

**SUPPLEMENT TO THE FLORA OF
MADHYA PRADESH**

K.K. Khanna
Anand Kumar
R.D. Dixit
N.P. Singh

BOTANICAL SURVEY OF INDIA

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Series - 2

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**भारतीय वनस्पति सर्वेक्षण
BOTANICAL SURVEY OF INDIA**

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INTRODUCTION

The state of Madhya Pradesh* which forms the central region of the country came into existence in the year 1956 after state reorganisation. It has an area of about 4,63,452 sq km and is a naturalist's paradise with about 31.5% of area covered with forests particularly of tropical forests of teak, sal, mixed and montane subtropical forests harbouring a variety of wild animals. Although the botanical explorations in the state have been undertaken by a number of earlier workers like Jacquemont, Vicary, Edgeworth, Griffith, Hole, Brandis, Jerdon, Hobson, Kuntze, Barclay, Clarke, Wood, Morris, Duthie, Cardon, Hope, Watt, Haines, etc., most of the districts of the state remained partially unexplored for a long time. However, after the establishment of the Central Circle, Botanical Survey of India at Allahabad in 1962 exploration of various districts of Madhya Pradesh got the required momentum. Besides, botanists from some other scientific institutions and universities also took tremendous interest in exploring certain regions of the state, which has resulted in the publication of various accounts of the floristics of different areas as well as some district floras.

Subsequently, Botanical Survey of India, Central Circle was assigned the task of bringing out the comprehensive Flora of Madhya Pradesh within certain time limit. It has resulted in the publication of Flora of Madhya Pradesh Volume I (eds. Verma, Balakrishnan and Dixit) in the year 1993 which deals with the Pteridophytes and Angiosperms (Ranunculaceae to Plumbaginaceae) and Flora of Madhya Pradesh Volume II (eds. Mudgal, Khanna and Hajra) in the year 1997 which includes Angiosperms from family Primulaceae to Ceratophyllaceae. First volume of the flora deals with the taxonomic account of 83 families of Angiosperms comprising of 874 species belonging to 407 genera. Whereas the second volume deals with the taxonomic treatment of 51 families with 792 species pertaining to 320 genera. Monocotyledons have been published in the third volume (eds. Singh, Khanna, Mudgal and Dixit) in the year 2001 which includes 37 families consisting of 706 species and 241 genera. Besides, 7 species of Gymnosperms belonging to 5 genera and 4 families have been dealt in the third volume.

* Although the state has been recently divided into two separate states Madhya Pradesh proper and Chhattisgarh but in the present work, it has been treated as undivided following the pattern of Flora of Madhya Pradesh Vol. I III.

However, during further study of herbarium specimens at Central National Herbarium, Howrah (CAL) and Central Circle, B.S.I., Allahabad (BSA) and perusal of literature, it has been observed that about 358 taxa of angiosperms have not been included in the first volume of the Flora of Madhya Pradesh. List of such taxa have been published by Kumar and Lal (1995, 1998) and Khanna and Kumar (in press). In addition, Kumar (1997a, 1997b) has also published an account of five families of Angiosperms, *viz.*, Araliaceae, Elaeocarpaceae, Erythropalaceae, Saxifragaceae and Tropaeolaceae since these families have not been dealt in the first volume. Further, Khanna and Kumar (2000) have also published a list of 32 taxa which are additions to the second volume of the Flora of Madhya Pradesh.

Therefore, in order to bring the Flora of Madhya Pradesh more comprehensive, it has been considered worthwhile to publish the taxonomic account of all additional taxa in the form of a supplementary volume which will be very informative to various research workers engaged on the study of the Flora of the state. The present work deals with 379 taxa of angiosperms belonging to 233 genera and 65 families.

As in the earlier volumes, here also the families have been arranged according to the Bentham and Hooker's system of classification (with slight modifications as per recent treatment). Genera under each family have been arranged alphabetically and arrangement of the species under each genus is in the alphabetical sequence. Taxonomic citation, vernacular name/s (if any), description, phenology, habitat and distribution of each taxon have been provided in the present work.

SYSTEMATIC ACCOUNT**RANUNCULACEAE****DELPHINIUM L.**

Delphinium ajacis L., Sp. Pl. 531. 1753; Hook. *f.* & Thoms. in Hook. *f.*, Fl. Brit. India 1: 27. 1872. - *Larkspur*.

Herbs, annual. Leaves palmately lobed; each lobe linear to elliptic, acuminate. Inflorescence racemose. Flowers variously coloured, zygomorphic, spurred; bracteoles 2. Sepals 5; odd sepal posterior, prolonged into a long spur, petaloid. Petals 2, gamopetalous, the posterior hooded and drawn within the spur of the sepal. Stamens numerous, spirally arranged. Ovary 1-locular; ovules numerous, on marginal placentae.

Cultivated in gardens as an ornamental. Bhopal, Indore. *Fl.*: Jan. Feb.

NIGELLA L.

Nigella sativa L., Sp. Pl. ed. 2. 753. 1762. *Kalajira*.

Herbs, annual, erect. Leaves decompose; segments linear. Flowers subtended by a leafy involucre. Sepals 5, petaloid. Petals 5, white or blue, clawed, bifid. Stamens numerous, spirally arranged. Pistils 5, united at the base. Fruit of 5 united follicles, many-seeded. Seeds ovoid to subtrigonal, rugulose-tuberculate.

Cultivated in gardens as an ornamental. Bhopal, Indore. *Fl.*: Dec. Jan.

BERBERIDACEAE**BERBERIS L.**

Berberis asiatica Roxb. *ex* DC. var. **clarkeana** Schneid. in Bull. Herb. Boiss. ser. 2, 5: 457. 1905.

Shrubs. Leaves broadly obovate-elliptic, usually entire. Flowers in fascicles; pedicels red, *ca* 1.2 cm long. Outer sepals broadly ovate; inner ones longer and broader. Petals emarginate. Berries red, turning black, ellipsoid.

Madhya Pradesh (Uniyal and Rao in Sharma *et al.* (eds.), Fl. India 1: 371. 1993). *Fl. & Fr.*: April - Aug.

Berberis hainesii Ahrendt var. **brevifilipes** Ahrendt in J. Bot. Lond. 80 (Suppl.): 105. 1944.

Shrubs. Stems terete; spines sulcate. Leaves oblong-elliptic, entire or spinulose. Flowers subfascicled; pedicels 5-9 mm long. Petals narrowly obovate. Berries oblong-ellipsoid, shortly stylose.

Endemic. Madhya Pradesh (Uniyal and Rao in Sharma *et al.* (eds.), Fl. India 1: 372. 1993). *Fl. & Fr.*: Feb. - June.

PAPAVERACEAE

PAPAVER L.

Papaver rhoeas L., Sp. Pl. 507. 1753; Hook. *f.* & Thoms. in Hook. *f.*, Fl. Brit. India 1: 117. 1872.

Herbs, annual, erect. Stems covered with bristles. Basal leaves ovate, sinuate, pinnatisect, petiolate; segments linear, glabrous or hispid, dentate; upper cauline leaves much dissected, sessile. Flowers solitary, terminal. Sepals bristly hairy. Petals red with black blotch at base. Stamens numerous. Capsules campanulate. Seeds dark brown.

Cultivated. Bhopal (Oommachan, Fl. Bhopal 38. 1977). *Fl. & Fr.*: April Aug.

Papaver somniferum L., Sp. Pl. 508. 1753; Hook. *f.* & Thoms. in Hook. *f.*, Fl. Brit. India 1: 117. 1872.

Herbs, annual, erect, robust, glaucous. Basal leaves ovate-oblong, shortly petiolate, shallowly pinnatifid; lobes coarsely dentate; upper cauline leaves smaller, unlobed or shallowly lobed, sessile. Flowers solitary. Sepals

glabrous. Petals white or pale purple. Capsules globose or ovoid. Seeds white or grey brown.

Cultivated. Bhopal (Oommachan, Fl. Bhopal 39. 1977). *Fl. & Fr.*: April Aug.

BRASSICACEAE

BRASSICA L.

***Brassica oleracea* L. var. *botrytis* L.**, Sp. Pl. 667. 1753. *Phulgobhi*.

Herbs. Stems up to 25 cm high, fleshy. Leaves oblanceolate, usually shallowly lobed. Rhachis of young inflorescence and pedicels thickened forming a dense yellowish white mass with the flowers. Sepals oblong. Petals obovate, clawed. Fruit a siliqua, 1-seeded. Seeds reticulate.

Cultivated. Inflorescence is cooked as a vegetable. Bhopal (Oommachan, Fl. Bhopal 41. 1977). *Fl. & Fr.*: Nov. - Feb.

***Brassica oleracea* L. var. *capitata* L.**, Sp. Pl. 667. 1753. *Bandhgobhi*.

Herbs. Stems short and thick. Leaves densely packed and overlapping into a subglobose or ellipsoid head with very stout nerves. Flowers in racemes. Sepals oblong. Petals obovate, clawed. Stamens 6. Fruit a siliqua, 1-seeded.

Cultivated for edible leaves which are used as a vegetable. Bhopal (Oommachan, Fl. Bhopal 42. 1977). *Fl. & Fr.*: Jan. March.

***Brassica oleracea* L. var. *gongylodes* L.**, Sp. Pl. 667. 1753. *Gandhgobhi*.

Herbs. Stems swollen and subglobose thickened, fleshy. Leaves more or less fleshy, rounded-cordate or subamplexicaul at base, dentate or crenate. Flowers in racemes. Sepals erect, oblong. Petals obovate, clawed. Stamens 6, erect. Fruit a siliqua, 1-seeded. Seeds reticulate.

Cultivated for its edible stem. Bhopal (Oommachan, Fl. Bhopal 42. 1977). *Fl. & Fr.*: March - April.

Brassica rapa L., Sp. Pl. 666. 1753. *B. campestris* L. subsp. *rapa* Hook. f. & T. Anders. in Hook. f., Fl. Brit. India 1: 156. 1872. - *Shaljam*.

Herbs, annual or biennial, up to 1 m high. Roots tuberous. Stems branched. Basal leaves lyrate-pinnatifid, up to 25 x 10 cm, middle and upper leaves oblong to oblong-lanceolate, cordate at base, glaucous. Flowers in terminal racemes, ca 1 cm across. Petals 4, yellow. Stamens 6. Fruits linear, subtorulose, 4-7 cm long. Seeds 8-12 in each locule.

Cultivated for its roots which are cooked as a vegetable. Bhopal (Oommachan, Fl. Bhopal 42. 1977). *Fl. & Fr.*: Jan. March.

CAPSELLA Medik., *nom. cons.*

Capsella bursa-pastoris (L.) Medik., Pflanzen-Gatt. 1: 85. 1792; Hook. f. & T. Anders. in Hook. f., Fl. Brit. India 1: 159. 1872. *Thlaspi bursa-pastoris* L., Sp. Pl. 647. 1753.

Herbs, annual, up to 35 cm high. Basal leaves rosulate, oblong-lanceolate, pinnatipartite; cauline ones ovate-lanceolate to linear, acute at apex, auricled at base, entire or denticulate. Flowers in racemes. Sepals oblong, obtuse. Petals white, oblanceolate. Fruits obcordate to obtriangular, emarginate at apex. Seeds reddish brown to black, ellipsoid, up to 12 in each locule.

Along roadsides. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 41. 1996). *Fl. & Fr.*: March - Oct.

CARDAMINE L.

Cardamine flexuosa Withering, Bot. Arr. Brit. Pl. ed. 3. 3: 578. 1976. *C. scutata* Thunb. subsp. *flexuosa* (Withering) Hara in J. Fac. Sci. Univ. Tokyo Bot. 6: 59. 1952.

Herbs, annual or biennial, flexuose, up to 30 cm high. Basal leaves orbicular, sinuate-dentate to lobed; cauline leaves ovate to lanceolate, 3-5 cm long, pinnate; lateral leaflets 2-4 pairs, orbicular-ovate, terminal leaflet

obovate or suborbicular, dentate. Flowers in racemes. Sepals erecto-patent, oblong to oblong-elliptic. Petals white, *ca* 4 mm long. Stamens 4 or 6, with 2 outer staminodes. Fruits elliptic-oblong or obovate, 1.5-2.5 cm long. Seeds yellow, ovoid-compressed.

In moist places. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 42. 1996). *Fl. & Fr.*: Jan. - April.

Cardamine hirsuta L., Sp. Pl. 655. 1753. *C. hirsuta* L. var. *sylvatica* (Link) Hook. f. & T. Anders. in Hook. f., Fl. Brit. India 1: 138. 1872, *p.p.*

Herbs, annual, with variable habit, size, shape and number of leaflets. Basal leaves orbicular, rounded, sinuate-dentate to lobed leaflets; upper leaves ovate-rounded to lanceolate, entire-crenulate. Flowers in racemes; pedicels erecto-patent. Petals white, truncate. Stamens 4, rarely with 2 staminodes. Pods 2-2.5 cm long.

Rare in moist places among grasses at higher elevations. Hoshangabad. *Fl. & Fr.*: Feb. - April.

IBERIS L.

Iberis amara L., Sp. Pl. 649. 1753. *Candituft.*

Herbs, annual, up to 30 cm high. Leaves oblanceolate to spatulate, 3-10 cm long, obtuse at apex, dentate towards apical portion. Flowers in terminal, globose clusters, zygomorphic. Sepals oblique. Petals white, obovate-oblong. Fruits suborbicular with divergent triangular wings, notched at apex. Seeds reddish brown, broadly ovate.

Cultivated in gardens. Bhopal (Oommachan, Fl. Bhopal 43. 1977). *Fl. & Fr.*: Jan. - April.

RORIPPA Scop.

Rorippa dubia (Pers.) Hara in J. Jap. Bot. 30: 196. 1955. *Sisymbrium dubium* Pers., Syn. Pl. 2: 199. 1806. *Nasturtium indicum auct. non* (L.) DC., 1821: Hook. f. & T. Anders. in Hook. f., Fl. Brit. India 1: 134. 1872, *p.p.*

Herbs, annual, up to 45 cm high. Lower leaves lyrate-pinnatifid to pinnatipartite, 5-9 x 2.5 cm; upper ones ovate-lanceolate to lanceolate-oblong, lyrate-pinnatifid. Flowers in terminal racemes. Sepals 2-3 mm long. Petals bright yellow, 3-4 mm long. Fruits beaked. Seeds reddish brown, orbicular, 2-seriate, rugose.

As a weed in cultivated fields and along stream banks. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 43. 1996). *Fl. & Fr.*: April - June.

CAPPARACEAE

CADABA Forssk.

Cadaba fruticosa (L.) Druce in Bot. Exch. Cl. Soc. Brit. Isles 3: 415. 1914. *Cleome fruticosa* L., Sp. Pl. 671. 1753. *Cadaba indica* Lam., Encycl. 1: 544. 1785; Hook. *f.* & Thoms. in Hook. *f.*, Fl. Brit. India 1: 172. 1872.

Shrubs. Stems much branched. Leaves simple, ovate or elliptic, entire, glaucous, chartaceous. Flowers in one-sided corymbose racemes. Sepals greenish. Petals white, spatulate. Disk expanded, pinkish. Stamens 4-6. Gynophore *ca* 1.5 cm long. Fruits narrowly cylindrical. Seeds black.

Nimar (Witt, List Trees Shr. Climb. Berar For. Circle Centr. Prov. 2. 1908). *Fl. & Fr.*: Sept. - Feb.

CAPPARIS L.

Capparis grandiflora Hook. *f.* & Thoms. in Hook. *f.*, Fl. Brit. India 1: 174. 1872.

Shrubs, erect or low scrambling; spines recurved. Leaves elliptic-ovate, subcoriaceous, pubescent beneath. Flowers solitary, axillary; pedicels *ca* 1.5 cm long, puberulous. Sepals subequal. Petals white with orange throat. Stamens numerous; filaments white; anthers pinkish. Gynophore *ca* 2.5 cm long. Fruits ovoid.

Katni (Sebastine and Balakrishnan in Indian For. 89: 522. 1963). *Fl. & Fr.*: March - Sept.

CLEOME L.

Cleome scaposa DC., Prodr. 1: 230. 1824. *C. papillosa* Steud., Nomen. Bot. ed. 2. 1: 382. 1840; Hook. f. & Thoms. in Hook. f., Fl. Brit. India 1: 168. 1872. **Fig. 1.**

Herbs, annual, scabrid, glandular hairy. Leaves simple, ovate-elliptic to orbicular, up to 2.5 x 1.5 cm, obtuse at apex, scabridly papillose. Flowers in lax racemes. Sepals elliptic or lanceolate. Petals yellow or white, ovate. Stamens 6. Capsules linear, glabrous, striated. Seeds brownish black, granular.

On bunds of cultivated fields. Dhar (CAL). *Fl. & Fr.*: Aug. Oct.

CRATEVA L.

Crateva magna (Lour.) DC., Prodr. 1: 243. 1824. *Capparis magna* Lour., Fl. Cochinch. 1: 331. 1790. *Crateva religiosa* G. Forster var. *nurvala* (Buch.-Ham.) Hook. f. & Thoms. in Hook. f., Fl. Brit. India 1: 172. 1872. *Barna*.

Trees, up to 6 m high. Leaves 3-foliolate; leaflets obovate-lanceolate, up to 12 x 2.5 cm, middle leaflet elliptic-lanceolate, tapering at apex. Flowers polygamous, in corymbose cymes. Sepals free. Petals yellowish white, clawed. Berries red on maturity, globose. Seeds dorsally crested, tuberculate.

Along roadsides. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 47. 1996). *Fl. & Fr.*: Jan. - June.

VIOLACEAE**VIOLA L.**

Viola tricolor L., Sp. Pl. 935. 1753. - *Pansy*.

Herbs, annual, branched. Basal leaves cordate or rounded-cordate; cauline leaves ovate-oblong or lanceolate, crenate-dentate; stipules large, pinnately partite towards the base. Flowers showy, variously coloured, 5-merous, spurred. Anthers connivent in a ring about the style. Capsules 3-valved.

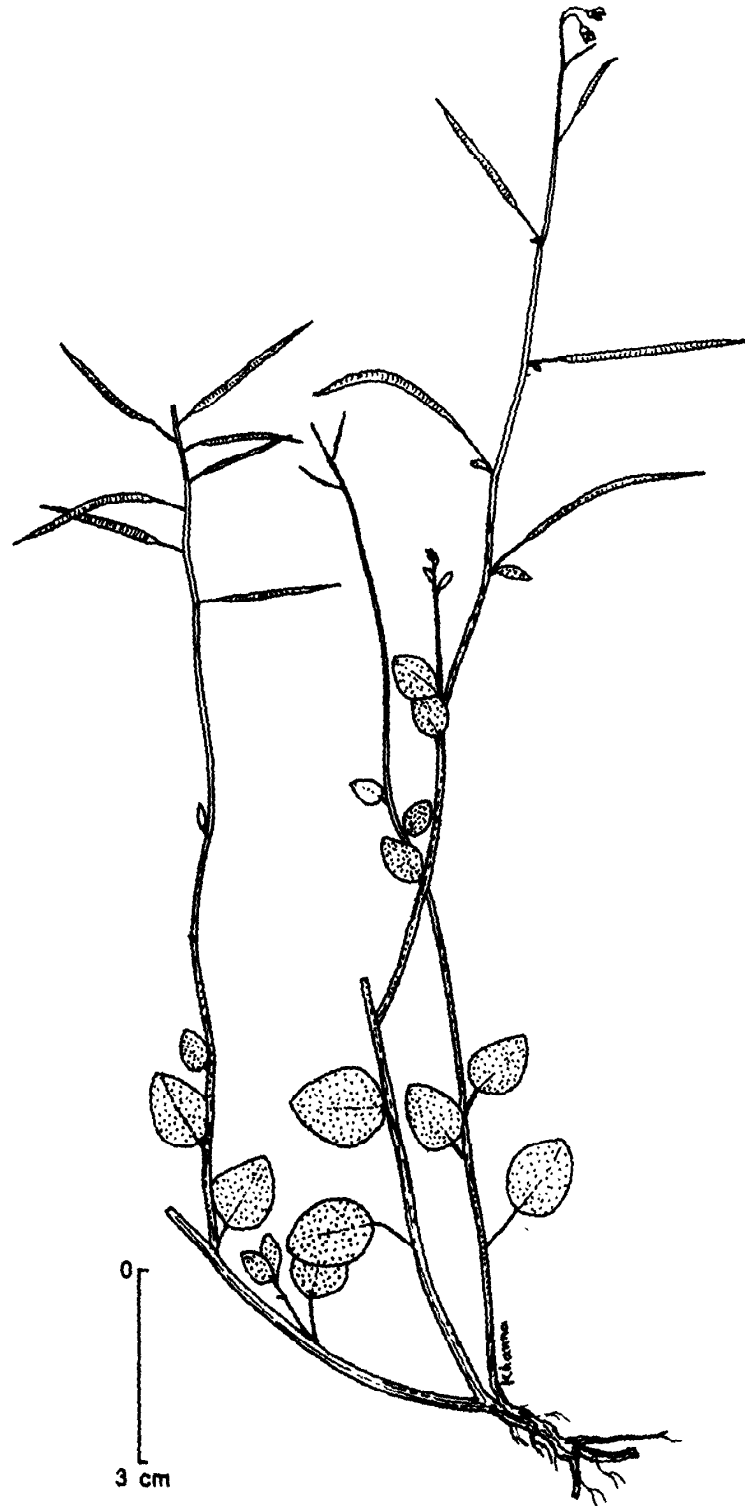


Fig. 1. *Cleome scaposa* DC.

Cultivated in gardens. Bhopal (Oommachan, Fl. Bhopal 49. 1977). *Fl. & Fr.*: Jan. March.

FLACOURTIACEAE

FLACOURTIA Comm. ex L'Hérit.

Flacourtia montana Grah., Cat. Pl. Bombay 10. 1839; Hook. *f.* & Thoms. in Hook. *f.*, Fl. Brit. India 1: 192. 1872.

Armed trees. Branches tomentose. Leaves oblong-elliptic or ovate-lanceolate, 10-15 x 5-8 cm, subcoriaceous, coarsely serrate or crenate. Flowers in lax racemes or dense panicle clusters, unisexual, cream-coloured. Male flowers: Stamens numerous. Female flowers: Ovary surrounded by few staminodes. Berries reddish purple, globose.

Balaghat (Lal *et al.* in Biol. Mem. 12(1): 11. 1986). *Fl. & Fr.*: Nov. March.

HOMALIUM Jacq.

Homalium napaulense (DC.) Benth. in J. Proc. Linn. Soc. Bot. 4: 34. 1866; C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 596. 1879, '*nepalense*' *Blackwellia napaulense* DC., Prodr. 2: 54. 1825.

Trees. Leaves ovate-elliptic, 8-14 x 5-8 cm, crenate. Flowers in pyramidal, axillary panicles, foetid; pedicels densely hairy. Sepals 6-8, linear, densely pilose outside. Petals 6-8, white, spathulate, densely pilose outside. Stamens 6-8, opposite to each petal.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 236. 1942). *Fl.*: May-June.

POLYGALACEAE

POLYGALA L.

Polygala buxiformis Hassk. in Miq., Ann. Mus. Ludg.-Bat. 1: 161. 1864.

Herbs. Leaves oblong or oblong-elliptic, 4-12 x 2-5 mm, subcoriaceous, recurved on margins. Flowers in leaf-opposed spikes; bracts ovate-oblong; bracteoles 2, linear. Petals blue or violet; lateral lobes obovate; mid lobe cymbiform, clawed. Stamens 8, monadelphous. Fruits orbicular, silky stiff hairy.

Madhya Pradesh (Banerjee in Sharma and Balakrishnan (eds.), Fl. India 2: 463. 1993). *Fl. & Fr.*: Aug. - Feb.

Polygala linarifolia Willd., Sp. Pl. 3: 877. 1803.

Herbs, prostrate or ascending. Branches tomentose. Leaves linear or narrowly lanceolate. Flowers in leaf-opposed racemes; bracteoles minute, caducous. Petals yellow; lateral lobes *ca* 3 mm long; mid lobe *ca* 5 mm long. Fruits obcordate, narrowly winged, unequal and emarginate at apex.

Madhya Pradesh (Banerjee in Sharma and Balakrishnan (eds.), Fl. India 2: 476. 1993). *Fl. & Fr.*: April - Oct.

Polygala tartarinowii Regel in Bull. Soc. Nat. Moscou 34(2): 523. 1861. *P. triphylla auct. non* D. Don, 1825 : Bennett in Hook. *f.*, Fl. Brit. India 1: 201. 1872.

Herbs, annual, erect. Leaves ovate to obovate, 1-4 x 0.4-1.8 cm, ciliate. Flowers in terminal or axillary dense racemes; bracts and bracteoles lanceolate, caducous. Sepals caducous. Petals pinkish or deep yellow; lateral lobes oblong; mid lobe keeled, papillose. Fruits discoid, subquadrangular, notched at apex.

Madhya Pradesh (Banerjee in Sharma and Balakrishnan (eds.), Fl. India 2: 483. 1993). *Fl. & Fr.*: March - Aug.

SALOMONIA Lour., *nom. cons.*

Salomonica cantoniensis Lour. var. **cantoniensis** Lour., Fl. Cochinch. 1: 17. 1790. *S. edentula* DC., Prodr. 1: 334. 1824; Bennett in Hook. *f.*, Fl. Brit. India 1: 207. 1872.

Herbs, annual, erect or ascending. Stems angular. Leaves ovate or lanceolate, 0.6-2 x 0.4-1.2 cm. Flowers in terminal or axillary, 5-10 cm long spikes; bracts lanceolate, fugaceous. Sepals 5, scaly. Petals 3, pink

or light violet. Stamens 4 or 6, monadelphous. Fruits orbicular, flat, minutely dentate on margins.

Madhya Pradesh (Banerjee in Sharma and Balakrishnan (eds.), Fl. India 2: 489. 1993). *Fl. & Fr.*: Jan. Sept.

CARYOPHYLLACEAE

DIANTHUS L.

Dianthus caryophyllus L., Sp. Pl. 410. 1753; Edgew. & Hook. *f.* in Hook. *f.*, Fl. Brit. India 1: 214. 1874.

Herbs, perennial. Stems erect, stout. Leaves opposite, channelled, usually linear; cauline leaves recurved. Flowers in lax, paniculate cymes; bracteoles 4, obovate. Calyx cylindrical. Petals white or rose-purple, crenate-dentate. Stamens 10. Fruits ovoid-cylindrical. Seeds pyriform.

Cultivated. Bhopal (Oommachan, Fl. Bhopal 52. 1977). *Fl.*: Nov. Jan.

Dianthus chinensis L., Sp. Pl. 411. 1753; Edgew. & Hook. *f.* in Hook. *f.*, Fl. Brit. India 1: 213. 1874.

Herbs, perennial, caespitose. Stems dichotomously branched. Leaves linear-lanceolate, entire, channelled. Flowers solitary or in lax cymes; bracteoles 4, ovate-lanceolate. Calyx subcylindrical. Petals pink-purple, serrate, pubescent at base, incurved along margins. Fruits ovoid, subsessile. Seeds granulate.

Cultivated. Bhopal (Oommachan, Fl. Bhopal 53. 1977), Indore (Khanna *et al.*, Fl. Kasturbagram 38. 1991). *Fl.*: Feb. March.

PORTULACACEAE

TALINUM Adans.

Talinum portulacifolium (Forssk.) Aschers. *ex* Schweinf. in Bull. Herb. Boiss. 4 (App. 2): 172. 1896. *Orygia portulacifolia* Forssk., Fl. Aegypt.-Arab. 114. 1775. *Portulaca cuneifolia* Vahl, Symb. Bot. 1: 33.

1790. *Talinum cuneifolium* (Vahl) Willd., Sp. Pl. ed. 4. 2: 864. 1799; Dyer in Hook. *f.*, Fl. Brit. India 1: 247. 1874.

Undershrubs, perennial, suffrutescent, up to 1 m high. Leaves oblanceolate, up to 8 x 4 cm, succulent, obtuse or subacute at apex, narrowed at base. Flowers in terminal panicles. Sepals ovate-orbicular. Petals 5, purple. Stamens 20 or more. Capsules globose, crustaceous. Seeds reniform, concentrically striate.

Rare. In river beds. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 11. 1996). *Fl. & Fr.*: Nov. - Jan.

TAMARICACEAE

TAMARIX L.

Tamarix indica Willd. in Ges. Nat. Fr. Berl. Neue Schr. 4: 214. 1803. *T. gallica* L. var. *indica* (Willd.) Ehrenb. in Linnaea 2: 276. 1827; Dyer in Hook. *f.*, Fl. Brit. India 1: 248. 1874. *T. troupii* Hole in Indian For. 45: 248. 1919.

Shrubs. Leaves ovate-lanceolate, 0.5-3 mm long. Flowers in simple or compound racemes; bracts ovate-lanceolate, deflexed. Sepals 5, almost free, equal. Petals 5, pink, obovate or oblong-elliptic, caducous. Stamens exserted. Disk 5-lobed. Fruit a capsule.

Shivpuri (Kaushik in Bull. Bot. Surv. India 11: 54. 1971). *Fl. & Fr.*: Throughout the year.

ELATINACEAE

BERGIA L.

Bergia suffruticosa (Del.) Fenzl. in Dankes Bot. Ges. 3: 183. 1841. *Lancretia suffruticosa* Del., Fl. Egypt. 213. t. 25. 1813. *Bergia odorata* Edgew. in J. Asiat. Soc. Bengal 7: 765. 1838; Dyer in Hook. *f.*, Fl. Brit. India 1: 251. 1874.

Shrubs, with decumbent or ascending glandular hairy branches. Bark peeling off in flakes. Leaves opposite, oblong-lanceolate to elliptic, up to 2 x 1.3 cm, obtuse at apex, glandular hairy on both the surfaces, crenate-

serrate, sessile. Flowers solitary or 2-8 in axillary fascicles. Sepals ovate. Petals obovate-oblong. Stamens 10. Capsules 5-loculed. Seeds brown, many, shining.

Occasional. In wet and marshy places. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 54. 1996). *Fl. & Fr.*: Oct. Dec.

MALVACEAE

ABELMOSCHUS Medik.

Abelmoschus manihot (L.) Medik. subsp. **manihot** (L.) Medik. Malv. 46. 1787. *Hibiscus manihot* L., Sp. Pl. 696. 1753; Masters in Hook. *f.*, Fl. Brit. India 1: 341. 1874.

Undershrubs, up to 2.5 m high. Stem, petiole and lamina glabrous or pubescent with simple or stellate hairs. Leaves variable in shape and size, broadly ovate, cordate or sometimes hastate, up to 16 x 18 cm, entire or 3-7-lobed. Flowers yellow, solitary, axillary or in racemes. Capsules ovoid-oblong, 5-gonous.

Rare. On hill slopes. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 55. 1996). *Fl. & Fr.*: Sept. Dec.

Abelmoschus manihot (L.) Medik. subsp. **tetraphyllus** (Roxb. ex Hornem.) Borss. var. **megaspermus** Hemadri in Bull. Bot. Surv. India 11: 338. 1972.

Herbs. Stems terete, stout. Leaves variable. Flowers axillary, solitary or in terminal racemes. Epicalyx-segments hispid along the margins with stiff hairs. Corolla yellow or white. Fruits ovoid-oblong. Seeds more or less globose.

Madhya Pradesh (Paul in Sharma and Sanjappa (eds.), Fl. India 3: 307. 1993). *Fl. & Fr.*: Aug. Dec.

Abelmoschus manihot (L.) Medik. subsp. **tetraphyllus** (Roxb. ex Hornem.) Borss. var. **pungens** (Roxb.) Hochr. in Candollea 2: 87. 1924. *Hibiscus pungens* Roxb., Fl. Ind. 3: 213. 1832; Masters in Hook. *f.*, Fl. Brit. India 1: 341. 1874.

Herbs or undershrubs. Leaves variable, palmately 3-5-lobed. Flowers axillary, solitary or in terminal racemes. Epicalyx-segments densely covered with soft hairs. Corolla white or yellow. Fruits ovoid-oblong. Seeds reniform.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 224. 1942). *Fl. & Fr.*: Aug. Dec.

Abelmoschus tuberculatus Pal & Singh var. **deltoideifolius** T.K. Paul & Nayar in Bull. Bot. Surv. India 24: 215. 1982.

Herbs. Stems strigose. Leaves deltoid, 3-5-lobed. Flowers solitary, axillary. Epicalyx-segments 9-12. Corolla white or yellow with deep purple centre. Capsules densely covered with bristles bearing tubercles. Seeds 4-5 mm across, densely villous.

Indore. *Fl. & Fr.*: Sept. - Nov.

ABUTILON Mill.

Abutilon indicum (L.) Sw. subsp. **guineensis** (Schum.) Borss. in Blumea 14: 175. 1966. *Sida guineense* Schum., Kongl. Danske Vidensk Selsk. Skr. 4: 81. 1829. *S. asiatica* L., Cent. Pl. 2: 26. 1756. *Abutilon asiaticum* (L.) Sw., Hort. Brit. ed. 1. 53. 1826; Masters in Hook. *f.*, Fl. Brit. India 1: 326. 1874.

Undershrubs, perennial. Leaves ovate, 5-10 cm long, acute or acuminate at apex, cordate at base, sparsely hairy and scabrid above, velvety beneath. Pedicels stout, longer than the petioles, jointed near the apex. Calyx-lobes as long as the fruit. Corolla yellow. Fruits subglobose, ca 2.5 cm across, depressed.

In fallow fields. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 56. 1996). *Fl. & Fr.*: Sept. Jan.

Abutilon ramosum (Cav.) Guillemain & Perrottet in Guillemain *et al.*, Fl. Seneg. Tent. 1: 68. 1830; Masters in Hook. *f.*, Fl. Brit. India 1: 328. 1874. *Sida ramosa* Cav., Diss. 1: 28. t. 6. f. 1. 1785.

Herbs, perennial, densely stellate and simple hairy. Leaves ovate, 4-12 x 3-9 cm, acute to acuminate at apex, crenate-serrate. Flowers solitary or paired, axillary or terminal; pedicels shorter than petioles, jointed

towards apex. Calyx campanulate, partite up to middle. Corolla yellow, glabrous. Staminal column antheriferous towards tip, stellate hairy. Mericarps with 2 long reflexed awns. Seeds reniform.

East Nimar (Maheshwari in Bull. Bot. Soc. Univ. Saugar 10: 30. 1958). *Fl. & Fr.*: Aug. Feb.

ALCEA L.

Alcea rosea L., Sp. Pl. 687. 1753. *Althaea rosea* (L.) Cav., Diss. 2: 91. t. 28. f. 1. 1786; Masters in Hook. *f.*, Fl. Brit. India 1: 319. 1874.

Herbs, annual, erect, 1.5-2 m high, stellate hairy. Leaves orbicular-cordate, 5-12 x 4-10 cm, deeply cordate; petioles 4-10 cm long. Flowers solitary, axillary or in terminal racemes; pedicels up to 1 cm long. Epicalyx-segments 6-7. Calyx-lobes ovate-lanceolate. Petals variously bright-coloured. Schizocarps depressed globose; mericarps longitudinally sulcate.

Cultivated. Bhopal (Oommachan, Fl. Bhopal 61. 1977), Sagar (Sahu and Mishra in Bull. Bot. Soc. Univ. Saugar 29: 74. 1982). *Fl. & Fr.*: Feb. Aug.

DECASCHISTIA Wight & Arn.

Decaschistia crotonifolia Wight & Arn., Prodr. 52. 1834; Hook. *f.*, Fl. Brit. India 1: 332. 1874.

Undershrubs, up to 1.5 m high. Leaves ovate, up to 10 x 4 cm, acute at apex, cuneate at base, puberulous above, tomentose beneath; mid rib with a glandular pore at the base. Flowers in solitary, axillary or terminal clusters. Epicalyx-segments 10, linear, acute. Calyx up to 1.5 cm long, 5-lobed, ciliate, acute. Petals yellow with purple centre, 3.5-4.5 cm long, hairy outside. Staminal column antheriferous in regular whorls. Capsules *ca* 1.5 cm long, 10-valved, hispid. Seeds 10, ovoid or reniform, *ca* 3.5 mm long.

In open places on hill slopes. Bastar. *Fl. & Fr.*: Oct. Dec.

GOSSYPIUM L.

Gossypium herbaceum L., Sp. Pl. 693. 1753; Masters in Hook. *f.*, Fl. Brit. India 1: 346. 1874.

Herbs, annual. Leaves ovate-rounded, palmately 3-5-lobed; lobes oblong-elliptic; stipules linear to lanceolate. Flowers solitary, axillary. Epicalyx-segments ovate, 1-2 cm long. Calyx cupular. Corolla yellow with purple centre. Staminal column *ca* 1 cm long. Capsules oblong, 3-4 cm long. Seeds ovoid, with greyish white floss.

Cultivated. Bhopal (Oommachan, Fl. Bhopal 62. 1977). *Fl.*: Oct. - Nov.

HIBISCUS L., *nom. cons.*

Hibiscus beddomei Rakshit & Kundu in *Sci. & Cult.* 27: 192. 1961.

Undershrubs, up to 3 m high, densely covered with rigid stellate hairs. Leaves ovate-cordate, 3-angled or slightly 3-lobed, 5-7 cm across; lobes ovate, acute; upper leaves narrow, ovate-lanceolate, serrate-dentate, hairy. Flowers axillary, solitary or in terminal racemes. Epicalyx with linear appendages arising from the base of the spatulate tip. Calyx equalling the capsule. Corolla yellow. Capsules ovoid, beaked, densely hairy.

Rare. On hill tops. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 57. 1996). *Fl. & Fr.*: Sept. Dec.

Hibiscus caesius Garcke, *Bot. Zeit.* 7: 850. 1849. *H. gibsoni* Stocks ex Harvey & Sonder, *Fl. Cap.* 2: 587. 1862; Masters in *Hook. f.*, *Fl. Brit. India* 1: 339. 1874.

Herbs or undershrubs. Stems sparsely covered with bristles and prickles. Leaves deeply 3-5-lobed up to base; lobes oblong or lanceolate, serrate, simple hairy above, stellate hairy beneath; stipules linear, up to 1 cm long. Flowers solitary, axillary; pedicels sparsely covered with prickly hairs. Epicalyx-segments 8-10, linear. Calyx-lobes lanceolate, connate at base. Corolla yellow with purple centre. Staminal column antheriferous throughout. Capsules ovoid.

Raisen (Gupta in *J. Bombay Nat. Hist. Soc.* 74: 660. 1979). *Fl. & Fr.*: Sept. Dec.

Hibiscus mutabilis L., *Sp. Pl.* 694. 1753; Masters in *Hook. f.*, *Fl. Brit. India* 1: 344. 1874.

Shrubs. Leaves suborbicular, palmately 3-7-lobed; lobes triangular, coarsely dentate, glabrescent or sparsely pubescent above; stipules linear or lanceolate. Flowers solitary, axillary or subcorymbose towards apex. Epicalyx-segments 8-12, linear-lanceolate. Calyx-lobes ovate-lanceolate, densely stellate and glandular hairy outside. Petals 5 or in multiples of 5, sparsely stellate hairy outside. Staminal column antheriferous throughout. Capsules subglobose.

Cultivated. Raisen (Gupta in J. Bombay Nat. Hist. Soc. 74: 660. 1979). *Fl. & Fr.*: Sept. Dec.

Hibiscus surattensis L., Sp. Pl. 696. 1753; Masters in Hook. *f.*, Fl. Brit. India 1: 334. 1874.

Herbs or undershrubs, covered with simple hairs and recurved prickles. Leaves ovate or suborbicular, 3-5-palmilobed or 5-palmiparted; lobes lanceolate, crenate-serrate; stipules foliaceous, ovate, serrate-dentate. Flowers solitary, axillary; pedicels jointed near the apex. Epicalyx-segments spatulate. Calyx campanulate, deeply 5-partite. Corolla yellow with deep purple centre. Staminal column antheriferous throughout. Capsules ovoid.

Throughout (Paul in Sharma and Sanjappa (eds.), Fl. India 3: 327. 1993). *Fl. & Fr.*: Sept. Feb.

Hibiscus syriacus L., Sp. Pl. 695. 1753; Masters in Hook. *f.*, Fl. Brit. India 1: 344. 1874.

Shrubs; young branches stellate hairy, glabrous with age. Leaves rhomboid-ovate, often 3-lobed, coarsely dentate, young ones sparsely stellate hairy; stipules filiform. Flowers solitary, axillary. Epicalyx-segments 6-8, linear, sparsely stellate hairy. Calyx-lobes oblong or ovate-lanceolate, sparsely stellate hairy. Corolla white. Staminal column antheriferous towards base. Capsules sparsely hispid.

Cultivated. Indore. *Fl. & Fr.*: June - Oct.

MALVAVISCUS Fabric.

Malvaviscus arboreus Cav. var. **arboreus** Cav., Diss. 3: 131. t. 48. f. 1. 1787.

Shrubs, 1.5-2 m high, glabrous or densely pubescent. Leaves ovate-orbicular, 3-5-lobed, acute to acuminate at apex, rounded or shallowly cordate at base, crenate to serrate. Flowers solitary, axillary. Epicalyx-segments 6 or more. Corolla red, 2-3 cm long.

Cultivated throughout India (Paul in Sharma and Sanjappa (eds.), Fl. India 3: 394. 1993).

Malvaviscus arboreus Cav. var. **penduliflorus** (DC.) Schery in Ann. Miss. Bot. Gard. 29: 223. 1942. *Malvaviscus penduliflorus* DC., Prodr. 1: 445. 1824.

Shrubs, ca 1.5 m high, glabrous or pubescent. Leaves elliptic to ovate or lanceolate, entire or 3-lobed, acuminate at apex, rounded at base, crenate-serrate. Flowers solitary, axillary, pendulous. Epicalyx-segments 6 or more. Corolla red, more than 4 cm long.

Cultivated throughout India (Paul in Sharma and Sanjappa (eds.), Fl. India 3: 394. 1993).

Malvaviscus konzattii Greenm. in Publ. Field Mus. Nat. Hist. Chicago (Bot.) 2: 333. 1912.

Shrubs, ca 3 m high. Leaves ovate, entire, crenate-serrate. Flowers solitary, axillary, red, crimson-scarlet or orange-red, hanging as closed bells. Petals erect, closed. Staminal column exerted. Fruits white to scarlet.

Cultivated. Bhopal (Oommachan, Fl. Bhopal 65. 1977).

SIDA L.

Sida rhombifolia L. subsp. **retusa** (L.) Borss. in Blumea 14: 198. 1966. *S. retusa* L., Sp. Pl. ed. 2. 961. 1763. *S. rhombifolia* L. var. *retusa* (L.) Masters in Hook. f., Fl. Brit. India 1: 324. 1874.

Woody herbs, branched, stellate tomentose. Leaves triangular to obovate, retuse at apex, stellate hairy beneath, coarsely dentate. Flowers pale yellow; pedicels clustered in the upper axils, jointed below the middle. Petals 5. Capsules globose. Seeds many, black, smooth.

Along roadsides. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 61. 1996). *Fl. & Fr.*: Oct. Dec.

THESPESIA Soland. *ex* Correa, *nom. cons.*

Thespesia lampas (Cav.) Dalz. & Gibs. var. **longisepala** Borss. in *Blumea* 14: 118. f. 14C. 1966. **Fig. 2.**

Arborescent shrubs; twigs densely stellate hairy, glabrescent with age. Leaves orbicular, membranous to subcoriaceous, 3-5-lobed; lobes deltoid, acuminate at apex; petioles and stipules densely hairy. Flowers solitary, axillary. Epicalyx-segments 5, free. Calyx cupular; lobes subulate to triangular, 1-3 mm long. Corolla yellow with dark purple centre. Fruits ovoid to globose.

Bilaspur, Surguja. *Fl. & Fr.*: Aug. Dec.

BOMBACACEAE

CEIBA Mill. *emend.* Gaertn.

Ceiba pentandra (L.) Gaertn., *Fruct. Sem. Pl.* 2: 244. t. 133. f. 1. 1791. *Bombax pentandrum* L., *Sp. Pl.* 511. 1753. *Eriodendron anfractuosum* DC., *Prodr.* 1: 479. 1824; Masters in Hook. *f.*, *Fl. Brit. India* 1: 350. 1874. - *Safed-semul*.

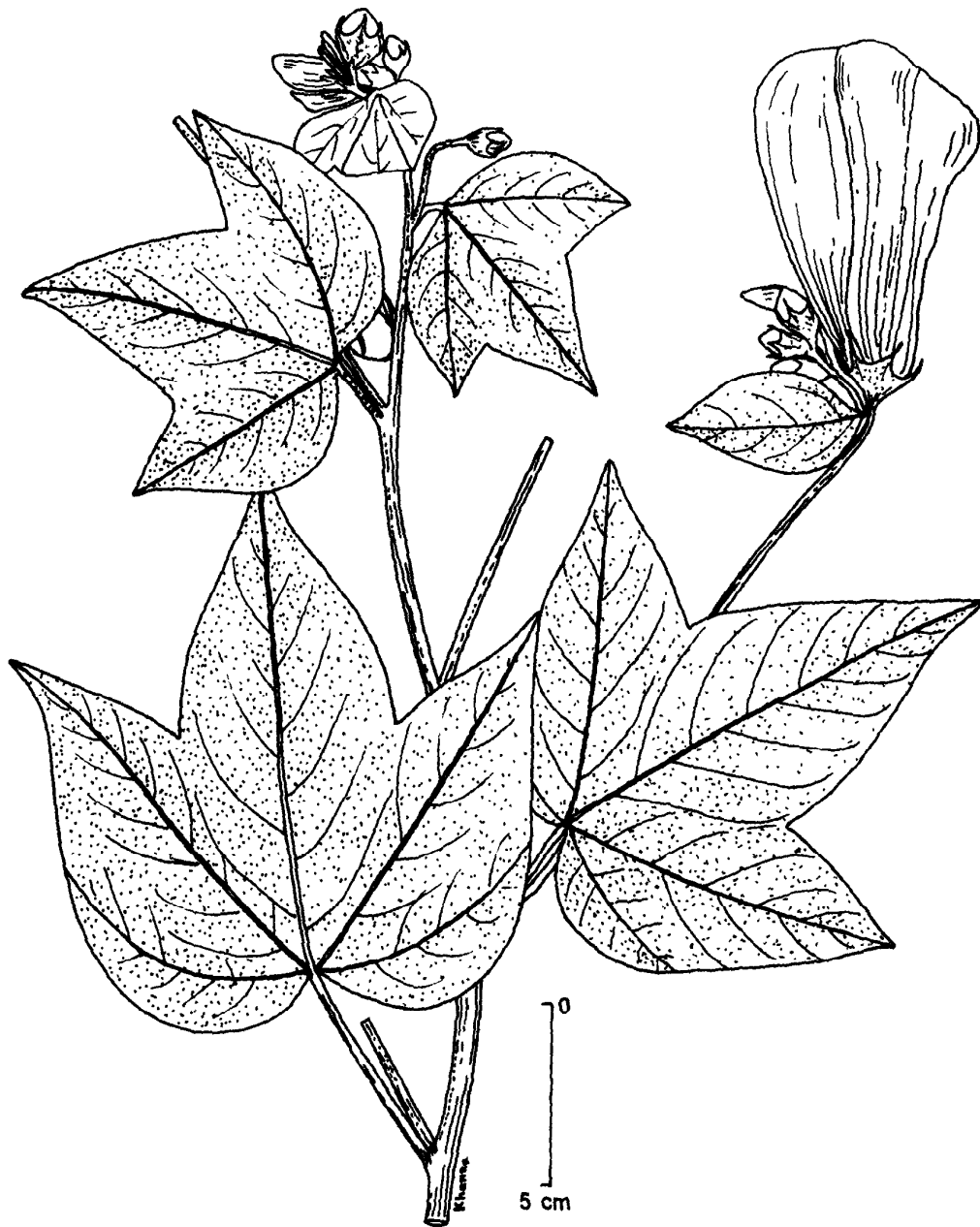
Trees, up to 12 m high. Stems and branches green. Leaves digitate; leaflets 5-8, lanceolate, up to 12.5 x 3.8 cm, cuspidate at apex, acute at base. Flowers in clusters of 2-8 at the apex of branches. Calyx campanulate, 5-lobed. Petals 5, dull white. Stamens in 5 bundles, opposite the petals. Fruit a capsule. Seeds pyriform, silky hairy.

Indore (Khanna *et al.*, *Fl. Kasturbagram* 48. 1991). *Fl. & Fr.*: Feb. May.

STERCULIACEAE

DOMBEYA Cav., *nom. cons.*

Dombeya cayeuxii x Hort.; Oommachan, *Fl. Bhopal* 72. 1977; Bailey, *Stand. Cyclop. Hort.* 1: 1066. 1961 (repr. ed.).



**Fig. 2. *Thespesia lampas* (Cav.) Dalz. & Gibs.
var. *longisepala* Borss.**

Shrubs or small trees, evergreen. Leaves cordate or cordate-ovate, acute at apex, dentate, velvety, long petiolate. Flowers pink or white, showy, in pendulous, many-flowered umbels.

Planted in gardens for ornamental purpose. Bhopal (Oommachan, Fl. Bhopal 72. 1977). *Fl.*: Feb. March.

Dombeya mastersii Hook. *f.* in Curtis, Bot. Mag. t. 5639. 1867.
Changing rose.

Shrubs, evergreen, 2-3 m high. Leaves ovate or cordate, 6-angled or lobed, 9-15 x 10-16 cm, serrate. Flowers fragrant, in cymose clusters. Petals white with rose-coloured veins. Capsules villous.

Cultivated. Indore. *Fl. & Fr.*: Jan. - April.

ERIOLAENA DC.

Eriolaena quinquelocularis (Wight & Arn.) Cleghorn, Gen. Index 36. 1856; Masters in Hook. *f.*, Fl. Brit. India 1: 371. 1874. *Microchlaena quinquelocularis* Wight & Arn., Prodr. 71. 1834. *Bhawat.*

Small trees. Leaves orbicular, 8-20 x 7-15 cm, subacuminate at apex, cordate at base, crenate-serrate, stellate hairy above, softly tomentose beneath; petioles up to 8 cm long. Flowers white, in axillary pedunculate cymes; pedicels 2-3 cm long. Sepals linear-lanceolate. Petals obovate-oblong. Staminal column with irregularly arranged anthers towards apex. Capsules ovoid-lanceolate, beaked.

Surguja (Wood, Pl. Ch. Nagpur Jasp. Sirg. 85. 1977, repr. ed.). *Fl. & Fr.*: Feb. Dec.

PTEROSPERMUM Schreb., *nom. cons.*

Pterospermum xylocarpum (Gaertn.) Santapau & Wagh in Bull. Bot. Surv. India 5: 108. 1963. *Velago xylocarpa* Gaertn., Fruct. Sem. Pl. 2: 245. t. 133. f. 2. 1791. *Pterospermum heyneanum* Wallich ex Wight & Arn., Prodr. 69. 1834; Masters in Hook. *f.*, Fl. Brit. India 1: 369. 1874.

Trees. Leaves variable, oblong or oblong-obovate, 10-16 x 6-10 cm, acuminate at apex, cordate at base, dentate towards apical portion, glabrous

above, pubescent beneath. Flowers white, fragrant, solitary or in 2-3-flowered fascicles. Sepals oblong, rusty tomentose. Petals obovate, stellate pubescent outside. Ovary densely rusty stellate hairy. Fruits oblong-pyriform.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 248 1942). *Fl. & Fr.*: May - July.

STERCULIA L.

Sterculia foetida L., Sp. Pl. 1008. 1753; Masters in Hook. *f.*, Fl. Brit. India 1: 354. 1874. **Fig. 3.**

Trees. Branches horizontally whorled. Leaves digitately 5-9-foliolate; leaflets elliptic or elliptic-lanceolate, acute at apex, tapering at base, entire; stipules ensiform, caducous. Flowers in erect, racemose panicles. Calyx campanulate; lobes 5, lanceolate, stellate hairy. Fruits cymbiform, 10-12 cm long.

Jabalpur. *Fl. & Fr.*: Feb. - Aug.

TILIACEAE

CORCHORUS L.

Corchorus depressus (L.) Vicary in J. Asiat. Soc. Bengal 16: 1160. 1847. *Antichorus depressus* L., Mant. Pl. 64. 1767. *Corchorus antichorus* Raeusch., Nomencl. Bot. ed. 3. 158. 1797; Masters in Hook. *f.*, Fl. Brit. India 1: 398. 1874.

Herbs, perennial, prostrate. Leaves elliptic, 1-3 x 0.7-1 cm, crenate-serrate, sparsely hairy on nerves, without basal filiform processes. Flowers in leaf-opposed cymes; bracts linear-lanceolate. Sepals reddish green, linear-oblong. Petals yellow, ovate-spathulate, as long as sepals. Capsules cylindrical, beaked, 4-loculed. Seeds black.

Lower Chambal Valley Ravine (Agarkar in Bull. Bot. Surv. India 11: 399. 1972). *Fl. & Fr.* : Throughout the year.

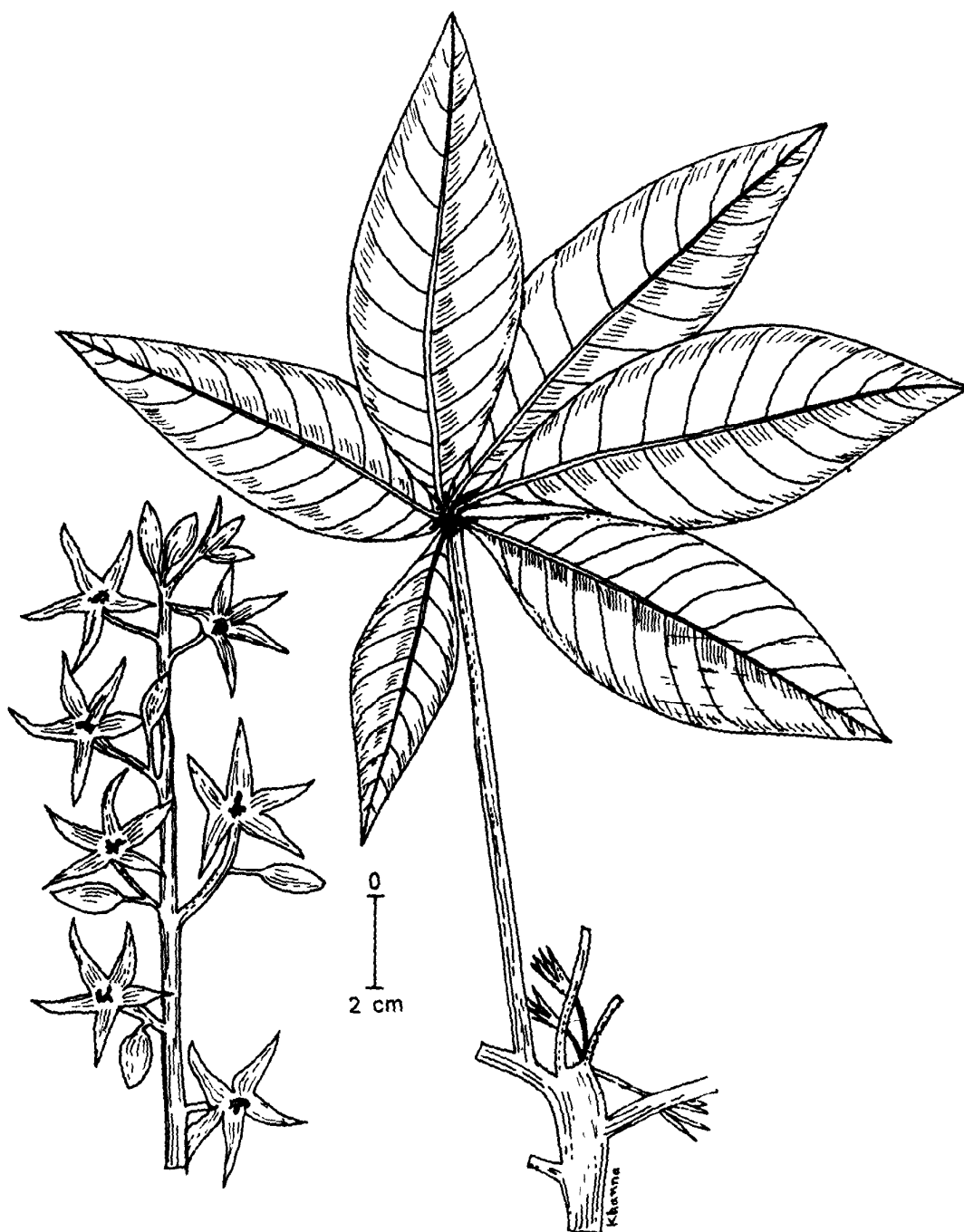


Fig. 3. *Sterculia foetida* L.

GREWIA L.

Grewia orbiculata Rottl. in Ges. Naturf. Freunde Berlin Neue Schr. 4: 205. 1803; Masters in Hook. *f.*, Fl. Brit. India 1: 386. 1874. *Kaladhaman*.

Trees. Leaves broadly elliptic or obovate, 3-8 x 2-6 cm, acuminate at apex, obliquely cordate or subcordate at base, irregularly crenate-serrate, tomentose beneath. Flowers in axillary, umbellate cymes; pedicels up to 1 cm long. Sepals lanceolate, woolly outside. Petals orange-yellow, oblong. Receptacle angular. Drupes subglobose, 5-7 mm across, obscurely 2-lobed.

Madhya Pradesh (Daniel and Chandrabose in Sharma and Sanjappa (eds.), Fl. India 3: 504. 1993). *Fl. & Fr.*: March - Oct.

Grewia orientalis L., Sp. Pl. 964. 1753; Masters in Hook. *f.*, Fl. Brit. India 1: 384. 1874, *p.p. excl. syn. G. rhamnifolia* Roth. *G. columnaris* Sm. in Rees, Cyclop. 17: no. 5. 1811; Masters in Hook. *f.*, Fl. Brit. India 1: 383. 1874, *incl. syns.*

Shrubs or small trees. Leaves ovate-elliptic or elliptic-oblong, 4-12 x 2-6 cm, acute or acuminate at apex, obliquely cordate at base, crenate-serrate. Flowers in axillary cymes; pedicels up to 1 cm long. Sepals oblong, pubescent. Petals white, ovate-lanceolate. Receptacle angular, softly villous. Drupes yellow, subglobose, *ca* 1.2 cm across, 4-lobed.

Madhya Pradesh (Daniel and Chandrabose in Sharma and Sanjappa (eds.), Fl. India 3: 506. 1993). *Fl. & Fr.*: May - Jan.

Grewia rhamnifolia Heyne *ex* Roth, Nov. Pl. Sp. 244. 1821. *G. orientalis auct. non L.*, 1753; Masters in Hook. *f.*, Fl. Brit. India 1: 384. 1874, *p.p.*

Shrubs. Leaves ovate or ovate-rhomboid, 5-13 x 2-7 cm, acute or acuminate at apex, rounded at base, crenate-serrate, glabrous. Flowers in terminal or axillary umbellate cymes; pedicels 1-2 cm long. Sepals lanceolate, woolly tomentose. Petals ovate-lanceolate. Receptacle angular. Drupes yellow, subglobose, *ca* 1.4 cm across, obscurely 2-4-lobed, tomentose.

Madhya Pradesh (Daniel and Chandrabose in Sharma and Sanjappa (eds.), Fl. India 3: 507. 1993). *Fl. & Fr.*: May - Feb.

Grewia sclerophylla Roxb. ex G. Don, Gen. Hist. 1: 550. 1831. *G. scabrophylla* Roxb., Fl. Ind. 2: 584. 1832; Masters in Hook. f., Fl. Brit. India 1: 387. 1874. - *Dhaman*.

Shrubs. Leaves obovate or ovate-rotundate, 8-18 x 6-12 cm, acuminate at apex, rounded or subacute at base, serrate, tomentose. Flowers in axillary cymes; pedicels up to 1 cm long. Sepals lanceolate, densely pubescent outside. Petals white, oblong-obovate, notched at apex. Receptacle hispid. Drupes globose, ca 1.5 cm across, stellate hairy.

Nimar (Witt, List Trees Shr. Climb. Berar For. Circle Centr. Prov. 9. 1908). *Fl. & Fr.*: April - Jan.

Grewia villosa Willd. in Ges. Naturf. Freunde Berlin Neue Schr. 4: 205. 1803, in anmerkungen; Masters in Hook. f., Fl. Brit. India 1: 388. 1874.

Shrubs or small trees. Leaves orbicular or ovate-rotundate, 5-15 x 4-12 cm, abruptly acuminate at apex, cordate at base, crenate or serrulate, scabrous above, villous beneath. Flowers in axillary or leaf-opposed cymes; pedicels 2-5 mm long. Sepals lanceolate, pilose. Petals dull yellow, spatulate, emarginate. Drupes yellowish red, subglobose, up to 1.5 cm across, obscurely 4-lobed.

Madhya Pradesh (Daniel and Chandrabose in Sharma and Sanjappa (eds.), Fl. India 3: 515. 1993). *Fl. & Fr.*: Throughout the year.

ELAEOCARPACEAE

ELAEOCARPUS L.

Elaeocarpus lanceifolius Roxb., Fl. Ind. 2: 598. 1832; Masters in Hook. f., Fl. Brit. India 1: 402. 1874.

Trees, up to 18 m high. Leaves elliptic or elliptic-lanceolate, up to 14 x 3.5 cm, acute or acuminate at apex, cuneate or attenuate at base, crenate-serrate. Flowers in axillary, up to 8 cm long racemes. Sepals lanceolate, keeled. Petals white, obovate, 4-6 mm long, laciniate, ciliate. Stamens 15-

30; anthers oblong with short bristles at apex. Drupes oblong-ovoid or ellipsoid, up to 3 cm long; pyrenes oblong, rugose with 3 longitudinal grooves.

Rare. In semi-evergreen forests. Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 248. 1942). *Fl. & Fr.*: Aug. - Jan.

Elaeocarpus prunifolius (C. Muell.) Masters in Hook. *f.*, Fl. Brit. India 1: 407. 1874. *Monocera prunifolius* C. Muell., Anot. Fam. Elaeocarp. 15. 1849.

Trees, up to 20 m high. Leaves oblong-lanceolate or elliptic-lanceolate, up to 11 x 3.2 cm, acute or acuminate at apex, cuneate at base, subentire or crenate-serrate. Flowers white or cream-coloured, in axillary, up to 8 cm long, silky pubescent racemes. Sepals oblong-lanceolate, villous on margins. Petals oblong, up to 9 mm long, with 2 pits at the base, lacinate, silky hairy. Stamens 15-30; anthers short-awned. Drupes oblong-ovoid, up to 2 cm long; pyrenes ovoid, subtrigonous, rugose.

Rare. In moist deciduous and semi-evergreen forests. Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 236. 1942). *Fl. & Fr.*: Feb. Sept.

Elaeocarpus varunua Buch.-Ham. *ex* Masters in Hook. *f.*, Fl. Brit. India 1: 407. 1874.

Trees, up to 22 m high. Leaves elliptic or elliptic-oblong, up to 24 x 7 cm, subacuminate at apex, rounded or subacute at base, crenate-serrate. Flowers white; pedicels curved, sericeous. Sepals lanceolate or ovate-lanceolate, silky tomentose. Petals *ca* 6 mm long, lacinate. Stamens 25-30; anthers with reflexed awns. Drupes oblong or oblong-ovoid, up to 2 cm long; pyrenes subterete, finely rugose, 3-grooved.

Rare. In semi-evergreen forests at high elevation. Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 248. 1942). *Fl. & Fr.*: April - Oct.

MALPIGHIACEAE

ASPIDOPTERYS A. Juss.

Aspidopterys indica (Roxb.) Hochr. in Bull. Inst. Bot. Buitenzorg 19: 45. 1904. *Triopteris indica* Roxb., Pl. Corom. t. 160. 1798.

Aspidopterys roxburghiana A. Juss. in Ann. Sci. Nat. Bot. ser. 2, 13: 267. 1840; Hook. f., Fl. Brit. India 1: 420. 1874, *excl. var. et syn.*

Shrubs, climbing. Leaves ovate or ovate-elliptic, 6-10 x 3-6 cm, acuminate at apex, rounded at base, glabrous; petioles up to 1.5 cm long, rusty pubescent. Flowers in rusty tomentose panicles. Calyx-lobes ovate, tomentose. Petals white, ovate. Filaments connate at base. Ovary pilose. Samara-wings linear-oblong, equally broader on both sides.

Madhya Pradesh (Srivastava in Hajra *et al.* (eds.), Fl. India 4: 8. 1997).

MALPIGHIA L.

Malpighia glabra L., Sp. Pl. 425. 1753. *Barbados-cherry*.

Shrubs, *ca* 2 m high. Leaves opposite, ovate, elliptic or oblong-lanceolate, 4-7 x 2.5-4.5 cm, acuminate at apex, acute at base, subcoriaceous, entire, glabrous. Flowers in 4-12-flowered umbels borne in the axil of leaves; bracts and bracteoles present. Sepals 5, oblong. Petals 5, pinkish violet, ovate or suborbicular, clawed, crisped on margin. Berries red, *ca* 1 cm across.

Cultivated. Indore. *Fl. & Fr.*: Feb. March.

ZYGOPHYLLACEAE

FAGONIA Tourm. ex L.

Fagonia schweinfurthii (Hadidi) Hadidi *ex* Ghafoor in Jafri & El-Gadi, Fl. Libya 38: 31. 1977. *F. indica* Burm. f. var. *schweinfurthii* Hadidi in Reich. f., Fl. Iran. 98: 6. t. 6. 1972. *F. cretica auct. non* L., 1753: T. Cooke, Fl. Pres. Bombay 1: 164. 1901, *p.p.* *F. arabica auct. non* L., 1753: Edgew. & Hook. f. in Hook. f., Fl. Brit. India 1: 425. 1874, *p.p.*

Undershrubs, annual or perennial, erect to prostrate. Leaves 3-foliolate, upper ones 1-foliolate; stipular spines patent, longer than leaves. Flowers solitary, axillary; pedicels glabrous to glandular. Sepals ovate, persistent, sparsely glandular outside. Petals pinkish purple, *ca* 5 mm long. Capsules globose, *ca* 4 mm across, softly hairy.

Lower Chambal Valley Ravine (Agarkar in Bull. Bot. Surv. India 11: 399. 1972). *Fl. & Fr.*: Almost throughout the year.

TROPAEOLACEAE

TROPAEOLUM L.

Tropaeolum majus L., Sp. Pl. 345. 1753.

Herbs, annual or biennial, climbing, decumbent or erect. Leaves simple, peltate, long petiolate; lamina orbicular, up to 5 cm across, glaucous beneath. Flowers solitary, fragrant; pedicels up to 25 cm long. Calyx 5-lobed, spurred. Petals 5, yellow or orange-red, broadly rounded, slightly notched, the 2 posterior ones up to 3.5 cm long, the 3 anterior ones slightly longer. Stamens 8. Fruits of 3, indehiscent, 1-seeded cocci.

Cultivated in gardens as an ornamental. Bhopal (Oommachan, Fl. Bhopal 84. 1977). *Fl. & Fr.*: Dec. - Feb.

OXALIDACEAE

BIOPHYTUM DC.

Biophytum nudum (Arn.) Wight, Ill. 1: 161. 1840; Edgew. & Hook. *f.* in Hook. *f.*, Fl. Brit. India 1: 438. 1874. *Oxalis nuda* Arn. in Nova Acta Phys. Med. Acad. Caes. Lep. Carol. Nat. Cur. 18(1): 326. 1836.

Herbs, perennial. Stems umbellately branched. Leaflets 15-20 pairs, oblong, 3-6 cm long, cuspidate at apex, truncate at base. Flowers in small umbels; peduncles exceeding leaves, appressed hairy; pedicels hairy; bracts lanceolate. Sepals lanceolate, mucronate. Capsules ovoid, blunt.

Madhya Pradesh (Manna in Hajra *et al.* (eds.), Fl. India 4: 235. 1997). *Fl. & Fr.*: March - Sept.

OXALIS L.

Oxalis cernua Thunb., Diss. Oxal. 14. t. 2. f. 2. 1781. *O. pescaprae* Savign. in Lam., Encycl. 4: 685. 1798, *non* L., 1753; Calder in Rec. Bot. Surv. India 6: 329. 1919.

Herbs, acaulescent. Leaves 3-foliolate; leaflets 2-lobed, cordate, *ca* 5 x 15 mm, glabrous above, villous beneath, sessile. Flowers in few to many-flowered umbels; pedicels unequal; bracts minute, hairy. Sepals 5, lanceolate. Petals 5, yellow, oblong, shortly clawed. Stamens 10, connate into a tube at base.

Sagar (Sahu and Mishra in Bull. Bot. Soc. Univ. Saugar 29: 74. 1982). *Fl. & Fr.*: Aug. Feb.

BALSAMINACEAE

IMPATIENS L.

Impatiens scabriuscula Heyne *ex* Roxb., Fl. Ind. (Carey & Wallich ed.) 2: 464. 1824; Hook. *f.*, Fl. Brit. India 1: 454. 1874.

Herbs, 10-20 cm high. Stems hairy. Leaves alternate, elliptic-lanceolate, 2-6 x 0.7-1 cm, serrate, sparsely hairy above. Flowers pink or rose-coloured, in axillary fascicles; pedicels up to 5 mm long, scabrid. Capsules ellipsoid, mucronate, villous. Seeds brown, globose, tuberculate.

Shahdol (Mishra in Bull. Bot. Soc. Univ. Saugar 8(1): 2. 1956). *Fl. & Fr.*: Aug. Jan.

RUTACEAE

CITRUS L.

Citrus maxima (Burm.) Merr. var. ***uvacarpa*** Merr. & Lee in Amer. J. Bot. 11: 384. 1929. *C. paradisi* Macf. in Hook., Bot. Misc. 1: 304. 1830. *Naringi*.

Small trees; young twigs glabrous. Leaves 1-foliolate, ovate or elliptic, acute or obtuse at apex, crenate; petiolar wings narrowly obovate-oblongate. Flowers axillary, solitary or few clustered; pedicels pubescent. Calyx cupular, irregularly lobed; lobes greenish white. Petals cream-coloured, oblong-obovate, glandular. Fruits orange, globose, 2-3 cm across.

Cultivated. Indore (Khanna *et al.*, Fl. Kasturbagram 58. 1991). *Fl. & Fr.*: Oct. Jan.

Citrus reticulata Blanco, Fl. Filip. 610. 1837. - *Santra*.

Small trees. Branches spinous. Leaves 1-foliolate, narrowly to broadly lanceolate, 5-8 x 2.5-3.5 cm, tapering or sometimes emarginate at apex, acute or rounded at base, crenate to crenulate; petioles shortly marginate. Flowers axillary, solitary or few clustered. Sepals 5. Petals white, glandular. Fruits orange-yellow, variable, globose or pyriform; endocarp-segments easily separable.

Cultivated. Indore (Khanna *et al.*, Fl. Kasturbagram 59. 1991). *Fl. & Fr.*: Nov. - March.

Citrus sinensis (L.) Osbeck, Dagb. Ostind. Resa 41. 1775. *C. aurantium* L. var. *sinensis* L., Sp. Pl. 783. 1753. - *Mosambi*.

Trees. Branchlets spinous. Leaves 1-foliolate, ovate to elliptic, 7-10 x 3.5-5 cm, emarginate at apex, cuneate at base; petioles narrowly winged. Flowers axillary, solitary or few in racemes. Sepals 4 or 5, suborbicular. Fruits greenish yellow, globose or subglobose, smooth, pitted; endocarp-segments fusiform.

Cultivated. Indore (Khanna *et al.*, Fl. Kasturbagram 59. 1991). *Fl. & Fr.*: Aug. Dec.

GLYCOSMIS Correa

Glycosmis mauritiana (Lam.) Tanaka in Bot. Not. 1929: 159 (4th Apr.) 1928. *Limonia mauritiana* Lam., Encycl. Meth. Bot. 3: 517. 1792. *Glycosmis pentaphylla auct. non* (Retz.) DC., 1824: Hook. *f.*, Fl. Brit. India 1: 499. 1875, *quoad* var. 2, *excl.* subvars. 1 to 4.

Shrubs. Leaves 3-5-foliolate; leaflets alternate and opposite, ovate, elliptic or linear-lanceolate, obtuse or subacuminate at apex, cuneate at base, entire, coriaceous. Flowers in axillary panicles; pedicels and bracteoles minute. Sepals 4 or 5, suborbicular. Petals greenish white, oblong-elliptic. Disk minute, lobulate. Berries pink, subglobose, *ca* 1 cm across.

Bastar (Subramanyam and Henry in Bull. Bot. Surv. India 8: 210. 1967). *Fl. & Fr.*: March - Sept.

TODDALIA Juss., *nom. cons.*

Toddalia asiatica (L.) Lam., Tab. Encycl. Meth. 2: 116. 1797. *Paullinia asiatica* L., Sp. Pl. 365. 1753. *Toddalia aculeata* (Sm.) Pers., Syn. Pl. 1: 249. 1805; Hook. *f.*, Fl. Brit. India 1: 497. 1875.

Shrubs, scandent or straggling. Stems armed or unarmed. Leaves digitately 3-foliolate; leaflets variable, oblong-elliptic or elliptic-obovate, asymmetrical, obtuse, acute or acuminate at apex, cuneate at base, entire or crenulate. Flowers creamy white, unisexual, in panicles, fragrant. Calyx-lobes deltoid. Petals narrowly to broadly oblong. Disk 5 or more lobed. Drupes orange or reddish, 4-5-grooved. Seeds reniform.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 239. 1942). *Fl. & Fr.*: April - Sept.

ZANTHOXYLUM L.

Zanthoxylum rhetsa (Roxb.) DC., Prodr. 1: 728. 1824; Hook. *f.*, Fl. Brit. India 1: 495. 1875. *Fagara rhetsa* Roxb., Fl. Ind. (Carey & Wallich ed.) 1: 438. 1820. *Zanthoxylum budrunga* (Roxb.) DC., Prodr. 1: 728. 1824; Hook. *f.*, Fl. Brit. India 1: 495. 1875.

Trees. Stems and branchlets with prickles. Leaves paripinnate or imparipinnate; leaflets opposite or subopposite, ovate-oblong or lanceolate, caudate-acuminate at apex, cuneate and oblique at base, chartaceous to coriaceous, glabrous; petioles and rachis prickly. Flowers white or creamy yellow, unisexual, in terminal or pseudoterminal panicles. Sepals 4. Petals 4. Disk pulvinate, lobulate. Fruits globose, apiculate. Seeds bluish black, globose.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 237. 1942). *Fl. & Fr.*: April - Oct.

BURSERACEAE**COMMIPHORA** Jacq., *nom. cons.*

Commiphora wightii (Arn.) Bhandari in Bull. Bot. Surv. India 6: 327. 1965. *Balsamodendron wightii* Arn. in Ann. Nat. Hist. 3: 86. 1839. *B. mukul* Hook. *ex* Stocks in Hook., J. Bot. Kew Gard. Misc. 1: 259. t. 8.

1849; Bennett in Hook. *f.*, Fl. Brit. India 1: 529. 1875. *Commiphora mukul* (Hook. ex Stocks) Engl. in A. & C. DC., Monogr. Phan. 4: 26. 1883.

Shrubs, dimorphic. Branchlets thorny. Leaves 1-3-foliolate; leaflets rhomboid-ovate or obovate, 1-3 x 0.5-2.5 cm, obtuse or acute at apex, cuneate at base, entire or serrate, subsessile, terminal leaflets larger. Flowers red or pinkish white, solitary or in 2-3-flowered fascicles; bracts glandular hairy. Calyx campanulate or tubular, 4-5-lobed. Petals 4-5, broadly linear. Drupes red, ovoid.

Betul (Witt, List Trees Shr. Climb. Berar For. Circle Centr. Prov. 12. 1908), Jabalpur (Balapure in Bull. Bot. Surv. India 8: 191. 1967), Nimar (Witt, *l.c.*). *Fl. & Fr.*: Jan. Oct.

MELIACEAE

AGLAIA Lour.

Aglaia elaeagnoidea (A. Juss.) Benth. var. ***beddomei*** (Gamble) K.K.N. Nair in J. Bombay Nat. Hist. Soc. 78: 426. 1981. *A. roxburghiana* (Wight & Arn.) Miq. var. *beddomei* Gamble, Fl. Pres. Madras 1: 180. 1915.

Trees; young parts covered with scales. Leaves compound; leaflets 5-7, usually lanceolate, ca 10 x 2.5 cm, thinly coriaceous. Flowers yellow, in densely flowered panicles, shortly pedicellate. Calyx cupular, 5-lobed. Petals 5, longer than calyx. Style half as long as the staminal tube. Berries subglobose or pyriform.

Bastar (Subramanyam and Henry in Bull. Bot. Surv. India 8: 210. 1967). *Fl. & Fr.*: Dec. Feb.

APHANAMIXIS Blume

Aphanamixis polystachya (Wallich) R. Parker in Indian For. 57: 486. 1931. *Aglaia polystachya* Wallich in Roxb., Fl. Ind. (Carey & Wallich ed.) 2: 429. 1824. *Andersonia rohituka* Roxb., Fl. Ind. 2: 213. 1832. *Amoora rohituka* (Roxb.) Wight & Arn., Prodr. 119. 1834; Hiern in Hook. *f.*, Fl. Brit. India 1: 559. 1875.

Trees. Leaves alternate, crowded at the end of branchlets; leaflets oblanceolate, 8-20 x 4-8 cm, acuminate at apex, entire. Flowers dull white, in axillary or supra-axillary spikes, sessile, bracteate; male spikes paniculate; female spikes much shorter. Calyx 5-lobed. Petals 3, sparsely hairy inside, glabrous outside. Staminal tube as long as petals. Capsules yellow or purplish, obovoid.

Madhya Pradesh (Jain and Bennet in Hajra *et al.* (eds.), *Fl. India* 4: 477. 1997). *Fl. & Fr.*: Jan. Dec.

ERYTHROPALACEAE

ERYTHROPALUM Blume

Erythropalum scandens Blume, *Bijdr.* 921. 1826; Masters in Hook. *f.*, *Fl. Brit. India* 1: 578. 1875.

Rambling climbers or lianas; tendrils axillary, shortly bifid. Leaves distichous, ovate-oblong to lanceolate, up to 17 x 10 cm, palmately 3-nerved, acute or subacuminate at apex, rounded or narrowly peltate at base. Flowers white, in axillary paniculate cymes. Calyx cupular, obscurely 4-5-segmented, accrescent. Corolla deeply 5-lobed; lobes ovate. Drupes ellipsoid, up to 2.5 cm long, obtuse, 3-6-valved. Seeds solitary.

Rare. In dense semi-evergreen forests. Bastar (Mooney in *Indian For. Rec.* (n.s.) 3(7): 249. 1942). *Fl. & Fr.*: May - Dec.

RHAMNACEAE

HELINUS Meyer *ex* Endl.

Helinus lanceolatus Brandis var. **tomentella** Bedd. *ex* Bhandari & Bhansali in *Fasc. Fl. India* 20: 44. 1990.

Shrubs, slender, with tendrils. Branches, tendrils and bracts appressed brown silky hairy. Leaves ovate or lanceolate, 2.3-4.6 x 1-2.8 cm, acute at apex, rounded at base, tomentose below, slightly pubescent above on nerves; petioles *ca* 7 mm long, tomentose. Flowers 2-12 in umbels. Calyx 5-lobed; lobes deltoid. Petals white, 5, margin and apex incurved. Stamens 5; anthers dorsifixed. Disc glabrous. Fruits globose to slightly obovoid, 5-10 mm long, pendulous. Seeds plano-convex.

Endemic. Common amongst the ravines between Jabalpur and Mandla (Bhandari and Bhansali in Fasc. Fl. India 20: 44. 1990). *Fl.* & *Fr.*: not mentioned.

VENTILAGO Gaertn.

Ventilago denticulata Willd. var. **bifida** Bhandari & Bhansali in Fasc. Fl. India 20: 84. 1990.

Climbing shrubs, woody. Branchlets green, pubescent. Leaves elliptic-oblong, 4-16 x 2.3-7.5 cm, obtuse or subacute at apex, oblique at base, crenate-serrate, pubescent. Flowers in axillary and terminal, pubescent panicles. Calyx 5-lobed; lobes deltoid. Petals 5, spathulate, emarginate at apex. Disc 5-lobed. Fruits 3.8-6 x 0.8-1 cm, pubescent; fruit wing bifid at apex, acute bifid portion *ca* 3.5 mm long.

Khandwa (Bhandari and Bhansali in Fasc. Fl. India 20: 84. 1990). *Fl.* & *Fr.*: Dec. - April.

ZIZIPHUS Tourn. ex Mill.

Ziziphus mauritiana Lam. var. **pedunculata** Bhandari & Bhansali in Fasc. Fl. India 20: 101. 1990.

Large shrubs or trees, spiny. Leaves 5.3-9.8 x 2.8-4.3 cm, obtuse at apex, cuneate at base, glabrous above, tomentose beneath. Flowers in axillary cymes; peduncles 6-8 mm long, pubescent. Petals spathulate. Drupes ovate-oblong, *ca* 3.4 x 1 cm, pointed at apex. Seeds black, solitary, compressed, elongate.

Madhya Pradesh (Bhandari and Bhansali in Fasc. Fl. India 20: 101. 1990). *Fl.* & *Fr.*: Aug. - March.

Ziziphus truncata Blatt. & Hallb. in J. Bombay Nat. Hist. Soc. 26: 234. 1918.

Giant lianas. Leaves oblong-orbicular, up to 15 x 10 cm, somewhat longer than broad, coriaceous, truncate at apex, subcordate at base; stipular spines 2, tomentose at the base, one shorter and straight, the other longer and erect. Flowers greenish yellow, in short, axillary cymes. Drupes yellow when ripe, globose.

Rare. In dry forests. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 76. 1996). *Fl. & Fr.*: Oct. Dec.

VITACEAE

AMPELOCISSUS Planch., *nom. cons.*

Ampelocissus divaricata (Wallich *ex* Lawson) Planch. in Vigne Amer. Vitic. Eur. 8: 375. 1884 & in A. & C. DC., Monogr. Phan. 5: 378. 1887. *Vitis divaricata* Wallich *ex* Lawson in Hook. *f.*, Fl. Brit. India 1: 657. 1875.

Climbers. Branchlets glabrescent. Leaves 3-foliolate, up to 15 cm long, acuminate at apex, cuneate at base, thinly coriaceous, double serrate; terminal leaflet broadly ovate; lateral leaflets more or less similar to terminal one, inequilateral, cordate; petioles up to 5.5 cm long. Flowers in diffuse, divaricate cymes; peduncles up to 8 cm long. Calyx 4 or 5-lobed. Petals 4 or 5. Berries *ca* 2 mm across.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 244. 1942). *Fl. & Fr.*: July Oct.

CAYRATIA Juss., *nom. cons.*

Cayratia pedata (Lam.) Juss. *ex* Gagnep. in Lecomte, Notul. Syst. (Paris) 1: 346. 1911. *Cissus pedata* Lam., Encycl. 1: 31. 1783. *Vitis pedata* (Lam.) Wallich *ex* Wight in Wight & Arn., Prodr. 128. 1834; Lawson in Hook. *f.*, Fl. Brit. India 1: 661. 1875.

Climbing shrubs. Branches apically densely pubescent, basally strigose. Leaves 5-9-foliolate; leaflets oblong or oblong-lanceolate, 5-10 x 2.5-5 cm, acuminate at apex, oblique at base, subentire or serrate; petioles 5-8 cm long. Flowers white, in axillary, corymbose, divaricate cymes. Calyx 4-lobed. Petals 4, ovate. Berries cream-coloured when ripe, subglobose, 6-8 mm across.

Shahdol (Saxena in Bull. Bot. Surv. India 12: 44. 1970). *Fl. & Fr.*: July Oct.

CISSUS L.

Cissus adnata Roxb., Fl. Ind. (Carey & Wallich ed.) 1: 423. 1820. *Vitis adnata* (Roxb.) Wallich, Num. List. no. 5998. 1831-33; Lawson in Hook. f., Fl. Brit. India 1: 649. 1875. **Fig. 4.**

Climbers. Leaves broadly ovate, sometimes 3-5-lobed, 4-15 x 3-13 cm, acuminate at apex, cordate at base, serrate-dentate, tomentose beneath. Flowers red, in terminal, dichotomous cymes. Calyx saucer-shaped. Petals broadly oblong-ovate, spreading, hairy outside. Berries ovoid, *ca* 8 mm long, beaked.

Satpura hills (CAL). *Fl. & Fr.*: Dec. March.

Cissus glauca Roxb., Fl. Ind. (Carey & Wallich ed.) 1: 406. 1820. *Vitis glauca* (Roxb.) Wight & Arn., Prodr. 126. 1834.

Herbs, scandent, slender. Branches subterete or angled; tendrils forked. Leaves broadly ovate, up to 15 x 9 cm, spinous toothed, glabrous, cordate at base; petioles up to 8 cm long. Flowers in leaf-opposed compound cymes. Berries subglobose or pyriform, usually 1-seeded.

As forest undergrowth. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 78. 1996). *Fl. & Fr.*: Jan. March.

Cissus quadrangularis L., Mant. Pl. 39. 1767. *Vitis quadrangularis* (L.) Wallich *ex* Wight & Arn., Prodr. 125. 1824; Lawson in Hook. f., Fl. Brit. India 1: 645. 1875. *Harhjora*, *Harsankar*.

Herbs, climbing. Stems quadrangular, leafless when old; tendrils simple, slender. Leaves simple, ovate or reniform, glabrous, 3-lobed, denticulate or crenate-serrate; stipules small, broadly ovate, obtuse. Flowers greenish white, in umbelliform cymes; peduncles 1-2.5 cm long. Calyx cupular, truncate or obscurely lobed. Petals 4, ovate-oblong, hooded at apex. Disk 4-lobed. Stamens inserted below the margin of the disk. Berries red, globose or obovoid.

Bhopal (Oommachan, Fl. Bhopal 100. 1977). *Fl. & Fr.*: Aug. Sept.

Cissus vitifolia L., Sp. Pl. 117. 1753. *Vitis linnaei* Wallich *ex* Wight & Arn., Prodr. 126. 1834; Lawson in Hook. f., Fl. Brit. India 1: 649. 1875.

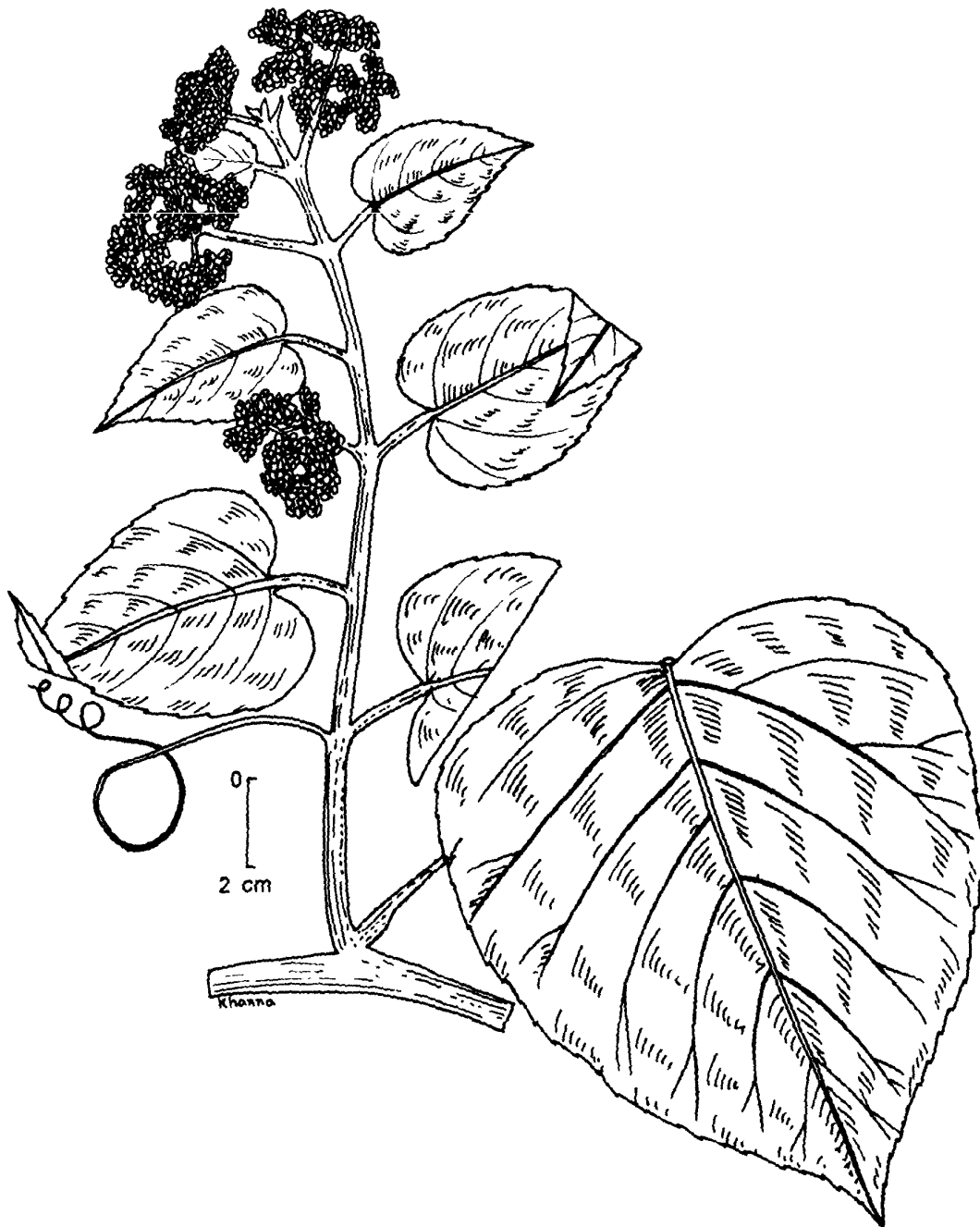


Fig. 4. *Cissus adnata* Roxb.

Shrubs, climbing. Branches hoary pubescent; tendrils simple. Leaves ovate, palmately 3-5-angular or lobed, acuminate at apex, cordate or truncate at base, coriaceous, pubescent, dentate. Flowers pale yellow, in umbelliform, compound cymes; peduncles 4-6 cm long. Calyx obscurely lobed. Petals 4, ovate. Disk 4-lobed. Berries ovoid or pyriform, *ca* 1 x 0.6 cm, apiculate.

Bastar (Saxena and Khotele in J. Bombay Nat. Hist. Soc. 73: 23. 1973). *Fl. & Fr.*: July - Feb.

CYPHOSTEMMA (Planch.) Alston

Cyphostemma setosum (Roxb.) Alston in Trimen, Handb. Fl. Ceylon 6(Suppl.): 53. 1931. *Cissus setosa* Roxb., Fl. Ind. (Carey & Wallich ed.) 1: 410. 1820. *Vitis setosa* (Roxb.) Wallich ex Wight & Arn. in Wight, Cat. 26. 1833 & Prodr. 127. 1834; Lawson in Hook. *f.*, Fl. Brit. India 1: 654. 1875.

Herbs, climbing. Branchlets fleshy, bristly setose; tendrils forked. Leaves 3-foliolate; leaflets oblong-obovate, 4-8 x 3-5 cm, rounded at apex and base, glandular puberulous, dentate-serrate; terminal leaflet larger. Flowers greenish, in dichasial, divaricate, glandular pubescent cymes. Calyx obscurely 4-lobed. Petals 4, ovate-oblong. Berries red when ripe, ovoid, *ca* 8 mm long.

Nimar (Witt, List Trees Shr. Climb. Berar For. Circle Centr. Prov. 17. 1908). *Fl. & Fr.*: Sept. - Jan.

TETRASTIGMA (Miq.) Planch.

Tetrastigma leucostaphylum (Dennst.) Alston ex Mabb. in Taxon 26: 539. 1977; Shetty & P. Singh in Taxon 37: 173. 1988. *Cissus leucostaphyla* Dennst., Schluess. Hort. Malab. 17, 19, 33. 1818 & in Forst., Allg. Deutsch. Gart.-Mag. 3: 35, 37, 81. 1818. *C. lanceolaria* Roxb., Fl. Ind. (Carey & Wallich ed.) 1: 412. 1820. *Vitis lanceolaria* (Roxb.) Wallich. Num. List. 206, no. 6013. 1831-32; Lawson in Hook. *f.*, Fl. Brit. India 1: 660. 1875. *Tetrastigma lanceolarium* (Roxb.) Planch. in A. & C. DC., Monogr. Phan. 2: 423. 1887.

Shrubs, climbing. Stems woody; branchlets glabrescent or tuberculate. Leaves 3-5-foliolate; leaflets oblong-lanceolate or oblanceolate, 4-12 x 2-

5 cm, acute at apex, cuneate at base, coriaceous, entire or distantly serrate. Male inflorescence a paniculate cyme; female inflorescence a corymbose cyme. Flowers greenish white. Calyx 4-lobed. Petals 4, ovate. Berries globose, *ca* 1 cm across.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 249. 1942), Chhindwara (Saxena and Shukla in Bull. Bot. Surv. India 12: 190. 1972). *Fl. & Fr.*: Jan. May.

VITIS L.

Vitis campylocarpa Kurz *ex* Lawson in Hook. *f.*, Fl. Brit. India 1: 657. 1875.

Climbers. Branches smooth; tendrils leaf-opposed, stout. Leaves digitately 3-foliolate; leaflets elliptic, ovate or obovate, oblique, sometimes falcate, acuminate at apex, coriaceous, distantly serrate. Flowers in axillary, dichotomously branched, subcorymbose, compound cymes; peduncles short. Berries oblong or ellipsoid, smooth, glossy.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 249. 1942). *Fl. & Fr.*: Nov. - April.

LEEACEAE

LEEA L., *nom. cons.*

Leea aequata L., Syst. Nat. ed. 12. 2: 627. 1767. *L. hirta* Roxb. *ex* Hornem., Hort. Hafn. 1: 231. 1813; Lawson in Hook. *f.*, Fl. Brit. India 1: 668. 1875.

Shrubs. Leaves pinnate; leaflets lanceolate or oblong-lanceolate, 8-18 x 3-6 cm, acuminate at apex, rounded at base, serrate, membranous, hispid above, with peltate glands beneath; petioles 8-12 cm long; stipules caducous. Inflorescence subterminal. Flowers greenish white; bracts ovate to oblong. Calyx glabrous or densely pubescent. Fruits orange-red. globose.

Madhya Pradesh (Naithani in Singh *et al.* (eds.), Fl. India 5: 326. 2000). *Fl. & Fr.*: June - Jan.

SAPINDACEAE**DODONAEA L.**

Dodonaea viscosa Jacq., Enum. Syst. Pl. 19. 1760.

Shrubs. Branches terete, often angled. Leaves broadly elliptic, 2-7 x 0.5-1.5 cm, subacute or shortly apiculate at apex, abruptly tapering at base. Flowers greenish yellow, in paniced cymes. Sepals oblong. Capsules compressed, membranous, 2-3-winged.

Throughout India (Naithani in Singh *et al.* (eds.), Fl. India 5: 361. 2000).
Fl. & Fr.: Jan. Sept.

ANACARDIACEAE**BUCHANANIA Spreng.**

Buchanania axillaris (Desr.) Ramamurthy in Saldanha & Nicholson, Fl. Hassan Dist. 374. 1976. *Mangifera axillaris* Desr. in Lam., Encycl. Meth. Bot. 3: 687. 1789. *Buchanania angustifolia* Roxb., Pl. Corom. 3: 79. t. 262. 1819; Hook. *f.*, Fl. Brit. India 2: 23. 1876.

Trees. Leaves oblong-lanceolate or elliptic-lanceolate, 5-12 x 2-4 cm, obtuse at apex, entire; petioles 1-2 cm long. Flowers in terminal and axillary, glabrous panicles, 3-4 mm across, shortly pedicellate. Calyx-lobes ovate. Petals oblong, reflexed. Stamens 10. Drupes *ca* 12 mm long.

Madhya Pradesh (Chandra and Mukherjee in Singh *et al.* (eds.), Fl. India 5: 441. 2000). *Fl. & Fr.*: March - July.

FABACEAE**ABRUS Adans.**

Abrus pulchellus Wallich ex Thwaites, Enum. Pl. Zeyl. 91. 1859; Baker in Hook. *f.*, Fl. Brit. India 2: 175. 1876.

Climbers. Branches slender. Leaves paripinnate, up to 15 cm long; leaflets 12-16 pairs, oblong, up to 3 x 0.7 cm, apiculate at apex, rounded

at base, sparsely silky beneath. Flowers lax in peduncled racemes. Calyx *ca* 3 mm long, silky. Corolla pink or pale blue, up to 1 cm long, exserted. Stamens 9, monadelphous. Pods linear, up to 6 x 1.2 cm, flat, incurved, 8-12-seeded. Seeds black, oblong, *ca* 4 mm long, compressed.

Sparse. In hilly forests. Hoshangabad (Oommachan and Masih in J. Econ. Tax. Bot. 16: 439. 1992). *Fl. & Fr.*: Sept. Dec.

ALHAGI Gagnebin

Alhagi maurorum Medik. in Vorles, Chrupf. Phys. Oek. Ges. 2: 397. 1787; Baker in Hook. *f.*, Fl. Brit. India 2: 145. 1876. *Hedysarum pseudalhagi* M. Bieb., Fl. Taur.-Cauc. 2: 174. 1808. *Alhagi pseudalhagi* (M. Bieb.) Desv. in J. Bot. 2, 1: 120. 1823. **Fig. 5.**

Shrubs, armed, up to 75 cm high. Leaves simple, oblong or obovate, up to 12 x 5.5 cm, mucronate at apex, cuneate at base. Flowers red, 4-7 on axillary, 2-3 cm long spinous shoots. Calyx-teeth triangular, auricled at the base. Pods moniliform, 1.5-2.5 cm long, falcate. Seeds many.

Along river banks and in barren fields. Bhind, Gwalior, Morena. *Fl. & Fr.*: Aug. - April.

ALYSICARPUS Neck. *ex* Desv., *nom. cons.*

Alysicarpus bupleurifolius (L.) DC. var. **hybridus** DC., Prodr. 2: 352. 1825. *A. bupleurifolius* (L.) DC. var. *intermedius* Haines, Bot. Bihar Orissa 2: 258. 1922.

Herbs, diffuse. Leaves 1-foliolate; leaflets up to 4 x 0.5 cm, upper leaves linear-oblong, lower leaves sometimes elliptic, acute at apex. Flowers in pairs on less lax spikes. Calyx exceeding the first joint of pod, ciliate at apex only or also at edges. Corolla red. Pods 6-8 mm long, terete, 2-4-jointed; joints not veined or rugose.

As forest undergrowth. Madhya Pradesh (Sanjappa, Leg. India 77. 1992). *Fl. & Fr.*: July - Oct.

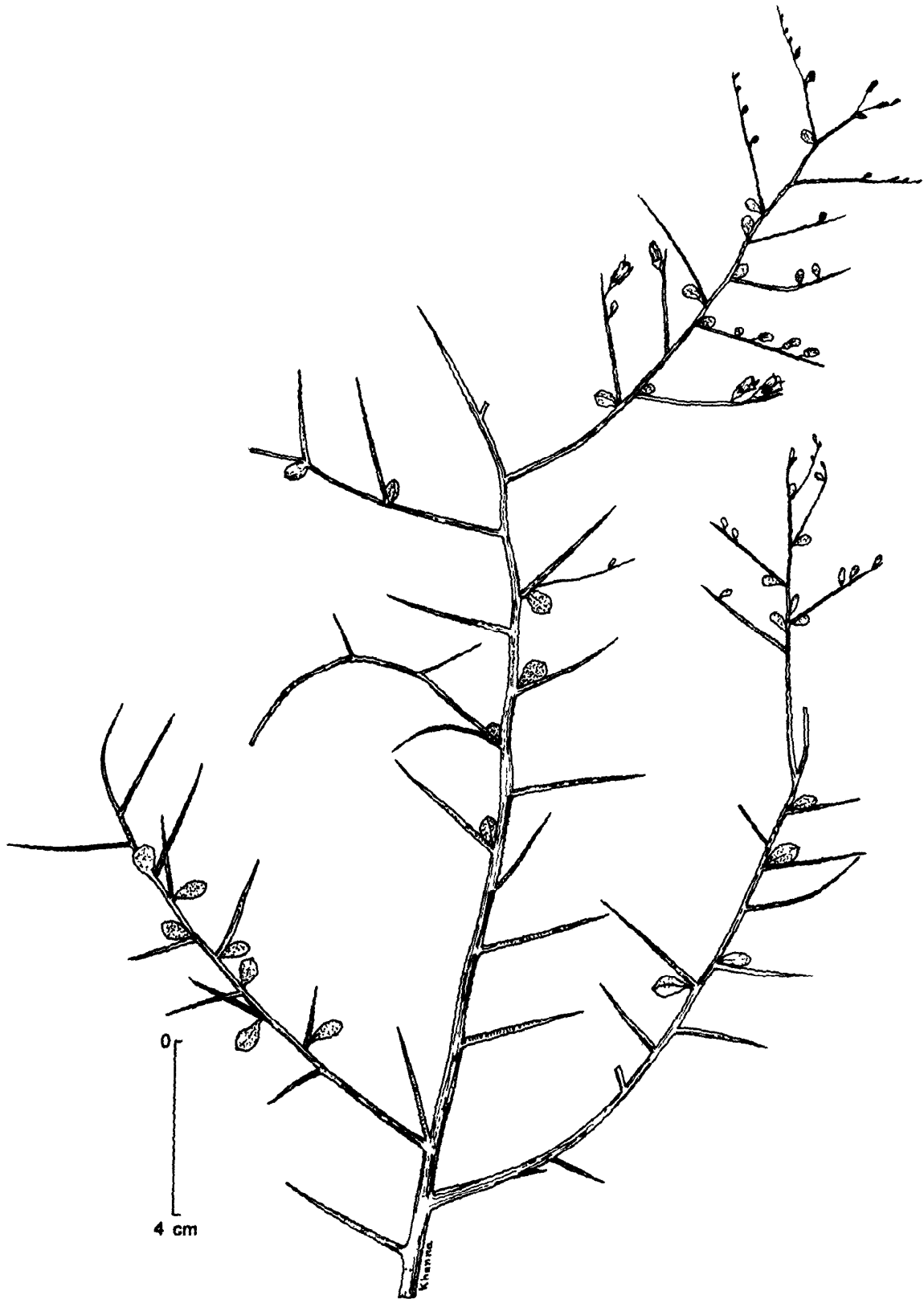


Fig. 5. *Alhagi maurorum* Medik.

Alysicarpus gamblei Schindler in Fedde Repert. 21: 11. 1925.

Herbs, perennial, up to 40 cm high. Leaves 1-foliolate; leaflets linear-elliptic, up to 3 x 0.6 cm, rounded at apex, acute at base, sparsely hairy below. Flowers lax, in up to 10 cm long, terminal racemes. Calyx 5-6 mm long, one tooth bigger than the other four, ciliate at upper portion. Corolla yellowish brown, not or slightly exserted. Pods up to 1.2 x 0.2 cm, flat, somewhat reticulate, dusty pilose, 3-5-jointed.

Among grasses. Madhya Pradesh (Sanjappa, Leg. India 78. 1992). *Fl. & Fr.*: Aug. Nov.

Alysicarpus heterophyllus (Baker) Jafri & Ali in Biologia 12: 33. 1966. *A. vaginalis* (L.) DC. var. *heterophyllus* Baker in Hook. *f.*, Fl. Brit. India 2: 158. 1876.

Herbs, erect, diffusely branched. Upper leaves 3-foliolate, lower 1 and 3-foliolate intermixed; leaflets lanceolate to oblong-lanceolate, up to 7 x 1 cm, acute at apex. Flowers pink, remotely paired in 6-20-flowered racemes. Calyx equalling or slightly longer than the first joint of pod. Pods tetragonous, reticulately veined, 3-5-jointed; joints longer than broad.

In wastelands. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 86. 1996). *Fl. & Fr.*: Aug. Oct.

Alysicarpus heyneanus Wight & Arn., Prodr. 234. 1834. *A. rugosus* (Willd.) DC. var. *heyneanus* (Wight & Arn.) Baker in Hook. *f.*, Fl. Brit. India 2: 159. 1876.

Herbs, diffuse or suberect, densely pubescent or villous, up to 50 cm high. Leaves 1-foliolate; leaflets obovate-oblong or elliptic-oblong, up to 4.5 x 2.5 cm, obtuse or apiculate at apex, pubescent beneath. Flowers up to 15 cm long, in axillary and terminal racemes. Calyx deeply divided. Corolla purple. Pods moniliform, up to 1.2 cm long, 3-5-jointed, apiculate; joints rugose. Seeds brown, ellipsoid, obtuse at ends.

In grasslands and cultivated fields. Hoshangabad (Bir and Kumari in Bull. Bot. Surv. India 22: 47. 1982). *Fl. & Fr.*: Sept. Dec.

Alysicarpus heyneanus Wight & Arn. var. **ludens** (Baker) Pramanik & Thoth. in Bull. Bot. Surv. India 24: 112. 1983. *A. rugosus* (Willd.) DC. var. *ludens* Baker in Hook. *f.*, Fl. Brit. India 2: 159. 1876.

Herbs, ascending. Leaves 1-3-foliolate; leaflets linear, up to 7 x 0.3 cm, obtuse or apiculate at apex, appressed hairy beneath. Flowers crowded in dense spicate racemes. Calyx 5-7 mm long, hairy. Corolla reddish purple. Pods included, 3-5-jointed, joints transversely ribbed.

Among grasses. Sagar (CAL). *Fl. & Fr.*: Aug. Oct.

Alysicarpus ovalifolius (Schumach) J. Leon., Bull. Jard. Bot. Estat. Brux. 24: 88. 1954. *Hedysarum ovalifolium* Schumach, Beskr. Guin. Pl. 359. 1827.

Herbs, diffuse, annual, up to 50 cm high. Leaves 1-foliolate; leaflets elliptic-oblong or lanceolate, up to 7.5 x 1 cm, acute or mucronate at apex, subcordate at base, puberulous on nerves beneath. Flowers in terminal or leaf-opposed, lax racemes. Calyx equal or longer than first joint of pod. Corolla orange-buff to pink-coloured. Pods up to 3 x 0.4 cm, flat, 5-7-jointed, puberulous. Seeds brown, ellipsoid.

In grassy fields. Madhya Pradesh (Sanjappa, Leg. India 79. 1992). *Fl. & Fr.*: Aug. Oct.

Alysicarpus roxburghianus Thoth. & Pramanik in Bull. Bot. Surv. India 21: 189. 1981.

Herbs, diffuse or ascending. Leaves 1-foliolate; leaflets linear, up to 5.5 x 0.5 cm, glabrous above, pubescent on nerves beneath. Flowers purple, in spike-like, lax racemes. Calyx much longer than the first joint of pod. Pods moniliform, 3-6-jointed; joints smooth.

In grasslands. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 87. 1996). *Fl. & Fr.*: Aug. Sept.

CAJANUS DC., *nom. cons.*

Cajanus albicans (Wight & Arn.) van der Maesen, Agric. Univ. Wageningen Pap. 85-4: 55. 1985. *Canthospermum albicans* Wight & Arn., Prodr. 256. 1834. *Atylosia albicans* (Wight & Arn.) Benth. in Miq., Pl. Jungh. 243. 1852; Baker in Hook. f., Fl. Brit. India 2: 215. 1876.

Shrubs, climbing; young branches canescent, grooved. Leaflets digitate, obovate, up to 5 x 3.5 cm, obtuse or subacute at apex, coriaceous, white-

canescent beneath. Racemes 4-12-flowered, often corymbose, usually shorter than leaves. Calyx *ca* 5 mm long, the lowest tooth lanceolate, the upper teeth oblong or deltoid. Corolla much exserted. Pods linear, up to 3 x 1 cm, canescent, beaked at apex, 5-6-seeded. Seeds strophiolate.

In hilly areas. Bundelkhand (Tiwari, Phytog. Leg. Madh. Prad. 373. 1979). *Fl. & Fr.*: Dec. - April.

Cajanus cajanifolius (Haines) van der Maesen, Agric. Univ. Wageningen Pap. 85-4: 91. 1985. *Atylosia cajanifolia* Haines in J. Asiat. Soc. Bengal (n.s.) 15: 312. 1920. *Banrahar*.

Shrubs, up to 2 m high. Stems minutely pubescent, angled by 3-decurrent lines from the nodes. Leaflets subdigitate, lanceolate-rhomboid, up to 6 x 3.5 cm, acute at apex, pubescent beneath. Flowers 1-4 (usually 2) on axillary peduncles. Calyx-teeth distinct, triangular. Corolla dull yellow, *ca* 1 cm long. Stamens diadelphous. Pods linear-oblong, up to 3 x 1 cm, minutely velvety, 4-6-seeded, constricted between the seeds. Seeds black, shining, strophiolate.

Rare. In dense forests. Bastar (Tiwari, Phytog. Leg. Madh. Prad. 373. 1979). *Fl. & Fr.*: Nov. - April.

Cajanus heynei (Wight & Arn.) van der Maesen, Univ. Wageningen Pap. 85-4: 129. 1985. *Dunbaria heynei* Wight & Arn., Prodr. 258. 1834; Baker in Hook. *f.*, Fl. Brit. India 2: 217. 1876. *Cajanus kulnensis* Dalz. in Hook., Kew J. Bot. Gard. Misc. 2: 664. 1850. *Atylosia kulnensis* (Dalz.) Dalz. in J. Linn. Soc. London (Bot.) 13: 185. 1873; Baker in Hook. *f.*, Fl. Brit. India 2: 214. 1876.

Twiners. Branches sparsely hairy. Leaves 3-foliolate; leaflets obovate-rhomboid, up to 7.5 x 5 cm, cuspidate at apex, scabrous with glands above, obscurely hairy on ribs beneath. Flowers in lax racemes. Calyx *ca* 1 cm long, lowest tooth linear-acuminate, exceeding the tube. Corolla half as long as the calyx. Pods linear, up to 3 x 1 cm, hairy, obliquely constricted between the seeds. Seeds 5-6, strophiolate.

In dense forests. Hoshangabad (Bir and Kumari in Bull. Bot. Surv. India 22: 47. 1982). *Fl. & Fr.*: Nov. - March.

Cajanus rugosus (Wight & Arn.) van der Maesen, Agric. Univ. Wageningen Pap. 85-4: 179. 1985. *Atylosia rugosa* Wight & Arn., Prodr. 257. 1834; Baker in Hook. *f.*, Fl. Brit. India 2: 215. 1876.

Woody twiners. Branches shortly grey downy. Leaflets digitate, obovate, up to 5 x 3.2 cm, coriaceous, rugose above, densely grey canescent beneath. Flowers usually in pairs, pedicellate. Calyx 6-9 mm long, densely canescent, the lower tooth linear, the others lanceolate. Corolla yellow, little exserted. Pods linear-oblong, up to 2.5 x 0.8 cm, densely grey canescent, hooked at apex, 3-4-seeded, compressed between the seeds. Seeds strophiolate.

At higher elevations. Balaghat, Bastar (Tiwari, Phytog. Leg. Madh. Prad. 374. 1979). *Fl. & Fr.*: Nov. Feb.

CROTALARIA L.

Crotalaria angulata Mill., Gard. Dict. ed. 8. no. 9. 1768. *Astragalus biflora* L., Mant. Pl. 273. 1771. *Crotalaria biflora* (L.) L., Mant. Pl. 570. 1771; Baker in Hook. *f.*, Fl. Brit. India 2: 66. 1876.

Herbs, perennial, trailing, silky hairy. Branches numerous, up to 30 cm long. Leaves simple, broadly ovate or suborbicular, up to 2 x 1.5 cm, oblique, sessile. Flowers usually 2-together on long, slender peduncles. Calyx-tube short, 2-lipped. Corolla yellow. Stamens monadelphous. Pods subglobose. Seeds 2, reniform.

In plains. Madhya Pradesh (Tiwari, Phytog. Leg. Madh. Prad. 277. 1979). *Fl. & Fr.*: Dec. Feb.

Crotalaria chinensis L., Syst. Nat. ed. 10. 1158. 1759; Baker in Hook. *f.*, Fl. Brit. India 2: 73. 1876.

Herbs, annual, branched, up to 50 cm high. Branches silky hairy. Leaves oblong or oblanceolate, up to 5.5 x 1.8 cm, pellucido-punctate, silky hairy beneath, rounded at both ends, subsessile. Flowers in terminal capitate racemes; bracts and bracteoles linear. Calyx densely hairy, the lower teeth linear, the upper lanceolate. Corolla pale yellow, not exserted. Pods up to 1 cm long, turgid, sessile. Seeds 15-20, reniform.

As forest undergrowth. Bilaspur (Tiwari, Phytog. Leg. Madh. Prad. 278. 1979). *Fl. & Fr.*: Sept. Dec.

Crotalaria epunctata Dalz. in Hook., Kew J. Bot. Gard. Misc. 3: 210. 1850. *C. albida* Heyne ex Roth var. *epunctata* (Dalz.) Baker in Hook. f., Fl. Brit. India 2: 71. 1876.

Undershrubs, up to 75 cm high. Branches silky pubescent. Leaves linear-oblong or oblanceolate, up to 5 x 1.2 cm, obtuse, apiculate at apex, membranous, pubescent, exstipulate. Flowers in terminal, 3-6-flowered, up to 10 cm long racemes. Calyx 5-6 mm long; teeth linear, acuminate. Corolla pale yellow, 7-9 mm long. Pods oblong-cylindrical, up to 1.2 cm long, sessile, 6-12-seeded. Seeds reniform.

As forest undergrowth. Rewa (Sebastine and Balakrishnan in Indian For. 89: 526. 1963). *Fl. & Fr.*: Dec. Feb.

Crotalaria filipes Benth. in Hook., Lond. J. Bot. 2: 475. 1843; Baker in Hook. f., Fl. Brit. India 2: 66. 1876. **Fig. 6.**

Herbs, prostrate, with many branches arising from the root. Branches silky hairy. Leaves simple, ovate-oblong, up to 1.3 x 0.7 cm, acute or mucronulate at apex, silky hairy. Flowers distant in 1-3-flowered racemes; peduncles and pedicels very slender. Calyx *ca* 4 mm long, hairy. Corolla yellow, exserted. Pods 4-6 mm long, 8-10-seeded. Seeds reniform.

Sparse. In moist places. Indore. *Fl. & Fr.*: Oct. Dec.

Crotalaria filipes Benth. var. **trichophora** (Benth. ex Baker) Cooke, Fl. Pres. Bombay 1: 293. 1903. *C. trichophora* Benth. ex Baker in Hook. f., Fl. Brit. India 2: 67. 1876.

Herbs, prostrate, covered with spreading, caducous hairs. Stems filiform, hairy. Leaves ovate, up to 1.2 x 0.8 cm, acute or obtuse at apex, subcordate at base, sparsely silky hairy. Flowers 1-3, in axillary racemes. Calyx-teeth lanceolate. Corolla yellow, exserted. Pods 3-6 mm long, turgid, exserted. Seeds 8-10.

In grasslands and on hill slopes. Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 90. 1996). *Fl. & Fr.*: Oct. Dec.



Fig. 6. *Crotalaria filipes* Benth.

Crotalaria leptostachya Benth. in Hook., Lond. J. Bot. 2: 562. 1843; Baker in Hook. *f.*, Fl. Brit. India 2: 78. 1876.

Shrubs. Branches 4-gonous. Leaves 1-foliolate; leaflets linear or linear-oblong, up to 12 x 2.5 cm, apiculate at apex, membranous, fulvous silky hairy on both the surfaces. Flowers in 20-30 cm long racemes. Calyx silky hairy. Corolla yellow, not exserted. Pods 1.5-2.5 cm long, turgid, densely fulvous-silky. Seeds 4-6.

Rare. As forest undergrowth. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 91. 1996). *Fl. & Fr.*: Aug. Nov.

Crotalaria medicaginea Lam. var. ***luxurians*** (Benth.) Baker in Hook. *f.*, Fl. Brit. India 2: 81. 1876. *C. luxurians* Benth. in Hook., Lond. J. Bot. 2: 578. 1843.

Herbs, perennial, robust, up to 1 m high. Leaves 3-foliolate; leaflets oblanceolate, up to 2.5 x 0.7 cm, obtuse, apiculate at apex, more or less silky beneath; stipules filiform. Flowers in terminal and extra-axillary, 6-12-flowered racemes; bracts linear-subulate. Calyx silky hairy outside. Corolla yellow, twice as long as the calyx. Pods obliquely subglobose, up to 1.2 cm long, sparsely silky, beaked. Seeds 2, reniform.

Sparse. In fields. East Nimar (Tiwari, Phytog. Leg. Madh. Prad. 281. 1979), Ujjain (Singh and Khare, Fl. Ujjain Dist. 155. 1996). *Fl. & Fr.*: Sept. Nov.

Crotalaria medicaginea Lam. var. ***neglecta*** (Wight & Arn.) Baker in Hook. *f.*, Fl. Brit. India 2: 81. 1876. *C. neglecta* Wight & Arn., Prodr. 192. 1834.

Herbs, perennial, up to 30 cm high. Branches ascending, slender, appressed hairy. Leaves 3-foliolate; leaflets oblanceolate, up to 2 x 0.6 cm, retuse or rounded at apex, silky beneath; stipules filiform. Flowers in terminal, leaf-opposed, 6-9-flowered racemes. Calyx *ca* 2.5 mm long, silky appressed hairy; teeth triangular, acute. Corolla yellow, *ca* 5 mm long. Pods obliquely subglobose, *ca* 3 mm long, sparsely silky, beaked, 2-seeded. Seeds reniform.

Sparse. In mixed forests. Mandla. *Fl. & Fr.*: Sept. Dec.

Crotalaria sessiliflora L. var. **anthylloides** (Lam.) A.A. Ansari & Thoth. forma **lineariformis** A.A. Ansari & Thoth. in J. Econ. Tax. Bot. 6: 745. 1985.

Herbs, branched, up to 30 cm high. Stems sparsely hairy. Leaves linear or linear-lanceolate, up to 7.5 x 0.5 cm, acuminate at apex, acute at base, piloso-pubescent beneath; stipules linear, piloso-pubescent, reflexed upwards. Flowers 3-8 in terminal and axillary racemes or solitary, axillary. Calyx-lobes 6-9 mm long, pilose outside, 2 upper oblong-lanceolate, 3 lower linear-lanceolate; tube *ca* 1 mm long. Corolla bluish, shorter or equal to calyx. Pods obovate-oblong, up to 9 x 4 mm, beaked, 7-10-seeded. Seeds reniform.

Rare. In mixed forests. Surguja (Ansari and Thothathri in J. Econ. Tax. Bot. 6: 745. 1985). *Fl. & Fr.*: Oct. Dec.

Crotalaria verrucosa L., Sp. Pl. 715. 1753; Baker in Hook. *f.*, Fl. Brit. India 2: 77. 1876.

Herbs, up to 1 m high. Branches acutely angled. Leaves ovate-rhomboid or ovate-deltoid, up to 15 x 7 cm, obtuse or acute at apex, tapering at base, pubescent beneath; stipules foliaceous, sublunate. Flowers in terminal or lateral, 12-20-flowered, up to 20 cm long racemes. Calyx 6-8 mm long; teeth triangular, acute; tube campanulate. Corolla bluish purple and white, up to 2 cm long. Pods oblong-cylindrical, up to 3 x 0.8 cm, villous when young, pubescent when ripe, 10-15-seeded. Seeds yellow, *ca* 5 mm long, reniform.

Throughout India (Sanjappa, Leg. India 131. 1992). *Fl. & Fr.*: Oct. Nov.

DERRIS Lour., *nom. cons.*

Derris scandens (Roxb.) Benth. in J. Linn. Soc. London (Bot.) 4(Suppl.): 103. 1860; Baker in Hook. *f.*, Fl. Brit. India 2: 240. 1876. *Dalbergia scandens* Roxb., Pl. Corom. 2: 29. t. 192. 1805.

Extensive climbers. Stems dark purple. Leaves up to 15 cm long; leaflets 9-19, elliptic-oblong or obovate-oblong, up to 5 x 1.8 cm, subacute to subacuminate or subemarginate at apex, rounded or subacute at base, subcoriaceous, pubescent beneath. Flowers fascicled in axillary, up to 35

cm long racemes. Calyx grey-silky; teeth obscure. Corolla white or pale pink. Stamens monadelphous. Pods up to 7 x 1.2 cm, pointed, narrowly winged on the upper suture, 1-4-seeded.

In dense forests. Bastar (Tiwari, Phytog. Leg. Madh. Prad. 345. 1979). *Fl. & Fr.*: July - Oct.

Bark yields fibre, also used in fish poisoning.

DESMODIUM Desv., *nom. cons.*

Desmodium alysicarpoides van Meeuwen in Reinwardtia 6: 246. 1962. *Alysicarpus parviflorus* Dalz. in Hook., J. Bot. Kew Gard. Misc. 3: 211. 1851. *Desmodium parviflorum* (Dalz.) Baker in Hook. f., Fl. Brit. India 2: 172. 1876, *non* Mart. & Galleotti, 1843.

Herbs. Stems glabrous below, pubescent in the upper portion. Leaves simple, 1-3-foliolate intermixed; leaflets elliptic-oblong, obtuse, subacute or mucronate at apex, sparsely hairy beneath. Flowers in racemes. Pods falcate, 4-6-jointed, rounded on both edges, reticulately veined, glabrescent.

In grasslands. Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 94. 1996). *Fl. & Fr.*: Aug. - Nov.

Desmodium biarticulatum (L.) F.v. Muell., Fragm. Phyt. Austr. 2: 121. 1861; Baker in Hook. f., Fl. Brit. India 2: 163. 1876. *Hedysarum biarticulatum* L., Sp. Pl. 747. 1753.

Undershrubs, caespitose, up to 50 cm high. Branches slender. Leaves 3-foliolate; leaflets oblanceolate-oblong, up to 1.2 x 0.4 cm, obtuse at apex, coriaceous. Flowers in lax, up to 15 cm long racemes. Calyx *ca* 2 mm long, scarious; two upper teeth connate. Pods orbicular-oblong, *ca* 4 mm long, usually 2-jointed, some 1-jointed, pubescent, both sutures indented.

Rare. As forest undergrowth. Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 238. 1942). *Fl. & Fr.*: Sept. - Dec.

Desmodium elegans DC. in Ann. Sci. Nat. Paris 4: 100. 1825. *Hedysarum tiliaefolium* D. Don, Prodr. Fl. Nepal. 244. 1825. *Desmodium tiliaefolium* (D. Don) Wallich ex G. Don, Gen. Hist. 2: 297. 1832; Baker in Hook. f., Fl. Brit. India 2: 168. 1872, *p. maj. p. D. oxyphyllum auct.*

non DC., 1825: Baker in Hook. *f.*, Fl. Brit. India 2: 167. 1876 *incl.* var. *serriferum*.

Undershrubs. Branches up to 50 cm long, slender, hairy. Leaves 3-foliolate; leaflets elliptic-rhomboid, up to 7.5 x 6.5 cm, acute or subacuminate at apex, entire or obscurely repand, subcoriaceous, hairy beneath. Flowers lax, in copious, up to 20 cm long, axillary and terminal racemes. Calyx *ca* 3 mm long, villous; teeth deltoid. Corolla purple, up to 1.2 cm long. Pods up to 7.5 x 0.6 cm, 6-9-jointed; joints longer than broad, upper suture straight, lower indented between the seeds, pubescent.

Rare. In mixed forests. Seoni. *Fl. & Fr.*: Aug. Oct.

Desmodium ferrugineum Wallich *ex* Thwaites, Enum. Pl. Zeyl. 87. 1859. *D. rufescens* Wight & Arn., Prodr. 228. 1834, *non* DC., 1825, *nec* G. Don, 1832; Baker in Hook. *f.*, Fl. Brit. India 2: 171. 1876, *p.p.*

Undershrubs, up to 1.5 m high. Branches covered with ferrugineous silky hairs. Leaves 3-foliolate; leaflets obovate-oblong, up to 5 x 3 cm, obtuse with a mucro, subcoriaceous, argenteo-canescens beneath. Flowers in terminal, up to 15 cm long racemes. Calyx *ca* 3 mm long; teeth linear-lanceolate. Corolla pink, up to 1.2 cm long. Pods up to 3 x 0.3 cm, 6-8-jointed; joints as broad as long, pubescent, upper suture straight, lower slightly indented.

In hilly areas. Hoshangabad (Oommachan and Masih in J. Econ. Tax. Bot. 16: 439. 1992), Sagar (Sahu and Mishra in Bull. Bot. Soc. Univ. Saugar 29: 1982). *Fl. & Fr.*: Sept. Dec.

Desmodium heterophyllum (Willd.) DC., Prodr. 2: 334. 1825; Baker in Hook. *f.*, Fl. Brit. India 2: 173. 1876. *Hedysarum heterophyllum* Willd., Sp. Pl. 3: 620. 1820.

Herbs, trailing. Branches up to 50 cm long, spreading, hairy. Leaves 3-foliolate; leaflets oblong or obovate-oblong, up to 2.5 x 1 cm, hairy beneath; petioles up to 1 cm long, pubescent; stipules lanceolate, *ca* 3 mm long, acuminate. Flowers 1-2 in leaf axils and up to 6 in copious, lax racemes. Calyx *ca* 3 mm long, densely hairy; teeth setaceous. Corolla pink, exserted. Pods up to 1.8 x 0.4 cm, 4-5-jointed; joints as broad as long; upper suture straight, lower indented.

Rare. As forest undergrowth. Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 238. 1942). *Fl. & Fr.*: Aug. - Oct.

Desmodium neomexicanum A. Gray, Pl. Wright 1: 53. 1852. *D. spirale auct. non* (Sw.) DC., 1825; Baker in Hook. *f.*, Fl. Brit. India 2: 164. 1876.

Herbs, annual, branched, up to 50 cm high. Branches slender. Leaves 3-foliolate; leaflets ovate-lanceolate, up to 3.5 x 2.2 cm, subacute or obtuse at apex, rounded at base, membranous, sparsely pubescent. Flowers in axillary and terminal paniced racemes; bracts setaceous. Calyx-teeth lanceolate. Corolla pink. Pods up to 1.5 x 0.2 cm, 3-6-jointed; joints as broad as long, spirally twisted, both suture deeply indented.

Rare. As undergrowth in forests. Sagar (Sahu and Mishra in Bull. Bot. Soc. Univ. Saugar 29: 75. 1982). *Fl. & Fr.*: Aug. Sept.

DOLICHOS L.

Dolichos trilobus L., Sp. Pl. 726. 1753. *D. falcatus* Klein ex Willd., Sp. Pl. 3: 1047. 1802; Baker in Hook. *f.*, Fl. Brit. India 2: 211. 1876, *p.p.*

Slender climbers, with fusiform tuberous roots. Leaves 3-foliolate; leaflets simple and 3-lobed, sometimes with a pale patch in the centre; stipules reflexed. Flowers solitary or in slender few-flowered racemes. Corolla lilac or pink. Stamens diadelphous. Pods linear-oblong, up to 8 x 1 cm, flat, 5-8-seeded. Seeds reniform.

Sparse. In hilly forests. Hoshangabad (Tiwari, Phytog. Leg. Madh. Prad. 395. 1979). *Fl. & Fr.*: Nov. - Jan.

Roots and seeds are eaten by the aboriginals.

DUNBARIA Wight & Arn.

Dunbaria glandulosa (Dalz.) Prain in J. Asiat. Soc. Bengal 66: 433. 1897. *Cajanus glandulosus* Dalz. in Dalz. & Gibs., Bombay Fl. 73. 1861. *Atylosia rostrata* Baker in Hook. *f.*, Fl. Brit. India 2: 216. 1876.

Woody climbers, covered with short tomentum. Leaves 3-foliolate; leaflets up to 7 x 8 cm, usually broader than long, subcoriaceous, punctate

beneath, the terminal leaflet rhomboid-ovate, acute or acuminate at apex, the laterals obliquely ovate, acute at apex. Flowers paired in lax racemes. Calyx sparsely bristly. Corolla yellow with brown lines. Pods linear, up to 7.5 x 1 cm, covered with bulbous-based bristles, shortly beaked, constricted between the seeds, 8-10-seeded. Seeds suborbicular; funicle thickened, scarcely strophiolate.

Rare. In outskirts of forests. Sagar (Tiwari, Phytog. Leg. Madh. Prad. 371. 1979).

DYSOLOBIUM (Benth.) Prain

Dysolobium grande (Wallich *ex* Benth.) Prain in J. Asiat. Soc. Bengal 66: 427. 1897. *Phaseolus grandis* Wallich *ex* Benth. in Miq., Pl. Jungh. 239. 1852 *in adnota*. *Phaseolus velutinus* Grah. *ex* Baker in Hook. *f.*, Fl. Brit. India 2: 204. 1876.

Woody climbers. Stems terete. Leaves 3-foliolate; leaflets suborbicular, up to 20.5 x 18.5 cm, cuspidate at apex, membranous, bristly hairy. Flowers in up to 20 cm long racemes. Calyx *ca* 1 cm long, silky hairy, lowest tooth lanceolate, shorter than the tube, the others much shorter. Corolla reddish, more than twice as long as the calyx. Pods linear-oblong, up to 20 x 1.6 cm, subterete, deeply channelled down both sutures, densely brown velvety, many-seeded.

Rare. At higher elevations. Hoshangabad (Bir and Kumari in Bull. Bot. Surv. India 22: 48. 1982). *Fl. & Fr.*: July - Oct.

ERYTHRINA L.

Erythrina resupinata Roxb., Pl. Corom. t. 220. 1811; Baker in Hook. *f.*, Fl. Brit. India 2: 189. 1876.

Undershrubs, with very thick rootstock. Stems short, die down annually. Leaves 3-foliolate; leaflets more or less rhomboid; stipules glanduliform. Flowers in racemes, appearing during leafless condition of the plant. Calyx 2-lipped. Corolla scarlet, exserted. Ovary stipitate. Pods falcate, torulose, turgid, attenuate at both ends.

Sparse. In dry deciduous forests at higher elevations. Bastar, Surguja (Tiwari, Phytog. Leg. Madh. Prad. 357. 1979). *Fl. & Fr.*: March - June.

FLEMINGIA Roxb. *ex* Ait. & Ait. *f.*, *nom. cons.*

Flemingia praecox C.B. Clarke *ex* Prain var. **angusta** (Craib) Anand Kumar in Nat. Acad. Sci. Letters 5(8): 249. 1982. *Flemingia angusta* Craib in Kew Bull. 1913: 41. 1913.

Undershrubs, up to 1.2 m high. Stems 3-quetrous. Leaves digitately 3-foliolate; leaflets narrowly lanceolate, up to 22 x 3.2 cm, acuminate at apex, cuneate at base, subcoriaceous, appressed pilose on the nerves and glandular beneath. Racemes axillary, dense, narrowly cylindrical, up to 8 cm long. Calyx *ca* 6 mm long; teeth linear, pubescent, lowest tooth twice as long as the others. Corolla red, equalling the lowest calyx-tooth. Pods black, up to 1 cm long, turgid, oblique, 2-seeded.

Rare. As undergrowth in forests. Madhya Pradesh (Anand Kumar in Nat. Acad. Sci. Letters 5(8): 249. 1982). *Fl. & Fr.*: Feb. April.

Flemingia praecox C.B. Clarke *ex* Prain var. **robusta** (Mukerjee) Anand Kumar in Nat. Acad. Sci. Letters 5(8): 249. 1982. *Moghania praecox* (C.B. Clarke *ex* Prain) H.L. Li var. *robusta* Mukerjee in Bull. Bot. Soc. Bengal 6: 19. 1952.

Shrubs, up to 2 m high. Stems 3-quetrous. Leaves digitately 3-foliolate; leaflets lanceolate, up to 25 x 4 cm, acuminate at apex, coriaceous; petioles up to 10 cm long. Racemes densely flowered, shorter than petioles; bracts lanceolate, imbricating, completely covering the flower in bud. Calyx 4-6 mm long; teeth linear, pubescent, lowest tooth twice as long as the others. Corolla red, equalling the lowest calyx-tooth. Pods up to 1 cm long, turgid, oblique, 2-seeded. Seeds black.

Rare. In mixed forests. Madhya Pradesh (Anand Kumar in Nat. Acad. Sci. Letters 5(8): 249. 1982). *Fl. & Fr.*: Jan. March.

Flemingia procumbens Roxb., Fl. Ind. 3: 338. 1832. *F. vestita* Benth. *ex* Baker in Hook. *f.*, Fl. Brit. India 2: 230. 1876. *Moghania procumbens* (Roxb.) Mukerjee in Bull. Bot. Soc. Bengal 6: 12. 1952.

Shrubs. Branches trailing, up to 70 cm long, 3-gonous, villous. Leaves 3-foliolate; leaflets obliquely ovate, up to 2 cm long, punctate beneath; stipules villous, caducous. Flowers small, in short, dense, long peduncled, axillary racemes. Calyx silky with garnet-coloured glands; teeth narrow.

Corolla with prominent red veins. Pods turgid, 2-seeded. Seeds grey mottled with brown, globose.

Rare. As undergrowth in forests. Bastar (Tiwari, Phytog. Leg. Madh. Prad. 383. 1979). *Fl. & Fr.*: Jan. March.

Flemingia stricta Roxb. subsp. **pteropus** (Baker) K.K. Khanna & Anand Kumar in Indian J. For. 24(2): 223. 2001. *F. stricta* Roxb. var. *pteropus* Baker in Hook. f., Fl. Brit. India 2: 228. 1876. *Moghania stricta* (Roxb.) Kuntze var. *pteropus* (Baker) Mukerjee in Bull. Bot. Soc. Bengal 6(1): 15. 1952. Fig. 7.

Shrubs, up to 3 m high. Stems hairy, glabrescent with age. Leaves digitately 3-foliolate; leaflets lanceolate or elliptic-lanceolate, 16-38 x 8-15 cm, acuminate at apex, middle leaflet subacute at base, lateral leaflets oblique at base, glabrous, hairy on nerves and midrib; petioles 7-13 cm long, distinctly winged. Racemes 6-10 cm long, always fascicled in leaf axils; peduncles silky hairy. Flowers 7-10 mm long. Calyx 5-lobed; one of the lobe (lowest) large, lanceolate, 7-8 mm long; other lobes ovate, ca 4 mm long, all silky hairy and gland dotted outside. Corolla longer than the lowest calyx-lobe; standard greenish purple with deep purple streaks, ca 6.5 mm across; lateral petals pinkish purple, 6-7 mm long; keel petals green with deep purple streaks, 9-10 mm long. Stamens 9+1. Pods green with purple markings in the upper half and suture, oblong, turgid, up to 15 x 7 mm, softly hairy.

Bastar, Betul. *Fl. & Fr.*: March - May.

Flemingia wightiana Grah. ex Wight & Arn., Prodr. 242. 1834. *F. congesta* Roxb. ex Ait. f. var. *wightiana* (Grah. ex Wight & Arn.) Baker in Hook. f., Fl. Brit. India 2: 229. 1876.

Shrubs, up to 1 m high. Branches golden silky hairy. Leaves digitately 3-foliolate; leaflets oblong-lanceolate or oblanceolate, up to 12 x 6 cm, acute or acuminate at apex, coriaceous, slightly rugose above, tomentose beneath; stipules caducous. Racemes 2-3-together, cone-like before expansion and covered with imbricating bracts. Calyx villous, glandular; teeth linear. Corolla red, equalling the tube or slightly longer. Pods turgid, oblique, sparsely glandular, usually 2-seeded. Seeds black, rounded.

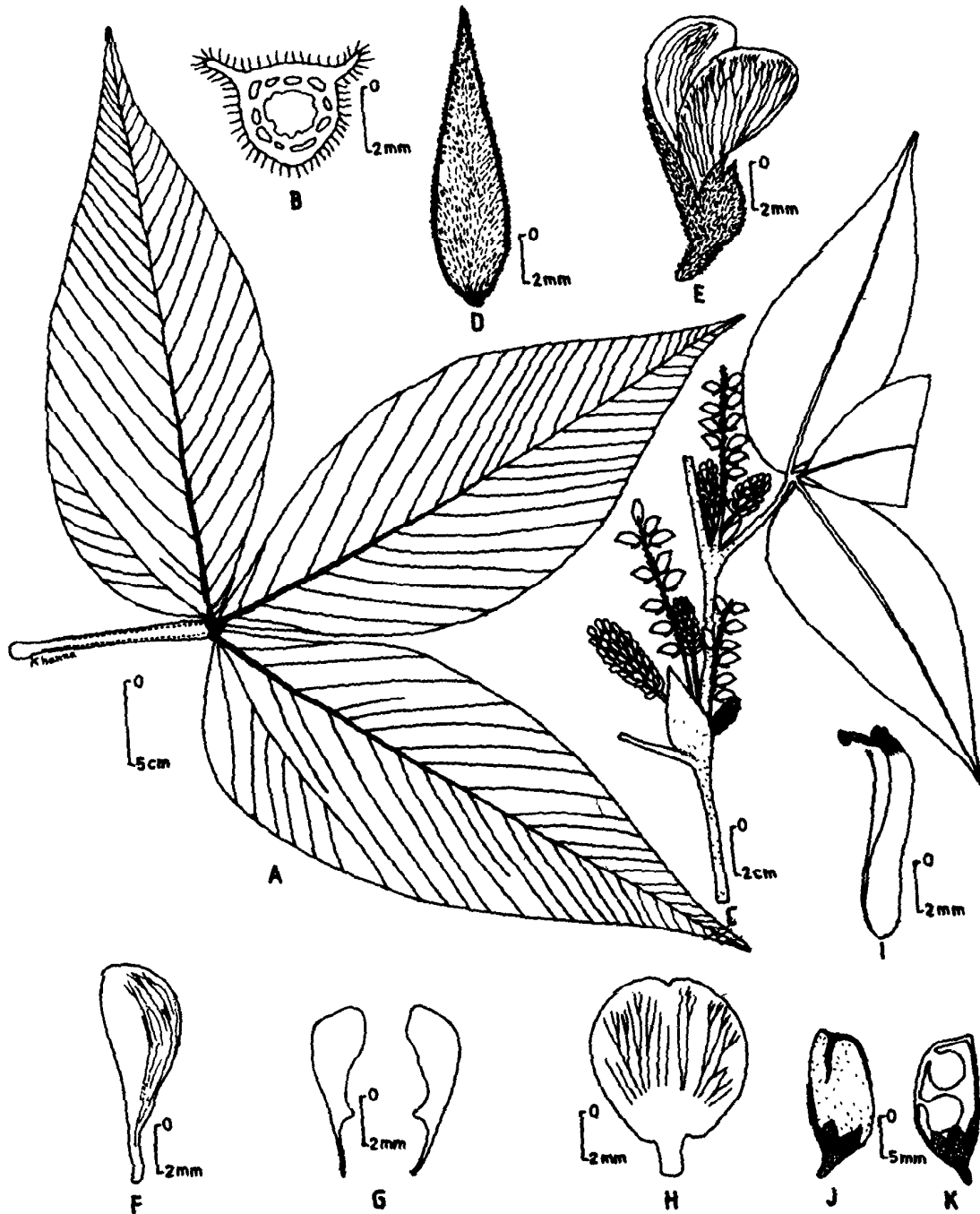


Fig. 7. *Flemingia stricta* Roxb. subsp. *pteropus* (Baker)
 K.K. Khanna & Anand Kumar

A. Leaf; B. Transverse section of petiole showing wings; C. A branch bearing inflorescence; D. Bract; E. Flower; F. Keel; G. Wings; H. Standard; I. Androecium and gynoecium; J. Pod; K. Pod opened showing seeds.

Rare. At lower elevations in forests. Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 238. 1942). *Fl. & Fr.*: March June.

GALACTIA P. Br.

Galactia longifolia Benth. in Ann. Wein. Mus. Nat. 2: 127. 1838.

Slender twiners, generally spreading on rocky ground; latex present. Leaves 3-foliolate; leaflets linear or oblong, up to 9 x 1.8 cm, obtuse, mucronate at apex, subcoriaceous, appressed villous beneath; stipules subulate. Calyx-lobes rather broad, acuminate. Corolla slightly exserted. Stamens diadelphous. Pods linear, up to 7 x 1 cm, flat. Seeds somewhat compressed.

Rare. In hilly forests. Bansapur (Tiwari, Phytog. Leg. Madh. Prad. 366. 1979). *Fl. & Fr.*: Sept. Dec.

Galactia tenuiflora (Klein ex Willd.) Wight & Arn. var. ***villosa*** (Wight & Arn.) Benth. in Mart., Fl. Bras. 15: 143. 1859; Baker in Hook. f., Fl. Brit. India 2: 192. 1876. *Galactia villosa* Wight & Arn., Prodr. 207. 1834.

Herbs, twining. Stems grey-downy. Leaves 3-foliolate; leaflets elliptic-oblong, up to 3 x 2 cm, obtuse at apex, rounded or subcordate at base, grey-downy. Flowers few in racemes. Calyx filiform, 5-8 mm long, slightly hairy; teeth lanceolate, acute. Corolla bluish purple. Stamens diadelphous. Pods linear, up to 3.5 x 0.7 cm, compressed, densely grey-downy.

Rare. In hilly forests. Hoshangabad (Oommachan and Masih in J. Econ. Tax. Bot. 16: 439. 1992). *Fl. & Fr.*: Dec. - Feb.

INDIGOFERA L.

Indigofera barberi Gamble, Fl. Pres. Madras 1: 306, 310. 1918 & in Kew Bull. 1919: 222. 1919.

Herbs, annual, appressed hairy. Leaves 3-5-foliolate; leaflets obovate, up to 1.8 x 0.6 cm, obtuse at apex, cuneate at base. Flowers in axillary, 6-8-flowered spikes, subsessile. Sepals united 1/3 length, ca 2 mm long, hairy. Corolla hairy outside; standard orbicular. Stamens alternately long and short. Pods up to 1.25 x 0.2 cm, 4-gonous, narrowly winged, not

torulose, slightly deflexed, curved at apex, 4-5-seeded. Seeds brown, shining, smooth.

In wastelands. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 98. 1996). *Fl. & Fr.*: Aug. Nov.

Indigofera glandulosa Wendl. var. **sykesii** Griff. ex Baker in Hook. *f.*, Fl. Brit. India 2: 94. 1876.

Herbs, annual, erect, up to 45 cm high. Branches covered with long spreading hairs when young. Leaves 3-foliolate; leaflets obovate, up to 3.5 x 1.2 cm, retuse at apex, obliquely cuneate at base, nigropunctate beneath. Flowers 8-10 in axillary, racemose heads. Corolla reddish purple. Pods orbicular, 1-seeded.

In grasslands and along roadsides. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 99. 1996). *Fl. & Fr.*: Sept. Nov.

Indigofera parviflora Heyne ex Wight & Arn., Prodr. 201. 1834; Baker in Hook. *f.*, Fl. Brit. India 2: 97. 1876.

Herbs, erect, branched. Stems and branches slender, grooved or angled, silvery canescent. Leaflets 7-9, elliptic-oblong, up to 1.2 x 0.5 cm, membranous, grey pubescent. Racemes 6-8-flowered. Corolla reddish purple. Pods linear, deflexed, hairy, 12-16-seeded.

In wastelands. Bastar (Tiwari, Phytog. Leg. Madh. Prad. 300. 1979), Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 100. 1996). *Fl. & Fr.*: Sept. - Jan.

Indigofera sessiliflora DC., Prodr. 2: 228. 1825. *I. trigonelloides auct. non* Jaub. & Spach., 1857; Baker in Hook. *f.*, Fl. Brit. India 2: 94. 1876.

Herbs, annual, densely silvery hairy. Stems 3-gonous, trailing, branched. Leaves 5-7-foliolate; leaflets oblanceolate, up to 1.3 x 0.5 cm, silvery white on both the surfaces. Inflorescence of 15-20-flowered heads. Corolla red. Pods linear, cylindrical, 6-8 mm long, silvery hairy, torulose, 3-4-seeded.

Rare. In wastelands. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 100. 1996). *Fl. & Fr.*: Aug. Dec.

Indigofera trifoliata L. var. **duthiei** (Drum. ex Naik) Sanj., Leg. India 196. 1992. *Indigofera duthiei* Drum. ex Naik in Proc. Indian Acad. Sci. 61: 227. 1970.

Herbs, erect, up to 50 cm high. Leaves 3-foliolate; leaflets obovate or oblong, up to 3 x 1.5 cm, hairy on both the surfaces, nigropunctate beneath. Flowers in axillary, 5-12-flowered, dense racemes. Corolla pink. Pods 2-2.5 cm long, deflexed, compressed, sparsely hairy, winged, 6-8-seeded.

In pasture lands, on hill slopes and along bunds of fields. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 99. 1996). *Fl. & Fr.*: Aug. Nov.

LATHYRUS L.

Lathyrus sphaericus Retz., Observ. Bot. 3: 39. 1783; Baker in Hook. *f.*, Fl. Brit. India 2: 180. 1876. **Fig. 8.**

Herbs, annual. Stems not winged. Leaves paripinnate; rhachis ending in a tendril; leaflets 2, linear or lanceolate, up to 6.8 x 0.3 cm; stipules semisagittate; petioles winged. Flowers solitary, axillary. Calyx 4-6 mm long; teeth as long as the tube. Corolla red, twice as long as the calyx. Pods linear-ensiform, up to 5.5 x 0.5 cm, 5-12-seeded.

In cultivated fields. Central India (CAL). *Fl. & Fr.*: Feb. - April.

LUPINUS L.

Lupinus pubescens Benth., Pl. Hartw. 169. 1845.

Herbs, annual. Leaves digitate; leaflets 7-9, narrow; stipules adnate to the petiole base. Flowers showy, in racemes. Calyx 2-lipped. Corolla bluish violet having white centre, turning to purple red; standard with reflexed edges. Stamens monadelphous. Stigma bearded. Pods up to 3 cm long, compressed, constricted between the seeds. Seeds oblong-reniform, smooth.

Planted as a winter ornamental. Madhya Pradesh (Tiwari, Phytog. Leg. Madh. Prad. 285. 1979). *Fl. & Fr.*: Dec. March.



Fig. 8. *Lathyrus sphaericus* Retz.

MACROTYLOMA (Wight & Arn.) Verdc.

Macrotyloma ciliatum (Klein ex Willd.) Verdc. in Kew Bull. 24: 405. 1970. *Dolichos ciliatus* Klein ex Willd., Sp. Pl. 3: 1049. 1802; Baker in Hook. f., Fl. Brit. India 2: 210. 1876.

Twiners, perennial. Roots tuberous. Stems grey hairy. Leaves 3-foliolate; leaflets oblong, up to 7 x 2 cm, ciliate on margins, adpressed hairy on both the surfaces. Flowers 3-6 in subsessile cymes. Calyx-teeth setaceous. Corolla yellow, exserted. Pods linear-oblong, up to 4 x 1.2 cm, with persistent hooked base of the style, 3-4-seeded.

In fields on black soil. Dhar (Tiwari, Phytog. Leg. Madh. Prad. 395. 1979). *Fl. & Fr.*: Sept. Dec.

Roots are said to be useful in constipation, ophthalmic and skin diseases. Seed decoction is used for rheumatism.

MUCUNA Adans., *nom. cons.*

Mucuna monosperma DC. ex Wight in Bot. Misc. 2: 346. 1831; Baker in Hook. f., Fl. Brit. India 2: 185. 1876. - *Baidonka*.

Large climbers. Young branches rusty tomentose. Leaves 3-foliolate; leaflets broadly ovate or elliptic, up to 10 x 4.5 cm, subacuminate at apex, rounded at base; stipules linear, caducous. Flowers in up to 10 cm long, axillary, corymbose racemes. Calyx campanulate, 5-dentate. Corolla purple, exserted. Pods up to 7.5 x 5.5 cm, obliquely plaited on the surfaces, sutures winged, covered with irritant bristles, 1-seeded. Seeds dark brown, shining, rounded.

In hilly forests. Bastar (Tiwari, Phytog. Leg. Madh. Prad. 363. 1979). *Fl. & Fr.*: Nov. - April.

Mucuna pruriens (L.) DC. var. **utilis** (Wallich ex Wight) Baker ex Burck., Ann. Jard. Buitenz. 11: 187. 1893. *M. utilis* Wallich ex Wight, Icon. Pl. Ind. Orient. 1: t. 280. 1840. *Carpopogon capitatum* Roxb., Fl. Ind. 3: 284. 1832. *Mucuna capitata* (Roxb.) Wight & Arn., Prodr. 255. 1834; Baker in Hook. f., Fl. Brit. India 2: 187. 1876.

Twining, annual. Leaves 3-foliolate; leaflets elliptic or elliptic-rhomboid, up to 15.5 x 11.5 cm, membranous; lateral leaflets oblique, acute or sub-acuminate at apex, sparsely pubescent. Flowers 5-6 in corymbs on short ascending peduncles. Calyx 6-8 mm long, silky hairy. Corolla purple, 2-3 cm long. Pods up to 15 cm long, longitudinally ribbed, short velvety when young, glabrescent later on, 4-6-seeded.

Madhya Pradesh (Sanjappa, Leg. India 218. 1992). *Fl. & Fr.*: Nov. March.

NEONOTONIA (Wight & Arn.) Lackey

Neonotonia wightii (Grah. ex Wight & Arn.) Lackey in *Phytologia* 37: 210. 1977. *Notonia wightii* Grah. ex Wight & Arn., *Prodr.* 208. 1834. *Glycine javanica* L., *Sp. Pl.* 754. 1753; Baker in Hook. *f.*, *Fl. Brit. India* 2: 183. 1876.

Herbs, twining. Stems obscurely angled, densely hairy. Leaves 3-foliolate, long petiolate; stipules triangular, nerved, densely hairy. Flowers many in axillary racemes. Calyx densely silky. Corolla hairy outside. Anthers apiculate, almost spiny tipped, with short spreading hairs at base. Pods linear, compressed.

Rare. In moist shady places. Western Madhya Pradesh (Samvatsar, *Fl. West. Trib. Madh. Prad.* 103. 1996). *Fl. & Fr.*: Sept. Nov.

NOGRA Merr.

Nogra grahamii (Wallich ex Benth.) Merr. in *Trans. Amer. Phil. Soc.* ser. 2, 24: 201. 1935. *Glycine grahamii* Wallich ex Benth. in *Miq.*, *Pl. Jungh.* 233. 1852. *Grona grahamii* (Wallich ex Benth.) Baker in Hook. *f.*, *Fl. Brit. India* 2: 191. 1876.

Slender twiners. Leaves 1-foliolate; leaflets ovate, ovate-oblong or linear-lanceolate, up to 10 x 3.5 cm, acute at apex, cordate at base; petioles up to 3 cm long, joint tumid. Racemes 2-3 at each node. Flowers light red, in pairs. Calyx campanulate; teeth narrow. Standard and wing petals spurred. Pods linear, up to 3 x 0.5 cm, compressed, hairy. Seeds black, compressed.

Extremely rare. In hilly forests. Surguja (Tiwari, Phytog. Leg. Madh. Prad. 366. 1979). *Fl. & Fr.*: Aug. Dec.

PACHYRHIZUS L. C. Rich. *ex DC.*, *nom. cons.*

Pachyrhizus erosus (L.) Urb., *Symb. Antill.* 4: 311. 1904. *Dolichos erosus* L., *Sp. Pl.* 726. 1753. *Pachyrhizus angulatus* L. C. Rich. *ex DC.*, *Prodr.* 2: 402. 1825; Baker in Hook. *f.*, *Fl. Brit. India* 2: 207. 1876. *Sankalu*.

Robust climbers. Roots tuberous. Leaves 3-foliolate; leaflets sharply angled or very acutely sublobed. Racemes long with tumid nodes and fascicled pedicels. Calyx 2-lipped; upper lip emarginate; lower lip 3-dentate. Corolla blue, exserted. Stamens diadelphous. Style flattened upwards and bearded below the stigma. Pods linear, up to 25 cm long, turgid, constricted between the seeds. Seeds 8-12, flattened.

Occasionally cultivated. Bastar, Bhopal (Tiwari, Phytog. Leg. Madh. Prad. 393. 1979).

Roots are boiled and eaten like turnip.

PSOPHOCARPUS Neck. *ex DC.*, *nom. cons.*

Psophocarpus tetragonolobus (L.) DC., *Prodr.* 4: 403. 1825; Baker in Hook. *f.*, *Fl. Brit. India* 2: 211. 1876. *Dolichos tetragonolobus* L., *Syst. Nat.* ed. 10. 1162. 1759. *Charkonisem*, *Chaudhaari*, *Ghevda*.

Twiners, annual. Leaves 3-foliolate; leaflets ovate, membranous; stipules lanceolate, attached above the base. Flowers lilac, in few-flowered racemes. Calyx-teeth shorter than the tube, the two upper connate. Corolla exserted. Stamens monadelphous. Pods linear, up to 10.5 x 0.4 cm, 4-gonous, distinctly winged at each angle, septate between the seeds.

Cultivated for pods. Bastar (Tiwari, Phytog. Leg. Madh. Prad. 397. 1979). *Fl. & Fr.*: Oct. - Jan.

PTEROCARPUS Jacq., *nom. cons.*

Pterocarpus marsupium Roxb. subsp. **acuminatus** (Prain) Thoth., *Tax. Rev. Trib. Dalberg.* Indian Subcont. 227. 1987. *P. marsupium* Roxb. var. *acuminata* Prain in *J. Asiat. Soc. Bengal* 66: 455. 1897.

Trees, up to 30 m high. Bark brown. Leaves imparipinnate, up to 37 cm long; leaflets 5-7, ovate-oblong to oblong, up to 12 x 6 cm, acute to acuminate at apex, narrowed at base, pubescent beneath. Inflorescence a terminal panicle. Calyx campanulate, 6-7 mm long, 5-toothed. Standard petal ovate-orbicular, *ca* 1.2 cm long; wings clawed; keels oblong. Stamens 10, monadelphous. Pods more or less orbicular, up to 5.5 x 5 cm, winged; pedicels 6-7 mm long. Seeds solitary, reniform.

In moist deciduous forests. East Nimar, Jabalpur, Mandla (Thothathri, Tax. Rev. Trib. Dalberg. Indian Subcont. 227. 1987). *Fl. & Fr.*: Aug. Nov.

PUERARIA DC.

Pueraria phaseoloides (Roxb.) Benth. in J. Linn. Soc. London (Bot.) 9: 124. 1867; Baker in Hook. *f.*, Fl. Brit. India 2: 199. 1876. *Dolichos phaseoloides* Roxb., Fl. Ind. 3: 316. 1832.

Slender climbers. Leaves 3-foliolate; lateral leaflets ovate-oblong, up to 15 x 7 cm; terminal leaflet rhomboid; stipules small, lanceolate. Inflorescence a long peduncled, axillary, puberulous raceme of fascicled flowers. Corolla pale blue. Pods linear, up to 7 cm long, somewhat compressed, covered with stiff appressed hairs, 10-14-seeded.

Rare. Bastar, Indore (Tiwari, Phytog. Leg. Madh. Prad. 367. 1979). *Fl. & Fr.*: Aug. Dec.

RHYNCHOSIA Lour., *nom. cons.*

Rhynchosia rufescens (Willd.) DC., Prodr. 2: 387. 1825; Baker in Hook. *f.*, Fl. Brit. India 2: 220. 1876. *Glycine rufescens* Willd., Nov. Act. Berol. 222. 1803.

Climbers, rusty tomentose, often glandular hairy. Leaves 3-foliolate; leaflets ovate or rhomboid, up to 6.5 x 5 cm, subacuminate at apex, punctate beneath. Flowers in axillary, lax, few-flowered racemes. Calyx-lobes 5, broadly oblong, accrescent. Corolla included. Pods quadrate-oblong, beaked, 1-seeded. Seeds subglobose, mottled with a large grooved strophiole.

As undergrowth in forests over shrubs. Bastar (Tiwari, Phytog. Leg. Madh. Prad. 377. 1979). *Fl. & Fr.*: Dec. March.

Rhynchosia suaveolens (L. f.) DC., Prodr. 2: 387. 1825; Baker in Hook. f., Fl. Brit. India 2: 221. 1876. *Glycine suaveolens* L. f., Suppl. Pl. 326. 1782.

Undershrubs, viscous hairy. Leaves 3-foliolate; leaflets ovate, up to 7.5 x 4 cm, acuminate at apex, punctate beneath. Flowers paired on axillary peduncles. Calyx-lobes lanceolate, acuminate. Corolla yellow. Stamens 9 + 1. Pods indented outside between the seeds and with a partition inside. Seeds 2-strophiolate.

Rare. In outskirts of forests. Raipur (Tiwari, Phytog. Leg. Madh. Prad. 378. 1979). *Fl. & Fr.*: Oct. Dec.

Rhynchosia viscosa (Roth) DC., Prodr. 2: 387. 1825; Baker in Hook. f., Fl. Brit. India 2: 225. 1876. *Glycine viscosa* Roth, Nov. Pl. Sp. 349. 1821, *non* Moench., 1802.

Twiners. Stems covered with grey viscous pubescence. Leaves 3-foliolate, rhomboid, up to 7 x 5.8 cm, acute at apex, gland-dotted beneath; stipules deltoid. Flowers in lax racemes, up to 10 cm long. Calyx 4-6 mm long, 5-toothed, glandular hairy. Corolla twice the calyx. Pods up to 3 x 0.8 cm, turgid, pubescent, narrowed at both ends, 2-seeded.

As undergrowth in forests. Nimar (Witt, List. Trees Shr. Climb. For. Circle Centr. Prov. 26. 1908). *Fl. & Fr.*: Aug. - Nov.

ROBINIA L.

Robinia pseudo-acacia L., Sp. Pl. 722. 1753. *R. spectabilis* Dum.-Cours., Bot. Cult. ed. 2. 6: 140. 1784.

Tall shrubs or small trees, deciduous. Leaves imparipinnate; leaflets elliptic to ovate, up to 15.5 x 4.5 cm, puberulous on the nerves beneath; stipules spinescent, up to 2 cm long. Flowers in axillary, up to 20 cm long racemes. Calyx-teeth shorter than the tube. Corolla white or purple. Pods linear-oblong, up to 10 x 1.8 cm, winged along the upper suture, many-seeded. Seeds reniform.

Cultivated as an ornamental. Bhopal (Oommachan, Fl. Bhopal 134. 1977). *Fl. & Fr.*: March - June.

SESBANIA Scop., *nom. cons.*

Sesbania cannabina (Retz.) Poir. in Lam., *Encycl.* 7: 130. 1806. *Aeschynomene cannabina* Retz., *Observ. Bot.* 5: 26. 1789. *Sesbania aculeata* (Schreb.) Poir. var. *cannabina* (Retz.) Baker in Hook. *f.*, *Fl. Brit. India* 2: 115. 1876.

Shrubs, up to 3 m high. Branches obscurely muricated. Leaves abruptly pinnate; leaflets numerous, linear-oblong, obtuse, mucronate at apex. Flowers in axillary racemes. Calyx *ca* 2 mm long. Corolla yellow, exserted, petals clawed. Stamens diadelphous. Pods linear, up to 22 x 0.3 cm, beaked, many-seeded.

Amidst grasses. Hoshangabad (Joseph in Bull. Bot. Surv. India 5: 287. 1964). *Fl. & Fr.*: Aug. Oct.

Sesbania procumbens (Roxb.) Wight & Arn., *Prodr.* 215. 1834; Baker in Hook. *f.*, *Fl. Brit. India* 2: 115. 1876. *Aeschynomene procumbens* Roxb., *Fl. Ind.* 3: 337. 1832.

Herbs, annual, diffuse, prickly. Leaves up to 5.5 cm long; leaflets 15-20 pairs, linear-oblong, up to 6 x 2 mm, obtuse, apiculate at apex, rounded at base; stipules acute from a triangular base. Flowers in short, 2-4-flowered racemes. Calyx 2-3 mm long, membranous; teeth 5, deltoid. Corolla yellow, 6-8 mm long. Pods up to 7.5 cm long, torulose, beaked, 12-20-seeded.

In paddy fields. Madhya Pradesh (Tiwari, *Phytog. Leg. Madh. Prad.* 312. 1979). *Fl. & Fr.*: Sept. Dec.

SMITHIA Ait., *nom. cons.*

Smithia bigemina Dalz. in Hook., *J. Bot. Kew Gard. Misc.* 3: 208. 1851; Baker in Hook. *f.*, *Fl. Brit. India* 2: 149. 1876.

Herbs, annual, diffuse, up to 30 cm high. Branches slender, bristly. Leaves abruptly pinnate; rachis bristle-pointed; leaflets 2-paired, oblanceolate, up to 1.2 x 0.7 cm, obtuse and bristle-pointed at apex, cuneate

at base, ciliate. Flowers 2-8 in axillary racemes. Calyx membranous, *ca* 3 mm long, 2-lipped, bristly outside. Corolla yellow, twice as long as the calyx. Pods 6-8-jointed; joints tubercled.

In moist places. Hoshangabad. (Oommachan and Masih in J. Econ. Tax. Bot. 16: 439. 1992). *Fl. & Fr.*: Sept. Dec.

Smithia blanda Wallich *ex* Wight & Arn. var. **racemosa** (Heyne *ex* Wight & Arn.) Baker in Hook. *f.*, Fl. Brit. India 2: 151. 1876, *p.p.* *S. racemosa* Heyne *ex* Wight & Arn., Prodr. 221. 1834.

Herbs, annual, up to 40 cm high. Branches fulvous hairy. Leaves abruptly pinnate; rachis bristle-pointed; leaflets 3-4-paired, oblanceolate-oblong, up to 1.8 x 0.5 cm, rounded at apex, ciliate. Flowers in 6-12-flowered, capitate racemes. Calyx *ca* 4 mm long, bristly and densely ciliate, 2-lipped. Corolla *ca* 8 mm long. Pods 4-7-jointed; joints reticulate-venose.

Rare. In marshy places. Hoshangabad (Joseph in Bull. Bot. Surv. India 5: 288. 1964). *Fl. & Fr.*: Sept. - Nov.

Smithia ciliata Royle, Illustr. Bot. Himal. 3: 201. t. 35. f. 2. 1835; Baker in Hook. *f.*, Fl. Brit. India 2: 150. 1876.

Herbs, annual, slender, up to 50 cm high. Leaves pinnate; leaflets 3-8 pairs, linear, up to 9 x 2 mm, obtuse at apex, bristly on the edges and mid rib below. Flowers in dense, short peduncled, axillary racemes. Calyx *ca* 6 mm long, membranous, densely bristly. Corolla yellow, *ca* 8 mm long. Pods 6-8-jointed, obscurely papillose.

Rare. In moist places. Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 243. 1942). *Fl. & Fr.*: Oct. Dec.

SOPHORA L.

Sophora bakeri C.B. Clarke *ex* Prain in J. Asiat. Soc. Bengal 64: 466. 1906. - *Bada jirhul*.

Shrubs, up to 2 m high. Stems tomentose. Leaves imparipinnate, 12-20 cm long; leaflets 6-8 pairs, subopposite, oblong, up to 4 x 2 cm, silky. Flowers in leaf opposed racemes. Calyx-tube campanulate; mouth oblique.

Corolla purple, exserted. Stamens 10, free. Pods in bunches of 6-7, moniliform, tapering at both ends.

Rare. In sal forests at higher elevations. Surguja (Tiwari, Phytog. Leg. Madh. Prad. 271. 1979). *Fl. & Fr.*: May March.

Sophora tomentosa L., Sp. Pl. 373. 1753; Baker in Hook. *f.*, Fl. Brit. India 2: 249. 1878.

Shrubs, up to 2.5 m high. Leaves imparipinnate; leaflets 15-19, obovate, up to 5 x 3.2 cm, obtuse at apex, grey downy beneath. Flowers in terminal, up to 15 cm long racemes. Calyx oblique. Corolla yellow, much exserted, *ca* 2.5 cm long. Stamens 10, free. Pods oblong, up to 15 cm long, moniliform, hoary, 3-8-jointed, 6-8-seeded.

Cultivated as an ornamental (Tiwari, Phytog. Leg. Madh. Prad. 272. 1979).

STYLOSANTHES Sw.

Stylosanthes erecta P. Beauv., Fl. Owar. 1: 29. 1805; Mohlenbr. in Ann. Miss. Bot. Gard. 44: 314. 1957.

Shrubs or undershrubs, perennial, branched, up to 1 m high. Leaves 3-foliolate; leaflets lanceolate, up to 3 x 0.5 cm, acute at both ends, veins thickened and prominent beneath towards the margins; stipules adnate to the petiole for most of their length, persistent, biapiculate. Flowers small, in the axils of foliaceous, stipulate bracts and forming closed terminal heads, sessile. Calyx-lobes oblong, up to 5 mm long. Corolla yellow. Pods very short, concealed by the persistent bracts, curved at apex, 1-2-jointed. Seeds pale brown, oblong.

Rare. In grasslands. Morena (Sikarwar & Painuli in Indian J. For. 22: 276. f. 1. 1999). *Fl. & Fr.*: Aug. Oct.

Stylosanthes fruticosa (Retz.) Mohlenbr. in Ann. Miss. Bot. Gard. 44: 318. 1957. *Arachis fruticosa* Retz., Obs. Fasc. 5: 26. 1791, *excl. char.* *Stylosanthes mucronata* Willd., Sp. Pl. 3: 1166. 1800, *excl. char.*; Baker in Hook. *f.*, Fl. Brit. India 2: 148. 1876. **Fig. 9.**



Fig. 9. *Stylosanthes fruticosa* (Retz.) Mohlenbr.

Herbs, suffrutescent, up to 80 cm high. Branches hairy. Leaves 3-foliolate; leaflets elliptic-oblong, up to 1.5 x 0.3 cm, acute, rarely obtuse at apex, ciliate on margins, nerves conspicuous beneath; sheath of stipules 5-7 mm long with 2-3 mm long subulate teeth. Flowers 4-10 in terminal, sessile heads. Calyx-tube *ca* 5 mm long, 5-lobed. Petals yellow. Pods 3-4 mm long, reticulately nerved, 2-articulated, beaked.

In grassy fields. Indore. *Fl. & Fr.*: Jan. March.

TAVERNIERA DC.

Taverniera cuneifolia (Roth) Arn., Nov. Act. Nat. Cur. 18: 332. 1836. *Hedysarum cuneifolium* Roth, Nov. Pl. Sp. 348. 1825. *Taverniera nummularia auct. non DC.*, 1826: Baker in Hook. *f.*, Fl. Brit. India 2: 140. 1876. **Fig. 10.**

Undershrubs, up to 1.2 m high. Branches pubescent. Leaves 1 or 3-foliolate; leaflets obovate-oblong or suborbicular, up to 3.2 x 2.8 cm, mucronate at apex, pubescent; stipules amplexicaul. Flowers in axillary racemes. Calyx 4-5 mm long, silky, 5-toothed. Corolla red, up to 1.2 cm long. Stamens monadelphous. Pods of 1-4 flattened indehiscent densely muricated joints.

Madhya Pradesh (CAL). *Fl. & Fr.*: Most parts of the year.

TEPHROSIA Pers., *nom. cons.*

Tephrosia candida Roxb. *ex DC.*, Prodr. 2: 249. 1825; Baker in Hook. *f.*, Fl. Brit. India 2: 111. 1876.

Undershrubs. Leaflets 11-27, oblong-lanceolate, glabrescent above, pubescent below. Flowers 2-6 in pseudoracemes, up to 2.5 cm long. Corolla white; standard densely pubescent outside. Pods linear-oblong, densely pubescent, 5-13-seeded. Seeds brown, reniform.

Along forest roads. Western Madhya Pradesh (Tiwari, Phytog. Leg. Madh. Prad. 305. 1979; Samvatsar, Fl. West. Trib. Madh. Prad. 108. 1996). *Fl. & Fr.*: Oct. Dec.

Tephrosia maxima (L.) Pers., Syn. Pl. 2: 329. 1807. *Galega maxima* L., Syst. Nat. ed. 10. 1172. 1759. *Tephrosia purpurea* (L.) Pers. var. *maxima* (L.) Baker in Hook. *f.*, Fl. Brit. India 2: 113. 1876.

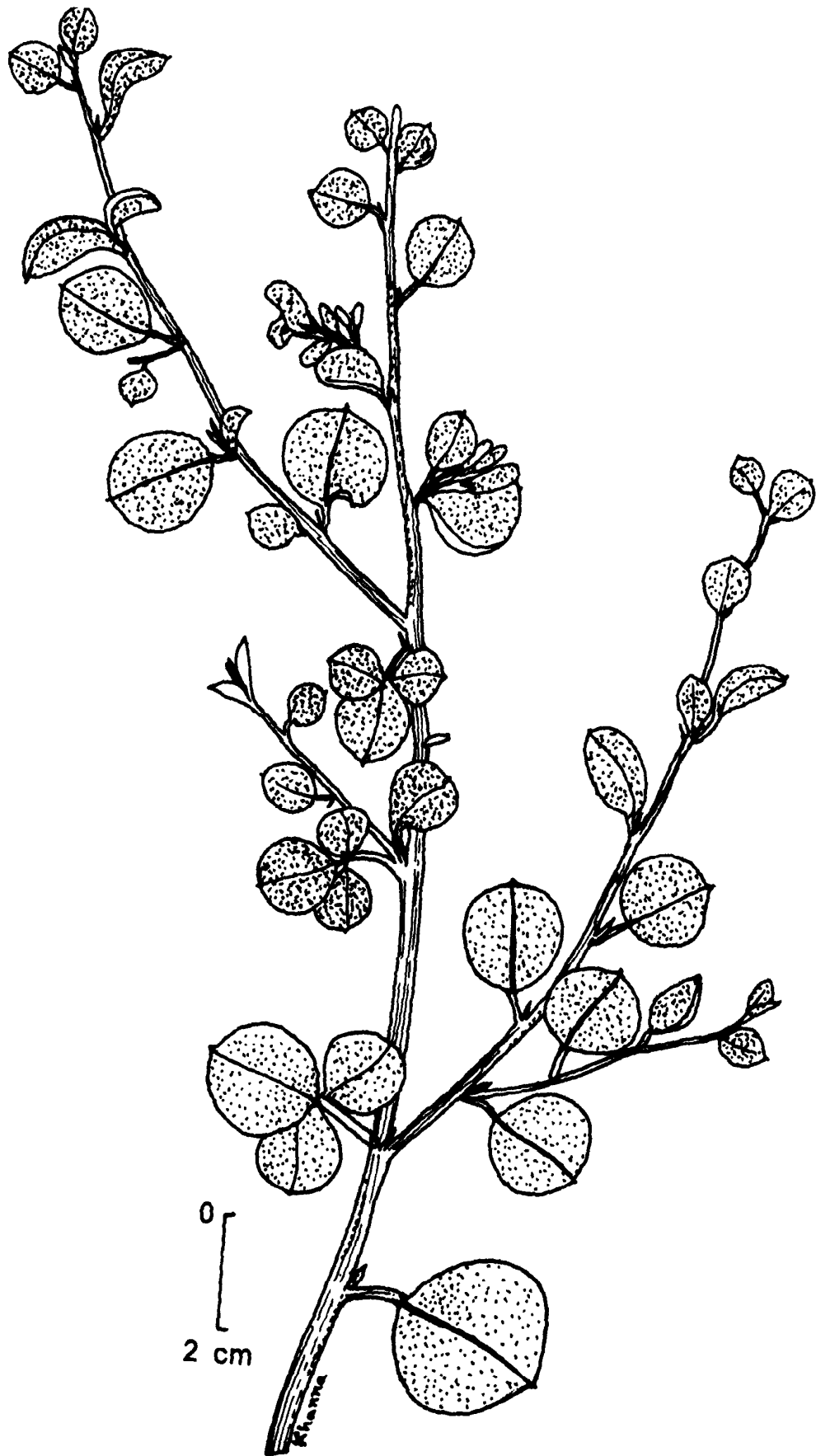


Fig. 10. *Taverniera cuneifolia* (Roth) Arn.

Undershrubs. Branches often prostrate, villous. Leaves 5-9 cm long, paripinnate; leaflets 5-8 pairs, 2-3 cm long, obcuneate, retuse; stipules lanceolate, reflexed, acuminate. Peduncles elongate with several nodes bearing 2-3-flowers. Corolla bright purple, ca 1.3 cm long. Style villous. Pods much narrow, appressed puberulous or glabrescent, 10-12-seeded.

Dhar (Tiwari, Phytog. Leg. Madh. Prad. 306. 1979). *Fl. & Fr.*: Nov. Jan.

Tephrosia senticosa (L.) Pers., Syn. Pl. 2: 330. 1807. *Cracca senticosa* L., Sp. Pl. 752. 1753. *Tephrosia intermedia* Wight & Arn., Prodr. 211. 1834. *T. tinctoria* (L.) Pers. var. *intermedia* (Wight & Arn.) Baker in Hook. f., Fl. Brit. India 2: 112. 1876.

Shrubs. Branches silvery-white. Leaflets 5-11, obovate-oblong, up to 3 x 1.25 cm, emarginate at apex, cuneate at base. Flowers 1-2 in the axils of leaves. Calyx-teeth longer than the tube. Corolla reddish; standard hairy outside. Pods linear-oblong, straight, 6-8-seeded. Seeds ellipsoid.

Amidst rock boulders in river beds. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 108. 1996). *Fl. & Fr.*: Sept. Dec.

TRIFOLIUM L.

Trifolium repens L., Sp. Pl. 767. 1753; Baker in Hook. f., Fl. Brit. India 2: 86. 1876.

Herbs, perennial, creeping. Stems up to 40 cm long. Leaves 3-foliolate; leaflets obovate, up to 3 x 1.2 cm, emarginate at apex. Flowers in globose, pedunculate heads. Corolla white or pink; standard and wings narrow; keel straight. Stamens diadelphous; filaments more or less dilated. Pods included, 1 or few-seeded.

Cultivated for fodder. Gwalior, Jabalpur (Tiwari, Phytog. Leg. Madh. Prad. 291. 1979). *Fl. & Fr.*: March - April.

Trifolium resupinatum L., Sp. Pl. 771. 1753; Baker in Hook. f., Fl. Brit. India 2: 86. 1876.

Herbs, annual, up to 50 cm high. Leaves 3-foliolate, oblanceolate, up to 3 x 0.8 cm; nerves excurrent. Flowers in axillary, congested racemes.

Corolla pink; standard and wings narrow; keel straight. Stamens diadelphous. Pods included, membranous, indehiscent, 1 or few-seeded.

Cultivated for fodder. Gwalior (Tiwari, Phytog. Leg. Madh. Prad. 291. 1979). *Fl. & Fr.*: March - May.

TRIGONELLA L.

Trigonella incisa Benth. in Royle, *Illustr. Bot. Himal.* 197. 1835. *T. monantha* C.A. Meyer subsp. *incisa* (Benth.) Ali in *Fl. W. Pak.* no. 100: 294. 1977. *T. polycerata auct. non L.*, 1753: Baker in Hook. *f.*, *Fl. Brit. India* 2: 87. 1876. - *Jangli-methi*.

Herbs, annual, prostrate or ascending. Leaves 3-foliolate, obovate, up to 1 x 0.7 cm, dentate or pinnatifid. Flowers usually 2-4 on a short common peduncle in the leaf axils. Calyx subcampanulate, *ca* 4 mm long; teeth setaceous. Corolla yellow, slightly exserted. Stamens diadelphous. Pods up to 5.5 x 0.2 cm, falcate, transversely wrinkled, 10-20-seeded.

In cultivated fields. Bastar (Oommachan and Masih in ISCA Symp. Focal theme (Botany) 203. 1991). *Fl. & Fr.*: Feb. - March.

Trigonella obcordata Wallich *ex* Benth. in Royle, *Illustr. Bot. Himal.* 197. 1835. *T. hamosa auct. non L.*, 1759: Baker in Hook. *f.*, *Fl. Brit. India* 2: 88. 1876.

Herbs, caespitose, diffuse, up to 25 cm high. Leaves 3-foliolate; leaflets obovate-cuneate, up to 1.2 x 0.8 cm, dentate; stipules broad, deeply cut. Flowers in capitate racemes, equal or shorter than the leaflets, terminal represented by a spine. Calyx-tube campanulate; teeth subequal. Corolla white. Stamens diadelphous. Pods linear-oblong, up to 1.2 cm long, hairy, curved with closed transverse wrinkles, 4-6-seeded.

On the fringes of ditches and water courses. Rewa, Sagar (Tiwari, Phytog. Leg. Madh. Prad. 287. 1979). *Fl. & Fr.*: Dec. March.

URARIA Desv.

Uraria lagopus DC. var. *neglecta* (Prain) Ohashi in Hara, *Fl. East. Himal.* 3: 70. 1975. *U. neglecta* Prain in *J. Asiat. Soc. Bengal* 66: 382. 1897.

Shrubs, up to 1 m high. Branches angled, grey-villous. Leaves 1 and 3-foliolate; leaflets elliptic-oblong, suborbicular-ovate or broadly ovate-rhomboid, up to 6.5 x 5.5 cm, obtuse, mucronate at apex, rounded or subtruncate at base, hairy on nerves beneath. Flowers in dense, terminal, cylindrical, up to 5 cm long spikes; bracts ovate, acuminate, hairy. Calyx-tube short, the upper teeth much shorter than the lower 3. Corolla purple. Pods included in the calyx, few-jointed.

Rare. As undergrowth in forests. Bastar. *Fl. & Fr.*: Feb. May.

Uraria prunellaefolia Grah. ex Baker in Hook. *f.*, *Fl. Brit. India* 2: 157. 1876.

Undershrubs. Roots fusiform. Leaves 1-foliolate, alternate; leaflets oblong-lanceolate, up to 10 x 2.3 cm, subcoriaceous; stipules triangular, 6-7 mm long, striate. Flowers in terminal, up to 5 cm long racemes; rhachis and pedicels covered with stiff white and hooked brown hairs. Pods 2-4 jointed; joints black, indehiscent.

Bastar (Tiwari, *Phytog. Leg. Madh. Prad.* 332. 1979). *Fl. & Fr.*: April - May.

VICIA L.

Vicia angustifolia L., *Amoen. Acad.* 4: 105. 1759. *V. sativa* L. var. *angustifolia* (L.) Wahlenb., *Fl. Carpth.* 218. 1814; Baker in Hook. *f.*, *Fl. Brit. India* 2: 178. 1876.

Herbs, slender, climbing. Leaves pinnate; leaflets 6-10 pairs, opposite; rhachis ending in a tendril. Flowers axillary, solitary or geminate. Calyx-teeth shorter than the tube. Corolla 1-1.8 cm long. Pods black or brown, oblong, 3.5-5 cm long, 8-10-seeded.

As weed in cultivated fields. Jhabua (Samvatsar, *Fl. West. Trib. Madh. Prad.* 111. 1996). *Fl. & Fr.*: Dec. - April.

Vicia peregrina L., *Sp. Pl.* 737. 1753; Baker in Hook. *f.*, *Fl. Brit. India* 2: 178. 1876.

Herbs, annual, slender, erect. Leaflets 5-6 pairs, alternate and opposite, linear-oblong; stipules 2-fid, divisions linear. Flowers in pairs. Corolla reddish

purple. Pods geminate, deflexed, 2.5-3 cm long, 5-6-seeded. Seeds dark brown, oblong, truncate.

In river beds. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 110. 1996). *Fl. & Fr.*: Jan. - April.

Vicia tetrasperma (L.) Schreb., Spicil. Fl. Lips. 26. 1771; Baker in Hook. *f.*, Fl. Brit. India 2: 177. 1876. *Ervum tetraspermum* L., Sp. Pl. 738. 1753. *Choti Ankadi*.

Herbs, climbing. Leaves paripinnate; rachis ending in a tendril; upper leaves smaller than the lower ones. Flowers up to 5 mm long. Calyx campanulate, often oblique. Stamens 9+1, mouth of staminal sheath very oblique. Pods compressed, continuous inside, 3-8-seeded.

In cultivated fields and gardens. Jabalpur, Panna, Rewa (Tiwari, Phytog. Leg. Madh. Prad. 347. 1979). *Fl. & Fr.*: Nov. March.

VIGNA Savi

Vigna pilosa (Willd.) Baker in Hook. *f.*, Fl. Brit. India 2: 207. 1876. *Dolichos pilosus* Willd., Sp. Pl. 3: 1043. 1802.

Twiners. Stems hairy. Terminal leaflets lanceolate, up to 17 x 7 cm, acuminate at apex, hairy on both the surfaces, 3-nerved; lateral leaflets subfalcate, oblique at base. Flowers *ca* 1.7 cm long. Corolla pale purple; standard *ca* 2 cm across; keel with an incurved beak. Pods up to 14 x 0.8 cm, compressed, beaked, pubescent, 10-12-seeded. Seeds shining black, oblong, *ca* 5 mm long.

Rare. In dense forests. Bastar (Tiwari, Phytog. Leg. Madh. Prad. 392. 1979). *Fl. & Fr.*: Oct. March.

CAESALPINIACEAE

ACROCARPUS Wight & Arn.

Acrocarpus fraxinifolius Wight & Arn., Mag. Zool. Bot. 2: 547. 1838; Baker in Hook. *f.*, Fl. Brit. India 2: 292. 1878.

Trees, up to 20 m high. Bark light grey. Stems buttressed. Leaves 2-pinnate; pinnae 3-5-pinnate; leaflets bright red when young, elliptic-lanceolate, up to 10 x 3.5 cm. Flowers in dense, axillary racemes, usually deflexed. Calyx-tube campanulate; lobes 5, lanceolate. Petals green, 5, narrow, subequal. Stamens crimson, 5. Pods flat, ligulate, upper suture winged, 5-10-seeded. Seeds obovate-oblique, compressed.

Planted as a shade tree in coffee plantations. Betul (Tiwari, Phytog. Leg. Madh. Prad. 421. 1979). *Fl. & Fr.*: Feb. - June.

BAUHINIA L.

Bauhinia tomentosa L., Sp. Pl. 375. 1753; Baker in Hook. *f.*, Fl. Brit. India 2: 275. 1878. - *Kachnar*.

Shrubs, up to 2 m high. Leaves up to 5 x 6 cm, divided a little less than half way down into 2 rounded lobes, truncate at base, glabrous above, pubescent beneath; main nerves 7 from the base. Flowers in terminal racemes. Calyx 5-lobed, velvety-pubescent. Petals yellow, 5, obovate-spathulate, up to 5 cm long. Stamens 10, all fertile. Pods oblong, up to 12 x 1.2 cm, compressed, 8-12-seeded. Seeds oblong.

Cultivated. Indore. *Fl. & Fr.*: Aug. Oct.

Dried leaves, buds and flowers are used in dysentery. Fruits are diuretic.

CASSIA L.

Cassia grandis L. *f.*, Suppl. Pl. 230. 1782. *Horse cassia*.

Trees, up to 18 m high. Leaves dichotomously arranged, silky hairy; leaflets 12-15 pairs, oblong, up to 5.5 x 1.8 cm, mucronate at apex; nerves close-set. Flowers red, profuse when leafless. Pods up to 50 cm long, woody, torulose, many-seeded. Seeds white, variously shaped, up to 1.5 cm long, arranged in the gummy and foul smelling pulp.

Cultivated in gardens. Bhopal (Oommachan, Fl. Bhopal 142. 1977). *Fl. & Fr.*: March June.

Cassia hochstetteri Ghesq. in Bull. Jard. Bot. Brux. 9: 155. 1932. *Senna dimidiata* Buch.-Ham. ex Roxb., Fl. Ind. 2: 352. 1832. *Cassia mimosoides* L. var. *dimidiata* (Buch.-Ham. ex Roxb.) Baker in Hook. f., Fl. Brit. India 2: 266. 1878, *p.p.*

Herbs, annual, prostrate or erect, covered with long white spreading hairs. Leaves paripinnate; leaflets 20-30 pairs, oblong-lanceolate, up to 1 x 0.2 cm, apiculate at apex, oblique at base, ciliolate. Flowers yellow, 1-4, in the axils of leaves. Pods straight, flat, hairy, 4-15-seeded. Seeds brown, rhomboid, smooth.

Cultivated. Madhya Pradesh (Sanjappa, Leg. India 15. 1992). *Fl. & Fr.*: Oct. May.

Cassia kleinii Wight & Arn., Prodr. 293. 1834; Baker in Hook. f., Fl. Brit. India 2: 266. 1878.

Herbs, perennial, branched, up to 1 m high. Leaves paripinnate, up to 3 cm long; leaflets 8-20 pairs, linear, up to 1.2 x 0.3 cm, subacute, obliquely mucronate at apex, rounded or truncate at base, coriaceous; rhachis with a peltate stalked gland below the lowest pair of leaflets. Flowers 1-3 in the axils of leaves. Calyx 5-lobed; lobes lanceolate, acute. Petals yellow, 5, obovate, slightly exserted. Stamens 10, fertile, alternately short and long. Pods linear-oblong, up to 4 x 0.5 cm, flat, slightly curved, 10-seeded. Seeds dark brown.

As undergrowth in forests. Rewa (Tiwari in Indian For. 94: 578. 1968). *Fl. & Fr.*: Oct. Dec.

Cassia nodosa Buch.-Ham. ex Roxb., Fl. Ind. 2: 236. 1832; Baker in Hook. f., Fl. Brit. India 2: 261. 1878.

Trees, up to 12 m high. Bark greyish black, fissured. Leaves up to 20 cm long; leaflets 6-12 pairs, oblong, up to 8.5 x 1 cm, acute at apex, oblique at base, subcoriaceous. Flowers *ca* 5 cm across, in racemes. Sepals 3-4 mm long, hairy. Petals red, oblong, up to 2.5 cm long. Stamens 10. Pods up to 25 x 1 cm, terete, many-seeded. Seeds compressed.

Cultivated. Hoshangabad (Oommachan and Masih in J. Econ. Tax. Bot. 16: 439. 1992). *Fl. & Fr.*: March.

Cassia senna L., Sp. Pl. 377. 1753. *C. angustifolia* Vahl, Symb. Bot. 1: 29. 1790; Baker in Hook. *f.*, Fl. Brit. India 2: 264. 1878.

Trees, up to 7 m high, with dense foliage forming a round crown. Leaves paripinnate; leaflets lanceolate, up to 7 x 2 cm, with prominent close 20-30 secondary nerves, acute at apex, produced below at base as ridges on the stem. Flowers in racemes. Petals yellow. Stamens 10; staminodes 3-4. Pods up to 5 x 2 cm, slightly curved.

Planted as an ornamental. Rajnandgaon (Tiwari, Phytog. Leg. Madh. Prad. 411. 1979). *Fl. & Fr.*: Nov. - June.

Leaves are marketed as senna leaves which are purgative.

Cassia spectabilis DC., Cat. Pl. Hort. Monsp. 90. 1813.

Trees, up to 10 m high. Leaves paripinnate; leaflets elliptic, acute at apex, pubescent beneath; petioles and rhachises eglandular. Flowers in terminal panicles. Sepals 5, imbricate. Petals yellow, 5, imbricate. Pods almost terete, many-seeded.

Cultivated in gardens. Bilaspur (Panigrahi and Murti, Fl. Bilaspur Dist. 1: 235. 1989). *Fl. & Fr.*: April - Aug.

Cassia uniflora Mill., Gard. Dict. ed. 8. no. 5. 1768, *non* Spreng., 1820. *C. sericea* Sw., Prodr. 66. 1878.

Herbs, annual, branched. Young branches appressedly hairy, 4-5-angled. Leaflets 3-5 pairs, with a gland on rhachis between each pair, ovate-lanceolate or oblanceolate, up to 5 x 2.5 cm, mucronate at apex, fulvous hairy beneath. Flowers axillary. Petals yellow. Fertile stamens 6-7. Pods 3-5 cm long, 4-angled. Seeds 4-10, dark brown, 4-7 mm long.

Along roadsides. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 114. 1996). *Fl. & Fr.*: Aug. Dec.

COLVILLEA Bojer

Colvillea racemosa Bojer *ex* Hook. in Curtis, Bot. Mag. 61: tt. 3325-3326. 1834.

Trees, up to 8 m high. Bark grey. Stems with several lenticels; young branches and leaves grey pubescent. Leaves feathery, 2-pinnate, up to 75 cm long; pinnae 12-16 pairs, up to 15 cm long; pairs of pinnae attached closely on the upper surface of rhachis; leaflets oblong, up to 1.2 x 0.4 cm. Flowers in large drooping subpaniculate racemes. Petals bright orange; the uppermost petal very broad, the lowest narrow. Stamens 10, free, declinate. Pods turgid, many-seeded.

Cultivated. Bastar (Tiwari, Phytog. Leg. Madh. Prad. 421. 1979). *Fl. & Fr.*: Sept. Dec.

SCHIZOLOBIUM Vogel

Schizolobium parahyba (Vell.) Blake, Contrib. U.S. Nat. Herb. 20: 240. 1919. *Cassia parahyba* Vell., Fl. Flum. 168. 1790. *Schizolobium excelsum* Vogel in Linnaea 11: 399. 1837, *nom. illeg.*

Trees, up to 6 m high; young parts covered with light brown and silvery tomentum. Leaves up to 20 cm long, 2-pinnate; pinnae 4-6 pairs; leaflets opposite, up to 7 x 4 mm, sessile; stipules pectinate. Flowers in racemes. Calyx brownish tomentose. Petals 5, yellow. Stamens 8, exserted. Pods compressed, dehiscent.

Cultivated in gardens. Rewa, Surguja (Tiwari, Phytog. Leg. Madh. Prad. 420. 1979). *Fl. & Fr.*: May - Aug.

MIMOSACEAE

ACACIA Durazz.

Acacia caesia (L.) Willd., Sp. Pl. 4: 1090. 1806. *Mimosa caesia* L., Sp. Pl. 522. 1753, *p.p. Acacia intsia* Willd. var. *caesia* (L.) Wight & Arn. ex Baker in Hook. f., Fl. Brit. India 2: 297. 1878.

Shrubs, scandent, armed. Branches yellowish brown. Leaves 2-pinnate, up to 15 cm long, with a convex gland on petiole below the leaflets and glands between 2-4 uppermost pairs of pinnae; pinnae 8-15 pairs, up to 5 cm long; leaflets 15-35 pairs, crowded, linear, up to 4 x 1.5 mm, unequal sided, mucronate at apex, truncate at base, pubescent. Flowers in terminal panicles; heads globose, ca 1 cm across. Calyx campanulate, ca 2 mm

long; teeth ovate, subacute. Corolla *ca* 3 mm long, divided half way down; lobes lanceolate, acute. Stamens numerous. Pods strap-shaped, up to 15 x 2 cm, subfalcate, flat, thin, reticulately veined, 5-10-seeded.

In dry places. Nimar (Maheshwari in Indian For. Rec. 86: 556. 1960).
Fl. & Fr.: May - Sept.

Acacia campbellii Arn., Nov. Act. Phys.-Med. Acad. Caes. Leop. Carol. Nat. Cur. 18: 333. 1836.

Shrubs or small trees; young branches pubescent. Stipular spines prominent. Pinnae 5-8 pairs; leaflets 9-12 pairs, up to 1.5 x 0.75 cm, densely pubescent beneath. Flowers yellow, in globose heads. Pods flat, papery, obtusely pointed, slightly curved.

In thorn forests. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 119. 1996). *Fl. & Fr.*: Dec. - April.

Acacia gageana Craib in Bull. Misc. Inform. Kew 1915: 409. 1915.

Large shrubs, scrambling, with very minute and few prickles. Young shoots, petioles and leaflets rusty tomentose. Leaflets oblong-falcate; petiolar gland present near the base; stipular spines absent. Flowers pale white. Pods up to 20 x 3 cm; sutures raised on both sides.

In thorn forests. Rewa (Tiwari, Phytog. Leg. Madh. Prad. 452. 1979).
Fl. & Fr.: Aug. - April.

Acacia nilotica (L.) Willd. *ex* Delile subsp. **cupressiformis** (J.L. Stewart) Ali & Faruqui in Pak. J. Bot. 1: 4. 1969. *A. arabica* Willd. var. *cupressiformis* J.L. Stewart, Punjab Pl. 51. 1869.

Trees; canopy conical, spreading of branches restricted to upper side only. Leaves with a gland in the first pair of pinnae and one between the terminal pair; pinnae 5-7 pairs; leaflets 18-25 pairs, obtuse at apex, glabrous, subsessile. Flowers yellow, in globose heads. Pods slightly compressed, moniliform, grey pubescent, 10-12-seeded.

Along roadsides. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 120. 1996). *Fl. & Fr.*: July - Jan.

Acacia planifrons Wight & Arn., Prodr. 276. 1834; Baker in Hook. *f.*, Fl. Brit. India 2: 293. 1878.

Trees, armed, 6-8 m high. Leaflets 5-10 pairs, linear, 2-3 mm long, obtuse at apex; spines both short and recurved and long, straight, white with brown spots. Flowers white, in globose heads. Pods turgid, cylindrical, circinate, 6-9-seeded.

Along river banks. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 122. 1996). *Fl. & Fr.*: Oct. Dec.

Acacia tomentosa Willd., Sp. Pl. 4: 1087. 1806; Baker in Hook. *f.*, Fl. Brit. India 2: 294. 1878.

Trees, up to 6 m high. Bark yellow, with lenticels. Leaves 2-pinnate, 4-8 cm long; pinnae 6-12 pairs, 2-5 cm long, sessile; leaflets 20-30 pairs, up to 4 x 1.5 mm; stipular spines straight with broad base; rhachis densely pubescent. Flowers pale greenish white, in globose heads, axillary on 2-3 cm long stout downy peduncles. Pods strap-shaped, up to 15 x 1.3 cm, falcate, flat.

In thorn forests. Bundelkhand (Tiwari, Phytog. Leg. Madh. Prad. 458. 1979). *Fl. & Fr.*: Oct. - April.

ALBIZIA Durazz.

Albizia chinensis (Osb.) Merr. in Amer. J. Bot. 3: 575. 1916. *Mimosa chinensis* Osb., Degbok Ostind. Resa 233. 1757. *M. stipulata* Roxb., Fl. Ind. 2: 549. 1832, '*stipulacea*'. *Albizia stipulata* (Roxb.) Boivin in Encycl. 19(2): 33. 1838; Baker in Hook. *f.*, Fl. Brit. India 2: 300. 1878. *Mimosa marginata* Lam., Encycl. 1: 12. 1783. *Albizia marginata* (Lam.) Merr. in Philipp. J. Sci. 5: 23. 1910. **Fig. 11.**

Trees, evergreen, up to 30 m high. Young shoots grey pubescent. Leaves 2-pinnate; pinnae 7-20 pairs; leaflets 30-45 pairs, linear-oblong, up to 8 x 2.5 mm, falcate, pubescent beneath; main rhachis up to 35 cm long with a large sessile gland on the petiole and with smaller glands between each of the uppermost 2-9 pairs of pinnae; stipules up to 3 cm long, caducous, unequally cordate, acuminate with a filiform tail. Flowers in small paniced heads. Calyx infundibuliform, *ca* 2.5 mm long. Corolla yellowish white, 4-6 mm long; lobes lanceolate, acute. Stamens connate



Fig. 11. *Albizia chinensis* (Osb.) Merr.

into a tube. Pods pale brown, strap-shaped, up to 17.5 x 2.8 cm, reticulately veined, 8-12-seeded. Seeds dark brown, ovoid.

Bastar (CAL). *Fl. & Fr.*: April - Sept.

Albizia lathamii Hole in Indian For. Rec. 4(4): 153. 1913.

Trees, up to 12 m high. Bark purplish red. Leaves 25-30 cm long; leaflets 15-20 pairs, up to 1.5 x 0.6 mm, glabrous; rachis with very small raised gland at the middle of petiole and at its end, tomentose. Flowers pale yellow. Anthers pink. Pods purplish brown, up to 30 x 3 cm, with constricted margins between the seeds.

In dry deciduous forests. Bastar (Tiwari, Phytog. Leg. Madh. Prad. 437. 1979). *Fl. & Fr.*: Sept. - March.

Albizia thompsonii Brandis in Indian For. 25: 284. 1899. - *Silari*.

Trees, up to 25 m high. Bark greyish black. Young branches tawny tomentose. Leaves 2-pinnate; pinnae 5-10 pairs; leaflets 8-20 pairs, obliquely oblong, up to 2 x 1 cm, obtuse at apex, obliquely rounded at base, pubescent. Flowers pale yellow, in heads arranged in terminal panicles, pedicellate. Calyx-teeth obscure. Corolla-lobes ovate-lanceolate, acute. Anthers pink; filaments connate at the base. Pods dark brown, strap-shaped, up to 20 x 3 cm, thin, glabrous, 8-12-seeded. Seeds ovoid.

In deciduous forests. Bastar, Jabalpur, Sagar, Surguja (Tiwari, Phytog. Leg. Madh. Prad. 441. 1979). *Fl. & Fr.*: March - Dec.

CALLIANDRA Benth., *nom. cons.*

Calliandra haematocephala Hassk. in Retzia 1: 216. 1855.
Lalbabul.

Shrubs or small trees, up to 5 m high. Leaves 2-pinnate, each pinnae with 6-10 pairs of leaflets; leaflets obliquely oblong, coriaceous. Flowers in axillary, globose heads. Stamens scarlet or dark crimson-coloured, hairy. Pods small, linear.

Cultivated in gardens. Bastar (Oommachan and Masih, ISCA Symp. Focal Theme (Botany) 203. 1991). *Fl. & Fr.*: Nov. - March.

Calliandra surinamensis Benth. in Hook., Lond. J. Bot. 3: 105. 1844.

Shrubs, unarmed, up to 2 m high. Leaves 2-pinnate; leaflets 10-15, linear or oblong, up to 1.5 x 0.4 cm. Inflorescence a many-flowered, loose head. Calyx 5, campanulate, 5-lobed. Corolla pink to purple, 5-lobed. Stamens many, apical half pinkish purple, basal half white. Pods flat, 2-valved.

Cultivated. Indore. *Fl. & Fr.*: Almost throughout the year.

DESMANTHUS Willd., *nom. cons.*

Desmanthus virgatus (L.) Willd., Sp. Pl. 4: 1047. 1806; Baker in Hook. *f.*, Fl. Brit. India 2: 290. 1878. *Mimosa virgata* L., Sp. Pl. 519. 1753.

Shrubs or trees, up to 5 m high. Branches virgate. Leaves 2-pinnate; pinnae 6-8 pairs, with a gland on the rachis between the lowest pair of pinnae; leaflets strap-shaped, up to 1 x 0.4 cm, membranous; stipules subulate, persistent. Flowers polygamous, in solitary, globose peduncled, axillary heads. Calyx minute, campanulate, 5-dentate. Corolla pink or white. Pods linear, up to 15 x 0.3 cm, with oblique septa between the seeds.

Ornamental. Cultivated. Raipur (Tiwari, Phytog. Leg. Madh. Prad. 463. 1979). *Fl. & Fr.*: May - July.

DICHROSTACHYS (DC.) Wight & Arn., *nom. cons.*

Dichrostachys cinerea (L.) Wight & Arn. var. **indica** Brenan & Brummit, Bol. Soc. Borter 39: 111. 1935.

Shrubs, up to 2 m high. Leaves 2-pinnate; pinnae 8-14 pairs; leaflets 10-20 pairs, linear, subacute at apex, oblique at base. Spikes axillary or extra-axillary, up to 4 cm long; the upper half of the spike yellow, the lower red. Calyx minute, membranous. Petals united below. Pods brown, linear, up to 7.5 x 0.8 cm, flat, twisted when ripe, 6-10-seeded. Seeds obovoid, compressed.

Madhya Pradesh (Sanjappa, Leg. India 65. 1992). *Fl. & Fr.*: Aug. Dec.

MIMOSA L.

Mimosa angustisiliqua Gamble, Fl. Pres. Madras 1: 421. 1919.

Shrubs, prickly, up to 2 m high. Young stems 4-gonous, brownish. Leaves with 6-8 pairs of pinnae, 2-4 cm long; leaflets 12-18 pairs, 5-8 mm long, semirectangular at base, hirsute. Flowers pink. Pods up to 9 x 1 cm, much curved, acute at both ends; sutures without or with very few prickles.

In thorns forests. Balaghat, Bastar (Tiwari, Phytog. Leg. Madh. Prad. 461. 1979). *Fl. & Fr.*: Oct. Jan.

Mimosa barberi Gamble in Kew Bull. 1920: 5. 1920.

Shrubs. Branches striate, sparsely spiny. Leaves 2-pinnate, up to 12 cm long; pinnae 6-8 pairs, up to 4 cm long; leaflets 16-20 pairs, oblong, up to 7 x 3 mm, mucronate at apex, subrectangular at base; rhachis sparsely spiny. Flowers red, in axillary heads. Calyx campanulate, *ca* 1 mm long, 4-toothed. Corolla infundibuliform, *ca* 2.5 mm long, 4-lobed. Stamens 8, exserted. Pods up to 10 x 1 cm, curved, acute or mucronate, 8-10-seeded.

Rare. In open forests. Bastar (Subramanyam and Henry in Bull. Bot. Surv. India 8: 210. 1967). *Fl. & Fr.*: March - May.

Mimosa prainiana Gamble, Fl. Pres. Madras 1: 421. 1919.

Shrubs, straggling, thorny. Young stems 4-gonous, grey pubescent. Leaves 5-8 cm long; pinnae 5-7 pairs, 6-10 cm long; leaflets 7-8 pairs, ovate, up to 7 x 1.5 mm, rounded at base, pubescent. Flowers pink. Pods up to 8 x 1.5 cm, obtuse; sutures with strong recurved prickles.

In thorn forests. Morena (Tiwari, Phytog. Leg. Madh. Prad. 461. 1979). *Fl. & Fr.*: Sept. - Jan.

ROSACEAE**MALUS Mill.**

Malus pumila Mill., Gard. Dict. ed. 8, n. 3. 1768. *M. sylvestris* (L.) Mill., Gard. Dict. ed. 8, n. 1. 1768. *Pyrus malus* L. var. *sylvestris* L., Sp. Pl. 479. 1753. - *Seb.*

Trees, with divaricate branches. Leaves ovate, obovate or elliptic, 5-10 x 3-5 cm, acute at apex, rounded or cuneate at base, crenate-serrate, petiolate, stipulate. Hypanthia densely tomentose. Flowers in umbels, pedicellate; bracts obovate, villous. Sepals villous. Petals white, with reddish tinge. Stamens 30. Fruits subglobose.

Cultivated. Hoshangabad (Oommachan and Masih in J. Econ. Tax. Bot. 16: 439. 1992). *Fl. & Fr.*: April - Sept.

POTENTILLA L.

Potentilla indica (Andrews) Wolf in P. Ascherson & P. Graebner, Synopsis der Mitteleuropaischen Flora 6: 661. 1904. *Fragara indica* Andrews, Bot. Repos. 7. pt. 99. t. 479. 1807; Hook. *f.*, Fl. Brit. India 2: 343. 1878.

Herbs, perennial. Leaves 3-foliolate, radical leaves long petiolate, cauline leaves smaller; leaflets obovate, elliptic or rhomboid, incised, sparsely appressed hairy above, short and soft-hairy beneath; petioles soft-hairy. Flowers solitary, axillary; pedicels 2-6 cm long. Episeals 5 or 6, densely hairy, with 3-6 incisions at apex. Sepals 5 or 6, a little longer than episeals, entire. Petals 5 or 6, yellow. Stamens 20-30. Achenes glabrous.

Madhya Pradesh (Dikshit and Panigrahi, Fam. Rosac. India 4: 133. 1999). *Fl. & Fr.*: June - Aug.

Potentilla sundaica (Blume) Kuntze, Revis. Gen. Pl. 1: 219. 1891. *Fragara sundaica* Blume, Bijdr. 1106. 1826. *Potentilla kleniana* Wight & Arn. in Wight, Illustr. Ind. Bot. 1: t. 85. 1831; Hook. *f.*, Fl. Brit. India 2: 359. 1878. **Fig. 12.**

Herbs, annual. Leaves digitately 5-7-foliolate, radical leaves 5-25 cm long, cauline leaves 4-8 cm long, upper cauline leaves 3-foliolate; leaflets ovate, serrate; stipules connate and adnate to the petioles. Flowers borne in the axils of uppermost cauline leaves, pedicellate. Episeals 5, oblong, entire or 2-fid. Sepals 5, oblong-ovate, entire. Petals 5, yellow, obovate. Stamens 20, arranged in 3 whorls. Achenes glabrous with rugose surface.

Surguja. *Fl. & Fr.*: April - Sept.

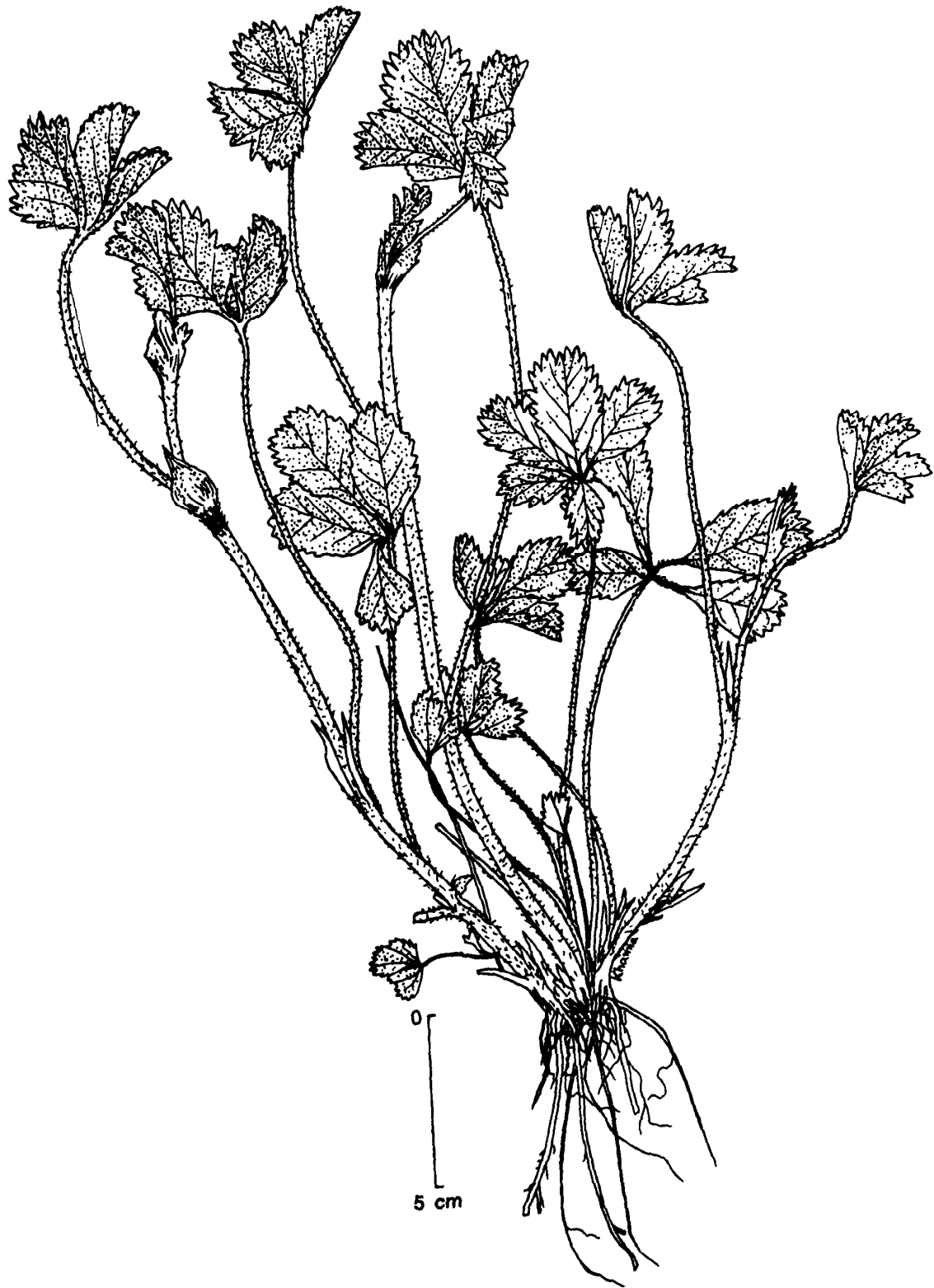


Fig. 12. *Potentilla sundaica* (Blume) Kuntze

PRUNUS L.

Prunus armeniaca L., Sp. Pl. 474. 1753; Hook. *f.*, Fl. Brit. India 2: 313. 1878. - *Apricot*.

Trees, up to 7 m high. Leaves orbicular-ovate, 6-10 x 3-5 cm, acuminate at apex, cordate at base, serrate, petiolate. Flowers solitary, subsessile. Sepals reddish. Petals white to pink. Stamens 27-32. Drupes orange-yellow, globose, laterally compressed.

Cultivated. Hoshangabad (Oommachan and Masih in J. Econ. Tax. Bot. 16: 439. 1992). *Fl. & Fr.*: March - June.

Prunus cerasus L., Sp. Pl. 474. 1753; Hook. *f.*, Fl. Brit. India 2: 313. 1878. *Red cherry*.

Shrubs. Branches woolly at maturity. Leaves elliptic-obovate or ovate, 3-5 x 1.5-4 cm, shortly acuminate or acute at apex, dentate or double serrate; petioles *ca* 1 cm long; stipules serrate. Flowers in umbels or fascicles, pedicellate. Hypanthia campanulate. Sepals glandular-serrate. Petals white. Stamens 32. Drupes reddish black, globose.

Cultivated. Hoshangabad (Oommachan and Masih in J. Econ. Tax. Bot. 16: 439. 1992). *Fl. & Fr.*: May - July.

Prunus ceylanica (Wight) Miq., Fl. Ind. Bat. 1, 1: 365. 1855. *Polydontia ceylanica* Wight, Illustr. Ind. Bot. 1: 203. 1840. *Pygeum acuminatum* Colebr. in Trans. Linn. Soc. London 12: 306. t. 18. 1818, *non* Michx., 1803, *nec* (Wallich) D. Dietr., 1842; Hook. *f.*, Fl. Brit. India 2: 318. 1878. *Pygeum wightianum* Blume ex C. Muell in Walp., Ann. 4: 642. 1857; Hook. *f.*, *l.c.* 2: 319. 1878. *P. gardneri* Hook. *f.*, *l.c.* 2: 321. 1878. *P. glaberrimum* Hook. *f.*, *l.c.* 2: 319. 1878.

Trees, up to 10 m high; young branches pubescent. Leaves oblong-elliptic or ovate-lanceolate, 6-18 x 3-7 cm, acuminate or acute at apex, glabrous, petiolate, stipulate. Flowers in racemes, pedicellate. Hypanthia woolly outside, glabrous inside. Sepals unequal. Petals woolly outside, glabrous inside. Stamens more than 20. Drupes 2-lobed, glabrous.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 237. 1942). *Fl. & Fr.*: May Dec.

Prunus x domestica L., Sp. Pl. 475. 1753, *p.p.* *Plum.*

Trees. Branches pubescent when young. Leaves elliptic or ovate-lanceolate, 4-8 x 2-4 cm, shortly acuminate at apex, cuneate at base, crenate-serrate, petiolate; stipules dentate. Flowers in pairs or umbellate fascicles. Hypanthia glabrous. Sepals serrate. Petals greenish white. Stamens 20-25. Drupes ovoid-oblong, fleshy, drooping.

Cultivated. Hoshangabad (Oommachan and Masih in J. Econ. Tax. Bot. 16: 439. 1992). *Fl. & Fr.*: Feb. - May.

Prunus persica (L.) Batsch, Beytr. Entw. Pragm. Gesch. Naturr. 1: 30. 1801; Hook. *f.*, Fl. Brit. India 2: 313. 1878. *Amygdalus persica* L., Sp. Pl. 472. 1753.

Shrubs or small trees. Leaves lanceolate or oblong-lanceolate, 4-12 x 1-3 cm, acuminate at apex, cuneate at base, serrulate to crenulate, glabrous; petioles up to 2 cm long. Flowers usually solitary, sometimes fascicled. Hypanthia campanulate. Sepals villous outside. Petals purple. Stamens 18-30, epipetalous. Drupes subglobose to ellipsoid, tomentose.

Cultivated. Bilaspur (Panigrahi and Murti, Fl. Bilaspur Dist. 1: 242. 1989), Hoshangabad (Mukherjee, Fl. Pachmarhi & Bori Reserves 111. 1984). *Fl. & Fr.*: Jan. - June.

PYRUS L.

Pyrus pyrifolia Nakai in Bot. Mag. Tokyo 40: 564. 1926. - *Nashpati*.

Small trees; young shoots brown. Leaves broadly ovate-oblong or elliptic, 10-14 x 7-9 cm, acuminate at apex, rounded at base, serrate, petiolate. Flowers in umbels; pedicels 3-5 cm long. Sepals long acuminate. Petals white or with pinkish tinge. Stamens many. Fruits pyriform, with a depression at one end; skin pale yellow; flesh hard.

Cultivated. Indore (Khanna *et al.*, Fl. Kasturbagram, Indore 123. 1991). *Fl. & Fr.*: April - Sept.

ROSA L.

Rosa multiflora Thunb., Fl. Jap. 214. 1784; Hook. *f.*, Fl. Brit. India 2: 364. 1878. *Climbing rose*.

Shrubs, climbing; twigs glabrescent, prickles usually curved. Leaflets 5-9; basal pair smallest, uppermost pair larger, elliptic, *ca* 3 x 1.5 cm, acute at apex, obtuse to rounded at base, serrate, pubescent beneath, apical leaflet largest, ovate, up to 4 x 2 cm. Flowers in thyrsus corymbs of 8-16 flowers; bracts dentate. Hypanthia obovoid. Sepals pubescent. Petals white, obovate. Stamens many.

Cultivated. Bilaspur (Panigrahi and Murti, Fl. Bilaspur Dist. 1: 242. 1989). *Fl.*: June - July.

SAXIFRAGACEAE

BERGENIA Moench, *nom. cons.*

Bergenia ciliata (Haw.) Sternb., Rev. Saxifr. Suppl. 2: 2. 1831.
Megascea ciliata Haw., Saxifr. Enum. 7. 1821.

Herbs, up to 30 cm high. Leaves suborbicular orbicular or broadly obovate, up to 10 x 9 cm, rounded or sometimes acuminate at apex, cordate or sometimes rounded at base, entire or denticulate towards apex and ciliate; petioles hirsute. Inflorescence a one-sided raceme or corymb, often subtended by an ovate leafy bract. Flowers pink to purple. Sepals oblong. Petals 5, up to 9 x 4 mm, unguiculate; limb orbicular. Stamens 10. Capsules up to 1.2 x 0.5 cm. Seeds many, *ca* 1 mm long, minutely tuberculate.

At higher elevations. Hoshangabad (Oommachan and Masih in J. Econ. Tax. Bot. 16: 439. 1992). *Fl. & Fr.*: Dec. Feb.

CRASSULACEAE

KALANCHOE Adans.

Kalanchoe olivacea Dalz. in Dalz. & Gibs., Bombay Fl. 313. 1861.

Herbs, succulent, olive-brown, up to 30 cm high. Leaves simple, ovate-lanceolate, up to 12.5 x 5.5 cm, glabrous, dotted with red spots, irregularly serrate. Flowers white, in paniculate cymes; pedicels covered with glandular viscid hairs. Corolla-tube glandular hairy outside, 4-lobed. Follicles glabrous.

In moist, shady places among rocks. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 125. 1996). *Fl. & Fr.*: Oct. Dec.

HALORAGIDACEAE

MYRIOPHYLLUM L.

Myriophyllum spicatum L., Sp. Pl. 992. 1753; Hook. *f.*, Fl. Brit. India 2: 433. 1878.

Herbs, aquatic, submerged. Leaves in whorls of 4. Flowers in slender, terminal spikes, with one large and 2 small bracts; spikes appearing above the surface of water, upper flowers male while lower ones female. Male flowers: Calyx 4-lobed. Stamens 8. Ovary rudimentary. Female flowers: Calyx 4-lobed. Petals much reduced. Stigmas 4. Fruits oblong.

Raipur (Unni in J. Bombay Nat. Hist. Soc. 64: 98. 1967). *Fl. & Fr.*: May - July.

MYRTACEAE

EUCALYPTUS L'Hérit.

Eucalyptus camaldulensis Dehnh., Cat. Pl. Hort. Camald. ed. 2. 20. 1832. *Neelgiri*.

Tall trees. Leaves opposite and alternate, narrowly or broadly lanceolate, 5-20 x 1-2 cm, coriaceous, glabrous, entire. Flowers 5-10 in axillary umbels. Operculum hemispherical with a narrow beak or bluntly conical. Fruits more or less globose, 5-7 mm across, with prominent and broad rim.

Jabalpur (Singh and Oommachan in Indian J. Appl. Pure Biol. 6(2): 135. 1991). *Fl. & Fr.*: Feb. - May.

Eucalyptus citriodora Hook. in Mitch. J. Trop. Austr. 235. 1848. *Lal-nilgiri*.

Tall trees, with short crown. Bark smooth, shining, whitish grey, faintly bluish. Leaves opposite and alternate, narrowly or broadly lanceolate, 10-

16 x 1-2.5 cm, coriaceous, entire. Flowers in axillary panicles. Operculum hemispherical. Stamens all fertile. Fruits ovoid, with thin rim.

Jabalpur (Singh and Oommachan in Indian J. Appl. Pure Biol. 6(2): 135. 1991). *Fl. & Fr.*: Jan. - April.

Eucalyptus globulus Labill. in Voy. 1: 153. t. 13. 1800. - *Neelgiri*.

Tall trees. Bark greyish or bluish white, peeling off in long strips or sheets. Leaves opposite and alternate, ovate-broadly lanceolate or lanceolate, 15-30 x 4-8 cm, coriaceous, entire. Flowers axillary, solitary, rarely 3. Operculum depressed hemispherical, warty. Fruits globose or hemispherical, with broad rim, 4-ribbed.

Jabalpur (Singh and Oommachan in Indian J. Appl. Pure Biol. 6(2): 135. 1991). *Fl. & Fr.*: Feb. - June.

Eucalyptus paniculata Sm. in Trans. Linn. Soc. London 3: 287. 1797.

Tall trees. Bark dark grey, compact, deeply fissured. Leaves opposite and alternate, lanceolate or broadly lanceolate, up to 15 x 3.5 cm, coriaceous, entire. Flowers in terminal panicle of 3-9-flowered umbels. Operculum conical. Outer stamens sterile. Fruits pyriform, with thin rim.

Bhopal (Oommachan, Fl. Bhopal 167. 1977), Jabalpur (Shrivastava and Oommachan, Fl. Jabalpur 107. 1996). *Fl. & Fr.*: Feb. - May.

Eucalyptus tereticornis Sm., Spec. Bot. New Holl. 41. 1795 & in Trans. Linn. Soc. London 3: 284. 1797. - *Liptees, Nilgiri*.

Tall trees. Bark smooth. Leaves opposite and alternate, ovate to broadly lanceolate or elliptic, 10-20 x 1-2 cm, glabrous, entire. Flowers in axillary umbels. Operculum conical, horn-shaped. Fruits truncate-globose.

Cultivated. Indore. *Fl. & Fr.*: Feb. - June.

SYZYGIUM Gaertn., *nom. cons.*

Syzygium alternifolium (Wight) Walp., Rep. 2: 179. 1906. *Eugenia alternifolia* Wight, Icon. Pl. Ind. Orient. 2: t. 537. 1842; Duthie in Hook. f., Fl. Brit. India 2: 497. 1879.

Trees, 10-15 m high. Leaves alternate, ovate-oblong or ovate-orbicular, 5-12 x 2-8 cm, obtuse or emarginate at apex, truncate or unequally rounded at base, glabrous, entire. Flowers greenish white, fragrant, in trichotomous, lateral or axillary cymes. Calyx 4-lobed. Petals ovate-calyptate. Berries globose, *ca* 1 cm across.

Balaghat (Duthie in Hook. *f.*, Fl. Brit. India 2: 497. 1879). *Fl. & Fr.*: March May.

Syzygium fruticosum DC., Prodr. 3: 260. 1828. *Eugenia fruticosa* Roxb., Fl. Ind. 2: 487. 1832; Duthie in Hook. *f.*, Fl. Brit. India 2: 499. 1879.

Trees, 8-10 m high. Leaves elliptic or elliptic-oblong, 8-10 x 3-4 cm, acute or shortly acuminate at apex, cuneate at base, coriaceous, smooth, entire; petioles *ca* 1 cm long. Flowers in divaricately branched panicles; branches 4-angled. Hypanthium broadly campanulate. Sepals absent. Petals calyptate. Berries globose, 6-9 mm across.

Mandla (Maheshwari in Bull. Bot. Surv. India 5: 128. 1964). *Fl. & Fr.*: April - July.

LECYTHIDACEAE

CAREYA Roxb., *nom. cons.*

Careya herbacea Roxb., Pl. Corom. 3: 13. t. 217. 1811; C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 510. 1879. - *Bhui kumbi*.

Undershrubs, up to 1.5 m high. Leaves crowded at the end of branches, cuneate-oblong or obovate, up to 18 x 5.5 cm, obtuse at apex, attenuate at base, subcrenate. Flowers terminal, 1-2 or rarely many on each shoot; bracts linear. Calyx campanulate, *ca* 2 cm long; lobes 4, ovate. Petals 4, greenish purple, elliptic. Stamens indefinite, many seriate. Fruits globose, up to 3.5 cm across, crowned by persistent calyx.

In dry deciduous forests. Balaghat (Haines, Descr. List Trees Shr. Econ. Herbs South. Circle Centr. Prov. 115. 1916). *Fl. & Fr.*: March May.

MELASTOMATACEAE**MEMECYLON L.**

Memecylon madgolense Gamble in Kew Bull. 1919: 227. 1919.

Shrubs. Leaves ovate-lanceolate, 5-9 x 2-4 cm, caudate-acuminate at apex, acute at base, coriaceous; petioles 3-5 mm long. Flowers in lateral, branched, short, few-flowered cymes, pedicellate. Calyx obscurely lobed. Berries globose, *ca* 4 mm across.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 236. 1942).

LYTHRACEAE**AMMANNIA L.**

Ammannia auriculata Willd., Enum. Pl. Hort. Berol. 1: t. 7. 1803.
A. senegalensis auct. non Lam., 1791: C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 570. 1879.

Herbs, annual, erect, up to 40 cm high. Stems 4-angled. Leaves lanceolate-oblong, up to 5 x 0.6 cm, subacute at apex, auricled at base. Flowers pink, in axillary pedunculate cymes, shorter than the leaves. Calyx campanulate with 8 vertical lines. Petals spreading, suborbicular, caducous. Capsules subglobose, *ca* 2 mm across. Seeds excavated on ventral side.

In water logged places. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 129. f. 15. 1996). *Fl. & Fr.*: Aug. - Oct.

ROOTALA L.

Rotala macrandra Koehne in Engl., Bot. Jahrb. 1: 176. 1881.
Ammannia rotundifolia sensu C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 566. 1879, *p.p.*

Herbs, diffuse, creeping, rooting at lower nodes. Leaves orbicular. Flowers pink, small, in terminal, solitary or branched, bracteate spikes. Stamens much exerted. Capsules pinkish red. Seeds hairy.

In rocky river beds. Rewa (Panigrahi and Arora in Proc. Nat. Acad. Sci. India 35: 90. 1965). *Fl.*: Feb.

CUCURBITACEAE

CITRULLUS Schrad., *nom. cons.*

Citrullus lanatus (Thunb.) Matsumura & Nakai var. **fistulosus** (Stocks) Chakravarty, Fasc. Fl. India 11: 23. 1982. *Citrullus fistulosus* Stocks in Hook., Kew J. Bot. 3: 74. t. 3. 1851. *C. vulgaris* Schrad. var. *fistulosus* Duthie & Fuller, Field Gard. Crops, N. W. P. 2: 46. 1882. *Tinda*.

Herbs, annual. Stems fistulose. Leaves triangular-ovate, deeply 3-fid, cordate at base, more or less scabrid; segments oblong, lanceolate or obovate; tendrils 2-fid. Male flowers: Peduncles villous. Calyx-lobes lanceolate; tube broadly campanulate. Corolla-lobes ovate-oblong. Female flowers: Calyx and corolla as in the male. Fruits light green, rounded, depressed at each end, up to 8 cm across.

Cultivated. Bhopal (Oommachan, Fl. Bhopal 181. 1977). *Fl. & Fr.*: March Oct.

The fruits are consumed as vegetable.

CORALLOCARPUS Welw. *ex* Hook. *f.*

Corallocarpus conocarpus C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 628. 1879.

Climbers. Stems striate, glabrous; tendrils simple. Leaves palmately 3-5-lobed, cordate at base; lobes oblong-lanceolate, sparsely hairy. Flowers yellow. Female flowers usually fascicled or subcapitate. Corolla campanulate, divided to the middle. Fruits sessile, orange-red except green base, beaked. Seeds dark brown.

Rare. Over hedges. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 137. 1996). *Fl. & Fr.*: June - Aug.

Corallocarpus epigaeus (Rottl. & Willd.) Hook. *f.* in Benth. & Hook. *f.*, Gen. Pl. 1: 831. 1862; C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 628. 1879. *Bryonia epigaea* Rottl. & Willd., Neue Schrift. Ges. Naturf. Freunde Berlin 4: 223. 1803. **Fig. 13.**

Stems scandent, glabrous. Leaves broadly suborbicular, 2-4.5 x 2.5-5 cm, densely villous, 3-5-lobed; lobes often lobulate; tendrils glabrous. Male flowers: Peduncles 6-12-flowered. Calyx-lobes erect; tube sparsely pilose. Corolla dirty green, spreading. Female flowers often solitary, pedunculate. Fruits red, ovoid, glabrous. Seeds yellow.

Hoshangabad (CAL). *Fl. & Fr.*: July Oct.

CUCUMIS L.

Cucumis melo L. var. **utilissimus** (Roxb.) Duthie & Fuller in Field Gard. Crops, N. W. P. 2: 55. tt. 53-54. 1882. *C. utilissimus* Roxb., Fl. Ind. 3: 721. 1832. - *Kakri*.

Annuals. Stems hirsute, angular. Leaves 5-angular or shallowly 3-7-lobed; lobes obtuse, subhirsute, denticulate. Male flowers fasciculate. Calyx-lobes subulate; tube campanulate, narrow. Corolla-lobes ovate-oblong. Fruits cylindrical to elongate, straight or curved, up to 40 cm long, ribbed.

Cultivated. Bhopal (Oommachan, Fl. Bhopal 183. 1977). *Fl. & Fr.*: Feb. - July.

LUFFA Mill.

Luffa tuberosa Roxb., Fl. Ind. 3: 717. 1832.

Climbers, perennial, monoecious. Stems slender, striate. Leaves orbicular-reniform, 5-7-lobed, entire; tendrils simple, filiform. Male flowers in 2-5-flowered racemes. Calyx broadly campanulate; lobes lanceolate. Corolla yellow. Stamens 2. Female flowers with 2 or 3 stigmas. Fruits angular, pyriform with 8 sharp ridges. Seeds blackish grey, broadly ovoid.

Madhya Pradesh (Chakravarty, Fasc. Fl. India 11: 74. 1982). *Fl. & Fr.*: July - Oct.

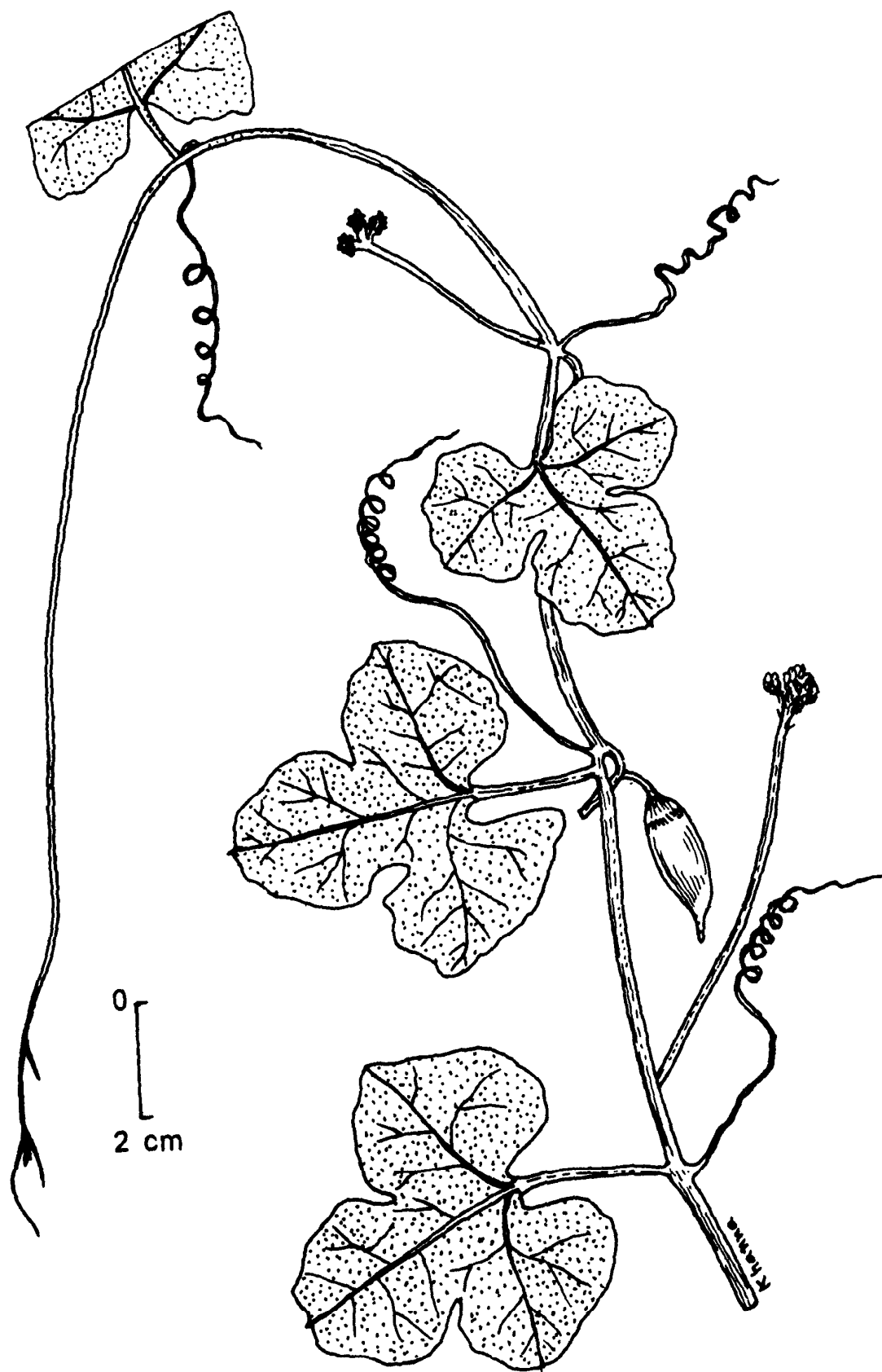


Fig. 13. *Corallocarpus epigaeus* (Rottl. & Willd.) Hook. f.

MELOTHRIA L.

Melothria indica Lour., Fl. Cochinch. 1: 35. 1790; C.B. Clarke in Hook. f., Fl. Brit. India 2: 626. 1879.

Herbs, monoecious, scandent. Leaves ovate-deltoid or cordiform, undivided or 3-lobed, acute at apex, entire or denticulate; tendrils simple, short. Male flowers solitary or fascicled. Calyx-lobes subulate; tube campanulate. Corolla-lobes ovate-oblong. Fruits brownish, ovoid, glabrous, finely reticulate.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 249. 1942). *Fl. & Fr.*: Aug. Dec.

Melothria perpusilla (Blume) Cogn. in A. DC., Monogr. Phan. 3: 607. 1881. *Cucurbita perpusilla* Blume, Cat. Hort. Buitenz. 105. 1823. *Zehneria hookeriana* Arn. in Hook., J. Bot. 3: 275. 1841; C.B. Clarke in Hook. f., Fl. Brit. India 2: 624. 1879.

Monoecious. Stems scandent; branches slender. Leaves ovate-cordate, angular or undivided, rarely 3-5-lobed, acute at apex, undulate-denticulate; tendrils slender, elongate. Male flowers: Peduncles 2-4 cm long. Calyx teeth recurved; tube campanulate. Corolla-lobes ovate-oblong. Female flowers solitary or rarely subumbellate. Fruits globose, finely reticulate.

Surguja. (Wood, Pl. Ch. Nagpur Jasp. Sirg. 106. 1977, Repr. ed.).

TRICHOSANTHES L.

Trichosanthes dioica Roxb., Fl. Ind. 3: 701. 1832; C.B. Clarke in Hook. f., Fl. Brit. India 2: 609. 1879. - *Parwal*.

Herbs, dioecious, scandent. Stems slender, branched. Leaves ovate-oblong, 7-10 x 4-6 cm, acute at apex, cordate at base, sparsely scabrous, sinuate-dentate; tendrils slender, short. Male flowers: Peduncles paired, one short, other long, both 1-flowered. Calyx-tube ca 4 cm long. Petals fimbriate. Female flowers solitary. Fruits oblong, glabrous, smooth.

Cultivated throughout warmer parts of India (Chakravarty, Fasc. Fl. India 11: 114. 1982). *Fl. & Fr.*: April - Sept.

Fruits are used as vegetable.

Trichosanthes tricuspidata Lour. var. **strigosa** Mitra & Bandyop. in J. Bombay Nat. Hist. Soc. 95: 374-375. 1998.

Dioecious. Stems robust. Leaves suborbicular, 10-18 x 9-17 cm, shortly palmately 3-5-lobed, densely covered with strigose hairs on the lower surface; petioles 4-6 cm long, robust. Male flowers: Peduncles 15-18 cm long; pedicels spreading, thick. Calyx-lobes subulate; tube 5-6 cm long. Petals deeply laciniate. Female flowers: Peduncles 2-4 cm long. Fruits red, ovoid, smooth. Seeds black.

Bastar (Mitra and Bandyopadhyay in J. Bombay Nat. Hist. Soc. 95: 374-375. 1998). *Fl. & Fr.*: Aug. - Oct.

CACTACEAE

CEREUS Mill.

Cereus hexagonus Mill., Gard. Dict. ed. 8. n. 1. 1768.

Stems tall, columnar, sharply 6-ridged, with clusters of sharp spines; areoles with felted hairs and numerous prickles. Leaves reduced to scales, caducous. Flowers solitary, white, *ca* 20 cm long. Perianth infundibuliform; tepals oblong-lanceolate. Berries red, ovoid, succulent.

Bhopal (Oommachan, Fl. Bhopal 190. 1977). *Fl. & Fr.*: May - Sept.

Cereus peruvianus (L.) Mill., Gard. Dict. ed. 8. n. 4. 1768. *Cactus peruvianus* L., Sp. Pl. 467. 1753. *Hedge-cactus*.

Stems erect, columnar, with 4-9 ridges; areoles brown, with 5-10 radial spines and one stiff central spine. Flowers white to reddish brown, *ca* 15 cm long. Fruits orange, rounded.

Bhopal (Oommachan, Fl. Bhopal 190. 1977). *Fl. & Fr.*: May - Aug.

Cereus pterogonous Lam., Cat. Gen. Sp. Nov. 59. 1839.

Shrubs, 2-3 m high. Stems columnar, 3-9-angled or winged; areoles echinate, without glochids; spines 8-10, unequal, 0.5-3 cm long. Leaves absent. Flowers solitary, infundibuliform, sessile. Tepals numerous, greenish white. Berries succulent.

Planted. Bhopal (Oommachan, Fl. Bhopal 190. 1977). Indore (Khanna *et al.*, Fl. Kasturbagram 140. 1991). *Fl.*: March - July.

AIZOACEAE

TRIANTHEMA L.

Trianthema pentandra L., Mant. Pl. 70. 1767; C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 660. 1879.

Herbs, diffuse, much branched. Branches angled. Leaves elliptic-oblong, up to 4 x 1.5 cm, obtuse at apex, acute at base, glabrous to papillose. Flowers in axillary fascicles. Stamens 5. Styles 2. Capsules with deflexed horn. Seeds brownish black, rugulose.

As weed in moist places. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 142. 1996). *Fl. & Fr.*: Sept. Dec.

ZALEYA Burm. *f.*

Zaleya decandra (L.) Burm. *f.*, Fl. Ind. 110. t. 31. 1768; Backer in Steenis, Fl. Males ser. 1, 4: 274. 1951. *Trianthema decandra* L., Mant. Pl. 70. 1767; C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 661. 1879.

Herbs, prostrate. Leaves oblong or ovate-elliptic, 1.5-3 x 0.8-1.5 cm, obtuse at apex, acute at base, entire; petioles dilated, amplexicaul. Flowers 6-8 in a subumbellate cluster. Perianth pink. Stamens 10-15, unequal. Ovary 2-locular; ovules 2 in each locule. Capsules subterete, *ca* 4 mm long. Seeds striate.

Lower Chambal valley ravine (Agarkar in Bull. Bot. Surv. India 11: 399. 1972). *Fl. & Fr.*: Sept. Dec.

MOLLUGINACEAE**MOLLUGO L.**

Mollugo disticha (L.) Ser. in DC., Prodr. 1: 392. 1824; C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 663. 1879. *Pharnacium distichum* L., Mant. Pl. 221. 1771.

Herbs, erect. Branchlets pubescent. Leaves elliptic or obovate-oblong, 0.5-2 x 0.2-0.5 cm, acute at apex, cuneate at base, entire, chartaceous, pubescent. Flowers in terminal and/or leaf-opposed cymes; bracts small. Sepals 5, white, ovate-elliptic, subequal. Stamens 5. Capsules ovoid. Seeds pale pink, compressed.

Rewa (Tiwari in Indian For. 94: 581. 1968). *Fl. & Fr.*: Jan. March.

APIACEAE**BUPLEURUM L.**

Bupleurum wightii Kozo - Polj., Epitome Bupleur. Rossiae 166. 1913, non P.K. Mukh., 1969; P.K. Mukh. & Constance, Umbell. India 64. 1993. *B. mucronatum* var. *virgata* (Wight & Arn.) C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 676. 1879, non *B. virgatum* Cav., 1827. *B. virgatum* Wight & Arn., Prodr. 370. 1834.

Herbs, annual or perennial, erect. Basal and lower cauline leaves linear-oblong, 4-7 cm long, sharply acuminate at apex, amplexicaul at base; upper cauline leaves shorter. Umbels both terminal and lateral; peduncles up to 3 cm long; involucre bracts 4-5, lanceolate; rays 4-6, unequal; umbellets ca 10-flowered. Flowers yellow. Fruits ovoid.

Hoshangabad (CAL). *Fl. & Fr.*: Nov. Feb.

DAUCUS L.

Daucus carota L., Sp. Pl. 242. 1753; C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 718. 1879. *Gajar*.

Herbs, annual, branched, hispid. Roots conical, orange, pink or red. Leaves 2-3-pinnate; segments lanceolate, narrow. Flowers many in

compound umbels, outer flowers zygomorphic; rays numerous; bracts and bracteoles present. Calyx-teeth small or obsolete. Petals white, obovate, emarginate. Fruits ellipsoid; carpophore undivided.

Cultivated for edible roots. Bhopal (Oommachan, Fl. Bhopal 196. 1977), Indore. *Fl. & Fr.*: Jan. March.

LIGUSTICUM L.

Ligusticum alboalatum Haines in J. Asiat. Soc. Bengal II. 15: 314. 1920; P.K. Mukh. & Constance, Umbell. India 171. 1993.

Herbs, erect. Stems stout. Leaves oblong-lanceolate, 10-20 cm long, 2-pinnate; leaflets ovate, 2-6 cm long, spinulose-serrate. Peduncles both terminal and lateral; involucre bracts 1 or 2; rays 12-25, unequal; umbellets 20-30-flowered. Fruits ellipsoid, dorsally compressed.

Surguja (DD). *Fl. & Fr.*: May - June.

PEUCEDANUM L.

Peucedanum dhana Buch.-Ham. var. **dalzellii** C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 709. 1879; P.K. Mukh. & Constance, Umbell. India 217. 1993. **Fig. 14.**

Herbs, erect. Stems slender. Leaves clustered at base, ovate-oblong, coriaceous, simply pinnate or ternately parted; leaflets oblong to suborbicular, shorter and broader, crowded. Peduncles slender, terminal or lateral; involucre bracts 3-6, linear-lanceolate; rays 5-10, unequal; umbellets 15-20-flowered. Flowers yellow. Fruits ellipsoid to subquadrate.

Jabalpur, Mandla. *Fl. & Fr.*: March - Aug.

TRACHYSPERMUM Link, *nom. cons.*

Trachyspermum roxburghianum (DC.) Craib., Fl. Siam. Enum. 1: 788. 1931; P.K. Mukh. & Constance, Umbell. India 163. 1993. *Ptychotis roxburghiana* DC., Prodr. 4: 109. 1830. *Carum roxburghianum* Kurz in J. Asiat. Soc. Bengal 46(2): 114. 1877; C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 682. 1879.

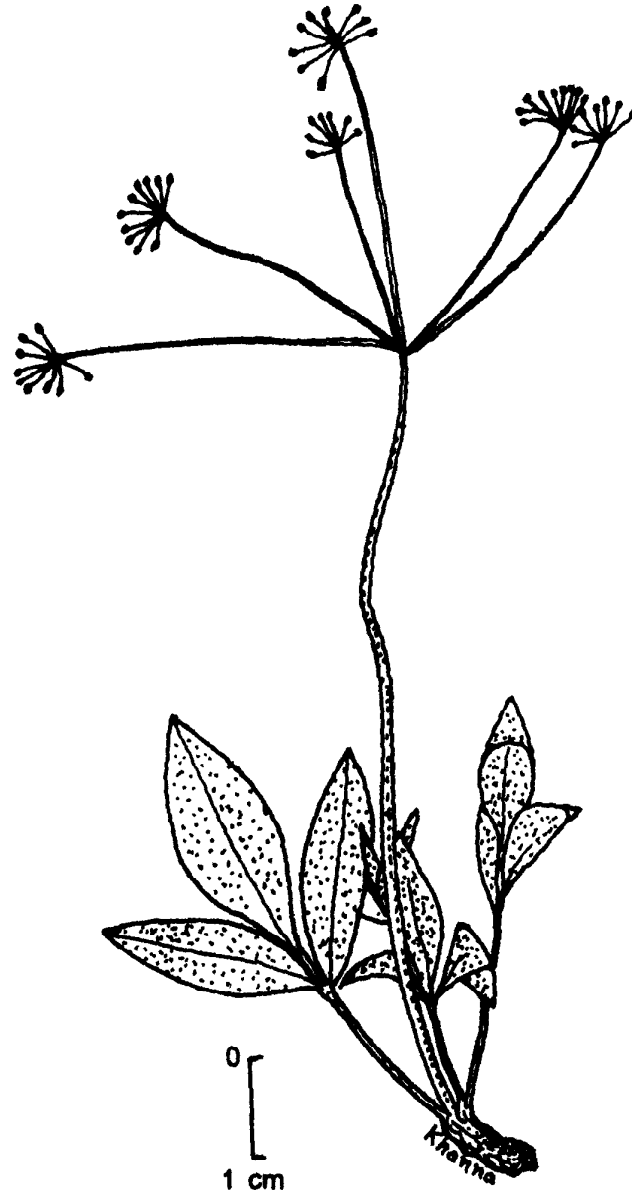


Fig. 14. *Peucedanum dhana* Buch.-Ham. var. *dalzellii* C.B. Clarke

Herbs, erect, slender. Leaves triangular-ovate, 3-8 cm long, bipinnate or ternately pinnate; segments narrowly oblong; petioles 1-2 cm long. Peduncles terminal and lateral, 5-8 cm long; involucre bracts 3-8, linear or lanceolate; rays 4-12, filiform, unequal. Flowers white or pink. Fruits ovoid, compressed laterally.

Bastar, Hoshangabad, Jabalpur (CAL). *Fl. & Fr.*: Jan. May.

ARALIACEAE

SCHEFFLERA J.R. Forster & G. Forster

Schefflera roxburghii Gamble, *Fl. Pres. Madras* 570. 1919. *Heptapleurum venulosum sensu* C.B. Clarke in *Hook. f., Fl. Brit. India* 2: 729. 1879, *p.p. non* Seem, 1885.

Large straggling or climbing shrubs. Leaves digitate; leaflets ovate-elliptic, up to 15 x 6 cm, subacuminate at apex, chartaceous; main nerves scarcely more prominent than the secondary and reticulations. Flowers in large, usually terminal panicles. Petals 5. Stamens 5. Drupes 5-6-angled. Seeds compressed.

Rare. In semi-evergreen forests. Bastar (Mooney in *Indian For. Rec.* (n.s.) 3(7): 245. 1942). *Fl. & Fr.*: June - Aug.

Schefflera stellata (Gaertn.) Harms in *Engl. & Prantl, Nat. Pflanzenfam.* 3(8): 39. 1894. *Heptapleurum stellatum* Gaertn., *Fruct. Sem. Pl.* 2: 472. t. 178. 1791; C.B. Clarke in *Hook. f., Fl. Brit. India* 2: 730. 1879. **Fig. 15.**

Large straggling or climbing shrubs. Leaves digitate; leaflets usually 3-5, up to 15 x 7 cm, rounded, emarginate or slightly obtuse at apex, prominently reticulate; petioles up to 12 cm long. Flowers in umbels arranged in terminal, up to 30 cm long panicles. Petals usually falling off as an operculum. Drupes 5-angled.

In moist deciduous forests along hill slopes. Shahdol, Sidhi. *Fl. & Fr.*: May - July.

Schefflera venulosa (Wight & Arn.) Harms in *Engl. & Prantl, Nat. Pflanzenfam.* 3(8): 39. 1894. *Paratropia venulosa* Wight & Arn., *Prodr.*

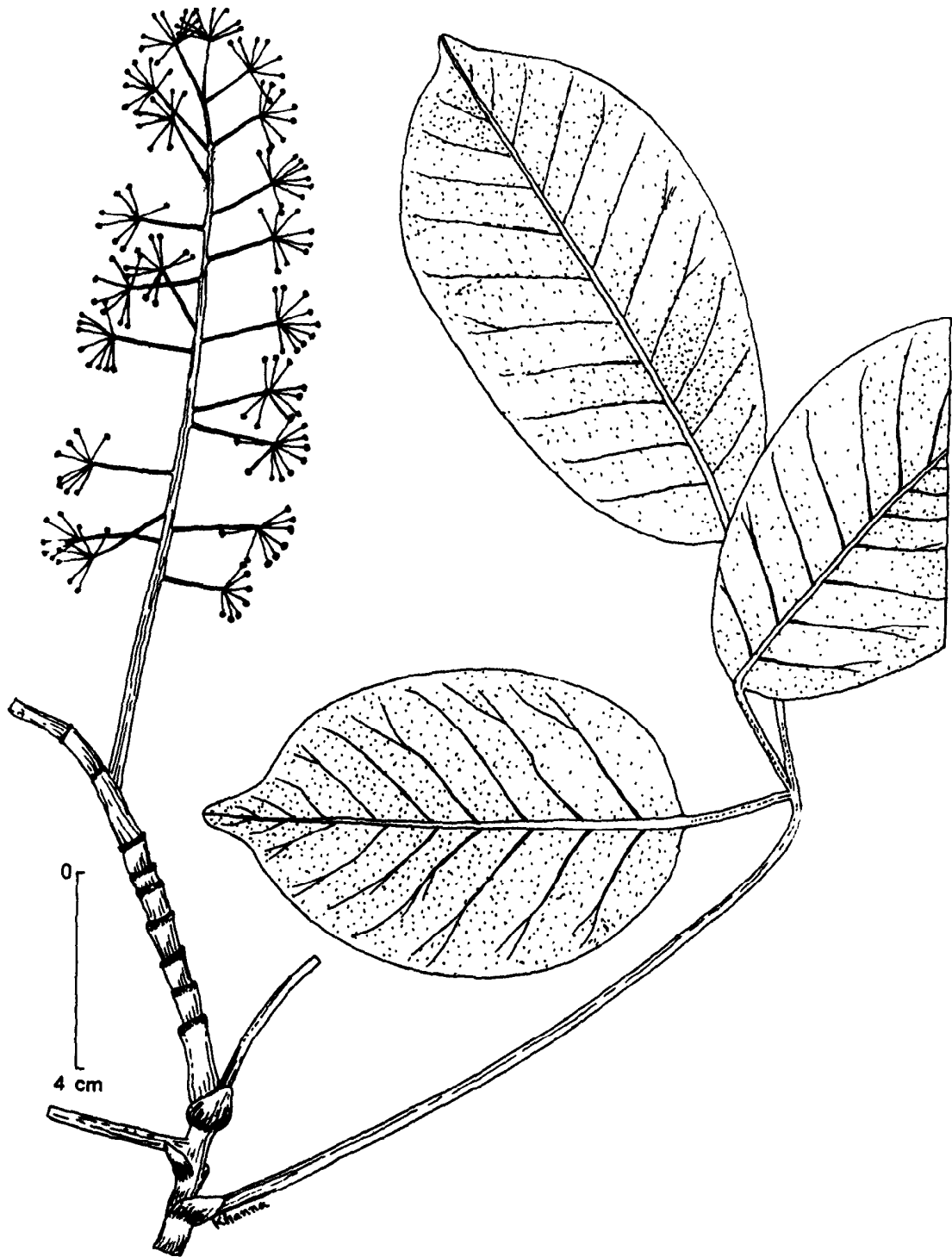


Fig. 15. *Schefflera stellata* (Gaertn.) Harms

377. 1834. *Heptapleurum venulosum sensu* C.B. Clarke in Hook. *f.*, Fl. Brit. India 2: 729. 1879, *p.p.*

Large straggling shrubs. Leaves palmately compound; leaflets 5-7, elliptic or elliptic-oblong, up to 10.5 x 5 cm; subacuminate at apex, coriaceous; petioles up to 15 cm long; stipules connate, up to 1 cm long. Flowers light yellow, in terminal, branched, up to 30 cm long panicles with a number of 8-12-flowered umbellules. Calyx truncate. Petals 5, obovate-oblong. Stamens 5. Drupes 5-angled.

In moist deciduous forests. Hoshangabad, Rewa (Tiwari in Indian For. 94: 577. 1968). *Fl. & Fr.*: May - Aug.

TETRAPANAX (K. Koch) K. Koch

Tetrapanax papyrifera (Hook.) K. Koch in Koch & Fint, Wochenschr. 2: 371. 1859. *Aralia papyrifera* Hook. in Kew Journ. 4: 50. 1852.

Shrubs, up to 2.5 m high. Leaves 5-7-lobed, up to 45 cm long, stellate hairy when young; segments oblong or ovate, acute or acuminate at apex, lobed or entire, serrate; sinus very deep. Inflorescence-axis, bracts, pedicels, dorsal side of petals and ovary stellate-hairy. Petals ovate, acute. Style erect, recurved afterwards.

Often grown in gardens as an ornamental. Bilaspur (Panigrahi and Murti, Fl. Bilaspur Dist. 1: 276. 1989).

RUBIACEAE

ARGOSTEMMA Wallich

Argostemma verticillatum Wallich in Roxb., Fl. Ind. (Carey & Wallich ed.) 2: 325. 1824; Hook. *f.*, Fl. Brit. India 3: 43. 1880.

Herbs, epiphytic. Leaves whorled, ovate-lanceolate or lanceolate, up to 6 x 1.5 cm, acuminate at apex, pubescent. Flowers in umbels arranged in panicles or fascicles; peduncles much shorter than leaves. Flowers 5-merous. Calyx campanulate. Corolla white. Capsules 2-celled.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 240. 1942). *Fl. & Fr.*: July - Aug.

CANTHIUM Lam.

Canthium dicoccum (Gaertn.) Teijsm. & Binn. var. **umbellata** (Wight) Sant. & Merch. in Bull. Bot. Surv. India 3: 107. 1961. *C. umbellata* Wight, Icon. Pl. Ind. Orient. t. 1034. 1845; Hook. *f.*, Fl. Brit. India 3: 132. 1880.

Shrubs or small trees, up to 4 m high. Leaves opposite, oblong-lanceolate or elliptic-lanceolate, up to 12 x 6 cm, acute or acuminate at apex, gradually decurrent at base, coriaceous. Cymes dense, umbellate, subsessile; peduncles up to 5 mm long, elongating in fruit. Flowers 5-merous. Calyx turbinate. Corolla white, tubular. Fruits ovoid.

Bilaspur (Panigrahi and Arora in Proc. Nat. Acad. Sci. India 35: 94. 1965). *Fl. & Fr.*: Jan. - March.

Canthium rheedii DC., Prodr. 4: 474. 1830; Hook. *f.*, Fl. Brit. India 3: 134. 1880. *Plectronia rheedii* (DC.) Bedd., For. Man. Bot. 134/5. 1872.

Shrubs, armed; spines supra-axillary. Leaves obovate or elliptic-ovate, 2-3.5 x 1-2 cm, acuminate at apex, rounded or cordate at base, chartaceous, glabrous; stipules filiform. Flowers in axillary fascicles. Calyx cupular, 5-toothed. Corolla white; lobes lanceolate. Fruits obcordate, compressed.

Bilaspur (Panigrahi and Arora in Proc. Nat. Acad. Sci. India 35: 94. 1965). *Fl. & Fr.*: Aug. - Oct.

CEPHALANTHUS L.

Cephalanthus tetrandra (Roxb.) Ridsdale & Bakh. *f.* in Blumea 23: 182. 1976. *Nauclea tetrandra* Roxb., Fl. Ind. (Carey & Wallich ed.) 2: 125. 1824. *Cephalanthus naucleoides* DC., Prodr. 539. 1830; Hook. *f.*, Fl. Brit. India 3: 24. 1880, *excl. syn. C. aralioides* Zoll. & Mor. *C. occidentalis auct. non L.*, 1753; Saxena in Bull. Bot. Surv. India 11: 60. 1971.

Shrubs, up to 2.5 m high. Leaves ovate, acuminate at apex, glossy above, glabrous or slightly pubescent below. Flowers white or yellow, in heads, up to 2.5 cm across, long peduncled, 3 or more at the end of branches. Stamens exserted. Fruits of 2 nutlets.

Cultivated in gardens. Hoshangabad (Saxena in Bull. Bot. Surv. India 11: 60. 1971). *Fl. & Fr.*: Aug. - Oct.

COFFEA L.

Coffea robusta Linden ex De Wildeman, Miss. Em. Laurent 1: 328. 1906. *Coffee*.

Stout shrubs, 2-3 m high. Leaves opposite, broadly oblong or elliptic-oblong, 10-17 x 4-6.5 cm, coriaceous, shining, glabrous, entire; stipules filiform. Flowers in 3-5-flowered cymes borne in leaf axils, each cyme with 2 triangular bracts. Corolla 5-7-lobed; tube 15-18 mm long. Drupes red, ovoid-globose.

Cultivated. Indroo. *Fl. & Fr.*: March - Aug.

GARDENIA J. Ellis, *nom. cons.*

Gardenia jasminoides J. Ellis in Phil. Trans. Roy. Soc. London 51: 935. t. 23. 1761. - *Gandharaj*. **Fig. 16.**

Shrubs, 2-3 m high. Leaves opposite or ternately whorled, obovate or oblanceolate, 4-9 x 1.5-3 cm, dark green, glabrous, entire, prominently nerved. Flowers solitary, fragrant. Calyx 5-6-ridged. Corolla white; lobes often double; tube stout. Stamens 5, adnate to corolla-tube. Berries ellipsoid.

Cultivated. Indore. *Fl. & Fr.*: July - Aug.

HAMELIA Jacq.

Hamelia patens Jacq., Enum. Syst. Pl. 16. 1760.

Shrubs, evergreen, up to 2 m high. Branches terete. Leaves opposite or sometimes in whorls, elliptic-obovate, acute or subacuminate at apex, petiolate; stipules interpetiolar. Flowers in forked cymes. Sepals short,

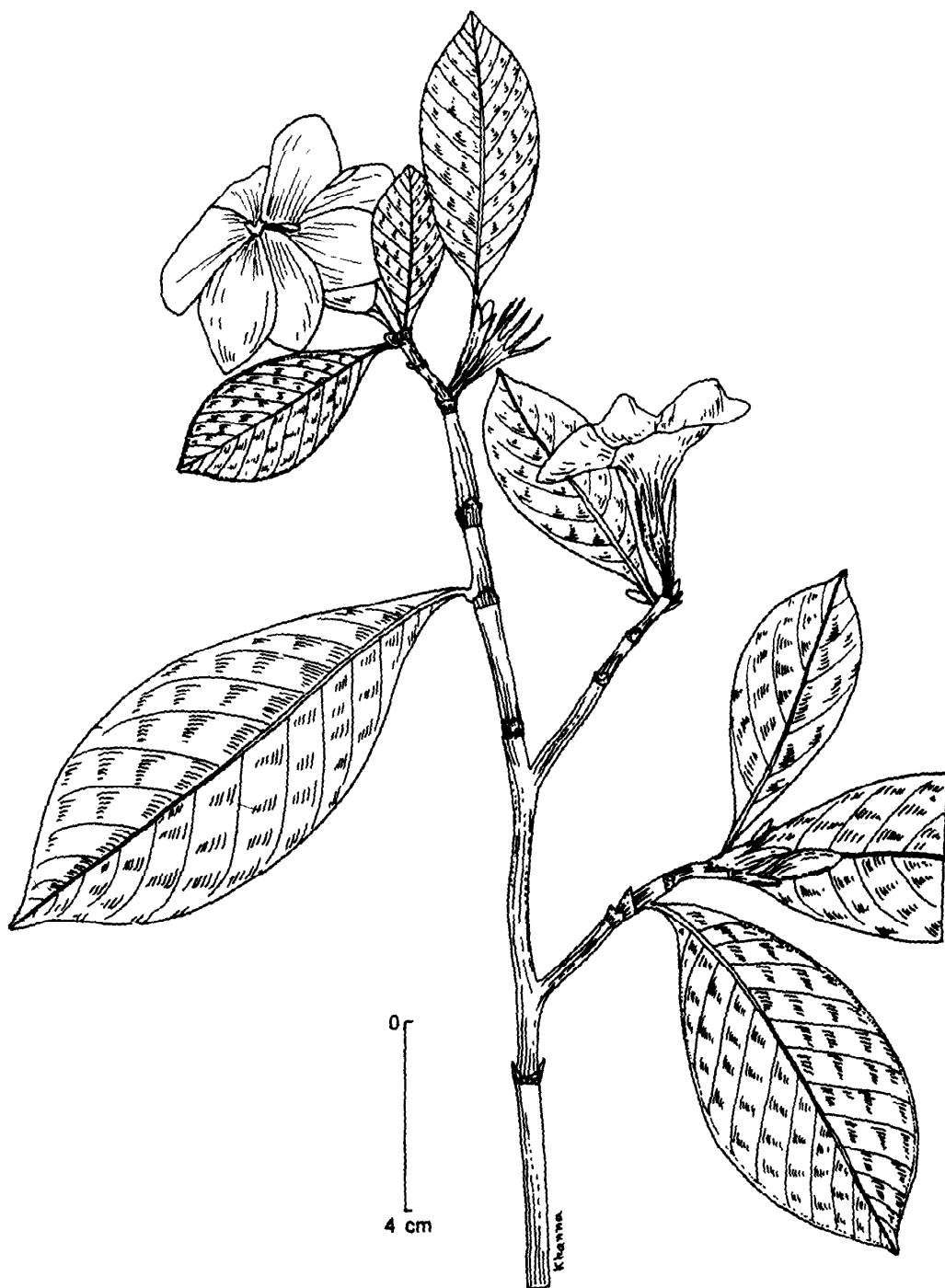


Fig. 16. *Gardenia jasminoides* J. Ellis

triangular. Corolla scarlet, tubular with 5 short lobes. Stamens 5. Berries ovoid, black when ripe.

Cultivated in gardens as an ornamental. Bhopal, Indore, Jabalpur. *Fl. & Fr.*: Throughout the year.

HEDYOTIS L.

Hedyotis nitida Wight & Arn., Prodr. 412. 1834; Hook. *f.*, Fl. Brit. India 3: 61. 1880. *Oldenlandia nitida* (Wight & Arn.) Gamble, Fl. Pres. Madras 597. 1921.

Herbs, prostrate or ascending. Branches 4-angled. Leaves lanceolate or elliptic-lanceolate, 4-6 x 1-1.5 cm, acute-acuminate at apex, narrowed at base, recurved on margins; nerves indistinct. Flowers in axillary, sessile or subsessile cymes. Corolla white. Stamens exserted. Capsules ovoid.

Mandla (Joseph and Vajravelu in Bull. Bot. Surv. India 9: 23. 1967). *Fl. & Fr.*: March - May.

Hedyotis pseudocorymbosa Bakh. *f.* in Blumea 12: 62. 1969. *Oldenlandia pseudocorymbosa* (Bakh. *f.*) Babu, Herb. Fl. Dehra Dun 227. 1977. *O. corymbosa sensu* Hook. *f.*, Fl. Brit. India 3: 64. 1880, *p.p.*

Herbs, annual, erect or decumbent-ascending. Stems slender, subterete, shortly scabrid. Leaves linear-lanceolate, up to 5 x 0.2 cm, scabrid on margins. Peduncles axillary, 1-3-flowered. Calyx-teeth ovate-triangular, scabrid, acute. Corolla white. Stamens and style exserted. Capsules ovoid, 2-3 mm across, pyramidal at the apex.

Common. In forests and wastelands. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 149. 1996). *Fl. & Fr.*: Aug. Nov.

HYMENODICTYON Wallich

Hymenodictyon obovatum Wallich in Roxb., Fl. Ind. (Carey & Wallich ed.) 2: 153. 1824; Hook. *f.*, Fl. Brit. India 3: 36. 1880. **Fig. 17.**

Trees, deciduous. Leaves elliptic or obovate, abruptly acuminate at apex, cuneate at base, glabrescent. Flowers sessile, in elongated spikes;

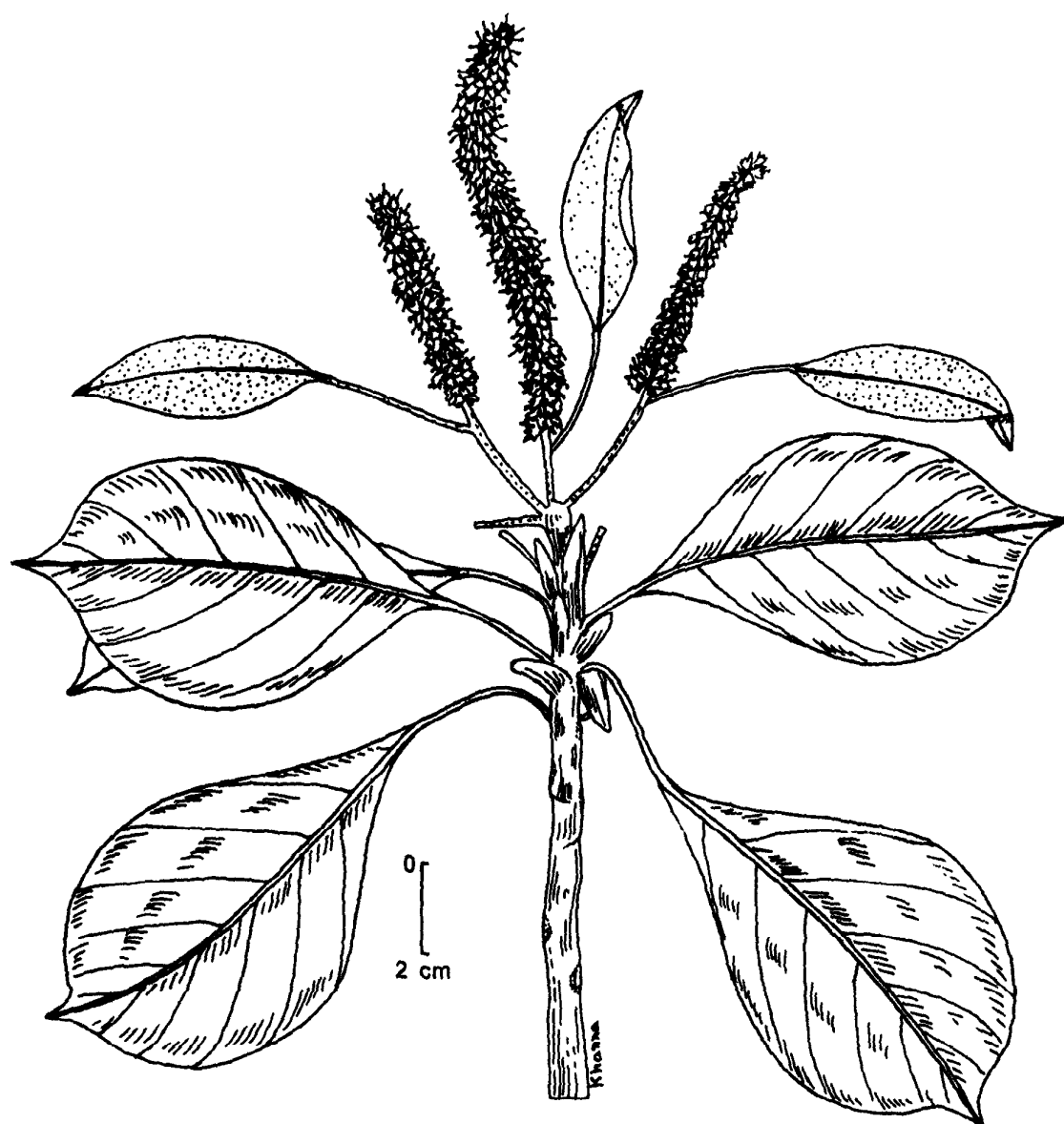


Fig. 17. *Hymenodictyon obovatum* Wallich

bracts greenish to cream-coloured. Calyx pubescent. Corolla white. Capsules brown, erect. Seeds narrowly winged.

Raisen (CAL). *Fl. & Fr.*: Dec. April.

IXORA L.

Ixora finlaysoniana Wallich ex G. Don, Gen. Hist. 3: 572. 1834.

Shrubs, 2-2.5 m high. Leaves opposite, decussate, obovate, 10-15 x 4-7 cm, coriaceous, entire, stipulate; petioles *ca* 1 cm long. Flowers in corymbs. Calyx cupular, 4-lobed. Corolla white, 4-lobed; lobes 5-7 mm long; tube 2-3 cm long. Fruits globose.

Cultivated. Indore. *Fl. & Fr.*: March - April.

Ixora undulata Roxb., Fl. Ind. 1: 385. 1832; Hook. *f.*, Fl. Brit. India 3: 147. 1880.

Shrubs or small trees. Leaves elliptic or elliptic-lanceolate, 8-15 x 3-4 cm, acuminate at apex, acute or cuneate at base, undulate on margins. Flowers in subcorymbose cymes arranged in panicles. Calyx-lobes more or less equal to tube. Corolla white; lobes linear, reflexed; tube slender, *ca* 1 cm long. Fruits purplish, turning black, ellipsoid, 6-7 mm long.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 238. 1942). *Fl. & Fr.*: Feb. May.

MUSSAENDA L.

Mussaenda glabrata (Hook. *f.*) Hutch. ex Gamble, Fl. Pres. Madras 2: 610. 1921. *M. frondosa* L. var. *glabrata* Hook. *f.*, Fl. Brit. India 3: 90. 1880. *Sarved.*

Undershrubs. Leaves oblong-obovate, acuminate at apex, sessile or petiolate; stipules 2-fid. Flowers in terminal cymes. Calyx with a white, membranous, orbicular or elliptic leafy lobe. Corolla yellow. Berries obovoid with broad areole.

Cultivated in gardens as an ornamental. Bhopal (Oommachan, Fl. Bhopal 204. 1977). *Fl.*: July - Oct.

NEANOTIS Lewis

Neanotis foetida (Dalz.) Lewis in Ann. Miss. Bot. Gard. 53: 38. 1966. *Hedyotis foetida* Dalz. in Hook., J. Bot. Kew Gard. Misc. 2: 134. 1850, non Sm., 1811. *Anotis foetida* (Dalz.) Hook. f., Fl. Brit. India 3: 74. 1880.

Herbs, annual, slender. Leaves linear to linear-lanceolate, up to 2.5 x 0.4 cm, scaberulous above, recurved on margins, sessile. Flowers subsessile in capitate cymes. Calyx-teeth narrowly triangular. Corolla purple, infundibuliform, externally papillose. Capsules 2-4 mm long, didymous, 1-6-seeded. Seeds black, elliptic or orbicular, pitted.

In cultivated fields. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 150. 1996). *Fl. & Fr.*: July - Oct.

Neanotis lancifolia (Hook. f.) Lewis in Ann. Miss. Bot. Gard. 53: 39. 1966. *Hedyotis lancifolia* Dalz. in Hook., J. Bot. Kew Gard. Misc. 2: 135. 1850, non Schum., 1827. *Anotis lancifolia* Hook. f., Fl. Brit. India 3: 73. 1880.

Herbs, perennial, erect, diffusely branched. Stems terete. Leaves ovate or ovate-lanceolate, 3-5 cm long, acuminate at apex, pubescent, membranous; stipules with short bristles. Flowers in terminal and subterminal many-flowered corymbose cymes. Calyx-teeth subulate. Corolla purple; lobes triangular, hairy outside. Capsules hispid, with recurved calyx-teeth.

Bhopal (Oommachan, Fl. Bhopal 200. 1977). *Fl. & Fr.*: Aug. - Nov.

Neanotis montholoni (Hook. f.) Lewis in Ann. Miss. Bot. Gard. 53: 39. 1966. *Anotis montholoni* Hook. f., Fl. Brit. India 3: 73. 1880.

Herbs, annual, erect. Stems and branches hispid. Leaves ovate or ovate-lanceolate, 3-6 x 1.5-2 cm, acute at apex, more or less hairy. Flowers in terminal and axillary, many-flowered cymes; peduncles hairy. Calyx aristate. Corolla purple, infundibuliform. Capsules didymous, subsessile, hairy; cells 1-3-seeded. Seeds black, pitted.

Hoshangabad (Saxena in Bull. Bot. Surv. India 13: 81. 1973). *Fl. & Fr.*: Aug. - Sept.

OPHIORRHIZA L.

Ophiorrhiza hirsutula Wight *ex* Hook. *f.*, Fl. Brit. India 3: 81. 1880.

Undershrubs, rooting below. Leaves ovate-lanceolate, up to 15 x 4 cm, acute or acuminate at apex, attenuate at base; stipules very villous. Flowers in rusty pubescent cymes; bracteoles linear or filiform. Corolla white, hirsute, winged at back. Capsules pubescent.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 242. 1942). *Fl. & Fr.*: April - Nov.

Ophiorrhiza pectinata Arn. in Nov. Act. Cur. 18(1): 338. 1836; Hook. *f.*, Fl. Brit. India 3: 81. 1880.

Undershrubs, erect. Leaves elliptic-lanceolate, sometimes narrow, up to 16 x 5 cm, long acuminate at apex, glabrous above, pale green beneath. Flowers in terminal, up to 4 cm long cymes; bracteoles oblong-lanceolate, persistent. Corolla white, with lilac tinge.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 249. 1942). *Fl. & Fr.*: March April.

PENTAS Benth.

Pentas lanceolata (Forssk.) K. Schum. in Engl. & Prantl, Nat. Pflanzenfam. 4(4): 29. 1891. *Ophiorrhiza lanceolata* Forssk., Fl. Aegypt.-Arab. 42. 1775.

Undershrubs, up to 50 cm high, puberulous. Leaves ovate, elliptic or oblong, up to 15 x 5 cm, acute or subacute at apex, narrowed at the base into a short petiole; stipules multifid. Flowers in cymes. Calyx 4-6-lobed. Corolla pale purple, showy. Stamens 4-6. Ovary 2-locular. Seeds minute.

Cultivated in gardens as an ornamental. Bhopal (Oommachan, Fl. Bhopal 205. 1977), Raisen (Gupta in J. Bombay Nat. Hist. Soc. 74: 668. 1979). *Fl.*: Throughout the year.

WENDLANDIA Bartl. *ex* DC., *nom. cons.*

Wendlandia gamblei Cowan in Not. Roy. Bot. Gard. Edinb. 26: 271. 1932.

Trees. Leaves opposite, rarely ternately arranged, elliptic or elliptic-oblong, shortly acuminate at apex, attenuate at base, glabrous, coriaceous; petioles 2-3 cm long. Flowers 1-3 fascicled in up to 15 cm long panicles, sessile or subsessile. Receptacle glabrous. Calyx-lobes acute or rounded. Corolla tubular, 8-9 mm long; lobes ovate, reflexed. Capsules globose. Seeds reticulate.

At higher elevations. Bastar (Subramanyam and Henry in Bull. Bot. Surv. India 8: 211. 1967). *Fl. & Fr.*: March - May.

Wendlandia heyneana Wallich ex Wight & Arn., Prodr. 1: 403. 1834. *W. glabrata auct. non DC.*, 1830: Hook. f., Fl. Brit India 3: 39. 1880, *p.p.*

Small trees. Branches spreading. Leaves ovate-lanceolate or elliptic-lanceolate, 8-15 x 2-5 cm, acuminate at apex, cuneate at base, glabrous; stipules cuspidate. Flowers in panicles. Calyx glabrous; lobes ovate. Corolla yellowish white; lobes spreading or recurved. Capsules globose.

Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 237. 1942). *Fl. & Fr.*: Feb. May.

Wendlandia thyrsioides (Schult.) Steud., Nom. ed. 2. 2: 786. 1841. *Canthium thyrsoides* Schult. in Roem. & Schult., Syst. Veg. 6: 207. 1820. *Wendlandia notoniana* Wallich ex Wight & Arn., Prodr. 403. 1834; Hook. f., Fl. Brit. India 3: 40. 1880. **Fig. 18.**

Shrubs or small trees. Branchlets sparsely pubescent. Leaves opposite or ternately whorled, elliptic-lanceolate, up to 10 x 3.5 cm, acute at apex, coriaceous, entire; stipules ovate, entire or 2-fid. Flowers in terminal, dense, pyramidal panicles. Calyx tubular. Corolla pale yellow, tubular; lobes 4. Capsules globose. Seeds brown, reticulate.

Bastar (CAL). *Fl. & Fr.*: Feb. April.

ASTERACEAE

ADENOSTEMMA J.R. Forster & G. Forster

Adenostemma lavenia (L.) Kuntze var. **latifolium** (D. Don) Panigrahi in Kew Bull. 30: 651. 1975. *A. latifolium* D. Don, Prodr. Fl.



Fig. 18. *Wendlandia thysioides* (Schult.) Steud.

Nepal. 181. 1825. *A. viscosum* J.R. Forster & G. Forster var. *latifolium* (D. Don) C.B. Clarke, Comp. Ind. 29. 1876; Hook. f., Fl. Brit. India 3: 242. 1881.

Herbs. Stems decumbent-ascending. Leaves opposite, broadly ovate, up to 16.5 x 10.5 cm, acute or obtuse at apex, entire or serrate. Heads corymbose. Involucral bracts sub 2-seriate, ciliate on margins. Achenes more densely muriculate in the upper half than in the lower. Pappus hairs 4-5, ending in a knob.

Rare in moist shady places in dense forests. Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 239. 1942). *Fl. & Fr.*: Nov. Feb.

ANAPHALIS DC.

Anaphalis adnata DC., Prodr. 6: 274. 1838; Hook. f., Fl. Brit. India 3: 282. 1881.

Herbs, up to 50 cm high, densely white floccose-tomentose. Leaves obovate-oblong, subspathulate or oblong, up to 7.5 x 2 cm, mucronate at apex, narrowed at base, densely white woolly on lower surface, sessile. Heads in axillary and terminal corymbs. Involucral bracts many - seriate. Outer florets pale yellow. Central florets brownish yellow, 5-toothed. Achenes of outer florets oblong, minutely hairy; those of central florets glabrous with scattered shining dots. Pappus hairs silky white.

Sparse on shady slopes. Bastar (Mooney in Indian For. Rec. (n.s.): 3 (7): 240. 1942), Sagar (Sahu and Mishra in Bull. Bot. Soc. Univ. Saugar 25-26: 69. 1978-1979). *Fl. & Fr.*: Aug. - March.

Anaphalis sudecurrens (DC.) Gamble, Fl. Pres. Madras 2: 489. 1957 (repr. ed.). *Gnaphalium sudecurrens* DC. in Wight, Contrib. Bot. Ind. 21. 1834. *Anaphalis oblonga* (Blume) DC., Prodr. 6: 274. 1838; Hook. f., Fl. Brit. India 3: 283. 1881, *p.p.*

Herbs, up to 30 cm high. Branches covered with white cottony wool. Leaves linear-oblong, spathulate or obovate, up to 1.8 x 0.5 cm, acute or obtuse at apex, subamplexicaul at base, sparsely hairy on upper surface, densely white tomentose on lower surface, sessile. Heads in dense, terminal corymbs. Involucral bracts 3-4-seriate, the outer most covered with dense

white woolly tomentum. Ray florets with filiform corolla. Disc florets bisexual. Achenes minute. Pappus hairs white.

Rare in dense forests. Katni (Sebastine and Balakrishnan in Indian For. 89: 531. 1963). *Fl. & Fr.*: Aug. - Dec.

ASTER L.

Aster amellus L., Sp. Pl. 873. 1753.

Herbs, annual, branched, up to 50 cm high. Leaves obovate or oblanceolate, more or less serrate, pubescent, rough, 3-nerved. Heads large, purple. Involucral bracts 2 to many-seriate, oblong, obtuse. Ray florets subulate or lanceolate. Disc florets tubular, 5-lobed. Achenes compressed. Pappus copious.

Planted in gardens as an ornamental. Bilaspur (Panigrahi and Murti, Fl. Bilaspur Dist. 1: 295. 1989). *Fl. & Fr.*: Oct. - Jan.

BLUMEA DC., *nom. cons.*

Blumea balsamifera (L.) DC., Prodr. 5: 447. 1836; Hook. *f.*, Fl. Brit. India 3: 270. 1881. *Conyza balsamifera* L., Sp. Pl. ed. 2. 1208. 1763.

Shrubs or undershrubs, evergreen. Stems corymbosely branched above, densely woolly. Leaves appendiculate; lamina narrowly oblong-lanceolate or oblong-obovate or ovate, 6-30 x 1-12 cm, acute to apiculate at apex, tapering at base, coriaceous, silky woolly beneath, entire or pinnately lobed, serrate-serrulate. Heads in axillary and terminal, lax panicles. Involucral bracts linear, densely woolly on dorsal surface. Corolla of bisexual florets yellow, tubular, 5-lobed. Corolla of female florets filiform, 2-4-lobed. Achenes brown, oblong, 10-ribbed, silky. Pappus 4-6 mm long.

Rare on rocky slopes. Hoshangabad (Mukherjee, Fl. Pachmarhi Bori Res. 154. 1984). *Fl. & Fr.*: Throughout the year.

Blumea belangeriana DC., Prodr. 5: 555. 1836; Hook. *f.*, Fl. Brit. India 3: 266. 1881.

Herbs, up to 30 cm high. Stems reddish brown, dichotomously branched, glandular hairy at apex. Leaves obovate, up to 15 x 7.5 cm,

apiculate at apex, tapering at base, strigose above, serrate-dentate. Heads in dense, axillary and terminal, leafy clusters. Involucral bracts lanceolate, reflexed at maturity. Receptacle convex, alveolate. Corolla of bisexual florets yellow, tubular, 5-lobed. Corolla of female florets filiform, 2-3-lobed. Achenes oblong, terete, pubescent. Pappus white, 3-4 mm long.

Sparse in moist shady places. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 156. 1996). *Fl. & Fr.*: Nov. - April.

Blumea hieracifolia (D. Don) DC. var. **hamiltoni** (DC.) C.B. Clarke, Comp. Ind. 83. 1876; Hook. *f.*, Fl. Brit. India 3: 263. 1881. *B. hamiltoni* DC., Prodr. 5: 439. 1836.

Herbs, white villous. Leaves usually radical, obovate-spathulate, acute or obtuse at apex, obscurely dentate. Heads globose, in axillary and terminal clusters. Involucral bracts straw-coloured, reflexed at maturity. Corolla of bisexual florets tubular, 5-lobed. Corolla of female florets filiform, 3-4-lobed. Achenes brown, oblong, ribbed. Pappus white, 3-4 mm long.

Sparse in grassy fields. Sagar (Sahu and Mishra in Bull. Bot. Soc. Univ. Saugar 25-26: 70. 1978-1979). *Fl. & Fr.*: April - June.

BREEA Less.

Breea arvensis (L.) Less., Syn. Comp. 9. 1832. *Serratula arvensis* L., Sp. Pl. 820. 1753. *Cirsium arvense* (L.) Scop., Fl. Carn. ed. 2. 2: 126. 1772. *Cnicus arvensis* (L.) Roth, Catalecta B. 1: 115. 1797; Hook. *f.*, Fl. Brit. India 3: 362. 1881.

Herbs, up to 75 cm high. Leaves sinuate-pinnatifid, up to 10 cm long, more or less woolly beneath. Heads solitary, fascicled or corymbose; male heads up to 2 cm across, globose; female heads much longer, campanulate. Involucral bracts glabrous or cobwebby, 3-seriate. Corolla purplish. Achenes smooth, shining. Pappus brownish white.

Rare at high elevations. Hoshangabad (Saxena in Bull. Bot. Surv. India 11: 61. 1973). *Fl. & Fr.*: Feb. - May.

CALENDULA L.

Calendula officinalis L., Sp. Pl. 921. 1753; Hook. *f.*, Fl. Brit. India 3: 357. 1881. - *Marigold, Zergul*.

Herbs, annual, viscid-pubescent. Leaves obovate-spathulate, up to 5.5 x 2.5 cm, obtuse at apex, subamplexicaul at base. Heads orange-yellow, 4-5 cm across, pedunculate. Involucral bracts lanceolate, *ca* 1 cm long, glandular hairy. Ray florets 2-3-seriate, female, 3-dentate. Disc florets 5-dentate. Achenes oblong, curved, outer ones warty ribbed, the inner prickly warty.

Cultivated in gardens. Bilaspur (Panigrahi and Murti, Fl. Bilaspur Dist. 1: 295. 1989), Indore (Khanna *et al.*, Fl. Kasturbagram 161. 1991). *Fl. & Fr.*: Jan. - April.

CARTHAMUS L.

Carthamus tinctorius L., Sp. Pl. 830. 1753; Hook. *f.*, Fl. Brit. India 3: 386. 1881.

Herbs, annual, up to 40 cm high. Leaves lanceolate, up to 10.5 x 2.5 cm, spinous toothed, stiff, sessile. Heads discoid, up to 2.2 cm across, terminal. Involucral bracts many, spinous, erect; outer ones leaf-like; inner ones narrow. Receptacle flat, densely bristly. Corolla orange-red; tube slender, deeply 5-lobed. Achenes 4-angled, glabrous.

Cultivated in gardens and bungalows. Bilaspur (Panigrahi and Murti, Fl. Bilaspur Dist. 1: 311. 1989). *Fl. & Fr.*: Feb. - April.

CHRYSANTHEMUM L.

Chrysanthemum coronarium L., Sp. Pl. 890. 1753.

Herbs, annual, branched. Leaves pinnatifid or pinnatifid; segments linear-lanceolate, mucronate, glaucous beneath. Heads on ribbed peduncles. Involucral bracts many-seriate, ovate-oblong, not keeled. Heads yellow. Ray florets ligulate, 3-dentate. Achenes 3-angular, glandular between ribs.

Rare on hill slopes. Hoshangabad (Mukherjee, Fl. Pachmarhi Bori Res. 158. 1984). *Fl. & Fr.*: Dec. Feb.

Chrysanthemum indicum L., Sp. Pl. 889. 1753.

Herbs, perennial, branched, up to 50 cm high. Leaves alternate, pinnatisect, with acute or mucronate teeth. Involucral bracts many - seriate,

imbricate. Ray florets yellow, ligulate, female. Disc florets tubular, bisexual, 5-lobed. Achenes of ray and disc florets similar, striate. Pappus often absent.

Cultivated in gardens. Bilaspur (Panigrahi and Murti, Fl. Bilaspur Dist. 1: 295. 1989). *Fl. & Fr.*: Nov. - March.

CICHORIUM L.

Cichorium intybus L., Sp. Pl. 813. 1753; Hook. *f.*, Fl. Brit. India 3: 391. 1881. - *Kasni*. **Fig. 19.**

Herbs, perennial. Stems up to 40 cm high. Lower leaves oblong, oblong-lanceolate or oblanceolate, pinnatifid, up to 22.5 x 4 cm, runcinate - pinnatifid or dentate towards margins; upper leaves cordate-amplexicaul at base. Heads usually solitary or clustered, axillary and terminal. Outer involucre bracts ovate; inner ones linear-lanceolate. Florets bright blue. Achenes 2-2.5 mm long, subcompressed, angled, ribbed. Pappus short.

In cultivated fields. Indore. *Fl. & Fr.*: March - May.

CONYZA Less., *nom. cons.*

Conyza aegyptiaca (L.) Ait., Hort. Kew. ed. 1. 3: 183. 1789; Hook. *f.*, Fl. Brit. India 3: 258. 1881. *Erigeron aegyptiacus* L., Mant. Pl. 112. 1767.

Herbs, annual or biennial. Leaves lanceolate or obovate-lanceolate or oblong-spathulate, up to 5.5 x 1.5 cm, obtuse - apiculate at apex, usually pinnately lobed. Heads 6-9 mm across, in compact cymes. Involucre bracts 2-3-seriate, linear or lanceolate, glandular-pubescent. Ray florets filiform. Disc florets tubular. Achenes minute, hairy with thickened margins.

Rare in open places. Bastar (Saxena and Khotele in J. Bombay Nat. Hist. Soc. 73: 26. 1973). *Fl. & Fr.*: Oct. - Feb.

COSMOS Cav.

Cosmos bipinnatus Cav., Icon. 1: 10. t. 14. 1791.

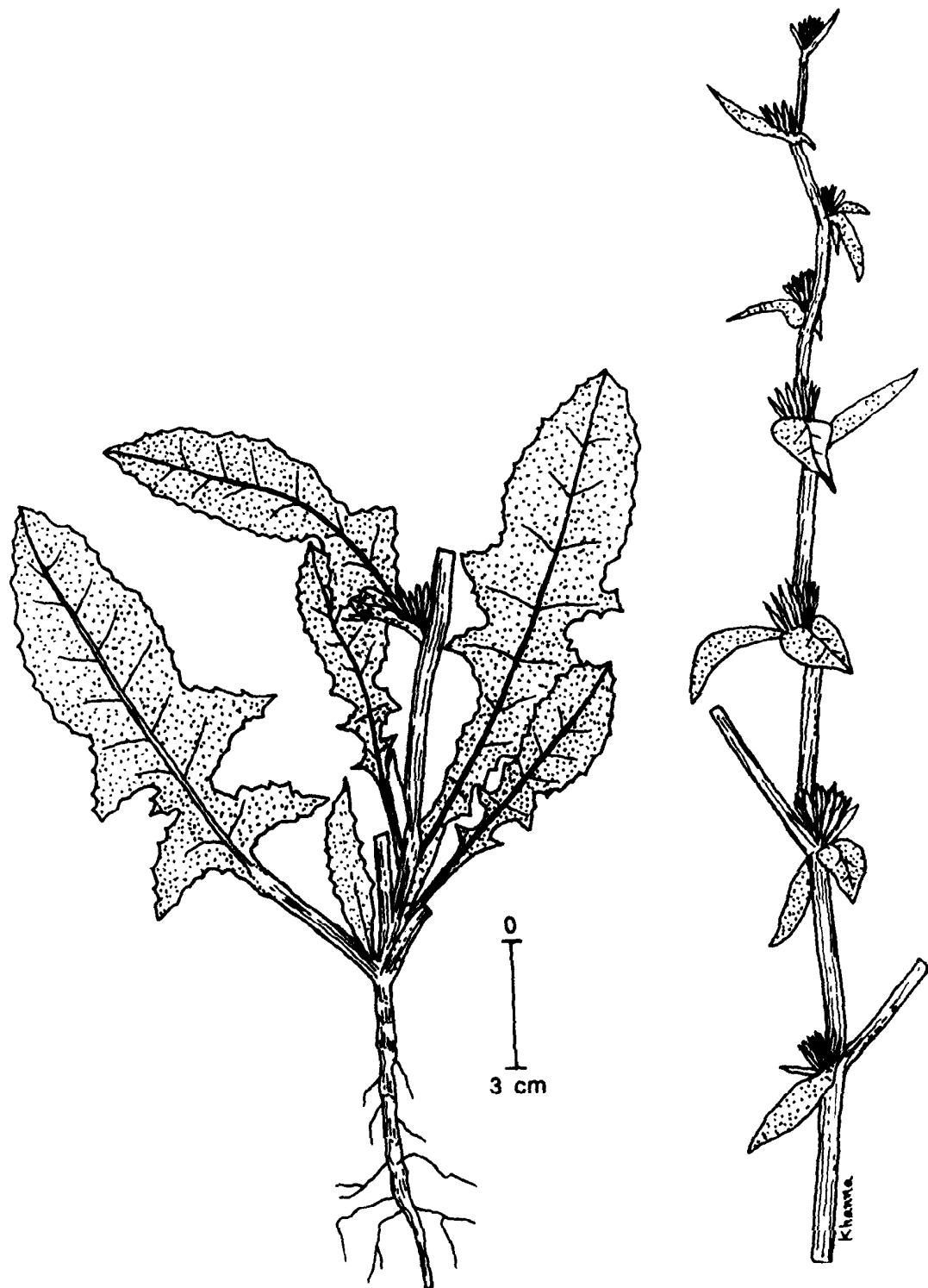


Fig. 19. *Cichorium intybus* L.

Herbs, annual, branched, up to 2 m high. Leaves opposite, 20-25 cm long, bipinnately segmented; segments linear, mucronulate, entire. Heads in corymbose panicles; peduncles long. Involucral bracts ovate-lanceolate, acuminate. Ray florets white, pink or crimson, 3-toothed at apex. Disc florets yellow. Achenes linear, with an abrupt beak much shorter than the body.

Planted in gardens for ornamental purposes. Ujjain (Singh and Khare, Fl. Ujjain Dist. 242. 1996). *Fl. & Fr.*: Nov. - Jan.

Cosmos caudatus Kunth, Nov. Gen. Pl. 4: 188. 1820.

Herbs, annual, branched. Leaves opposite, pinnatipartite, up to 20 x 12.5 cm. Heads solitary, terminal, long peduncled. Involucral bracts 2-seriate, connate at base. Ray florets reddish or violet, 1-1.5 cm long, sterile. Disc florets yellow, numerous, bisexual, tubular, 5-dentate. Achenes linear-fusiform, compressed, beaked. Pappus absent.

Grown in gardens. Rewa (Tiwari in Indian For. 94: 578. 1968). *Fl. & Fr.*: Dec. Feb.

COTULA L.

Cotula anthemoides L., Sp. Pl. 891. 1753; Hook. *f.*, Fl. Brit. India 3: 316. 1881. **Fig. 20.**

Herbs, annual, procumbent. Leaves up to 4 cm long, pinnatisect or pinnatifid; segments narrowly oblong, slightly curved, mucronulate at apex; petioles semiamplexicaul. Heads yellow, 3-5 mm across, solitary on long, filiform peduncles. Involucral bracts narrowly oblong, obtuse. Receptacle tubercled. Ray florets minute, female. Disc florets bisexual, tubular, 4-lobed. Achenes of disc florets ovoid with thick narrow wings; those of ray florets broad, flat.

Madhya Pradesh (CAL). *Fl. & Fr.*: Dec. April.

Cotula australis (Sieb. ex Spreng.) Hook. *f.*, Bot. Antarch. Voy. 2(1): 128. 1852. *Anacyclus australis* Sieb. ex Spreng. in L., Syst. Veg. ed. 16. 3: 497. 1826.

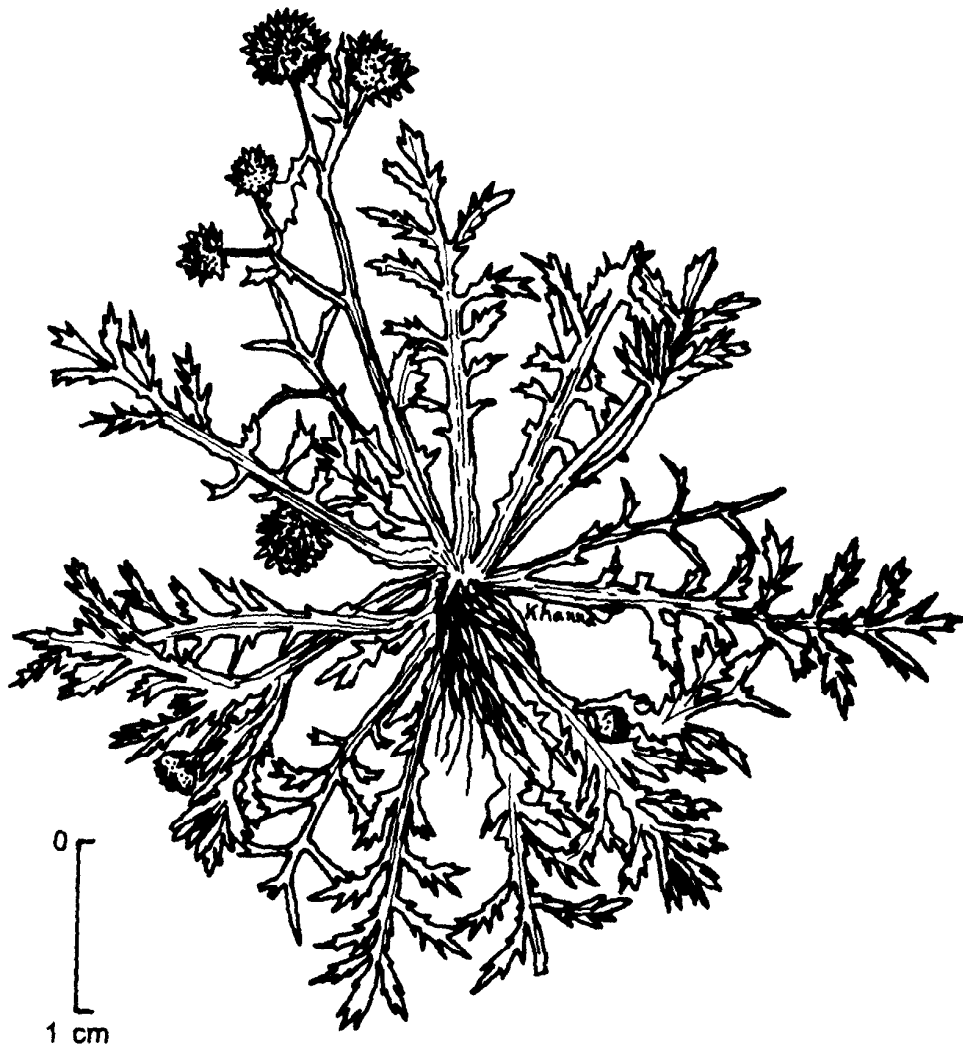


Fig. 20. *Cotula anthemoides* L.

Herbs, annual, procumbent or ascending. Branches glabrous or hairy. Leaves up to 3.5 x 1 cm, 1-2-pinnatisect; segments oblong-linear, acute or mucronate at apex, entire. Heads green, solitary on long filiform branches, 3-4 mm across. Involucral bracts 2-seriate. Receptacle naked. Ray florets female. Disc florets bisexual, tubular. Achenes of ray florets flat, glandular and winged; those of disc florets thick, not winged. Pappus almost absent.

Rare. In moist rocky crevices. Shahdol. *Fl. & Fr.*: Feb. Dec.

DAHLIA Cav.

Dahlia pinnata Cav., *Icon.* 1: 56. t. 80. 1791.

Herbs, perennial, tuberous. Leaves opposite, 1-3-pinnate. Heads large, solitary, terminal, long peduncled. Involucral bracts 2-3-seriate. Ray florets many-seriate, female or sterile, variously coloured. Disc florets tubular, 5-lobed. Achenes oblong-obovate, dorsally compressed. Pappus absent.

Cultivated in gardens and bungalows as an ornamental. Bilaspur (Panigrahi and Murti, *Fl. Bilaspur Dist.* 1: 295. 1989). *Fl. & Fr.*: Nov. March.

Dahlia rosea Cav., *Icon.* 3: 33. t. 265. 1795.

Herbs, perennial, tuberous. Leaves opposite, 1-pinnate, sometimes 2-pinnate; leaflets ovate, dentate. Heads long peduncled, large, with yellow disc and rays in single series and mostly in shades of red and purple and also in white. Involucral bracts 2-seriate. Ray florets sterile or female. Disc florets bisexual. Achenes oblong or obovate, strongly compressed at the back, rounded at the apex, obscurely 2-toothed.

Cultivated in houses and gardens. Ujjain (Singh and Khare, *Fl. Ujjain Dist.* 242. 1996). *Fl. & Fr.*: Nov. - March.

ECLIPTA L., *nom. cons.*

Eclipta prostrata (L.) L. var. **dixitii** Anand Kumar & Khanna in *J. Econ. Tax. Bot.* 23: 713. 1999. Fig. 21.

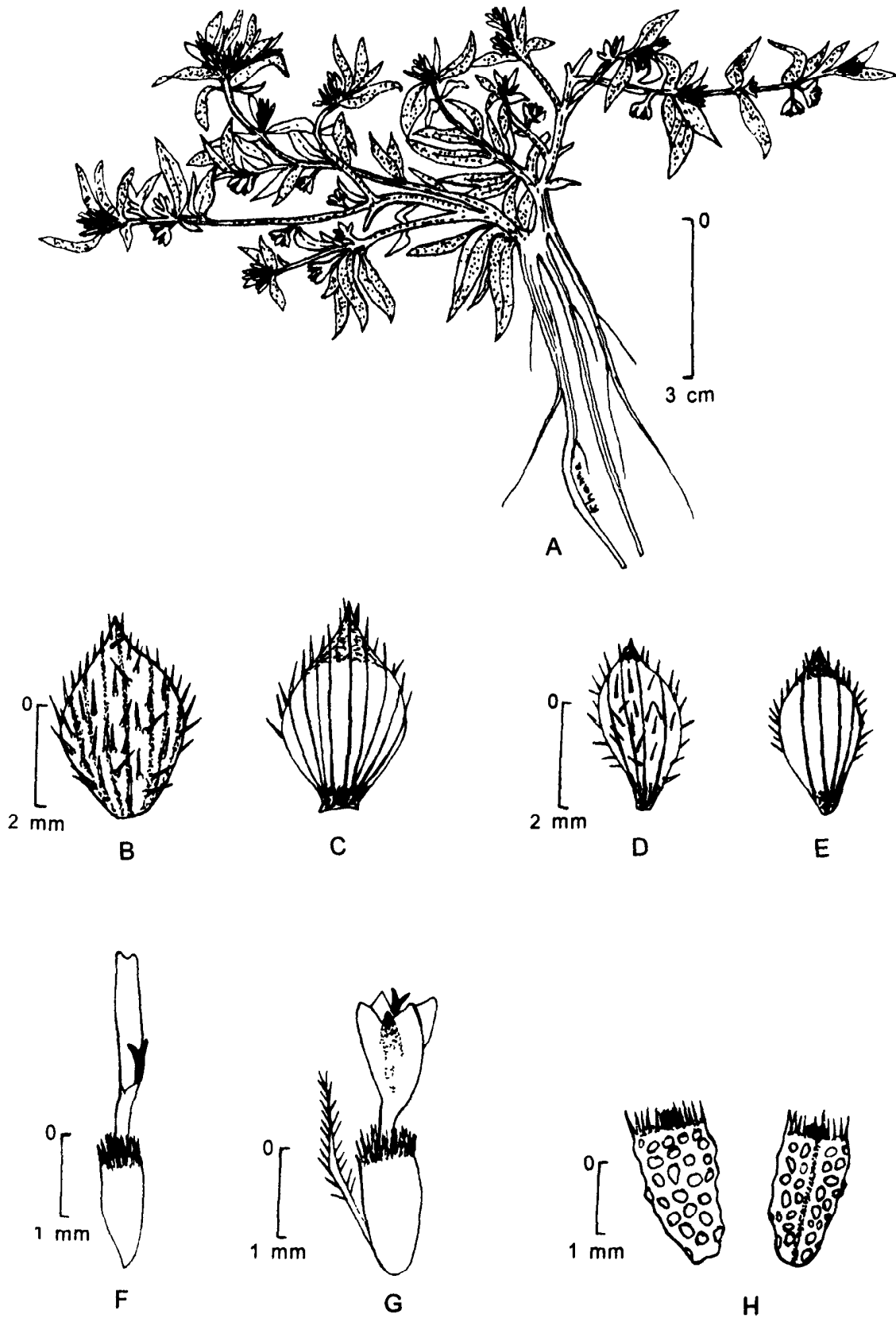


Fig. 21. *Eclipta prostrata* (L.) L. var. *dixitii* Anand Kumar & Khanna

A. Habit; B. Outer bract (outer surface); C. Outer bract (inner surface);
 D. inner bract (outer surface); E. Inner bract (inner surface); F. Ray floret;
 G. Disk floret; H. Achenes.

Herbs, caespitose, up to 6 cm high. Branches up to 10 cm long, appressed strigose. Leaves oblong, oblong-lanceolate or oblong-elliptic, up to 2 x 0.5 cm, acute or subacuminate at apex, cuneate at base, densely strigose. Heads white, 4-5 mm across; peduncles 2-4 mm long. Involucral bracts 2-seriate. Ray florets 2-3-seriate, female, *ca* 4 mm long with 2 unequal obtuse tipped lobes at apex. Disc florets many, *ca* 3 mm long, bisexual. Corolla campanulate, *ca* 1.6 mm long, 4-lobed. Achenes yellowish brown to brown, oblong-turbinate, dorsiventrally compressed and sharply angled, hairy at apex. Pappus of shortly or completely united scales forming a cone at the apex.

Rare on plateaus. Betul. *Fl. & Fr.*: March May.

ERECHTITIS Rafin.

Erechtitis hieracifolia (L.) Rafin. *ex* DC., Prodr. 6: 294. 1838.
Senecio hieracifolia L., Sp. Pl. 866. 1753.

Herbs, up to 40 cm high. Leaves oblong-lanceolate to lanceolate, up to 25 x 7 cm, acute to subacute at apex, sessile; lower leaves serrate; upper cauline leaves pinnately lobed, coarsely dentate. Heads disciform, cylindrical in terminal corymbs. Involucral bracts greenish brown, linear, acute. Ray florets yellow, *ca* 8 mm long, filiform. Disc florets 8-10 mm long, 5-lobed. Achenes brown, cylindrical, *ca* 2.5 mm long, appressed hairy between the ribs. Pappus white, 8-12 mm long.

In cultivated fields. Madhya Pradesh (Mathur in Hajra *et al.* (eds.), *Fl. India* 13: 216. 1995). *Fl. & Fr.*: Jan. - Feb.

ERIGERON L.

Erigeron alpinus L., Sp. Pl. 864. 1753, *sp. agg.*; Hook. *f.*, *Fl. Brit. India* 3: 255. 1881, *p.p.*

Herbs, biennial. Radical leaves oblong-obovate, petiolate; cauline leaves obovate or oblong, acute at apex, usually sessile. Heads purple, *ca* 2 cm across. Involucral bracts 1 or 2-seriate, tomentose. Ray florets in many seriate rows, narrow. Achenes narrow. Pappus 2-seriate.

Cultivated in gardens. Madhya Pradesh (Rao *et al.*, *Fl. Ind. Enum. Asteraceae* 36. 1988). *Fl. & Fr.*: Dec. Feb.

Erigeron kumaonensis (Vierh.) Wendelbo in Nytt Mag. B 1: 62. 1952. *Trimorpha kumaonensis* Vierh. in Beih. B. Centralb. 19(2): 467. t. 6. f. 1. 1906.

Herbs, perennial, up to 40 cm high. Branches 1-4, erect, the uppermost extremely short, the lowermost 4-12 cm long. Leaves alternate, sessile, remotely denticulate. Inflorescence compact. Involucral bracts campanulate. Ray florets light blue, female, 6-9 mm long. Disc florets bisexual, tubular, 5-lobed. Achenes ellipsoid, compressed. Pappus setose.

Rare at higher elevations. Hoshangabad (Oommachan and Masih in J. Econ. Tax. Bot. 16: 440. 1992). *Fl. & Fr.*: July - Aug.

EUPATORIUM L.

Eupatorium capillifolium (Lam.) Small in Mem. Torrey Bot. Club 5: 31. 1894. *Artemisia capillifolia* Lam., Encycl. 1: 267. 1783.

Herbs or undershrubs, up to 60 cm high. Leaves finally dissected into filiform segments. Heads axillary, racemose or paniculate, 5-flowered. Involucral bracts 2-seriate, broad, scarious on margins; outer ones ovate; inner ones oblong-ob lanceolate, acuminate. Achenes *ca* 1.5 mm long, angled. Pappus hairs reddish, 1-seriate.

Planted in gardens. Madhya Pradesh (Uniyal in Hajra *et al.* (eds.), Fl. India 12: 352. 1995). *Fl. & Fr.*: Aug. - Nov.

Eupatorium coelestinum L., Sp. Pl. 838. 1753.

Herbs, perennial, branched. Leaves opposite, triangular-ovate, thin, acute at apex, cordate at base, coarsely dentate. Heads light blue or violet, in corymbs. Florets all tubular, bisexual, 5-dentate. Achenes oblong. Pappus hairs 1-seriate, dentate.

Cultivated in gardens as a hedge plant. Hoshangabad (Oommachan and Masih in J. Econ. Tax. Bot. 16: 440. 1992). *Fl. & Fr.*: Nov. - March.

Eupatorium odoratum L., Syst. Nat. ed. 10. 1205. 1759; Hook. *f.*, Fl. Brit. India 3: 244. 1881. *Chromolaena odorata* (L.) King & Robinson in Phytologia 20: 204. 1970. *Eupatorium conyzoides* Vahl, Symb. Bot. 3: 96. 1794.

Herbs or shrubs, up to 2.5 m high. Leaves opposite, ovate-deltoid or lanceolate, up to 9 x 2.8 cm, acute or acuminate at apex, entire or serrate-dentate, glabrous above, pubescent and glandular beneath. Heads in corymbs, 3-4 mm across. Involucral bracts 3-5-seriate, oblong or ovate-lanceolate, 3-4-nerved. Achenes *ca* 4 mm long, 4-5-ribbed, bristly on ribs. Pappus hairs many, white.

Throughout India (Uniyal in Hajra *et al.* (eds.), *Fl. India* 12: 354. 1995). *Fl. & Fr.*: Nov. - May.

Eupatorium triplinerve Vahl, *Symb. Bot.* 3: 97. 1794.

Herbs or undershrubs, up to 50 cm high. Leaves lanceolate, oblanceolate or narrowly elliptic, up to 8.5 x 1.6 cm, acute or subacute at apex, slightly recurved on margins, minutely glandular beneath. Heads paniculate, many flowered. Involucral bracts 3-seriate, linear. Achenes *ca* 2 mm long, 5-angular, slightly pubescent on the ribs. Pappus hairs shorter than corolla.

Cultivated in gardens. Sagar (Sahu and Mishra in *Bull. Bot. Soc. Univ. Saugar* 25-26: 69. 1978-1979). *Fl. & Fr.*: Dec. - April.

FLAVERIA Juss.

Flaveria bidentis (L.) Kuntze, *Revis. Gen. Pl.* 3: 48. 1898. *Ethulia bidentis* L., *Mant. Pl.* 110. 1767. *Flaveria contrayerba* Pers., *Syn. Pl.* 2: 489. 1807.

Herbs, annual, up to 1 m high. Stems sparsely villous. Leaves lanceolate-elliptic, up to 12 x 2.5 cm, serrate or spinulose-serrate, glabrous or pubescent. Inflorescence of tightly aggregated heads in scorpioid cymes. Heads obscurely radiate. Involucral bracts oblong. Ray florets pale yellow, ovate-oblique, 1-2 mm long. Disc florets tubular with acute lobes, 2-2.5 mm long. Achenes of ray florets oblanceolate or subclavate, 2-2.5 mm long. Pappus absent.

Sparse in wastelands. Madhya Pradesh (Chowdhery in Hajra *et al.* (eds.), *Fl. India* 12: 386. 1995). *Fl. & Fr.*: April - Dec.

GAILLARDIA Foug.

Gaillardia pulchella Foug. in *Mém. Acad. Sci. Paris* 1786: 5. t. 1. 1788.

Herbs, up to 35 cm high. Leaves oblong-lanceolate, up to 7.5 x 1 cm, acute at apex, rounded to acute at base, entire or recurved on margins. Heads 2-4 cm across, solitary, terminal. Involucre campanulate; bracts 2-seriate. Ray florets pinkish yellow. Corolla 4-lobed. Disc florets tubular, 5-lobed. Achenes 4-5 mm long, angular, upper portion broad with 4 awns. Pappus of few equal or unequal palaceous scales.

Cultivated in gardens. Sagar (Sahu and Mishra in *Bull. Bot. Soc. Univ. Saugar* 25-26: 71. 1978-1979). *Fl. & Fr.*: July - Sept.

GALINSOGA Ruiz & Pavon

Galinsoga quadriradiata Ruiz & Pavon, *Syst. Veg.* 1: 198. 1798.

Herbs, up to 50 cm high. Stems densely glandular hairy. Leaves ovate-lanceolate or elliptic-oblong, up to 7.5 x 1.5 cm, acute at apex, cuneate at base, coarsely serrate. Heads axillary and terminal, up to 5 mm across. Involucral bracts 2-seriate, 6-8, ovate-obovate, glandular hairy. Ray florets 4-5. Corolla white, 3-dentate. Disc florets many. Corolla yellow, tubular, 5-lobed. Achenes 1-1.5 mm long, turbinate, hairy. Pappus scales 15-20, ciliate, awn tipped.

Sparsely found as a weed in fallow fields and along roadsides. Throughout India (Chowdhery in Hajra *et al.* (eds.), *Fl. India* 12: 388. 1995). *Fl. & Fr.*: Dec. - May.

GERBERA L., *nom. cons.*

Gerbera jamesonii Bolus, *Gard. Chron.* 1: 772. f. 122. 1889.

Herbs, acaulescent. Leaves radical, many, up to 20 cm long, pinnatifid, woolly beneath; petioles up to 17 cm long. Heads solitary, orange-flame-coloured. Ray florets strap-shaped. Disc florets tubular, 2-lipped. Achenes beaked.

Cultivated in gardens as an ornamental. Indore. *Fl. & Fr.*: Dec. Feb.

GNAPHALIUM L.

Gnaphalium hypoleucum DC. in Wight, Contrib. Bot. Ind. 21. 1834; Hook. *f.*, Fl. Brit. India 3: 288. 1881.

Herbs, branched, up to 35 cm high. Leaves linear, up to 5.5 x 0.5 cm, acuminate at apex, auricled at base, puberulous or scaberulous above, woolly beneath. Heads many, in corymbose, dense clusters. Involucral bracts many-seriate, yellowish, oblong. Ray florets female, 3-4-dentate. Disc florets bisexual, 5-dentate. Achenes papillose. Pappus usually 1-seriate, deciduous.

Occasionally found in wastelands. Bilaspur (Panigrahi and Murti, Fl. Bilaspur Dist. 1: 321. 1989). *Fl. & Fr.*: March - May.

Gnaphalium luteo-album L., Sp. Pl. 851. 1753; Hook. *f.*, Fl. Brit. India 3: 288. 1881.

Herbs, branched, up to 60 cm high. Stems white woolly tomentose. Leaves up to 6 x 1.2 cm, the lower ones oblong-spathulate, hairy above, woolly tomentose beneath, the upper ones linear-lanceolate. Heads clustered in dense, terminal, glistening corymbs; corymbs woolly pubescent. Involucral bracts pale to dark brown or reddish brown, elliptic-lanceolate, many seriate, intermixed with few spathulate ones. Ray florets female, filiform, 3-4-toothed. Disc florets bisexual, 5-toothed. Achenes linear, *ca* 0.5 mm long, papillose. Pappus hairs white, minutely barbed.

Along roadsides and edges of streams. Hoshangabad (Mukherjee, Fl. Pachmarhi Bori Res. 162. 1984). *Fl. & Fr.*: Almost throughout the year.

Gnaphallium purpureum L., Sp. Pl. 854. 1753; Hook. *f.*, Fl. Brit. India 3: 289. 1881.

Herbs, up to 50 cm high. Stems with thin, white cottony tomentum. Leaves spathulate, up to 6.5 x 1 cm, mucronulate at apex, narrowed at base, puberulous on upper surface, white pannose beneath. Heads in short spicate clusters. Involucral bracts 3-4-seriate. Ray florets female with filiform corolla. Disc florets bisexual, 5-dentate. Achenes oblong. Pappus hairs white, united at base.

Sparse in wastelands. Madhya Pradesh (Rao *et al.*, Fl. Ind. Enum. Asteraceae 41. 1988). *Fl. & Fr.*: Aug. May.

GYNURA Cass., *nom. cons.*

Gynura lycopersicifolia DC., Prodr. 6: 300. 1838; Hook. *f.*, Fl. Brit. India 3: 334. 1881.

Herbs, up to 1.5 m high. Stems hispid. Leaves lyrate-pinnatisect, up to 17.5 cm long, softly pubescent on both the surfaces, irregularly coarsely dentate. Heads discoid in terminal corymbs. Involucre campanulate; bracts linear-lanceolate. Florets orange-coloured, 9-11 mm long, bisexual, tubular. Achenes black, *ca* 4 mm long, ribbed, sparsely pubescent between the ribs. Pappus white, 1-1.3 cm long.

Rare in dense forests. Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 241. 1942). *Fl. & Fr.*: Feb. March.

HYPOCHOERIS L.

Hypochoeris glabra L., Sp. Pl. 811. 1753; Hook. *f.*, Fl. Brit. India 3: 401. 1881. **Fig. 22.**

Herbs, annual, up to 30 cm high, occasionally branched. Leaves radical, ovate to oblong-spathulate, up to 12.5 x 5.5 cm, entire or minutely dentate, sinuate-pinnatifid. Heads solitary, pedunculate. Involucral bracts 2-seriate; outer ones ovate-lanceolate; inner ones linear-lanceolate. Florets ligulate, yellow, 5-dentate. Achenes beaked or truncate at apex or all rostrate; inner beaked. Pappus white, 2-seriate.

Sparse in shady places. Rewa, Satna (CAL). *Fl. & Fr.*: April Dec.

KLEINIA Mill.

Kleinia grandiflora (Wallich *ex* DC.) N. Rani in Matthew, Fl. Tamil Nadu Carnatic 2: 801. 1983. *Notonia grandiflora* Wallich *ex* DC., Arch. Bot. (Paris) 2: 518. 1833; Hook. *f.*, Fl. Brit. India 3: 337. 1881.

Herbs, succulent. Leaves blackish brown, elliptic-oblong, oblanceolate, suborbicular or spathulate, up to 15 x 4 cm, obtuse at apex, attenuate at

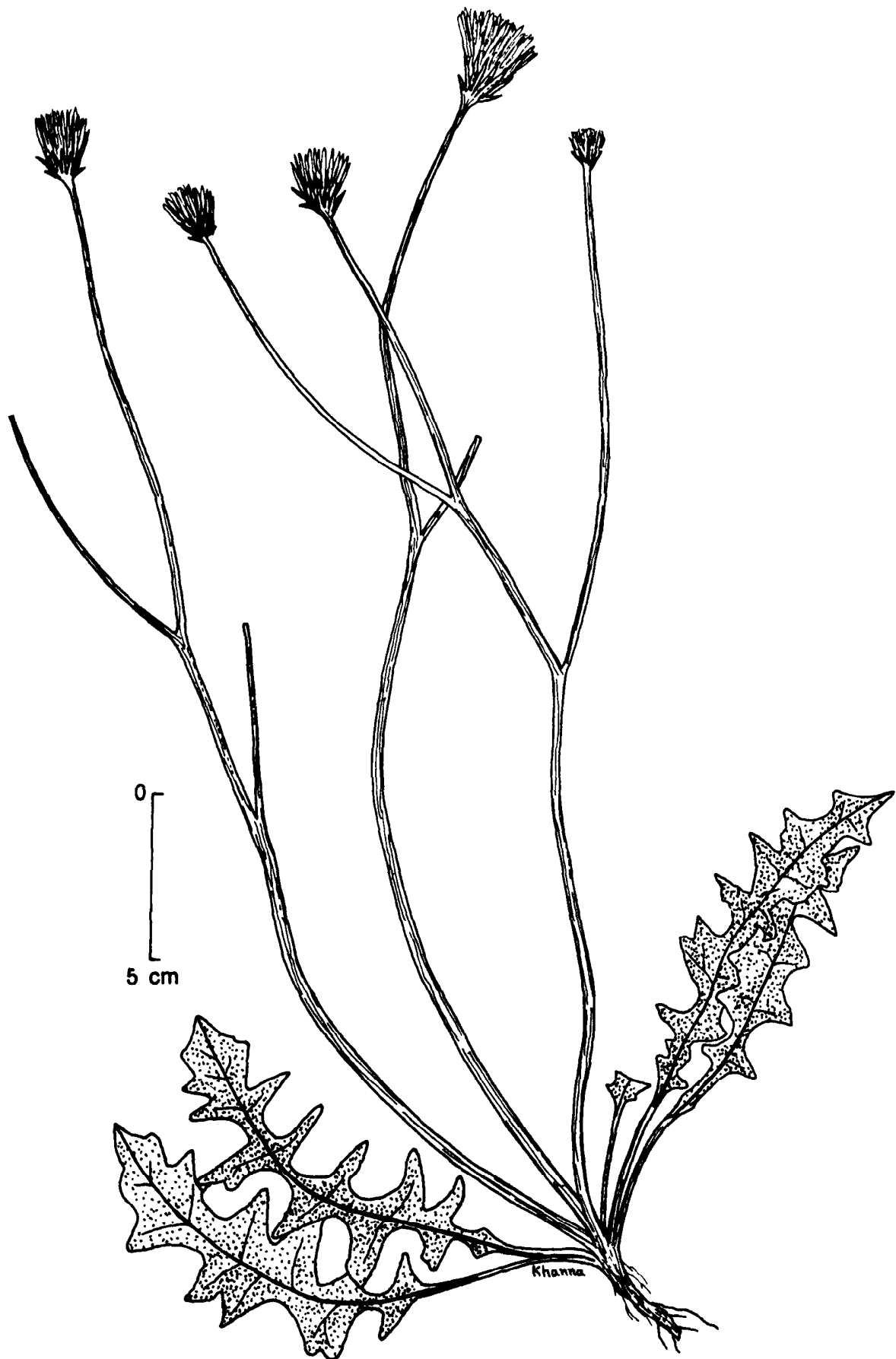


Fig. 22. *Hypochoeris glabra* L.

base, glaucous. Heads campanulate, 3-6 in short, terminal corymbs or 15-20 in longer, lax branched panicles. Involucral bracts 8-12, lanceolate, striate. Florets greenish white, all tubular, bisexual, 5-lobed. Achenes 5-7 mm long, somewhat compressed. Pappus white, 1.5-1.8 cm long.

In dry habitats. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 163. 1996). *Fl. & Fr.*: Aug. - May.

LACTUCA L.

Lactuca dissecta D. Don, Prodr. Fl. Nepal. 164. 1825; Hook. *f.*, Fl. Brit. India 3: 405. 1881.

Herbs, annual, suberect or prostrate, dichotomously branched. Leaves up to 20 x 3.5 cm, pinnatifid to entire or lyrate or runcinate-pinnatifid, entire or sparingly dentate; uppermost leaves linear. Heads up to 1.2 x 0.4 cm, erect, 10-20-flowered. Outer involucral bracts ovate or obovate; inner ones linear or linear-oblong. Achenes oblanceolate, 6-7 mm long, compressed, 6-ribbed, beaked at apex. Pappus 2.5-4 mm long.

In wastelands. Madhya Pradesh (Mamgain and Rao in Hajra *et al.* (eds.), Fl. India 12: 297. 1995). *Fl. & Fr.*: April-Oct.

Lactuca rapunculoides (DC.) C.B. Clarke, Comp. Ind. 268. 1876; Hook. *f.*, Fl. Brit. India 3: 407. 1881. *Mulgedium rapunculoides* DC., Prodr. 7: 249. 1838.

Herbs, biennial or perennial, up to 80 cm high. Leaves hastate, cordate or deltoid, up to 12.5 x 5.5 cm, with incurved margins; uppermost leaves ovate or lanceolate. Heads in terminal panicles; peduncles drooping. Involucral bracts 2-seriate. Florets ligulate, white or purple. Achenes fusiform, 1-1.2 cm long, beaked. Pappus dirty white, 7-9 mm long.

Rare at higher elevations. Madhya Pradesh (Rao *et al.*, Fl. Ind. Enum. Asteraceae 49. 1988). *Fl. & Fr.*: Sept. -Nov.

LAUNAEA Cass.

Launaea aspleniifolia (Willd.) Hook. *f.*, Fl. Brit. India 3: 415. 1881. *Prenanthes aspleniifolia* Willd., Sp. Pl. 3: 1540. 1803.

Herbs, biennial or perennial, with thick rootstocks. Leaves mostly radical, cauline few, oblanceolate, narrowly obovate or pinnatifid or sinuate-lobed, up to 8.5 x 3.2 cm. Heads on terminal paniculate branches. Involucral bracts few-seriate. Florets all ligulate, yellow. Achenes *ca* 2 mm long, narrow, columnar or somewhat angled. Pappus white, 8-9 mm long.

Sparse in wastelands. Hoshangabad (Saxena in Bull. Bot. Surv. India 11: 61. 1971), Sagar (Sahu and Mishra in Bull. Bot. Soc. Univ. Saugar 25-26: 72. 1978-1979). *Fl. & Fr.*: March - Oct.

Launaea sarmentosa (Willd.) Sch.-Bip. *ex* Kuntze, Revis. Gen. Pl. 1: 350. 1891. *Prenanthes sarmentosa* Willd., Phytographia 10. t. 6. f. 2. 1794. *Launaea pinnatifida* Cass. in Ann. Sci. Nat. Ser. 1. 23: 85. 1831; Hook. *f.*, Fl. Brit. India 3: 416. 1881.

Herbs, biennial or perennial, procumbent. Leaves up to 7 x 1.2 cm, pinnatifid, runcinate-pinnatifid or sinuate-toothed or lobed. Flowering branches long, slender. Heads up to 1.2 cm long, clustered; peduncles slender. Involucral bracts 2-3-seriate; outer ones ovate, ovate-lanceolate or ovate-oblong; inner ones linear or linear-lanceolate or linear-oblong. Florets yellow, all ligulate, 5-toothed. Achenes 4-6 mm long, columnar, ribbed. Pappus yellowish white, 6-7 mm long, slender.

In wastelands and along river banks. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 163. 1996). *Fl. & Fr.*: June - Sept.

PHYLLOCEPHALUM Blume

Phyllocephalum phyllolaenum (DC.) Narayana in Curr. Sci. 51: 438. 1982. *Decaneurum phyllolaenum* DC., Prodr. 7: 264. 1839. *Centratherum phyllolaenum* (DC.) Benth. *ex* C.B. Clarke, Comp. Ind. 4. 1876; Hook. *f.*, Fl. Brit. India 3: 228. 1881.

Herbs, branched, up to 1 m high. Leaves elliptic, up to 15 x 6 cm, acute or acuminate at apex, sparsely hairy above, white tomentose beneath, serrate. Heads solitary, axillary and terminal. Outer involucral bracts up to 4 cm long, white felted beneath; intermediate bracts variable; inner purple-tinged, *ca* 8.5 mm long, scarious. Florets reddish purple, all tubular, bisexual. Achenes obconic, *ca* 3 mm long, 10-ribbed. Pappus hairs reddish.

On moist hill slopes. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 158. 1996). *Fl. & Fr.*: Sept. Nov.

Phyllocephalum scabridum (DC.) Kirkman in *Rhodora* 83: 10. 1981. *Decaneurum scabridum* DC. in Wight, *Contrib. Bot. Ind.* 7. 1834. *Centratherum molle* Benth. & Hook. *f.*, *Gen. Pl.* 2: 225. 1873; Hook. *f.*, *Fl. Brit. India* 3: 227. 1881.

Herbs. Stems ridged, scabrous. Leaves ovate-lanceolate, up to 10.5 x 4 cm, acuminate at apex, serrate, upper surface with scattered moniliform hairs, lower surface white tomentose. Heads solitary or paired, axillary and terminal. Involucral bracts many-seriate. Florets reddish purple, tubular, bisexual. Achenes obconic, ribbed. Pappus very short.

Rare at higher elevations. Madhya Pradesh (Uniyal in Hajra *et al.* (eds.), *Fl. India* 13: 344. 1995). *Fl. & Fr.*: July - Dec.

PLUCHEA Cass.

Pluchea tomentosa DC. in Wight, *Contrib. Bot. Ind.* 16. 1834; Hook. *f.*, *Fl. Brit. India* 3: 272. 1881.

Shrubs, up to 2.5 m high. Leaves obovate, up to 7.5 x 3 cm, obtuse or subacute at apex, semiamplexicaul at base, serrate or dentate, more or less pilose above, softly pubescent beneath. Heads in compound corymbs. Involucral bracts 2-seriate. Ray florets many, 2-3-dentate. Disc florets tubular, 5-lobed. Achenes cylindrical, obscurely angled. Pappus reddish, minutely barbellate.

Rare, at higher elevations. Madhya Pradesh (Kumar in Hajra *et al.* (eds.), *Fl. India* 13: 155. 1995). *Fl. & Fr.*: Dec. - Feb.

PSEUDOJACOBOEA (Hook. f.) R. Mathur

Pseudojacoboea lavandulaefolius (DC.) R. Mathur in Rao *et al.*, *Fl. Ind. Enum. Asteraceae* 59. 1988 & Hajra *et al.* (eds.), *Fl. India* 13: 304. 1995. *Senecio lavandulaefolius* DC., *Prodr.* 6: 367. 1838; Hook. *f.*, *Fl. Brit. India* 3: 343. 1881.

Herbs, perennial, rhizomatous, up to 45 cm high. Leaves linear-oblong to ovate-elliptic, up to 4 x 1 cm, acute at apex, uppermost leaves with

auricled base, coriaceous, hispid on both the surfaces. Heads radiate, in terminal, lax corymbs. Involucral bracts lanceolate, acuminate. Ray florets yellow, linear-oblong, *ca* 7 mm long, 3-dentate at apex. Disc florets yellow, *ca* 3.5 mm long; limb 5-lobed. Achenes 1-3 mm long, ribbed. Pappus pale white, *ca* 4 mm long, minutely barbed.

In moist habitats. Central India (Mathur in Rao *et al.*, Fl. Ind. Enum. Asteraceae 59. 1988). *Fl. & Fr.*: Feb. June.

SCORZONERA L.

Scorzonera virgata DC., Prodr. 7: 125. 1838. *S. divaricata* (DC.) Hook. *f.*, Fl. Brit. India 3: 418. 1881, *non* Turcz, 1832.

Herbs, perennial, with woody, stout rootstocks. Leaves crowded at the base of stem, filiform, up to 25.5 x 0.4 cm, incurved on margins. Heads broadly cylindrical or campanulate, up to 3.5 x 0.8 cm. Involucral bracts 2-seriate. Florets ligulate, yellow, 5-dentate. Achenes pale yellow or pale brown, lanceolate, 1-1.5 cm long, subcompressed, many-ribbed. Pappus white or yellow, feathery.

Rare on hill slopes. Surguja (Wood, Pl. Ch. Nagpur Jasp. Sirg. 114. 1977, repr. ed.). *Fl. & Fr.*: June - Sept.

SENECIO L.

Senecio bombayensis Balakr. in J. Bombay Nat. Hist. Soc. 67: 61. 1970. *S. grahmi* Hook. *f.*, Fl. Brit. India 3: 347. 1881, *non* Benth., 1857.

Herbs, annual, up to 60 cm high. Stems glabrescent below, appressed white pubescent above. Leaves ovate-rhomboid, up to 5.5 x 2.5 cm, acute at apex, irregularly mucronate and toothed, glabrous or sparsely pubescent above, appressed white tomentose beneath; upper cauline leaves with a pair of lanceolate auricles at the base of petiole; lowermost leaves auriculate. Inflorescence subcorymbose. Heads 2-3 cm across. Involucral bracts broadly campanulate. Ray florets 9-12, yellow, oblong, 2-3-dentate. Disc florets yellow, many. Achenes of ray florets linear and of disc florets obconic.

Rare at higher elevations. Hoshangabad (Joseph in Bull. Bot. Surv. India 5: 283. 1964; Saxena in Bull. Bot. Surv. India 13: 84. 1973). *Fl. & Fr.*: Aug. - Dec.

SOLIDAGO L.

Solidago nemoralis Ait., Hort. Kew. ed. 1. 3: 213. 1789.

Herbs, up to 1 m high, rhizomatous. Leaves simple, alternate, up to 8.5 x 1.5 cm; radical ones narrowly obovate or spatulate; cauline leaves narrowly oblong or oblanceolate, acute at apex, hispid. Heads yellow. Involucral bracts many-seriate, sublinear. Ray florets female, 2-3 mm long. Disc florets infundibuliform, 5-fid. Achenes oblong, ribbed. Pappus - hairs 1-2-seriate.

Occasionally grown in residential gardens. Bhopal (Oommachan, Fl. Bhopal 224. 1977). *Fl. & Fr.*: Aug. Dec.

SPHAERANTHUS L.

Sphaeranthus senegalensis DC., Prodr. 5: 370. 1836. *S. indicus auct. non L.*, 1753: Hook. *f.*, Fl. Brit. India 3: 275. 1881, *p.p.*

Herbs, prostrate or decumbent, with ascending branches. Stems winged, tomentose. Leaves linear-oblong, oblong or oblanceolate, up to 10 x 3.5 cm, subamplexicaul at base, densely soft lanate, dentate with spinescent denticulations, glandular, villous. Heads reddish violet, globose or ellipsoid, terminal. Involucral bracts oblanceolate, spatulate. Receptacle orbicular or suborbicular, ovate to lanceolate. Outer female florets 7-10. Corolla filiform, 2-3 mm long, female. Bisexual florets 2-4, infundibuliform, 2.5-3.5 mm long. Achenes oblong, glandular. Pappus absent.

In wastelands and cultivated fields. Madhya Pradesh (Kumar in Hajra *et al.* (eds.), Fl. India 13: 162. 1995). *Fl. & Fr.*: Jan. - April.

SPILANTHES Jacq.

Spilanthes ciliata H.B.K., Nov. Gen. Sp. Pl. 208. 1820.

Herbs, diffuse. Leaves ovate, up to 7 x 4 cm, acute at apex, rounded at base, serrate. Heads yellow, subglobose becoming conical, solitary, axillary. Involucral bracts 2-seriate. Ray florets 8-12, female. Corolla 3-dentate. Disc florets many, bisexual. Corolla-tube abruptly expanded from middle. Achenes of ray florets black, 3-gonous, ciliate along the margins

and with pappus of 3 awns. Achenes of disc florets black, oblong, laterally compressed, ciliate along the margins with pappus of 2 unequal bristles.

Common in marshy places. Madhya Pradesh (Chowdhery in Hajra *et al.* (eds.), *Fl. India* 12: 409. 1995). *Fl. & Fr.*: March - May.

TAGETES L.

Tagetes erecta L., *Sp. Pl.* 887. 1753.

Herbs, aromatic, branched. Leaves opposite, decussate or upper ones alternate, pinnate; leaflets lanceolate-oblong, up to 5 x 1.2 cm, acute at apex, cuneate, decurrent at base, remotely dentate. Heads 6-8 cm across, heterogamous, solitary, terminal. Receptacle pitted. Involucral bracts 1-seriate, connate, glandular. Florets orange-yellow. Ray florets ligulate, female. Disc florets bisexual, tubular, 5-dentate. Achenes black, scabrous on the angles. Pappus scales *ca* 4 mm long, united.

Cultivated in gardens, also found as an escape. Bilaspur (Panigrahi and Murti, *Fl. Bilaspur Dist.* 1: 295. 1989). *Fl. & Fr.*: Nov. - March.

Tagetes patula L., *Sp. Pl.* 887. 1753. *Genda.*

Herbs, branched, up to 50 cm high. Leaves opposite, upper ones sometimes alternate, pinnate or pinnatifid; leaflets lanceolate-oblong, sharply serrate with awned teeth, glandular along the margins below the serrations. Heads 2-3 cm across, solitary or cymose. Involucral bracts campanulate, gland-dotted. Ray florets yellow or orange-coloured with brown red markings, emarginate. Disc florets yellow, infundibuliform, 5-lobed. Achenes angled, somewhat compressed, hairy. Pappus of 1-2 long awned scales and 2-3 shorter blunt ones.

Cultivated in gardens. Indroo. *Fl. & Fr.*: Sept. - Dec.

Tagetes signata Bartl., *Ind. Sem. Hort. Gotting* 7. 1837. *Genda.*

Herbs, annual, branched. Leaves pinnately divided into 12 linear-oblong, serrate segments. Heads on long peduncles. Ray florets yellow, 5, obovate-orbicular, female. Disc florets tubular, bisexual. Achenes sub-compressed. Pappus of few scales.

Cultivated in gardens. Ujjain (Singh and Khare, Fl. Ujjain Dist. 259. 1996). *Fl. & Fr.*: Nov. - Jan.

TRICHOLEPIS DC.

Tricholepis glaberrima DC., Prodr. 6: 754. 1837; Hook. *f.*, Fl. Brit. India 3: 381. 1881.

Rigid herbs, up to 1 m high. Branches angled. Leaves linear-oblong or lanceolate, simple or auricled at base, entire or serrate, scaberulous. Heads 6-8 mm across. Involucral bracts many-seriate, subulate. Receptacle bristly. Florets bisexual. Achenes oblong, faintly ribbed. Pappus about half as long as the achenes.

Sparse in wastelands. Sagar (Sahu and Mishra in Bull. Bot. Soc. Univ. Saugar 25-26: 71. 1978-1979). *Fl. & Fr.*: Oct. - Jan.

Tricholepis radicans (Roxb.) DC., Prodr. 6: 584. 1838; Hook. *f.*, Fl. Brit. India 3: 381. 1881. *Carduus radicans* Roxb., Fl. Ind. 3: 408. 1832.

Herbs, annual, branched, slender, up to 50 cm high. Leaves linear, obovate, oblong or spatulate, up to 8 x 2.5 cm, irregularly toothed or pinnatifid, membranous. Heads solitary, terminal. Outer involucral bracts acicular, inner ones lanceolate. Receptacular bristles longer than achenes. Corolla lilac, *ca* 8 mm long. Achenes ovoid or oblong, *ca* 5 mm long, compressed, truncate. Pappus hairs scabrid.

Along hill slopes and as weed in cultivated fields. Western Madhya Pradesh (Samvatsar, Fl. West. Trib. Madh. Prad. 166. 1996). *Fl. & Fr.*: Sept. Jan.

Tricholepis stictophyllum C.B. Clarke, Comp. Ind. 241. 1876; Hook. *f.*, Fl. Brit. India 3: 382. 1881.

Herbs, perennial, up to 30 cm high. Branches angular, grooved. Leaves linear or ligulate, up to 12.5 x 1.2 cm, semiamplexicaul at base, entire or obscurely toothed. Heads up to 3.5 cm across. Involucral bracts appressed; outer ovate; inner linear-lanceolate. Receptacular bristles longer than achenes. Florets bisexual. Achenes linear, oblong, many-ribbed. Pappus of slender feathery hairs equalling achenes.

Rare on grassy slopes. Madhya Pradesh (Hajra in Hajra *et al.* (eds.), Fl. India 12: 223. 1995). *Fl. & Fr.*: March - April.

VERBESINA L.

Verbesina encelioides (Cav.) Benth. in Benth. & Hook. *f.*, Gen. Pl. 2: 380. 1873. *Ximenesia encelioides* Cav., Icon. 2: 60. t. 178. 1793.

Herbs, up to 2 m high. Leaves ovate-lanceolate, up to 10 x 6 cm, acute at both ends, coarsely serrate; petioles winged. Heads radiate, solitary, terminal or leaf-opposed, 4-5 cm across. Involucral bracts 2-seriate, oblong-lanceolate, acute, strigose. Ray florets yellow, 5-9 mm long, 1-seriate. Disc florets many. Corolla *ca* 4 mm long, shortly tubular below, 5-lobed; lobes lanceolate-acute. Achenes obovoid with winged margins, 2-awned.

Sparse in wastelands. Madhya Pradesh (Chowdhery in Hajra *et al.* (eds.), Fl. India 12: 420. 1995). *Fl. & Fr.*: July - Oct.

VERNONIA Schreb., *nom. cons.*

Vernonia elliptica DC. in Wight, Contrib. Bot. Ind. 5. 1834. *V. elaeagnifolia* DC., Prodr. 5: 22. 1836; Hook. *f.*, Fl. Brit. India 3: 237. 1881.

Shrubs, climbing. Branches pendulous. Leaves oblong or elliptic-lanceolate, up to 4 x 1.5 cm, acute or obtuse at apex, entire, glabrous and dotted above, appressed silky beneath. Heads *ca* 3 mm across, aggregated in axillary or terminal corymbs. Involucral bracts scarious to herbaceous, 2-seriate. Corolla actinomorphic, 5-lobed. Achenes *ca* 2 mm long, 5-8-ribbed. Pappus hairs white, outer few.

Cultivated throughout India (Rao *et al.*, Fl. Ind. Enum. Asteraceae 92. 1988). *Fl. & Fr.*: Jan. - April.

Vernonia patula (Dryand.) Merr. in Philipp. J. Sci. 3: 439. 1908. *Conyza patula* Dryand. in Ait., Hort. Kew. ed. 1. 3: 184. 1789.

Herbs, up to 60 cm high. Branches ribbed, appressed pubescent. Leaves broadly ovate or ovate-elliptic, up to 10.5 x 4.5 cm, acute, acuminate or obtuse at apex, silky villous, glandular beneath. Heads at

the apex of dichotomous branches. Involucral bracts 4-seriate, sparsely greyish villous, spine-tipped. Corolla actinomorphic, 5-lobed, glandular. Achenes *ca* 1.5 mm long, 5-angled, glandular. Pappus hairs white, 1-seriate.

Rare in grasslands. Sagar (Sahu and Mishra in Bull. Bot. Soc. Univ. Saugar 25-26: 79. 1978-1979). *Fl. & Fr.*: Throughout the year.

WEDELIA Jacq., *nom. cons.*

Wedelia montana var. **wallichii** (Less.) H. Koyama in Acta Phytotax. Geobot. 34: 171. 1985. *W. wallichii* Less. in Linnaea 6: 162. 1831; Hook. *f.*, Fl. Brit. India 3: 307. 1881.

Herbs, up to 50 cm high. Stems hispid. Leaves ovate or ovate-lanceolate, up to 10 x 3.5 cm, acuminate at apex, hispid, crenate-serrate. Heads yellow, 2-2.5 cm across, leaf-opposed, solitary, terminal. Involucral bracts 2-seriate. Ray florets 5, yellow, 3-dentate. Disc florets 4-7, subtended by linear-lanceolate palea. Achenes brown, obpyramidal, obovoid, scarcely compressed, truncate and hairy at apex. Pappus a very short scaly or toothed ciliate ring.

Rare at higher elevations. Hoshangabad (Saxena in Bull. Bot. Surv. India 13: 84. 1973). *Fl. & Fr.*: July - Dec.

ZINNIA L., *nom. cons.*

Zinnia elegans Jacq., Coll. 3: 152. 1789.

Herbs, annual, branched, up to 1 m high. Leaves clasping, opposite, ovate or elliptic, up to 15 x 10 cm, acute or subacuminate at apex, subcordate at base, hispid. Heads peduncled, up to 6 cm across. Involucral bracts many-seriate. Ray florets female, pink, obovate-oblong. Disc florets yellow, bisexual, tubular, 5-lobed. Achenes obovate. Pappus absent.

Cultivated in gardens. Bilaspur (Panigrahi and Murti, Fl. Bilaspur Dist. 1: 295. 1988). *Fl. & Fr.*: Nov. - March.

Zinnia linearis Benth., Pl. Hartw. 17. 1839.

Herbs, annual, slender, branched. Leaves opposite, linear or linear-lanceolate, up to 5.5 x 0.5 cm, obtuse at apex, narrowed at base, appressed pubescent. Heads many, up to 3 cm across. Ray florets orange-coloured, broadly elliptic, emarginate at apex, female. Disc florets yellow, many, bisexual. Achenes with an apical awn. Pappus absent.

Cultivated in gardens as an ornamental. Throughout India (Rao *et al.*, Fl. Ind. Enum. - Asteraceae 93. 1988). *Fl. & Fr.*: Nov. April.

Zinnia peruviana L., Syst. Nat. ed. 10. 2: 1221. 1759.

Herbs, annual, branched, up to 75 cm high. Leaves opposite, ovate-lanceolate, up to 10 x 5.5 cm, acute at apex. Heads pink, solitary, terminal. Involucral bracts many-seriate. Ray florets 1-seriate, female. Disc florets many, bisexual, tubular, 5-lobed. Achenes laterally compressed. Pappus absent.

Cultivated in gardens. Throughout India (Rao *et al.*, Fl. Ind. Enum. Asteraceae 93. 1988). *Fl. & Fr.*: Dec. March.

STYLIDIACEAE

STYLIDIUM Sw. *ex* Willd., *nom. cons.*

Stylidium kunthii Wallich *ex* DC., Prodr. 7: 335. 1838; C.B. Clarke in Hook. *f.*, Fl. Brit. India 3: 420. 1881.

Small herbs, 5-10 cm high. Leaves ovate-orbicular or oblong-spathulate, fleshy. Flowers minute, zygomorphic, in cymes; bracts usually 2, linear-oblong, opposite at the fork of peduncles. Calyx bilabiate; upper lip of 3 oblong sepals; lower lip spatulate, notched. Corolla white or purple; anterior lobe longer than lateral ones, oblanceolate. Capsules linear, 0.5-1 cm long.

In damp sandy alluvial soil. Bastar (Saxena and Khotele in J. Bombay Nat. Hist. Soc. 73: 26. 1973), Bilaspur (Panigrahi and Murti, Fl. Bilaspur Dist. 1: 332. 1989). *Fl. & Fr.*: Oct. - Jan.

CAMPANULACEAE**CAMPANULA L.**

Campanula modesta Hook. *f.* & Thoms. in J. Linn. Soc. London (Bot.) 2: 224. 1858; C.B. Clarke in Hook. *f.*, Fl. Brit. India 3: 442. 1881.

Herbs, erect, up to 15 cm high. Stems simple. Radical leaves ovate, glabrous, subentire, long petiolate; cauline leaves linear-oblong, glabrous, sparingly dentate, sessile. Flowers solitary, 5-merous. Calyx-lobes linear. Corolla blue, conical. Capsules obovoid, long attenuate at base, contracted and dehiscent near the summit. Seeds ellipsoid.

Bhopal (Oommachan, Fl. Bhopal 229. 1977). *Fl. & Fr.*: Nov. - March.

LOBELIA L.

Lobelia nicotinaefolia Roxb. *ex* Roem. & Schult. var. **trichandra** (Wight) C.B. Clarke in Hook. *f.*, Fl. Brit. India 3: 427. 1881. *Lobelia trichandra* Wight, Icon. Pl. Ind. Orient. t. 1171. 1850.

Herbs or undershrubs, erect. Stems terete, slender, minutely pubescent. Leaves oblong-lanceolate, 6-10 x 2-4 cm, acute or subacuminate at apex, cuneate or rounded at base, glabrous or nearly so, finely serrulate. Flowers white with lilac tinge, in long, terminal, cylindrical racemes. Anthers with white hairs on their back. Capsules subglobose, *ca* 6 mm across.

Bastar. *Fl. & Fr.*: May - July.

WAHLENBERGIA Schrad. *ex* Roth, *nom. cons.*

Wahlenbergia hookeri (C.B. Clarke) Tuyn in Steenis, Fl. Males. ser. 1, 6: 114. 1960. *Cephalostigma hookeri* C.B. Clarke in Hook. *f.*, Fl. Brit. India 3: 429. 1881.

Herbs, annual, erect, up to 30 cm high. Stems slender, puberulous. Leaves subverticillate, elliptic or ovate-oblong, narrowed at both ends, sparsely pilose, minutely crenate, subsessile. Flowers in branched panicles; bracts linear, minute. Calyx-lobes lanceolate or shortly triangular, glabrous. Corolla blue. Capsules conical, glabrous. Seeds trigonous.

Shahdol (Saxena in Bull. Bot. Surv. India 12: 52. 1970). *Fl. & Fr.*:
Oct. Dec.

SPHENOCLEACEAE

SPHENOCLEA Gaertn., *nom. cons.*

Sphenoclea zeylanica Gaertn., Fruct. Sem. Pl. 1: 113. t. 24. f. 5.
1788; C.B. Clarke in Hook. f., Fl. Brit. India 3: 438. 1881.

Herbs, annual, erect, up to 60 cm high. Stems much branched, hollow. Leaves spirally arranged, oblong or elliptic-lanceolate, up to 10 x 3 cm, attenuate at both ends, glabrous, entire, sessile or subsessile. Flowers in terminal, cylindrical, up to 7 cm long spikes, crowded, sessile. Calyx 5-fid. Corolla white or pale green, campanulate. Stamens 5, epipetalous, alternating with corolla-lobes. Capsules depressed globose, 2-celled, circumscissile.

Chattisgarh region (Shukla and Jain in Bull. Bot. Soc. Univ. Saugar 30-31: 45. 1984-1985). *Fl. & Fr.*: Aug. - Nov.

PRIMULACEAE

ANAGALLIS L.

Anagallis arvensis L. var. **caerulea** (Schreb.) Gren. & Godr., Fl. France 2: 467. 1852. *A. caerulea* Schreb., Fl. Lips. 5. 1771; Hook. f., Fl. Brit. India 3: 506. 1882.

Herbs, decumbent or erect, up to 20 cm high. Branches angular, glabrous with blue tinged wings. Leaves opposite, ovate, up to 2.5 x 1 cm, acute at apex, cordate at base, punctate. Flowers axillary, solitary or in clusters. Corolla blue; lobes 5, star-shaped. Capsules 3-4 mm across with persistent calyx, dehiscing transversely in the middle; style persistent. Seeds brownish black, trigonous, tubercled.

In cultivated fields. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madhya Pradesh 169. 1996). *Fl. & Fr.*: Jan. - April.

ASCLEPIADACEAE**CEROPEGIA L.**

Ceropegia oculata Hook. *f.* in Curtis, Bot. Mag. t. 4093. 1844; Hook. *f.*, Fl. Brit. India 4: 72. 1883. *C. stocksii* Hook. *f.*, Fl. Brit. India 4: 74. 1883.

Twining, tuberous. Leaves broadly ovate or ovate-oblong, sparsely hairy above. Cymes few-flowered; peduncles hairy; pedicels glabrous. Corolla *ca* 6.5 cm long; tube *ca* 5 cm long, base inflated, narrowed in the neck, mouth infundibuliform, glabrous inside; lobes linear-oblong above from ovate base, *ca* 1.5 cm long. Outer corona of 5 bifid glabrous lobes; inner erect, linear-clavate.

Rare at higher elevations. Hoshangabad (Chaturvedi *et al.* in Taxonomy and Biodiversity (ed. A.K. Pandey) 116-117. 1995). *Fl. & Fr.*: July - Oct.

BORAGINACEAE**TRICHODESMA** R. Br., *nom. cons.*

Trichodesma indicum (L.) R. Br. *ex* Lehm. var. **betulense** K.K. Khanna & Anand Kumar in Indian J. For. 24(2): 226. 2001. **Fig. 23.**

Herbs, annual, up to 30 cm high. Stems terete, covered with simple, appressed hairs and spreading bulbous-based hispid hairs. Leaves opposite, lanceolate-oblong, 1.5-3 x 0.2-0.6 cm, subacute or acute at apex, subcordate or subamplexicaul at base, entire, covered with bulbous-based stiff hairs on upper surface (adaxial) and with stiff bulbous-based hairs on midrib intermixed with appressed villous simple hairs on lower surface (abaxial), sessile. Flowers solitary or in terminal, few-flowered cymes; pedicels covered with simple, appressed hairs and spreading bulbous-based hispid hairs, recurved in fruit. Calyx 5-partite; segments lanceolate, hastate. Corolla infundibuliform, with 5 brownish yellow blotches at base inside, 5-lobed; lobes white with light violet tinge. Stamens 5; anthers connivent into a cone, back of connectives densely tomentose; tips elongate, spirally twisted. Fruits pyramidal; nutlets 4, cream-coloured, obovoid, *ca* 4 x 3 mm.

In soyabean fields. *Betul. Fl. & Fr.*: March - May.

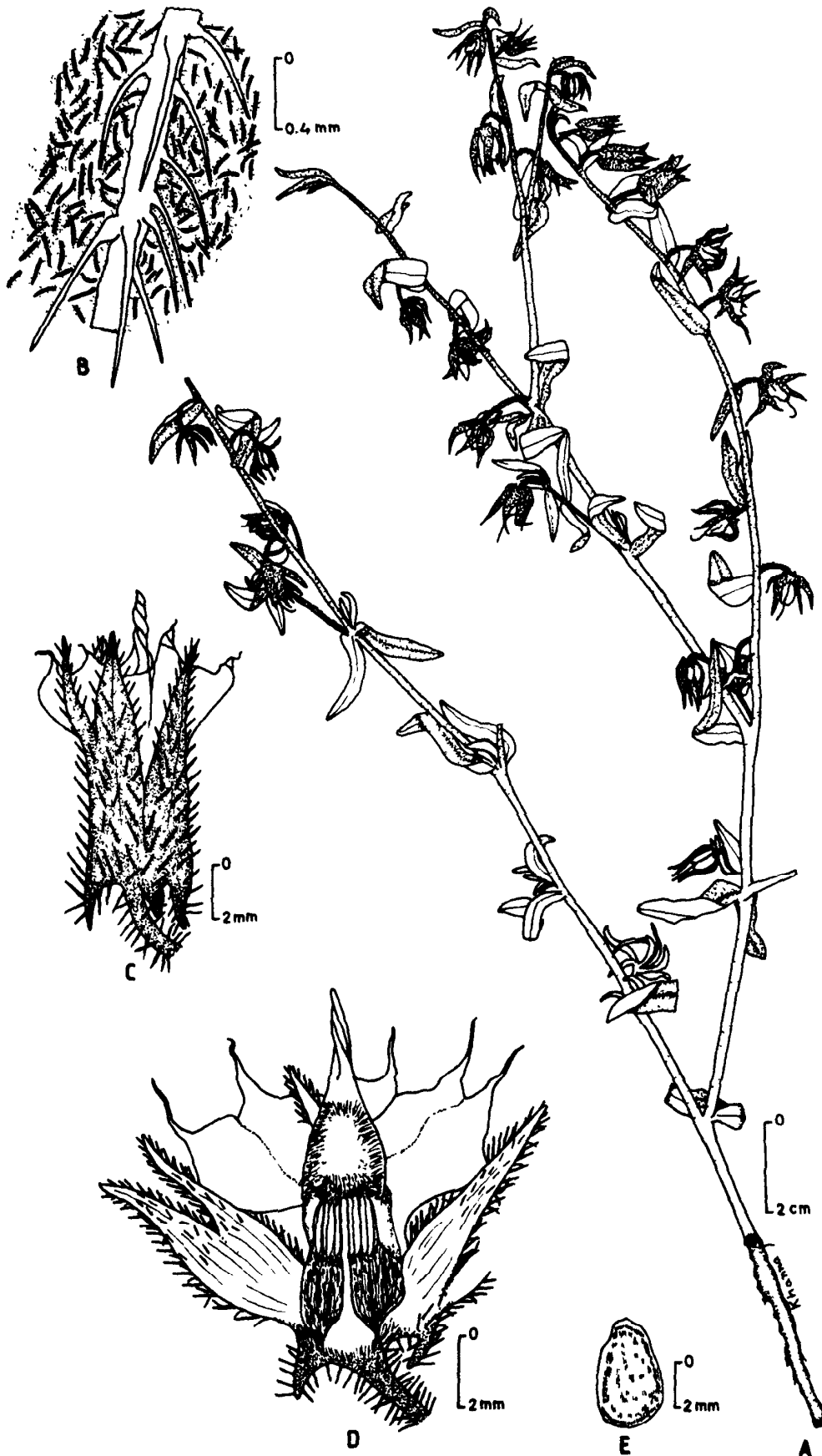


Fig. 23. *Trichodesma indicum* (L.) R. Br. ex Lehm. var. *betulense*
K.K. Khanna & Anand Kumar

A. Habit; B. Leaf surface (abaxial) showing two types of hairs; C. Flower; D. Flower-opened; E. Seed.

CONVOLVULACEAE**ARGYREIA** Lour.

Argyrea pilosa Arn., Pugill. Pl. Ind. Or. 38. 1836; C.B. Clarke in Hook. f., Fl. Brit. India 4: 189. 1883.

Large climbers, hirsute. Leaves broadly ovate, up to 20 x 15 cm, acuminate at apex, shallowly cordate at base, hairy on both the surfaces. Flowers in subcapitate cymes; bracts linear-oblong. Sepals ovate-lanceolate, *ca* 1.2 cm long. Corolla reddish purple. Berries orange-yellow, 1-1.5 cm across.

Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 192. 1996). *Fl. & Fr.*: Aug. - Nov.

CONVOLVULUS L.

Convolvulus deserti Hochst. & Steud. *ex* Baker & Rendle, Fl. Trop. Afr. 4(2): 164. 1905.

Herbs, suffruticose. Branches covered with spreading hairs. Leaves linear-oblong, up to 6 x 1 cm, obtuse at apex, villous on both the surfaces. Flowers pink, axillary, 1-3 on slender, hairy, long peduncles; bracts linear with ferruginous hairs. Fruits ovoid, *ca* 3 mm long. Seeds 2-4, dark brown, minutely pubescent.

In wastelands and fallow fields. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 192. 1996). *Fl. & Fr.*: Sept. Dec.

IPOMOEA L.

Ipomoea tuberculata Ker Gawl. in Bot. Reg. 1. t. 86. 1816. *I. dasysperma* Jacq., Ecol. Pl. Rar. 1: 132. t. 89. 1816; C.B. Clarke in Hook. f., Fl. Brit. India 4: 215. 1883.

Climbers, perennial. Branches hirsute, smooth or tuberculate. Leaves palmately 5-foliolate; leaflets lanceolate, acute at apex; petioles up to 4 cm long, hirsute. Flowers in dichasial cymes; peduncles axillary, 4-5 cm long. Sepals herbaceous with scarious margins. Corolla yellow or white with purple centre. Seeds villous with woolly margins.

Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 197. 1996). *Fl. & Fr.*: Nov. - Jan.

STICTOCARDIA Hall. *f.*

Stictocardia tiliifolia (Desr.) Hall. *f.* in Engl., Bot. Jahrb. Syst. 18: 159. 1894. '*tiliaefolia*'. *Convolvulus tiliaefolius* Desr. in Lam., Encycl. 3: 544. 1792. *Argyreia tiliaefolia* (Desr.) Wight, Icon. Pl. Ind. Orient. t. 1358. 1848; C.B. Clarke in Hook. *f.*, Fl. Brit. India 4: 184. 1883.

Climbers. Stems striate; young parts pubescent. Leaves broadly ovate to orbicular, up to 20 x 18 cm, subacuminate at apex, cordate at base, finely pubescent to glabrous, nigro punctate beneath. Flowers purple, in corymbosely branched, many-flowered cymes. Capsules globose, 1-2 cm across.

Along water streams. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 201. 1996). *Fl. & Fr.*: Oct. March.

OROBANCHACEAE

OROBANCHE L.

Orobanche cernua Loefl. var. **nepalensis** Reut. in DC., Prodr. 11: 33. 1847.

Herbs, parasitic, scapigerous, up to 30 cm high. Leaves scaly, ovate, 1-1.3 mm long, acuminate at apex, glabrous to puberulous, sessile. Flowers lilac, sessile, in dense, bracteate, terminal spikes. Capsules brown, oblong, up to 1 cm long. Seeds brown, many, ovoid.

Common parasite on brinjal and tomato. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 216. 1996). *Fl. & Fr.*: Jan. March.

GESNERIACEAE

RHYNCHOGLOSSUM Blume

Rhynchoglossum obliquum Blume var. **parviflora** C.B. Clarke in Hook. *f.*, Fl. Brit. India 4: 367. 1884.

Herbs, succulent, up to 30 cm high. Leaves elliptic, up to 2.5 x 0.4 cm, unequal sided, acuminate at apex, cordate on one side at base. Flowers in racemes. Calyx campanulate, 5-lobed. Corolla bilabiate; lower lip narrower, hardly twice as long as the upper. Stamens 2, included. Capsules ellipsoid, membranous. Seeds narrowly ellipsoid.

Rare on hills. Central India (C.B. Clarke in Hook. *f.*, Fl. Brit. India 4: 367. 1884).

VERBENACEAE

ALOYSIA Juss.

Aloysia triphylla (L'Hérit.) Britton in Sci. Surv. Puerto Rico Virgin Isles 6: 140. 1925. *Verbena triphylla* L'Hérit., Stirp. Nov. 21. t. 11. 1784.

Shrubs, aromatic, spreading. Leaves whorled in groups of 3-4, lemon-scented, oblong, up to 7 x 3 cm, caducous. Flowers in spikes, often distant, fragrant. Calyx 2-4-lobed. Corolla purple-white, hypocrateriform. Stamens 4, didynamous. Fruits dry.

Along river banks. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 233. 1996). *Fl. & Fr.*: Feb. - May.

GMELINA L.

Gmelina asiatica L., Sp. Pl. 626. 1753; C.B. Clarke in Hook. *f.*, Fl. Brit. India 4: 582. 1885.

Shrubs, scandent, deciduous, up to 3 m high. Bark brownish white. Spines axillary, bearing leaves when old. Leaves ovate to obovate, up to 9 x 5.5 cm. Flowers yellow, pendulous, in short, terminal, tomentose panicles. Calyx 4-dentate. Drupes yellow, obovoid-pyriform.

Rare along river banks. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 234. 1996). *Fl. & Fr.*: Nov. - March.

VITEX L.

Vitex trifolia L., Sp. Pl. 638. 1753, '*trifoliis*'; C.B. Clarke in Hook. *f.*, Fl. Brit. India 4: 583. 1885.

Shrubs, up to 2.5 m high. Leaves 1-3-foliolate, obovate-oblong, sessile. Flowers in terminal, up to 12 cm long panicles. Fruiting calyx *ca* 5 mm across. Drupes reddish black when ripe, globose, 2-5 mm across.

Grown as a hedge plant. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 236. 1996). *Fl. & Fr.*: Most parts of the year.

LAMIACEAE

CLINOPODIUM L.

Clinopodium umbrosum (Bieb.) Koch in Linnaea 21: 673. 1848. *Melissa umbrosa* Bieb., Fl. Taur. Cauc. 2: 63. 1808. *Calamintha umbrosa* (Bieb.) Benth. in DC., Prodr. 12: 232. 1848; Hook. *f.*, Fl. Brit. India 4: 650. 1885.

Herbs, annual, procumbent or ascending, sparsely hairy. Branches up to 40 cm long. Leaves ovate, chartaceous, serrate. Flowers purplish or bluish pink, in axillary, loose or dense whorls. Calyx 13-ribbed, 2-lipped. Corolla 2-lipped, villous at throat inside. Stamens 4, didynamous. Nutlets subglobose, smooth.

Along water courses. Shahdol (Saxena in Bull. Bot. Surv. India 12: 56. 1970). *Fl. & Fr.*: March - June.

LAVANDULA L.

Lavandula bipinnata (Roth) Kuntze var. **rothiana** Kuntze, Revis. Gen. Pl. 521. 1891.

Herbs, slender, up to 50 cm high. Leaves pinnatipartite or pinnatisect, sessile; lobes subacute or obtuse at apex, entire or denticulate. Flowers in spikes; bracts awned. Calyx tubular, slightly awned, 5-dentate. Corolla 2-lipped. Stamens 4, didynamous, declinate. Nutlets oblong-ellipsoid, smooth.

In hilly areas. Chhindwara (Saxena and Shukla in Bull. Bot. Surv. India 12: 197. 1970). *Fl. & Fr.*: Nov. - Jan.

LEUCAS R. Br.

Leucas diffusa Benth., Labiat. Gen. Sp. 615. 1834; Hook. *f.*, Fl. Brit. India 4: 689. 1885.

Herbs, annual, diffusely branched, up to 40 cm high. Branches ascending, hispid or hirsute. Leaves linear or linear-oblong, up to 2.5 x 0.4 cm, obtuse at apex, subentire. Flowers in terminal, few-flowered whorls. Calyx up to 6 mm long, turbinate, curved, smooth below, ribbed and hispid above; mouth wide truncate; teeth small, subulate, erect. Corolla white, 2-lipped. Nutlets ovoid, 3-gonous, obtuse.

In sandy river beds. Jabalpur (Oommachan and Shrivastava, Fl. Jabalpur 208. 1996). *Fl. & Fr.*: Jan. March.

Leucas zeylanica (L.) R. Br. var. **walkeri** (Benth.) Hook. f., Fl. Brit. India 4: 689. 1885. *L. walkeri* Benth. in DC., Prodr. 7: 531. 1839.

Herbs, annual. Stems acutely 4-angled, appressed hairy. Leaves linear, up to 6 x 0.5 cm, densely hairy beneath. Flowers in terminal whorls, less than 5 cm across; bracts linear, spinous-tipped. Calyx-tube erect, 10-dentate; mouth villous inside. Corolla up to 2 cm long. Nutlets narrowly turbinate.

Along streams and forest roads. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 241. 1996). *Fl. & Fr.*: Aug. Dec.

ORTHOSIPHON Benth.

Orthosiphon aristatus (Blume) Miq., Fl. Ind. Bat. 2: 943. 1858; Mukerjee in Rec. Bot. Surv. India 14(1): 26. 1940. *Ocimum aristatum* Blume, Bijdr. 833. 1855. *Trichostema spiralis* Lour., Fl. Cochinch. 2: 371. 1790. *Orthosiphon spiralis* (Lour.) Merr. in Lingnaam Agric. Rev. 2: 137. 1925.

Shrubs, slender, up to 1 m high. Young stem sparsely pubescent. Leaves ovate or rhomboid, up to 8 x 4 cm, entire or serrate, acuminate at apex, cuneate at base, chartaceous or membranous. Flowers in pseudowhorls below and in lax, terminal, up to 15 cm long racemes. Calyx campanulate, curved. Corolla white or purple, up to 1.5 cm long, 2-lipped. Stamens exserted. Nutlets broadly oblong, compressed, rugose.

Rare as forest undergrowth. Bastar (Subramanyam and Henry in Bull. Bot. Surv. India 8: 213. 1967). *Fl. & Fr.*: March - May.

PLATOSTOMA P. Beauv.

Platostoma africanum P. Beauv., Fl. Oware 2: 61. t. 95. 1805. *P. flaccidum* Benth., Gen. Pl. 2: 1173. 1876; Hook. f., Fl. Brit. India 4: 611. 1885.

Herbs, annual, slender, up to 30 cm high. Leaves ovate, up to 4 x 2.2 cm, acute at apex, membranous, serrate. Flowers whorled in slender racemes. Calyx campanulate, 2-lipped. Corolla pale lilac, 2-lipped. Stamens 4, declinate, included. Nutlets black, ovoid, minutely reticulate.

Rare in dense forests. Bastar (Saxena and Khotele in J. Bombay Nat. Hist. Soc. 73: 29. 1976). *Fl. & Fr.*: Jan. - Feb.

PLECTRANTHUS L'Hérit., *nom. cons.*

Plectranthus striatus Benth. in Wallich, Pl. Asiat. Rar. 2: 17. 1830-1831. *P. stocksii* Hook. f., Fl. Brit. India 4: 618. 1885.

Herbs, annual, erect, decumbent or ascending. Stems short, hairy. Leaves ovate, up to 6 x 3 cm, glabrous or sparsely hairy. Flowers white with purple spot, whorled, arranged in terminal panicles. Nutlets yellowish brown, broadly ellipsoid, smooth.

In moist shady places. Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 243. 1996). *Fl. & Fr.*: Aug. Dec.

POGOSTEMON Desf.

Pogostemon griffithii (Hook. f.) J.R. Press in Bull. Brit. Mus. Nat. Hist. Bot. 10(1): 73. 1982. *Dysophylla griffithii* Hook. f., Fl. Brit. India 4: 641. 1885.

Herbs, decumbent, slender. Stems often geniculate. Leaves whorled, linear, up to 7 x 0.4 cm. Flowers pink in dense, up to 6 cm long, villous spikes. Calyx-tube 5-angled with incurved villous lobes. Corolla with 4 equal lobes. Stamens 4, exserted. Nutlets 4, minute, suborbicular.

Rare in moist places. Bastar (Subramanyam and Henry in Bull. Bot. Surv. India 8: 213. 1967). *Fl. & Fr.*: Dec. - Jan.

Pogostemon myosuroides (Benth.) K.K. Khanna & Anand Kumar, *comb. nov.* *Dysophylla myosuroides* Benth. in Wallich, Pl. Asiat. Rar. 1: 30. 1830; Hook. *f.*, Fl. Brit. India 4: 638. 1885.

Herbs, perennial, branched, up to 35 cm high; young branches silky villous or tomentose. Leaves opposite, elliptic-oblong, up to 3 x 0.7 cm, subacute at apex, silky villous, entire or denticulate. Flowers red, in simple or branched, up to 8 cm long, dense spikes. Calyx *ca* 1.5 mm long, densely silky, 5-dentate. Corolla-lobes 4, subequal. Stamens 4, exserted. Nutlets ellipsoid, compressed, granulate.

Rare in hilly areas. Bastar (Mooney in Indian For. Rec. (n.s.) 3(7): 249. 1942). *Fl. & Fr.*: Dec. Jan.

NYCTAGINACEAE

BOERHAVIA L.

Boerhavia helenae Schult. in Roem. & Schult., Mant. 1: 73. 1822. *B. verticillata sensu* Hook. *f.*, Fl. Brit. India 4: 710. 1885.

Herbs, diffuse. Branches long. Leaves opposite, thick, ovate to suborbicular, obtuse at apex, cordate at base. Flowers in whorls on long peduncles; pedicels filiform. Perianth white. Stamens exserted; filaments connate at base. Fruits clavate, glandular at apex.

In wastelands. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 244. 1996). *Fl. & Fr.*: Oct. Dec.

AMARANTHACEAE

AERVA Forssk., *nom. cons.*

Aerva wightii Hook. *f.*, Fl. Brit. India 4: 728. 1885.

Herbs, perennial, up to 40 cm high, prostrate below, ascending above. Leaves orbicular or obovate, up to 5 x 4 cm, obtuse at apex, pubescent above, white villous beneath. Flowers bisexual, in small, dense, yellowish white, axillary spikes. Perianth-lobes 5, hyaline, acuminate and aristate. Staminodes present. Stigmas 2, short.

Rare on hill slopes. Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 248. 1996). *Fl. & Fr.*: Sept. - Jan.

AMARANTHUS L.

Amaranthus dubius Mart. ex Thell., Pl. Adav. Montpellier 203. 1912.

Herbs, annual, erect. Leaves ovate or rhomboid-ovate, up to 6 x 4 cm, glabrous or nearly so. Flowers greenish, in axillary clusters and spikes; bracts and bracteoles pale, ovate-deltoid, membranous, awns of bracteoles rigid. Tepals of female flowers lanceolate. Utricle *ca* 1.5 mm long, circumscissile.

In wastelands. Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 249. 1996). *Fl. & Fr.*: Aug. Dec.

PODOSTEMACEAE

POLYPLEURUM (Tul.) Warm.

Polypleurum dichotomum (Gardn.) J.B. Hall in Kew Bull. 26: 131. 1972. *Podostemon dichotomus* Gardn. in Calc. J. Nat. Hist. 7: 185. 1847; Hook. f., Fl. Brit. India 5: 64. 1886. *Dicraea dichotoma* (Gardn.) Tul. in Ann. Sci. Nat. Ser. III, 2: 101. 1849.

Herbs, perennial, aquatic. Stems up to 10 cm long. Thallus narrow, zigzag, with marginal, one-flowered secondary shoots. Leaves filiform, subulate, caducous. Flowers solitary, zygomorphic, pedicellate, enclosed in spathes splitting irregularly; bracts fleshy. Stamens 2; staminodes 2, on either side of the common axis. Ovary ellipsoid; style absent; stigmas 2, short. Capsules ellipsoid, *ca* 3 x 1 mm, 8-ribbed. Seeds obovoid, smooth.

Rare. Attached to rocks in running water. Bastar (Roy and Dixit in Indian J. For. 9: 87. figs. 1-6. 1986). *Fl. & Fr.*: Jan. March.

LORANTHACEAE

DENDROPTHOE Mart.

Dendrophthoe falcata (L. f.) Etting. var. **coccinea** (Talb.) Sant. in Pl. Saurashtra 34. 1953. *Loranthus longiflorus* Desr. var. *coccinea* Talb., Syst. List Trees Bombay ed. 1. 172. 1894.

Shrubs, parasitic. Branches grey, often horizontal. Leaves oblong, ovate or elliptic-oblong, up to 6 x 4 cm, obtuse at apex, cuneate at base, coriaceous, entire or undulate. Flowers red, in axillary racemes; bracts minute, ovate. Corolla 3-4 cm long, curved, trumpet-shaped; lobes 5, reflexed; tube narrow. Fruits black when ripe.

In dry deciduous forests on *Boswellia serrata* trees. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 256. 1996). *Fl. & Fr.*: July - Oct.

EUPHORBIACEAE

ACALYPHA L.

Acalypha alnifolia Klein ex Willd., Sp. Pl. 4: 525. 1805; Hook. *f.*, Fl. Brit. India 5: 415. 1887.

Undershrubs. Leaves ovate, up to 5 x 3.2 cm, acute at apex, tomentose beneath. Male flowers in axillary spikes, female in terminal capitate spikes; bracts in female spikes many, imbricating, dentate, enveloping the capsule. Capsules hispid. Seeds globose.

Dhar (Samvatsar, Fl. West. Trib. Madh. Prad. 258. 1996). *Fl. & Fr.*: Aug. Dec.

EUPHORBIA L.

Euphorbia coccinea Roth, Nov. Pl. Sp. 228. 1821; Hook. *f.*, Fl. Brit. India 5: 248. 1887.

Herbs, decumbent or procumbent, villous. Branches purple, filiform, softly hispid with long hairs. Leaves opposite, broadly elliptic or obovate-oblong, up to 1.2 x 0.4 cm, obtuse at apex, oblique, auricled on one side at base, villous beneath, subsessile. Involucres in the axils of crowded, terminal leaves, forming villous heads of 2-4 flowers; gland with a petaloid limb. Capsules white-woolly, truncate at the base; cocci compressed.

Common weed in fields and gardens. Dhar, Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 262. 1996). *Fl. & Fr.*: July - Dec.

Euphorbia fusiformis Buch.-Ham. in D. Don, Prodr. Fl. Nepal. 62. 1825; Hook. *f.*, Fl. Brit. India 5: 257. 1887.

Herbs, dwarf, glabrous. Rootstocks tuberous. Leaves radical, obovate or oblanceolate, up to 20 x 12 cm, acute or obtuse at apex, succulent, subsessile. Cymes from the crown of the rootstocks. Involucres *ca* 6 mm across; bracts ovate or the upper or all truncate and 3-fid; lobes spatulate, fimbriate. Capsules 5-8 mm across. Seeds obliquely ovoid, subacute, smooth.

Rare in hilly areas. Bastar (CAL). *Fl. & Fr.*: April - June.

HOMONOIA Lour.

Homonoia retusa (Grah. ex Wight) Muell.-Arg. in *Linnaea* 34: 200. 1865; Hook. *f.*, *Fl. Brit. India* 5: 456. 1887. *Adelia retusa* Grah. ex Wight, *Ic. t.* 1869. 1852. **Fig. 24.**

Shrubs, up to 2.5 m high. Branches pink, rigid. Leaves alternate, obovate, up to 4 x 2.2 cm, emarginate at apex, cuneate at base, coriaceous, dentate in the upper part, sessile. Flowers sessile, in stout, up to 2.5 cm long spikes. Male tepals 3, elliptic, concave. Filaments branched. Female tepals 5, ovate-lanceolate. Styles plumose. Capsules globose, 2-3 mm across, tomentose. Seeds yellow, rounded on the outer face, angled on the inner face.

Abundant in river beds. Bastar. *Fl. & Fr.*: Feb. - June.

JATROPHA L.

Jatropha nana Dalz. in Dalz. & Gibs., *Bombay Fl.* 229. 1861; Hook. *f.*, *Fl. Brit. India* 5: 382. 1887.

Undershrubs, up to 60 cm high. Leaves broadly ovate to orbicular, up to 15 cm long, entire or 3-lobed, eglandular on margins; petioles up to 4 cm long. Flowers in few-flowered, terminal, paniculate cymes, pedicellate; bracts lanceolate, acute. Petals free. Stamens 8, all connate in the lower half. Capsules obovoid, *ca* 1 cm across, obscurely 6-lobed.

Rare along banks of streams and rivers. Jhabua (Samvatsar, *Fl. West. Trib. Madh. Prad.* 264. 1996). *Fl. & Fr.*: Oct. - Jan.

SYNADENIUM Boiss.

Synadenium grantii Hook. *f.* in *Curtis, Bot. Mag. t.* 5633. 1867.

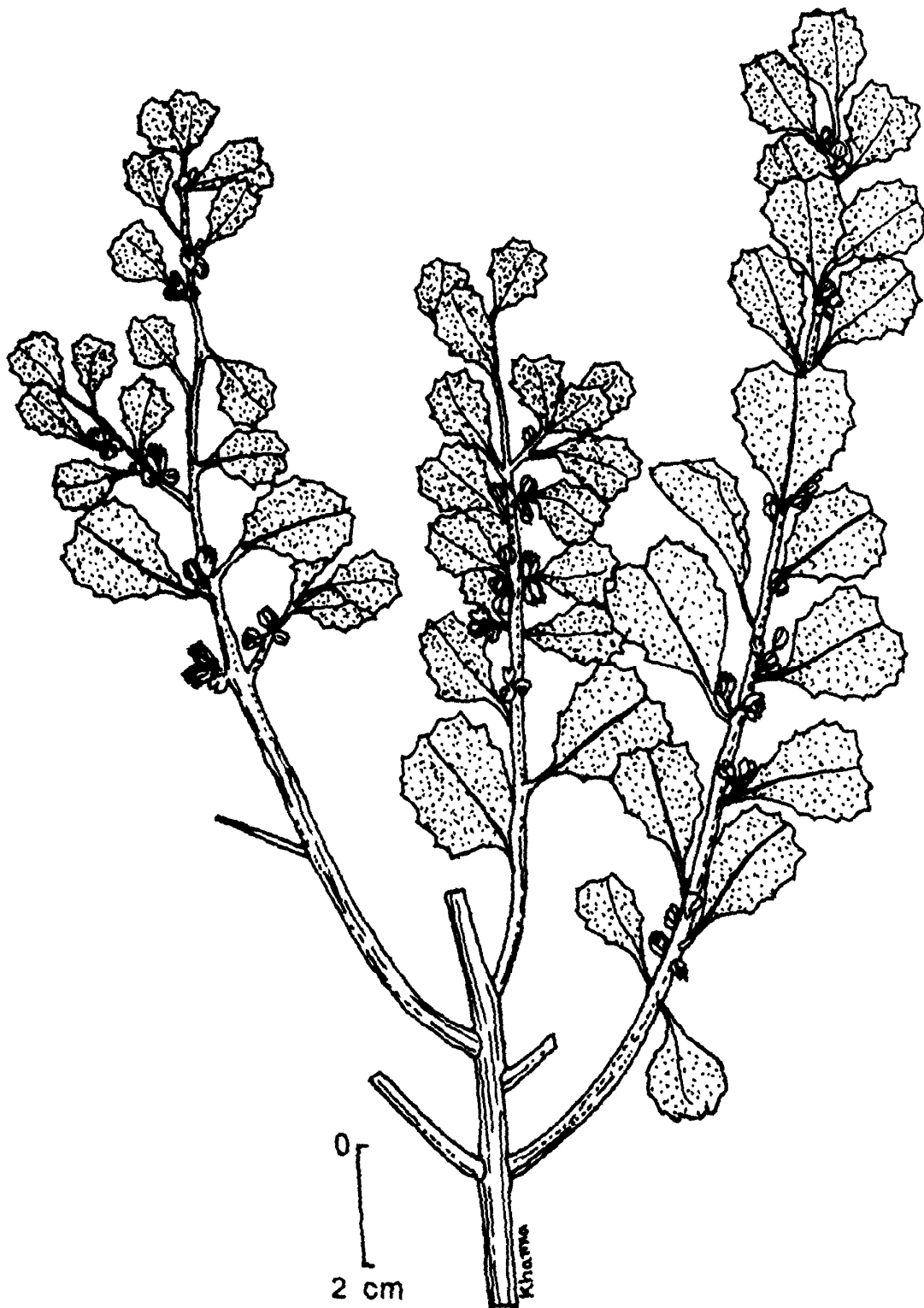


Fig. 24. *Homonoia retusa* (Grah. ex Wight) Muell.-Arg.

Shrubs, up to 3 m high. Leaves obovate-spathulate, up to 10 x 6 cm, acute at apex, succulent. Cymes axillary and terminal, dichotomously branched. Involucres infundibuliform, 1-1.3 cm across; mouth truncate with scales and red cushion. Capsules red. Seeds dull brown, ellipsoid.

Planted as a hedge. Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 270. 1996). *Fl. & Fr.*: Nov. - Feb.

MORACEAE

FICUS L.

Ficus caulocarpa Miq. in Ann. Mus. Bot. Lugd. Bat. 3: 268. 1867. *F. infectoria* Roxb. var. *caulocarpa* (Miq.) King in Ann. Roy. Bot. Gard. Calcutta 1: 63. t. 79. 1887.

Trees, up to 30 m high. Leaves elliptic-oblong, up to 22 x 9 cm, subacuminate at apex, rounded to narrowly cuneate at base, subcoriaceous, lateral veins 9-16 pairs. Receptacles 2-8 in the axil of old leaves, black or purple when ripe, 5-8 mm across.

Jhabua (Samvatsar, Fl. West. Trib. Madh. Prad. 271. 1996). *Fl. & Fr.*: Dec. March.

SALICACEAE

POPULUS L.

Populus euphratica G. Oliver, Voy. Emp. Othonan 3: 449. t. 45, 46. 1807; Hook. *f.*, Fl. Brit. India 5: 638. 1888.

Trees, up to 10 m high. Leaves ovate, oblong, rhomboid or orbicular, of young shoots up to 15 cm long, those of old shoots up to 8 x 7 cm, more or less dissected, cuneate-rounded or cordate at base, 3-5-nerved. Catkins lax flowered. Male flowers: Bracts oblanceolate, incised. Stamens 8-12. Disc orbicular, 8-cleft. Female flowers: Disc tubular, 8-12-cleft, membranous, caducous. Capsules lanceolate, up to 1 cm long.

Planted in gardens. Ujjain (Singh and Khare, Fl. Ujjain Dist. 386. 1996). *Fl. & Fr.*: Dec. March.

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