombay 2:190. 1958 (Repr.).

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.

Fls. & Frts. : June–January.

Distrib. : Uncommon, usually found along swamps, Ratnagiri.

CHONEMORPHA G. Don

Chonemorpha grandiflora (Roth) M.R. & S.M. Almeida in J. Bombay nat. Hist. Soc. 90: 427. (1992) 1993. *Echites grandiflora* Roth, Nov. Pl. Sp. 136, 1821 non Roxb. 1832. *Chonemorpha fragrans* (Moon) Alst. in Ann. Roy. Bot. Gard. (Peradenia) 11: 203. 1929. *C. macrophylla* (Roxb.) G. Don, Gen. Syst. 4: 76. 1837; Hook. f. Fl. Brit. India 3: 661. 1882; Cooke, Fl. Pres. Bombay 2: 202. 1958 (Repr.).

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).*

Distrib. : Found in moist and semi–evergreen forests. Bombay, Pune, Raigad, Ratnagiri, Sindhudurg.

HOLARRHENA R. Br.

Holarrhena pubescens (Buch.–Ham.) Wall. ex G. Don, Gen. Syst. 4: 78. 1837; Panigr. in Taxon 36 : 466. 1987. *Echites pubescens* Buch. – Ham. in Trans. Linn. Soc. London. 13 : 521. 1821. *Holarrhena antidysenterica* (Roth) Wall. ex A. DC. in DC. Prodr. 8: 413. 1844; Hook. f. Fl. Brit. India 3: 644. 1882; Cooke, Fl. Pres. Bombay 2: 195. 1958 (Repr.). *'Kuda', 'Pandhara kuda'.*

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.

Fls. & Frts. : February–June.

Illus. : Wight, Ic. tt. 1297 & 1298. 1848 *(H. malaccensis);* Talb. For. Fl. Bombay Pres. & Sind 2: 217, f. 398. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 430. 1982 *(Holarrhena antidysenterica).*

Distrib. : Common throughout the state in dry deciduous and semi–evergeen 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.

Kamettia caryophyllata (Roxb.) Nicols. & Suresh, in Taxon 35: 354. 1986 & in Nicols. et al., Interpret. of van Rheede's Hortus Malab. 55. 1988. *Echites caryophyllata* Roxb. Hort. Beng. 20. 1814. *Ellertonia rheedei* Wight, Ic. t. 1295. 1848; Hook. f. Fl. Brit. India 3: 64. 1882; Cooke, Fl. Pres. Bombay 2: 193. 1958 (Repr.).

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.

Fls. & Frts. : November–January.

Illus. : Wight, op. cit.

Distrib. : Rare in semi–evergreen forests. Ratnagiri (Cooke, op. cit.).

PARSONSIA R. Br. (nom. cons.)

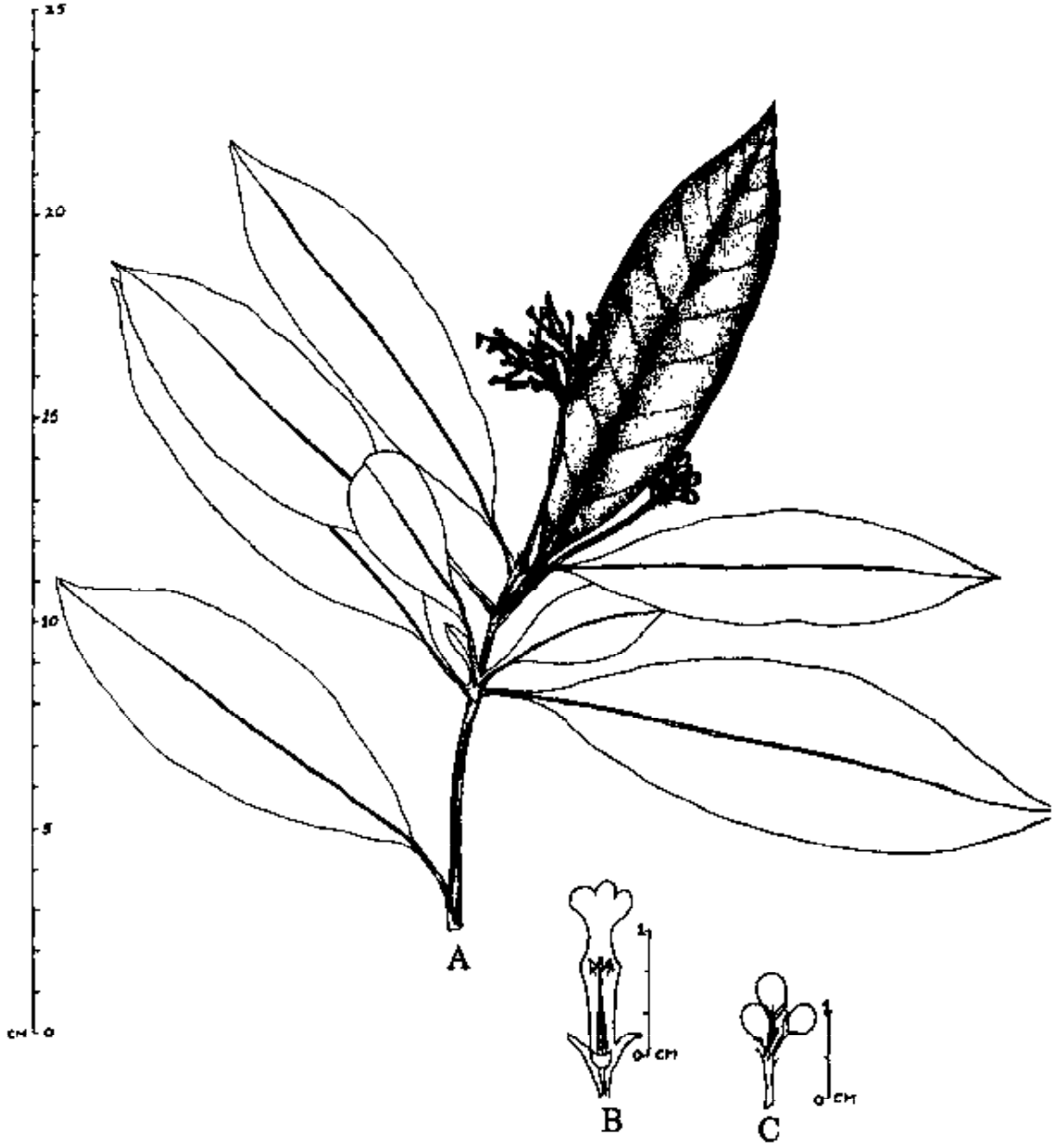
Parsonsia alboflavescens (Dennst.) Mabb. in Taxon 26: 532. 1977. *Periploca alboflavescens* Dennst. Schluss. 12, 23, 35. 1818. *Parsonsia spiralis* Wall. ex G. Don, Gen. Syst. 4: 80. 1837–38; Hook. f. Fl. Brit. India 3: 650. 1882; Cooke, Fl. Pres. Bombay 2: 198. 1958 (Repr.).

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 paniculately 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.

Distrib. : Uncommon, in moist forests. Kolhapur, Ratnagiri.



Rauvolfia serpentina (L.) Bth. ex Kurz
A - Twig; B L. s. of flower; C - Fruits.

QUIRIVELIA

Quirivelia frutescens (L.) M.R. & S.M. Almeida in J. Bombay nat. Hist. Soc. 90: 427. (1993) 1994. *Apocynum frutescens* L. Sp. Pl. 213. 1753. *Ichnocarpus frutescens* (L.) R. Br. Mem. Wern. Nat. Hist. Soc. 1: 62. 1811; Hook. f. Fl. Brit. India 3: 669. 1882; Cooke, Fl. Pres. Bombay 2: 205. 1958 (Repr.). *I. ovatifolius* A. DC in DC. Prodr. 8: 435. 1844; Bhogaonkar & Devarkar, Add. Fl. Melghat 33, f. 1999. *'Krishnasazwa'.*

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.

RAUVOLFIA 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*

Rauvolfia serpentina (L.) Bth. ex Kurz, For. Fl. Brit. Burma 2: 171. 1877; Hook. f. Fl. Brit. India 3: 632. 1882; Cooke, Fl. Pres. Bombay 2: 188. 1958 (Repr.); Sulochana in J. Ind. Bot. Soc. 38:578. 1959. *Ophioxylon serpentinum* L. Sp. Pl. 1043. 1753. *'Hadki', 'Sarpagandha'.*

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.

Illus. : Wight, Ic. t. 849. 1844 *(Ophioxylon serpentinum);* Mahesh. Illus. Fl. Delhi f. 121. 1966; Kothari & Moorthy, Fl. Raigad Dt. Mah. State 226, f. 1993.

Distrib. : Common in moist forests. Chandrapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

R. verticillata Baillon in Bull. Soc. Linn. Paris 1: 768. 1888; Chakr. in Bull. Bot. Soc. Bengal 9: 7. 1955; Markgraf in Blumea 30: 160. 1984. *R. densiflora* (Wall.) Bth. ex Hook. f. Fl. Brit. India 3: 633. 1882; Cooke, Fl. Pres. Bombay 2: 189. 1958 (Repr.); Sulochana in J. Ind. Bot. Soc. 38: 580, t. 1. 1959.

Shrubs c 3.5 m tall. Leaves 3–4–whorled, 7–20 x 2.5–6.0 cm, obovate or oblanceolate, acuninate 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.

Distrib. : Frequent in moist and semi–evergreen forests. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

TABERNAEMONTANA L.

Tabernaemontana alternifolia (Roxb.) Nicols. & Suresh in Taxon 35: 354. 1986 & in Nicols. et al., Interpret. van Rheede's Hortus Malab. 57. 1980. *Ervatamia heyneana* (Wall.) T. Cooke, Fl. Pres. Bombay 2: 134. 1904 [2: 196. 1958 (Repr.)]. *Tabernaemontana heyneana* Wall. Bot. Reg. 7: subt. 1273. 1829; Hook. f. Fl. Brit. India 3: 646. 1882. *'Nagkuda'.*

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.

Vallaris solanacea (Roth) O. Ktze. Rev. Gen. Pl. 2:417. 1891. *Peltanthera solanacea* Roth, Nov. Pl. Sp. 132. 1821. *Vallaris heynei* Spr. Syst. Veg. 635. 1824, Hook. f. Fl. Brit. India 3:650. 1882; Cooke, Fl. Pres. Bombay 2:199. 1958 (Repr.).

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 (culivated), Raigad (planted), Solapur, Thane.

Notes. : Flowers fragrant.

WRIGHTIA R. Br.

1.	Fruits white–tubercled, grooved, c 1.2 cm across	...	*W. arborea*
1.	Fruits not as above, 0.6–0.8 cm across	...	*W. tinctoria*

Wrightia arborea (Dennst.) Mabb. in Taxon 26: 533. 1977. *Periploca arborea* Dennst. Schluss. 13, 23 & 25. 1818 in Forts. Allg. Teutsch. Gaerten.–Mag. 3 : 32, 41, 83. 1818. *Wrightia tomentosa* (Roxb.) R. & S. Veg. ed. nov. 4: 414. 1819; Hook. f. Fl. Brit. India 3: 653. 1882; Cooke, Fl. Pres. Bombay 2: 199. 1958 (Repr.); Ngan in Ann. Missouri Bot. Gard. 52: 148. 1965. *'Buralicode'.*

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).*

Distrib. : Common in moist forests. Akola, Amravati (Ngan, op. cit.*)*, Chandrapur, Kolhapur, Nanded, Nasik, Pune, Raigad, Ratnagiri, (Cooke, op. cit.), Thane.

W. tinctoria R. Br. in Mem. Wern. Nat. Soc. 1: 74. 1811; Hook. f. Fl. Brit. India 3:653. 1882; Cooke, Fl. Pres. Bombay 2: 200. 1958 (Repr.); Ngan in Ann. Missouri Bot. Gard. 52: 143. 1965.

1.	Corona segments glabrous near the base within, firmbriae usually simple	...	ssp. *tinctoria*
1.	Corona segments puberulous near the base within, fimbriae compound	...	ssp. *rothii*

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.

Illus. : Wight, Ic. t. 444. 1840–43; Talb. For. Fl. Bombay Pres. & Sind 2:223, f. 400. 1911.

Distrib. : Common throughout the state in dry and moist deciduous forests.

Notes. : Flowers fragrant.

ssp. **rothii** (G. Don) Ngan in Ann. Missouri Bot. Gard. 52:144. 1965. *W. rothii* G. Don, Gen. Syst. 4:86. 1838. *W. tinctoria* R. Br. var. *rothii* (G. Don) Hook. f. Fl. Brit. India 3: 653. 1882. *W. tinctoria* sensu Cooke, Fl. Pres. Bombay [2: 200 1958 (Repr.)] p.p. non R. Br. 1811.

Trees, 3–4 m tall. Leaves ellipitic to broadly elliptic, puberulous throughout. Flowers white. Follicles paired, drooping. Seeds pointed.

Fls. & Frts. : March–May.

Illus. : Wight, Ic. t. 1319. 1848 *(W. rothii).*

Distrib. : Akola (Ngan, op. cit.), Chandrapur (Ngan, op. cit.), Yavatmal.

CULTIVATED SPECIES :

Adenium obesum R. & S. Syst. 4: 411. 1819; Woodr. in J. Bombay Nat. Hist. Soc. 12: 166. 1898; Cooke, Fl. Pres. Bombay 2: 207. 1958 (Repr.). *Nerium obesum* Forssk. Fl. Aegypt.–Arab. 255. 1775; Dalz. & Gibs. Suppl. 52. 1861.

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. & Gibs. Suppl. 51. 1861;

Woodr. in J. Bombay Nat. Hist. Soc. 12: 166. 1898; Cooke, Fl. Pres. Bombay 2: 203. 1958 (Repr.).

Rambling, evergreen shrubs; stems woody. Leaves opposite, 10–13 cm long, ovate, subcordate at base. Flowers fragant, 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.

Allamanda cathartica L. Mant. 2: 214. 1771; Cooke, Fl. Pres. Bombay 2: 207. 1958 (Repr.); Bailey, Man. Cult. Pl. (ed. 2) 810. 1949. *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.

var. **grandiflora** Raffill; Bailey, Man. Cult. Pl. (ed. 2). 811. 1949.

Dwarf, compact plants with thin wiry stems, ovate–lanceolate leaves and lemon yellow flowers, 10–11 cm long.

Notes. : Grown in gardens. Pune.

var. **hendersonii** Raffill ; Bailey, Man. Cult. Pl. (ed. 2). 810. 1949.

Shrubs. Leaves thick, leathery. Flowers yellow, 10–12 cm across.

Notes : Grown in gardens.

var. **nobilis** Raffill; Bailey, Man. Cult. Pl. (ed. 2). 811. 1949.

Shrubs, pubescent; twigs purple. Flowers bright yellow with white spot at base of lobes, 10–12 cm across.

Notes. : Grown in gardens. Pune.

A. neriifolia Hook. in Bot. Mag. t. 4594. 1851; Cooke, Fl. Pres. Bombay 2: 207. 1958 (Repr.); Bailey, Man. Cult. Pl. (ed. 2) 810. 1949.

Erect, evergreen shrubs upto 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.

Alstonia macrophylla Wall. ex G. Don, Gen. Syst. 4: 87. 1837; C.B.Cl. in Hook. f. Fl. Brit. India 3: 643. 1882; Naik, Fl. Marathwada 2: 529. 1998.

Evergreen trees upto 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 upto 50 cm long, winged on one suture. Seeds brownish–tomentose.

Fls. & Frts. : September–December.

Notes. : Native of Malaya, grown in gardens.

A. neriifolia Don, Prodr. 131. 1837; C.B.Cl. in Hook. f. Fl. Brit. India 3: 642. 1882.

Shrubs, upto 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.

Beaumontia grandiflora (Roxb.) Wall. Tent. Fl. Nepal t. 7, 1826; C.B.Cl. in Hook. F. Fl. Brit. India 3: 660. 1882; Dalz. & Gibs. Suppl. 52. 1861; Woodr. in J. Bombay Nat. Hist. Soc. 12: 166. 1898; Cooke, Fl. Pres. Bombay 2: 201. 1958 (Repr.). *Echites grandiflora* Roxb. Fl. Ind. 2: 14. 1832. (excl. fruit.).

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.

Notes. : Native of Nepal. Grown as ornamental plant.

Carissa arduina Lam. Encyl. 1: 555. 1783; Dalz. & Gibs. Suppl. 53. 1861; Cooke, Fl. Pres. Bombay 2: 188. 1958 (Repr.); Bailey, Man. Cult. Pl. (ed. 2) 812. 1949.

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.

C. grandiflora A. DC.; Bailey, Man. Cult. Pl. (ed 2) 812. 1949.

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.

Cascabella thevetia (L.) Lippold in Feddes Repert. 91. 1980. *Cerbera thevetia* L. Sp. Pl. 203. 1753. *Thevetia peruviana* (Pers.) Merr. in Philip. J. Sci. Bot. 9: 130. 1914; Bailey, Man. Cult. Pl.(ed. 2) 809. 1949. *T. neriifolia* Juss. ex Steud. Nom. 2: 680. 1841; Cooke, Fl. Pres. Bombay 2: 207. 1958 (Repr.). *'Pivah kanher'*.

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.

Catharanthus roseus (L.) G. Don, Gen. Syst. 4: 95. 1837; Sant. in Bull. Bot. Surv. India 3: 15. 1961; Naik, Fl. Osmanabad 199. 1979. *Vinca rosea* L. Syst. ed. 10. 944. 1759; C.B.Cl. in Hook. f. Fl.Brit. India 3: 640. 1882. *'Sadaphuli'*.

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.

Nerium indicum Mill. Gard. Dict. ed. 8, n. 2. 1768; Naik, Fl. Osmanabad 200. 1979. *N. odorum* Soland. in Ait. Hort. Kew 1: 297. 1789; C.B.Cl. in Hook. f. Fl. Brit. India 3: 655. 1882; Cooke, Fl. Pres. Bombay 2: 206. 1958 (Repr.). *'Kaner'.*

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.

Plumeria alba L. Sp. Pl. 210. 1753; Bailey, Man. Cult. Pl. (ed. 2) 1949; Naik, Fl. Marathwada 1: 533. 1998.

Small trees, 3–5 m tall, with millky 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.

P. rubra L. Sp. Pl. 209. 1753; Woodson in Ann. Missouri Bot. Gard. 25: 297. 1938. *P. acutifolia* Poir. in Lam. Encycl. Suppl. 2: 667. 1812; C.B.Cl. in Hook. f. Fl. Brit. India 3. 641. 1882; Cooke, Fl. Pres. Bombay 2: 205. 1958 (Repr.); Bailey, Man. Cult. Pl. (ed. 2) 810. 1949. *'Pandhara Chapha'.*

Trees, 3–5 m tall. Leaves alternate, 20–30 x 5–13 cm, oblong–lanceolate or oblancolate, 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.

Rauvolfia tetraphylla L. Sp. Pl. 208. 1753. *R. canescens* L. Sp. Pl. (ed. 2). 303. 1762; Cooke, Fl. Pres. Bombay 2: 188. 1958 (Repr.).

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.

Distrib. : Planted or as an escape.

Roupellia grata Wall. & Hook. in Bot. Mag. t. 4466. 1849; Dalz. & Gibs. Suppl. 52. 1861; Woodr. in J. Bombay Nat.Hist. Soc. 12: 166. 1898; Cooke, Fl. Pres. Bombay 2: 206. 1958 (Repr.).

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.

Stropanthus caudatus (Burm. f.) Kurz, For. Fl. Brit. Burma 2: 192. 1877 et in J. Asiat. Soc. Bengal 46, 11: 257. 1877; Back. & Bakh. f. Fl. Java 2: 240. 1965. *Nerium caudatum* Burm. f. Fl. Ind. t. 26. 1768. *Stropanthus wallichii* A. DC. Prodr. 8 : 418. 1844; C.B.Cl. in Hook. f. Fl. Brit. India 3: 655. 1882; Cooke, Fl. Pres. Bombay 2: 206. 1958 (Repr.).

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.

Tabernaemontana citrifolia L. Sp. Pl. 210. 1753; Bailey, Man. Cult. Pl. (ed. 2) 813. 1949; Naik, Fl. Marathwada 2: 536. 1998.

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.

T. divaricata (L.) R. Br. in R. & S. Syst. Veg. 4: 427. 1819; Sant. in Rec. Bot. Surv. India 16 (1): 167. 1953. *Nerium divaricatum* L. Sp. Pl. 209. 1753. *Tabernaemontana caronaria* (Jacq.) Willd. Enum. Hort. Berol. 275. 1809; C.B.Cl. in Hook. f. Fl. Brit. India 3: 646. 1882. *Ervatamia coronaria* Stapf in Dyer, Trop. Africa 4: 127. 1902; Cooke, Fl. Pres. Bombay 2: 197. 1958 (Repr.).

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 ... FREREA
               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 sub–coriaceous ... 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.

Asclepias curassavica L. Sp. Pl. 215. 1753; Hook. f. Fl. Brit. India 4: 18. 1883; Cooke, Fl. Pres. Bombay 2: 245. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4:15. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 6. 1999. *'Kurki'*.

Undershrubs, 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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:436. 1982.

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 cuspidate, 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*

Bidaria cuspidata (Thunb.) Huber in Abeywick. Rev. Handb. Fl. Ceylon 1(1): 47. 1973; Jagtap et N.P. Singh in Fasc. Fl. India 24: 65. 1999. *Cynanchum cuspidatum* Thunb. Obs. Cynan. 5. 1821. *Gymnema cuspidatum* (Thunb.) K. Schum. in Pflanzenf. 4(2): 284. 1895; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4:60. 1962. *G. pergularioides* Wight & Gard. in Thw. Enum. 198. 1860; Hook. f. Fl. Brit. India 4: 32. 1883; Cooke, Fl. Pres. Bombay 2: 225. 1958 (Repr.).

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.

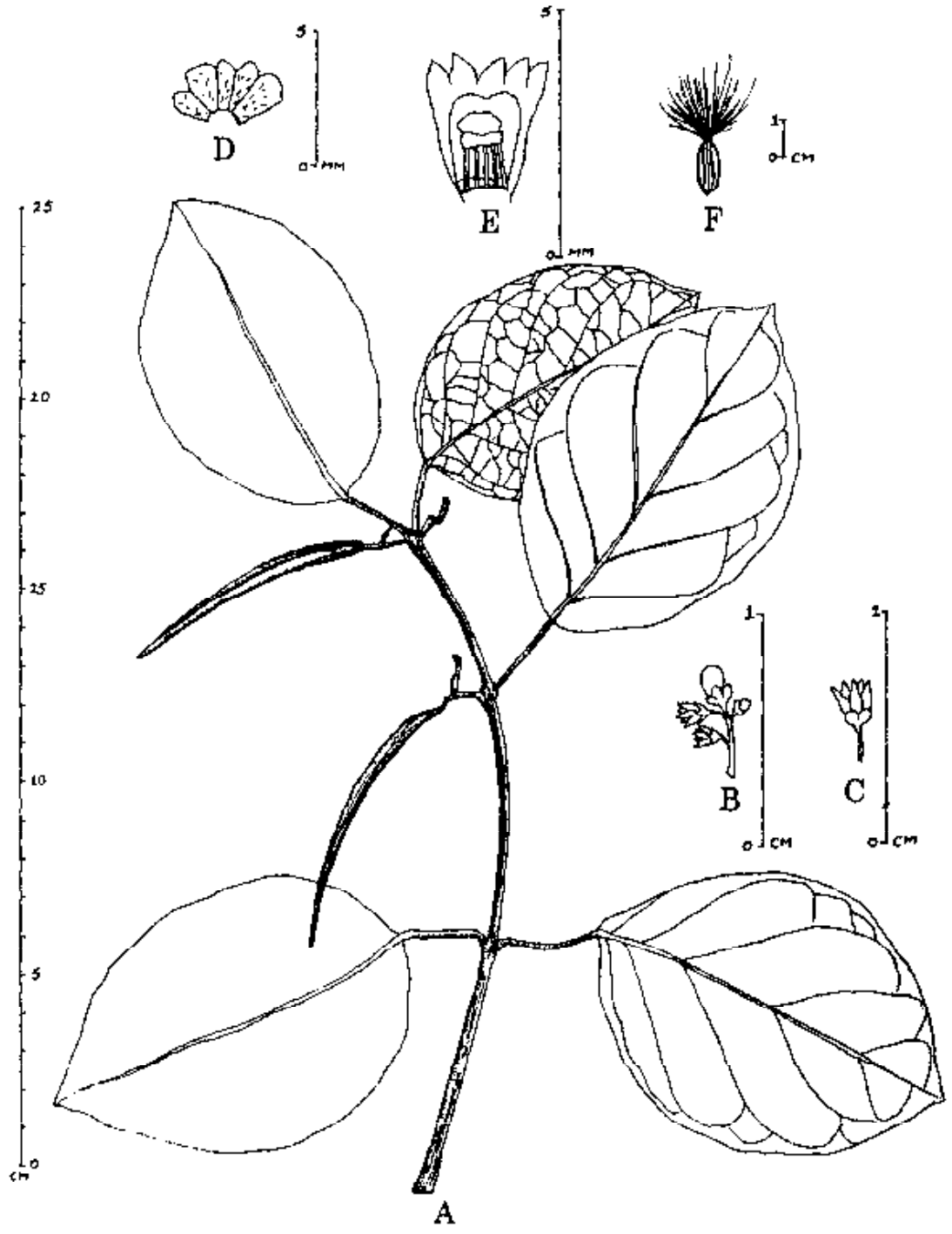
Illus. : Malhotra et al. in J. Bombay Nat. Hist. Soc. 76 : 203, figs. 1-6. 1979 *(Gymnema cuspidatum).*

Distrib. : Rare. Bhandara.

B. khandalense (Sant.) Jagtap & N. P. Singh in Biovigyanam 16(1):62. 1990 & in Fasc. Fl.India 24: 67. 1999. *Gymnema khandalense* Sant. in Kew Bull. 1948: 486. 1949; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4:49. 1962.

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.

Fls. & Frts. : October–January.



Bidaria khandalense (Sant.) Jagatap & N. P. Singh
A - Fruiting branch; B Inforescence; C Flower;
D Corolla spread open; E L. s. of flower; F - Seed

Illus. : Nayar & Sastry, Red data book Ind. pl. 3: 38, ff. a–f. 1990; Kothari & Moorthy, Fl. Raigad Dt. Mah. State 236, f. 1993.

Distrib. : In ghat areas of Pune, Raigad. It is endemic to Maharashtra.

B. montana (Roxb.) Rahman & Wilcock in Blumea 34: 99. 1989; Jagtap et N.P. Singh in Fasc. Fl. India 24: 68. 1999. *Asclepias montana* Roxb. Fl. Ind. 2:45. 1832. *Gymnema montanum* (Roxb.) Hook. f. Fl. Brit. India 4: 31. 1883; Cooke, Fl. Pres. Bombay 2:225. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4:48. 1962.

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.

B. tingens (Roxb.) Decne. in DC. Prodr. 8:623. 1844; Jagtap et N.P. Singh in Fasc. Fl. India 24: 69. 1999. *Asclepias tingens* Roxb. Fl. Ind. 2: 53. 1832. *Gymnema tingens* (Roxb.) Wight & Arn. in Wight, Contrib. 45. 1834; Hook. f. Fl. Brit. India 4: 31. 1883; Naik, Fl. Marathwada 1: 547. 1998.

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*

Brachystelma edulis Coll. et Helmsl. in J. Linn. Soc. 28:89, t. 14. 1890; Yadav *et al.* in J. Bombay Nat. Hist. Soc. 86: 480. 1990; Jagtap et N.P. Singh in Fasc. Fl. India 24: 181. 1999.

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.

B. malwanense Yadav et N.P. Singh in Kew Bull. 48 : 59, f. 1. 1993; Jagtap et N.P. Singh in Fasc. Fl. India 24: 186. 1999.

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.

B. naorojii Tetali et al. in Rheedea 8: 75. 1998; Jagtap et N.P. Singh in Fasc. Fl. India 24: 187. 1999.

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–oblong or ovate–lanceolate, 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 ... *C. gigantea*

1. Corona lobes glabrous, equal to or exceeding staminal column, straight or nearly so on acute, upcurved spur; apex bifid and without auricles ... *C. procera*

Calotropis gigantea (L.) Ait. Hort. Kew ed. 2, 2: 78. 1811; Hook. f. Fl. Brit. India 4: 17. 1883; Cooke, Fl. Pres. Bombay 2: 214. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 17. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 9. 1999. *Asclepias gigantea* L. Sp. Pl. 214. 1753. *'Ak', 'Akra', 'Madar', 'Rui'.*

Erect shrubs, c 3 m high; stems woody, terete, branched. Leaves subsessile, 5–17 x 3–9 cm, broadly obovate or elliptic–oblong, 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.

Fls. & Frts. : October–July.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:240, f. 408 & 409. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 437. 1982.

Distrib. : Common throughout.

C. procera (Ait.) R. Br. in Ait. Hort. Kew ed. 2, 2: 78. 1811; Hook. f. Fl. Brit. India 4: 18. 1883; Cooke, Fl. Pres. Bombay 2: 215. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 19. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 11. 1999. *C. procera* (Ait.) Ait. f. subsp. *hamiltonii* (Wight) Ali in Notes R.B.G. Edinb. 38 (2): 287–290. 1980. *'Ak', 'Akdo', 'Akro', 'Rui'.*

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.

Fls. : Most of the year. *Frts.* : August–December.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:242, f. 410. 1911; Mahesh. Illus. Fl. Delhi f. 124. 1966.

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*

Caralluma adscendens (Roxb.) R. Br. in Mem. Wern. Soc. 1: 25. 1809 (1811); Hook. f. Fl. Brit. India 4: 76. 1883; Gamble, Fl. Pres. Madras 2: 605. 1957 (Repr.); Mahabale, Bot. Fl. Maharashtra 694. 1987; Jagtap et N.P. Singh in Fasc. Fl. India 24: 193. 1999. *Stapelia adscendens* Roxb. Cor. Pl. 1: 28, t. 30. 1795.

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.

Fls. : March–January. *Frts.* : July–September.

Illus. : Grav. & Mayur. in Bull. Madr. Govt. Mus. n.s. Nat. Hist. Soc. 4(1): Pl. I, fig. 1. 1931.

Distrib. : Maharashtra (Jagtap et N.P. Singh, op. cit.).

var. **attenuata** (Wight) Grav. & Mayur. in Bull. Madr. Govt. Mus. n. s. Nat. Hist. Soc. 4(1): 13. 1931; Sant. & Irani in Univ. Bombay Bot. Mem no. 4: 22. 1962; Jagtap et N.P. Singh in Fasc. Fl. 24: 194. 1999. *C. attenuata* Wight, Ic. t. 1268. 1850; Hook. f. Fl. Brit. India 4: 76. 1883. *'Makad shing'*.

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.

Fls. & Frts. : December–April.

Illus. : Wight, op. cit.

Distrib. : Common in dry barren places. Ahmednagar, Aurangabad, Beed, Jalna, Latur, Nanded, Osmanabad, Parbhani and Pune.

var. **fimbriata** (Wall.) Grav. & Mayur. in Bull. Madr. Govt. Mus. n. s. Nat. Hist. Soc. 4(1): 12. 1931; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4:21. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 195. 1999. *C. fimbriata* Wall. Pl. Asiat. Rar. 1: 7, t. 8, pl. 1. 1830; Hook. f. Fl. Brit. India 4: 77. 1883; Cooke, Fl. Pres. Bombay 2: 244. 1958 (Repr.). *'Makadsing'*.

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.

Fls. & Frts. : June–September.

Illus. : Wight, Ic. t. 1268. 1848; Sant. & Irani, op. cit. 104, t. 1.

Distrib. : Common in dry rocky places. Ahmednagar, Deccan (Cooke, op. cit.), Dhule, Nasik, Pune, Satara.

C. edulis (Edgew.) Bth. Gen. Pl. 2: 782. 1876; Hook. f. Fl. Brit. India 4: 76. 1883; Cooke, Fl. Pres. Bombay 2: 244. 1958 (Repr.); Jagtap et N.P. Singh in Fasc. Fl. India 24: 202. 1999. *Boucerosia edulis* Edgew. in J. Linn. Soc. 6: 205, t. 1. 1862.

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, necter bearing, inner corona–lobes longer than the outer corona–lobes, strap–shaped, incumbent on anthers.

Fls. : February–September. *Frts.* :March–May.

Illus. : Bhandari in J. Bombay Nat. Hist. Soc. 68: 296. 1971 et Fl. Indian Desert 197. 1990.

Distrib. : Maharashtra (Jagtap et N.P. Singh, op. cit.).

C. crenulata Wall. Pl. As. Rar. 1: 6, t. 7. 1829; Grav. & Mayur. in Bull. Madr. Govt. Mus. n.s. Nat. Hist. Soc. 4(1): 21. 1931; Jagtap et N.P. Singh in Fasc. Fl. India 24: 199. 1999. *Boucerosia crenulata* (Wall.) Wight & Arn. in Wight, Contrib. 34. 1834; Hook. f. Fl. Brit. India 4: 77. 1883.

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.

Illsus. : Grav. & Mayur. in Bull. Madr. Govt. Mus. n.s. Nat. Hist. Soc. 4(1): Pl. III, figs. 12–13. 1931.

Distrib. : Mahrashtra (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*

1. Twining herbs :

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 memberanous :

14. Corolla lobes equal to or longer than tube :

15. Corolla–tube finnel–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 ... *C. hirsuta*

19. Stem glabrous; corolla–tube glabrous inside; inner corona not hooked at tips ... *C. oculata*

18 Corolla–tube subcylindric, hardly dilated above :

20. Corolla–lobes lanceolate, linear to subspathulate or broadly oblong ... *C. media*

20. Corolla lobes broadly ovate or orbicular :

21. Corolla less than 2 cm long, lobes orbicular, glabrous within; corona uniseriate ... *C. santapaui*

21. Corolla 2.5–4.0 cm long, lobes broadly ovate, pubescent within; corona biseriate ... *C. evansii*

Ceropegia attenuata Hook. Ic. Pl. 9: t. 867. 1852; Hook. f. Fl. Brit. India 4: 67. 1883; Cooke, Fl. Pres. Bombay 2:239. 1958 (Repr.); Huber in Mem. Soc. Broter. 12: 128. 1957; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 25 1962; Ansari in Fasc. Fl. India 16: 9. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 215. 1999. *'Tilori'*.

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.

Fls. : July–August. *Frts.* : August–October.

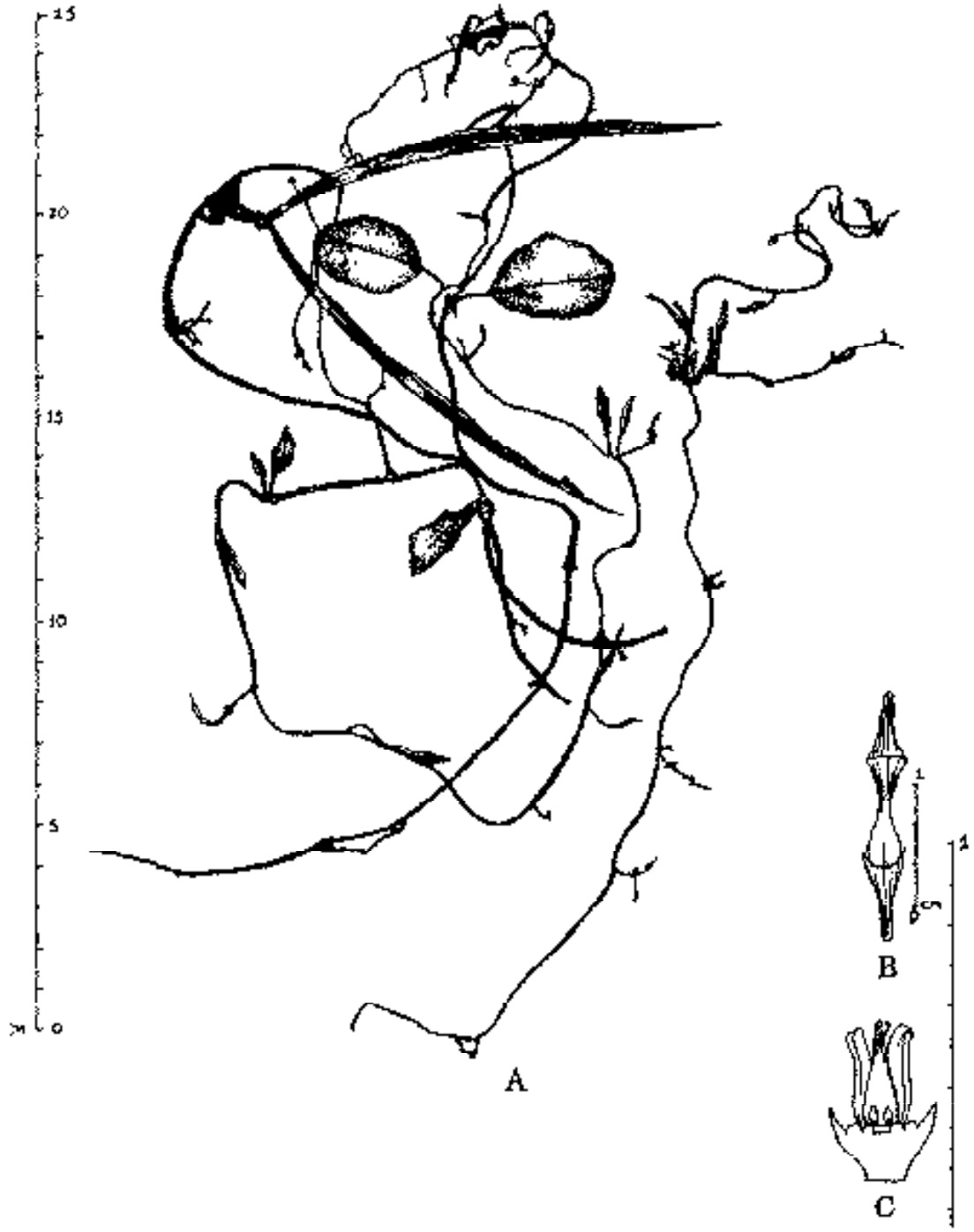
Illus. : Sant. & Irani, op. cit. 105, t. 2.

Distrib. : Mumbai, Pune, Raigad, Ratnagiri, Thane.

C. bulbosa Roxb. Pl. Cor. 1: 11, t. 7. 1795; Hook. f. Fl. Brit. India 4:67. 1883; Cooke, Fl. Pres. Bombay 2:240. 1958 (Repr.); Huber in Mem. Soc. Broter. 12: 60. 1957; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 28. 1962; Ansari in Fasc. Fl. India 16: 11. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 217. 1999. *'Khapparkadu'*.

1. Leaves orbicular, ovate ... var. *bulbosa*

1. Leaves linear to lanceolate 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.

var. **lushii** (Grah.) Hook. f. Fl. Brit. India 4: 68. 1883; Cooke, Fl. Pres. Bombay 2: 241. 1958 (Repr.); Ansari in Fasc. Fl. India 16: 11. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 218. 1999. *C. lushii* Grah. in Bot. Mag. t. 3300. 1834. *C. acuminata* Roxb. Pl. Corom. 1: 12, t. 8. 1795; Hook. f. Fl. Brit. India 4: 78. 1883.

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.

C. candelabrum L. Sp. Pl. 211. 1753; Hook. f. Fl. Brit. India 4: 70. 1883; Huber in Mem. Soc. Broter. 12: 58. 1957; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 29. 1962; Ansari in Fasc. Fl. India 16:12. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 218. 1999. *C. ellottii* Hook. f. Fl. Brit. India 4: 70. 1883.

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.

Illus. : Rheede, Hort. Malab. 9:27, t. 17. 1673.

Distrib. : Along ghats. 'Konkan' & Pune (Cooke, op. cit.).

C. evansii McC. in J. Bombay Nat. Hist. Soc. 45: 209. 1945; Huber in Mem. Soc. Broter. 12: 66. 1957; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 31. 1962; Ansari in Fasc. Fl. India 16:15. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 222. 1999.

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.

Illus. : Sant. & Irani in Bull. Bot. Soc. Bengal 12(1 & 2): 11, t. 1, f. d & t. 2, f. c. 1958.

Distrib. : In low forest open slopes. Pune, Ratnagiri – Endemic & Critically Endangered.

C. fantastica Sedgw. in J. Ind. Bot. Soc. 2: 124. 1921; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 35. 1962; Vartak, Fl. Gomantak 72. 1966; Jagtap et N.P. Singh in Fasc. Fl. India 24: 222. 1999.

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.

Illus. : Kanodia & Reddi in Bull. Bot. Surv. India 6: 311, t. 1–5. 1964.

Distrib. : On lateritic soil in open semi–evergreen forests, among shrubs. Mahrashtra (Jagtap et N.P. Singh, op. cit.).

C. hirsuta Wight & Arn. in Wight, Contrib. 30. 1834; Hook. f. Fl. Brit. India 4:71. 1883; Cooke, Fl. Pres. Bombay 2: 242. 1958 (Repr.); Huber in Mem. Soc. Broter. 12:63. 1957; Sant. & Irani in Univ. Bombay Bot. Mem. no 4: 30. 1962; Ansari in Fasc. Fl. India 16, t. 3: 11, f. 7. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 223. 1999. *'Haamana'.*

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.

Distrib. : Common in Akola, Aurangabad, Mumbai, (Cooke, op. cit.), Nanded, Nasik, Pune, Ratnagiri, (Cooke, op. cit.), Satara.

C. huberi Ansari in Bull. Bot. Surv. India 10 (2): 219. (1968) 1969 et in Fasc. Fl. India 16: 17. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 225. 1999. *'Kharpudi'.*

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.

Distrib. : Along western ghats. Kolhapur, Ratnagiri, Satara – Endemic & Critically Endangered.

C. jainii Ansari & Kulkarni in Bull. Bot. Surv. India 22: 221. (1980) 1982; Ansari in Fasc. Fl. India 16: 18. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 226. 1999.

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.

Distrib. : Among grassy bed on hill side. Satara, Sindhudurg Endemic & Critically Endangered.

C. juncea Roxb. Pl. Cor. 1:12, t. 10. 1795; Hook. f. Fl. Brit. India 4:68. 1883; Cooke, Fl. Pres. Bombay 2:240. 1958 (Repr.); Yadav et al. in J. Bombay Nat. Hist. Soc. 86: 481. 1990; Jagtap et N.P. Singh in Fasc. Fl. India 24: 227. 1999.

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.

C. lawii Hook. f. Fl. Brit. India 4: 67. 1883; Cooke, Fl. Pres. Bombay 2: 240. 1958 (Repr.); Huber in Mem. Soc. Broter. 12: 67. 1957; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 27. 1962; Ansari in Fasc. Fl. India 16:19. 1984; Jagtap et N. P. Singh in Fasc. Fl. India 24: 228. 1999. *'Kharpudi'. 'Tilori'.*

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.

Distrib. : On hill tops of Ahmednagar, Kolhapur, Pune – Endemic & Vulnerable.

C. maccannii Ansari in Bull. Bot. Surv. India 22. 227. (1980) 1982 & in Fasc. Fl. India 16: 22, t. 3: 16. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 230. 1999. *C. lawii* auct. plur. non Hook. f. Fl. Brit. India 4:67. 1883 p.p.; Cooke, Fl. Pres. Bombay 2: 240. 1958 (Repr.) p.p. *'Kharpudi'.*

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 cylindrical above; corona biseriate, outer of 5 shortly bifid, hairy lobes, inner subspathulate, hairy, divergent.

Fls. & Frts. : July–October.

Illus. : Ansari, op. cit.

Distrib. : Along western ghats. Ahmednagar, Pune – Endemic & Critically Endangered.

C. mahabalei Hem. & Ansari in Indian Forester 97:105. 1971; Ansari in Fasc. Fl. India 16: 24, t. 3:17. 1984; Jagtap et N.P. Singh in Fasc.Fl. India 24: 232. 1999. *'Gauti Kharpudi'*.

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. : August–September. *Frts.* : September–onwards

Illus. : Hem. & Ansari, op. cit. 106, fig. 1-4; Ansari, op. cit.

Distrib.: Western ghats of Pune – Endemic & Critically Endangered.

C. media (Huber) Ansari in Bull. Bot. Surv. India 11:199–201. 1969 et in Fasc. Fl. India 16: 24. 1984; Jagtap et N.P. Singh 24: 232. 1999. *C. evansii* McC. var. *media* Huber in Mem. Soc. Broter. 12:67, t. 3, f. 22b. 1957; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4:32. 1962.

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.

Distrib. : Ahmednagar, Pune - Endemic & Critically Endangered.

C. noorjahaniae Ansari in J. Bombay Nat. Hist. Soc. 69: 250, t. 1, f. 1–5. 1972 et in Fasc. Fl. India 16: 26. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 233. 1999.

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.

Fls. : July–August. *Frts.* : September–onwards.

Illus. : Ansari, op. cit.

Distrib. : In forests along ghats. Satara – Endemic & Critically Endangered.

C. oculata Hook. Bot. Mag. t. 4093. 1844; Hook. f. Fl. Brit. India 4: 72. 1883; Cooke, Fl. Pres. Bombay 2: 242. 1958 (Repr.); Huber in Mem. Soc. Broter. 12:64, t. 3, f. 31a. 1957; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4:33. 1962; Ansari in Fasc. Fl. India 16: 26, t. 4: 20.1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 234. 1999.

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.

C. odorata Hook. f. Fl. Brit. India 4: 75. 1883; Huber in Mem. Soc. Broter. 12: 69, t. 3, f. 37, t. 11, f. 37. 1957; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 29. 1962; Sabnis & Bedi in Kew Bull. 25: 59, f. 1–6. 1971; Ansari in Fasc. Fl. India 16: 26. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 234. 1999.

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.).

C. panchganiensis Blatt. & McC. in J. Bombay Nat. Hist. Soc. 36: 534. 1933; Ansari in Bull. Bot. Surv. India 22: 199, f. 1–4. 1980 et in Fasc. Fl. India 16: 27. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 235. 1999. *'Kharpudi', 'Khartundi'.*

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, cilate 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.

Distrib. : Rare among grasslands. Satara – Endemic & Critical Endangered.

C. pusilla Wight & Arn. in Wight Contrib. 31. 1834 et Wight Ic. Pl. Ind. Or. t. 1261. 1848; Hook. f.Fl. Brit. India 4: 66. 1883; Gamble, Fl. Pres. Madras 2. 601. 1957 (Repr.); Mahabale, Bot. Fl. Maharashtra 499. 1987; Jagtap et N.P. Singh in Fasc. Fl. India 24: 236. 1999.

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.

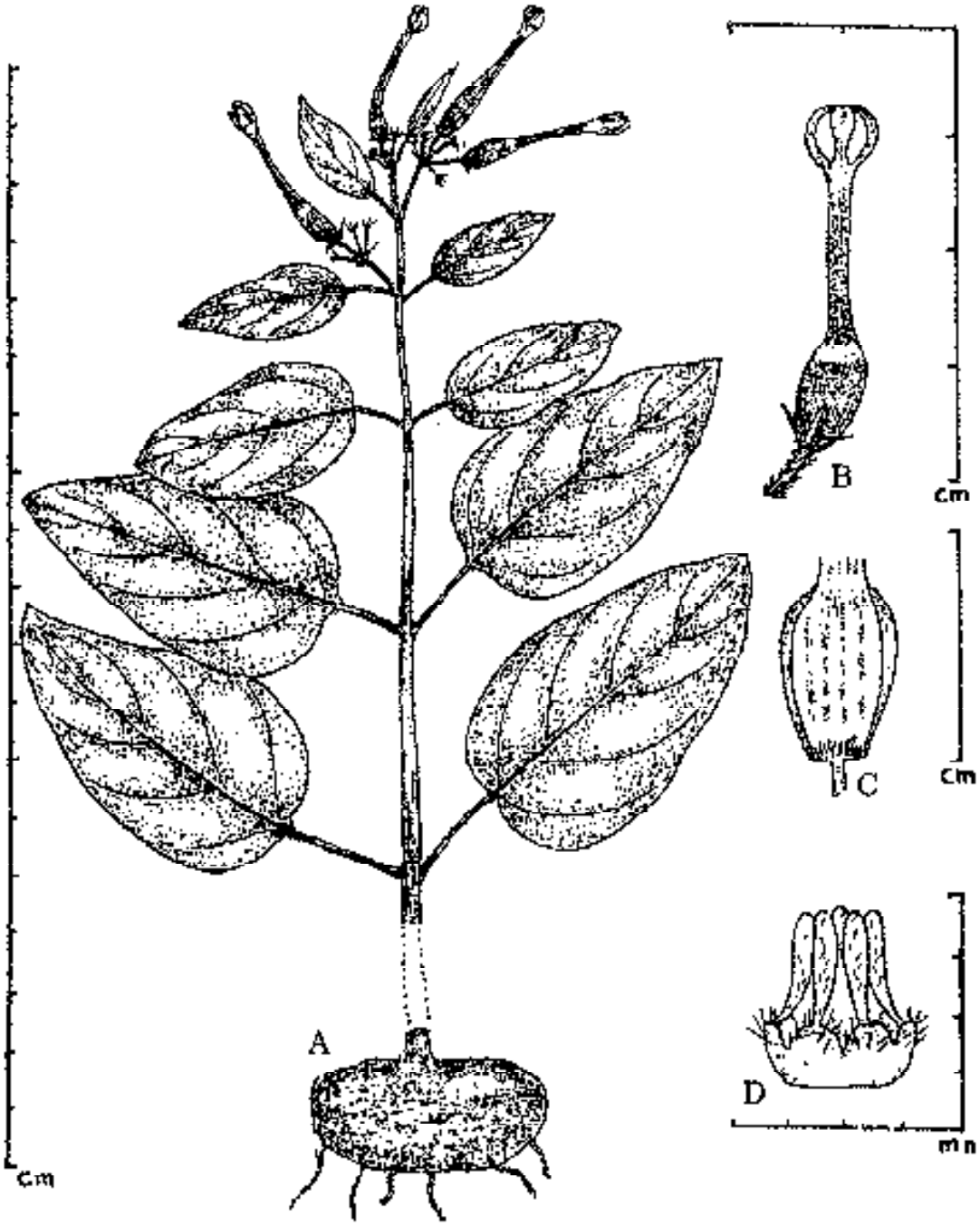
Illus. : Wight, Ic. t. 1261. 1848.

Distrib. : Maharashtra (Jagtap et N.P. Singh, op. cit.).

C. rollae Hem. in Bull. Bot. Surv. India 10(2): 123–125, t. 1, f. 1–6. 1969; Ansari in Fasc. Fl. India 16: 29. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 237. 1999. *'Kharpudi'.*

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.

C. sahyadrica Ansari & Kulkarni in Indian Forester 97: 688, t. 1, f. 1–4 & t. 2, f. A(1 & 2) & B (1). 1971; Ansari in Fasc. Fl. India 16: 29. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 238. 1999.

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.

Distrib. : Sparse on hill slopes. Nasik, Pune, Sindhudurg – Endemic & Endangered.

C. santapaui Wadhwa & Ansari in Bull. Bot. Surv. India 10: 95, t. 1, f. 1–9. 1968; Ansari in Fasc. Fl. India 16:30, t. 4: 25, f. 17. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 238. 1999. *'Khartundi'.*

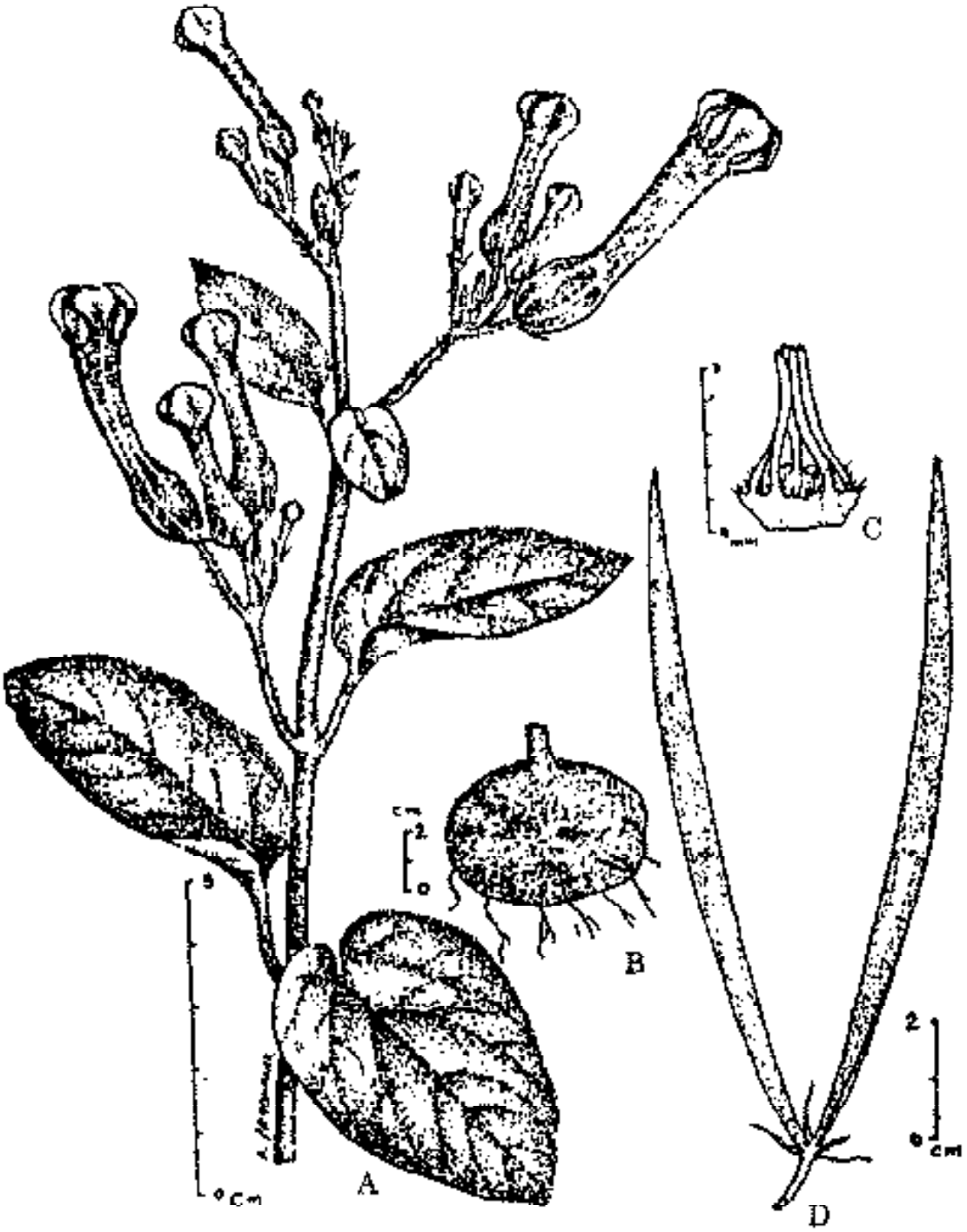
Herbs, twining; stems terete, puberulous above, glabrous at age. Leaves petiolate, 1.5–5.4 x 0.8–1.5, ovate or lanceolate, puberulous above, glabrous below, apex subacuminate or acuminate, base rounded, ciliolate at margins. Flowers few to many, in extra–axillary cymes; peduncles and pedicels hairy; corolla base inflated, glabrous inside; corona of 5, erect, elongated–conical processes, hairy outside, convergent at apex.

Fls. & Frts. : August–October.

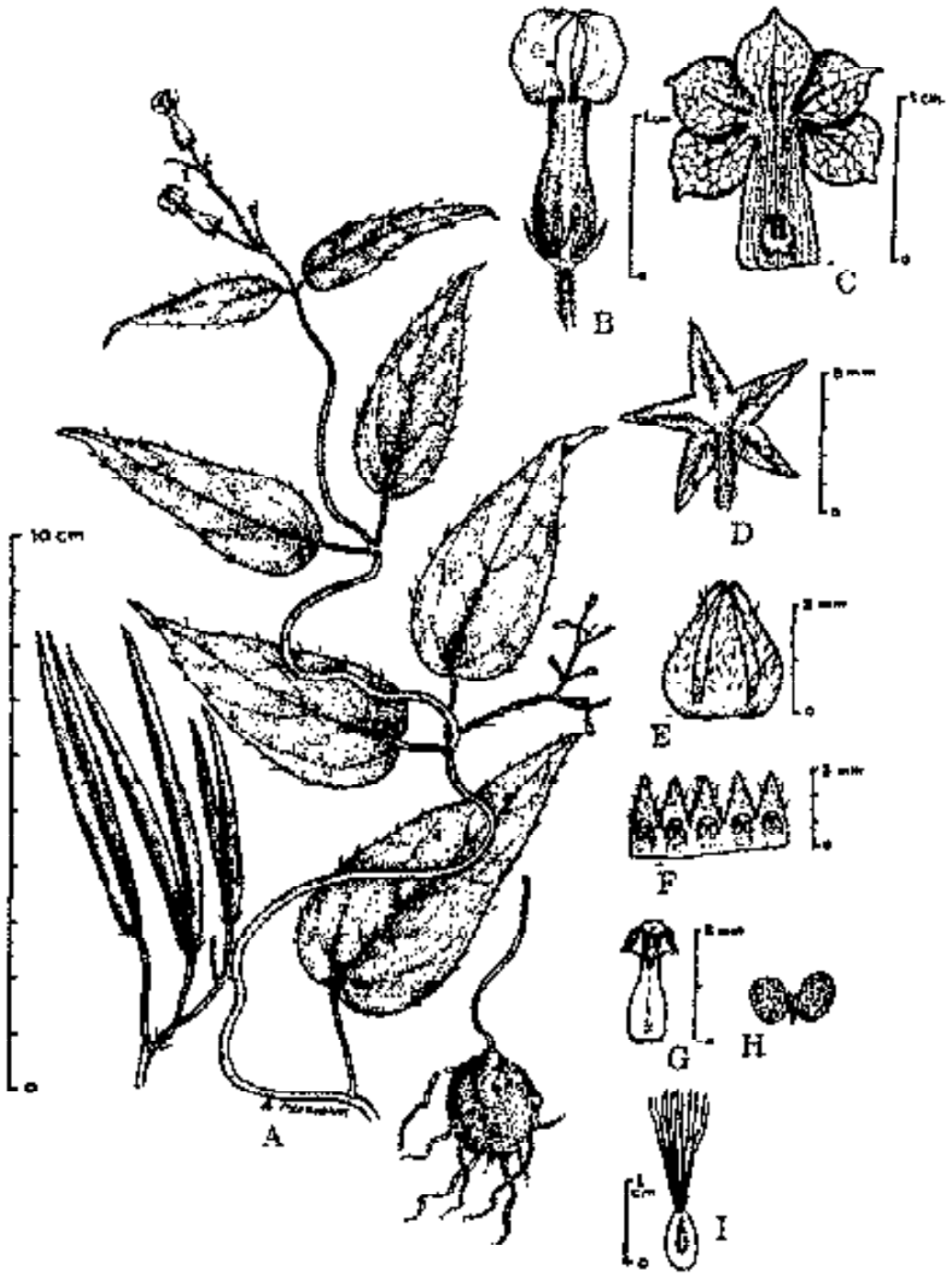
Illus. : Wadhwa & Ansari, op. cit.; Ansari, op. cit.

Distrib. : Rare. Satara – Endemic & Critically Endangered.

C. vincaefolia Hook. Bot. Mag. t. 3740. 1839 emend. Ansari in Bull. Bot. Surv. India 13:187–191. 1971; Ansari in Fasc. Fl. India 16:31, t. 4:26. 1984; Jagtap et N.P. Singh in Fasc. Fl. India 24: 240. 1999. *C. stocksii* Hook. f. Fl. Brit. India 4:74. 1883; Cooke, Fl. Pres. Bombay 2:243. 1958 (Repr.). *'Khapar Khutti'.*



Ceropegia sahyadrica Ansari & Kulkarni
A - Flowering twig; B - Tuber; C Corona; D Follicles



Ceropegia santapaui 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 acuminate, 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, oblanceolate, glabrous.

Fls. : August–September. *Frts.* : September–onwards.

Illus. : Hook. op. cit.; Ansari, op. cit.

Distrib. : Rare. Mumbai, Pune, Raigad, Satara, Thane – Endemic & Vulnerable.

COSMOSTIGMA Wight

Cosmostigma racemosum (Roxb.) Wight, Contrib. 42. 1834 & Ic. t. 591. 1842; Hook. f. Fl. Brit. India 4:46. 1883; Cooke, Fl. Pres. Bombay 2:232. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4:36. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 72. 1999. *Asclepias racemosa* Roxb. Fl. Ind. 2:32. 1832. *'Jati', 'Marvel', 'Shendvel'.*

Climbing shrubs; stems branched, stout. Leaves petiolate, 5.5–14.0 x 5–12 cm, broadly ovate, apex acute or shortly acuminate, 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 exserted beyond anthers. Follicles c 14 cm long, solitary or paired, ovoid–oblong. Seeds ovoid, coma silky.

Fls. : June–August. *Frts.* : October–December.

Illus. : Wight, op. cit.; Sant. & Irani, op. cit. 108, t. 5.

Distrib. : Not common. Mumbai, Pune, Raigad, Thane.

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,

Fl. Pres. Bombay 2: 221. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 39. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 17. 1999.

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.

Fls. : September–January. *Frts.* : October–April.

Illus. : Wight, op. cit.; Talb. For. Fl. Bombay Pres. & Sind 2: 246 –247, ff. 413 & 414. 1911.

Distrib. : Widely distributed in Ahmednagar, Pune, Satara, Thane.

C. tunicatum (Retz.) Alston in Kew Bull. 1932: 60. 1932; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 40. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 22. 1999. *Periploca tunicata* Retz. Obs. 2: 15. 1781. *Cynanchum pauciflorum* R. Br. in Mem. Wern. Soc. 1:45. 1809; Hook. f. Fl. Brit. India 4:23. 1883; Cooke, Fl. Pres. Bombay 2:221. 1958 (Repr.).

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.

Fls. & Frts. : May–July.

Illus. : Wight, Ic. t. 354. 1840.

Distrib. : Not common. Konkan (Sant. & Irani), Pune.

FREREA Dalz.

Frerea indica Dalz. in J. Linn. Soc. Lond. 8:10, t. 3. 1865; Hook. f. Fl. Brit. India 4: 76. 1883; Cooke, Fl. Pres. Bombay 2: 243. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 44. 1962;

Jagtap et N.P. Singh in Fasc. Fl. India 24: 243. 1999. *'Shindal–Makudi'*.

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.

Fls. : September–December. *Frts.* : December–January.

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.

Genianthus laurifolius (Roxb.) Hook. f. Fl. Brit. India 4:16. 1883; Cooke, Fl. Pres. Bombay 2: 213. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 46. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 274. 1999. *Asclepias laurifolia* Roxb. Fl. Ind. 2: 49. 1832.

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.

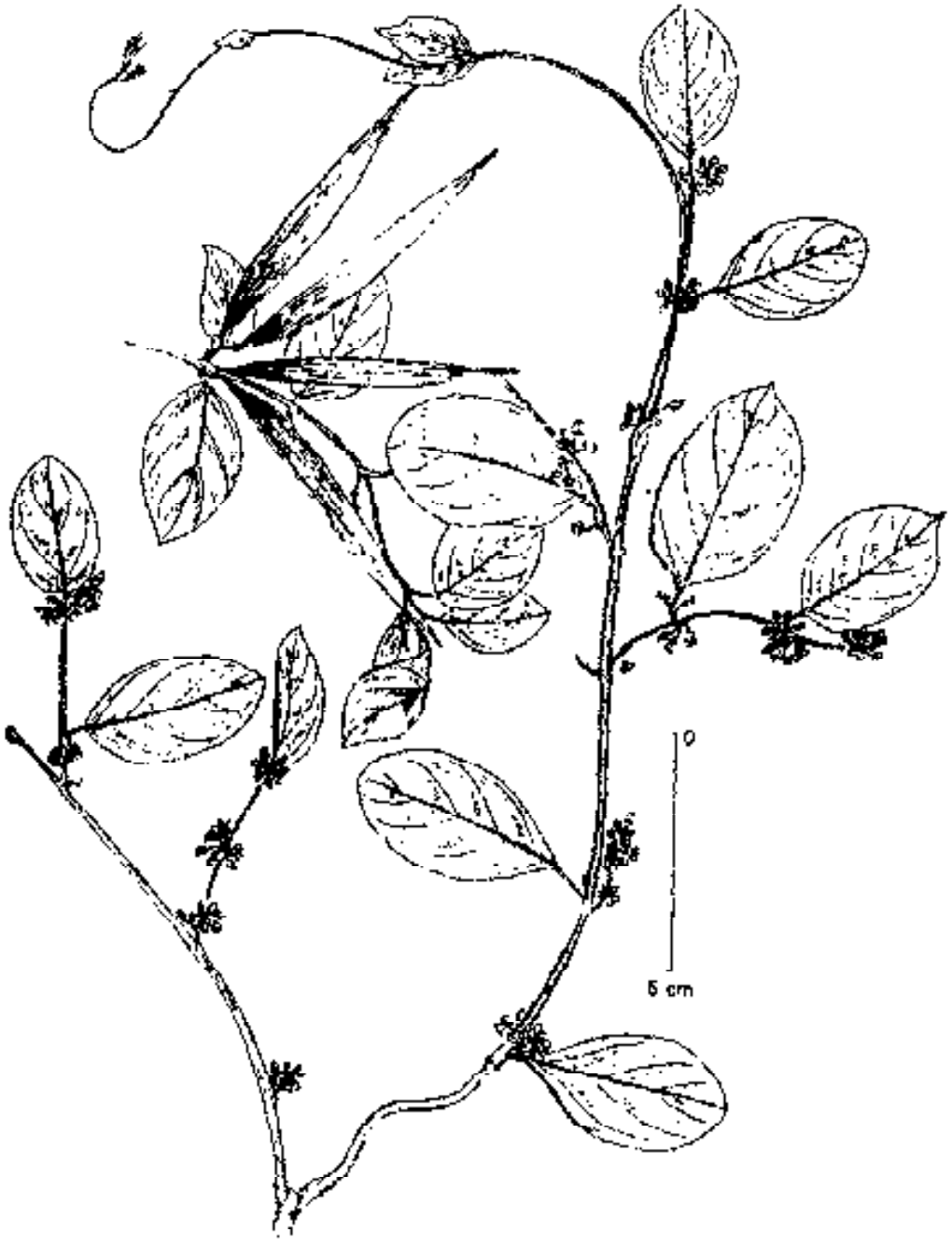
Fls. & Frts. : October–December.

Illus. : Wight, Ic. t. 588. 1842.

Distrib. : Rare. Konkan (Cooke, op. cit.), Mumbai.

GYMNEMA R. Br.

Gymnema sylvestre (Retz.) R. Br. ex Schultes in R. & S. Syst. Veg. 6:57. 1819; Hook. f. Fl. Brit. India 4:29. 1883; Cooke, Fl. Pres.



Gymnema sylvestre (Retz.) R. Br. ex Schultes

Bombay 2: 224. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 47. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 89. 1999. *Periploca sylvestris* Retz. Obs. 2: 15. 1781. *'Kavali', 'Pitani'.*

Twining shrubs; stems much branched, cylindrical, young branches densely pubescent. Leaves petiolate, 3–6 x 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.

Fls. : April–July. *Frts.* : September–January.

Illus. : Wight, Ic. t. 349. 1840; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 445. 1982.

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*

Heterostemma alatum Wight, Contrib. 42. 1834; Hook. f. Fl. Brit. India 4: 47. 1883; Jagtap et N.P. Singh in Fasc. Fl. India 24: 246. 1999.

Twining shrubs; stems terete, slightly swollen at nodes, branches slender, puberulous. Latex milky–white. Leaves 1.1–17 x 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.).

H. dalzellii Hook. f. Fl. Brit. India 4:48. 1883; Cooke, Fl. Pres. Bombay 2: 232. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4:51. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 249. 1999.

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.

H. deccanense (Talb.) Swarupanandan & Mangaly in Bot. J. Linn. Soc. 101:255. 1989; Jagtap et N.P. Singh in Fasc. Fl. India 24: 249. 1999. *Oianthus deccanensis* Talb. For. Fl. Bombay Pres. & Sind 2:260. 1911; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4:64. 1962.

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.

Fls. : August–October. *Frts.* : December–January.

Illus. : Swarupanandan & Mangaly, op. cit. f. 2 (C–E).

Distrib. : Rare, on rocky ground in open wastelands. Nasik, Pune, Thane.

H. tanjorense Wight & Arn. in Wight Contrib. 42. 1834; Hook. f. Fl. Brit. India 4: 47. 1883; Jagtap et N.P. Singh in Fasc. Fl. India 24: 253. 1999. *H. tanjorense* var *zeylanicum* Hook. f. Fl. Brit. India 4: 48. 1883.

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.

Illus. : Wight,Ic. t. 348. 1840; Matthew, Illus. Fl. Tamil. Carnatic 2: t. 447. 1982.

Distrib. : Maharashtra (Jagtap et N.P. Singh, *op. cit.*).

H. urceolatum Dalz. in Hook. Kew J. 4: 295. 1852; Jagtap et N.P. Singh in Fasc. Fl. India 24: 254. 1999. *Oianthus urceolatus* Bth. in Hook. Ic. Pl. t. 1191. 1876; Hook. f. Fl. Brit. India 4: 49. 1883; Cooke, Fl. Pres. Bombay 2: 236. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 65. 1962.

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.

Distrib. : Very rare. Pune, Raigad, Thane.

HOLOSTEMMA R. Br.

Holostemma annulare (Roxb.) K. Schum. in Engl. & Prantl, Pflanzenf. 4(2): 250, f. 71, J–K. 1895; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 53. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 29. 1999. *Asclepias annularia* Roxb. Fl. Ind. 2: 37. 1832. *Sarcostemma annulare* Roth, Nov. Pl. Spec. 178. 1821. *Holostemma ada–kodien* Schl. in L. Syst. Veg. 6: 95. 1820 nom. illeg.; Naik, Fl. Marathwada 1: 548. 1998. *Holostemma rheedei* Wall. Pl. Asiat. Rar. 2: 51. 1831; Hook. f. Fl. Brit. India 4: 21. 1883. *H. rheedianum* Spreng. Syst. 1: 851. 1825; Cooke, Fl. Pres. 2: 220. 1958 (Repr.). *'Shidodi', 'Tultuli'.*

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. *Frts.* : September–October.

Illus. : Wight, Ic. t. 597. 1842 *(H. rheedei);* Sant. & Irani, op. cit. 111, t. 8.

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*

Hoya alexicaca (Jacq.) Moon, Cat. Pl. Ceylon 21. 1824; Jagtap et N.P. Singh *in* Fasc. Fl. India 24: 95. 1999. *Asclepias alexicaca* Jacq. Coll. Bot. 2:101. 1789. *Hoya iconum* Sant. in J. Bombay Nat. Hist. Soc. 53: 504. 1956; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 58. 1962. *H. pendula* (Roxb.) Wight, Ic. t. 474. 1840–43 non Wight & Arn. 1834; Hook. f. Fl. Brit. India 4: 61. 1883; Cooke, Fl. Pres. Bombay 2: 235. 1958 (Repr.).

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 elemnets, 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.*

H. retusa Dalz. in Hook. Kew J. Bot. 4: 294. 1852; Hook. f. Fl. Brit. India 4: 56. 1883; Cooke, Fl. Pres. Bombay 2: 233. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 55. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 118. 1999. *'Jonnaki'.*

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.

H. wightii Hook. f. Fl. Brit. India 4:59. 1883; Cooke, Fl. Pres. Bombay 2:234. 1958 (Repr.); Jagtap et N.P. Singh in Fasc. Fl. India 24: 121. 1999. *H. pendula* Wight & Arn. in Wight, Contrib. 36. 1834 (excl. syn. non Wight Ic. t. 474. 1841); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 56. 1962. *'Ambri', 'Dudh–yel'.*

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.

Illus. : Blatt. & McC. in J. Bombay Nat. Hist. Soc. 36: 532, t. 2. 1933.

Distrib. : Common in ghats. Pune, Raigad, Satara, Thane.

LEPTADENIA R. Br.

1.	Erect, bushy shrubs, leafless or nearly so	...	*L. pyrotechnica*
1.	Twining shrubs with leaves	...	*L. reticulata*

Leptadenia pyrotechnica (Forssk.) Decne. in Ann. Sc. Nat. 2, 9: 270. 1838; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 59. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 259. 1999. *Cynanchum pyrotechnicum* Forssk. Fl. Aegypt.–Arab. 53. 1775. *Leptadenia spartium* Wight, Contrib. 48. 1834; Hook. f. Fl. Brit. India 4: 64. 1883; Cooke, Fl. Pres. Bombay 2: 238. 1958 (Repr.).

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; corona 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.

Fls. : October–January. *Frts.* : January–February.

Illus. : Mahesh. Illus. Fl. Delhi f. 128. 1966; Bhandari, Fl. Indian Desert 223, f. 74. 1978.

Distrib. : Rare. Kolhapur.

L. reticulata (Retz.) Wight & Arn. in Wight, Contrib. 47. 1834; Hook. f. Fl. Brit. India 4:63. 1883; Cooke, Fl. Pres. Bombay 2:237. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 60. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 260. 1999. *Cynanchum reticulatum* Retz. Obs. 2:15. 1781. *'Hirandodi', 'Kharkhoda', 'Shinguti'.*

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.

Illus. : Wight, Ic. t. 350. 1840; Mahesh. Illus. Fl. Delhi f. 127. 1966.

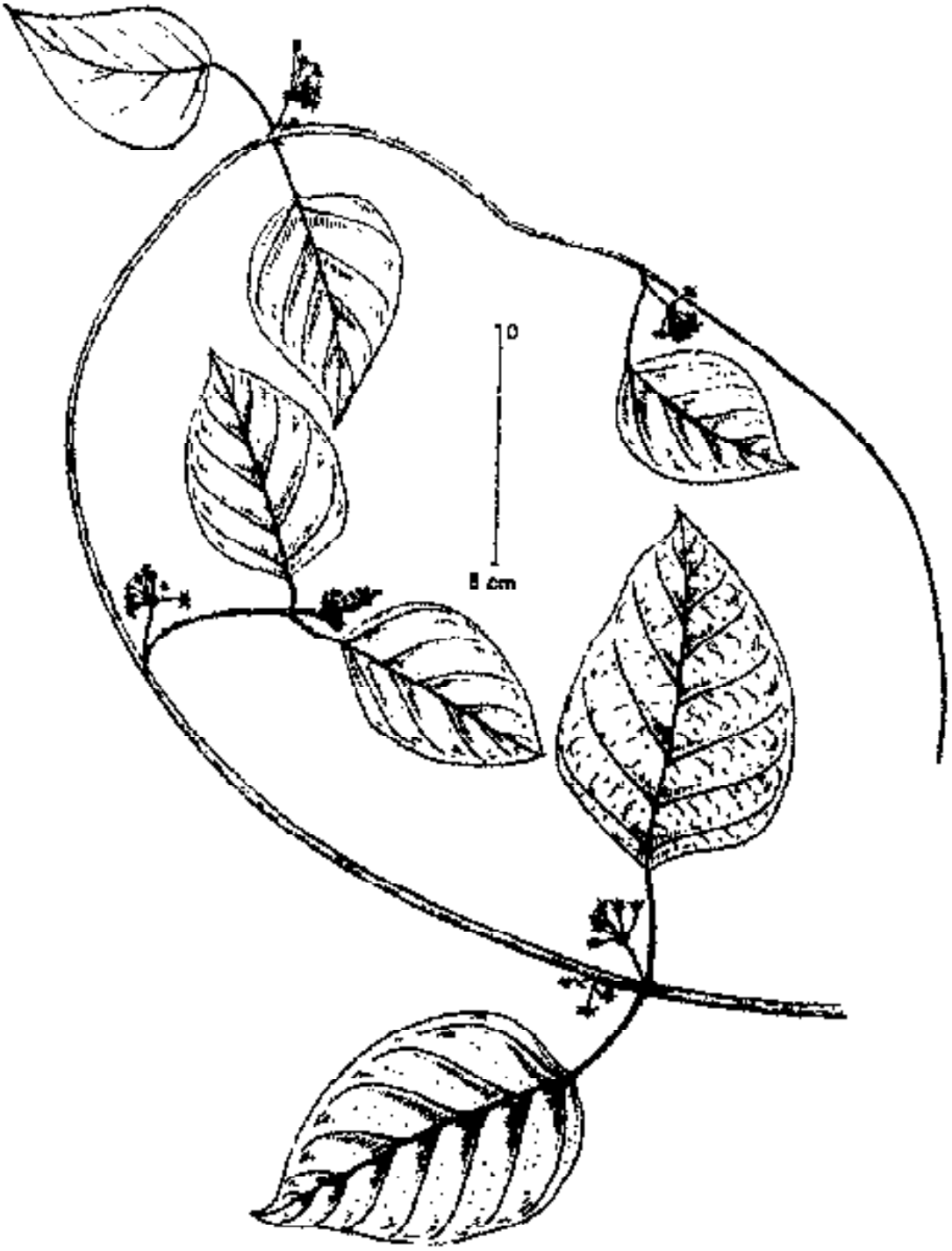
Distrib. : Common in hedges, along river–banks, etc. Common throughout.

Notes. : Leaves are used in Ayurvedic medicine. It is one of the ingradients of 'Leptaden'.

MARSDENIA R. Br.

Marsdenia tenacissima (Roxb.) Moon, Cat. Pl. Ceylon. 21. 1824; Hook. f. Fl. Brit. India 4: 35. 1883; Cooke, Fl. Pres. Bombay 2: 230. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 62. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 132. 1999. *Asclepias tenacissima* Roxb. Pl. Cor. 3: 35, t. 240. 1819.

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 tomentse 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 cyclindrical. Seeds broadly ovate.

Fls. : April–July. *Frts.* : January–March.

Illus. : Wight, Ic. t. 590. 1842.

Distrib. : Forest Ghats of Dhule, Pune.

OXYSTELMA R. Br.

Oxystelma esculentum (L. f.) R. Br. in Mem. Wern. Soc. 5: 40. 1809, printed in 1811 ex Schult. in L. Syst. Veg. 6: 89. 1820; Hook. f. Fl. Brit. India 4: 17. 1883; Cooke, Fl. Pres. Bombay 2: 216. 1958 (Repr.); Jagtap et N.P. Singh in Fasc. Fl. India 24: 33. 1999. *Periploca esculenta* L. f. Suppl. Pl. 168. 1781. *Oxystelma secamone* (L.) Karst. Deut. Fl. 1031. 1880–1883 nom. illegit.; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 67. 1962. *Sarcostemna secamone* (L.) Bennet in Indian Forester 95: 692. 1969 nom. illegit.; Naik, Fl. Marathwada 1: 552. 1998. *'Dudhani'*.

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 125. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: 451. 1982.

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*

Pentatropis capensis (L. f.) Bullock in Kew Bull. 1955: 284. 1955; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 69. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 38. 1999. *Cynanchum capense* L. f. Suppl. 168. 1781. *Pentatropis microphylla* (Roxb.) Wight & Arn. in Wight, Contrib. 52. 1834; Hook. f. Fl. Brit. India 4: 20. 1883; Cooke, Fl. Pres. Bombay 2:218. 1958 (Repr.). *'Parparam'*.

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. *Frts.* : December–January.

Illus. : Wight, Ic. t. 352. 1840 (*Pentatropis microphylla*).

Distrib. : Along hedges. Mumbai, Pune, Satara, Thane.

P. nivalis (Gmel.) D. V. Field & S. R. I. Wood in Kew Bull. 38: 215. 1983; Jagtap et N.P. Singh in Fasc. Fl. India 24: 39. 1999. *Asclepias nivalis* J. F. Gmel. in Linn. Syst. Nat. ed. 13, 2 (2): 444. 1791. *Pentatropis spiralis* (Forssk.) Decne. in Ann. Sc. Nat. 2, 9: 329, t. 11E. 1838; Hook. f. Fl. Brit. India 4: 19. 1883; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 70. 1962; Naik, Fl. Marathwada 1: 549. 1998. *Pentatropis cynanchoides* R. Br. in Salt. Voy Abyss. App. 64. 1814; Cooke, Fl. Pres. Bombay 2: 218. 1958 (Repr.). *'Ambarvel'*.

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. *Frts.* : May–October.

Illus. : Ali in Nasir & Ali, Fl. Pakistan 150:22, f. 6, D–H. 1983.

Distrib. : On hedges of cultivated fields. Ahmednagar, Aurangabad, Beed, Jalna, Mumbai, Thane.

PERGULARIA L.

Pergularia daemia (Forssk.) Choiv. Result. Sc. Miss. Stefan. Paoli Somal. Ital. 1: 115. 1916; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 74. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 41. 1999. *Asclepias daemia* Forssk. Fl. Aeg.–Arab. 51. 1775. *Daemia extensa* R. Br. in Mem. Wern. Soc. 5 (1) : 50. 1811.; Hook. f. Fl. Brit. India 4: 20. 1883; Cooke, Fl. Pres. Bombay 2:219. 1958 (Repr.). *'Utarni'*.

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.

Fls. : March–December. *Frts.* : March–December.

Illus. : Wight, Ic. t. 596. 1842; Bhandari, Fl. Indian Desert 226, fig. 75. 1978; Matthew Illus. Fl. Tamilnadu Carnatic 2: t. 453. 1982.

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*

Sarcostemma intermedium Decne. in DC. Prodr. 8: 538. 1844; Hook. f. Fl. Brit. India 4: 27. 1883; Cooke, Fl. Pres. Bombay 2: 223. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 77. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 48. 1999. *'Phok'*.

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.

Distrib. : On arid rocky soil. Pune, Satara.

S. viminale (L.) R. Br. in Mem. Wern. Soc. 1: 51. 1810; Jagtap et N.P. Singh in Fasc. Fl. India 24: 50. 1999. *Euphorbia viminalis* L. Sp. Pl. 452. 1753. *Sarcostemma acidum* (Roxb.) Voigt, Hort. Sub. Calc. 542. 1845; Sant. & Irani in Unv. Bombay Bot. Mem. no. 4: 76. 1962; Naik, Fl. Marathwada 1: 551. 1998. *Asclepias acida* Roxb. Fl. Ind. 2: 31. 1832. *Sarcostemma brevistigma* Wight & Arn. in Wight, Contrib. 59. 1834; Hook. f. Fl. Brit. India 4:26. 1883; Cooke, Fl. Pres. Bombay 2: 222. 1958 (Repr.). *'Ran–sher'*, *'Soma'*, *'Som–vel'*.

1. Follicles 10.0–12.5 cm long, tapering at both ends, slightly divergent when 2 together ... ssp. *viminale*

1. Follicles 5.5–8.8 cm long, not tapering towards base but tapering little towards apex, much divaricate ... ssp. *stocksii*

ssp. **viminale.**

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.

ssp. **stocksii** (Hook. f.) Ali in Nasir & Ali, Fl. Pakistan 150: 31. 1983; Jagtap et N.P. Singh in Fasc. Fl. India 24: 51. 1999. *Sarcostemma stocksii* Hook. f. Fl. Brit. India 4: 27. 1883; Cooke, Fl. Pres. Bombay 2: 223. 1958 (Repr.).

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–Septermber.

Illus. : Ali, op. cit. 18, f. 5, F–H.

Distrib. : In rocky areas of Deccan, Poona (Ali, op. cit.).

SESHAGIRIA Ansari & Hemadri

Seshagiria sahyadrica Ansari & Hem. in Indian Forester 97: 126–127, t. 1, f. 1–7. 1971 & in Bull Bot. Surv. India 13: 357–358, t. 1, f. A–B. 1971; Jagtap et N.P. Singh in Fasc. Fl. India 24: 53. 1999. *'Khobar–doda'*.

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.

Fls. : June–July. *Frts.* : July–September.

Illus. : Ansari & Hem. op. cit.

Distrib. : Along western ghats. Pune, Satara.

TELOSMA Coville

Telosma pallida (Roxb.) Craib in Kew Bull. 1911: 418. 1911; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 83. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 143. 1999. *Asclepias pallida* Roxb. Fl. Ind. 2: 48. 1832. *Pergularia pallida* Wight & Arn. in Wight, Contrib 42. 1834; Hook. f. Fl. Brit. India 4: 38. 1883; Cooke, Fl. Pres. Bombay 2: 229. 1958 (Repr.).

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. Follicles c 10 cm long, lanceolae.

Fls. : August–September. *Frts.* : November–December.

Illus. : Wight, Ic. t. 585. 1842.

Distrib. : Not common, found in dry open wastelands. Akola, Mumbai, Nasik, Osmanabad.

TOXOCARPUS Wight & Arn.

Toxocarpus kleinii Wight & Arn. in Wight, Contrib. 61. 1834; Hook. f. Fl. Brit. India 4: 14. 1883; Cooke, Fl. Pres. Bombay 2: 212. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 84. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 282. 1999.

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*

Tylophora dalzellii Hook. f. Fl. Brit. India 4:43. 1883; Cooke, Fl. Pres. Bombay 2:227. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4:87. 1962; Jagtap & N.P. Singh in Fasc. Fl. India 24: 151. 1999.

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.

T. fasciculata Buch.–Ham. in Wight, Contrib. 50. 1834; Hook. f. Fl. Brit. India 4:40. 1883; Cooke, Fl. Pres. Bombay 2: 226. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 85. 1962; Jagtap et N. P. Singh in Fasc. Fl. india 24: 153. 1999. *'Bhindodi'.*

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.

T. indica (Burm. f.) Merr. in Phil. J. Sci. 19:373. 1921; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 88. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 159. 1999. *Cynanchum indicum* Burm. f. Fl. Ind. 70. 1768. *Tylophora asthamatica* Wight & Arn. in Wight, Contrib. 51. 1834; Hook. f. Fl. Brit. India 4: 44. 1883; Cooke, Fl. Pres. Bombay 2: 228. 1958 (Repr.). *'Antamul', Potmari'.*

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.

Fls. : December–July. *Frts.* : January–July.

Illus. : Sant. & Irani, op. cit. 115, t. 12.

Distrib. : Common on hedges. Latur, Mumbai, Nanded, Nasik, Osmanabad, Pune, Ratnagiri, Thane.

T. rotundifolia Buch.– Ham. in Wight, Contrib. 50. 1834; Hook. f. Fl. Brit. India 4: 43. 1883; Cooke, Fl. Pres. Bombay 2: 227. 1958 (Repr.); Sant. & Irani in Univ. Bombay. Bot. Mem. no. 4: 86. 1962; Naik, Fl. Marathwada 1: 555. 1998; Jagtap et N. P. Singh in Fasc. Fl. India 24: 167. 1999.

Creepers; stems terete, sparingly branched, pubescent. Leaves shorly 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.

Fls. & Frts. : January–July.

Distrib. : Rare on hill slopes, in forests. Aurangabad, 'Konkan' (Cooke, op. cit.), Nanded.

T. tetrapetala (Dennst.) Suresh in Nicolson, C. R. Suresh & K. S. Maninal's An Interpr. of van Rheedes Hort. Malab. 64. 1988; Jagtap et N.P. Singh in Fasc. Fl. India 24: 171. 1999. *Asclepias tetrapetala* Dennst. Schlussel 14, 18, 35. 1818. *T. tenuis* Bl. Bijdr. 1062. 1826; Hook. f. Fl. Brit. India 4:42. 1883; Cooke, Fl. Pres. Bombay 2: 227. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 87. 1962.

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.

Fls. : May–July. *Frts.* : July–August.

Illus. : Wight, Ic. t. 588. 1843 (*Tylophora tenuissima* Wight & Arn.).

Distrib. : Rare. Mumbai (Cooke, op. cit.).

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*

Wattakaka lanceolata (T. Cooke) Jagtap & N.P. Singh in Kew Bull. 46(2): 359. 1991 et in Fasc. Fl. India 24: 173. 1999. *Marsdenia lanceolata* T. Cooke, Fl. Pres. Bombay 2: 167. 1904 [2: 231. 1958 (Repr.)]. *Wattakaka angustifolia* (Hook. f.) S. Deshpande in S. Deshpande et al. Fl. Mahabelshwar and Adj. Maharashtra 1: 369. 1993. *Dregea angustifolia* (Hook. f.) Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 41. 1962. *Dregea volubilis* var. *angustifolia* Hook. f. Fl. Brit. India 4: 47. 1883; Naik, Fl. Marathwada 1: 545. 1998.

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind. 2: 255, f. 419. 1911.

Distrib. : Rare on bunds of fields. Amednagar, Aurangabad, Beed, Jalna, Kolhapur, Nanded, Pune, Satara.

Notes. : It is endemic in Maharashtra.

W. volubilis (L. f.) Stapf in Bot. Mag. 148: Sub t. 8976. 1923; Jagtap et N.P. Singh in Fasc. Fl. India 24: 175. 199. *Asclepias volubilis* L. f. Suppl. 170. 1781. *Dregea volubilis* (L. f.) Bth. ex Hook. f. Fl. Brit. India. 4: 46. 1883; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 42. 1962; Naik, Fl. Marathwada 1: 546. 1998. *Marsdenia volubilis* T. Cooke, Fl. Pres. Bombay 2: 166. 1904 [2: 230. 1958 (Repr.)]. *'Ambri', 'Hirandodi'.*

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.

Fls. : April–July. *Frts.* : August–February.

Illus. : Wight, Ic. t. 586. 1840–43 (*Hoya viridiflora* R. Br. in Mem. Wern. Nat. Hist. Soc. 1: 27. 1810); Sant. & Irani, op. cit. 109, t. 6; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 458. 1982.

Distrib. : Very common in wastelands. Common throughout.

CULTIVATED SPECIES :

Gomphocarpus physocarpus E. Meyer, Comm. Pl. Afr. Austral. 202. 1837; Jagtap et N.P. Singh in Fasc. Fl. India 24: 27. 1999. *Asclepias physocarpus* Schl. in Bot. Jahrb. Syst. 21. Biebl. Liv. 8. 1895.

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.

Hoya carnosa R. Br. in Mem. Wern. Soc. 1: 27. 1811; Cooke, Fl. Pres. Bombay 2: 235. 1958 (Repr.).

Twining or climbing by means of roots, glabrous. Leaves ovate–oblong or elliptic–oblong, thick and fleshy. Flowers white with pink center, in pendulous umbels on short peduncles; corolla fleshy, bearded inside.

Distrib. : A native of Queensland, grown in gardens. Mumbai.

H. griffithii Hook. f. Fl. Brit. India 4: 59. 1883; Cooke, Fl. Pres. Bombay 2: 235. 1958 (Repr.); Jagtap et N.P. Singh in Fasc. Fl. India 24: 102. 1999.

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.

Distrib. : It is native of Khasia mountains. Grown in gardens. Mumbai.

Stapelia grandiflora Masson Stap. Nov. t. 11. 1796; Cooke, Fl. Pres. Bombay 2: 245. 1958 (Repr.); Jagtap et N.P. Singh in Fasc. Fl. India 24: 269. 1999.

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.

Distrib. : A native of South Africa, grown in gardens. Mumbai, Pune.

Stephanotis floribunda Brong. in Ann. Sc. Nat. Ser. 2, 7: 30. 1831; Cooke, Fl. Pres. Bombay 2: 245. 1958 (Repr.); Jagtap et N.P. Singh in Fasc. Fl. India 24: 139. 1999.

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, dichasial 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.

Telosma cordata (Burm. f.) Merr. in Philip. J. Sci. 19: 372. 1921; Jagtap et N.P. Singh in Fasc. Fl. India 24: 142. 1999. *Asclepias cordata* Burm. f. Fl. Ind. 72, t. 27. 1768. *Telosma minor* (Andr.) Craib. in Bull. Misc. Inform. 1911: 418. 1911; Cooke, Fl. Pres. Bombay 2: 229. 1958 (Repr.). *Pergularia minor* Andr. Bot. Repos 3: t. 184. 1801; Hook. f. Fl. Brit. India 4: 38. 1883.

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.

PERIPLOCAEAE

(A. P. Jagtap & Sujit Kumar Das Das)

1. Woody climbers; corolla–tube as long as or longer than lobes ... CRYPTOSTEGIA

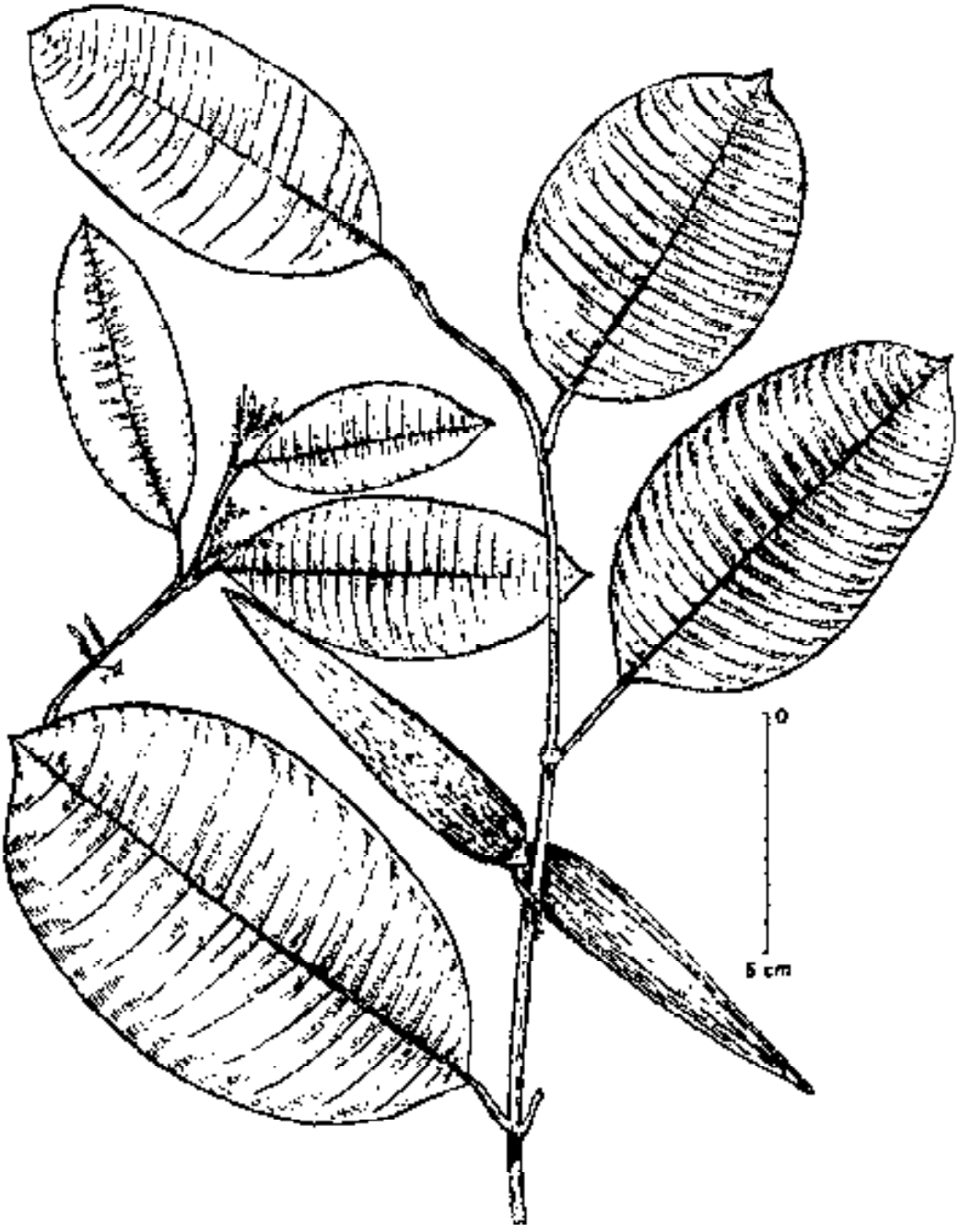
1. Climbing shrubs or undershrubs; corolla–tube shorter than lobes :

   2. Leaves with numerous lateral nerves united intramarginally; corolla–lobes overlapping to the right ... CRYPTOLEPIS

   2. Leaves wtih few (6–8) lateral nerves not united intramarginally; corolla–lobes valvate ... HEMIDESMUS

CRYPTOLEPIS R. Br.

Cryptolepis buchanani Roem. & Schult. Syst. 4: 409. 1819; Hook. f. Fl. Brit. India 4: 5. 1883; Cooke, Fl. Pres. Bombay 2: 210. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 91. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 290. 1999. *'Karnata', 'Setakavali'.*



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.

Illus. : Wight, Ic. t. 494. 1842; Talb. For. Fl. Bombay Pres. & Sind 2: 237, f. 407. 1911.

Distrib. : Common throughout.

CRYPTOSTEGIA R. Br.

Cryptostegia grandiflora R. Br. in Bot. Reg. 5:t. 435. 1819; Hook. f. Fl. Bri. India 4: 6. 1883; Cooke, Fl. Pres. Bombay 2: 245. 1958 (Repr.); Sant & Irani in Univ. Bombay Bot. Mem. no. 4: 93. 1962; Jagtap et N.P. Singh in Fasc. Fl India 24: 295. 1999. *'Vilayati–vakundi'*.

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.

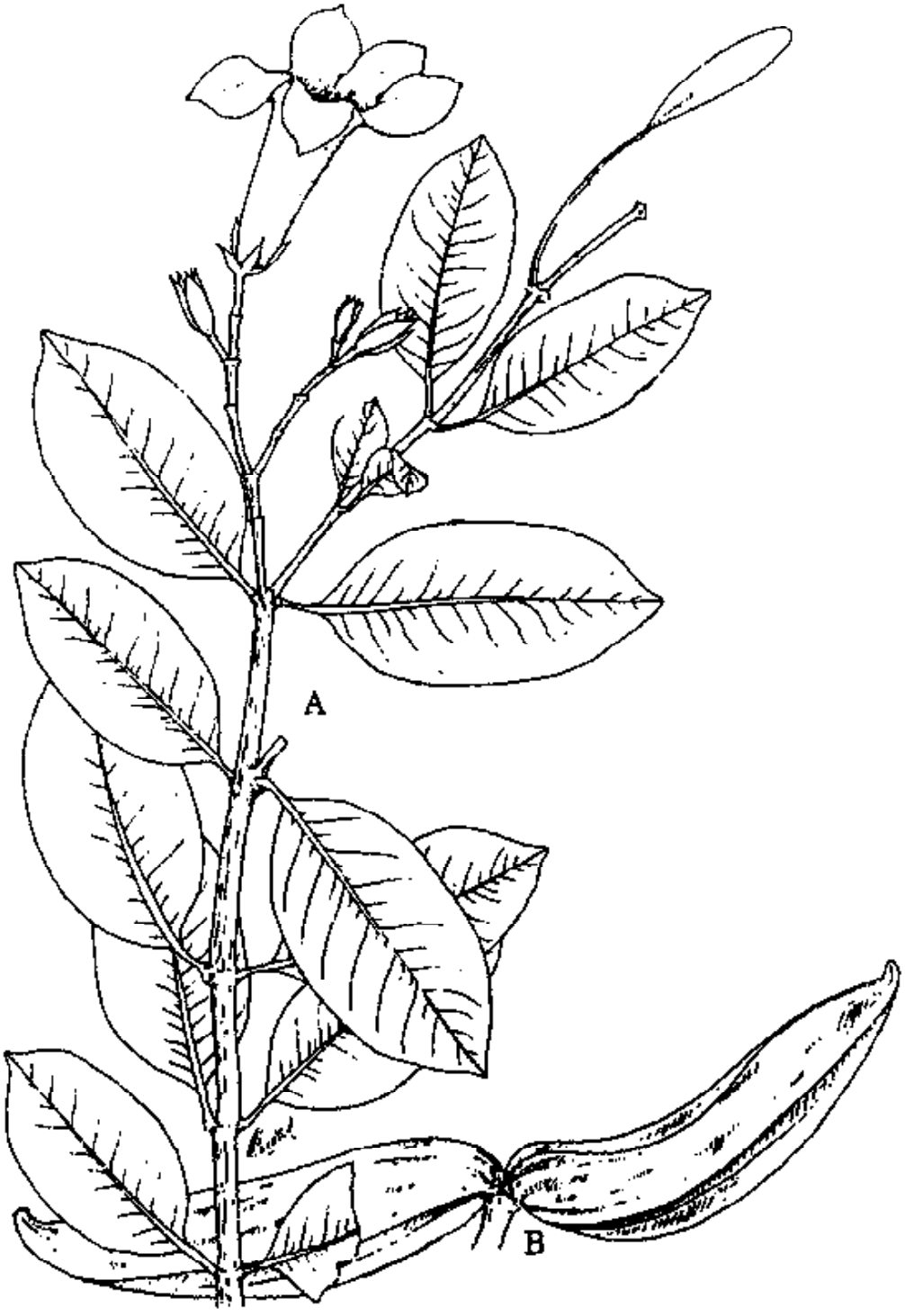
Illus. : Wight, Ic. t. 831. 1844–45; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 370. 1988.

Distrib. : Common throughout.

Notes : This species is a native of Tropical Africa almost naturalized in State.

HEMIDESMUS R. Br.

Hemidesmus indicus (L.) Schult. in Roem. & Schult. Syst. Veg. 6: 126. 1819; Hook. f. Fl. Brit. India 4: 5. 1883; Cooke, Fl. Pres. Bombay



Gryptostegia grandiflora R. Br.
A - Flowering twig; B - Fruit.

2: 210. 1958 (Repr.); Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 96. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 301. 1999. *Periploca indica* L. Sp. Pl. 211. 1753. *'Anantvel', 'Uparsul'.*

1.	Leaves glabrous beneath	...	var. *indicus*
1.	Leaves pubescent beneath	...	var. *pubescens*

var. **indicus.**

Undershrubs, twining; stems terete, swollen at nodes. Leaves petiolate, 6–11 x 0.8–4 cm, linear–lanceolate, elliptic–oblong or obovate–oblong, 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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 233, f. 403. 1911.

Distrib. : Common throughout.

var. **pubescens** (Wight & Arn.) Hook. f. Fl. Brit. India 4: 5. 1883. *H. pubescens* Wight & Arn. in Wight, Contrib. 63. 1834; Jagtap et N.P. Singh in Fasc. Fl. India 24: 303. 1999.

Branchlets, leaves beneath and inflorescence pubescent. Leaves c 8 x 2.5 cm, elliptic–oblong.

Fls. & Frts. : August–December.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 446. 1982.

Distrib. : Common on bushes in forests and around fields. Aurangabad, Beed, Jalna, Latur, Nanded, Osmanabad, Parbhani.

CULTIVATED AND INTRODUCED SPECIES :

Cryptostegia madagascariensis Boj. Hort. Maurit. 212. 1837; Sant. & Irani in Univ. Bombay Bot. Mem. no. 4: 94. 1962; Jagtap et N.P. Singh in Fasc. Fl. India 24: 296. 1999.

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.

Fagraea ceilanica Thunb. Kongl. Vetensk. Acad. Nya. Handl. 3: 132. 1782. *F. obovata* Wall. in Roxb. Fl. Ind. 2: 33. 1824; C.B.Cl. in Hook. f. Fl. Brit. India 4: 83. 1883; Cooke, Fl. Pres. Bombay 2: 248. 1958 (Repr.). *'Hannachalli', 'Menakalli'.*

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.

Mitrasacme indica Wight, Ic. t. 1601. 1850; Leenh. in Steenis, Fl. Males. 1, 6: 384. 1962. *M. alsinoides* auct. non R. Br. 1810; C.B.Cl. in Hook. f. Fl. Brit. India 4: 80. 1873; Cooke, Fl. Pres. Bombay 2: 247. 1958 (Repr.).

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.

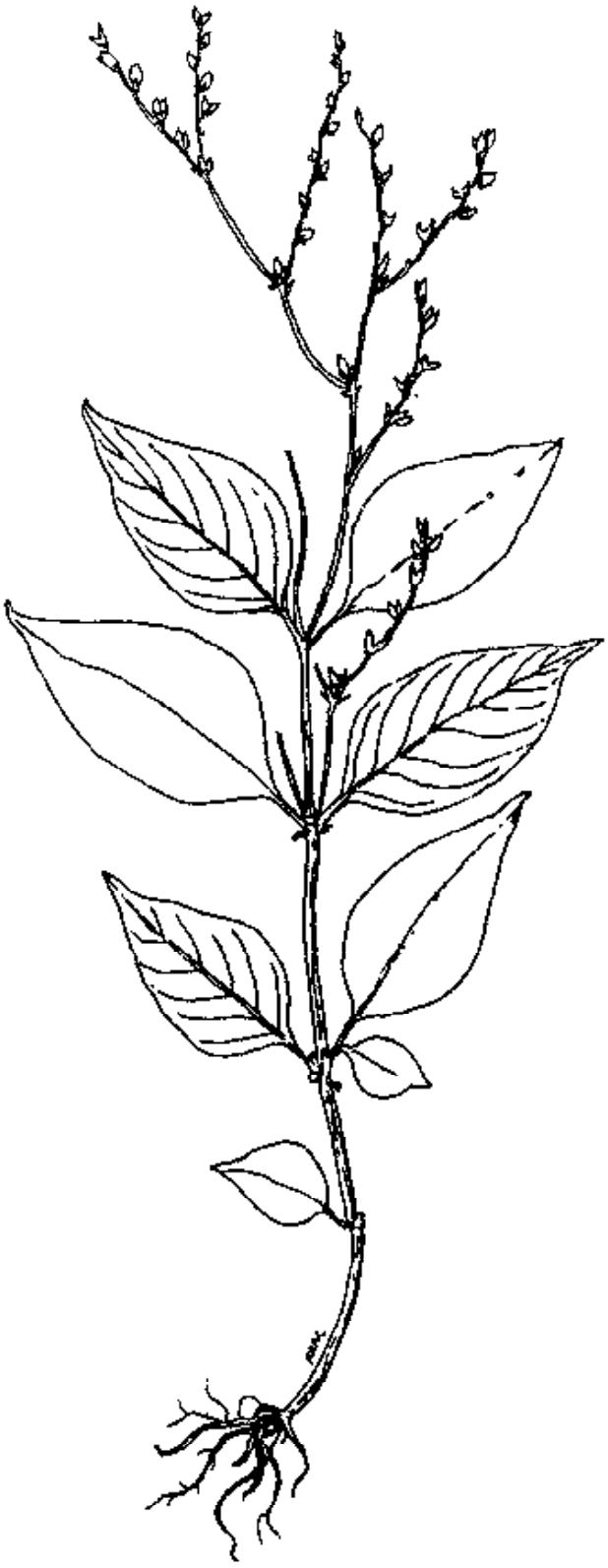
Mitreola petiolata (J. F. Gmel.) Torr. & A. Gray, Fl. N. America 2: 45. 1845; Heine in Kew Bull. 23: 251. 1969. *Cynoctonum petiolatum* J. F. Gmel. Syst. Nat. ed. 13, 2: 443. 1791. *Mitreola oldenlandioides* Wall. ex DC. Prodr. 9: 9. 1845; C. B. Cl. in Hook f. Fl. Brit. India 4: 79. 1883; Cooke, Fl. Pres. Bombay 2: 246. 1958 (Repr.). *Cynoctonum mitreola* (L.) Britton in Mem. Torr. Bot. Cl. 5: 258. 1884; Sant. & Wagh in Bull. Bot. Surv. India 5: 106. (1963) 1964.

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.

Illus. : Wight, Ic. t. 1600. 1850; Leenh. in Steenis, Fl. Males. 1, 6: 374, f, 37. f–h. 1962 (*Cynoctonum mitreola*); Bhogaonkar & Devarkar, Add. Fl. Melghat 35, f. A–G. 1999.

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 balck, 1–2–seeded ... *S. potatorum*

Strychnos dalzellii C.B.Cl. in Hook. f. Fl. Brit. India 4: 87. 1883; Cooke, Fl. Pres. Bombay 2: 250. 1958 (Repr.).

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.).

S. nux–vomica L. Sp. Pl. 189. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 4: 90. 1883; Cooke, Fl. Pres. Bombay 2: 250. 1958 (Repr.); Leenh. in Steenis, Fl. Males. 1, 6: 349. 1962. *'Kajra', 'Kasarkamora'.*

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.

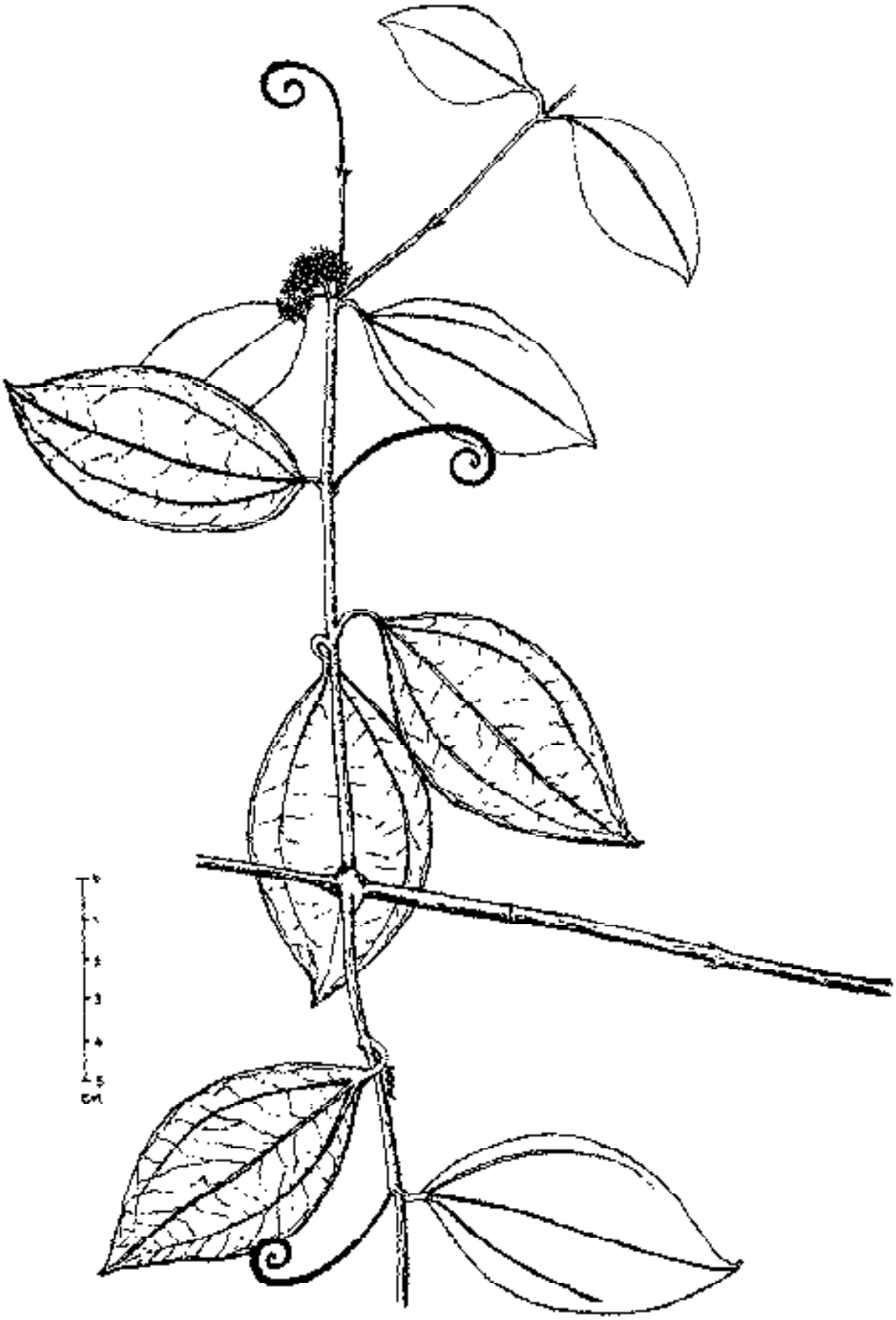
Illus. : Bedd. Fl. Sylv. t. 243. 1872.

Distrib. : Scattered in forests, along roadsides and coasts. Kolhapur, Raigad, Ratnagiri, Sindhudurg.

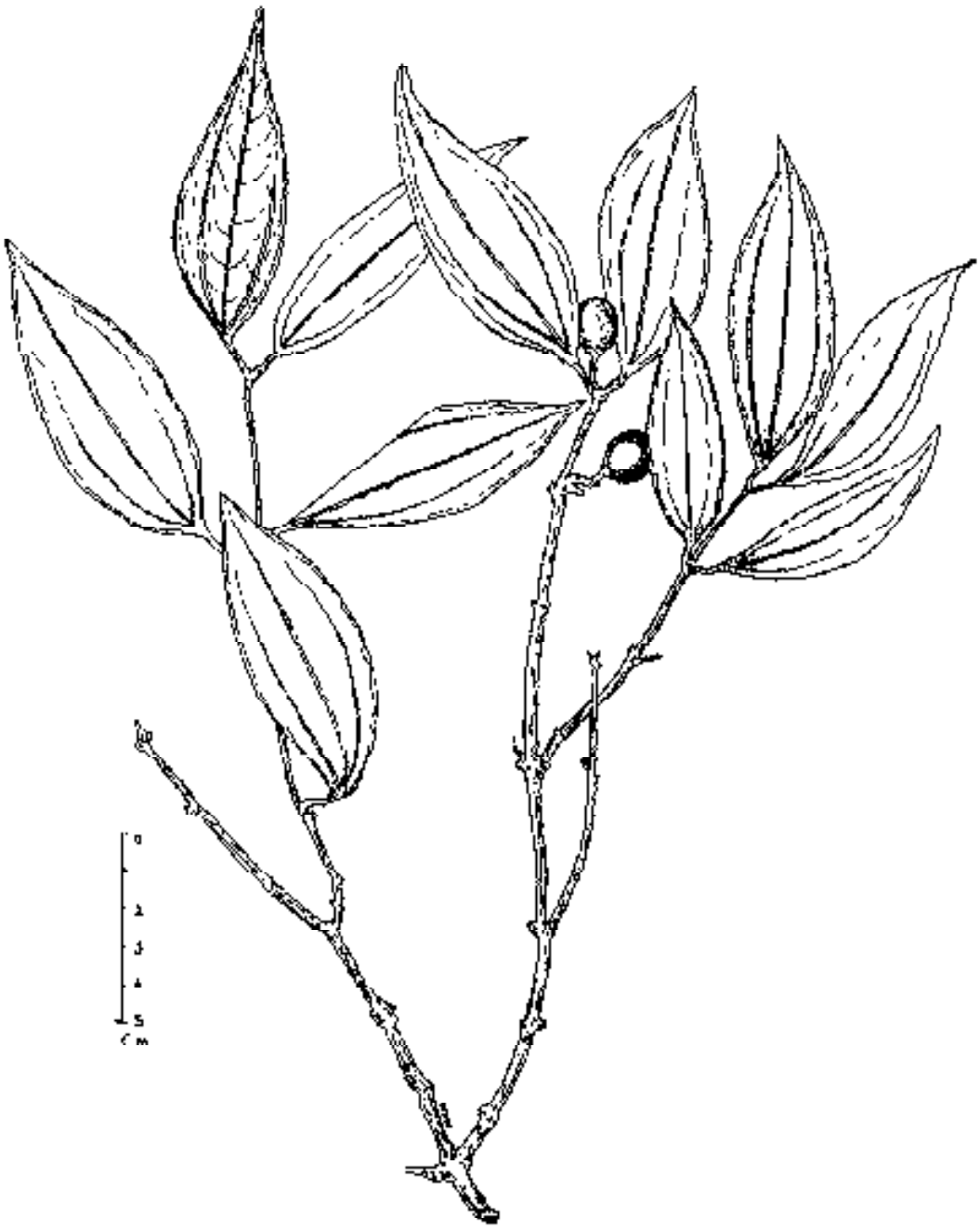
S. potatorum L. f. Suppl. 148. 1782; C. B. Cl. in Hook. f. Fl. Brit. India 4: 90. 1883; Cooke, Fl. Pres. Bombay 2: 251. 1958 (Repr.). *'Nirmali', 'Nivali'.*

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.

Fls. & Frts. : June–January.



Strychnos dalzellii C. B. Cl.



Strychnos wallichiana Steud. ex DC.

Illus. : Wight, Illus. t. 156. 1840; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 371. 1988.

Distrib. : Occasional in midbelt to base ghats, in sacred groves and in hilly forests. Chandrapur, Jalgaon, Nanded, Osmanabad, Raigad, Satara, Solapur, Yavatmal.

S. wallichiana Steud. ex DC. Prodr. 9: 13. 1845; Bisset & Philcox in Taxon 20: 548. 1971. *S. colubrina* auct. non L. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 4: 87. 1883; Cooke, Fl. Pres. Bombay 2: 249. 1958 (Repr.); Leenh. in Steenis, Fl. Males. 1, 6: 355. 1962. *'Kajra-vel', 'Kanal'.*

Climbing shrubs upto 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.

Illus. Leenh. op. cit. 354, f. 31. 1962.

Distrib. Occasional in hilly forests and along ghats. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

BUDDLEJACEAE

(C. R. Jadhav)

BUDDLEJA L.

Buddleja asiatica Lour. Fl. Cochinch. 72. 1790; C. B. Cl. in Hook. f. Fl. Brit. India 4: 82. 1883; Cooke, Fl. Pres. Bombay 2: 248. 1958 (Repr.); Leenh. in Steenis, Fl. Males. 1, 6: 337. 1962.

Shrubs, upto 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.

Illus. : Wight, Ic. t. 894. 1844–45 (*B. discolor* Roth); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 459. 1982.



Buddleja asiatica Lour.

Distrib. : Occasional along hill slopes and ghats. Ahmednagar, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

CULTIVATED SPECIES :

Buddleja lindleyana Fort. in Lindl. Bot. Reg. 25. 1844; Bailey, Man. Cult. Pl. 804. 1949; Naik, Fl. Marathwada 1: 557. 1998.

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.

B. madagascariensis Lam. in Lindl. Bot. Reg. 25. 1844; Bailey, Man. Cult. Pl. 804. 1949.

Shrubs, straggling upto 6 m; branchlets densely tomentose. Leaves ovate–oblong, white or yellow tomentose beneath. Flowers orange, in large terminal panicles.

Fls. & Frts. : October–January.

Distrib. : Native of Madagascar. Grown in gardens. Pune.

GENTIANACEAE

(C. R. Jadhav)

1. Flowers regular; corolla lobes equal :
   - 2. Ovary 2–celled ... EXACUM
   - 2. Ovary 1–celled :
     - 3. Petals glandular at base ... SWERTIA
     - 3. Petals eglandular :
       - 4. Flowers sessile, in axillary clusters ... ENICOSTEMA
       - 4. Flowers pedicellate, in dichotomous cymes ... CENTAURIUM

1. Flowers irregular; corolla lobes unequal :
   - 5. Flowers yellow; stigma obscurely lobed ... HOPPEA
   - 5. Flowers not as above; stigma distinctly lobed ... CANSCORA

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*

Canscora concanensis C. B. Cl. in Hook. f. Fl. Brit. India 4:104. 1883; Cooke, Fl. Pres. Bombay 2: 258. 1958 (Repr.); Ahuja & Cherian in J. Bombay nat. Hist. Soc. 66: 655, f. 4. 1970.

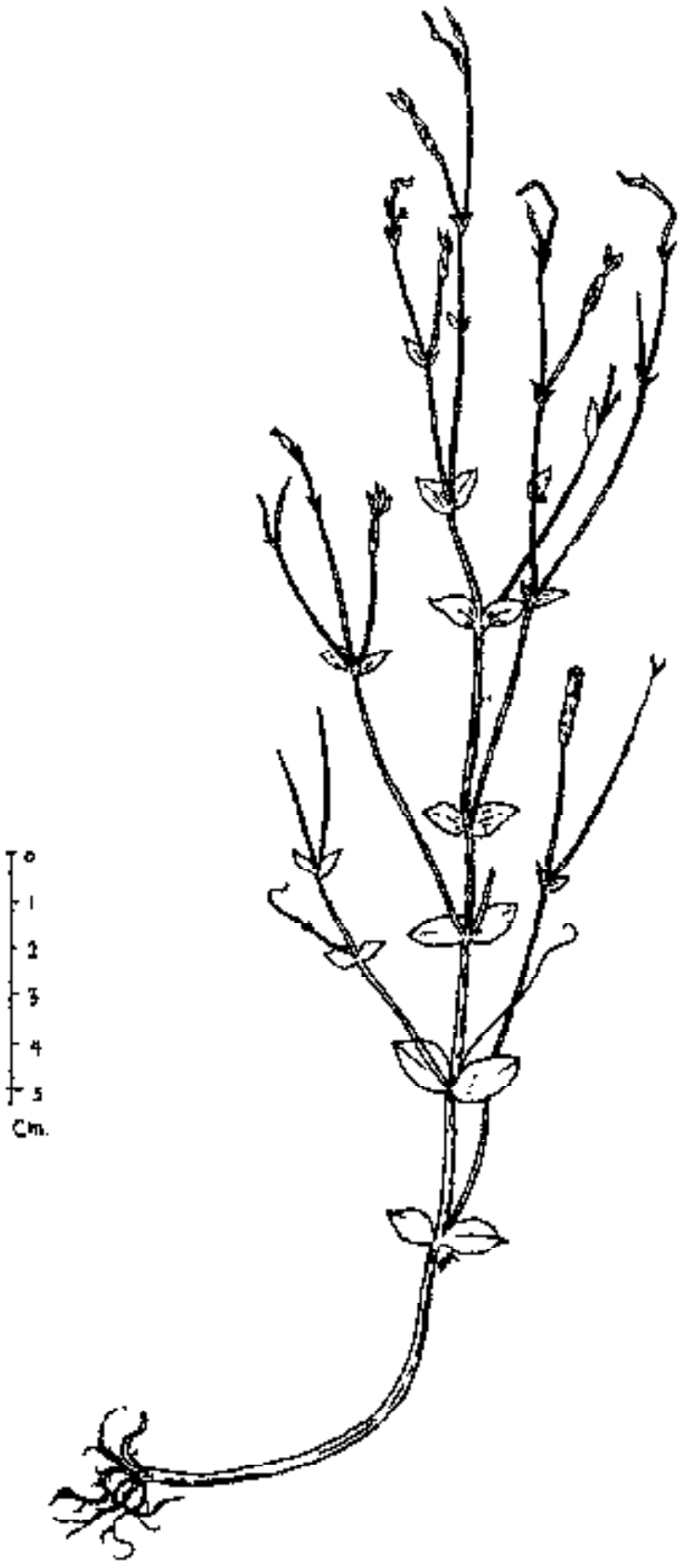
Herbs, c 20 cm high, annual, erect; stems obscurely quadrangular, spreading branches profuse. Leaves sessile, 0.5–3.0 x 0.5–1.5 cm, ovate, acute at apex, 3–nerved. Inflorescence of terminal cymes. Flowers bluish–purple, c 1 cm long; bracts linear. Capsules c 0.5 cm long, oblong–ellipsoid, 2–valved. Seeds 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.

C. decurrens Dalz. in Hook. J. Bot. & Kew Gard. Misc. 2: 136. 1850; C. B. Cl. in Hook. f. Fl. Brit. India 4: 103. 1883; Cooke, Fl. Pres. Bombay 2: 257. 1958 (Repr.).



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.

C. decussata (Roxb.) J. A. & J. H. Schult. Mant. 3: 229. 1827; C. B. Cl. in Hook. f. Fl. Brit. India 4: 104. 1883. *Pladera decussata* Roxb. Fl. Ind. 1:418. 1820.

Herbs, c 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.

Illus. : Ramam. in Sald. & Nicols. Fl. Hassan Dt. 423, f. 85. 1976 (Flower only).

Distrib. : Rare in moist places. Chandrapur, Nagpur, Nanded, Pune, Yavatmal.

C. diffusa (Vahl) R. Br. ex R. & S. Syst. Veg. 3: 301. 1818; C. B. Cl. in Hook. f. Fl. Brit. India 4: 103. 1883; Cooke, Fl. Pres. Bombay 2: 257. 1958 (Repr.). *Gentiana diffusa* Vahl, Symb. Bot. 3: 47. 1794.

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.

Illus. : Wight, Ic. t. 1327. 1848 (*C. lawii*).

Distrib. : Common throughout in moist, shady places.

var. **tetraptera** Naik & Pokle in J. Econ. Tax. Bot. 7: 673. (1985) 1986.

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.

Fls. & Frts. : October–January.

Illus. : Naik & Pokle, op. cit. 674, f. 3 (a–d).

Distrib. : Rare. Aurangabad (Naik & Pokle, op. cit.).

C. heteroclita (L.) Gilg in Pflanzen. 4(2): 76. 1895; Garg, Indian Gentianaceae 2. 1988; Naik, Fl. Marathwada 1: 560. 1998. *Gentiana heteroclita* L. Mant. 2: 560. 1770. *Canscora sessiliflora* R. & S. Syst. 3: 230. 1827; C. B. Cl. in Hook. f. Fl. Brit. India 4: 104. 1883.

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.

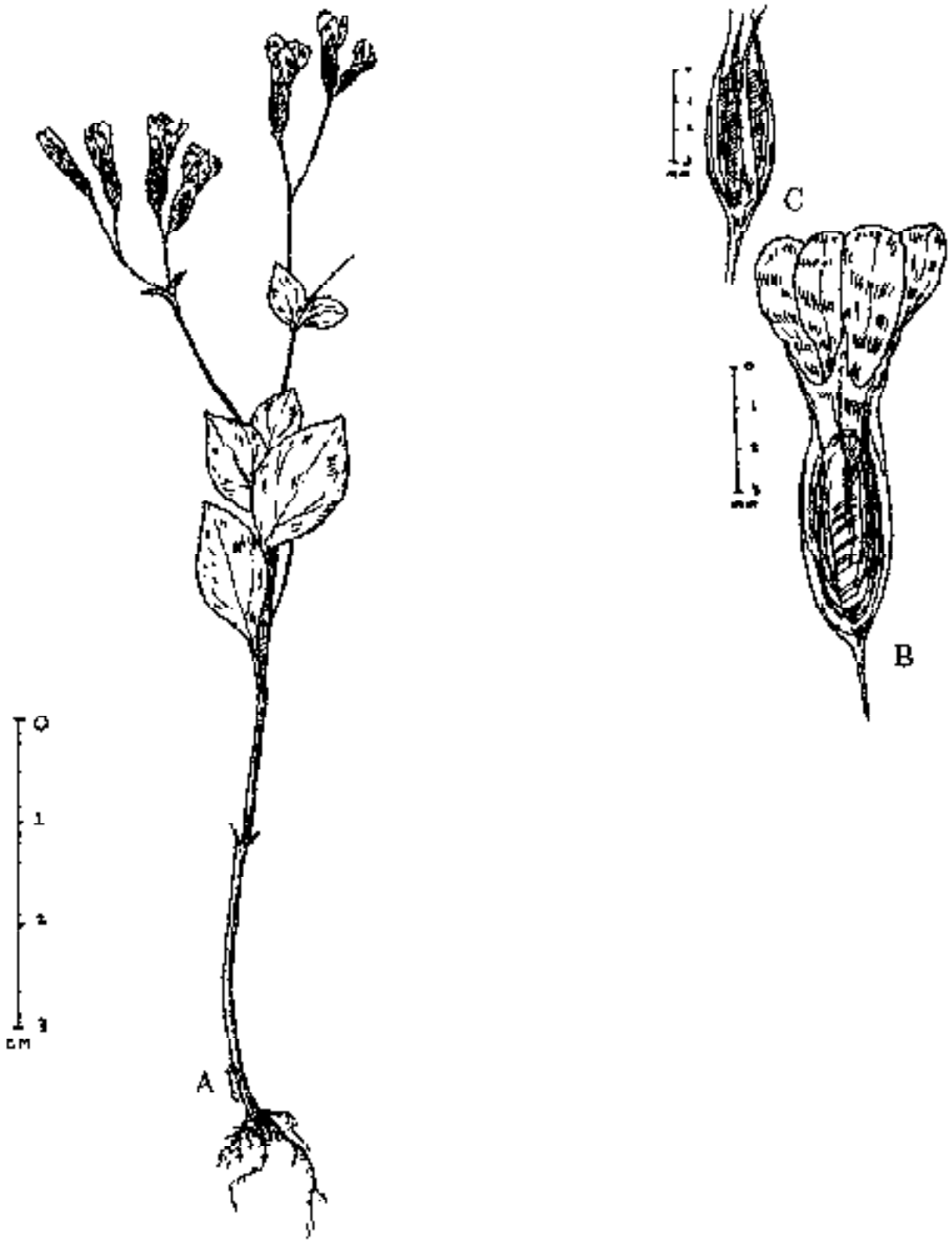
Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 462. 1982.

Distrib. : Rare on wet soil along gullies. Nanded (Naik, op. cit.).

C. khandalensis Sant. in Kew Bull. 1948: 485. 1949 & in Rec. Bot. Surv. 16(1): 162. 1967 (3rd Rev. ed.).

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.

C. pauciflora Dalz. in Hook. J. Bot. & Kew Gard. Misc. 2: 136. 1850; C. B. Cl. in Hook. f. Fl. Brit. India 4: 104. 1883; Cooke, Fl. Pres. Bombay 2: 258. 1958 (Repr.).

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.

Distrib. : Scattered along grassy slopes and in harvested rice fields. Chandrapur, Kolhapur, Osmanabad, Pune, Ratnagiri, Satara, Sindhudurg (Cooke, op. cit.).

C. perfoliata Lam. Encycl. 1: 601. 1785; C. B. Cl. in Hook. f. Fl. Brit. India 4: 104. 1883; Cooke, Fl. Pres. Bombay 2: 258. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 1326. 1848 *(C. grandiflora)*; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 422, f. 85. 1976.

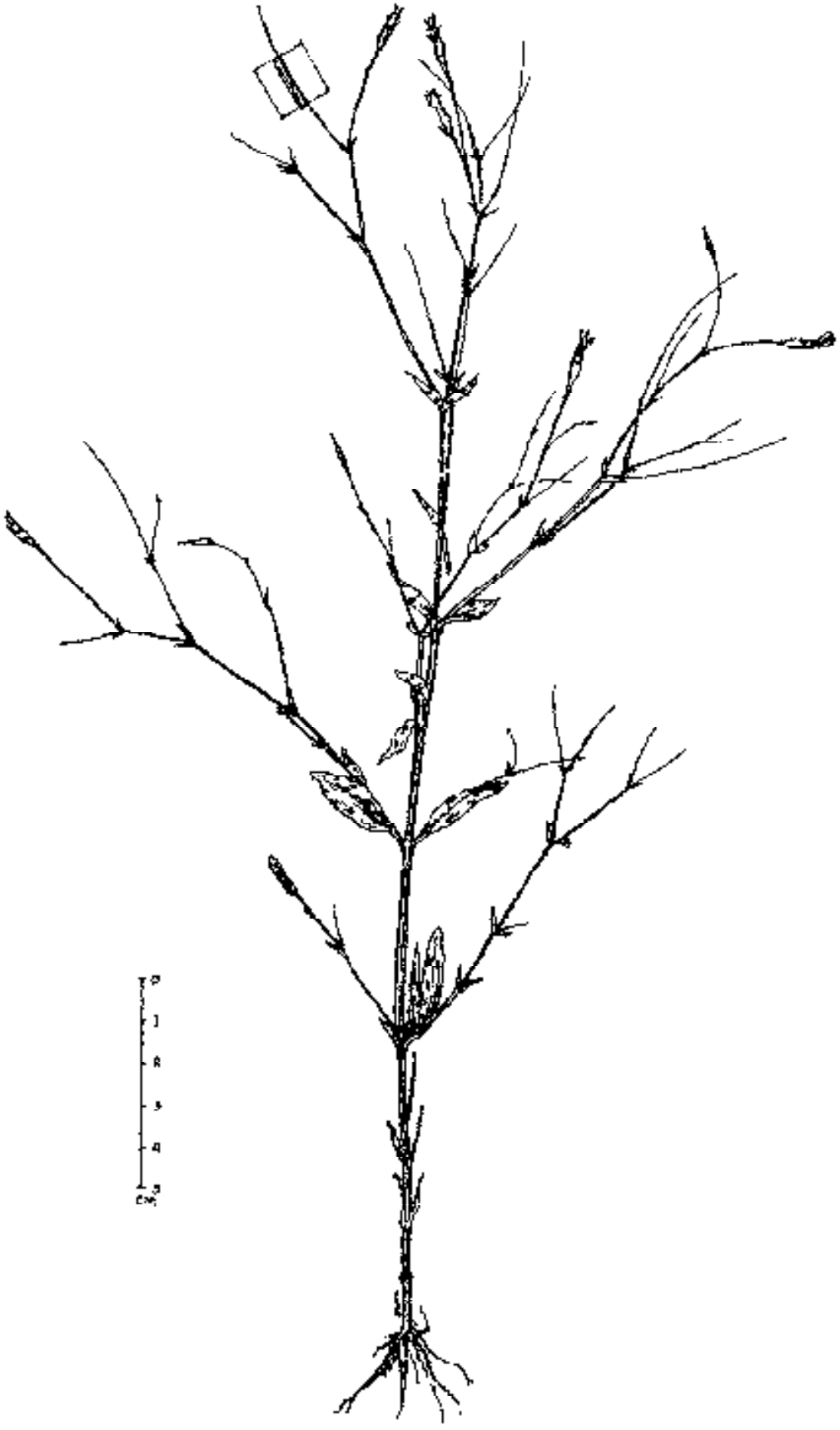
Distrib. : Infrequent in moist and shady places along ghat slopes and in scrub forests. Bombay (Cooke, op. cit.), Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

C. roxburghii Arn. ex Miq. Anal. Bot. Ind. 3:10. 1852; Garg, Indian Gentianaceae 2. 1988. *C. wallichii* C. B. Cl. in Hook. f. Fl. Brit. India 4: 105. 1883.

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.

Centaurium meyeri (Bunge) Druce in Rep. Bot. Exch. Club Brit. Isles 4: 613. 1917; Garg, Indian Gentianaceae 3. 1988. *Erythraea meyeri* Bunge in Ledeb. Fl. Altai 1:220. 1829; C. B. Cl. in Hook. f. Fl. Brit. India 4: 102. 1883. *E. roxburghii* D. Don in Lond. & Edinb. Phil. Mag. & J. Sci. 8:77. 1836; C. B. Cl. in Hook. f. op. cit.; Cooke, Fl. Pres. Bombay 2: 255. 1958 (Repr.). *Centaurium centaurioides* (Roxb.) Rolla Rao & Hemadri in J. Bombay nat. Hist. Soc. 67: 357. 1970. *'Luntak'*.

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.

Enicostema axillare (Lam.) Raynal in Adansonia 2, 9:75. 1969. *Gentiana axillaris* Lam. Ill. Gen. 487. 1793. *Enicostema hyssopifolium* (Willd.) I. C. Verdoorn in Bothalia 7: 462. 1961. *E. littorale* non Bl. 1826; C. B. Cl. in Hook. f. Fl. Brit. India 4: 101. 1883; Cooke, Fl. Pres. Bombay 2: 255. 1958 (Repr.). *'Chota–Karait'*.

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.

Illus. : Wight, Ic. t. 600. 1842 [*Adenema hyssopifolium* (Willd.) G. Don, Syst. 4:201. 1837]; Mahesh, Illus. Fl. Delhi f. 129. 1966 (*Enicostema hyssopifolium*); Matthew, Illus, Fl. Tamilnadu Carnatic 2: t. 463. 1982.

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 ... *E. petiolare*
   2. Leaves upper ones sessile, lower most subsessile :
      3. Corolla lobes more than 1.5 cm long ... *E. tetragonum*
      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*
1. Calyx not winged ... *E. lawii*

Exacum lawii C. B. Cl. in Hook. f. Fl. Brit. India 4: 98. 1883; Cooke, Fl. Pres. Bombay 2: 254. 1958 (Repr.).

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.

Illus. : Lakshmi. & Sharma, Fl. Nasik Dt. 311, f. 20. 1991; Bhogaonkar & Devarkar, Add. Fl. Melghat 37, f. A–G. 1999.

Distrib. : Frequent on hill tops and in moist grassy places. Ahmednagar, Amravati, Kolhapur, Nasik, Pune, Ratnagiri, Satara, Sindhudurg.

E. pedunculatum L. Sp. Pl. 112. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 4: 97. 1883; Cooke, Fl. Pres. Bombay 2:253. 1958 (Repr.); Klackenberg in Nord. J. Bot. 3: 867. 1983; Garg, Indian Gentianaceae 7. 1988.

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.

Illus. : Wight, Ic. t. 336. 1840; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 464. 1982.

Distrib. : Common throughout along ghats, open places and banks of nallahs.

E. petiolare Griseb. in DC. Prodr. 9:46. 1845; C.B.Cl. in Hook. f. Fl. Brit. India 4: 98. 1883 p. p. (excl. syn.); Garg, Indian Gentianaceae 7. 1988. *E. pedunculatum* var. *petiolare* (Griseb.) Trim. Fl. Ceylon 3:182. 1893; Cooke, Fl. Pres. Bombay 2: 253. 1958 (Repr.).

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.

E. pumilum Griseb. in DC. Prodr. 9: 46. 1845; C. B. Cl. in Hook. f. Fl. Brit. India 4:98. 1883; Cooke, Fl. Pres. Bombay 2: 254. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 1324. 1846; Bhogaonkar & Devarkar, Add. Fl. Melghat 38, f. A–F. 1999.

Distrib. : Frequent in open moist places amongst grasses. Ahmednagar, Amravati, Chandrapur, Dhule, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

E. tetragonum Roxb. Fl. Ind. ed. Carey & Wall. 1: 413. 1820; C.B.Cl. in Hook. f. Fl. Brit. India 4: 95. 1883; Garg, Indian Gentianaceae 8. 1988. *E. tetragonum* var. *stylosa* (Wall. ex D. Don) C. B. Cl. in Hook. f. op. cit. *E. perottetii* Griseb. in DC. Prodr. 9: 45. 1845; C. B. Cl. in Hook. f. op. cit. *E. bicolor* Roxb. Fl. Ind. op. cit.; C. B. Cl. in Hook. f. op. cit. 96; Cooke, Fl. Pres. Bombay 2: 252. 1958 (Repr.). *'Udichirayet'*.

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.

Illus. : Wight, Ic. t. 1321. 1848; Bhogaonkar & Devarkar, Add. Fl. Melghat 36, f. A–E. 1999 (*E. bicolor*).

Distrib. : Common in waste lands. Ahmednagar, Amravati, Kolhapur, Nasik, Pune, Raigad (Cooke, op. cit.), Ratnagiri, Satara, Sindhudurg, Thane.

HOPPEA Willd.

1.	Corolla ventricose, shorter than calyx; capsules globose	...	*H. dichotoma*
1.	Corolla tubular, exceeding calyx; capusles ellipsoid	...	*H. fastigiata*

Hoppea dichotoma Heyne ex Willd. in Ges. Naturf. Fr. Neue Schr. 3: 435. 1801; C. B. Cl. in Hook. f. Fl. Brit. India 4: 100. 1883; Cooke, Fl. Pres. Bombay 2: 256. 1958 (Repr.).

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.

Illus. : Ramam. in Sald. & Nicols. Fl. Hassan Dt. 422, f. 85 C, Ca. 1976; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 465. 1982.

Distrib. : Common throughout in open moist places amongst grasses.

H. fastigiata (Griseb.) C. B. Cl. in Hook. f. Fl. Brit. India 4: 100. 1883; Naik, Fl. Marathwada 1: 562. 1998. *Cicendia fastigiata* Griseb. Gentian. 158. 1839.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 375. 1982.

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*

Swertia angustifolia Buch.–Ham. ex D. Don var. **pulchella** Burkill in J. Proc. Asiat. Soc. Bengal N. S. 2: 375. 1906; Garg, Indian Gentianaceae 29. 1988. *S. pulchella* Buch.–Ham. ex C. B. Cl. in Hook. f. Fl. Brit. India 4: 125. 1883. *S. affinis* C. B. Cl. in Hook. f. op. cit. 126.

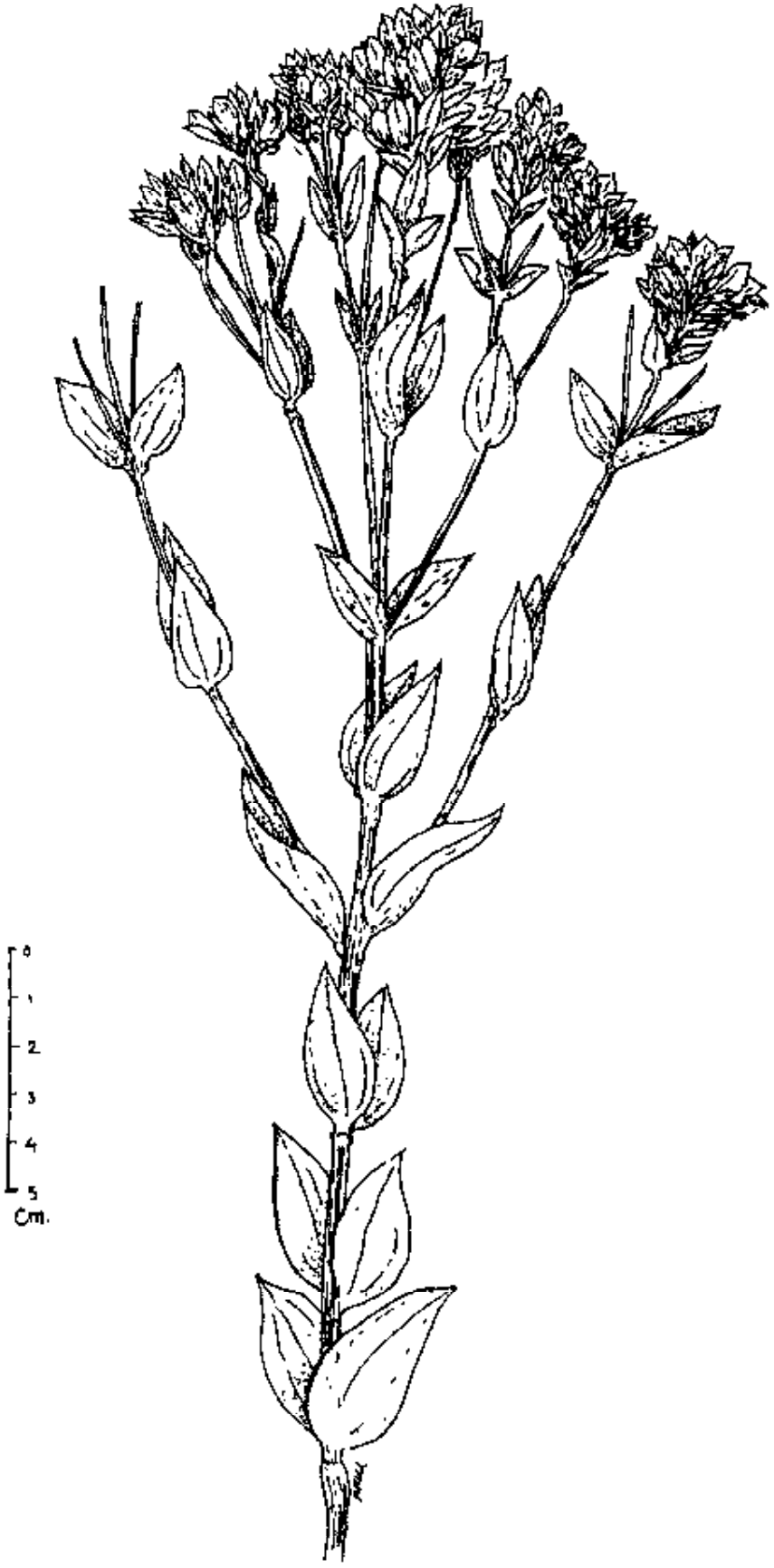
Herbs, 25–90 cm high, annual. Leaves lanceolate, narrowed at base. Panicle–branches sharply quadrangular. Flowers white or pale blue; petals with orbicular gland completely covered by a large scale with pubescent margin, petal–nerves deeper blue.

Illus. : Arn. in Wight, Illus. 2. 175, t. 157, bis, f. 3, b. 1850 (*Ophelia affinis);* Wight, Ic. t. 1331. 1848 *(Ophelia elegans).*

Distrib. : It has been included based on Garg, op. cit.

S. densifolia (Griseb.) Kashyapa in Kew Bull. 15:42. 1961. *Ophelia densifolia* Griseb. in DC. Prodr. 9:125. 1845, *Swertia decussata* Nimmo ex C. B. Cl. in Hook f. Fl. Brit. India 4:127. 1883; Cooke, Fl. Pres. Bombay 2: 259. 1958 (Repr.). *'Kadu', 'Kavadi'.*

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.

S. lawii Burkill in J. Asiat. Soc. Bengal n. s. 2: 379. 1906. *S. corymbosa* (Griseb.) C. B. Cl. var. *lawii* C. B. Cl. in Hook. f. Fl. Brit. India 4: 126. 1883; Cooke, Fl. Pres. Bombay 2: 260. 1958 (Repr.).

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.

S. minor (Griseb.) Knobl. in Bot. Centralbl. 60:321. 1894; Cooke, Fl. Pres. Bombay 2:259. 1958 (Repr.). *Ophelia minor* Griseb. in DC. Prodr. 9:126. 1845. *Pleurogyne minor* (Griseb.) Bth. in Gen. Pl. 2:816. 1876; C. B. Cl. in Hook. f. Fl. Brit. India 4:120. 1883.

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*

Nymphoides aurantiaca (Dalz.) O. Ktze. Rev. Gen. Pl. 429. 1891; Subr. Aq. Ang. 24. 1962; Cramer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 211. 1981. *Limnanthemum aurantiacum* Dalz. in Kew J. Bot. 2: 136. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 132. 1883; Cooke, Fl. Pres. Bombay 2: 262. 1958 (Repr.).

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-oblong. Capsules 0.4–0.6 cm across, depressed-globose, shorter than calyx-lobes. Seeds globose, minutely reticulate.

Fls. & Frts. : September-December.

Distrib. : In shallow ponds. Sindhudurg (Cooke, op. cit.).

N. hydrophylla (Lour.) O. Ktze.Rev. Gen. Pl. 429. 1891; Cramer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3:208. 1981. *Menyanthes hydrophylla* Lour. Fl. Cochinch. 1:129. 1790. *Limnanthemum cristatum* (Roxb.) Griseb. Gen. Sp. Gent. 342. 1839; C.B.Cl. in Hook. f.

Fl. Brit. India 4:131. 1883; Cooke, Fl. Pres. Bombay 2:261. 1958 (Repr.). *Nymphoides cristata* (Roxb.) O. Ktze. Rev. Gen. Pl. 429. 1891; Subr. Aq. Ang. 24, f. 16. 1962. *'Kumudini'*.

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, tuberculate.

Fls. & Frts. : December–April.

Illus. : Subr. op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 466. 1982.

Distrib. : Infrequent in pools and ponds. Ahmednagar, Akola, Bhandara, Chandrapur, Pune, Raigad, Ratnagiri, Thane, Yavatmal.

N. indicum (L.) O. Ktze. Rev. Gen. Pl. 429. 1891; Subr. Aq. Ang. 24, t. 2, f. 17. 1962; Cramer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3:207. 1981. *Menyanthes indica* L. Sp. Pl. 145. 1753. *Limnanthemum indicum* Griseb. in DC. Prodr. 9: 139. 1845; C.B.Cl. in Hook. f. Fl. Brit. India 4:131. 1883; Cooke, Fl. Pres. Bombay 2:261. 1958 (Repr.).

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.

Illus. : Subr. op. cit.; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 675, f. 90B. 1976.

Distrib. : In streams and ponds, infrequent. Chandrapur, Pune, Raigad, Satara (Cooke, op. cit.), Thane.

N. parviflora (Griseb.) O. Ktze. Rev. Gen. Pl. 429. 1891; Subr. Aq. Ang. 26. 1962; Cramer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon

3:210. 1981. *Limnanthemum parviflorum* Griseb. in DC. Prodr. 9:141. 1845; C.B.Cl. in Hook. f. Fl. Brit. India 4:132. 1883; Cooke, Fl. Pres. Bombay 2:261. 1958 (Repr.).

Herbs, aquatic or terrestrial; rhizomes short with slender, fibrous roots. Radical leaves 0.7–1.0 x 0.6–1.0 cm, broadly spathulate 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, muriculate.

Fls. & Frts. : December–January.

Distrib. : Occasional in open, moist grassy slopes or shallow ponds. Sindhudurg (Cooke, op. cit.).

HYDROPHYLLACEAE

(B. G. Kulkarni)

HYDROLEA L. (nom. cons.)

Hydrolea zeylanica (L.) Vahl, Symb. Bot. 2:46. 1791; C.B.Cl. in Hook. f. Fl. Brit. India 4:133. 1883; Cooke, Fl. Pres. Bombay 2:263. 1958 (Repr.); Subr. Aq. Ang. 27. 1962. *Nama zeylanica* L. Sp. Pl. 226. 1753. *'Keriti', 'Popti'.*

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.

Illus. : Wight, Ic. t. 601. 1842; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 467. 1982.

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, upto 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.

Coldenia procumbens L. Sp. Pl. 125. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 4: 144. 1883; Cooke, Fl. Pres. Bombay 2: 271. 1958 (Repr.); Kazmi in J. Arnold Arbor. 51: 148. 1970. *'Tripanki'.*

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, oblong, spreading. Drupes 0.3–0.4 cm long, beaked, 4–lobed and breaking into 4–pyrenes.

Fls. & Frts. : More or less throughout the year.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 468. 1982.

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*

Cordia dichotoma Forst. f. Prodr. 18. 1786; Sant. in Rec. Bot. Surv. Ind. 16: 163. 1967 (3rd. Rev. ed.); Kazmi in J. Arnold Arbor. 51: 141. 1970. *C. obliqua* Willd. Phytogr. 4. t. 4. 1794; C.B.Cl. in Hook. f. Fl. Brit. India 4: 137. 1883, excl. var. *C. myxa* auct. plur. non. L. 1753; C. B. Cl. in Hook. f. op. cit. 136; Cooke, Fl. Pres. Bombay 2: 265. 1958 (Repr.). *'Bhokar'*.

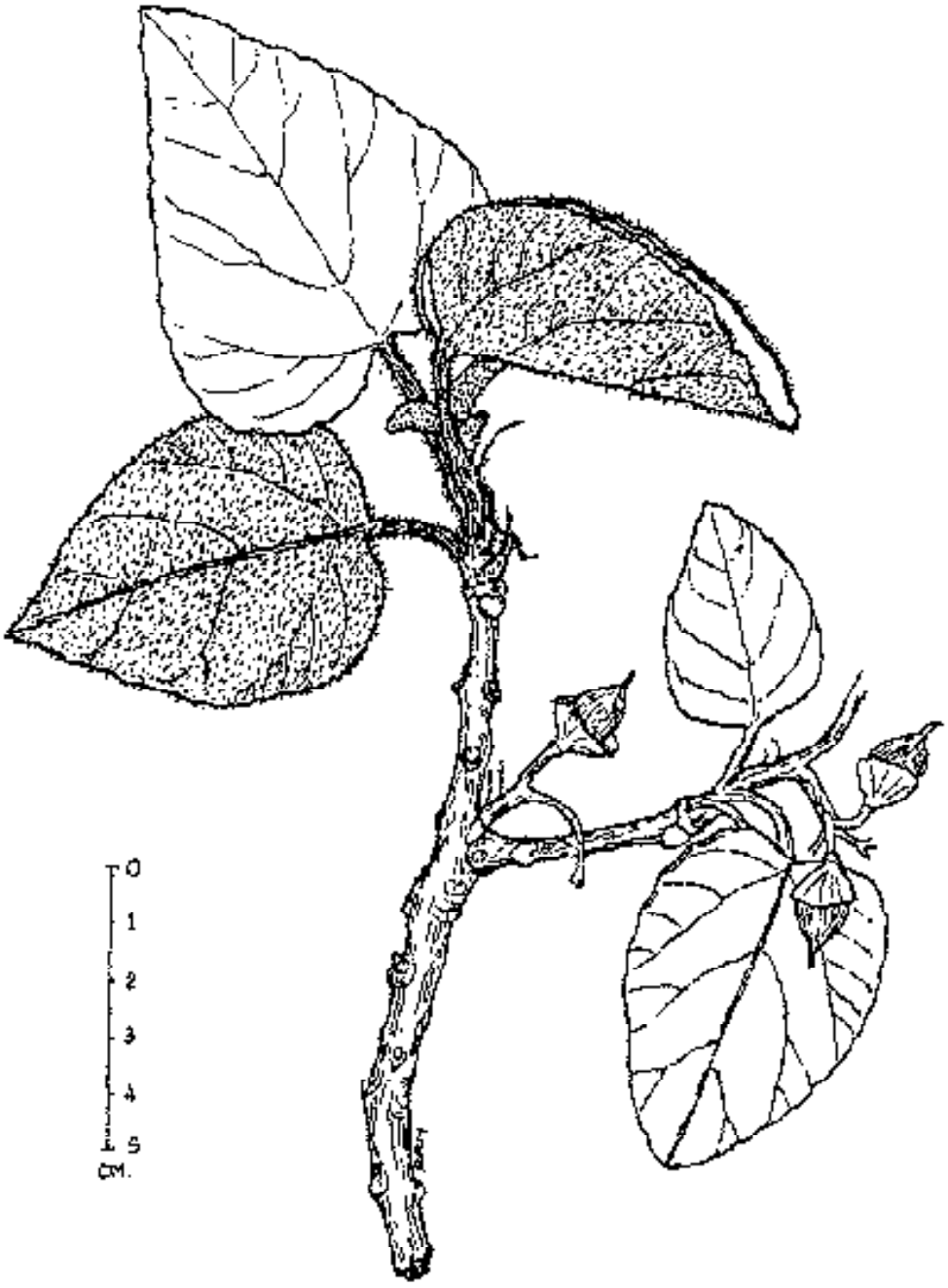
Medium sized trees, 5–10 m high; bark rough. Leaves variable, 6–12 x 4–10 cm, broadly ovate, scabrous above, apex obtuse, base rounded or cordate. Flowers white, polygamous; male flowers larger than bisexual ones in cymose–panicles; calyx irregularly splitting; corolla–lobes oblong. Berries 0.6–2.5 cm long, ovoid, yellow or pink, glossy, supported by accescent calyx, pulp mucilaginous, edible.

Fls. & Frts. : February–June.

Illus. : Wight, Ic. t. 159. 1839 (*C. myxa*); Talb. For. Fl. Bombay Pres & Sind 2: 270, f. 422. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 469. 1982.

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.

Fl. Pres. Bombay 2: 267. 1958 (Repr.). *C. myxa* L. var. *domestica* (Roth) C. B. Cl. in Hook. f. Fl. Brit. India 4: 137. 1883.

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.

Fls. & Frts. : April–July.

Illus. : Wight, op. cit.

Distrib. : Infrequent in deciduous forest. 'Konkan' (Cooke, op. cit.).

C. gharaf (Forssk.) Ehrenb & Asch. in Bitszung. Bericht Ges. Naturf. Fl. Berl. 46. 1879; Sant. & Wagh in Bull. Bot. Surv. India 5: 106. (1963) 1964; Kazmi in J. Arnold Arbor. 51: 140. 1970. *Cornus gharaf* Forssk. Fl. Aeg.–Arab. 94. 1775. *Cordia rothii* R. & S. Syst. Veg. 4: 798. 1819; C. B. Cl. in Hook. f. Fl. Brit. India 4: 138. 1883; Cooke, Fl. Pres. Bombay 2: 268. 1958 (Repr.). *'Gondani','Gundi'*.

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.

C. macleodii (Griff.) Hook. f. & Thoms. in J. Linn. Soc. 2:128. 1858; C. B. Cl. in Hook. f. Fl. Brit. India 4:139. 1883; Cooke, Fl. Pres. Bombay 2: 266. 1958 (Repr.); Kazmi in J. Arnold Arbor. 51: 143. 1970. *Hemigymnia macleodii* Griff. in Calc. J. Nat. Hist. 3: 363. 1843. *'Dahivan'*.

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 corymbs; 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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 272, f. 423. 1911.

Distrib. : Frequent in deciduous forests. Akola, Dhule, Kolhapur, Nagpur, Nasik, Pune, Raigad, Satara, Thane, Yavatmal.

C. wallichii G. Don, Gen. Syst. 4:379. 1837; Cooke, Fl. Pres. Bombay 2: 266. 1958 (Repr.). *C. obliqua* Willd. var. *wallichii* (G. Don) C. B. Cl. in Hook. f. Fl. Brit. India 4: 137. 1883. *C. obliqua* Willd. var. *tomentosa* (Wall.) Kazmi in J. Arnold Arbor. 51: 143. 1970.

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 appendges 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*

Cynoglossum lanceolatum Forssk. Fl. Aeg.–Arab. 41. 1775; C. B. Cl. in Hook. f. Fl. Brit. India 4: 156. 1883; Cooke, Fl. Pres. Bombay 2: 285. 1958 (Repr.); Kazmi in J. Arnold Arbor. 52: 343. 1971.

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 subsessile, 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 upto base. Nutlets 4, ovate, 0.1–0.2 cm as long as broad.

Fls. & Frts. : August–October.

Distrib. : Occasional in open areas in plains. Pune.

C. wallichii G. Don var. **glochidiatum** (Wall. ex Bth.) Kazmi in J. Arnold Arbor. 52: 347. 1971. *C. glochidiatum* Wall. ex Bth. in Royle, Illus. Bot. Himal. Mount. 1:306. 1839; C. B. Cl. in Hook. f. Fl. Brit. India 4: 156. 1883.

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, scorpioid cymes; calyx enlarged in fruits corolla tube divided upto base. Nutlets ovate, 0.25 x 0.2 cm, with few vertical appendages.

Fls. & Frts. : August–October.

Distrib. : Infrequent in open areas along ghat slopes. Pune, Satara, Thane.

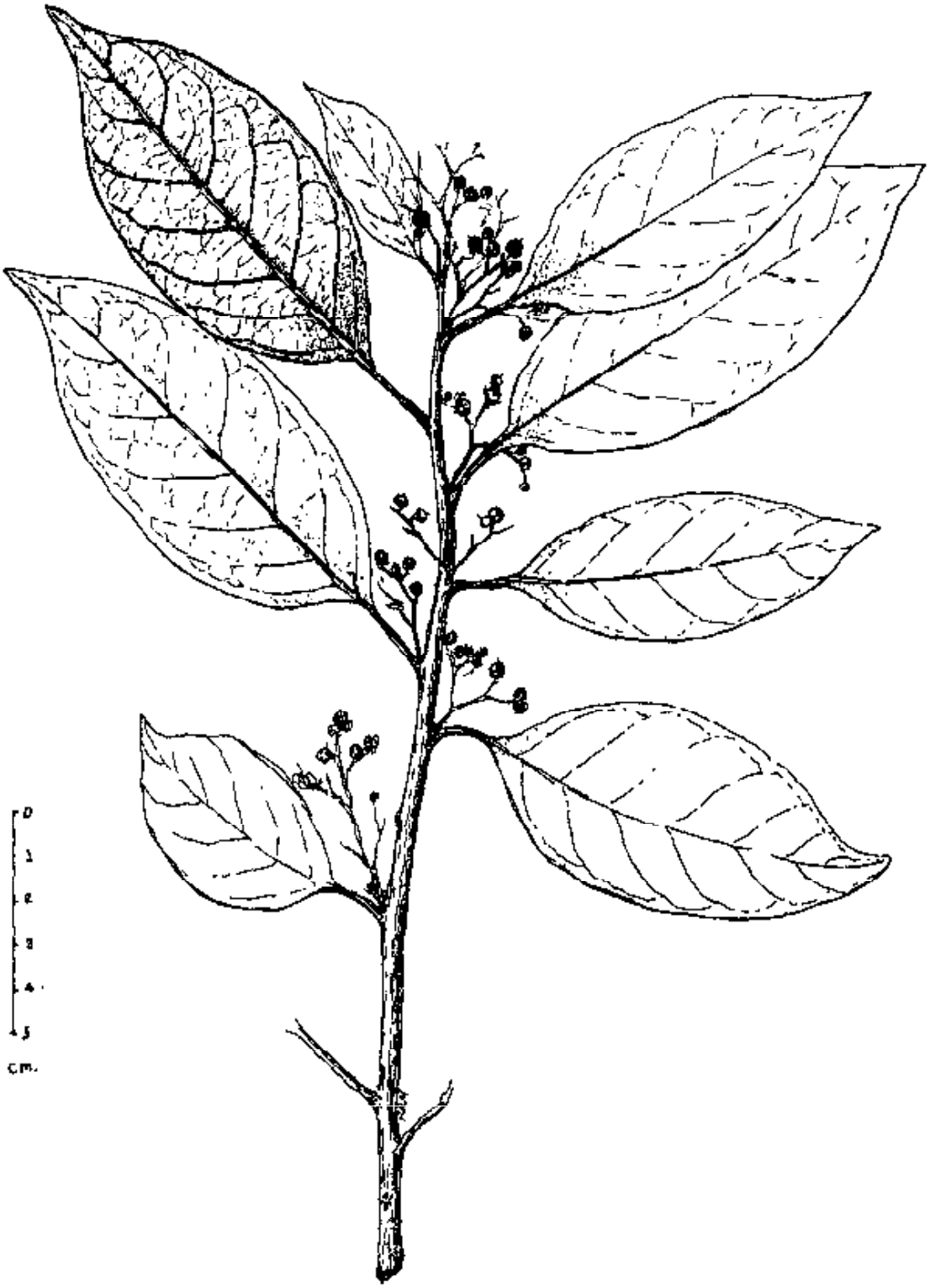
C. zeylancium (Vahl ex Hornem.) Thunb. ex Lehm. Neue Schrift. Naturf. Ges. Halle 3 (2) : 20. 1817; Kazmi in J. Arnold Arbor. 52:344. 1971. *Anchusa zeylanica* Vahl ex Hornem. Enum. Hafn. 3. 1807. *Cynoglossum furcatum* Wall. ex Roxb. Fl. Ind. [Carey ed.] 2: 6. 1824; C. B. Cl. in Hook. f. Fl. Brit India 4: 155 1883. *C. denticulatum* A. DC. var. *zeylanicum* (Vahl ex Hornem.) C.B.Cl. in Hook. f. op. cit. 157; Cooke, Fl. Pres. Bombay 2: 284. 1958 (Repr.). *C. meeboldii* Brand. in Feddes Repert. 14: 323. 1916 & in Engl. Pflanzenr. 78: 134. 1921.

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, 0.5cm long, in racemes; calyx divided upto 3/4 of its length; corolla infundibuliform. Nutlets 4, ovoid.

Fls. & Frts. : August–November.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 470. 1982.

Distrib. : Uncommon in open situations in plains. Ahmednagar, Akola, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.



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*

Ehretia aspera Roxb. Pl. Cor 1: 41, t. 55. 1795; Cooke, Fl. Pres. Bombay 2: 270. 1958 (Repr.). *E. obtusifolia* Hochst. ex DC. Prodr. 9: 507. 1845; C.B.Cl. in Hook. f. Fl. Brit. India 4: 142. 1883. *E. laevis* var. *aspera* (Roxb.) C. B. Cl. in Hook. f. op. cit. *Lokhande'.*

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.

E. indica (Dennst. ex Kostel.) M. R. & S. M. Almeida in J. Bombay Nat. Hist. Soc. 90: 424. (1993) 1994. *Brunelia indica* Dennst. ex Kostel. Allg. Med. Pharm. Fl. 5: 2002. 1836. *E. laevis* var. *canarensis* C. B. Cl in Hook. f. Fl. Brit. India 4: 142. 1883; Cooke, Fl. Pres. Bombay 2: 270. 1958 (Repr.). *E. canarensis* (C. B. Cl.) Gamble, Fl. Pres. Madras 891. 1923 [2: 626. 1957 (Repr.)].

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.

E. laevis Roxb. Pl. Cor. 1: 42, t. 55. 1795 & Fl. Ind. 2:341. 1824; C. B. Cl. in Hook. f. Fl. Brit. India 4:141. 1883; Cooke, Fl. Pres. Bombay 2: 269. 1958 (Repr.); Kazmi in J. Arnold Arbor. 51: 147. 1970.

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 276 & 277, ff. 424 & 425. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 471. 1982.

Distrib. : Frequent in deciduous forests. Ahmednagar, Chandrapur, Dhule, Kolhapur, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg.

HELIOTROPIUMM L.

1. Leaves more than 2.5 cm broad ... *H. indicum*
1. Leaves less than 2.5 cm broad :
    2. Calyx divided up to 1/4 the length, lobes short; fruits enclosed by calyx ... *H. supium*
    2. Calyx divided nearly to base, lobes free, long; fruits not enclosed by calyx :
        3. Corolla tube hairy inside :
            4. Style absent; nutlets separating ... *H. ovalifolium*
            4. Style present; nulets not separating :
                5. Stigma subcapitate, stigmatic ring fleshy ... *H. rariflorum*
                5. Stigma elongate–conic, stigmatic ring not fleshy :
                    6. Plants decumbent or prostrate; flowers sessile ... *H. marifolium*
                    6. Plants usually erect, sometimes decumbent; flowers pedicellate to subsessile :
                        7. Glandular and pubescent at corolla throat ... *H. strigosum*
                        7. Not glandular, but hirsute at corolla throat ... *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*

Heliotropium cornutum Johnst. in Contrib. Gray Herb. n. s. 92: 90. 1930; Arora & Banerjee in Bull. Bot. Surv. India 8: 341. (1966) 1967; Kulkarni & Wadhwa in J. Bombay nat. Hist Soc. 70: 235. 1973.

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.

Fls. & Frts. : February–June.

Illus. : Arora & Banerjee, op. cit. figs. A–J.

Distrib. : Infrequent in open, moist areas along ghats and plains. Sindhudurg.

H. indicum L. Sp. Pl. 130. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 4: 152. 1883; Cooke, Fl. Pres. Bombay 2: 273. 1958 (Repr.). *'Bhurundi'*.

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, scorpioid cymes; corolla salver shaped. Fruits deeply bifid, nutlets beaked, angled.

Fls. & Frts. : July–June (almost throughout the year).

Illus. : Tadul. & Venkatn. Handb. S. Indian Weeds 270, f. 107. 1955 (Rev. ed); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 473. 1982.

Distrib. : Frequent in open, moist places as weed. Bombay, Dhule, Nagpur, Nasik, Pune, Ratnagiri, Satara, Sindhudurg, Thane.

H. marifolium Koen. ex Retz. Obs. Bot. 2: 8. 1781; C. B. Cl. in Hook. f. Fl. Brit. India 4: 152. 1883; Cooke, Fl. Pres Bombay 2: 280. 1958 (Repr.); Kazmi in J. Arnold Arbor. 51: 154. 1970.

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 scorpioid 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.

var. **laxiflora** (C.B.Cl.) T. Cooke, Fl. Pres. Bombay 2:213. 1904 [2:280. 1958 (Repr.)]. *H. bracteatum* DC. var. *laxiflora* C. B.Cl. in Hook. Fl. Brit. India 4: 152. 1883.

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.).

ssp. **wallichii** (C.B.Cl.) Kazmi in J. Arnold Arbor. 51: 155. 1970. *H. marifolium* var. *wallichii* C.B.Cl. in Hook. f. Fl. Brit. India 4: 152. 1883; Naik, Fl. Osmanabad 213. 1979.

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.

H. ovalifolium Forssk. Fl. Aeg.–Arab. 38. 1775; C. B. Cl. in Hook. f. Fl. Brit. India 4: 150. 1883; Cooke, Fl. Pres. Bombay 2: 278. 1958 (Rerp.); Kazmi in J. Arnold Arbor. 51: 178. 1970.

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.

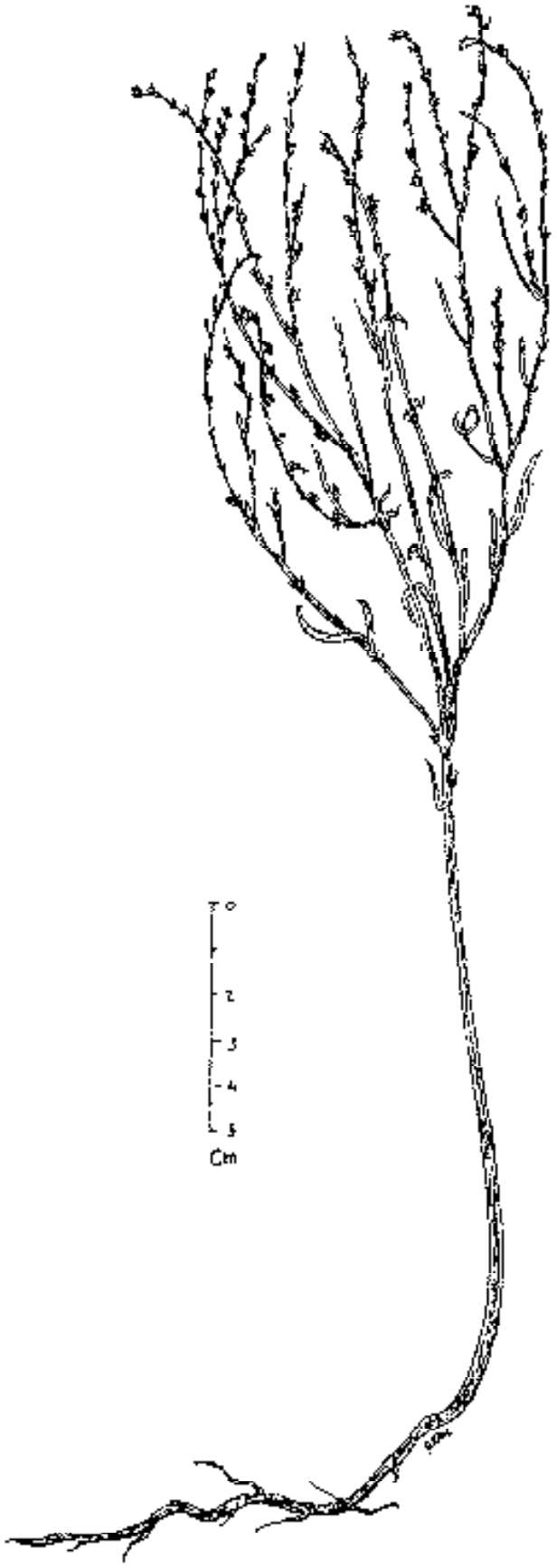
Illus. : Wight, Ic. t. 1388. 1848 *(H. coromandelianum* Retz. Obs. Bot. 2: 9. 1810); Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 377. 1988.

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.

H. rariflorum Stocks in Hook. J. Bot. 4: 174. 1852; C.B.Cl. in Hook. f. Fl. Brit. India 4: 152. 1883; Cooke, Fl. Pres. Bombay 2: 276. 1958 (Repr.); Kazmi in J. Arnold Arbor. 51: 151. 1970.

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,

H. scabrum Retz. Obs. Bot. 2: 8. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 4: 152. 1883; Gamble, Fl. Pres. Madras 2: 630. 1957 (Repr.).

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, strigosely hairy on both sides, apex acute, base narrowed, margins reflexed. Flowers white in axillary or terminal scorpioid 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.

Illus. : Wight, Ic. t. 1389. 1848; Matthew, Further Illus. Fl. Tamilnadu Carnatic 4: t. 378. 1988.

Distrib. : Infrequent in open areas in deciduous forests. Pune, Ratnagiri.

H. strigosum Willd. Sp. Pl. 1: 743. 1798; C.B.Cl. in Hook. f. Fl. Brit. India 4: 151. 1883; Kazmi in J. Arnold Arbor. 51: 152. 1970.

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.

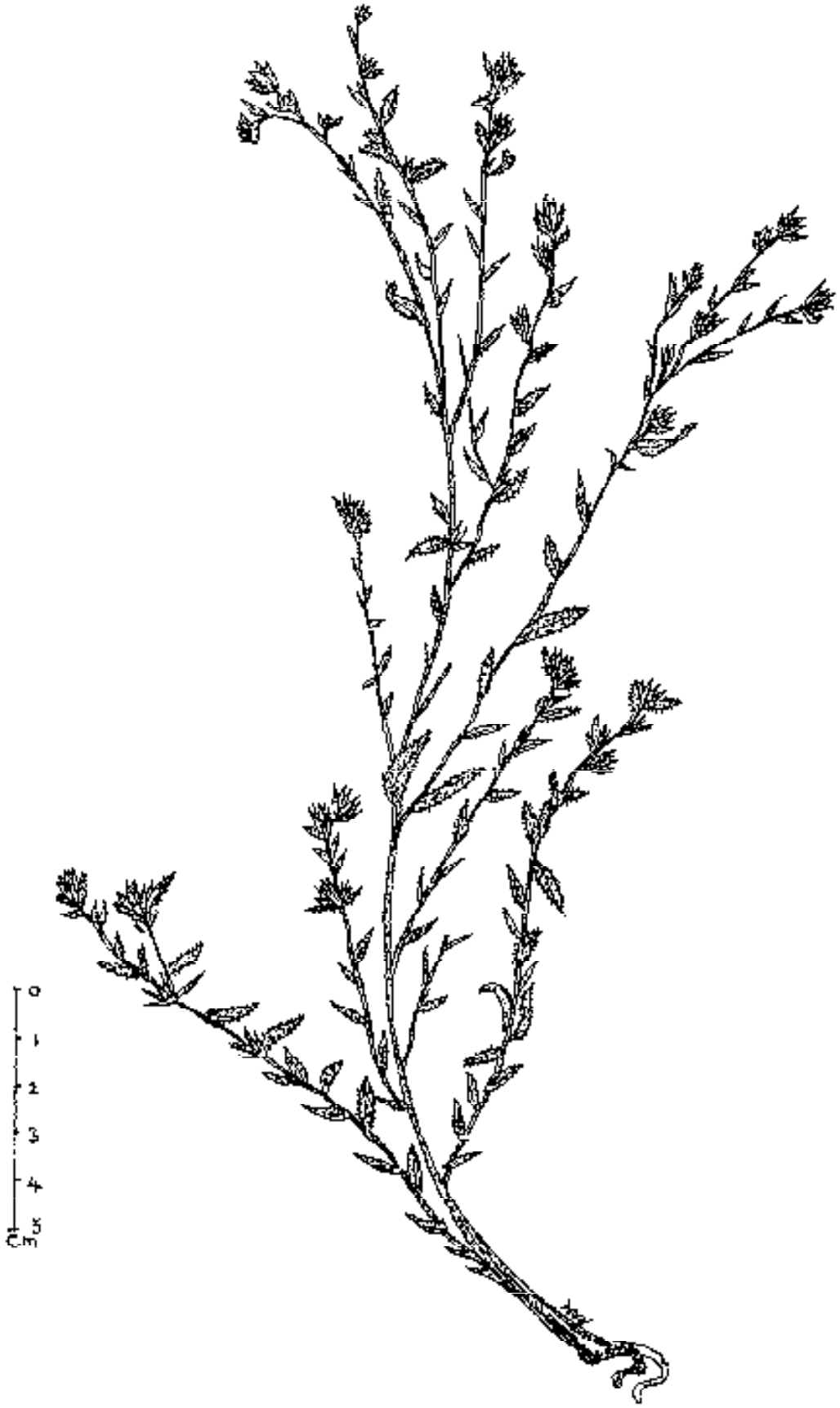
Fls. & Frts. : August–May.

Distrib. : Frequent in open areas and in fallow fields in plains in deciduous forests. Chandrapur, Sindhudurg.

H. subulatum (Hochst. ex DC.) Vatke, Oesterr. Bot. Zeitschr. 25: 166. 1875; Kazmi in Arnold Arbor. 51: 157. 1970. *Tournefortia subulata* Hochst. ex DC. Prodr. 9: 528. 1845.

Erect, upto 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.

Distrib. : Infrequent in open, dry areas in deciduous forests. Akola, Amravati, Raigad.

H. supinum L. Sp. Pl. 130. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 4: 149. 1883; Cooke, Fl. Pres. Bombay 2: 275. 1958 (Repr.); Kazmi in J. Arnold Arbor. 51: 179. 1970.

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.

Illus. : Wight, Ic. t. 1387. 1848; Mahesh. Illus. Fl. Delhi f. 132. 1966.

Distrib. : Frequent in open, moist places and fields. Ahmednagar, Amravati, Aurangabad, Chandrapur, Nagpur, Osmanabad, Pune, Raigad, Ratnagiri, Thane, Yavatmal.

H. zeylanicum (Burm. f.) Lam. Encycl. 3:94. 1791; C.B.Cl. in Hook. f. Fl. Brit. India 4: 148. 1883; Cooke, Fl. Pres. Bombay 2: 274. 1958 (Repr.); Kazmi in Arnold Arbor. 51: 155. 1970. *H. curassavicum* L. var. *zeylanicum* Burm. f. Fl. Ind. 41, t. 16. f. 2. 1768.

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.

ssp. **paniculatum** (R. Br.) Kazmi in J. Arnold Arbor. 51: 156. 1970. *H. paniculatum* R. Br. Prodr. 494. 1810; C. B. Cl. in Hook. f. Fl. Brit. India 4: 150. 1883; Cooke, Fl. Pres. Bombay 2: 279. 1958 (Repr.).

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.

Illus. : Wight Ic. t. 1391. 1848 (*H. linifolium* Lehm. Asperifol. 35. 1810).

Distrib. : Infrequent in open, dry places along road sides in deciduous forests. Dhule, Nagpur, Nasik, Pune, Solapur.

PARACARYOPSIS (H. Riedl) R. Mill.

1. Flowers pale blue with dark centre; anthers included ... *P. coelestina*

1. Flowers uniformly blue; anthers exserted :

2. Stigma minute; nutlets 4 ... *P. malabaricum*

2. Stigma capitate; nutlets 2 (2–suppressed) ... *P. lambertianum*

Paracaryposis coelesina (Lindl.) R. Mill. in Edinb. J. Bot. 48: 57. 1991. *Cynoglossum coelestinun* Lindl. Bot. Reg. 25: t. 36. 1839. *Paracaryum coelestinum* (Lindl.) Bth. & Hook. f. Gen. Pl. 2: 850. 1876; C.B.Cl. in Hook. f. Fl. Brit. India 4:160. 1883; Cooke, Fl. Pres Bombay 2: 285. 1958 (Repr.). *Adelocaryum coelestinum* (Lindl.) Brand. in Feddes Repert. 13: 549. 1915 & in Engl. Pflanzenr. 78: 78, 79, f. 8. 1921; Sant. in Rec. Bot. Surv. India 16(1): 167. 1967 (3rd Rev. ed.). *'Nisurdi'*.

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.

P. lambertiana (C.B.Cl.) R. Mill. in Edinb. J. Bot. 48:59. 1991. *Paracaryum lambertianum* C.B.Cl. in Hook. f. Fl. Brit. India 4: 161. 1883; Cooke, Fl. Pres. Bombay 2: 287. 1958 (Repr.). *Mattiastrum lambertianum* (C. B. Cl.) Brand. in Engl. Pflanzenr. 78: 61. 1921.

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.

P. malabarica (C.B.Cl.) R. Mill. in Edinb. J. Bot. 48: 59. 1991. *Paracaryum malabaricum* C.B.Cl. in Hook. f. Fl. Brit India 4: 160. 1883; Cooke, Fl. Pres. Bombay 2: 286. 1958 (Repr.). *Adelocaryum malabaricum* (C.B.Cl.) Brand. in Feddes Repert. 13: 549. 1915 & in Engl. Pflanzenr. 78: 79. 1921. *'Kalanisurdi'*.

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.

Illus. : Lakshmi. & Sharma, Fl. Nasik Dt. 315, f. 21. 1991.

Distrib. : Frequent in open areas along the ghats. Ahmednagar, Nasik, Satara, Thane.

ROTULA Lour.

Rotula aquatica Lour. Fl. Cochinch. 121. 1790; Gamble, Fl. Pres. Madras 2: 627. 1957 (Repr.). *Rhabdia lycicoides* Mart. Nov. Gen. & Sp.

2: 137, t. 195. 1826; C. B. Cl. in Hook. f. F. Brit. India 4: 145. 1883; Cooke, Fl. Pres. Bombay 2: 272. 1958 (Repr.).

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 upto 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.

Illus. : Wight, Ic. t. 1385. 1848 (*Ehretia cuneata*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 474. 1982.

Distrib. : Infrequent on river bed or along the banks among rocks. Chandrapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.

SERICOSTOMA Stocks ex Wight

Sericostoma pauciflorum Stocks ex Wight, Ic. t. 1377. 1848; C.B.Cl. in Hook. f. Fl. Brit. India 4: 175. 1883; Cooke, Fl. Pres. Bombay 2: 288. 1958 (Repr.); Kazmi in J. Arnold Arbor. 51: 181. 1970.

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*

Trichodesma inaequale Edgew. in Asiat. Soc. Bengal 21: 175. 1853; Verdc. in Kew Bull. 44: 700. 1989. *T. amplexicaue* sensu A. DC. in DC. Prodr. 10: 172. 1846 p.p.; C.B.Cl. in Hook. f. Fl. Brit. India 4: 153. 1883 p.p. *T. indicum* var. *amplexicaule* T. Cooke, Fl. Pres. Bombay 2: 215. 1904 [2: 282. 1958 (Repr.)] p.p.; *T. sedgwickianum* Banerjee in Bull. Bot. Soc. Bengal 16: 10. (1962) 1964; Banerjee & Pramanik in Bull. Bot. Surv. India 17: 116, f. A–D. (1975) 1978.

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.

T. indicum (L.) Lehm. Pl. Fam. Asperif. 193. 1818; C.B.Cl. in Hook. f. Fl. Brit. India. 4: 153. 1883; Cooke, Fl. Pres. Bombay 2: 281. 1958 (Repr.); Kazmi in J. Arnold Arbor. 52: 516. 1971; Banerjee & Pramanik in Bull Bot. Surv. India 17: 110. (1975) 1978; Verdc. in Kew Bull. 44: 701. 1989. *Borago indica* L. Sp. Pl. 137. 1753. *Trichodesma amplexicaule* Roth, Nov. Sp. Pl. 104. 1821; C.B.Cl in Hook. f. op. cit. p. p. *T. indicum* var. *amplexicaule* (Roth) T. Cooke, Fl. Pres. Bombay 2: 215. 1904 [2: 282. 1958 (Repr.)]; Kazmi, op. cit. 518; Banerjee & Pramanik, op. cit. 113. *'Chota kalpa'*.

Annual herbs, 15–60 cm high, erect; branches stems sparsely or densely hairy. Leaves 3–9 x 0.6 – 4.5 cm, ovate–oblong 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.

Illus. : Mahesh. Illus. Fl. Delhi f. 134. 1966 (*Trichodesma amplexicaule*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 475. 1982.

Distrib. : Common throughout in open dry situations, along road sides, waste lands and in fallow fields.

T. zeylanicum (Burm. f.) R. Br. Prodr. 496. 1810; C.B.Cl. in Hook. f. Fl. Brit. India 4: 154. 1883; Cooke, Fl. Pres. Bombay 2: 282. 1958 (Repr.); Banerjee & Pramanik in Bull. Bot. Surv. India 17: 120. (1975) 1978. *Borago zeylanica* Burm. f. Fl. Ind. 41, t. 14, f. 2. 1768. *'Jalshirasi'*.

Erect, annual, herbs, upto 0.5 m high; stems and branches softy 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 offcinalis 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. Nultlets 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.

Heliotropium peruvinum L. Sp. Pl. ed. 2. 187. 1762; Cooke, Fl. Pres. Bombay 2: 280. 1958 (Repr.).

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 ... EVOLVULUS

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 ... ARGYREIA

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 ... ANISEIA

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 hypocrateriform, 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

Aniseia martinicensis (Jacq.) Choisy in Mem. Soc. Phys. Geneve 8: 66. 1838; Ooststr. in Steenis, Fl. Males. 1, 4: 435, t. 21. 1953; Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 291. 1980. *Convolvulus martinicensis* Jacq. Sel. Stirp. Amer. 26, t. 17. 1763. *Aniseia uniflora* (Burm f.) Choisy, Convolv. Orient. 101. 1834; C.B.Cl. in Hook. f. Fl. Brit. India 4:201. 1883; Cooke, Fl. Pres. Bombay 2: 300. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 850. 1845 (*A. uniflora*); Ooststr. in Steenis, op. cit.; Austin in Ann. Miss. Bot. Gard. 62: 188, t. 8. 1975.

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*

Argyreia boseana Sant. & Patel in Trans. Bose Res. Inst. Calcutta 22: 35, t. 3. 1958. *A. hookeri* sensu T. Cooke, Fl. Pres. Bombay 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 nerved, 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.

Illus. : Sant. & Patel, op. cit.

Distrib. : A few along hilly tracts and in plains. Kolhapur, Ratnagiri, Satara.

A. cuneata (Willd.) Ker–Gawl. in Bot. Reg. 8: t. 661. 1822; C.B.Cl. in Hook. f. Fl. Brit. India 4: 191. 1883; Cooke, Fl. Pres. Bombay 2: 327. 1958 (Repr.). *Convolvulus cuneata* Willd. Sp. Pl. 1: 873. 1798. *'Maha–lungi'*.

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.

Illus. : Wight, Ic. t. 890. 1844 (*Rivea cuneata*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 476 & 974 C. 1982.

Distrib. : Common on hill slopes of dry deciduous forests, occasional in plains along hedges. Pune, Satara.

A. cymosa (Roxb.) Sweet, Hort. Brit. ed. 289. 1827; C.B.Cl. in Hook. f. Fl. Brit. India 4: 190. 1883; Cooke, Fl. Pres. Bombay 2: 327. 1958 (Repr.); Naik, Fl. Osmanabad 216. 1979. *Lettsomia cymosa* Roxb. Fl. Ind. 2: 82. 1824.

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.

A. elliptica (Roth) Choisy in Mem. Soc. Phys. Geneve 6: 417. 1834; Sant. in Rec. Bot. Surv. India 16(1): 172. 1967 (3rd Rev. ed.); Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 294. 1980. *Ipomoea elliptica* Roth, Nov. Pl. Sp. 113. 1821. *Lettsomia ellitptica* (Roth) Wight, Ic. t. 1356. 1848; C.B.Cl. in Hook. f. Fl. Brit. India 4: 192. 1883; Cooke, Fl. Pres. Bombay 2: 329. 1958 (Repr.). *'Bondvel'*.

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.

Distrib. : Occasional in semi-evergreen forests. Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg.

A. hirsuta Wight & Arn. in Arn. Nova Acta. Nat. Cur. 18: 365. 1836; C. B. Cl. in Hook. f. Fl. Brit. India 4: 189. 1883; Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 296. 1980. *A. hirsuta* Wight & Arn. var. *coacta* C. B. Cl. in Hook. f. 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, elliptic-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, Ic. t. 891. 1845 (*Rivea hirsuta*).

Distrib. : Restricted to elevated ghats between 700– 1200 m. Akola, Aurangabad, Chandrapur.

A. hookeri C. B. Cl. in Hook. f. Fl. Brit. India 4: 185. 1883; Cooke, Fl. Pres. Bombay 2: 325. 1958 (Repr.); Ooststr. in Steenis, Fl. Males. 1, 4: 502. 1953. *A. malabarica* Woodr. in J. Bombay nat. Hist. Soc. 12:170. 1898 non Choisy, 1834.

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2:285, f. 428. 1911.

Distrib. : In thickets and thin forests. Kolhapur, Raigad, Ratnagiri, Sindhudurg.

A. imbricata (Roth) Sant. & Patel in Trans. Bose Res. Inst. Calcutta 22: 40. 1958; S. M. Almeida, Fl. Savantwadi 1: 278. 1990. *Ipomoea imbricata* Roth, Nov. Pl. Sp. 112. 1821. *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 middle 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.

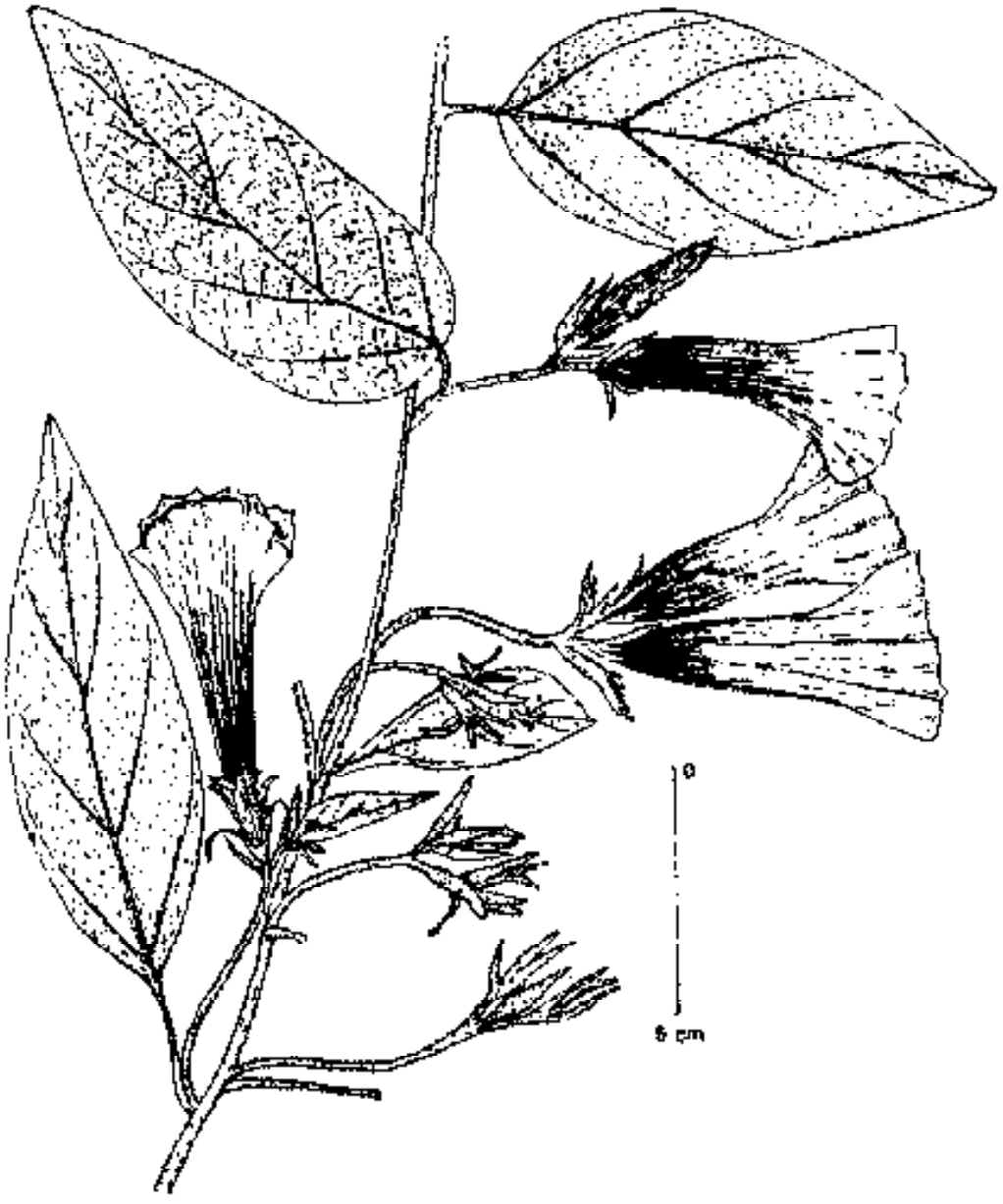
Fls. & Frts. : September–December.

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; Cooke, Fl. Pres. Bombay 2: 385. 1958 (Repr.).

Twiners, large, shrubby; stems appressed with hairs. Leaves 10–20 x 8–12 cm, ovate, apex acute or aucminate, 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 filments 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.

A. lawii C. B. Cl. in Hook. f. Fl. Brit. India 4: 190. 1883; Cooke, Fl. Pres. Bombay 2: 327. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 287. 1911.

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".

A. nervosa (Burm. f.) Bojer, Hort. Maurit. 224. 1837; Ooststr. in Steenis, Fl. Males. 1, 4: 499. 1953; Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 297. 1980. *Convolvulus nervosus* Burm. f. Fl. Ind. 48. 1768. *Argyreia speciosa* (L. f.) Sweet, Hort. Brit. 289. 1827; C.B.Cl. in Hook. f. Fl. Brit. India 4: 185. 1883; Cooke, Fl. Pres. Bombay 2: 324. 1958 (Repr.). *'Samudrashok'*.

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.

A. pilosa Wight & Arn. in Nov. Act. Nat. Cur. 18: 356 c. 1836; C.B.Cl. in Hook. f. Fl. Brit. India 4: 189. 1883; Cooke, Fl. Pres. Bombay 2: 326. 1958 (Repr.); S. M. Almeida, Fl. Savantwadi 1: 279. 1990.

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.).

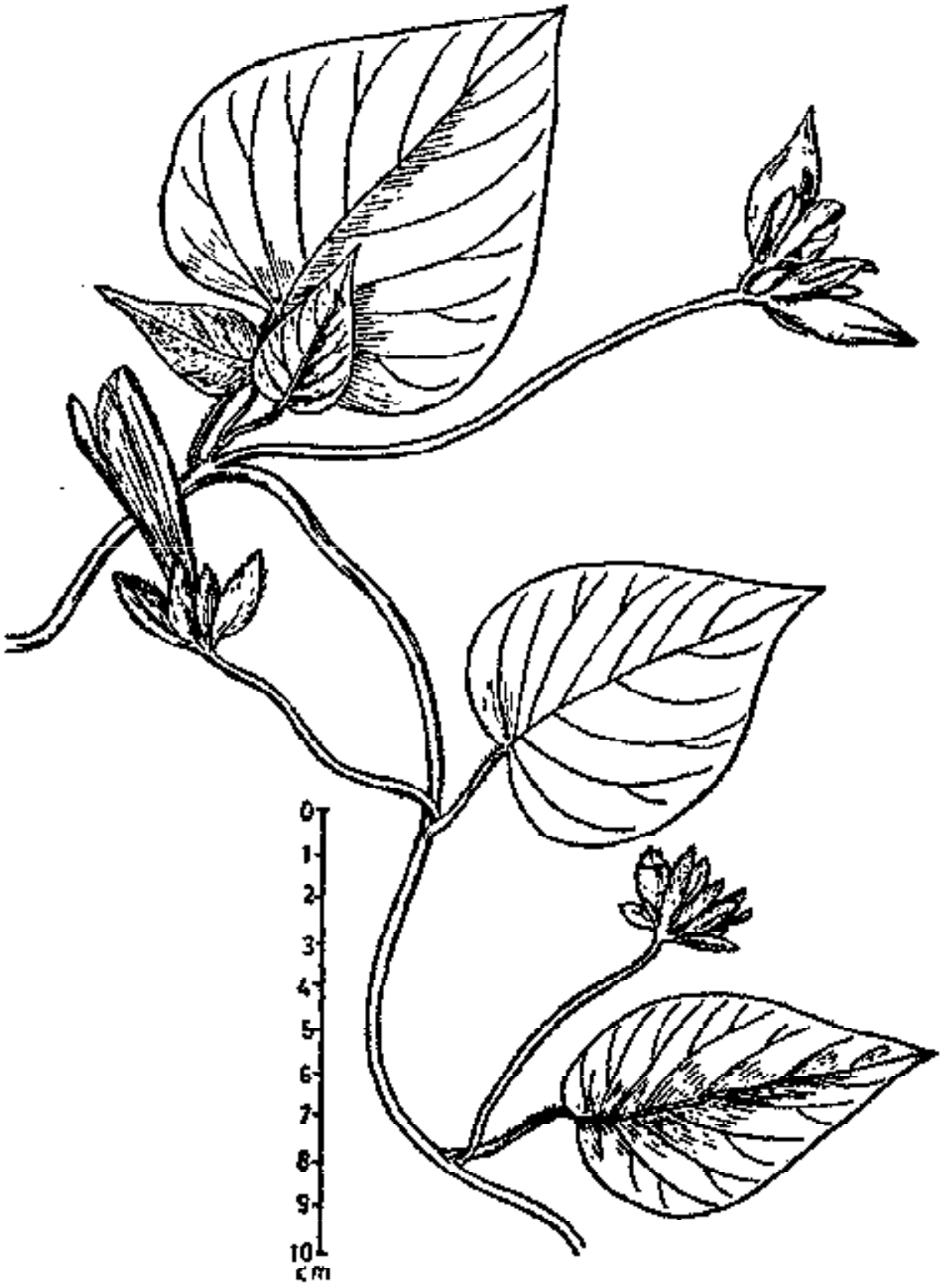
A. sericea Dalz. & Gibs. Bombay. Fl. 169. 1861; C. B. Cl. in Hook. f. Fl. Brit. India 4: 188. 1883; Cooke, Fl. Pres. Bombay 2: 326. 1958 (Repr.). *'Gavel'*.

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.

Illus. : Lakshmi. & Sharma, Fl. Nasik Dt. 323, f. 22. 1991.

Distrib. : Common along high hilly tracks in deciduous forests. Ahmednagar, Akola, Amravati, Chandrapur, Dhule, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Wardha.



Argyreia sericea Dalz. & Gibs.

A. strigosa (Roth) Roberty in Candollea 14: 44. 1952; Sant. & Patel in Trans. Bose Res. Inst. Calcutta 22: 41. 1958. *Ipomoea strigosa* Roth, Nov. Pl. Sp. 113. 1821. *Lettsomia setosa* Roxb. Fl. Ind. 2: 80. 1824; C. B. Cl. in Hook. f. Fl. Brit. India 4: 194. 1883; Cooke, Fl. Pres. Bombay 2: 330. 1958 (Repr.). *'Dhudh-vel', 'Sambar-vel'.*

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.

Fls. & Frts. : October–January.

Illus. : Wight, Ic. t. 1360. 1848; Talb. For. Fl. Bombay Pres. & Sind 2: 291, f. 430. 1911 (*Lettsomia setosa*).

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.)

Bonamia semidigyna (Roxb.) Hall. f. in Bot. Jahrb. Syst. 16: 528. 1893; Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 303. 1980. *Convolvulus semidigynus* Roxb. Fl. Ind. 2:47. 1824. *Breweria cordata* Bl. Bijdr. 722. 1825; C.B.Cl. in Hook. f. Fl. Brit. India 4: 223. 1883; Cooke, Fl. Pres. Bombay 2: 298. 1958 (Repr.).

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 subessile; 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*

Convolvulus arvensis L. Sp. Pl. 153. 1753; C.B.Cl. in Hook f. Fl. Brit. India 4: 219. 1883; Cooke, Fl. Pres. Bombay 2: 303. 1958 (Repr.); Ooststr. in Steenis, Fl. Males. 1, 4: 437. 1953; Austin & Ghazanfar in Nasir & Ali, Fl. W. Pak. 126: 26, f. 4, D–E. 1979. *'Chandvel', 'Hiranpag'*.

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, subtrigonous, dark reddish–brown.

Fls. & Frts. : December–June.

Illus. Austin & Ghazanfar in Nasir & Ali, op. cit.

Distrib. : Common throughout in waste places, cultivated lands and along road sides and railway lines.

C. flavus Willd. Sp. Pl. 1: 852. 1798; Dhore & Joshi, Fl. Melghat Tig. Reserve 125. 1988.

Slender herbs, twiners; stems hairy. Leaves hastate, hairy, toothed. Flowers solitary, axillary. Capsules globose, 4–valved, breaking up irregularly.

Fls. Frts. : October–November.

Distrib. : Rare among grases on hill slopes. Amravati (Dhore & Joshi, op. cit.).

C. prostratus Forssk. Fl. Aegypt.–Arab. 203. 1775; Austin & Ghazanfar in Nasir & Ali, Fl. W. Pak. 126: 23, f. 3, D–G. 1979. *C. microphyllus* Sieb. ex Spreng. Syst. Veg. 1:611. 1845; C.B.Cl. in Hook. f. Fl. Brit. India 4: 218. 1883; Cooke, Fl. Pres. Bombay 2: 301. 1958 (Repr.).

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 oblanceolate, 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.

C. rottlerianus Choisy, Conv. Or. in Mem. Soc. Phys. Geneve 95. 1834; C.B.Cl. in Hook. f. Fl. Brit. India 4: 219. 1883; Cooke, Fl. Pres. Bombay 2: 301. 1958 (Repr.); Austin & Ghazanfar in Nasir & Ali, Fl. W. Pak. 126: 26, f. 4, D–F. 1979.

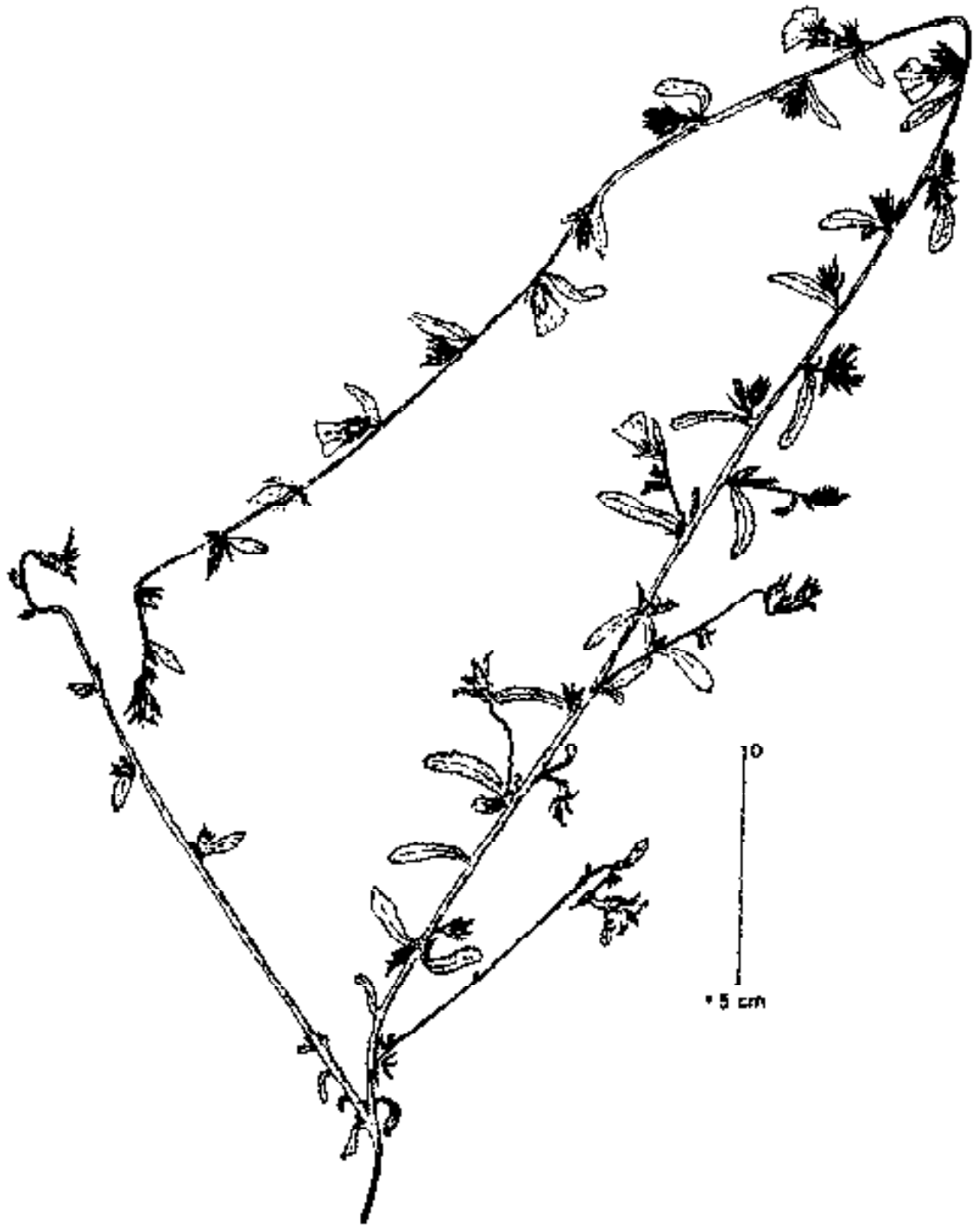
Herbs, 20–25 cm high, diffusely branched; branches appressed–pilose. Leaves 15–50 x 2–8 mm, linear or oblong–lanceolate, base attenuate, apex acute. Flowers axillary, 1–2, on slender peduncles, 20–40 mm long; bracts linear–oblanceolate, bracteoles linear; calyx 4–5 mm long, obovate, pilose; corolla 7–8 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.

C. sindicus Stocks in Hook. Kew J. Bot. 4: 173. 1852 non Boiss. 1856; C. B. Cl. in Hook. f. Fl. Brit. India 4:217. 1883; Cooke, Fl. Pres. Bombay 2: 300. 1958 (Repr.); Austin & Ghazanfar in Nasir & Ali, Fl. W. Pak. 126: 17, f. 2, C. 1979.



Convolvulus prostratus Forssk.

Undershrubs, 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.

Illus. : Austin & Ghazanfar in Nasir & Ali, op. cit.

Distrib. : Rare in dry and open situations. Dhule.

CRESSA L.

Cressa cretica L. Sp. Pl. 223. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 4:225. 1883; Cooke, Fl. Pres. Bombay 2: 296. 1958 (Repr.); Austin & Ghazanfar in Nasir & Ali, Fl. W. Pak. 126: 30. 1979. *'Kardi', 'Lona'.*

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 477. 1982.

Distrib. : Common in rice fields of saline soil and in salt pans. Mumbai, Nanded, Raigad, Solapur, Thane.

ERYCIBE Roxb.

Erycibe paniculata Roxb. Pl. Cor. 2: 31, t. 159. 1802; C.B.Cl. in Hook. f. Fl. Brit. India 4: 180. 1883; Cooke, Fl. Pres. Bombay 2: 293. 1958 (Repr.); Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1:308. 1980. *E. paniculata* var. *wightiana* (Grah.) C.B.Cl. in Hook. f. op. cit.; Cooke, op. cit. 294. *E. wightiana* Grah. Cat. Bombay Pl. 37. 1839.

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

white, fragrant, campanulate–rotate. Berries green when young, purplish–black when ripen, leathery, ovoid–ellipsoid, 10–14 mm long. Seeds solitary.

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.).

EVOLVULUS L.

Evolvulus alsinoides (L.) L. Sp. Pl. ed. 2, 2: 392. 1762; C.B.Cl. in Hook. f. Fl. Brit. India 4: 220. 1883; Cooke, Fl. Pres. Bombay 2: 297. 1958 (Repr.); Austin & Ghazanfar in Nasir & Ali, Fl. W. Pak. 126: 32, f. 5, A–B. 1979; Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1:309. 1980. *Convolvulus alsinoides* L. Sp. Pl. 157. 1753. *'Shanka veli', 'Vishnukranta'.*

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.

Illus. : Wight, Illus. t. 168, f. 10. 1850; Mahesh. Illus. Fl. Delhi f. 136. 1966; Austin & Ghazanfar in Nasir & Ali, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 479. 1982.

Distrib. : Common in grass lands, waste places and dry areas. Common throughout.

HEWITTIA Wight & Arn.

Hewittia malabarica (L.) Suresh in Nicols. et al. Interp. Hort. Malab. 89. 1988. *Convolvulus malabaricus* L. Sp. Pl. 155. 1753. *Hewittia sublobata* (L. f.). O. Ktze. Rev. Gen. Pl. 2: 441. 1891. *H. bicolor* (Vahl) Wight & Arn. in Madras J. Sci. 1: 22 1837; C.B.Cl. in Hook. f. Fl. Brit. India 4: 216. 1883; Cooke, Fl. Pres. Bombay 2: 299. 1958 (Repr.).

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.

Note : Linnaeus in Species Plantarum 155. 1753 quoted Rheede's "Kattu kelangu" [Hort. Malab. 11: 105, t. 51. 1692] against *Convolvulus malabaricus* L. Suresh in Nicols. et al. (op. cit.) lectotyped the plate of Rheede.

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 gabrous 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. clarkei*

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. salsettensis*

15. Corolla 8–10 cm across ... *I. violacea*

13. Stems and corolla not as above :

16. Leaves hastate :

17. Flowers in dichasial cymes, more than 5 ... *I. carnea* ssp. *fistulosa*

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 sub–umbellate cymes; corolla less than 5 cm long :

21. Corolla hypocrateriform; seeds with long hairs ... *I. marginata*

21. Corolla infundibuliform; 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*

Ipomoea aquatica Forssk. Fl. Aegypt.–Arab. 44. 1775; C.B.Cl. in Hook. f. Fl. Brit. India 4: 210 1883; Cooke, Fl. Pres. Bombay 2: 315. 1958 (Repr.); Ooststr. in Steenis, Fl. Males. 1, 4: 473. 1953; Austin & Ghazanfar in Nasir & Ali Fl. W. Pak. 126: 38, f. 5, C–D. 1979. *'Nelichi–bhaji'*.

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 139. 1966; Austin & Ghazanfar in Nasir & Ali, op. cit.

Distrib. : Common along the margins of tanks and other moist bodies.

I. arachnosperma Welw. Apont. Phyto–Geogr. 588. 1859; Naik, Fl. Marathwada 1: 585. 1998. *Convolvulus dichrous* R. & S. Syst. Mant. 4: 263. 1819. *C. pilosus* Roxb. Fl. Ind. 1: 473. 1820. *Ipomoea dichroa* (R. & S.) Choisy in DC. Prodr. 9: 264. 1845 nom. illegit. *I. pilosa* (Roxb.) Sweet, Hort. Brit. 289. 1823 nom. illegit.; C.B.Cl. in Hook f. Fl. Brit. India 4: 213. 1883; Cooke, Fl. Pres. Bombay 2: 313. 1958 (Repr.). *'Bohori'*.

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, broady ovoid, black, clothed with cottony hairs mixed with velvetty pubescence.

Fls. & Frts. : September–December.

Illus. : Wight, Ic. t. 837. 1845 (*I. pilosa*).

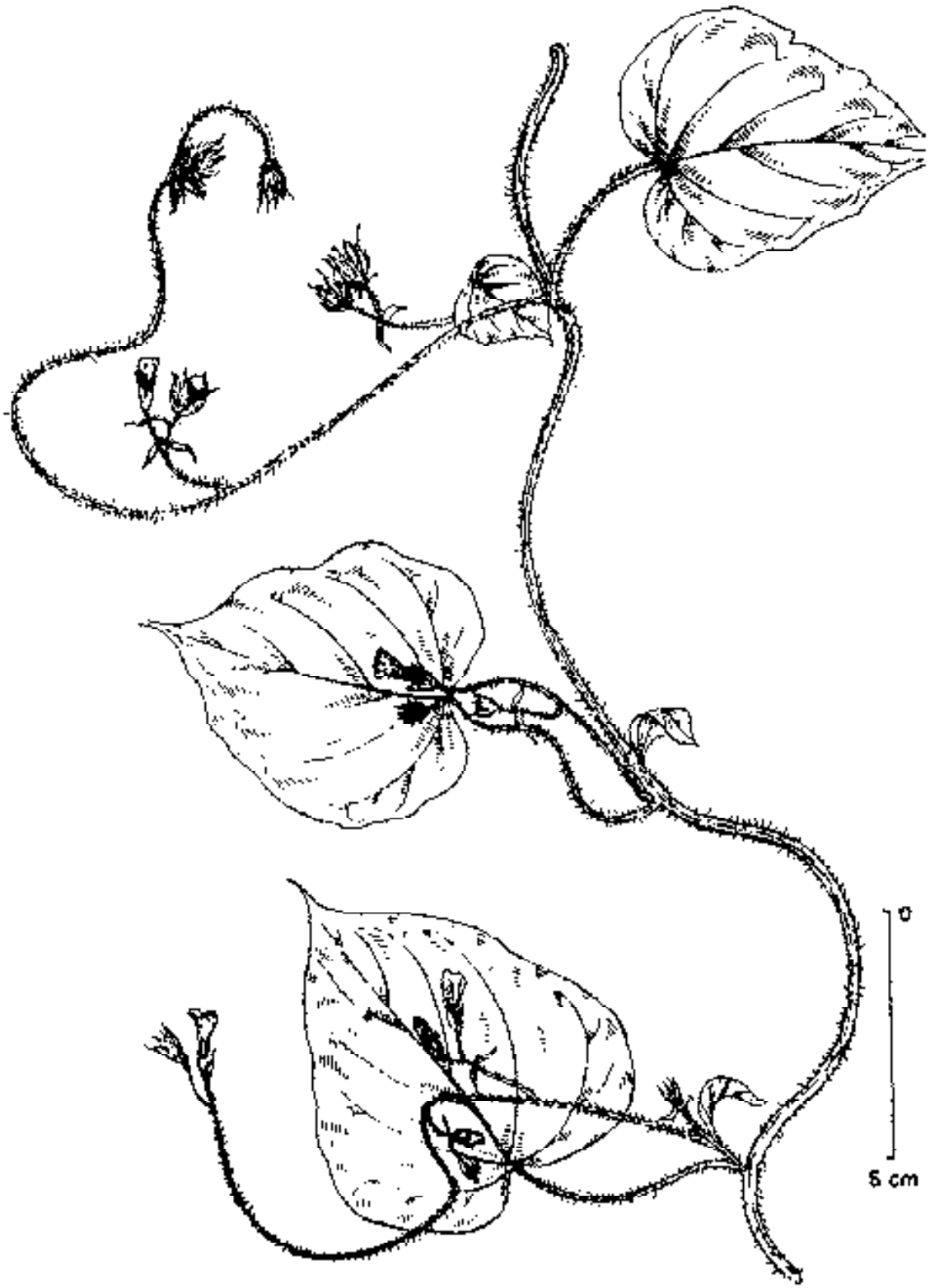
Distrib. : Rare on hedges along stream banks and on low shrubs. Aurangabad, Dhule, Thane.

I. barlerioides (Choisy) Bth. ex Hook. f. Gen. Pl. 2: 872. 1876; C. B. Cl. in Hook. f. Fl. Brit. India 4: 201 1883; Cooke, Fl. Pres. Bombay 2: 312. 1958 (Repr.). *Aniseia barlerioides* Choisy, Mem. Soc. Phys. Geneve 6: 484. 1834.

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.

I. campanulata L. Sp. Pl. 160. 1753; Cooke, Fl. Pres. Bombay 2: 316. 1958 (Repr.); Austin et al. in Brittonia 30: 196. 1978. *I. campanulata* var. *illustris* C. B. Cl. in Hook. f. Fl. Brit. India 4: 211. 1883. *I. illustris* (C. B. Cl.) Prain, Bengal Pl. 2: 735. 1903; Ooststr. in Steenis, Fl. Males. 1, 4: 485. 1953; Naik, Fl. Marathwada 1: 589. 1998. *'Tambarvel'.*

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.

Illus. : Wight Ic. t. 1375. 1848; Talb. For. Fl. Bombay Pres. & Sind 2: 294, f. 431. 1911.

Distrib. : Growing on thickets along hilly tracts of deciduous forests. Dhule, Nasik, Pune, Ratnagiri, Satara, Sindhudurg, Thane.

I. carnea Jacq. subsp. **fistulosa** (Mart. ex Choisy) Austin in Taxon 26: 237, f. 2. 1977 & in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 322. 1980. *I. fistulosa* Mart ex Choisy in DC. Prodr. 9: 349. 1845; Ooststr. in Steenis, Fl. Males. 1, 4 : 485. 1953. *I. carnea* Jacq. Enum. Pl. Carib. 13. 1760; Cooke, Fl. Pres. Bombay 2: 321. 1958 (Repr.).

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.

I. clarkei Hook. f. Fl. Brit. India 4: 734. 1885 (under editions and correcions *I. stocksii* in error for *I. clarkei* in Hook. f. op. cit.207. 1883); Cooke, Fl. Pres. Bombay 2: 314. 1958 (Repr.); Billore & Singh in Indian Forester 98: 147. 1972.

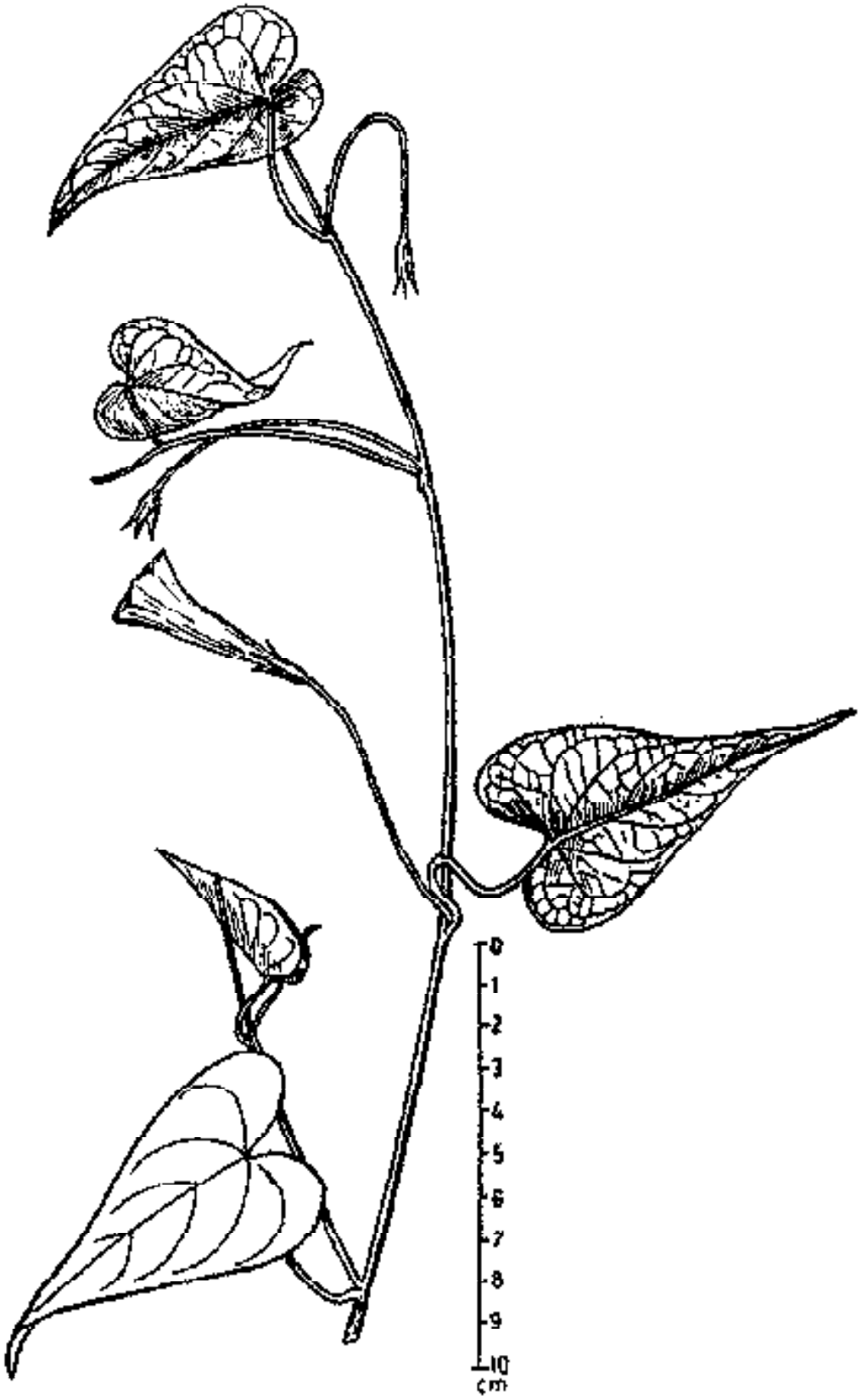
Twiners, slender. Leaves 5–9 x 4–6 cm, broadly ovate, finely acuminate, hairy on both surfaces, base deeply cordate with rounded lobes; petioles 2.5–6.0 cm long. Inflorescence 1–3 flowered cymes; peduncles 2–4 cm long, slender; bracts minute, lanceolate, acute; pedicels 0.5–3 cm long; calyx 0.8–1.0 cm 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.

Illus. : Nayar & Sastry, Red Data Book Ind. Pl. 3: 100, f. 1990.

Distrib. Rarely found in forests at high altitude. Nasik, Pune, Thane.

I. coptica (L.) Roth ex R. & S. Syst. 4: 208. 1819; Oostrtr. in Blumea 3: 544. 1940 et in Steenis, Fl. Males. 1, 4(4): 479. 1953; Naik, Fl. Marathwada 1: 587. 1998. *Convolvulus copticus* L. Mant. 2, App. 559. 1771. *Ipomoea dissecta* Willd. Phytogr. 5, t. 2. 1794; C.B.Cl. in Hook. f. Fl. Brit. India 4: 200. 1883; Cooke, Fl. Pres. Bomay 2: 318. 1958 (Repr.).



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, 10–12 mm long, white. Capsules globose, 7–8 mm in diam., 3–celled. Seeds 6, densely grey tomentose, 2–2.5 mm long.

Fls. & Frts. : November–January.

Distrib. : Rare, in wet rice fields. Nanded (Naik, op. cit.).

I. deccana Austin var. **lobata** (C.B.Cl.) Johari in J. Econ. Tax. Bot. 5: 432. (1984) 1986. *I. bracteata* Wight var. *lobata* C. B. Cl. in Hook. f. Fl. Brit. India 4: 204. 1883.

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.).

I. diversifolia R. Br. Prodr. 487. 1810; Ooststr. in Steenis, Fl. Males. 1, 4:479. 1953. *I. lacinata* C. B. Cl. in Hook. f. Fl. Brit. India 4:200. 1883; Cooke, Fl. Pres. Bombay 2: 319. 1958 (Repr.).

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.

I. eriocarpa R. Br. Prodr. 484. 1810; C. B. Cl. in Hook. f. Fl. Brit. India 4: 204. 1883; Cooke, Fl. Pres. Bombay 2: 312. 1958 (Repr.); Ooststr. in Steenis, Fl. Males. 1, 4: 462, f. 35. 1953; Austin & Ghazanfar in Nasir & Ali, Fl. W. Pak. 126: 41, f. 6, A–B. 1979. *'Ranbhori'*.

Herbs, twining or prostrate, retrorsely to patently pilose; stems herbaceous. Leaves mostly lanceolate to oblong or linear–lanceolate, 2.5–6.0 x 0.5–1.5 cm, sometimes ovate, 2,5–9.0 x 1.5–5.5 cm, base cordate, apex attenuate to acuminate with a mucronulate point, pubescent on both surfaces. Flowers axillary in sessile 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.

Illus. : Wight, Ic. t. 169. 1839. (*I. sessiliflora* Roth. Nov. Pl. Sp. 116. 1821); Ooststr. in Steenis op. cit.; Austin & Ghazanfar in Nasir & Ali, op. cit.

Distrib. : Common in plains and lower hills in grasslands, hedges and fields.

I. hederifolia L. Syst. Nat. ed. 10. 925. 1759; Austin & Ghazanfar in Nasir & Ali, Fl. W. Pak. 126: 43. 1979. *I. coccinea* auct. non L. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 199. 1883. *Quamoclit coccinea* Moench. Method. 453. 1795; Cooke, Fl. Pres. Bombay 2: 330. 1958 (Repr.).

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 481. 1982.

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.

I. marginata (Desr.) H. Manitz in Feddes Repert. 85 (9–10) : 638. 1974; Verdc. in Kew Bull. 42: 658. 1987; Nicols. et al. Interp. Hort. Malab. 91. 1988. *Convolvulus marginatus* Desr. in Lam. Encycl. 3:558. 1792. *Ipomoea sepiaria* Koen. ex Roxb. Fl. Ind. 2: 90. 1824; C.B.Cl. in Hook. f. Fl. Brit. India 4 : 209. 1883; Cooke, Fl. Pres. Bombay 2: 315. 1958 (Repr.); Shah & Badrinath in J. Econ. Tax. Bot. 6: 131. 1985. *I. maxima* sensu Ooststr. & Hoogl. in Steenis, Fl. Males. 1, 4:472. 1953 non (L. f.) G. Don ex Sweet, 1830; Naik, Fl. Marathwada 1: 590. 1998.

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.

forma **candida** (Naik & Zate) Das Das & Lakshmi. in J. Econ. Tax. Bot. 24: 449. 2000. *I. maxima* (L.f.) G. Don ex Sweet forma *candida* Naik & Zate in Naik, Fl. Marathwada 1: 590. 1998.

Fls. & Frts. : September–July.

Distrib. : Frequent on forest floor under the shade of trees and along stream banks. Nanded.

I. mauritiana Jacq. Collect. 4: 216. 1791; Ooststr. in Steenis, Fl. Males. 1, 4: 483, f. 55. 1953; Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 331. 1980. *Ipomoea digitata* auct. non L. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 202. 1883; Cooke, Fl. Pres. Bombay 2: 318. 1958 (Repr.).

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.

I. nil (L.) Roth, Cat. Bot. 1: 36. 1797; Ooststr. in Steenis, Fl. Males. 1, 4: 465. 1953; Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 332. 1980. *Convolvulus nil* L. Sp. Pl. ed. 2. 219. 1762. *Ipomoea hederacea* auct. non Jacq. 1786; C.B.Cl. in Hook. f. Fl. Brit. India 4: 199. 1883; Cooke, Fl. Pres. Bombay 2: 321. 1958 (Repr.).

Twiners, anuuals; 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.

Illus. : Mahesh. Illus. Fl. Delhi f. 145. 1966.

Distrib. : Common along hedges and thickets of deciduous forests.

I. obscura (L.) Ker–Gawl. Bot. Reg. 3, t. 239. 1837; C.B.Cl. in Hook. f. Fl. Brit. India 4: 207. 1883; Cooke, Fl. Pres. Bombay 2:317. 1958 (Repr.); Naik, Fl. Marathwada 1: 591. 1998. *Convolvulus obscurus* L. Sp. Pl. ed. 2: 220. 1762. *Ipomoea curassavica* All. Auct. Syn. 10. 1773; Dandy in Taxon 19: 622. 1970. *'Pungali'.*

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 patently hairy. Leaves 2–10 x 2–9 cm, ovate or orbicular, base cordate, apex attennuate 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 coloured, 4–valved. Seeds 4, black, finely grey puberulent.

Fls. & Frts. : August–February.

Illus. : Ooststr. in Steenis, Fl. Males. 1, 4: 471, f. 44. 1953; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 394. 1988.

Distrib. : Common along the hedges of thin forests also in grasslands and waste places.

Notes : Worth introducing in gardens.

forma **concolor** Naik et Zate in Naik, Fl. Marathwada 1: 591. 1998.

Fls. & Frts. : September–December.

Distrib. : Frequent, in hedges, on bushes, etc. Nanded.

I. pallida Sant. & Patel in Trans. Bose Res. Inst. Calcutta 22: 38. 1958. *I. stipulacea* (Roxb.) Sweet, Hort. Brit. 289. 1827 & 372. 1850. *I. sepiaria* Koen. var. *stipulosa* C.B.Cl. in Hook. f. Fl. Brit. India 4: 209. 1883; Cooke, Fl. Pres. Bombay 2: 316. 1958 (Repr.).

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.).

I. pes–caprae (L.) R. Br. in Tuckey, Narr. Exped. R. Zaire 477. 1818; Ooststr. in Steenis, Fl. Males. 1, 4: 475, fig. 49–50. 1953; Austin & Ghazanfar in Nasir & Ali, Fl. W. Pak. 126: 46, f. 6, E. 1979. *Convolvulus pes–caprae* L. Sp. Pl. 159. 1753. *Ipomoea biloba* Forssk. Fl. Aegypt. Arab. 44. 1775; C. B. Cl. in Hook. f. Fl. Brit. India 4: 212. 1883; Cooke, Fl. Pres. Bombay 2: 317. 1958 (Repr.). *'Maryadvel'*.

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 ong, 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.

I. petaloidea Choisy, Convol. Or. bq. 1833. C.B.Cl. in Hook. f. Fl. Brit. India. 4: 212. 1883; Haines, Bot. Bihar & Orissa 2: 628. 1967 (Repr.); Kamble et al. in J. Econ. Tax. Bot. 3: 811. (1982) 1983.

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.

I. pes–tigrides L. Sp. Pl. 162. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 4:204. 1883 (incl. var. *hepaticaefolia*); Cooke, Fl. Pres. Bombay 2: 320. 1958 (Repr.); Ooststr. in Steenis, Fl. Males. 1, 4:467, f. 40. 1953.

Herbs, annuals; stems twining, prostate or sparwling, 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, apicallly 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.

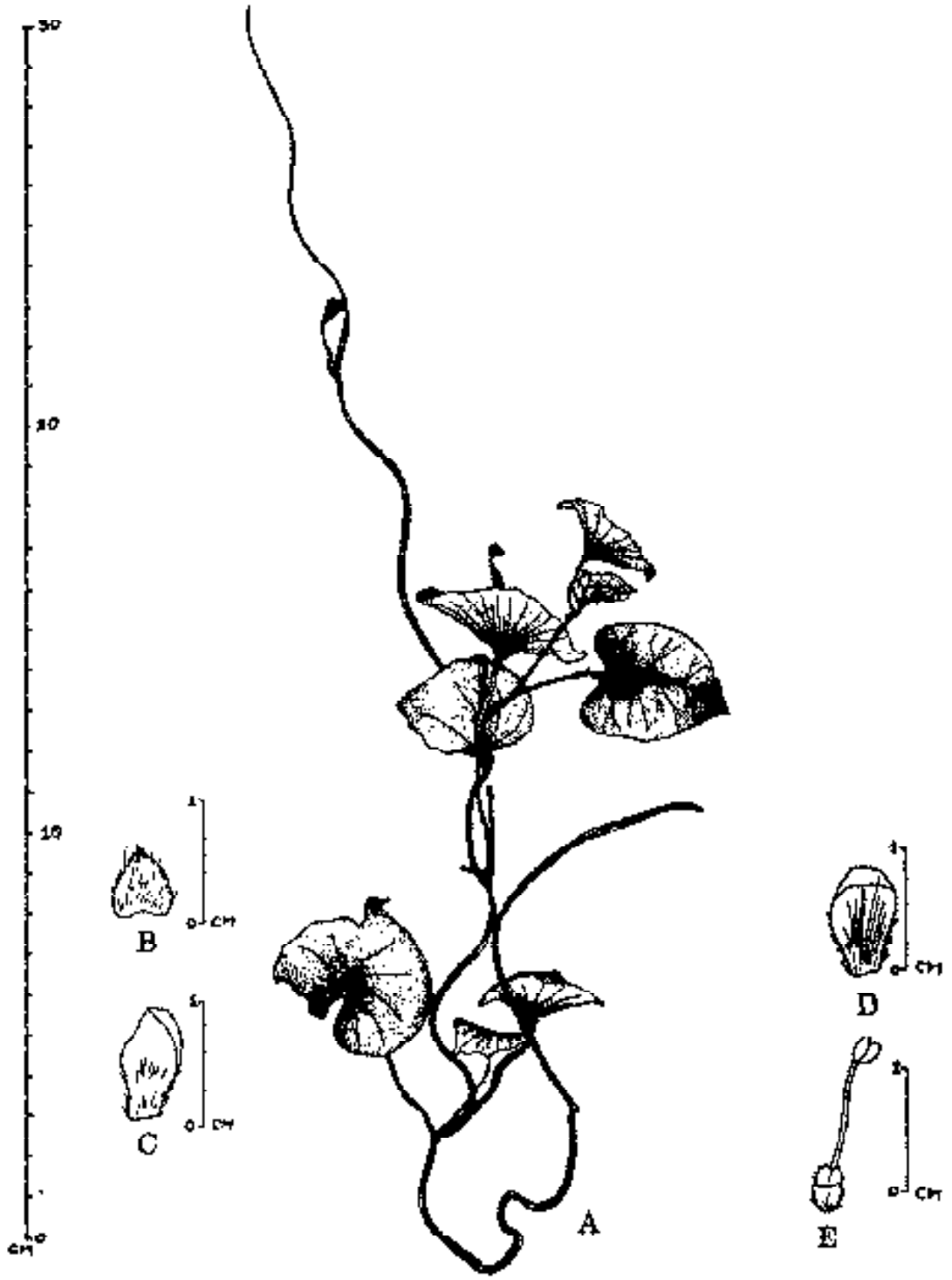
Fls. & Frts. : August – November.

Illus. : Wight, t. 836. 1845; Ooststr. in Steenis, op. cit.; Mahesh. Illus. Fl. Delhi. f. 143. 1966.

Distrib. : Common throughout in open grounds or hedges, often in cultivated fields.

I. pileata Roxb. Fl. Ind. 2: 94. 1824; C.B.Cl. in Hook. f. Fl. Brit. India. 4: 203. 1883; Ooststr. in Steenis, Fl. Males. 1, 4: 507. 1953; Sant. & Patel in Agharkar Comm. 16, f. 1. 1961; S. M. Almeida, Fl. Savantwadi 1: 286. 1990. *I. involucrata* auct. non P. Beauv. 1810; Cooke, Fl. Pres. Bombay 2: 314. 1958 (Repr.).

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.).

I. salsettensis Sant. et Patel in Trans. Bose Res. Inst. Calcutta 22: 34, t. 2. 1958; Singh & Raghavan in J. Econ. Tax. Bot. 8 : 32. 1986.

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–oblong, 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 subexserted, subequal, filaments pilose. Capsules 1.5–1.7 cm across, depressed–globose, 4–valved, 2–celled. Seeds 6–8, tomentose.

Fls. & Frts. : September –October.

Illus. : Sant. & Patel, op. cit.

Distrib. : Infrequent. Mumbai (Sant. & Patel, op. cit.).

I. sindica Stapf in Kew Bull. 1894: 364. 1894; Cooke, Fl. Pres. Bombay 2: 313. 1958 (Repr.); Datar & Vartak in J. Bombay Nat. Hist. Soc. 14: 390, f. 1. 1977.

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 brodly 5–lobed. Capsules 0.5–0.6 cm long, subglobose. Seeds black.

Fls. & Frts. : August–October.

Illus. : Mahesh. Illus. Fl. Delhi. f. 140. 1966; Datar & Vartak, op. cit.

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.

I. sinensis (Desv.) Choisy in Mem. Phys. Soc. Geneve 6: 459. 1834. *Convolvulus chinensis* Desv. in Lam. Encycl. 3: 557. 1791. *Ipomoea calycina* C. B. Cl. in Hook. f. Fl. Brit. India 4: 201. 1883; Cooke, Fl. Pres. Bombay 2: 311. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 833. 1844–45 [*Aniseia calycina* (Roxb.) Choisy in Mem. Phys. Soc. Geneve 6: 482. 1833].

Distrib. : Occasionally found on hedges in deciduous forests. Aurangabad, Ahmednagar, Akola, Amravati, Beed, Dhule, Jalna, Konkan (Cooke, op. cit.), Nasik, Nanded, Parbhani, Pune.

I. trichosperma Bl. Bijdr. 710. 1825; C. B. Cl. in Hook. f. Fl. Brit. India 4: 198. 1883; S. M. Almeida, Fl. Savantwadi 1: 287. 1990.

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.).

I. triloba L. Sp. Pl. 161. 1753; Ooststr. in Steenis, Fl. Males. 1, 4: 468, f. 41. 1953; Fernandes et al. in J. Bombay Nat. Hist. Soc. 52: 661. 1954; Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 341. 1980.

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.

I. turbinata Lag. Gen. Sp. Pl. 10. 1816; Gunn in Brittonia 24: 163, f. 5. 1972; Verdc. in Kew Bull 33: 167. 1978. *I. muricata* (L.) Jacq. Hort. Schoenbr. 3: 40, t. 323. 1798 (1803) non Cav. 1794; C.B.Cl. in Hook. f. Fl. Brit. India 4: 197. 1883; Ooststr. in Steenis Fl. Males. 1, 4: 481. 1953. *Calonyction muricatum* (L.) G. Don, Gen. Syst. 4: 264. 1828; Cooke, Fl. Pres. Bombay 2: 322. 1958 (Repr.). *'Gariya'*.

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.

Illus. : Gunn, op. cit.; Austin & Ghazanfar in Nasir & Ali, Fl. W. Pak. 126: 42, f. 6, H & I. 1979.

Distrib. : Common along hedges and waste places. Ahmednagar, Amravati, Aurangabad, Chandrapur, Mumbai, Nagpur, Nanded, Nasik, Osmanabad, Parbhani, Pune, Raigad, Ratnagiri.

I. violacea L. Sp. Pl. 161. 1753; Verdc. in Kew Bull. 33: 167. 1978. *I. tuba* (Schlecht.) G. Don, Gen. Syst. 4:271. 1837–38. *Convolvulus tuba* Schlecht. in Linneaea 6: 735. 1831. *Ipomoea longiflora* R. Br. Prodr. 1: 484. 1810 non Willd. 1809; Cooke, Fl. Pres. Bombay 2: 315. 1958 (Repr.). *I. grandiflora* sensu C.B.Cl. in Hook. f. Fl. Brit. India. 4: 198. 1883 p. p. non Lam. 1791, non Roxb. 1832. *I. macrantha*. R. & S. Syst. Veg. ed. Nov. 4: 251. 1819.

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. : Septermber–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

Jacquemontia paniculata (Burm. f.) Hall. f. in Engl. Jahrb. 16: 541. 1893; Cooke, Fl. Pres. Bombay 2: 303. 1958 (Repr.); Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 345. 1980. *Ipomoea paniculata* Burm. f. Fl. Ind. 50, t. 21, f. 3. 1768. *Cnvolvulus parviflorus* Vahl. Symb. Bot. 3: 29. 1794; C.B.Cl. in Hook. f. Fl. Brit. India 4: 220. 1883.

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 mosit places. Ahmednagar, Akola, Aurangabad, Beed, Chandrapur, Jalna, Nagpur, Nanded, Nasik, Pune, Raigad, Thane, Yavatmal.

MERREMIA 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*

Merremia aegyptia (L.) Urb. Symb. Antill. 4: 505. 1910; Ooststr. in Steenis, Fl. Males. 1, 4: 448. 1953; Austin & Ghazanfar in Nasir & Ali, Fl. W. Pak. 126: 54, f. 7, B–C. 1979. *Ipomoea aegyptia* L. Sp. Pl. 162. 1753. *I. pentaphylla* (L.) Jacq. Coll. Bot. 2: 297. 1788; C. B. Cl. in Hook. f. Fl. Brit. India 4: 202. 1883. *Merremia pentaphylla* (L.) Hall. f. in Bot. Jahrb. Syst. 16: 552. 1893; Cooke, Fl. Pres. Bombay 2: 308. 1958 (Repr.).

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.

Fls. & Frts. : July–October.

Illus. : Mahesh. Illus. Fl. Delhi f. 144. 1966; Austin & Ghazanfar in Nasir & Ali, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 483. 1982.

Distrib. : Common in hedges and on bushes around fields, along roadside, stream–banks, along the ghats in deciduous forests.

M. gangetica (L.) Cufod. in Bull. Jard. Bot. Brux. Suppl. 31: 743. 1961. *Convolvulus gangeticus* L. in Torner, Cent. Pl. 2:9. 1756. *Ipomoea reniformis* Choisy in Mem. Soc. Phys. Geneve 6: 446. 1833; C. B. Cl. in Hook. f. Fl. Brit. India. 4: 206. 1883. *Merremia emarginata* (Burm. f.) Hall. f. in Bot Jahrb. 16: 552. 1893; Cooke, Fl. Pres. Bombay 2: 305. 1958 (Repr.); Naik, Fl. Marathwada 1: 598. 1998. *'Undirkani'*.

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.

Fls. & Frts. : August–February.

Distrib. : Common in wastelands and water logged areas. Ahmednagar, Akola, Amravati, Aurangabad, Chandrapur, Dhule, Kolhapur, Nagpur, Pune, Sangli, Solapur, Thane, Yavatmal.

M. hederacea (Burm. f.) Hall. f. in Bot. Jahrb. Syst. 18: 118. 1894; Austin & Ghazanfar in Nasir & Ali, Fl. W. Pak. 126: 55. 1979; Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 350. 1980. *Convolvulus hederaceus* Burm. f. Fl. Ind. 77, t. 30, f. 2. 1768. *Merremea chryseides* (Ker–Gawl.) Hall. f. in Bot. Jahrb. 16: 552. 1893; Cooke, Fl. Pres. Bombay 2: 307. 1958 (Repr.). *Ipomoea chryseides* Ker–Gawl. Bot. Reg. t. 207. 1818; C.B.Cl. in Hook. f. Fl. Brit. India 4: 206. 1883.

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 spathulate, 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 glabours.

Fls. & Frts. : August–December.

Illus. : Wight, Ic. t. 157. 1839 (*Ipomoea chryseides*).

Distrib. : Grows on thickets, grasslands, sandy places in the dry regions. Nagpur, Sindhudurg (Cooke, op. cit.).

M. rhyncorhiza (Dalz.) Hall. f. in Engl. Bot. Jahrb. 16: 552. 1893; Cooke, Fl. Pres. Bombay 2: 307. 1958 (Repr.); S. M. Almeida, Fl. Savantwadi 1: 288. 1990. *Ipomoea rhyncorhiza* Dalz. in Kew J. Bot. 3: 179. 1851; C. B. Cl. in Hook. f. Fl. Brit. India 4: 214. 1883.

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 saggitate. Capsules oblong with persistent sepals.

Fls. & Frts. : October–November.

Distrib. : Rare on rocky substratum in open areas on hill slopes. Sindhudurg (S. M. Almeida, op. cit.).

M. umbellata (L.) Hall. f. in Bot. Jahrb. Syst. 16: 552. 1893; Cooke, Fl. Pres. Bombay 2: 305. 1958 (Repr.); Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 354. 1980. *Convolvulus umbellatus* L. Sp. Pl. 155. 1753. *Ipomoea cymosa* (Desr.) R. & S. Syst. Nat. 4: 241. 1819; C. B. Cl. in Hook. f. Fl. Brit. India 4: 211. 1883. *Merremia umbellata* ssp. *orientalis* (Hall. f.) Ooststr. in Steenis, Fl. Males. 1, 4: 449, f. 24, a– b. 1953.

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*.

M. vitifolia (Burm. f.) Hall. f. in Bot. Jahrb. Syst. 16: 552. 1893; Cooke, Fl. Pres. Bombay 2: 307. 1958 (Repr.); Ooststr. in Steenis, Fl. Males. 1, 4: 448. 1953; Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 355. 1980. *Convolvulus vitifolius* Burm. f. Fl. Ind. 45, t. 18, f. 1. 1758. *Ipomoea vitifolia* (Burm. f.) Bl. Bijdr. 709. 1825; C. B. Cl. in Hook. f. Fl. Brit. India 4: 213. 1883. *'Navti'*.

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 wingd; peduncles shorter than petioles; bracts 2.3–2.8 cm long, persistent; capsules depressed–quadrangular ... *O. tansaensis*

Operculina tansaensis Sant. & Patel in Trans. Bose Res. Inst. Calcutta, Cen. vol. 33–34. Pl. 1. 1958.

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.

O. turpethum (L.) S. Manso, Enum. Subst. Bras. 16. 1836; Ooststr. in Steenis, Fl. Males. 1, 4: 456, f. 32. 1953; Cooke, Fl. Pres. Bombay 2: 309. 1958 (Repr.); Naik, Fl. Marathwada 1: 601. 1998. *Convolvulus turpethum* L. Sp. Pl. 155. 1753. *Ipomoea turpethum* (L.) R. Br. Prodr. 485. 1810; C.B.Cl. in Hook. f. Fl. Brit. India 4: 212. 1883. *Merremia turpethum* (L.) Shah & Bhatt in Shah, Fl. Gujarat 1: 450. 1978 et J. Bombay Nat. Hist. Soc. 74: 567. 1978. *'Dudhkalmi', 'Nishottar', 'Nisothar'.*

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 brodly 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, 1.5–1.7cm in diam. Seeds ovoid, 5–6 mm long, black, glabrous.

Fls. & Frts. : September–April.

Illus. : Ooststr. in Steenis, op. cit.; Matthew, Illus. Fl. Tamilnadu Canatic 2: t. 484. 1982.

Distrib. : Common on bushes and in hedges. Amravati, Chandrapur, Dhule, Jalna, Nagpur, Nanded, Nasik, Pune, Raigad, Ratnagiri, Thane.

PORANA Burm. f.

Porana racemosa Roxb. Fl. Ind. 2:41. 1824; Sharma et al. in Bio. Mem. 2 (1 & 2) : 97. 1977. *P. malabarica* C. B. Cl. in Hook. f. Fl. Brit. India 4: 223. 1883; Cooke, Fl. Pres. Bombay 2: 294. 1958 (Repr.). *'Bhauri'.*

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.

Illus. : Wight, Ic. t. 1376. 1848; Talb. For. Fl. Bombay Pres. & Sind 2:298, f. 432. 1911.

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*
2. Erect undershrubs or shrubs; peduncles usually 2–7–flowered; corolla appressedly hairy only along mid–petaline bands . *R. laotica*

Rivea hypocrateriformis (Desr.) Choisy in Mem. Soc. Phys. Geneve 6: 408. 1834; C. B. Cl. in Hook. f. Fl. Brit. India 4: 184. 1883; Cooke, Fl. Pres. Bombay 2: 323. 1958 (Repr.); Austin & Ghazanfar in Nasir & Ali, Fl. W. Pak. 126: 60, t. 6, D–E. 1979. *Convolvulus hypocrateriformis* Desr. in Lam. Encycl. 3: 561. 1792. *'Phangyel'.*

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 subspicate; 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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 283, f. 427. 1911; Mahesh. Illus. Fl. Delhi f. 137. 1966; Austin & Ghazanfar in Nasir & Ali, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 485. 1982.

Distrib. : Common throughout along streams & deciduous forests.

R. laotica Ooststr. in Blumea 8: 525, f. 1. 1957; Naik, Fl. Marathwada 1: 602. 1998. *R. ornata* sensu C.B.Cl. in Hook f. Fl. Brit. India 4: 183. 1883 non (Roxb.) Choisy 1834; Cooke, Fl. Pres. Bombay 2: 323. 1958 (Repr.).

Undershrubs 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, appressedly 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.

Stictocardia tiliaefolia (Desr.) Hall. f. in Bot. Jahrb. 18: 159. 1894; Sant. & Patel in Prof. Agharkar Comm. 19: t. 3.1961; Austin in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 360. 1980. *Convolvus tiliaefolius* Desr. in Lam. Encycl. 3: 544. 1792. *Argyreia tiliaefolia* Wight, Ic. t. 1358. 1848; C. B. Cl. in Hook. f. Fl. Brit. India 4: 184. 1883.

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 orbicuar, 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.

Fls. : November–Feubruary. *Frts.* : January–May.

Illus. : Wight, op. cit.; Sant. & Patel op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 486. 1982.

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

Volvulopsis nummularia (L.) Roberty in Candollea 14: 28. 1952; Raiz. in Indian Forester 4: 453. 1968; Srivastava, Flora Gorakhpurensis 215. f. 26. 1976. *Evolvulus nummularius* (L.) L. Sp. Pl. ed. 2, 391. 1762; C.B.Cl. in Hook. f. Fl. Brit. India 4: 734. 1885 (in additions). *Convolvulus nummularius* L. Sp. Pl. 157. 1753.

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.

Illus. : Srivastava, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic t. 480. 1982 [*Evoluvulus nummularius* (L.) L.].

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

Xenostegia tridentata (L.) Austin & Staples in Brittonia 32: 533. 1980. *Convolvulus tridentatus* L. Sp. Pl. 157. 1753. *Ipomoea tridentata* (L.) Roth in Roem. Arch. Bot. 1, 2: 38. 1798; C.B.Cl. in Hook. f. Fl. Brit. India 4: 205. 1883. *Merremia tridentata* (L.) Hall. f. Bot. Jahrb. Syst. 16: 552. 1893; Cooke, Fl. Pres. Bombay 2: 306. 1958 (Repr.); Naik, Fl. Marathwada 1: 600. 1998. *Ipomoea angustifolia* Jacq. Ic. Pl. Rar. 2(10): t. 317. 1786–93; C.B.Cl. in Hook. f. Fl. Brit. India 4: 205. 1883. '*Morga*'.

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	*Merremia*
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 :

Ipomoea alba L. Sp. Pl. 161. 1753; Naik, Fl. Marathwada 1: 584. 1998. *I. bona-nox* L. Sp. ed. 2: 228. 1762; C.B.Cl. in Hook. f. Fl. Brit. India 4: 197. 1883 incl. var. *grandiflora*. *'Gulchandni'*.

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.

I. batatas (L.) Lam. Encycl. 1: 465. 1793; C.B.Cl. in Hook. f. Fl. Brit. India 4: 202. 1883; Naik, Fl. Marathwada 1: 585. 1998. *Convolvulus batatas* L. Sp. Pl. 154. 1753. *'Ratale'*, *'Ratali'*.

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.

I. cairica (L.) Sweet, Hort. Brit. 287. 1827; Sant. in Rec. Bot. Surv. India 16(1): 193. 1953; Naik, Fl. Marathwada 1: 586. 1998. *Convolvulus cairicus* L. Syst. ed. 10: 922. 1759. *Ipomoea palmata* Forssk. Fl. Aeg.-Arab.43. 1775; C.B.Cl. in Hook. f. Fl. Brit. India 4: 214. 1883. *'Garbel', 'Garwel', 'Railway creeper'.*

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.

I. dasysperma Jacq. Eclog. 1: 132, t. 89. 1811–1816; C.B.Cl. in Hook. f. Fl. Brit. India 4: 215. 1883; Naik, Fl. Marathwada 1: 587. 1998.

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 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.

I. indica (Burm. f.) Merr. Int. Rumph. Herb. Amb. 445. 1917; Fosb. in Micronesica 2: 151. 1967 et in Bot. Not. 129: 37.1967; Naik, Fl. Marathwada 1: 589. 1998. *Convolvulus indicus* Burm. f. in Rumph Herb. Amb. Index Univ. 7: 6. 1755. *Ipomoea congesta* R. Br. Prodr. 485. 1810; Ooststr. in Steenis, Fl. Males. 1, 4: 465, f.39A. 1953.

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.

I. perlonga Robinson ex Pringle in Gard. & For. 7: 153. 1894 et in Proc. Am. Acad. 29: 319. 1894.

A climber.

Distrib. : Native of Mexico. Cultivated in gardens as an ornamental. Aurangabad.

I. purpurea (L.) Roth, Bot. Abh. 27. 1787; C.B.Cl. in Hook. f. Fl. Brit. India 4: 200. 1883; Naik, Fl. Marathwada 1: 593. 1998. *Convolvulus purpureus* L. Sp. Pl. ed 2, 1: 219. 1762.

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.).

I. quamoclit L.Sp. Pl.159. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 199. 1883; Naik, Fl. Marathwada 1: 593. 1998. *Quamoclit vulgaris* Choisy in Mem. Soc. Phys. Hist. Nat. Geneva 6: 434. 1883; Cooke, Fl. Pres. Bombay 2: 331. 1958 (Repr.). *'Ganesh pushpa'*.

Twining herbs; stems glabrous. Leaves pinnatipartite to midrib, with 8–20 pairs of linear segments. Flowers in axillary, 1–few flowered cymes; sepals oblong–spathulate, 4–5 mm long; corolla scarlet, tubular–funnel–shaped, tube glabrous, lobes ovate, mucronulate. Capsules ovoid. Seeds ovoid–oblong, dark brown, minutely hairy.

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.

Jacquemontia coerulea Choisy in Mem. Soc. Phys. Geneve 6: 476. 1834; Cooke, Fl. Pres. Bombay 2: 304. 1958 (Repr.); Naik, Fl. Marathwada 1: 596. 1998.

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.).

J. pentantha (Jacq.)G. Don, Gen. Syst.4: 283. 1838; Ooststr. in Blumea 3: 278. 1939. *Convolvulus pentanthus* Jacq. Coll. 4: 210. 1790.

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.

Merremia dissecta (Jacq.) Hall. f. in Bot. Jahrb. Syst. 16: 552. 1893. *Convolvulus dissectus* Jacq. Obs.2: 4. 1767. *Ipomoea sinuata* Ort. Hort. Matr. Dec. 7: 84. 1798; C.B.Cl. in Hook. f. Fl. Brit. India 4: 214. 1883.

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.

M. quinqufolia (L.) Hall. f. in Engl. Bot. Jahrb. 16: 552. 1893; Naik, Fl. Marathwada 1: 598.1998. *Ipomoea quinquefolia* L. Sp. Pl. 162. 1753.

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.

Fls. & Frts. : October–January.

Distrib. : Native of West–Indies, grown in hedges, also naturalised in some parts. Common throughout.

M. tuberosa (L.) Rendle, Fl. Trop. Afr. 4, 2: 104, 1905; Ooststr. in Steenis, Fl. Males. 1, 4: 447. 1953; Naik, Fl. Marathwada 1: 600. 1998. *Ipomoea tuberosa* L. Sp. Pl. 160. 1753; Cooke, Fl. Pres. Bombay 2: 320. 1958 (Repr.).

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.

Fls. & Frts. : September–Jauary.

Distrib. : Native of Tropical America, now found in Tropical Africa, India Ceylon, Malaysia, mostly cultivated in gardens or as an escape along hedges. Aurangabad, Nagpur, Pune.

Mina lobata Cerv. in DE LA LIAVE & Lex. Nov. Veg. Desc. Fasc. 1: 12. 1824; Ooststr. in Blumea 5: 339. 1943.

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.

Distrib. : Native of Maxico to Central and South America, cultivated in other tropical and temperate regions for ornamental purposes. Pune.

Porana paniculata Roxb. Pl. Corom. 3: 31. 1819; C.B.Cl. in Hook. f. Fl. Brit. India 4: 222. 1883; Naik, Fl. Marathwada 1:601. 1998.

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 oblong to obovate, 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.

Turbina corymbosa (L.) Raf. Fl. Tellur. 4: 81. 1836 (1838); Ooststr. in Steenis, Fl. Males. 1, 4: 493. 1953. *Convolvulus corymbosus* L. Syst. ed. 10, 923. 1759.

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.

f. **mollissima** (Webb & Berth.) Stearn in Cuad. Bot. Canar. 21 : 12. 1974. *Legendrea mollissima* Webb & Berth. Phyt. Canar. 3 : 27. 1836–50.

A spring climber, pubescent. Leaves 10 x 7.5 cm, cordate, smooth. Flowers pale.

Distrib. : Native of Canary Islands, cultivated in gardens, seldom seen as escape. The plant grows without care in alluvium banks of the river at Pune (Woodrow, Gardening in Tropics ed. 6, 404. 1910). Mumbai, Pune.

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, distincly carinate; capsules, enclosed by corolla ... *C. chinensis*
         4. Calyx lobes neither overlapping nor carinate; capsules not enclosed by corolla ... *C. australis*

Cuscuta australis R. Br. Prodr. 491. 1810; Yuncker in Mem. Torr. Bot. Club 18: 124, f. 1, A–F. 1932; Sant. & Patel in J. Bombay Nat. Hist. Soc. 54: 709, f. B, 1–7. 1957.

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 broady 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 3–4, 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.

C. campestris Yuncker in Mem. Torr. Bot. Club. 18: 138, f. 14. 1932; Srinivasan in Bull. Bot. Surv. India 15: 160. (1973) 1976.

Stems yellowish, slender, mostly 0.1–03 mm in diam. Flowers c 1.5 long, greenish–yellow in compact cymose clusters; pedicels mostly rter than flowers; calyx lobes obtuse or somewhat acute; corolla es triangular, acute, equalling corolla tube; stamens shorter than as, filaments c 1 mm long, slender. Capsules depressed–globose, pale wnish straw coloured. Seeds c 1 mm long.

Fls. & Frts. : August–October.

Illus. : Yuncker, op. cit.

Distrib. : A parasite on *Ipomoea, Clerodendrum, Malachra itata, Chrysanthemum indium*, etc. Pune, Thane.

C. chinensis Lam., Encycl. 2: 229. 1786; C.B.Cl. in Hook. f. Fl. t. India 4:226. 1883; Cooke, Fl. Pres. Bombay 2: 293. 1958 (Repr.); it. & Patel in J. Bombay Nat. Hist. Soc. 54: 710, f. C. 1–7 1957. *C. alina* Wight, Ic. t. 1372. 1848 & Illus. t. 1686, f. 12. 1850 non Roth, 1; Yuncker in Mem. Torr. Bot. Club 18: 209, f. 80, A–G. 1932.

Scales oblong, fimbriate only on upper half	...	var. *chinensis*
Scales spathulate, truncate or rarely emarginate, fimbriate from near base	...	var. *ciliaris*

var. chinensis.

Stems slender, filiform. Flowers white or pale yellow c 2.5 mm g or slightly longer, shortly pedicellate or sessile, bracteate in mpact few–flowered clusters; calyx loosely fitting round corolla, as g as corolla tube, fleshy, lobes equal or slightly unequal; corolla –3 mm long, urceolate or globular, acute, as long as or slightly longer an corolla tube, spreading; stamens shorter than corolla lobes, ments as long as or longer than ovate anthers, infrastaminal scales aching up to staminal filaments. Capsules 2.5–3 mm across, pressed–globose, somewhat 4–lobed. Seeds 1.0–1.5 mm long, brown, nutely foveolate.

Fls. & Frts. : August–October.

Illus. : Wight, op. cit; Yuncker, op. cit.; Sant. & Patel, op. cit , tthew, Illus. Fl. Tamilnadu Carnatic 2: t. 478 1982.

Distrib. : Common parasite mostly on *Lawsonia inermis* L. and *Iaranthus oleraceus* L. Akola, Bombay, Jalgaon Nasik, Pune, Raigad, ane.

var. ciliaris Engelm. in Trans. Acad Sci. St. Louis 1 480 1859. ucker in Mem. Torr. Bot Club 18. 210. 1932. Sant & Patel in J mbay Nat. Hist. Soc. 54. 711. f C, 4b. 1957

Stems slender, filiform. Flowers lateral, glomerulate or sometimes loosely panicled; 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, sometiems lanceolate ovate or linear, acute; stamens exserted with short filaments; style straight or slightly divergent, withering on apex of capsule. Capsules round, corolla deciduous,

Fls. & Frts. : May–October.

Illus. : Wight, Ic. t. 373. 1848; Sant. & Patel, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 478. 1982.

Distrib. : Parasite on *Ipomoea pes–caprae* (L.) Sweet, *Tephrosia* spp., *Indigofera* spp. Bombay (Sant. & Patel, op. cit.), Pune.

C. hyalina Roth, Nov. Pl. Sp. 100. 1821; C.B.Cl. in Hook. f. Fl. Brit. India 4: 226. 1883; Cooke, Fl. Pres. Bombay 2: 292. 1958 (Repr.); Yuncker in Mem. Torr. Bot. Club 18: 235, f. 107, A–D. 1932 (non Wight, 1848, nec. Boisser, 1856); Sant. & Patel in J. Bombay nat. Hist. Soc. 54: 711, f. D, 1–7. 1957. *'Ambar'*.

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.

Distrib. : Parasite on *Leucas* spp., *Amaranthus* spp. &*Trianthema* spp. Pune.

C. reflexa Roxb. Pl. Cor. 2: 3, t. 104. 1798; C.B.Cl. in Hook. f. Brit. India 4: 225. 1883; Cooke, Fl. Pres. Bombay 2: 292. 1958 (Repr.); Yuncker in Mem. Torr. Bot. Club 18: 259, f. 130 & 130, A–F. 1932; Sant. & Patel in J. Bombay nat. Hist. Soc. 54 :712, f. A, 1–7. 1957; P. K. Bhattacharya & S. K. Mukerjee in Ind. J. For. 1: 162. 1978. *'Akashwel'*, *'Marwel'*, *'Sonwel'*.

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.

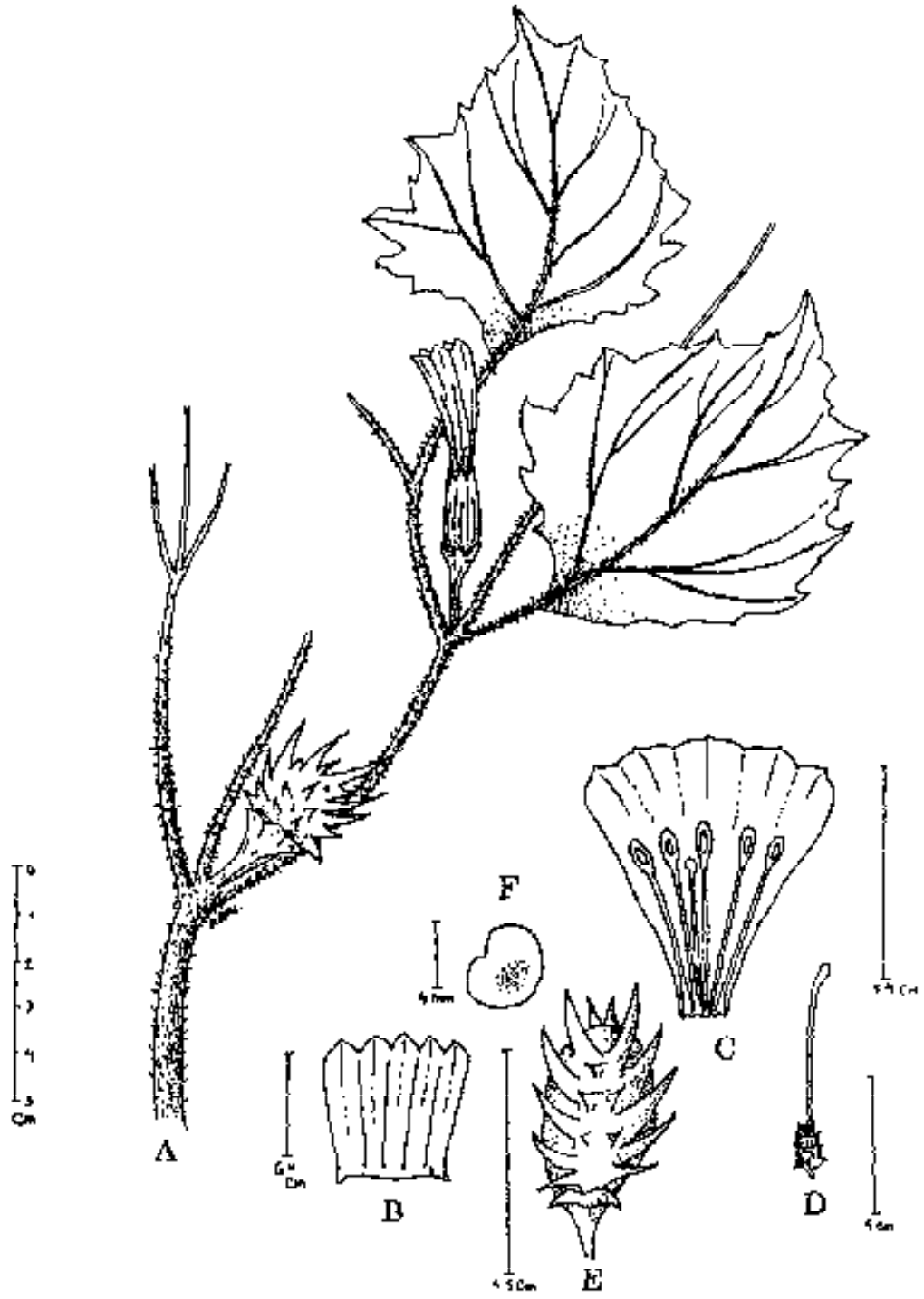
SOLANACEAE

(K. Madhusudan Rao)

1. Anthers dehiscing by an apical pore or a short slit :
   2. Calyx cupular; apical pores of anthers facing inwards ... LYCIANTHUS
   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.

Undershrubs, 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.

D. inoxia Mill. Gard. Dict. ed. 8, no. 5. 1768; Sant. in J. Bombay nat. Hist. Soc. 47: 659. 1948; Avery et al. in Blakeslee, Genus Datura 28, f. 10. 1959; Deb in J. Econ Tax. Bot. 1: 37. 1980 *D. metel* sensu Sims in Curtis, Bot. Mag 35: t. 1440. 1812 non L. 1753; C.B.Cl. in Hook. f. Fl. Brit India 4: 243. 1883; Cooke, Fl. Pres. Bombay 2: 344. 1958 (Repr.). *'Dhotra'*.

Undershrubs, 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 *innoxia* in de Chazelles and Holandras translation of Miller's ed. 8, vol. 3. 1787 and by most subsequent authors (Avery et al. op. cit.).

D. metel L. Sp. Pl. 179. 1753; Sant in J. Bombay Nat. Hist. Soc. 47: 657. 1948; Avery et al. in Blakeslee, Genus *Datura* 32, f. 1959; Deb in J. Econ. Tax. Bot. 1: 37. 1980. *D. fastuosa* L. Syst. Nat. ed. 10, 2: 932. 1759; C.B.Cl. in Hook. f. Fl. Brit. India 4: 243. 1883; Cooke, Fl. Pres. Bombay 2:343. 1958 (Repr.). *D. fastuosa* var. *alba* C. B. Cl. in Hook. f. op. cit. ; Cooke, op. cit. 344. *'Kala–Dhotra'*.

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.

Illus. : Wight, Ic. t. 852. 1844–45 (*D. alba* Nees in Trans. Linn. Soc. 17:73. 1834); Avery et al. in Blakeslee, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 488. 1982.

Distrib. : Frequent in waste lands.

D. quercifolia H. B. & K. Nov. Gen & Sp. 3:6. 1818; Vartak in Ayurvidya Mag. 21:327. 1957; Avery et al. in Blakeslee, Genus *Datura* 22. 1959.

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.

D. stramonium L. Sp. Pl. 179. 1753; C. B. Cl. in Hook. f. Fl. Brit. India 4: 242. 1883 (excl. var. *tatula*); Vartak in Ayurvidya Mag. 21: 326, f. 4. 1957; Avery et al. in Blakeslee, Genus *Datura* 18. 1959; Deb. in J. Econ Tax. Bot. 1: 38. 1980. *'Dhokra'*.

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.

Distrib. : Infrequent in waste lands. Aurangabad, Pune, Satara.

D. suaveolens Humb.& Bonpl. ex Willd. Enum. Hort. Berol. 227. 1809; Deb in J. Econ. Tax. Bot. 1: 38. 1980.

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.

Lycianthus laevis (Dunal) Bitter in Abh. Nat. Ver. Bremen 24:484. 1920: Deb in J. Econ. Tax. Bot. 1:39. 1980. *Solanum laeve* Dunal, Solan. Synop. 22. 1816. *S. bigeminatum* Nees in Trans. Linn. Soc. London 17: 42. 1837; C. B. Cl. in Hook. Fl. Brit. India 4: 231. 1883; Cooke, Fl. Pres. Bombay 2: 334. 1958 (Repr.).

Undershrubs, 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.

Fls. & Frts. : May–June.

Illus. : Gandhi in Sald. & Nicols. Fl. Hassan Dt. 459, f. 88 A. 1976.

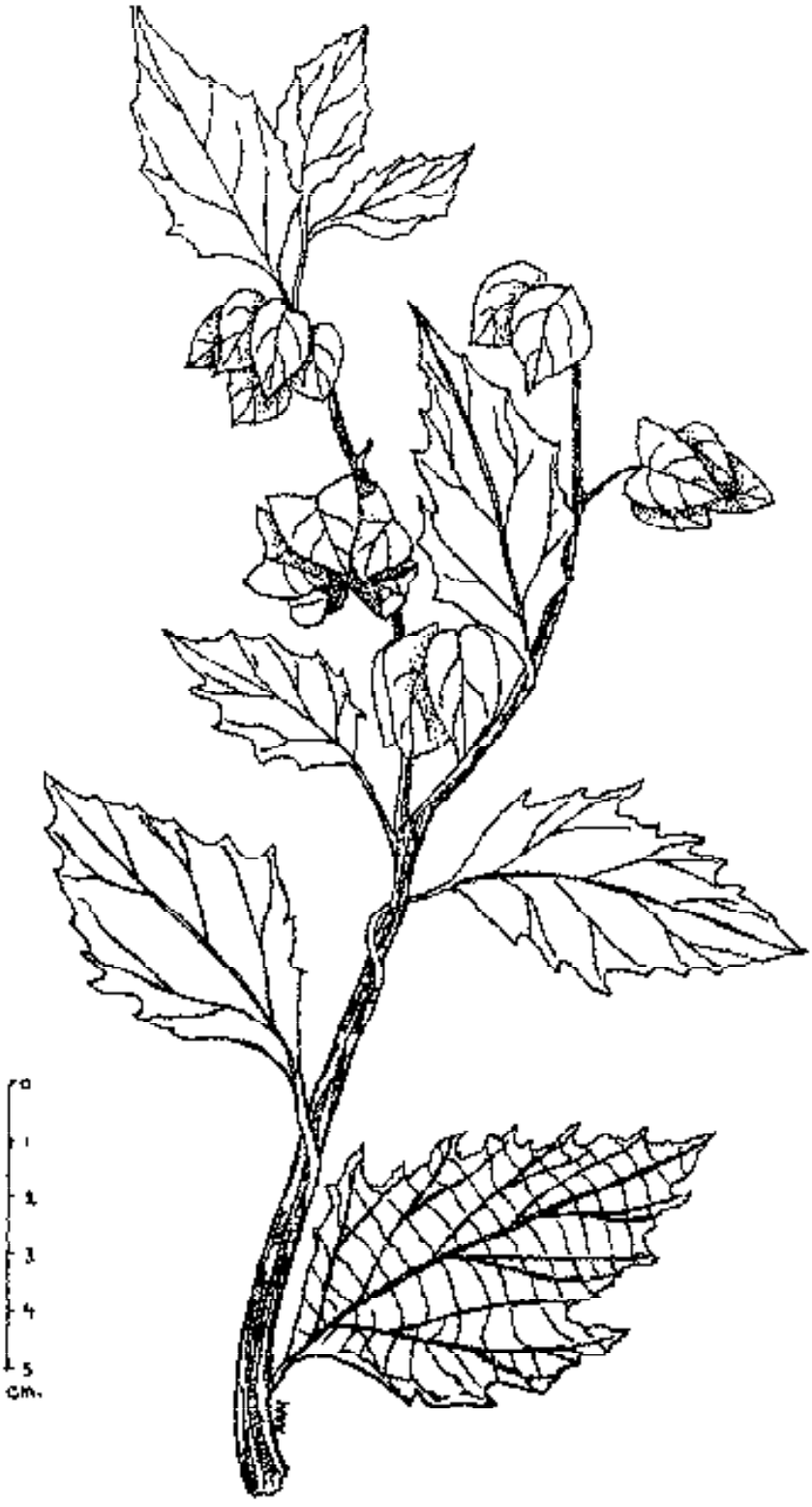
Distrib. : Infrequent in shades of evergreen forests. Satara, Sindhudurg (Cooke, op. cit.).

NICANDRA Adans. (nom. cons.)

Nicandra physalodes (L.) Gaertn. Fruct. 2: 237, t. 141, f. 2.1791 (*'physaloides'*); C.B.Cl. in Hook. f. Fl. Brit. India 4: 240. 1883; Cooke, Fl. Pres. Bombay 2: 346. 1958 (Repr.); Deb in J. Econ. Tax. Bot. 1: 42. 1980. *Atropa physalodes* L. Sp. Pl. 181. 1753. *'Dhodana', 'Ran Popati'*.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 489. 1982.

Distrib. : Frequent on plains as a weed. Ahmednagar, Kolhapur, Nasik, Osmanabad, Pune, Satara.

NICOTIANA L.

Nicotiana repanda Willd. ex. Lehm. Nicot. 40, t. 3. 1818; Pardeshi & Pokle in Bull. Bot. Surv. India 16: 162, f. 1. 1977.

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.).

PHYSALIS L.

1.	Corolla clear yellow; anthers yellow	...	*P. minima*
1.	Corolla yellow with 5 purple or brown spots at base within; anthers greenish–blue	...	*P. longifolia*

Physalis longifolia Nutt. in Trans. Amer. Phir. Soc. 5: 93. 1837; Sant. et al. in J. Bombay Nat. Hist. Soc. 58: 550. 1961.

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.

P. minima L. Sp. Pl. 183. 1753; C. B. Cl. in Hook. f. Fl. Brit. India. 4: 238. 1883; Cooke, Fl. Pres. Bombay 2: 340. 1958 (Repr.); Sant. in J. Bombay nat Hist. Soc. 47: 657. 1948; Deb in J. Econ. Tax. Bot. 1: 43. 1980. *'Chirboti', 'Ran popati'.*



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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 490. 1982.

Distrib. : Common throughout in open situations.

SOLANUM L.

1. Plants armed :
   - 2. Leaves pinnately or bipinnately lobed ... *S. sisymbrifolium*
   - 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. trilobatum*
         - 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.

Solanum anguivi Lam. Encycl. 2: 23. 1794; Hepper in Bot. J. Linn. Soc. 76: 290. 1978. *S. indicum* auct. non L. 1753 p. p.; C.B.Cl. in Hook. f. Fl. Brit. India 4: 234. 1883; Cooke, Fl. Pres. Bombay 2: 336. 1958 (Repr.); Sant. in J. Bombay nat. Hist. Soc. 47: 653. 1948; Deb in J. Econ. Tax. Bot. 1: 47. 1980. *'Dorli', 'Mothiringani', 'Ravangi', 'Ringni'.*

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.

Illus. : Wight, Ic. t. 346. 1840; Mahesh. Illus. Fl. Delhi f. 151. 1966 (*S. indicum*).

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.).

S. denticulatum Bl. Bijdr. 697. 1825; C.B.Cl. in Hook. f. Fl. Brit. India 4: 231. 1883; Cooke, Fl. Pres. Bombay 2: 334. 1958 (Repr.).

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 fascicles. 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.

S. elaeagnifolium Cav. Ic. 3:22, t. 243. 1795; Raghavan & Wadhwa in Maharashtra Vidyan Mandir Patrika 6: 22, f. 4. 1970.

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.

S. erianthum D. Don, Prodr. Fl. Nep. 96. 1825; Roe in Taxon 17: 176. 1968; Deb in J. Econ Tax. Bot. 1: 46. 1980. *S. verbascifolium* auct. pl. non L. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 230. 1883; Cooke, Fl. Pres. Bombay 2: 333. 1958 (Repr.). *'Kutri'*.

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.

S. giganteum Jacq. Collect. 4: 125. 1790; C.B.Cl. in Hook. f. Fl. Brit. India 4: 233 1883; Cooke, Fl. Pres. Bombay 2: 336. 1958 (Repr.); Deb in J. Econ Tax. Bot. 1: 47. 1980. *'Chunna'*, *'Kukri'*.

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.).

S. hovei Dunal in DC. Prodr. 13 (1) : 311. 1852; Sengupta in Bull Bot. Soc. Bengal 17: 3. 1963.

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.

S. incanum L. Sp. Pl. 188. 1753; Cooke, Fl. Pres. Bombay 2: 337. 1958 (Repr). *S. coagulans* Forssk. Fl. Aeg.–Arab. 47. 1775; C.B.Cl. in Hook. f. Fl. Brit. India 4: 236. 1883.

Undershrubs, 30–60 cm tall, prickly stellate tomentose. Leaves 3–8 x 2–5 cm, ovate–elliptic, sinuately lobed. Flowers purple on paired peduncles. Berries globose.

Fls. & Frts. : January–June

Distrib. : Infrequent in dry deciduous forests. Akola, Jalgaon, Osmanabad, Pune.

S. nigrum L. Sp. Pl. 186. 1753; C. B Cl. in Hook. f. Fl. Brit. India. 4: 229. 1883; Cooke, Fl. Pres. Bombay 2: 332. 1958 (Repr.); Sant in J. Bombay nat. Hist. Soc. 47: 652. 1948; Deb in J. Econ. Tax. Bot. 1: 49. 1980. *'Kangani'*.

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.

Fls. & Frts. : May–June.

Illus. : Wight, Ic. t. 344. 1840 (*S. rubrum* Mill. Gard. Dict. ed. 8, no. 4. 1768).

Distrib. : Common throughout as a weed in open situations.

S. sisymbrifolium Lam. Illus. 2: 25. 1792; Matthew, Exot. Fl. Kodaikanal 162. 1969; Naik, Fl. Osmanabad 226. 1979.

Herbs, prostrate, annuals; stems armed with straight sharp pale yellow prickles, thinly clothed with grey tomentum. Leaves 10–15 x 4–6 cm, pinnatifid or lobed, oblong–lanceolate. Flowers white, in short lateral racemes. Berries globose, yellow, smooth. Seeds large, pitted.

Fls. & Frts. : June–September.

Distrib. : A rare herb in waste lands. Osmanabad.

S. stramonifolium N. Jacq. Misc. 2: 298. 1781; Raiz. in Indian Forester 94: 450. 1968. *S. ferox* auct. non L. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 233. 1883; Cooke, Fl. Pres. Bombay 2: 335. 1958 (Repr.).

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.).

S. torvum Sw. Prodr. 47. 1788; C.B.Cl. in Hook. f. Fl. Brit. India 4: 234. 1883; Bhogaonkar & Devarkar, Add. Fl. Melghat 41, figs. A–G. 1999.

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.).

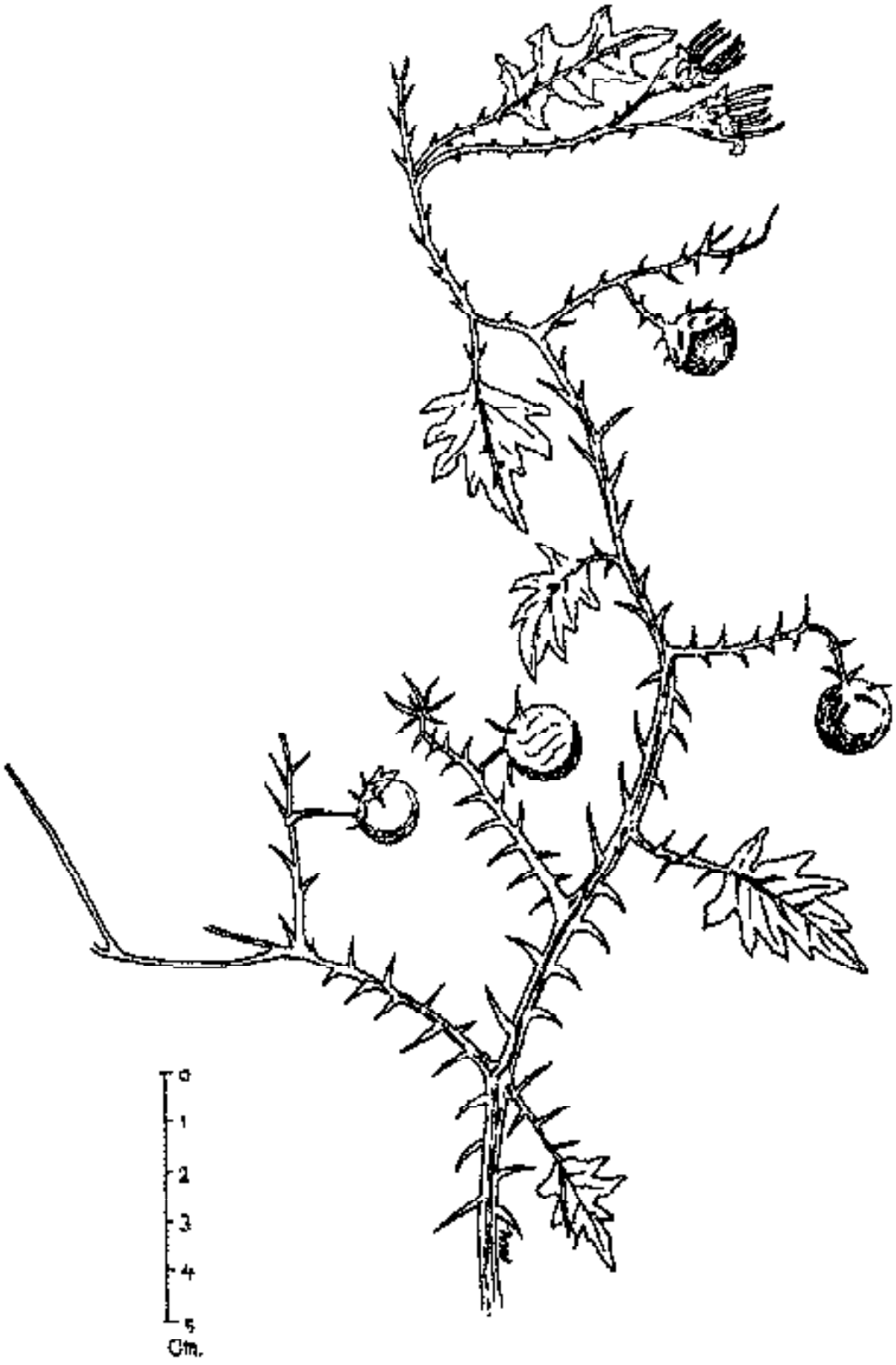
Undershrubs, trailing or subscandent. Leaves 2.5 – 5.0 x 2–3 cm, ovate or rotund, 3–5–lobed. Flowers purplish–violet, in extra axillary racemose–cymes. Berries scarlet when ripe. Seeds spherical, slightly pitted.

Fls. & Frts. : December–June.

Illus. : Wight, Ic. t. 854. 1844 –45.

Distrib. : Infrequent in open situations in plains. Ahmednagar, Kolhapur.

S. virginianum L. Sp. Pl. 187. 1753; Hepper & Jacq. in Kew. Bull. 41: 433. 1986. *S. surattense* Burm. f. Fl. Ind. 57. 1768; Sant in Bull. Bot. Surv. India 3: 20. 1961; Deb. in J. Econ. Tax. Bot. 1: 51. 1980. *S. xanthocarpum* Schrad. & Wendl. Sert. Hanov. 1:8, t. 2. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 4: 236. 1883; Cooke, Fl. Pres. Bombay 2: 335. 1958 (Repr.); Sant in J. Bombay nat. Hist. Soc. 47: 653. 1948. *'Bhui–ringni', 'Guiri', 'Kate–ringni'.*



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.

Illus. : Wight, Ic. t. 1401. 1848 (*S. jacquini* Willd. Sp. Pl. 1: 1041. 1798); Tadul. & Venkat. Handb. S. Indian Weeds 290, f. 115. 1955 (Rev. ed.); Mahesh. Illus. Fl. Delhi f. 150. 1966.

Distrib. : Common throughout in waste places on sandy river beds and fields as a weed.

WITHANIA Pauq. (nom. cons.)

Withania somnifera (L.) Dunal in DC. Prodr. 13: 453. 1852; C.B.Cl. in Hook. f. Fl. Brit. India 4: 239. 1883; Cooke, Fl. Pres. Bombay 2: 341. 1958 (Repr.); Deb in J. Econ. Tax. Bot. 1: 52. 1980. *Physalis somnifera* L. Sp. Pl. 182. 1753.

Undershrubs, 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.

Illus. : Wight, Ic. t. 853. 1844 (*Physalis somnifera*); Mahesh. Illus. Fl. Delhi f. 149. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 492. 1982.

Distrib. : Frequent as a weed in waste places and roadsides. Ahmednagar, Kolhapur, Nagpur, Nasik, Osmanabad, Pune, Ratnagiri, Satara, Thane.

CULTIVATED SPECIES :

Browallia americana L. Sp. Pl. 631. 1753; Bailey, Man. Cult. Pl. ed. 2, 880. 1949; Matthew, Mat. Fl. Tamilnadu Carnatic 276. 1981.

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

B. viscosa H. B. & K. Garten Fl. iv: t. 142. 1855; Bailey, Man. Cult. Pl. ed. 2, 880. 1949.

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.

Distrib. : Introduced from S. America. Cultivated in gardens as an ornamental plant, also found as an escape. Pune, Satara.

Brunfelsia americana L. Sp. Pl. 191. 1753; Cooke, Fl. Pres. Bombay 2: 346. 1958 (Repr.); Bailey, Man. Cult. Pl. ed. 2, 880. 1949.

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.

Distrib. : A native of Tropical America. Planted for odorous flowers in gardens (Cooke, op. cit.).

Capsicum annuum L. Sp. Pl. 188. 1753; Cooke, Fl. Pres. Bombay 2: 347. 1958 (Repr.); Deb in J. Econ. Tax. Bot. 1: 35. 1980.

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.

Distrib. : A native of tropical America. Cultivated for its edible berries. Nagpur, Nasik, Pune.

var. **abbreviata** Fingerh. Monogr. Gen. Caps. 14, t. 2, fig. f. 1832; Cooke, Fl. Pres. Bombay 2: 347. 1958 (Repr.).

Herbs, 30–60 cm high, much branched. Leaves broadly ovate. Flowers dull–white. Berries ovoid or ellipsoid, rugose, red or yellow when ripe.

Distrib. : Cultivated (Cooke, op. cit.) in the area for their fruits, which forms a major spice.

var. **acuminata** Fingerh. Mon. Gen. Caps. 13, t. 2, fig. c. 1832; Cooke, Fl. Pres. Bombay 2: 347. 1958 (Repr.); *C. frutescens* Roxb. Fl. Ind. 1: 574. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 239.1883 non L. 1753. *'Lalmirchi'*.

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.

Distrib. : Widely cultivated. Osmanabad, Pune, Raigad, Thane.

var. **grossa** (L.) Sendt. in Mart. Fl. Bras. 10: 147. 1846–56; Cooke, Fl. Pres. Bombay 2: 347. 1958 (Repr.). *C. grossum* L. Mant. 47. 1767; C.B.Cl. in Hook. f. Fl. Brit. India 4: 239. 1883. *'Bopla Mirchi'.*

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.

C. frutescens L. Sp. Pl. 189. 1753; Cooke, Fl. Pres. Bombay 2: 348. 1958 (Repr.). *C. minimum* Mill. Gard. Dict. ed. 6, no. 10. 1752; C.B.Cl. in Hook. f. Fl. Brit. India 4: 289. 1883.

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.

Fls. & Frts. : September–January.

Distrib. : Cultivated for the fruits used as spice and condiment. Osmanabad (Naik, 1979), Pune, Thane.

var. **baccata** (L.) Irish, Revis, Gen. Caps. in Missouri Bot. Gard. Rep. 9: 99. 1898; Cooke, Fl. Pres. Bombay 2: 349. 1958 (Repr.). *C. baccatum* L. Mant. 47. 1767. *C. minimum* Roxb.Fl. Ind. 2: 574. 1820; C.B.Cl. in Hook. f. Fl. Brit. India 4: 239. 1883 p.p.

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.

Illus. : Wight, Ic. t. 1617. 1850 (*C. fastigiatum* Bl. Bijdr. 705. 1826).

Distrib. : Occasionally cultivated. Pune.

Cestrum aurantiacum Lindl. in Edw. Bot. Reg. Misc. 19: 261. 1847; Cooke, Fl. Pres. Bombay 2: 346. 1958 (Repr.); Bailey, Man. Cult. Pl. ed. 2, 874. 1949.

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.

C. diurnum L. Sp. Pl. 191. 1753; Bailey, Man. Cult. Pl. ed 2, 874. 1949; Deb in J. Econ. Tax. Bot. 1: 37. 1980.

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.

C. elegans (Brongn) Schlecht. in Linnaea 19: 261. 1847; Bor & Raiz. Beaut. Ind. Cl. and Shr. 116, f. 74. 1954; Matthew, Exotic Fl. Kodaikanal 164. 1969. *C. purpureum* Lindl.) Standl. Contrib. U. S. Nat. Herb. 23 : 1280. 1924; Bailey, Man. Cult. Pl. ed. 2, 873. 1958.

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.

C. nocturnum L. Sp.Pl. 191. 1753; Bailey, Man. Cult. Pl. ed. 2, 874. 1949.

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.

C. parqui L. Herit. Stirp. 73. 1788; Bailey, Man Cult. Pl. ed 2, 874. 1949.

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. : Native of S. America. Cultivated in gardens for fragrant flowers. Bombay, Pune.

Cyphomandra betacea (Cav.) Sendt. Flora 28: 172. 1845; Cooke, Fl. Pres. Bombay 2: 346. 1958 (Repr.); Matthew, Exot. Fl. Kodaikanal 159. 1969. *Solanum betaceum* Cav. in Anal. Hist. Nat. 1: 44. 1799.

Shrubs, woody. Leaves cordate–ovate. Flowers white to pink. Fruits smooth, 2–celled, many seeded berry, ripens red.

Distrib. : Planted in gardens. 'Deccan' (Cooke, op. cit.).

Datura arborea L. Sp. Pl. 179. 1753; Cooke, Fl. Pres. Bombay 2: 344. 1958 (Repr.); Deb in J. Econ. Tax. Bot. 1: 87. 1980; Bailey. Man. Cult. Pl. ed. 2, 877. 1949.

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.

Fls. & Frts. : May–June.

Distrib. : Planted along roadsides. Satara.

Hyoscyamus niger L. Sp. Pl. 179. 1753; Bailey Man. Cult. Pl. ed. 2, 875. 1948.

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.

Lycopersicon lycopercicum (L.) Karsten, Deutsch. Fl. 966. 1855; Deb in J. Econ. Tax. Bot. 1: 4. 1980. *Solanum lycopersicum* L. Sp. Pl. 185. 1753. *Lycopersicon esculentum* Mill. Gard. Dict. ed. 8, no. 2. 1768; C.B.Cl. in Hook. f. Fl. Brit. India 4:237. 1883; Cooke, Fl. Pres. Bombay 2: 345. 1958 (Repr.). *'Tamata'*.

Herbs, sticky, pubescent. Leaves pinnatisect. Flowers yellow, solitary, axillary. Berries irregularly 4–6–lobed, depressed–globose. Seeds discoid.

Fls. & Frts. : Throughout the year.

Illus. : Bailey, Man. Cult. Pl. ed. 2, 866, f. 178, B–Ba–Bd. 1949 *(Lycopersicon esculentum).*

Distrib. : Native of tropical America, fruits used as vegetable. Cultivated. Ahmednagar, Jalgaon, Nasik, Osmanabad, Pune, Raigad, Satara, Thane, Yavatmal.

Nicotiana alata Link & Otto, Ic. Pl. Rar.1: 63, t.32. 1828; Bailey, Man. Cult. Pl. ed. 2, 876. 1949.

Undershrubs, 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.

N. glauca R. Grah. in Edinb. N.Phil. J. 5: 175. 1828 et in Bot. Mag. t. 2827. 1829; Kulkarni in J. Bombay nat. Hist. Soc. 71: 340. 1974; Pardeshi & Pokle in Sci. & Cult. 41: 89. 1975.

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.).

N. plumbaginifolia Viv. Elench. Pl. Hort. Bot. 26, t. 5.1802; C.B.Cl. in Hook f. Fl. Brit. India 4: 246. 1883; Deb in J. Econ. Tax. Bot. 1: 42. 1980; Matthew, Mat. Fl. Tamilnadu Carnatic 278. 1981.

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.

N. sanderae Hort. ex Watson in Fl. & Sylva 2: 216. 1904; Bailey, Man Cult. Pl. ed. 2, 876. 1949.

Herbs, viscid–pubescent, 60–90 cm tall, bushy. Leaves 15–30 cm long, oblong–lanceolate, shortly petioled, acuminate. Flowers greenish yellow, bracteolate, in large, loose panicles.

Distrib. : Planted in gardens. Pune.

N. tabacum L. Sp. Pl. 180. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 245. 1883; Bailey, Man. Cult. Pl. ed. 2, 875. 1949; Cooke, Fl. Pres. Bombay 2: 346. 1958 (Repr.); Deb in J. Econ. Tax. Bot. 1: 43. 1980. *'Tambakhu'*.

Herbs, erect, viscid, highly branched, upto 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.

Fls. & Frts. : October–January.

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.

Petunia axillaris Britton, Stern & Poggenb. Prelim. Catal 38. 1888; Bailey, Man. Cult. Pl. ed. 2, 879. 1949.

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.

P. hybrida Vilm. Fl. Pl. Terr. 615. 1875; Bailey, Man. Cult. Pl. ed. 2, 879. 1949; Naik, Fl. Osmanabad 233. 1979.

Herbs, erect, glandular–pubescent, 30–45 cm high, annual. Leaves 3–6 x 1.5–3.0 cm, ovate–oblong, upper sessile, lower petioled, pubescent. Flowers variously coloured, 5–7 cm long, solitary or axillary. Capsules ovoid, 2–valved. Seeds numerous, small.

Fls. & Frts. : Spring season.

Distrib. : Planted in gardens for various coloured flowers. Nagpur, Osmanabad (Naik, op. cit.).

P. violacea Lindl. Bot. Reg. t. 1626. 1833–34; Cooke, Fl. Pres. Bombay 2: 346. 1958 (Repr.); Bailey, Man. Cult. Pl. ed. 2, 879. 1949; Bole & Almeida in J. Bombay nat. Hist. Soc. 81: 378. 1984; Deb in J. Econ. Tax. Bot. 1: 43. 1980.

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.

Physalis angulata L. Sp. Pl.183. 1753; Raiz. Suppl. Duthie, Fl. Gangetic plain 170. 1976. *P. longifolia* auct. non Nutt. 1837; Sant. et al. in J. Bombay nat. Hist. Soc. 58: 551. 1961.

Herbs, annual, erect or decumbent, much branched, 20–100 cm high. Leaves 3–10 x 3–6 cm, ovate–elliptic, irregularly sinuate–dentate. Flowers yellow, solitary, terminal. Berries globose, greenish–yellow.

Fls. & Frts. : August–November.

Distrib. : Native of America, naturalized in fields and gardens, etc. Thane.

P. peruviana L. Sp. Pl. ed. 2. 1670. 1763; C.B.Cl. in Hook. f. Fl. Brit. India 4: 238.1883; Cooke, Fl. Pres. Bombay 2: 340. 1958 (Repr.); Deb. in J. Econ. Tax. Bot. 1: 44. 1980. *'Popati'*.

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.

Fls. & Frts. : December–January.

Distrib. : Native of tropical America, naturalized in wastelands and in and around the gardens. Cultivated for its edible fruits. Pune, Satara.

Solanum dulcamara L. Sp. Pl. 185. 1753; Bailey, Man. Cult. Pl. ed. 2, 869. 1949.

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.

Distrib. : Cultivated. Native of North America. Thane.

S. jasminoides Paxt. Bot. 8: t. 5. 1841; Bailey, Man. Cult. Pl. ed. 2, 869. 1949; Matthew, Exot. Fl. Kodaikanal 160. 1969.

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.

S. macrophyllum Hort. ex Dunal, Hist. Solan. 199, t. 17. 1813; Cooke, Fl. Pres. Bombay 2: 339. 1958 (Repr.).

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.

S. melongena L. Sp. Pl. 186. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 235.1883; Cooke, Fl. Pres. Bombay 2: 339.1958 (Repr.); Deb in J. Econ. Tax. Bot. 1: 48. 1980.

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.

var. **insanum** (L.) Prain, Bengal Pl. 746. 1903 [2: 555. 1963 (Repr.)]. *S. insanum* L. Mant. Pl. 46. 1767.

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,

S. myriacanthum Dun. Hist. Solan. 218, t. 19. 1813. *S. khasianum* C.B.Cl. in Hook. f. Fl. Brit. India 4: 234. 1883.

Undershrubs, prickly, base woody. Leaves broadly ovate, apex acute, hirsute beneath. Flowers white, in sessile, lateral 1–4–flowered cymes. Berries globose. Seeds compressed, brown, minutely muricate.

Fls. & Frts. : October–May.

Distrib. : Escape from experimental fields. Nagpur.

S. scaforthianum Andr. Bot. Rep. 8,t. 504. 1808; Bor & Raiz. Beautif. Ind. Climbers & Shrubs 127. 1954. Bailey, Man. Cult. Pl. ed 2, 869. 1949; Matthew, Mat. Fl. Tamilnadu Carnatic 279. 1981.

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.

Distrib. : Native of Brazil. Widely naturalized. Bombay, Kolhapur, Pune.

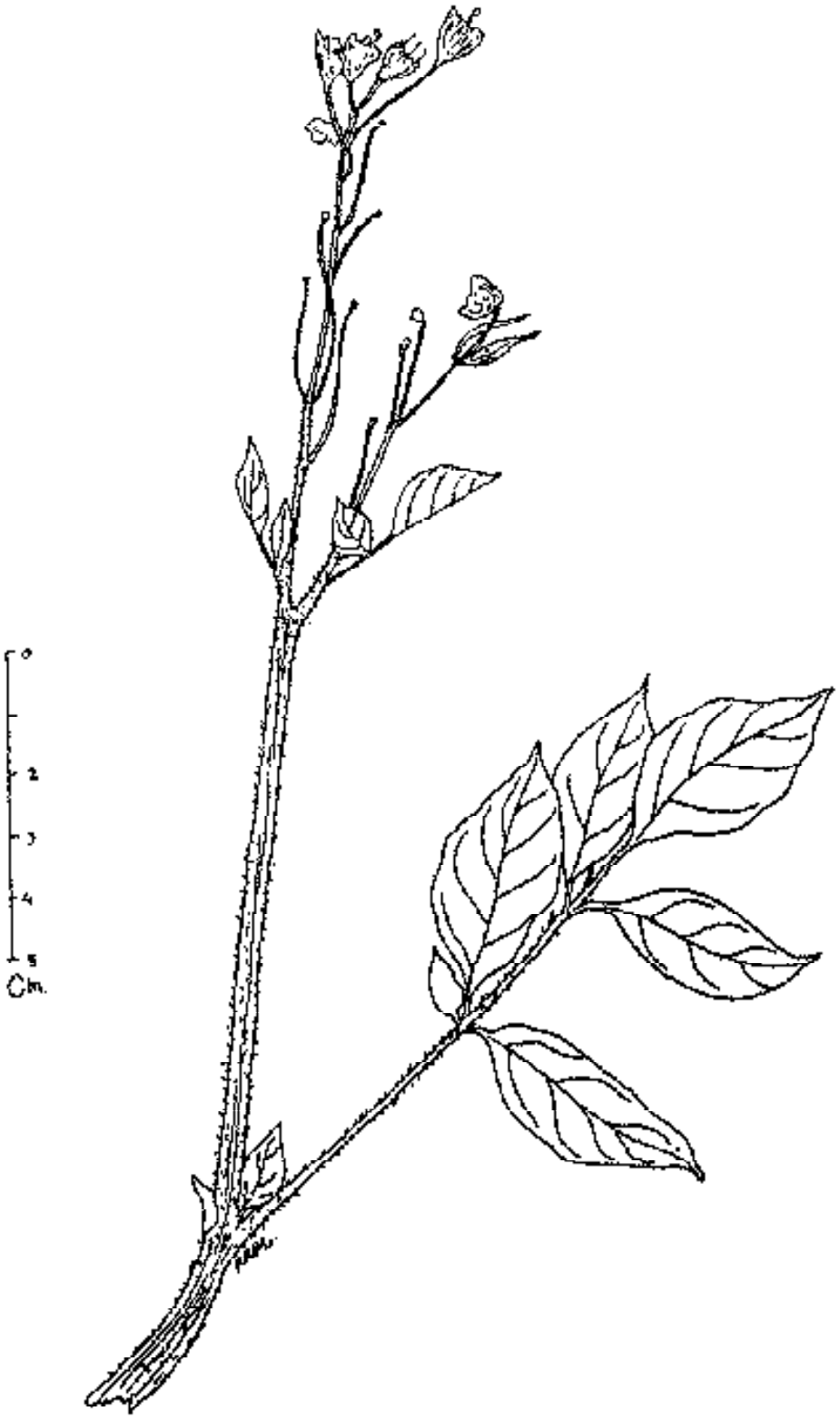
S. tuberosum L. Sp. Pl. 185. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 229. 1883; Bailey, Man. Cult. Pl. ed. 2, 868. 1949; Cooke, Fl. Pres. Bombay 2: 339. 1958 (Repr.). *'Batata'.*

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.).

S. wendlandii Hook. f. in Curtis,Bot. Mag. 113; t. 6914. 1887; Bor & Raiz. Beautif. Ind. Climbers & Shrubs 125. 1954; Matthew in Rec. Bot. Surv. India 20: 161. 1969 & Mat. Fl. Tamilnadu Carnatic 280. 1981; Deb. in J. Econ. Tax. Bot. 1: 52. 1980.



Solanum tuberosum L.

Climbers. Leaves: upper simple, oblong, acuminate, lower 3-lobed, prickly on midrib. Flowers violet, in large fascicles. Berries globose.

Fls. & Frts. : April–May.

Distrib. : A native of Costa Rica, sometimes cultivated in Indian gardens. Pune, Satara.

SCROPHULARIACEAE

(Archana Godbole & V. P. Prasad)

1. Leaves alternate ... VERBASCUM
1. Leaves all opposite or at least lower :
   2. Corolla subrotate; seeds biconvex ... VERONICA
   2. Corolla and seeds not as above :
      3. Corolla distinctly bilabiate; lobes subequal :
         4. Capsules opening by pores :
            5. Corolla spurred at base ... KICKXIA
            5. Corolla not spurred at base ... ANTIRRHINUM
         4. Capsules opening by valves ;
            6. Perfect stamens 2, upper 2 reduced to staminodes or absent :
               7. Plants prostrate or creeping ... LINDERNIA
               7. Plants erect or ascending :
                  8. Seeds longitudinally ribbed ... BONNAYODES
                  8. Seeds tuberculate ... DOPATRIUM
            6. Perfect stamens more than 2 :
               9. Perfect stamens 4–6 ... ALECTRA
               9. Perfect stamens 4:
                  10. Calyx spathaceous, split on one side ... PEDICULARIS
                  10. Calyx not as above :
                     11. Calyx lobes dissimilar, posterior lobe largest; anther cells parallel :
                        12. Anther cells stipitate ... MECARDONIA
                        12. Anther cells not stipitate ... BACOPA
                     11. Calyx lobes not as above; anther cells divergent :

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	.	STEMPARIA

ALECTRA Thunb.

1.	Inflorescence branched; filaments hairy	...	*A. thomsoni*
1.	Inflorescence unbranched; filaments glabrous	. .	*A. parasitica*

Alectra parasitica A. Rich. Tent. Fl. Abyss. 11: 117. 1851; Kamble & Pradhan in Bull. Bot. Surv. India 26: 129, figs. A1 & A2. (1984) 1985.

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.

Illus. : Kamble & Pradhan, op. cit. & Fl. Akola Dt. 155, figs. A1 & A2. 1988.

Distrib. : Rare under the shade of *Vitex negundo* and *Barleria* spp. Akola.

A. thomsoni Hook. f. Fl. Brit. India. 4: 297. 1884; Kamble & Pradhan in Bull. Bot. Surv. India 26: 131, figs. 1–9. (1984) 1985.

Erect parasitic herbs, up to 60 cm tall; rhizome orange–red. Floral leaves 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.

Illus. : Kamble & Pradhan, op. cit. & Fl. Akola Dt. 155, figs. 1–9. 1988.

Distrib. : Rare in shade of *Barleria* spp. Akola; Aurangabad & Beed (Naik, 1998).

ANTIRRHINUM L.

Antirrhinum orontium L. Sp. Pl. 617. 1753; Hook. f. Fl. Brit. India 4: 253. 1883; Vartak in J. Bombay nat. Hist. Soc. 64: 584. 1968.

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

Artanema longifolium (L.) Vatke in Linnaea 43: 207. 1880–82; Crammer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 404. 1981. *Columnea longifolia* L. Mant. 90. 1767. *Artanema sesamoides* (Vahl) Bth. Scroph. Ind. 39. 1835; Hook. f. Fl. Brit. India 4: 279. 1884; Cooke, Fl. Pres. Bombay 2: 365. 1958 (Repr.).

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 spathulate; 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*

Bacopa floribunda (R. Br.) Wettst. in Engl. & Prantl, Pflanzenfam. 4 (3b) : 77. 1895; Kulkarni & Wadhwa in J. Bombay nat. Hist. Soc. 70: 236. 1973. *Herpestis floribunda* R. Br. Prodr. 442.1810; Hook. f. Fl. Brit. India 4: 273. 1884. *Moniera floribunda* (R. Br.) T. Cooke, Fl. Pres. Bombay 2: 286.1904 [2: 357. 1958 (Repr.)].

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.

Distrib. : Occasional on wet sandy soil. Nanded (Naik, 1998), Sindhudurg.

B. hamiltoniana (Bth.) Wettst. in Engl. & Prantl, Pflanzenfam. 4(3b): 77. 1895; Sant. in J. Bombay nat. Hist. Soc. 49: 30. 1950. *Herpestis hamiltoniana* Bth. Scroph. Ind. 30. 1835; Hook. f. Fl. Brit. India 4: 272. 1884. *Moniera hamiltoniana* (Bth.) T. Cooke, Fl. Pres. Bombay 2: 286. 1904 [2: 357. 1958 (Repr.)].

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.

B. monnieri (L.) Penn. in Proc. Acad. Nat. Sci. Philadelphia 98: 94. 1946; Sant. in J. Bombay nat. Hist. Soc. 49: 30. 1950; Philcox in Kew Bull. 33: 679. 1979. *Lysimachia monnieri* L. in Torner, Cent. Pl. 2: 9. 1756. *Herpestis monniera* H. B. & K. Nov. Gen. & Sp. Pl. 2: 366. 1888; Hook. f. Fl. Brit. India 4: 272. 1884. *Moniera cuneifolia* Michx. Fl. Bor. Am. 2: 22. 1803; Cooke, Fl. Pres. Bombay 2: 356. 1958 (Repr.). *'Nira–bramhi'*.

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.

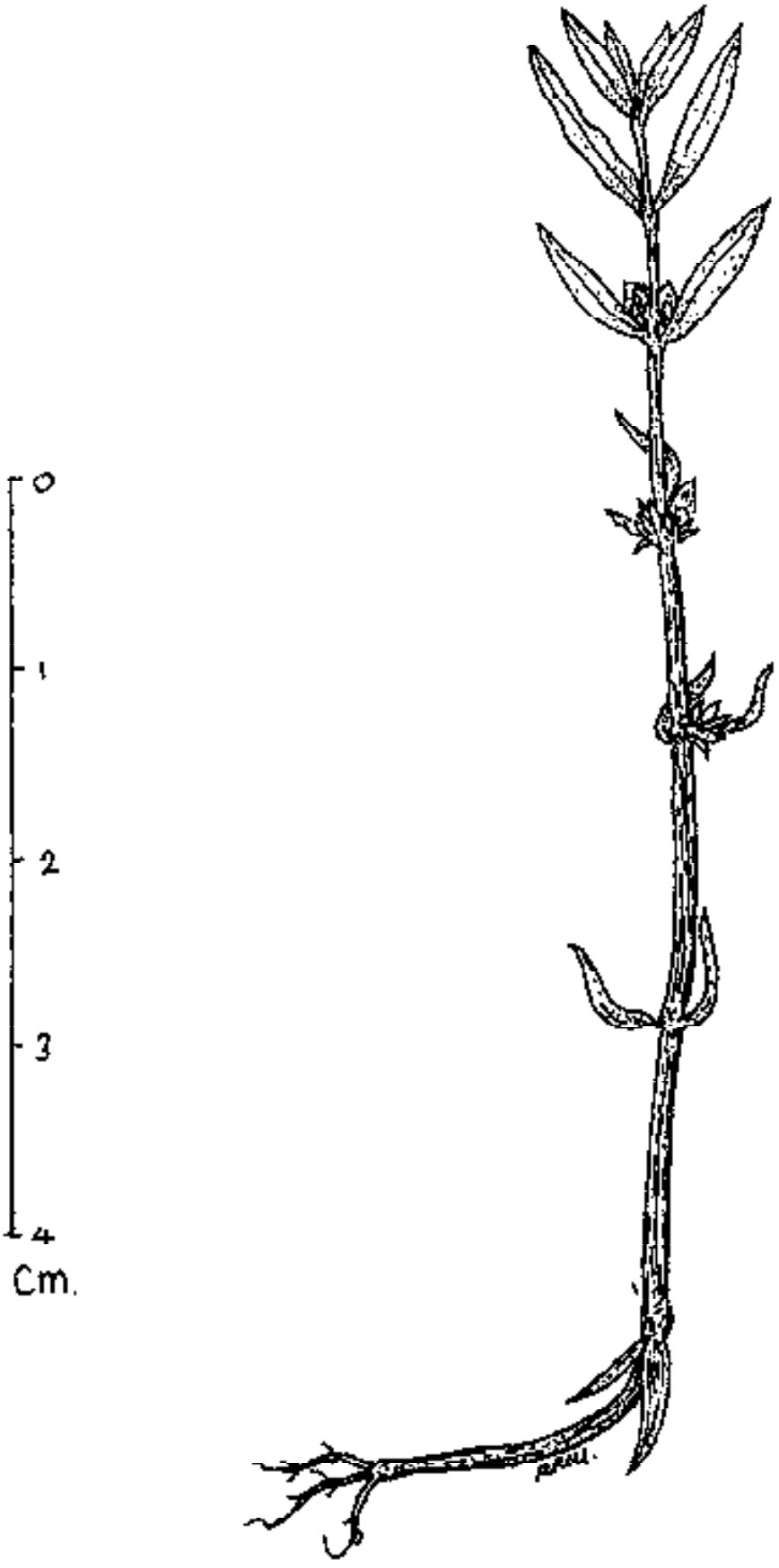
Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 494. 1982.

Distrib. : Frequent in moist places, throughout Maharashtra.

BONNAYODES Blatt. & Hallb.

Bonnayodes limnophiloides Blatt. & Hallb. in J. Indian Bot. 2: 46, f. 2.1921; Nayar in Bull. Bot. Surv. India 22: 19. 1980.

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.

Illus. : Blatt. & Hallb., op. cit.

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.

Buchnera hispida Buch.–Ham. ex D. Don, Prodr. Fl. Nepal. 91. 1825; Hook. f. Fl. Brit. India 4: 298. 1884; Cooke, Fl. Pres. Bombay 2: 373. 1958 (Repr.); Sant. in J. Bombay nat. Hist. Soc. 49: 42. 1950.

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.

Fls. & Frts. : September–January.

Illus. : Wight, Ic. t. 1413. 1849.

Distrib. : Frequent among grasses along hill slopes. Ahmednagar, Amravati, Aurangabad, Jalna (Naik, 1998), Kolhapur, Nagpur, Nanded (Naik, 1998), Nasik, Pune, Raigad, Ratnagiri, Satara, Thane, Yavatmal.

Centranthera R. Br.

Centranthera indica (L.) Gamble, Fl. Pres. Madras 971. 1924 [2: 683. 1957 (Repr.)]; Sant. in Rec. Bot. Surv. India 16(1): 184. 1967 (3rd Rev. ed). *Rhinacanthus indica* L. Sp. Pl. 603. 1753. *Centranthera hispida* R. Br. Prodr. 438. 1810; Hook. f. Fl. Brit. India 4: 301. 1884; Cooke, Fl. Pres. Bombay 2: 381. 1958 (Repr.).

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*

Dopatrium junceum (Roxb.) Buch.–Ham. ex Bth. Scroph. Ind. 31. 1835; Hook. f. Fl. Brit. India 4: 274. 1884; Cooke, Fl. Pres. Bombay 2: 363. 1958 (Repr.); Sant. in J. Bombay nat. Hist. Soc. 49: 35. 1950. *Gratiola juncea* Roxb. Pl. Cor. 2: 16, t. 129. 1798.

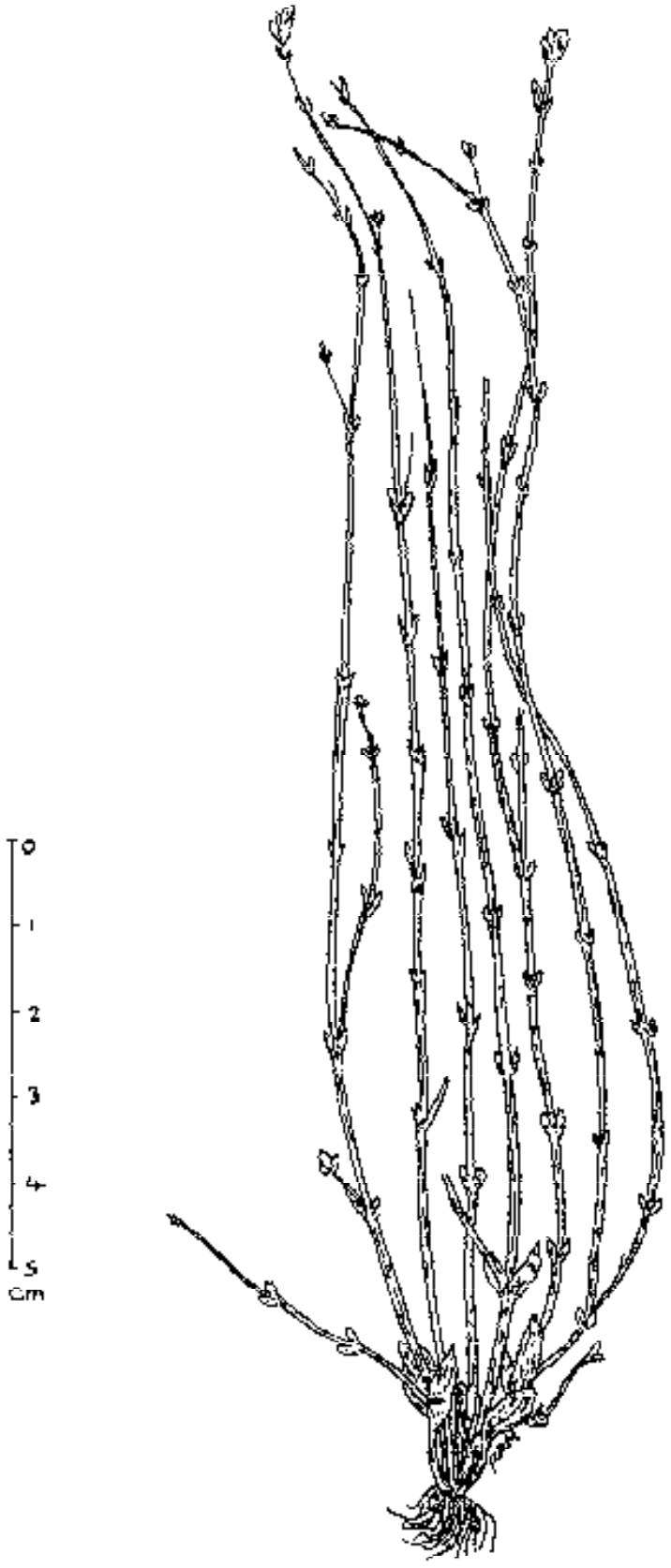
Herbs, 10–20 cm high, slightly fleshy. Leaves basal, sessile, 1.2–2.5 x 0.4–0.6 cm, elliptic–oblong or obovate; upper leaves small. Flowers voilet, axillary, solitary; calyx 5–partite; corolla tubular, lobes 5, subequal. Capsules dialated upward, c 0.2 cm across, enclosed in persistent calyx.

Fls. & Frts. : August–December.

Distrib. : Frequent in ponds in plains. Almost throughout Maharashtra.

D. lobelioides (Retz.) Buch.–Ham. ex Bth. Scroph. Ind. 31. 1835; Hook. f. Fl. Brit. India 4: 274. 1884; Bhogaonkar & Devarkar, Add. Fl. Melghat 42, f. A–G 1999. *Gratiola lobelioides* Retz. Obs. 4: 7. 1786; Subr. Aqu. Ang. 31. 1962.

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.

Fls. & Frts. : November–January.

Illus. : Bhogaonkar & Devarkar, op. cit.

Distrib. : Moist soil along the margin of water bodies. Melghat, Amravati (Bhogaonkar & Devarkar, op. cit.).

D. nudicaule (Willd.) Bth. Scroph. Ind. 31. 1835 & DC. Prodr. 10: 407. 1846; Hook. f. Fl. Brit. India 4: 274. 1884; Cramer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 423. 1981; Bachulkar & Yadav in J. Econ. Tax. Bot. 24: 295. 2000. *Gratiola nudicaulis* Willd. in Ges. Naturf. Fr. Berling Neue Schr. 4: 193. 1803.

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.)

Glossostigma diandrum (L.) O. Ktze. Rev. Gen. Pl. 461. 1891; Sant. in Rec. Bot. Surv. India 16(1): 186. 1967 (3rd Rev. ed.) *Limosella diandra* L. Mant. Alt. 252. 1771. *Glossostigma spathulatum* (Hook.) Wight & Arn. ex Arn. Nova Act. Acad. Caes. Leop–Carol. German Nat. Cur. 18: 355. 1836; Hook. f. Fl. Brit. India 4: 288. 1884; Cooke, Fl. Pres. Bombay 2: 371. 1958 (Repr.); Sant. in J. Bombay nat. Hist. Soc. 49: 41. 1950.

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*

Kickxia incana (Wall.) Pennell, Scroph. West. Himal. 59. 1943; Sant. Fl. Purandhar 90. 1960; S.M. Almeida, Fl. Savantwadi 1: 295. 1990. *Linaria incana* Wall. Pl. As. Rar. 2: 43. 1831; Hook. f. Fl. Brit. India 4: 252. 1883. *L. cabulica* Bth. in DC. Prodr. 10: 270. 1846; Hook. f. Fl. Brit. India. 4: 251. 1883; Cooke, Fl. Pres. Bombay 2: 354. 1958 (Repr.).

Herbs, hairy, much branched; rootstock woody. Leaves c 1.2 x 0.8 cm, triangular–ovate, pubescent. Flowers yellow with purple spots; calyx denesly 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.)].

K. ramosissima (Wall.) Janchen in Oest. Bot. Zeit. 82: 152. 1933; Sant. in J. Bombay nat. Hist. Soc. 49: 27. 1950. *Linaria ramosissima* Wall. Pl. As. Rar. 2: 43, t. 153. 1831; Hook. f. Fl. Brit. India 4: 251. 1883; Cooke, Fl. Pres. Bombay 2: 353. 1958 (Repr.).

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 153. 1966.

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 striate in fruits :
      3. Flowers sessile ... *L. repens*
      3. Flowers pedicellate ... *L. aromatica*
   2. Calyx not striate in fruits ... *L. rugosa*
1. Leaves with 3–5 parallel nerves running from base to tip, lower leaves whorled, pinnatifid or multifid :
   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 :
      6. Stems 1–2; corolla 1–2 cm long or more ... *L. aquatica*
      6. Stems 3–8; corolla 0.5–1 cm long ... *L. indica*

Limnophila aquatica (Roxb.) Alston in Ann. Roy. Bot. Gard. Parad. 11: 205. 1929; Philcox in Kew Bull. 24: 129. 1970. *Cyrilla aquatica* Roxb. Pl. Cor. 2: 47, t. 189. 1798. *Limnophila racemosa* Bth. Scroph. Ind. 26. 1835; Hook. f. Fl. Brit. India. 4. 271. 1884; Cooke, Fl. Pres. Bombay 2: 362. 1958 (Repr.). *'Mahaka'*.

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.

L. aromatica (Lam.) Merr. Interp. Herb. Amb. 466. 1917 & Enum. Philipp. Fl. 3: 432. 1923; Philcox in Kew Bull. 24: 145. 1970; S.M. Almeida, Fl. Savantwadi 1: 296. 1990. *Ambulia aromatica* Lam. Encycl. 1: 128. 1783. *Limnophila gratissima* Bl. Bijdr. 749. 1826; Hook. f. Fl. Brit. India 4: 288. 1884; Cooke Fl. Pres. Bombay 2: 361. 1958 (Repr.).

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–oblong, covered in calyx. Seeds truncate at both ends.

Fls. & Frts. : August–December.

Distrib. : Rare along margins of ponds. Sindhudurg (S.M. Almeida, op. cit.).

L. heterophylla (Roxb.) Bth. in Scroph. Ind. 25. 1835; Hook. f. Fl. Brit. India 4: 270. 1884; Philcox in Kew Bull. 24: 124. 1970. *Columnea heterophylla* Roxb. Fl. Ind. 3: 97. 1832.

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.

L. indica (L.) Druce in Rep. Bot. Exch. Cl. Brit. Isles 3: 420. 1914; Philcox in Kew Bull. 24: 115. 1970. *Hottonia indica* L. Syst. Nat. ed. 10. 991. 1759. *Limnophila gratioloides* R. Br. Prodr. 442. 1810; Hook. f. Fl. Brit. India 4: 271. 1884; Cooke, Fl. Pres. Bombay 2: 362. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 851. 1844 (*L. racemosa* Bth. Scroph. Ind. 26. 1835).

Distrib. : Common throughout Maharashtra, in open water–logged areas or in marshy places.

L. repens (Bth.) Bth. in DC. Prodr. 10: 387. 1846; Philcox in Kew Bull. 24: 154. 1970. *Stemodia repens* Bth. in Edw. Bot. Reg. 17, sub t. 1470. Sp. 11. 1832 et Scroph. Ind. 24. 1835. *Limnophila conferta* Bth. in DC. Prodr. 10: 387. 1846; Hook. f. Fl. Brit. India. 4: 266. 1884; Cooke, Fl. Pres. Bombay 2: 361. 1958 (Repr.).

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.

L. rugosa (Roth) Merr. Interp. Herb. Amb. 466. 191 & Enum. Philipp. Fl. Pl. 3: 434. 1922; Philcox in Kew. Bull. 24: 135. 1970; S.M. Almeida, Fl. Savantwadi 1: 297. 1990. *Herpestis rugosa* Roth, Nov. Pl. Sp. 290; 1821. *Limnophila roxburghi* G. Don, Gen. Syst. 4: 543. 1838; Hook. f. Fl. Brit. India 4: 265. 1884; Cooke, Fl. Pres. Bombay 2: 360. 1958 (Repr.).

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.

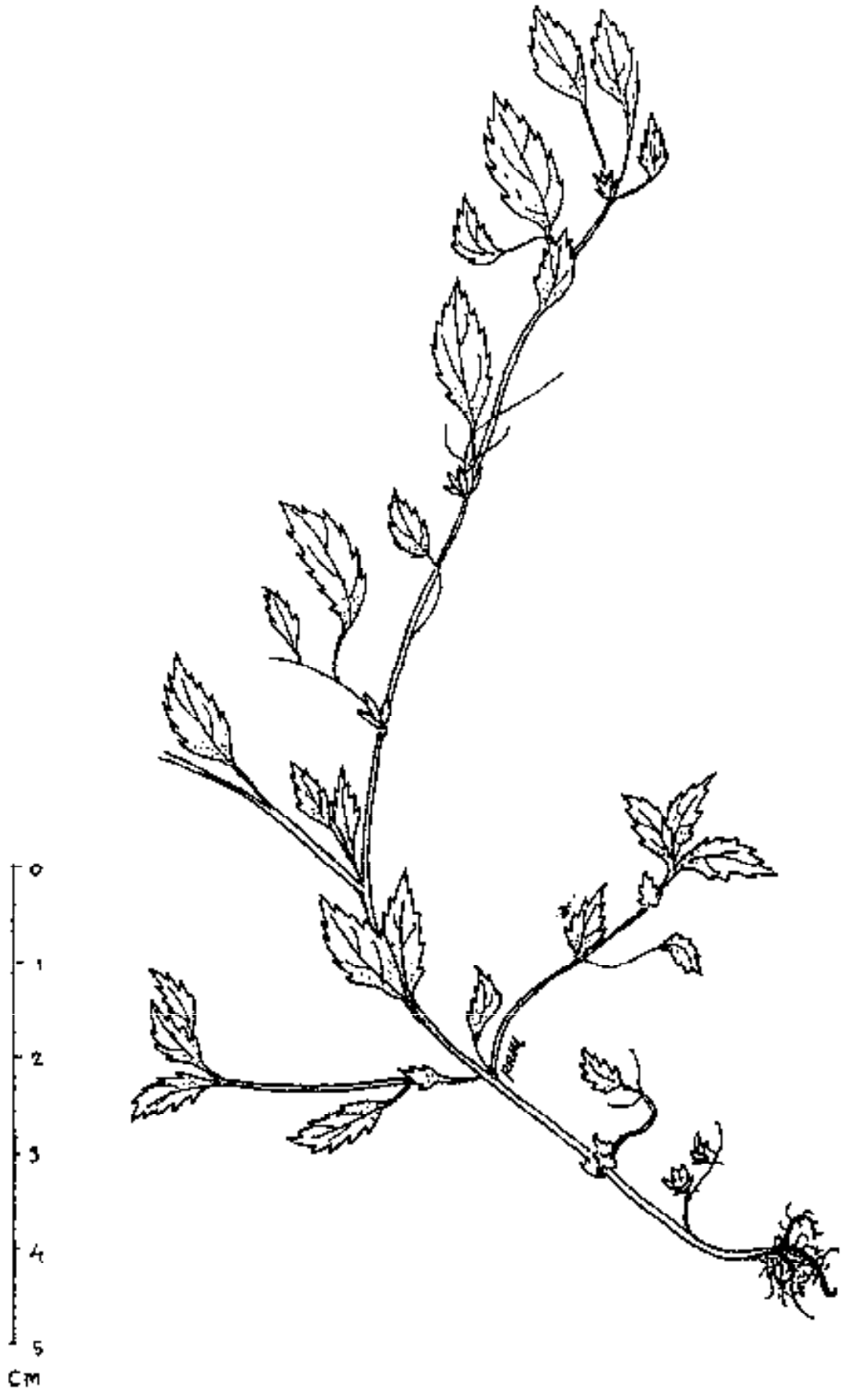
Distrib. : In marshy open situations. Chandrapur, Sindhudurg (S.M. Almeida, op. cit.).

L. sessiliflora (Vahl) Bl. Bijdr. 849. 1826; Hook. f. Fl. Brit. India 4: 270. 1884; Cooke, Fl. Pres. Bombay 2: 362. 1958 (Repr.); Philcox in Kew Bull. 24: 112. 1970. *Hottonia sessiliflora* Vahl, Symb. Bot. 2: 36. 1791.

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 Lehm.

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*

Lindenbergia indica (L.) Vatke, Osterr. Bot. Zeit. 25: 10. 1875; Sant. in J. Bombay nat. Hist. Soc 49: 45. 1950; Prijanto in Reinwardtia 7: 550. 1969. *Dodartia indica* L. Sp. Pl. 633. 1753. *Lindenbergia polyantha* Royle ex Bth. Scroph. Ind. 22. 1835; Hook. f. Fl. Brit. India 4: 262. 1884; Cooke, Fl. Pres. Bombay 2: 380. 1958 (Repr.).

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 154. 1966.

Distrib. : Infrequent in hilly forests & along sea–coast, Ahmednagar, Dhule, Jalgaon, Nagpur, Nasik, Pune (Sant. op. cit.), Raigad, Satara, Thane.

L. muraria (Roxb.) Brubl in J. Dept. Sci. Calcutta Univ. 2 (Bot): 27. 1920; Prijanto in Reinwardtia 7: 548. 1969. *Stemodia muraria* Roxb. in D. Don, Prodr. Fl. Nepal. 89. 1825. *Lindenbergia urticifolia* Lehm. in Link & Otto, Ic. Pl. Rar. 95, t. 48. 1831 *('urticaefola');* Hook. f. Fl. Brit. India 4: 261. 1884; Cooke, Fl. Pres. Bombay 2: 379. 1958 (Repr.).

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.

Distrib. : Weed on old walls. Ahmednagar, Akola, Amravati, Aurangabad, Beed (Naik, 1998), Pune, Raigad, Thane.

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 upto 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. hyssopioides*

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*

Lindernia anagallis (Burm. f.) Penn. in J. Arnold Arbor. 24: 252. 1943; Philcox in Kew Bull. 17: 484. 1964; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 139. 1983. *Ruellia anagallis* Burm. f. Fl. Ind. 135. 1768. *Vandellia pedunculata* Bth. Scroph. Ind. 37. 1835; Hook. f. Fl. Brit. India 4: 282. 1884; Cooke, Fl. Pres. Bombay 2: 367. 1958 (Repr.).

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, Sindhdurg, Thane.

L. antipoda (L.) Alston in Trim. Handb. Fl. Ceylon 6 (Suppl.): 214. 1931; Philcox in Kew Bull. 22: 57. 1968; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 133. 1983. *Ruellia antipoda* L. Sp. Pl. 635. 1753. *Bonnaya veronicaefolia* (Colsm.) Spreng. Syst. Veg. 41. 1824; Hook. f. Fl. Brit. India 4: 285. 1884; Cooke, Fl. Pres. Bombay 2: 369. 1958 (Repr.). *Bonnaya vernonicaefolia* var. *grandifolia* (Retz.) Hook. f. op. cit.; Cooke, op. cit. 370.

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.

L. ciliata (Colsm.) Penn. in Brittonia 2: 182. 1936; Philcox in Kew Bull. 22: 51, f. 10/12–15. 1968; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 133. 1983. *Gratiola ciliata* Colsm. Prodr. Descr. Grat. 14. 1793. *Bonnaya brachiata* Link & Otto, Ic. Pl. Select. 25, t. 11. 1820; Hook. f. Fl. Brit. India 4: 284. 1884; Cooke, Fl. Pres. Bombay 2: 369. 1958 (Repr.).

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.

L. crustacea (L.) F. v. Muell. Syst. Census Austr. Pl. 1: 97. 1882; Philcox in Kew Bull. 22: 47, f.1/ 9–12 1968; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 136. 1983. *Capraria crustacea* L. Mant. 87. 1767. *Vandellia crustacea* (L.) Bth. Scroph. Ind. 35. 1835; Hook. f. Fl. Brit. India 4: 279. 1884; Cooke, Fl. Pres. Bombay 2: 366. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 863. 1845 (*Vandellia crustacea*); Mahesh. Illus. Fl. Delhi f. 155. 1966; Philcox, op. cit.; Mathew, Illus. Fl. Tamilnadu Carnatic 2: t. 499. 1982.

Distrib. : Common in cultivated fields & waste lands.

L. estaminodiosa (Blatt. & Hallb.) Mukherjee in J. Indian Bot. Soc. 24: 133. 1945; Sant. in J. Bombay nat. Hist. Soc. 49: 40. 1950; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 134. 1983; S.M. Almeida, Fl. Savantwadi 1: 300. 1990. *Bonnaya estaminodiosa* Blatt. & Hallb. in J. Bombay nat. Hist. Soc. 24: 416. 1918.

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.

L. hyssopioides (L.) Haines, Bot. Bihar & Orissa 635. 1922 [2: 666. 1961 (Repr.)]; Philcox in Kew Bull. 22: 50. 1968; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 136. 1983. *Gratiola hyssopioides* L. Mant. Pl. 174. 1771. *Ilysanthes hyssopioides* (L.) Bth. in DC. Prodr. 10: 419. 1846; Hook; f. Fl. Brit. India 4: 283. 1884; Cooke, Fl. Pres. Bombay 2: 368. 1958 (Repr.).

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, oviod 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.

L. molluginoides (Bth.) Wettst. in Engl. & Prantl, Pflanzenfam. 4, 3b: 80. 1891; Naik, Fl. Marathwada 2: 627. 1998. *Vandellia molluginoides* Bth. Scroph. Ind. 35. 1835 et in DC. Prodr. 10: 413. 1846; Hook. f. Fl. Brit. India 4: 279. 1884.

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.).

L. multiflora (Roxb.) Mukherjee in J. Indian Bot. Soc. 24: 131. 1945; Sant. et al. in J. Bombay nat. Hist. Soc. 55: 482, t. 2. 1958; Philcox in Kew Bull. 22: 36, f. 8/8–12. 1968; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 137. 1983. *Torenia multiflora* Roxb. Fl. Ind. 3: 96. 1832. *Vandellia multiflora* (Roxb.) G. Don, Gen. Syst. 4: 549. 1838; Hook. f. Fl. Brit. India 4: 280. 1884.

Herbs, 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.

Distrib. : Occasional. Chandrapur, Nagpur, Nanded (Naik, 1998), Yavatmal.

L. nummularifolia (D. Don) Wettst. in Natur. Pflanzenfam. 4 (3b): 79. 1891; Mukherjee in J. Indian Bot. Soc. 24: 132. 1945; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 139. 1983. *Vandellia nummularifolia* D. Don, Prodr. Fl. Nepal 86. 1825; Hook. f. Fl. Brit. India 4: 282. 1884. *V. sessiliflora* Bth. Scroph. Ind. 37. 1835; Hook. f. op. cit. *Lindernia sessiliflora* (Bth.) Wettst. op. cit.; Mukherjee, op. cit.; Philcox in Kew Bull. 24: 10. 1968.

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.

Distrib. : Scattered in open moist situations. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

L. oppositifolia (L.) Mukherjee in J. Indian Bot. Soc. 24: 134. 1945; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 134. 1983. *Gratiola oppositifolia* L. Sp. Pl. (ed. Willd.) 1: 105. 1797. *Bonnaya oppositifolia* Spreng. Syst. Veg. 1: 41. 1825; Hook. f. Fl. Brit. India 4: 286. 1884; Cooke, Fl. Pres. Bombay 2: 370. 1958 (Repr.).

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.

L. parviflora (Roxb.) Haines, Bot. Bihar & Orissa 2: 635. 1922 [2: 665. 1961 (Repr.)]; Mukherjee in J. Indian Bot. Soc. 24: 132. 1945; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 135. 1983. *Gratiola parviflora* Roxb. Pl. Cor. 3: 3, t. 203. 1911. *Ilysanthes parviflora* (Roxb.) Bth. in DC. Prodr. 10: 419. 1846; Hook. f. Fl. Brit. India 4: 283. 1884; Cooke, Fl. Pres. Bombay 2: 368. 1958 (Repr.).

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.

L. procumbens (Krock.) Philcox in Taxon 14: 30, f. 5/8 1965 & in Kew Bull. 22: 29. 1968; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 138. 1980. *Anagalloides procumbens* Krock. Fl. Siles 2: 398, t. 26. 1790. *Vandellia erecta* Bth. Scroph. Ind. 36. 1835 p.p.; Hook. f. Fl. Brit. India 4: 281. 1884.

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.

L. pusilla (Willd.) Bold. Zakfl. Landbouwstr. Jawa 165. 1916; Philcox in Kew Bull. 24: 41, t. 9, f. 6–9. 1968; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 139. 1983. *Gratiola pusilla* Willd. Sp. Pl. 1: 105. 1797. *Vandellia scabra* Bth. Scroph. Ind. 36. 1835; Hook. f. Fl. Brit. India 4: 281. 1884. *Lindernia hirta* (Cham. & Schlecht.) Pennell in J. Arnold Arbor. 24: 250. 1943; Mukherjee in J. Indian Bot. Soc. 24: 131. 1945.

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.

L. rotundifolia (L.) Mukherjee in J. Indian Bot. Soc. 24: 132. 1945; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80. 135. 1983. *Gratiola rotundifolia* L. Mant. 174. 1767. *Ilysanthes rotundifolia* Bth. in DC. Prodr. 10: 424. 1846; Hook. f. Fl. Brit. India 4: 284. 1884.

1 Plants slender; flowers tiny ... var. *concanensis*

1. Plants stout; flowers large ... var. *rotundifolia*

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–Septmeber.

Distrib. : Frequent in wet places in plains. Sindhudurg.

var. **concanensis** Sald. in Tax. Rev. Scroph. W. Penin. Ind. 1: 184. 1963 (ined.); S.M. Almeida, Fl. Savantwadi 1: 301. 1990.

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.

L. ruellioides (Colsm.) Penn. in Brittonia 2: 182. 1936 & in J. Arnold. Arbor. 20: 81. 1939; Philcox in Kew Bull. 22: 54. 1968; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 132. 1983. *Gratiola ruellioides* Colsm. Prodr. Desc. Grat. 12. 1793. *Bonnaya reptans* (Roxb.) Spreng. Syst. Veg. 1: 41. 1824; Hook. f. Fl. Brit. India 4: 284. 1884; Cooke, Fl. Pres. Bombay 2: 369. 1958 (Repr.).

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.).

L. **tenuifolia** (Colsm.) Alston in Trim. Fl. Ceyl. (Suppl.): 214. 1931; Mukherjee in J. Indian Bot. Soc. 24: 134. 1945; Philcox in Kew Bull. 22: 62, t. 11, f. 9–12. 1968; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 134. 1983. *Gratiola tenuifolia* Colsm. Prodr. Desc. Grat. 8: 1793. *Bonnaya tenuifolia* (Colsm.) Spreng. Syst. Veg. 1: 42. 1824; Hook. f. Fl. Brit. India 4: 286. 1884.

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–Septmebr.

Illus. : Philcox, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 500. 1982.

Distrib. : Rare among grasses. Ratnagiri, Sindhudurg.

L. viscosa (Horhem.) Boldingh, Zakfl. Landbouwstr. Jawa 165. 1916; Philcox in Kew Bull. 22: 38, f. 9 (1–5). 1968; Sivar. & Mathew in J. Bombay nat. Hist. Soc. 80: 137. 1983. *Gratiola viscosa* Hornem. Enum. Pl. Hort. Hafn. 19. 1807. *Vandellia hirsuta* Bth. Scrop. Ind. 36. 1835; Hook. of Fl Brit. India 4: 280. 1884; Cooke, Fl. Pres. Bombay 2: 367. 1958 (Repr.).

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.

Mazus pumilus (Burm. f.) Steenis in Nova Guinea n.s. 9: 31. 1958; Sant. in Rec. Bot. Surv. India 16(1): 185. 1967 (3rd Rev. ed.). *Lobelia pumila* Burm. f. Fl. Ind. 186, t. 60, f. 3. 1768. *Mazus rugosus* Lour. Fl. Cochinch. 385. 1790; Hook. f. Fl. Brit. India 4: 259. 1884; Cooke, Fl. Pres. Bombay 2: 383. 1958 (Repr.). M. *mccannii* Blatt. & Hallb. in J. Bombay nat. Hist. Soc. 25: 423. 1918.

Annual erect herbs, ascending, multicauline, non–stoloniferous. Basal leaves in a rosette, oblanceolate–obovate to spathulate. 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

Mecardonia procumbens (Mill.) Small, Fl. Southeast U.S. 1065, 1338. 1903. *Erinus procumbens* Mill. Gard. Dict. ed. 8 n. 6. 1768. *Lindernia dianthera* Sw. Prodr. 92. 1788. *Bacopa procumbens* (Mill.) Greenm. Field Columb. Mus. Bot. Ser. 2, 261. 1907.

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.

Distrib. : An introduced species rapidly spreading in open situations. Probably naturalized. Amravati, Nagpur, Satara.

MICROCARPAEA R. Br.

Microcarpaea minima (Koen. ex Retz.) Merr. in Philipp. J. Sci. 7: 100. 1912; Fischer in Kew Bull. 1932: 6. 1933; S.M. Almeida, Fl. Savantwadi 1: 302. 1990. *Paederota minima* Koen. ex Retz. Obs. Bot. 5: 10. 1789.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: 502. 1982.

Distrib. : Common herb in drying rice fields & in wet marshy places. Sindhudurg.

MIMULUS L.

Mimulus strictus Bth. Scroph. Ind. 28. 1835; Pennell in Acad. Nat. Sci. Philad. Monogr. 5: 32. 1943. *M. gracilis* auct. pl. non R. Br. 1810; Hook. f. Fl. Brit. India 4: 259. 1884.

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.

Pedicularis zeylanica Bth. Scroph. Ind. 54. 1835; Hook. f. Fl. Brit. India 4: 319. 1884; Cooke, Fl. Pres. Bombay 2: 381. 1958 (Repr.).

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.

Peplidium maritimum (L.f.) Wettst. in Engl. & Prantl, Pflanzenfam 4(36): 78. 1895; Sant. in J. Bombay nat. Hist. Soc. 49: 41. 1950. *Hedyotis maritima* L.f. Suppl. 119. 1781. *Peplidium humifusum* Del. Descr. Egypte 148, t. 4. 1812; Hook. f. Fl. Brit. India 4: 287. 1884; Cooke, Fl. Pres. Bombay 2: 371. 1958 (Repr.).

Herbs, decumbent; stems 8–16 cm long, slender. Leaves subsessile, 0.6–1.2 x 0.3–0.6 cm, obovate–oblong or spathulate 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.

Fls. & Frts. : September–February.

Illus. : Wight in Hook. Bot. Misc. 3: 95, sub tab. t. 29. 1833; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 503. 1982.

Distrib. : Occasional in open areas. Raigad (Cooke, op. cit.), Sindhudurg (S. M. Almeida, Fl. Savantwadi 1; 302. 1990).

RHAMPHICARPA Bth.

Rhamphicarpa longiflora (Arn.) Bth. in Comp. Bot. Mag. 1: 368. 1836; Hook. f. Fl. Brit. India 4: 300. 1884; Cooke, Fl. Pres. Bombay 2: 377. 1958 (Repr.). *Buchnera longiflora* Arn. in Nov. Act. Nat. Cur. 18: 356. 1836.

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.

Scoparia dulcis L. Sp. Pl. 116. 1753; Hook. f. Fl. Brit. India 4: 289. 1884; Cooke, Fl. Pres. Bombay 2: 383. 1958 (Repr.).

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.

Illus. : Tad. & Venkatan. Handb. S. Indian Weeds 302. f. 120. 1955 (Rev. ed.); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 504. 1982.

Distrib. : Frequent along road sides & in waste lands. Amravati, Bombay, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

SOPUBIA Buch.–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*

Sopubia delphinifolia (L.) G. Don, Gen. Syst. 4: 560. 1837; Hook. f. Fl. Brit. India 4: 302. 1884; Cooke, Fl. Pres. Bombay 2: 378. 1958 (Repr.). *Gerardia delphinifolia* L. in Juslenius, Cent. Pl. 21. 1756. *'Dudhali'*.

1. Calyx 1.6 cm long, lobes glabrous; corolla c 3 cm long ... var. *delphinifolia*

1. Calyx 0.5–0.6 cm long, lobes minutaly 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.

Fls. & Frts. : July–January.

Illus. : Fyson, Fl. Nilgiri & Pulney Hill–tops 2: t. 199. 1915 (Repr. ed. 1974).

Distrib. : Common throughout among grasses.

var. **parviflora** Bth. in DC. Prodr. 10: 522. 1846; Sant. in Rec. Bot. Surv. India 16(1): 184. 1967 (3rd Rev. ed.).

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.

S. trifida Buch.–Ham. ex D. Don, Prodr. Fl. Nepal. 88. 1825; Hook. f. Fl. Brit. India 4: 302. 1884; Cooke, Fl. Pres. Bombay 2: 378. 1958 (Repr.); Sant. Fl. Purandhar 93. 1960.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 305. 1982.

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*

Stemodia serrata Bth. in DC. Prodr. 10: 381. 1846; Hook. f. Fl. Brit. India 4: 265. 1884; Cooke, Fl. Pres. Bombay 2: 359. 1958 (Repr.).

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–Feburary.

Distrib. : Common in open moist situations, among grasses. Raigad, Thane.

S. verticillata (Mill.) Sprague in Kew Bull. 1921: 211. 1921; Alston in Trimen, Handb. Fl. Ceylon 6: 211. 1931; Cramer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 420. 1981; Bachulkar & Yadav in J. Econ. Tax. Bot. 24: 295. 2000. *Erinus verticillatus* Mill. Gard. Dict. (ed. 8) 5. 1768.

Annual herbs, 8–14 cm high, much branched from base; branchlets terete, densely hirsute. Lower leaves opposite, upper ones in verticels of 3, broadly ovate, margins coarsely crenate–serrate; petioles glandular–hispid. Flowers pale greenish–purple, axillary, solitary, subsessile; calyx lobes glandular–hispid; corolla tube minutely glandular–pilose. Capsules orbicular. Seeds minute, dark brown, ribbed.

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.).

S. viscosa Roxb. Pl. Cor. 2: 33, t. 163. 1802 & Fl. Ind. 3: 94. 1832; Hook. f. Fl. Brit. India 4: 265. 1884; Cooke, Fl. Pres. Bombay 2: 359. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 1408. 1849; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 506. 1982.

Distrib. : In cleared off cultivated fields and along river banks. Almost throughout Maharastra.

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*

Striga angustifolia (D. Don) Sald. in Bull. Bot. Surv. India 5: 70. 1963; Sant. in Rec. Bot. Surv. India 16(1): 184. 1967 (3rd Rev. ed.). *Buchnera angustifolia* D. Don, Prodr. Fl. Nepal. 91. 1825. *Striga euphrasioides* Bth. in Hook. Comp. Bot. Mag. 1: 364. 1836; Hook. f. Fl. Brit. India 4: 299. 1884; Cooke, Fl. Pres. Bombay 2: 376. 1958 (Repr.).

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 podicelled; 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.

S. asiatica (L.) O. Ktze. Rev. Gen. Pl. 1: 466. 1861; Sant. in Rec. Bot. Surv. India in 16(1): 183. 1967 (3rd Rev. ed.) *Buchnera asiatica* L. Sp. Pl. 630. 1753. *Striga lutea* Lour. Fl. Cochinch. 22. 1790; Hook. f. Fl. Brit. India 4: 299. 1994; Cooke, Fl. Pres. Bombay 2: 375. 1958 (Repr.).

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.

Fls. & Frts. : July–January.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2; t. 507. 1982.

Distrib. : Frequent in plains and hilly forests among grasses. Throughout Maharashtra.

S. densiflora (Bth.) Bth. Comp. Bot. Mag. 1: 363. 1836; Hook. f. Fl. Brit. India 4: 299. 1884; Cooke, Fl. Pres. Bombay 2: 375. 1958 (Repr.). *Buchnera densiflora* Bth. Scroph. Ind. 41. 1835.

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.

S. gesnerioides (Willd.) Vatke in Oest. Bot. Zeit. 2. 11. 1875; Sant. in Rec. Bot. Surv. India 16(1): 182. 1967 (3rd Rev. ed.). *Buchnera gesnerioides* Willd. Sp. Pl. 3: 338. 1800. *Striga orobanchioides* (R. Br. ex Endl.) Bth. Comp. Bot. Mag. 1: 361, t. 19. 1836; Hook. f. Fl. Brit. India 4: 299. 1884; Cooke, Fl. Pres. Bombay 2: 374. 1958 (Repr.).

1. Flowers few, c 0.6 cm across; bracteoles ciliolate ... var. *gesnerioides*

1. Flowers numernes, 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.

var. **minor** Sant. in Kew Bull. 1948: 491. 1948, J. Bombay nat. Hist. Soc. 49: 48. 1950 & in Rec. Bot. Surv. India 16 (1) : 206. 1967 (3rd Rev. ed.).

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.

Fls. & Frts. : October–January.

Distirb. :Ahmednagar.

S. sulphurea Dalz. & Gibs. Bombay Fl. 182. 1861; Hook. f. Fl. Brit. India 4: 300. 1884; Cooke, Fl. Pres. Bombay 2: 376. 1958 (Repr.); Sant. in Rec. Bot. Surv. India 16 (1) : 184. 1967 (3rd Rev. ed.).

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

Sutera dissecta (Del.) Walp. Repert. 3: 271. 1844: Sant. in Rec. Bot. Surv. India 16 (1) : 177. 1967 (3rd Rev. ed.). *Capraria dissecta* Del. Fl. Egypte 95, t. 32, f. 2. 1812. *Sutera glandulosa* Roth, Nov. Pl. Sp. 291. 1821; Hook. f. Fl. Brit. India 4: 258. 1884; Cooke, Fl. Pres. Bombay 2: 356. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 856. 1844–45.

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*

Torenia bicolor Dalz. in Hook. J. Bot. & Kew Gard. Misc. 3: 38. 1851; Hook. f. Fl. Brit. India 4: 278. 1884; Cooke, Fl. Pres. Bombay 2: 364. 1958 (Repr.); Sald. in Bull. Bot. Surv. India 8: 129, f. 3. 1967.

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, oblong.

Fls. & Frts. : September–October.

Illus. : Sald. op. cit.

Distrib. : Found in wet, marshy places. Sindhudurg.

T. indica Sald. in Bull. Bot. Surv. India 8: 126, f. 1. 1967. *T. cordifolia* Hook. in. Bot. Reg. t. 3715. 1839 non Roxb. 1802; Hook. f. Fl. Brit. India 4: 276. 1884; Cooke, Fl. Pres. Bombay 2: 364. 1958 (Repr.).

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.

Fls. & Frts. : August–October.

Illus. : Sald. op. cit.

Distrib. : In moist open situations and in forest undergrowth. Bombay (Sald. op. cit.), Nasik, Raigad, Ratnagiri, Satara, Sindhudurg, Thane. Rare.

T. lindernioides Sald. in Bull. Bot. Surv. Ind. 8: 129. t. 4. 1966 & Fl. Hassan Dist. 527. 1976; S.M. Almeida, Fl. Savantwadi 1: 306. 1990.

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.

Fls. & Frts. : May–August.

Illus. : Sald. op. cit.

Distrib. : Common herb in open grassland and on lateritic grounds. Sindhudurg.

T. thouarsii (Cham. & Schlecht) O. Ktze. Rev. Gen. Pl. 2: 468. 1891; S.M. Almeida, Fl. Savantwadi 1: 306. 1990. *Nortenia thouarsii* Cham. & Schlecht in Linnaea 3: 18. 1828. *Torenia parviflora* Buch.–Ham. ex Bth. Scroph. Ind. 39. 1835 & in DC. Prodr. 10: 410. 1846; Hook. f. Fl. Brit. India 4: 278. 1884.

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.

T. vagans Roxb. Fl. Ind. 3: 96. 1824; Hook. f. Fl. Brit. India 4: 277. 1884; S.M. Almeida, Fl. Savantwadi 1: 306. 1990.

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.

VERBASCUM L.

Verbascum chinense (L.) Sant. Fl. Purandhar 90. 1958. *Scrophularia chinensis* L. Mant. 2: 250. 1771. *Celsia coromandeliana* Vahl, Symb. 3: 79. 1794; Hook. f. Fl. Brit. India 4: 240. 1883; Cooke, Fl. Pres. Bombay 2: 352. 1958 (Repr.). *'Kutaki'*.

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 coromondeliana).*

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 capiate racemes; capsules obcordate ... *V. javanica*

Veronica anagallis-aquatica L. Sp. Pl. 12. 1753; Penn. in Acad. Nat. Sci. Phil. 1: 362. 1935. *V. anagalis* Bth. Scroph. Ind. 44. 1835; Hook. f. Fl. Brit. India 4: 393. 1884; Cooke, Fl. Pres. Bombay 2: 373. 1958 (Repr.).

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.

V. javanica Bl. Bijdr. 742. 1826; Hook. f. Fl. Brit. India 4: 296. 1884; Pennell in Acad. Nat. Sci. Phil. 1: 87. 1935; Dutta in J. Bombay nat. Hist. Soc. 57: 594. 1960.

Herbs, viscid–pubescent. Leaves shortly petioled, ovate, apex obtuse, pubescent. Flowers pinkish white; calyx strigose. Capsules enclosed in calyx, pubescent.

Fls. & Frts. : April.

Distrib. : Weed along margins of cultivated fields and in wastelands. Satara.

CULTIVATED SPECIES :

Antirrhinum majus L. Sp. Pl.617.1753; Bailey, Man. Cult. Pl. 895.1949.

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.

Angilonia salicariaefolia Humb. & Bonpl. Pl. Aequinoct. 2:92, t. 108. (1809) 1812.

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.

Maurandya barclaiana Lindl. Bot. Reg. 5,13, t. 1108. 1927; Bailey, Man. Cult. Pl. 895. 1949.

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 pruple 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.

M. lophospermum D. Don in Trans. Linn. Soc. 15: 359. 1927. *M. scandens* A. Grey in Proc. Amer. Acad 7: 377. 1868; Cooke, Fl. Pres. Bombay 2 : 382. 1958 (Repr.).

Climbers with glandular–pubescent branches. Leaves triangular–ovate, cordate; petioles twining. Flowers purple –violet, showy; sepals oblong, leafy; corolla lobes equal, obtuse. Capsule subglobose, c 2 cm across. Seeds with winged testa.

A native of Mexico. Cultivated in gardens of Satara.

Russelia coccinia Wettst. in Engl. & Prantl, Pflanzenfam. 4 (3b) : 63. 1891; Naik, Fl. Marathwada 2 : 629. 1998.

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.).

R. equisetiformis Schlecht. & Cham. in Linnaea 6 : 377. 1831 ; Sant. in J.Bombay nat. Hist. Soc. 49:47.1950; Naik, Fl. Marathwada 2:629.1998.

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.).

Undershrubs. Leaves opposite, sessile, cordate or suborbicular. Flowers scarlet, in axillary and terminal racemes.

A showy plant native to Mexico. Cultivated for ornamental purpose.

Torenia asiatica L. Sp. Pl. 619.1753; Cooke, Fl. Pres. Bombay 2:365.1958 (Repr.).

A diffusely branching annual, creeping below. Leaves opposite, ovate, subcordate or lanceolate, serrate. Calyx tubular; corolla blusih–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.

OROBANCHACEAE

(A.N. Londhe)

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 ... OROBANCHE

   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.

Aeginetia indica L. Sp. Pl. 632. 1753; Hook. f. Fl. Brit. India 4: 320. 1884; Cooke, Fl. Pres. Bombay 2: 384. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 895. 1844–1845; Ramam. in Sald. & Nicols. Fl. Hassan Dt. f. 98, A–Ad. 1976; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 508. 1982.

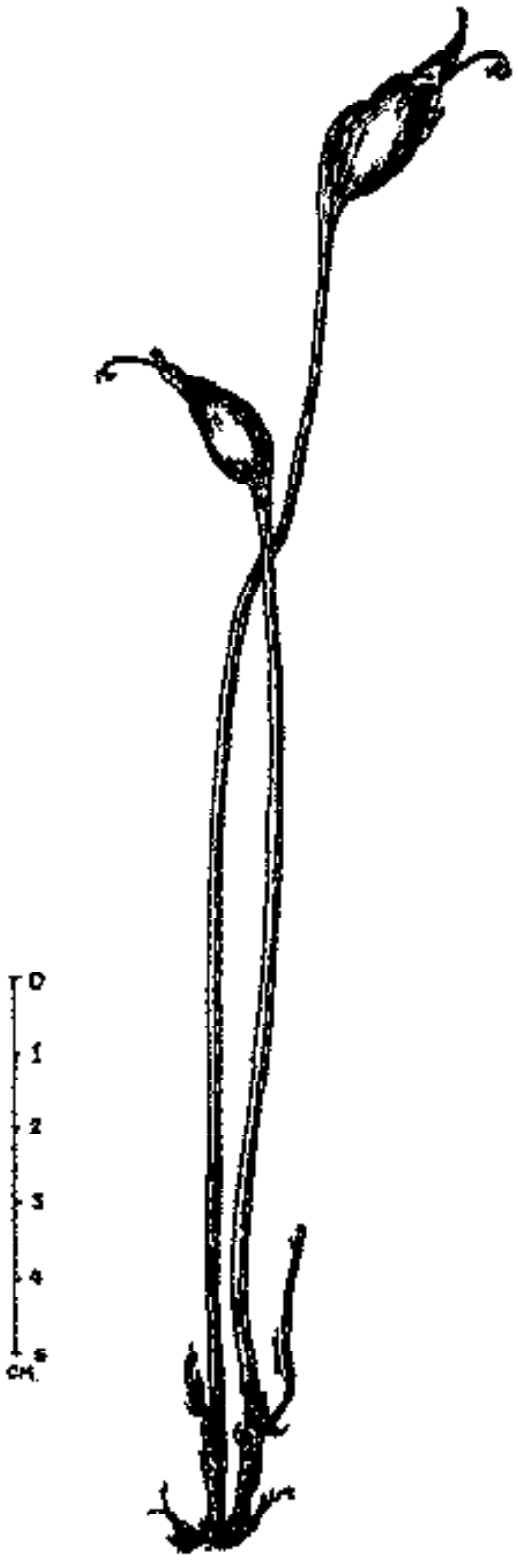
Distrib. : Bombay (Cooke, op. cit.), Chandrapur, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

CHRISTISONIA Gardn.

1. Pedicels short, less than 1.5 cm long ... *C. lawii*

1. Pedicels long, sometimes exceeding 5 cm in length ... *C. calcarata*

Christisonia calcarata Wight, Ic. t. 1426. 1849; Hook. f. Fl. Brit. India 4: 322. 1884; Cooke, Fl. Pres. Bombay 2: 385. 1958 (Repr.); Sant. in Rec. Bot. Surv. India 16(1): 187. 1967 (3rd Rev. ed.).



Aeginetia indica L.

Herbs, root parasites; stems simple, scaly; scales broadly ovate, obtuse. Flowers white, in racemes. Capsules upto 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.

C. lawii Wight, Ic. t. 1427. 1849; Hook. f. Fl. Brit. India 4: 322. 1884; Cooke, Fl. Pres. Bombay 2: 385. 1958 (Repr.); Sant. in Rec. Bot. Surv. India 16(1): 187. 1967 (3rd Rev. ed.).

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.).

CISTANCHE Hoffm. & Link

Cistanche tubulosa (Schrenk) Wight, Ic. t. 1420 bis 1850; Hook. f. Fl. Brit. India 4: 324. 1884; Cooke, Fl. Pres. Bombay 2: 386. 1958 (Repr.); Grah. Fl. Trop. E. Africa 2. 1957; Bole in J. Bombay nat. Hist. Soc. 61: 473. 1964. *Philipaea tubulosa* Schrenk, Pl. Aeg.-Arab. Sp. 23. 1841.

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.

OROBANCHE L.

Orobanche cernua Loefl. var **nepalensis** DC. Prodr. 11: 33. 1847; Shah, Fl. Gujarat 1: 512. 1978. *O. nicotiana* Wight, Illus. 2: 179, t. 158. 1850; Hook. f. Fl. Brit. India 4: 326. 1884. *O. cernua* var *desertorum* R. Beck. Mon. Orob. in Bibl. Bot. 19: 142, t. 33(1). 1890; Cooke, Fl. Pres. Bombay 2: 387. 1958 (Repr.).

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.

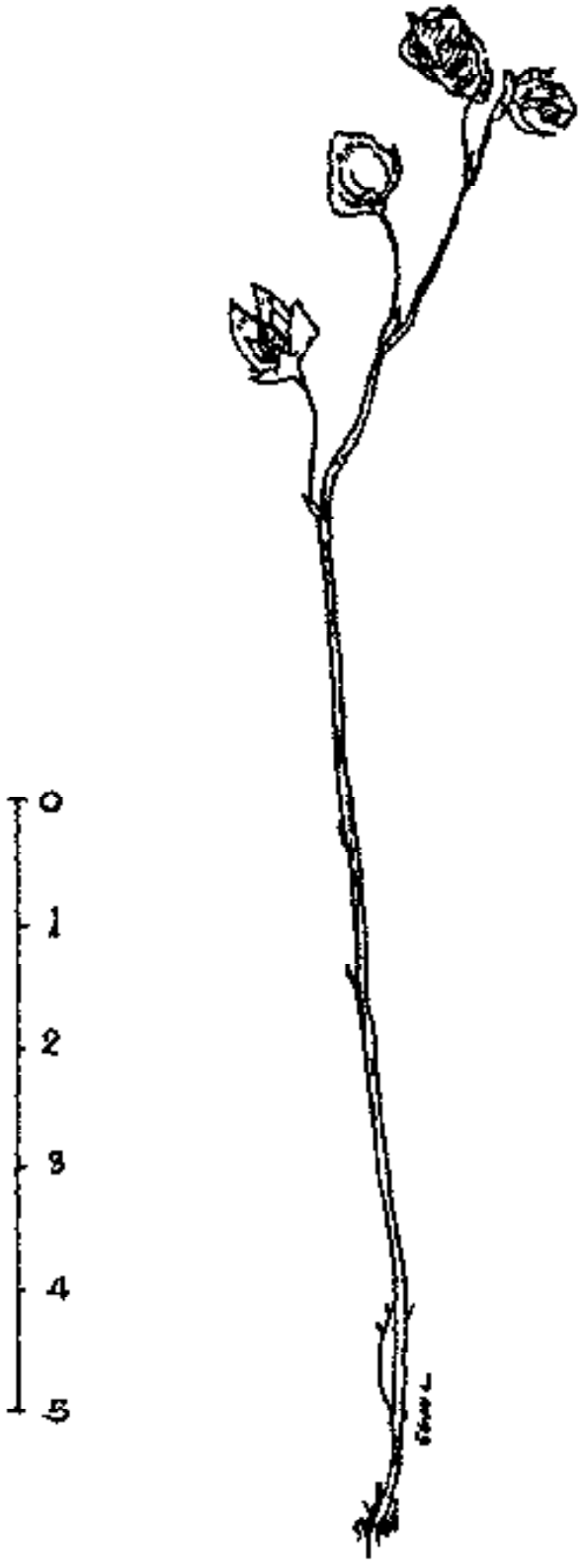
LENTIBULARIACEAE

(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*

Utricularia albocaerulea Dalz. in Hook. J. Bot. Kew Gard. Misc. 3: 279. 1851; C.B.Cl. in Hook. f. Fl. Brit. India 4: 330. 1884; Cooke, Fl. Pres. Bombay 2: 391. 1958 (Repr.); Janarthanam & Henry, Bladderworts of India 27, f. 4. 1992.

Herbs, 8–16 cm high, erect; stolons bear a few bladders. Leaves 0.2–0.4 cm long, spathulate, 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.

Distrib. : Infrequent in moist situations. Kolhapur, Satara, Sindhudurg.

U. aurea Lour. Fl. Cochinch. 1: 26. 1790; Janarthanam & Henry, Bladderworts of India 30, f. 5. 1992. *U. flexuosa* Vahl, Enum. Pl. 1: 198. 1804; C.B.Cl. in Hook. f. Fl. Brit. India 4: 329. 1884; Cooke, Fl. Pres. Bombay 2: 390. 1958 (Repr.).

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.).

U. australis R. Br. Prodr. 430 1810; Janarthanam & Henry, Bladderworts of India 34, f. 6. 1992. *U. flexuosa* sensu C.B.Cl. in Hook. f. Fl. Brit. India 4: 329. 1884 p.p. quoad syn. *U. australis* R. Br. non Vahl, 1804. *U. vulgaris* sensu Taylor in Kew Bull. 18: 71. 1964 p.p. non L. 1753.

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.

U. bifida L. Sp. Pl. 18. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 332. 1884; Janarthanam & Henry, Bladderworts of India 37, f. 7. 1992.

Herbs, erect, 5–15 cm high, delicate. Leaves linear–spathulate. Scapes erect, 5.0–17.5 cm long, many–fid, 1–10–flowered. Pedicels curved; calyx ovate, obtuse; lower lip of corolla ovate, acute; spur funnel shaped. Seeds obovoid.

Fls. & Frts. : February.

Illus. : Janarthanam & Henry, op. cit.

Distrib. : Rare in wet open muddy places. Chandrapur.

U. caerulea L. Sp. Pl. 18. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 331. 1884; Cooke, Fl. Pres. Bombay 2: 392. 1958 (Repr.); Sant. in J. Bombay nat. Hist. Soc. 49: 220. 1950; Janarthanam & Henry, Bladderworts of India 42, f. 9. 1992.

Herbs, scapes erect; stolons numerous from base of scapes having ovoid bladders. Leaves linear–spathulate. Flowers in racemes, 2–8, distant, bluish–purple; spur curved. Capsules ovoid.

Fls. & Frts. : August–September.

Illus. : Wight, Ic. t. 1583. 1850; Janarthanam & Henry, op. cit.

Distrib. : Infrequent in watery areas. Nagpur, Raigad, Ratnagiri, Satara, Sindhudurg.

U. exoleta R. Br. Prodr. 430. 1810; C.B.Cl. in Hook. f. Fl. Brit. India 4: 329. 1884; Cooke, Fl. Pres. Bombay 2: 390. 1958 (Repr.); Janarthanam & Henry, Bladderworts of India 49, f. 11. 1992.

Herbs, floating with branched stolons; branches fascicled. Leaves dissected, capillary with bladders. Scapes slender, c 10 cm long. Flowers minute, yellow. Capsules globose. Seeds with corky wing, orbicular, flat.

Fls. & Frts. : September–May.

Illus. : Janarthanam & Henry, op. cit.

Distrib. : Infrequent in ponds and lakes. Nagpur, Pune, Ratnagiri (Cooke, op. cit.).

U. graminifolia Vahl, Enum. Pl. 1: 195. 1804; Janarthanam & Henry, Bladderoworts of India 57, f. 14. 1992. *U. caerulea* C.B.Cl. in Hook. f., Fl. Brit. India 4: 331. 1884 non L. 1753. *U. equiseticaulis* Blatt. & McC. in J. Indian Bot. Soc. 10: 122, t. 1 & 2. 1931.

Herbs. Scapes simple, 5–15 cm, long, 2–6–flowered, distant. Flowers bluish–purple; bracts lanceolate; lower lobe of calyx bifid. Capsules ovoid, enclosed in enlarged calyx.

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.

U. praeterita P. Taylor in Matthew, Fl. Tamilnadu Carnatic 3: 1120, t. 87. 1983; Janarthanam & Henry, Bladderworts of India 81, f. 23. 1992.

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.

Fls. & Frts. : October–January.

Illus. : P. Taylor, op. cit.; Janarthanam & Henry, op. cit.

Distrib. : In moist places in Panchgani (Satara district) only.

U. purpurascens Grah. Cat. Pl. Bombay 165. 1839; Janarthanam & Henry, Bladderworts of India 85, f. 25. 1992. *U. arcuata* Wight in Hook. J. Bot. Kew Gard. Misc. 1: 372. 1849 & Ic. t. 1571, f. 1. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 330. 1884; Cooke, Fl. Bombay 2: 391. 1958 (Repr.).

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.

Distrib. : Uncommon in moist situations. Ahmednagar, Kolhapur, Pune, Ratnagiri.

U. reticulata Sm. Exot. Bot. 2: t. 119. 1805; C.B.Cl. in Hook. f. Fl. Brit. India 4: 331. 1884; Cooke, Fl. Pres. Bombay 2: 393. 1958 (Repr.); Janarthanam & Henry, Bladderworts of India 91, f. 27. 1992.

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.

U. scandens Benj. in Linnaea 20: 309. 1847; Janarthanam & Henry, Bladderworts of India 97, f. 29. 1992. *U. wallichiana* Wight, Ic. t. 1572, f. 1. 1849; C.B.Cl. in Hook. f. Fl. Brit. India 4: 332. 1884.

Herbs, slender. Leaves linear, base attenuate into a capillary petiole. Scapes filiform. Flowers 1–8, distant, alternating with sterile bracts, yellow. Capsules strongly dorsiventrally compressed, oblong–ovoid, completely enclosed in persistent calyx. Seeds broadly ovoid to ellipsoid, smooth.

Fls. & Frts. : September.

Illus. ; Wight, op. cit.; Janarthanam & Henry, op. cit.

Distrib. : In moist places. Pune.

U. stellaris L. f. Suppl. 86. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 4: 328. 1884; Cooke, Fl. Pres. Bombay 2: 389. 1958 (Repr.); Sant. in J. Bombay nat. Hist. Soc. 49: 212. 1950; Janarthanam & Henry, Bladderworts of India 102. 1992. *U. inflexa* Forssk. var. *stellaris* (L. f.) Taylor in Mitt. Bot. Staass. Munchen 4: 96. 1961 & Kew Bull. 18: 189. 1964.

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.

U. striatula J.E. Sm. in Rees, Cyclop. 37: no. 17. 1819; Cooke, Fl. Pres. Bombay 2: 393. 1958 (Repr.); Taylor in Kew Bull. 18: 91, 92, f. 3. 1964; Janarthanam & Henry, Bladderwarts of India 106, f. 32. 1992. *U. orbiculata* Wall ex A. DC. in DC. Prodr. 8: 18. 1844; C.B.Cl. in Hook. f. Fl. Brit. India 4: 334. 1884.

Herbs, tiny; stolons filiform, creeping, bearing leaves and bladders. Leaves at base of scapes in rosettes, orbicular or reniform. Scapes filiform, few, 10–flowered. Corolla bluish–purple. Capsules subglobose. Seeds oblong–ellipsoid.

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.

U. uliginosa Vahl, Enum. Pl. 1: 203. 1804; Janarthanam & Henry, Bladderworts of India 113, f. 34. 1992. *U. affinis* Wight in Hook. J. Bot. & Kew Gard. Misc. 1: 373. 1849; C.B.Cl. in Hook. f. Fl. Brit. India 4: 330. 1884; Cooke, Fl. Pres. Bombay 2: 392. 1958 (Repr.).

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 ... AESCHYNANTHUS
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 ... DIDYMOCARPUS
        3. Leaves two only; capsule more than 2 cm long, curved ... CHIRITA
    2. Capsules oblong or oblong-ellipsoid and included within calyx:
        4. Leaves distinctly oblique at base, apex acuminate ... RHYNCHOGLOSSUM
        4. Leaves subequal at base, apex acuminate ... EPITHEMA

AESCHYNANTHUS Jack (nom. cons.)

Aeschynanthus perrottetii A. DC. in DC. Prodr. 9: 261. 1845; C.B.Cl. in Hook. f. Fl. Brit. India 4: 339. 1884; Cooke, Fl. Pres. Bombay 2: 395. 1958 (Repr.).

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.

Chirita hamosa R. Br. in Benn. Pl. Jav. Rar. 117. 1838–1852; C.B.Cl. in Hook. f. Fl. Brit. India 4: 360. 1884; Cooke, Fl. Pres. Bombay 2: 396. 1958 (Repr.).

Herbs, annual, 30–50 cm tall. Leaves subequal, 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.

Didimocarpus pygmaea C.B.Cl. in Hook. f. Fl. Brit. India 4: 345. 1884; Dhore & Joshi, Fl. Melghat Tiger Reserve 137. 1988; S. Panda & A. P. Das in J. Bombay Nat. Hist. Soc. 88: 467. 1991.

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.

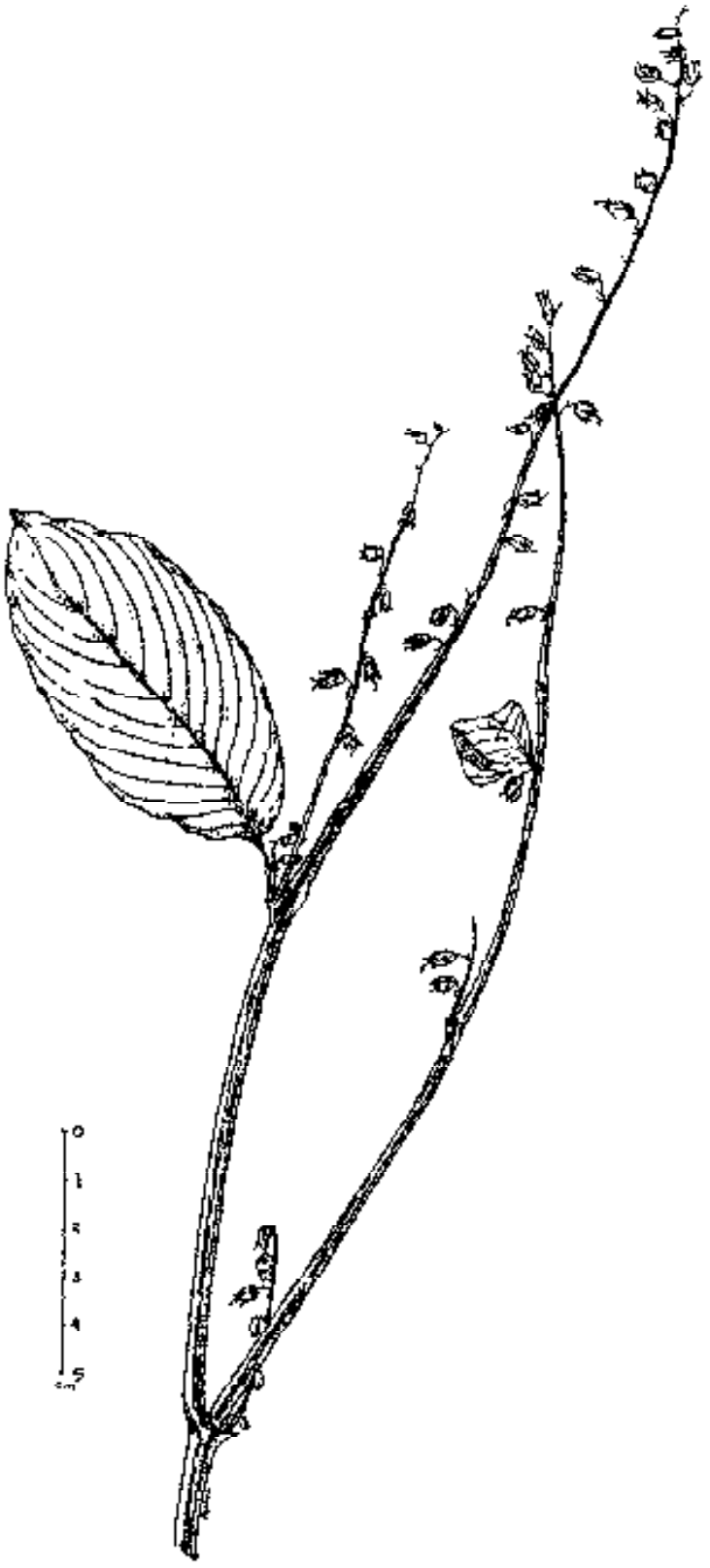
Epithema carnosum Bth. var. **hispida** C.B.Cl. in DC. Monogr. Phan. 5: 178. 1883 & in Hook. f. Fl. Brit. India 4: 369. 1884; Cooke, Fl. Pres. Bombay 2: 399. 1958 (Repr.).

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*

Rhynchoglossum notonianum (Wall.) Burtt in Notes Roy. Bot. Gard. Edinburgh 24: 170. 1962. *Wulfenia notoniana* Wall. Tent. Fl. Nepal. 46. 1826. *Klugia notoniana* (Wall.) A. DC. in DC. Prodr. 9: 276. 1845; C.B.Cl. in Hook. f. Fl. Brit. India 4: 366. 1884; Cooke, Fl. Pres. Bombay 2: 397. 1958 (Repr.).

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.

R. obliquum Bl. Bijdr. 741. 1826; C.B.Cl. in Hook. f. Fl. Brit. India 4: 367. 1884; Cooke, Fl. Pres. Bombay 2: 398. 1958 (Repr.).

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.

var. parviflora C.B.Cl. in DC. Mon. Phan. 5: 162. 1884 & in Hook. f. Fl. Brit. India 4: 367. 1884; Cooke, Fl. Pres. Bombay 2: 398. 1958 (Repr.).

Herbs, succulent. Leaves 5–15 x 2–6 cm, elliptic–oblong, membranous, apex acuminate, base unequal sided. Racemes terminal. Flowers blue. Capsules c 0.4 cm long, ovoid. Seeds ellipsoid, minute.

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.

Episia fulgida Hook. f. in Bot. Mag. V: 30, t. 6136. 1874.

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.

E. tesselata Linden ex Lemaire, Ill. Hortic. V: 16 subt. 607. 1869.

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.

Gloxinia maculata L' Herit. Stirp. Nov. Pl. 149.1784.

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.

Distrib. : Planted in gardens. Deccan.

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 Kjoeb. Vidensk. Meddel 91. 1877–78.

Short stemmed plant. Leaves oblong, velvetty crenate. Flowers violet–purple.

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.

BIGNONIACEAE

(P. V. Prasanna)

1. Capsules winged on both margins ... PAJANELIA
1. Capsules not winged:
   2. Capsules falcately curved.
      3. Inflorescence a few–flowered raceme ... DOLICHANDRONE
      3. Inflorescence a lax panicle ... STEREOSPERMUM
   2. Capsules straight :
      4. Capsules velvetty when young ... HETEROPHRAGMA
      4. Capsules not velvetty:
         5. Leaflets subsessile ... RADERMACHERA
         5. Leaflets petiolate ... OROXYLUM

DOLICHANDRONE (Fenzl) Seem. (nom. cons.)

1. Leaflets obovate to suborbicular, upto 4.5 cm long, cuneate at base; capsules falcate ... *D. falcata*
1. Leaflets elliptic–ovate > 5 cm long, base obliquely truncate; capsules arcuate ... *D. atrovirens*

Dolichandrone atrovirens (Heyne ex Roth) Sprague in Kew Bull. 1919: 304. 1919. *Bignonia atrovirens* Heyne ex Roth, Nov. Pl. Sp. 284. 1821. *Dolichandrone crispa* Seem. in J. Bot. 8: 381. 1870 excl. syn.; C.B.Cl. in Hook. f. Fl. Brit. India 4: 379. 1884; Cooke, Fl. Pres. Bombay 2: 403. 1958 (Repr.).

Trees up to 19 m tall; young parts velvetty 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.

Fls. & Frts. : March–December.

Distrib. : Occasional.

D. falcata (Wall. ex DC.) Seem. in J. Bot. 8: 381. 1870; C.B.Cl. in Hook. f. Fl. Brit. India 4: 380. 1884; Cooke, Fl. Pres. Bombay. 2: 404. 1958 (Repr.). *Spathodea falcata* Wall. ex DC. Prodr. 9: 206. 1845. *'Medh–Shingi'*, *'Medsing'*.

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.

Fls. & Frts. : March–December.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 512. 1982.

Distrib. : Common in deciduous forests.

HETEROPHRAGMA DC.

Heterophragma quadriloculare (Roxb.) K. Schum. in Engl. & Prantl, Pflanzenf. 4 (3b) : 243. 1895; Sant. in Rec. Bot. Surv. Ind. 16(1): 191. 1967 (3rd Rev. ed.) *Bignonia quadrilocularis* Roxb. Pl. Cor. 2: 24, t. 145. 1800. *Heterophragma roxburghii* A. DC. in DC. Prodr. 9: 210. 1845; C.B.Cl. in Hook. f. Fl. Brit. India 4: 381. 1884; Cooke, Fl. Pres. Pres. Bombay 2: 404. 1958 (Repr.). *'Varas'*.

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, velvetty when young, 3.5 x 1.5 cm.

Fls. & Frts. : January–June.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 311, f. 437. 1911.

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

OROXYLUM Vent.

Oroxylum indicum (L.) Vent. Dec. Gen. Nov. 8. 1808; C.B.Cl. in Hook. f. Fl. Brit. India 4: 378. 1884; Cooke, Fl. Pres. Bombay 2: 401. 1958 (Repr.). *Bignonia indica* L. Sp. Pl. 625. 1753. *'Shivan'*, *'Tetu'*.

Trees, 5–10 m tall. Leaflets 5–15 x 5–10 cm, ovate or ovate–ellipitc, 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.

Pajanelia longifolia (Willd.) K. Schum. in Engl. & Prantl, Pflanzenf. 4 (3b). 244. 1895. *Bignonia longifolia* Willd. Sp. Pl. 3: 306. 1800. *Pajanelia rheedii* Wight, Ic. tt. 1343–44. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 384. 1884. *Pajanelia multijuga* DC. Prodr. 9: 227. 1845; Cooke, Fl. Pres. Bombay 2: 408. 1958 (Repr.).

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

Radermachera xylocarpa (Roxb.) K. Schum. in Engl. & Prantl, Pflanzenf. 4 (36): 243. 1895; Cooke, Fl. Pres. Bombay 2: 407. 1958 (Repr.). *Bignonia xylocarpa* Roxb. Fl. Ind. 3: 108. 1832. *Stereospermum xylocarpum* Bth. & Hook. f. ex C.B.Cl. in Hook. f. Fl. Brit. India 4: 383. 1884. '*Kharsingh*'.

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.

Illus. : Wight, Ic. tt. 1335–36. 1848; Matthew, Illus. Fl. Tamilnadu Carnatic 2: 513. 1982.

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*

Stereospermum chelenoides (L.f.) DC. Bibl. Univ. Geneve II, 17: 125. 1838 et Prodr. 9: 210 1845 p.p.; Santisuk in Kew Bull. 28: 176. 1973. *Bignonia chelenoides* L.f. Suppl. 282. 1781 p.p. *Stereospermum suaveolens* (Roxb.) DC. Prodr. 9: 211. 1845; C.B.Cl. in Hook. f. Fl. Brit. Ind. 4: 382. 1884; Cooke, Fl. Pre. Bombay 2: 406 1958 (Repr.). *Bignonia suaveolens* Roxb. Fl. Ind. 3: 104 1832. *'Paral'*.

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, fagrant; 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.).

S. colais (Buch.–Ham. ex Dillw.) Mabb. in Taxon 27: 553. 1978. *Bignonia colais* Buch.–Ham. ex Dillw. Rev. Ref. Hort. Mal. 28. 1839. *Stereospermum personatum* (Hassk.) Chatterjee in Bull. Bot. Soc. Bengal 2: 70. 1948; Santisuk in Kew Bull. 28: 178. 1973. *Stereospermum chelonoides* auct. non (L.f.) DC. 1845; C.B.Cl. in Hook. f. Fl. Brit. Ind. 4: 382. 1884; Cooke, Fl. Pres. Bombay 2: 405. 1958 (Repr.).

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, tetragonous.

Fls. & Frts. : February–September.

Illus. : Wight, Ic. t. 1341. 1848; Talb. For. Fl. Bombay Pres. & Sind 2: 313, f. 438. 1911 (*S. chelonoides*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 514. 1982 & Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 481. 1988.

Distrib. : Occasional in hilly forests. Ahmednagar, Amravati, Chandrapur, Dhule, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Sholapur, Thane.

var. **angustifolium** (Haines) Bennet & Raiz. in Indian J. For. 4: 67. 1981. *S. chelonoides* var. *angustifolium* Haines, Descr. List Trees South Cir. Cent. Prov. 169. 1916. *S. angustifolium* (Haines) Haines in Kew Bull. 1922: 121. 1922 & Bot. Bihar & Orissa 4: 656. 1922 [2: 687. 1961 (Repr.)]. *S. personatum* var. *angustifolium* (Haines) Santisuk in Kew Bull. 28: 181. 1973. *'Paral'*.

Similar to var. **colais** but differs in having oblong–lanceolate leaflets with acuminate apex and terete capsules.

Fls. & Frts. : April–June.

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 :

Amphilophium mollе Cham. et Schlecht. in Linnaea 5: 120. 1830; Naik, Fl. Marathwada 2: 642. 1998.

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.).

Bignonia incarnata Aubl. Hist. Pl. Guian. 5: (2) 645, t. 261. 1775; Cooke, Fl. Pres. Bombay 2: 409. 1958 (Repr.).

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.

Trees, upto 12 m tall. Leaves palmately compound; leaflets 3–5, elliptic–oblong. Flowers in axillary clusters, light pink–yellow; calyx tubular, 2–lipped.

Fls. : April–September.

Distrib. : Occasionally planted.

Notes. : Native of Tropical America.

Campsis grandiflora (Thunb.) K. Schum. in Engl. Pflanzenf. 4 (3b): 230. 1894. *Bignonia grandiflora* Thunb. Fl. Jap. 253. 1784. *'Chinese trumpet creeper'.*

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 transculent wings.

Fls. & Frts. : June–January.

Distrib. : Occasionally grown in gardens. Pune.

Notes : Native of China and Japan.

C. radicans (L.) Seem. in Journ. Bot. 5: 372. 1867; Cooke, Fl. Pres. Bombay 2: 410. 1958 (Repr.); Bailey Man. Cult. Pl. 903. 1949. *Bignonia radicans* L. Sp. Pl. 624. 1753. *Tecoma radicans* Juss. Gen. 139. 1789; Bor & Raiz. Beaut. Ind. Cl. & Shr. 40, tt. 11, 12 & f. 30. 1990 (Repr.). *'Trumpet vine'.*

Climbing shrubs. Leaves odd–pinnate; leaflets ovate–oblong, acuminate at apex, cuneate at base. Inflorecences of terminal cymose clusters. Flowers orange with scarlet limb; calyx campanulate, 5–lobed; corolla tube narrow, limb spreading. Fruit a capsule, beaked. Seeds winged.

Fls. & Frts. : June–December.

Illus. : Bor. & Raiz. op. cit.

Distrib. : An extensive climber, frequently grown in gardens. Pune.

Notes. : Native of North America.

Colea mauritiana Boj. Hort. Maurit. 220. 1837; Cooke, Fl. Pres. Bombay 2: 411. 1958 (Repr.).

Shrubs upto 5 m high. Flowers cauliflorus; corolla with reddish veins and yellow coloured inside.

Distrib. : Occasionally planted in gardens.

Notes. : Native of Madagascar.

Crescentia alata H.B. & K. Nov. Gen. Sp. 3: 158. 1819. *Parmentiera alata* (H.B. & K.) Miers in Trans. Linn. Soc. London 26: 166. 1868.

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.

C. cujete L. Sp. Pl. 626. 1723; Bailey, Man. Cult. Pl. 904. 1949; Cooke, Fl. Pres. Bombay 2: 411. 1958 (Repr.); Naik, Fl. Marathwada 2: 643. 1998. *'Calabashtree'*.

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.

Dolichandrone stipulata (Wall.) Bth. & Hook. f. Gen. Pl. 5(2): 1046. 1876; C.B.Cl. in Hook. f. Fl. Brit. India 4: 379. 1885; Cooke, Fl. Pres. Bombay 2: 410. 1958 (Repr.). *Spathodea stipulata* Wall. Pl. As. Rar. 20, t. 238. 1832.

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 velvetty–tomentose.

Distrib. : Occasionally planted in gardens. Pune.

Notes : Native of Rangoon and Pegu.

Haplophragma adenophyllum (Wall.) P. Dop. in Bull. Soc. Bot. France 72: 890. 1925. *Bignonia adenophylla* Wall. Cat. 6502, 1832 nom. nud.; P. Dop, l.c. 72: 889. 1925. *Heterophragma adenophyllum* (DC.) Seem. ex Benth. in Benth. & Hook f. Gen. Pl. 2: 1047. 1876; C.B.Cl. in Hook f. Fl. Brit. India 4: 381. 1884; Cooke, Fl. Pres. Bombay 2: 410. 1958 (Repr.).

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.

Jacaranda acutifolia Humb. & Bonpl. Pl. Acquin. 1: 59, t. 17. 1806; Bailey, Man. Cult.Pl. 907. 1949.

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.

Kigelia africana (Lam.) Bth. in Hook. Niger Fl. 463. 1849. *Bignonia africana* Lam. Encycl. 1: 424. 1785. *Kigelia pinnata* (Jacq.) DC. Prodr. 9: 247. 1845; Cooke, Fl. Pres. Bombay 2: 411. 1958 (Repr.).

Trees, up to 15 m tall. Leaves 1–pinnate; leaflets 5–7, 5–12 x 3–6 cm, ovate–oblong 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.

Macfadyena unguis-cati (L.) A Gentry in Brittonia 25: 236. 1973. *Bignonia unguis–cati* L. Sp. Pl. 623. 1753; Cooke, Fl. Pres. Bombay 2: 409. 1958 (Repr.). *Doxantha unguis–cati* (L.) Miers emend. Rehder, Mitt. Dent. Dendr. Ges. 262. 1913.

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–oblong, 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.

Millingtonia hortensis L. f. Suppl. 291. 1781; C.B. Cl. in Hook. f. Fl. Brit. Ind. 4: 377. 1884; Cooke, Fl. Pres. Bombay 2: 409. 1958 (Repr.). *'Akash neem'*, *'Booch'*.

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.

Pachyptera hymenaea (DC.) Gentry, Brittonia 25: 236. 1973; Naik, Fl. Marathwada 2: 646. 1998. *Bignonia hymenaea* DC. Prodr. 9: 158. 1845.

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.

Pandorea jasminoides (Lindl.). Schum. in Pflazenfam. 4(3b): 230. 1894; Chatterji in Bull. Bot. Soc. Bengal 2(1): 78. 1948; Bailey, Man. Cult. Pl. 904. 1949; Cooke, Fl. Pres. Bombay 2: 410. 1958 (Repr.). *Tecoma jasminoides* Lindl. Bot. Reg. 23: t. 2002. 1837.

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.

Distrib. : Occasionally grown in gardens. Bombay, Pune.

Notes : Native of Australia.

Parmentiera cerifera Seem. Bot. Voy. Herald 182, t. 32. 1853; Cooke, Fl. Pres. Bombay 2: 411. 1958 (Repr.); Mahesh. Fl. Delhi 257. 1963. *'Candletree'*.

Small trees. Leaves trifoliolate; petioles narrowly winged. Flowers white or pale pink; calyx spathaceous.

Fls. : July–September.

Distrib. : Planted along the hedges of gardens. Bombay, Pune.

Notes. : It is a native of Panama.

Pyrostegia venusta (Ker–Gawl.) Presl, Bot. Bemerk. 93. 1845. *Bignonia venusta* Ker–Gawl. in Bot. Reg. 3: t. 249. 1818. *Pyrostegia ignea* (Vell.) Presl, Bot. Bemerk. 93. 1845; Cooke, Fl. Pres. Bombay 2: 410. 1958 (Repr.). *'Golden shower'*.

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.

Saritaea magnifica (Steen.) Dugand, Caldasia 3: 263. 1945. *Arrabidaea magnifica* Steen. Rec. Trav. Bot. Neerl. 24: 830. 1927 excl. syn. *Bignonia magnifica* Bull. Jard. Bot. Buiten. 44: 195. 1934; Cooke, Fl. Pres. Bombay 2: 409. 1958 (Repr.).

Scandent shrubs. Leaves opposite; leaflets obovate–oblanceolate, acuminate at apex, truncate at base. Inflorescenes 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.

Spathodea campanulata P. Beauv. Fl. Owarc Benin 1: 47, t. 27. 1805; Bailey, Man. Cult. Pl. 907. 1949; Cooke, Fl. Pres. Bombay 2: 410. 1958 (Repr.).

Trees, up to 20 m tall. Leaves odd pinnate; leaflets 3–19, 5–9 x 2–5 cm, elliptic–obovate. Flowers in many flowered compact racemes; calyx dark brown velutinous; corolla orange–crimson. Capsules lanceolate, brownish–black. Seeds winged.

Fls. & Frts. : July–March.

Distrib. : Commonly planted as avenue tree.

Notes : Native of Tropical Africa.

Tabebuia argentea (Bur. & Schum.) Britt. in Sc. Surv. Porto Rico & Virgin Isl. 6: 197. 1925. *Tecoma argentea* Bur. & Schum. in Mart. Fl. Bras. 8(2): 332. 1845.

Trees, c 8 m tall. Leaves opposite, digitate; leaflets 5, 5–20 x 2–7 cm, elliptic–oblong, siver 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.

T. pallida (Lindl.) Miers, Proc. Roy. Hort. Soc. 3: 199. 1863. *Bignonia pallida* Lindl. Bot. Reg. 12, t. 695. 1826.

Shurbs 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.

Distrib. : An ornamental tree, occasionally planted in gardens. Mumbai.

Tecoma capensis (Thunb.) Lindl. Bot. Reg. 13, t. 117. 1828; van Steenis, Fl. Males. 1, 8: 185. 1977. *Bignonia capensis* Thunb. Prodr. 105. 1800. *Tecomaria capensis* (Thunb.) Spach, Hist. Veg. Phan. 9: 137. 1840; Cooke, Fl. Pres. Bombay 2: 409. 1958 (Repr.).

Semierect or scandent 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. : Ocasionally planted in gardens.

Notes : It is a native of South Africa.

T. stans (Linn.) H.B. & K. Nov. Gen. Sp. 3: 144. 1819. *Bignonia stans* L. Sp. Pl. ed. 2: 871. 1763. *Stenolobium stans* Seem. in Ann. Mac. Nat. Hist. 10: 30. 1862; Cooke, Fl. Pres. Bombay 2: 410. 1950 (Repr.).

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.

Fls. & Frts. : Throughout the year.

Illus. : Naik, Fl. Marathwada 2: 651, f. 82. 1998.

Distrib. : Widely planted in gardens and along hedges, often found as an escape.

Notes : Native of Tropical South America.

Tecomella undulata (Sm.) Seem. in Ann. Mag. Nat. Hist. 3, 10: 30. 1862; Cooke, Fl. Pres. Bombay 2: 408. 1958 (Repr.). *Bignonia undulata* Sm. Exot. Bot. 1: 35. 1805. *Tecoma undulata* G. Don, Gen. Syst. 4: 223. 1837; C.B.Cl. in Hook. f. Fl. Brit. India 4: 378. 1884. *'Rakta Rohida'*.

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.

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.

Pedalium murex L. Syst. Nat. ed. 10. 1123. 1759; C.B.Cl. in Hook. f. Fl. Brit. India 4: 386. 1884; Cooke, Fl. Pres. Bombay 2: 412. 1958 (Repr.). *'Mathe'*, *'Mothe–gokhru'*, *'Malro–gokhru'*, *'Sarata'*.

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*

Sesamum laciniatum Klein ex Willd. Sp. Pl. 3: 359. 1800; C.B.Cl. in Hook. f. Fl. Brit. India 4: 387. 1884; Cooke, Fl. Pres. Bombay 2: 413. 1958 (Repr.); Kamble in J. Econ. Tax. Bot. 16: 557. 1993.

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.

S. orientale L. Sp. Pl. 634. 1753; Babu, Herb. Fl. Dehra Dun 372. 1977. *S. indicum* L. Sp. Pl. 634. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 387. 1884; Cooke, Fl. Pres. Bombay 2: 413. 1958 (Repr.). *S. mulayanum* Nair in Bull. Bot. Surv. India 5: 251. 1963. *`Rantil', `Til'.*

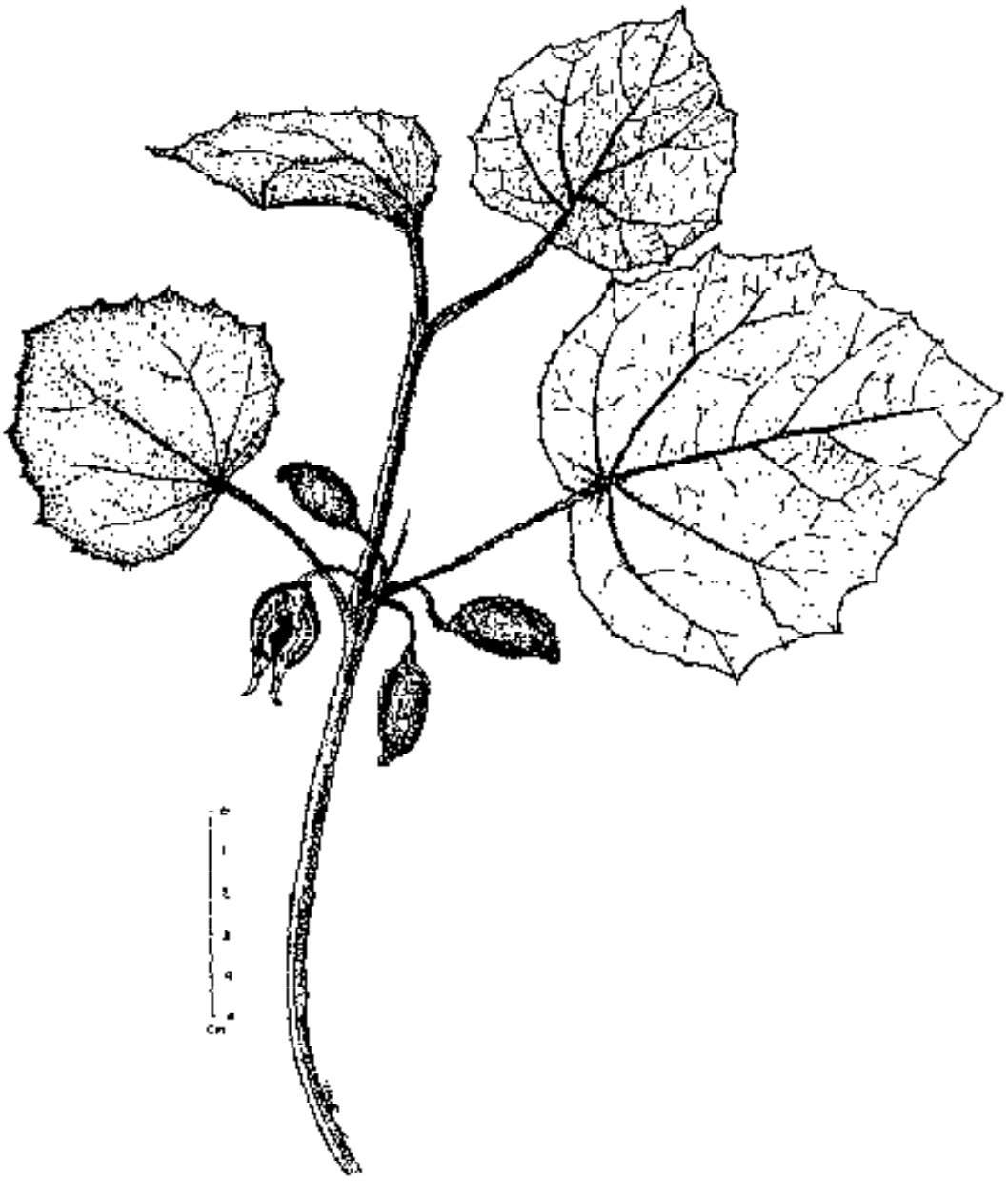
Herbs, annual, 1.5 m tall, glandular–pubescent. Lower leaves opposite, long–petioled, trifoliolate or palmatisect, upper shortly petioled, ovate–lanceolate or oblong. Inflorescence of terminal, leafy racemes. Flowers 3.2–3.5 cm long, pink. Capsules 1.8–2.2 x 0.5 cm, 4–angled, beaked, glandular–pubescent. 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 varient 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)

MARTYNIA L.

Martynia annua L. Sp. Pl. 618. 1753; Backer in Steenis, Fl. Males. 1, 4: 221. 1951. *M. diandra* Glox. Obs. 14, t. 1. 1785; C.B.Cl. in Hook. f. Fl. Brit. India 4: 386. 1884; Cooke, Fl. Pres. Bombay 2: 414. 1958 (Repr.). *'Birnak', 'Vagnaki', 'Vichucha jhar'.*

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.

Illus. : Mahesh. Illus. Fl. Delhi 162, 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 515. 1982.

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 ... CYNARROSPERMUM

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 ... GANTELEOA

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 ... TUBLEPAEPALE

17. Pollen grains ellipsoid:

18. Bands on pollen grains punctate:

19. Bands on the pollen grains wavy ... MACKENZIEA

19. Bands on the pollen grains not wavy ... NILGIRIANTHUS

18. Bands septate:

20. Flowers bracteolate ... PLEOCAULIS

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 ... INDONEESIELLA

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 ... NEUROACANTHUS

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 ... SUPUSHPA

31. Stamens 2:

33. Anthers 1–celled ... HYPOESTES

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 ... ELYTRARIA

ACANTHUS L.

Acanthus ilicifolius L. Sp. Pl. 639. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 481. 1884; Cooke, Fl. Pres. Bombay 2: 427. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 16. 1952. *'Marandi'.*

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.

Illus. : Wight, Ic. t. 459. 1841 (*Dilivaria ilicifolia*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: tt. 88a. & 518. 1982.

Distrib. : Along the coast in tidal swamps. Common. Bombay, Raigad, Ratnagiri, Sindhudurg, Thane.

ANDROGRAPHIS Wall. ex Nees

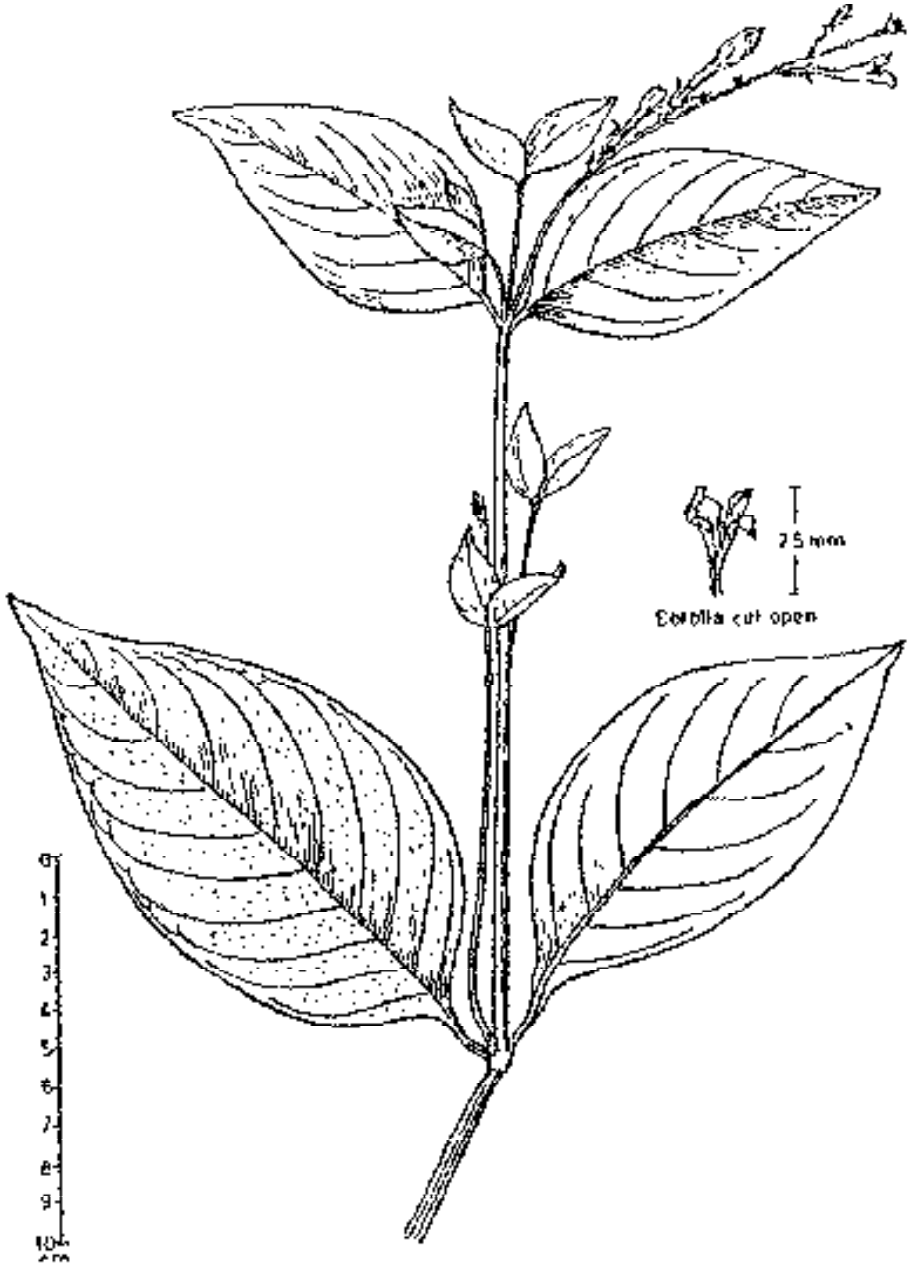
Andrographis paniculata (Burm. f.) Wall. ex Nees in Wall. Pl. Asiat. Rar. 3: 116. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 501. 1884; Cooke, Fl. Pres. Bombay 2: 451. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 50. 1952. *Justicia paniculata* Burm. f. Fl. Ind. 9. 1768. *'Kalameti', 'Kalpa', 'Kreat'.*

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.

Illus. : Wight, Ic. t. 518. 1842; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 438. 1988.

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*

Asystasia chelonoides Nees in Wall. Pl. Asiat. Rar. 3: 89. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 493. 1884. *A. chelonoides* var. *quadrangularis* C.B.Cl. in Hook. f. op. cit. 494..

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.

A. dalzelliana Sant. in Kew Bull. 3: 276. 1948 & in Univ. Bombay Bot. Mem. 2: 68. 1952. *A. violacea* Dalz. ex C.B.Cl. in Hook. f. Fl. Brit. India 4: 494. 1884 non Dalz. 1850; Cooke, Fl. Pres. Bombay 2: 467. 1958 (Repr.).

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 440. 1988; Lakshmi. & Sharma, Fl. Nasik Dt. 356, f. 24. 1991.

Distrib. : Along the banks of rivers. Frequent. Kolhapur, Nanded, Nasik, Osmanabad, Pune, Ratnagiri, Satara, Sindhudurg, Thane.

A. gangetica (L.) Anders. in Thw. Enum. Pl. Zeyl. 235. 1860; Sant. in Univ. Bombay Bot. Mem. 2: 68. 1952; Durkee in Ann. Missouri Bot. Gard. 65: 177, f. 2. 1978. *Justicia gangetica* L. Amoen. Acad. 4: 299. 1759. *Asystasia coromandeliana* Wight ex Nees in Wall. Pl. Asiat. Rar. 3: 89. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 493. 1884; Cooke, Fl. Pres. Bombay 2: 466. 1958 (Repr.).

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, c 0.5 cm across, tuberculate.

Fls. & Frts. : November–April.

Illus. : Wight, Ic. t. 1506. 1850 (*Asystasia coromandeliana);* Durkee, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 521. 1982.

Distrib. : Found along bushes. Frequent. Bombay, Pune, Raigad, Sindhudurg, Thane.

A. mysurensis (Roth) T. And. in J. Linn. Soc. 9: 524. 1867; Sant. in Univ. Bombay Bot. Mem. 2: 69. 1952. *Ruellia mysorensis* Roth, Nov. Pl. Sp. 303. 1821. *Asystasia lawiana* Dalz. in Hook. Kew J. Bot. 4: 344. 1852; C.B.Cl. in Hook. f. Fl. Brit. India 4: 496. 1884; Cooke, Fl. Pres. Bombay 2: 467. 1958 (Repr.).

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*

Barleria buxifolia L. Sp. Pl. 636. 1753; Sant. in Univ. Bombay Bot. Mem. 2: 58. 1952; C.B.Cl. in Hook. f. Fl. Brit. India 4: 483. 1884; Cooke, Fl. Pres. Bombay 2: 458. 1958 (Repr.).

Undershrubs, 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.

Illus. : Wight, Ic. t. 870. 1844–45.

Distrib. : Infrequent. 'Konkan' (Cooke, op. cit.).

B. courtallica Nees in DC. Prodr. 11: 226. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4: 489. 1884; Cooke, Fl. Pres. Bombay 2: 462. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 61. 1952.

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.

Illus. : Wight, Ic. t. 1529. 1850; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 443. 1988.

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.

B. cristata L. Sp. Pl. 636. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 488. 1884; Cooke, Fl. Pres. Bombay 2: 460. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 59. 1952.

1. Flowers purphish–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.

Illus. : Wight, Ic t. 463. 1841; Mahesh. Illus. Fl. Delhi f. 171. 1966.

Distrib. : Common. Akola, Aurangabad, Beed, Bombay, Chandrapur, Dhule, Kolhapur, Jalna, Latur, Nagpur, Nanded, Osmanabad, Parbhani, Pune, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.

var. **dichotoma** (Roxb.) Prain, Beng. Pl. 812. 1903. {2: 606. 1963 (Repr.)}; Cooke, Fl. Pres. Bombay 2: 460. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 59. 1952. *B. dichotoma* Roxb. Fl. Ind. 3: 39. 1832.

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.

B. cuspidata Heyne ex Nees in Wall. Pl. Asiat. Rar. 3: 93. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 483. 1884; Cooke, Fl. Pres. Bombay 2: 380. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 58. 1952.

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.

Fls. & Frts. : December–March.

Illus. : Wight, Ic. t. 451. 1841; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 44. 1988.

Distrib. : Infrequent. Raigad, Thane.

B. gibsoni Dalz. in Hook. Kew J. Bot. 2: 339. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 487. 1884; Cooke, Fl. Pres. Bombay 2: 464. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 62. 1952. *B. montana* non Nees 1832; Witt, List 65. 1908. *'Gura'.*

Herbs, suffruticose. 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. : Common. Akola, Amravati, Aurangabad, Kolhapur, Nanded, Pune, Raigad, Yavatmal (Witt, *op. cit.*).

B. gibsonioides Blatt. in J. Bombay nat. Hist. Soc. 32: 733, t. 1. 1928; Sant. in Univ. Bombay Bot. Mem. 2: 64. 1952.

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.

B. grandiflora Dalz. in Hook. Kew J. Bot. 2: 339. 1850; Sant. in Univ. Bombay Bot. Mem. 2: 62. 1952; C.B.Cl. in Hook. f. Fl. Brit. India 4: 488. 1884; Cooke, Fl. Pres. Bombay 2: 463. 1958 (Repr.).

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.

B. involucrata Nees var. **elata** (Dalz.) C.B.Cl. in Hook. f. Fl. Brit. India 4: 486. 1884; Cooke, Fl. Pres. Bombay 2: 461. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 60. 1952. *B. elata* Dalz. in Hook. Kew J. Bot. 3: 227. 1851.

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic. 4: t. 445. 1988.

Distrib. : Infrequent. Ahmednagar, Pune, Sindhudurg, Thane.

B. lawii T. And. in J. Linn. Soc. 9: 492. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 486. 1884; Cooke, Fl. Pres. Bombay 2: 460. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 59. 1952.

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.).

Distrib. : A showy shrub. Uncommon. Nasik, Pune, Raigad, Satara Sindhudurg, Thane.

B. longiflora L. f. Suppl. 239. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 4: 485. 1884; Sant. in Univ. Bombay Bot. Mem. 2: 64. 1952; Naik, Fl. Marathwada 2: 662. 1998.

Undershrubs 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 nerved in fruit. Capsules 2–2.5 cm long, obovoid. Seeds 4, suborbicular, appressed–hairy.

Fls. & Frts. : September–February.

Distrib. : On barren hills on rocky areas. Frequent. Aurangabad, Beed (Naik, op cit.).

Notes. : Flowers said to be fragrant.

B. montana Nees in Wall. Pl. Asiat. Rar. 3: 92. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 487. 1884; Cooke, Fl. Pres. Bombay 2: 461. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 60. 1952. '*Kolista*'.

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.

Fls. & Frts. : September–March.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 447. 1988.

Distrib. : Infrequent. Nanded, Pune.

B. prattensis Sant. in Kew Bull. 3: 487. 1949 & in Univ. Bombay Bot. Mem. 2: 62. 1952.

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.

Fls. & Frts. : September–February.

Illus. : Sant. in Univ. Bombay Bot. Mem. 2: f. opposite page 64. 1952.

Distrib. : In deciduous forests. Common. Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.

B. prionitis. L. Sp. Pl. 636. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 482. 1884; Cooke, Fl. Pres. Bombay 2: 457. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 57. 1952.

1. Anthers 0.2–0.35 cm long ... ssp. *prionitis*

1. Anthers 0.5–0.6 cm long ... ssp. *pubiflora*

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.

Illus. : Wight, Ic. t. 452. 1841; Mahesh. Illus. Fl. Delhi f. 170. 1966; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 448. 1988.

Distrib. : Along hedges. Common. Ahmednagar, Akola, Aurangabad, Beed, Bombay, Chandrapur, Dhule, Jalna, Jalgaon, Kolhapur, Nagpur, Nanded, Nasik, Osmanabad, Parbhani, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.

ssp. **pubiflora** (Bth. ex Hohen.) Brummit & Wood in Kew Bull. 38: 436. 1983. *Barleria pubiflora* Bth. ex Hohen. in Flora 32: 358. 1849. *B. prionitis* sensu C.B.Cl. in Hook. f. Fl. Brit. India 4: 482. 1885 p.p. non L. 1753.

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.

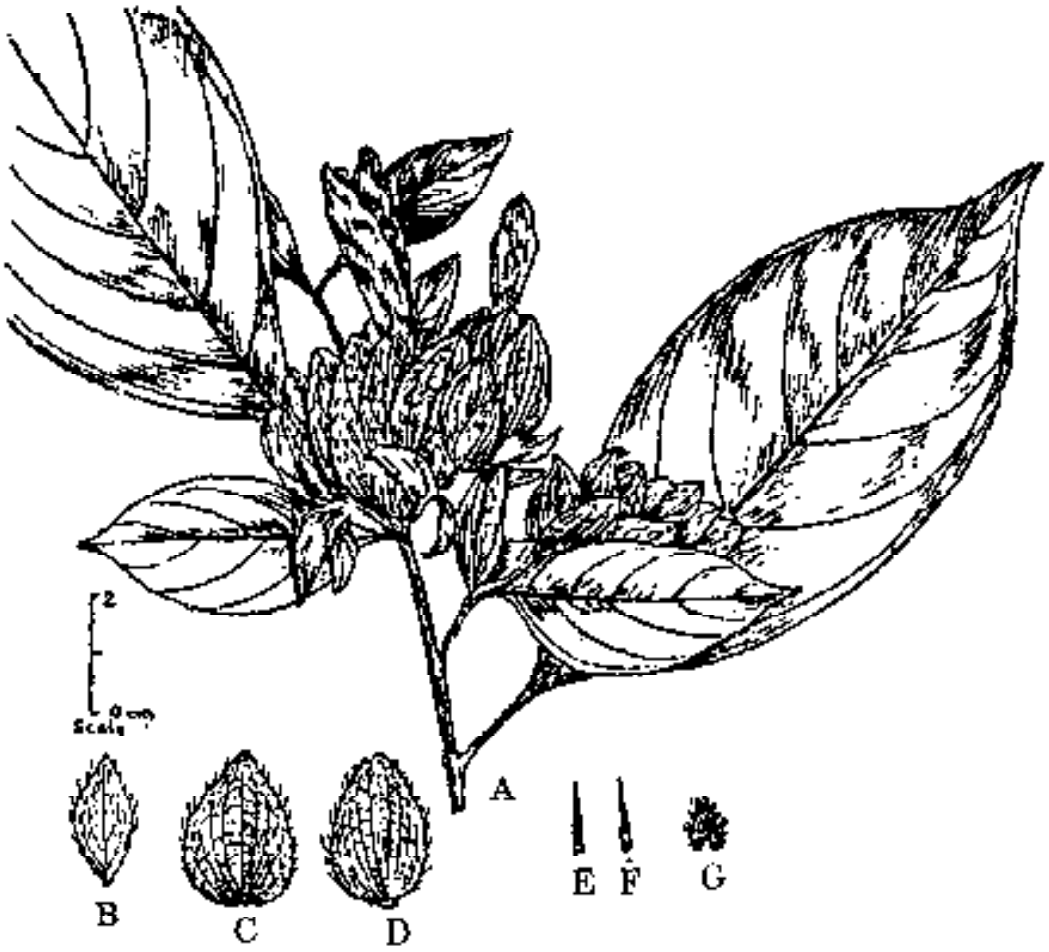
Fls. & Frts. : October–February.

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.

B. sepalosa C.B.Cl. in Hook. f. Fl. Brit. India 4: 487. 1884; Sant. in Univ. Bombay Bot. Mem. 2: 61. 1952; Cooke, Fl. Pres. Bombay 2: 463. 1958 (Repr.).

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.).

B. strigosa Willd. emend. Malhotra & Moorthy in Indian Forester 107: 449. 1981. *B. strigosa* Willd. Sp. Pl. 3: 379. 1801; C.B.Cl. in Hook. f. Fl. Brit. India 4: 489. 1884. *B. coerulea* Roxb. Fl. Ind. 3: 39. 1820.

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 bairs on main nerves, apex slightly curved and shortly acuminate, base narrowed into petiole. Flowers blusih–violet, coerulate. Capsules c 2 cm long. Seeds 4, ovate, cordaté, hygroscopically densely hairy.

Fls. & Frts. : September–March.

Illus. : Malhotra & Moorthy, op. cit. 451, pl. 2.

Distrib. : In Deccan and to eastwards. Frequent. Chandrapur.

var. **polystachya** (Nees) C.B.Cl. in Hook. f. Fl. Brit. India 4: 490. 1884; Cooke, Fl. Pres. Bombay 2: 462. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 61. 1952. *B. polystachya* Nees in DC. Prodr. 11: 226. 1847.

Shrubs. Leaves large, fulvous hirsute above, somewhat glaucescent beneath. Spikes densely agglomerated, yellow hirsute.

Fls. & Frts. : October–February.

Distrib. : Infrequent. 'Konkan' (Cooke, op. cit.).

B. terminalis Nees emend. Malhotra & Moorthy in Indian Forester 107: 449. 1981. *B. terminalis* Nees in DC. Prodr. 11: 225. 1847. *B. strigosa* Willd. var. *terminalis* (Nees) C.B.Cl. in Hook. f. Fl. Brit. India 4: 490. 1884; Cooke, Fl. Pres. Bombay 2: 462. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 61. 1952.



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.

Distrib. : Along the western ghats. Frequent. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

BLEPHARIS A.L. JUSS.

1. Leaves petiolate, thin, acute ..*B. maderaspatensis*
1. Leaves subsessile, thick, fleshy, obtuse ... *B. repens*

Blepharis maderaspatensis (L.) Roth, Nov. Pl. Sp. 320. 1821; Sant. in Univ. Bombay Bot. Mem. 2: 15. 1952. *Acanthus maderaspatensis* L. Sp. Pl. 639. 1753. *Blepharis boerhavifolia* Pers. Syn. Pl. 2: 180. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 4: 478. 1884; Cooke, Fl. Pres. Bombay 2: 424. 1958 (Repr.). *'Kolata'*.

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.

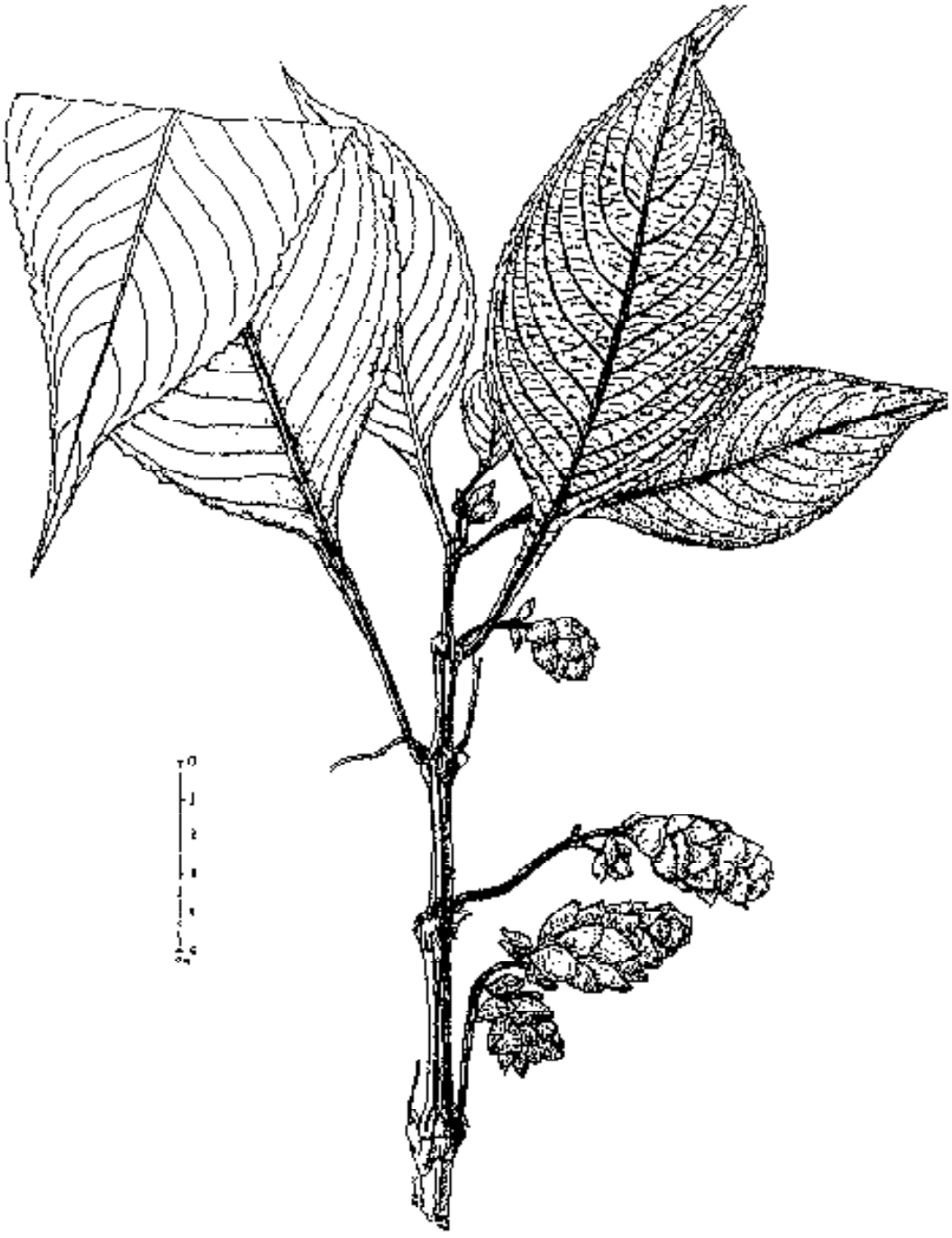
Fls. & Frts. : October–March.

Illus. : Wight, Ic. t. 458. 1841 *(Blepharis boerhaviaefolia);* Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 449. 1988.

Distrib. : Frequent. Akola, Aurangabad, Beed, Bombay, Dhule, Jalgaon, Jalna, Nagpur, Nanded, Nasik, Pune, Thane.

B. repens (Vahl) Roth, Nov. Pl. Sp. 321. 1821. *Acanthus repens* Vahl, Symb. 2: 76. 1791. *Blepharis molluginifolia* Pers. Syn. Pl. 2: 180. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 4: 479. 1884; Cooke, Fl. Pres. Bombay 2: 425. 1958 (Repr.); Sant in Univ. Bombay Bot. Mem. 2: 16. 1952. *'Kantemaka'*.

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.

Illus. : Tadul. & Venkatn. Handb. S. Ind. Weeds 314, t. 124, ff. 1–7. 1955 (Rev. ed.); Mahesh. Illus. Fl. Delhi f. 164. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 523, 1982. *(Blepharis molluginifolia).*

Distrib. : Not common. Akola, Aurangabad, Beed, Bombay, Jalna, Latur, Nagpur, Nanded, Osmanabad, Parbhani, Pune.

Notes. : Bennet (1987) treated this species synonymous to the preceeding species.

CALACANTHUS T. Anders.

Calacanthus grandiflorus (Dalz.) Radlk. in Stizung Math.–Phys. Acad. Muench. 13: 279. 1883; Sant in Univ. Bombay Bot. Mem. 2: 50. 1952. *Lepidagathis grandiflora* Dalz. in Hook. Kew J. Bot. 2: 138. 1850. *Calacanthus dalzelliana* T. Anders. ex Bth. & Hook. Gen. Pl. 2: 1088. 1876; C.B.Cl. in Hook. f. Fl. Brit. India 4: 478. 1884; Cooke, Fl. Pres. Bombay 2: 450. 1958 (Repr.).

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.

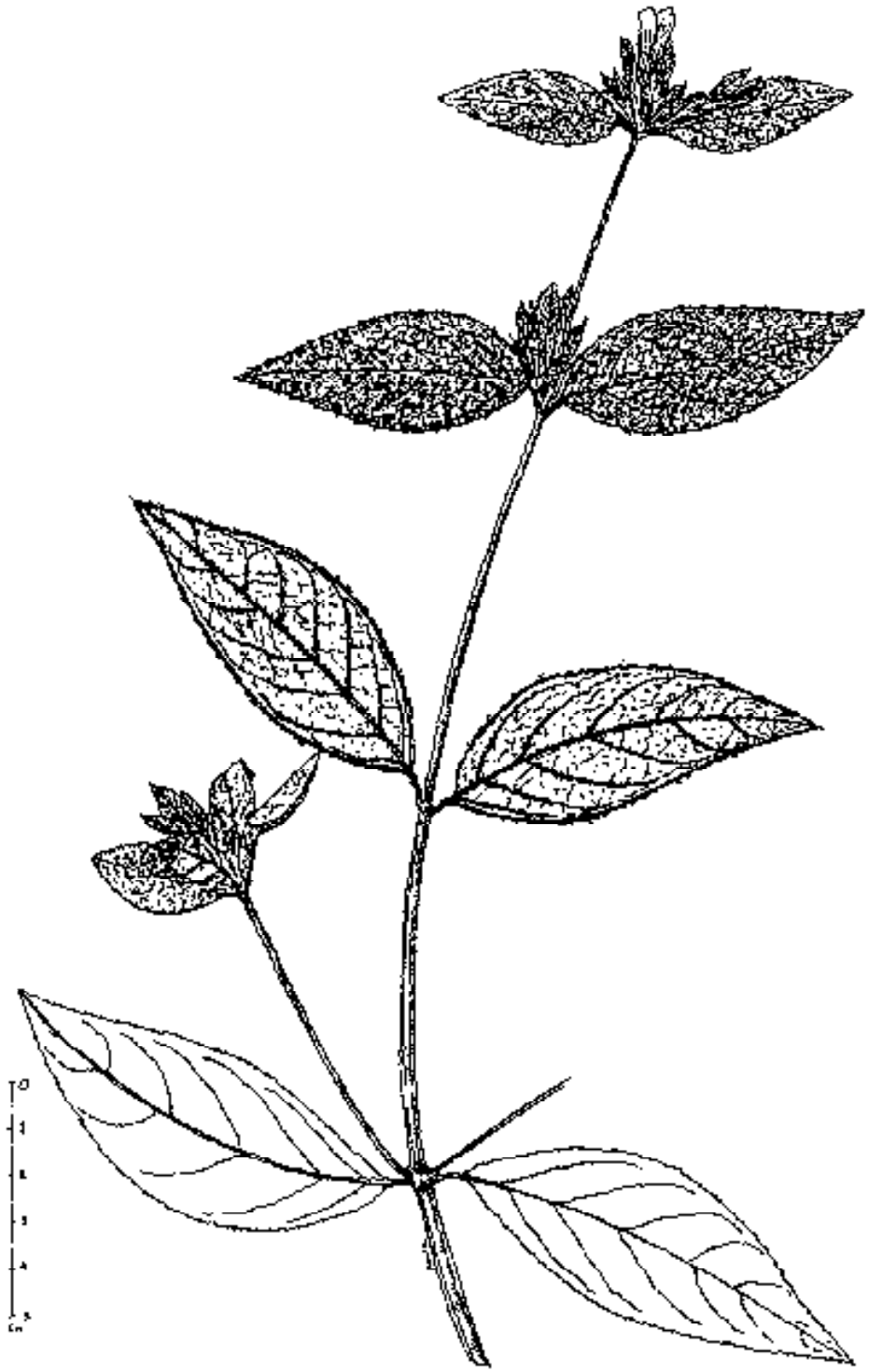
Fls. & Frts. : October–March.

Illus. : Bedd. Ic. 54, t. 226. 1874 *(Lepidagathis grandiflora).*

Distrib. : Frequent. Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

CARVIA Bremek.

Carvia callosa (Wall.) Bremek. in Verh. Nederl. Acad. Wet 2, 40: 187. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 46. 1952. *Ruellia callosa* Wall. Cat. 2359. 1830. *Strobilanthes callosus* Nees in Wall. Pl. Asiat. Rar. 3: 85. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 451. 1884; Cooke, Fl. Pres. Bombay 2: 444. 1958 (Repr.). *'Karvi'.*



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.

Illus. : Wight, Ic. t. 1520. 1850 *(Strobilanthes grahamianus)*; Talb. For. Fl. Bombay Pres. & Sind 2: 331, f. 446. 1911 *(Strobilanthes callosus)*.

Distrib. : In the higher slopes of the ghats. Common. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

CROSSANDRA R.A. Salisb.

Crossandra infundibuliformis (L.) Nees in Wall. Pl. Asiat. Rar. 3: 98. 1832; Sant. in Univ. Bombay Bot. Mem. 2: 55. 1952. *Justicia infundibuliformis* L. Sp. Pl. 21. 1753. *Crossandra undulaefolia* Salisb. Par. London. t. 12. 1805; C.B.Cl. in Hook. f. Fl. Brit. India 4: 492. 1884; Cooke, Fl. Pres. Bombay 2: 455. 1958 (Repr.) *C. axillaris* Nees, op. cit.; *'Aboli'*.

Subshrubs upto 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*).

Distrib. : In gardens as an escape. Common. Ahmednagar, Jalgaon, Marathwada (Naik, 1998), Nagpur, Pune, Thane.

CYNAROSPERMUM Vollesen

Cynarospermum asperrimum (Nees) Vollesen in Kew Bull. 54(1): 173. 1998. *Blephairs asperrima* Nees in DC. Prodr. 11: 267. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4: 478. 1884; Cooke, Fl. Pres. Bombay 2: 424. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 14. 1952. *'Akada'*, *'Dikna'*.

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 0.6 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*

Dicliptera cuneata Nees in Wall. Pl. Asiat. Rar. 3: 111, 1832 & in DC. Prodr. 11: 481. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4: 552. 1885; Cooke, Fl. Pres. Bombay 2: 483. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 82. 1952.

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.

Illus. : Wight, Ic. t. 1552. 1850; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 524. 1982.

Distrib. : Infrequent. Pune.

D. foetida (Forssk.) Blatt. in Rec. Bot. Surv. India 8: 361. 1921; Wood *et al* in Kew Bull. 38: 453. 1983. *Justicia foetida* Forssk. Fl. Aeg.-Arab. 5. 1775. *Dicliptera zeylanica* Nees in DC. Prodr. 11: 474. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4: 552. 1885; Cooke, Fl. Pres. Bombay 2: 482. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 79. 1952.

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.

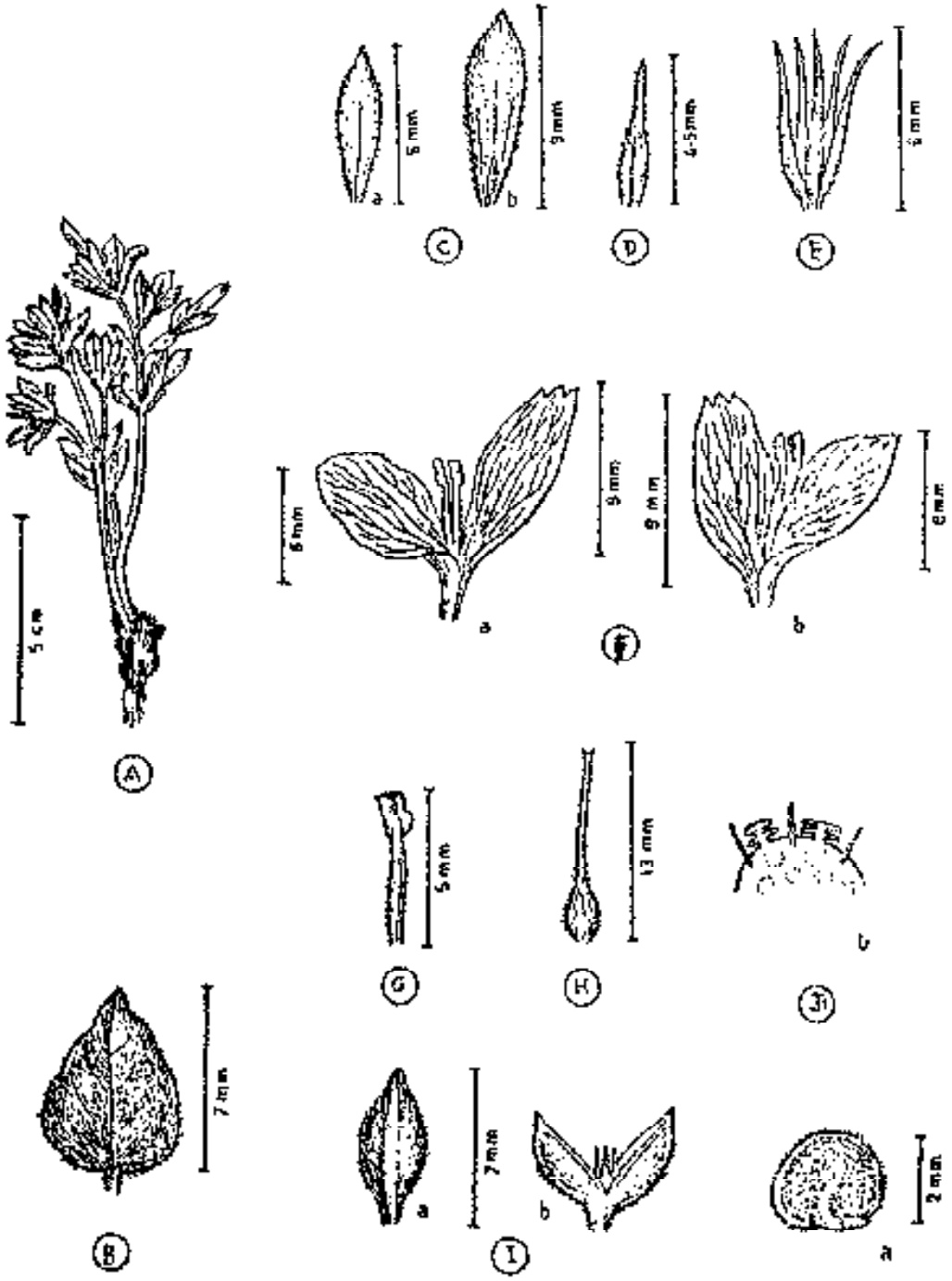
D. ghatica Sant. in Univ. Bombay Bot. Mem. 2: 80. 1952.

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 acuminately 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.

D. leonotis Dalz. ex C.B.Cl. in Hook. f. Fl. Brit. India 4: 553. 1885; Cooke, Fl. Pres. Bombay 2: 482. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 81. 1952.

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, tuberculed.

Fls. & Frts. : December–March.

Distrib. : Infrequent. Nasik, Solapur, S. 'Konkan' (Cooke, op. cit.).

D. nasikensis Lakshmi. & Sharma in J. Econ. Tax. Bot. 7; 481. (1985) 1986.

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.

Illus. : Lakshmi. & Sharma, op. cit. 482, f. 1–9b. & 483. t. 1. & Fl. Nasik Dt. 361, f. 25. 1991.

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.

D. spinulosa Hochst. ex K. Balkwill in Kew Bull. 51: 53. 1996.

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.

Distrib. : Infrequent. Bombay, Nagpur, Pune.

D. verticillata (Forssk.) C. Chr. in Dansk. Bot. Ark. 4(3): 11. 1923; Wood *et al.* in Kew Bull. 38: 450. 1983. *Dianthera verticillata* Forssk. Fl. Aeg.–Arab. Deser. Pl. 9: 1775. *Dicliptera micranthes* Nees in Wall. Pl. Asiat. Rar. 3: 112. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 553. 1885; Cooke, Fl. Pres. Bombay 2: 481. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 79. 1952. '*Amphutavani*'.

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*

Dipteracanthus patulus (Jacq.) Nees in Wall. Pl. Asiat. Rar. 3: 82. 1832; Sant. in Univ. Bombay Bot. Mem. 2: 24. 1952. *Ruellia patula* Jacq. Misc. Bot. 2: 358. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 4: 412. 1884; Cooke, Fl. Pres. Bombay 2: 432. 1958 (Repr.). '*Katmora*'.

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.

Illus. : Wight, Ic. t. 1505. 1850; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 450. 1988.

Distrib. : Common. Ahmednagar, Akola, Aurangabad, Beed, Chandrapur, Dhule, Jalgaon, Jalna, Latur, Nanded, Osmanabad, Parbhani, Pune, Satara, Solapur, Thane.

D. prostratus (Poir.) Nees in Wall. Pl. Asiat. Rar. 3: 81. 1832; Sant. in Univ. Bombay Bot. Mem. 2: 24. 1952 & in Indian Forester 79: 321. 1953. *Ruellia prostrata* Poir. in Lam. Encycl. 6: 349. 1804; C.B.Cl. in Hook. f. Fl. Brit. India 4: 411. 1884. *R. prostrata* var. *dejecta* C.B.Cl. in Hook. f. op. cit. 412; Cooke, Fl. Pres. Bombay 2: 431. 1956 (Repr.). *'Karata'*.

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.

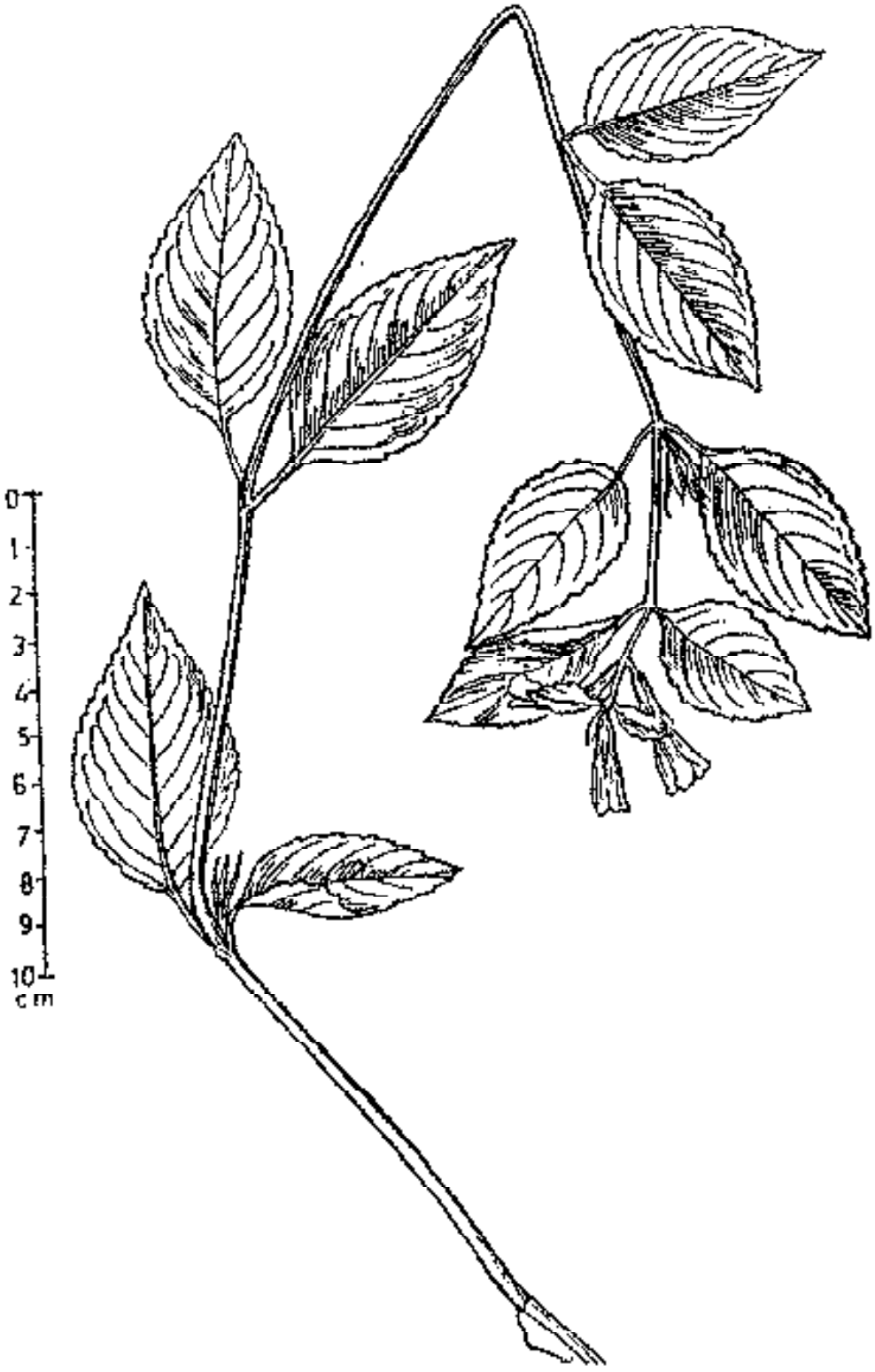
Illus. : Tadul. & Venkatn. Handb. S. Ind. Weeds 318, 126, ff. 1–7. 1955 *(Ruellia prostrata)*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 525. 1982.

Distrib. : Frequent. Ahmednagar, Akola, Aurangabad, Beed, Bhandara, Chandrapur, Jalgaon, Jalna, Latur, Nagpur, Nanded, Nasik, Osmanabad, Parbhani, Satara, Sindhudurg, Thane, Wardha, Yavatmal.

DYSCHORISTE Nees

1.	Corolla not or scarcely exceeding the calyx	...	*D. nagchana*
1.	Corolla much longer than the calyx:		
2.	Corolla less then 2.5 cm long, anther cells with long spurs at the base	...	*D. vagana*
2.	Corolla more than 2.5 cm long; anther cells with minute spurs or almost spurless at the base	...	*D. dalzellii*

Dyschoriste dalzellii (T. And. ex Bedd.) O. Ktze. Rev. Gen. Pl. 486. 1891; Cooke, Fl. Pres. Bombay 2: 438. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 31. 1952. *Calophanes dalzellii* T. And. ex Bedd. Ic. Pl. Ind. Or 1: 60, t. 248. 1874; C.B.Cl. in Hook. f. Fl. Brit. India 4: 411. 1884.



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.

Illus. : Bedd. op. cit.; Lakshmi. & Sharma, Fl. Nasik Dt. 364, f. 26. 1991.

Distrib. : Not common. Akola, Nasik, Pune, Thane.

D. nagchana (Nees) Bennet in Indian Forester 109: 220. 1988. *Dipteracanthus nagchana* Nees in Wall. Pl. Asiat. Rar. 3: 82. 1832. *Calophanes nagchana* (Nees) in DC. Prodr. 11: 109. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4: 410. 1884. *Dyschoriste depressa* Nees in Wall. op. cit.; Cooke, Fl. Pres. Bombay 2: 437. 1958 (Repr.). *D. erecta* (Burm. f.) O. Ktze. Rev. Gen. Pl. 485. 1891, excl. type; Sant. in Univ. Bombay Bot. Mem. 2: 31. 1952. *'Nagchana'*.

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 451. 1988.

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 typitied 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.

D. vagans (Wight) O. Ktze. Rev. Gen. Pl. 486. 1891; Sant. in Univ. Bombay Bot. Mem. 2: 31. 1952; Cooke, Fl. Pres. Bombay 2: 438. 1958 (Repr.). *Calophanes vagans* Wight, Ic. t. 1526. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 411. 1884.

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.

Distrib. : Infrequent. Chandrapur, 'Konkan' (Cooke, op. cit.). Pune.

Ecbolium Kurz

Ecbolium ligustrinum (Vahl) Vollesen in Kew Bull. 44: 651. 1989. *Justicia ligustrina* Vahl, Enum. 1: 118. 1804. *Ecbolium viride* (Forssk.) Alst. var. *laetevirens* (Vahl) Raiz. in Indian Forester 84: 482. 1958. *E. linneanum* Kurz var. *laetevirens* (Vahl) C.B.Cl. in Hook. f. Fl. Brit. India 4: 545. 1885; Cooke, Fl. Pres. Bombay 2: 484. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 82. 1952. *E. viride* (Forssk.) Alst. var. *dentata* (Klein. ex Link) Raiz. op. cit. *E. linneanum* Kurz var. *dentata* (Klein ex Link) C.B.Cl. in Hook. f. op. cit.; Cooke, *op. cit.*; Sant. op. cit. *'Dhakta-adulsa', 'Odu-jati', 'Ran-aboli'.*

Undershrubs; 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.

Illus. : Wight, Ic. t. 463. 1841 (*Justicia echolium* L.).

Distrib. : Frequent. Aurangabad, Beed, Bombay, Jalna, Kolhapur, Latur, Nanded, Osmanabad, Parbhani, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

ELYTRARIA Michaux.

Elytraria acaulis (L.f.) Lindau in Engl. & Prantl, Nat. Pflanzenfam. Nachtr. 1: 304. 1897; Sant. in Univ. Bombay Bot. Mem. 2: 11. 1952. *Justicia acaulis* L. f. Suppl. 84. 1781. *Elytraria crenata* Vahl, Enum. Pl. 1: 106. 1804; C.B.Cl. in Hook. f. Fl. Brit. India 4: 394. 1884. *Tubiflora acaulis* (L.f.) O. Ktze. Rev. Gen. Pl. 500. 1891; Cooke, Fl. Pres. Bombay 2: 420. 1958 (Repr.). *'Dasmori'*.

Herbs, acaulescent. Leaves radical, 10–20 x 4.5–7.5 cm, obovate to lanceolate or spathulate, 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.

Illus. : Mahesh. Illus. Fl. Delhi f. 163. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 528. 1982.

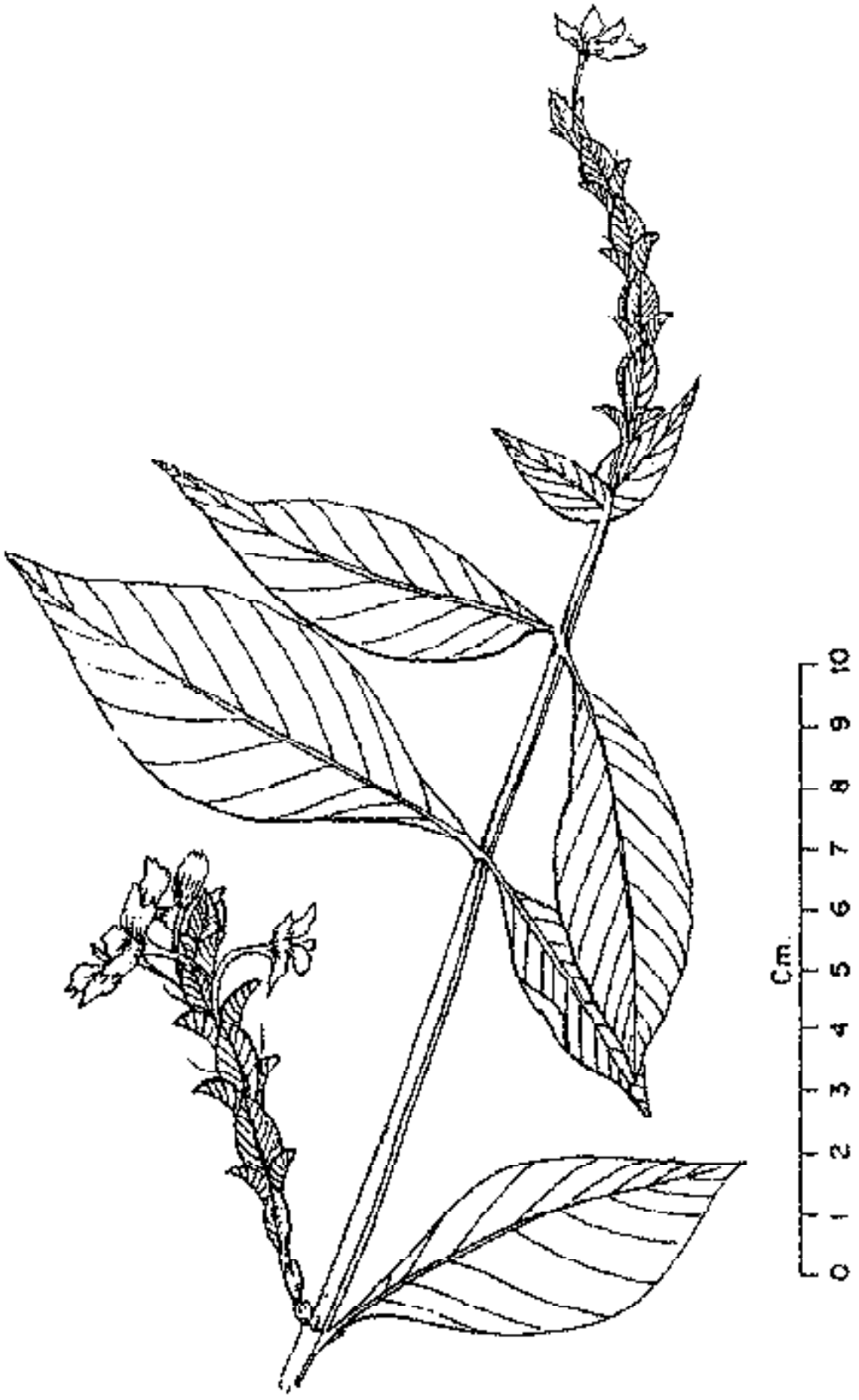
Distrib. : Infrequent. Dhule, Jalgaon, Nagpur, Nanded, Thane, Yavatmal.

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*

Eranthemum capense L. var. **concanense** (T. And. ex C.B.Cl.) Sant. in Univ. Bombay Bot. Mem. 2: 34. 1952. *Daedalacanthus montanus* (Roxb.) T. And. var. *concanense* T. And. ex C.B.Cl. in Hook. f. Fl. Brit. India 4: 421. 1884; Cooke, Fl. Pres. Bombay 2: 441. 1958 (Repr.).

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.).

E. pulchellum Andr. Bot. Repos 2; 88. 1798 non Roxb. 1832; Fosberg & Sachet in Taxon 2: 135. 1953. *E. nervosum* (Vahl) R. Br. ex Roem. & Schult. Syst. Veg. 1: 174. 1817; Sant. in Univ. Bombay Bot. Mem. 2: 35. 1952. *Justicia nervosa* Vahl, Enum. Pl. 1: 164. 1804. *Daedalacanthus nervosus* (Vahl) T. And. in J. Linn. Soc. 9: 487. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 418. 1884; Cooke, Fl. Pres. Bombay 2: 441. 1958 (Repr.).

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.

E. purpurascens Nees in Wall. Pl. Asiat. Rar. 3: 106. 1832; Sant. in Univ. Bombay Bot. Mem. 2: 35. 1952. *Daedalacanthus purpurascens* T. And. in J. Linn. Soc. 9: 488. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 420. 1884; Cooke, Fl. Pres. Bombay 2: 440. 1958 (Repr.). *'Gulsham'*.

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.

E. roseum (Vahl) R. Br. Prodr. 1: 477. 1810; Sant. in Univ. Bombay Bot. Mem. 2: 34. 1952. *Justicia rosea* Vahl, Enum. Pl. 1: 165. 1804. *Daedalacanthus roseus* T. And. in J. Linn. Soc. 9: 487. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 419. 1884; Cooke, Fl. Pres. Bombay 2: 439. 1958 (Repr.). *'Dasamuli'*.



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.

Gantelbua urens (Heyne ex Roth) Bremek. in Verh. Kon. Ned. Acad. Wetenschr. Afd. Natuurk. Tweede Sect. 2, 41, 1, 55: 148. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 28. 1952. *Ruellia urens* Heyne ex Roth, Nov. Pl. Sp. 302. 1821. *Hemigraphis dura* T. And. in J. Linn. Soc. 9: 461. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 422. 1884; Cooke, Fl. Pres. Bombay 2: 433. 1958 (*Repr.*). *'Gantelbu'*.

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.

Distrib. : In waste places. Infrequent. Ahmednagar, Akola, Aurangabad, Beed, Chandrapur, Jalna, Latur, Nagpur, Nanded, Osmanabad, Parbhani, Solapur, Yavatmal.

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*

Gymnostachyum canescens (Nees) T. And. in J. Linn. Soc. 9; 505. 1867; Sant. in Univ. Bombay Bot. Mem. 2: 55. 1952; C.B.Cl. in Hook. f. Fl. Brit. India 4: 509. 1884. *Cryptophragmium canescens* Nees in Wall. Pl. Asiat. Rar. 3: 100. 1832 & in DC. Prodr. 11: 95. 1847.

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.

G. glabrum (Dalz.) T. And. in J. Linn. Soc. 9: 506. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 509. 1884; Cooke, Fl. Pres. Bombay 2: 454. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 54. 1952. *Cryptophragmium glabrum* Dalz. in Kew J. Bot. 2: 338. 1850.

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.

G. latifolium (Dalz.) T. And. in J. Linn, Soc. 9: 505. 1867; Sant. in Univ. Bombay Bot. Mem. 2: 54. 1952; C. B. Cl. in Hook. f. Fl. Birt. India 4: 509. 1884; Cooke, Fl. Pres. Bombay 2: 454. 1958 (Repr.); Bedd. Ic. 61. t. 253. 1874. *Cryptophragmium latifolium* Dalz. in Hook. Kew J. Bot. 2: 137. 1850.

Undershrubs, 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 *Bremekampia* 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*

Haplanthodes neilgherryensis (Wight) R. B. Majumdar in Bull. Bot. Soc. Bengal 25: 76. 1971. Panigr & Das in Bull. Bot. Surv. India 23: 201. (1981) 1983. *Haplanthus neilgherryensis* Wight, Ic. t. 1556. 1850; Sant. in Univ. Bombay Bot. Mem. 2: 52. 1952. *H. tentaculatus* Nees in DC. Prodr. 11:513. 1847 p. p; Cooke, Fl. Pres. Bombay 2: 453. 1958 (Repr.) p.p. *H. tentaculatus var. neilgherryensis* C.B.Cl. in Hook. f. Fl. Brit. India 4: 507. 1884. *Bremekampia neilgherryensis* (Wight) Sreem. in Bull. Bot. Surv. India 6: 323. 1964.

Herbs, prosrate, slender, annuals. Leaves 7–14 x 2–4 cm, elliptic–lanceolate, apex acute, base attenuated. Flowers violet, upto 1

cm long, amidst cladodes; ultimate cladodes 0.5–1.5 cm long or a few reaching upto 2 cm long. Capsules 0.6–0.8 cm long, oblong. Seeds 6–8.

Fls. & Frts : December–June.

Illus : Wight, op. cit.

Distrib. : Frequent. Dhule, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

H. plumosa (T. And.) Panigr. & G. C. Das in Bull. Bot. Surv. India 23: 200 (1981) 1983. *Haplanthus plumosus* T. And. in J. Linn Soc. 9:504. 1867. *H. tentaculatus* var. *plumosa* (T. And.) C.B.Cl in Hook f. Fl. Birt. India 4: 507. 1884; Sant. in Univ. Bombay Bot. Mem. 2: 53. 1952. *H. tentaculatus sensu* Cooke, Fl. Pres. Bombay 2: 376. 1905 [2:453. 1958 (Repr.)] p. p. non (L.) Nees (1847). *Bremekampia tentaculata* (L.) Sreem. var. *plumosa* (T. And.) Sreem. in Bull. Bot. Surv. India. 6: 324. 1964. *Haplanthodes tentaculata* var. *plumosa* (T. And.) R. B. Majumdar in Bull. Bot. Soc. Bengal 25: 76. 1971.

Herbs, suberect or prosrate, 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.

Distrib. : Infrequent. Kolhapur, Nasik, Pune, Raigad, Sindhudurg.

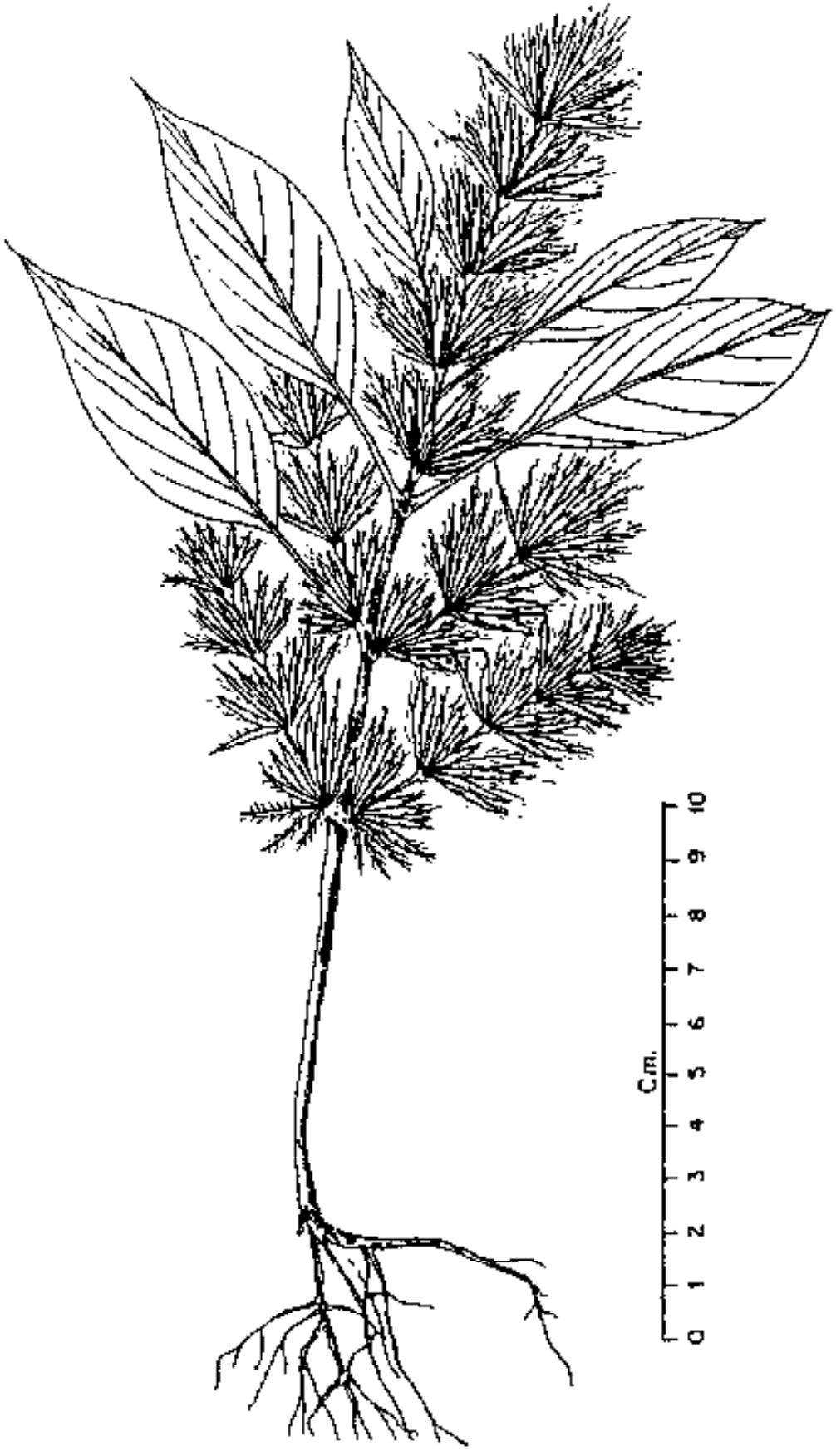
H. tentaculata (L.) R. B. Majumdar in Bull . Bot. Soc. Bengal 25: 76. 1971; Panigr. & Das in Bull Bot. Surv. India 23: 201. (1981) 1983; *Ruellia tentaculata* L. in Torner, Cent. Pl. 22. 1756. *Haplanthus tentaculatus* (L.) Nees in DC. Prodr. 11: 513. 1847 p.p.; C.B.Cl. in Hook. f. Fl. Brit. India 4: 507. 1884; Cooke, Fl. Pres. Bombay 2: 453. 1958 (Repr.) p.p. *H. tentaculatus* var. *neesiana* Sant. in Univ. Bombay Bot. Mem. 2: 52. 1952.

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.

H. verticillata (Roxb.) R. B. Majumdar in Bull. Bot. Soc. Bengal 25: 76. 1971. *Justicia verticillata* Roxb. Fl. Ind. 1: 135. 1832.



Haplanthodes verticillata (Roxb.) R. B. Majumdar

Haplanthus verticillatus (Roxb.) Nees in DC. Prodr. 11: 513. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4: 506. 1884; Cooke, Fl. Pres. Bombay 2: 452. 1958 (Repr.) *('verticillaris')*; Sant. in Univ. Bombay Bot. Mem. 2: 51. 1952. *Bremekampia verticillata* (Roxb.) Sreem. in Bull. Bot. Surv. India 6: 323. 1964. *'Jakara', 'Kateri'.*

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.

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*

Hemigraphis crenata (Bth. ex Hohen.) Bremek. in Verh. Nederl. Acad. Wet. 2, 40: 137. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 27. 1952. *Ruellia crenata* Bth. ex Hohen. in Flora 32: 558 1849. *Hemigraphis elegans* var. *crenata* C. B. Cl. in Hook. f. Fl. Brit. India 4:425. 1884; Cooke, Fl. Pres. Bombay 2: 435. 1958 (Repr.).

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.

H. hirta (Vahl) T. And. in J. Linn. Soc. 9; 462. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 422. 1884; Oza in J. Bombay nat. Hist. Soc. 71: 634. 1974 & in Jain & Rao, Ass. Threat. Pl. India 180. 1983. *Ruellia hitra* Vahl, Symb. Bot.t. 67. 1794.

Herbs, creeping, hairy. Leaves 1.3–2.8 x 0.8–1.2 cm, ovate, sessile. Flowers blusih in condensed terminal heads. Capsules linear–ovoid. Seeds ellipsoid or suborbicular, yellowish–brown, hairy.

Fls. & Frts. : September–December.

Distrib. : Infrequent. Dhule, Raigad.

H. latebrosa (Heyne ex Roth) Nees in DC. Prodr. 11: 723. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4: 423. 1884; Cooke, Fl. Pres. Bombay 2: 434. 1958 (Repr.) *Ruellia latebrosa* Heyne ex Roth, Nov. Pl. Sp. 307. 1821. *Hemigraphis latebrosa* var. *heyneana* Bremek. Mat. Mon. Strob. 139. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 26. 1952.

1. Leaves smaller, hairy; haira stiff, almost bristly esp–ecially on the leaves beneath ... var. *ebracteata*

1. Leave comparatively larger, sparsely hairy often with short, bulbous based hairs on both the surfaces ... var. *latebrosa*

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.

var. **ebracteata** (Dalz.) T. Cooke, Fl. Pres. Bombay 2: 358. 1904 [2: 434. 1958 (Repr.)]; Bremek. Mat. Mon. Strob. 139. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 26. 1952. *Ruellia ebracteata* Dalz. in Hook. Kew J. Bot. 2: 342. 1850. *Hemigraphis ebracteata* C.B.Cl. in Hook. f. Fl. Brit. India 4: 424. 1884 *(Sphalm pro 'ebracteata').*

Herbs. Leaves 2.0–3.8 x 1.0–2.5 cm, broadly ovate, acute or subobtuse. Flowers blusish. 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. *heynesna, ebracteata* and *H. rupestris*' (p. 27) Hence a monographers pronouncement is required on these.

H. rupestris Heyne ex T. And. in J. Linn. Soc. 9: 462. 1867; Sant. in Univ. Bombay Bot. Mem. 2: 27. 1952. *H. latebrosa* var. *rupestris* (Heyne ex T. And.) C.B.Cl. in Hook. f. Fl. Brit. India 4: 424. 1884; Cooke, Fl. Pres. Bombay 2: 434. 1958 (Repr.).

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*

Hygrophila heinei Sreem. in Bull. Bot. Surv. India 10: 223. 1968. *Cardanthera uliginosa* Buch.– Ham. ex Nees in DC. Prodr. 1: 69. 1847, *non Hygrophila uliginosa* S. Moore 1880; C.B.Cl. in Hook. f. Fl. Birt. India 4: 403. 1884.

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.

H. phlomoides Nees var. **roxburghii** C. B. Cl. in Hook. f. Fl. Brit. India 4: 408 1885; Sharma & Pradhan in J. Econ. Tax. Bot. 14: 609. 1990. *Ruellia obovata* Roxb. Fl. Ind. 3: 51. 1832.

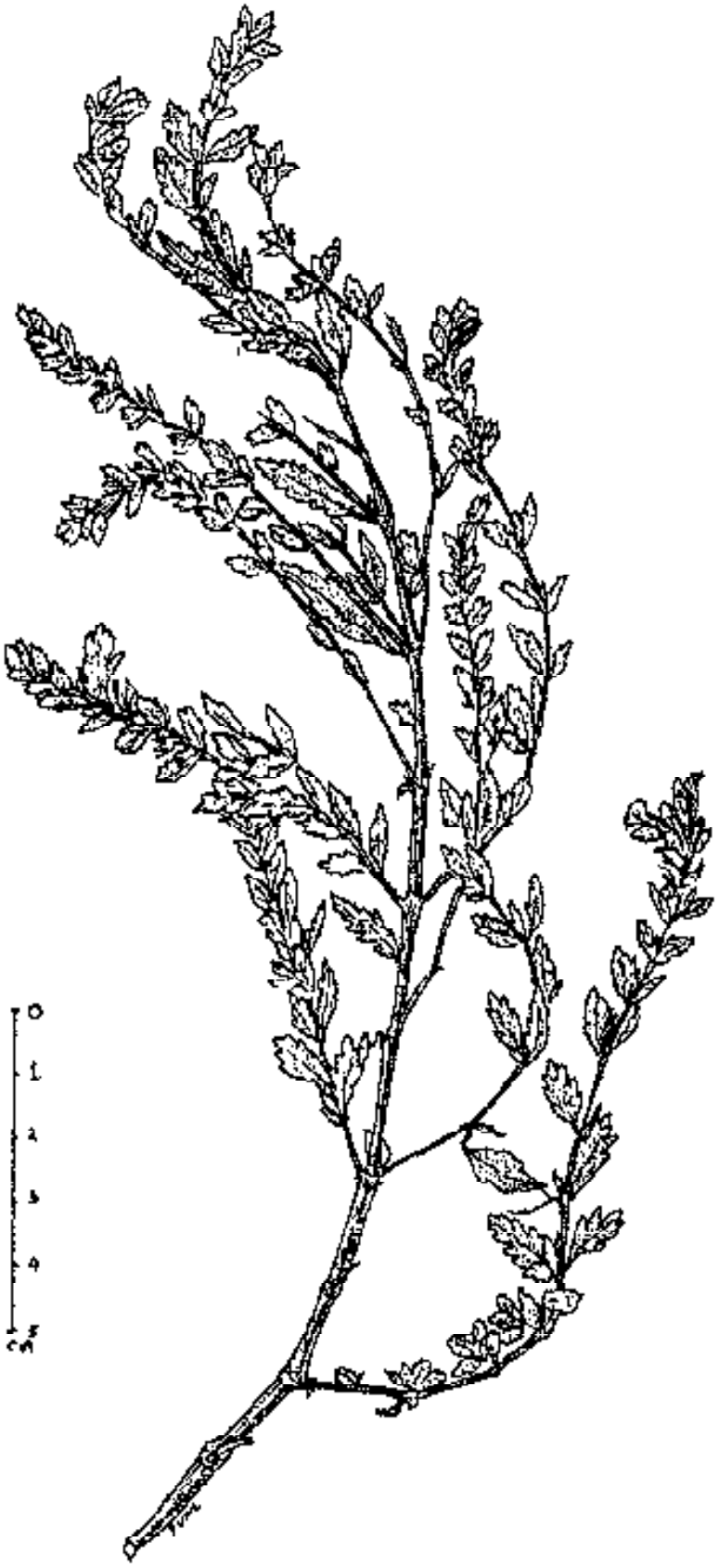
Herbs, upto 50 cm; stems striate, glandular–pubescent. Leaves 1–5 x 0.9–2.5 cm, usually obovate, elliptic–oblong, oblanceolate or spathulate, sparsely hairy above, pubescent on nerves below, apex obtuse or subacute, base cuneate, upper portion of margins irregularly serrate dentate. Flowers pale purple 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.

Illus. : Sharma & Pradhan, op. cit. 610. f. A–J.

Distrib. : Around dried areas of lakes, etc. Infrequent. Bombay.

H. pinnatifida (Dalz.) Sreem. in Bull. Bot. Surv. India 10: 222. 1968. *Nomaphila pinnatifida* Dalz. in Hook. Kew J. Bot. 3:38. 1851. *Adenosma pinnatifidum* (Dalz.) T. And. in J. Linn. Soc. 9. 455. 1867. *Cardanthera pinnatifidum* (Dalz.) Bth. ex C.B.Cl. in Hook. f. Fl. Brit. India 4: 455. 1884; Cooke, Fl. Pres. Bombay 2: 423. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:13. 1952.



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.

Illus. : Bedd. Ic. Pl. Ind. Or t. 246. 1872.

Distrib. : Infrequent. Kolhapur, Raigad, Ratnagiri, Sindhudrug.

H. polysperma (Roxb.) T. And. in J. Linn. Soc. 9: 456: 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 406. 1884; Cooke, Fl. Pres. Bombay 2: 429. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:19. 1952. *Justicia polysperma* Roxb. Fl. Ind. 1:119. 1832.

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).

Distrib. : Infrequent. Nanded, Thane.

H. ringens (L.) Steud. Nom. 1: 418. 1821; Nicols. et al. Interpr. Hort. Malab. 39. 1988. *Ruellia ringens* L. Sp. Pl. 635. 1753. *R. erecta* Burm. f. Fl. Ind. 138, pl. 41, f. 3. 1784. *R. salicifolia* Vahl, Symb. 3: 84. 1794. *R. obovata* Roxb. ex Hornem, Suppl. Hort. Bot. Hafrin. 144. 1819. *R. quadrivalvis* Buch.–Ham. in Trans. Linn. Soc. Lond. 14: 219. 1824. *Hygrophila erecta* (Burm. f.) Hochr in Candollea 5: 230. 1934. *H. salicifolia* (Vahl) Nees in Wall. Pl. As. Rar. 3: 81. 1832. *H. obovata* (Roxb. ex Hornem) Nees in Wall. Pl. As. Rar. 3: 81. 1832 et in Wight, Ic. t. 1489. 1849; Naik in Ind. For. 96(6): 414. 1969. *H. quadrivalvis* (Buch.– Ham.) Nees in Wall. Pl. As. Rar. 3: 80. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 407. 1884. *H. angustifolia* T. Cooke, Fl. Pres. Bombay 2: 354. 1804 [2: 430. 1958 (Repr.)] non R. Br. 1810.

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.

Illus. : Wight, Ic. tt. 1489. & 1490, 1849. [*Ruellia ovata* & *Hygrophila salicifolia* (Vahl) Nees]; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 532. 1982.

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.

H. schulli (Buch.–Ham.) M.R. & S.M. Almeida in J. Bombay Nat. Hist. Soc. 83 (Suppl.) 221. 1986; Nicols. et al. Interpr. Hort. Malab. 40. 1988. *Barleria longifolia* L. in Torner, Cent. II, Pl. 22. 1756. *Behel schulli* Buch.–Ham. in Trans. Linn. Soc. Lond. 14; 289. 1825. *Barleria auriculata* Schum. in Schum. &Thonn. Besk. Guin. Pl. 285. 1827. *Ruellia longifolia* (L.) Roxb. Fl. Ind. 3: 50. 1832. *Asteracantha longifolia* (L.) Nees in Wall. Pl. As. Rar. 3: 90. 1832; Cooke, Fl. Pres. Bombay 2: 428. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 17. 1952. *Hygrophila spinosa* T. Anders. in Thw. Enum. Pl. Zeyl. 225. 1860; C.B.Cl. in Hook. f. Fl. Brit. India 4; 408. 1884. *H. auriculata* (K. Schum.) Heine in Kew Bull. 16: 172. 1962. *'Kolsunda', 'Talimkhana'.*

Herbs, 0.5 – 1.5 m high, erect, stout; branches subquadrangular. Leaves sessile, 5.0–17.5 x 0.6–3.0 cm, appear whorld 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.

Illus. : Wight, Ic. t. 449. 1841; Tadul. & Venkatn. Handb. S. Ind. Weeds 316, Pl. 125, ff. 1–7. 1955. *(Asteracantha longifolia);* Matthew, Illus. Fl. Tamilnadu Carnatic 2: 530 1982.

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 availabe as it is transfered to *Hygrophila* and is proccupied by *Hygrophila longifolia* Nees in Mart. Fl. Bras. 9: 21. 1847.

H. serpyllum (Nees) T. And. in J. Linn. Soc. 9: 456. 1867; C.B.Cl. in Hook f. Fl. Brit. India 4: 406. 1884; Cooke, Fl. Pres. Bombay 2:429. 1958 (Repr.), Sant. in Univ. Bombay Bot. Mem. 2: 19. 1952. *Physichilus serpyllum* Nees in Hook. Comp. Bot. Mag. 2: 311. 1837. *Rantewan*[1]

1. Plants slender; leaves ovate–acute ... var. *serpyllum*
1. Plants roubst; leaves orbicular to reniform ... var. *hookeriana*

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 atleast on upper half. Seeds ovoid–orbicular.

Fls. & Frts. : September–March.

Illus. : Wight, Ic. t. 1493. 1849. *(Physichilus serpyllum).*

Distrib. : In moist places. Common. Bombay, Chandrapur, Dhule, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg. Thane.

var. **hookeriana** C.B.Cl. in Hook. f. Fl. Brit. India 4:407. 1884; Cooke, Fl. Pres. Bombay 2: 430. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 20. 1952.

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.

H. stocksii T. And. ex C.B.Cl. in Hook. f. Fl. Brit. India 4: 407. 1884; Cooke, Fl. Pres. Bombay 2:430. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:21. 1952.

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 worhwhile for its detailed studies and to know its present status of distribution.

HYPOESTES Soland ex R. Br.

Hypoestes lanata Dalz. in Hook. Kew J. Bot. 2: 343, 1850; C.B.Cl. in Hook. f. Fl. Birt. India 4: 557. 1885; Cooke, Fl. Pres. Bombay 2:477. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:76. 1952.

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, tuberculate.

Fls. & Frts. : October – February.

Distrib : Rare. Raigad, Ratnagiri.

INDONEESIELLA Sreem.

Indoneesiella echioides (L.) Sreem in Phytologia 15:271. 1967. *Justicia echioides* L. Sp. Pl. 16. 1753. *Andrographis echioides* (L.) Nees in Wall. Pl. As. Rar. 3:117. 1832. C.B.Cl. in Hook. f. Fl. Brit. India 4: 505. 1884; Cooke, Fl. Pres. Bombay 2:451. 1958 (Repr.); Sant. in Univ. Bombay. Bot. Mem. 2: 51. 1952. *'Pandhra feda'*.

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 cuncate, 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.

Illus : Wight, Ic. t. 467. 1841; Tadul. & Venkatn. Handb. S. Ind. Weeds 320, t. 127, ff. 1–6. 1955. (Revised); Mahesh. Illus. Fl. Delhi f. 165. 1966; Matthew, Mat. Fl. Tamilnadu Carnatic 1:t. 294, pl. 89. 1981 & Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 454. 1988.

Distrib. : In open grasslands. Common. Ahmednagar, Akola, Amaravati, Aurangabad, Beed, Chandrapur, Dhule, Jalgaon, Jalna, Latur, Nagpur, Nanded, Nasik, Osmanabad, Parbhani, Pune, Raigad, Satara, Solapur.

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. santapaui*
   - 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. Undershurbs; 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*

Justicia adhatoda L. Sp. Pl. 15. 1753; Stearn in J. Arnold Arb. 52: 640. 1971. *Adhatoda zeylanica* Medic. in Hist. & Commentat. Acad. Elect. Sci. Theod. Palast. 6: 393. 1790. *A. vasica* Nees in Wall. Pl. As. Rar. 3:103. 1832 & in DC. Prodr. 11:387. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4: 540. 1885; Cooke, Fl. Pres. Bombay 2:493. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 92. 1952. '*Adulsa*'.

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, tubercular, verrucose, glabrous.

Fls. & Frts. : August–March.

Illus. : Mahesh. Illus. Fl. Delhi f. 169. 1966 (*Adhatoda vasica*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 519. 1982 (*A. zeylanica*).

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.

J. betonica L. Sp. Pl. 15. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 525. 1885; Sant. in Univ. Bombay Bot. Mem. 2: 85. 1952. *J. betonica* L. var. *ramocissima* C.B.Cl. op. cit.; Cooke, Fl. Pres. Bombay 2: 486. 1958 (Repr.).

Undershrubs, 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 paniculately 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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 534. 1982.

Distrib. : Common. Ahmednagar, Akola, Aurangabad, Kolhapur, Nasik, Osmanabad, Parbhani, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

J. glauca Rottl. in Ges. Naturf. Neue Schr. 4:219. 1802; C.B.Cl. in Hook. f. Fl. Brit. India 4:529. 1885; Cooke, Fl. Pres. Bombay 2:487. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:86. 1952.

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.

Illus. : Wight, Ic. t. 462. 1841 *(Gendarussa tranquebarensis);* Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 458. 1988.

Distrib. : Frequent. Beed, Chandrapur, 'Konkan' (Cooke, op. cit.), Nanded, Parbhani, Yavatmal.

J. latispica (C.B.Cl.) Gamble, Fl. Pres. Madras 1080. 1924 [2: 756. 1957 (Repr.)]; Naik, Fl. Marathwada 2: 678. 1998. *J. procumbens* L. var. *latispica* C.B.Cl. in Hook. f. Fl. Brit. India 4: 529. 1885.

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. : Occasional under the shade of trees on gravelly slopes. Beed, Nanded.

Notes. : Similar to *J. japonica* Thunb. and *J. procumbens* L. but distinguishes itself from both with broad spikes and strongly pectinately ciliate bracts.

J. nagpurensis A.V.W. Grah. in Kew Bull. 43: 597. 1988. *Rostellularia procumbens* var. *serpyllifolia* Bth. in Hohen. Pl. Ind. Or. 571. 1847. *J. simplex* D. Don var. *serpyllifolia* (Bth.) C.B.Cl. in Hook. f. Fl. Brit. India 4: 539. 1885. *J. serpyllifolia* (C. B. Cl.) Gamble, Fl. Pres. Madras 1080. 1924 [2: 756. 1957 (Repr.)]; Sant. in Univ. Bombay Bot. Mern. 2: 90. 1952; Naik Fl. Marathwada 2: 681. 1998. *Rostellularia serpyllum* (Bth.) Bremek. in Verh. Kon. Ned. Acad. Wet. Afd. Naturk. Tweede Sect. 2: 45(2): 62. 1948.

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 subcute, 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.

J. orbiculata Wall. ex T. Anders. in J. Linn. Soc. Bot. 9: 512. 1867; Naik, Fl. Marathwada 2: 678. 1998. *J. diffusa* willd. var. *orbiculata* (Wall. ex T. And.) C.B.Cl. in Hook. f. Fl. Brit. India 4: 538. 1885.

Herbs, upto 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.

J. santapaui Bennet in J. Bombay nat. Hist. Soc. 67:358. 1970. *J. montana* (Nees) Wall. ex T. And. in J. Linn. Soc. 9: 509. 1867 non Roxb. 1805; C.B.Cl. in Hook. f. Fl. Brit. India 4:525. 1885; Cooke, Fl. Pres. Bombay 2:485. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 85. 1952. *Justicia andersonii* Ramam. in Sald. & Nicols. Fl. Hassan Distt. 551. 1976.

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. & Frs. : January–June.

Illus. : Wight, Ic. t. 1538. 1850 *(Hemichoriste montana).*

Distrib. : Frequent at higher elevations. Kolhapur, Raigad, Ratnagiri, Satara, Sindhudurg.

J. trinervia Vahl, Enum. 1:156. 1804; C.B.Cl. in Hook. f. Fl. Brit. India 4:526. 1885; Cooke, Fl. Pres. Bombay 2:486. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:86. 1952. *'Sut'.*

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.

J. wynaadensis (Nees) T. And. in J. Linn. Soc. Bot. 9: 515. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 533. 1885; Cooke, Fl. Pres. Bombay 2: 488. 1958 (Repr.); Sant in Univ. Bombay Bot. Mem. 2: 87. 1932. *Gendarussa wynaadensis* Nees in Wall. Pl. As. Rar. 3:104. 1832.

Undershrubs; 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, oppsite 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	...	*L. bandraensis*
8.	Bracteoles uniform :		
9.	Bracts softly hairy with straight, apical spines	...	*L. lutea*
9.	Bracts glabrous with long, recurved spines	...	*L. trinervis*
1. Seeds 4 :			
10.	Leaves longer, longitudinally folded	...	*L. rigida*
10.	Leaves shorter, not folded :		
11.	Erect undershrubs	...	*L. cuspidata*
11.	Prostrate herbs :		
12.	Leaves entire or nearly so	...	*L. incurva* var. *mucronata*
12.	Leaves crenate or crenate-serrate	...	*L. fasciculata*

Lepidagathis bandraensis Blatt. in J. Asiat. Soc. Beng. (New Series) 26: 347. 1930; Sant. in Univ. Bombay Bot. Mem. 2: 75. 1952; Naik, Fl. Marathwada *(L. brandraensis)* 2: 682. 1998.

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.

Fls. & Frts. : November-March.

Distrib. : Infrequent. Amaravathi, Bombay, Nanded (Kinwat, Zate 529).

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 *Lepidagathis* which comprises the spp. *cristata* Willd. *hamiltoniana* Wall. and *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.

L. clavata Dalz. in Hook. Kew J. Bot. 2: 340. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 518. 1885; Cooke, Fl. Pres. Bombay 2: 472. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 73. 1952.

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.

L. cristata Willd. Sp. Pl. 2:400. 1800; C.B.Cl. in Hook. f. Fl. Brit. India 4: 516. 1885; Cooke, Fl. Pres. Bombay 2:470. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 71. 1952. Naik, Fl. Marathwada 2: 682. 1998. *'Bhuigend', 'Gundra', 'Kumbha'*.

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.

Illus. : Wight, Ic. t. 455. 1841; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 535. 1982.

Distrib. : Frequent. Ahmednagar, Akola, Aurangabad, Bombay, Chandrapur, Dhule, Jalna and probably elsewhere also (Naik, op. cit.), Kolhapur, Nagpur, Nasik, Satara, Yavatmal.

L. cuspidata Nees in Wall. Pl. As. Rar. 3: 97. 1832. C.B.Cl. in Hook. f. Fl. Brit. India 4: 519. 1885; Cooke, Fl. Pres. Bombay 2: 478. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:73. 1952.

Undershrubs, 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.

Illus. : Bedd. Ic. t. 227. 1872.

Distrib. : Frequent. Ahmednagar, Dhule, Kolhapur, Nasik, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

L. fasciculata (Retz.) Nees in Wall. Pl. As. Rar. 3: 95. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 522. 1885; Cooke, Fl. Pres. Bombay 2: 746. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 74. 1952.

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.

Fls. & Frts. : February–June.

Illus. : Bedd. Ic. t. 228. 1872;Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 536. 1982.

Distrib. : Infrequent. Kolhapur, Satara, Sindhudurg.

L. hamiltoniana Wall. ex Nees in Wall. Pl. As. Rar. 3: 96. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 516. 1885; Naik, Fl. Marathwada 2: 683. 1998. *'Bhuigend', 'Gundra'.*

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.

L. incurva Don var. **mucronata** (Wall.) C.B.Cl. ex T. Cooke, Fl. Pres. Bombay 2:397. 1904 [2:475. 1958 (Repr.)]; Sant. in Univ. Bombay Bot. Mem. 2:74. 1952. *Ruellia mucronata* Wall. Cat. 2366. 1830. *Lepidagathis mucronata* Nees in Wall. Pl. As. Rar. 3:95. 1832 & Lepidag. Ill. Monogr. 11. 1841. & in DC. Prodr. 11:250. 1847. *L. hyalina* Nees var. *mucronata* C.B.Cl. in Hook. f. Fl. Brit. India 4: 521. 1885.

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.).

L. lutea Dalz. in Hook. Kew. J. Bot. 2:139. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4:517. 1885; Cooke, Fl. Pres. Bombay 2:471. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:73. 1952.

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.

L. mitis Dalz. in Hook. kew J. Bot. 3: 226. 1851; C.B.Cl. in Hook. f. Fl. Brit. India 4: 516. 1885; Cooke, Fl. Pres. Bombay 2: 470. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 71. 1952. *'Kumbhi'*.

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 acores 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.).

L. prostrata Dalz. in Hook. kew J. Bot. 2:138. 1850. C.B.Cl. in Hook. f. Fl. Brit, India 4:518. 1885; Cooke, Fl. Pres. Bombay 2: 473. 1958 (Repr.); Sant in Univ. Bombay Bot. Mem. 2: 73. 1952.

Undershrubs 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.

Distrib. : Frequent. Ahemednagar, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

L. rigida Dalz. in Hook. Kew J. Bot. 2:341. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 518. 1885; Cooke, Fl. Pres. Bombay 2.473. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2. 73. 1952.

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.

Distrib. : Infrequent. Konkan (Cooke, op. cit.); Sindhudurg.

L. subarmata (C.B.Cl.) Gamble,Fl. Pres. Madras 1067. 1924 [2: 247. 1957 (Repr.)]; Naik, Fl. Osmanabad 252. 1979et Fl. Marathwada 2: 684. 1998. *L. mitis* Dalz. var. *subarmata* C.B.Cl. in Hook. f. Fl. Brit. India 4: 516. 1885. *'Gundra'.*

Undershrubs; 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.

L. trinervis Wall. ex Nees in Wall. Pl. As. Rar. 3: 96. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 517. 1885; Cooke, Fl. Pres. Bombay 2; 471. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 72. 1952.

1. Leaves 2.5–4.5 x 0.3–0.6 cm, glabrous or only margins scabrous ... var. *trinervis*

1. Leaves c 0.6 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.

var. **asperrima** C.B.Cl. in Hook. f. Fl. Brit. India 4:507. 1885; Cooke, Fl. Pres. Bombay 2: 471. 1958 (Repr.); Sant. in Univ Bombay Bot Mem. 2:72. 1952.

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 warrated for detailed studies and elaborative description.

MACKENZIEA Nees

Mackenziea integrifolia (Dalz.) Bremek. in Verh. Nederl. Akad. Wet. 40; 2: 182. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 43. 1952. *Eudopogon integrifolius* Dalz. in Hook. Kew J. Bot. 2: 343. 1850. *Leptacanthus alatus* Wight, Ic. t 1527. 1850. *Strobilanthes perfoliatus* T. And. in J. Linn. Soc. 9: 471. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4: 458. 1884; Cooke, Fl. Pres. Bombay 2: 448. 1958 (Repr.). *Waiti'*.

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.

Distrib. : Frequent. Kolhapur, Raigad, Ratnagiri, Sindhudurg, Pune, Thane.

NELSONIA R. Br.

Nelsonia canescens (Lam.) Spreng. Syst. Veg. 1: 42. 1825; Bremek. in Reinwardtia 3: 248. 1955. *Justicia canescens* Lam. Encycl. 1:41. 1791. *Nelsonia campestris* R. Br. Prodr. 1:481. 1810; C.B.Cl. in Hook. f. Fl. Brit. India 4:394. 1884; Cooke, Fl. Pres. Bombay 2: 420. 1958. (Repr.).

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*

Neuracanthus sphaerostachyus (Nees) Dalz. in Hook. Kew J. Bot. 2:140. 1850; C.B.Cl. in Hook. f. Fl. Brit. India. 4:491. 1885; Cooke, Fl. Pres. Bombay 2: 465. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:66. 1952. *Lepidagathis sphaerostachyus* Nees in DC. Prodr. 11: 254. 1847.

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 x0.5 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).*

Distrib. : Common. Bombay, Dhule, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

N. trinervius Wight, Ic. t. 1532. 1850; C.B.Cl. in Hook. f. Fl. Brit. India 4: 491. 1885; Cooke, Fl. Pres. Bombay 2: 465. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 66. 1952.

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, Puno, Raigad, Ratnagiri, Thane.

NILGIRIANTHUS Bremek.

1. Stamens 2 ... *N. reticulatus*
1. Stamens 4 :
   2. Flowers ebracteolate :
      3. Bracts glabrous or nearly so ... *N. heyneanus*
      3. Bracts hairy ... *N. lupulinus*
   2. Flowers bracteolate :
      4. Stems usually winged;bracteoles longer than calyx ... *N. barbatus*
      4. Stems not winged; bracteoles shorter than calyx :
         5. Leaves membranous ... *N. membranaceus*
         5. Leaves coriacious:
            6. Bracts glabrous ... *N. ciliatus*
            6. Bracts glandular hairy :
               7. Seeds glabrous ... *N. warrenensis*
               7. Seeds hairy ... *N. asper*

Nilgirianthus asper Sant. in Univ. Bombay Bot. Mem. 2:42. 1952. *Strobilanthes asper* Wight, Ic. t. 1518. 1850. nom. illeg. (non Decne, 1834); C.B.Cl. in Hook. f. Fl. Brit. India 4:452. 1885; Cooke, Fl. Pres. Bombay 2: 447. 1958 (Repr.).

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 hariy, 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.

N. barbatus (Nees) Bremek. in Verh. Nederl. Akad. Wet 2, 40 : 172. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 39. 1952. *Strobilanthes barbatus* Nees in Wall. Pl. As. Rar. 3: 85. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 437. 1884; Bedd. Ic. Pl. Ind. Or. 49, t. 212. 1874; Cooke, Fl. Pres. Bombay 2:445. 1958 (Repr.).

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.

N. ciliatus (Nees) Bremek. in Verh. Nederl. Akad. Wet (2) 172, 1944; Sant. in Univ. Bombay Bot. Mem. 2: 40. 1952. *Strobilanthes ciliatus* Nees in Wall. Pl. As. Rar. 3:85. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4:439. 1884; Cooke, Fl. Pres. Bombay 2: 446. 1958 (Repr.).

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.

N. heyneanus (Nees) Bremek. in Verh. Nederl. Akad. Wet 2, 40:173. 1944; Sant. in Univ. Bombay Bot. Mem. 2: 40. 1952. *Strobilanthes heyneanus* Nees in Wall. Pl. As. Rar. 3: 85. 1932; C.B.Cl. in Hook. f. Fl. Brit. India 4: 443. 1884; Cooke, Fl. Pres. Bombay 2; 444. 1958 (Repr.).

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.

N. lupulinus (Nees) Bremek. in Verh. Nederl. Akad. Wet 2, 40 : 173. 1944; Sant. in Univ. Bombay Bot. Mem. 2:41. 1952. *strobilanthes lupulinus* Nees in Wall. Pl. As. Rar. 3:85. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4:443. 1884; Cooke, Fl. Pres. Bombay 2:443. 1958 (Repr.).

Shrubs, erect; stems and branches woody, the older warted and glabrous, the younger hariy. Leaves 10–15 x 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.

Distrib. : Infrequent. Raigad, Satara, Ratnagiri, Sindhudurg.

N. membranaceus (Talb.) Bremek. in Verh. Nederl. Akad. Wet 2, 40:280. 1944; Sant. in Univ. Bombay Bot. Mem. 2:43. 1952. *Strobilanthes membranaceus* Talb. Trees & Shrubs Bombay ed. 2:261. 1902 & For. Fl. Bombay Pres. & Sind 2: 327; f. 444. 1911.

Shrubs, stout, gregarious; branches subquadrangular, grooved thickened at nodes, glabrescent or hairy. Leaves 5–18 x 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, exareolate, shining.

Fls. & Frts. : November–February.

Illus. : Talb. op. cit.

Distrib. : Infrequent. Kolhapur (Nayar, 152229 dated 12.2. 1978) Raigad, Sindhudurg.

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 availabe 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 disribution in Karnataka state to Raigad district in Maharashtra State.

N. reticulatus (Stapf) Bremek. in Verh. Nederl. Akad. Wet 2, 40: 173. 1944; Sant. in Univ. Bombay Bot. Mem. 2:41. 1952. *Strobilanthes reticulatus* stapf in Kew Bull. 1894: 347. 1894; Cooke, Fl. Pres. Bombay 2:442. 1958 (Repr.).

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.

Illus. : Talbot, For. Fl. Bombay Pres. & Sind 2:324, f. 443. 1911 *(Strobilanthes reticulatus).*

Distrib. : Frequent. Ahmednagar, Nasik, Pune, Sindhudurg, Thane.

N. warreensis (Dalz.) Bremek. in Verh. Nederl. Akad. Wet 2, 40 173. 1944; Sant. in Univ. Bombay Bot. Mem. 2:41. 1952. *Srobilanthes warreensis* Dalz. in Hook. Kew J. Bot. 2:341. 1850; C.B.Cl. in Hook. f. Fl. Birt. India 4: 429 1884; Cooke, Fl. Pres. Bombay 2: 447. 1958 (Repr.).

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 upto 8 x 4 cm; corolla 0.8–1.2 cm long	...	*P. paniculata*
1.	Leaves uptio 18 x 7 cm; corolla 5–7 cm long	...	*P. montana*

Peristrophe montana Nees in Wall. Pl. As. Rar. 3:113. 1832 & in DC. Prodr. 11:493. 1847 (excl. plant *khasianis*); C.B.Cl. in Hook. f. Fl. Brit. India 4:556. 1885; Sant. in Univ. Bombay Bot. Mem. 2:93. 1952.

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.

Distrib. : Infrequent. Bombay, Konkan.

Notes. : A handsome plant said to be bracts also often coloured.

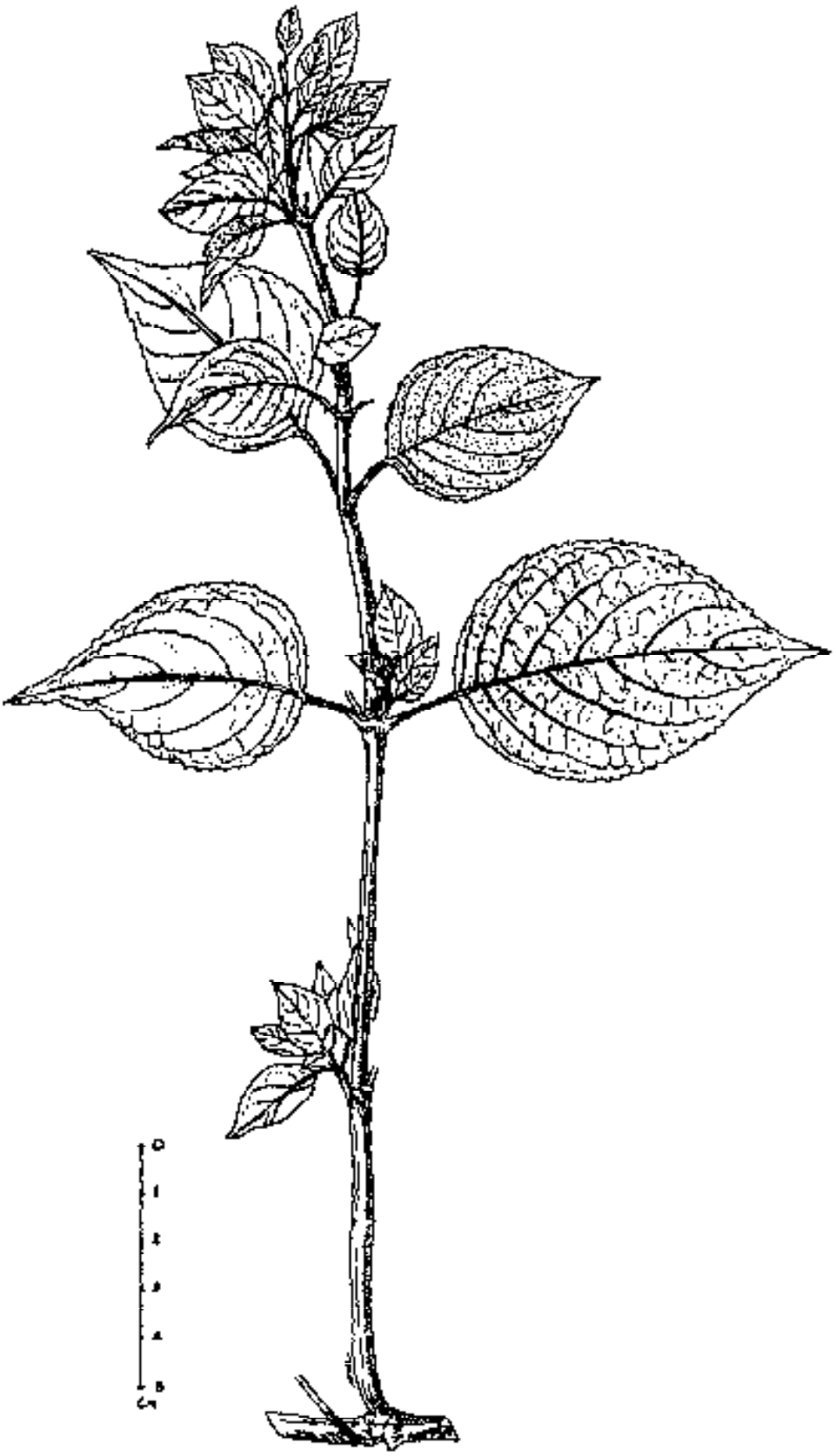
P. paniculata (Forssk.) Brummitt in Kew Bull. 38:451. 1983. *Dianthera paniculata* Forssk. Fl. Aeg.–Arab. 7. 1775. *Peristrophe bicalyculata* (Retz.) Nees in Wall. Pl. As. Rar. 3: 113. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 554. 1885; Cooke, Fl. Pres. Bombay 2:495. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 93. 1952.

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 166. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 538. 1982.

Distrib. : Common. Ahmednagar, Akola, Aurangabad, Bombay Chandrapur, Dhule, Jalgaon, Kolhapur, Nagpur, Nasik, Pune, Raigad, Ratnagiri, Thane, Yavatmal.



Petalidium barlerioides (Roth) Nees

PETALIDIUM Nees

Petalidium barlerioides (Roth) Nees in Wall. Pl. As. Rar. 3:82. 1832; C.B.Cl. in Hook. f. Fl. Brit. India. 4:416. 1884; Cooke, Fl. Pres. Bombay 2:435. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:29. 1952.

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.

Distrib. : Frequent. Chandrapur, Nanded, Raigad, Ratnagiri, Sindhudurg, Thane. Yavatmal.

PHAULOPSIS Willd.

Phaulopsis imbricata (Forssk.) Sw. Hort. Brit. 327. 1827. *Ruellia imbricata* Forssk. Fl. Aeg.–Arab. 113. 1775. *Phaulopsis dorsiflora* (Retz.) Sant. in kew Bull. 3: 276. 1948 & in Univ. Bombay Bot. mem. 2:30. 1952. *Micranthus oppositifolius* Wendl. Bot. Beobacht. t. 39. 1798; Cooke, Fl. Pres. Bombay 2: 436. 1958 (Repr.). *Phaulopsis parviflora* Willd. Sp. Pl. 3: 342. 1801; C.B.Cl. in Hook. f. Fl. Brit. India 4: 417. 1884.

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.

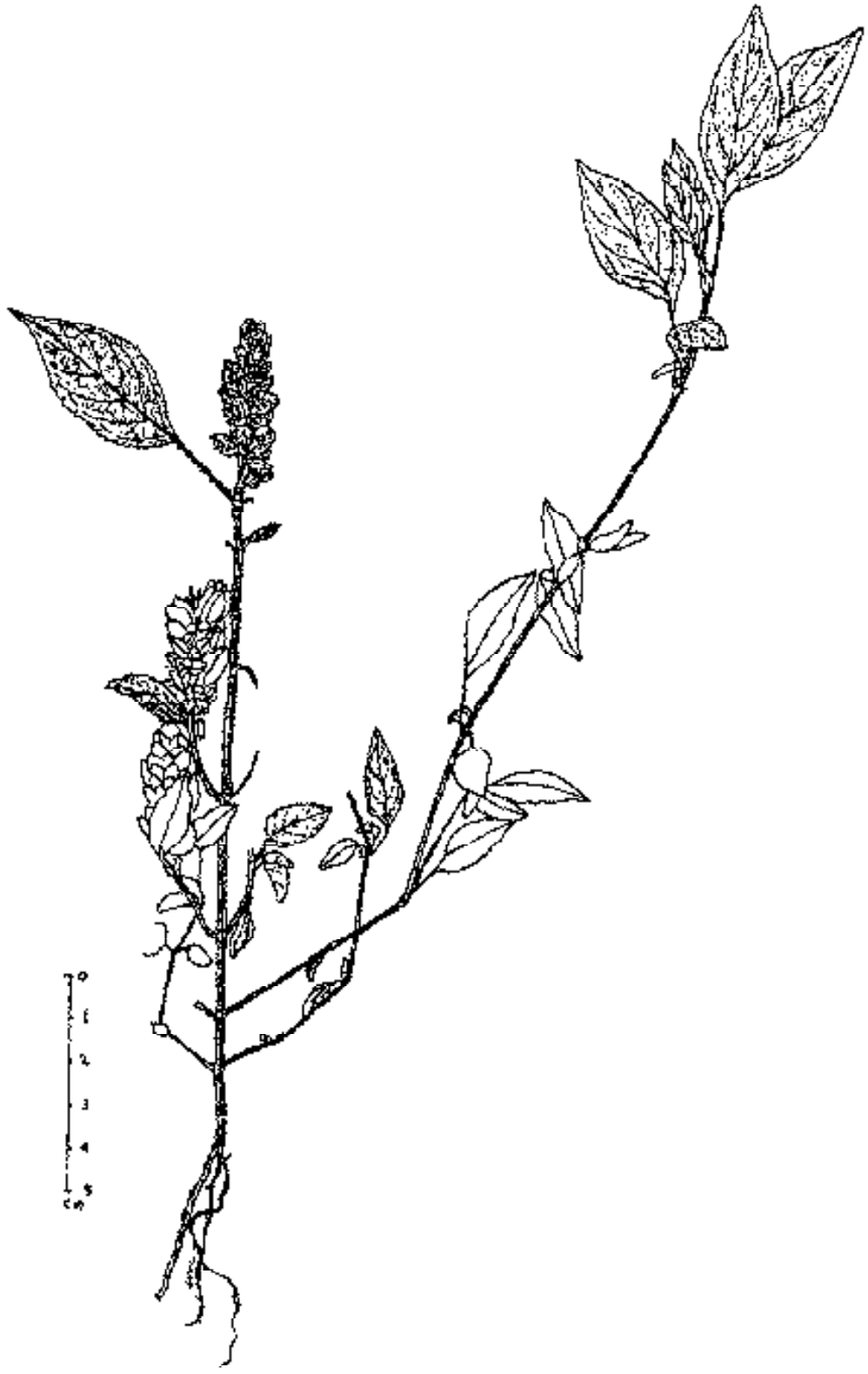
Fls. & Frts. : December–May.

Illus. : Wight, Ic. t. 1533. 1850 *(Aetheilema reniforme).*

Distrib. : Infrequent. Chandrapur, Raigad, Satara, Sindhudurg.

PHLOGACANTHUS Nees

Phlogacanthus thyrsiformis (Roxb. ex Hardw.) Mabb. in Manilal, Bot. Hist. Hort. Malab. 53. 1980. *Justicia thyrsiformis* Roxb. ex Hardw. in Asiat. Res. 6: 349. 1799. *J. thyrsiformis* Roxb. Fl. Ind. 1:



Pheulopsis imbricata (Forssk.) Sw.

116. 1820. *Phlogacanthus thyrsiflorus* (Roxb.) Nees in Wall. Pl. As. Rar. 3: 99. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4:512. 1884. *Justicia thyrsiflora* Roxb. Fl. Ind. 1:114. 1820.

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.

Pleocaulus ritchiei (C.B.Cl.) Bremek. in Verh. Nederl. Akad. Wet 2, 40: 185. 1944; Sant. in Univ. Bombay Bot. Mem. 2:45. 1952. *Strobilanthes sessilis* Nees var. *ritchiei* C.B.Cl. in Hook. f. Fl. Brit. India 4:452. 1884; Cooke, Fl. Pres. Bombay 2:443. 1958 (Repr.). *'Bukra'*.

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.

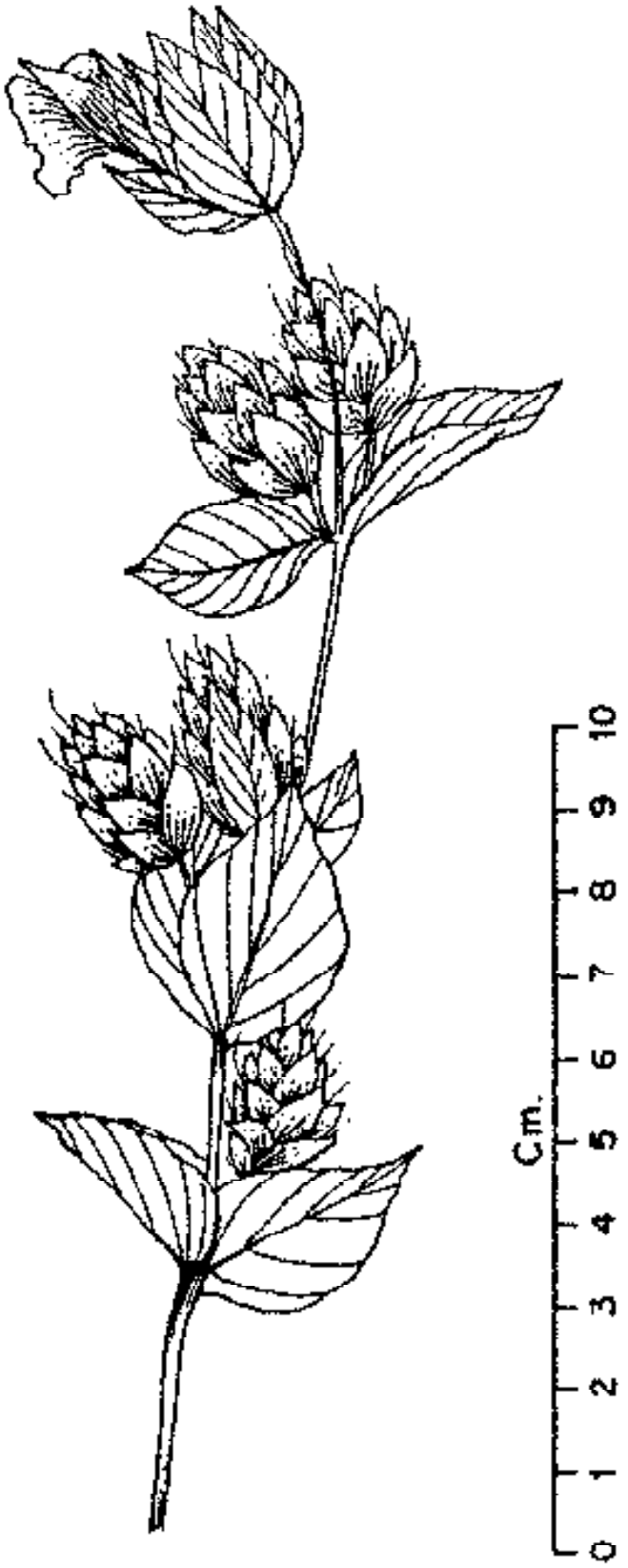
Fls. & Frts. : September–March.

Distrib. : Infrequent. Kolhapur, Ratnagiri, Satara, Sindhudurg.

Pseuderanthemum Radlk.

Pseuderanthemum malabaricum (C.B.Cl.) Gamble, Fl. Pres. Madras 1064. 1924 [2:745. 1967 (Repr.)]; Sant. in Univ. Bombay Bot. Mem. 2:70. 1952. *Eranthemum malabaricum* C.B.Cl. in Hook. f. Fl. Brit. India 4: 497. 1884; Cooke, Fl. Pres. Bombay 2:468. 1958 (Repr.).

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.

Distrib. : Infrequent. Kolhapur, Raigad, Sindhudurg.

RHINACANTHUS Nees

Rhinacanthus nasuta (L.) Kurz in J. As. Soc. Beng. 39:79. 1870; Sant. in Univ. Bombay Bot. Mem. 2: 92. 1952. *Justicia nasuta* L. Sp. Pl. 16. 1753. *Rhinacanthus communis* Nees in Wall. Pl. As. Rar. 3: 109. 1832; C.B.Cl. in Hook. f. Fl. Brit India 4:541. 1885; Cooke, Fl. Pres. Bombay 2: 494. 1958 (Repr.). *'Gajkarni', 'Nagamalli'.*

Undershrubs, 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.

Illus. : Wight, Ic. t. 464. 1841 (*Rhinacanthus communis*); Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 539. 1982.

Distrib. : Infrequent. Ahmednagar, Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg, Thane.

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. Cystolitha on leaves minute, straight, ascending from the midrib or parallel to midrib :

5. Calyx lobes and bracteoles ovate, puberulous; cystolyths on leaves numerous; capsules puberulous ... *R. vahlii*

5. Calyx lobes and bracteoles spathulate or oblanceolate, glabrous; cystoliths on leaves sparse; capsules glabrous ... *R. quinqueangularis*

Rostellularia crinita Nees in Wall. Pl. Asiat. Rar. 3: 101. 1832 & in DC. Prodr. 11: 373. 1847; Ellis in Bull. Bot. Surv. India 30: 130. (1988) 1990. *Justicia micrantha* Wall. ex C.B.Cl. in Hook. f. Fl. Brit. India 4: 536. 1885; Sant. in Univ. Bombay Bot. Mem. 2: 87. 1952. *J. neesii* Ramam. in Sald. & Nicols. Fl. Hassan Dt. 551. 1976.

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4:t. 459. 1988 *(Justicia micrantha).*

Distrib. : Frequent. Ahmednagar, Akola, Aurangabad, Jalna, Kolhapur, Nagpur, Nasik, Pune, Ratnagiri, Satara, Sindhudurg.

R. diffusa (Willd.) Nees in Wall. Pl. As. Rar. 3: 100. 1832 & in DC. Prodr. 11:371. 1847; Ellis in Bull. Bot. Surv. India 30:131. (1988) 1990. *Justicia diffusa* Willd. Sp. Pl. 1:87. 1789; C.B.Cl. in Hook. f. Fl. Brit. India 4:538. 1885; Cooke, Fl. Pres. Bombay 2: 489. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:87. 1952.

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.

Fls. & Frts. : October–March.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4:t. 455. 1988.

Distrib. : Common. Ahmednagar, Akola, Amravati, Beed, Aurangabad, Chandrapur, Dhule, Jalgaon, Jalna, Kolhapur, Latur, Nagpur, Nanded, Osmanabad, Parbhani, Pune, Raigad, Satara, Wardha, Yavatmal.

var. **prostrata** (Roxb. ex C.B.Cl). Ellis in Bull. Bot. Surv. India 30:131. (1988) 1990. *Justicia diffusa* var. *prostrata* Roxb. ex C.B.Cl. in Hook. f. Fl. Brit. India 4:538. 1885; Cooke, Fl. Pres. Bombay 2: 490. 1958 (Repr.). *J. prostrata* (Roxb. ex C.B.Cl.) Gamble, Fl. Pres. Madras 1081. 1924 (2:757 1967, 2nd Repr.); Sant. in Univ. Bombay Bot. Mem. 2:88. 1952. *Rostellularia prostrata* (Roxb. ex C.B.Cl.) Majumdar in Bull. Bot. Soc. Bengal 25:75. 1971.

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.

Fls. & Frts. : August–May.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4:t. 461. 1988.

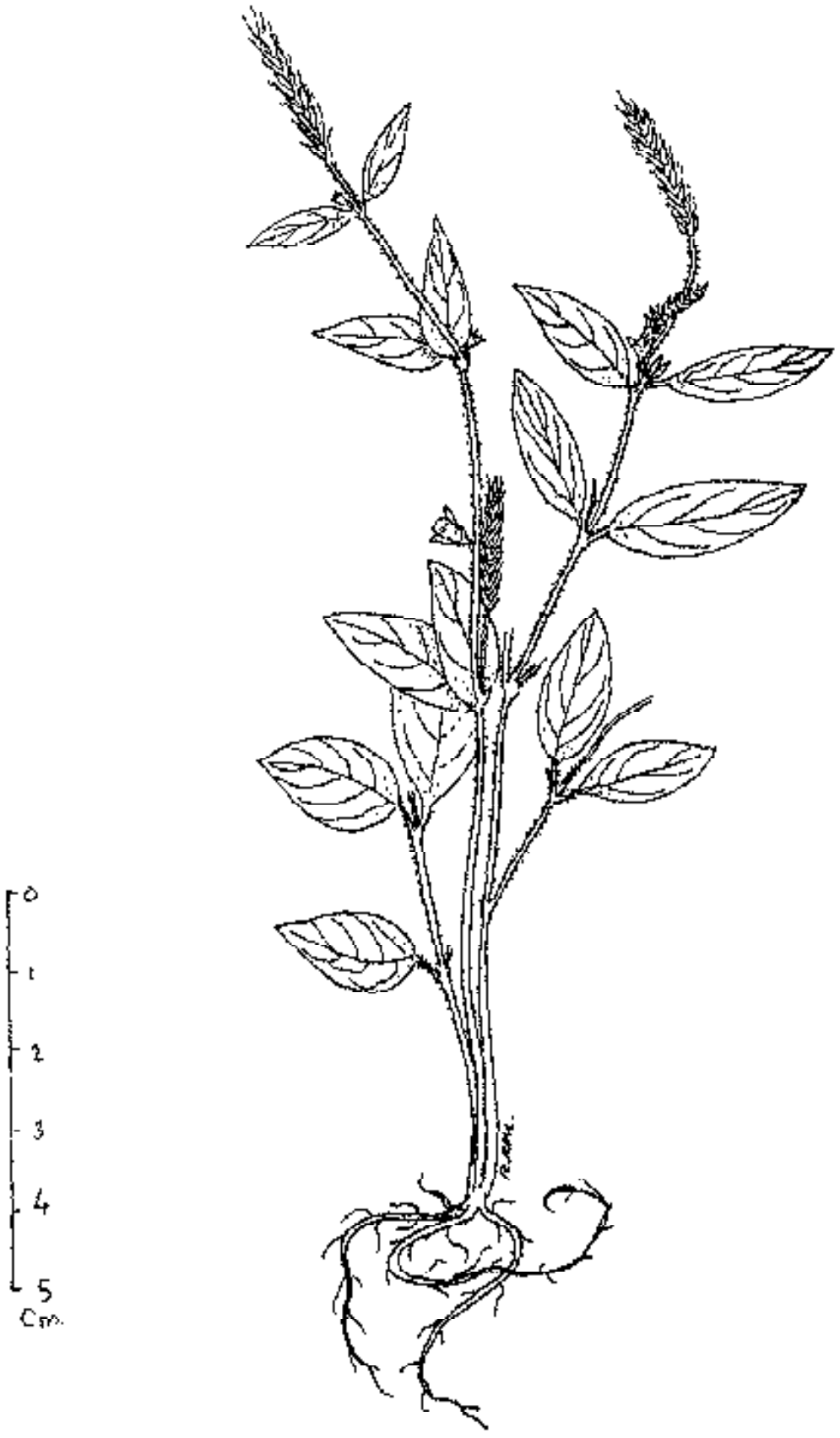
Distrib. : Frequent. Ahmednagar, Aurangabad, Beed, Dhule, Jalgaon, Jalna, Latur, Nagpur, Nanded, Nasik, Osmanabad, Parbhani, Pune, Ratnagiri, Solapur, Yavatmal.

R. japonica (Thunb.) Ellis in Bull. Bot Surv. India 22:196. (1980) 1982. *Justicia japonica* Thunb. Fl. Jap. 20.1784. *J. simplex* D. Don, Prodr. Fl. Nep. 118. 1825; C.B.Cl. in Hook. f. Fl. Brit. India 4: 539. 1885; Cooke, Fl Pres. Bombay 2: 490. 1958 (Repr.); Sant in Univ. Bombay Bot. Mem. 2: 89. 1952.

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.

Fls. & Frts. : November–March.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4:t. 462. 1988 (*J. simplex*).



Rostellularia diffusa (Willd.) Nees
var. **prostrata** (Roxb. ex C.B.Cl.) Ellis

Distrib. : Common. Akola, Amaravati, Aurangabad, Chandrapur, Dhule, Nagpur, nanded, Nasik, Osamanabad, Parbhani, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

R. procumbens (L.) Nees in Wall. Pl. As. Rar. 3:101. 1832. *Justicia procumbens* L. Sp. Pl. 15. 1753; C.B.Cl in Hook. f. Fl. Brit. India 4:539. 1885; Cooke, Fl. Pres. Bombay 2:491. 1958 (Repr.); Sant in Univ. Bombay Bot. Mem. 2:90. 1952. *'Kalmashi', 'Kamrabul'.*

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.

Illus. : Sant. op. cit. f. opp. facing page 90; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 460. 1988.

Distrib. : Frequent. Ahmednagar, Aurangabad, Kolhapur, Nagpur, Nasik, Osmanabad, Parbhani, Pune, Raigad, Satara, Sindhudurg, Thane.

R. quinqueangularis (Koen. ex Roxb.) Nees in Wall. Pl. As. Rar. 3:101. 1832 & in DC. Prodr. 11:375. 1847 *('quinquangularis')*; Ellis in Bull. Bot. Surv. India 30:129. (1988) 1990. *Justicia quinqueangularis* Koen. ex Roxb. Fl. Ind. 1:134. 1820; C.B.Cl. in Hook. f. Fl. Brit. India 4:537 1885; Cooke, Fl. Pres. Bombay 2:490. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 89. 1952.

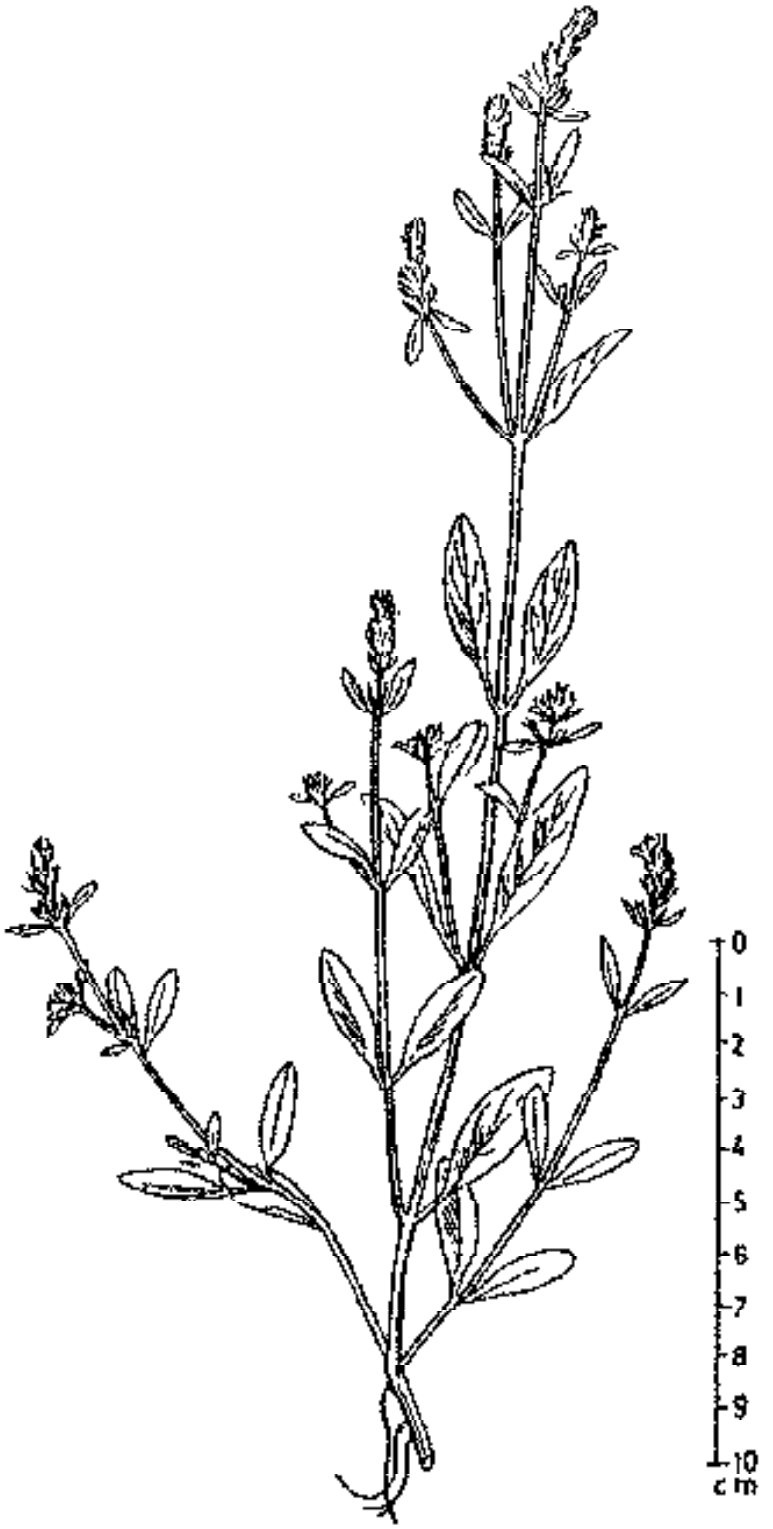
1. Leaves under 1 cm broad, linear–oblong or linear–lanceolate, subobtuse, sessile or petioles upto 0.3 cm long; spikes slender, elongate ... var. *quinqueangularis*

1. Leaves broader, reaching upto 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.



Rostellularia quinqueangularis var. **peploides** (Nees) Raiz.

Distrib. : Frequent. Ahmednagar, Akola, Amaravati, Aurangabad, Chandrapur, Dhule, Jalna, Latur, Nagpur, Nanded, Osmanabad, Parbhani, Pune, Wardha.

var. peploides (Nees) Raiz. in Suppl. Duthie's Fl. Upp. Gang. Pl. 209. 1976; Ellis in Bull. Bot. Surv. India 30: 129. (1988) 1990. *R. peploides* Nees in Wall. Pl. Asiat. Rar. 3: 101. 1832. *Justicia quinqueangularis* Koenig ex Roxb. var. *peploides* (Nees) C.B.Cl. in Hook. f. Fl. Brit. India 4: 537. 1885; Cooke, Fl. Pres. Bombay 2: 490. 1958 (Repr.).

Herbs, c 40 cm high. Leaves 4 x 1.5 cm, ovate–oblong, apex obtuse, base cuneate or rounded. Flowers pinkish–purple wih purple streaked throat in slender, terminal spikes. Capsules 0.6–0.7 cm long, acute.

Fls. & Frts. : September November.

Illus. : Lakshmi. & Sharma, Fl. Nasik Dt. 372, f. 27. 1991.

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.

R. vahlii (Roth) Nees in Wall. Pl. Asiat. Rar. 3: 102. 1832 & in DC. Prodr. 11:376. 1847. *Justicia vahlii* Roth, Nov. Pl. Sp. 14. 1821; Sant. in Univ. Bombay Bot. Mem. 2: 88. 1952; Naik, Fl. Marathwada 2: 681. 1998. *J. diffusa* var. *vahlii* (Roth.) C.B.Cl. in Hook. f. Fl. Brit. India 4: 538. 1885; Cooke, Fl. Pres. Bombay 2: 490. 1958 (Repr.).

Herbs, upto 70 cm high, erect or decumbent. Leaves 2–3.5 x 0.5–1 cm, narrowly linear–lanceolate, lineolate; petioles puberular 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.).

RUELLIA L. emend. Bremek.

Ruellia tuberosa L. Sp. Pl. 635. 1753; Bremek. in Verh. Ned. Akad. Wet. Afd. Natuurk. Tweeds Sect. 2, 45: 11. 1948; Sant. in Univ. Bombay Bot. Mem. 2: 23. 1952; Naik, Fl. Marathwada. 2: 689. 1998.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 540, 1982.

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*
   - 2. Spikes imperfectly 1–sided; bracts with broad, scarious margins; corolla exceeding 0.8 cm lengh:
     - 3. Stems erect, densely hairy; capsules obovoid, obtuse ... *R. elegans*
     - 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*

Rungia crenata T. And. in J. Linn. Soc. 9: 518. 1867; C.B.Cl. in Hook f. Fl. Brit. India 4:547. 1885; Cooke, Fl. Pres. Bombay 2:478. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 76. 1952.

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

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.

R. elegans Dalz. in Dalz. & Gibs. Bombay Fl. 196. 1861; C.B.Cl. in Hook. f. Fl. Brit. India 4:549. 1885; Cooke, Fl. Pres. Bombay 2:480. 1958 (Repr.); Sant in Univ. Bombay Bot. Mem. 2: 78. 1952.

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, Nasik, Satara, Yavatmal.

R. linifolia Nees in Wall. Pl. As. Rar. 3:110. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 548. 1885; Cooke, Fl. Pres. Bombay 2: 479. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 77. 1952.

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.).

R. parviflora (Retz.) Nees in Wall. Pl. As. Rar. 3: 110. 1832 & in DC. Prodr. 11: 469. 1847. (excl. Syn.); C.B.Cl. in Hook. f. Fl. Brit. India 4: 550 1885; Sant. in Univ. Bombay Bot. mem. 2: 76. 1952. *Justicia parviflora* Retz. Obs. Bot. 4: 9. 1788.

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).

Distrib. : A weed among grasses, frequent. Chandrapur, Kolhapur, Jalgaon, Pune, Raigad, Ratnagiri, Thane.

R. pectinata (L.) Nees in DC. Prodr. 11: 469. 1847; Sant. in Univ. Bombay Bot. Mem. 2:77. 1952; *Justicia pectinata* L. in Torner, Cent. II Pl. 3. 1756. *Rungia parviflora* var. *pectinata* (L.) C.B.Cl. in Hook. f. Fl. Brit. India 4; 550. 1885; Cooke, Fl. Pres. Bombay 2:478. 1958 (Repr.). *R. parviflora* var. *muralis* C.B.Cl. in Hook. f. op. cit.; Cooke, op. cit.

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.

Illus. : Wight, Ic. t. 1547. 1850; Mahesh. Illus. Fl. Delhi f. 167. 1966.

Distrib. : Common. Ahmednagar, Akola, Aurangabad, Bombay Chandrapur, Dhule, Kolhapur, Nagpur, Nanded, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane, Yavatmal.

R. repens (L.) Nees in Wall. Pl. As. Rar. 3:110. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 549. 1885; Cooke, Fl. Pres. Bombay 2:480. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:78. 1952. *Justicia repens* L. Sp. Pl. 15. 1753. *'Ghatipitpapra'.*

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 boh 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.

Illus. : Wight, Ic. t. 465. 1841; Tadul. & Venkatn. Handb. S. Ind. Weeds 322, Pl. 128, ff. 1–9. 1955; Mahesh. Illus. Fl. Delhi f. 168. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2:t. 541. 1982.

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*

1. Stems 30–40 cm high, viscous-pubescent; branches not trailing ... *S. glauca*

Staurogyne glauca (Nees.) O. Ktze. Rev. Gen. Pl. 497. 1891; Cooke, Fl. Pres. Bombay 2: 421. 1958 (Repr); Sant. in Univ. Bombay Bot. Mem. 2:13. 1952. ***Ebermaiera glauca*** Nees in DC. Prodr. 11:73. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4:395. 1884.

Herbs, 30–40 cm high, erect. Leaves 3.5–5.0 x 1.0–1.5 cm, spathulate, 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. 1468. 1649.

Distrib. : Infrequent. Chandrapur, Konkan (Cooke, op. cit.).

S. zeylanica (Nees) O. Ktze. Rev. Gen. Pl. 497. 1891; Cooke, Fl. Pres. Bombay 2: 422. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 13. 1952. ***Ebermaiera zeylanica*** Nees in DC. Prodr. 11:74. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4:397. 1884.

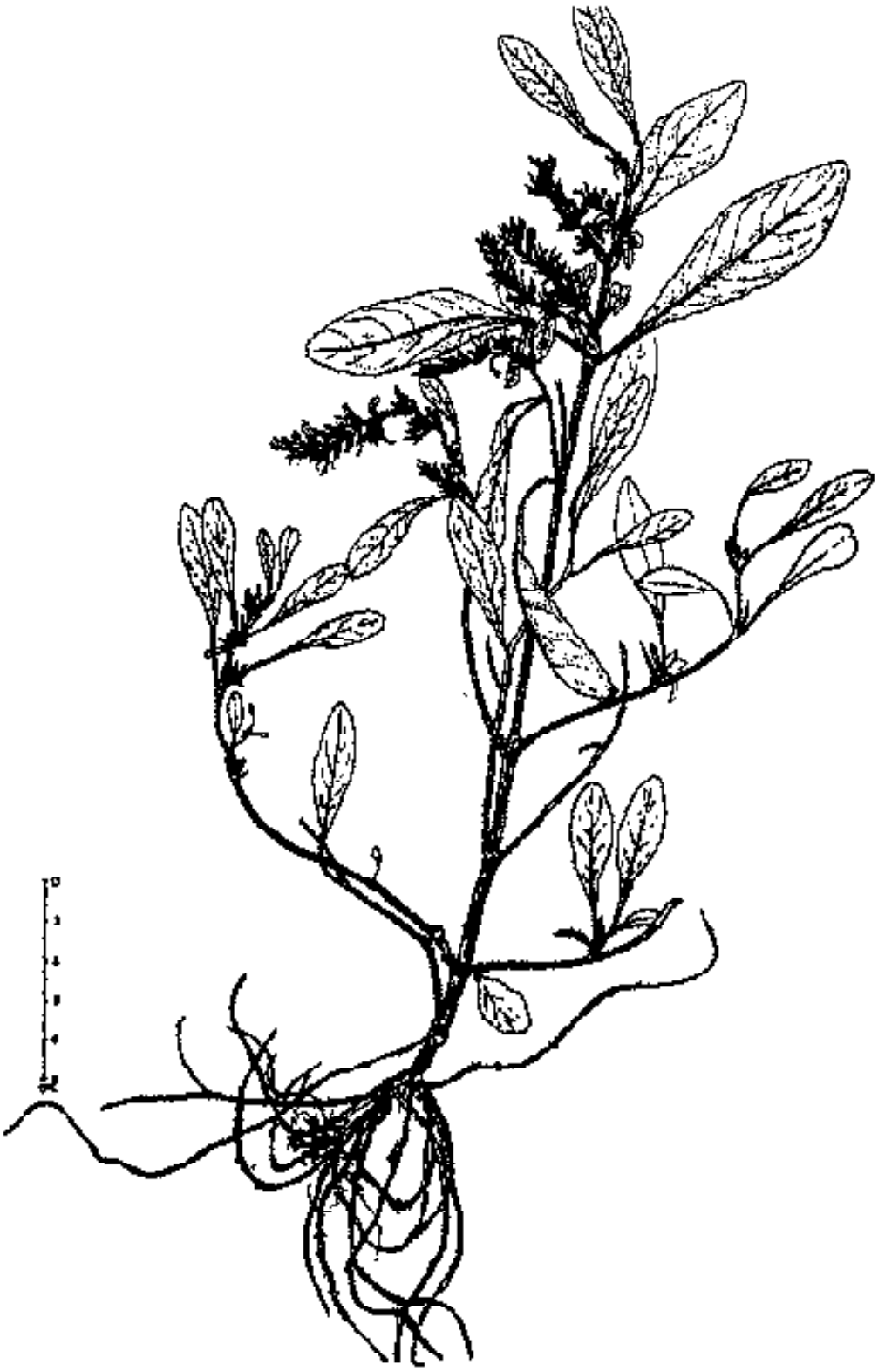
Herbs; stems short, usually with long, procumbent, trailing branches. Leaves 1.0–7.5 x 0.8–2.8 cm elliptic or slightly obovate, more or less pubescent, pale beneath, apex subobtuse, base attenuated. Flowers purplish with rose or yellow stripes in 2–5 cm long, dense spikes. Capsules c 0.5 cm long, narrowly oblong, apiculate. Seeds subglobose or ellipsoid, distantly pitted.

Fls. & Frts. : December–March.

Distrib. : Infrequent. Kolhapur, Sindhudurg.

SUPUSHPA Suryan.

Supushpa scrobiculata (Dalz. ex C.B.Cl.) Suryan. in Koninkl. Nederl. Acad. Wet. C. 73:428. 1970. ***Strobilanthes scrobiculatus*** Dalz.



Staurogyne glauca (Nees) O. Ktze.

ex C.B.Cl. in Hook. f. Fl. Brit. India 4:445. 1884; Cooke, Fl. Pres. Bombay 2:446. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:49. 1952.

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.

Synnema anomalum (Blatt.) Sant. in Rec. Bot. Surv. India 16 (1): 173. 1960 & 194. (3rd. Rev ed,) 1967. *S. anomala* (Blatt.) Raiz. in Indian Forester 94:451. 1968. *Cardanthera anomala* Blatt. in J. & Proc. Asiat. Soc. Bengal 1930 n. s. 26. 350. 1930; Sant. in Univ. Bombay. Bot. Mem. 2:14. 1952.

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 authoriy 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.

Thelepaepale ixiocephala (Bth.) Bremek. in Verh. Nederl. Akad. Wet 2, 40: 188. 1944; Sant. in Univ. Bombay Bot. Mem. 2:48.

1952. *Strobilanthes ixiocephalus* Bth. in Flora 32:557. 1849; C.B.Cl. in Hook. f. Fl. Brit. India 4:444. 1884; Cooke, Fl. Pres. Bombay 2:448. 1958 (Repr.).

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*).

Distrib. : Frequent. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

CULTIVATED AND INTRODUCED SPECIES :

Aechmanthera gossypina (Nees) Nees in Wall. Pl. As. Rar. 3: 87. 1832; Saxena in Indian Forester 92: 529. 1966. *Ruellia gossypina* Nees, op. cit. 1: 38, t. 42. 1830. *Aechmanthera tomentosa* Nees op. cit. 3; 87. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 428. 1884. *A. tomentosa* var. *wallichii* (Nees) C.B.Cl. op. cit.

Undershrubs, softy 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.

Distrib. : Grown gardens. Pune.

Aphelandra aurantiaca (Scheidw.) Lindl. Bot. Reg. 31, t. 12. 1823. *Hemisandra aurantiaca* Scheidw. in Bull. Acad. Brux 9 (1) : 28. 1842.

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.

Fls. & Frts. : November–January.

Distrib. : Grown in gardens. Pune.

Notes. : Native of Mexico, S. America.

A. tetragona (Vahl) Nees in DC. Prodr. 11: 295. 1847; Bailey, Man. Cult. Pl. 917. 1949; Naik, Fl. Marathwada 2: 658. 1998. *Justicia tetragona* Vahl, Symb. 3: 5. 1790. *A. cristata* (Jacq.) R. Br. in W. & W.T. Ait. Hort. Kew ed. 2, 4: 55. 1812.

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, acuminate at apex, glabrous above, pubescent beneath, petioles 1–4 cm long. Flowers 5–7 cm long, red, sessile in dense, tetragonous, axillary and terminal 5–20 cm long spikes. Capsules oblong, smooth, shining. Seeds fewer, flat, suborbicular.

Fls. & Frts. : September–December.

Distrib. : Occasionally grown in garden. Bombay, Marathwada.

Notes. : Native of W. Indies.

Barleria lupulina Lindl. in Bot. Reg. t. 1483. 1826; C.B.Cl. in Hook. f. Fl. Brit. India 4: 482. 1885; Cooke, Fl. Pres. Bombay 2: 464. 1958 (Repr.).

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.

Distrib. : Grown in gardens. Bombay, Pune.

Notes. : Native of Mauritius.

B. rosea

Is also said to be grown in gardens. Bombay.

Calliaspidia guttata (Bran.) Bremek. in Verh. Nederl. Acad. Wet. Sect. 2, 45n. 2: 54. 1948; Back & Bakh. f. Fl. Java 2: 588. 1965; Naik, Fl. Marathwada 2: 665. 1998. *Beloperone guttata* Bran. in Univ. California Publ. Bot. 4; 278. 1912; Bailey, Man. Cult. Pl. 924. 1949.

Undershrubs; 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.

Distrib. : Planted in gardens. Aurangabad (Univ. Bot. Garden), Pune.

Notes. : Native of Mexico.

Crossandra infundibuliformis (L.) Nees in Wall. Pl. As. Rar. 3: 98. 1832; Sant. in Univ. Bombay Bot. Mem. 2: 55. 1952. *Justicia infundibuliformis* L. Sp. Pl. 21. 1753. *Crossandra undulaefolia* Salisb. Parad. Lond. t. 12. 1805; C. B. Cl. in Hook. F. Fl. Brit. India 4: 492. 1885; Cooke, Fl. Pres. Bombay 2: 455. 1958 (Repr.).

1. Stem and leaves thinly pubescent or glabrescent; corolla orange-red with yellow throat ... var. *crocea*

1. Stem and leaves densly grey-pubescent; corolla solmon 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 tetra gonous 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 solmon-pink with deep-red throat.

Fls. & Frts. : November–December.

Distrib. : Grown in home gardens in the state.

Dianthera secunda Gresseb. 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.

Eranthemum cinnabarium Wall. Pl. As. Rar. 1: 20, t. 21. 1820; C.B.Cl. in Hook. f. Fl. Brit. India 4: 499. 1885.

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.

Distrib. : Grown in gardens. Bombay.

E. cooperii Hook.

Distrib. : Grown in gardens. Bombay.

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 obsoletely 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.

Distrib. : Grown in gardens. Bombay.

E. rubrum

Fls. & Frts. : October–December.

Distrib. : Grown in gardens. Bombay.

GENDARUSSA Nees

Gendarussa vulgaris Nees in Wall. Pl. As. Rar. 3: 104. 1832; Naik, Fl. Osmanabad 256. 1979. *Justicia gendarussa* Burm. f. Fl. Ind. 10. 1768; C.B.Cl. in Hook. f. Fl. Brit. India 4: 532. 1885; Cooke, Fl. Pres. Bombay 2: 492. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 91. 1952; Naik, Fl. Marathwada 2; 676. 1998. *'Baad', 'Jagat madan', Tev.*

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

Graptophyllum pictum (L.) Griff. Notul. Pr. Asiat. 4: 139. 1854; Nicols. et al. Interpr. van Rheede Hort. Malab. 39. 1988. *Justicia picta* L. Sp. Pl. ed. 2, 21. 1762. *Graptophyllum hortense* Nees in Wall. Pl. As. Rar. 3: 102. 1832 & in DC. Prodr. 11: 328. 1847; C.B.Cl. in Hook. f. Fl. Brit. India 4: 545. 1885; Cooke, Fl. Pres. Bombay 2: 496. 1958 (Repr.).

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.

Distrib. : Grown in gardens. Bombay.

Notes. : Probably of New Guinea widely cultivated in warm regions as a foliage plant.

Gymnostachyum ceylanicum Arn. & Nees in DC. Prodr. 9: 93. 1847; C.B.Cl. in Hook. f. Fl. Brit India 4: 508. 1885; Bhargavan & Ramach. in J. Econ. Tax. Bot. 5: 445. 1984.

Herbs, scapigerous; stems 2.5–7.5 cm, villous. Leaves 7.5 x 3.0 cm, elliptic–lanceolate, apex obtuse, base acuminate, magins 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 ghiesreghtiana* 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.

Distrib. : Grown in gardens. Bombay.

Monechma debile (Forssk.) Nees in DC. Prodr. 11: 411. 1847 (*'debilis'*); Sant in Univ. Bombay Bot. Mem. 2: 91. 1952. *Dianthera debilis* Forssk. Fl. Aeg.–Arab. 9. 1775. *Monechma bracteatum* Hochst. in Flora 24: 375. 1841; Cooke, Fl. Pres. Bombay 2: 492. 1958 (Repr.).

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.

Distrib. : Grown in gardens. Pune.

Pachystachys coccinia (Abul.) Nees in Mart. Fl. Bras. 9: 99. 1847; Bailey; Man. Cult. Pl. 922. 1949; Naik, Fl. Marathwada 2: 685. 1998. *Justicia coccinea* Abul. Pl. Gui. 1: 10. 1775. *Jacobiana coccinea* (Abul.) Hiern in Kjoeb. Viclensk. Meddel. 84. 1877–78.

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.

Distrib. : Grown in gardens. Pune.

Notes. : Useful for vases and basket bouquet.

Pseuderanthemum bicolor (Schrank) Radlk. ex Lindou in Engl. & Prantl, Pflanzenf. 4(3B): 300, f. 133. A–D. 1895; Sant. in Univ. Bombay Bot. Mem. 2: 70. 1952; Naik, Fl. Osmanabad 252. 1979 et Fl. Marathwada 2: 687. 1998. *Eranthemum bicolor* Schrank, Pl. Hort. Monac. t. 8. 1819. *E. pulchellum* Hort. in Gartenmag. 176, t. 17. 1810 non Andr. 1800, nec Roxb. 1832. *Pseuderanthemum pulchellum* Merr. in Phil. J. Sci. Bot. 7: 218. 1912.

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.

P. kewense Bailey, Gentes Herb. 1: 103. 1923; Naik, Fl. Marathwada 2: 688. 1998. *Eranthemum atropurpureum* Hook. f. in Bot. Mag. t. 7839. 1902 non Bull. *Pseuderanthemum atropurpureum* (Hook. f.) Radlk. op. cit.

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, varigated with pink leaves and corolla pink–purple with darkdots.

Ruellia brittoniana (L.) Leonard. in J. Wash. Acad. Sci. 31: 196. 1941; Bailey, Man. Cult. Pl. 918. 1949; Naik, Fl. Marathwada 2: 688. 1998.

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 Miexico.

Sanchezia longiflora Hook. f. ex Planch. in Fl. des. Serres 23: 257, t. 2460. 1883; Naik, Fl. Marathwada 2: 692. 1998.

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, petoiles2.5 cm long. Flowers violet–red in terminal branched spikes.

Fls. & Frts. : September–October.

Distrib. : Planted in gardens. Marathwada (Naik, op. cit.).

Notes. : Native of Equador.

S. nobilis Hook. f. Bot. Mag. t. 5594. 1866; Bailey, Man. Cult. Pl. 920. 1949; Naik, Fl. Marathwada 2: 692. 1998.

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.

THUNBERGIACEAE

(S. Moorthy)

THUNBERGIA Retz. (nom. cons.)

1. Flowers yellow ... *T. mysorensis*
1. Flowers white :
   2. 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*

Thunbergia fragrans Roxb. Cor. Pl. 1: 47, t. 67. 1795; C.B.Cl. in Hook. f. Fl. Brit. India 4: 390. 1884; Cooke, Fl. Pres. Bombay 2: 417. 1958 (Repr.); Bor. & Raiz. in J. Bombay nat. Hist. Soc. 42:690, f. 4. 1941; Sant. in Univ. Bombay Bot. Mem. 2: 8. 1952.

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.

T. laevis Nees in Wall. Pl. As. Rar. 3: 77. 1832; Bremek. in Verh. K. Nederl. Akad. Wet. II 50 (4): 51. 1955; Sant. in J. Bombay nat. Hist. Soc. 53: 500. 1955; Naik, Fl. Marathwada 2: 694. 1998. *T. fragrans* auct. non Roxb. nisi partim; C.B.Cl. in Hook. f. Fl. Brit. India 4: 390. 1884; Cooke, Fl. Pres. Bombay 2: 417. 1958 (Repr.). *T. fragrans* var. *laevis* (Nees) C.B.Cl. in Hook. f. op. cit. 391.

Herbs, perennials; stems long, slender, twining, sowllen 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.

T. mysorensis (Wight) T. Anders. in J. Linn. Soc. 9:448. 1867; C.B.Cl. in Hook. f. Fl. Brit. India 4:393. 1884; Cooke Fl. Pres. Bombay 2:417. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2:9. 1952. *Hexacentris mysorensis* Wight, Ic. t. 871. 1844–45

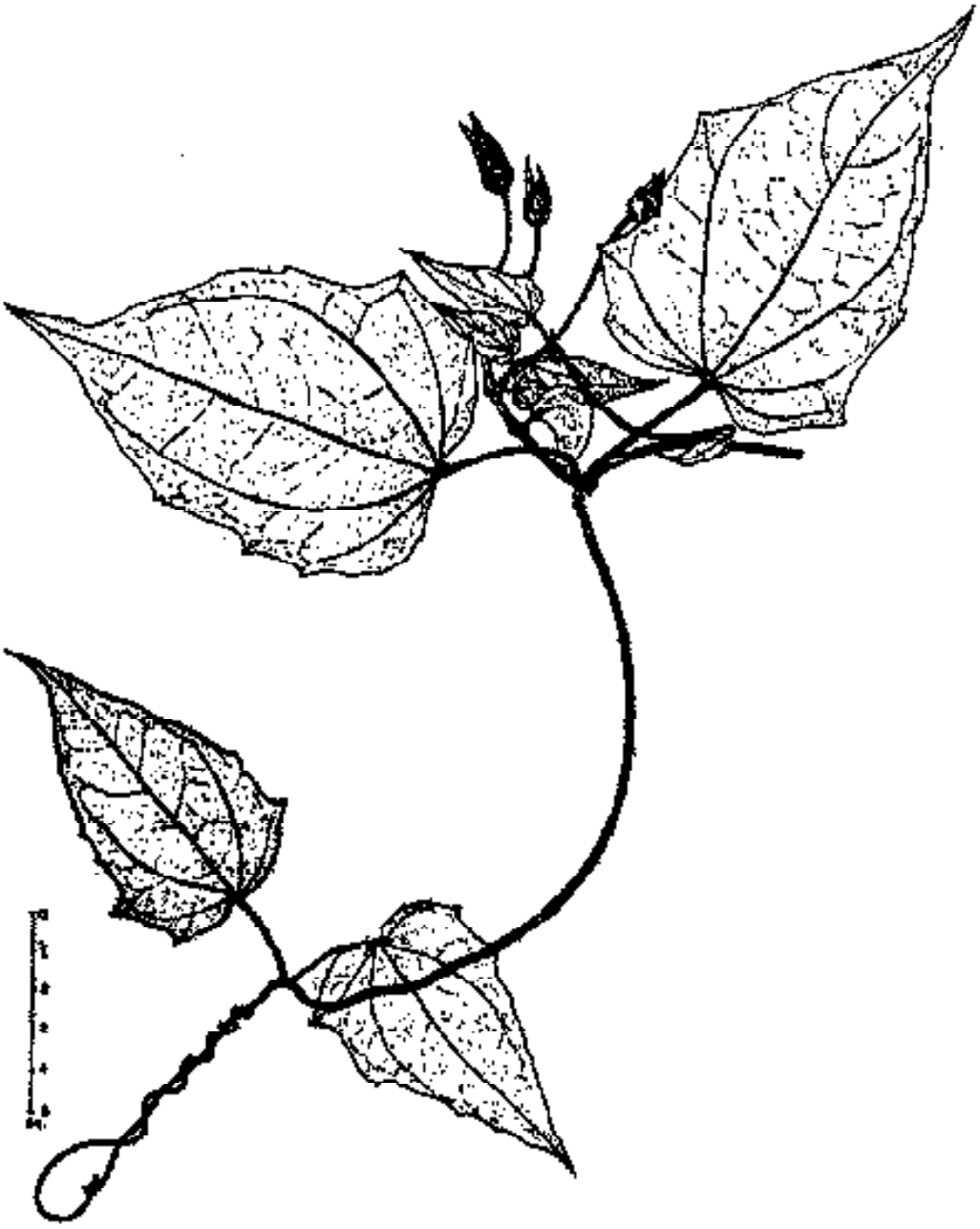
Climbers, extensive; braches slender. Leaves opposite, 7.5–12.5 x 2.5–3.5 cm, elliptic–lanceolate, base rounded, margins toothed, apex acuminate. Flowers yellow, 5–7 cm long, in lax, pendant racemes. Corolla tube 5 cm long, shortly conical below, swelling above and ending in four lobes; the upper lobe 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 :

Thunbergia alata Boj. ex Sims. in Bot. Mag. t. 2591. 1825; C.B.Cl. in Hook. f. Fl. Brit. India 4: 391. 1884; Cooke, Fl. Pres. Bombay 2: 418. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 10. 1952.

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.

T. coccinia Wall. Tent. Fl. Nep. 49, 58, t. 37. 1826; C.B.Cl. in Hook. f. Fl. Brit. India 4: 393. 1884. *Hexacentris coccinea* Nees in Wall. Pl. As. Rar. 3; 78. 1832. & in DC. Prodr. 11: 61. 1847.

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.

Distrib. : Grown in gardens. Pune.

Notes. : A native of India, outer Himalayas from Kumaon east–wards, Khasia hills but cultivated in gardens throughout India.

T. erecta (Benth.) T. Anders. in J. Linn. Soc. 7: 18. 1864; Cooke, Fl. Pres. Bombay 2: 418. 1958 (Repr.); Sant. in Univ. Bombay Bot. Mem. 2: 10. 1952; Naik, Fl. Marathwada 2: 694. 1998. *Meyenia erecta* Benth. in Hook. Niger Fl. 476. 1849; Bot. Mag. t. 4013. 1857.

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.

T. grandiflora (Roxb. ex Rottl.) Roxb. Fl. Ind. 3: 34. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 392. 1884; Sant. in Univ. Bombay Bot. Mem. 2: 9. 1952; Naik, Fl. Marathwada 2: 694. 1998. *Flemingia grandiflora* Roxb. ex Rottl. in Ges. Naturf. f. Neue Schr. 4: 202. 1803.

Shrubs with underground stolons; stems twining, young parts pubescent. Leaves 6–15 x 5–15 cm, broadly ovate, shallowly or deeply palmatilobed, 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.

Distrib. : Grown in gardens. Marathwada (Naik, op. cit.), Bombay, Pune, Raigad.

Notes. : Native of Bangladesh or S.E. Asia.

T. laurifolia Lindl. in Gard. Chron. 1856: 260. 1856; C.B.Cl. in Hook. f. Fl. Brit. India 4: 392. 1884.

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 ... PYGMAEOPREMNA
   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.

Callicarpa tomentosa (L.) Murr. Syst. Veg. ed. 13, 130. 1774; Sant. in Rec. Bot. Surv. India 16(1): 212. 1967 (3rd Rev. ed.). *Tomex tomentosa* L. Sp. Pl. 118. 1753. *Callicarpa lanata* L. Mant. Alt. 331. 1771; C.B.Cl. in Hook. f. Fl. Brit India 4: 567. 1885; Cooke, Fl. Pres. Bombay 2: 502. 1958 (Repr.). *'Aisar'*.

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 c 0.4 cm long, pale pink, sessile; calyx densely tomentose. Drupes 0.2–0.4 cm across, globose, black.

Fls. & Frts. : December–June.

Illus. : Wight, Ic. t. 1480. 1849; Talb. For. Fl. Bombay Pres. & Sind 2: 345, f. 449. 1911 *(Callicarpa lanata)*; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 548. 1982.

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*
1.	Inflorescence in terminal panicles, many–flowered :		
2.	Leaf margins distinctly serrate; flowers bluish or bluish–purple	...	*C. serratum*
2.	Leaf margins subentire or crenate–dentate :		
3.	Drupes obovoid, 4–lobed; calyx enlarged in fruits	...	*C. multiflorum*
3.	Drupes globose, entire; calyx not as above	...	*C. viscosum*

Clerodendrum inerme (L.) Gaertn. Fruct. Sem. 1: 271, t.75. 1788; C.B.Cl. in Hook. f. Fl. Brit. India 4: 589. 1885; Cooke, Fl. Pres. Bombay 2: 511. 1958 (Repr.). *Volkameria inermis* L. Sp. Pl. 637. 1753. *'Baad', 'Koynel', 'Vanjai'.*

Shrubs, c 2.5 m tall, much branched, straggling. Leaves 2–5 × 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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 467. 1988; Naik, Fl. Marathwada 2: 697, f. 87. 1998.

Distrib. : Common in deciduous forests and village outskirts, usually grown as hedge plant.

C. multiflorum (Burm. f.) O. Ktze. Rev. Gen. Pl. 3: 526. 1891. *Volkameria multiflorum* Burm. f. Fl. Ind. 137, t. 45, f. 1. 1786. *Clerodendrum phlomidis* L.f. Suppl. 292. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 4: 590. 1885; Cooke, Fl. Pres. Bombay 2: 511. 1958 (Repr.). *'Aarkhadi,' 'Bahurf', 'Iran', 'Takalni', 'Taklan'.*

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 358, f. 456. 1911; Mahesh. Illus. Fl. Delhi f. 173. 1966 (*Clerodendrum phlomidis*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: 549. 1982.

Distrib. : Common in deciduous forests.

C. serratum (L.) Moon. Cat. 46. 382. 1824; C.B.Cl. in Hook. f. Fl. Brit. India 4: 592. 1885; Cooke, Fl. Pres. Bombay 2: 512. 1958 (Repr.). *Volkameria serrata* L. Mant. 90. 1767. *'Bharang'*.

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 c 12.5 cm long. Drupes c 0.8 x 0.6 cm, obovoid.

Fls. & Frts. : July–December.

Illus. : Wight, Ic. t. 1472. 1849; Talb. For. Fl. Bombay Pres. & Sind 2: 359, f. 455. 1911; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 468. 1988.

Distrib. : Common in deciduous forests.

C. viscosum Vent. Jard. Malm. 1: t. 25. 1803. *C. infortunatum* auct. non L. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 594. 1885; Cooke, Fl. Pres. Bombay 2: 513. 1958 (Repr.). *'Adulsa', 'Bhandira', 'Kodli'*.

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 L.

1.	Trees, unarmed; leaves stellately fulvous tomentose beneath	...	*G. arborea*
1.	Shrubs, armed; leaves glaucescent beneath	...	*G. asiatica*

Gmelina arborea Roxb. Pl. Cor. 3: 42, t. 246. 1815; C.B.Cl. in Hook. f. Fl. Brit. India 4: 581. 1885; Cooke, Fl. Pres Bombay 2: 504. 1958 (Repr.). *'Shivan'*.

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.

Illus. : Wight, Ic. t. 1470. 1849; Talb. For. Fl. Bombay Pres. & Sind 2: 349, f. 451. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 550. 1982.

Distrib. : Common in deciduous forests.

G. asiatica L. Sp. Pl. 626. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4; 582. 1885; Cooke, Fl. Pres. Bombay 2: 505. 1958 (Repr.). *'Kali Shiwan'*.

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.

Illus. : Wight, Ic. t. 174. 1840; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 470.1988.

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 velvetty pubescent	...	*L. salvifolia*

Lantana camara L. var. **aculeata** (L.) Moldenke in Torreya 34: 9. 1934. *L. aculeata* L. Sp. Pl. 627. 1753. *L. camara* auct. non L. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 562. 1885; Cooke, Fl. Pres. Bombay 2: 498. 1958 (Repr.). *'Ghaneri', 'Tantani'.*

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.

Illus. : Tad. & Venkat. Handb. S. Indian Weeds 326, f. 129. 1955 (Rev. ed.).

Distrib. : Common in waste places and scrub forests.

L. salvifolia Jacq. Hort. Schoenbr. 3: 18, t. 285. 1798. *L. indica* Roxb. Fl. Ind. 3: 89. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 562. 1885; Cooke, Fl. Pres. Bombay 2: 498. 1958 (Repr.).

Undershrubs, 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.

Phyla nodiflora (L.) Greene in Pittonia 4: 46. 1899; Sant. in Rec. Bot. Surv. India 16(1): 211. 1967 (3rd Rev. ed.). *Verbena nodiflora* L. Sp. Pl. 20. 1753. *Lippia nodiflora* (L.) A. Rich. in Michaux, Fl. Bor. Amer. 2: 15. 1803; C.B.Cl. in Hook.f. Fl. Brit. India 4: 563. 1885; Cooke, Fl. Pres. Bombay 2: 499. 1958 (Repr.). *'Gour Mundi', 'Ratoliva'.*

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.

Illus. : Wight, Ic. t. 1463. 1849; Matthew, Illus. Fl Tamilnadu Carnatic 2: t. 553. 1982; Naik, Fl. Marathwada 2: 704, f. 88. 1998.

Distrib. : Common in marshy places.

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*

Premna coriacea C.B.Cl. in Hook.f. Fl. Brit. India 4: 573. 1885; Cooke, Fl. Pres. Bombay, 2: 506. 1958 (Repr.); Sant. in Rec. Bot. Surv. India 16(1): 213. 1967 (3rd Rev. ed.). *'Chambari'*, *'Rawan'*.

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.

Fls. & Frts. : February–September.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 351, f. 452. 1911.

Distrib. : Occasional. Ahmednagar, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.

P. latifolia Roxb. var. **viburnoides** C.B.Cl. in Hook. f. Fl. Brit. India 4: 578. 1885; Bole & Fernandez in J. Bombay nat. Hist. Soc. 70: 410, t. 2. 1973. *'Naroli'*, *'Narval'*, *'Narvela'*.

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.

Illus. : Bole & Fernandez, op. cit.

Distrib. : Infrequent. Bombay.

P. obtusifolia R.Br. var. **pubescens** Moldenke f. **serratifolia** (L.) Moldenke in Phytologia 36: 438. 1977. P. *serratifolia* L. Mant. 2: 253. 1771. *P. integrifolia* L. Mant. 2: 252. 1771 nom. superfl.; C.B.Cl. in Hook. f. Fl. Brit. India 4: 574. 1885; Cooke, Fl. Pres. Bombay 2: 506. 1958 (Repr.). *'Khara', 'Narvel'.*

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.

Illus. : Wight, Ic. t. 1467. 1849 (*P. integrifolia* L.).

Distrib. : Occasional. Bombay, Pune, Ratnagiri, Sindhudurg, Thane.

PRIVA Adans.

Priva cordifolia (L.f.) Druce in Bot. Soc. Exch. Club Brit. Isles 4: 641. 1917. *Buchnera cordifolia* L.f. Suppl. 287. 1781. *Priva leptostachya* A.L. Juss. in Ann. Mus. Par. 7: 70. 1806; C.B.Cl. in Hook. f. Fl. Brit. India 4: 565. 1885; Cooke, Fl. Pres. Bombay 2: 502. 1958 (Repr.).

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.

Fls. & Frts. : September–July.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 555. 1982.

Distrib. : Infrequent. Aurangabad, Beed, Bombay, Jalna, Raigad, Osmanabad.

PYGMAEOPREMNA Merr.

Pygmaeopremna herbacea (Roxb.) Moldenke in Phytologia 2: 54. 1941. *Premna herbacea* Roxb. Fl. Ind. 3: 80. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 4: 581. 1885.

Undershrubs. Leaves 5–12 x 2–9 cm, obovate, arranged in a rosette like whorl, apex obtuse, base cuneate, microscopically dotted and pubescent on venation above, margins sinuate–serrate. Inflorescences in corymbose–cymes. Flowers greenish–white. Drupes globose.

Fls. & Frts. : April–August.

Distrib. : Infrequent. Nagpur.

STACHYTARPHETA Vahl

Stachytarpheta jamaicensis (L.) Vahl, Enum. Pl. 1: 206. 1804; Rajendran & Daniel in Bull. Bot. Surv. India 34: 167. (1992) 1997. *Verbena jamaicensis* L. Sp. Pl. 1753. *Stachytarpheta indica* auct. non (L.) Vahl. 1804; C.B.Cl. in Hook. f. Fl. Brit. India 4: 564. 1885 p.p.; Cooke, Fl. Pres. Bombay 2: 501. 1958 (Repr.) p.p.

Undershrubs, 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

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 556. 1982.

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.

TECTONA L. f. (nom. cons.)

Tectona grandis L. f. Suppl. 151. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 4: 570. 1885; Cooke, Fl. Pres. Bombay, 2: 503. 1958 (Repr.). *'Sag', 'Sagwan'*.

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.

Illus. : Bedd. Fl. Sylv. t. 250. 1872; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 558. 1982.

Distrib. : Common in deciduous forests.

VERBENA L.

Verbena officinalis L. Sp. Pl. 20. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 565. 1885; Cooke, Fl. Pres. Bombay 2: 517. 1958 (Repr.); Naik, Fl. Marathwada 2: 708. 1998.

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*
	2. 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*

Vitex altissima L. f. Suppl. Pl. 294. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 4: 584. 1885; Cooke, Fl. Pres. Bombay 2: 510. 1958 (Repr.). *Vitex alata* Heyne ex Roth, Nov. Pl. Sp. 316. 1821; C.B.Cl. in Hook. f. op.cit.

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.

Illus. : Wight, Ic. t. 1466. 1849; Bedd. Fl. Sylv. t. 252. 1872; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 559. 1982.

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.).

var. **alata** (Willd.) Trimen, Handb. Fl. Ceylon 3: 358. 1895; Cooke, Fl. Pres. Bombay 2: 510. 1958 (Repr.). *V. alata* Willd. in Ges. Naturf. Fr. Berlin Neue Schrift. Neuesch. 4: 203. 1803; C.B.Cl. Hook. f. Fl. Brit. India 4: 585. 1885.

Trees, 15–20 m tall. Leaflets subsessile, 5–10 x 2–3.5 cm, oblong finely pubescent above, densely pubescent beneath. Cymes densely fulvous–pubescent. Flowers white with bluish tinge. Drupes globose, ripens purple.

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.

V. leucoxylon L. f. Suppl. 293. 1781; C.B.Cl. in Hook. f. Fl. Brit. India 4: 587. 1885; Cooke, Fl. Pres. Bombay 2: 510. 1958 (Repr.). *Wallrothia leucoxylon* (L.f.) Roth, Nov. Pl. Sp. 319. 1821. *'Sheras'*, *'Sherni'*.

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.

Illus. : Wight, Ic. t. 1467. 1850; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 559. 1982.

Distrib. : Frequent on banks of streams and in forests. Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

V. negundo L. Sp. Pl. 638. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 583. 1885; Cooke, Fl. Pres. Bombay 2: 508. 1958 (Repr.). *V. trifolia* Grah. Cat. Bombay Pl. 155. 1839 non L.

1.	Leaflets acute at apex	...	var. *intermedia*
1.	leaflets acuminate at apex :		
2.	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.).

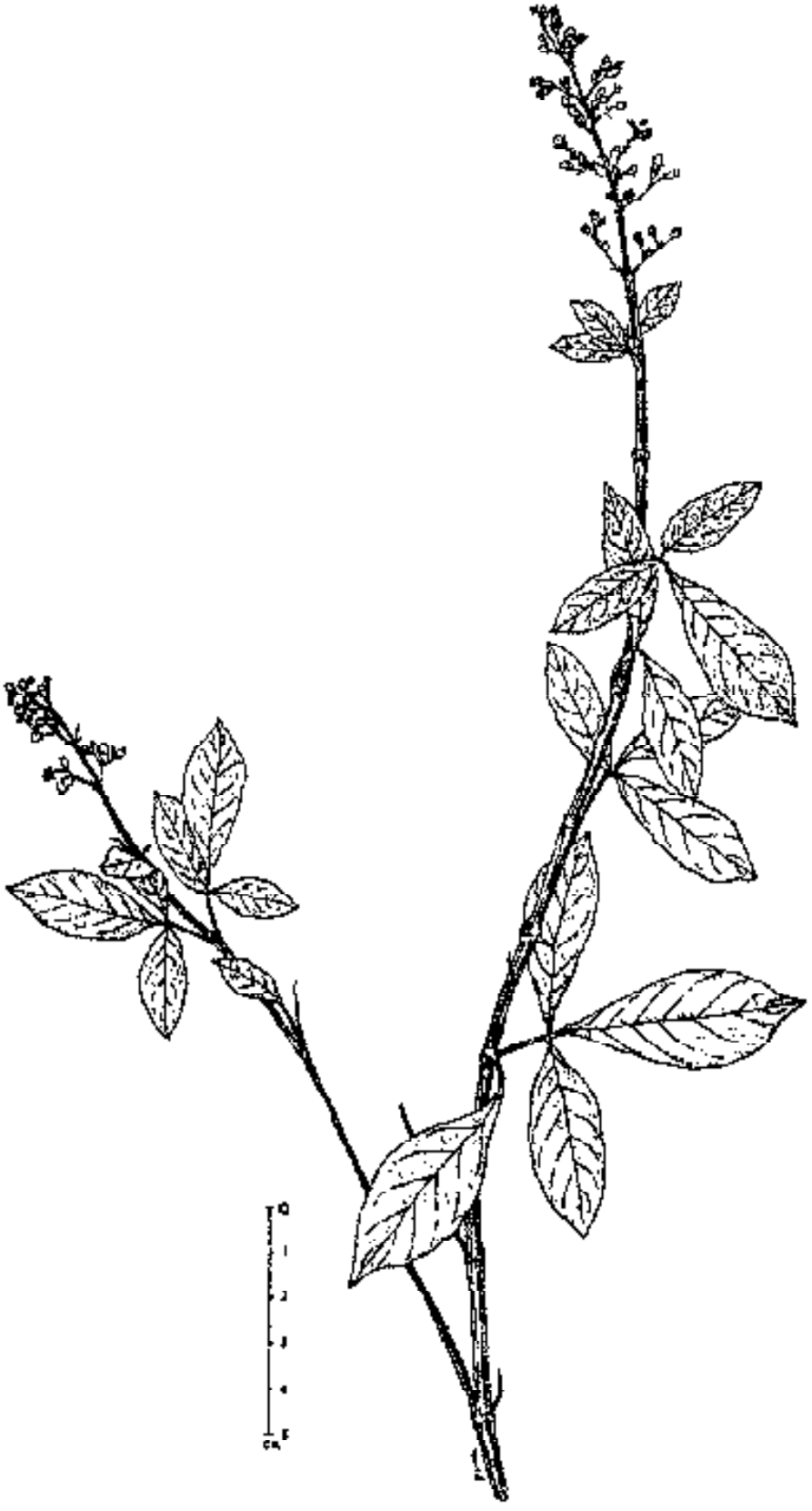
var. **incisa** (Lam.) C.B.Cl. in Hook. f. Fl. Brit. India 4: 584. 1885. *V. incisa* Lam. Dict. 2: 611. 1788 & Bot. Mag. t. 364. 1797. *'Katri nigad'.*

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.

var. **intermedia** (Pie) Moldenke, Revist. Sudan Bot. 5: 3. 1937. *V. negundo* f. *intermedia* Pie, Nem. Sci. Soc. Chine 1(3): 105. 1932.



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.

Fls. & Frts. : March–July.

Distrib. :Occasional along the hedges. Ratnagiri.

V. trifolia L. Sp. Pl. 638. 1753 *('trifollis);* C.B.Cl. in Hook. f. Fl. Brit India 4: 583. 1885; Cooke, Fl. Pres. Bombay 2: 508. 1958 (Repr.). 'Lingad', 'Lingur', 'Nirgundi'.

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.

Distrib. : Occasional. Bombay, Ratnagiri, Sindhudurg.

CULTIVATED SPECIES :

Citharexylum spinosum L. Sp. Pl. 625. 1753; Naik, Fl. Marathwada 2: 696. 1998. *C. subserratun* auct. non Sw. 1788; Cooke, Fl. Pres. Bombay 2: 518. 1958 (Repr.).

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.

Distrib. : Grown in gardens. Aurangabad, Nasik, Pune.

Notes. : Native of West Indies.

Clerodendrum aculeatum (L.) Griseb. Fl. Brit. W. Ind. 500. 1864; C.B.Cl. in Hook. f. Fl. Brit. India 4: 589. 1885; Cooke, Fl. Pres. Bombay 2: 514. 1958 (Repr.). *Volkameria aculeata* L. Sp. Pl. 637. 1753.

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.

C. calamitosum L. Mant. 90. 1767; C.B.Cl. in Hook. f. Fl. Brit. India 4: 591. 1885 (Repr.); Cooke, Fl. Pres. Bombay 2: 513 1958 (Repr.); Naik, Fl. Marathwada 2: 696. 1998.

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.

Distrib.: Frequently grown in gardens, sometimes naturaliaed. Jalna, Pune.

C. capitatum (Willd.) Schum. & Thonn. Beskr. Guin. Pl. 61. 1827; Huber in Fl. W. Trop. Afr. 2: 443. 1963. *Volkameria capitata* Willd. Sp. Pl. 3: 384. 1800.

Erect or scrambling shrubs. Flowers in globose terminal heads, white.

Fls. & Frts. : February–March.

Distrib. : Cultivated in gardens. Thane.

Notes. : A native of Africa.

C. glabrum E. Mey, Comm. Pl. Afr. Austr. 1: 273. 1835.

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.

Distrib. : Occasionally grown in gardens. Bombay.

C. indicum (L.) O. Ktze. Rev. Gen. Pl. 586. 1891. *Siphonanthus indica* L. Sp. Pl. 109. 1753. *Clerodendrum siphonanthus* R. Br. in Ait. f. Hort. Kew. ed. 2, 4: 65. 1812; C.B.Cl. in Hook. f. Fl. Brit. India 4: 595. 1885; Cooke, Fl. Pres. Bombay 2: 514. 1958 (Repr.); Bor & Raiz. Some Beautiful Indian climbers and shrubs 158. 1990 (Repr).

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.

Fls. & Frts. : July–December.

Distrib. : Grown in gardens. Bombay, Pune, Thane.

C. philippinum Schauer in DC. Prodr. 11: 667. 1847; Naik, Fl. Marathwada 2: 699. 1998. *Volkameria japonica* Jacq. Hort. Schoenbr. 3: 48, t. 338. 1798 non Thunb. 1784. *Clerodendrum fragrans* (Vent.) Willd. Enum. Hort. Berol. 659. 1809; C.B.Cl. in Hook. f. Fl. Brit. India 4: 589. 1885; Cooke, Fl. Pres. Bombay 2: 514. 1958 (Repr.). *'Hajar mogra'*.

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.

C. speciosissimum Van Geert ex Morren, Hort. Belge 3: 322–323. 1836 (as *'Clerodendron'*); Bailey, Man. Cult. Pl. 845. 1949.

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.

Distrib. : Occasionally cultivated in gardens.

C. splendens G. Don in Edinb. Phil. J. 9: 849. 1824 non A Cheval. 1920; Bailey, Man. Cult. Pl. 845. 1949; Naik, Fl. Marathwada 2: 700. 1998.

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 spreeding.

Distrib. : Cultivated as ornamental plant. Bombay, Pune.

Notes. : Native of Tropical Africa.

C. wallichii Merr. in J. Arnold Arbor. 33: 220. 1952. *C. nutans* Wall. ex D. Don, Prodr. Fl. Nep. 103. 1825; C.B.Cl. in Hook. f. Fl. Brit. India 4: 591. 1885.

Shrubs. Leaves elliptic–lanceolate. Flowers white, in pendulous panicled cymes; calyx accrescent; corolla tube obovate. Drupes deep purple.

Fls. & Frts. : November–March.

Distrib. : Occasionally cultivated.

Duranta erecta L. Sp. Pl. 637. 1753. *D. repens* auct. non L. 1753. *D. plumieri* Jacq. Select. Stirp. Arn. 186. 1763; C.B.Cl. in Hook. f. Fl. Brit. India 4: 560. 1885; Cooke, Fl. Pres. Bombay 2: 518. 1958 (Repr.).

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.

Gmelina philippensis Cham. in Linnaea 7: 109. 1832. *G. hystrix* Schult. ex Kurz in J. As. Soc. Bengal 39. 81. 1870; C.B.Cl. in Hook. f. Fl. Brit. India 4: 582. 1885; Cooke, Fl. Pres. Bombay 2: 505. 1958 (Repr.).

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.

Distrib. : Grown in gardens.

Notes. : Native of Siam and Philippine islands.

Holmskioldia sanguinea Retz. Obs. 6: 31. 1791; C.B.Cl. in Hook. f, Fl. Brit. India 4: 590. 1885; Cooke, Fl. Pres. Bombay 2: 518. 1958 (Repr.).

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.

Fls. & Frts. : November–January.

Distrib. : Grown in gardens as ornamental. Ahmednagar, Aurangabad, Bombay, Nagpur, Pune, Thane.

Notes. : Native of Tropical Himalayas.

Hymenopyramis brachiata Wall. ex Griff. in Calc. Nat. Hist. 3: 365. 1843.

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.

Distrib. : Occasionally grown in gardens. Nagpur.

Petrea volubilis L. Sp. Pl. 625. 1753; Bailey, Man. Cult. Pl. 843. 1949. Cooke, Fl. Pres. Bombay 2: 518. 1958 (Repr.).

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.

Fls. & Frts. : February–April.

Distrib. : Grown as ornamental in gardens. Ahmednagar, Aurangabad, Bombay, Nagpur, Pune.

Notes. : A native of Tropical America.

Stachytarpheta mutabilis (Jacq.) Vahl, Enum. Pl. 1: 209. 1804; Bor & Raiz. Some Beautiful Indian climbers and shrubs 152. 1990 (Repr.). *Verbena mutabilis* Jacq. Coll. Bot. 2: 334. 1758.

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.

Distrib. : Grown as an ornamental. Nagpur, Osmanabad, Pune, Raigad.

Notes. : A Native of Europe.

V. hybrida Voss in Vilm., Fleure Pleine Terre, ed. 1, 936. 1863. non Bicknell, 1941; Bailey, Man. Cult. Pl. 841. 1949.

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.

Distrib. : Grown in gardens. Pune.

V. rigida Spreng. Syst. Cur. Post 4(2): 230. 1827. *Verbena venosa* Gill. & Hook. in Bot. Misc. 1: 167. 1830; Bailey, Man. Cult. Pl. 840. 1949.

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.

V. tenuisecta Brig. in Ann. Conserv. & Jard. Bot. Geneve 7–8. 294. 1898; Bailey, Man. Cult. Pl. 841. 1949.

Herbs; stems decumbent, ascending. Leaves 3–pinnatifid, glabrescent. Spikes pedunclate. Flowers blue; calyx toothed, strigose–pubecent.

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*

Symphorema involucratum Roxb. Pl. Cor. 2: 4, t. 186. 1786; C.B.Cl. in Hook. f. Fl. Brit. India 4: 599. 1885; Cooke, Fl. Pres. Bombay 2: 515. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 362. 1840; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 557. 1982.

Distrib. : Frequent. Bombay, Pune, Raigad, Satara, Thane.

S. polyandrum Wight, Ic. t. 363. 1840; C.B.Cl. in Hook. f. Fl. Brit. India 4: 599. 1885; Cooke. Fl. Pres. Bombay 2: 515. 1958 (Repr.).

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.

Distrib. : Infrequent. Bombay, Chandrapur, Kolhapur, Ratnagiri.

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*

Avicennia alba Bl. Bijdr. 821. 1826; Cooke, Fl. Pres. Bombay 2: 517. 1958 (Repr.); Banerjee et al. Mangroves in India Id. Man. 33, f. 35. 1989. *A. officinalis* L. var. *alba* (Bl.) C.B.Cl. in Hook. f. Fl. Brit. India 4: 604. 1885. *'Tivar'*.

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.

A. marina (Forssk.) Vierh. in Denkschr. Kaiserl. Akad. Wiss. Math.–Naturwiss. Kl. 71. 435. 1907; Banerjee et al. Mangroves in India Id. Man. 36, f. 37 & 38 1989; S.M. Almeida, Fl. Savantwadi 1: 333. 1990. *Sceura marina* Forssk. Fl. Aeg.–Arab. 37. 1775.

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, upto 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.

var. **acutissima** Stapf & Mold. in Phytologia 1: 411. 1940 & 7: 225. 1960; Banerjee et al. Mangroves in India Id. Man. 39. 1989. *'Tivar'*.

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.

Fls. & Frts. : May–July.

Distrib. : Occasional along elevated tidal flats. Bombay (Banerjee et al. op. cit.).

A. officinalis L. Sp. Pl. 110. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 4: 604. 1885; Cooke Fl. Pres. Bombay 2: 516. 1958 (Repr.). *A. tomentosa* Jacq. Enum. Pl. Carib. 25. 1760. *'Tivar'*.

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.

Illus. : Wight, Ic. t. 1481. 1849 (*A. tomentosa* Jacq.); Matthew. Illus. Fl. Tamilnadu Carnatic 2: t. 560. 1982.

Distrib. : Infrequent along coastal swamps. Bombay, Ratnagiri, Sindhudurg, Thane.

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 :
      4. Calyx lobes/teeth less than 5 :
         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 ... ANISOCHILUS

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 ... COLEBROOKEA

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.

Acrocephalus hispidus (L.) Nicols. & Sivadasan in Taxon 29: 324. 1980. *Gomphrena hispida* L. Sp. Pl. ed. 2, 326. 1762. *Acrocephalus capitatus* Bth. in Wall. Pl. As. Rar. 2: 18. 1830; Hook. f. Fl. Brit. India 4: 611. 1885; Cooke, Fl. Pres. Bombay 2: 525. 1958 (Repr.).

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.

Illus. : Hook. Ic. Pl. t. 456. 1842.

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.

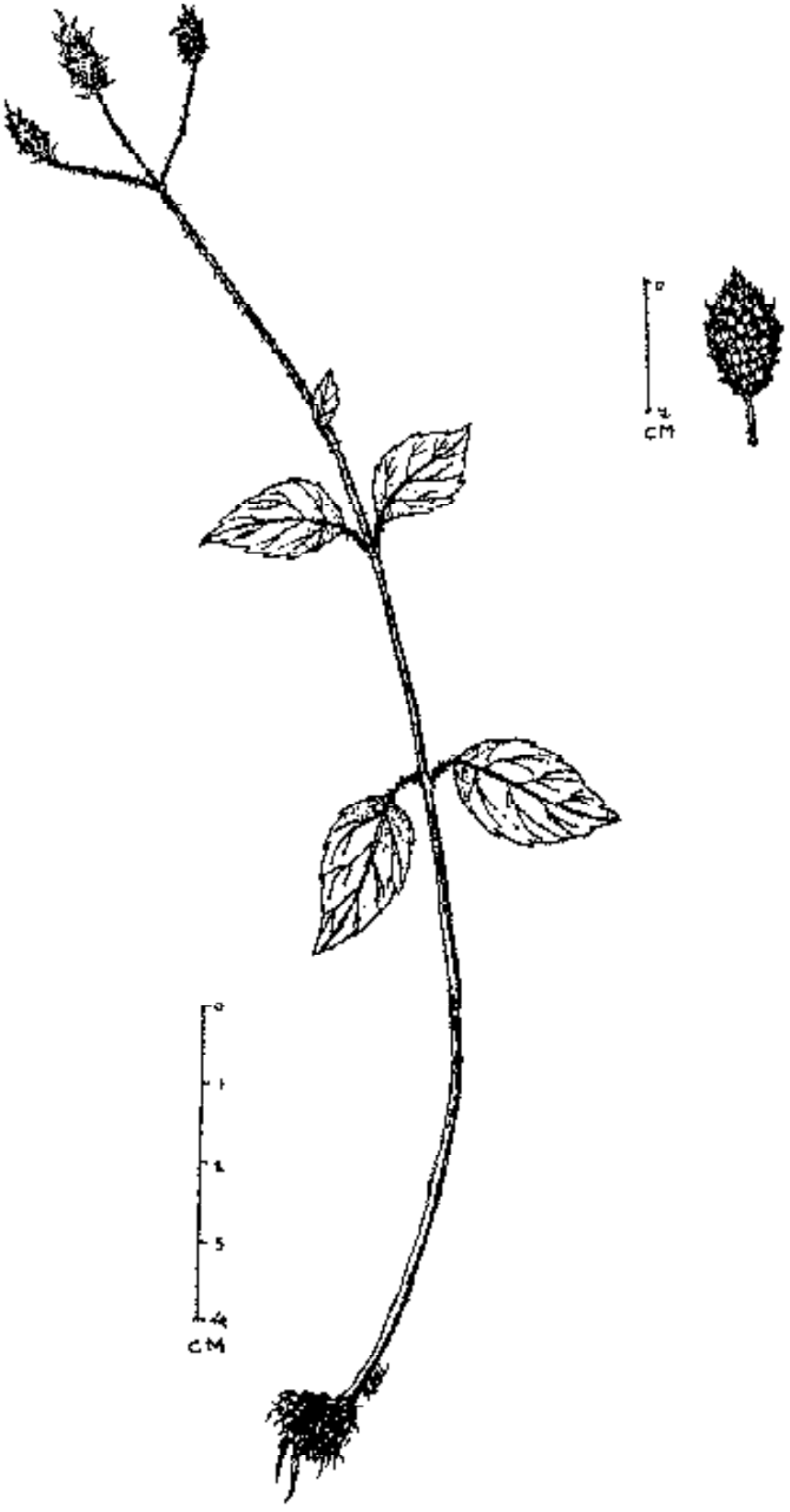
ANISOCHILUS Bth. ex Wall.

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.

Anisochilus carnosus (L.) Wall. Pl. As. Rar. 2: 18. 1830; Hook.f. Fl. Brit. India 4: 627. 1885; Cooke, Fl. Pres. Bombay 2: 532. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 58. 1940. *Lavandula carnosa* L. Amoen. Acad. 10: 56, t. 3. 1790. *'Charonva', 'Kapurli', 'Panjiri'.*

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.

Illus. : Wight, Illus. t. 1766, f. 1. 1850; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 561. 1982.

Distrib. : Infrequent in open situations. Ahmednagar, Akola, Amravati, Aurangabad, Bhandara, Buldhana, Chandrapur, Dhule, Nagpur, Nanded, Nasik, Pune, Ratnagiri.

A. eriocephalus Bth. in DC. Prodr. 12: 81. 1848; Hook.f. Fl. Brit. India 4: 627. 1885; Mukerjee in Rec. Bot. Surv. India 14(1): 58. 1940. *A. carnosus* var. *eriocephalus* (Bth.) T. Cooke, Fl. Pres. Bombay 2: 450. 1906 [2: 532. 1958 (Repr.)].

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.

A. verticillatus Hook. f. Fl. Brit. India 4: 629. 1885; Cooke, Fl. Pres. Bombay 2: 532. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 59. 1940.

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 serrulate. 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*

Anisomeles heyneana Bth. in Wall. Pl. As. Rar. 1: 59 1831; Hook. f. Fl. Brit. India 4: 672. 1885; Cooke, Fl. Pres. Bombay 2: 543. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 152. 1940. '*Chandhara*'.

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.

A indica (L.) O. Ktze. Rev. Gen Pl. 512. 1891; Mukerjee in Rec. Bot. Surv. India 14(1): 152. 1940. *Nepeta indica* L. Sp. Pl. 571. 1753. *Anisomeles ovata* R. Br. in Ait. Hort. Kew (ed. 2), 2: 364. 1811; Hook. f. Fl. Brit. India 4: 672, 1885; Cooke, Fl. Pres. Bombay 2: 543. 1958 (Repr.). '*Gopali*'.

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.

Illus. : Wight, Ic. t. 865. 1844–45; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 562. 1982.

Distrib. : Common throughout the State.

A. malabarica R.Br. ex Sims, Bot. Mag. t. 2071. 1819; Hook.f. Fl. Brit. India 4: 673. 1885; Cooke, Fl. Pres. Bombay 2: 544. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 153. 1940. '*Gojibha*'.

Undershrubs, 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 oblong–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.

Illus. : Wight, Ic. t. 864. 1844–45; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 482. 1988.

Distrib. : Occasional in ghats and in open, moist situations. Latur, Mumbai, Nanded, Nasik, Pune, Yavatmal.

Basilicum Moench.

Basilicum polystachyon (L.) Moench. Menth. Suppl. 143. 1802; Bennet in Indian Forester 95: 629. 1967; Keng in Gard. Bull. Singapore 24: 39. 1969. *Ocimum polystachyum* L. Mant. Pl. 567. 1767. *Moschosma polystachyum* (L.) Bth. in Wall. Pl. As. Rar. 2: 13. 1830; Hook. f. Fl. Brit. India 4: 612. 1885; Cooke, Fl. Pres. Bombay 1: 527. 1958 (Repr.).

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.

Fls. & Frts. : August–November.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 563. 1982.

Distrib. : Occasional in open, moist areas. Mumbai, Thane.

COLEBROOKEA Sm.

Colebrookea oppositifolia Sm. Exot. Bot. 2: 111, t. 115. 1804; Hook. f. Fl. Brit. India 4: 642. 1885; Cooke, Fl. Pres. Bombay 2: 541. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 84. 1940. '*Bhaman*'.

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, oblong–lanceolate, 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, divided up to base; corolla c 0.2 cm long. Nutlets obovoid–oblong, pubescent, tip hairy.

Fls. & Frts. : November–May.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 365, f. 458. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 564. 1982.

Distrib. : Common throughout the State.

GENIOSPORUM Wall.

Geniosporum tenuiflorum (L.) Merr. in Philipp. J. Sci. 19: 379. 1921; C.E.C. Fischer in Bull. Misc. Inform. 1932: 64. 1932; Sant. & Jain in Indian Forester 92: 643. 1966. *Ocimum tenuiflorum* L. Sp. Pl. 597. 1753. *Geniosporum prostratum* Bth. in Wall. Pl. As. Rar. 2: 18. 1830; Hook. f. Fl. Brit. India 4: 610. 1885; Cooke, Fl. Pres. Bombay 2: 525. 1958. (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 33. 1940.

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–lanceolate or obovate–lanceolate, 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.

Fls. & Frts. : December–March.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 566. 1982.

Distrib. : Occasional in sandy soil. Mumbai.

HYPTIS Jacq. (nom. cons.)

Hyptis suaveolens (L.) Poit. in Ann. Mus. Nat. Hist. Paris 7: 472, t. 29, f. 2. 1806; Hook. f. Fl. Brit. India 4: 630. 1885; Cooke, Fl. Pres. Bombay 2: 560. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 46. 1940; King in Gard. Bull. Singapore 24: 96. 1969. *Ballota suaveolens* L. Syst. Nat. ed. 10, 1100. 1759.

Undershrubs, 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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 567. 1982.

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*

Isodon coesta (Buch.–Ham. ex D. Don) Kudo in Mem. Fac. Sci. Toihoku Imp. Univ. 2: 131. 1929; Li in J. Arnold Arbor. 69: 368. 1988. *Plectranthus coesta* Buch.–Ham. ex D. Don, Prodr. Fl. Nepal. 117. 1825; Cooke, Fl. Pres. Bombay 2: 528. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 44. 1940. *P. menthoides* Bth. in Wall. Pl. As. Rar. 2: 17. 1830; Hook.f. Fl. Brit. India 4: 620. 1885.

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 502. 1988 *Rabdosia coesta* (D.Don) H. Hara].

Distrib. : Infrequent in open, moist areas and forest edges. Pune, Satara.

var. **cavaleriei** (Leveille) H.W.Li in J. Arnold Arbor. 69: 371. 1988. *Plectranthus cavaleriei* Leveille in Feddes, Repert. 9: 247. 1911.

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.

Illus. : Wight, Ic. t. 1430. 1849.

Distrib. : Occasional in open areas, and forest edges. Satara (as habitat mentioned by Li op. cit. 1630–2300 m alt.).

I. lophanthoides (Buch.–Ham. ex D. Don) H. Hara in J. Jap. Bot. 60: 235. 1985; Li in J. Arnold Arbor. 69: 334. 1988. *Hyssopus lophanthoides* Buch.–Ham. ex D. Don, Prodr. Fl. Nepal. 110. 1825. *Plectranthus stocksii* Hook. f. Fl. Brit. India 4: 618. 1885; Cooke, Fl. Pres. Bombay 2: 528. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 43. 1940. *P. striatus* Bth. in Wall. Pl. As. Rar. 2: 17. 1830; Hook.f. op. cit. 618.

1. Corolla tube exceed in calyx :

   2. Leaves obtuse at apex ... var. *gerardianus*

2. Leaves acuminate at apex ... var. *lophanthoides*

1. Corolla tube included in calyx ... var. *brachyantha*

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.

var. **gerardianus** (Bth.) H. Hara in J. Jap. Bot. 60: 235. 1985; Li in J. Arnold Arbor. 69: 336. 1988. *Plectranthus gerardianus* Bth. in Wall. Pl. As. Rar. 2: 17. 1830.

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.

Distrib. : Occasional in moist places. Sindhudurg (S. M. Almeida, Fl. Savantwadi 1: 348. 1990).

var. **brachyantha** (Hook. f.) Kulkarni, Lakshmi. & Das Das, comb. nov. *Plectranthus gerardianus* Bth. var. *brachyantha* Hook. f. Fl. Brit. India 4: 618. 1885; S.M. Almeida, Fl. Savantwadi 1: 348. 1990.

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.).

I. rugosus (Wall.) Codd in Taxon 17: 239. 1968; Li in J. Arnold Arbor. 69: 340. 1988. *Plectranthus rugosus* Wall. Pl. As. Rar. 2: 17. 1830; Hook. f. Fl. Brit. India 4: 620. 1885; Mukerjee in Rec. Bot. Surv. India 14(1): 47. 1940.

Undershrubs, 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*
1. Leaves sessile or subsessile; bracts shortly ovate, with long, capillary awns ... *L. bipinnata*

Lavandula bipinnata O. Ktze. Rev. Gen. Pl. 521. 1891; Mukerjee in Rec. Bot. Surv. India 14(1): 65. 1940. *L. burmanni* Bth. Lab. Gen. & Sp. 161. 1833; Hook.f. Fl. Brit. India 4: 631. 1885; Cooke, Fl. Pres. Bombay 2: 534. 1958 (Repr.). '*Ghodeghui*', '*Gorea*'.

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 dialated 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.

var. **intermedia** O. Ktze. Rev. Gen. Pl. 521. 1891; Mukerjee in Rec. Bot. Surv. India 14(1): 66. 1940.

Other characters as in species, except bracts lanceolate, shortly acuminate, almost equalling the calyx.

Distrib. : Infrequent. Bombay & 'Concan' (Mukerjee, op. cit.).

var. **rothiana** O. Ktze. Rev. Gen. Pl. 521. 1891; Mukerjee in Rec. Bot. Surv. India 14(1): 65. 1940; Sant. Fl. Purandhar 108. 1958; Naik, Fl. Marathwada 2: 713. 1998.

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, Parbhani, Purandhar–Pune (Sant. op. cit.).

L. lawii Wight, Ic. t. 1439. 1849; Shrinivasan in Henry et al. Fl. Tamilnadu Anal. 2: 174. 1987. *L. gibsoni* Grah. ex Dalz. & Gibs. Bombay Fl. 206. 1861; Hook. f. Fl. Brit. India 4: 631. 1885; Cooke, Fl. Pres. Bombay 2: 533. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 64. 1940. '*Nivale*'.

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.

Leonotis nepetiifolia (L.) R. Br. Prodr. 504. 1810 *('nepetaefolia')*; Hook. f. Fl. Brit. India 4: 691. 1885; Cooke, Fl. Pres. Bombay 2: 555. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 185. 1940. *Phlomis nepetiifolia* L. Sp. Pl. 586. 1753. '*Dipmal*', '*Matisul*'.

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.

Illus. : Wight, Ic. t. 687. 1844–1845; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 568. 1982..

Distrib. : Common throughout the State.

LEONURUS L.

Leonurus sibiricus L. Sp. Pl. 584. 1753; Hook. f. Fl. Brit. India 4: 678. 1885; Cooke, Fl. Pres. Bombay 2: 546. 1958 (Repr.).

Herbs, erect, 40–100 cm high; stems stout, slightly angled, furrowed, puberulous. Leaves 3–10 cm long, pinnatipartite, 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 spinescent; 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.

Fls. & Frts. : November–January.

Distrib. : Naturalized exotic occurs in open areas. 'Konkan' (Cooke, op. cit.), Mumbai.

LEUCAS R. Br.

1. Whorls lax, 2–4–flowered ... *L. biflora*

1. Whorls compact, more than 4–flowered :

2. Mouth of calyx–tube oblique :

3. Lower side of calyx mouth longer ... *L. urticifolia*

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 ... *L. cephalotes*

6. Leaves linear–lanceolate or oblong–lanceolate; floral bracts linear; calyx teeth not exceeding the villi; nutlets oblong ... *L. diffusa*

5. Calyx–tube uniformly pubescent :

7. Bracts lanceolate, ciliate; calyx tube abruptly decurved, strongly ribbed ... *L. nutans*

7. Bracts linear, villous; calyx tube slightly curved, not strongly ribbed :

8. Leaves sessile; calyx prominently nerved; corolla up to 10 mm long ... *L. wightiana*

8. Leaves subsessile; calyx not prominently nerved; corolla up to 18 mm long ... *L. zeylanica*

4. Calyx–tube not pubescent inside :

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 ... *L. aspera*

10. Calyx–tube uniformly pubescent, teeth not bristle tipped ... *L. indica*

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 :

18. 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 turbinate–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 ... *L. deodikarii*

Leucas aspera (Willd.) Link, Enum. Hort. Berol. Alt. 2: 113. 1822; Hook. f. Fl. Brit. India 4: 690. 1885; Cooke, Fl. Pres. Bombay 2: 548. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 166. 1940; Keng in Gard. Bull. Singapore 24: 101. 1969. *Phlomis aspera* Willd. Enum. Hort. Berol. 2: 621. 1809. *Leucas plukenetii* (Roth) Spr. Syst. Veg. 2: 473. 1825; Naik, Fl. Marathwada 2: 719. 1998. *Phlomis plukenetii* Roth, Nov. Pl. Sp. 261. 1821.

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 483. 1988.

Distrib. : Common throughout the State in open situations on sandy and gravelly soils, around cultivated fields, open grasslands and along road–sides.

L. biflora (Vahl) R. Br. Prodr. 504. 1810; Hook. f. Fl. Brit. India 4: 683. 1885; Cooke, Fl. Pres. Bombay 2: 553. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 180. 1940. *Phlomis biflora* Vahl, Symb. Bot. 3: 77. 1794.

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.

Illus. : Wight, Ic. t. 866. 1844–1845.

Distrib. : Common throughout the State in the undergrowth of deciduous forests in plains and in rocky areas.

var. **procumbens** (Desf.) Gamble, Fl. Pres. Madras 1151. 1924 [2: 804. 1957 (Repr.)]; Mukerjee in Rec. Bot. Surv. India 14(1): 180. 1940. *L. procumbens* Desf. in Mem. Mus. Paris. 9: 7, t. 3. 1824; Hook.f. Fl. Brit. India 4: 683. 1885; Cooke, Fl. Pres. Bombay 2: 553. 1958 (Repr.).

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.

L. cephalotes (Roth) Spr. Syst. Veg. 2: 743. 1825; Hook. f. Fl. Brit. India 4: 689. 1885; Cooke, Fl. Pres. Bombay 2: 549. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 168. 1940.

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.

L. ciliata Bth. in Wall. Pl. As. Rar. 1: 61 1831; Hook. f. Fl. Brit. India 4: 687. 1885; Cooke, Fl. Pres. Bombay 2: 554. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 174. 1940. '*Burumbi*'.

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.

L. clarkei Hook. f. Fl. Brit. India 4: 688. 1885; Haines, Bot. Bihar & Orissa 2: 787. 1961 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 170. 1940; Naik, Fl. Marathwada 2: 716. 1998.

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 et 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.

L. diffusa Bth. Lab. Gen. Sp. 615. 1835; Hook. f. Fl. Brit. India 4: 689. 1885; Mukerjee in Rec. Bot. Surv. India 14(1): 171. 1940; Naik, Fl. Marathwada 2: 717. 1998.

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.).

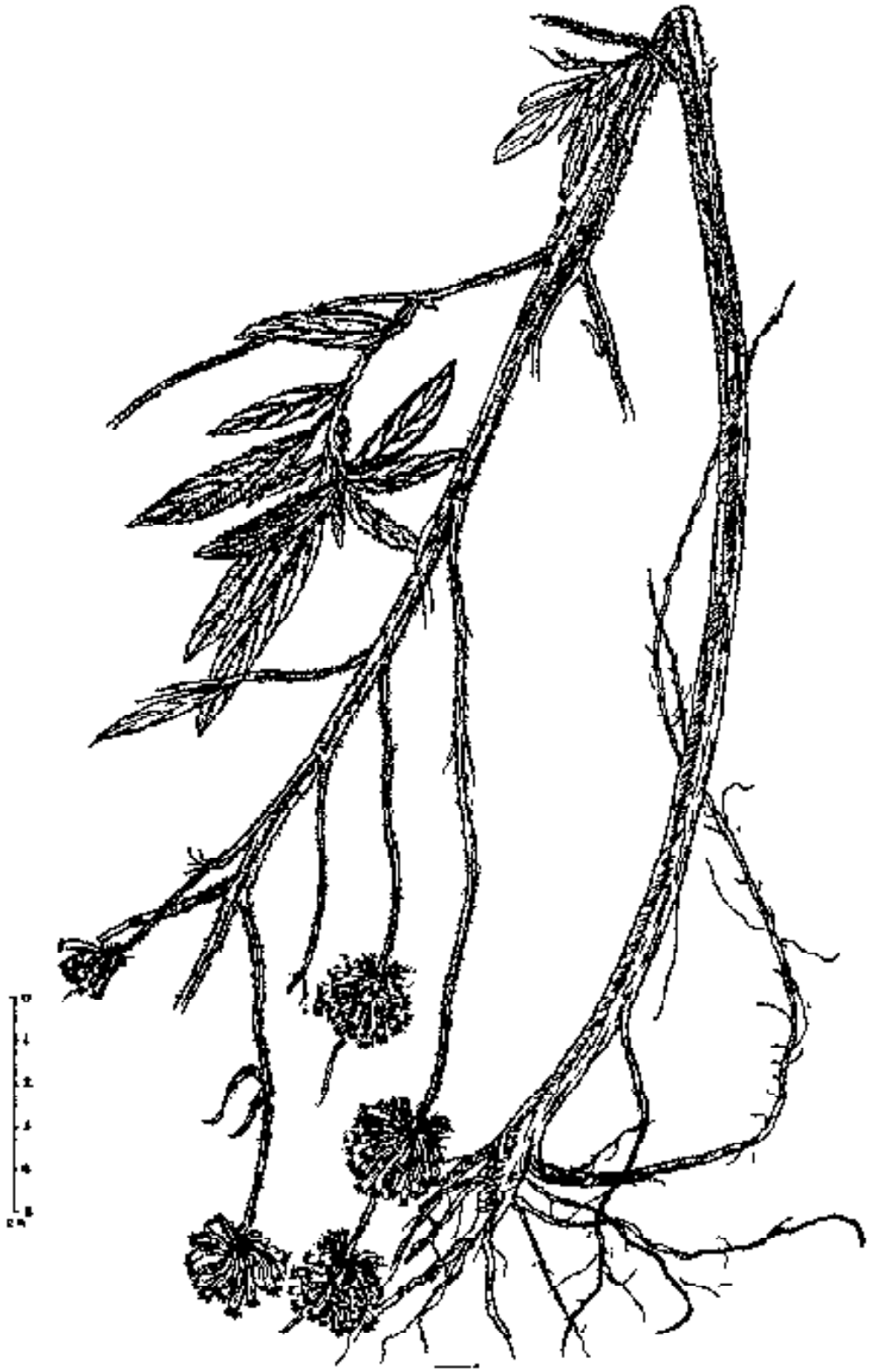
L. eriostoma Hook.f. Fl. Brit. India 4: 686. 1885; Gamble, Fl. Pres. Madras 2: 806. 1957 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 176. 1940.

Undershrubs, 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.

L. indica (L.) R.Br. ex Vatke in Oestr. Bot. Zeitschr. 25: 95. 1875; Srinivasan in Henry et al. Fl. Tamilnadu Anal. 2: 171.1987. *L. lavandulifolia* Sm. in Rees. Cycl. 20: n.2. 1812; Mukerjee in Rec. Bot. Surv. India 14(1): 167. 1940; Keng in Gard. Bull. Singapore 24: 103. 1969. *L. linifolia* (Roth) Spr. Syst. Veg. 2: 743. 1825; Hook. f. Fl. Brit. India 4: 690. 1885; Cooke, Fl. Pres. Bombay 2: 548. 1958 (Repr.).



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 subserrate. 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.

Fls. & Frts. : February–September.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 569. 1982.

Distrib. : Common in plains and ghats. Ahmednagar, Aurangabad, Dhule, Kolhapur, Nasik, Pune, Raigad, Ratanagiri, Sindhudurg, Thane.

L. lanata Bth. in Wall. Pl. As. Rar. 1: 61. 1831; Hook.f. Fl. Brit. India 4: 681. 1885; Cooke, Fl. Pres. Bombay 2: 552. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 178. 1940.

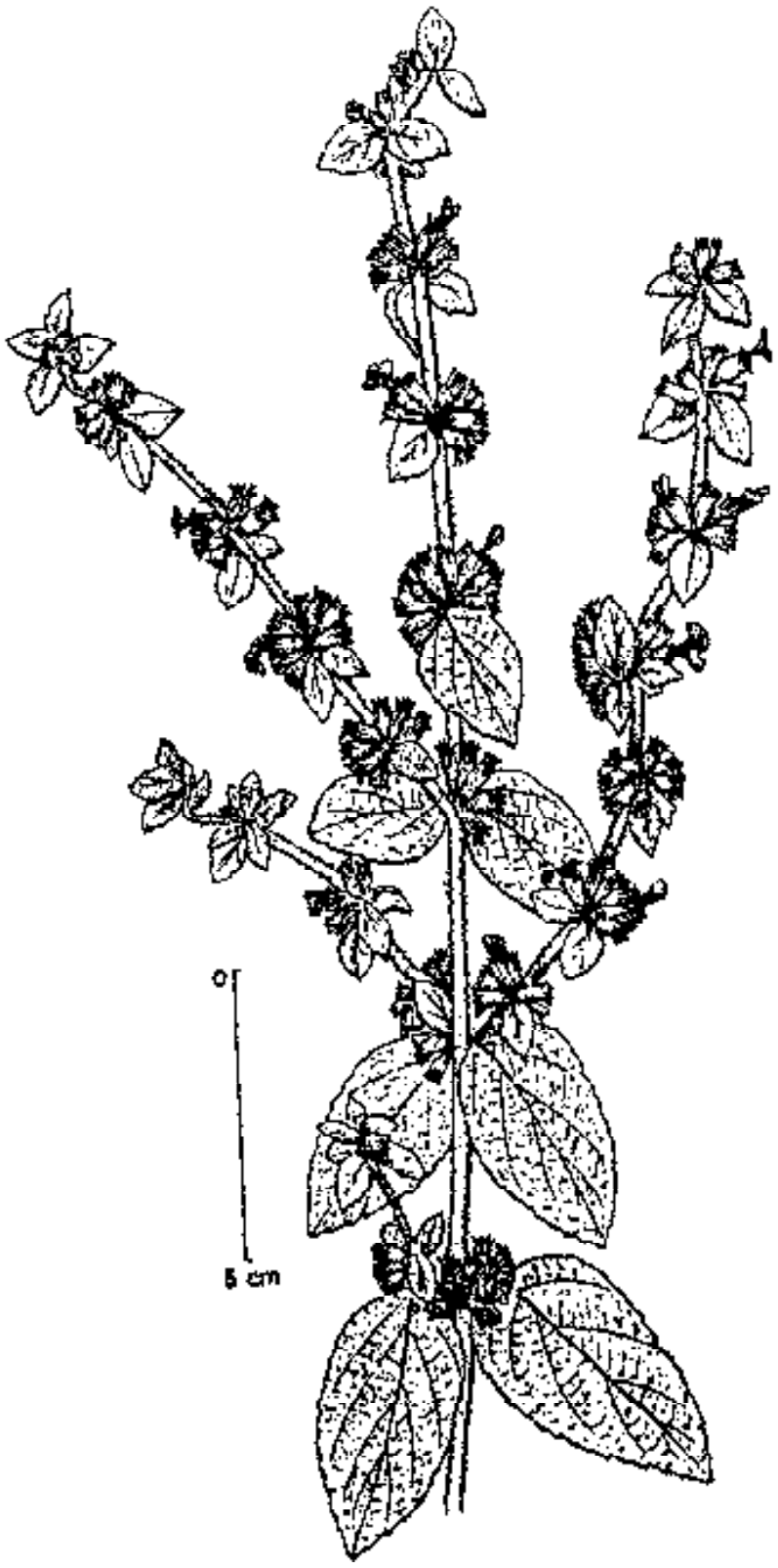
Herbs, 25–75 cm high, perennial, much branched from woody root stock; branches softly erect, woolly or subsilky, obtusely 4–angled. Leaves 3–6 x 1.2–3.0 cm, ovate, thick, tomentose or softly silky on both sides, apex acute or obtuse, base rounded or cuneate, margins crenate–serrate. Flowers white, in 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.

L. longifolia Bth. Lab. Gen. Sp. 744. 1835; Hook. f. Fl. Brit. India 4: 684. 1885; Cooke, Fl. Pres. Bombay 2: 551. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 170. 1940; Cramer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 182. 1981. '*Dudhani*'.

Herbs, 25–50 cm high, rigid, annual with perennial rootstock; stems and branches 4–angular, hirsute or retrorsely pubescent below, less hirsute or scaberulous avove. 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.

L. marrubioides Desf. Mem. Mus. Hist. Nat. 11: 6, t. 3, f. 1. 1824; Hook. f. Fl. Brit. India 4: 683. 1885; Mukerjee in Rec. Bot. Surv. India 14(1): 181. 1940; Cramer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 185. 1981.

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 487. 1988.

Distrib. : Appears to be rare. Concan (Mukerjee, op. cit.).

L. martinicensis (Jacq.) R. Br. Prodr. 504. 1810; Hook. f. Fl. Brit. India 4: 688. 1885; Cooke, Fl. Pres. Bombay 2: 550. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 169. 1940; Morton, Fl. West Africa 2: 460. 1963. *Clinopodium martinicense* Jacq. Amer. Hist. 173. 1763.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 488. 1988.

Distrib. : Infrequent in open, moist areas in deciduous forests. Akola, Aurangabad, Beed, Buldhana, Dhule, Jalna, Latur, Nagpur, Nanded, Osmanabad, Parbhani, Pune, Thane.

L. mollissima Wall. Pl. As. Rar. 1: 62. 1831; Hook. f. Fl. Brit. India 4: 682. 1885; Cooke, Fl. Pres. Bombay 2: 552. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 183. 1940; Cramer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 185. 1981.

Herbs, slender, annual or perennial; stems and branches straggling or ascending, 90–130 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.

L. montana Spr. Syst. Veg. 2: 742. 1825; Hook. f. Fl. Brit. India 4: 682. 1815; Cooke, Fl. Pres. Bombay 2: 552. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 182. 1940.

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 linear, villous; 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.

Distrib. : Uncommon in open areas in rocky and moist situations. Pune, Satara.

L. nutans (Roth) Spr. Syst. Veg. 2: 743. 1825; Hook, f. Fl. Brit. India 4: 688. 1885; Cooke, Fl. Pres.Bombay 2: 550. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 169. 1940; Naik, Fl. Marathwada 2: 719. 1998. *Phlomis nutans* Roth, Nov. Pl. Sp. 263. 1821.

Hrerbs, 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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 490. 1988.

Distrib. : Occasional in rocky areas in scrub jungle, weed of wastelands near fields. Amravati, Nagpur, Nanded & Osmanabad (Naik, op. cit.).

L. stelligera Wall. Pl. As. Rar. 1: 61. 1831; Hook. f. Fl. Brit. India 4: 686. 1885; Cooke, Fl. Pres. Bombay 2: 553. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 177. 1940. *'Burumbi', 'Goma'*.

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.

L. stricta Bth. in Wall. Pl. As. Rar. 1: 61. 1831; Hook. f. Fl. Brit. India 4: 688. 1885; Cooke, Fl. Pres. Bombay 2: 551. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 170. 1940.

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.

Fls. & Frts. : August–January.

Distrib. : Frequent in open areas, road sides and in rocky areas. Akola, Aurangabad, Beed, Buldhana, Chandrapur, Dhule, Jalgaon, Jalna, Latur, Nanded, Osmanabad, Parbhani, Pune, Yavatmal.

L. urticifolia (Vahl) R. Br. Prodr. 504. 1810; Hook. f. Fl. Brit. India 4: 680. 1885; Cooke, Fl. Pres. Bombay 2: 547. 1958 (Repr.); Mukerjee in Rec. Bot Surv. India 14(1): 166. 1940. *Phlomis urticifolia* Vahl, Symb. Bot. 3: 76. 1794 (*'urticaefolia'*).

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, villous outside, lower 3–lobed. Nutlets c 0.2 cm long, oblong, truncate and glandular at top.

Fls. & Frts. : August–November.

Illus. : Wight, Ic. t. 1451. 1849.

Distrib. : Scattered in the undergrowth of the forests and along forest paths. Ahmednagar, Aurangabad, Beed, Buldhana, Dhule, Jalna, Latur, Mumbai, Nagpur, Nanded, Nasik, Osmanabad, Parbhani, Pune.

L. wightiana Bth. in Wall. Pl. As. Rar. 1: 60. 1829; Hook. f. Fl. Brit. India 4: 690. 1885; Mukerjee in Rec. Bot. Surv. India 14(1): 172. 1940; Naik, Fl. Marathwada 2: 721. 1998.

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 nerved, hispid throughout from 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, dark brown.

Fls. & Frts. : October–December.

Distrib. : Rare, on gravelly soil along stream–banks. Nanded (Naik, op. cit.).



Leucas zeylanica (L.) R. Br.

L. zeylanica (L.) R.Br. Prodr. 504. 1810; Hook. f. Fl. Brit. India 4: 689. 1885; Cooke, Fl. Pres. Bombay 2: 549. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14: 171. 1940; Cramer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 183. 1981. *Phlomis zeylanica* L. Sp. Pl. 586. 1753.

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, obovoid 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.

Micromeria capitellata Bth. in DC. Prodr. 12: 218. 1848; Hook. f. Fl. Brit. India 4: 649. 1885; Cooke, Fl. Pres. Bombay 2: 542. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 97. 1940. '*Karvat*'.

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 whorls 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*

Nepeta bombaiensis Dalz. in Dalz. & Gibs. Bombay Fl. 209. 1861; Hook. f. Fl. Brit. India 4: 661. 1885; Cooke, Fl. Pres. Bombay 2: 556. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 133. 1940.

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.

N. hindostana (Heyne ex Roth) Haines, Bot. Bihar & Orissa 744. 1922 [2: 781. 1961 (Repr.)]; Mukerjee in Rec. Bot. Surv. India 14(1): 133. 1940. *Glechoma hindostana* Roth, Nov. Pl. Sp. 259. 1821. *Nepeta ruderalis* Buch.–Ham. ex Bth. in Wall. Pl. As. Rar. 1: 64. 1831; Hook. f. Fl. Brit. India 4: 661. 1885; Cooke, Fl. Pres. Bombay 2: 556. 1958 (Repr.).

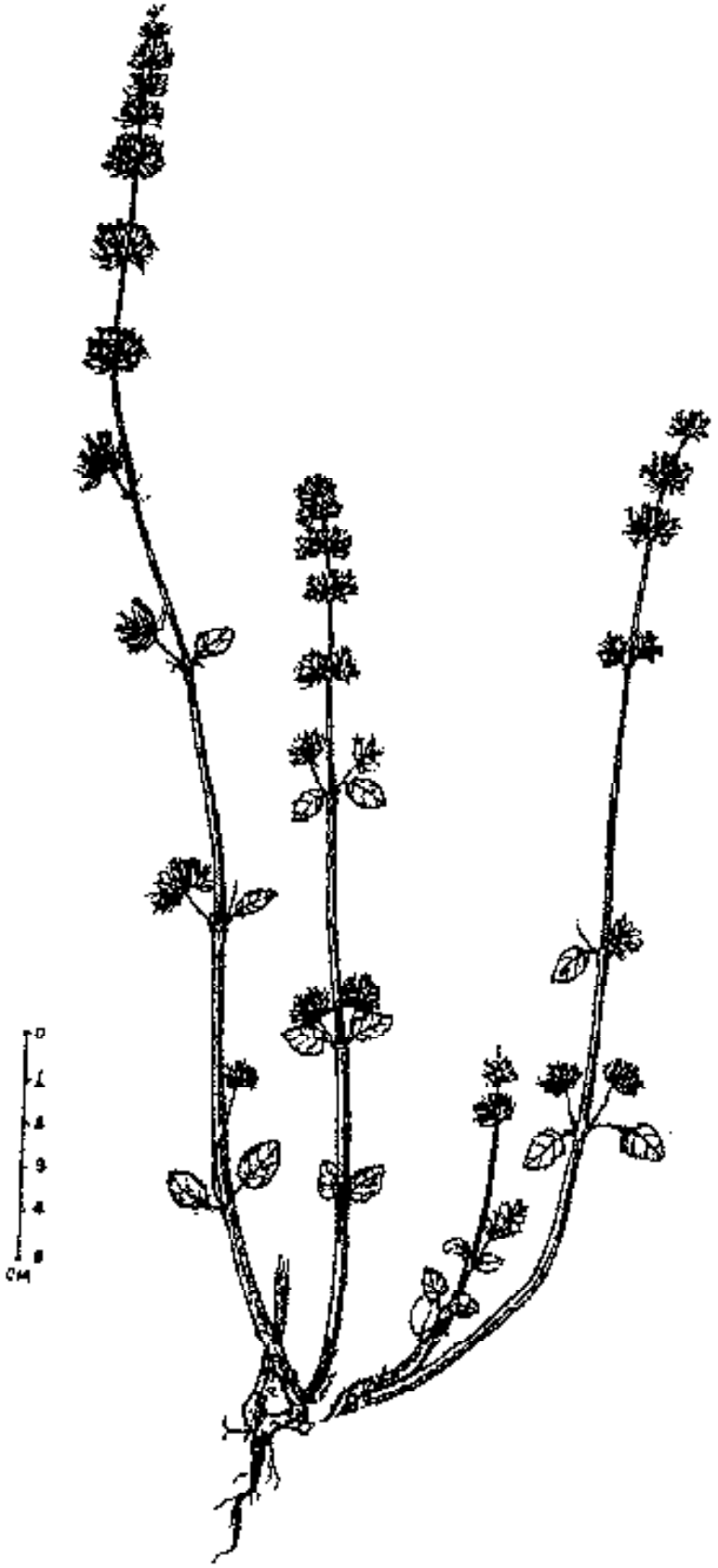
1. Calyx 0.4 cm long; corolla exserted ... var. *hindostana*
1. Calyx c 0.6 cm long; corolla not exserted ... var. *woodrowii*

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 c 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.

var. **woodrowii** (T. Cooke) Sant. Fl. Purandhar 110. 1958. *N. ruderalis* Buch.–Ham. ex Hook. f. var. *woodrowii* T. Cooke, Fl. Pres. Bombay 2: 473. 1906. [2: 556. 1958 (Repr.)].

Herbs, 10–30 cm high, annual, branched from base; branches ascending or erect, pubescent. All other characters as in species but differes 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. & Frts. : August–November.

Illus. : Lakshmi. & Sharma, Fl. Nasik, Dt. 394. 1991.

Distrib. : Occasional in open, moist areas. Ahmednagar, Akola, Bombay, Nasik, Pune, Thane.

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*

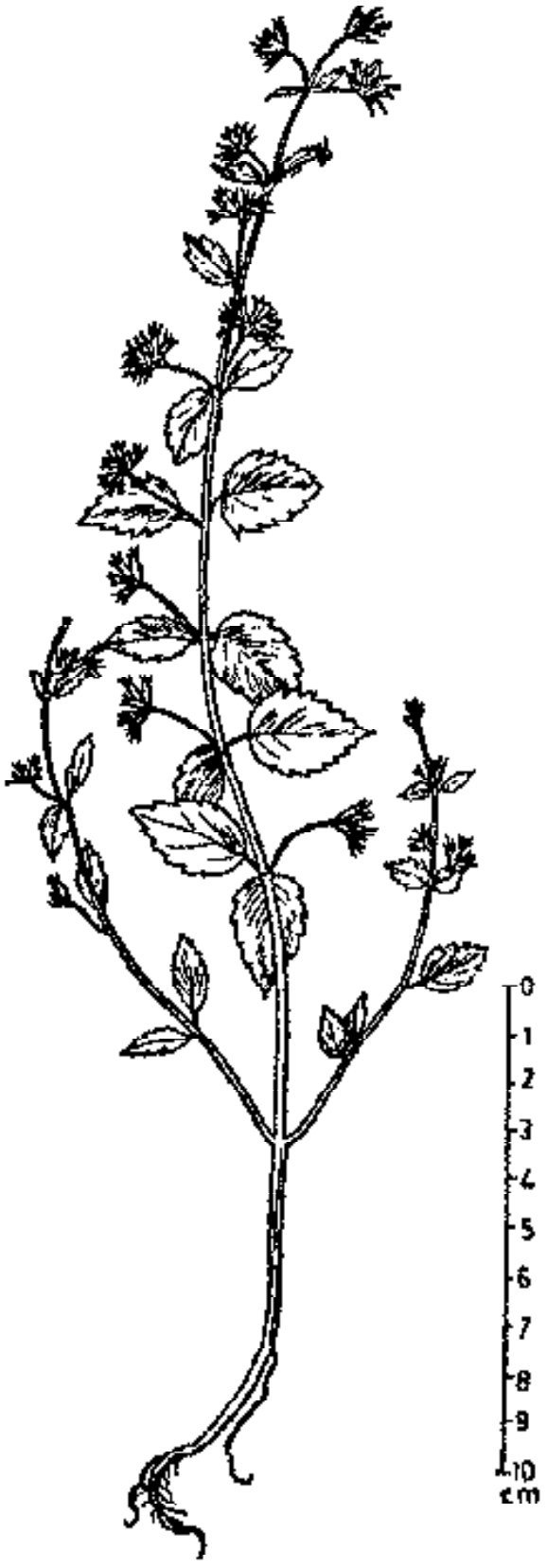
Ocimum americanum L. Cent. Pl. 1: 15. 1755; Keng in Gard. Bull. Singapore 24: 125. 1969. *O. canum* Sims in Bot. Mag. 51: t. 2452. 1823; Hook. f. Fl. Brit. India 4: 607. 1885; Cooke, Fl. Pres. Bombay 2: 521. 1958 (Repr.); Mukerjee in Rec. Bot Surv. India 14(1): 17. 1940. *'Ran–tulsi'*.

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. & Frts. : September–February.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 494. 1988.

Distrib. : Common throughout the State, in open situations.



Nepeta hindustana var. **woodrowii** (T. Cooke) Sant.

O. gratissimum L. Sp. Pl. 1197. 1753; Hook. f. Fl. Brit. India 4: 608. 1885; Cooke, Fl. Pres. Bombay 2: 522. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 20. 1940; Cramer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 112. 1981. *'Mali–tulsi'*, *'Ram–tulas'*.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 520. 1982.

Distrib. : Infrequent in open situations in deciduous forests. Aurangabad, Dhule, Jalna, Latur, Mumbai, Nasik, Parbhani, Pune, Ratnagiri, Sindhudurg, Thane.

O. tenuiflorum L. Sp. Pl. 2: 597. 1753; Press & Sivarajan in Bull. Br. Mus. Nat. Hist. (Bot.) 19: 116. 1989. *O. sanctum* L. Syst. Nat. ed. 12, 2: 402. 1767; Hook. f. Fl. Brit. India 4: 609. 1885; Cooke, Fl. Pres. Bombay 2: 521. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 19. 1940. *'Kali–tulas'*, *'Tulas'*, *'Tulshi'*.

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 495. 1988.

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	...	*O. aristatus*
1.	Stamens included :		
2.	Corolla–tube equal to calyx	...	*O. pallidus*
2.	Corolla–tube much longer than clayx:		
3.	Leaves petiolate; petioles up to 3.5 cm long; leaf–margins serrate	...	*O. thymiflorus*
3.	Leaves sessile or subsessile; leaf–margins serrate–denatate	...	*O. rubicundus*

Orthosiphon aristatus (Bl.) Miq. Fl. Ind. Bat. 2: 943. 1858; Mukerjee in Rec. Bot. Surv. India 14(1): 26. 1940; Naik, Fl. Marathwada 2: 725. 1998. *Ocimum aristatum* Bl. Bijdr. 833. 1826. *O. grandiflorum* Bl. Bijdr. 825. 1826 non L. Herit. 1788. *Orthosiphon stamineus* Bth. in Wall. Pl. As. Rar. 2: 15. 1830; Hook. f. Fl. Brit. India 4: 615. 1885. *O. grandiflorus* (Bl.) Haines, Bot. Bihar & Orissa 739. 1922 [2: 767. 1961 (Repr.)].

Undershrubs, 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, thyrsoid 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.

Fls. & Frts. : September–November.

Distrib. : Rare in crevices of rocks, on rocky soil, etc. Nanded (Naik, op. cit.).

Notes. : This is the 1st record of its occurrence on the Deccan plateau.

O. pallidus Royle ex Bth. in Hook. Bot. Misc. 3: 370.1833 et Lab. Gen. Sp. 708. 1833; Hook. f. Fl. Brit. India 4: 613. 1885; Cooke, Fl. Pres. Bombay 2: 523. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 23. 1940.

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 175. 1966.

Distrib. : Frequent in open situations. Ahmednagar, Akola, Aurangabad, Beed, Buldhana, Chandrapur, Dhule, Jalna, Latur, Mumbai, Nagpur, Nanded, Nasik, Osmanabad, Parbhani, Pune, Raigad, Satara, Yavatmal.

O. rubicundus (D. Don) Bth. in Wall. Pl. As. Rar. 2: 14. 1830; Hook. f. Fl. Brit. India 4: 614. 1885; Mukerjee in Rec. Bot. Surv. India 14(1): 25. 1940. *Plectranthus rubicundus* D. Don, Prodr. Fl. Nepal. 116. 1825.

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.

Illus. : Hook. Ic. Pl. 459. 1842.

Distrib. : Frequent in hilly areas, known from Amravati, Akola, Aurangabad, Mumbai, Nagpur, Nanded, Yavatmal.

O. thymiflorus (Roth) Sleesen in Reinwardtia 5: 42. 1959; Keng in Gard. Bull. Singapore 24: 135. 1969. *Ocimum thymiflorum* Roth, Nov. Pl. Sp. 269. 1821. *Orthosiphon tomentosum* Bth. var. *glabratus* Hook.f. Fl. Brit. India 4: 614. 1885; Cooke, Fl. Pres. Bombay 2: 524. 1958 (Repr.). *O. glabratus* Bth. in Wall. Pl. As. Rar.2: 14(1). 1830; Mukerjee in Rec. Bot. Surv. India 14 (1): 24. 1940.

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 496. 1988.

Distrib. : Infrequent in open situations and on the outskirts of deciduous forests. Chandrapur, Mumbai, Raigad, Ratnagiri, Sindhudurg, Thane.

PLATYSTOMA Beauv.

Platystoma africanum Beauv. Fl. Owar. & Bom. 2: 61, t. 95, f. 2, 1808; Cooke, Fl. Pres. Bombay 2: 526. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 34. 1940. *P. flaccidum* Bth. in Bth. & Hook. Gen. Pl. 2: 1173. 1862; Hook. f. Fl. Brit. India 4: 611. 1885.

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.

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*

3. 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 entirly 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*

Plectranthus amboinicus (Lour.) Spr. Syst. Veg. 2: 690. 1825; Willemse in Blumea 25: 509. 1979. *Coleus amboinicus* Lour. Fl. Cochinch. 372. 1790; Cooke, Fl. Pres. Bombay 2: 531. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 54. 1940. *C. aromaticus* Bth. in Wall. Pl. As. Rar. 2: 15. 1830; Hook. f. Fl. Brit. India 4: 625. 1885. *'Panachaonva'*, *'Pathachur'*.

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 declinate. Nutlets globose.

Fls. & Frts. : August–November.

Distrib. : Usually grown in gardens, found as an escape. Nagpur, Pune.

P. barbatus Andr. Bot. Rep. 9: t. 594. 1809; Willemse in Blumea 25: 509. 1979. *Coleus barbatus* (Andr.) Bth. in Wall. Pl. As. Rar. 2: 15. 1830; Hook. f. Fl. Brit. India 4: 625. 1885; Cooke, Fl. Pres. Bombay 2: 530. 1958 (Repr.). *C. forskohlii* (Poir.) Briq. in Engl. & Prantl, Pflanzenfam. 4, 3a: 359. 1897; Mukerjee in Rec. Bot. Surv. India 14(1): 53. 1940. *'Gormar'*, *'Main–mul'*.

Herbs, 25–50 cm high, perennial; stems decumbent, rooting at lower nodes, 4–angled, semi–succulent, densely hirsute, glandular. Leaves 3–8 x 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.

P. caninus Roth, Nov. Pl. Sp. 279. 1821; Keng in Steenis, Fl. Males. 1, 8: 392. 1978; Lakshmi. & Sharma, Fl. Nasik Dt. 396. 1991. *Coleus caninus* (Roth) Vatke in Linnaea 37: 318. 1871–73; Raiz. in Indian Forester 92: 306. 1966. *C. spicatus* Bth. in Wall. Pl. As. Rar. 2: 15. 1830; Hook. f. Fl. Brit. India 4: 624. 1885; Cooke, Fl. Pres. Bombay 2: 530. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 52. 1940.

Herbs, scented, perennial, fleshy; stems subquadrangular, softly hairy, ascending from procumbent base, simple or branched. Leaves 2–5 x 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.

P. mollis (Ait.) Spr. Syst. Veg. 2: 690. 1825; Sant. in Rec. Bot. Surv. Ind. 16(1): 216. 1967 (3rd Rev. ed.). *Ocimum molle* Ait. Hort. Kew. 2: 322. 1789. *Plectranthus incanus* Link, Enum. Hort. Berol. 2:

120. 1822; Hook. f. Fl. Brit. India 4: 621. 1885; Cooke, Fl. Pres. Bombay 2: 529. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 47. 1940. *'Lalaghada'*.

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–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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 498. 1988.

Distrib. : Common throughout the State in open situations, on wastelands.

P. rotundifolius (Poir.) Spr. Syst. Veg. 2: 690. 1825; Cooke, Fl. Pres. Bombay 2: 529. 1958 (Repr.); Willemse in Blumea 25: 509. 1979. *Germania rotundifolia* Poir. in Lam. Encycl. Suppl. 2: 763. 1788. *Coleus routundifolius* (Poir.) A. Cheval. & Perr. in A. Cheval. Veg. Ut. Afr. Trop. Franc. 1: 101, 119. 1905. *C. parviflorus* Bth. in DC. Prodr. 12: 72. 1848; Hook. f. Fl. Brit. India 4: 625. 1885; Mukerjee in Rec. Bot. Surv. India 14(1): 54. 1940.

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, verticels; 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.).

P. scutellarioides (L.) R. Br. Prodr. 506. 1810; Willemse in Blumea 25: 509. 1979. *Ocimum scutellarioides* L. Sp. Pl. ed. 2, 2: 834. 1763. *Coleus scutellarioides* (L.) Bth. in Wall. Pl. As. Rar. 2: 16. 1830; Mukerjee in Rec. Bot. Surv. India 14(1): 54. 1940; Naik, Fl. Marathwada 2: 712. 1998.

Herbs, 40–80 cm high, perennial; stems obtusely 4–angled, semisucculent, finely tometose. 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 lateraly 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.

P. subincisus Bth. in Wall. Pl. As. Rar. 2: 16. 1830; Hook. f. Fl. Brit. India 4: 621. 1885; Cooke, Fl. Pres. Bombay 2: 529. 1958 (Repr., under excluded species); Mukerjee in Rec. Bot. Surv. India 14(1): 49. 1940; Cramer in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 133. 1981.

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. Leves verticillate or whorled:
   2. Leaves 4 in a whorl, petiolate ... *P. quadrifolius*
   2. Leaes 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 elliipsoid 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. 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. plectranthoides*

13. Calyx teeth deep; corolla up to 4.8 mm long, lower lip relatively wide, longer than the upper lip ... *P. heyneanus*

Pogostemon auricularius (L.) Hassk. in Hoeven & de Vriese, Tijdschr. Nat. Gesch. Physiol. 10: 127. 1843; Press in Bull. Brit. Mus. (Nat. Hist.) 10: 71. 1982; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27(2): 107, figs. 11a, 29c. 1997. *Mentha auricularia* L. Mant. 1: 81. 1767. *Dysophylla auricularia* (L.) Bl. Bijdr. 825. 1826; Hook. f. Fl. Brit. India 4: 638. 1885; Cooke, Fl. Pres. Bombay 2: 538. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 79. 1940.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 573. 1982; Bhatti & Ingrouille, op. cit.

Distrib. : 'Konkan' (Cooke, op. cit. mentions, occurrence is doubtful).

P. benghalensis (Burm. f.) O. Ktze. Rev. Gen. Pl. 2: 529. 1891; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27: 89, figs. 4a, 14a. 1977. *Origanum benghalense* Burm. f. Fl. Ind. 128, t. 38, f. 3. 1768. *Pogostemon parviflorus* Bth. in Wall. Pl. Asiat. Rar. 1: 31. 1831; Hook. f. Fl. Brit. India 4: 632. 1885; Cooke, Fl. Pres. Bombay 2: 536. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 68. 1940. *P. plectranthoides* auct. pro maj. non Desf. 1815.

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, panicled–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*.

P. deccanensis (Panigr.) Press in Bull. Brit. Mus. Nat. Hist. Bot. 10: 73. 1982; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27(2): 118, figs. 13i, 39c. 1997. *Eusteralis deccanensis* Panigr. in Phytologia 32: 475. 1976. *Dysophylla tomentosa* Dalz. in Hook. J. Bot. 2: 337. 1850; Hook. f. Fl. Brit. Inida 4: 641. 1885 non *Pogostemon tomentosa* Hassk. 1844. *D. stellata* var. *tomentosa* (Dalz.) T. Cooke, Fl. Pres. Bombay 458. 1906 [2: 540. 1958 (Repr.)]; Mukerjee in Rec. Bot. Surv. India 14(1): 81. 1940. *Eusteralis tomentosa* (Dalz.) Panigr. op. cit. 77. *E. tomentosa* (Dalz.) Majumdar in J. Bombay nat. Hist Soc. 74: 385. (1977) 1978.

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.

P. erectus (Dalz.) O. Ktze. Rev. Gen. Pl. 2: 530. 1891; Press in Bull. Brit. Mus. Nat. Hist. Bot. 10: 73. 1982; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27: 117, figs. 13g, 39a. 1997. *Dysophylla erecta* Dalz. in Hook. J. Bot. 2: 332 1850; Hook f. Fl. Brit. India 4: 641. 1885. *D. gracilis* Dalz. op. cit. 337; Hook. f. op. cit. non *Pogostemon gracilis* Hassk. (1843). *Eusteralis gracilis* (Dalz.) Panigr. in Phytologia 32: 476. 1976; Majumdar in J. Bombay nat. Hist. Soc. 74: 386. (1977) 1978. *E. erecta* (O. Ktze.) Panig. op. cit. 477. *E. erecta* (O. Ktze.) Majumdar, op. cit. *E. tomentosa* var. *gracilis* Bennet & Raiz. in Indian Forester 108: 303. 1982.

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.

Fls. & Frts. : October–January.

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').

P. heyneanus Bth. in Wall. Pl. As. Rar. 1: 31. 1830; Mukerjee in Rec. Bot. Surv. India 14(1): 71. 1940; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27: 94, figs. 5d, 17b. 1997. *P. patchouli* sensu Hook. f. Fl. Brit. India 4: 633. 1885 non Pellet. 1845.

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.

Illus. : Wight, Ic. t. 140. 1849; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 499. 1988; Bhatti & Ingrouille, op. cit.

Distrib. : Cooke (op. cit.) mentions that the plant is grown in gardens, but often it has been found as an escape. Mumbai, Raigad, Thane.

P. mollis Bth. Labiat. Gen. Sp. 155. 1833; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27(2): 99, figs. 7c, 21c. 1997.

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.).

P. myosuroides (Bth.) O. Ktze. Rev. Gen. Pl. 2: 530. 1891; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27: 110, figs. 11e, 31a. 1997. *Dysophylla myosuroides* Bth. in Wall. Pl. As. Rar. 1: 30. 1831; Hook. f. Fl. Brit. India 4: 638. 1885; Cooke Fl. Pres. Bombay 2: 538. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 78. 1940.

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.

P. paniculatus (Willd.) Bth. in Wall. Pl. As. Rar. 1: 30. 1831; Hook. f. Fl. Brit. India 4: 631. 1885; Cooke, Fl. Pres. Bombay 2: 535. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 65. 1940; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27: 92, figs. 4g, 16a. 1997. *Elsholtzia paniculata* Willd. Sp. Pl. 3: 59. 1800.

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 501. 1988; Bhatti & Ingrouille, op. cit.

Distrib. : Infrequent in open areas 'Konkan' (Cooke, op. cit.).

P. plectranthoides Desf. in Mem. Mus. Hist. nat. Paris 2: 155, t. 6. 1815; Hook. f., Fl. Brit. India 4: 632. 1885; Cooke, Fl. Pres. Bombay 2: 536. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 69. 1940; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27(2): 91, figs. 4c, 14c. 1997. *'Pangali'*.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 574. 1982; Bhatti & Ingrouille, op. cit.

Distrib. : Frequent, from ghats to plains in open areas and along forest edges. Ahmednagar, Amravati, Dhule, Mumbai, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

P. purpurascens Dalz. in Hook. J. Bot. Misc. 2: 337. 1850; Hook. f. Fl. Brit. India 4: 632. 1885; Cooke, Fl. Pres. Bombay 2: 537. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 71. 1940; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27: 92, figs. 5a, 16b. 1997.

Herbs, 20–60 cm high, branched, villous with spreadig 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.

P. quadrifolius (Bth.) O. Ktze. Rev. Gen. Pl. 2: 530. 1891; Press in Bull. Brit. Mus. Nat. Hist. Bot. 10: 74. 1982; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27: 110, figs. 11g, 31c. 1997. *Dysophylla quadrifolia* Bth. in Wall. Pl. As. Rar. 1: 30. 1831; Hook. f. Fl. Brit. India 4: 639. 185; Cooke, Fl. Pres. Bombay 2: 539. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 79. 1940. *Eusteralis quadrifolia* (Bth.) Panigr. in Phytologia 32: 478. 1976. *E. quadrifolia* (Bth.) Majumdar in J. Bombay nat. Hist. Soc. 74: 385. (1977) 1978.

Undershrubs, 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

P. salicifolius (Dalz. ex Hook. f.) El.–Gazzar Gazzar & Watson in Taxon 16: 187. 1967; Press in Bull. Brit. Mus. Nat. Hist. 10: 73. 1982; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27: 110, figs. 11f, 31b. 1997. *Dysophylla salicifolia* Dalz. ex Hook. f. Fl. Brit. India 4: 638. 1885; Cooke, Fl. Pres. Bombay 2: 539. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 79. 1940.

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.

P. stellatus (Lour.) O. Ktze. Rev. Gen. Pl. 2: 429. 1891; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27: 117, figs. 13h, 39b. 1997. *Mentha stellata* Lour. in Fl. Cochinch. 2: 361. 1790. *Dysophylla stellata* (Lour.) Bth. in Wall. Pl. As. Rar. 1: 30. 1831 non *Mentha stellata* Roxb. 1814; Hook. f. Fl. Brit. India 4: 640. 1885; Cooke, Fl. Pres. Bombay 2: 540. 1958 (Repr.). *Eusteralis stellata* (Lour.) Panigr. in Phytologia 32: 477. 1976. *E. malabarica* (Lour.) Majumdar in J. Bombay nat. Hist. Soc. 74: 385. (1977) 1978 nom. inval.

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, rovolute, 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.).

P. stocksii (Hook. f.) Press in Bull. Brit. Mus. Nat. Hist. Bot. 10: 74. 1982; Bhatti & Ingrouille in Bull. nat. Hist. Mus. Lond. (Bot.) 27: 117, figs. 13f, 38c. 1997. *Dysophylla stocksii* Hook. f. Fl. Brit. India 4: 642. 1885; Cooke, Fl. Pres. Bombay 2: 541. 1958 (Repr.); Mukerjee, in Rec. Bot. Surv. India 14(1): 83. 1940. *Eusteralis stocksii* (Hook. f.) Panigr. in Phytologia 32: 478. 1976. *E. stocksii* (Hook. f.) Majumdar in J. Bombay nat. Hist. Soc. 74: 386. (1977) 1978.

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*

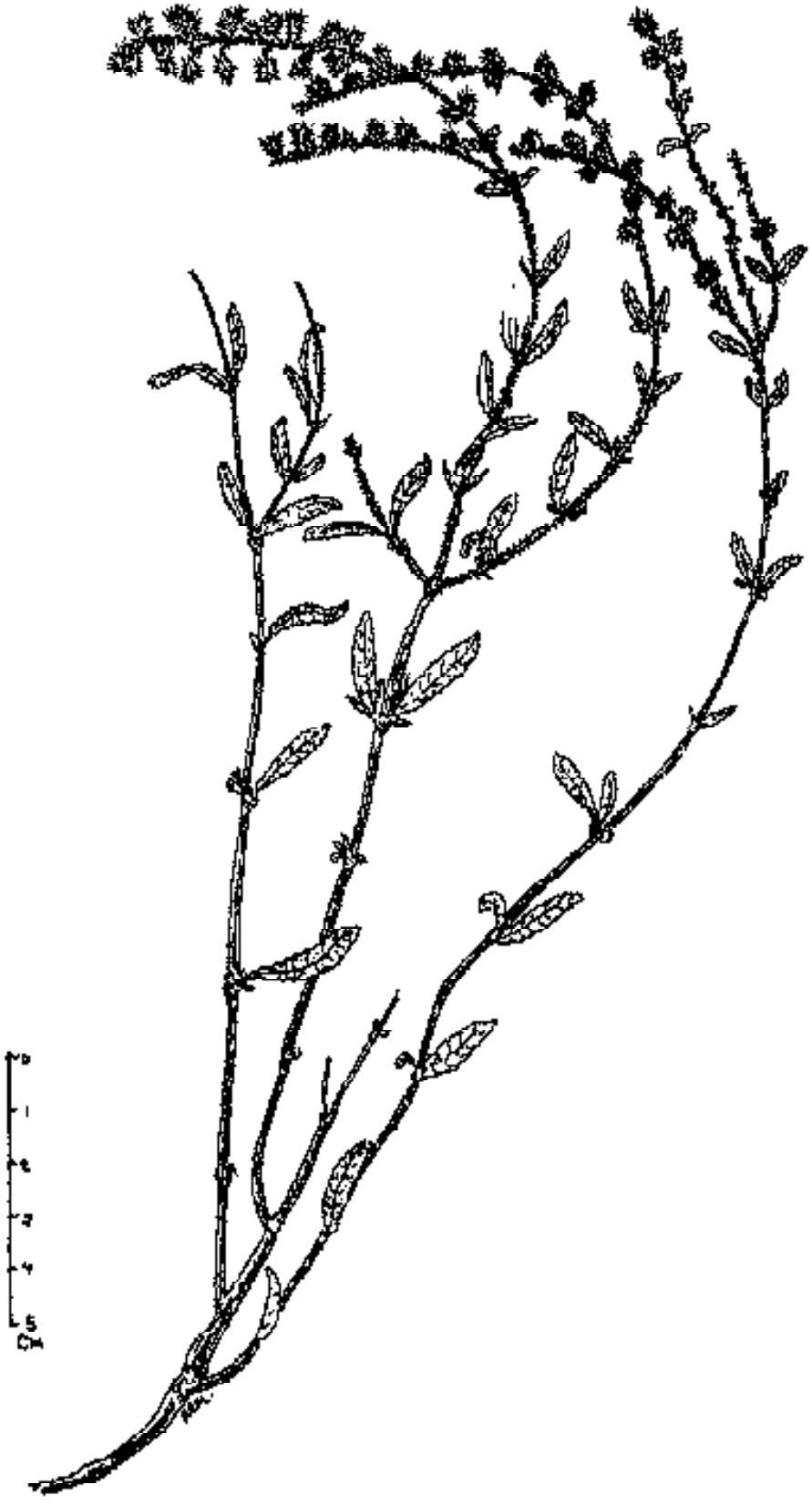
1. Leaves margins crenate or serrate; calyx pubescent; corolla annulate within :

   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*

Salvia aegyptiaca L. Sp. Pl. 23. 1753; Hook. f. Fl. Brit. India 4: 656. 1884; Cooke, Fl. Bombay Pres. 2: 558. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 107. 1940; Naik, Fl. Marathwada 2: 727. 1998.

Undershrubs; branches straggling, divaricate, rigid, pubescent. Leaves subsessile, 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.

Distrib. : Rare, on rocky soil of wastelands. Aurangabad (Naik, op. cit.).

S. plebeia R. Br. Prodr. 501. 1810; Hook f. Fl. Brit. India. 4: 655. 1885; Cooke, Fl. Pres. Bombay 2: 557. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 111. 1940.

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, oviod, smooth, brown.

Fl. & Frts. : October–March.

Distrib. :Common throughout the State in open, moist situations.

S. santolinaefolia Boiss. Diagn. Pl. Orient. 1, 13. 1842; Hook. f. Fl. Brit. India 4: 656. 1885; Mukerjee in Rec. Bot. Surv. India 14(1): 108. 1940. *S. aegyptiaca* L. var. *pumila* Hook. f. op. cit. p.p.; Cooke, Fl. Pres. Bombay 2: 558. 1958 (Repr.). *'Tukam'*.

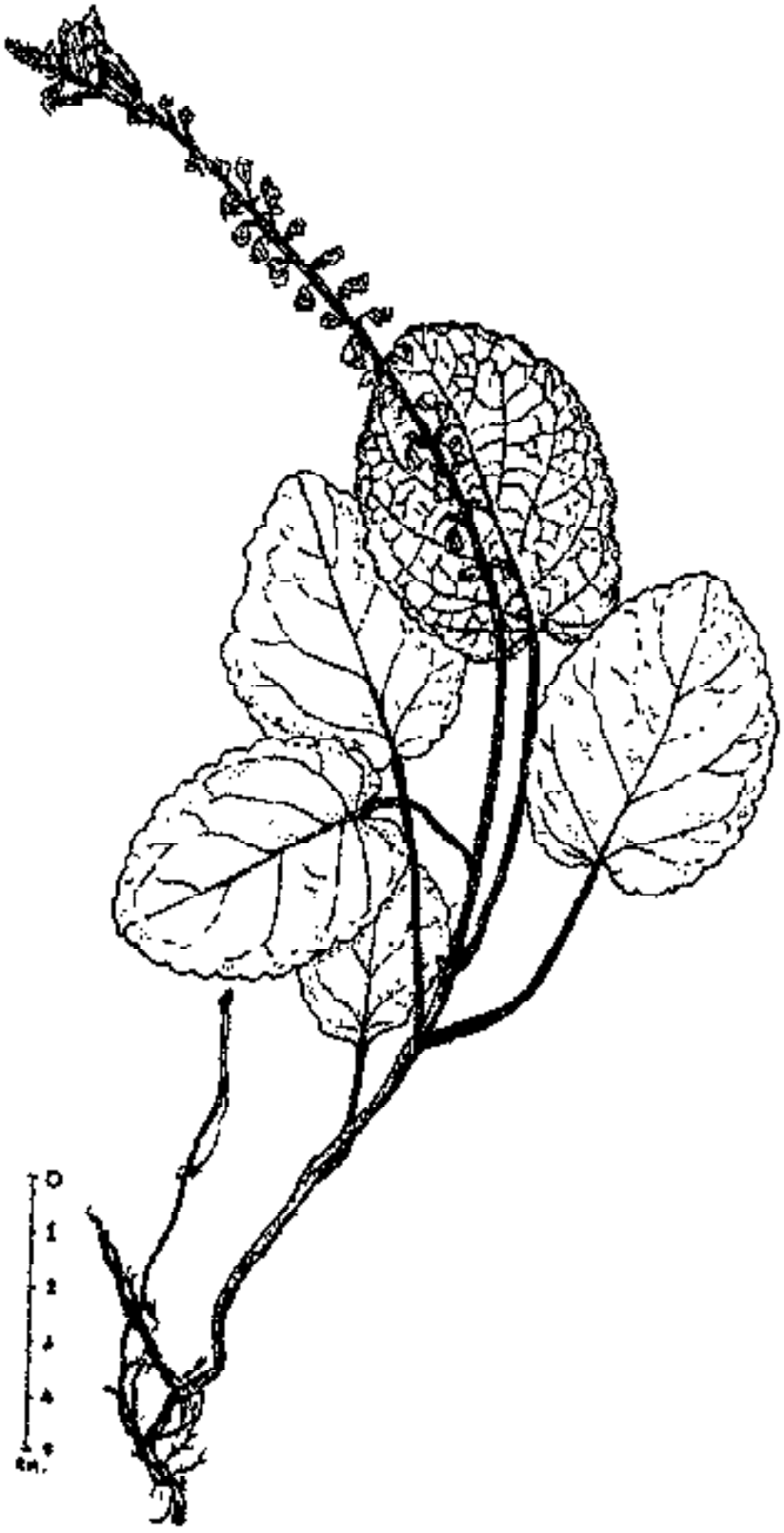
Undershrubs, stunted; branches many, hoary pubescent, rigid, 4–angled. Leaves 0.3–2.5 x 0.2 cm, linear or linear–lanceolate, very rigid and rugose, subsessile to shortly petiolate, pectinatoly lobed, lobes rounded, margins revolute. Flowers white, in 2–3–flowered whorls in slender spikes; bracts elliptic; 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.

Distrib. : Occasional in open situations. Pune.

SCUTELLARIA L.

Scutellaria discolor Wall. ex Bth. in Wall. Pl. As. Rar. 1: 66. 1831; Hook f. Fl. Brit. India 4: 667. 1885; Cooke, Fl. Pres. Bombay 2:



Scutellaria discolor Wall. ex Bth.

545. 1958 (Repr.); Mukerjee in Rec. Bot. Surv. India 14(1): 146. 1940; Keng in Gard. Bull. Singapore 24: 165. 1969.

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 decidous forests along ghats. Pune, Ratnagiri, Satara, Sindhudurg.

CULTIVATED SPECIES :

Leucosceptrum canum Sm. Exot. Bot. 2: 113, t. 116. 1805; Hook. f. Fl. Brit. India 4: 699. 1885; Mukerjee in Rec. Bot. Surv. India 14(1): 214. 1940.

Shrubs or small trees; branches stout, terete, densely or laxly, white tomentose or wooly, 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.

Mentha arvensis L. Sp. Pl. 577. 1753; Hook. f. Fl. Brit. India 4: 648. 1885; Mukerjee in Rec. Bot. Surv. India 14(1): 86. 1940.

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.

M. piperita L. Sp. Pl. 576. 1753; Bailey, Man. Cult. Pl. 863. 1949.

Herbs; stems erect or ascending, branched, reddish. Leaves petioled, lanceolate or ovate–lanceolate or ovate–oblong, acute at apex, sharply serrate along margins, globrous 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.

M. pulegium L. Sp. Pl 577. 1753; Bailey, Man. Cult. Pl. 863. 1949.

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.

M. spicata L. Sp. Pl. 576. 1753; Bailey, Man. Cult. Pl. 863. 1949; Naik, Fl. Marathwada 2: 721. 1998. *M. viridis* L. Sp. Pl. ed 2: 804. 1763; Hook. f. Fl. Brit. India 4: 647. 1885. *'Pudina'*.

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.

Monarda fistulosa L. Sp. Pl. 22. 1753; Bailey, Man. Cult. Pl. 859. 1949.

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.

Ocimum basilicum L. Sp. Pl. 597. 1753; Hook. f. Fl. Brit. India 4: 608. 1885; Mukerjee in Rec. Bot. Surv. India 14(1): 18. 1940; Naik, Fl. Marathwada 2: 722. 1998.

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 throuout the state.

var. **thyrsifolia** Bth. Lab. Gen. Sp. 5. 1835; Hook. f. Fl. Brit. India 4: 608. 1885; Mukerjee in Rec. Bot. Surv. India 14(1): 18. 1940; Naik, Fl. Marathwada 2: 723. 1998.

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.

Origanum vulgare L. Sp. Pl. 590. 1753; Hook. f. Fl. Brit. India 4: 648. 1885; Mukerjee in Rec. Bot. Surv. India 14(1): 94. 1940.

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

Pycnostachys dawei N. E. Brown in Gard. Chron. 41: 18. 1907.

Herbs; stems stout, branches pyramidal. Flowers cobault–blue.

Distrib. : Cultivated as an ornamental in gardens. Pune.

Salvia coccinea Juss. ex Murr. in Comm. Goett. 1: 86, t. 1. 1778; Prain in J. Asiat. Soc. Bengal 74(2): 712. 1907; Bailey, Man. Cult. Pl. 858. 1949; Naik, Fl. Marathwada 2: 727. 1998.

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–companulate, 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.

S. farinacea Bth. Lab. Gen. Sp. 274. 1832; Bailey, Man. Cult. Pl. 858. 1949.

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.

S. leucantha Cav. Ic. & Descr. 1: 16, t. 24. 1791; Bailey, Man. Cult. Pl. 858. 1949; Naik, Fl. Marathwada 2: 728. 1998.

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.

S. officinalis L. Sp. Pl. 23. 1753; Bailey, Man. Cult. Pl. 857. 1949.

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.

S. splendens Sellow ex Nees in Weid–Neuwied, Reise Bras. 2: 335. 1821; Bailey, Man. Cult. Pl. 858. 1949; Naik, Fl. Marathwada 2: 1998.

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.

S. viridis L. var. **horminum** (L.) Batt. & Trabut, Fl. Alger. 685. 1890; Back & Bakh. f. Fl. Java 2: 628. 1965; Naik, Fl. Marathwada 2: 729. 1998. *S. horminum* L. Sp. Pl. 24. 1753; Bailey, Man. Cult. Pl. 857. 1949.

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, grandular 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).

Satureia hortensis Linn. Sp. Pl. 568. 1753; Mukerjee in Rec. Bot. Surv. India 14 (1) : 96. 1940.

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.

Thymus serpyllum L. Sp. Pl. 590. 1753; Hook. f. Fl. Brit. India 4: 649. 1885; Mukerjee in Rec. Bot. Surv. India 14 (1) : 95. 1940.

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*

Plantago erosa Wall. in Roxb. Fl. Ind. 1: 423. 1820; Naik, Fl. Marathwada 2: 731. 1998. *P. major* sensu Hook. f. Fl. Brit. India 4: 705. 1885 non L. 1753. *P. asiatica* auct. non L. 1753; Wight, Ill. 2: t. 177. 1850.

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.

P. exigua Murr. Comm. Soc. Reg. Sci. Gotting. 1: 94, 5. 19, t. 5, 1778-9; Pilger in Engl. Pfreich. 102: 42. 1937; Naik, Fl. Marathwada 2: 731. 1998. *P. pumila* L. f. Suppl. 125. 1781; Hook. f. Fl. Brit. India 4: 707 1995.

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, subglobsoe, brown, membranous. Seeds 2, boat–shaped, brownish.

Fls. & Frts. : September–November.

Distrib. : Weed of road–sides and waste lands around city. Occasional. Aurangabad.

P. major L. Sp. Pl. 112. 1753; Hook. f. Fl. Brit. India 4: 705. 1885; Cooke, Fl. Pres. Bombay 2: 560. 1958 (Repr.). *'Bartang'*.

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.).

P. ovata Forssk. Fl. Agypt.–Arab. 31. 1775; Hook. f. Fl. Brit. India 4: 707. 1885; Cooke, Fl. Pres. Bombay 2: 562. 1958 (Repr.). *'Ispaghul'*, *'Spogel'*.

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 :

Plantago lanceolata L.Sp. Pl. 113. 1753; Hook. f. Fl. Brit. India 4: 706. 1885; Blatt., Hallb. & McC. in J. Ind. Bot. Soc. 1: 266. 1920.

Herbs, perennials, acaulescent, 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

BOERHAVIA L.

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*

Boerhavia erecta L. Sp. Pl. 3. 1753; Nair in Bull. Bot. Surv. India 9: 283. 1967; Woodson Schery et al in Ann. Miss. Bot. Gard. 48: 52. 1961. *B. punarnava* Saha & Murthy in J. Sci. Ind. Res. 21C: 249. 1962. *'Pandhari-Punarnawa'.*

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.

Illus. : Ramarathinum in J. Bombay nat. Hist. Soc. 61: 217, f. 1–4; 1964.

Distrib. : As a weed in gardens or in waste places and along railway tracks. Bombay, Jalna, Pune.

B. fruticosa Dalz. in Dalz. & Gibs. Bombay Fl. 213. 1861: Hook. f. Fl. Brit. India 4: 710. 1885; Cooke, Fl. Pres. Bombay 2: 565. 1958 (Repr.).

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.

B. repens L. Sp. Pl. 3. 1753; Hook. f. Fl. Brit. India 4: 709. 1885; Nair in Rec. Bot. Surv. India 21 (1) : 218. 1978.

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.

var. **diffusa** (L.) Hook. f. Fl. Brit. India 4: 709. 1885. *B. diffusa* L. Sp. Pl. 3. 1753; Cooke, Fl. Pres. Bombay 2: 563. 1958. (Repr.). *'Ghetuli', 'Punarnava', 'Vasu'.*

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.,

Illus. : Wight, Ic. t. 874. 1844–45; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 2: t. 578, ff 1–10 1988.

Distrib. : A troublesome weed along the railway tracks, road sides and in waste places throughout the state.

B. rubicunda Steud. Nom. ed. 2, 1: 213. 1840. *B. elegans* Choisy in DC. Prodr. 13(2): 453. 1849; Hook. f. Fl. Brit. India 4: 710. 1885; Cooke, Fl. Pres. Bombay 2. 565. 1958 (Repr.).

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*

Commicarpus boissieri (Heimerl.) Cufod. in Bull. Jard. Bot. Bruxelles 23, Suppl. 79.1953; Meikle in Hook. Ic. Pl. Ser. 5.t. 3694, 7: 34. 1971 *et* in Notes Roy. Bot. Gard. Edinburg 36 (2): 245, f. 3M. 1978. *Boerhavia boissieri* Hiemerl. in Denkschro Akad. Wiss. Wein. Math. Nat. Kl. 71: 346. 1907. *B. verticillata* auct. non Poir. (1804); Hook. f. Fl. Brit. India 4: 710. 1885; Cooke,Fl. Pres. Bombay 2: 564. 1958 (Repr.); *B. stellata* Wight, Ic. t. 875. 1844–45. '*Satura*'.

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.

C. chinensis (L.) Heimerl. in Engl. & Prantl Nat. Pflanzenf. ed. 2, 16 c: 117. 1934; Meikle in Notes Roy. Bot. Gard. Edinburg 36: 243. 1978. *Valeriana chinensis* L. Sp.Pl. 33.1753. *Boerhavia repanda* Willd. Sp. Pl. 1: 22. 1797; Hook. f. Fl. Brit. India 4: 709. 1885; Cooke, Fl. Pres. Bombay 2: 564. 1958 (Repr.). *Boerhavia chinensis* (L.) Aschers & Schweinf. in Schweinf. Beitr. Fl. Aeth. 1: 167. 1867; Stemmerik in Steenis, Fl. Males. Ser. 1,6(3): 455. 1964. *'Punarnava', 'Pungali'*.

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.

Illus. : Wight, Ic. t. 1766. 1851; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 579, ff. 1–7. 1982.

Distrib. : Along the hedges. Ahmednagar, Akola, Aurangabad, Beed, Bombay, Buldhana, Chandrapur, Jalna, Latur, Nanded, Nasik, Osmanabad, Parbhani, Pune, Thane.

PISONIA L.

Pisonia aculeata L. Sp. Pl. 1026. 1753; Hook. f. Fl. Brit. India 4: 711. 1885; Cooke, Fl. Pres. Bombay 2: 566. 1958 (Repr.).

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 :

Bougainvillea glabra Choisy in DC. Prodr. 13, 2: 437. 1849; Bailey, Stand. Encycl. Hort. 1: 533. 1919; Bor & Raiz. Ind. Climb. & Shrubs, 270, f. 4, A, B, 1954. *B. spectabilis* var. *glabra* (Choisy) Hook. Cult. Bot. Mag. t. 4811. 1854.

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; sepals 5, acute, c 2.5 mm long, tip villous, yellow above, lilac beneath, alternating with 5 irregular and adnate yellow lobed appendages; pedicels 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.

B. spectabilis Willd. Sp. Pl. 2: 348. 1799; Bailey, Stand. Encycl. Hort. 1: 533. 1919; Bor & Raiz. Ind. Climb. & Shrubs 269, f. 4, C, D, 1954; Cooke, Fl. Pres. Bombay 2: 567. 1958 (Repr.); Naik, Fl. Osmanabad 279. 1979 et Fl. Marathwada 2: 735. 1998. *B. peruviana* Nees. & Mant. in Nov. Act. Nat. Cur. 11: 39. 1823. *B. speciosa* Schnizl. Ic. Fam. t. 104. 1843–1870. *'Boganvel'*.

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. Periath 2–3 cm long, tubular, pale yellow or white within, purplish black and pubescent outside.

Fls. & Frts. : February–June.

Distrib. : In gardens as a covering to trellises, archways and the like. Common. Ahmednagar, Bombay, Chandrapur, Osmanabad, Pune, Thane, Yavatmal.

Mirabilis jalapa L. Sp. Pl. 177. 1753; Cooke, Fl. Pres. Bombay 2: 567. 1958 (Repr.); Naik, Fl. Marathwada 2: 737. 1998. *'Guleabbas'*, *'Gulbus'*.

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.

Pisonia grandis R. Br. Prodr. Fl. Nov. Holl. 1: 422. 1810; J. F. Stemmerik in Steenis, Fl. Males. 1, 6: 464. 1964; Hutch. Gen. Flow. Pl. 2: 266. 1967. *P. alba* Spanoghe in Linnaea 15: 342. 1842; Hook. f. Fl. Brit. India 4: 711. 1885; Brandis, Ind. Trees 517. 1906. *P. morindifolia* R. Br. ex Wight, Ic. t. 1765. 1852. *'Chinai– Salit'*.

Shrubs or small trees, upto 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.

Distrib. : Grown in gardens. Bombay.

Notes. : The *'Lettuce'* or the *'Mollucean Cabbage'* whose leaves are said to be eaten by natives in Bali.

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 ... NOTHOSAERVA
            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 ... NOTHOSAERVA

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. caynsi*

Achyranthes aspera L. Sp. Pl. 204. 1753; Hook. f. Fl. Brit. India 4: 730. 1885; Cooke, Fl. Pres. Bombay 2: 580. 1958 (Repr.); Backer in Steenis, Fl. Males. 1, 4: 88. 1949.

1. Leaves thick, velvetty 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.

Illus. : Wight, Ic. t. 1777. 1852; Tad. & Venkat. Handb. S. Ind. Weeds 266, f. 111. 1932; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 581. 1982.

Distrib. : Common in open areas, forest edges.

var. **porphyristachya** (Wall. ex Moq.) Hook. f. Fl. Brit. India 4: 730. 1885; Sant. in Rec. Bot. Surv. India 16 (1) : 224. 1967 (3rd Rev. ed.); Naik, Fl. Osmanabad 286. 1979. *A. porphyristachya* Wall. ex Moq. Cat. 1925. 1832. '*Aghada*'.

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 183. 1966.

Distrib. : Common, weed of wastelands, around fields, etc.

A. coynei Sant. in Kew Bull. 1948: 488. 1949 et in Rec. Bot. Surv. India 16(1): 224. 1967 (3rd Rev. ed.); Bhogaonkar & Devarkar, Add. Flora Melghat 47, figs. A–H. 1999.

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*

Aerva javanica (Burm. f.) Juss. ex Schult. Syst. Veg. ed. 15.5: 565. 1819; Hook. f. Fl. Brit. India 4: 727. 1885; Cooke, Fl. Pres. Bombay 2: 577. 1958 (Repr.); Townsend in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 32. 1980. *Iresine javanica* Burm. f. Fl. Ind. 217, t. 65, f. 1. 1768.

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.

A. lanata (L.) Juss. ex Schult. Syst. Veg. ed. 15. 5: 564. 1819; Hook. f. Fl. Brit. India 4: 728. 1885; Cooke, Fl. Pres. Bombay 2: 578. 1958 (Repr.); Townsend in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 32. 1980. *Achyranthes lanata* L. Sp. Pl. 204. 1753. '*Kapuri–Madhuri*'.

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

Illus. : Wight, Ic. t. 1776. 1852 (*Aerva floribunda*); Tad. & Venkat. Handb. S. Ind. Weeds 272, f. 113. 1932; Mahesh. Illus. Fl. Delhi f. 176. 1966.

Distrib. : Common along roadsides, waste places, on walls of old forts, under the shade of trees and in open cleared areas.

A. sanguinolenta (L.) Bl. Bijdr. 547. 1825; Backer in Steenis, Fl. Males. 1, 4: 85. 1949. *Achyranthes sanguinolenta* L. Sp. Pl. ed. 2, 294. 1762. *Aerva scandens* Wall. (Cat. n. 6911. 1835, nom. nud.) ex Moq. in DC. Prodr. 13: 302. 1849; Hook. f. Fl. Brit. India 4: 727. 1885; Cooke, Fl. Pres. Bombay 2: 577. 1958 (Repr.).

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.

A. wightii Hook. f. Fl. Brit. India 4: 728. 1885; Naik, Fl. Marathwada 2: 740. 1998.

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

Allmania nodiflora (L.) R. Br. ex Wight in Hook. J. Bot. 1: 226. 1834; Hook. f. Fl. Brit. India 4: 716. 1885; Naik, Fl. Marathwada 2: 740. 1998. *Celosia nodiflora* L. Sp. Pl. 205. 1753. *Allmania nodiflora* var. *aspera* (Roth) Hook. f. op. cit. 717; Cooke, Fl. Pres. Bombay 2: 571. 1958 (Repr.). *A. nodiflora* var. *dichotoma* (Heyne ex Roth) Hook. f. op. cit.

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*

Alternanthera bettzichiana (Regel) Nicols. Ill. Dict. Gard. 1: 51. 1885; Townsend in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 52. 1980; Chaudhury & Bhattacharyya in Bull. Bot. Surv. India 36: 274, t. 3, figs. 1–7. (1994) 1997. *Telanthera bettzichichiana* Regel, Ind. Sem. Hort. Petrop. 1862: 28. 1862 & Gartenflora 11: 178. 1862. *Alternanthera ficoidea* auct. non (L.) R. Br. ex R. & S. 1819. *A. tenella* sensu Kothari & Moorthy, Fl. Raigad Dt. 337. 1993; Naik, Fl. Marathwada 2: 744. 1998; Pradhan & Singh, Fl. Ahmednagar Dt. 456. 1999 non Colla, 1829. *A. tenella* var. *vesicolor* sensu Naik, op. cit. non (Lam.) Veldk. 1981.

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.

A. paronychioides St. Hil. Voy. Distr. Diamans Bresil 22: 43. 1833; Townsend in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 50. 1980; Chaudhury Bhattacharyya in Bull. Bot. Surv. India 36: 271, t. 2, figs. 1–7. (1994) 1997.

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.

A. pungens Kunth in H.B. & K. Nov. Gen. Sp. 2: 206. 1817; Sant. & Shah in J. Bombay nat. Hist. Soc. 58: 551. 1961; Townsend in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 47. 1980; Chaudhury &

Bhattacharyya in Bull. Bot. Surv. India 36: 270, t. 1, figs. 1–8. (1994) 1997. *'Chibuk Kata'.*

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 180. 1966; Chaudhury & Bhattacharyya, op. cit.

Distrib. : Native of Central America, naturalised. Common in open areas, along road sides, near fields and rubbish heaps.

A. sessilis (L.) R. Br. ex DC. Cat. Hort. Monsp. 77. 1813; Hook. f. Fl. Brit. India 4: 731. 1885; Townsend in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 49. 1980; Chaudhury & Bhattacharyya in Bull. Bot. Surv. India 36: 268, t. 1, figs. 1–8. (1994) 1997. *Gomphrena sessilis* L. Sp. Pl. 225. 1753. *Alternanthera triandra* Lam. Encycl. 1: 95. 1783; Cooke, Fl. Pres. Bombay 2: 584. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 727. 1843; Mahesh. Illus. Fl. Delhi f. 181. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 584. 1982; Chaudhury & Bhattacharyya, op. cit.

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, panicled, slender spikes; fruits prominently rugose, indehiscent ... *A. viridis*

10. Flowers in axillary clusters only; fruits slightly rugose or wavy, usually circumscissile ... *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 axillery clusters as well as in long terminal spiciform panicles; stigmas long and curved, feathery ... *A. caturus*

Amaranthus caturus Heyne ex Hook. f. Fl. Brit. India 4: 720. 1885; Naik, Fl. Marathwada 2: 745. 1998.

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, circumscissile.

Fls. & Frts. : August–November.

Distrib. : Rare, on wasteland around villages. Osmanabad (Naik, op. cit.).

A. caudatus L. Sp. Pl. 990. 1753; Hook. f. Fl. Brit. India 4: 719. 1885; Cooke, Fl. Pres. Bombay 2: 576. 1958 (Repr.); Naik, Fl. Marathwada 2: 746. 1998.

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.).

A. cruentus L. Syst. Nat. ed. 10. 1269. 1759; Duke in Ann. Miss. Bot. Gard. 48: 15. 1961. *A. paniculatus* L. Sp. Pl. ed. 2. 1406. 1763; Hook. f. Fl. Brit. India 4: 718. 1885; Cooke, Fl. Pres. Bombay 2: 573. 1958 (Repr.). *A. hybridus* L. ssp. *creuentus* (L.) Thell. var. *paniculatus* (L.) Thell. in Aschers. & Graebn. Syn. 5, 1: 247. 1914; Naik, Fl. Marathwada 2: 742. 1998. *'Rajgira'*.

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.

A. dubius Mart. ex Thells. in Aschers & Graebn. Syn. 5, 1: 265. 1914; Backer in Steenis, Fl. Males. 1, 4: 79. 1949; Naik, Fl. Marathwada 2: 746. 1998.

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.).

A. hypochondriacus L. Sp. Pl. 991. 1753; Cooke, Fl. Pres. Bombay 2: 576. 1958 (Repr.); Naik, Fl. Marathwada 2: 747. 1998.

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.).

A. palmeri Wats. in Proc. Am. Acad. 12: 274. 1877; D.A. Patil in J. Bombay Nat. Hist. Soc. 95: 151. 1998.

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 obovoid, 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.).

A. polygonoides L. Fl. Jamaica Pugill. 2: 27. 1759; Naik in J. Bombay nat. Hist. Soc. 64: 134. 1967.

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.

A. roxburghianus Nevski in Trudy, Act. Inst. Bot. Acad. Sc. USSR 1, Fasc. 4: 311. 1937 in Obs. (*roxburghiano*); N.C. Nair in J.

Bombay nat. Hist. Soc. 73: 60. 1976; Naik, Fl. Marathwada 2: 748. 1998. *A. polygonoides* Roxb. Fl. Ind. 3: 602. 1832 non L. 1759. *A. blitum* L. var. *oloraceus* (L.) Hook. f. Fl. Brit. India 4: 721. 1885; Cooke, Fl. Pres. Bombay 2: 575. 1958 (Repr.). *A. polygamus* sensu Hook. f. op. cit. non L. 1759; Cooke, op. cit. *A. lividus* L. ssp. *polygonoides* (Moq.) Thell. ex Probst, Wolland. Mittel. 74. 1949; Townsend in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 18. 1980. *'Charlai'*.

Herbs, 20–30 long, prostrate, annual with striate stem. Leaves 1–3 x 0.6-20 cm, ellipitic or obovate, apex obtuse, often notched, base tapering towards apex, rugose. Seed lenticular, 1, 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.

A. spinosus L. Sp. Pl. 991. 1753; Hook. f. Fl. Brit. India 4: 718. 1885; Cooke, Fl. Pres. Bombay 2: 573. 1958 (Repr.). *'Katemath'*.

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.

Illus. : Wight Ic. t. 513. 1841; Tad. & Venkat. Handb. S. Ind. Weeds 360, f. 144. 1932.

Distrib. : Common in open areas and waste places as a weed.

A. tenuifolius Willd. Sp. Pl. ed. 4, 4: 381. 1805; Hook. f. Fl. Brit. India 4: 722. 1885; Cooke, Fl. Pres. Bombay 2: 576. 1958 (Repr.). *'Chavali', 'Ghol'*.

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.

A. tricolor L. Sp. Pl. 989. 1753; Backer in Steenis, Fl. Males. 1, 4(2): 77. 1949. *A. gangeticus* L. Syst. Nat. ed. 10. 1268. 1759; Hook. f. Fl. Brit. India 4: 720. 1885; Cooke, Fl. Pres. Bombay 2: 574. 1958 (Repr.).

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.

Fls. & Frts. : September–January.

Illus. : Wight, Ic. t. 715. 1843 *[A. oleraceus* Roxb. Fl. Ind. (Carey ed.) 3: 605. 1832]; Mahesh. Illus. Fl. Delhi f. 178. 1966.

Distrib. : Common in open areas as weed.

var. **tristis** (Prain) Nayar et al. in Rec. Bot. Surv. India 19(1): 114. 1964; Kamble & Pradhan, Fl. Akola Dt. 192. 1988. *A. gangeticus* var. *tristis* (Willd.) Prain, Bengal Pl. 869. 1903 [2 : 650. 1963 (Repr.)]; Cooke, Fl. Pres. Bombay 2: 574. 1958 (Repr.). *'Chaulari'.*

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.

Fls. & Frts. : August–January.

Illus. : Wight, Ic. t. 714. 1843 (*A. tristis* Willd. Sp. Pl. 4: 382. 1805).

Distrib.: Cultivated as a pot–herb (Cooke, op. cit.; Kamble & Pradhan, op. cit.). Also occurs as a weed in Akola (Kamble & Pradhan, op. cit.).

A. viridis L. Sp. Pl. ed. 2. 1405. 1763; Hook. f. Fl. Brit. India 4: 720. 1885; Cooke, Fl. Pres. Bombay 2: 575. 1958 (Repr.). *A. gracilis* Desf. Tabl. Bot. 43. 1804; Backer in Steenis, Fl. Males. 1, 4: 76. 1949. *'Math'.*

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 panicled 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.

Celosia argentea L. Sp. Pl. 205. 1753; Hook. f. Fl. Brit. India 4: 714. 1885; Cooke, Fl. Pres. Bombay 2: 570. 1958 (Repr.); Townsend in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 3. 1980. '*Kurdu*'.

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.)

Cyathula prostrata (L.) Bl. Bijdr. 549. 1825; Townsend in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 26. 1980; Hook. f. Fl. Brit. India 4: 723. 1885; Cooke, Fl. Pres. Bombay 2: 581. 1958 (Repr.). *Achyranthes prostrata* L. Sp. Pl. ed. 2. 296. 1762.

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.

Illus. : Wight, Ic. t. 733. 1843. (*Desmochaeta prostrata* DC. Cat. Hort. Monsp. 102. 1813).

Distrib. : Occasional along the ghats. Bombay, Ratnagiri, Sindhudurg.

DIGERA Forssk.

Digera muricata (L.) Mart. Beitr. Amar. 77. n. 2. 1825; Backer in Steenis, Fl. Males. 1, 4: 80. 1949. *Achyranthes muricata* L. Sp. Pl. ed. 2. 295. 1762. *Digera arvensis* Forssk. Fl. Aegypt.–Arab. 65. 1775; Hook. f. Fl. Brit. India 4: 717. 1885; Cooke, Fl. Pres. Bombay 2: 572. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 732. 1843 *[Desmochaeta muricata* (L.) DC. Cat. Hort. Monsp. 103. 1813]; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 587. 1982.

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 exserted	...	*G. globosa*

Gomphrena globosa L. Sp. Pl. 224. 1753; Hook. f. Fl. Brit. India 4: 732. 1885; Cooke, Fl. Pres. Bombay 2: 584. 1958 (Repr.); Backer in Steenis, Fl. Males. I, 4(2) : 95. 1949. *'Jafrigundi'*.

Herbs, tall, branched, annual. Leaves elliptic or ovate–oblong. 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.

Illsus. : 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.

G. serrata L. Sp. 224. 1753; Mears in Taxon 20: 86. 1980; Naik, Fl. Marathwada 2: 753. 1998. *G. celosioides* auct. non Mart. 1826; Raiz. in J. Bombay nat. Hist. Soc. 48: 675. 1946; Backer in Steenis, Fl. Males. 1, 4(2): 96. 1949.

Herbs, prostrate. Leaves 1–3 x 0.5 cm, elliptic–oblong or ovate–oblong, upper surface glabrous, lower densely pilose. Flowers white. Utricles indehiscent, smooth. Seeds notched on one side.

Fls. & Frts. : June–January.

Illus. : Tad. & Venkat. Handb. S. Ind. Weeds 378, f. 152. 1932; Mahesh. Illus. Fl. Delhi f. 179. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 588. 1982 *(G. celosioides).*

Distrib. : Native of tropical America, common throughout in open situations.

NOTHOSAERVA Wight

Nothosaerva brachiata (L.) Wight, Ic. t. 1776 bis. f. B. 1853; Hook. f. Fl. Brit. India 4: 726. 1885; Cooke, Fl. Pres. Bombay 2: 580. 1958 (Repr.). *Achyranthes brachiata* L. Mant. 50. 1767.

Herbs, erect, slender. Leaves 2.0–3.5 x 1–2 cm, elliptic – lanceolate, apex acute or subobtuse. Flowers white. Fruits enclosed in hardened perianth. Seeds black, shining.

Fls. & Frts. : August–February.

Illus. : Wight, op. cit.; Mahesh. Illus. Fl. Delhi f. 182. 1966.

Distrib. : Bombay, Chandrapur, Dhule, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.

PUPALIA A. L. Juss.

Pupalia lappacea (L.) A. L. Juss. in Ann. Mus. Hist. Nat. Paris 2: 132. 1803; Hook. f. Fl. Brit. India 4: 728. 1885; Cooke, Fl. Pres. Bombay 2: 583. 1958 (Repr.); Townsend in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 1: 29. 1980. *Achyranthes lappacea* L. Sp. Pl. 204. 1753.

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 x 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.

Illus. : Mahesh. Illus. Fl. Delhi f. 184. 1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 591. 1982.

Distrib. : Common along road sides & waste places.

var. **orbicular** (Heyne ex Wall.) C.C. Townsend in Kew Bull. 29 : 469. 1974. *Achyranthes orbiculata* Heyne ex Wall. in Roxb. Fl. Ind. 2: 507. 1824. *Pupalia orbiculata* (Heyne ex Wall.) Wight, Ic. Pl. Ind. Or. 5(2): 4, t. 1783. 1852; Hook. f. Fl. Brit. India 4: 724. 1885; Cooke, Fl. Pres. Bombay 2: 583. 1958 (Repr.).

Herbs, prostrate; stems woody. Leaves closely pilose, rounded, apiculate. Flowers purplish–green. Branches of sterile flowers terminating in 5–9 yellow setae in 1–2 ranks. Capsules circumscissile. Seeds oblong–ellipsoid, smooth, shining, black.

Fls. & Frts. : September–November.

Illus. : Wight, Ic. Pl. Ind. Or. 5(2): 4, t. 1753. 1852.

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

Trichuriella Bennet

Trichuriella monsoniae (L.f.) Bennet in Indian J. For. 8: 86. 1985. *Illecebrum monsoniae* L. f. Suppl. 161. 1781. *Aerva monsoniae* (L.f.) Mart. in Nov. Actxon Acad. Caes. Leop–Carol. Nat. Cur. 13: 291. 1826; Hook. f. Fl. Brit. India 4: 728. 1885; Cooke, Fl. Pres. Bombay 2: 578. 1958 (Repr.). *Trichurus monsoniae* (L.f.) Townsend in Kew Bull. 29: 466. 1974.

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:

Celosia argentea L.f. var. **cristata** (L.) O. Ktze. Liu, Syst. Bot. Fl. Fam. N. China 91. 1931; Naik, Fl. Marathwada 2: 751. 1998. *Celosia cristata* L. Sp. Pl. 205. 1753; Hook. f. Fl. Brit. India 4: 715. 1885. *'Kombada'*.

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.

Iresine herbstii Hook. f. in Gard. Chron. 654, 1206. 1864; Backer in Steenis, Fl. Males. 1, 4: 97. 1949; Naik, Fl. Marathwada 2: 753. 1998.

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.

Telanthera ficoides Moq. in DC. Prodr. 13: 363. 1849; Cooke, Fl. Pres. Bombay 2: 584. 1958 (Repr.); S. Deshpande et al. Fl. Mahabaleshwar and Adj. 2: 498. 1995.

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 ... SUAEDA

1. Embryo annular or horseshoe–shaped:

2. Stems leafy, not jointed nor fleshy:

3. Flowers all similar, hermaphrodite; leaves flat ... CHENOPODIUM

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.

Arthrocnemum indicum (Willd.) Moq. Chenopod. Monogr. Enum. 113. 1840; Hook. f. Fl. Brit. India 5: 12. 1886; Cooke, Fl. Pres. Bombay 2: 589. 1958 (Repr.). *Salicornia indica* Willd. in Nova Acta Acad. Sci. Imp. Petrop. Hist. Nat. 5: 111, t. 4, f. 1. 1799. '*Machur*'.

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.

Atriplex stocksii (Wight) Boiss. Ser. 2, no. 4. 73. 1879; Mast. in Hook. in Hook. f. Fl. Brit. India 4: 7. 1875; Cooke, Fl. Pres. Bombay 2: 587. 1958 (Repr.). *Obione stocksii* Wight, Ic. t. 1789. 1852.

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*

Chenopodium album L. Sp. Pl. 219. 1753; Hook. f. Fl. Brit. India 5: 3. 1886; Cooke, Fl. Pres. Bombay 2: 586. 1958 (Repr.); Backer in Steenis, Fl. Males. 1, 4: 102. 1949. *'Chakwat'*.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 594. 1982.

Distrib. : A frequent weed of roadsides, wastelands and cultivated fields.

C. ambrosioides L. Sp. Pl. 219. 1753; Hook. f. Fl. Brit. India 5: 4. 1886; Cooke, Fl. Pres. Bombay 2: 587. 1958 (Repr.); Backer in Steenis Fl. Males. 1, 4: 101. 1949; Banerji in Rec. Bot. Surv. India 19(2): 77.1966.

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, Ic. t. 1786. 1852.

Distrib. : Weed in cultivated fields. Pune, Raigad, Satara.

C. murale L. Sp. Pl. 219. 1753; Hook. f. Fl. Brit. India 5: 4. 1886; Cooke, Fl. Pres. Bombay 2: 586. 1958 (Repr.); Backer in Steenis, Fl. Males. 1, 4: 102. 1949; Naik, Fl. Marathwada 2: 756, f. 93. 1998.

Herbs, erect or ascending, 15–40 cm high, branched. Leaves deltoid–ovate, apex acute or obtuse, irregularly lobulate with cuneate base; petioles c 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.

Salicornia brachiata Roxb. Fl. Ind. 1: 84. 1832; Hook. f. Fl. Brit. India 5: 12. 1886; Cooke, Fl. Pres. Bombay 2: 590. 1958 (Repr.).

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*

Suaeda fruticosa (L.) Forssk. Fl. Aeg.–Arab. 70. 1775; Hook. f. Fl. Brit. India 5: 13. 1886; Cooke, Fl. Pres. Bombay 2: 590. 1958 (Repr.). *Salsola fruticosa* L. Sp. Pl. ed. 2, 324. 1792.

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 compresed, 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.

S. maritima (L.) Dumort. Fl. Belg. 22. 1827; Hook. f. Fl. Brit. India 5: 14. 1886; Cooke, Fl. Pres. Bombay 2: 519. 1958 (Repr.); S. M. Almeida, Fl. Savantwadi 1: 355 1990. *Chenopodium maritimum* L. Sp. Pl. 22. 1753.

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.).

S. monoica Forssk. ex Gmel. in L. Syst. Nat. (ed. 13) 2: 503. 1791; Hook. f. Fl. Brit. India 5: 13. 1886; Cooke, Fl. Pres. Bombay 2: 591. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 1792. 1853; Matthew, Fl. Tamilnadu Carnatic 3 (pt. 2): 1325, t. 961. 1983.

Distrib. : Frequent along the coastal swamps. Bombay, Raigad.

S. nudiflora Moq. Ann. Sci. Nat. 23: 316. 1831; Hook. f. Fl. Brit. India 5: 14. 1886; Cooke, Fl. Pres. Bombay 2: 591. 1958 (Repr.). '*Morus*', '*Muchole*'.

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, Ic. t. 1796. 1852 (*Suaeda indica* Moq.).

Distrib. : Frequent along the coastal mangroves. Bombay, Thane.

CULTIVATED SPECIES:

Atriplex hortensis L. Sp. Pl. 1053. 1753; Hook. f. Fl. Brit. India 5: 6. 1886; Cooke, Fl. Pres. Bombay 2: 588. 1958 (Repr.); Naik, Fl. Marathwada 2: 755. 1998; Pradhan & Singh, Fl. Ahmednagar Dt. 461. 1999. *'Chandan batwa'*.

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.

Beta vulgaris L. Sp. Pl. 222. 1753; Hook. f. Fl. Brit. India 5: 5. 1886; Naik, Fl. Marathwada 2: 755. 1998; Pradhan & Singh, Fl. Ahmednagar Dt. 462. 1999. *'Beet'*.

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.

Spinacia oleracea L. Sp. Pl. 1027. 1753; Hook. f. Fl. Brit. India 5: 6. 1886; Naik, Fl. Marathwada 2: 758. 1998. *'Palak'*.

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 SPICIES :

Rivina humilis L. Sp. Pl. 121. 1753; Bailey, Man. Cult. Pl. 359, t. 60. 1949; Backer in Steenis, Fl. Males 1, 4: 229. 1951; Naik, Fl. Marathwada 2: 759, f. 94. 1998..

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.

Basella alba L. Sp. Pl. 272. 1753. *B. rubra* L. Sp. Pl. 272. 1753; Hook. f. Fl. Brit. India 5: 21. 1886; Cooke, Fl. Pres. Bombay 2: 594. 1958 (Repr.). *'Mayal ki baji', 'Mayalu', 'Velbondi'.*

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 upto 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. Tamilnaldu 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.

Petiveria alliacea L. Sp. Pl. 342. 1753; Backer in Steenis, Fl. Males. 1,4: 230. 1951; Bachulkar & Yadav in J. Econ. Tax. Bot. 17: 330. 1993; Tandyekkal, Mathew Dan & P. Mathew in Rheedea 7: 37, f. 1. 1997.

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 panicled 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 panicled 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, eciliate 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 strigosely hairy beneath ... *P. pubescens* var. *acuminata*

Persicaria auriculata (Meissn.) Dixit, Datt & Roy in J. Econ. Tax. Bot. 15: 312. 1991. *Polygonum auriculatum* Meissn. Monog. Polyg. 59, t. 6. 1826; Steenis in Blumea 16: 357. 1968. *P. chinense* L. var. *ovalifolium* Meissn. in Wall. Pl. Asiat. Rar. 3: 60. 1832; Hook. f. Fl. Brit.



Persicaria auriculata (Meisn.) Dixit, Datta & Roy

India 5: 45. 1886; Cooke, Fl. Pres. Bombay 3: 8. 1958 (Repr.). *Persicaria chinensis* (L.) H. Gros var. *ovalifolia* (Meissn.) Hara, Fl. East. Himal. 71. 1966. *'Narali', 'Paral'.*

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.

P. barbata (L.) Hara, Fl. East. Himal. 70. 1966. *Polygonum barbatum* L. Sp. Pl. 362. 1753; Hook. f. Fl. Brit. India 5: 37. 1886; Steward in Contr. Gray Herb. 88: 52. 1930.

1. Stems strigose hairy; leaves pubescent–hispid ... var. *stagnina*
1. Stems and leaves glabrescent:
   2. Stems stout ... var. *barbata*
   2. Stems slender ... var. *gracilis*

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.

Illus. : Wight, Ic. t. 1798. 1852; Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 521. 1988.

Distrib. : Infrequent in marshy areas along streams. Buldhana, Kolhapur, Ratnagiri, Satara.

var. **gracilis** (Danser) Sojak in Preslia 46(2): 152. 1974. *Polygonum barbatum* L. ssp. *gracile* Danser in Bull. Jard. Bot. Buiten. Ser. 3, 8: 146, f. 2. 1927; Babu, Herb. Fl. Dehra Dun 441. 1977. *P. barbatum* var. *gracile* (Danser) Steward in Contr. Gray Herb. 88: 55. 1930.

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 189. 1966 (*Polygonum barbatum* ssp. *gracile*).

Distrib. : Frequent in moist places along streams. Ahmednagar, Chandrapur, Kolhapur, Pune, Ratnagiri, Thane.

var. **stagnina** (Buch.–Ham. ex Meissn.) Sojak in Preslia 46(2): 152. 1974. *Polygonum stagninum* Buch.–Ham. ex Meissn. in Wall. Pl. Asiat. Rar. 3: 56. 1832; Hook. f. Fl. Brit. India 5: 37. 1886; Sald. Fl. Karnataka 1: 181. 1984. *P. barbatum* var. *stagninum* (Buch.–Ham. ex Meissn.) Steward in Contr. Gray Herb. 88: 54. 1930.

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.

Fls. & Frts. : September–January.

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.

P. dichotoma (Bl.) Dixit, Datt & Roy var. **angustissima** (Hook. f.) C.R. Jadhav & Lakshmi., comb. nov. *Polygonum pedunculare* Wall. ex Wight var. *angustissima* Hook. f. Fl. Brit. India 5: 48. 1886; Cooke, Fl. Pres. Bombay 3: 9. 1958 (Repr.).

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.

P. glabra (Willd.) Gomez in Ann. Inst. Segunda Ensef. Habana 2: 278. 1896; Hara in Hara et al. Enum. Fl. Pl. Nepal 3: 176. 1982. *Polygonum glabrum* Willd. Sp. Pl. 2: 447. 1799; Hook. f. Fl. Brit. India 5: 34. 1886; Cooke, Fl. Pres. Bombay 3: 5. 1958 (Repr.). '*Sheral*'.

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.

P. hydropiper (L.) Spach, Hist. Nat. Veg. 10: 536. 1841; Hara in Hara et al. Enum. Fl. Pl. Nepal 3: 176. 1982. *Polygonum hydropiper* L. Sp. Pl. 961. 1753; Hook. f. Fl. Brit. India 5: 39. 1886; Steward in Contr. Gray Herb. 88: 58. 1930.

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.

ssp. **mite** (Schrank) A. Majeed Kak in J. Bombay nat. Hist. Soc. 81: 517. 1984. *Polygonum mite* Schrank, Fl. Bair. 1: 668. 1789; Cooke, Fl. Pres. Bombay 3: 7. 1958 (Repr.).

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.

P. limbata (Meissn.) Hara, Fl. East. Himal. 71. 1966 & in Hara et al. Enum. Fl. Pl. Nepal 3: 76. 1982. *Polygonum limbatum* Meissn. in DC. Prodr. 14(1): 123. 1856; Hook. f. Fl. Brit. India 5: 30. 1886; Cooke, Fl. Pres. Bombay 3: 6. 1958 (Repr.).

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.).

P. nepalensis (Meissn.) H. Gross in Engl. Bot. Jahrb. 49: 277. 1913; Hara in Hara et al. Enum. Fl. Pl. Nepal 3: 177. 1982. *Polygonum nepalense* Meissn. Monogr. Polyg. 84, t. 7, f. 2. 1826; Steward in Contr. Gray Herb. 5(88): 74. 1930. *P. alatum* Buch.–Ham. ex Spreng. Syst. Veg. Cur. Post. 154. 1827 nom. illegit.; Hook. f. Fl. Brit. India 5: 41. 1886; Cooke, Fl. Pres. Bombay 3: 8. 1958 (Repr.). *P. alatum* var. *nepalense* (Meissn.) Hook. f. op. cit. 5: 42. 1886.

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.

Illus. : Wight, Ic. t. 1804. 1852 (*Polygonum nepalense*); Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 523. 1988.

Distrib. : Infrequent in wet places. Kolhapur, Pune, Raigad, Ratnagiri, Satara.

P. pubescens (Bl.) Hara var. **acuminata** (Franch. & Sav.) Hara, Fl. East Himal. 74. 1966. *Polygonum hydropiper* var. *acuminata* Franch & Sav. Enum. Pl. Jap. 2: 474. 1877. *P. flaccidum* auct. non Roxb. 1814; Meissn. in DC. Prodr. 14(1): 107. 1856; Hook. f. Fl. Brit. India 5: 39. 1886. *P. hydropiper* ssp. *microcarpum* Danser in Bull. Jard. Bot. Buiten ser. 3, 8: 188. 1927 (incl. var. *lenticularis* & *triquetrum*). *P. hydropiper* L. var. *flaccidum* (Meissn.) Steward in Contr. Gray Herb. 88: 59. 1930.

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.

Distrib. : Occasional in wet situations. Kolhapur, Raigad.

P. pulchera (Bl.) Sojak in Preslia 46(2): 154. 1974. *Polygonum pulcherum* Bl. Bijdr. 530. 1826; Sant. & Wagh in Bull. Bot. Surv. India 5: 108. 1964. *P. tomentosum* Willd. Sp. Pl. 2: 447. 1799 non Schrank, 1789; Hook. f. Fl. Brit. India 5: 30. 1886; Cooke, Fl. Pres. Bombay 3: 6. 1958 (Repr.).

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 526. 1988.

Distrib. : Occasional in marshy places. Bhandara, Chandrapur, Kolhapur.

P. salicifolia (Brouss. ex Willd.) Assenov in Fl. Reipubl. Popul. Bulgar. 3: 243. 1966. *Polygonum salicifolium* Brouss. ex Willd. Enum. Pl. Hort. Berol. 1: 428. 1809; Maiti & Sikdar in Indian J. For. 8: 189. 1985. *P. serrulatum* Lag. Gen. & Sp. Pl. 14. 1816; Hook. f. Fl. Brit. India 5: 38. 1886; Cooke, Fl. Pres. Bombay 3: 7. 1958 (Repr.). '*Dhakta–Sheral*'.

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.

Polygonum plebeium R. Br. Prodr. 420. 1810 (*plebejum*); Hook. f. Fl. Brit. India 5: 27. 1886; Cooke, F. Pres. Bombay 3: 4. 1958 (Repr.).

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 527. 1988 (*P. plebeium*).

Distrib. : Common throughout.

var. **brevifolia** Hook. f. Fl. Brit. India 5: 28. 1886; Cooke, Fl. Pres. Bombay 3: 5. 1958 (Repr.).

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.

var. **indica** (Heyne ex Roth) Hook. f. Fl. Brit. India 5: 28. 1886; Cooke, Fl. Pres. Bombay 3: 5. 1958 (Repr.). *Polygonum indicum* Heyne ex Roth, Nov. Pl. Sp. 208. 1821.

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.

Illus. : Wight, Ic. t. 1808. 1852 (*P. indicum*).

Distrib. : Akola, Satara, Thane.

RUMEX L.

1. Inner fruiting tepals with narrow margins and few or no teeth ... *R. nigricans*
1. Inner fruiting tepals with broad much toothed wing :
   2. Wings of fruiting perianth pectinately toothed; teeth hooked at tip ... *R. nepalensis*
   2. Wings of fruiting perianth irregularly toothed; teeth straight (not hooked) ... *R. dentatus*

Rumex dentatus L. Mant. 2: 226. 1771; Hook. f. Fl. Brit. India 5: 59. 1886; Cooke, Fl. Pres. Bombay 3: 10. 1958 (Repr.).

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.

R. nepalensis Spreng. Syst. Veg. 2: 159. 1825; Hook. f. Fl. Brit. India 5: 60. 1886; Babu, Herb. Fl. Dehra Dun 446. 1977.

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.

Illus. : Wight, Ic. t. 1810. 1852.

Distrib. : Bhandara, Pune.

R. nigricans Hook. f. Fl. Brit. India 5: 59. 1886; Naik, Fl. Marathwada 2:765. 1998.

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 :

Antigonon leptopus Hook. & Arn. Bot. Beech. Voy. 308, t. 69. 1841; Cooke, Fl. Pres. Bombay 3: 10. 1958 (Repr.).

Climbers, tendrillar. Leaves cordate or ovate–triangular. Flowers pink, in axillary fasciculate racemes or panicles, showy.

Fls. & Frts. : August–May.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 520. 1988.

Distrib. : Native of Mexico. Grown in gardens mostly throughout the state.

Fagopyrum esculentum Moench. Method. 290. 1794; Hook. f. Fl. Brit. India 5: 55. 1886; Cooke, Fl. Pres. Bombay 3: 10. 1958 (Repr.). *'Kuthu'*.

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.).

Homalocladium platyclados (F. Muell.) Bailey, Gentes Herbarium 2: 58. 1929 & Man. Cult. Pl. 351. 1949. *Polygonum platyclados* F. Muell. in Bot. Mag. t. 5282. 1863. *Muehlenbeckia platyclados* Meissn. in Bot. Zeit. 23: 313. 1895; Cooke, Fl. Pres. Bombay 3: 11. 1958 (Rerp.).

Shrubs, erect; branchlets flat. Leaves linear–lanceolate. Flowers white or pink, in sessile clusters. Fruits globose.

Fls. & Frts. : April–September.

Distrib. : Native of Solomon Island east of New Guinea. Occasionally grown in gardens. Ahmednagar, Marathwada (Naik, 1998).

Rumex vesicarius L. Sp. Pl. 336. 1753; Hook. f. Fl. Brit. India 5: 61. 1886; Naik Fl. Marathwada 2: 765. 1998. *'Chuka'*.

Herbs, erect, subsucculent. Leves ovate. Flowers in long terminal panicles. Nuts trigonus, enclosed in persistant tepals.

Fls. & Frts. : January–March.

Distrib. : It is said to be indigenous in Western Punjah. Cultivated as a vegitable & 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 persistant lobes:
   2. Capsules smooth, pollen in monads ... CLADOPUS
   2. Capsules ribbed; pollen in dyads ... ZEYLANIDIUM
1. Capsules not as above ... POLYPLEURUM

CLADOPUS H. Moller

Cladopus hookerianus (Tul.) C. Cusset, Fl. Cambodge, Laos, Viet–Nam 14: 71. 1973. *Mniopsis hookeriana* Tul. Arch. Mus. Paris 6: 147. 1852. *Griffithella hookeriana* (Tul.) Warming, Fam. Podost. Afhandl. 6: 13. 1901; Cooke, Fl. Pres. Bombay 3: 13. 1958 (Repr.). *Podostemon hookerianus* (Tul.) Wedd. in DC. Prodr. 17: 74. 1873; Hook. f. Fl. Brit. India 5: 65. 1886. *'Karukphul'*.

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.

Fls. & Frts. : October–February.

Illus. : Wight, Ic. t. 1918, f. 4. 1852 (*Mniopsis hookeriana*).

Distrib. : Frequent on rocks in streams. Bombay, Kolhapur, Pune, Ratnagiri, 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 upto 4 cm long .. *P. stylosum*

Polypleurum dichotomum (Gardn.) Hall in Kew Bull. 26: 131. 1971. *Podostemum dichotomum* Gardn. in Calc. J. Nat. Hist. 7: 185 1846 (*'Podostemon'*). *Dicraeia dichotoma* (Gardn.) Tul. in Ann. Sci. Nat. Bot. Ser. 3,11: 101. 1849 *('Dicraea')*.

Herbs, submerged; stems floating, flowering branches flexous. 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.

Illus. : Suhr. Aq. Ang. 40, f. 30. 1962.

Distrib. : On rocks in rapid water. Thane.

P. stylosum (Wight) Hall in Kew Bull. 26: 131. 1971. *Dicraeia stylosa* Wight, Ic. t. 1917, f. 2. 1852. *Podostemon stylosum* (Wight) Bth. ex Hook. f. Fl. Brit. India 5: 64. 1886.

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*

Zeylanidium lichenoides (Kurz) Engl. Nat. Pflanzenfam. 18a: 61. 1928 (2nd ed.); Subr. Aq. Ang. 49. 1962. *Hydrobryum lichenoides* Kurz in J. As. Soc. Beng. 42(2): 103. 1873; Cooke, Fl. Pres. Bombay 3: 14. 1958 (Repr.). *Podostemum microcarpum* Wedd. in DC. Prodr. 17:76. 1873; Hook. f. Fl. Brit. India 5: 66. 1886 (*Podostemon microcarpus).*

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.

Z. subulatum (Gardn.) C. Cusset in Bull. du Mus. National d'Histoire Naturelle sect. B. Adansonia 4^{e} serie T. N^{0}1: 14. 1992. *Podostemum subulatum* Gardn. in Calc. J. Nat. Hist. 7: 184. 1847; Subr. Aq. Ang. 50, f. 35. 1962; Hemadri in Indian Forester 94: 810. 1968; Hook. f. Fl. Brit. India 5: 65. 1886 *(Podostemon subulatus)*.

Herbs, small, tufted, aquatic. Leaves 5–8 cm long, subulate with spathaceous base. Flowers solitary, zygomorphic, 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)

Dalzellia Wight

Dalzellia ceylanica (Gardn.) Wight, Ic. 5(2): t. 35. 1852 (Sphalm. *zelanica*); Cusset & Cusset in Bull. Mus. nat. Hist. nat. Paris Ser. 10, Sect. B, Adansonia no. 2: 172. 1988. *Tristicha ceylanica* Gardn. in Calcutta J. nat. Hist. 7: 177. 1846. *Lawia zeylanica* (Gardn.) Tul. emend. Willis var. *malabarica* Willis in Ann. Roy. Bot. Gard. Peradeniya 1(3): 215. 1902; Cooke, Fl. Pres. Bombay 3: 13. 1958 (Repr.). *L. zeylanica* (Gardn.) Tul. var. *konkanica* Willis, op. cit. 216. 1902; Cooke, op. cit. *Terniola zeylanica* (Gardn.) Tul. var. *konkanica* (Willis) Sant. in Rec. Bot. Surv. India 16 (1) : 256. 1953. *Dalzellia zeylanica* (Gardn.) Wight var. *malabarica* (Willis) Janardhanan in Bull. Bot. Surv. India 24: 207. (1982) 1983. *D. zeylanica* (Gardn.) Wight var. *konkanica* (Willis) Janardhanan, op.cit.

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*

Aristolochia bracteolata Lam. Encycl. 1: 258. 1783; Naik, Fl. Marathwada 2: 766, f. 96. 1998. *A. bracteata* Retz. Obs. Bot. 5: 29. 1789; Hook. f. Fl. Brit. India 5: 75. 1886; Cooke, Fl. Pres.Bombay 3: 16. 1958 (Repr.). '*Gandhati*', '*Kidamar*'.

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 cylindiric 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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 601. 1982; Naik, op. cit.

Distrib. : Scattered weed on black cotton soil. Ahmednagar, Akola, Aurangabad, Beed, Bombay, Buldhana, Jalna, Nanded, Parbhani, Pune, Satara, Solapur.

A. indica L. Sp. Pl. 960. 1753; Hook. f. Fl. Brit. India 5: 75. 1886; Cooke, Fl. Pres. Bombay 3: 16. 1958 (Repr.). *'Sampsun', 'Sapsan', 'Sapsund'.*

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.

A. tagala Cham. in Linnaea 7: 207, t. 5, f. 3. 1832; Cooke, Fl. Pres. Bombay 3: 17. 1958 (Repr.). *A. roxburghiana* Klotzsch in Monatsb. Deutsch. Akad. Wiss. Berlin 596. 1859; Hook. f. Fl. Brit. India 5: 75. 1886.

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.

Thottea siliquosa (Lam.) Ding Hou in Blumea 27(2): 327. 1981 *Apama siliquosa* Lam. Encycl. 1: 91. 1793. *Bragantia wallichii* R. Br. ex Wight & Arn. in Edinburgh New Philos. J. 15: 181. 1833; Hook. f. Fl. Brit. India 5: 73. 1886; Cooke, Fl. Pres. Bombay 3: 15. 1958 (Repr.).

Undershrubs, 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 :

Aristolochia brasiliensis Mart. & Zucc. Nov. Gen. & Sp. 1: 77. 1824; Cooke, Fl. Pres. Bombay 3: 17. 1958 (Repr.). *A. labiata* Willd. in Mem. Soc. Nat. Mosc. 2: 101, t. 6. 1809. *'Popat–vel'*.

Herbs, twining. Leaves cordate–reniform, obtuse with deep sinus at base. Peduncles 20–25 cm long, 1–flowered. Flowers large, dingy yellow with marks and reticulations of purple.

Distrib. : It is a native of Brazil and cultivated in gardens. Pune.

A. fimbriata Cham. in Linnaea 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.

A. gibbosa Duch. in Ann. Sc. Nat. 4, 2: 53. 1854. *A. odoratissma* Bth. Pl. Hartw. 82. 1841.

Distrib. : Cultivated in gardens. Pune.

A. littoralis Paroch. in Anal. Soc. Cient. Argent. 5: 155. 1878; Naik, Fl. Marathwada 2: 768. 1998. *A. elegans* Mast. in Gard. Chron. 2: 301. 1885; Cooke, Fl. Pres. Bombay 3: 18. 1958 (Repr.); Pradhan & Singh, Fl. Ahmednagar Dt. 466. 1999.

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*

Peperomia pellucida (L.) H. B. & K. Nov. Gen. Sp. 1: 64. 1815; Yuncker in Ann. Miss. Bot. Gard. 37: 79. 1950; Cooke, Fl. Pres. Bombay 3: 21. 1958 (Repr.). *Piper pellucidum* L. Sp. Pl. 30. 1753.

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.

P. wightiana Miq. in Hook. Lond. J. Bot. 5: 548. 1846; Hook. f. Fl. Brit. India 5: 98. 1886; Cooke, Fl. Pres. Bombay 3: 21. 1958 (Repr.).

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.

Illus. : Wight, Ic. t. 1924. 1853.

Distrib. : Occasional in moist, shady places. Pune, Satara.

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*

Piper hookeri Miq. in Hook. Lond. J. Bot. 4: 437. 1845; Hook. f. Fl. Brit. India 5: 88. 1886; Cooke, Fl. Pres. Bombay 3: 19. 1958 (Repr.).

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.

Illus. : S. Deshpande et al. Fl. Mahabaleshwar and Adj. 2: 509, f. 50. 1995.

Distrib. : Occasional on trees trunks. Bombay, Pune, Raigad, Satara, Sindhudurg.

P. nigrum L. Sp. Pl. 28. 1753; Hook. f. Fl. Brit. India 5: 90. 1886; Cooke, Fl. Pres. Bombay 3: 19. 1958 (Repr.). *'Kali–Miri'*.

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.

Illus. : Wight, Ic. t. 1935. 1853 [*Piper trioicum* Roxb. Fl. Ind. (Carey & Wall. ed.) 1: 151. 1820.

Distrib. : Pune, Raigad, Ratnagiri, Satara.

P. trichostachyon (Miq.) C.B.Cl. in DC. Prodr. 16(1): 242. 1869; Hook. f. Fl. Brit. India 5: 80. 1886; Cooke, Fl. Pres. Bombay 3: 19. 1958 (Repr.). *Muldera trichostachya* Miq. in Hook. Lond. J. Bot. 5: 556. 1846.

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. & Frts. : August–April.

Illus. : Wight, Ic. t. 1944, 1858 *(Muldera trichostachya).*

Distrib. : Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

CULTIVATED SPECIES :

Peperomia sandersii C. DC. in DC. Prodr. 16 (I): 400. 1869; Bailey, Man. Cult. Pl. 318. 1949.

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.

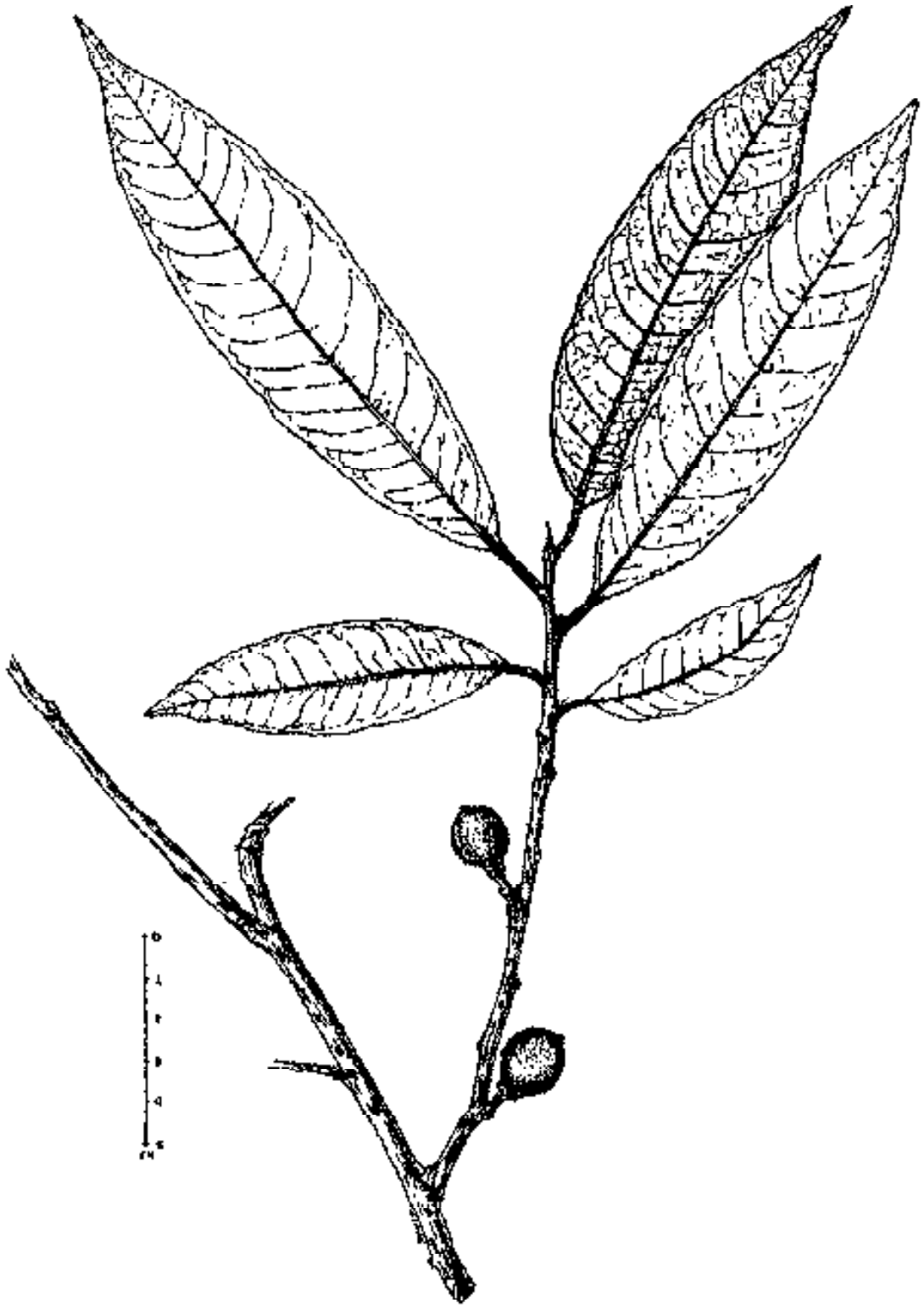
Piper betle L. Sp. Pl. 28. 1753; Hook. f. Fl. Brit. India 5: 85. 1886; Cooke, Fl. Pres. Bombay 3: 20. 1998 (Repr.); Naik, Fl. Marathwada 2: 768. 1998. *'Nagwel', 'Paan'.*

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.

Distrib. : Cultivated for its leaves. Latur, Osmanabad, Pune, Sangli, Thane.

P. longum L. Sp. Pl. 29. 1753; Hook. f. Fl. Brit. India 5: 83. 1886; Cooke, Fl. Pres. Bombay 3: 20. 1958 (Repr.). *Chavica roxburghii* Miq. Syst. Piperac. 239. 1843; Wight Ic. t. 1928, 1853. *'Pipli'.*



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.

Knema attenuata (Wall. ex Hook. f. & Thoms.) Warb. Monogr. Myrist. 590. 1897; de Wilde in Blumea 25: 439. 1979. *Myristica attenuata* Wall. ex Hook. f. & Thoms. Fl. Ind. 157. 1855 & in Hook. f. Fl. Brit. India 5: 110. 1886; Cooke, Fl. Pres. Bombay 3: 24. 1958 (Repr.). *'Ran–Jayphal', 'Rukt–mara'.*

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.

Fls. & Frts. : October–June.

Illus. : Bedd. Fl. Sylv. t. 271. 1822 non Hook. f. & Thoms. 1855 (*Myristica corticosa*).

Distrib. : Frequent in semi–evergreen and moist deciduous forests, along ghats. Bombay, Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

MYRISTICA Grovon. (nom. cons.)

1.	Fruits subglobose; aril red	...	*M. dactyloides*
1.	Fruits elongate; aril yellow	...	*M. malabarica*

Myristica dactyloides Gaertn. Fruct. 1: 195, t. 41, f. 2 a–d. 1788; Gandhi in Sald. & Nicols. Fl. Hassan Dt. 42. 1976. *M. beddomei* King in Ann. Roy. Bot. Gard. Calcutta 3: 291, t. 118, f. 1–8. 1891; Cooke, Fl. Pres. Bombay 3: 23. 1958 (Repr.). *M. laurifolia* Bedd. Fl. Sylv. t. 267. 1872; Hook. f. Fl. Brit. India 5: 103. 1886. *'Jayphal'*.

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.

M. malabarica Lam. in Hist. Acad. Sci. Par. 162. 1791; Hook. f. Fl. Brit. India 5: 103. 1886; Cooke, Fl. Pres. Bombay 3: 22. 1958 (Repr.), Sincl. in Gard. Bull. Singapore 23: 168, f. 9A–I. 1968. *'Kayphal'*, *'Ran–Jayphal.*

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.

Distrib. : Rare in semi–evergreen forests along ghats. Bombay, Raigad, Ratnagiri, Sindhudurg (Almeida, Fl. Savantwadi 1: 361. 1990).

CULTIVATED SPECIES :

Myristica fragrans Houtt. Nat. Hist 2, 3: 333. 1774. *M. officinalis* L. f. Suppl. Pl. 265. 1781.

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 ... ALSEODAPHNE
      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 ... CINNAMOMUM
         6. Leaves penninerved:
            8. Perianth glabrous, deciduous ... BEILSCHMIEDIA
            8. Perianth silky pubescent, persistent ... PERSEA

ACTINODAPHNE Nees

Actinodaphne angustifolia Nees in Wall. Pl. As. Rar. 3: 31. 1832; Sant. in Rec. Bot. Surv. India 16(1): 231. 1967 (3rd Rev. ed.). *A. hookeri* Meissn. in DC Prodr. 15(1): 218. 1864; Hook. f. Fl. Brit. India 5: 149. 1886; Cooke, Fl. Pres. Bombay 3:31. 1958 (Repr.). *'Gulchahe', 'Pisa'*.

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.

Illus. : Wight, Ic. t. 1941. 1852; Talb. For. Fl. Bombay Pres. & Sind 2: 393, f. 465. 1911 *(A. hookeri).*

Distrib. : Infrequent in semi–evergreen and moist deciduous forests along ghats. Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Thane.

ALSEODAPHNE Nees

Alseodaphne semicarpifolia Nees in Wall. Pl. As. Rar. 2: 71. 1831; Hook. f. Fl. Brit. India 5: 144. 1886; Cooke, Fl. Pres. Bombay 3: 30. 1958 (Repr.). *'Phudgus'.*

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*

var. **semicarpifolia**. *'Phudgus'.*

Trees, 8–10 m tall; bark smooth. Leaves 5–10 x 2.5–5.0 cm, glabrous and shining above, apex acute, base rounded or attenuate. Flowers greenish, in terminal or axillary panicles; perianth lobes 6, funnel shaped, pubescent; stamens 9, in 3 whorls, first 2 whorls introrse and 3rd one extrorse, staminodes form 4th whorl. Berries globose, 1.5–2.0 cm across, smooth.

Fls. & Frts. : January–February.

Illus. : Wight, Ic. t. 1826–27. 1852; Bedd. Sylv. t. 297. 1873; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 605. 1982.

Distrib. : Infrequent in moist deciduous and semi–evergreen forests along ghats. Kolhapur, Raigad, Ratnagiri, Sindhudurg, Thane.

var. **angustifolia** Meissn. in DC. Prodr. 15(1): 26. 1864; Hook. f. Fl. Brit. India 5: 144. 1886; Cooke, Fl. Pres. Bombay 3: 30. 1958 (Repr.).

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.).

var. **rufa** Hook. f. Fl. Brit. India 5: 144. 1886; Cooke, Fl. Pres. Bombay 3: 30. 1958 (Repr.).

Trees. Leaves broadly cuneate–obovate, coriaceous, red. Berries 1.25 cm across.

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

Beilschmiedia Nees

Beilschmiedia dalzellii (Meissn.) Kosterm. in Reinwardtia 6: 282. 1962; Sant. in. Rec. Bot. Surv. India 16(1): 230. 1967 (3rd Rev. ed.). *B. fagifolia* Bedd. var. *dalzellii* Meissn. in DC. Prodr. 15(1): 64. 1864; Hook. f. Fl. Brit. India 5: 122. 1886; Cooke, Fl. Pres. Bombay 3: 27.1958 (Repr.). '*Umber*'.

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.

Cassytha filiformis L. Sp. Pl. 35. 1753; Hook. f. Fl. Brit. India 5: 188. 1886; Cooke, Fl. Pres. Bombay 3: 35. 1958 (Repr.). '*Amarvel*'.

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.

Illus. : Wight, Ic. t. 1847. 1852; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 607. 1982.

Distrib. : Frequent in deciduous forests on hosts like *Ipomoea* spp., *Vitex* spp., etc. Amravati, Bhandara, Chandrapur, Nagpur, Pune, Ratnagiri, Sindhudurg, Thane, Yavatmal.

CINNAMOMUM Schaeff.

1.	Panicles longer than leaves	...	*C. verum*
1.	Panicles shorter than leaves	...	*C. nitidum*

Cinnamomum nitidum (Roxb.) Hook. Exot. Fl. 2: t. 176. 1825; S.M. Almeida, Fl. Savantwadi 1: 363. 1990. *Laurus nitida* Roxb. Fl. Ind. 2: 300. 1832 (ed. Carey). *Cinnamomum macrocarpum* Hook. f. Fl. Brit. India 5: 133. 1886; Cooke, Fl. Pres. Bombay 3: 28. 1958 (Repr.).

Trees, 10–15 m high. Leaves 12–15 x 4.5–5.0 cm, elliptic–lanceolate or oblong–lanceolate. Flowers creamish, in axillary panicles; perianth tube short, lobes oblong–obovate, subequal. Berries globose–oblong, seated on accrescent perianth.

Fls. & Frts. : March–April.

Illus. : Wight, Ic. t. 130. 1839 (*C.iners*).

Distrib. : Rare in semi–evergreen forests along ghats. Pune, Satara, Sindhudurg.

C. verum J.S. Presl in Prir. Rostlin. 2: 36, 37–44, t. 7. 1825; Kosterm. in Reinwardtia 7: 141. 1965; Sald. & Ramesh in Sald. Fl. Karnataka 1: 62. 1984. *C. zeylanicum* Bl. Bijdr. 568. 1825; Hook. f. Fl. Brit. India 5: 131. 1886; Cooke, Fl. Pres. Bombay 3: 28. 1958 (Repr.). '*Dalchini*', '*Tamalpatra*'.

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

Illus. : Wight, Ic. tt. 123 & 134. 1839; Talb. For. Fl. Bombay Pres. & Sind. 2: 388, f. 463. 1911 *(C. zeylanicum).*

Distrib. : Infrequent in moist deciduous and semi–evergreen forests along ghats. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

CRYPTOCARYA R. Br.

Cryptocarya bourdillonii Gamble in Kew Bull 1925: 127. 1925 & Fl. Pres. Madras 2: 853. 1957 (Repr.). *C. wightiana* sensu Hook. f. Fl. Brit. India 5: 120. 1886 p.p. non Thw. 1861; Cooke, Fl. Pres. Bombay 3: 26. 1958 (Repr.). '*Gulmur*'.

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, 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*

Litsea deccanensis Gamble, Fl. Pres. Madras 1235. 1925 [2: 864. 1957 (Repr.)]; Kosterm. in Reinwardtia 7: 502. 1969. *L. tomentosa* Heyne ex Hook. f. Fl. Brit. India 5: 157. 1886; Cooke, Fl. Pres. Bombay 3: 32. 1958 (Repr.). '*Chikna*'.

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.

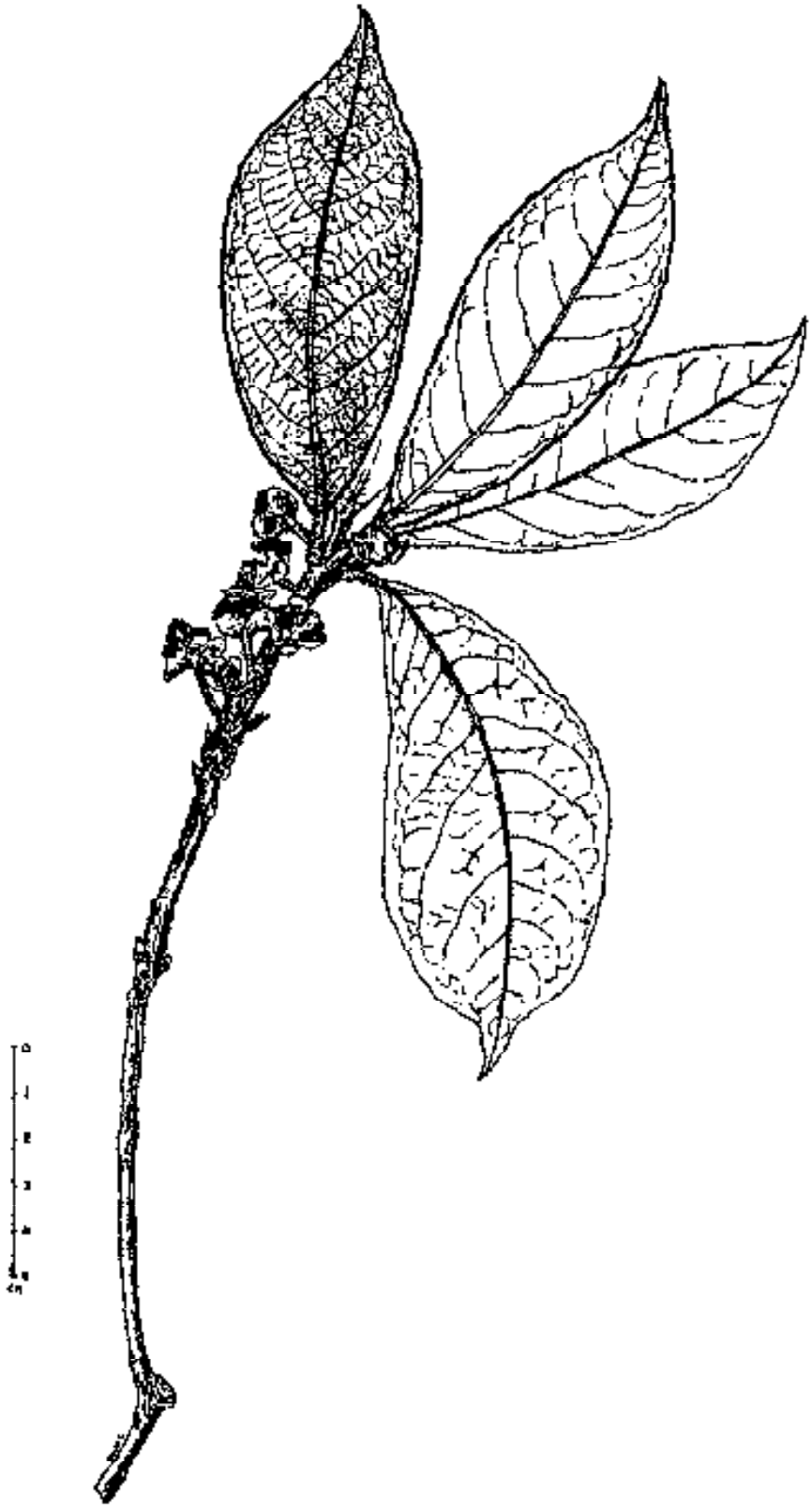
L. fuscata Thw. Enum. Fl. Zeyl. 258. 1861; Hook f. Fl. Brit. India 5: 178. 1886.

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.

L. ghatica Sald. Fl. Karnataka 1: 67, f. 5. 1984.

Shrubs or small trees, c 4 m tall; young shoots tomentose. Leaves 5.0–22.5 x 2.5–11.0 cm, obovate to oblanceolate or elliptic to elliptic-oblong, apex abruptly shortly acuminate, base cuneate; lateral nerves 10–12 pairs; petioles tomentose. Umbels lateral and axillary, greenish-white to yellow, faintly odorous; bracts tomentose outside. Perianth lobes in males glabrescent; filaments hairy at base. Berries globose, c 1 cm across, ripens black.



Litsea deccanensis Gamble

Fls. & Frts. : August–December.

Illus. : Sald. op. cit.

Distrib. : Rare. Pune, Ratnagiri, Satara, Sindhudurg.

L. glutinosa (Lour.) C.B. Robinson in Philipp. J. Sci. (Bot.) 6: 321. 1911; Kosterm. in Reinwardtia 7: 505. 1969. *Sebifera glutinosa* Lour. Fl. Cochinch. 638 1790. *Litsea chinensis* Lam. Encycl. 13: 514. 1789; Hook. f. Fl. Brit. India 5:157. 1886; Cooke, Fl. Pres. Bombay 3: 32. 1958 (Repr.). *L. sebifera* Pers. Sun. Pl. 2: 4.1807; Hook. f. op. cit. '*Maidlakdi*'.

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.

L. josephii S.M. Almeida, Fl. Savantwadi 1: 364. 1990. *L. stocksii* (Meissn.) Hook. f. Fl. Brit. India 5: 176. 1886; Cooke, Fl. Pres. Bombay 2: 33. 1958 (Repr.). '*Bobirsa*'.

Trees, 5–8 m tall. Leaves alternate or subopposite, 10–20 x 5–8 cm, coriaceous, glaucous beneath, elliptic–oblong, 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.

Distrib. : Occasional in moist deciduous & semi–evergreen forests. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

L. monopetala (Roxb.) Pers. Syn. Pl. 2:4. 1807; Kosterm. in Fl. W. Pakistan Lauraceae 118: 4. 1978; S.M. Almieda, Fl. Savantwadi 1: 364. 1990. *Tetranthera monopetala* Roxb. Pl. Corom. 2: 26, t. 148. 1798. *Litsea polyantha* Juss. in Ann. Mus. Hist. Nat. Paris 6: 211. 1805; Hook. f. Fl. Brit. India 5: 162. 1886.

Trees, 6–12 m tall; branches stout. Leaves alternate, 7.5–40.0 cm long, elliptic–oblong or obovate, penninerved, chartaceous, softly pubescent beneath. Umbels 5–6–fid, clustered and subcorymbose on short peduncles. Berries globosely–ellipsoid on a small perianth base.

Fls. & Frts. : June.

Distrib. : Frequent in moist deciduous forest. Pune, Sindhudurg.

L. wightiana (Nees) Bth. & Hook. f. Gen. Pl. 3: 162. 1880; Hook. f. Fl. Brit. India 5: 177. 1886; Puri & Mahajan in Bull. Bot. Surv. India 2: 131. 1960; Cooke, Fl. Pres. Bombay 3:33. 1958 (Repr.). *Cylicodaphne wightiana* Nees in Wall. Pl. As. Rar. 2: 68. 1829.

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.)

Neolitsea cassia (L.) Kosterm. in J. Sci. Res. Indonesia 1: 85. 1952; S.M. Almeida, Fl. Savantwadi 1: 365. 1990. *Laurus cassia* L. Sp. Pl. 361. 1753. *Litsea zeylanica* Nees in Amoen. Bot. Bonn. Fasc. 1: 58, t. 5. 1823; Hook. f. Fl. Brit. India 5: 178. 1886 p.p.; Cooke, Fl. Pres. Bombay 3: 34. 1958 (Repr.). *Neolitsea zeylanica* (Nees) Merr. in Philipp. J. Sci. 1: Suppl. 57. 1906; Gamble, Fl. Pres. Madras 2: 867. 1957 (Repr.). '*Chirchira*'.

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*).

Distrib. : Occasional in moist deciduous & semi–evergreen forests. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

PERSEA Mill.

Persea macrantha (Nees) Kosterm. in Reinwardtia 6: 193. 1962; Sant. in. Rec. Bot. Surv. India 16(1): 231. 1967 (3rd Rev. ed.). *Machilus macrantha* Nees in Wall. Pl. As. Rar. 2: 70. 1831; Hook. f. Fl. Brit. India 5: 140. 1886; Cooke, Fl. Pres. Bombay 3:29. 1958 (Repr.). *'Gulum'*, *'Pulas'*.

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.

Illus. : Wight, Ic. t. 1824. 1842 *(Machilus macrantha);* Matthew, Illus. Fl. Tamilnadu Carnatic 2: t 611. 1982.

Distrib. : Infrequent in moist deciduous & semi–evergreen forests. Kolhapur, Pune, Raigad, Ratnagiri, Sidhudurg.

CULTIVATED SPECIES :

Cinnamomum camphora (L.) Nees & Eberm. Handb. Med. Pharm. Bot. 2: 430. 1836; Hook. f. in Fl. Brit. India 5: 134. 1886; Gamble Fl. Pres. Madras 2: 858. 1957 (Repr.); N.P. Singh, Fl. E. Karnataka 2: 548. 1988. *Laurus camphora* L. Sp. Pl. 369. 1753.

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.

Persea americana Mill. Gard. Dict. ed. 8. 1768. *Persea gratissima* Gaern. f. Fruct. 3: 222. 1807; Gamble, Fl. Pres. Madras 2: 869. 1957 (Repr.).

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.

Fls. & Frts. : September–January.

Distrib. : Cultivated in gardens. Pune.

HERNANDIACEAE

(incl. GYROCARPACEAE)

(P. G. Diwakar)

GYROCARPUS Jacq.

Gyrocarpus americanus Jacq. Select. Stirp. Amer. 282, t. 178, f. 80. 1763; K. M. Matthew & N. Rani in Matthew, Fl. Tamilnadu Carnatic 3: 1366. 1983. *G. jaquini* Roxb. Pl. Cor. t. 1. 1795; C.B. Cl. in Hook. f. Fl. Brit. India. 2: 461. 1878; Cooke, Fl. Pres. Bombay 1: 516. 1958 (Repr.). '*Zaitun*'.

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.

Illus. : Bedd. Fl. Sylv. t. 196. 1872 *(G. jaquini).*

Distrib. : Rare in deciduous forests. Ratnagiri.

PROTEACEAE

(A. N. Londhe)

CULTIVATED SPECIES:

Grevillea robusta A. Cunn. ex R.Br. Prot. Nov. 24. 1830; Parker, For. Fl. 430. 1918.

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.

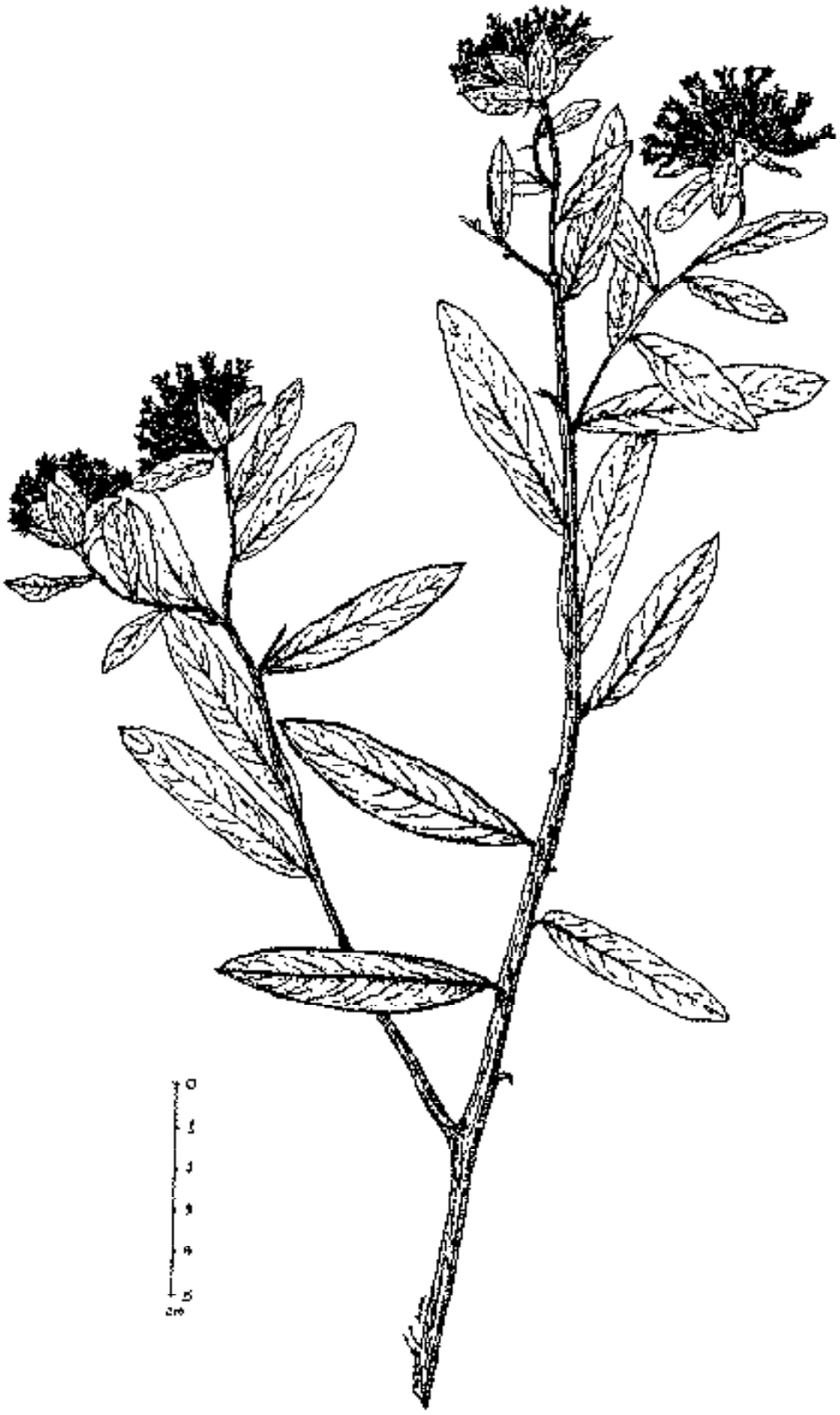
Distrib. : Introduced in gardens & planted along road–sides & parks. Ahmednagar, Dhule, Kolhapur, Satara, Sindhudurg.

Macadamia ternifolia F. Muell. in Trans. Phil. Inst. Vict. 2: 72. 1858.

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.

THYMELAEACEAE

(A. N. Londhe)

GNIDIA L.

Gnidia glauca (Fresen.) Gilg. in Bot. Jahrb. Syst. 19: 265. 1894; Sald. in Sald. & Nicols. Fl. Hassan Dt. 275.1976. *Lasiosiphon glaucus* Fresen. in Flora 21: 603. 1838. *L. eriocephalus* (Meissn.) Decne. in Jacq. Voy. Ind. Bot. 4 (3) : 148. 1844; Hook. f. Fl. Brit. India 5: 197. 1886; Cooke, Fl. Pres. Bombay 3: 36. 1958 (Repr.). '*Rametha*'.

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.

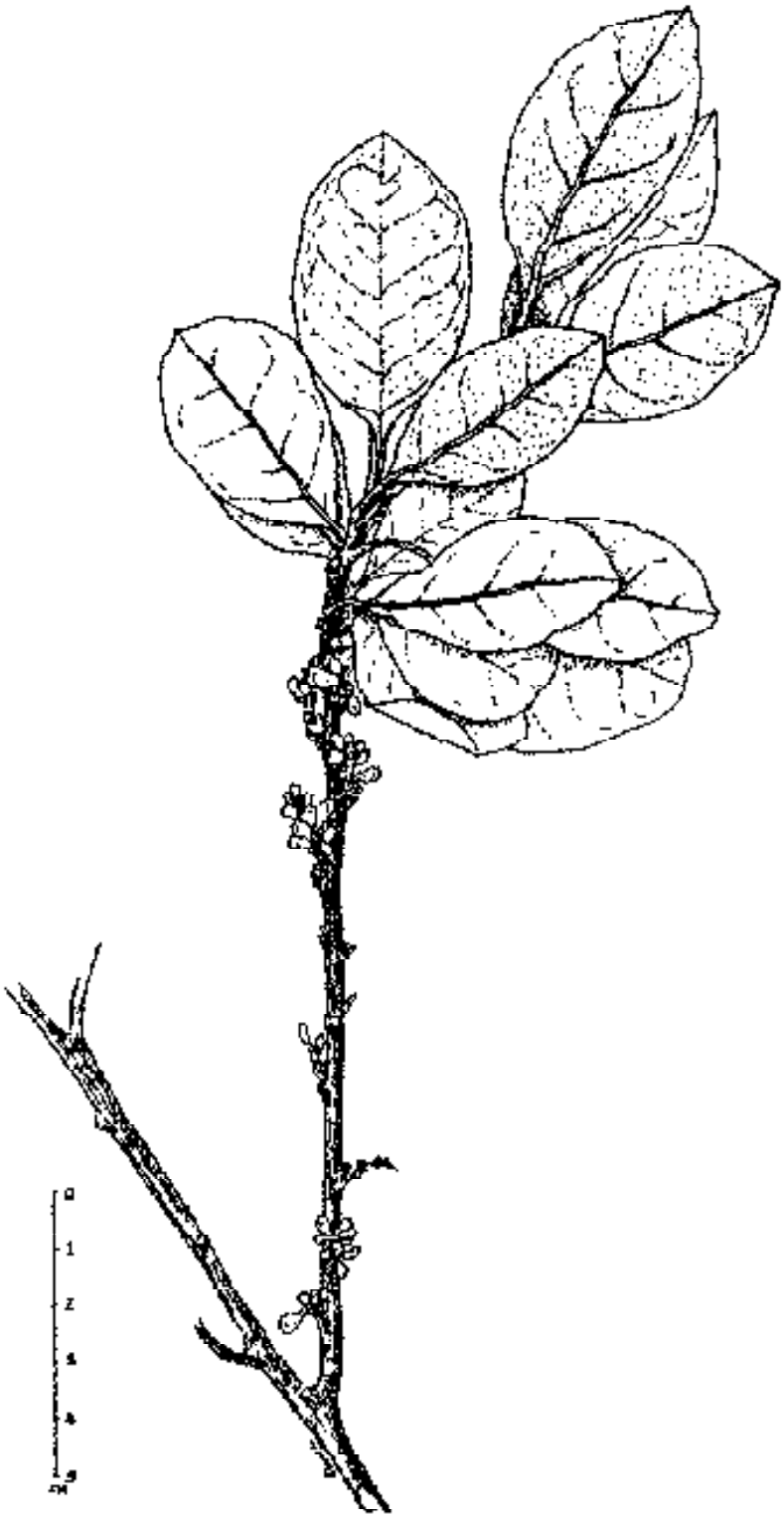
Elaeagnus conferta Roxb Fl. Ind. 1: 460. 1820; Hart. & Veldk. in Blumea 26: 396. 1980. *E. latifolia* L. Sp. Pl. 121. 1753 p. p.; Hook. f. Fl. Brit. India 5; 202. 1886; Cooke, Fl. Pres. Bombay 3: 37. 1958 (Repr.). '*Ambal*', '*Ambgul*', '*Amrum*'.

Shrubs, scandant, armed with spinous 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 ... DENDROPHTHOE

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*

Dendrophthoe falcata (L.f) Etting in Denkschr. Kaiserl. Akad. Wiss. Math. Naturw. Cl. 32: 52, 58, t. 13, f. 14. 1872; Danser in Bull. Jard. Buit. 3,16: 30. 1938. *Loranthus falcatus* L.f. Suppl. 211.1781. *L. longiflorus* var. *falcatus* (L.f.) Kurz, For. Fl. 2: 321. 1877; Hook. f. Fl. Brit. India 5:215. 1886. *L. longiflorus* var. *amplexifolia* (DC). Thw. Enum. Pl. Zeyl. 134. 1859; Hook. f. op. cit. 215. *L. longiflorus* Desr. in Lam. Encycl. 3: 498. 1789; Cooke Fl. Pres. Bombay 3: 42. 1958 (Repr.)

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.

Illus. : Wight, Ic. t. 302. 1840; Talb. for Fl. Bombay Pres. & Sind 2: 411, f. 473. 1911 (*L. longiflorus*); Mahesh. Illus. Fl. Delhi f. 190.1966; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 616. 1982.

Distrib. : Frequent as parasite on trees.

var. **coccinea** (Talb.) Sant. Pl. Sauras. 34.1953. *Loranthus longiflorus* Desr. var. *coccinea* Talb. Trees ed. 1,172. 1894; Cooke, Fl. Pre. Bombay 3: 43. 1958 (Repr.). *'Bandgul'.*

Parasites, well branched, woody; stem and branches stout, lenticellate. Leaves broadly ovate or ovate–elliptic. Flowers scarlet, in short, axillary racemes.

Fls. & Frts. : November.

Illus. : Talb. For. Fl. Bombay Pres & Sind 2: 413, f. 474. 1911.

Distrib. : Occasional parasite. Ahmednagar, Sindhudurg, Thane.

var. **pubescens** (Hook. f.). Sant. & Herb. ex Shah in J. Bombay Univ. 30: 37. 1961–1962. *Loranthus longiflorus* Desr. var. *pubescens* Hook. f. Fl. Brit.. India. 5: 215. 1886; Cooke, Fl. Pres. Bombay 3: 43. 1958 (Repr.).

Leaves oblong or elliptic–oblong. Peduncle, pedicel, calyx and corolla in bud stage pubescent.

Fls. : December–January.

Distrib. : Rare parasite in forests (S. M. Almeida, Fl. Savantwadi 1: 368. 1990).

D. memecylifolius (Wight & Arn.) Danser in Bull. Jard. Bot. Buitenz 3, 10: 291. 1929. *Loranthus memecylifolius* Wight & Arn. Prodr. 383. 1834; Hook. f. Fl. Brit. India 5: 217. 1886.

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).

D. neelgherrensis (Wight & Arn.) van Tiegh. in Bull. Soc. Bot. Fr. 42. 1895. *Loranthus neelgherrensis* Wight & Arn. Prodr. 382. 1824; Hook. f. Fl. Brit. India 5: 216.

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.

Distrib. : Rare in forests. Sindhudurg (S.M. Almeida, Fl. Savantwadi 1: 368. 1990).

D. trigona (Wight & Arn.) Danser ex Sant. in Rec. Bot. Surv. India.16(1): 163.1953. *Loranthus trigonus* Wight & Arn. Prodr. 386. 1834; Hook. f. Fl. Brit. India 5: 219. 1886; Cooke, Fl. Pres. Bombay 3: 43. 1958 (Repr.). *'Bundalki', 'Gonimaran'*.

Bushy, robust parasites; stems dichotmously 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, spathulate. Drupes c 1 cm long, ellipsoid, pale reddish.

Fls. & Frts. : November–March.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 416, f. 477.1911.

Distrib. : Infrequent in forest areas. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

HELICANTHES Danser

Helicanthes elastica (Desr.) Danser in Verh. Konink. Akad. Wetensch. Amsterdam 29(6): 55.1933; Sant. in Rec. Bot. Surv. India 16(1): 235.1967 (3rd Rev. ed.). *Loranthus elasticus* Desr. in Lam. Encycl. 3: 599. 1789; Hook. f. Fl. Brit. India 5: 216.1886; Cooke, Fl. Pres. Bombay 3: 41.1958 (Repr.).

Undershrubs, 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.

Illus. : Wight, Ic. t. 343. 1840 (*Loranthus elasticus*); Matthew, Illus. Fl. Tamilnadu, Carnatic 2: t. 617. 1982.

Distrib. : Frequent in forest on *Mangifera* and *Artocarpus* trees. Bombay, Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg.

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 subcylindric; ovary smooth	...	*H. intermedia*
3.	Buds 4 angled; ovary rugulose	...	*H. obtusata*

Helixanthera hookeriana (Wight & Arn.) Danser in Bull. Jard. Bot. Buitenz 3, 10: 316.1927; Johri & Bhatnagar, Bot. Monog. & Loranthaceae 11. 1972. *Loranthus hookerianus* Wight & Arn. Prodr. 1:381. 1834; Hook. f. Fl. Brit. India 5: 207. 1886.

Rusty pubescent parasites; branches with minute tubercles. Leaves shortly petioled, oblong–lanceolate or elliptic–ovate, coriaceous, dark brown when dry, narrowed to base. Inflorescence spicate, many–flowered. Flowers orange–red, bracteolate. Berries globose.

Fls. & Frts. : May.

Distrib. : Rare in forest areas. Sindhudurg (S.M. Almeida, Fl. Savantwadi 1: 369. 1990).

H. intermedia (Wight ex Hook. f.) Danser in Bull. Jard. Bot. Buitenz 3,10: 317.1929. *Loranthus intermedius* Wight ex Hook. f. Fl. Brit. India 5: 205. 1886.

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.

H. obtusata (Schult.) Danser in Bull. Jard. Bot. Buitenz 3,10: 317. 1929; Sant. in Rec. Bot. Surv. India. 16(1): 236.1967 (3rd Rev. ed.). *Loranthus obtusatus* Schult. Syst. 7(2): 1650. 1830; Hook. f. Fl. Brit. India 5: 205. 1886; Cooke, Fl. Pres. Bombay 3: 39.1958 (Repr.).

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 *Xylia* and *Knema*. Kolhapur, Pune, Satara.

H. wallichiana (Schult.) Danser in Bull. Jard. Bot. Buitenz 3,10: 317.1929 et Verh. Konink. Akad. Wetensch. Amsterdam 29(6): 60.1933. *Loranthus wallichianus* Schult. Syst. Veg. 7: 100. 1820; Hook. f. Fl. Brit. India 5: 204.1886; Cooke, Fl. Pres. Bombay 3: 39. 1958 (Repr.).

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.

Fls. & Frts. : March–July.

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*

Macrosolen capitellatus (Wight & Arn.) Danser in Blumea 2: 36. 1936; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 308. 1976. *Loranthus capitellatus* Wight & Arn. Prodr. 382. 1834; Hook. f. Fl. Brit. India 5: 221. 1886; Cooke, Fl. Pres. Bombay 3: 44. 1958 (Repr.).

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.

M. parasiticus (L.) Danser in Blumea 4: 36 1936; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 308. 1976. *Lonicera parasitica* L. Sp. Pl. 175. 1753. *Loranthus loniceroides* L. Sp. Pl. (ed. 2), 473. 1762; Hook. f. Fl. Brit. India. 5: 221. 1886; Cooke, Fl. Pres. Bombay 3: 45. 1958 (Repr.).

Bushy, much branched, parasites. Leaves opposite, ovate–oblong or oblong–lanceolate, acuminate, rounded at base and narrowed into petiole. Flowers few, bracteate, bracts ovate; stamens 6 stigma subglobose. Berries green, ellipsoid.

Fls. & Frts. : May–August.

Distrib. : Sindhudurg (S.M. Almeida, Fl. Savantwadi 1: 370. 1990).

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*

Scurrula parasitica L. Sp. Pl. 110. 1753. Wiens in Abeyw. Rev.

Handb. Fl. Ceylon. 1: 73. 1973; S.M. Almeida, Fl. Savantwadi 1: 37. 1990. *S. philippensis* (Cham. & Schlecht.) G. Don, Gen. Hist. 3: 442. 1834; Sant. in Rec. Bot. Surv. India 16(1): 236. 1967 (3rd Rev. ed.). *Loranthus scurrula* (L.) L. Sp. Pl. (ed. 2), 472. 1762; Hook. f. Fl. Brit. India 5: 208. 1886; Cooke, Fl. Pres. Bombay 3: 40. 1958 (Repr.).

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 408, f. 470. 1911 (*L. scurrula*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 618. 1982.

Distrib. : Frequent in forests on trees. Akola, Kolhapur, Nasik, Pune, Ratnagiri, Satara, Thane.

S. stocksii (Hook. f.) Danser in Bull. Jard. Bot. Buitenz 3, 10: 353. 1929 & Loranthaceae Verh. Koninkl. Acad. Wetensch. Amsterdam sect. 2, 29(6): 106. 1933. *Loranthus stocksii* Hook. f. Fl. Brit. India 5: 213. 1886; Cooke, Fl. Pres. Bombay 3: 40. 1958 (Repr.).

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.

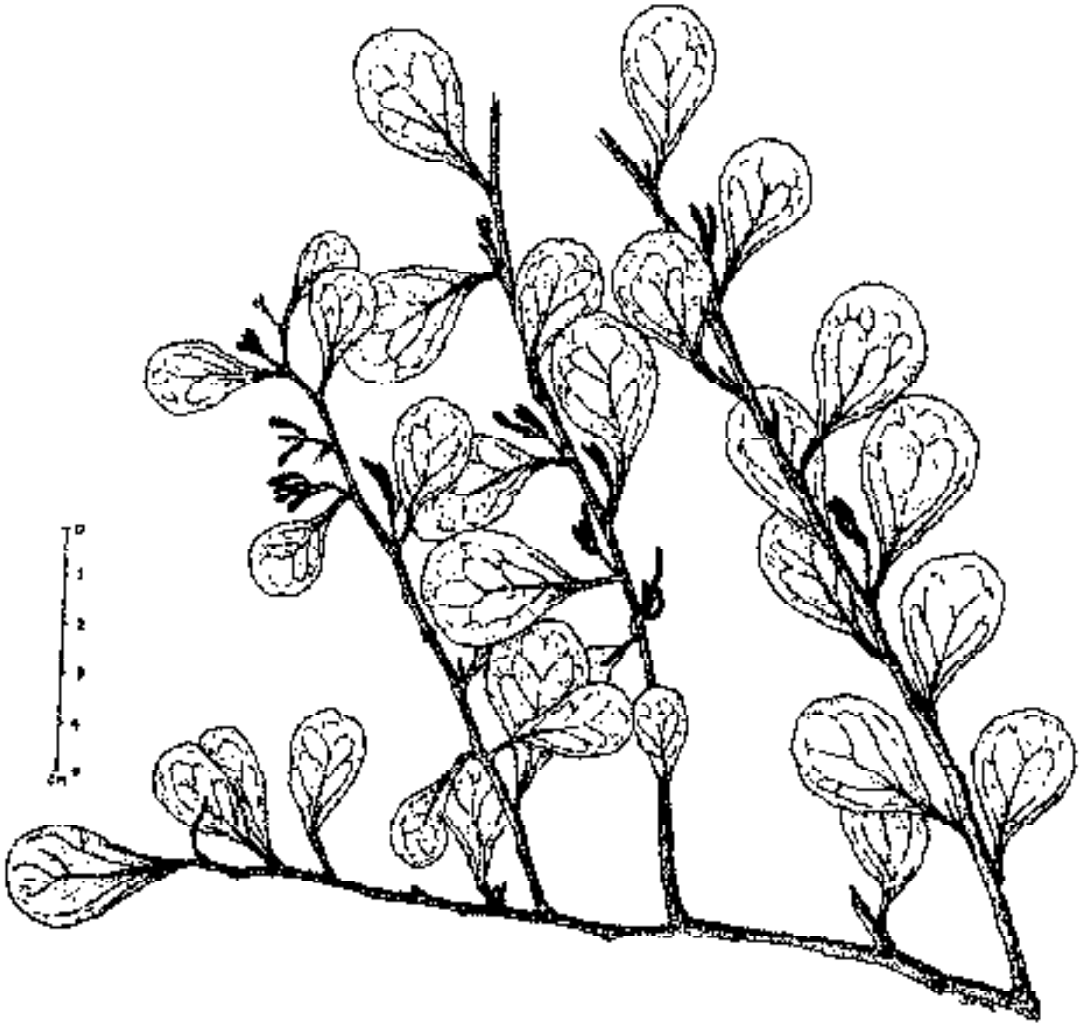
Fls. & Frts. : November onwards.

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 in Bull. Jard. Bot. Buitenz 3, 10: 354. 1929; Sant. in Rec. Bot. Surv. India 16(1): 237. 1967 (3rd Rev. ed.). *Loranthus cuneatus* Heyne ex Roth, Nov. Pl. Sp. 193. 1821; Hook f. Fl. Brit. India 5: 214. 1886; Cooke, Fl. Pres. Bombay 3: 42. 1958



Taxillus cuneatus (Roth) Danser

(Repr.).

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.

T. tomentosus (Roth) van Tiegh. in Bull. Soc. Bot. France 42: 256. 1895; S.M. Almeida, Fl. Savantwadi 1: 371. 1990. *Loranthus tomentosus* Roth, Nov. Pl. Sp. 191. 1821; Hook. f. Fl. Brit. India 5: 212. 1886. *L. gibbosus* Talb. Trees, Bombay ed. 2,289. 1902; Cooke, Fl. Pres. Bombay 3: 41. 1958 (Repr.).

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. & Frs. : October–February.

Distrib. : Rare in forests. Sindhudurg (S.M. Almeida, Fl. Savantwadi 1: 371. 1990).

TOLYPANTHUS Bl.

Tolypanthus lageniferus (Wight) van Tiegh. in Bull. Soc. Bot. France 42: 249. 1895 (*'lageniferus'*); Ramam. in Sald. & Nicols. Fl. Hassan Dt. 310. 1976. *Loranthus lageniferus* Wight, Ic. t. 306. 1840; Hook. f. Fl. Brit. India 5: 218. 1886; Cooke, Fl. Pres. Bombay 3: 44.1958 (Repr.). *'Bandguli'*.

Undershrubs 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.

Illus. : Wight, op. cit.; Talb. For. Fl. Bombay Pres. & Sind 2: 415, f. 476. 1911 (*Loranthus lageniferus*).

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*

Viscum angulatum Heyne ex DC. Prodr. 4: 283. 1830; Hook. f. Fl. Brit. India 5: 225. 1886; Cooke, Fl. Pres. Bombay 3: 47. 1958 (Repr.); Danser in Blumea 4: 292. 1941; Sant. in Rec. Bot. Surv. India 16(1): 238. 1967 (3rd Rev. ed.). *'Jalunder'*.

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.

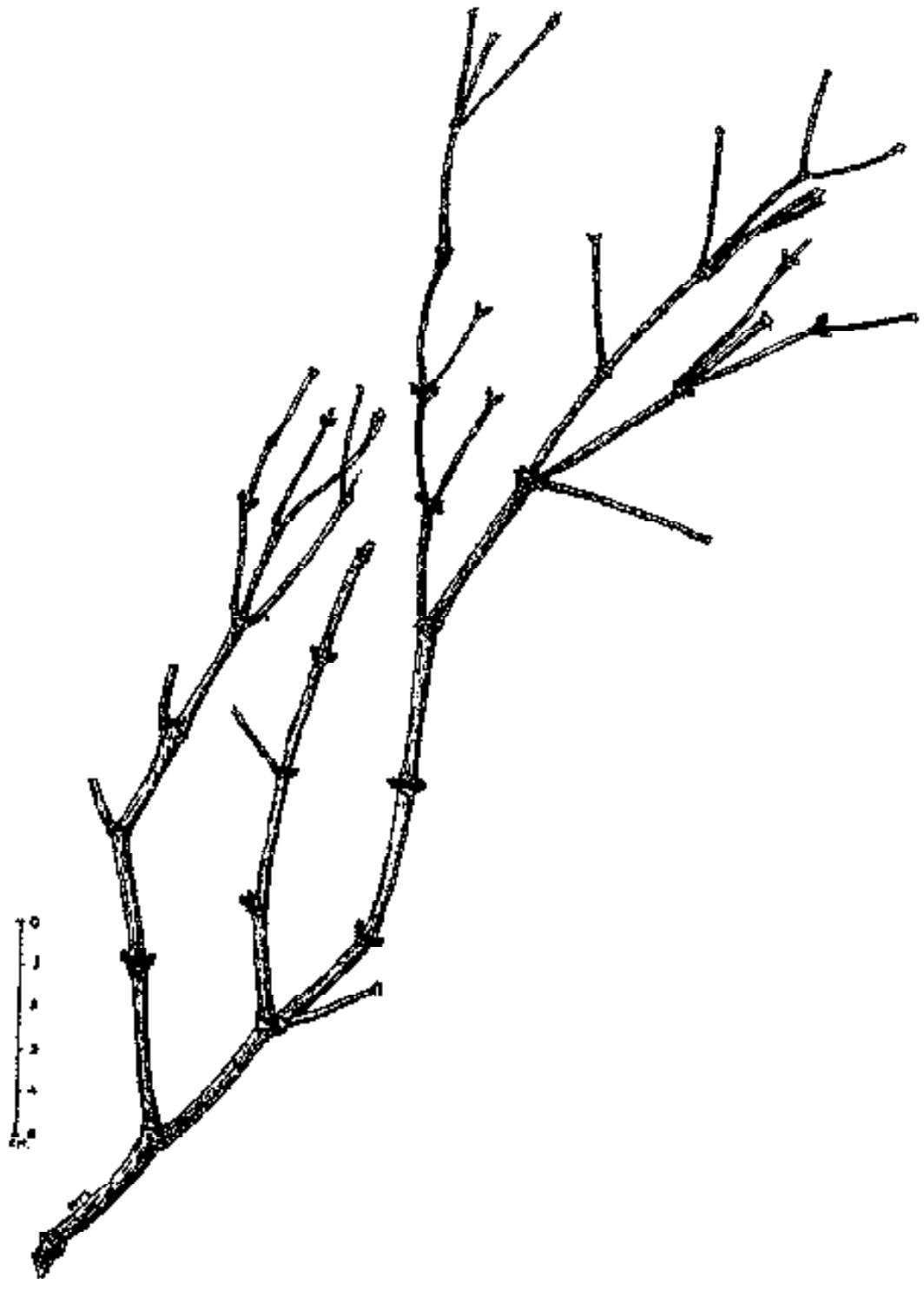
Distrib. : Frequent in forests on trees. Kolhapur, Pune, Ratnagiri, Satara, Sindhudurg, Thane.

V. articulatum Burm. f. Fl. Ind. 311. 1768; Hook. f. Fl. Brit. India 5: 226. 1886; Cooke, Fl. Pres. Bombay 3: 47. 1958 (Repr.); Danser in Blumea 4: 280. 1941; R. S. Rao in J. Indian Bot. Soc. 36: 126. 1957. *V. nepalense* Spreng. Syst. Cur. Post. 4(2): 42. 1827; Danser, op. cit. 283.

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.

Illus. : Collett. Fl. Siml. 440, f. 143. 1902; Talb. For. Fl. Bombay Pres. & Sind 2: 423, f. 482. 1911.



Viscum angulatum Heyne ex DC.

Distrib. : Frequent in forests on trees. Akola, Amravati, Bombay, Buldhana, Chandrapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

V. capitellatum Sm. in Rees, Cyclop. 37: 18. 1819; Hook. f. Fl. Brit. India. 5: 225. 1886; Cooke, Fl. Pres. Bombay 3: 47. 1958 (Repr.); Danser in Blumea 4: 309. 1941.

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. : Rare in forests. Pune.

V. monoicum Roxb. ex DC. Prodr. 4: 273.1830, Hook. f. Fl. Brit. India 5: 224.1886; Cooke, Fl. Pres. Bombay 3: 46.1958 (Repr.); Danser in Blumea 4: 305. 1941; R.S. Rao in J. Indian Bot. Soc. 36: 160. 1957.

Herbs, leafy, pendulous, parasitic, branches longitudinally wrinkled and grooved. Leaves sessile, 3–7 x 0.8–3.0 cm, oblong–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 on trees. Ratnagiri, Satara, Sindhudurg.

V. orientale Willd. Sp. Pl. 4: 737. 1805; Hook. f. Fl. Brit. India 5: 224. 1886 p. p.; Cooke, Fl. Pres. Bombay 3: 46. 1958 (Repr.); Danser in Blumea 4: 299. 1941.

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. Chandrapur.

SANTALACEAE

(Archana Godbole & P. Lakshminarasimhan)

1.	Trees; leaves opposite; stamens with interposed processes	...	SANTALUM
1.	Shrubs; leaves alternate; stamens without interposed processes	...	OSYRIS

OSYRIS L.

Osyris quadripartita Salz. ex Decne. in Ann. Sci. Nat. 2, 6: 65. 1836; Gandhi in Sald. & Nicols. Fl. Hassan Dt. 302. 1976. *Osyris wightiana* Wall. ex Wight, Ic. t. 1853. 1852. *O. arborea* Wall. ex A. DC. in DC. Prodr. 14: 633. 1857; Hook. f. Fl. Brit. India 5: 232. 1886; Cooke, Fl. Pres. Bombay 3: 50. 1958 (Repr.). *'Laotal', 'Popli'*.

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.

Santalum album L. Sp. Pl. 349. 1753; Hook. f. Fl. Brit. India 5: 231. 1886; Cooke. Fl. Pres. Bombay 3: 49. 1958 (Repr.). *'Chandan'*.

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.

Illus. : Bedd. Fl. Sylv. t. 256. 1872; Talb. For. Fl. Bombay Pres. & Sind 2: 425, f. 483. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 622. 1982.

Distrib. : Ahmednagar, Akola, Buldhana, Nasik, Pune, Ratnagiri, Raigad, Solapur, Thane, Yavatmal.

BALANOPHORACEAE

(S. Moorthy)

BALANOPHORA J.R. & J.G.A. Forst.

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*

Balanophora abbreviata Bl. Enum. Pl. Jav. 1: 87. 1827; Bertel Hans. in Densk. Botanik Ark. 28: 1135. 1972; Arekal & Shivamoorthy in Curr. Sci. 44: 97. 1975. *Acroblastum ambavanense* Reddi in Willdenowia 5(3): 389–393. 1969.

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.

B. elkinsi Blatt. in J. Bombay nat. Hist. Soc. 33: 309, t. 1. 1929.

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*.

B. fungosa Forst. & Forst. f. ssp. **indica** (Arn.) B. Hans. Densk. Botanik Ark. 28: 100, ff. 20, 21. 1972; Matthew, Fl. Tamilnadu Carnatic 2: 1383. 1983. *Langsdorffia indica* Arn. in Ann. Nat. Hist. 2: 37. 1838. *Balanophora indica* (Arn.) Wall. ex Griff. in Trans. Linn. Soc. London 20: 95. 1846; Hook. f. Fl. Brit. India 5: 237. 1886; Cooke, Fl. Pres.

Bombay 3: 52. 1958 (Repr.).

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 623. 1982.

Distrib. : Frequent. Kolhapur, Pune, Satara.

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 ... DIMORPHOCALYX

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:

36. Leaves broadly ovate; females in racemes; capsules densely tomentose ... TREWIA

36. Leaves, females and capsules not as above ... MALLOTUS

ACALYPHA L.

1. Bracts longer than the capsules:
   2. Spikes elongate, longer than 2.5 cm long ... *A. indica*
   2. Spikes less than 2.5 cm long :
      3. Bracts of female flowers bordered with gland tipped hairs ... *A. malabarica*
      3. Bracts of female flowers not as above:
         4. Capsules hispid ... *A. brachystachya*
         4. Capsules glabrous ... *A. ciliata*
1. Bracts shorter than the capsules ... *A. lanceolata*

Acalypha brachystachya Hornem. Hort. Hafn. 909. 1815; Hook. f. Fl. Brit. India 5: 416. 1887; Cooke, Fl. Pres. Bombay 3: 108. 1958 (Repr.).

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 624. 1982 & Fl. Tamilnadu Carnatic 3 (2): 1407, Pl. 103 b. 1983.

Distrib. : Scarce. Pune, Satara.

A. ciliata Forssk. Fl. Aegypt.–Arab. 162. 1775; Hook. f. Fl. Brit. India 5: 417. 1887; Cooke, Fl. Pres. Bombay 3: 109. 1958 (Repr.).

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 537. 1988.

Distrib. : Common.

A. indica L. Sp. Pl. 1003. 1753; Hook. f. Fl. Brit. India 5: 416. 1887; Cooke, Fl. Pres. Bombay 3: 108. 1958 (Repr.). *'Kapi', 'Khokali'.*

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.

Illus. : Wight, Ic. t. 877. 1844–1845.

Distrib. : Common.

A. lanceolata Willd. Sp. Pl. 4: 526.1805; Cooke, Fl. Pres. Bombay 3: 109. 1958 (Repr.). *A. fallax* Muell.–Arg. in Linnaea 34: 43. 1865; Hook. f. Fl. Brit. India 5: 416. 1887.

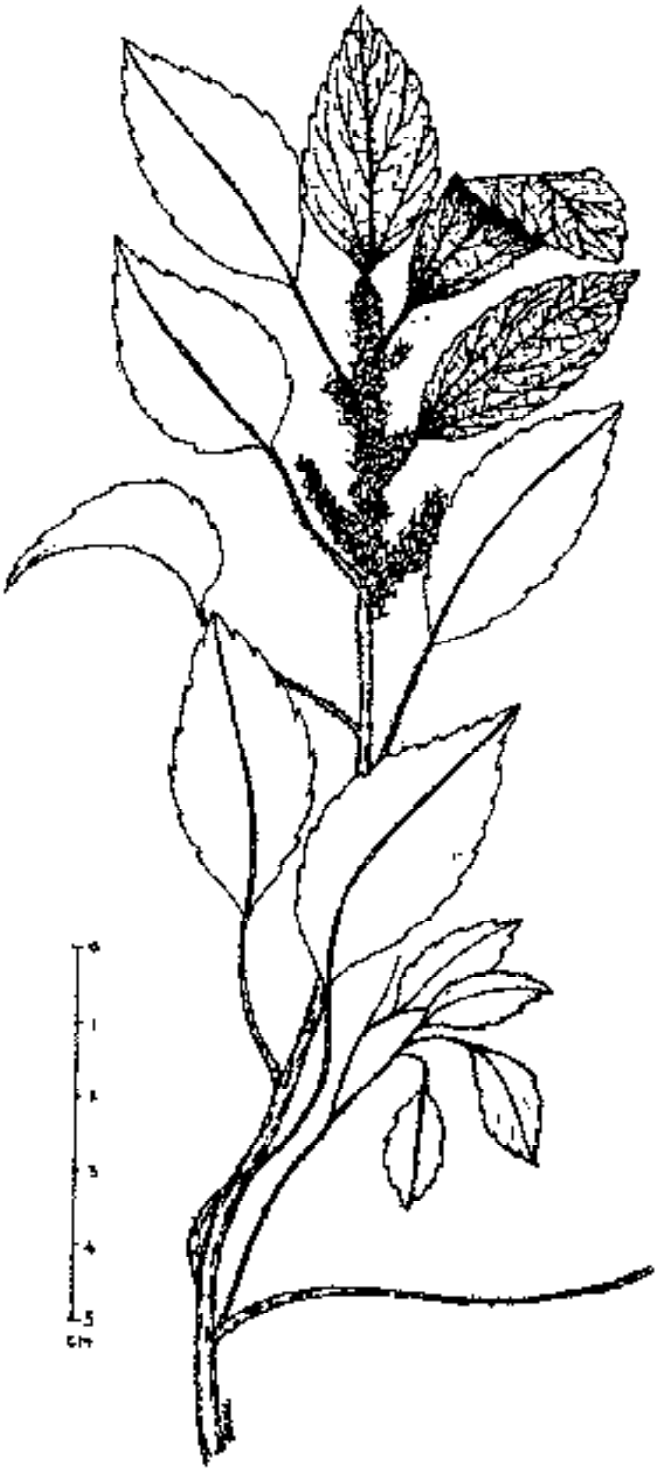
Annual, erect, herbs, c 40 cm tall. Leaves 1–5 x 0.4 cm, ovate–lanceolate, apex subacute, base acute, margins crenate–dentate, sparsely hairy on nerves. Spikes axillary. Male flowers c 1.5 mm across, yellow–red in colour; female flowers 2–2.5 mm across, green. Capsules 1.5–2 mm long, hispid with glandular based hairs. Seeds ovoid, acute.

Fls. & Frts. : July–October.

Distrib. : Scarce. Bombay, Chandrapur, Nagpur, Osmanabad, Ratnagiri, Yavatmal.

A. malabarica Muell.–Arg. in Linneae 34: 42. 1865–1866; Hook. f. Fl. Brit. India 5: 416. 1887; Cooke, Fl. Pres. Bombay 3: 109. 1958 (Repr.).

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, androgynous. 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.

obtusely trigonous. Seeds globose–ovoid, brown.

Fls. & Frts. : August–December.

Distrib. : Frequent.

ACTEPHILA Bl.

Actephila excelsa (Dalz.) Muell.–Arg. in Linnaea 32: 78. 1863 & in DC. Prodr. 222. 1866; Hook. f. Fl. Brit. India 5: 282. 1887; Cooke, Fl. Pres. Bombay 3: 71. 1958 (Repr.); Airy Shaw in Kew Bull. 26(2): 208. 1972. *Anomospermum excelsum* Dalz. in Hook. J. Bot. & Kew Gard. Misc. 3: 228. 1851.

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.

Illus. : *Actephila neilgherensis* Wight, Ic. t. 1910. 1852.

Distrib. : Scarce. Kolhapur, Ratnagiri, Satara.

AGROSTISTACHYS Dalz.

Agrostistachys indica Dalz. in Hook. J. Bot. & Kew Gard. Misc. 2: 41. 1850; Hook. f. Fl. Brit. India 5: 406. 1887; Cooke, Fl. Pres. Bombay 3: 102. 1958 (Repr.); Airy Shaw in Kew Bull. 26(2): 210. 1972.

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.

Illus. : Bedd. Ic. t. 241. 1868–1874.

Distrib. : Scarce. Kolhapur, Ratnagiri.

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*

Antidesma acidum Retz. Obs. Bot. 5: 30. 1788; Airy Shaw in Kew Bull. 26(2): 352. 1972; T. Chakrab. & Gang. in J. Econ. Tax. Bot. 24: 8, f. 1. 2000. *Antidesma diandrum* (Roxb.) Roth, Nov. Pl. Sp. 369. 1821; Hook. f. Fl. Brit. India 5: 361. 1887 p.p.; Cooke, Fl. Pres. Bombay 3: 90. 1958 (Repr.). *'Ghondurili'*.

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.

A. bunius (L.) Spreng. Syst. Veg. 1: 826. 1825; Hook. f. Fl. Brit. India 5: 358. 1887 p.p.; Cooke, Fl. Pres. Bombay 3: 89. 1958 (Repr.); T. Chakrab. & Gang. in J. Econ. Tax. Bot. 24: 12, f. 3. 2000. *Stilago bunius* L. Mant. Pl. 1232. 1767. *'Amati'*.

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.).

A. ghaesembilla Gaertn. Fruct. 1: 189, t. 39, f. 5. 1788; Hook. f. Fl. Brit. India 5:357. 1887; Cooke, Fl. Pres. Bombay 3: 89. 1958 (Repr.).

'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.

A. montanum Bl. Bijdr. 1124. 1825; T. Chakrab. & Gang. in J. Econ. Tax. Bot. 24: 36, f. 11. 2000. *A. menasu* (Tul.) Muell.–Arg. in DC. Prodr. 15(2): 257. 1866 p.p.; Hook. f. Fl. Brit. India 5: 364. 1887; Cooke, Fl. Pres. Bombay 3: 90. 1958 (Repr.).

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.

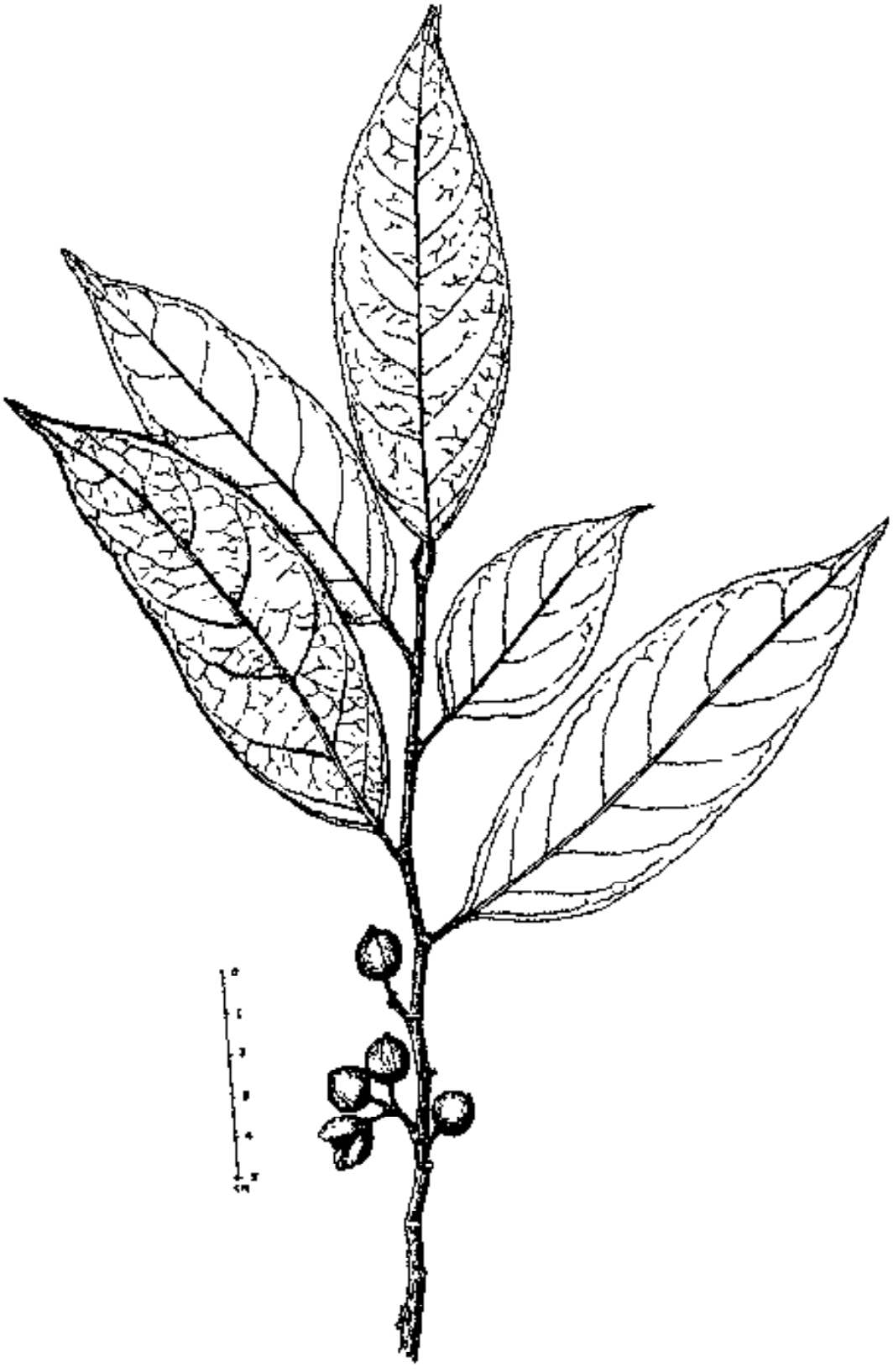
Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 627. 1982 *(A. menasu)*; T. Chakrab. & Gang. op. cit.

Distrib. : Scarce. Ratnagiri, Sindhudurg.

Aporosa Bl.

Aporosa lindleyana (Wight) Baill. Etud. Gen. Euph. 645. 1858; Hook. f. Fl. Brit. India 5: 349. 1887; Cooke, Fl. Pres. Bombay 3: 91. 1958 (Repr.). *Scepa lindleyana* Wight, Ic. t. 361. 1840. *'Sali' 'Bugdi'.*

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.

Baliospermum montanum (Willd.) Muell.–Arg. in DC. Prodr. 15(2): 1125. 1866. *Jatropha montana* Willd. Sp. Pl. 4: 563. 1805. *Baliospermum axillare* Bl. Bijdr. 604. 1826; Hook. f. Fl. Brit. India 5: 461. 1887; Cooke, Fl. Pres. Bombay 3: 106. 1958 (Repr.).*'Danti', 'Jamalgota', 'Sapidi'.*

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.

Bischofia javanica Bl. Bijdr. 1168. 1827; Hook. f. Fl. Brit. India 5: 345. 1887; Cooke, Fl. Pres. Bombay 3: 67. 1958 (Repr.).*'Bok'.*

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.

Brit. India 5: 403. 1887; Cooke, Fl. Pres. Bombay 3: 100. 1958 (Repr.).

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 subglobsoe, 3–lobed.

Fls. & Frts. : September–March.

Distrib. : Few, scattered in semi–evergreen ghats. Kolhapur, Ratnagiri, Sindhudurg.

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*

Breynia retusa (Dennst.) Alston in Ann. Roy. Bot. Gard. (Peradeniya) 11: 204. 1929; T. Chakrab. & Gang. in J. Econ. Tax. Bot. 20: 505, f. 3 A–E. 1996. *Phyllanthus retusus* Dennst. Schluss. Hort. Malab. 31. 1818. *Breynia patens* (Roxb.) Rolfe in J. Bot. 11: 359. 1882; Hook. f. Fl. Brit. India 5: 329. 1887; Cooke, Fl. Pres. Bombay 3: 79. 1958 (Repr.). *'Dolfodi', 'Kangli', 'Retund'*.

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 451, f. 496. 1911 (*Breynia patens*); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 628. 1982; T. Chakrab. & Gang. op. cit.

Distrib. : Frequent. Ahmednagar, Bombay, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

B. vitis-idaea (Burm. f.) C.E.C. Fischer in Kew Bull. 1932: 65. 1932; T. Chakrab. & Gang. in J. Econ. Tax. Bot. 20: 509, f. 4 A–F. 1996. *Rhamnus vitis-idaea* Burm. f. Fl. Ind. 61. 1768 p.p. *Breynia rhamnoides* (Retz.) Muell.–Arg. in DC. Prodr. 15(2): 440. 1866; Hook. f. Fl. Brit. India 5: 330. 1887; Cooke, Fl. Pres. Bombay 3: 79. 1958 (Repr.). *Melanthesa rhamnoides* (Retz.) Bl. Bijdr. 591. 1825.

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.

Illus. : Wight, Ic. t. 1898. 1852 (*Melanthesa rhamnoides*); T. Chakrab. & Gang. op. cit.

Distrib. : Few. Ratnagiri, Sindhudurg.

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*

Bridelia crenulata Roxb. Fl. Ind. 3: 734. 1832. *B. roxburghiana* (Muell.-Arg.) Gehrm. in Bot. Jahrb. Syst. 41. Beibl. 95: 30. 1908; Gamble, Fl. Pres. Madras 2: 896. 1957 (Repr.). *B. retusa* (L.) Spreng. var. *roxburghiana* Muell.-Arg. in DC. Prodr. 15(2): 493. 1866; Hook. f. Fl. Brit. India 5: 268. 1887.

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.

Illus. : Sant. in J. Bombay nat. Hist. Soc. 50: opp. page 309, f. 3. 1951.

Distrib. : Scarce. Thane.

B. hamiltoniana Wall. ex Muell.–Arg. in Linnaea 34: 77. 1805–1806; Hook. f. Fl. Brit. India 5: 271. 1887; Cooke, Fl. Pres. Bombay 3: 69. 1958 (Repr.); Sant. in J. Bombay nat. Hist. Soc. 50: 309. 1951.

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.

Distrib. : Few. Bombay, Chandrapur, Raigad, Ratnagiri, Thane.

B. montana Willd. Sp. Pl. 4:978. 1806; Hook. f. Fl. Brit. India 5: 269. 1887 p.p.; Karthik. & Anand Kumar in J. Bombay nat. Hist. Soc. 80: 256. 1983.

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.

B. retusa (L.) Spreng. Syst. Veg. 3: 48. 1826; Hook. f. Fl. Brit. India 5: 268. 1887; Cooke, Fl. Pres. Bombay 3: 68. 1958 (Repr.); Sant. J. Bombay nat. Hist. Soc. 50: 308. 1952. *Clutia retusa* L. Sp. Pl. 1042. 1753. *'Asana', 'Ashind', 'Kutgi'.*

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.

B. scandens (Roxb.) Willd. Sp. Pl. 4: 979. 1805; Sant. in J. Bombay nat. Hist. Soc. 50:307. 1951. *Clutia scandens* Roxb. Pl. Cor. t. 173. 1802. *Bridelia stipularis* sensu Hook. f. Fl. Brit. India 5: 270. 1887 non Bl. 1825 p.p.; Cooke, Fl. Pres. Bombay 3: 68. 1958 (Repr.). *'Chikni', 'Patharphoda'.*

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.

Distrib. : Few. Kolhapur, Raigad, Ratnagiri, Sindhudurg.

B. squamosa (Lam.) Gehrm. in Engl. Bot. Jahrb. 41, Beibl. 95:30. 1909; Sant. in J. Bombay nat. Hist. Soc. 50: 308. 1951. *Clutia squamosa* Lam. Encycl. 5:54. 1790. *'Asana'.*

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.

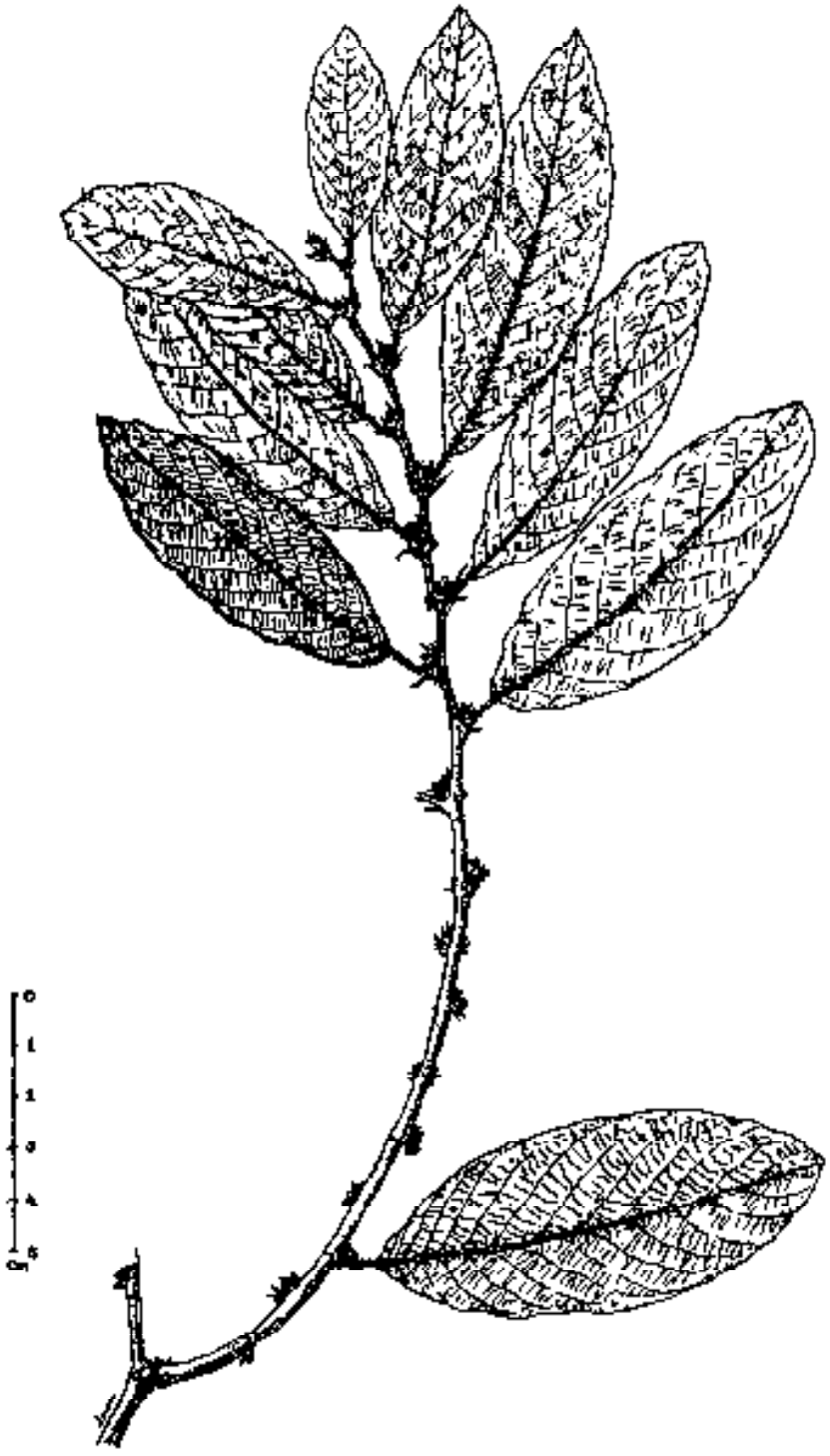
CHROZOPHORA A.L. Juss.

1. Prostrate–procumbent herbs; leaf base subcordate; racemes short ... *C. prostrata*

1. Erect herbs; leaf base truncate or cuneate; racemes elongate ... *C. rottleri*

Chrozophora prostrata Dalz. & Gibs. Bombay Fl. 233. 1861; Hook. f. Fl. Brit. India 5: 410. 1887; Cooke, Fl. Pres. Bombay 3: 105. 1958 (Repr.).

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.

Fls. & Frts. : October–May.

Distrib. : Common.

C. rottleri (Gies.) Juss. Euphorb. Gen. Tent. 28. 1824; Balakr. in Bull. Bot. Surv. India 15: 4. 1973. *Croton rottleri* Gies. Croton Monogr. 54. 1807. *Chrozophora plicata* Voigt, Hort. Sub. Calc. 156. 1846 non A Juss. 1824; Hook. f. Fl. Brit. India 5: 408. 1887; Cooke, Fl. Pres. Bombay 3: 104. 1958 (Repr.).

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.

Fls. & Frts. : December–July.

Illus. : Tad. & Venkat. Handb. S. Indian Weeds 400, f. 161. 1955 (Rev. ed.); Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 630. 1982.

Distrib. : Common.

CLEIDION Bl.

Cleidion spiciflorum (Burm. f.) Merr. Interpr. Rumph. Herb. Amboini. 322. 1917, in Obs. & Enum. 2: 439. 1923; Airy Shaw in Kew Bull. 26(2): 234. 1972. *C. javanicum* Bl. Bijdr. 613. 1825; Hook. f. Fl. Brit. India 5: 444. 1887; Cooke, Fl. Pres. Bombay 3: 116. 1958 (Repr.).

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.

Fls. & Frts. : October–March.

Illus. : Bedd. Fl. Sylv. t. 272. 1872.

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*

Cleistanthus collinus (Roxb.) Bth. ex Hook. f. Fl. Brit. India 5: 274. 1887. *Clutia collina* Roxb. Pl. Cor. t. 169. 1802. *'Garavi'*.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 632. 1982.

Distrib. : Scarce. Bhandara, Chandrapur, Nagpur, Yavatmal.

C. malabaricus Muell–Arg. in DC. Prodr. 15(2): 508. 1866; Hook. f. Fl. Brit. India 5: 276. 1887; Cooke, Fl. Pres. Bombay 3: 70. 1958 (Repr.).

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*

Croton aromaticus L. Sp. Pl. 1005. 1753; Hook. f. Fl. Brit. India 5: 388. 1887; T. Chakrab. & Balakr. in Bull. Bot. Surv. India 34: 25. (1992) 1997.

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.

Illus. : Bedd. Fl. Sylv. t. 283 A. 1872.

Distrib. : Bombay (T. Chakrab. & Balakr. op. cit.).

C. bonplandianus Baill. in Adansonia 4: 339. 1864; T. Chakrab. & Balakr. in Bull. Bot. Surv. India 34: 31. (1992) 1997. *C. sparsiflorus* Morong in Ann. New York Acad. Sci. 7: 221. 1893.

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 545. 1988.

Distrib. : Few. Ahmednagar, Akola, Buldhana, Chandrapur, Dhule, Kolhapur, Nagpur, Pune, Ratnagiri, Thane.

C. gibsonianus Nimmo in Grah. Cat. Pl. Bombay 251. 1839; Hook. f. Fl. Brit. India 5: 392. 1887; Cooke, Fl. Pres. Bombay 3: 97. 1958 (Repr.); T. Chakrab. & Balakr. in Bull. Bot. Surv. India 34: 46, f. 6. (1992) 1997.

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.

C. roxburghii Balakr. in Bull. Bot. Surv. India. 3: 39. (1961) 1962; T. Chakrab. & Balakr. in Bull. Bot. Surv. India 34: 67. (1992) 1997. *C. oblongifolius* Roxb. Fl. Ind. 3: 685. 1832 non Delile 1814 nec. Siebr. ex Spr. 1826; Hook. f. Fl. Brit. India 5: 386. 1887; Cooke, Fl. Pres. Bombay 3: 96. 1958 (Repr.).

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 471, f. 500. 1911 (*C. oblongifolius*).

Distrib. : Scarce. Buldhana, Nasik, Ratnagiri, Sindhudurg.

C. zeylanicus Muell.–Arg. in Linnaea 34: 107. 1865 & in DC. Prodr. 15(2): 581. 1866; T. Chakrab. & Balakr. in Bull. Bot. Surv. India 34: 79, f. 16. (1992) 1997. *C. reticulatus* Heyne in Wall. ex Muell.–Arg. in DC. op. cit.; Hook. f. Fl. Brit. India 5: 386.1887; Cooke, Fl. Pres. Bombay 3: 96. 1958 (Repr.).

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.

Illus. : Bedd. Ic. Pl. Ind. Or. t. 233. 1874 *(C. reticulatus)*; T. Chakrab. & Balakr. op. cit.

Distrib. : Scarce. Kolhapur, Pune, Raigad, Ratnagiri, Sindhudurg.

DALECHAMPIA Linn.

Dalechampia indica Wight, Ic. Pl. Ind. Or.t. 1882. 1852; Hook. f. Fl. Brit. India 5: 467. 1888; Matthew, Mat. Fl. Tamilnadu Carnatic 330. 1981.

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.

Fls. & Frts. : November–January.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 634. 1982.

Distrib. : Rare. Dhule.

DIMORPHOCALYX Thw.

Dimorphocalyx lawianus (Muell.–Arg.) Hook. f. Fl. Brit. India 5: 404. 1887; Cooke, Fl. Pres. Bombay 3: 101. 1958 (Repr.). *Trigonostemon lawianus* Muell.–Arg. in Linnaea 34: 212. 1865 p. p.

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.

Fls. & Frts. : October–June.

Illus. : Talb. For. Fl. Bombay Pres. & Sind, 2: 475, f. 506. 1911.

Distrib. : Scarce. Kolhapur, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.

DRYPETES Vahl

1.	Fruits obovoid, 3–angled, 7.5 cm across	...	*D. venusta*
1.	Fruits ellipsoid, not angled, 1–2 cm across	...	*D. roxburghii*

Drypetes roxburghii (Wall.) Hurusawa in J. Fac. Sci. Univ. Tokyo, Sect. III Bot. 6: 337. 1954; Airy Shaw in Kew Bull. 26: 257. 1972; T. Chakrab. et al. in J. Econ. Tax. Bot. 21. 271. 1997. *Putranjiva roxburghii* Wall. Tent. Fl. Nep. 61. 1828; Hook. f. Fl. Brit. India 5: 336. 1887; Cooke, Fl. Pres. Bombay 3: 86. 1958. (Repr.).

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. 187: *(Putranjiva roxburghii).*

Distrib. : Few. Bombay, Pune, Ratnagiri, Sindhudurg, Thane.

D. venusta (Wight) Pax & Hoffm. in Engl. Pflanzenr. iv. 147. xv. 268. 1922; T. Chakrab. et al. in *J.* Econ. Tax. Bot. 21: 277. 1997. *Astylis venusta* Wight, Ic. t. 1992. 1853. *Hemicyclia venusta* Thw. in Kew J. Bot. 7: 272. 1855; Hook. f. Fl. Brit. India 5: 339. 1887; Cooke, Fl. Pres. Bombay 3: 87. 1958 (Repr.).

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.

Distrib. : Scarce. Bombay Presidency (T. Chakrab. et al. op. cit.), Pune, Ratnagiri.

EMBLICA Gaertn.

Emblica officinalis Gaertn. Fruct. 2: 122, t. 108. 1790. *Phyllanthus emblica* L. Sp. Pl. 982. 1753; Hook. f. Fl. Brit. India 5: 289. 1887; Cooke, Fl. Pres. Bombay 3: 81. 1958 (Repr.); Webster in J. Arnold Arbor. 38: 76. 1957. *'Avala', 'Awalkante'.*

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.

Illus. : Wight, Ic. t. 1896. 1852; Talb. For. Fl. Bombay Pres. & Sind 2: 442, f. 491. 1911 *(Phyllanthus emblica).*

Distrib. : Common.

EPIPRINUS Griff.

Epiprinus mallotiformis (Muell.–Arg.) Crozatin in J. Arnold

Arbor. 23: 52. 1942. *Symphyllia mallotiformis* Muell.–Arg. in Linnaea 14: 156. 1865. *Adenochlaena indica* (Bedd.) Bedd. ex Hook. f. Fl. Brit. India 5: 418. 1889; Cooke, Fl. Pres. Bombay 3: 111. 1958 (Repr.).

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.

Illus. : Bedd. Fl. Sylv. t. 261. 1872.

Distrib. : Rare. Kolhapur.

EUPHORBIA L.

1. Shrubs or small trees :
   2. Unarmed plants ... *E. tirucalli*
   2. Armed plants :
      3. Branches terete or angular, not winged :
         4. Branches distinctly angular ... *E. ligularia*
         4. Branches not as above ... *E. nivulia*
      3. Branches and branchlets 3–winged ... *E. antiquorum*
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 ... *E. panchganiensis*
         7. Cymes 4–5 times dichotomous; bracts broadly triangular ... *E. khandalensis*
      6. Cymes once dichotomous ... *E. fusiformis*
   5. Leaves not all radical :
      8. Stems weak, filiform, prostrate or decumbent :
         9. Stems glabrous or scarcely hairy:
            10. Leaves as broad as long; involucres numerous; capsules glabrous; seeds smooth ... *E. heyneana*
            10. Leaves, involucres, 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 :

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 548. 1988.

Distrib. : Scarce. Osmanabad.

E. dracunculoides Lam. Encycl 2: 428.1786; Hook. f. Fl. Brit. india 5: 262 1887; Cooke, Fl. Pres. Bombay 3: 59. 1958 (Repr.). *'Pisola'.*

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.

Fls. & Frts. : June–January.

Illus. : Mahesh, Illus. Fl. Delhi f. 192. 1966.

Distrib. : Few. Ahmednagar, Osmanabad, Solapur, Yavatmal.

E. elegans Spr. Syst. Veg. 3: 794. 1826; Hook. f. Fl. Brit. India 5: 246. 1887; Cooke, Fl. Pres. Bombay 3: 61 1958 (Repr.); Sant. in Bull. Bot. Soc. Bengal 8(1 & 2): 13. 1954.

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 551. 1988.

Distrib. : Few Chandrapur, Osmanabad, Pune, Ratnagiri, Sindhudurg.

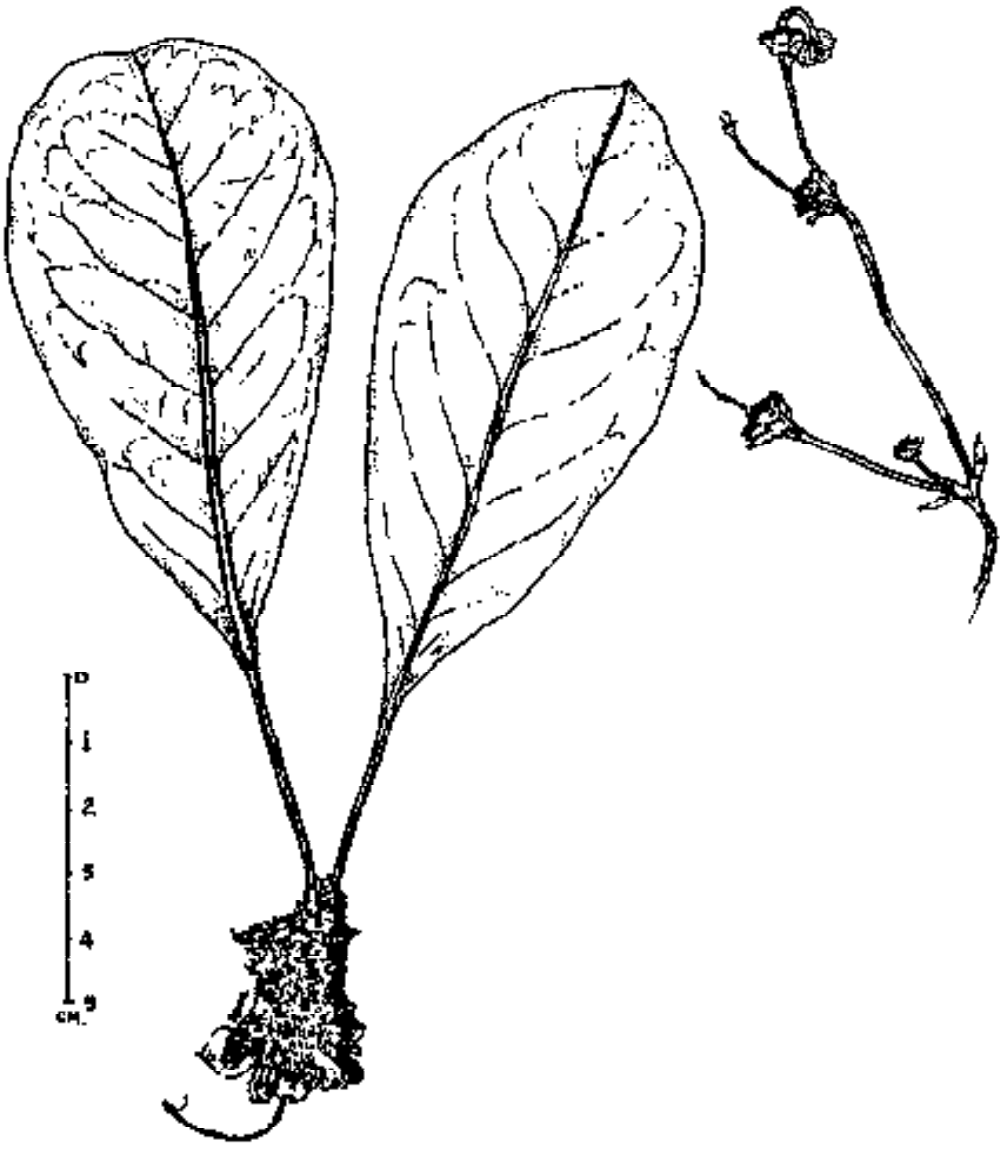
E. erythroclada Boiss. in DC Prodr. 15(2): 25. 1862; Hook. f. Fl. Brit. India 5: 247. 1887; Cooke, Fl. Pres. Bombay 3. 63. 1958 (Repr.); Billore in Indian For. 95: 576. 1969.

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.

Illus. : Billore, op. cit. 577, f. 1–5.

Distrib. : Few. Bombay, Nasik, Raigad, Ratnagiri, Thane.



Euphorbia fusiformis Buch. – Ham. ex D. Don

E. fusiformis Buch.-Ham. ex D. Don, Prodr. Fl. Nepal 62. 1825; Hook. f. Fl. Brit. India 5: 257. 1887; Sant in Bull. Bot. Soc. Bengal 8: 3. 1955. *E. acaulis* Roxb. Fl. Ind. ed. Carey 2: 472. 1832; Cooke, Fl. Pres. Bombay 3: 52. 1958 (Repr.). *'Buishirid'*.

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.

E. geniculata Orteg. Nov. Rar. Pl. Matr. Decad. 18. 1797; Hook. f. Fl. Brit India 5. 239. 1887; Cooke, Fl. Pres. Bombay 3: 66. 1958 (Repr.); Sant. in Bull. Bot. Soc. Bengal 8:5. 1955.

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.

Distrib. : Frequent. Ahmednagar, Amravati, Bhandara, Buldhana, Dhule, Kolhapur, Nasik.

E. heyneana Spr. Syst. 3: 791. 1826; Panigr. in Kew Bull. 29: 695. 1976. *E. microphylla* Heyne ex Roth, Nov. Pl. Sp. 229. 1821 non Lam. 1788; Hook. f. Fl. Brit. India 5: 252. 1887; Cooke, Fl. Pres. Bombay 3: 65. 1958 (Repr.). *E. bombaiensis* Sant. in Bull. Bot. Soc. Bengal 8: 17. 1954.

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 companulate. Capsules 0.15 cm across, keeled. Seeds c 0.1 cm long, obtusely quadrangular, smooth, mucilaginous when wet.

Fls. & Frts. : April–December.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 553. 1988.

Distrib. : Few. Akola, Bhandara, Kolhapur, Raigad, Ratnagiri, Sindhudurg.

E. hirta L. Sp. Pl. 454. 1753; Sant. in Bull. Bot. Soc. Bengal 8: 15.

1954; Carter in Kew Bull 39: 643. 1984. *E. pilulifera* auct. pl. non L. 1753; Hook. f. Fl. Brit. India 5. 250. 1887; Cooke, Fl. Pres. Bombay 3: 64. 1958 (Repr.).

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.

Illus. : Tad. & Venkat. Handb. S. Indian Weeds, 390, f. 156. 1955 (Rev. ed.); Mahesh. Illus. Fl. Delhi f. 193. 1966.

Distrib. : Frequent.

E. katrajensis Gage in Kew Bull. 1914: 236. 1914; Sant. in Bull. Bot. Soc. Bengal 8: 14. 1954.

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.

E. khandalensis Blatt. & Hallb. in J. Ind. Bot. Soc. 2: 48, t. 3. 1921; Sant. in Rec. Bot. Surv. India 16 (1): 242. 1967 (3rd Rev. ed.).

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. Cocci rounded. Seeds perfectly spherical or globose.

Fls. & Frts. : January–May.

Distrib. : Rare. Pune.

E. laciniata Panigr. in Kew Bull. 30: 531. 1975. *E. fimbriata* Heyne ex Roth, Nov. Pl. Sp. 227. 1821 non Scop. 1788 nec Boiss. 1862; Sant. in Bull. Bot. Soc. Bengal 8: 12. 1954. *E. cristata* sensu Hook. f. Fl. Brit. India 5: 247. 1887 p.p. quoad syn. non Heyne ex Roth, 1821.

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.

Fls. & Frts. : October–January.

Illus. : Panigr. & Mitra in Bull. Bot. Surv. India 20 : 167, f. 1–9. (1978) 1979.

Distrib. : Few. Akola, Dhule, Nasik, Punc.

E. laeta Heyne ex Roth, Nov. Pl. Sp. 230. 1821; M.A. Rau in Bull. Bot. Surv. India 19 (Suppl.) : 171. 1961. *E. rothiana* Spr. Syst. Veg. 3: 769. 1826; Hook. f. Fl. Brit. India 5: 263. 1887; Cooke, Fl. Pres. Bombay 3: 59. 1958 (Repr.); Sant. in Bull. Bot. Soc. Bengal 8:9. 1954. *'Dudhi'*.

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.

E. ligularia Roxb. Fl. Ind. 3: 465. 1832; Cooke, Fl. Pres. Bombay 3: 58. 1958 (Repr.); Airy Shaw in Kew Bull 26: 265. 1972. *E. nerifolia* sec. Boiss. in DC. Prodr. 79. 1862; Hook. f. Fl. Brit. India 5: 255. 1887; Cooke, Fl. Pres. Bombay 3: 59. 1958 (Repr.). *'Sabar', 'Sabarkandi'*.

Shrubs, succulent, 4 m high, much branched. Leaves obovate–oblong, acute, base narrowed into short petioles. Involucres red or pale yellow, 3–nate forming small, solitary or dichotomous cymes. Capsules 3–lobed.

Fls. & Frts. : November–April.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 433, f. 485. 1911.

Distrib. : Frequent. Ahmednagar, Akola, Amravati, Bhandara, Buldhana, Dhule, Kolhapur, Nasik, Raigad, Ratnagiri, Yavatmal.

E. nivulia Buch.–Ham. in Trans. Linn. Soc. London 14: 286. 1825; Hook. f. Fl. Brit. India 5: 255. 1887; Sant. in Bull. Bot. Soc. Bengal 8: 8. 1954.

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.

Distrib. : Few. Ahmednagar, Bombay, Chandrapur, Jalgaon, Pune, Raigad, Satara, Thane.

E. notoptera Boiss in DC. Prodr. 15(2): 26. 1862; Hook. f. Fl. Brit. India 5: 247. 1887; Cooke, Fl. Pres. Bombay 3: 61. 1958 (Repr.); Sant. in Bull. Bot. Soc. Bengal 8(1 & 2): 13. 1954.

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.

Distrib. : Few. Bombay, Ratnagiri, Sindhudurg, Yavatmal.

E. panchganiensis Blatt. & McC. in J. As. Soc. Bengal n.s. 26: 353. 1930; Sant. in Bull. Bot. Soc. Bengal 8 (1 & 2): 4. 1954.

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.

E. parviflora L. Syst. ed. 10. 2: 1047. 1759; Sant. in Bull. Bot. Soc. Bengal 8:13. 1954. *E. hypericifolia* L. Sp. Pl. 454. 1753 p.p. tantum; Hook. f. Fl. Brit. India 5: 249. 1887 p.p. *E. hypericifolia* var. *parviflora* Prain, Beng. Pl. 2: 924. 1903 [2: 692. 1963 (Repr.)]; Cooke, Fl. Pres. Bombay 3: 63. 1958 (Repr.).

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.

E. perbracteata Gage in Kew Bull. 1914: 238. 1914; Sant. in Bull. Bot. Soc. Bengal 8:10. 1954.

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.

E. prostrata Ait. in Hort. Kew ed. 1, 2: 139. 1789; Hook. f. Fl. Brit. India 5: 266. 1887; Airy Shaw in Kew Bull. 26(2): 266. 1972. *'Gondan'*.

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 194. 1966.

Distrib. : Frequent. Ahmednagar, Amravati, Bhandara, Chandrapur, Pune, Yavatmal.

E. pycnostegia Boiss. Cent. Euphorb. 9. 1860; Hook. f. Fl. Brit. India 5: 246. 1887; Cooke, Fl. Pres. Bombay 3: 60. 1958 (Repr.); Sant. in Bull. Bot. Soc. Bengal 8: 11. 1954.

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.

E. rosea Retz. Obs. Bot. 4: 26. 1786; Hook. f. Fl. Brit. India 5: 251. 1887; Cooke; Fl. Pres. Bombay 3: 62. 1958 (Repr.); Sant. in Bull. Bot. Soc. Bengal 8: 13. 1954.

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.

Distrib. : Few. Bhandara, Nasik.

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–oblong, 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.

E. thymifolia L. Sp. Pl. 454. 1753; Hook. f. Fl. Brit. India 5: 252. 1887; Cooke, Fl. Pres. Bombay 3: 64. 1958 (Repr.); Sant. in Bull. Bot. Soc. Bengal 8(1 & 2): 16. 1954; Airy Shaw in Kew Bull. 26: 267. 1952. *'Dhakti–dudhi', 'Lahan–nayati'.*

Herbs, prostrate, annual. Leaves c 0.04 cm long, obliquely oblong or ovate, glabrous above, appressedly hairy beneath, apex obtuse, margins serrulate. Involucres axillary, hairy; limbs of glands stipitate. Capsules ovoid, cocci hairy.

Fls. & Frts. : June–September.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 562. 1988.

Distrib. : Common.

E. tirucalli L. Sp. Pl. 452. 1753; Hook. f. Fl. Brit. India. 5: 254. 1887; Cooke, Fl. Pres. Bombay 3: 66. 1958 (Repr.). *'Sher'.*

Stems green, articulated, succulent. Leaves linear–oblong, only at end of branches, deciduous, sap milky. Cyathia few, terminal.

Fls. & Frts. : August–September.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 435, f. 487. 1911.

Distrib. : Frequent. Ahmednagar, Aurangabad, Bombay, Buldbana, Pune, Ratnagiri, Thane.

E. zornioides Boiss in DC. Prodr. 15(2): 19. 1862; Hook. f. Fl. Brit. India 5: 246. 1887; Cooke, Fl. Pres. Bombay 3: 60. 1954 (Repr.).

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

Fls. & Frts. : July–December.

Distrib. : Scarce. Ahmednagar, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Thane.

EXCOECARIA L.

Excoecaria agallocha L. Sp. Pl. ed. 2, 1451. 1763; Hook. f. Fl. Brit. India 5: 472. 1888; Cooke, Fl. Pres. Bombay 3: 122. 1958 (Repr.); Airy Shaw in Kew Bull. 26: 168. 1972. *'Geva', Phungali', Surund'.*

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.

Fls. & Frts. : February–September.

Illus. : Wight, Ic. t. 1865. 1852.

Distrib. : Scarce. Bombay, Raigad, Ratnagiri, Sindhudurg, Thane.

GIVOTIA Griff.

Givotia rottleriformis Griff. in Calc. J. Nat. Hist. Soc. 4: 388.1844; Hook. f. Fl. Brit. India 5: 395. 1887; Cooke, Fl. Pres. Bombay 3: 99. 1958 (Repr.). *'Polki'.*

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*

Glochidion ellipticum Wight, Ic. Pl. Ind. Orient. t. 1906. 1852; Hook. f. Fl. Brit. India 5: 321. 1887. *G. hohenackeri* (Muell.–Arg.) Bedd. Fl. Sylv. 193. 1873; Cooke, Fl. Pres. Bombay 3: 75. 1958 (Repr.). *'Bhoma', 'Kalbaya', 'Maneri', 'Pahaba'.*

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.

Illus. : Wight, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 640. 1982.

Distrib. : Abundant in ghats. Ahmednagar, Bombay, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

G. hirsutum (Roxb.) Voigt, Hort. Suburb. Calcutta 153. 1845; Hook. f. Fl. Brit. India 5: 311. 1887; Panda & A.P. Das in J. Bombay nat. Hist. Soc. 88: 468–69. 1991.

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.

Illus. : T. Chakrab. & Balakr. in J. Econ. Tax. Bot. Add. Ser. 9: 74, f. 18. 1992.

Distrib. : Rare. Maharashtra (Panda & A. P. Das, op. cit.).

G. johnstonei Hook. f. Fl. Brit. India 5: 314. 1887; Cooke, Fl. Pres. Bombay 3: 76. 1958 (Repr.).

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 448, f. 1911.

Distrib. : Scarce. 'Konkan' (Cooke, op. cit.).

G. lanceolarium Voigt, Hort. Suburb. Calc. 153. 1845; Hook. f. Fl. Brit. India 5: 308. 1887; Cooke, Fl. Pres. Bombay 3: 73. 1958 (Repr.).

Trees, middle sized, evergreen, c 15 m tall; branches angular. Leaves 5–15 x 2–5 cm, elliptic–oblong or elliptic–lanceolate, apex acuminate. Female flowers sessile; sepals unequal, coriaceous, ovary hairy. Capsules orbicular, depressed, 12–lobed.

Fls. & Frts. : October–March.

Distrib. : Few. Pune, Satara, Thane.

G. malabaricum Bedd. Fl. Sylv. 194. 1872; Hook. f. Fl. Brit. India 5: 319. 1887; Cooke, Fl. Pres. Bombay 3: 74. 1958 (Repr.).

Shrubs or small trees, c 6 m tall. Leaves 7–13 x 3–5 cm, elliptic–oblong 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.

Distrib. : Scarce. Bombay, Kolhapur, Ratnagiri.

G. tomentosum Dalz. in Hook. J. Bot. Kew Gard. Misc. 3: 38. 1851; Hook. f. Fl. Brit. India 5: 309. 1887; Cooke, Fl. Pres. Bombay 3: 73. 1958 (Repr.).

Trees, 5–10 m tall. Leaves 5–15 x 2–6 cm, elliptic–oblong or ovate–oblong, 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.

Fls. & Frts. : February–December.

Distrib. : Rare.'Konkan' (Cooke, op. cit.).

G. velutinum Wight, Ic. 51(2): 29, t. 1907, f. 2. 1852; Hook. f. Fl. Brit. India 5: 322. 1887; Cooke, Fl. Pres. Bombay 3: 74. 1958 (Repr.).

Trees, c 10 m tall, velvety pubescent on undersurface of leaves, petioles and inflorescence. Leaves 3–8.5 x 2–4 cm, elliptic–oblong 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.

Fls. & Frts. : February–March.

Illus. : Wight, op. cit.

Distrib. : Scarce. Amravati, Kolhapur, Ratnagiri, Sindhudurg.

G. zeylanicum (Gaertn.) A. Juss. Tent. Euph. Gen. 107, t. 3. 1824. *G. zeylanicum* var. *nitidum* Hook. f. Fl. Brit. India 5: 310. 1887; Cooke, Fl. Pres. Bombay 3: 73. 1958 (Repr.). *Bridelia zeylanica* Gaertn. Fruct. 2: 128, t. 109. 1790.

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 445, f. 492. 1911.

Distrib. : Few. Bhandara, Chandrapur, Pune, Ratnagiri, Sindhudurg.

HOMONOIA Lour.

1.	Plants pubescent; leaves 7–15 cm long, linear–oblong	...	*H. riparia*
1.	Plants glabrous; leaves 2–5 cm long, obovate	...	*H. retusa*

Homonoia retusa Muell.–Arg. in Linnaea 34: 200. 1865; Hook. f. Fl. Brit. India 5: 456. 1887; Cooke, Fl. Pres. Bombay 3: 119. 1958 (Repr.). *'Machim'*.

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 569. 1988.

Distrib. : Few. Chandrapur, Pune, Yavatmal.

H. riparia Lour. Fl. Cochinch. 637. 1790; Hook. f. Fl. Brit. India 5: 455. 1887; Cooke, Fl. Pres. Bombay 3: 118. 1958 (Repr.). *'Sernai'*.

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 641. 1982.

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*

Jatropha curcas L. Sp. Pl. 1006. 1753; Hook. f. Fl. Brit. India 5: 383. 1887; Cooke, Fl. Pres. Bombay 3: 95. 1958 (Repr.); Airy Shaw in Kew Bull. 26: 283. 1972. *'Chandar–Jyoti', 'Yerand'*

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 467, f. 502. 1911.

Distrib. : Frequent.

J. glandulifera Roxb. Fl. Ind. 3: 688. 1832; Hook. f. Fl. Brit. India 5: 382. 1887; Cooke, Fl. Pres. Bombay 3: 93. 1958 (Repr.). *'Jangli erand', 'Underbibi'.*

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–oblong,

smooth, 3–lobed. Seeds ellipsoid–oblong, smooth and shining, black.

Fls. & Frts. : August–November.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 642. 1982.

Distrib. : Scarce. Chandrapur, Pune, Raigad, Solapur, Thane.

J. gossipifolia L. Sp. Pl. 1006. 1753. Hook. f. Fl. Brit. India 5: 383. 1887; Cooke, Fl. Pres. Bombay 3: 95. 1958 (Repr.); Airy Shaw in Kew Bull. 26: 283. 1972. *'Mogli Erand'.*

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.

Fls. & Frts. : February–June.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 468, f. 503. 1911.

Distrib. : Few. Ahmednagar, Akola, Bhandara, Bombay, Buldhana, Jalgaon, Pune, Raigad, Ratnagiri, Solapur, Thane, Yavatmal.

J. nana Dalz. in Dalz. & Gibs. Bombay Fl. 229. 1861; Hook. f. Fl. Brit. India 5: 382. 1887; Cooke, Fl. Pres. Bombay 3: 94. 1958 (Repr.).

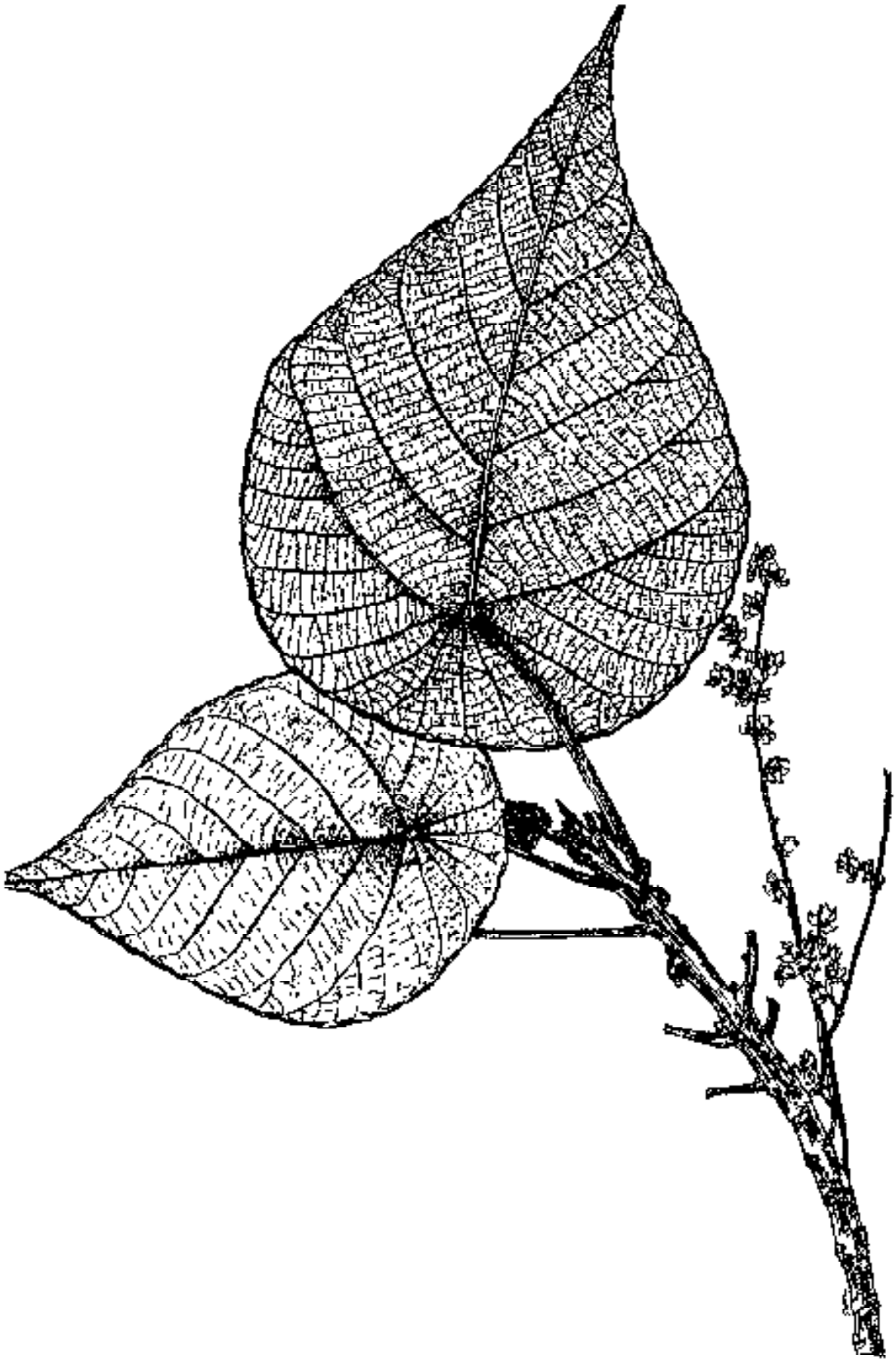
Shrubs, 30–45 cm high; roots woody. Leaves 7.5–12.5 x 7.5–12.5 cm, broadly ovate, entire or 3–lobed from above middle. Flowers pedicellate, in few flowered terminal, paniculate–cymes. Capsules c 1 cm long, obovoid–oblong, flattened at top, slightly 6–lobed.

Fls. & Frts. : May–July.

Distrib. : Scarce. Pune – Endemic.

MACARANGA Thou.

Macaranga peltata (Roxb.) Muell.–Arg. in DC. Prodr. 15(2): 1010. 1866; Whitmore in Gard. Bull. Singapure 31: 55. 1978. *Osyris peltata* Roxb. Fl. Ind. ed 2, 3: 755. 1832. *Macaranga roxburghii* Wight, Ic. 5: 23. 1852 & 6: t. 1949, f. 4. 1853; Hook. f. Fl. Brit. India 5: 448. 1887. *M. tomentosa* Wight, Ic. 5: 23. 1852 & 6: t. 1949, f. 1. 1853; Cooke, Fl. Pres. Bombay 3: 117. 1958 (Repr.). *'Chandiva'.*



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.

Illus. : Wight, op. cit.; Matthew. Illus. Fl. Tamilnadu Carnatic 2: t. 644. 1982.

Distrib. : Few. Ahmednagar, Bombay, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Solapur, Thane.

MALLOTUS Lour.

1. Straggling or climbing shrubs ... *M. repandus*
1. Erect shrubs or trees :
   2. Stamens 20 or less ... *M. stenanthus*
   2. Stamens 50 or more :
      3. Shrubs; leaves opposite; calyx spathaceous ..*M. aureo–punctatus*
      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 ... *M. philippensis*

Mallotus aureo–punctatus (Dalz.) Muell.–Arg. in DC. Prodr. 15(2): 973. 1866. *Rottlera aureo–punctata* Dalz. in Hook. J. Bot. & Kew Gard. Misc. 3: 122. 1851. *Mallotus lawii* Muell.–Arg. in Linnaea 34. 194 1865; Hook. f. Fl. Brit. India 5: 438. 1887; Cooke, Fl. Pres. Bombay 3: 115. 1958 (Repr.).

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.

Distrib. : Scarce. Pune, Raigad, Ratnagiri, Sindhudurg.

M. philippensis (Lam.) Muell.–Arg. in Linnaea 34: 196. 1865; Hook. f. Fl. Brit India 5: 442. 1887; Cooke, Fl. Pres. Bombay 3: 113.

1958 (Repr.); Airy Shaw in Kew Bull. 36: 328. 1981. *Croton philippense* Lam. Encycl. 2: 206. 1876. *'Kamala', 'Kukrell', 'Kumkum', 'Shendi'.*

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.

Illus. : Bedd. Fl. Sylv. t. 289. 1873; Talb. For. Fl. Bombay Pres. & Sind 2: 483, f. 509. 1911.

Distrib. : Common.

M. repandus (Willd.) Muell.–Arg. in Linnaea 34: 197. 1865; Hook. f. Fl. Brit. India 5: 442. 1887; Cooke, Fl. Pres. Bombay 3: 115. 1958 (Repr.). *Croton repandus* Willd. in Ges. Naturf. Freun. Berlin Neue Schrift. 4: 206. 1803.

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 437, f. 511. 1911.

Distrib. : Infrequent in moist deciduous forests. Raigad.

M. stenanthus Muell.–Arg. in Linnaea 34: 191. 1865; Hook. f. Fl. Brit. India 5: 437. 1887; Cooke, Fl. Pres. Bombay 3: 114. 1958 (Repr.).

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–dentate. Flowers in slender racemes, shorter than leaves. Capsules brown, deeply 3–lobed, echinate.

Fls. & Frts. : October–June.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: 573. 1988.

Distrib. : Scarce. Kolhapur, Pune, Raigad, Ratnagiri, Satara, Sindhudurg.

M. tetracoccus (Roxb.) Kurz in J. Asiat. Soc. Bengal 16: 245. 1873; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 345. 1976. *Rottlera tetracocca* Roxb. Fl. Ind. 3: 826. 1832. *Mallotus albus* auct. non (Roxb.) Muell.–Arg. 1865; Hook. f. Fl. Brit. India 5: 429. 1887; Cooke, Fl. Pres. Bombay 3: 113. 1958 (Repr.).

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.

Micrococca mercurialis (L.) Bth. in Hook. Niger. Flora 503. 1849. *Tragia mercurialis* L. Sp. Pl. 980. 1753. *Claoxylon mercurialis* Thw. Enum. 271. 1861; Hook. f. Fl. Brit. India 5: 412. 1887; Cooke, Fl. Pres. Bombay 3: 107. 1958 (Repr.).

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.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 647. 1982.

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 transversly furrowed ... *P. urinaria*

4. Capsules and seeds not as above ... *P. virgatus*

2. Stipules not peltate :

5. Stamens 5 ... *P. tenellus*

5. Stamens 3 :

6. Seeds with parallel ribs on back :

7. Branches and leaves hispidly hairy; style distinct ... *P. scabrifolius*

7. Branches and leaves not hispidly hairy; style minute ... *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 ... *P. amarus*

8. Leaves not as above; style 2, distinct with reflexed and recurved arms; seeds with irregular ribs on back ... *P. debilis*

1. Shrubs or trees :

9. Flowers dioecious ... *P. indicus*

9. Flowers monoecious :

10. Stamens 5 ... *P. reticulatus*

10. Stamens 3 :

11. Nerves of leaves distinct; stipules ovate–lanceolate ... *P. polyphyllus*

11. Nerves of leaves obscure; stipules minute, setaceous ... *P. lawii*

Phyllanthus amarus Schum & Thonn. Kongl. Danske Vidensk. Selsk. Skr. 4: 195–196. 1826; Airy Shaw in Kew Bull. 26: 317. 1972. *P. niruri* auct. non L. 1753 p.p.; Hook. f. Fl. Brit. India 5: 298.1887; Cooke, Fl. Pres. Bombay 3: 84. 1958 (Repr.). *'Bhuiavali'*.

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.

Fls. & Frts. : July–August.

Illus. : Wight, Ic. t. 1894. 1852.

Distrib. : Scarce. Bombay, Buldhana.

P. debilis Klein ex Willd. Sp. Pl. 4: 582. 1805; Hook. f. Fl. Brit. India 5: 299. 1887; Cooke, Fl. Pres. Bombay 3: 84. 1958 (Repr.); Airy Shaw in Kew Bull. 26: 92. 1971.

Herbs, 10–50 cm high, annual, erect. Leaves elliptic–obovate or elliptic–lanceolate. Flowers green, monoecious, solitary or in fascicles. Capsules depressed–globose, 3–lobed. Seeds 6, trigonous with rounded back and distantly microscopically muriculate in fine lines.

Fls. & Frts. : August–October.

Distrib. : Few. Amravati, Nagpur, Pune, Ratnagiri, Solapur, Thane, Yavatmal.

P. fraternus Webster in Contr. Gray Herb. 176: 53. 1955 & in J. Arnold Arbor. 38: 309. 1957. *P. niruri* auct. pl. non L. 1753; Hook. f. Fl Brit. India 5: 298. 1887 p.p.; Cooke, Fl. Pres. Bombay 3: 84. 1954 (Repr.). *'Bhuiavali', 'Dador'.*

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.

Illus. : Wight, Ic. t. 1894. 1852; Tad. & Venkat. Handb. S. Indian Weeds 396, f. 159. 1955 [Rev. ed. (*P. niruri.*)].

Distrib. : Common.

P. indicus Muell.–Arg. in Linnaea 32: 52. 1863; Hook. f. Fl. Brit. India 5: 305. 1887; Cooke, Fl. Pres. Bombay 3: 85. 1958 (Repr.). *'Pannana'.*

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.).

P. lawii Grah. Cat. Pl. Bombay 181. 1839; Hook. f. Fl. Brit. India 5: 290. 1887; Cooke, Fl. Pres. Bombay 3: 82. 1958 (Repr.).



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.

Distrib. : Few. Chandrapur, Kolhapur, Ratnagiri, Sindhudurg, Yavatmal.

P. maderaspatensis L. Sp. Pl. 982. 1753; Hook. f. Fl. Brit. India 5: 292. 1887; Cooke, Fl. Pres. Bombay 3: 82. 1958 (Repr.).

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.

Illus. : Tad. & Venkat. Handb. S. Indian Weeds, 394, f. 158. 1955 (Rev. ed.).

Distrib. : Common.

P. polyphyllus Willd. Sp. Pl. 4: 586. 1805; Airy Shaw in Kew Bull. 26: 322. 1972; Hook. f. Fl. Brit. India 5: 290. 1887.

Shruby; 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.

P. reticulatus Poir. in Lam. Encycl. 5: 298. 1804; Hook. f. Fl. Brit. India 5: 288. 1887; Cooke, Fl. Pres. Bombay 3: 81. 1958 (Repr.); Webster in J. Arnold Arbor. 38: 57. 1957; Airy Shaw in Kew Bull. 26: 322. 1972.

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.

P. scabrifolius Hook. f. Fl. Brit. India 5: 299. 1887; Cooke, Fl. Pres. Bombay 3: 84. 1958 (Repr.).

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.

P. tenellus Roxb. Fl. Ind. 3: 668. 1832; Webster in J. Arnold Arbor. 37: 257, t. l, f. 3. 1956 & 38: 52, f. 6. 1957; R.L. Mitra in Bull. Bot. Surv. India 27: 154, f. l. (1985) 1987.

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.).

P. urinaria L. Sp. Pl. 982. 1753; Hook. f. Fl. Brit. India 5: 293. 1887; Cooke, Fl. Pres. Bombay 3: 83. 1958 (Repr.); Webster in J. Arnold Arbor. 38: 194. 1958.

Erect herbs, 20–50 cm tall. Leaves 0.5–1.5 x 0.5 cm, obovate or elliptic–oblong, 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.

P. virgatus Forst. f. Inst. Austr. Prodr. 65. 1786; Airy Shaw in Kew Bull. 36: 338. 1981. *P. simplex* Retz. Obs. Bot. 5: 29. 1788; Hook. f. Fl. Brit. India 5: 295. 1887; Cooke, Fl. Pres. Bombay 3: 83. 1958 (Repr.).

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.

Illus. : Mahesh. Illus. Fl. Delhi f. 199. 1966 (*P. simplex*).

Distrib. : Common.

SAPIUM P. Browne.

Sapium insigne Bth. var. **malabaricum** (Wight) Hook. f. Fl. Brit. India 5: 472. 1888. *Falconeria malabarica* Wight, Ic. t. 1866. 1852. *Sapium insigne* sensu Cooke, Fl. Pres. Bombay 2: 622. 1906 [3: 121. 1958 (Repr.)] non Trim. 1885. *'Hura', 'Kirkind', 'Sirad'.*

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.

Illus. : Talb. For Fl. Bombay Pres. & Sind 2: 492, f. 513. 1911. *(Sapium insigne).*

Distrib. : Few. Ahmednagar, Bombay, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.

SAUROPUS Bl.

Sauropus quadrangularis (Willd.) Muell.–Arg. in Linnaea 32: 73. 1863; Hook. f. Fl. Brit. India 5: 335. 1887; Cooke, Fl. Pres. Bombay 3: 78. 1958 (Repr.); Airy Shaw in Kew Bull. 26: 337. 1972 p.p.; T. Chakrab. & Gang. in J. Econ. Tax. Bot. 20: 534, f. 9. A–D. 1996. *Phyllanthus quadrangularis* Willd. Sp. Pl. 4: 585. 1805.

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.

Sebastiana chamaelea (L.) Muell.–Arg. in DC. Prodr. 15(pt.2): 1175. 1866; Hook. f. Fl. Brit. India 5: 475. 1888; Cooke, Fl. Pres. Bombay 3: 124. 1958 (Repr.); Airy Shaw in Kew Bull. 26: 339. 1972. *Tragia chamaelea* L. Sp. Pl. 981. 1753. *'Bhui–erandi'*.

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.

Distrib. : Few. Bhandara, Chandrapur, Ratnagiri.

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*

Securinega leucopyrus (Willd.) Muell.–Arg. in DC. Prodr. 15(2): 451. 1866; Airy Shaw in Kew Bull. 26: 340. 1972. *Fluggea leucopyrus* Willd. Sp. Pl. 4: 757. 1805; Hook. f. Fl. Brit. India 5: 328. 1887; Cooke, Fl. Pres. Bombay 3: 77. 1958 (Repr.). *'Pandhar Phalli', 'Petuni'*.

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.

Illus. : Wight, Ic. t. 1875. 1852 (*Fluggea leucopyrus*); Mahesh. Illus. Fl. Delhi f. 198. 1966.

Distrib. : Frequent. Bhandara, Bombay, Dhule, Kolhapur, Nasik, Pune, Ratnagiri, Sindhudurg.

S. virosa (Roxb. ex Willd.) Baill. in Adansonia 6: 334. 1866; Airy Shaw in Kew Bull. 26: 340. 1972. *Phyllanthus virosus* Roxb. ex Willd. Sp. Pl. 4: 578. 1805. *Fluggea microcarpa* Bl. Bijdr. 580. 1825; Hook. f. Fl. Brit. India 5: 328: 1887; Cooke, Fl. Pres. Bombay 3: 77. 1958 (Repr.). *'Dait', 'Karmate', 'Pachurna', 'Pandhar–Phalli'*.

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.

Illus. : Talb. For. Fl. Bombay Pres. & Sind 2: 455, f. 497. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic t. 655. 1982.

Distrib. : Common.

TRAGIA L.

1.	Leaves palmately 3–partite	...	*T. plukenetti*
1.	Leaves not palmately 3–partite :		
2.	Leaves cordate at base :		
3.	Fruiting calyx with 4–8 pairs of teeth	...	*T. hispida*
3.	Fruiting calyx with more than 8 pairs of teeth	...	*T. muelleriana* var. *unicolor*
2.	Leaves acute at base	...	*T. involucrata*

Tragia hispida Willd. Sp. Pl. 4: 323. 1805; Gamble, Fl. Pres. Madras 1332. 1925 [2: 932. 1957 (Repr.)].

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.

T. involucrata L. Sp. Pl. 980. 1753; Hook. f. Fl. Brit. India 5: 465. 1888; Cooke, Fl. Pres. Bombay 3: 119. 1958 (Repr.). *'Khaj kolti'*.

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.

Fls. & Frts. : November–January.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 659. 1982.

Distrib. : Few. Ahmednagar, Chandrapur, Pune, Raigad,

Ratnagiri.

T. muelleriana Pax et Hoffm. var. **unicolor** (Muell.–Arg.) Pax & Hoffm. in Engl. Pflanzenr. 68: 81. 1935. *T. miqueliana* var. *unicolor* Muell.–Arg. in DC. Prodr. 15(2): 843. 1866. *T. involucrata* T. Cooke, Fl. Pres. Bombay 2: 621. 1906 [3: 119. 1958 (Repr.)] p. p. *'Kach–Kuile, 'Kulvat'*.

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.

Distrib. : Frequent. Ahmednagar, Kolhapur, Pune, Ratnagiri, Raigad, Satara, Sindhudurg, Thane.

T. plukenetii L. Radcliffe–Smith in Kew Bull. 37: 688. 1983. *T. cannabina* L.f. Suppl. 41 1781; Cooke, Fl. Pres. Bombay 3: 120. 1958 (Repr.). *T. involucrata* L. var. *cannabina* (L.f.) Muell.–Arg. in DC. Prodr. 25: 944. 1866; Hook. f. Fl. Brit. India 5: 465. 1887.

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.

Illus. : Matthew, Fur. Illus. Fl. Tamilnadu Carnatic 4: t. 582. 1988.

Distrib. : Few. Ahmednagar, Akola, Chandrapur, Pune, Satara, Yavatmal.

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*

Trewia nudiflora L. Sp. Pl. 1193. 1753; Hook. f. Fl. Brit. India 5: 423. 1887; Cooke, Fl. Pres. Bombay 3: 111. 1958 (Repr.).

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).

Distrib. : Few. Pune, Raigad, Ratnagiri, Sindhudurg, Thane.

T. polycarpa Bth. in Bth. & Hook. f. Gen. Pl. 3: 318. 1880; Hook. f. Fl. Brit. India 5: 424. 1887; Cooke, Fl. Pres. Bombay 3: 112. 1958 (Repr.). *'Petari'*.

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

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 660. 1982.

Distrib. : Not common. Kolhapur, Nasik, Pune, Ratnagiri, Thane.

CULTIVATED SPECIES :

Acalypha hispida Burm. f. Fl. India. 303, t.61, f. 1768; Hook. f. Fl. Brit. India 5: 417. 1887.

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.

Fls. & Frts. : April–June.

Distrib. : Cultivated in gardens. Ahmednagar, Buldhana, Pune.

Notes. : Native of New Guinea.

Aleurites moluccana (L.) Willd. Sp. Pl. 4: 590. 1805; Hook. f. Fl. Brit. India 5: 384. 1887; Cooke, in Fl. Pres. Bombay 3: 125. 1958 (Repr.). *Jatropha moluccana* L. Sp. Pl. 1006. 1753.

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.

Illus. : Bedd. Fl. Sylv. t. 276. 1872.

Distrib. : Cultivated in gardens. Bombay.

Notes. : Native of Malaya & Pacific Islands.

Breynia nivosa (Bull.) Small in Torr. Bot. Club. 37: 517. 1910; Bailey, Man. Cult. Pl. 619. 1949. *Phyllanthus nivosus* Bull. Cat. 9. 1784.

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.

Distrib. : Grown in gardens. Aurangabad, Bombay.

Codiacum variegatum (L.) Bl. Bijdr. 606. 1826; Hook. f. Fl. Brit. India 5: 399. 1887. *Croton variegatum* L. Sp. Pl. 1199. 1753.

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.

Euphorbia heterophylla L. Sp. Pl. 453. 1753; Cooke, Fl. Pres. Bombay 3: 66. 1958 (Repr.).

An annual bushy herb. Leaves green towards apex, scarlet, crimson or rose–coloured towards base.

Fls. & Frts. : September–March.

Distrib. : Grown in gardens. Akola, Bombay, Buldhana, Pune, Raigad, Thane.

Notes : Native of N. America.

E. milli Desmoul. in Bull. Hist. Nat. Soc. Linn. Bordeaux 1: 27–30, pl. 1. 1826.

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.

E. pulcherrima Willd. ex Klotzsch in Otto & Dietr. Allg. Gaertn. 2: 27. 1834; Cooke, Fl. Pres. Bombay 3: 66. 1958 (Repr.).

An unarmed shrub with woody branches. Upper floral leaves opposite, brightly coloured, crimson or occasionally yellowish–white.

Fls. & Frts. : September–January.

Distrib. : Grown in gardens. Ahmednagar, Bombay, Pune, Thane.

Excoecaria cochinchinensis Lour. Fl. Cochinch. 2: 612. 1790. *'Laila–Majnu'*.

Undershrubs c 1.5 m tall. Leaves simple, elliptic. Flowers in racemes, small; tepals subequal. Capsules of 3 cocci.

Fls. & Frts. : September–December.

Distrib. : Cultivated in gardens. Pune.

Jatropha integerrima Jacq. Stirp. Sel. Amer. 256. 1763.

Shrubs, 1–2 m tall. Leaves fiddle–shaped. Flowers in long pedunculate corymbose cymes, bright crimson. Capsules globose, c 1 cm across, 3–angled.

Fls. & Frts. : July–January.

Distrib. : Cultivated in gardens. Nagpur, Pune.

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.

Distrib. : Planted in gardens. Bombay, Pune.

Manihot esculenta Crantz in Inst. Rei. Herb. 1: 67. 1766. *M. utilissima* Pohl. Pl. Bros. Ic. et Descr. 1: 32, t. 24. 1826; Hook. f. Fl. Brit. India 5: 239. 1886; Cooke, Fl. Pres. Bombay 3: 125. 1958. (Repr.).

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.

Distrib. : Grown in gardens as an ornamental plant. Bombay, Nagpur, Osmanabad, Pune.

M. glaziovii Muell.–Arg. in Mart. Fl. Bras. 11, 2: 446. 1874; Airy Shaw in Kew Bull. Addl. Ser. 4: 174. 1975; van Welzen et al. in Rheedea 7: 82. 1997.

Trees c 10 m tall with milky latex. Leaves peltate, deeply 3–5–lobed, lobes 3–10 x 2–6 cm, elliptic–oblong or obovate. Panicles axillary and terminal. Flowers greenish–yellow. Fruits globose.

Fls. & Frts. : March–July.

Illus. : Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 646. 1982.

Distrib. : Native of N. Brazil, known as Ceara rubber tree.

Pedilanthus tithymaloides (L.) Poir. in Ann. Mus. Hist. Nat. Paris 19: 390, t. 19. 1812; Hook. f. Fl. Brit. India 5: 239. 1886; Cooke, Fl. Pres. Bombay 3: 124. 1958 (Repr.). *Euphorbia tithymaloides* L. Sp. Pl. 453. 1753. *'Vilayatisher'*.

Shrubs, c 90 cm tall, succulent. Leaves 5 x 3 cm, alternate, broadly ovate, fleshy. Flowers in terminal cymes. Fruits capsular.

Fls. & Frts. : February–June.

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.

Phyllanthus acidus (L.) K. Skeels in U.S. Dept. Agric. Bur. Pl. Industry Bull. 148: 17. 1909. *Averrhoa acida* L. Sp. Pl. 428. 1753. *Phyllanthus distichous* (L.) Muell.–Arg. in DC. Prodr. 15(2): 413. 1866; Hook. f. Fl. Brit. India 5: 304. 1886; Cooke, Fl. Pres. Bombay 3: 85. 1958 (Repr.).

Trees, robust, deciduous with pinnate leaves. Flowers reddish, small, densely clustered. Fruits globose, fleshy.

Fls. & Frts. : February–March.

Distrib. : Grown in gardens. Pune, Ratnagiri.

Notes. : Native of Malay Islands and Madagascar.

Xylophylla angustifolia Sw. Prodr. Veg. Ind. Occ. 28. 1789.

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*

Celtis tetrandra Roxb. Fl. Ind. (ed. 2) 2: 63. 1832; Hook. f. Fl. Brit. India 5: 482. 1888. *C. serratina* Planch. in Ann. Sci. Nat. Bot. 3, 10: 301. 1848.

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. serratina*).

Distrib. : Infrequent in hilly forests. Raigad.

C. timorensis Spanoghe in Linnaea 15: 343. 1841; Soep. in Steenis, Fl. Males. 1, 8: 65. 1977. *Celtis cinnamomea* Lindl. ex Planch. in Ann. Sci. Nat. 3, 10: 303. 1848; Hook. f. Fl. Brit. India 5: 482. 1888; Cooke, Fl. Pres,. Bombay 3: 128. 1958 (Repr.); Bole & Almeida in J. Bombay nat. Hist. Soc. 83: 570. 1987. *'Brumaj'*.

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.

Illus. : Wight, Ic. t. 1969. 1853 (*C. wightii*); Talb. For. Fl. Bombay Pres. & Sind 2: 498, f. 514. 1911; Bedd. Fl. Sylv. t. 312. 1873; (non Roxb. under *C. trinervia* Bedd.).

Distrib. : Occasional in forest areas along ghats. Ahmednagar, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

HOLOPTELEA Planch.

Holoptelea integrifolia (Roxb.) Planch. in Ann. Sci. Nat. 3, 10: 269. 1849; Hook. f. Fl. Brit. India 5: 481. 1888; Cooke, Fl. Pres. Bombay 3: 128. 1958 (Repr.). *Ulmus integrifolia* Roxb. Pl. Cor. 1: 56, t. 78. 1795 et in Willd. Sp. Pl. 1: 1326. 1797. *'Papada', 'Wavli'.*

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	...	*T. politoria*
1.	Branchlets villous–tomentose or appressed pubescent :		
2.	Leaf base 3–7–nerved	...	*T. orientalis*
2.	Leaf base 3–4–nerved	...	*T. amboinensis*

Trema amboinensis Bl. Mus. Bot. 2: 61. 1856; Hook. f. Fl. Brit. India 5: 484. 1888.

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 excees petiole.

Fls. & Frts. : January–June.

Distrib. : Rare in deciduous forests. Pune.

T. orientalis (L.) Bl. Mus. Bot. 2: 61. 1856; Hook. f. Fl. Brit. India 5: 484. 1888; Cooke, Fl. Pres. Bombay 3: 129. 1958 (Repr.). *Celtis orientalis* L. Sp. Pl. 1044. 1753. *'Ghol', 'Gol', 'Karamatigol'.*



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.

Illus. : Wight, Ic. tt. 602 & 603. 1842 *(Celtis orientalis)* ; Bedd. Fl. Sylv. t. 311. 1873; Talb. For. Fl. Bombay Pres. & Sind 2: 500, f. 515. 1911; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 673. 1982.

Distrib. : Common in forest clearings.

T. politoria Planch. in Ann. Sci. 3, 10: 326. 1848; Hook. f. Fl. Brit. India 5: 484. 1888; Chavan & Oza in J. Bombay nat. Hist. Soc. 58: 303. 1961; Diwakar & Pradhan in J. Econ. Tax. Bot. 5: 504. 1984; Naik, Fl. Marathwada 2: 807. 1998.

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.

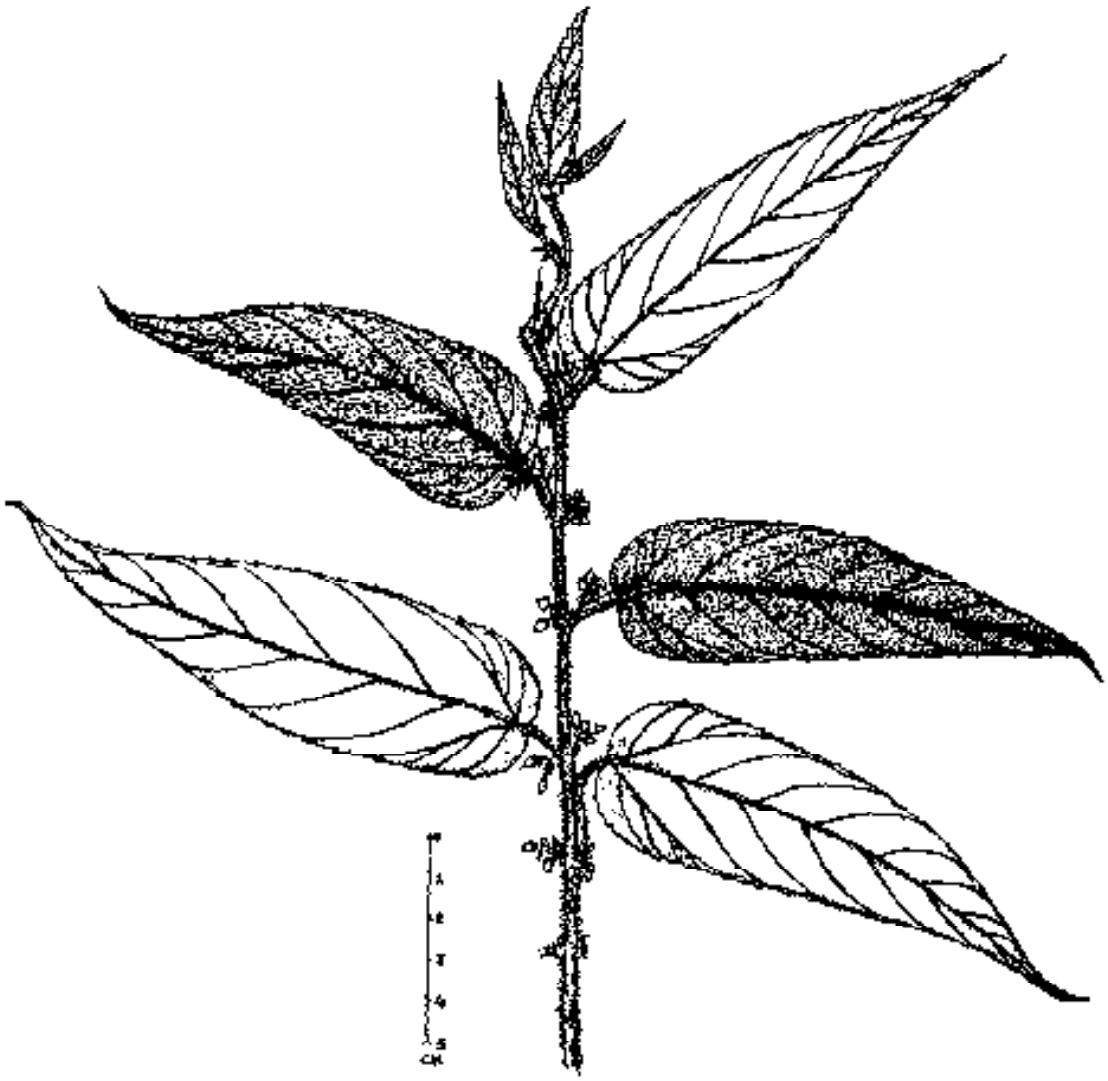
Fls. & Frts. : August–October.

Distrib. : Occasional along foot hills of deciduous forests and stream banks. Amravati, Aurangabad, Buldhana, Nanded.

URTICACEAE

(C. R. Jadhav)

1. Plants with stinging hairs:
   2. Flowers in interrupted racemes; ovary oblique ... LAPORTEA
   2. Flowers in heads; ovary straight ... GIRARDINIA
1. Plants without stinging hairs :
   3. Stigmas penicillate :
      4. Leaves opposite :
         5. Flowers in heads ... LECANTHUS
         5. Flowers in cymes ... PILEA



Trema politoria Planch.

4. Leaves alternate :

6. Stipules present :

7. Stipules simple ... ELATOSTEMA

7. Stipules 2–fid ... DEBREGEASIA

6. Stipules absent ... PARIETARIA

3. Stigmas filiform (not penicillate) :

8. Leaves entire along margings; 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*

Boehmeria glomerulifera Miq. in Zoll. Syst. Verz. Ind. Archip. 101, 104. 1854; Ramam. in Sald. & Nicols. Fl. Hassan Dt. 87. 1976. *B. malabarica* Wedd. Arch. Mus. Hist. Nat. 8: 350. 1855–56; Hook. f. Fl. Brit. India 5: 575. 1888; Cooke, Fl. Pres. Bombay 3: 135. 1958 (Repr.).

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.

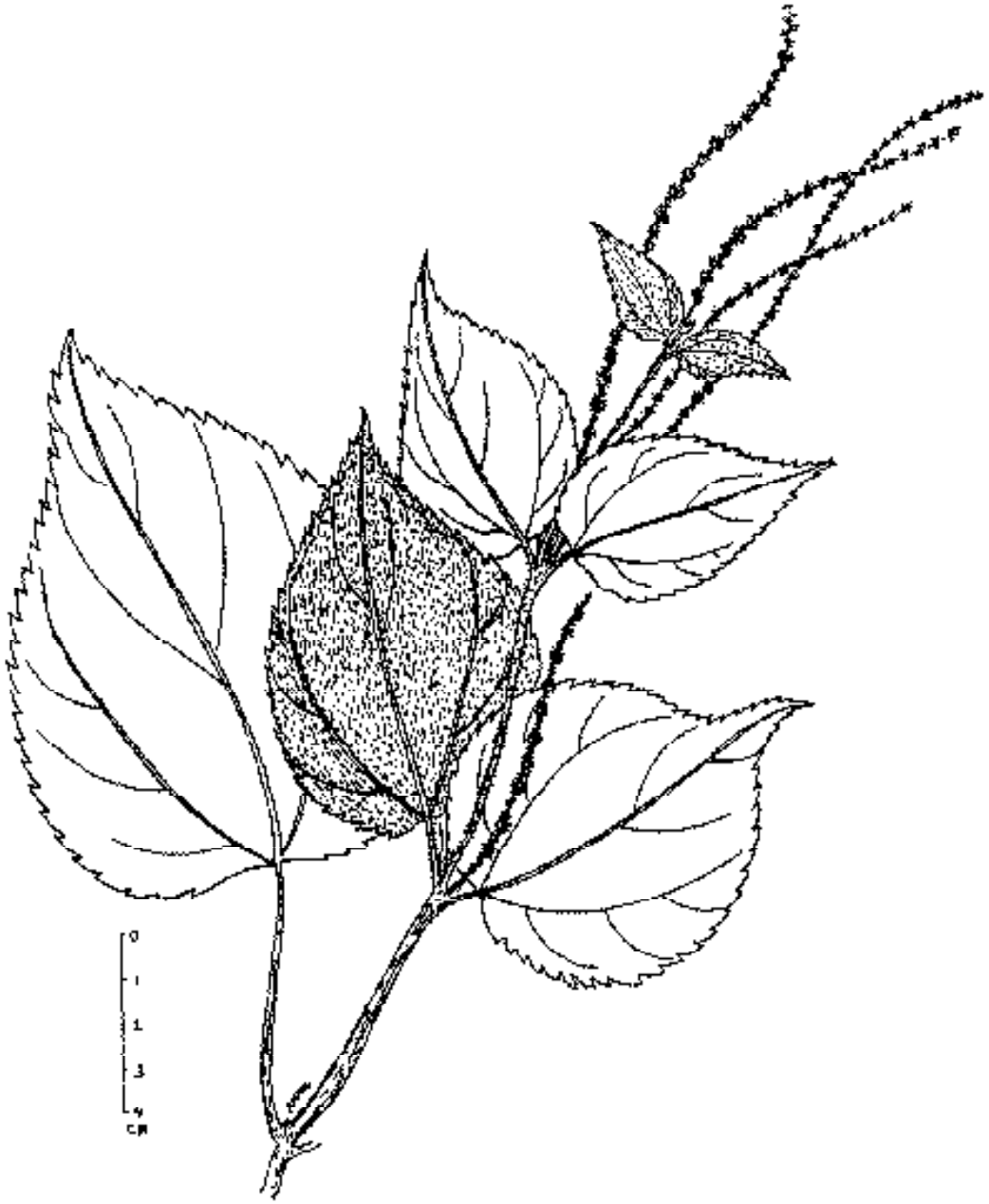
Fls. & Frts. : November–February.

Illus. : Bedd. Forest Man. Bot. t. 27, f. 2. 1973 (*B. ramiflora*).

Distrib. : Konkan (Cooke, op. cit.), Sindhudurg (S. M. Almeida, 1990).

Notes : Rare, in deciduous forests.

B. macrophylla Hornem. Hort. Bot. Hofn. 2: 890. 1815; Friis & Marais in Kew Bull. 37: 164. 1982. *B. platyphylla* D. Don, Prodr. Fl. 60. 1825; Hook. f. Fl. Brit. India 5: 578. 1888. *B. scabrella* (Roxb.) Gaud. in Bot. Freyc. Voy. 500. 1826; Cooke, Fl. Pres. Bombay 3: 135. 1958 (Repr.). *B. platyphylla* var. *scabrella* Wedd. Monogr. Urtic. 265. 1856; Hook. f. op. cit.



Boehmeria macrophylla Hornem.

Undershrubs or shrubs, 0.8–1.5 m high, erect; branches more or less grooved, strigosely 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.

Fls. & Frts. : July–January.

Illus. : Wight, Ic. t. 691. 1843 (*Urtica scabrella*).

Distrib. : Common throughout the state.

DEBREGEASIA Gaud.

1.	Leaves lanceolate or oblong–lanceolate	...	*D. longifolia*
1.	Leaves broadly round–ovate or orbicular–ovate :		
2.	Leaves entire along margins	...	*D. ceylanica*
2.	Leaves dentate along margins	...	*D. dentata*

Debregeasia ceylanica Hook. f. Fl. Brit. India 5: 592. 1888; Gamble, Fl. Pres. Madras 3: 972. 1967 (Repr.).

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.

Distrib. : Sindhudurg (S. M. Almeida, 1990).

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.

D. dentata Hook. f. Fl. Brit. India 5: 591. 1888.

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.

Distrib. : Sindhudurg (S. M. Almeida, 1990).

Notes : Rare, noticed only at one spot near water falls.

D. longifolia (Burm. f.) Wedd. in DC. Prodr. 16(1): 235. 1869; Sant. in Rec. Bot. Sur. India 16 (1): 255. 1967 (3rd Rev. ed.); Ramam. in Sald. & Nicols. Fl. Hassan Dt. 87. 1976. *Urtica longifolia* Burm. f. Fl. India 197. 1768. *Debregeasia velutina* Gaud. Bot. Bomite Voy. t. 90. 1844–46; Hook. f. Fl. Brit. India 5: 590. 1888; Cooke, Fl. Pres. Bombay 3: 139. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind. 2: 533–534. 1911. *Boehmeria ramiflora* Grah. Cat. Bombay Pl. 187. 1839 non Jacq. 1762. *'Kapsi'*.

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, 0.3–1.2 m high; normal leaves not subtended by filiform or linear leaves	...	*E. liniolatum*

Elatostema cuneatum Wight, Ic. t. 2091, f. 3. 1853 (*'cuneata'*); Hook. f. Fl. Brit. India 5: 568. 1888; Cooke, Fl Pres. Bombay 3: 134. 1958 (Repr.); Mitra in Bull Bot. Surv. India 9: 279. (1967) 1968.

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.

E. liniolatum Wight, Ic. t. 1984. 1853 (*'liniolata'*); Hook. f. Fl. Brit. India 5: 565. 1888; Cooke, Fl. Pres. Bombay 3: 134. 1958 (Repr.).

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.).

E. sessile Forst. var. **cuspidata** Wedd. Monogr. 294. 1856; Hook. f. Fl. Brit. India 5: 564. 1888; Gamble, Fl. Pres. Madras 3: 963. 1967 (Repr.). *E. cuspidata* Wight, Ic. t. 1983. 1853.

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.

Distrib. : Rare. Sindhudurg (S. M. Almeida, 1990).

E. surculosum Wight, Ic. t. 2091, f. 4. 1853; Hook. f. Fl. Brit. India 5: 572. 1888; Matthew, Fl. Palni Hills 657. 1996; Bhogaonkar & Devarkar, Add. Fl. Melghat 48, f. A–F. 1999.

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.

Fls. & Frts. : September–November.

Illus. : Wight, op. cit.; Bhogaonkar & Devarkar, op. cit.

Distrib. : Plants grow in the crevices of walls. Amravati, (Bhogaonkar & Devarkar, op. cit.).

GIRARDINIA Gaud.

Girardinia diversifolia (Link) Friis in Kew Bull. 36: 45. 1981. *Urtica diversifolia* Link, Enum. Hort. Berol. Alt. 2: 385. 1822. *Girardinia zeylanica* Decne. in Jacq. Bot. Voy. Bon. 152. 1844; Cooke, Fl. Pres. Bombay 3: 132. 1958 (Repr.). *G. heterophylla* var. *zeylanica* (Decne.) Hook. f. Fl. Brit. India 5: 551. 1888. *'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.)

Laportea interrupta (L.) Chew in Gard. Bull. Singapore 21: 200. 1965. *Urtica interrupta* L. Sp. Pl. 985. 1753. *Fleurya interrupta* (L.) Gaud. in Freyc. Voy. Bot. 497. 1826; Hook. f. Fl. Brit. India 5: 548. 1888; Cooke, Fl. Pres. Bombay 3: 131. 1958 (Repr.). *'Aagya'.*

Herbs, annual, 20–60 cm high, densly 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.

Lecanthus peduncularis (Wall. ex Royle) Wedd. in DC. Prodr. 16(1): 164. 1869; Sant. in Rec. Bot. Surv. India 16(1): 254. 1967 (3rd Rev. ed.). *Procris peduncularis* Wall. ex Royle, Illus. Himal. t. 83, f. 2. 1839. *Lecanthus wallichii* Wedd. in Ann. Sci. Nat. Bot. Ser. 4, 1: 187. 1854; Cooke, Fl. Pres. Bombay 3: 133. 1958 (Repr.). *L. wightii* Wedd. op. cit.; Hook. f. Fl. Brit. India 5: 559. 1888; Cooke, op. cit. *Elatostema oppositifolia* Dalz. in Hook. J. Bot. & Kew Gard. Misc. 3: 179. 1851; Dalz. & Gibs. Bombay Fl. 239. 1861.

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.

Illus. : Wight, Ic. t. 1985. 1853 (*Elatostema ovata*).

Distrib. : Chandrapur, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane (Cooke, op. cit.).

PARIETARIA L.

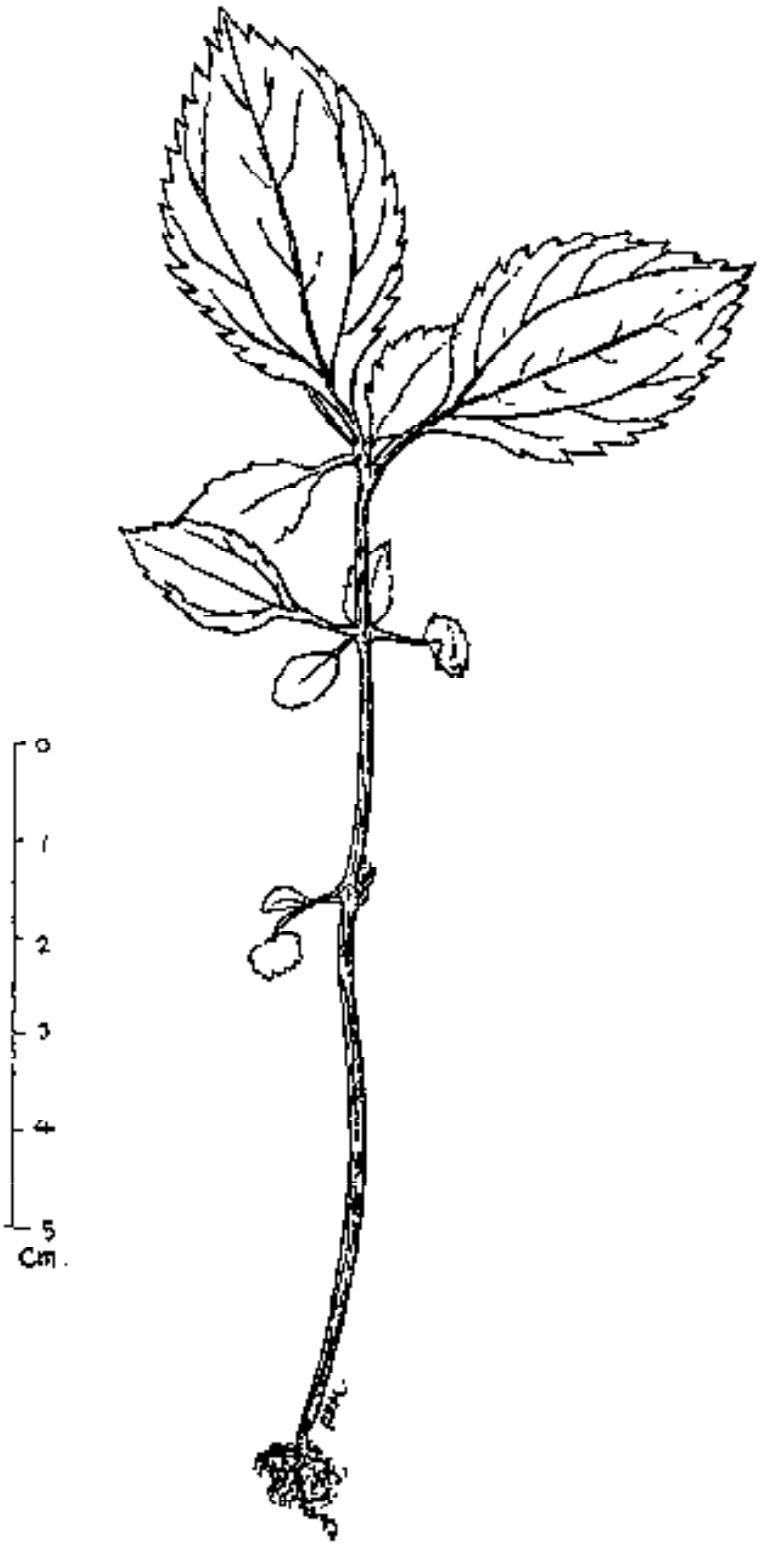
Parietaria debilis Forst. f. Prodr. 73. 1786; Hook. f. Fl. Brit. India 5: 593. 1888; Cooke, Fl. Pres. Bombay 3: 140. 1958 (Repr.).

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.

Illus. : Wedd. Monogr. Urtic. 514, t. 17, f. 21–25. 1856.

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



Lecanthus 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*

Pilea melastomoides (Poir.) Bl. Mus. Lugd. – Bat. 2: 54. 1856; Matthew, Fl. Tamilnadu Carnatic 3(2): 1493. 1983. *Urtica melastomoides* Poir. in Lam. Encycl. Suppl. 4: 223. 1816. *Pilea trinervia* Wight, Ic. t. 1973. 1853; Hook. f. Fl. Brit. India 5: 557. 1888.

Undershrubs or shrubs, erect. Leaves acute–cuneate at base, acuminate at apex, long petiolate. Flowers in axillary, branched cymes. Male cymes spreading; female cymes slender. Achenes biconvex, granular.

Illus. : Wight, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 667. 1982.

Distrib. : Fairly common in ghat areas. Sindhudurg (S. M. Almeida, 1990).

P. microphylla (L.) Liebm. in Vidensk. Selsk. Skr. 5(2): 296. 1851; Cooke, Fl. Pres. Bombay 3: 160 (Repr.) *Parietaria microphylla* L. Syst. 1308. 1759 (10th ed.). *Pilea muscosa* Lindl. Coll. Bot. t. 4. 1821; Hook. f. Fl. Brit. India 5: 551. 1888.

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.

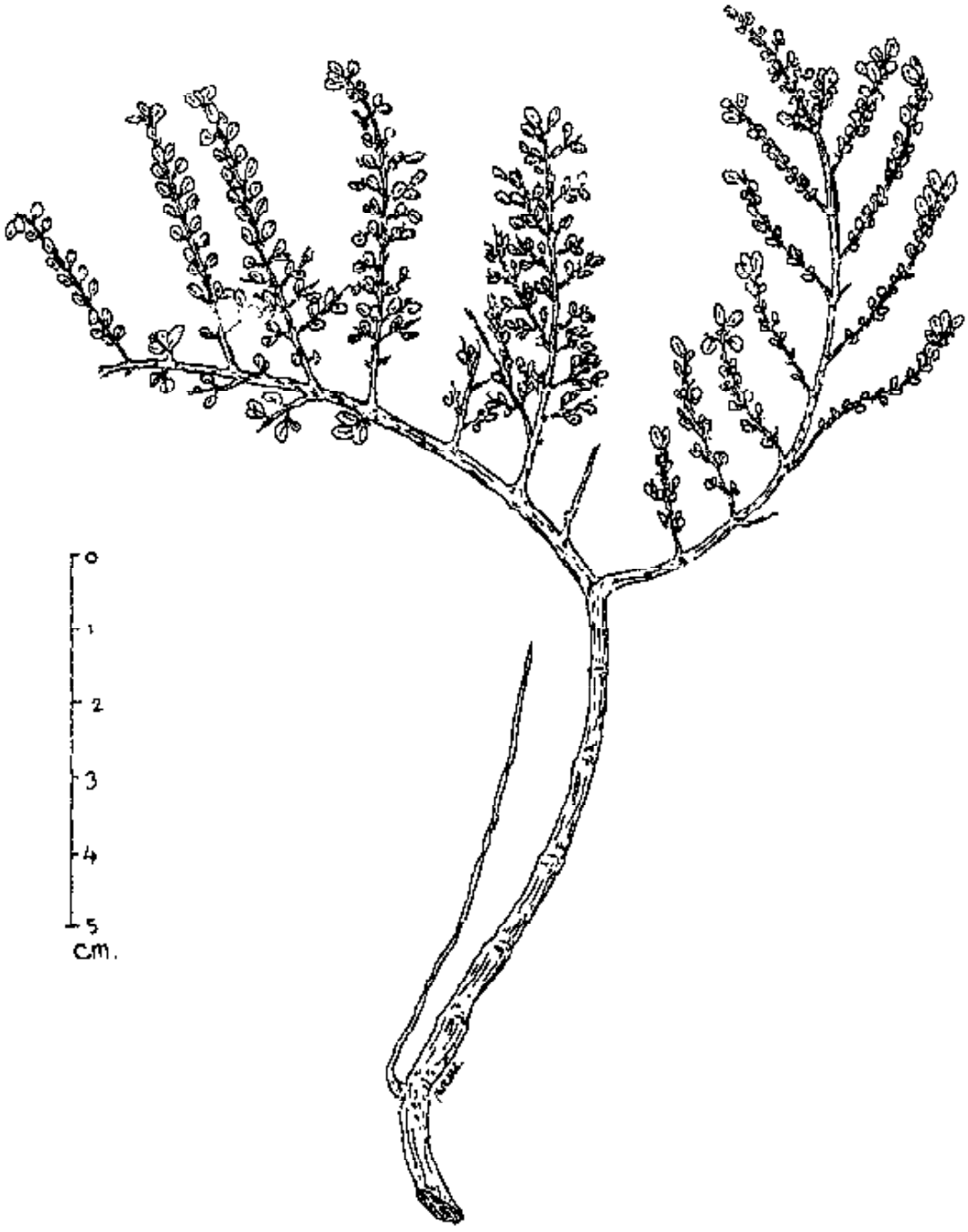
Notes : A South American species now mostly naturalised and growing along moist waste places.

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*

Pouzolzia bennettiana Wight, Ic. t. 1978. 1853; Hook. f. Fl. Brit. India 5: 585. 1888; Cooke, Fl. Pres. Bombay 3: 138. 1958 (Repr.).

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).

P. integrifolia Dalz. Hook. J. Bot. & Kew Gard. Misc. 3: 134. 1851; Hook. f. Fl. Brit. India 5: 587. 1888; Cooke, Fl. Pres. Bombay 3: 138. 1958 (Repr.). *P. pentandra* Benn. var. *integrifolia* Hook. f. *op. cit.* 583; Cooke, op. cit.

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.).

P. pentandra Benn. Pl. Jav. Rar. 64, t. 14. 1888; Hook. f. Fl. Brit. India 5: 583. 1888; Cooke, Fl. Pres. Bombay 3: 137. 1958 (Repr.).

1. Leaves lanceolate or linear–oblong	...	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.

var. **ramosissima** Wedd. in DC. Prodr. 16(1): 235. 1869; Cooke, Fl. Pres. Bombay 3: 138. 1958 (Repr.). *P. ramosissima* Wight, Ic. t. 2095, f. 17. 1853. *P. dalzelli* Wight, t. 2096, f. 21. 1853.

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.).

var. **stocksii** Hook. f. Fl. Brit. India 5: 583. 1883; Cooke, Fl. Pres. Bombay 3: 138. 1958 (Repr.).

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.).

P. zeylanica (L.) Benn. Pl. Jav. Rar. 67. 1838; Sant. in Rec. Bot. Surv. India 16 (1): 255. 1967 (3rd Rev. ed.). *Parietaria zeylanica* L. Sp.

Pl. 1052. 1753. *Pouzolzia indica* (L.) Gaud. in Freyc. Voy. Bot. 503. 1826; Hook. f. Fl. Brit. India 5: 581. 1888; Cooke, Fl. Pres. Bombay 3: 137. 1958 (Repr.).

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. 1. & t. 2100, f. 40. 1853 (*P. indica*).

Distrib. : Bombay, Kolhapur, Nasik, Pune, Raigad, Ratnagiri, Sindhudurg, Thane.

CULTIVATED SPECIES :

Boehmeria nivea (L.) Gaud. Voy. Uranie 12: 499. 1830; Hook. f. Fl. Brit. India 5: 576. 1888; Bailey, Man. Cult. Pl. ed. 2. 342. 1949. *Urtica nivea* L. Sp. Pl. 1398. 1753.

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.

Conocephalus suveolens Bl. Bijdr. 483. 1825; Hook. f. Fl. Brit. India 5: 545. 1888.

Extensive climbers. Male heads in shortly peduncled dichotomous cymes. Female heads 2.5 cm in diam. Flowers sweet scented.

Distrib. : Grown in gardens.

Laportea schomburgkii Bull. Cat. 7, 1875; Bailey, Encycl. Horticulture 2: 1821. 1929.

Herbs. Leaves large, showy, with purplish rib and veins variegated, sometimes one–half, being creamy–white.

Distrib. : A native of Polynesia. Grown in gardens for its ornamental leaves.

CANNABACEAE

(C.R. Jadhav)

CULTIVATED SPECIES :

Cannabis sativa L. Sp. Pl. 1027. 1753; Hook. f. Fl. Brit. India 5: 487. 1888; Cooke, Fl. Pres. Bombay 3: 160. 1958 (Repr.); Kamble & Pradhan, Fl. Akola Dt. 213. 1988. *'Aphu', 'Charas', 'Ganja'*.

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 ... FICUS
1. Flowers exposed :
    2. Leaves with many transverse inter costal veins :
        3. Leaves spirally arranged ... ARTOCARPUS
        3. Leaves distichous ... ANTIARIS
    2. Leaves with few or no transverse inter costal veins :
        4. Shrubs or small trees ... STREBLUS
        4. Climbers ... PLECOSPERMUM

ANTIARIS Lesch. (nom. cons.)

Antiaris toxicaria (Pers.) Lesch. in Ann. Mus. Hist. Nat. Paris 16: 478, t. 22. 1810; Hook. f. Fl. Brit. India 5: 537. 1888; Cooke, Fl. Pres. Bombay 3: 156. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 530, f. 534. 1911; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 288, f. 31. 1981; S.M. Almeida, Fl. Savantwadi 1: 403. 1990. *Ipo toxicaria* Pers. Syn. 2: 566. 1807. *Lepurandra saccidora* Nimmo ex Grah. Cat. Pl. Bombay 193. 1839. *'Jasund', 'Karvat'*.

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*
2.	Leaves oblong, usually tomentose beneath	...	*A. lakoocha*
1.	Syncarp warted or somewhat spinous, cylindric; male heads cylindric :		
3.	Young shoots, petioles and stipules hairy	...	*A. hirsutus*
3.	Young shoots, petioles and stipules not hairy	...	*A. heterophyllus*

Artocarpus gomezianus Wall. ex Trec. ssp. **zeylanicus** Jarrett in J. Arnold. Arbor. 41: 90. 1960; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 216, f. 1. 1981. *A. lakoocha* sensu Gamble, Fl. Madras Pres. 1369. 1928 [3: 958. 1957 (Repr.)] non Roxb. 1832; Cooke, Fl. Pres. Bombay 3: 158. 1958 (Repr.). *'Lowki', 'Otamb'.*

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.

Fls. : March–September & *Frts.* : June–February.

Illus. : Corner, op. cit.

Distrib. : Along ghats, rare. Bombay, Pune, Sindhudurg, Thane.

A. heterophyllus Lam. Encycl. 3: 210. 1789 (*'heterophylla'*); Jarrett in J. Arnold Arbor. 40: 334. 1959; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 217, f. 2. 1981. *A. integrifolia* sensu Gamble, Fl. Madras Pres. 1369. 1928 [3: 957. 1967 (Repr.)] non L. f. 1781]; Hook. f. Fl. Brit. India 5: 541. 1888; Cooke, Fl. Pres. Bombay 3: 158. 1958 (Repr.); Talb. For. Fl. Bombay Pres. Sind 2: 526. 1911. *'Phanas'*.

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.

Illus. : Sant. in J. Bombay nat. Hist. Soc. 57: f. A & B opp. page 448. 1960; Ramam. & Gandhi in Sald. & Nicols. Fl. Hassan Dt. 76, f. 15 C–Cb. 1976; Corner, op. cit.

Distrib. : Commonly cultivated, but naturalised. Bombay, Nasik, Pune, Raigad, Ratnagiri, Satara, Sindhudurg, Thane.

A. hirsutus Lam. Encycl. 3: 210. 1789; Hook. f. Fl. Brit. India 5: 541. 1888; Cooke, Fl. Pres. Bombay 3: 157. 1958 (Repr.); Talbot, For. Fl. Bombay Pres. & Sind 2: 547, f. 532. 1911. *'Bakodyo'*.

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.

Distrib. : Along the river sides, common. Sindhudurg (S.M. Almeida, 1990).

A. lakoocha Roxb. Fl. Ind. 3: 524. 1832; Grah. Cat. Pl. Bombay 193. 1839; Hook. f. Fl. Brit. India 5: 543. 1888; Cooke, Fl. Pres. Bombay 3: 158. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 529, f. 533. 1911. *'Uomt'*.

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.

Distrib. : Common in forest areas. Sindhudurg (S.M. Almeida, 1990).

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 ... *F. geniculata*
            5. Lamina thinly coriaceous; figs axillary ... *F. virens*
         4. Figs without internal bristles :
            6. Lateral nerves 8–14 pairs; figs axillary or clustered ... *F. tsjahela*
            6. Lateral nerves 4–9 pairs; figs in pairs, axillary ... *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 ... *F. rumphii*
            8. Leaf apex acute or cuspidate; basal bracts 3 ... *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 axils 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*

Ficus amplissima J.E. Sm. in Rees, Cyclop. 14. n. 68. 1810; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 242, f. 9. 1981. *F. tsiela* Roxb. ex Buch.–Ham. in Trans. Linn. Soc. 15: 149. 1826; King in Hook. f. Fl. Brit. India 5: 515. 1888; Cooke Fl. Pres. Bombay 3: 150 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 518, f. 526. 1911. *'Payer', 'Pimpri'.*

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.

F. arnottiana (Miq.) Miq. in Ann. Mus. Bot. Lugd. Bat. 3: 287. 1867; King in Ann. Roy. Bot. Gard. Calcutta 1: 56, t. 68 A & 84V. 1887 & in Hook. f. Fl. Brit. India 5: 513. 1888; Cooke, Fl. Pres. Bombay 3: 149. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 516, f. 524. 1911; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 244, f. 10. 1981. *Urostigma arnottiana* Miq. in London J. Bot. 6: 564. 1847. *'Kadak payer', 'Pair'.*

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.

F. benghalensis L. Sp. Pl. 1059. 1753; King in Ann. Roy. Bot. Gard. Calcutta 1: 18, t. 13. 1887 & in Hook. f. Fl. Brit. India 5: 499. 1888; Cooke, Fl. Pres. Bombay 3: 145. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 502, f. 518. 1911; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 251, f. 13. 1981. *'Wad'.*

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.

Illus. : Wight, Ic. t. 1989. 1853 [*Urostigma benghalense* (L.) Gasp. Nov. Gen. Fic. 7. 1844]; King, op. cit.; Talb. op. cit.; Corner, op. cit.

Distrib. : Along road sides in towns and villages also found in low land forests, common.

F. benjamina L. Mant. Pl. 129. 1767; King in Ann. Roy. Bot. Gard. Calcutta 1: 43, t. 52. 1887 & in Hook. f. Fl. Brit. India 5: 508. 1888; Cooke, Fl. Pres. Bombay 3: 156. 1958 (Repr.); Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 256, f. 15. 1981.

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.

Distrib. : Found along stream sides in deciduous forests, rare. Pune, Ratnagiri (planted, S.M. Almeida, 1983–86).

F. callosa Willd. Acta. Acad. Berol. 102. 1798; King in Ann. Roy. Bot. Gard. Calcutta 1: 64, t. 85. 1887 & in Hook. f. Fl. Brit. India 5: 516. 1888; Cooke, Fl. Pres. Bombay 3: 152. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 521. 1911; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 263, f. 19. 1981.

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.

Distrib. : Found in low land forests, rare. Raigad, Ratnagiri, Sindhudurg (S.M. Almeida, 1990).

F. drupacea Thunb. var. **pubescens** (Roth) Corner in Gard. Bull. Singapore 17: 1381. 1960 et in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 247, f. 11. 1981. *F. mysorensis* Heyne ex Roth var. *pubescens* Roth in Roem. & Schult. Syst. Veg. 1: 508. 1817; King in Hook. f. Fl. Brit. India 5: 500. 1888; Cooke, Fl. Pres. Bombay 3: 145. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 508, f. 519. 1911. *'Burali–Wad'*.

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.

F. exasperata Vahl, Enum. Pl. 2: 197, 402. 1806; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 274, f. 25. 1981. *F. asperrima* Roxb. Fl. Ind. 3: 554. 1832; King in Ann. Roy. Bot. Gard. Calcutta 2: 80, t. 100. 1888 & in Hook. f. Fl. Brit. India 5: 522. 1888; Cooke, Fl. Pres. Bombay 3: 158. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 523, f. 529. 1911. *'Buiumbar', 'Karyat', 'Kharmate', 'Kharvati'.*

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.

F. geniculata Kurz, For. Flora 2: 447. 1877; King in Hook. f. Fl. Brit. India 5: 518 1888; Corner in Gard. Bull. Singapore 21: 9. 1965.

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.

F. heterophylla L. f. Suppl. 432. 1781; King in Ann. Roy. Bot. Gard. Calcutta 2: 75, t. 94. 1888 & in Hook. f. Fl. Brit. India 5: 518. 1888; Cooke, Fl. Pres. Bombay 3: 152. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 521, f. 528. 1911; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 272, f. 24. 1981. *'Datir'*.

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 coriacous; 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.

Distrib. : In dry zones, occasional. Kolhapur, Pune, Raigad, Ratnagiri, Sindhudurg (S.M. Almeida, 1990).

F. hispida L. f. Suppl. 442. 1781; King in Ann. Roy. Bot. Gard. Calcutta 2: 116, t. 154. 1888 & in Hook. f. Fl. Brit. India 5: 522. 1888; Cooke, Fl. Pres. Bombay 3: 154. 1958 (Repr.); Talb. For Fl. Bombay Pres. & Sind 2: 523, f. 530. 1911; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 277, f. 27. 1981. *'Bhui–umbar'*, *'Bokeda' Gandy–umbar'*, *'Kala–umbar'*.

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.

F. microcarpa L.f. Suppl. 442. 1781; Ramam. & Gandhi in Sald. & Nicols. (eds.) Fl. Hassan Dt. 81. 1976; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 258, f. 16. 1981. *F. retusa* sensu King in Ann. Bot. Gard. Calcutta 1: 50, tt. 61, 62. 1887 non L. 1767; Hook. f. Fl. Brit. India 5: 511. 1888; Cooke, Fl. Pres. Bombay 3: 146. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 510, f. 520. 1911. *'Nandruk'.*

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 substipitate. Gall with c 1.2 mm long pedicels. Females sessile.

Receptacles : March–June.

Illus. : King, op. cit.; Talb. op. cit.; Corner, op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 676. 1982.

Distrib. : In deciduous to semi–evergreen forests, common.

F. mollis Vahl, Symb. Bot. 1: 82. 1790; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 249, f. 12. 1981. *F. tomentosa* Roxb. ex Willd. Sp. Pl. 4: 1136. 1806; King in Ann. Roy. Bot. Gard. Calcutta 1: 22, t. 18. 1887 & in Hook. f. Fl. Brit. India 5: 501. 1888; Cooke, Fl. Pres. Bombay 3: 146. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 509. 1911. *'Kallu–goli'.*

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.).

F. nervosa Heyne ex Roth in R. & S. Syst. Veg. 1: 513. 1817; King in Ann. Roy. Bot. Gard. Calcutta 1: 53, t. 65. 1887; Hook. f. Fl. Brit. India 5: 512. 1888; Cooke, Fl. Pres. Bombay 3: 147. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 512, f. 522. 1911; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 264, f. 20. 1981.

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.

Distrib. : In deciduous to semi–evergreen forests, occasional. Raigad, Ratnagiri, Satara, Sindhudurg (S.M. Almdeia, 1990).

F. palmata Forssk. Fl. Aegypt.–Arab. 179. 1755; King in Hook. f. Fl. Brit. India 5: 530. 1888.

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.

F. racemosa L. Sp. Pl. 1060. 1753; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 266, f. 21. 1981. *F. glomerata* Roxb. Pl. Corom. 2: 13, t. 1. 23. 1798; King in Ann. Roy. Bot. Gard. Calcutta 2: 173, tt. 218, 219. 1888 & in Hook. f. Fl. Brit. India 5: 535. 1888; Cooke, Fl. Pres. Bombay 3: 154. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 524, f. 531. 1911. *'Umbar'*.

Trees, 4–10 m high, much branched, often with well spreading canopy; bark greyish–white or pinkish, smooth. Leaves ovate–oblong, 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.

F. religiosa L. Sp. Pl. 1059. 1753; King in Ann. Roy. Bot. Gard. Calcutta 1: 55, t. 67. 1887 & in Hook. f. Fl. Brit. India 5: 513. 1883; Cooke, Fl. Pres. Bombay 3: 149. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 514, f. 523. 1911; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 236. 1981. *'Pimpal'*.

Trees c 10 m high, occasionally epiphytic. Leaves coriaceous, ovate–rotund, base truncate, apex caudate–acuminate with 1–5 cm long acumen, margins often sinuous; lateral veins 6–9 pairs, petioles 1.3–3.5 cm long. Receptacles axillary, paired, sessile, pink, purple or black when ripens; 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.

F. rumphii Bl. Bijdr. 437. 1825; King in Ann. Roy. Bot. Gard. Calcutta 1: 54, tt. 67 B, 84. 1887 & in Hook. f. Fl. Brit. India 5: 512. 1888; Cooke, Fl. Pres. Bombay 3: 148. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 514, 1911. *'Ashta, 'Pair'*.

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 spathulate; 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.).

F. semicordata Buch.–Ham. ex Sm. in Rees, Cycl. 14: n. 71. 1810 non Miq. 1867; Khanna & Uniyal in Mudgal et al. Fl. Madhya Pradesh 2: 621, f. 102. 1997. *F. cunia* Buch.–Ham. ex Roxb. Fl. Ind. 3: 561. 1832; King in Hook. f. Fl. Brit. India 5: 523. 1888; Dhore & Joshi, Fl. Melghat Tiger Reserve 168. 1988. *'Korelawa'*.

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.).

F. talbotii King in Ann. Roy. Bot. Gard. Calcutta 1: 51, t. 63. 1887 & in Hook. f. Fl. Brit. India 5: 512. 1888; Cooke, Fl. Pres. Bombay 3: 147. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 511, f. 521. 1911; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 254, f. 14. 1981.

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.

Illus. : King, op. cit.; Talb. op. cit.

Distrib. : In wet deciduous to evergreen forests, occasional. Pune.

F. tinctoria Forst. f. ssp. **parasitica** (Willd.) Corner in Gard. Bull. Singapore 17: 1476. 1960, Ibid. 21: 75. 1965 et in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 276, f. 26. 1981. *F. parasitica* Koen. ex Willd. Mem. Acad. Roy. Soc. Hist. (Berlin) 2: 102, t. 3. 1798; Cooke, Fl. Pres. Bombay 3: 144. 1958 (Repr.). *F. gibbosa* Bl. var. *parasitica* King in Ann. Roy. Bot. Gard. Calcutta 1: 6, t.2. 1887 & in Hook. f. Fl. Brit. India 5: 497. 1888; Cooke, op. cit.; Talb. For. Fl. Bombay Pres. & Sind 2: 506, f. 517. 1911.

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 obliquly ovoid, papillose.

Receptacles : April–May.

Illus. : Wight, Ic. t. 651. 1840 (*F. tuberculata* Roxb. Fl. Ind. 3: 554. 1832); King, op. cit.; Talb. op. cit.; Corner, op. cit.

Distrib. : Found in dry and moist forests, often on old walls. Bhandara, Bombay, Chandrapur, Nasik, Pune, Ratnagiri, Sindhudurg (S.M. Almeida, 1990), Thane.

F. tsjuhela Burm. f. Fl. Ind. 227. 1768 *('tjakela');* King in Ann. Roy. Bot. Gard. Calcutta 1: 57, t. 70. 1887 & in Hook. f. Fl. Brit. India 5: 514. 1888; Cooke, Fl. Pres. Bombay 3: 150. 1958 (Repr. ed.); Talb. For. Fl. Bombay Pres. & Sind 2: 518, f. 525. 1811; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 237. 1981. *'Kel'*.

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, bifid. 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.

Distrib. : In wet deciduous to evergreen forests, occasional. Ahmednagar, Bombay, Chandrapur, Ratnagiri (S.M. Almeida, 1983–86), Satara, Sindhudurg (S.M. Almeida, 1990).

F. virens Ait. Hort. Kew 3: 451. 1789; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 238, f. 7. 1981. *F. infectoria* Roxb. Fl. Ind. 3: 551. 1832 non Willd. 1806; King in Ann. Roy. Bot. Gard. Calcutta 1: 60, t. 75. 1887 & in Hook. f. Fl. Brit. India 5: 515. 1888; Cooke, Fl. Pres. Bombay 3: 151. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 518, f. 526. 1911.

1. Figs pedunculate ... var. *virens*

1. Figs sessile ... var. *sublanceolata*

var. **virens**. *'Amba payer', 'Amba piper', 'Amchar', 'Bassari', 'Payer', 'Pipli'.*

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 spathulate 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).*

Distrib. : In deciduous to evergreen forests, frequent. Amravati, Bombay, Dhule, Nasik, Pune, Raigad, Ratnagiri (S.M. Almeida, 1983–86), Sindhudurg (S.M. Almeida, 1990).

var. **sublanceolata** (Miq.) Corner in Gard. Bull. Singapore 17: 377. 1959 et in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 240. 1981. *F. saxophila* Bl. var. *sublanceolata* Miq. Ann. Mus. Bot. Lugd–Bat. 3: 260. 1867.

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

Plecospermum spinosum Trecul in Ann. Sci. Nat. 3, 8: 124, t. 4, f. 121–126. 1847; Hook. f. Fl. Brit. India 5: 491. 1888; Cooke, Fl. Pres. Bombay 3: 142. 1958 (Repr.); Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 226, f. 5. 1981.

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.

Streblus asper Lour. Fl. Cochinch. 2: 615. 1790; Hook. f. Fl. Brit. India 5: 489. 1888; Cooke, Fl. Pres. Bombay 3: 141. 1958 (Repr.); Talb. For. Fl. Bombay Pres. & Sind 2: 502, f. 516. 1911; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 281, f. 28. 1981. *'Karvati', 'Kharota', 'Parayu', 'Poi'.*

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.

Fls. January–March & *Frts.* : April–May.

Illus. : Tallb. op. cit.; Matthew, Illus. Fl. Tamilnadu Carnatic 2: t. 679. 1982.

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 :

Artocarpus incisus L. f. Suppl. 411. 1781; Hook. f. Fl. Brit. India 5: 539. 1888; Cooke, Fl. Pres. Bombay 3: 159. 1958 (Repr.); Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 219. 1981; Kothari & Moorthy, Fl. Raigad Dt. 380. 1993. *A. communis* J.R. & G. Forst. Char. Gen. 101. 1776; Jarret in J. Arnold Arbor. 40: 307. 1959; Kulkarni, Fl. Sindhudurg Dt. 415. 1987. *'Kapa phanas' 'Panas', 'Phirangi'.*

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.

Fls. & Frts. : September–January.

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.

Broussonetia papyrifera Vent. Tabl. Regn. Veg. 3: 547. 1799; Hook. f. Fl. Brit. India 5: 490. 1888; Bailey, Man. Cult. Pl. ed. 2: 337. 1949; Khanna & Uniyal in Mudgal et al. Fl. Madhya Pradesh 2: 606. 1997.

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.

Fls. & Frts. : May–July.

Distrib. : Cultivated in gardens. Pune.

Castilla elastica Cerv. Gaz. Lit. Mexico Suppl. 7. 1794; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 291, f. 32. 1981.

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 colur.

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.

Chlorophora excelsa (Welw.) Bth. & Hook. f. Gen. 3: 363. 1880. *Morus excelsa* Welw. in Trans. Linn. Soc. 27: 69. 1869. *Maclura excelsa* Bureau in DC. Prodr. 17: 231. 1873.

A large deciduous tree c 15 m tall. Leaves oblong–elliptic, densely and finely puberulous beneath.

Distrib. : Cultivated in gardens. Thane.

Ficus benghalensis var. **krishnae** (C. DC.) Corner in Gard. Bull. Singapure 21: 14. 1965 & in Dassan & Fosb. Rev. Handb. Fl. Ceylon 3: 253. 1981. *F. krishnae* C. DC. in Bot. Mag. t. 8092. 1906; Naik, Fl. Marathwada 2: 811. 1998.

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.

Fls. & Frts. : October–January.

Distrib. : Plant with pouched leaves, grown in gardens. Marathwada (Naik, op. cit.).

F. benjamina var. **nuda** (Miq.) Barrett, Amer. Midl. Naturalist 45: 127. 1951; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 257. 1981. *Urostigma nudum* Miq. in Hook. Lond. J. Bot. 6: 584. 1847. *Ficus benjamina* var. *comosa* (Roxb.) Kurz, For. Fl. Burma 2: 446. 1877; Naik, Fl. Marathwada 2: 810. 1998.

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.).

F. carica L. Sp. Pl. 1059. 1753; Cooke, Fl. Pres. Bombay 3: 155. 1958 (Repr.); Naik, Fl. Marathwada 2: 810. 1998. *'Anjir'.*

Trees, 5–10 m tall, deciduous; branches pubescent. Leaves 8–13 x 8–17 cm, broadly ovate, thick, cordate at base, usally 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.

F. elastica Roxb. ex Horn. Hort. Bot. Hatn. Suppl. 7. 1819; King in Ann. Roy. Bot. Gard. Calcutta 1: 45, t. 54. 1887 & in Hook. f. Fl. Brit. India 5: 508. 1888; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 261, f. 18. 1981; Naik, Fl. Marathwada 2: 810. 1998.

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).

F. laevis Bl. Bijdr. 437. 1825; King in Ann. Roy. Bot. Gard. Calcutta 2: 128, t. 161. 1888 & in Hook. f. Fl. Brit. India 5: 526. 1888; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 269, f. 22. 1981.

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.

F. pumila L. Sp. Pl. 1060. 1753; King in Ann. Roy. Bot. Gard. Calcutta 2: 124, t. 158. 1888; Corner in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 3: 268. 1981; Naik, Fl. Marathwada 2: 812. 1998.

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).

Morus alba L. Sp. Pl. 486, 1753; Hook. f. Fl. Brit. India 5: 492. 1888; Cooke, Fl. Pres. Bombay 3: 159. 1958 (Repr.); Naik, Fl. Marathwada 2: 814, f. 97. 1998. *'Shahtut', 'Tut', 'Tuti'.*

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 at base, toothed along margins, entire or 3–lobed in upper half; petioles 1–4 cm long. Infloreacence 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.

Distrib. : Planted in Kitchen gardens for lacidu lour–sweet edible sorosis. Bombay, Dhule, Kolhapur, Marathwada (Naik, op. cit.), Pune, Satara, Thane.

M. macroura Miq. Pl. Jungh. 42. 1851; Khanna & Uniyal in Mudgal et al. Fl. Madhya Pradesh 2: 627. 1997. *M. laevigata* Wall. ex Brandis, For Fl. N.W. India 409. 1874; Hook. f. Fl. Brit. India 5: 492. 1888; Cooke, Fl. Pres. Bombay 3: 159. 1958 (Repr.).

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, villoun. Female spikes as long as male. Fruits hispid, yellowish–white, sweet.

Fls. & Frts. : March–April.

Distrib. : A native of Tropical and subtropical Himalyas. Cultivated in gardens. Pune.

CASUARINACEAE

(P. Venkanna & M. J. Kothari)

CASUARINA L. ex Adans.

Casuarina equisetifolia L. Amoen. Acad. 4: 143. 1759; Hook. f. Fl. Brit. India 5: 598. 1888; Cooke, Fl. Pres. Bombay 3: 161. 1958 (Repr.); Friis in Taxon 29: 499. 1980. *'Suru'*.

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.

Illus. : Rogers in J. Arnold Arbor. 63: 356, f. 1 a–n. 1982.

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, upto 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*

Salix ichnostachya Lindl. in Wall. Cat. n. 3702. 1828; Hook. f. Fl. Brit. India 5: 628. 1888; Cooke, Fl. Pres. Bombay 3: 163. 1958 (Repr.).

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 globosely ovoid.

Fls. & Frts. : October–December.

Illus. : Wight, Ic. t. 1953. 1853.

Distrib. : Rare along river banks. 'Konkan' (Cooke, op. cit.).

S. tetrasperma Roxb. Pl. Cor. t. 97. 1798; Jacobs in Steenis, Fl. Males. 1, 5: 107, f. on p. 108. 1954; Hook. f. Fl. Brit. India 5: 626. 1888; Cooke, Fl. Pres. Bombay 3: 162. 1958 (Repr.). *'Valunj'.*

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.

Illus. : Wight, Ic. t. 1954. 1853; Bedd. Fl. Sylv. t. 302. 1873.

Distrib. : Along water–courses, river banks, stream sides, occasional. Dhule, Kolhapur, Pune, Satara.

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*

Ceratophyllum demersum L. Sp. Pl. 992. 1753; Hook. f. Fl. Brit. India 5: 639. 1888; Cooke, Fl. Pres. Bombay 3: 165. 1958 (Repr.); Subr. Aquat. Angio. 52, f. 36. 1962.

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.

Illus. : Subr. op. cit.; Gandhi in Sald. & Nicols. Fl. Hassan Dt. 59, f. 10A-Ae. 1976; Matthew, Illus Fl. Tamilnadu Carnatic 2: t. 683. 1982.

Distrib. : Found in shallow ponds, lakes, tanks and other stagnant waters, occasional. Akola, Amravati, Bombay, Buldhana, Chandrapur, Nasik, Pune, Raigad, Thane.

C. submersum L. Sp. Pl. (ed. 2) 2: 1409. 1763; Steenis, Fl. Males. 1, 4: 41. 1949; Ramaprabhu in Sci & Cult. 30: 200, f. 1. 1964; Datta & Roy in J. Econ. Tax Bot. 4: 305, f. A–D. 1983; Billore in J. Econ. Tax. Bot. 5: 491. 1984.

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.

Illus. : Ramaprabhu, op. cit.; Datta & Roy, op. cit.

Distrib. : Submerged in shallow water. Thane (Billore, op. cit.).

ADDENDA & CORRIGENDA

(P. Lakshminarasimhan)

DICOTYLEDONES

ZYGOPHYLLACEAE

Fagonia bruguieri DC. Prodr. 1 : 704. 1824; Edgew. & Hook f. in Hook. f. Fl. Brit. India 1 : 425. 1874; Hadidi in Candollea 21 : 21. 1966; D. A. Patil in J. Bombay nat. Hist. Soc. 94 : 592. 1997; P. Singh & V. Singh in Hajra et al. Fl. India 4 : 42. 1997.

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

Abrus fruticulosus Wall. ex Wight & Arn. Prodr. 1: 236. 1834; Baker in Hook.f. Fl. Brit. India 2: 176. 1876; Verdc. in Kew Bull. 24: 245. 1970; Sanj. Legumes of India 74. 1991; Almeida, Fl. Mah. 2: 4, f. 1. 1998. *A. pulchellus* Wall. ex Thw. Enum. Pl. 91. 1859; Baker in Hook. f. op.cit. 175; Cooke, Fl. Pres. Bombay 1: 383. 1958 (Repr.). *`Licorice–root'*.

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.

Fls. & Frts. : December–January.

Illus. : Almeida, op.cit.

Distrib. : Sindhudurg (Almeida, op.cit.).

Alysicarpus bupleurifolius (L.) DC var. **gracilis** (Edgew.) Baker in Hook.f. Fl. Brit. India 2: 158. 1876; Sanj. Legumes of India 77. 1991; Almeida, Fl. Mah. 2: 10. 1998. *A. gracilis* Edgew. in J.Asiat. Soc. Bengal 21: 170. 1853. *'Sewara'*.

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.).

A. glumaceus (Vahl) DC var. **thothathri** Almeida, Fl. Mah. 2: 11. 1998.

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.).

A. monilifer (L.) DC. var. **cuddapahensis** S.M. & M.R. Almeida & Almeida in J. Bombay nat. Hist. Soc. 85: 402. 1988; Almeida, Fl. Mah. 2: 13. 1998.

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.).

A. scariosus (Rottl. ex Spr.) Grah ex Thw. var. **pilifer** (Prain) Pramanik & Thoth. in Bull. Bot. Surv. India 24: 113. 1982; Sanj. Legumes of India 81. 1991; Almeida, Fl. Mah. 2: 15. 1998. *A. rugosus* DC var. *pilifer* Prain in J. As. Soc. Bengal 66: 384. 1898.

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.).

Brya ebenus (L.) DC. Prodr. 2: 421. 1825; Sanj. Legumes of India 98. 1991; Almeida, Fl. Mah. 2: 18. 1998. *Aspalathus ebenus* L. Syst. Nat. ed. 10, 2: 1158. 1759. *'Cocoswood', 'Jamaica Ebony'.*

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.).

Cajanus albicans (Wight & Arn.) van der Maesen in Agric. Univ. Wageningen Papers 85 (4): 55. 1985; Sanj. Legumes of India 99. 1991; Almeida, Fl. Mah. 2: 21. 1998. *Cantharospermum albicans* Wight & Arn. Prodr. 256. 1834. *Atylosia albicans* (Wight & Arn.) Bth. in Miq. Pl. Jungh. 243. 1853; Baker in Hook.f. Fl. Brit. India 2: 215. 1876.

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.).

Christia vespertilionis (L.f.) Bakh. f. in Reinwardtia 6: 90. 1961; Sanj. Legumes of India 113. 1991; Almeida, Fl. Mah. 2: 28. 1998. *Hedysarum vespartilionis* L.f. Sp. Pl. Suppl. 331. 1791.

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.).

Clitoria annua Grah. var. **sekharii** Almeida & Chaturvedi in Almeida, Fl. Mah. 2: 29. 1998.

This variety differs from the typical variety in having lanceolate leaves with somewhat acuminate apices.

Fls. : September–October.

Illus. : Almeida & Chaturvedi in Almeida, op.cit. opp. p. 29, f.

Distrib. : Bombay (Almeida & Chaturvedi in Almeida, op.cit.).

Crotalaria clavata Wight & Arn. Prodr. 194. 1834; Baker in Hook. f. Fl. Brit. India 2: 83. 1876; Sanj. Legumes of India 118. 1991; Almeida, Fl. Mah. 2: 35. 1998.

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.).

C. filipes Bth. var. **panthaki** M.R. Almeida & S.M. Almeida in M.R. Almeida, Fl. Mah. 2: 42. 1998.

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.

Illus. : M.R. & S.M. Almeida in Almeida, op.cit. back of p. 43, f.

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.

C. laeta Mart. ex Bth. in Mart. Fl. Brazil 15 (1): 30. 1906; Almeida, Fl. Mah. 2: 37. 1998.

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.).

C. montana Heyne ex Roth, Nov. Pl. Sp. 335. 1821; Almeida, Fl. Mah. 2: 40. 1998. C. linifolia sensu Baker in Hook.f. Fl. Brit. India 2: 72. 1876 p.p.; Zate in Ind. J. For. 5: 36. 1982.

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.

Illus. : Almeida, op.cit. opp.p. 39, f.

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

C. orixensis Willd. var. **waghii** M.R. Almeida & S.M. Almeida in Almeida, Fl. Mah. 2: 41. 1998.

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.

Illus. : M.R. & S.M. Almeida in Almeida, op.cit. opp.p. 43, f.

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.

C. pulchra Andr. Bot. Rep. 10: t. 601. 1810; Sanj. Legumes of India 127. 1991; Almeida, Fl. Mah. 2: 43. 1998. *C. pulcherrima* Curtis, Bot. Mag. t. 2027. 1818; Baker in Hook.f. Fl. Brit. India 2: 80. 1876.

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.

Fls. & Frts. : January–March.

Illus. : Wight, Ic. t. 481. 1841 *(C. pulcherrima).*

Distrib. : Pune College garden (Almeida, op.cit.).

C. trifoliastrum Willd. Sp. Pl. 3: 983. 1802; Baker in Hook.f. Fl. Brit. India 2: 82. 1876; Sanj. Legumes of India 131. 1991; Almeida, Fl. Mah. 2: 45. 1998.

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.).

C. willdenowiana DC. Prodr. 2: 134. 1825; Baker in Hook.f. Fl. Brit. India 2: 82. 1876; Sanj. Legumes of India 132. 1991; Almeida, Fl. Mah. 2: 47. 1998.

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.).

C. yasminii M.R. Almeida & S.M. Almeida in Almeida, Fl. Mah. 2: 47, figs. A–D. 1998.

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 velvetty 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.

Derris macrocarpa Thoth. in Bull. Bot. Surv. India 3: 192, t. 9. 1961; Sanj. Legumes of India 146. 1991; Almeida, Fl. Mah. 2: 57. 1998.

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.).

D. ovalifolia (Wight & Arn.) Bth. in Miq. Pl. Jungh. 1: 252. 1852 & in J. Linn. Soc. 4: Suppl. 115. 1860; Baker in Hook.f. Fl. Brit. India 2: 247. 1876; Sanj. Legumes of India 147. 1991; Almeida, Fl. Mah. 2: 58, f. 1998. *Pongamia ovalifolia* Wight & Arn. Prodr. 262. 1834.

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.).

Desmodium neomexicanum A. Gray, Pl. Wright 1: 53. 1852; Sanj. Legumes of India 159. 1991; Almeida, Fl. Mah. 2: 64, f. A–C. 1998.

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.).

D. styracifolium (Osb.) Merr. in Amer. J. Bot. 3: 580. 1916; van Meeuwen in Reinwardtia 6: 259. 1962; Sanj. Legumes of India 162. 1991; Almeida, Fl. Mah. 2: 66. 1998. *Hedysarum styracifolium* Osb. Dagbok Ostind. Resa 247. 1757. *Desmodium retroflexum* (L.) DC. Prodr. 2: 336. 1825; Baker in Hook.f. Fl. Brit. India 2: 170. 1878. *D. capitatum* (Burm.f.) DC. Prodr. 2: 336. 1825; Baker in Hook.f. 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, subcoriacous, 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.).

Dunbaria rotundifolia (Lour.) Merr. in Philipp. J. Sci. 15: 242. 1919; Sanj. Legumes of India 169. 1991; Almeida, Fl. Mah. 2: 71. 1998. *Indigofera rotundifolia* Lour. Fl. Cochinch. 458. 1790.

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.).

Erythrina arborescens Roxb. Cor. Pl. t. 219. 1811; Baker in Hook.f. Fl. Brit. India 2: 190. 1876; Sanj. Legumes of India 172. 1991; Almeida, Fl. Mah. 2: 72. 1998.

Trees; branches with few prickles. Leaves trifoliolate; leaflets as broad as long, membranaceous, 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.).

E. fusca Lour. Fl. Cochinch. 477. 1790; Krukoff in J. Arnold Arbor. 53: 130. 1972; Sanj. Legumes of India 172. 1991; Almeida, Fl. Mah. 2: 73. 1998. *E. ovalifolia* Roxb. Fl. Ind. 3: 254. 1832; Baker in Hook.f. Fl. Brit. India 2: 189. 1876.

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 velvetty; 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.).

Geissaspis cristata Wight & Arn. var. **malabarica** (Sivar. & Babu) Almeida, Fl. Mah. 2: 83. 1998. *G. tenella* var. malabarica Sivar. & Babu in J. Econ. Tax. Bot. 5: 992. 1984; Sanj. Legumes of India 181. 1991.

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 then 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.).

Indigofera aspalathoides Vahl ex DC. Prodr. 2: 231. 1825; Baker in Hook.f. Fl. Brit. India 2: 94. 1876; Sanj. Legumes of India 185. 1991 & in Hajra et al. Fasc. Fl. India 21: 16, f. 5. 1995; Almeida, Fl. Mah. 2: 86. 1998.

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.).

var. **uniflora** (Buch.–Ham. ex Roxb.) Almeida, Fl. Mah. 2: 100. 1998. *I. uniflora* Buch.–Ham. ex Roxb. Fl. Ind. 3: 374. 1832; Baker in Hook.f. Fl. Brit. India 2: 94. 1876; Cooke, Fl. Pres. Bombay 1: 333. 1958 (Repr.); Sanj. Legumes of India 198. 1991 & in Hajra et al. Fasc. Fl. India 21: 151, f. 58. 1995. *I. aspalathoides* auct. non Vahl ex DC. 1825; Cooke, 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.).

I. barberi Gamble in Bull. Misc. Inform. Kew 1918: 222. 1918; Sanj. Legumes of India 185. 1991 & in Hajra et al. Fasc. Fl. India 21: 24, f. 8. 1995; Almeida, Fl. Mah. 2: 87. 1998.

Undershrubs, 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.).

I. heterantha Wall. ex Brandis, For. Fl. N. W. C. India 135. 1874; Sanj. Legumes of India 190. 1991 & in Hajra et al. Fasc. Fl. India 21: 77, f. 29. 1995; Almeida, Fl Mah. 2: 92. 1998. *I. gerardiana* Wall. ex Baker in Hook.f. Fl. Brit. India 2: 100. 1876. *I. gerardiana* var. *heterantha* (Wall. ex Brandis) Baker in Hook. f. op.cit.

Shrubs, copiously branched; branchlets argenteo–canescent. Leaflets 17–25, elliptic, ovate, obovate to oblong, rarely lanceolate, adpressed–pubescent on both sides. Racemes axillary. Corolla pink to purplish–pink, 6–12 mm long. Pods 2.5–4 cm long, cylindric, 6–8–seeded. Seeds reddish–brown.

Fls. & Frts. : July–September.

Illus. : Sanj. in Hajra et al. op.cit.

Distrib. : New Bombay (Almeida, op.cit.).

I. karuppiana Pallithanam in J. Bombay nat. Hist. Soc. 73: 239. 1976; Sanj. Legumes of India 191. 1991 & in Hajra et al. Fasc. Fl. India 21: 88, f. 34. 1995; Almeida, Fl. Mah. 2: 93. 1998. *I. vestita* Baker in Hook.f. Fl. Brit. India 2: 96. 1876.

Herbs, perennial, suffruticose, pubescent; branches densely caespitose, ascending, clothed with short spreading, soft, brownish hairs. Leaves trifoliolate; leaflets 1–2 cm long, obovate, obtuse at apex, terminal one sessile. Racemes congested. Flowers deep red; calyx densely pubescent. Pods reflexed, many–seeded, clothed with brown pubescence, 6–10–seeded. Seeds reddish–brown.

Fls. & Frts. : September–December.

Illus. : Sanj. in Hajra et al. op.cit.

Distrib. : On dry hill slopes (Almeida, op.cit.).

I. suffruticosa Mill. Gard. Dict. ed. 8, no. 2. 1768; Sanj. Legumes of India 195. 1991 & in Hajra et al. Fasc. Fl. India 21: 130, f. 49. 1995; Almeida, Fl. Mah. 2: 97. 1998.

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.

Illus. : Sanj.in Hajra et al. op.cit.

Distrib. : Powai, Victoria garden–Bombay (Almeida, op.cit.).

Lonchocarpus sericeus (Poir.) DC. Prodr. 2: 260. 1825; Sanj. Legumes of India 205. 1991; Almeida, Fl. Mah. 2: 106. 1998. *Robinia sericea* Poir. in Lam. Encycl. 6: 226. 1804. *'Savonette'.*

Trees. Leaflets 7–11, ovate, coriaceous, obtuse or shortly acuminate at apex. Inflorescence in paniculate erect racemes. Pedicels and calyx sericeus pubescent; petals argento–sericeo–pubescent.

Fls. : July.

Distrib. : Cultivated in gardens. Bombay (Almeida, op.cit.).

Lupinus perennis L. Sp. Pl. 721. 1753; Almeida, Fl. Mah. 2: 106. 1998. *'Sun Dial'.*

Herbs, 40–60 cm high, perennial, pubescent. Flowers generally blue, also pink and white. Pods 4 cm long.

Fls. & Frts. : May–June.

Distrib. : A native of America. Victoria garden–Bombay (Almeida, op. cit.).

L. polyphyllus Lindl. Bot. Reg. 13: t. 1096. 1827; Almeida, Fl. Mah. 2: 106. 1998.

Herbs, up to 1.5 cm long, perennial. Flowers purplish with blue wings, in compact racemee. Pods 4 cm long, woody.

Fls. & Frts. : June–September.

Distrib. : Pune (Almeida, op.cit.).

Medicago laciniata (L.) Mill. Gard. Dict. ed. 8, no. 5. 1768; Baker in Hook.f. Fl. Brit. India 2: 90. 1876; Cooke, Fl. Pres. Bombay 1: 326. 1958 (Repr.); Sanj.Legumes of India 209. 1991; Almeida, Fl. Mah. 2: 108. 1998. *Lupinus polymorpha* L. var. *laciniata* L. Sp. Pl. 781. 1753.

Herbs, annual; stems 30–40 mm long. Leafelets 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.).

Mucuna atropurpurea DC. Prodr. 2: 406. 1825; Baker in Hook.f. Fl. Brit. India 2: 186. 1876; Cooke, Fl. Pres. Bombay 1: 388. 1958 (Repr.); Sanj. Legumes of India 215. 1991; Almeida, Fl. Mah. 2: 111. 1998.

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, hilium extending half round the edge.

Fls. & Frts. : October–December.

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

Myroxylon balsamum (L.) Harms, Notizbl. Bot. Gart. Berlin 5: 94. 1908; Sanj. Legumes of India 219. 1991; Almeida, Fl. Mah. 2: 113. 1998. *Toluifera balsamum* L. Sp. Pl. 384. 1753. *'Balsam of Peru'.*

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 spathulate, 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.).

Pterocarpus indicus Willd. Sp. Pl. 3: 904. 1802; Baker in Hook.f. Fl. Brit. India 2: 238. 1876; Thoth. Tax. Rev. of Tribe Dalbergieae in Ind. Subc. 208. 1987; Sanj. Legumes of India 232. 1991; Almeida, Fl. Mah. 2: 120. 1998.

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.).

Rhynchosia cana (Willd.) DC. Prodr. 2: 386. 1825; Baker in Hook.f. Fl. Brit. India 2: 222. 1876; Sanj. Legumes of India 237. 1991; Almeida, Fl. Mah. 2: 123. 1998. *Glycine cana* Willd. Sp. Pl. 3: 1063. 1802.

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.).

Sesbania aculeata Pers. var. **paludosa** (Roxb.) Baker in Hook.f. Fl. Brit. India 2: 115. 1876; Sanj. Legumes of India 242. 1991. *Aeschynomene paludosa* Roxb. Fl. Ind. 3: 333. 1832. *Sesbania paludosa* (Roxb.) Prain in J. Asiat. Soc. Bengal 66: 82. 1897; Almeida, Fl. Mah. 2: 128. 1998.

Woody shrubs or small trees, 4–6 m tall; stem and leaves covered with velvetty–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.).

S. speciosa Taub. in POAC 213. 1893; Sanj. Legumes of India 244. 1991; Almeida, Fl. Mah. 2: 130. 1998.

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 pulvinous at base. Inforescences 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.).

Sophora davidii (Franchet) Skeels in USDA Bur. Pl. Industr. Bull. 282: 68. 1913; Almeida, Fl. Mah. 2: 138. 1998. *S. moorcraftiana* (Bth.) Bth. ex Baker var. *davidii* Franchet, Nouv. Arch. Mus. Hist. Nat. 2, 5: 253. 1883.

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.).

S. secundiflora (Orteg.) Lag. ex DC. Cat. Hort. Monsp. 148. 1813; Sanj. Legumes of India 250. 1991; Almeida, Fl. Mah. 2: 138. 1998. *Broussonetia secundiflora* Orteg. Nov. Rar. Pl. Matr. 61, t. 7. 1798. *'Mescal bean'.*

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.).

Tephrosia pentaphylla (Roxb.) G. Don ex Sweet, Hort. Brit. ed. 3, 170. 1839; Sanj. Legumes of India 257. 1991; Almeida, Fl. Mah. 2: 144. 1998. *Galega pentaphylla* Roxb. Fl. Ind. 3: 384. 1832.

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.).

T. sara-almeidii Almeida, Fl. Mah. 2: 144. 1998.

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 velvetty-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.

Trifolium alexandrium L. Cent. Pl. 1: 25. 1755; Sanj. Legumes of India 262. 1991; Almeida, Fl. Mah. 2: 148. 1998. *`Berseem', `Egyptium clover'.*

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.).

T. repens L. Sp. Pl. 767. 1753; Hook.f. Fl. Brit. India 2: 86. 1876; Bailey, Man. Cult. Pl. 581. 1949; Sanj. Legumes of India 263. 1991; Almeida, Fl. Mah. 2: 148. 1998. *`Dutch clover', 'White clover'.*

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.).

Vigna grahamiana (Wight & Arn.) Verdc. in Kew Bull. 24: 562. 1970; Sanj. Legumes of India 273. 1991; Almeida, Fl. Mah. 2: 154. 1998. *Phaseolus grahamiana* Wight & Arn. Prodr. 244. 1834. *Dolichos subcarnosus* Wight & Arn. Prodr. 249. 1834; Baker in Hook.f. Fl. Brit. India 2: 211. 1876.

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.).

V. radiata (L.) Wilczeck var. **aurea** (Roxb.) Prain in Wealth of India 10: 485. 1976; Almeida, Fl. Mah. 2: 156. 1998. *Phaseolus aureus* Roxb. Fl. Ind. 3: 297. 1832 (ed. Carey). *P. radiatus* L. var. *aureus* Prain in J. Asiat. Soc. Bengal 66: 422. 1898. *P. mungo sensu* Baker in Hook.f. Fl. Brit. India 2: 203. 1876 p.p. *'Golden–gram', 'Sona–Mug'.*

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.

V. radiata var. **grandis** Prain in Wealth of India 10: 435. 1976; Almeida, Fl. Mah. 2: 157. 1998. *Phaseolus mungo* Baker in Hook.f. Fl. Brit. India 2: 203. 1876 p.p.

Foliage medium–green. Pods longer, spreading. Seeds black.

Notes : It has been included on the authority of Almeida (op.cit.) who has not given any locality.

Wisteria polystachyus (Thunb.) Almeida, Fl. Mah. 2: 161. 1998. *Dolichos polystachyus* Thunb. Fl. Jap. 281. 1784. *Wisteria sinensis* (Sims) Sweet, Hort. Brit. 121. 1827; Bailey, Man. Cult. Pl. 558. 1949; Bor & Raiz. Beaut. Ind. Cl. & Shr. 47, t. 13. 1954. *W. chinensis* (Sweet) DC. Prodr. 2: 390. 1825; Sanj. Legumes of India 279. 1991. *'Blue Acacia', 'Blue Rain', 'Chinese Wisteria'.*

Climbers up to 15 m tall, deciduous. Leaves alternate, imparpinnate, 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, oblanceolate, flattened, velvetty. 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

Acrocarpus faxinifolius Wight &Arn. Mag. Zool. Bot. 2: 547. 1838; Baker in Hook.f. Fl. Brit. India 2: 292. 1878; Sanj. Legumes of India 1. 1991; Almeida, Fl. Mah. 2: 164. 1998. *`Pink Cedar, `Shingle tree'.*

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.).

Amherstia nobilis Wall. Pl. As. Rar. 1:1, tt. 1–2. 1819; Baker in Hook. f. Fl. Brit. India 2: 272. 1878; Sanj. Legumes of India 1. 1991; Almeida, Fl. Mah. 2: 164. 1998. *`Noble Amberstia', `Tree of heaven'.*

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.).

Bauhinia scandens L. var. **anguina** (Roxb.) Ohashi in J. Jap. Bot. 63: 159. 1988; Sanj. Legumes of India 5. 1991. *B. anguina* Roxb. Cor. Pl. 3: t. 285. 1820; Baker in Hook.f. Fl. Brit. India 2: 284. 1876; Almeida, Fl. Mah. 2: 165. 1998.

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.).

B. tomentosa L. forma **concolor** DC. ex Wight in Mahabale, Maharashtra State Gazet. pt. 4: 301. 1987; Almeida, Fl. Mah. 2: 170. 1998.

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.).

Brownea coccinea Jacq. Enum. Pl. Carib. 26. 1760; Sanj. Legumes of India 8. 1991; Almeida, Fl. Mah. 2: 171. 1998. *'West Indian Mountain Rose'.*

Trees, evergreen, often branching from base. Leaves pinnate; leaflets 10–14, elliptic, acuminate at apex. Flowers enclosed in pink corymbose, deciduous bracts; petals crimson–scarlet. Pods jointed, compressed, red, rusty–hairy.

Fls. & Frts. : February–March (September).

Distrib. : Mahalaxmi, Bombay (Almeida, op.cit.).

B. grandiceps Jacq. Collect. 3: 287, t. 22. 1790; Sanj. Legumes of India 8. 1991; Almeida, Fl. Mah. 2: 171. 1998.

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.).

Caesalpinia gilliesii (Wall ex Hook.) Dietr. Syn. Pl. 2: 1495. 1840; Sanj. Legumes of India 13. 1991; Almeida, Fl. Mah. 2: 174. 1998. *Poinciana gilliesii* Wall. ex Hook. Bot. Misc. 1: 129, t. 34. 1830.

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.).

Cassia biflora L. Sp. Pl. 398. 1753; Sanj. Legumes of India 23. 1991; Almeida, Fl. Mah. 2: 178. 1998.

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.).

C. didymobotrya Fresen in Flora 22 (1): 53. 1839; Sanj. Legumes of India 23. 1991; Almeida, Fl. Mah. 2: 178. 1998.

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.).

C. montana Heyne ex Roth, Nov. Pl. Sp. 214. 1821; Baker in Hook.f. Fl. Brit. India 2: 246. 1878. Cooke, Fl. Pres. Bombay 1: 423. 1958 (Repr.); Sanj. Legumes of India 183. 1991; Almeida, Fl. Mah. 2: 183. 1998.

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 couspicuous 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.).

C. multijuga A. Rich. in Act. Hist. Nat. Paris 1: 108. 1792; Sanj. Legumes of India 24. 1991; Almeida, Fl. Mah. 2: 184. 1998.

Small trees. Leaflets 20–25 pairs, oblong–elliptic. Flowers bright yellow.

Fls. : August–September.

Notes : It is included on the authority of Almeida (op.cit.) who has not given any locality.

C. pumila Lam. var. **wallichiana** (Baker) Almeida, Fl. Mah. 2: 186. 1998. *C. mimosoides* L. var. *wallichiana* Baker in Hook.f. Fl. Brit. India 2: 266. 1878. *C. mimosoides* ssp. *leschenaultiana* DC. Mem. Soc. Phys. Geneve 2: 132. 1824 & Prodr.2: 504. 1825; Sanj. Legumes of India 17. 1991.

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.).

Peltophorum linnaei Bth. in Griseb. Fl. Brit. West. Ind. 206. 1860; Sanj. Legumes of India 34. 1991; Almeida, Fl. Mah. 2: 194. 1998.

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.

Fls. : May.

Distrib. : Victoria Garden, Bombay (Almeida, op.cit.).

Trachylobium verrucosum (Gaertn.) Olivere, Fl. Trop. Africa 2: 311. 1877; Almeida, Fl. Mah. 2: 196. 1998. *Hymenaea verrucosa* Gaertn. Fruct. 2: 306, t. 139/7. 1791; Sanj. Legumes of India 31. 1991.

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

Acacia canescens Grah. ex Gamble, Fl. Madras 1(3): 429. 1919 [1: 304. 1957 (Repr.)]; Almeida, Fl. Mah. 2: 199. 1998. *A. pennata* Willd. var. *canescens* Grah. ex Baker in Hook.f. Fl. Brit. India 2: 98. 1878; Sanj. Legumes of India 43. 1991.

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.).

A. jacquemontii Bth. in Hook.f. Lond. J. Bot. 1: 499. 1842; Baker in Hook.f. Fl. Brit. India 2: 293. 1878; Cooke, Fl. Pres. Bombay 1: 446. 1958 (Repr.); Sanj. Legumes of India 40. 1991; Almeida, Fl. Mah. 2: 203. 1998.

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.).

A. lenticularis Buch.–Ham. ex Hook. Lond. J. Bot. 1: 508. 1842; Baker in Hook.f. Fl. Brit. India 2: 296. 1878; Sanj. Legumes of India 40. 1991; Almeida, Fl. Mah. 2: 203. 1998. *`Bara–khair'.*

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.).

A. mangium Willd. Sp. Pl. 4: 1053. 1806; Sanj. Legumes of India 50. 1991; Almeida, Fl. Mah. 2: 204. 1998.

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.).

A. moniliformis Griseb. in Goett. Abh. 19: 136. 1874; Sanj. Legumes of India 281. 1991; Almeida, Fl. Mah. 2: 204. 1998.

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.).

A. nilotica (L.) Del. ssp. **tomentosa** (Bth.) Brenan in Kew Bull. 1957: 84. 1957; Sanj. Legumes of India 42. 1991; Almeida, Fl. Mah. 2: 206. 1998.

It differs from typical subspecies in having hairy branches, petioles and peduncles.

Fls.: October–December.

Distrib. : Jeur grant Medical College, Solapur (Almeida, op.cit.).

A. richii A. Grey in Bot. Amer. Expl. Exped. 1: 482, t. 53. 1856; Sanj. Legumes of India 52. 1991; Almeida, Fl. Mah. 2: 208. 1998.

Trees. Phyllodes lanceolate, acuminate, subfalcate, slightly coriaceous, many nerved. Flowers in small, globular heads. Pods flat.

Fls. & Frts. : January–February.

Distrib. : Victoria Garden, Pombay (Almeida, op.cit.).

A. senegal (L.) Willd. Sp. Pl. 4: 1030. 1806; Baker in Hook.f. Fl. Brit. India 2: 295. 1876; Cooke, Fl. Pres. Bombay 1: 449. 1958 (Repr.); Sanj. Legumes of India 44. 1991; Almeida, Fl. Mah. 2: 208. 1998. *Mimosa senegal* L. Sp. Pl. 521. 1753. *'Gum–arabic tree', 'Senegal gum'.*

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. : Amravati, Pune & Solapur (Almeida, op.cit.).

A. sphaerocephala Cham. & Schl. in Linnaea 5: 594. 1830; Sanj. Legumes of India 53. 1991; Almeida, Fl. Mah. 2: 209.1998.

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. : A native of Mexico. Cultivated in Ruia College & Victoria garden, Bombay (Almeida, op.cit.).

A. verticillata Willd. Sp. Pl. 4(2): 1049. 1806; Sanj. Legumes of India 53. 1991; Almeida, Fl. Mah. 2: 210. 1998. *'Star Acacia', ' Whorl Leaved acacia'.*

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.).

Albizia kalkora (Roxb.) Prain in J. Asiat. Soc. Bengal 66: 511. 1897; Sanj. Legumes of India 56. 1991; Almeida, Fl. Mah. 2: 210. 1998. *Mimosa kalkora* Roxb. Fl. Ind. 2: 547. 1832.

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, rigidily coriaceous. Flowers greenish–white or yellowish in corymbs, 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.

A. odoratissima (L.) Bth. var. **subhedarii** Almeida, Fl. Mah. 2: 215. 1998.

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.

A. richardiana King & Prain in Ann. Roy. Bot. Gard. Calcutta 9: 32, t. 42. 1901; Sanj. Legumes of India 59. 1991; Almeida, Fl. Mah. 2: 215. 1998.

Trees, 15–25 m tall, evergreen. Leaves bipinnate, alternate, stipulate, rhachis puberluous with 2 glands, pinnae 10–14 pairs; leaflets 50–100 pairs, 7 x 1 mm, linear, subacute at apex. Flowers

white, in globose heads arranged in panicles. Fruits strap–shaped, rounded at apex, cuneate at base. Seeds 10–12.

Fls. & Frts. : April–May.

Distrib. : Mahalaxmi, Bombay (Almeida, op.cit.).

Calliandra emarginata (Humb. & Bonpl. ex Willd.) Bth. in Hook. Lond. J. Bot. 3: 95. 1844; Almeida, Fl. Mah. 2: 217. 1998. *Inga emarginata* Humb. & Bonpl. ex Willd. Sp. Pl. 4: 1009. 1806. '*Miniature Powder Puff*'.

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.).

C. inermis (L.) Druce, Bot. Exch. Club. Brit. Isles 1913, 3: 415. 1914; Sanj. Legumes of India 63. 1991; Almeida, Fl. Mah. 2: 217. 1998. *Gleditsia inermis* L. Sp. Pl. ed. 2. 1509. 1763.

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.).

C. selloi (Spr.) McBride in Contr. Grey Herb. 59:5. 1919; Almeida, Fl. Mah. 2: 216. 1998. *Acacia selloi* Spr. Syst. Veg. 3: 137. 1826.

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.).

C. surinamensis Bth. in Lond. J. Bot. 3: 105. 1844; Sanj. Legumes of India 63. 1991; Almeida, Fl. Mah. 2: 217. 1998.

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.).

Prosopis farcata (Banks & Soland.) Macbr. Contrib. Gray Herb. n.s. 59: 17. 1919; Sanj. Legumes of India 71. 1991; Almeida, Fl. Mah. 2: 225. 1998. *Mimosa farcata* Banks & Soland. in Russell, Nat. Hist. Adepp. ed. 2, 2: 266. 1794. *Prosopis stephaniana* (Bieb.) Kunth in Spr. Syst. 2: 326. 1825; Baker in Hook. f. Fl. Brit. India 2: 288. 1878; Cooke, Fl. Pres. Bombay 1: 468. 1958 (Repr.).

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

Kerria japonica (L.) DC. in Trans. Linn. Soc. 12: 157. 1817; Almeida, Fl. Mah. 2: 227. 1998. *Rubus japonica* L. Mant. 2: 245. 1767.

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.).

Rosa polyantha Hort. ex Carr. in Rev. Hort. 48: 253. 1876 non Sieb. ex Zucc. 1848; Almeida, Fl. Mah. 2: 231. 1998.

Stipules glandular–ciliate. Flowers small, red or pink, rarely white, odourless. Fruits top–shaped.

Fls. & Frts. : Throughout the year.

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

Rubus idacus L. Sp. Pl. 492. 1753; Almeida, Fl. Mah. 2: 232. 1998. *`Red & Yellow Garden Raspberry'.*

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

Brexia madagascarensis (Lam.) Thou. in Ker.–Gawl. Bot. Reg. 730. 1840; Almeida, Fl. Mah. 2: 234. 1998. *Venana madagascarensis* Lam. Illustr. 2: 99, t. 131. 1800.

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 corymbs. Fruits a 5–gonous drupe, ovoid.

Fls. & Frts. : March.

Distrib. : Victoria garden, Bombay ((Almeida, op.cit.).

SAXIFRAGACEAE

Deutzia staminea Br. in Wall. Pl. Asiat. Rar. 82, t. 191. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 2: 407. 1878; Almeida, Fl. Mah. 2: 234. 1998.

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

Echeveria elegans Rose in N. Amer. Fl. 22: 22. 1924; Almeida, Fl. Mah. 2: 236. 1998. *'Mexican snow-ball'.*

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.).

Kalanchoe brasiliensis Camb. in Fl. Bras. Merid. 2: 196. 1868; C.B.Cl. in Hook. f. Fl. Brit. India 2: 415. 1878; Almeida, Fl. Mah. 2: 237. 1998.

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.).

K. marmorata Baker in Gard. Chronicle 2: 300. 1892; Almeida, Fl. Mah. 2: 239. 1998.

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.).

K. velutina Welw. ex Oliver, Fl. Trop. Afr. 2: 396. 1868; Almeida, Fl. Mah. 2: 240. 1998. *K. kirkii* N.E. Br. in Gard. Chron. 2: 110. 1902.

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.).

Sedum acre L. Sp. Pl. 432. 1753; Almeida, Fl. Mah. 2: 240. 1998. *'Stonecrop'.*

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.).

S. sarmentosum Bunge in Mem. Sav. Etr. Petesberg 2: 104. 1835 non Mast.; Almeida, Fl. Mah. 2: 240. 1998.

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

Anogeissus sericea Brandis in Indian Forester 25: 287. 1899; Cooke, Fl. Pres. Bombay 1: 513. 1958 (Repr.); Scottt in Kew Bull. 33: 558. 1979; Gang. & T. Chakrab. in J. Econ. Tax. Bot. 21: 292, f. 3. 1997; Almeida, Fl. Mah. 2: 248. 1998. *A. latfolia* var. *parviflora* C.B. Cl. in Hook. f. Fl. Brit. India 2: 450. 1878.

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.

Illus. : Gang. & T. Chakrab. op.cit.

Distrib. : Khandala, Pune Dt. (Almeida, op.cit.). It is endemic to Central & Western India.

Terminalia gella Dalz. in Hook. J. Bot. 2: 227. 1852; Gang. & T. Chakrab. in J. Econ. Tax. Bot. 21: 363. 1997; Almeida, Fl. Mah. 2: 255. 1998.

Trees, large. Leaves scattered, upto 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

Barringtonia asiatica (L.) Kurz, Rep. Pegu. App. A–65, App. B, 52 1875; Almeida, Fl. Mah. 2: 257. 1998. *Mammea asiatica* L. Sp. Pl. 512. 1753. *Barringtonia speciosa* Forst. & Forst. Char Gen 76, t. 38 1776; C B. Cl. in Hook. f. Fl. Brit. India 2: 507. 1879.

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.).

Gustavia augusta L. Dissert. Pl. Surinam. 17. 1775 & Amoen. Acad. 8: 266, t. 5. 1785; Almeida, Fl. Mah. 2: 259. 1998.

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.).

G. gracillium Meirs in Trans. Linn. Soc. London 30: 180. 1874; Almeida, Fl. Mah. 2: 259. 1998.

Trees, small. Leaves 25–30 cm long, linear, undulate, serrate along margins. Flowers in few flowered corymb–like panicles. Fruits small, 4–celled.

Fls. & Frts. : February–March.

Distrib. : Victoria garden, Bombay (Almeida, op.cit.).

MYRTACEAE

Eucalyptus cladocalyx E. Muell. in Linnaea 25: 388. 1852; Almeida, Fl. Mah. 2: 261. 1998. *E. corynocalyx* F. Muell. Fragm. Phytogr. Austral. 2: 43. 1860; Bailey, Man. Cult. Pl. 728. 1958.

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.).

E. maculata Hook. Ic. Pl. t. 619. 1844; Almeida, Fl. Mah. 2: 261. 1998.

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.).

E. obliqua L. Herit. Sert. Angl. 18, t. 20. 1788; Almeida, Fl. Mah. 2: 261. 1998.

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.

Fls. & Frts. : March–June & August–October.

Distrib. : Cultivated. Satara & Sindhudurg (Almeida, op.cit.).

E. racemosa Cav. Ic. 4: 24. 1787; Almeida, Fl. Mah. 2: 262. 1998.

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.).

E. rummeryi Maiden, Crit. Rev. Eucalypt. 58: 427, t. 1. 1923; Almeida, Fl. Mah. 2: 262. 1998.

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 hemispehrical, c 5 mm across.

Fls. & Frts. : November–December.

Distrib. : Native of New South Wales, cultivated in Bombay Gardens (Almeida, op.cit.).

E. whitei Maiden & Blackey in J. Roy. Soc. New South Wales 54: 172. 1925; Almeida, Fl. Mah. 2: 263. 1998.

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.).

Eugenia cotonifolia Jacq. Obs. Bot. 3: 2. 1764; Almeida, Fl. Mah. 2: 264. 1998. *E. cotinifolia* ssp. *codyensis* (Munro ex Wight) Ashton in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 2: 412. 1981. *E. codyensis* Munro ex Wight, Ill. 2: 13. 1850; Duthie in Hook. f. Fl. Brit. India 2: 501. 1879; Cooke, Fl. Pres. Bombay 1: 525. 1958 (Repr.). *E. lucida* Lam. Encycl. 3: 205. 1791; Duthie in Hook. f. op.cit. non Banks, 1788.

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.).

E. cotinifolia ssp. **phillyraeodes** (Trin.) Ashton var. **gracilis** (Duthie) Almeida, Fl. Mah. 2: 265. 1998. *E. mooniana* var. *gracilis* Duthie in Hook. f. Fl. Brit. 2: 505. 1878; Cooke, Fl. Pres. Bombay 1: 526. 1958 (Repr.). *Syzygium mooniana* (Wight) var. *gracilis* (Bedd.) Duthie in Hook. f. op.cit.

Leaves longer, lanceolate–acuminate. Fruits oblong–ellipsoid.

Fls. & Frts. : February–March.

Distrib. : Konkan (Cooke, op.cit.; Almeida, op.cit.).

Pimenta dioica (L.) Merr. Contr. Gray Herb. No. 165: 37. 1947; Almeida, Fl. Mah. 2: 267. 1998.

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.).

Psidium guajava L. var. **pomifera** Duthie in Hook. f. Fl. Brit. India 2: 488. 1878; Almeida, Fl. Mah. 2: 267. 1998. *'Jamb', 'Peru'.*

Fruits globose or ovoid.

Fls. & Frts. : Throughout the year.

Distrib. : Cultivated in gardens (Almeida, op.cit.).

Syzygium caryophyllifolia (Lam.) DC. Prodr 3: 259. 1828; Almeida, Fl. Mah. 2: 270. 1998. *Eugenia caryophyllifolia* Lam. Dict. 3: 198. 1789. *E. jambolana* Lam. var. *caryophyllifolia* (Lam.) Duthie in Hook. f. Fl. Brit. India 2: 499. 1878.

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.).

S. laetum (Buch.–Ham.) Gandhi var. **pauciflora** (Duthie) Almeida, Fl. Mah. 2: 272. 1998. *Eugenia laeta* var. *pauciflora* Duthie in Hook. f. Fl. Brit. India 2: 479. 1878; Cooke, Fl. Pres. Bombay 1: 520. 1958 (Repr.).

Pedicels solitary from extreme axils, 1–flowered.

Fls.. : December.

Distrib. : Deccan (Cooke, op.cit.). It is endemic to India.

MELASTOMATACEAE

Tococa platyphylla Bth. Pl. Hartw. 181. 1839; Almeida, Fl. Mah. 2: 279. 1998.

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

Ammannia multiflora Roxb. forma **uniflora** Blatt. & Hallb. in J. Bombay nat. Hist. Soc. 26. 213. 1918; Almeida, Fl. Mah. 2: 282. 1998.

Herbs; stem simple, 25–30 cm tall, erect. Leaves shorter than peduncles, sometimes ovate. Peduncles 1–flowered.

Fls. : January

Distrib. : Bhusaval, Jalgaon Dt. (Almeida, op.cit.).

Cuphea micropetala H.B. & K. Nov. Gen. et Sp. 6: 209, t. 551. 1824; Almeida, Fl. Mah. 2: 283. 1998.

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.).

Lafoensia vandelliana Chem. & Schlecht. in Linnaea 2: 436. 1827; Almeida, Fl. Mah. 2: 283. 1998.

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.).

Lagerstroemia floribunda Jacq. Malay Misc. 1: 38. 1820; Furtado & Srisuko in Gard. Bull. Singapore 24: 328, t. 55. 1969; Almeida, Fl. Mah. 2: 283. 1998.

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.).

L. hirsuta (Lam.) Willd. Sp. Pl. 2: 1178. 1799; Almeida, Fl. Mah. 2: 284. 1998. *Adambea hirsuta* Lam. Encycl. 1: 39. 1783. *Lagerstroemia rottleri* C.B. Cl. in Hook. f. Fl. Brit. India 2: 576. 1879.

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.).

L. thoreli Gagnep. in Lecompte, Not. Syst. 3: 362. 1918; Almeida, Fl. Mah. 2: 286. 1998.

Trees. Flowers light pink in colour.

Fls. : April–June.

Distrib. : Cultivated in gardens (Almeida, op.cit.).

NESAEA Commerson ex K. Kunth (nom.cons.)

Nesaea cordata (Wight & Arn.) Almeida, Fl. Mah. 2: 287. 1998. *Ammannia cordata* Wight & Arn. Prodr. 1: 304. 1834; C.B. Cl. in Hook. f. Fl. Brit. India 2: 570. 1879 non Hiern.

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.).

Rotala malampuzhensis Nair ex C.D.K. Cook in Boissiera 29:98. 1979; Almeida, Fl. Mah. 2: 290. 1998.

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

Clarkia concinna (Fish. & May) Green, Mem. Bot. San Francisco Bay 136. 1940; Almeida, Fl. Mah. 2: 296. 1998. *Eucharidium concinnum* Fish. & May, Ind. Sem. Hort. Pentrop. 2: 37. 1835.

Herbs, up to 1 m high, annual. Leaves 6–7 cm long, ovate–lanceolate, sometimes elliptic. Flowers deep pink or lavendar coloured.

Fls. : Septemebr–October.

Distrib. : Known as *'Red ribbons'*. Parbhani (Almeida, op.cit.).

C. elegans Dougl. in Lindl. Bot. Reg. t. 1575. 1847 non Poir.; Almeida, Fl. Mah. 2: 296. 1998. *'Koyal'*.

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.

Epilobium hirsutum L. Sp. Pl. 1: 347. 1753; C.B. Cl. in Hook. f. Fl. Brit. India 2: 583. 1879; Raven in Bull. Brit. Mus. (Bot.) 2: 363. 1962; Almeida, Fl. Mah. 2: 297. 1998. *E. serratum* Jacq. ex C.B. Cl. in Hook. f. op.cit. *E. hirsutum* L. var. *sericeum* C.B. Cl. in Hook. op.cit. 584. *E. hirsutum* var. *lactum* C.B.Cl. in Hook. op.cit.

Herbs, up to 1.5 m high, perennial, hairy all over. Leaves opposite, upto 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.).

Fucshia speciosa Hort. ex R.N. Sutaria, Syst. Bot. ed. 3, 264. 1962; Almeida, Fl. Mah. 2: 297. 1998.

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

Passiflora subpeltata Ortega, Nov. Pl. Descr. 78. 1798; Almeida, Fl. Mah. 2: 304. 1998. *P. calcarata* Mast. in Trans. Linn. Soc. 27: 638. 1871; Bor & Raiz. Beaut. Ind. Climbers & Shrubs 262, f. 153. 1954.

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.).

P. ciliata Dryand. Ait. Hort. Kew. ed. 3, 310. 1811; Almeida, Fl. Mah. 2: 304. 1998. *P. foetida* L. var. *ciliata* (Dryand.) Bor & Raiz. Beaut. Ind. Climbers & Shrubs 255. 1954.

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.).

P. gracilis Jacq. Eclog. Amer. t. 168. 1763; Almeida, Fl. Mah. 2: 305. 1998.

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.).

P. leschenaultii DC. Prodr. 3: 326. 1826; Hook. f. Fl. Brit. India 2: 599. 1879; Ugemuge, Fl. Nagpur Dt. 175. 1986; Almeida, Fl. Mah. 2: 306. 1998.

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.).

P. biflora Lam. Encycl. 3: 36. 1789; Almeida, Fl. Mah. 2: 306. 1998.

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.).

P. suberosa L. Sp. Pl. 958. 1753; Almeida, Fl. Mah. 2: 206. 1998. *P. minima* L. op.cit. 950; Bor & Raiz. Beaut. Ind. Climb. & Shrubs 244. 1954.

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.).

P. morifolia Mast. in Mart. Fl. Brazil 13 (1). 555. 1906; Almeida, Fl. Mah. 2: 307. 1998.

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

CERASIOCARPUM Hook. f.

Cerasiocarpum bennettii (Miq.) Cogn. in DC. Monogr. Phan. 3: 729. 1881; Chakr. in Rec. Bot. Surv. India 17 (1):167. 1959; Almeida, Fl. Mah. 2: 310. 1998. *Bryonopsis bennettii* Miq. Fl. Ind. Bat. 1: 657. 1855. *Cerasiocarpum zeylanicum* (Thw.) Hook. in Gen. Pl. 1: 832. 1862; C.B. Cl. in Hook. f. Fl. Brit. India 2: 629. 1879. *Kedrostis courtalensis* (Arn.) Jeffrey in Kew Bull. 15: 353. 1962.

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.

Illus. : Almeida, op.cit. f. behind page 312.

Distrib. : Pune & Sindhudurg (Almeida, op.cit.).

var. **deshmukhii** Almeida, Fl. Mah. 2: 311. 1998.

Fls. & Frts. : September.

Illus. : Almeida, op.cit. f. behind page 311.

Distrib. : Sindhudurg (Almeida, op.cit.).

Corallocarpus conocarpus (Dalz. & Gibs.) Hook. f. in Gen. Pl. 1: 831. 1862; C.B. Cl. in Hook. f. Fl. Brit. India 2: 628. 1879; Cooke, Fl. Pres. Bombay 1: 579. 1958 (Repr.); Chakr. in Fasc. Fl. India 11: 28. 1982; Almeida, Fl. Mah. 2: 313. 1998. *Aechmandra conocarpa* Dalz. & Gibs. Bombay Fl. 100. 1861.

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. & Gibs. op. cit.; Almeida, op.cit.). It is endemic to India.

C. gracilipes (Naud.) Cogn. in DC. Monog. Phan. 3: 650. 1891; Chakr. in Fasc. 11: 29. 1982; Almeida, Fl. Mah. 2: 314. 1998. *Rhynchocarpa epigaea* var. *gracilipes* Naud. in Ann. Sci. 4, 16: 179. 1861.

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.

Diplocyclos palmatus (L.) Heffrey var. **walkerae** (Chakr.) Bhandari & Singh in Bull. Bot. Surv. India 6: 327. 1965; Almeida, Fl. Mah. 2: 319. 1998. *Bryonopsis laciniosa* Naud. var. *walkerae* Chakr. in Rec. Bot. Surv. India 17 (1): 138. 1759.

Fls. : August–September.

Distrib. : 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.

Momordica charantia L. var. **muricata** (Willd.) Chakr. in Fasc. Fl. India 11: 92. 1982; Almeida, Fl. Mah. 2: 324. 1998. *M. muricata* Willd. Sp. Pl. 4: 602. 1806.

Fruits smaller, tapering at both ends.

Fls. & Frts. : May–August.

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

M. cochinchinensis (Lour.) Spreng. Syst. 3: 14. 1826; C.B. Cl. in Hook. f. Fl. Brit. India 2: 618. 1879; Cooke, Fl. Pres. Bombay 1: 564. 1958 (Repr.); Almeida, Fl. Mah. 2: 325. 1998. *Muricia cochinchinensis* Lour. Fl. Cochinch. 2: 596. 1790.

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 c middle. Fruits 10–15 cm long, ovoid, pointed, red, fleshy, terete, covered with raised points. Seeds numerous, ovoid, compressed, sculptured.

Fls. & Frts. : June–August.

Distrib. : Pune gardens (Almeida, op.cit.).

M. subangulata Bl. Bijdr. 928. 1825; Cooke, Fl. Pres. Bombay 1: 563. 1958; Chakr. in Fasc. Fl. India 11: 95. 1982; Almeida, Fl. Mah. 2: 326. 1998.

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.)

Sechium edule (Jacq.) Sw. Fl. Ind. Occ. 2: 1150. 1800; Chakr. in Fasc. Fl. India 2: 100. 1982; Almeida, Fl. Mah. 2: 328. 1998. *Sicyos edulis* Jacq. Enum. Pl. Carib. 32. 1760.

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–Decemebr.

Distrib. : Maharashtra (Chakr. op.cit.. ; Almeida, op.cit.).

Trichosanthes anguina L. Sp. Pl. 1008. 1753; C.B.Cl. in Hook. f. Fl. Brit. India 2: 610. 1879; Cooke, Fl. Pres. Bombay 1: 561. 1958 (Repr.); Ugemuge, Fl. Nagpur Dt. 184. 1986; Almeida, Fl. Mah. 2: 330. 1998. *`Chikonda'.*

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.).

T. lobata Roxb. Fl. Ind. 3: 703. 1832; C.B. Cl. in Hook. f. Fl. Brit. India 2: 610. 1879; Almeida, Fl. Mah. 2: 332. 1998. *I. perotettiana* Cogn.

in DC. Monog. Phan. 3: 362. 1881; Chakr. in Rec. Bot. Surv. India 17 (1): 38. 1959; S.M. Almeida, Fl. Savantwadi 1: 190. 1990.

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

Cereus hexagonous Mill. Gard. Dict. ed. 8, no. 1. 1768; Almeida, Fl. Mah. 2: 336. 1998. *C. pterogonous* Lamaire, Cact. Gen. Sp. Nov. 59. 1839; S.M. Almeida, Fl. Savantwadi 1: 192. 1990.

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.).

Epiphyllum oxypetalum Haworth, Phil. May. 109. 1829; Almeida, Fl. Mah. 2: 336. 1998.

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.).

E. strictum (Lem.) Britten & Rose in Contr. US Nat. Herb. 16: 256. 1913; Almeida, Fl. Mah. 2. 336. 1998. *Phyllocactus strictus* Lem. Illustr. Hortic. 1: Misc. 107. 1854.

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.).

Nopalea cochenillifera (L.) Salm-. Dyck, Cact. Hort. Dyck. ed. 2, 64. 1850; Almeida, Fl. Mah. 2: 336. 1998. *Cactus cochenillefera* Mill. Gard. Dict. ed. 8, 6. 1768.

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.).

Opuntia monacantea (Willd.) Haworth, Suppl Pl. Suc. 81. 1819; Almeida, Fl. Mah. 2: 337. 1998. *Cactus monacantha* Willd. Enum. Pl. Berol. Suppl. 33. 1813.

Undershrubs, 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.).

Hydrocotyle sibthorpioides Lam. Encycl. 3: 153. 1789; Almeida, Fl. Mah. 2: 356. 1998. *H. rotundifolia* Roxb. Fl. Ind. 2: 38. 1824; C.B. Cl. in Hook. f. Fl. Brit. India 2: 668. 1879; Cooke, Fl. Pres. Bombay 1: 598. 1958 (Repr.).

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.

Fls. & Frts. : March.

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

Aralia malabarica Bedd. Fl. Sylv. 2: 121. 1871; C.B. Cl. in Hook. f. Fl. Brit. 2. 727. 1879; Almeida, Fl. Mah. 2: 365. 1998.

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.).

Polyscias acuminata (Wight) Seem, Rev. Heder. 56. 1868; C.B.Cl. in Hook. f. Fl. Brit. India 2: 727. 1879; Almeida, Fl. Mah. 2: 366. 1998. *Hedera acuminata* Wight, Ic. t. 1062. 1842.

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.).

P. crispatum (Hort.) Almeida, Fl. Mah. 2: 367. 1998. *Panax crispum* Hort. Bull. Catal. 9. 1888 & in Gard. Chron. 2: 273. 1888.

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.).

Polyscias filicifolia Bailey in Rhodora 18: 133. 1916; Almeida, Fl. Mah. 2: 367. 1998.

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.).

P. scutellaria (Burm.f.) Fosb. in Univ. Haw. Occ. Pap. 46: 9. 1948; Almeida, Fl. Mah. 2: 368. 1998. *Crassula scutellaria* Burm. f. Fl. Ind. 78. 1768. *Polyscias pinnata* sensu C.B. Cl. in Hook. f. Fl. Brit. India 2: 727. 1879 non Forst. & Forst. 1776.

Leaflets orbicular, margins subentire or with small remote teeth, base cordate.

Distrib. : Goregaon, Bombay (Almeida, op.cit.).

Schefflera actinophylla Harms. in Engl. & Prantl, Nat. Pflanzenf. 3, 8: 36. 1894; Almeida, Fl. Mah. 2: 368. 1998.

Trees, 3–5 m tall. Leaves palmately, digitately compound; leaflets 7–16, long–stalked, 20–30 cm long, oblong–lanceolate, entire along margins. Inflorescences racemose. Flowers small, involucrate, in dense, substalked, globular heads. Drupes globose.

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.).

CAPRIFOLIACEAE

Lonicera chinensis Wats. Dendrol. 2: t. 117. 1825; Almeida, Fl. Mah. 2: 371. 1998.

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.).

L. confusa DC. Prodr. 4: 333. 1828; Almeida, Fl. Mah. 2: 371. 1998.

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.).

L. quinquelocularis Hardw. in Asiat. Res.4: 351. 1799; Almeida, Fl. Mah. 2: 372. 1998.

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.).

Viburnum foetidon Wall. Pl. Asiat. Rar. 1: 49, t. 66. 1832; C.B.Cl. in Hook. f. Fl. Brit. India 3: 4.1880; Almeida, Fl. Mah. 372. 1998.

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

Ricinus communis L. Sp. Pl. 1007. 1753; Hook. f. Fl. Brit. India 5: 457. 1887; Cooke, Fl. Pres. Bombay 3: 125. 1958 (Repr.) ***'Erand'***.

Shrubs upto 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).

Costus speciosus (Koen.) J.E. Sm. var. **dilnavazii** M.R. & S.M. Almeida in J. Bombay nat. Hist. Soc. 96: 355, pl. 1. 1999.

Illus.: M.R. & S.M. Almeida, op.cit.

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

Molineria trichocarpa (Wight) Balakr. in J. Bombay nat. Hist. Soc. 63: 330. (1966) 1967; S.R. Yadav & Bhuskute, Ibid. 96: 176, figs. A–C. 1999. *Hypoxis trichocarpa* Wight, Ic. t. 2045. 1853. *H. latifolia* Wight, op.cit. t. 2044. 1853. *H. leptostachya* Wight, op.cit. t. 2045. 1853. *Curculigo finlaysoniana* (Wall. ex Baker) Hook.f. Fl. Brit. India 6: 279. 1892.

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

Lasia spinosa (L.) Thw. Enum. Pl. Zeyl. 336. 1864; Nicols. in Dassan. & Fosb. Rev. Handb. Fl. Ceylon 6: 35. 1987; Hay in Blumea 33: 459. 1988; Sivadasan & Sajeev in Rheedea 6: 97, f.1. 1996. *Dracontium spinosum* L. Sp. Pl. 967. 1753. *Lasia heterophylla* (Roxb.) Scott in Schott & Endl. Melet. Bot. 21. 1832; Hook.f. Fl. Brit. India 6: 550. 1893; S.K. Malhotra & K.M. Rao in J. Bombay nat. Hist. Soc. 78: 457, figs. 1–2. 1981.

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 cylindric 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.

ERIOCAULACEAE

Eriocaulon ratnagiricus Yadav, Gaikwad & Sardesai in Rheedea 8: 145, f. 1. 1998.

Herbs, c 2.5 cm high, erect, acaulescent, tufted. Leaves rosulate, 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.

CYPERACEAE

Eleocharis lankana Koyama subsp. **mohamadii** Wadood Khan in J. Econ. Tax. Bot. 22: 560, f.3. 1998.

Herbs, perennial, 10–30 cm high, leafless, densely tufted; rhizomes stoutish, stolons bright golden brown; culms terete, distinctly

septate, strongly ribbed, greenish to pale yellowish. Inflorescence with a single terminal spikelet. Spikelets 2.5–4 x 0.3–0.45 cm, cylindrically elongated, angular, stramineous to pale yellowish. Nuts c 2 x 1.5 mm, obovoid–oblong, subturgid, finely striated, stramineous to pale brown.

Fls. & Frts : October–December.

Illus. : Wadood Khan, op.cit.

Distrib. : Rare in perennial lakes and ponds, often in stagnant waters. Kolhapur (Wadood, op.cit.).

Notes : It differs from the type subspecies, *E. lankana* ssp. *lankana* by its golden–brown stolons which are 10–30 x 0.3–0.5 cm, emitting from thick rhizomes and by angular spikelet. The type subspecies is endemic to Sri Lanka.

Fimbristylis ambavanensis Prasad & N.P. Singh in J. Bombay nat. Hist. Soc. 96: 454, f. 1.1999.

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 un 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.).

F. nagpurensis Prasad & N.P. Singh in J. Econ. Tax. Bot. 21: 671, f. 1 (A–E). 1997.

Annuals, 30 cm high; roots fibrous, stems tufted, strongly

compressed, angular. Leaves mostly basal, shorter then 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; stamen 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. : Sparingly 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).

F. ratnagirica Prasad & N.P. Singh in J. Econ. Tax. Bot. 21: 673, f. 2 (A–G). 1997.

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. Involucral 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.

Fls. & Frts : December–January.

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.

Scleria africana Bth. in Bth. & Hook.f. Gen. Pl. 3: 1071. 1883; Wadood Khan in J. Econ. Tax. Bot. 22: 555, f. 1. 1998.

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.

Illus. : Wadood Khan, op.cit.

Distrib. : Rare in open grasslands, wet forest clearings of hill slopes. Gadchiroli (Wadood Khan, op. cit.).

Notes : Similar to *Scleria caricina* (R. Br.) Bth. but differs in the glumes of female spikelets are spreading to expose the outer, 3–nerved, nuts along falling, leaving the glumes persistent on rachilla, the peduncle is spongious from the inflated cells.

S. poklii Wadood Khan in J. Econ. Tax. Bot. 22: 559, f. 2. 1998.

Herbs, annual; culms erect, much branched. Inflorescences of axillary clusters; peduncles often cellularly spongeous 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

Chrysopogon castaneus Veldk. & Salunkhe in Rheedea 10: 59, fig. 1 (A–O). 2000.

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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Vandar roti	222	Zendu	265
Vangi	517		
Vanjai	690		

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EMENDATUS

Page	Line/s	For	Read / Remarks
086	08	(Kew Gawl.)	(Ker-Gawl.)
115	01	MASTIXACEAE	MASTIXIACEAE
294	03	**Manikara**	**Manilkara**
314	11	**Olea eurpaea**	**Olea europaea**
325	02	QUIRIVELIA	QUIRIVELIA Poir.
331	16	*'Pivah kanher'*	*'Pivala kanher'*
384	23	PERIPLOCAEAE	PERIPLOCACEAE
432	19	**Paracaryopsis coelesina**	**Paracaryopsis coelestina**
496	30	*'Dhokra'*	*'Dhotra'*
771	04	*'Ispaghul'*	*'Isapghul'*
998	1-8	**Nopalea cochenillifera** (L.) Salm. - Dyck	It should deleted as it has already been treated on page 93.

