
A large tree with erect trunk and widely spreading horizontal branches; young parts pubescent. Leaves coriaceous, elliptic-oblong, 15-24 x 8-12.5 cm, usually rounded at base, sometimes cordate, entire margin, acute—shortly acuminate at apex, slightly pubescent in younger leaves whereas glabrescent in older leaves, main nerves 10-13 pairs, parallelly prominent on both sides; petioles 3 cm long; stipules interpetiolar, lanceolate, acute, caducous. Flowers fragrant in terminal globular heads, heads solitary, on stout peduncles, greenish yellow in colour. Fruit small, 0.3 x 3.5 cm, orange—yellow when ripe; seeds muriculate.

North circars along river banks, Deccan in Kurnool and Cuddapah districts. Fl. & Fr.: February - May.
Loc. name: Kadambe. Sujanakotapeta (VSKP), G.V.Subba Rao 32900 (MH); Kilagada (VSKP), G.V.Subba Rao 44-CA9 (MH); Godavari district, J.S.Gamble 16092 (MH).

**Argostemma Wall.**

**Argostemma verticillaturn** Wall. in Roxb. Fl. Ind. ed. 2:325.1824; FBI 3:43; Gamble 590 (417).

A small delicate, erect herb, up to 10 cm tall. Leaves thinly membranous, 4 in a whorl, unequal, lanceolate or ovate - lanceolate, 3-5.5 cm x 1-1.5 cm, unequal at base entire margin, acuminate at apex, glabrous above, sparsely hairy below; stipules interpetiolar. Flowers 5-merous, in terminal, peduncled, few-flowered umbels, shorter than the leaves, white; bracts beneath the umbels, conspicuous, oblong - lanceolate or linear - lanceolate; calyx triangular from broad base, lobes 5, 1.75 mm long, acuminate with curved tip; corolla very short, divided almost to the base, 2 mm across, lobes 5, oblong-ovate 3.5 mm , very acute; stamens 5, filament 2 mm, anther linear - oblong, 3 mm, apiculate, opening by pores; ovary 2 mm, glabrous, style linear, 4 mm, stigma globose, 0.5 mm. Capsule dehiscing at the apex or by an operculum; seeds minute, angled or compressed, Fig.13.
Fig. 13: Argostemma verticillatum Wall

A. Twig
B. Calyx
C. Corolla with stamens
D. Stevens - dorsal view
E. Stevens - ventral view
In forests of Sunkarimetta in Viskhapatnam district. Fl. & Fr.: July - August. Sunkarimetta (VSKP), TP & EC 7364; Sunkarimetta (VSKP), N.P. Balakrishnan 10912 and 702 (CAL).

Note: Gamble (1921) reported that this species occurs only in Annamalai hills of Western ghats. Our present collection and earlier collection of this species by N.P. Balakrishnan shows that this species also occurs at higher elevation in Eastern ghats. A new record for the state of Andhra Pradesh.

Berikera Tirveng.

Berikera malabarica (Lam.) Tirveng. in Taxon 32:440, 1983.

Randia malabarica Lam. Encycl. 3:25, 1789; FBI 3:111; Gamble 616 (435).

An armed shrub, up to 6 m tall; spines short, 0.6-1 cm. Leaves coriaceous, decussate or clustered, obovate-ob lanceolate, 3-6 x 1.5-2.5 cm, cuneate at base, entire margin, obtusely apiculate at apex; petiole 0.7 cm; stipules intrapetiolar, connate. Flowers in axillary, umbel like corymbose cymes, white bracts and bracteoles free or connate; calyx turbinate, 4 mm across, lobes 5, triangular 1 mm, valvate, acute, deciduous; corolla salver form,
4 cm across, tube cylindric with a ring of hairs within, lobes 5, oblong, 3 mm, recurved, obtusely acute; stamens 5, between the lobes, exserted, filaments 0.5 mm, anthers linear, 3 mm; ovary 1 mm, style 0.25 mm, stigma fusiform, 1.75 mm. Berry globose, 0.8 mm across; seeds conical or cubical, 8 per locule, not embedded in pulp.

Common in dry evergreen scrub forests.

Fl. & Fr.: February - August. Loc. name: Pedalli. Simhachalam hills (VSKP), MSG 5606; On the way to Bairavakona (NLR), MSG & DAM 5655; Loyapalli (CTR), VRK 5848; Madhavaram RF (KNL), TP & RVR 1333; Panapakam (CTR), G.V.Subba Rao 31864 (MH); Sudikonda (EG), G.V.Subba Rao 24496 (CAL); towards Punyagiri hill (VSKP), G.V.Subba Rao 19414 (CAL); Kodur (CDP), J.S.Gamble 10764 (DD).

Note: Tirvengadura (1983) reestablished the genus Benkera for the segregated taxon from Randia. He also discussed the reasons for reestablishing the genus and also rejection of the name Griffithia.

Borreria G.F.W. Mey. nom. cons.

Note: Although Borreria G.F.W. Meyer has been conserved, some Indian workers on the flora have started following Verdcourt (Fl.E.Trop Afr. 1:344.1976) who
considers, based on some characters that *Spermacoce* L. should be the appropriate genus instead of *Borreria* Meyer. This involves nomenclatural changes for the Indian taxa under *Spermacoce* L. However in the present study the considered name *Borreria* Meyer is followed.

Annual or perennial herbs; the branches usually four-angled. Leaves opposite, sessile; stipules interpetiolar, connate with the base of leaves into a sheath, pectinate. Flowers in axillary or terminal fascicles; bracteoles many, calyx - tube obovoid or turbinate, lobes 4, often with intermediate teeth or bristles; corolla funnel-shaped or hypocrateriform, lobes 4; stamens 4, on the throat or tube of the corolla, anther linear or oblong; ovary 2-locular, ovules solitary in each locule, style filiform with 2 short arms or stigma capitate. Capsule of 2 mericarps which dehisce ventrally; seeds oblong, ventrally grooved.

1. Stem broadly winged ....................... *B. latifolia*
1. Stem not winged:
   2. Erect slender herb, leaves linear - lanceolate................................. *B. pusilla*
   2. Diffuse or prostrate herb, leaves elliptic or ovate - obovate:
3. Stem terete with densely pilose hairs, leaves highly flexuous, corolla tube equalling the lobes .............. B.hispida

3. Stem 4-angled with minutely adpressed hairs, leaves rarely flexuous, corolla-tube 3-4 times longer than lobes, occasionally equal .................................................. B.articularis

Borreria articularis (L.f.) Will. in Bull. Herb. Boiss,

An annual erect herb, up to 25 cm tall, four-angled, glabrous. Leaves opposite, decussate, elliptic-obovate, 1.5-4 x 1-2 cm, acute-attenuate at base, entire margin, acute at apex; sub sessile; stipules connate with the base of leaves into a sheath, pectinate. Flowers in axillary and terminal fascicles, pinkish white; Calyx tube short, 3 mm, lobes 4, 2.75 mm, hispid; corolla tubular, 13 mm, hairy, lobes 4, oblong, 4 mm; stamens 4, filament 2 mm, anther 1 mm; ovary bilocular, single ovule per each locule, style 14 mm, stigma bifid, 0.75 mm. Capsule globose, hispid, 0.5 x 0.2 cm; seeds narrow, oblong, testa reticulate.

A common weed in waste lands, road sides and cultivated fields in all districts. Fl. & Fr.: June - February. Loc. name: Madanaku. Araku valley (VSKP), MSG 5626; Nellore town,
Borneria hispida (L.) K. Schum. in Engl. & Prantl, Pfl. 

An annual, erect, hispid herb, up to 26 cm tall; obscurely four-angled. Leaves ovate-oboovate, 2-3.5 x 1-1.8 cm, acute - attenuate at base, undulate margin, acute at apex; sub sessile; stipules connate with the base of leaves into a sheath, pectinate. Flowers in few-flowered axillary fascicles, pink; calyx-tube short, 3.5 mm, lobes 4, 2.5 mm, hispid without corolla-tube short, 4 mm, lobes 4, oblong, 2 mm; stamens 4, filament 1.25 mm, anther 0.85 mm; ovary oblong, 2 mm style 5 mm, spiny, stigma bifid, 0.75 mm.
Capsule hispid, 0.5 x 0.3 cm; seeds broadly ellipsoid, coarse, closely pitted, black. Fig. 14.

All districts and up to about 3,000 ft in the hills, common on the coastal sands, also on all dry lands in the interior. Fl. & Fr.: June - February. Kalasamudram RF (ATP), NY 651; Ramallakota RF (KNL), RVR 1857; Near Balaparallagutta (CTR), G.V. Subba Rao 46783 (MH).

Note: The taxonomy of Borreria hispida - articularis complex has been quite perplexing. The two taxa originally described as two different species of Spermacoce by Linnaeus and his son respectively, have been subsequently united because of overlapping variation in superficial leaf and floral characters and treated as a highly polymorphic species. Authors who preferred its generic position under Spermacoce adopted the epithet hispida for the combined taxon while those who treated it under Borreria preferred articularis. Studies by Sivarajan et al. (1986) have shown that the two are distinct species. I am also of the opinion that the two are distinct species.

Fig. 1b: *Borreria hispida* (L.) K. Schum.

A. Twig  
B. Open flower  
C. Calyx  
D. Corolla  
E. Stamen - ventral view  
F. Stamen - dorsal view  
G. Pistil  
H. Capsule
An annual diffuse herb, stem four-angled, angles prominently winged and hispid. Leaves broadly ovate or elliptic, 2-3 x 0.5-1 cm, cuneate at base, entire margin, acute at apex, scabrid on both sides, impressly veined; subsessile; stipules with papillate bristles. Flowers in axillary few-flowered cymes, pink; calyx truncate, 2.5 mm, lobes 4, 2 mm, hispid without; corolla broad, 3 mm across, tube 10 mm, lobes 4, 3 mm; stamens 4, filament 2 mm, anther 1 mm; ovary oblong, 4 mm, style linear, 8.5 mm, spines appear near the stigma, stigma bifid, 1 mm. Capsules densely subescent, 0.5 cm x 0.35 cm; seeds ellipsoid, testa reticulate - rugulose. Fig. 15:

In Kurnool and Nellore districts. Fl. & Fr.; November - March. Nellore town, MSG 5636; On the way to Bairavakona (NFL) MSG 5660; Kurnool dt, J.L.Ellis 25560 (CAL). New record to Andhra Pradesh.


An annual erect herb, up to 35 cm tall. Leaves elliptic - lanceolate, 2-5 x 0.4-0.8 cm, attenuate at base
Fig. 15: Borreria latifolia (Aublet) K. Schum

A. Twig
B. Flowers
C. Calyx
D. Corolla
E. Stamen - ventral view
F. Stamen - dorsal view
G. Pistil
H. Fruit
entire margin, acute at apex, glabrous; sessile; stipules broad, truncate with marginal bristles. Flowers in axillary fascicles, pink; calyx tube short, 2.5 mm across, lobes 4, 2 mm, unequal, scabrid; corolla tube short, tubular, lobes 4, 2 mm; stamens 4, filament linear, 1.75 mm, anther 0.5 mm, one anther lobe longer than other lobe; ovary bilocular, solitary in each locule, style 4 mm, stigma papillose, bifid. Capsule oblong, 3.5 mm.

Common in all districts and up to 1500 m in the hills usually in forest under growth. Fl. & Fr.: August - November. S.K. University (ATP), MSG 5028; Penchalakona RF (NLR), MSG 5654; Dharmapuri RF (ATP), NY 896; Ramallakota (KNL), PVR 843; Themmalabasti (CDP), MH 15397 (MH); Peddavegi (WGL), V. Naravana Swamy 4516 (MH); Kondaveedu forest (CTR), C.A. Barber 4691 (MH); way to Pegarikutta - Narsapur (MDK), K.M. Sebastine 6613 (MH); Chintaladevi (NLR), MH 16459 (MH); Near Anantagiri (VSKP), G.V. Subba Rao 44299 (MH); Dummakonda, Rampa (EG), V. Narayanaswami 650 (CAL); Kalavam Kunta (CTR), G.V. Subba Rao (CAL).

Note:

Borreria stricta (L.f.) Schum (1891) becomes a later homonym of B. stricta (L.) Meyer (1818) and therefore the new combination B. pusilla (Wall.) DC. was validly published for this species.
Sivarajan et al. (1987) erected a new species *Spermacoce ramanii* listing out several differences. I tried to differentiate them in our specimens and found many intergrading characters. Further when one character agrees, the other character is contradictory. Hence I keep all our specimens in *Borreria pusilla* only.

**Canthium** Lam.

Armed or unarmed shrubs or trees. Leaves decussate, elliptic - ovate to oblanceolate, glabrous; stipules interpetiolar, caducous. Flowers in axillary, lax or dense cymes sometimes umbellate, flowers 4 or 5-merous, shortly pedicellate; calyx toothed; corolla salver-form, villous or glabrous within; stamens between the lobes, exserted; ovary bilocular, ovule 1 per locule, laterally pendulous, style columnar, stigma acute or capitate. Drupe ellipsoid or compressed, with 2, one locule pyrenes; seeds oblong, testa membranous.

1. Armed shrubs, flowers 4-merous, drupe ellipsoid or compressed

1. Unarmed trees, flowers 5-merous, drupe globose

1. Flowers in cymes, fruit globose... C. dicoccum var dicoccum
1. Flowers in umbells, fruit obovoid... C. dicoccum var umbellatum

An unarmed shrub, up to 3 m tall; branches smooth.
Leaves very coriaceous, ovate - lanceolate or suborbicular,
4-12 x 1.5-6 cm, acute or even cordate at base, entire margin,
usually obtusely caudate - acuminate at apex; petiole 0.5 cm.
Flowers 5-merous, in axillary short peduncled cyme, greenish white. Drupe globose.

All plains districts in dry evergreen and open forests, often on river banks. Fl. & Fr.: December - May.
Loc. name: Nallabalasu. Way to Tirumalai (CTP), K. Subramanyam 7839 (MH); At the foot of Galikonda hill (VSKP), G. V. Subba Rao 19621 (CAL); way to upper Ahobilam (KML), J. L. Ellis 25579 (CAL); Panapakam (CTP), G. V. Subba Rao 31866 (CAL);
Maredumilli (EG), G. V. Subba Rao 24247 (CAL); Ramapatnam (NLP), J. S. Gamble 12691 (CAL); Yerraguntlakota (CDP), J. S. Gamble 10977 (DD).

var. umbellatum (Wight) Sant. & Merch. in Bull. Bot.

1845; FBI 3:132. Plectronia didyma (Gaertn. f.) Kurz.
Var. umbellata (Wight) Gamble Fl. Pres. Madras 624, 1921,
(440) 1952.

An unarmed small tree, up to 5 m tall; young branches four-angled, glabrous. Leaves coriaceous, elliptic -
obovate, 4-10 x 2.5-5.5 cm, acute - attenuate at base, entire margin, acuminate at apex, glabrous; petiole 1 cm; stipules lanceolate. Flowers in axillary peduncled umbels, white; calyx tube very short, 2 mm across, lobes 4, 0.5 mm; corolla tube short, 3 mm, villous within, lobes 4, oblong, 4 mm, acute; stamens 4, attached at the throat of the lobes, filament 1 mm, anther mucronate, 2.25 mm; ovary 2 mm, style 5 mm, stigma fusiform, 2.5 mm. Drupe abovoid, 0.7 x 0.7 cm. Fig. 16.

Occasional in forests in all districts.

Fl. & Fr.: December - May. Loc. name: Nallabalasu, Nakkereni, Miralli. Kalasamudram RF (ATP), NY 1197; Gupalapatnam (ADB), GO 4407; Maredumilli (EG), G.V.Subba Rao 2424 (MH).

Note: Santapau & Merchant (loc. cit) examined large number of plants from Bombay and other parts of India. All the specimens in Blatter Herbarium belong to umbellatum; the typical variety, dicoccum, they have seen only from Andhra and other places of South India.


Electronia parviflora (Lam.) Bedd. Fl. Sylv. S. India 124, 1872; Gamble 625 (441).

An armed shrub, up to 5 m tall; spines up to 3 cm, supra-axillary. Leaves elliptic-ovate, 2-3 x 1-2 cm,
Fig. 16. Ganthium dicoccum (Gaertn.) Teijn. & Birn. var. umbellatum (Wight) Sant. & Merch.

A. Stigma
B. Flower
C. Corolla
D. Stamen - ventral view
E. Stamen - dorsal view
F. L.S. of flower
G. Pistil
H. Berry
acute to attenuate at the base, entire margin, acute at apex, glabrous; petiole 0.4 cm; stipules linear. Flowers in axillary decussate, lax cymes, greenish white; calyx cupular, 1-lobed, 1 x 2.5 mm, glabrous; corolla 5 mm across, tube 1.5 mm, villous within, lobes 4, obovate, 2.5 mm, acute, spreading or reflexed; stamens 4, (sub) sessile, anther 0.7 mm, pointed at apex; ovary 0.7 x 1 mm, style 2.5 mm, stigma capitate. Drupe globose, 1 cm across, pyrens furrowed.

All dry plains districts, in scrub forests, especially on laterite and near the coast, very common. Fl. & Fr.: March - September. Loc. Name: Balasu, Chinnabalusu. Simhachalam hills (WSKP), MSG 5605; Bramhadevi (NLR), MSG 5642; Gundumala PF (ATP), TP & NY 716; Madhavaram RF (KNL), TP & RVR 1333; Loyapalli (GTR), VRK 3980; Devipatnam (EG), G.V.Subba Rao 27204 (CAL); Near Dongalacheruvu lake (CDP), K.Subramanyam 6314 (MH); Foot of the Kambakam hill (GTR), M.Chandrabose 45140 (MH); Near Hussain Sagar Dam (HYD), K.M.Sebastine 8025 (MH); Kondapalli hill (KSN), P.Venkanna 5589 (MH); Velagalapalli (KSN), A.W.Lushington 1223 (DD).

**Catunaregum Wolf**

Armed shrubs or trees. Leaves opposite, stipules interpetiolar. Flowers axillary, solitary or in corymbs;
calyx tube short, hairy without; corolla tubular, hairy within or without; stamens as many as corolla lobes, attached to the corolla lobes; ovary bilocular, ovules 2 on axile placation, stigma bifid. Berry globose.

1. Stipules ovate, acuminate; flowers in corymbbs, greenish white .................................................. \textit{C. spinosa}

1. Stipules triangular; flowers solitary, yellowish white .................................................. \textit{C. tomentosa}


A small armed shrub. Leaves elliptic - lanceolate or obovate, 1.5-3.5 x 1-1.5 cm, acute attenuate at base, entire margin, acute-obtuse at apex, sparsely pubescent above, densely pubescent below; petiole short, 0.5 cm; stipule ovate, acuminate. Flowers in axillary corymbbs, greenish white; calyx tube short, 1 cm, lobes 5, hairy without; corolla tubular, 6 mm, lobes 5, 4 mm, hairy without; stamens 5, attached to the base of the lobes, filament 0.5 mm, anther linear, 3.2 mm; ovary bi-locular, 5 mm, ovules 2 on axile placation, style long, 7 mm, stigma bifid, 2 mm. Berry
Fig. 17. *Catunaregium spinosa* (Thumb.) Tirveng.

- A & B: Twig
- C: Flower
- D: Calyx
- E: Corolla
- F: Stamen - ventral view
- G: Stamen - dorsal view
- H: Pistil
- I: Berry
globose, hairy, 3 x 2 cm. Fig. 17.

Common in scrub jungles in most districts.

Fl. & Fr.: February - June. Loc. Name: Manga. On the way to Bairavakona (NLR), MSG 5656; Baliguppa RF (ATP), NY 560; Sunkesula (KNL), AA 2091; Loyapalli (GTR), VRK 3977; Ankusapuram RF (ADB), GO 14358; Kodimial (KNR), G.V. Subba Rao 20141 (MH); Karaka (VSKP), C.A. Barber 1593 (MH); Elurinpeta block (SKLM), G.V. Subba Rao 62466 (MH).

Catunaregam tomentosa (Bl. ex DC.) Tirveng. in Taxon 27:515.


In Inda 3:110, 1880, non Wight & Arn.

A small armed tree up to 5 m tall. Leaves obovate-spathulate, 1.5-6 x 2-5.5 cm, attenuate at base, entire margin, acute at apex, scarsely pubescent above, slightly pubescent below, main nerves 5-6 pairs; petiole 2 cm; stipules triangular. Flowers axillary, solitary, yellowish white, scented. Berry globose, 2.5 x 2 cm, glabrous, crown small, rugose.

In Visakhapatnam and East Godavari districts.

Fl. & Fr.: April - October. On the way to Nulakamaddi (EG), G.V. Subba Rao 24540 (MH); Minimuluru towards Ontally (VSKP),
G.V. Subba Rao 30024 (MH); Chintapalli (VSKP), G.V. Subba Rao 28131 (MH); Dumakonda near Ganjigedda (EG), G.V. Subba Rao 68589 (MH).

Ceriscoides Tirveng.


An armed deciduous tree up to 4 m tall; spines leaf-bearing. Leaves thick-chartaceous, decussate, dimorphic, of lower branches ovate, 1.5-2.5 x 0.8-1.5 cm, of upper branches 4-9 x 2.5 cm, attenuate at base, entire margin, acute- apiculate at apex, hispid above, hirsute below, lateral nerves 8-10 pairs; stipules intrapetiolar, connate into a sheath. Flowers 5-merous, solitary or in lax cymes, pedicellate, white turning yellow with age; bracteoles lanceolate, free or connate. Berry globose, turgid, 5 x 4 cm; seeds numerous, embedded in fleshy pulp.

Occasional in dry deciduous forests in most districts. Fl. & Fr.: March - July. Bheemaram nursery (ADB), GO 5185; Bison hill (EG), C.A. Barber 5152 (MH); Diguva metta (KNL), 8052 (MH); Chodavaram (EG), M.S. Ramaswami 1498 (CAL); Balapalle (CDP), J.S. Gamble 11003 (DD).
Chassalia DC.


A small shrub, up to 1.5 m tall; branchlets compressed, glabrous. Leaves elliptic, oblong-lanceolate or sometimes obovate, 10-22 cm x 3.5-6.5 cm, attenuate at base, entire margin, acute - acuminate at apex, main nerves 8-10 pairs; petioles 2.5 cm, often obscure owing to the tapering of the leaf - blade; stipules intrapetiolar, short, 0.4 cm long, usually bifid. Flowers dimorphic in terminal trichotomously branched cymes, white. Berry size of a pea, depressed globose, dark-purple.

In the hills of Visakhapatnam, Eastern ghats at about 800 m. Fl. & Fr.: April - November. Minumuluru towards Padalammagudi (VSKP), G.V.Subba Rao 30038 (CAL).

Note: C. curviflora (Wall.) Thw. is restricted to Malay peninsula and Siam. It is quite distinct from C. ophioxyloides Craib.

Chomelia L. nom. cons.


A shrub, up to 5 m tall. Leaves sub coriaceous, elliptic-oblong, 6-10 x 1.5-4 cm, acute at base, undulate margin, acuminate at apex, glabrous, shining; petiole 1 cm; stipules interpetiolar, connate, acute. Flowers in terminal trichotomously corymbs up to 5 cm, white, scented; calyx campanulate, lobes 5, 1 mm, puberulous without; corolla salver form, tube 2 mm, villous within, lobes 5, oblong, 3.5 mm, reflexed; stamens 5, between the lobes, exserted, filament 0.5 mm, anther linear, 3 mm; ovary bilocular, 1 mm, style columnar, 4 mm, stigma fusiform. Berry globose, 0.6 x 0.6 cm, with a crown of calyx < lobes. Fl. & Fr.: Loc. name: Komi. Simhachalam hills (VSKP), MSG 5608; Penchala-kona (NLR), MSG & DAM 5660; Ankusapuram RF (ADB), GO 4374;
Fig. 18. A. Chomelia asiatica (L.) Yunzze in Simhasanam hills - Visakhapatnam district.

B. Sarcenia latifolia Aiton in Kavala RF - Adilabad district.
Deccania pubescens (Foth) Tirveng. in Nordic J Bot. 3: 456 1983. var. candolleana (Wight & Arn.) Tirveng. lec.

Randia candolleana Wight & Arn. Prodr. 39, 1834; FBI 3: 113; Gamble 616 (435).

A small tree, up to 5 m tall, often unarmed. Leaves orbicular or obovate, 10-16 x 6.5-10.5 cm, acute - attenuate at base, entire margin, obtuse at apex, densely tawny velvety; petiole 1.5 cm; stipule interpetiolar. Flowers axillary in short cymes, white. Berries clustered, glabrous, 1.2 x 1.3 cm.

In open forests of Anantapur, Krishna, Kurnool, Cuddapah and Nellore districts. Fl. & Fr.: September - May. Loc. name: Kondamanga. Penchakakona RF (NLR), MSG 5647; Vengalammacheruvu (ATP), TP & NY 2124; North Dhone RF (KNL), RVR 2518; Javaku (CTR), VRK 3874; Midway to Kailasakona hill (CTR), G.V. Subba Rao 46992 (CAL); Seshachalam hills (CDP), C.F.C. Fischer 15354 (CAL); Muchukota (ATP), J.S. Gamble 10764 (DD).
Note: Tirvangadum (1983) erected the genus Deccania for the section Gynopachys (=Aidia) of the Old world Randia. He transferred the Randia candolleana to Deccania pubescens by the characters of terminal flowers, stigma globose, seed non ruminate, testa cells non foveolate. The generic name was inspired by Boddome's epithet "deccanensis".

Dentella Forst. & Forst. f.

A small prostrate herb. Leaves small; stipules connate, scarious. Flowers solitary, axillary and in the forks of the dichotomous branches, sessile or pedicelled, white; calyx - tube globose, limb tubular, 5-lobed, persistent; corolla funnel - shaped, lobes 5, 2-3-toothed; stamens 5, in the middle of the corolla - tube, filaments short, anther linear; ovary bi-locular, ovules many on hemispheric placentas, style short, stigma filiform; seeds many, minute, angular, testa puncticulate.

1. A hairy herb, leaves elliptic, capsule densely villous with coarse hairs ..................D. repens
1. A glabrescent herb, leaves oblanceolate subspatulate, capsule glabrous ..............D. serpyllifolia
26.t.13.1776; FBI 3:42; Gamble 590 (416).
Oldeniandia repens L. Mant. Pl.40.1767.

An annual prostrate, hairy herb. Leaves elliptic
0.3-0.5 x 0.2-0.4 cm, acute - attenuate at base, entire
margin, acute - obtuse at apex; petiole 0.1 cm; stipules
connate, scarious. Flowers axillary, solitary, white;
calyx campanulate, lobes 5, equal, valvate, linear, 2 mm,
acute - acuminate, hairy without; corolla campanulate,
3 mm across, lobes 5, each 3-partile, midlobe oblong,
lateral lobes shorter, 4.5 mm, membranous, acute, villous
within the throat; stamens 5, between the lobes, attached
in the middle, included, filament 0.5 mm, anthers oblong,
1 mm; ovary bi-locular, globular, 1.5 mm, hairy without,
ovules numerous on axile placation, stigma subulate,
sessile. Capsule globose, 3 mm, indehiscent densely villous
with coarse hairs; seeds angular, punctate.

All plains districts in moist places, especially
in rice fields. Fl. & Fr.: May - November. Reddipalli
form, (ATP), NY 293; Kadam dam, near marshy ditch (ADE),
GO & DAM 5198; Near Dongalacheruvu (CDP), K.Subramanyam
6317 (MH); Cheedipalem (EG), G.V.Subba Rao 27433 (MH);
Kodimial (KRN), G.V.Subba Rao 20103 (MH); Pakhal lake(WGL),
K.M. Sebastine 13109; Moosi river Bank (HYD), K.M. Sebastine 5977 (MH); Near Pangamatiagedda near Singapuram (SKLM), G.V. Subba Rao 62342 (MH); Nandhavaram (NLR), M.S. Ramaswami 1167 (CAL).

Note: A herb forming network on damp muddy soil, grows vegetatively during rains and bears flowers and fruits with the drying of the mud. Its occurrence, however, is restricted to banks of ponds, ditches, and in rice field etc.


A dichotomously branched, prostrate herb, glabrous; stem 4-gonous. Leaves oblanceolate, subspathulate, 5-10 x 2.4 mm, narrowed at base, entire margin, acute or obtuse at apex. Flowers in axillary cymes, white. Capsule globose, glabrous.

In Srikakulam district near Vadavalasa. Fl. & Fr.: Almost throughout the year, but mostly in monsoon and the beginning of the winter. Vadavalasa (SKLM), G.V. Subba Rao 6240+ (CAL).
Note: *Dentella repens* Forst. & Forst. f. is the species most commonly found in India. *D. serpyllifolia* is not as common as *D. repens* and can be easily distinguished by its glabrous fruits. Verdcourt (loc.cit.) states - "I have compromised between Airy Shaw's treatment and the idea of Bakhuizen van der Brink who does not recognise *serpyllifolia* at all".

**Galium L.**

*Galium asperifolium* Wall. in Roxb. Fl. Ind. 1:381.1820; Gamble656(462). *G. mollugo* auct. non. L. 1753; FBI 3:207.

A scabrid herb or slender vine, stem four-angled. Leaves whorled, 4-8, oblong-linear, 0.4 - 1.5 x 0.2 - 0.4cm acute at base, entire margin, apiculate at apex, 1-nerved; sub-sessile; estipulate (stipulate only when leaves opposite). Flowers 4-merous, terminal or axillary, pedicel 1 mm, articulate, white; bracteoles minute. Capsule 1 x 2 mm, didymous, with 2 apical teeth.


**Gardenia Ellis nom. cons.**

Unarmed trees or shrubs. Leaves sometimes
ternate; stipules intrapetiolar, often connate. Flowers
terminal or axillary, solitary fascicled or cymose, some
times dimorphic and polygamous; large white flowers;
calyx tube ovoid or obconic, limb, tubular, lobed or
cleft; corolla tube long or short, lobes 5-11, overlapp-
ing to the left in bud, twisted; stamens as many as corolla-
lobes, adnate to the tube, sessile, or sub-sessile,
anthers linear; ovary uni-locular, ovules numerous, on
2-6 pericarpal placentation, style thick, stigma club-shaped
or fuliform, usually, bifid. Fruit often large, ovoid,
ellipsoid or globose, coriaceous, or fleshy berry with a
hard endosperm polished within. Seeds many, compressed,
testa thin.

1. Calyx lobes triangular, acute, stamens included...G. gummifera
1. Calyx lobes lanceolate, acuminate, stamens excluded:

2. Calyx & corolla lobes 5-11, berry globose....G. latifolia
2. Calyx & corolla lobes 5, berry

ellipsoid .............................................................G. resinifera

Gamble 618 (436).

A small tree, up to 3 m tall. Leaves oblong-
obovate, 2.5 - 6.5 x 1-3 cm, acute at base, entire margin,
acute - obtuse at apex, main nerves 10-18 pairs. Flowers
in axillary, solitary, yellowish white or white. Berry
Berry oblong or ellipsoid 2–4 cm.

Common in deciduous forests of all districts.

Fl. & Fr.: January - September. Loc. name: Manchibikki.

Penchalakona (MLP), MLC 5648; Bukkapatnam RF (ATP), TP & MV 2111; Loniabanda RF (KIL), KVP 1590; Cupalapetnam RF (ADB), GO 1403; Balapalli (CDP), J.L. Ellis 14279(MH); way to Papanasam (CTR), K.Subramanyam 7852 (MH); Chintapalli (VSP), G.V. Subba Rao 28138 (CAL); Badvel, Velikonda (CDP), J.S. Gamble 11240(CAL).

Gardenia latifolia Ait. on Fort. Frew, I:294, 1780; FRI 3:116; Gamble 619 (b36).

A tree, up to 25 m tall. Leaves broadly elliptic - obovate, 6-13 x 3-7.5 cm, acute - attenuate at base, entire margin, acute at apex, glabrous, main nerves 15-22 pairs. Flowers in short cyme, white; calyx tubular - campanulate, tube 1.4 cm, lobes 5-11, lanceolate, 1.3 cm, acuminate; corolla 1.4 cm across, tube 6 cm, pubescent without, lobes 5-11, oblong - obovate, 3 cm, thin - fleshy; stamens 5-11, sub exserted, anther 1.9 cm; ovary oblong, 2.9 cm, style 4.1 cm, stigma 2-lamellate. Berry globose, 1 x 3.5 cm, with a crown of calyx; seeds rugose. Fig. 1/9B, 19.

Common in dry deciduous forests of most districts.

Fl. & Fr.: Throughout the year. Loc. name: Pedda bikki.

Penchalakona (MLP), MLC & DAK, 5648; Gundumala (ATP), MV 1232;
Fig. 19. Gardenia latifolia Aiton

A. Twig
B. Flower
C. Calyx
D. Corolla
E. Stamen - dorsal view
F. Stamen - ventral view
G. Pistil
H. Capsule
Gardenia resinifera Roth Nov. Pl. Spec. 150.1821. l. lucida
Roxb. Fl. Ind. 2:553.1824; FBI 3:115; Gamble 618 (436).

A tree, up to 10 m tall. Leaves elliptic - ovate,
6-16 x 3.5 cm, attenuate-rounded at base, entire margin abtuse -
acute at apex, glabrous above, pubescent below, main nerves
20-30 pairs; petiole 0.5 cm. Flowers axillary, solitary, white.
Berry ellipsoidal, 3.5 x 2.5 cm, with a crown of calyx; seeds
rugose.

Common in dry deciduous forests of most districts.
Fl. & Fr.: January - April. Loc. names: Yetti bikki, Malasamu-
dram RF (ATP) 22 2953; Upper Ahobilam FF (KML), TVR 2759;
Kotagalli TF (ADB), CO 4521; Tambakam hills (CTR), H.Chandrabose
45077 (MH); M.Duraimurin, J.S.Gamble 15302 (MH); Aklaspur FF
G.V.Subba Rao 22505 (MH); Chinnalettipattidiavati (CDP),
C.E.C. Fisher 4781 (CAL); K.V.Subramanyan 2231 (DD).
Geophila D. Don nom. cons.

Geophila repens (L. Johnston in Sargentia 9:221, 1849).


1825; MLB 3: 178; Gamble 643 (453).

A small creeping herb, stem prostrate, rooting at the nodes, filiform, puberulous. Leaves orbicular, 1.7 x 2 cm, deeply cordate at base, pubescent or glabrous; petiole 2 cm long, pubescent; stipules broadly ovate, obtuse. Flowers terminal, solitary or in peduncled 2-3-flowered umbels bracts lanceolate-subulate. Drupe globose, 0.1 cm, crowned with the large calyx-limb, smooth, scarlet when ripe.

Rare in moist situations of interior forests and hills areas in Srikakulam and East Godavari districts (Rolla Rao & Hara Sreeramulu, 1936). Fl. & Fr.: July - September.

Note: - It is an interesting record for the Eastern ghats. The species is known so far from the Khasi hills of Meghalaya and the Western ghats of the mainland of India and also from the Andaman and Nicobar Islands, Rolla Seshagiri Rao and Hara Sreeramulu's collection from the Srikakulam district and also similar collection from the ghats of the East Godavari districts establish the possible continuity of distribution on the Indian
main land from the western ghats towards the north-eastern direction to Khasi hills and surroundings through the Eastern ghats. There is every possibility of locating the species along the southern part of the Eastern ghats of Andhra Pradesh and Karnataka and also the North-Eastern ghats of the Orissa state.

**Guettarda L.**

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**Guettarda speciosa L.** Sp. Pl. 961.1753; FBI 3:126.

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An evergreen tree, up to 10 cm tall. Leaves decussate, clustered sub-coriaceous, ovate-ovate, 8-14 x 5-8 cm, rounded -acute at base, entire margin, obtuse - shortly acute at apex, puberulous along nerves above, pubescent below, main nerves 6-9 pairs; petiole 2 cm; stipules interpetiolar, foliaceous, caducous. Flowers white in cymes in axils of fallen leaves, cymes helicoid. Drupe woody globose, obscurely lobed.

Often cultivated at many places along East Coast.

Fl. & Fr.: Venkatatiri hills (MLR), E.Suryanarayana 4112; Yanam Botanic garden, T.Amanda Rao 7307 (CAL).

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**Haldina Ridsd.**

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A small tree up to 10 m tall; tender parts pubescent. Leaves thick, characeous, cordate, 9-23 x 7-27.5 cm, cordate at base, entire margin, acuminate at apex, puberulous along nerves above, pubescent below, lateral nerves 8-10 pairs; petiole 5 cm; stipules intrapetiolar, caducous. Flowers 5-merous, in axillary; globose heads, peduncle 12 cm, yellowish white; bracts small near the top of the peduncle; bracteoles numerous, filiform, hairy. Capsules clustered, 4 mm, breaking in to 2 follicular cocci.

In dry deciduous forests of all districts.

Fl. February - November; Fr. June - November, Loc. name:
Dandaru, Rudraganpa, Peddakamga, Penchakakora RF (MLR), 1800 & 1800
5661; Balugrav, (KIL), TP & KNR 2742; Paragav RF (AB), 100
4482; Guvvelecheruvu along the stream, (CDP), K.Subramanyan
6398 (MN); Rampachodavaram (EC), "L. Subba Rao 24465 (MN); Pathalaganga (KIL), J.L. Ellis 16941 (M); Nadikonakuta - Narasapur (MD), K.M. Sebastine 6744 (M); Near rest house Pakhal (WCL), K.M. Sebastine 13181 (CAL); Lakshmipuram (WKL),
C.A. Barber 1757 (MH); Papikonda RF (WC), D.C. Raju 520 (CAL); Nagaluty - Bairluty Range (KIL), K.N. Subramanyam 3366 (CD).

Note: - This species has so far been treated in florae under Adina cordifolia (Roxb.) Hook.f. ex. Brandis. But Ridsdale (1.c) in his revision of tribe Haucteae s.s.
feels that the Indian taxon does not belong to the genus Adina Salisb., which does not occur in India and has therefore, raised the monotypic new genus Haldina Ridsd. to accommodate it. He differentiates the two as follows:

1. Terminal vegetative and loosely surrounded by stipules, stipules more or less free in bud, deeply bifid, somewhat persistent, ovules up to 4 per locule .......................................................... Adina

1. Terminal vegetative bud flattened, stipules depressed in bud, entire, pubescent, keeled ........... Haldina

Note: - In this work we have followed the broad concept of Backer and Bakhuizen f. (Fl. Java 2:294.1965) and Lewis, W.H. (Rhodora 63:216.1961) who treated the genus Oldenlandia L. under Hedvotis L. while including other genera like Exallage Bremek and Kohautia Cham. & schlecht. Though Bremekamp (verh. kon. Ned. Akad. Wet. 11,43 (2): 25.1952) and a few others have treated these genera separately, namely Oldenlandia L. based on numerous minute angled seeds with fleshy endosperm in wholly inferior capsules and monomorphic flowers with very short corolla tube and Exallage Bremek, created on the basis of indehiscent fruit, they do not stand as distinct genera.
Erect, prostrate or diffused herbs; usually dichotomously branched. Leaves opposite, rarely ternately whorled; stipules interpetiolar, pinnately fringed. Flowers in terminal or axillary, pedicled cymes, rarely solitary, white or pink or sometimes blue; calyx teeth 4 or 5, persistent; corolla campanulate or funnel-shaped, lobes 4 or 5; stamens 4 or 5, in the throat of the corolla-tube, included or exerted; ovary bilocular, ovules numerous, style filiform, stigma 2. Capsule indehiscent or dehiscent loculicidally or rarely at the top; seeds numerous, minute.

Note: Tao & Hamedri (in Indian For. 99:372-379, 1953) recommend the fusion of Kohautia & Oldenlandia into one genus Ledvotis L.

1. Leaves elliptic or ovate-lanceolate:
   2. Capsule indehiscent, stipules hispid........H. auriculata
   3. Flowers in solitary 1-2-flowered peduncled cyme ..............................................H. pumila

1. Leaves linear or linear-lanceolate:
   4. Flowers in exclusively terminal cymes, corolla tube slender;
   5. Anther included, non coastal plant:
      6. Leaves, fascicled, capsule scabrous...H. aspara
      6. Leaves opposite, capsule glabrous......H. gracilis
5. Anther exerted, coastal plant........H. craminifolia
4. Flowers in terminal and axillary panicles, clustered, few-flowered cymes and umbels:
7. Flowers white, peduncles 1-flowered:
8. Capsule valves short, corolla-tube short and broad, diffuse herbs:
9. Flowers pedicelled, usually in pairs or threes .........................H. corymbosa
9. Flowers sessile or sub sessile, solitary .........................H. diffusa
8. Capsule valves elongate, corolla-tube slender, erect herbs..............H. herbecae
7. Flowers blue and pink, peduncled, 1-many-flowered:
10. Flowers in panicles, stamens included ......................................H. affinis
10. Flowers in capitately clusters, stamens (sub) exerted:
11. Flowers blue, erect herb..............H. caerulea
11. Flowers pinkish, diffuse herb..............H. pinnatifolia

An annual erect herb, up to 35 cm tall. Leaves linear, 1-3 x 0.1-0.3 cm, decurrent at base, entire margin, acuminate at apex, glabrous; sub sessile. Flowers in terminal and axillary dichotomous panicles, blue; calyx truncate 2 mm, lobes ½; filament 0.2 mm, anther oblong, 0.75 mm; ovary 0.3 mm, style linear, 1.25 mm, stigma bifid, 1 mm. Capsule loculicidal.

Occasional weed of road sides and open forests in all districts. Fl. & Fr.: June - December. Panchalakor FF (MLR), DCG 5653; Alurifora (ATP), TF & M 1131; Upper Ahobilam (MLR), TF & DUR 2725; Turnileru river Godavari agency, A.A. Barber 5298 (MH); Kad酮ons Vuttanarsapur (ID), L.S. Sebastian 6750 (MH); Anantadri (WSIP), T.S. Subba Rao 21733 (MH); way to Bairani, Diguvametta (PRM), J.L. Ellis 32453 (CAL); way to Papikonda TF (W.C.), B.C. S. Raju 430 (CAL); Morsely Bonala (GTA), J.S. Gamble 15132 (DS).


An annual erect herb, up to 30 cm tall. Leaves whorled, linear, 2.5-4 x 0.2-0.6 cm, attenuate at base, entire or undulate margin, acute at apex, pubescent; sub sessile. Flowers in terminal lax racemes, 6-13 cm, purple; calyx-tube
short, 0.5 mm, lobes 5, triangular, 2 mm, scabrid; corolla tubular 3 mm across, tube narrowly cylindric, 16 mm, inflated above, lobes 5, 2.5 mm, acuminate; stamens 5, filaments small, 1 mm, anther 1.75 mm; ovary 2 mm, style 8 mm, hairy, stigma bifid, 1 mm. Capsule 3 x 4 mm. Fig. 20.

Very common in waste places and road sides.

Fl. & Fr.: July - December. S.F. University (ATP), JSC 5631; Penukonda (ATP), MV 1093; North Dhone RF (KHL), RVR 1633; Anupu (CTR), L3K 3509; on the way to Anuddakonda, Adoni (KHL), D.B. Debate & Ganguly, ACC 24676 (MH); on the way to Amudalakona (CTR), L.V. Subba Rao 46758 (CAL); Nagarjunakonda, K. Thothathri 9835 (CAL); ICRISAT (MDK), LJG. van der Faesen 3900 (CAL); Gurankonda (CDP), J.S. Gamble 20914 (DD).


An annual, usually trailing herb, stem glabrous, four-angled. Leaves ovate-oblong or lanceolate, 2.5-6 x 1.5-2.5 cm, rounded at base, entire margin, acute at apex, prominently nerved; sub sessile; stigule short, membranous, hirsute, with few erect teeth. Flowers in axillary sub sessile cyme, white; calyx 4.5 mm across, lobes 4, elongate, larger than the corolla lobes, hairy without; corolla 4 mm across, lobes, 4, scabrid spines within; stamens 4, filament short, 0.25 mm,
Fig. 20. Hedyotis aspera Heyne ex Roth

A. Twig
B. Full flower
C. Calyx
D. Corolla
E. Stamen ventral view
F. Stamen forsal view
G. L.S. of flower
H. Capsule
stigma bifid. Capsule globose, indehiscent, 2 mm.

In the forests of Visakhapatnam, East Godavari and Khammam districts in hilly country. Fl. & Fr.: July - December. Loc. name: Nela adavikal. Araku valley (VSCP), MSG 5625; Kothugudem RF (KU), 52 745; Naredumilli (EC), C.V.Subba Rao 24203 (MH); Ranjalledu (VSCP), C.V.Subba Rao 44492 (MH); Araku valley (VSCP), K.P.Balakrishnan 10775(CAL); Kota, Rampa (EC), V.Narayanswami 529 (CAL).


An annual diffuse glabrous herb. Leaves linear-lanceolate, 0.7-1.7 x 0.1-0.2 cm, decurrent at base, entire margin, acute at apex, glabrous. Flowers in terminal cyme, purple. Capsule 0.1 x 0.2 cm.

In the forests of Srikakulam, Visakhapatnam and Chittor districts. Fl. & Fr.: September - December. Chandragiri forests (CTR), K.Subramanyam 6968 (MH); Circuit house, Visakhapatnam, G.V.Subba Rao 21460 (CAL).

Hedyotis caerulea Wight & Arn. Prodr. 412. 1834; RBI 3:60.

An annual erect scabrid herb, up to 20 cm. Leaves appearing clustered, linear-lanceolate, 1-1.5 x 0.1-0.2 cm, shortly decurrent at base, undulate margin, aristate at apex, scabrid on both sides; sub sessile; stipule truncate, with 6-8 pectinate bristles. Flowers terminal, sub sessile, 2-4 flowers in capitate clusters, blue. Capsule crustaceous, hardly dehiscent, 0.2 x 0.1 cm, hispid.

In Kollur and Chiragore districts. Fl. & Fr.: June - September. Fuel coup East of Nerabalu (CTR), L.V. Subba Rao 4697 (MH); Varandi (MLR), J.S. Gamble 21745 (DD).


An annual erect, scaberulous herb. Leaves linear-lanceolate, 1.5-3 x 0.7-1.2 cm, decurrent at apex, undulate margin, acute at apex, scabrid prominently nerved. Flowers in axillary peduncled cyme, usually in pairs, white; calyx tube short, triangular, 2 mm across, lobes 5, 0.2 mm scabrid; corolla tube short, 1 mm, lobes 5, 1.5 mm; stamens 4, filament short, 0.5 mm, anther 0.75 mm ovary 1 mm, style slender 1.25 mm, stigma bifid, 0.5 mm. Capsule loculicidal, 3 x 2 mm. Fig. 21.

Common in forests and in cultivated fields. Fl. & Fr.: June - January. Galikonda (VSKP) LEG & BR 5616; Krishnapatnam (MLR), LEG & DAM 5641; Nuthukuru (MLR), MSG 5646;
Fig. 21. *Hedrotis herbaeae* L. & *Hedrotis corymbosa*(L.) Lam

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<th>A-1</th>
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<td>Stamen - ventral</td>
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<td>A-6</td>
<td>Pistil</td>
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A annual diffuse herb, up to 25 cm tall.
Leaves decussate, chartaceous, linear, 2-4 x 0.2-0.4 cm, decurrent at base, undulate margin, acute apiculate at apex, 1-nerved; sub sessile. Flowers in axillary pairs or solitary, white, shortly pedicellate, pedicel up to 3 mm. Capsule loculicidal, 3 x 3 mm with persistent, calyx lobes, acute.

Occasional in moist places in Visakhapatnam, East Godavari and Adilabad districts. Fl. & Fr.: July - November.
Ankusapuram (ADB), GO l316; Araku towards Joraput (VSKP), G.V.Subba Rao 19697 (MH); Naredurilli. (BG), G.V.Subba Rao 212406 (CAL).

Hedyotis gracilis Wall. in Roxb. Fl. Ind. 1:371. 1820.

Ic. t.32.1863-1874, non Heyne ex Roth 1821. Lobautia gracilis (Wall.) DC Prodr. 4:430.1830.
An annual erect herb, up to 30 cm tall. Leaves opposite, decussate, linear - lanceolate, 3-6 x 0.2-0.5 cm, decurrent at base, entire margin, acute at apex, glabrous; sessile. Cymes terminal, 20 cm long, peduncle 10 cm long. Flowers light pinkish bracts minute. Capsule didyrous, 0.1 x 0.2 cm.

In the forests of Viscshapetnam district. Fl. & Fr.: November - June. Arakuvalley (VSKP), D. Daniel Sunderarai 213222 (MH); Galikonda (VSKP), G.V. Subba Rao 19613 (MH); Chintapalli (VSKP), G.V. Subba Rao 20721 (CAL).

Hedystis graminifolia L.f. Suppl. Pl. 119.1781.

1. Leaves glabrous, flowers in long slender branching subracemose cymes ............... H. graminifolia var. graminifoli

1. Leaves scabrid, flowers in short close cymes

................. H. graminifolia var. shuteri


An annual erect, glabrous herb, up to 35 cm tall. Leaves chartaceous, linear - lanceolate, 1.5-4 x 0.2-0.5 cm, decurrent at base, undulate margin, acute at apex, 1-nerved; subsessile. Flowers in terminal, unilateral, lax panicled raceme, raceme up to 10.5 cm, flowers purplish white; calyx
tubular, lobes 2.5 mm, acute; corolla 3 mm across, 
campanulate, 4 mm, lobes 4, oblong, 6 mm, acute; stamens 4,  
exserted, filament 2.5 mm, anther linear, 3 mm; ovary 3 mm, 
style 6 mm, stigma linearly bifid, 2 mm. Capsule loculicidal,  
5 x 3 mm, crown protruded. Fig. 22.

On sandy sea shore lands of Vellore and Srikakulam  
districts. Fl. & Fr.: December - April. Bramhadevi (MLR),  
NEC & DAD 5663; Kypadu (MLR), ISC 5663; Bamau West, (SKLM),  
G.V.Subba Rao 62320 (US).

Camble 602 (h-25). Hedyotis shuteri (Hook.f.) R.Pao &  

An annual erect scabrous herb; branches stout, woody  
below, ascending, sparingly divided. Leaves short, linear -  
lanceolate, 1.25 - 2 cm long, decurrent at base, undulate margin,  
acute at apex, scabrid; subsessile; stipules truncate. Flowers  
terminal, short, close cyme. Capsules pedicelled, small ovoid.  

In Chinnaganzam of Prakasam district. Fl. & Fr.:  
July - November. Chinnaganzan (PHS), L.S.Camble 12376 (CAL).  
ex. C.Don Gen. Syst. 3:531, 1834; FBD 1:65. Q. herbacea (L.)  
Roxb. Fl. Ind. 1:445,1820; Camble 601 (h-2b).
Fig. 22. Hedyotis graminifolia L.f. var. graminifolia

A. Twig
B. Full flower
C. Calyx
D. Corolla
E. Stamen ventral view
F. Stamen dorsal view
G. Pistil
H. Capsule
An annual erect herb, up to 30 cm tall. Leaves opposite, decussate, linear-lanceolate, 2.5-5 x 0.2-0.4 cm, decurrent at base, entire margin, acute at apex, glabrous, turning black when dry; sessile. Flowers axillary, solitary, some times 2 in each axil, white; calyx tubular, 0.5 mm, lobes 4, lanceolate, 1.25 mm, acute; corolla 2 mm across, tube 3 mm, lobes 4, ovate, 2.25 mm, acute; stamens 4, included, filament 0.5 mm, anther oblong, 0.75 mm; ovary, 1.25 mm, style 3 mm, stigma bifid, 1.5 mm, hairy. Capsule loculicidal, 2.5 x 2 mm, crown protruded; seeds reticulate. Fig. 21.

In most districts both in plains and hills of Circars and Deccan. Fl. & Fr.: June - December. Simhachalam hills (VSIP), ESG 5604, 5605; Dharmapuri PF, (ATP), EN 692; Owk (EHL), FVP 3034; Bijjur PF (ADB), GO & FVP 12931; Madikonakutta, Narasapur (VJ), K.J. Sabatina 6720 (CAL); Bison hills (EG) C.A. Barber 5684 (CAL); Thummalapenta (NLJ), J.S. Gamble 21926 (CAL); Kottakota (ATP), J.S. Gamble 20882 (DD).


An annual ascending or prostrate herb, 4-angled. Leaves sub-coriaceous, elliptic-lanceolate, 2.5-4.5 x 0.6-1 cm, attenuate at base, undulate margin, acute or acuminat at apex, glabrous, shining above, pale white below; subsessile; stipules
with many long hair like bristles. Flowers small, in axillary clusters, white. Capsule dehiscent at the top, 0.6 x 0.4 cm.

Eastern ghats & hills of North circars. Fl. & Fr.: October - December. Gundlabrahmeswaram FT (KMY), RVB 2366; Mogulutta locality - Chinnamontenals (KMY), J.L.Ellis, l2286 (MH); Sekabolu - Talakona (CTR), G.V.Subba Rao 31691 (MH); Ramna hills (TC), K.S.Tameswari 1523(CAL); Ramanapenta (KMY), J.L.Ellis 2633 (CAL).

Hedyotis pipifolia Wall. ex C.Don Gen. Syst. 3: 525. 1834; FBI 3:60.

An annual, slender, diffuse wiry, much branched herb; branches four-angled, angles sometimes hispid. Leaves very linear, decurrent at base, undulate margin, acuminate at apex, scabrid above, 1-nerved; stipule very short with many rigid bristles. Flowers in terminal and axillary cymes. Capsule ovoid, crustaceous, rarely coriaceous, loculicidal on the crown only, hispid.

Included on the authority of Varthkeyan (1933).

Hedyotis puberula (C.Don) Arn. Fugill. Fl. Ind. or 3:2. 1836
Oldenlandia puberula C.Don Gen. Syst. 3:530. 1834.

1792. non Wall. 1788. Oldenlandia Lightii Hook.f.
wightii (Hook.f.) K.K.Nair in J.Bombay Nat.Hist.

An annual or perennial herb, up to 15 cm. Leaves
decussate, appearing clustered. linear, 1.5 x 0.3 cm, decurrent
at base undulate margin, acute—apiculate at apex, or
scabrous; sub sessile. Flowers in terminal or in upper
axils, capitate clusters, single or paired, white; calyx
truncate, 2 mm across, lobes ½, lanceolate, 3 mm, puberulous
without; corolla 5 mm across, campanulate, lobes ½, lanceolate,
4 mm, acute, incurved; stamens ½, exserted, filament 2 mm, anther
oblong, 1.75 mm; ovary 2 mm, style linear, 5.25 mm, hairy,
stigma bifid. Capsule loculicidal, 1 x 2 mm.

Occasional weed of waste lands, road sides and in open
forests in all districts. Fl. & Fr.: August - January. Loc. name:
Chiriveru Kypadu, rice field near the coast (MLP), ISC 5665;
S.N.University (ATP), ISC 5630; on the way to Bairavakona
(ILR), ISC 5658; Vythukuru (ILP), ISC 5645. Kalasamudram PF
(ATP), ISC 23:1; Pangapuram PF (VNL), P.Venkanna 5221 (MV);
Pegerikutte, East Narsapur (MDK), K.M.Sebastine 6609 (MV);
Nagarjun Nagar, (VLC), K.M.Sebastine 07:0 (MV); Pyapali, (VNL),
J.S.Gamble 16351 (MV); Gunjag river side (CTP), J.L.Ellis 14078
(MV); Karimnagar rest house compound (ITK), G.V.Subba Rao 62318

An annual diffuse herb. Leaves elliptic - oblong, 0.7 - 1.5 x 0.3 - 0.5 cm, decurrent at base, entire margin, acute at apex, glabrous; sessile - subsessile. Flowers in terminal and axillary, 1-2-flowered cyme, white. Capsule, 0.3 x 0.2 cm, glabrous.

In Godavari, Visakhapatnam districts. Fl. & Fr.: September - December. Samalkot (MG), C.V.Subba Rao 16823 (MH); Araku Valley (VSI), C.V.Subba Rao 21550 (MH).

Hydrophyllax L. f.


A prostrate herb, rooting at the nodes, stem four-angled. Leaves decussate, oblong - spatulate, 0.6 - 1.3 x 0.4 - 0.6 cm, decurrent at base, entire margin, acute at apex, glaucescent above and below; subsessile; stipules connate into an entire or toothed sheath. Flowers axillary, solitary or fascicled, lilac. Capsule drupaceous, ellipsoid, 0.8 x 1.8 cm, indeliscent. Corks, compressed.
East coast on sandy dunes in Yelluru, Srikakulam and Visakhapatnam districts. Fl. & Fr.: January - August. Tamara-
patnam (MLR), C.R.C. Fischer 1433 (CAL); Ramayapatnam (MLR),
K.C. Jacob 1833 (ML); Near Forest nursery, Tarua (SKL),
C.V. Subba Rao 62322 (ML), Waltair (VSIP), P.L. Prodlock sn
(CAL); Srikarikota (MLF), J.S. Gamble 12764 (DD).

Hy menodicyon Wall. nom. cons.


(Roth.) Wall. in Roxb. Fl. Ind. 2:149.1824; FBI 3:35;
Gamble 589 (146).

A deciduous tree, up to 25 m tall; tender parts
pubescent. Leaves chartaceous, secundate, elliptic - ovate,
13-22 x 5-12 cm; acute - (attenuate at base, entire margin,
acute-shortly acuminate at apex, pubescent above, slightly
pubescent below, main nerves 3-10 pairs; petiole 8 cm; stig-
ules interpetiolar, leafy, membranous. Flowers in terminal and
axillary paniculate raceme, faintly scented, greenish. Capsule
obovoid, 2 x 1 cm, loculicidal.

In deciduous forests of most districts. Fl.: July -
September Fr.: January - February. Loc. name: Dudippa, Palapalli
hill (CDP), J.S. Gamble 10201 (CAL); Isagundam river, Duvvamatta.
Shrubs or small trees. Leaves opposite, thick, stipules interpetiolar. Flowers 1-5-flowered in terminal trichotomously branched, often corymbose cymes; bracts leaf-like, coriaceous, bracteoles 2; calyx tube ovoid, rarely 5-lobed, the lobes persistent; corolla in hypocrateriform, tube long, slender, lobes 4, rarely 5, twisted in buds, reflexed in flower; stamens 4, rarely 5, on the mouth of corolla, filament short; anthers slender, bifid at base, mucronate at tip; ovary 2-locular, ovule solitary in each locale, style filiform, stigma fusiform, slender, bifid. Fruit globose; seeds peltate, often 1 only, the others undeveloped, testa membranous.

1. Calyx - lobes manifestly longer than the tube...I. finlaysoniana

1. Calyx - lobes minute, manifestly shorter than the tube or equal to the tube:

2. Calyx - lobes reduced to mere teeth, leaves obtuse at the apex I. arborea

2. Calyx - lobes not reduced to mere teeth, leaves acuminate at the apex I. undulata
**Ixora criniflora** Roxb. ex Smith in Rees, Cyclop. 19:5. 1811.


A small tree, up to 2.5 m tall. Leaves coriaceous, elliptic-obovate, 7.5 - 13.5 x 3.5-6 cm, rounded or cordate at base, entire margin, obtuse or rarely acute at apex, glabrous, main nerves distinct; petiole very short, 0.6 cm; stipules sheathing, acuminate. Flowers in terminal branched cymes, white; calyx truncate, lobes 4, 0.5 mm; corolla tubular, 12 mm, lobes 4, oblong, 5 mm; stamens 4, filament 1.75 mm, anther oblong, narrowed at base, 5.75 mm; ovary globose, 1.75 mm, style filiform, 14 mm, hairy, stigma bifid, 2 mm. Berry didymous, 0.7 x 0.8 cm. *Fig. 23A & 24.*

Common in dry deciduous forests of all districts.

Fl. & fr.: March - June. Loc. name: Korivi, Narasimhulu Konda, (MLR), MEC 5667; Platevakona RT (MLR), MEC & DMS 5671; Kotta Kota RT - Bukkapatnam (ATP), TP & NY 2105; Pacharuvu (KML) NVR & PVR 2164; Devapur. (ADB), GO & PVR 4242; Between Gumma & Domalai (SDP), G.V.Subba Rao 62424 (KH); Carikabanda, (VSP), G.V.Subba Rao 47226 (KH); Krishna forest, B.L. Badhane 321 (KH); way to Tirmulai (GB), K.Subramanyam 780 (MI); Balapalle (TP), J.L. Ellis 15702 (CAL); Devapatnam (EG), G.V.Subba Rao 7241 (CAL).
Fig. 23.  
A. Ixora arborea Roxb. ex Smith in 
Gandhari PF - Mizenabad district.  

B. Knoxia nigriiana Wall. in Palkonda 
hills - Cuddapah district.
Fig. 24: *Ixora coccinea* Roxb. ex Smith

A. Twigs
B. Full flower
C. Calyx
D. Corolla
E. Stamens - ventral view
F. Stamens - dorsal view
G. L.S. of flower
Ixora finlaysoniana Wall. ex G.Don Gen. Syst. 3:572. 1834;
Gamble 629 (K). A small tree or shrub, up to 8 m tall. Leaves coriaceous, elliptic - obovate, 5-15 x 1-5 cm, acute - cuneate at base, entire margin, acute at apex, glabrous; petiole short, 0.6 cm; stipules sheathing, acute. Flowers in terminal corymbs, white; bracts small, linear, 2.5 mm; bracteole lanceolate, 5 mm; calyx truncate, 4 mm across; lobes 5, longer than the tube, 6 mm; corolla tube 4 mm across, lobes 5, oblong, 4.5 mm; stamens 5, filaments 1 mm, anther 2 mm; ovary 1.5 mm, style small, linear 1 mm, stigma bifid, 1.5 mm. (in bud). Berry globose. Fig. 25.

It appears wild in the forests of Cuntur and East Godavari districts. It is also cultivated as an ornamental. Fl. & Fr.: March - September. Vijayapuri South (CTR), V2K 6726; Yanam (36), C.V.Subba Rao 68708 (MI).

Ixora undulate Roxb. Fl. Ind. 1:395. 1820; WTI 3:1147; Gamble 631 (K).

A shrub, up to 3 mm tall. Leaves coriaceous, elliptic or elliptic - lanceolate, 3.5 - 11.5 x 3-1.5 cm, attenuate or rounded at base, undulate margin, acuminate at apex, glabrous, main nerves distinct, pale brown when dry.
Fig. 25: *Ixora coccinea* Wall ex. G.Don.

A. Twig
B. Bract
C. Bracteole
D. Calyx
E. Corolla
F. Stamen
G. Pistil
Flowers in terminal, slender branches of peduncled brachiate panicles, white; calyx lobes minute; corolla tubular, 1.5 mm across, 9 mm, lobes ½, oblong, 3 mm; stamens 4, filament 2 mm, anther 3.5 mm; ovary globose, 1 mm, style filiform, 1 cm, hairy, stigma bifid, 1 mm. Berry globose, 0.4 x 0.5 cm.

Rare in deciduous forests of Srikakulam, Visakhapatnam and Kurnool districts. Fl. & Fr.: April - September. Rangapuram R3 (KIL), MVR 3068; Tacherla R3 (KIL), 1366; Near Gummada. (SILM), C.L.Subba Rao 62442 (M); Test of Inspection Bengalou (VSKP), C.L.Subba Rao 10536 (M); Near Vantlamidi, Pedur-Narasipatnam (VSKP), C.L.Subba Rao 147365 (CAL).

Knoxia L.

Bent herbs or undershrubs, stems terete or obscurely angled. Leaves opposite: stipules connate with the petiole in a sheath. Flowers sub sessile, on the elongating branches of terminal cymes, white-pink, lilac or purple; abracteolate; calyx-tube ovoid, lobes ½, minute, persistent; corolla-tube long, the throat usually villous, lobes ½; stamens 4, included or exserted, anther linear; ovary bilocular, ovule 1 in each locule, pendulous, style filiform, stigma bifid, included or exserted. Fruit small of 2 semi-terete indehiscent mericarps separating from an entire of bifid columella; seeds with membranous testa.
1. Stipule - bristles hirsute, pericarps connate;
2. Leaves linear - lanceolate or oblanceolate,
lateral nerves 7-9 pairs, cyme lax with elongating branches .................. *K*. *sumatrensis*

2. Leaves elliptic to ovate or oblong,
10-12 pairs, cyme dense with short subumbellate branches .................. *K*. *mollis*

1. Stipule - bristles glabrous, pericarps separating from the base .................. *K*. *victiana*


An erect herb, up to 75 cm, inter nodes very long, 8.5 cm. Leaves elliptic-ovate, 5-7 x 0.7-1.5 cm, attenuate at base, entire margin, acute-shortly acuminate at apex, hirsute above, hairs along the nerves below; petiole 0.5 cm; stipules inter petiolar. Flowers terminal, subumbellate, purplish; Calyx 4 mm across, lobes 4, unequal, 2 short, 1.5 mm, 2 long, 1.75 mm; corolla tubular, 4 mm across, tube 6 mm, lobes 4, oblong, 1 mm; stamens 4 attached at the throat of the corolla lobes, filament 1 mm, anther linear, 1.75 mm; ovary 1 mm, style linear, 12 mm, stigma bifid, 2 mm. Capsule 2 mm. Fig. 26.

In forests of Visakhapatnam district at 1000 m.
Fl. & Fr.: October - January. Calikonda (V3KP), MSG 5617.
Fig. 26. <i>Proximia mollis</i> R.Fr. ex Night & Am.

A. Twix
B. Full flower
C. Calyx
D. Corolla
E. Stamen - ventral view
F. Stamen - dorsal view
G. Pistil
Sunkarinetta (VSIP), C.V. Subba Rao 21693 (MI); Cherukonda (VSIP), C.V. Subba Rao 28160 (MI).


An erect herb, up to 1 m tall, slender, hairy. Leaves narrow, linear-lanceolate, 4-11.5 x 0.8-1.8 cm, attenuate at base, entire margin, acute-acuminate at apex, hairy above, more so below, especially on the nerves; sessile or shortly petioled 1.5 cm; stipules with 3-5 filiform hairy bristles. Flowers in terminal corymbose cymes white or bluish white. Capsule 2 mm, small.

All districts, chiefly on grass lands, in woodland and up to about 1500 mts in the hills. Fl. & Fr.: February-December. Simbachelan hills (VSIP), ISC & BE 7612; Peccheruvu RF (KIL), JVR 2171; Sirinaka, C.A. Barber 4695 (UH); Chintakunta (CDP), J.S. Gamble 21473; Talakona RF (CTR), C.V. Subba Rao 46948 (UH); Gollalayikonda (EO), C.V. Subba Rao 67538 (MI); Cherukonda, (VSIP), C.V. Subba Rao 29745 (CAL); Solur (SHL), N.P. Balakrishnan 964 (CAL); Vetalugodu (MLR), K.N. Subramanyan 3755 (DD).


An erect woody herb or shrub; branches slender, stiff, glabrous. Leaves obovate-lanceolate, 2-4 x 0.6-1 cm, rounded at
base, entire margin, acute - acuminate at apex, glabrous, prominently nerved, main nerves 8-10 pairs; petiole 0.4 cm; stipules triangular, glabrous. Flowers in terminal trichotomous panicles, pinkish white; bracts and bracteoles persistent, bracts just like stipules, linear - lanceolate; Calyx-tube short, lobes 4, unequal triangular, 2 long, 1 mm, 2 short, 0.75 mm; tubular, 12 mm, lobes 4, lanceolate, 3 mm, granular like structure at the tip, hairy without stamens 4, filament very long, 6 mm, anther linear, 3 mm; ovary conical, 2.5 mm long, style 0.5 mm, stigma linearly bifid, 1 mm, papillose. Capsule 2.5 x 1 mm, didymous, truncate, mericarps very small, separating from the base. Fig. 23 & 27.


Lasianthus Jack nom.conf.
Lasianthus truncatus Bedd. Fl. Ind. Fl. t, 9: 1874; FEI 3: 186; Gamble 647(456).

A shrub, up to 1 m tall. Young parts puberulous. Leaves distichous, coriaceous, lanceolate, 7-15 x 2-4 cm, cuneate at base entire margin, mucronate at apex; petiole 5 mm; stipule interpetiolar, triangular, acute. Flowers 5-merous, in axillary, clustered cymes; bracteate. Drupe oblong - globose, 0.6 x 0.5 cm, adnate to persistent.
Fig. 27. Kroxia wishtiana Wight & Am.

A. Twix
B. Full Flower
C. Calyx
D. Corolla
E. Stamen - ventral view
F. Stamen - dorsal view
G. Pistil
H. Capsule

Karma Roxb. ex Link


Vangueria spinosa Roxb. Fl. Ind. 2:172. 1824; FBI 3:136; Cambie 626 (M42).

An armed tree. Leaves ovate - oblong or elliptic, 3.7 x 2.5-5 cm, rounded at base, entire margin, acuminate at apex, slightly pubescent above, densely pubescent below; petioled; stipules interpetiolar, connate. Flowers in axillary fascicles, greenish white, faintly fragrant. Drupe wrinkled, 1 x 1.3 cm, slightly pubescent above.

In dry deciduous forests of Visakhapatnam district at higher elevations. Fl. & Fr.: April – August. Dharakona, Dharalammagudi (VSKP) G.V.Subba Rao 1/2009 (CAL); Minumuluru; G.V.Subba Rao 30030 (CAL); Cherukonda, G.V.Subba Rao 28156 (CAL).

Mitracarpus Zucc.

Mitracarpus villosus (Sw.) DC. Prodr. 4:572.1830.

An erect herb, up to 35 cm. Leaves decussate, elliptic-lanceolate, 1.6-3 x 0.6-1 cm, alternate at base, entire margin, acute at apex, pubescent below; sub sessile; stipule interpetiolar, pectinate. Flowers in axillary and terminal capitate cymes, white; calyx truncate ½ mm across, lobes ½, unequal, 2 long, 3 mm, 2 short, 2 mm, cuspidate; corolla tubular, 1.75 mm across, tube 2.5 mm, lobes ⅓, 1 mm, stamens 4, exserted, filament short, 0.15 mm; anthers 0.75 mm; ovary bilocular, 1.75 mm, spiny; style linear, 2 mm, stigma bifid, 1 mm. Capsule globose, 2 mm. Fig. 28.

In forest of Visakhapatnam and Chittor districts.

Fl. & Fr.: November - April. Anantagiri, (VSKP) BG 5614; Borra caves (VSKP), PAM 5080; Araku valley - padmapuram gardens (VSKP), TP & RC 7332; Akasaganga (CTR), C.V.Subba Rao 66890 (CAL); towards Hilageda (VSKP), C.V.Subba Rao 66417 (III); Joraput(VSKP), C.V.Subba Rao 32803 (III).

Note: - An addition to the Flora of Andhra Pradesh. Anderson in Taxon 20:643, 1971 has clearly established that the original spelling of this genus in nominative singular is *Mitracarpus*, not *Mitracarpum*. Support for Anderson's position is that in the Index of Schultes' work this taxon is listed as *Mitracarpus scaber*.
Fig. 26: l'itracarpus villosus (Sw.) DC.

A. Twig
B. Flower
C. Calyx
D. Corolla
E. Stamen - ventral view
F. Stamen - dorsal view
G. Pistil
H. Capsule
19.1838; Camble 535(b13). Neurulae parvifolia Forb. Pl.
Cor. t. 52, 1796 et Pl. Ind. 1; 513.1832. Stechene
161.1838; EBI 3:25.

A deciduous tree, up to 12 cm tall. Leaves oblong -
obovate, 4.5 - 13 x 3.5-9 cm, acute - round at base, entire
margin, acute - obtuse at apex, glabrous; petiole 1.5-2 cm;
stipules interpetiolar, caducous. Flowers in axillary globose
heads, peduncles 4 cm; greenish yellow; calyx tube short, 5,
3 mm; stamens 5, filament short, 0.25 mm, anther 2 mm; ovary
1 mm, style slender, 11 mm, stigma nitiform 0.25 mm. Capsule
aggregated in to a globular head, 1 cm. Feb. 29. A.

Occasional in deciduous forests of most districts.
Fl. & Fr.: March - December. Loc. name: Patto gampu. Padharam
TP (ADB), TP & CO 7470; Kalasa Mudram Y (ATP), IX 1195; GNK
FW (KIL), DVR 1467; Pajjaverangi BF (TG), G.V.Subba Rao 68642
(MI); Between Kurupam & Levidi (KIL), G.V.Subba Rao 62404 (MI);
Maresapur forest (PDK), K.M.Sebastian 9217(MI); Pathal lake
(WIL), K.M.Sebastian 13133 (MI); Palappalle (CDP),
J.L.Ellis 14959 (MI); Way from Pachepalle (KIL) G.V.Subba Rao
20171 (CAL) Horsely hills (CTR), G.C.G.Fischer 1360 (CAL);
Vellore hills (FLR), M.S.Pamaswami 1391 (CAL).
Fig 29: 

A. *Nitrogenia nervifolia* (Forsk.) North in Nakhram F - Adilabad district

B. *Rubia cordifolia* L. in Tirumala hills - Chittoor district.
Morinda L.

Erect or climbing trees or shrubs; branchlets terete or obscurely four-angled. Leaves opposite, rarely ternate; stipules interpetiolar connate, sometimes very large. Flowers in axillary or terminal, simple panicked or umbellate heads; bracts 0; calyx-tube short, lobes short, truncate or occasionally with one large leafy bract-like lobe; corolla-tube funnel shaped, lobes 4 or 5; stamens as many as corolla lobes, on the throat of the corolla; filaments short, anthers linear or oblong; ovary 2 or rarely 4-locular; style slender, with 2 stigmatic branches. Fruit a syncarpium, seeds oblong or obovoid.

1. Erect trees or shrubs, corolla tube elongate:
   2. Leaves glabrous, seeds winged below stipules acute or obtuse;
   3. Leaves obovate-lanceolate, stipules acute
      .................................M. angustifolia
   3. Leaves broad, elliptic, stipules obtuse
      .................................M. citrifolia

2. Leaves pubescent or tomentose, seeds not winged, stipules usually bifid or very large, linear
   .................................M. pubescence

1. Climbing shrubs, corolla-tube short ..........M. umbellata
A small tree, up to 4 m tall. Leaves coriaceous, large, elliptic or obovate - lanceolate, 15-22 x 3-10 cm, cuneate - acuminate at base, undulate margin, shortly acuminate or acute at apex, glabrous; petiole 3.5 cm; stipules acute. Flowers terminal, long or short peduncles solitary, leaf-opposed rarely 2-3-nate, white. Fruit 2 cm, turbinate, 2 cm, black.

North circars, Visakhapatnam, Vellemalais hills of Kurool. Fl. & Fr.: May - December; Bichvanetta, Vellemalais (KML), C. A. Barber 8021 (WI); Bagupalam (VSP), C. A. Barber 1587 (WI).


A shrub, up to 3 m tall. Leaves coriaceous, elliptic - oblong, 10-16 x 3.5-7 cm, attenuate at the base, entire margin, acute or shortly acuminate at apex, glabrous; stipules obtuse. Flowers in dense ovoid heads, solitary, white. Fruit white when ripe, smooth and glossy.

In the coastal forests of Vellore Visakhapatnam and Srikakulam districts. Fl. & Fr.: July - October. Loc.Name: Kaddi, Tojodla. Simbesharam hills (VSP), MSG 5609; Urlakonda hills.

1. Leaves narrowly linear-oblong......var. sternophylla
1. Leaves broadly obovate-elliptic......var. pubescens

var. pubescens; Verdc. in Nov. Bull. 37: 543. 1923.

M. tinctoria Roxb. Fl. Ind. 2: 107, 122; & 154, 183, non
Coronha 1799; TEL 3: 156. 1820; Samble 652 (f59).

M. tinctoria Roxb. var. tomentosa (Wayne ex Roth) Hook.f.
Fl. Brit. Indic 3: 156. 1830; Samble 652 (f59). M. tomentosa

A small tree, up to 4 m tall. Leaves obovate-elliptic,
9-14 x 4-6 cm, attenuate-round at base, undulate margin,
acuminate at apex, tomentose; petiole 1.5 cm; stipules connate
into a sheath, usually bifid. Flowers in axillary globose
heads, white; calyx rim 4 x 3 mm; corolla tubular, 14 mm, hairy
without, lobes 5 or 7, triangular, 10 mm; stamens as many as
corolla lobes, filaments 2.5 mm, anther oblong, 7.5 mm; ovary
globose, 2 mm, style linear, 26 mm, stigma bifid, 2 mm. Fruit
syncarpium, 8 x 5 mm. Fig. 30.

Common in forests of all districts. Fl. & Fr.:
May - November. Loc. name: Torara, Bandavaddi. Sinhachalam
hills (USPE), 139 & ER 5610; Yellora town, 137 5620; Muchukota 57.
Fig. 30: *Morinda* pubescens J.E. Smith var.

A. Twig
B. Flower
C. Corolla
D. Stamen - ventral view
E. Stamen - dorsal view
F. Pistil
G. Syncarpium fruit
(ATP), TR & IV 1141: North Churu FP (H11); TR & IV 1302; Jaipur FP (ATR), CO & IV 458214; Satyavasidu (CTR), N Chandrabapu, 19760 (IT); Pumapuri village (VP), C.V. Subba Rao 10408 (IT); Koneravudu (CTR), ML 17897 (IT); Karedumili (TR) C.V. Subba Rao 21226 (IT); East of Taephelle (H11), C.V. Subba Rao 21151 (CAL); Forest of on the South of the Paraapur (IDF); K.J. Sabhatine 7077 (CAL); Polkalu FP (NCL), K.J. Sabhatine 13763 (IM); Barua (SKL); C.V. Subba Rao 68312 (CAL); Vannur (H11), C. Gumble 10374 (DD).


A shrub, up to 3 m tall, stem pubescent. Leaves narrowly linear - lanceolate or oblong, 6-12.5 x 1.2-1.5 cm, cuneate at base, entire margin, acute - acuminate at apex, slightly pubescent; petals very short, 0.6 cm; stigmas very large, linear, 1.5 x 1.5 cm. Flowers in axillary cyme, white. Fruit 0.5 x 0.14 cm.

In the forests of Chittor district. Fl. & Fr.: May - November. Chittor, WI Acc. No.26773 (IM).


A climbing shrub, up to 3 m tall. Leaves coriaceous,
shining, broadly obovate - elliptic or linear-lanceolate, 0.175 x 1-0 cm, cuneate-acuminate at base, entire margin, acute at apx, glabrous or pubescent above, tomentose below, nerves very distinct; petiole 3 cm; stipule connate, acuminate.

Flowers in terminal umbellate head, white peduncle pubescent. Calyx-tube truncate, lobes 4, very minute 0.5 mm. Corolla lobes 4, oblanceolate; stamens 4, included; stigmas bifid. Fruit syncarpium, occasionally septic, 0.5 x 4 cm, green.

In forests of Visakhapatnam and Chitauri districts.

Fl. & Fr.: April - September. Vorsley hills (CTR), G. L. Fischer 1373 (CAL); Vorsley hills (CTR), J. S. Tamble 15792 (CAL); on the eastern slopes of Calamunda, (CTR), L. V. Lurke. Ray 16657 (H); way to Sambalpurthor (CTR), L. Subramanam 7856 (H).

Neanotis Lewis

Note: According to L. J. Lewis (Lc.) Anatis DC. is restricted to the New World. He proposed a new generic name 'Neanotis' for the related but distinct species of the Old World.

An annual, erect herbs, often with flaccid hairs. Leaves opposite; stipules intercalary, usually pectinate. Flowers small, in axillary and terminal cymes or heads; calyx-tube short, lobes 4, erect or recurved, with usually broad sinuses; corolla tubular or funnel-shaped, lobes 4,
valvate; stamens 4, on the mouth of the corolla, anthers included or exerted; ovary bilocular, style filiform, stigmas linear. Capsule rarely indehiscent, usually loculicidal, rarely septicidal; seeds peltate, boat-shaped or plano-convex.

1. Glabrous herb, flowers in cymes .................. N. calycina
1. Hirsut herb, flowers in clusters ................. N. montaloni


An erect herb up to 20 cm tall, stem decumbent below, 4-angled. Leaves chartaceous, ovate-lanceolate, acuminate, ciliolate. Flowers in axillary and terminal few-flowered cymes, 0.3 cm long, white. Capsules 0.4 cm broad, broader than long, sparsely hairy, 2-loculed; seeds 15 or more.

In Eastern ghats, rare on moist rocky places in shade along streamlets in Krishnakanal, Visakhapatnam and East Godavari districts. Fl. & Fr.: September - November.


An annual, erect, hirsut herb. Leaves ovate or lanceolate, 2-3 x 0.7-1.3 cm, obtuse at base, entire margin, acute at apex, more or less hairy on both surfaces; petals
0.3 cm; stipules with short bristle. Flowers in terminal and axillary peduncles, many-flowered cymes, purple; peduncles hairy. Capsules clustered, subsessile, didymous; seeds globose.

In Mizoram and Adilabad district. WL. & FR.


Note: Our collection Neonaucleia montbordieri (Hook.) Lewis from Gandhari of Mizoram district which was previously collected by Bhabodur (quoted from Rao et al., 1981) is a new record for the State of Andhra Pradesh. This was known earlier only from the South-Western ghat.

Neonauclea Herr.

Neonauclea purpurea (Fock.) Herr. Inter. Burp. 433. 1917;

A small glabrous tree. Leaves coriaceous, elliptic or lanceolate, 2-15 x 1-2 cm, alternate at base, entire margin, acute or acuminate at apex, glabrous, main nerves 8-10 pairs; petioles 1 cm; stipules interpetiolar, flat, membranous. Flowers in terminal globose heads, solitary, dark purple; bracts caducous. Fruit of 2 dehiscent many-seeded cocci,
crowned with the persistent calyx lobes.


Ophiocarpaceae L.

Erect, herbs and undershrubs. Leaves opposite; stipules interpetiolar, deciduous. Flowers 5-merous, in terminal or axillary dichotomous cyme; bracts and bracteoles various, sometimes absent; calyx-tube short, lobes 5, small, persistent; corolla tubular or funnel-shaped; lobes 5, often winged at the back, sometimes with a fold in the sinus; stamens 5, inserted on the corolla-tube, filament slender anther linear; disc of 2 large lobes, erect in fruit; ovary bicarpellary, ovules many, style filiform stigmas 2, linear or flattened. Capsule obovate, compressed, slit in the middle by calyx limb, loculicidal; seeds minute, angled.

1. Bracteoles absent, cymes sub-umbellate...........O. mungos
2. Bracteoles very short...............................O. rugosa var. prostrata
2. Bracteoles linear or filiform:
3. Undershrubs, stipule subulate-lanceolate, very villous ......................... *O. hirsutula*

3. Herbs, stipule narrowly deltoid, pubescent ................................. *O. chandrasekharanii*


An erect herb, up to 45 cm tall, stem pubescent. Leaves coriaceous, obovate-lanceolate or ovate, 10-13 x 4-6 cm, attenuate at base, entire margin, acuminate at apex, scabrous above, glaucous below, margins shortly ciliate; petiole 2.5 cm long, tomentose; stipules narrowly deltoid, acuminate. Flowers in terminal fulvous tomentose corymbs or subcorymbs up to 3.5 cm across; white, yellow on drying; bract 1.5 mm; bracteoles 2 mm, few, acute, persistent; calyx-tube short, 1 mm; lobes 5, 1.75 mm, acute, scabrous; corolla tubular, 2.5 mm, pubescent (without), glabrous within, lobes 5, 2 mm stems 5, included, attached at the middle of the glabrous portion of corolla tube, filament 1 mm, anther 2 mm; ovary bi-locular, 2 mm, ovules many on basal ascending placentas, style short 1 mm, stigma bifid, 2 mm. Capsule obcordate, compressed, 8 x 3 mm, patently pubescent, girt by calyx limb; seeds many, minute, styles. Fig. 31.

Vankachinta and Galikonda hills of Visakhapatnam districts. Fl. & Fr.: April & October. Galikonda (YSKP),
An erect under shrub, stem rusty pubescent.
Leaves ovate - lanceolate, 6-12 cm long, slightly attenuate at base, entire margin, acute or acuminate at apex, pale beneath; petiole long; stipule subulate - lanceolate, very villous.
Flowers in axillary subcorymbose cyme, pubescent; bracteoles very narrow, subpersistent. Capsule pubescent.

Aralagudem chat, Minnavuluru and Sunkarimetta in Visakhapatnam and East Godavari districts. Fl. & Fr.: January - November. Yadalamagudi - Vankachinta near Minnavuluru (VSEP), C.V.Subba Rao 17373 (CAL); Sunkarimetta (VSEP), H.P.Balakrishnan 10939 (CAL); way to Sudem - Chintapalli (VSEP), J.L.Ellis 37146 (IM); Cammovaram (RG), C.V.Subba Rao 21533 (IM).

Ophiarrhiza mungosa L. Sp. Pl. 152.1753; TDI 3:77; Gamble 677 (h:23).

A herbaceous undershrub. Leaves elliptic - lanceolate or elliptic, 4-12 cm long, attenuate at base, entire margin, acuminate at apex; petiole long; stipule small with 2 slender teeth. Flowers terminal, subumbellate, minutely rusty puberulous, white; bracteoles absent. Capsule gibrous.
In East Godavari district. Fl. & Fr.;

*Ophiorrhiza rugosa* Wall. in Roxb. Fl. Ind. 2:747, 1824;

Surv. India 24:22. (1922) 1923. *O. prostrata* D.Don
Syst. 3:523.1833; FBI 3:77; Cambie 607(423).

An erect herb up to 15 cm tall. Leaves elliptic -
lanceolate or elliptic, 2-7 x 2-1 cm, usually rounded at
base, entire margin, obtuse or slightly acute at apex, pale
below, main nerves 6-8 pairs; petiole 0.8 cm; stipules
with 1 or more long stout bristles. Flowers in terminal
dense cymes, pinkish white; bracteoles at base of pedicels,
long, linear, acute, hairy. Capsule glabrous or pubescent.

In Godavari jungles. Fl. & Fr.; March - October.

Godavari Forests CAL. Acc.no.2011-98 (CAL).

Paeodaria L. nom. cons.

Paeodaria fastigiata L. Mant. 1:59.1767; FBI 3:105.

A slender twining shrub, costid when bruised.

Leaves opposite, elliptic - ovate or oblong - ovate,
6-11.5 x 2.5-5 cm, rounded or cordate at base, entire margin,
acuminate or acute at apex, glabrous; petiole 6 cm; stipule
intratrichorial, short. Flowers in terminal and axillary
trichotously branched penicillate cyme, greenish purple;
panicles puberulous, 1" on long; bract linear 2.5 mm, hairy;
bracteole linear, 2 mm, hairy; calyx - tube ovoid, lobes
4-5, small obtuse or triangular, 1 mm, slightly hispidulous,
persistent; corolla funnel-shaped, 3.75 mm across, tube 8 mm,
hispidulous without glandular hairs within, lobes 4-5, 2 mm,
crisped edges, stamens 4-5, adnate to the corolla tube, filament
3 mm to 0.5 mm, style slender, 2.5 mm, stigma bifid, twisted, 4.5 mm. Fruit
compressed, 7 x 5 mm. Fig. 32.

Araku valley, Visakapatnam district. Fl. & Fr.:
August - December. Kulyaguda - Borracaves (WSP), FP & EC 7409;
Araku valley (WSP), K.P. Balakrishnan 10760 (MH); Sunnarsetta
(WSP), K.P. Balakrishnan 731 (AL); Hill behind Araku village
(WSP), G.V. Subba Rao 100309 (MH); Towards Vellapalem (WSP),
G.V. Subba Rao 128509 (MH).

Note: New record for Andhra Pradesh.

Pavetta L.

Small trees. Leaves opposite, usually chartaceous;
petioled; stipules intratrichorial, usually connate in a loose
deciduous sheath. Flowers in terminal and axillary trichotously
branched corymbose cymes; bracteoles small; calyx lobes
Fig. 32. Paeotaria fustida L.

A. Twig
B. Flower
C. Bract
D. Bracteole
E. Calyx
F. Corolla
G. Stamen - ventral view
H. Stamen - dorsal view
I. Pistil
truncate, lobes 5; corolla hypocrateriform, tube slender, lobes 5; stamens 5, on the mouth of the corolla, filaments short or long, anthers linear; ovary bilocular, ovules solitary in each locule, style long, exserted, stigma bifid. Fleshy berry with 2 ventrally connate pyrenes; seeds conform to the pyrenes, testa membranous.

1. Leaves glabrescent:
   2. Calyx teeth minute, leaves chartaceous........P. indica
   2. Calyx teeth short, leaves coriaceous.........P. breviflora

1. Leaves tomentose:
   3. Leaves elliptic - oblong, style 'wiry'.......P. tenax
   3. Leaves lanceolate - oblanceolate,
      style glabrous

Myrtia breviflora DC, Prodr. 3:401. 1830 var. giliiolate
   Gmel. ex Brand, in Puddes Report. 37:98. 1934; Terble
   1879 (1830).

A pretty evergreen shrub, up to 3 m tall. Leaves
coriaceous, elliptic, acute at base, entire margin, acute
at apex, shining, with milky latex; petioles 1.4 cm; stipule
corolate. Flowers in axillary and terminal clusters white.
Berry globosa, 0.8 x 0.7 cm.

Abundant in reserve forests of Amnaspur district.

Fl. & Fr.: August - December. Loc. name: Bhipidichatta, Sundurula
RF (ATP), TP & NV 727; Errabonda South RF (ATP), EX 1062.

Note: A new record for Andhra Pradesh.


A small tree, up to 10 cm tall. Leaves very large, lanceolate - oblongolate, 11-20 cm x 6-10 cm, rounded margin, acuminate - exaruncate at apex, pubescent above, hispid below; petiole 2.5 cm; stipules coriaceous, hispid. Flowers in terminal or axillary thickly branched cyme, white; peduncle 7 cm, cyme 12 cm long. Berry globose, 1.6 x 0.6 cm, green.

In the forests of East Godavari district.

Fl. & Fr.: October - May. Bison hills (E.C), C.A.Barber 5166(MH).

Note: C.A.Barber collected this species from Bison hill in East Godavari in the year 1932 and housed in MH. But Gamble while writing the flora has given its occurrence in Western ghats only. Hence A new record for Andhra Pradesh.


A small tree, up to 3 m tall. Leaves chartaceous, obovate - oblong or oblongolate, 7-15 x 2.5-4.5 cm, acute - rounded at base, entire margin, acute at apex, glabrous;
petiole 1 cm; stipules connate. Flowers in terminal or axillary trichotonously branched coryphose cyme, white. Berry fleshy globose, 1.6 x 0.4 cm.

Common in deciduous forests of most districts.

Ex. Mfr.: May - November. Loc. name: Papatkhommu. Panchalakona (ER), LEG 5582; Bolvera 77 (W), TE 1 EN 2732; Mecherla 77 (CT), ENK 3716; Thamsipondal (TF), K. Channupata 1500 (MH); Kodimall (MH), C.J. Subba Rao 20422 (MH); Ramachandaram (RR), C.J. Subba Rao 21466 (MH); Parva (W), C.J. Taske 1673 (MH); Cuvalacharam (CDP), J.T. Camble 15021 (MH).


A small tree, up to 3 m tall. Leaves elliptic - oblance, 2.12 x 1.5-7 cm, acute - rounded at base, entire margin, acute apex, softly subbent above, tomentose below; petiole 1.5 cm; stipules connate. Flowers in terminal trichotonously branched coryphose cyme, white; calyx-tube short, 5 mm across, lobes 4, 0.5 mm hairy without corolla- tube, 1 cm, lobes 6, 0 mm; stamens 4, attached to the corolla in between the lobes, filament 3.5 mm, anther linear, 0 mm; ovary 1.5 mm, style very long, exserted, 14.5 mm hairy; stigma bifid, 1.5 mm. Fruit a drupaceous berry, globose or (sub) fleshy. Figg. 33.
Fig. 33: Pavetta tormentosa Roxb.

A. Twig
B. Flower
C. Calyx
D. Corolla
E. Stamens - ventral view
F. Stamens - dorsal view
G. Pistil
Condon in forests of Kurnool, Srikakulam and Visakhapatnam districts. Fl. & Fr.: May - February. EP & TQ 7396; Anantagiri DAU, 650h; Vay to Dicranopatta (PIS), I.J.Tillis 22157 CAL, (MH); East of I. Ponnagow Anantagiri (VTI), G.V.Subba Rao 10537 (TI); Taranagolavaran (70), G.V.Subba Rao 27230 (CAL); Panabook (CTM), G.V.Subba Rao 31988 (CAL); Kadimayyapolela (MLT), M.S.Ramaswami 1939 (CAL).

Psycotria L. non.nov.


A large shrub, up to 3 m tall. Leaves large, elliptic-oblong or lanceolate, 12-22 x 3-12 cm; acute or tapering at base, entire margin, acuminate at apex, rusty - pubescent, prominently nerved, main nerves 12-21 pairs; petiole 3 cm; stipules intrapetio
eral, connate, in pairs. Flowers in terminal or leaf opposite cymes, yellowish; bracts and bracteoles present. Fruit ovoid or globose, 1.6 x 0.6 cm, the pericarp furrowed, crown present.

3 stem shots, Visakhapatnam district. Fl. & Fr.: May - November. Minimaraju towards Palamaramgudi (VSP), G.V.Subba Rao 30639 (IN); Minimaraju - Kapparkonda (VSP), G.V.Subba Rao 30627(CAL); Soppadla (VSP), I.J.Tillis 37173 (IN); Towards Palamaramgudi (VSP), G.V.Subba Rao 42537 (IN).

Richardia L.


Surv. Ind. 6:95 1964.
A scabrid, prostrate herb. Leaves decussate, chartaceous, elliptic-ovate, 2.5 x 1.5-3 cm, attenuate at base, entire margin, acute at apex, scabrous on both sides; petiole 0.5 cm or sub sessile; stipules interpetiolar, pectinate. Flowers trimerous, in terminal. Capitate clusters, white; calyx truncate, 6 mm across, lobes 6, obovate, 2.5 cm, scabrous without, acute; corolla 5 mm across, funnel-shaped, tube 5 cm, lobes 6, triangular, 3 mm, slightly strigose without; stamens 6, attached between the lobes, exerted, filament 1.5 mm, anther ovate, 1.25 mm; ovary oblong, 3 mm scabrous without, ovule 1 per locale on basal placenta, style 6 mm, stigma capitate, trident, 1 mm. Capsule 3-valved. Fig. 34.

Anantagiri forests and Araku valley of Visakhapatnam district. Fl. & Fr.: August – May. Araku valley (WSPK) MG 5628; Kalikonda MG & BR 5615; Anantagiri – Kalikonda (WSPK), TP & BR 7363; Anantagiri (WSPK), N.P.Ralakrishnan 919 (CAL).

Rubia L.


A rugose vine or herb; branches 4-angled. Leaves whorled, 4 at the node, cordate, 4.5-6.5 x 2.5-3.5 cm, cordate at base, entire margin, acuminate at apex, scabrid, 5-nerved from the base; petiole 4.5 cm; stipules absent (stipules present when leaves opposite). Flowers in terminal and axillary
Fig. 34: Bichardia scabra L.

A. Twig
B. Calyx
C. Corolla
D. Stamens
E. Pistil
F. L.s of flower
Dichasial cymes, white; calyx truncate, 1 mm, glabrous; corolla 2 mm across, tube short, 1 mm, campanulate, 1.25 mm, united in the middle into an inflated; stamens 5, between the lobes, exerted, filaments 0.75 mm, anther 1.75 mm, ovary depressed-globose, 1 mm, styles 2, embedded in the depression, 0.5 mm, stigmas capitate, 1.25 mm. Drupes globose, fleshy, 3 mm across. Fig. 29B, 35.

Rare in moist deciduous forests of Srikakulam, Visakhapatnam, East Godavari and Chittoor districts. Fl. & Fr.: January - October. Loc. name: Handarti, Sunkarimitta, forests (V Employment), 122 & 228 5623; Tirumala hills way to Jagala (CET), NSG & RAI 5669; Yarlagadda on the way to Sesharamy (3G), V. Narayanaswami 129 (CAL); Duvvakonda (3G), V. Narayanaswami 652 (CAL); Outer valley (V Employment), V. Narayanaswami 511 (CAL)

Scyphiphora gaertn.

Scyphiphora hydrophyllacea Gaertn. Tract. 3:91. t. 196.

1825; TBI 3:125; Carle 629 (136).

A small glabrous tree; branchlets, about, swollen at the nodes. Leaves coriaceous, ovate - obovate, 2.5-6 x 1.5-3.5 cm, acute at base, entire margin, obtuse at apex, glabrous, shining; petiole 1 cm; stipules interpetiolar, short, coarsely into a sheath around the stem. Flowers in axillary fascicles, white. Drupes, obovate, 2 x 3.5 cm, 3-10-grooved.

East coast in mangrove forests (Wight). Fl. & Fr.: March - September. Occur well to light house area, Naralukuru,
Fig. 35: *Rubia cordifolia* L.

A. Twig
B. Flower
C. Corolla
D. Stamen - ventral view
E. Stamen - dorsal view
F. Pistil
Spandictryon Roxb.

Spandictryon suaveolens Roxb. Fl. Cor. t. 236. 1815. Hamiltonia

suaveolens Roxb. Fl. Ind. 2: 223. 1824; WR 1: 197;
Camble 650 (M8).

A small tree, up to 4 m tall. Leaves elliptic-obovate,
9-13.5 x 3.5 x 7 cm, acute at base, entire margin, obtuse
acute at apex; petiole 1.5-3 cm, stipule interpetiolar, connate,
acute. Flowers in terminal racemes, violet pink, scented;
calyx-tube short, 2.5 mm across, lobes 5, 1.5 mm, scabrid without;
corolla tubular, 10 mm, lobes 5, 3 mm granular, scabrid, without;
stamens 5, attached to the corolla in between the lobes,
filament 1 mm rather 2 mm; ovary 1.5 mm, style entire, 10-mm,
stigma repeatedly bifid, 2 mm. Capsules ellipsoid; seeds 3.
quercus. Fig. 36.

In dry deciduous forests of Kurnool, Visakhapatnam,
Srikakulam, East Godavari and Cuddapah districts. Fl. & Fr.: Novemb - March. Panpadi PF (KLU), RVR 2198, 2397; Rallapenta (KLU), DAI 2379; Vorsley hills. (GTR), L.S.Gambal 11025 (KH);
Bison hills (BB) S.A.Barber, 5018 (MH); Adapavala (VSKP),
C.V.Subba Rao 22623 (MH); Sirivaka Bourne 3300 (CAL); Cuddapah
forests, L.S.Gambal 11025 (DD).
Fig. 36: *Spermodictyon suaveolens* Roxb.

A. Twig
B. Calyx
C. Corolla
D. Stamen - ventral view
E. Stamen - dorsal view
F. Pistil
The name *Hamiltonia* Roxb. is not valid since it is a later homonym of *Hamiltonia* Willd. 1805 which is now synonymous to *Parularia* Michx. Further, *Spermadictyon* is at least nine years older than *Hamiltonia* Roxb., as per "rule of priority".

Gamble in "Flora of Presidency of Madras" and Hoffm. in "Flora of British India" stated that the stipules are intrapetiolar. But our observations revealed that the stipules are interpetiolar.

**Tamilnadia Tirveng.**


*Gambelia uliginosa* (Retz.) DC. Prodr. 1:386.1837; FBI 3:110; Gamble 615 (134).

An often armed medium sized tree, up to 4 m tall.

Leaves obovate - oblanceolate, 6-16.5 x 2.5-6 cm narrowed at base, entire margin, acute-obtuse at apex, glabrous, shining, main nerves 8-10 pairs; petiole 1.5 cm; stipule intrapetiolar, deciduous. Flowers axillary, solitary, white. Berry ellipsoid, 6 x 4 cm.

All open dry forests, in wet places and on black - cotton soils. Fl.&Fr.: June - February. Way to Kunthala water falls (ADB), 50 & DAV 5113; way to Dharakonda, Y.Parayanaswamy 401.
Thecagonum Babu

Note: The genus Conotheca Bl. ex DC. (1830) was formerly treated either as a subgenus or as a section of the genus Oldenlandia L. But Santapau & Wagh (1963) treated as distinct genus by the characters of fruit bilobed, seeds globose of subglobose, leaves usually broader. The generic name Conotheca Bl. ex DC. (1830) can no longer be used for this taxon, as it is illegitimate by being a later homonym of Conotheca Rafin (1908). Babu (1969) proposed Thecagonum as a new generic name for this group of plants.

An erect herb, succulent, sometime not succulent.

Leaves elliptic; petioled; stipules interpetiolar. Flowers in terminal and axillary panicles and fascicles, white; calyx truncate, lobes 4; corolla lobes 4, ovate or oblong; stamens 4, included, rarely exserted; ovary bilocular, ovules numerous, style filiform, stigma bifid. Capsule loculicidal, hemispheric, obscurely bilobed.

1. Succulent herb, leaves cauline:

2. Flowers in racemose panicles, calyx - lobes short, triangular, stem rounded.................. T. biflorum
2. Flowers in subcapitate cymes, calyx lobes broad and much produced on the ovary stem fourangled ................................................................. T. pteritum

1. Other than succulent herb, leaves radical ........... T. ovatifolium


An erect succulent herb, up to 35 cm tall. Leaves chartaceous, ovate-oblong or elliptic, 3.5-7 x 1-2 cm, rounded at base, entire margin, acute-obtuse at apex, glabrous; subsessile; stipules membranous, covering into a sheath. Flowers in terminal and axillary racemose panicle, white; calyx-tube truncate, 5 mm across, lobes 1 mm, ovate, 1 mm; corolla-tube short, 0.5 mm, lobes 0.2 mm, villous within; stamens 4, included, filament very short, 0.35 mm, anther ovate 0.75 mm; ovary sub-globose, 1.75 mm, style short, 0.75 mm, stigma bifid. Capsule loculicidal, 0.3 x 0.3 cm. Fig. 37.

Common in plains districts of the East coast and Kurnool. Fl. & Fr.: September - February. In Mypadu rice fields (NLR), MSC 5664; Galikonda (VSKP) DAM 6573, near Cani RF (KML), EVR 3155; Shikar line (GHR), C.V. Subba Rao 45094 (MI); Mantur (G) C.A. Barber 4935 (M), Pakhal lake (WCL) K.M. Sebastine 13167 (CAL).
Fig. 37: Theaconurus biflorum (L.) Babu

A. Cusp
B. Flower
C. Calyx
D. Corolla
E. Stamen - ventral view
F. Stamen - dorsal view
G. Pistil

Hedyotis nudicaulis (Roth) Vight & Arn.Prodr. 146. 1834.

An erect annual herb, up to 10 cm tall. Leaves in a whorl, radical, chartaceous, broadly ovate, 3.6-6 x 2.5-3 cm, rounded at base, entire margin, acute at apex sparsely pubescent below; sessile; stipule pectinate. Flowers in terminal, long peduncled trichotomously branched cymes; calyx truncate, 1.75 mm across, lobes 4, triangular, 0.75 mm hairy without; corolla-tube short 1 mm, lobes 4, oblong, 2 mm; stamens 4, filament 1.25 mm, anther 1 mm; ovary sub-globbose 1 mm, style 3 mm, stigma bifid 0.5 mm. Capsule 4 x 5 mm, hemispheric. Fig.38.

Frequent near stream banks, in moist deciduous forests in Srikakulam, East Godavari, Adilabad and Kurnool districts; Fl. & Fr.: September - February. Vempalli RF (ADB), 50 5500; Golla rayi Konda (EC), C.Y.Subba Rao 6712 (MH); Aklespur (CTP), C.Y.Subba Rao 25612 (MH); Elephant path - Gundlabrahmswaran (KML), J.L.Ellis 22211 (MH); Talakona RF (CTP), C.Y.Subba Rao 16934 (MH); Forest near Sri Ancevavarapurakota (VSKP), N.P.Balakrishnan 11019 (MH); Voruturu RF, Polavaram Agency (WG), DCS Raju 1423 (CAL).

A small erect, succulent herb, up to 10 cm tall, stem 4-angled. Leaves opposite, decussate, chartaceous, elliptic-lanceolate, 3-6 x 0.5 cm, rounded at apex, entire margin, acute-obtuse at apex, glabrous; sessile. Flowers in terminal and axillary fascicles, big, white. Capsule 0.5 x 0.4 mm.

Weed in agricultural and waste lands in East and West Godavari, Visakhapatnam and Srikakulam districts Pl. & Fr.: November - February. Sirmakot (76), WI 12425 (WI); Collanpalle, G.V.Narayana 16834 (WI); Andhra University Campus (VShP), K.Subramanyan 7362 (WI); Salur (SILN), M.P.Dalabhrisknan 1148(CAL).

Uncaria Schreb nom. cons.

Uncaria sessilifructus Forb. fl. Ind. 521.1821; FBI 3:37; Gamble 586 (414).

A climbing herb, stem four-angled. Leaves whorled, ovate-oblong, 5-11 x 3-6 cm, rounded at base entire margin, acute-shortly acuminate at apex, glabrous, prominently nerved; petiole short, 1.3 cm; stipules interpetiolar, entire or bifid, deciduous. Flowers in axillary globose heads, cream-
coloured, stamens white, just above the leaf; bracts in pairs on the peduncles, bracteoles small or 0. Fruit a head of capsules, each capsule obovate, septicidally 2-valved, many-seeded.

North circars, hills of Visakhapatnam at 1300 mtrs.
Fl. & Fr.: August - February. 'dirumaluru (VISIP), G.Y.Subba Rao 23271 (NH); Tovaras Kodelamagudi (VISIP), G.Y.Subba Rao 2571 (NH).

Wendlandia Barth. nom. cons.

A small trees. Leaves opposite; stipules entire or bifid. Flowers small in terminal dense thyrsoid or panicled cyme, pinkish white or yellow; bracteoles 2-3, sometimes more; calyx-tube sub-globose, lobes 5, persistent; corolla tubular or salver-shaped, lobes 5; stamen 5, between the corolla-lobes, anthers versatile, exerted; ovary bilocular, ovules numerous, style filiform, stigma bifid. Capsule globose, loculicidal, 2-valved; seeds very small.

1. Flowers in terminal dense thyrsoid cyme .......... W. thyrsei de a
1. Flowers in terminal panicled cyme;
2. Leaves ternately whorled, linear - lanceolate ..................................................... W. angustifolia
2. Leaves usually opposite, elliptic - oblong or obovate:
3. Leaves rounded at base ..................... W. tinctoria
3. Leaves cuneate at base ..................... W. ramblei

A small tree up to 4 m tall. Leaves coriaceous, whorled, elliptic - lanceolate, 7-10 x 0.3-1.25 cm, tapering at base, entire margin, acute - shortly acuminate at apex, glabrous, main nerves 9-10 pairs; petiole 1 cm; stipule entire. Flowers in terminal panicles, white. Capsule globose.

Deccan, forests of Gudchapah district (Beddome). Fl. & Fr. March - November. Gudchapah forest, P.H. Beddome 1880 (MH).

Wendlandia gamblei

A small tree. Leaves coriaceous, elliptic - oblong, 6-10 x 3.5-5.5 cm, cuneate at base, entire margin, acute - shortly acuminate; petiole 2 cm. Flowers in terminal and axillary panicle.

Minumaluru and Sunnarivetta of Vissakhapatnam district. Fl. & Fr.: March - November. Minumaluru (VSIP), G.V. Subba Rao 29606 (MH); Sunnarivetta (VSIP), G.V. Subba Rao 22641 (MH).

A shrub or tree, up to 6 m tall; branchlets terete to angular, hispid, nodose. Leaves decussate, rarely ternate, subcoriaceous, elliptic-obovate, 6-12 x 3-6 cm, acute-cuneate at base, entire margin, acute - shortly acuminate at apex, lateral nerves 10-12 pairs; petiole 1 cm; stipules triangular, acute. Flowers 5-merous, in terminal dense panicle pale yellow; bracts and bracteoles lanceolate. Capsule loculicidal, loculicidal, 2-valved 1 x 1.75 mm.

Deccan hills of Cuddapah (Gamble). Fl. & Fr.: February-September.

Wendlandia tinctoria DC. Prodr. 11.1837; FBI 3:38; Gamble 587 (145).

1. Calyx - tube glabrous, stamule truncate, branchlets glabrous ................................................. ssp. tinctoria

1. Calyx - tube pubescent, stamule ovate,
branchlets slightly pubescent .................. ssp. orientalis

ssp. tinctoria.

A shrub, up to 2 m tall. Leaves elliptic-obovate, 6.5-15 x 3.5-5.5 cm, acute at base, entire margin, acute - shortly acuminate at apex, glabrous above, pubescent near vein below, prominently nervet, petiole 2 cm; stipules ovate cuspidate. Flowers in terminal dense panicles, white. Capsule globose, 0.3 x 0.2 cm, loculicidal, 2-valved.
North circars, Decan from the Vallerantri forests of Kumool districts (VSIP), [date] 1886; Kumool district, J.L. Gamble 19727 (IFR); way to Velode-CBM, Vallerantri, J.L. Ellis 23948 (IFR).


A shrub, up to 2 m tall. Leaves elliptic-oblong, 8-11 x 4-5 cm, rounded at base, entire margin, acute - acuminate at apex, glabrous, prominently nerved, main nerves 8-10 pairs, petiolate; stipules truncate. Flowers in terminal panicles, white, with rose tips; fragrant, bracts linear, 0.4 cm; bracteoles 0.1 cm long, persistent. Capsule globose.

North circars, hills of Visakhapatnam and West Godavari districts, up to 125 mtrs. Fl. & Fr.: February - September. Way to Tirumalai (CTB), K.Subramanyan 7851 (NH); Mantralakana (KML), J.L. Gamble 16014 (DD); Rampa hills (36), J.L. Gamble 19727 (DD).

* * * * * * * * * *

Besides the above species some members are grown for various purposes. Cinchona officinalis L. is grown in the forests of Kumool district. Coffea arabica L. is being grown in Chintapalli, Sileru, T.Y.Nagar, Sunkarimetta, Anantariri and Simpalam hills.
of Visakhapatnam district and Hamdumilli in Rampachadavaram
in East Godavari district by the Forest department and
Integrated Tribal Development Agency. *Gardinia angustata* (L.)
Herr., *Hovea patens* Jacq., *Hydnocarpus* L., *Lissaenda*
erubrophylla Schum. & Thom. are grown as ornamentals in gardens
and parks.