

6. Tribe VERNONIEAE

斑鸠菊族 ban jiu ju zu

Chen Yilin (陈艺林 Chen Yi-ling); Michael G. Gilbert

Herbs, shrubs, sometimes climbing, or trees; hairs simple, T-shaped, or stellate. Leaves usually alternate [rarely opposite or whorled], leaf blade entire or serrate-dentate [rarely pinnately divided], venation pinnate, rarely with 3 basal veins (*Distephanus*). Synflorescences mostly terminal, less often terminal on short lateral branches or axillary, mostly cymose paniculate, less often spikelike, forming globose compound heads or reduced to a solitary capitulum. Capitula discoid, homogamous. Phyllaries generally imbricate, in several rows, rarely in 2 rows, herbaceous, scarious or leathery, outer gradually shorter. Receptacle flat or rather convex, naked or \pm fimbriate. Florets 1–400, all bisexual, fertile; corolla tubular, purple, reddish purple, pink, or white, rarely yellow (*Distephanus*), limb narrowly campanulate or funnellform, 5-lobed. Anther base bifid, auriculate, acute or hastate, rarely caudate, apex appendaged. Style branches usually long and slender, apex subulate or acute, dorsally pilose, without appendage. Achenes cylindrical or slightly flattened, (2–)5–10[–20]-ribbed, or 4- or 5-angled, rarely \pm terete; pappus usually present, persistent, of many filiform setae, bristles, or scales, often 2-seriate with inner series of setae or bristles and shorter outer series of scales, sometimes very few and deciduous (*Camchaya*) or absent (*Ethulia*).

Up to 120 genera and 1,400 species: throughout the tropics and extending into some temperate regions; six genera (one introduced) and 39 species (ten endemic, two introduced) in China.

The classification of this tribe is still in flux with some authors not accepting most of the recent segregates from *Vernonia*. See Robinson and Skvarla (Taiwania 55: 254–272. 2010) for a treatment of the Chinese species of Vernonieae using these segregates.

- 1a. Capitula densely clustered into compound synflorescences subtended by (1–)3 leaflike bracts, each involucre with 1–4 florets and ca. 8 phyllaries.
 - 2a. Capitula (1–)10–40 per cluster, clusters terminal, solitary or in flat-topped synflorescences, each subtended by (2 or)3 \pm triangular bracts; pappus with many straight, scabrid-barbellate, basally widened awns 90. *Elephantopus*
 - 2b. Capitula 1–5+ per cluster, clusters axillary in long spikelike synflorescences, each subtended by 1 or 2 lanceolate to spatulate or linear bracts; pappus with 2 very long, bent or curved awns 91. *Pseudelephantopus*
- 1b. Capitula in lax panicles, rarely in sessile clusters and then each involucre with more than 4 florets and always with many phyllaries.
 - 3a. Corolla golden yellow; leaves basally 3-veined 88. *Distephanus*
 - 3b. Corolla pale to dark purple, pink, or white; leaves pinnately veined.
 - 4a. Pappus absent; achenes (2–)4- or 5(or 6)-ribbed, apex truncate or concave with an enlarged rim 86. *Ethulia*
 - 4b. Pappus present [or absent]; achenes 10-ribbed, 4- or 5-angled, or terete, apex rounded.
 - 5a. Pappus of 1–10 easily deciduous bristles [or absent] 89. *Camchaya*
 - 5b. Pappus long, copious, persistent, outermost setae sometimes short and scalelike 87. *Vernonia*

86. ETHULIA Linnaeus f., Dec. Prima Pl. Horti Upsal. 1. 1762.

都丽菊属 du li ju shu

Herbs, annual or perennial; indumentum of simple hairs and sessile globose glands. Leaves alternate, petiole often ill-defined, margin usually dentate, pinnately veined. Synflorescence terminal, paniculate, densely clustered to laxly corymbose. Involucre campanulate or hemispheric; phyllaries imbricate, to 4-seriate, usually with scarious margins, apex obtuse to acute [to acuminate], outer shorter. Receptacle flat or rather convex, naked. Florets [3–]18–24[–50]; corolla purplish or reddish, narrowly tubular, usually with scattered glands, with narrowly campanulate limb, lobes 5, narrow. Anthers obtusely auricled. Style branches subulate, puberulent. Achenes cylindrical or obconical, prominently [2–]4- or 5(or 6)-ribbed, glandular between ribs, otherwise glabrous, apex [cupular to] truncate, with well-defined callose ring. Pappus absent.

About 19 species: most in tropical Africa, three or four restricted to Indonesia and Philippines, and one a widely distributed adventive; two species in China.

- 1a. Fruiting capitula with involucre spreading-rotate and exposing hemispheric cluster of achenes, usually with some capitula sessile; corolla 1.2–1.5 mm; achene broadly obpyramidal, apex truncate with conspicuously swollen callose ring 1. *E. conyzoides*
- 1b. Fruiting capitula with involucre campanulate and concealing achenes, capitula always clearly pedunculate; corolla 2.2–2.5 mm; achene narrowly obpyramidal to almost cylindrical, apex shallowly cupular with narrow callose ring 2. *E. gracilis*

1. *Ethulia conyzoides* Linnaeus f., Dec. Prima Pl. Horti Upsal. 1. 1762.

Ethulia ramosa Roxburgh.

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Herbs, annual, 0.4–1[–2] m tall. Stems erect, upper parts branched, lower part green or purplish, striate, adpressed pu-

berulent or subglabrous. Leaves denser, lowermost withered and shed by anthesis, median leaves oblong or oblong-lanceolate, 5–9[–13] × 1.5–2.5 cm, both surfaces gland-dotted, lateral veins 7- or 8-paired, adaxially rather prominent, base cuneately attenuate into short petiole, margin subentire to distantly coarsely serrate, apex acuminate or acute; upper leaves smaller, shallowly serrate or subentire. Synflorescence usually in terminal corymbs, often 2 or 3 together in sessile cluster. Capitula small; peduncles 0–6 mm, densely ferruginous puberulent. Involucre hemispheric at anthesis, rotate in fruit, to 2.5 × 5–7 mm; phyllaries 4- or 5-seriate, subequal, ovate or oblong-lanceolate, ca. 3 mm, apex acuminate or rather obtuse, outer and median ferruginous puberulent and glandular, inner glabrous and glandular. Florets to ca. 30; corolla pale purplish, tubular, 1.2–1.5 mm, glandular; lobes lanceolate. Achenes obconical, 1.2–2.1 mm, (3 or)4 or 5(or 6)-ribbed, apical rim expanded laterally to form wide truncate apex, fulvous glandular between ribs. Pappus absent. Fl. Apr–May.

By ponds and rice fields; 600–1400 m. Taiwan, S Yunnan [Cambodia, India, Laos, Thailand; Africa, South America (introduced)].

2. *Ethulia gracilis* Delile in Cailliaud, Voy. Méroé 4: 334. 1827.

纤细都丽菊 xian xi du li ju

Herbs, annual, to 1.3 m tall. Stems erect, upper parts branched, striate, adpressed puberulent. Leaves subsessile, narrowly lanceolate to lanceolate, to 10.5 × 2 cm, both surfaces adpressed puberulent, base narrowly cuneate, margin obscurely, sparsely dentate, apex acute. Peduncles (0–)0.7–6.5 mm. Involucre hemispheric; phyllaries ca. 3-seriate. Florets 18–24; corolla pale lilac to mauve, tubular, 2.2–2.5 mm. Achenes subcylindric, 0.8–1.7 mm, (2–)4–6-ribbed, apical rim narrow, forming shallow cup. Pappus absent.

By ponds and rice fields. ?Yunnan [Thailand; E and NE Africa].

There has been confusion, particularly in Asia, between this species and the more widely distributed and more weedy *Ethulia conyzoides*, though the two are easily distinguished if ripe fruit are available. For example, the illustration in Higher Pl. China (11: 135, pl. 186. 2005) clearly depicts this species rather than *E. conyzoides*.

87. *VERNONIA* Schreber, Gen. Pl. 2: 541. 1791, nom. cons.

斑鸠菊属 ban jiu ju shu

Herbs, shrubs, or trees, sometimes climbing; indumentum of simple or T-shaped hairs and sessile globose glands. Leaves alternate, rarely opposite, petiolate or subsessile, often ill-defined, margin entire, serrate, or dentate, pinnately veined. Synflorescence terminal or axillary, paniculate, densely clustered to laxly corymbose, sometimes thyrsoid, racemelike, or reduced to solitary capitulum. Involucre bowl-shaped to narrowly cylindrical; phyllaries imbricate, to 6-seriate, often with scarious margins, apex obtuse, acute, or acuminate into spinescent or threadlike tip, outer phyllaries shorter, inner occasionally caducous. Receptacle flat, areolate, naked or sometimes shortly hairy. Florets (1–)3–100+; corolla pink, purplish, rarely white, narrowly tubular, often glandular, with campanulate or campanulate-funnelform limb; lobes 5. Anthers hastate, obtusely auricled. Style branches subulate, puberulent. Achenes cylindrical or obconical, mostly with (7–)10 well-defined ribs, less often 4- or 5-ribbed or angled, rarely terete, usually glandular between ribs, glabrous or shortly hairy, apex truncate, often callose at base. Pappus usually double, outer pappus of short bristles or narrow scales, occasionally absent, inner pappus of many scabrid-barbellate-plumose bristles, deciduous or persistent, often colored.

About 1,000 species in the wide sense: tropical Asia and Africa, North and South America; 31 species (eight endemic, one introduced) in China.

Robinson (Proc. Biol. Soc. Washington 112: 220–247. 1999; in Kadereit & C. Jeffrey, Fam. Gen. Vasc. Pl. 8: 149–175. 2007) has proposed the segregation of many smaller genera from *Vernonia*, with *Vernonia* s.s. restricted to ca. 17 species in North America. Most of his segregates can be rather difficult to delimit, and the placement of individual species is not always easy; so *Vernonia* continues to be used mostly in its old, very wide, sense. However, there are some segregates that are quite widely accepted. One of these, *Distephanus*, occurs in China and is recognized in this Flora. The Chinese species are divided below into informal groups corresponding to these potential segregate genera.

Vernonia andersonii C. B. Clarke (Compos. Ind. 27. 1876; *Decaneuropsis andersonii* (C. B. Clarke) H. Robinson & Skvarla) is included in the following key on the basis of Robinson and Skvarla (Taiwania 55: 262. 2010). All the material so named seen so far by the present authors has proved to be *V. cumingiana*.

- 1a. Trees, shrubs, or climbers; florets (1 or)2–12 per involucre, rarely more and then plant a climber with axillary synflorescences.
- 2a. Trees or self-supporting shrubs.
 - 3a. Leaves obovate to oblanceolate, clearly widest above middle, basal secondary veins substraight toward leaf margins; petiole short and broad or expanded into a sheath at base; synflorescence conically thyrsoid (3. *Monosis* group).
 - 4a. Trees 3–8 m tall; leaf blade to 50 × 20 cm, abaxially glabrous or sparsely pubescent, lateral veins 12–17-paired; achenes 3–4 mm 8. *V. volkameriifolia*
 - 4b. Shrubs 2–3 m tall; leaf blade 15–30 × 4–9 cm, abaxially densely pubescent to fulvous tomentose, lateral veins 7–12-paired; body of mature achenes ca. 2.5 mm 9. *V. parishii*
- 3b. Leaves ovate to elliptic or oblong, widest at or below middle, basal secondary veins curved and often becoming subparallel to basal leaf margins; petiole slender; synflorescence flat-topped to rounded.
 - 5a. Corolla 8–10 mm, uniformly slender from base before widening into limb; achenes strongly 10-ribbed; style base without node; sweeping hairs of style branches pointed (4. *Gymnanthemum* group) 10. *V. extensa*

- 5b. Corollas 5–7 mm, widening gradually from near base; achenes 5-ribbed to weakly 10-ribbed; style base with large distinct node; sweeping hairs of style branches blunt (1. *Strobocalyx* group p.p.).
- 6a. Trees; branches fulvous or brown tomentose; inner phyllaries persistent.
- 7a. Florets 5 or 6 per capitulum; involucre 6–8 mm in diam.; phyllaries ovate-oblong, shortly pubescent or subglabrous; achenes subtriangular in section, 8–10-ribbed, glabrous, glandular; leaf blade thinly leathery, glabrous or sparsely puberulent along veins, margin entire 1. *V. arborea*
- 7b. Florets ca. 10 per capitulum; involucre 4–5 mm in diam.; phyllaries ovate, abaxially densely tomentose; achenes 4- or 5-angled, glabrous; leaf blade papery, abaxially hispidulous, adaxially tomentose, margin repand or laxly dentate 2. *V. solanifolia*
- 6b. Shrubs, rarely small trees; branches gray or gray-brown tomentose; innermost phyllaries ± deciduous.
- 8a. Capitula 6–8 mm in diam., florets 8–12; involucre subglobose or hemispheric with rounded base, 4–6 mm in diam.; phyllaries obtuse or rounded at apex, white sericeous; achenes 3.5–4 mm, 3-ribbed ventrally, glabrous; leaves membranous or thinly papery 3. *V. bockiana*
- 8b. Capitula 2–3 mm in diam., florets 5 or 6; involucre obconical with cuneate base, 2–3 mm in diam.; phyllaries few, acute or slightly acute at apex, sparsely shortly pubescent; achenes ca. 3 mm, slightly ribbed, sparsely puberulent, glandular; leaves hardly papery 4. *V. esculenta*
- 2b. Scandent shrubs.
- 9a. Synflorescences terminal and subterminal, forming broad panicle; pappus white or dirty white; branches densely reddish- or yellowish brown pubescent (1. *Strobocalyx* group p.p.).
- 10a. Branches densely reddish brown pubescent, eglandular; lateral veins 7- or 8-paired; capitula 7–12 mm in diam., with ca. 10 florets, peduncle up to 15 mm; achenes 10-ribbed, eglandular 5. *V. sylvatica*
- 10b. Branches densely yellowish brown pubescent, glandular; lateral veins 3–6-paired; capitula 3–5 mm in diam., with 2 or 3 florets, peduncle less than 2 mm; achenes 5-ribbed, glandular 6. *V. chunii*
- 9b. Synflorescences mostly axillary, forming long thyrses; pappus reddish, yellow, or brown; branches grayish brown pubescent.
- 11a. Hairs of stems and leaves T-shaped with long arms, shortly stalked and pressed against stems or leaf surface, silky; corollas without long slender bases; style with distinct basal node; achenes 5-angled (2. *Tarlmounia* group) 7. *V. elliptica*
- 11b. Hairs of stems and leaves simple, not T-shaped; corollas with long and filiform bases; bases of styles without nodes; achenes strongly 10-ribbed (5. *Decanepsis* group).
- 12a. Capitula in terminal or subterminal panicles; receptacle ferruginous pubescent; pappus reddish or reddish brown; leaves papery; branches reddish brown or grayish brown tomentose 11. *V. cumingiana*
- 12b. Capitula mostly axillary or on short lateral branches, solitary or in groups of 3–5, forming leafy thyrses; receptacle glabrous; pappus yellowish brown; leaves leathery or thinly leathery; branches sparsely, shortly pubescent or glabrescent.
- 13a. Leaf blade oblong or oblong-lanceolate, lateral veins 7–9-paired, adaxially densely gray-green tomentose; capitula with ca. 10 florets; achenes 3–3.5 mm.
- 14a. Phyllaries linear or linear-lanceolate, acute at apex, with dense short pubescence on margins and tips 12. *V. gratiosa*
- 14b. Phyllaries oblong, with short acute tips, glabrous *V. andersonii* (see note under *V. cumingiana*)
- 13b. Leaf blade ovate-oblong or oblong-elliptic, lateral veins 5–7-paired, adaxially sparsely pubescent; capitula with 18 or more florets; achenes 4–4.5 mm.
- 15a. Capitula 7–8 mm in diam., 3–5 in small axillary panicles; florets 20–25, reddish purple; achenes 3–3.5 mm, 10-ribbed, with short patent hairs and glands; leaves thinly leathery, elliptic or ovate-elliptic, entire 13. *V. blanda*
- 15b. Capitula ca. 20 mm in diam., solitary in leaf axils, racemose; florets many, white; achenes 7–9 mm, 7- or 8-ribbed, glabrous; leaves leathery, obovate-oblong or elliptic-oblong, margin often revolute, sparsely denticulate at upper margins 14. *V. chingiana*
- 1b. Erect annual or perennial herbs; florets 19 or more per involucre; synflorescences terminal.
- 16a. Achenes 4- or 5-angled to almost terete; phyllary apex acute or aristate-acuminate; plants often annual herbs (7. *Cyanthillium* group).
- 17a. Achenes unribbed or rarely inconspicuously ribbed, ± compressed, densely white pilose; pappus 2-seriate, outer setae many, short, and persistent; capitula small, ca. 6 mm in diam., many in relatively broad panicles; florets 19–28.
- 18a. Corolla ca. as long as pappus; leaf blade rhombic to ovate 26. *V. cinerea*
- 18b. Corolla much longer than pappus at anthesis; leaf blade linear-lanceolate to lanceolate 27. *V. benguetensis*
- 17b. Achenes 4- or 5-angled, glabrous and glandular; pappus 1-seriate, deciduous; capitula larger, 6–10 mm in diam., few or 2 or 3 terminal on branches; florets more than 30.
- 19a. Capitula several, laxly corymbose, 5–7 mm in diam.; stem leaves crowded, spatulate, apex rounded or obtuse, margin subentire, abaxially densely white hispidulous; small subshrubs, ca. 10 cm tall 28. *V. maritima*

- 19b. Capitula usually 2 or 3 terminal on branches or paired, 8–10 mm in diam.; stem leaves widely separated, ovate, ovate-elliptic, rarely orbicular, apex obtuse, slightly acute, margin crenate-shallowly dentate, abaxially sparsely shortly hairy or glabrous, adaxially gray sericeous-pubescent; robust annual herbs, to 1 m tall 29. *V. patula*
- 16b. Achenes (7–)10-ribbed or striate.
- 20a. Capitula subtended by foliose bracts as long as phyllaries; phyllary apex \pm leaflike; corolla with slender base more than 2 \times as long as abruptly wider narrowly campanulate limb; pappus bristles flattened on outer surface (9. *Baccharoides* group) 31. *V. anthelmintica*
- 20b. Capitula without foliose or membranous appendaged bracts at base of involucre; phyllary apex not leaflike; corolla with slender base up to as long as narrowly funnel-shaped limb; pappus segments rounded and/or scabrid on outer surface.
- 21a. Lower part of leaf blade with mostly spreading secondary veins; slender base of corolla tube ca. as long as limb; base of style without node (8. *Khasianthus* group) 30. *V. subsessilis*
- 21b. Lower part of leaf blade with secondary veins ascending at 45° angles or more; slender base of corolla tube shorter than limb; base of style with distinct node (6. *Acilepis* group).
- 22a. Capitula ca. 30 mm in diam.; phyllaries abaxially pale yellowish white tomentose 25. *V. albosquama*
- 22b. Capitula 5–25 mm in diam.; phyllaries glabrous to densely pubescent, green, often with darker apex.
- 23a. Outer pappus bristles many, short.
- 24a. Capitula usually more than 5 in terminal, often somewhat elongated, panicle or thyrse, 5–8 mm in diam.; achenes glabrous; pappus white or dirty white 15. *V. saligna*
- 24b. Capitula few, usually 2 or 3(–5) in \pm flat-topped cyme, rarely solitary in leaf axils, 8–15 mm in diam.; achenes hairy and glandular; pappus sordid white or rubescent, outer bristles deciduous or persistent.
- 25a. Stems hispidulous; capitula 10–15 mm in diam., peduncle very short to almost absent; florets ca. 30; phyllary apex apiculate; leaves oblanceolate or obovate-elliptic, sharply serrate, hispidulous on both surfaces 16. *V. aspera*
- 25b. Stems shortly pubescent or adpressed hairy; capitula 6–8(–10) mm in diam., peduncle 7–15 mm; florets 15–20; phyllary apex acute or acuminate; leaves oblong, oblong-lanceolate, obovate, or obovate-elliptic, denticulate or sparsely serrate toward apex, subglabrous or shortly pubescent along veins only.
- 26a. Involucres hemispheric; phyllaries with apex acute, upper part arachnoid pubescent and glandular; achenes hispidulous; leaves papery, laxly on stems, oblong or oblong-lanceolate, sparsely serrate on upper margins 17. *V. clivorum*
- 26b. Involucres obconical; phyllaries with apex acuminate, subscarios, margin pubescent; achenes patently villous; leaves leathery, often conferted below flowering branches, obovate or obovate-elliptic, upper leaves linear or linear-lanceolate, denticulate 18. *V. attenuata*
- 23b. Outer pappus bristles few to none.
- 27a. Capitula 4–6 mm in diam.; florets 8–12; shrubs or shrubby herbs 1–3 m tall; phyllary apex obtuse or bluntly acute, adpressed to form smooth involucre 19. *V. divergens*
- 27b. Capitula 12–25 mm in diam.; florets many; herbs 15–80(–200) cm tall; phyllary apex acute to acuminate, often conspicuous or colored spinescent, often recurved.
- 28a. Capitula sessile or nearly so, solitary, often axillary and forming spikelike synflorescence; outermost phyllaries almost subulate 24. *V. squarrosa*
- 28b. Capitula mostly clearly pedunculate, often in flat-topped cymes, never axillary; outer phyllaries lanceolate to ovate.
- 29a. Achenes glabrous; [inner phyllaries ca. 2.5 mm wide; stem hairs pigmented, clearly multicellular].
- 30a. Panicles relatively broad, \pm flat-topped; phyllaries often recurved at tip 21. *V. silhetensis*
- 30b. Panicles relatively narrow, \pm cylindric; phyllaries straight to slightly incurved 22. *V. doichangensis*
- 29b. Achenes adpressed hairy; inner phyllaries 1.5–2.2 mm wide; stem hairs pale, slender, obscurely multicellular.
- 31a. Involucre 12–15 mm wide; leaf blade thinly papery; achenes eglandular 20. *V. nantcianensis*
- 31b. Involucre 15–20 mm wide; leaf blade more stiffly papery; achenes glandular 23. *V. spirei*

1. *Strobocalyx* group

Strobocalyx (Blume ex Candolle) Spach; *Vernonia* sect. *Strobocalyx* Blume ex Candolle, Prodr. 5: 21. 1836.

Perhaps seven species: India to China and Indonesia; six species (four endemic) in China.

1. *Vernonia arborea* Buchanan-Hamilton, Trans. Linn. Soc. London 14: 218. 1824.

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Eupatorium celebicum Blume; *E. javanicum* Blume; *Gymnanthemum arboreum* (Buchanan-Hamilton) H. Robinson; *Strobocalyx arborea* (Buchanan-Hamilton) Schultz Bipontinus; *S. blumeana* (Candolle) Schultz Bipontinus; *S. celebica* (Blume) Schultz Bipontinus; *S. javanica* (Blume) Schultz Bipontinus; *Vernonia arborea* var. *javanica* (Blume) C. B. Clarke; *V. blumeana* Candolle; *V. celebica* (Blume) Candolle; *V. javanica* (Blume) Candolle; *V. urdanetensis* Elmer; *V. vaniotii* H. Léveillé.

Trees or erect shrubs, to 20 m tall. Branches densely fulvous tomentulose or ± glabrescent, rarely glabrous. Petiole 10–30 mm, densely pubescent; leaf blade ovate, elliptic-ovate, or oblong, 8–25 × 4–10 cm, thinly leathery, abaxially white pubescent, densely so on veins, or glabrous, adaxially fulvous pubescent along veins or glabrous, glandular, lateral veins 8–12-paired, adaxially distinctly raised, veinlets reticulate, base obtusely rounded or attenuate, margin entire, apex acuminate. Synflorescences terminal, panicles broader than long, shallowly rounded to ± flat-topped. Capitula very many; peduncles to 10 mm, mostly much shorter, densely pubescent; bracteoles absent. Involucre cup-shaped, 2–3 × 6–8 mm; phyllaries ca. 5-seriate, ovate or ovate-oblong, 0.5–2 mm, densely pilose, rarely subglabrous, apex obtuse or subacute, outer very short, ovate. Receptacle flat, areolate. Florets 5 or 6; corolla pink, pale purplish, or white, tubular, 5–7 mm, lobes acute, glabrous. Style branches long. Achenes compressed, 2–3 mm, 3- or 4-angled and 8–10-ribbed, inconspicuously pilose and glandular. Pappus 1- or 2-seriate, dirty white; outer setae few, almost absent, ca. 1 mm; inner setae 5–7 mm. Fl. and fr. Aug–Nov.

Open forests in valleys or on slopes; (100–)800–1200 m. Guangxi, SE Yunnan [India, Indonesia, Laos, Malaysia, Nepal, Sri Lanka, Thailand, Vietnam].

Many collections named as *Vernonia arborea* in European herbaria are *V. bockiana*.

2. *Vernonia solanifolia* Benth, London J. Bot. 1: 486. 1842.

茄叶斑鸠菊 qie ye ban jiu ju

Gymnanthemum solanifolium (Benth) H. Robinson; *Strobocalyx solanifolia* (Benth) Schultz Bipontinus; *Vernonia fortunei* Schultz Bipontinus.

Erect shrubs or trees, 8–12 m tall. Branches sometimes scandent, terete, fulvous or yellowish tomentose. Petiole 10–25 mm, densely tomentose; leaf blade ovate-oblong, 6–16 × 4–9 cm, abaxially scabrid, sparsely adpressed hispidulous, ± glabrescent, glandular, adaxially densely yellowish tomentose, lateral veins 7–9-paired, veinlets rather parallel and reticulate, base ± oblique, margin entire, shallowly repand, or laxly obtusely dentate, apex sometimes truncate. Synflorescences terminal, panicles flat-topped, up to 20 cm wide, leafy. Capitula many, small, 5–6 mm in diam.; peduncles 4–6 mm, densely tomentose. Involucre hemispheric, 4–5 mm wide; phyllaries 4- or 5-seriate, ovate, elliptic, or oblong, 2–6 mm, yellowish tomentose, apex obtuse. Receptacle flat, areolate. Florets ca. 10; corolla pink or purplish, fragrant, tubular, ca. 6 mm, with slender

tube and narrowly campanulate limb; lobes linear-lanceolate, glandular, apically white puberulent. Achenes rather compressed, 2–2.5 mm, 4- or 5-angled, glabrous. Pappus 2-seriate, yellowish; outer setae very short; inner setae scabridulous.

Open forests in valleys, climbing on trees; 500–1000 m. Fujian, Guangdong, Guangxi, Yunnan [Cambodia, India, Laos, Myanmar, N Thailand, Vietnam].

Vernonia solanifolia is used medicinally for treating carbuncle of the abdomen, intestinal pains, and eruptive diseases.

3. *Vernonia bockiana* Diels, Bot. Jahrb. Syst. 29: 608. 1901.

南川斑鸠菊 nan chuan ban jiu ju

Gymnanthemum bockianum (Diels) H. Robinson; *Pluchea rubicunda* C. K. Schneider; *Strobocalyx bockiana* (Diels) H. Robinson et al.

Shrubs or small trees, 3–6 m. Branches terete, finely striate, densely gray or yellowish fulvous tomentose. Petiole stout, 12–25 mm, densely gray or yellowish fulvous tomentose; leaf blade oblong-lanceolate or oblong-elliptic, rarely ovate-lanceolate, (8–)12–22 × 3–3.5 cm, membranous or thinly papery, abaxially dark green, rather scabrid, papillose, adaxially gray pubescent and white glandular, lateral veins 10–13-paired, adaxially prominent, veinlets reticulate, margin obscurely repand-denticulate, repand, or subentire, apex acuminate or long acuminate, mucronulate. Synflorescences terminal, panicles lax, flat-topped, 10–20 cm wide, lower branches subtended by well-developed leaves. Capitula many, 6–8 mm in diam.; peduncle 5–10 mm, gray tomentose. Involucre subglobose or hemispheric, 4–6 × 4–6 mm; phyllaries 5-seriate, dark brown or purplish red, leathery, ovate-oblong or oblong-obovate, rarely spatulate, white sericeous, apex obtuse, thickened mucronate, outer short, inner 4–5 × ca. 1.5 mm. Receptacle rather convex, foveolate. Florets 8–12; corolla reddish purple, tubular, ca. 7 mm, glandular; lobes linear-lanceolate, glandular. Achenes yellowish fulvous, subcylindric, 3.5–4 mm, 3-ribbed adaxially, glabrous or subglabrous, glandular. Pappus 2-seriate, white; outer setae short; inner setae as long as corolla, scabrid. Fl. Jul–Nov.

• Open places on slopes, thickets, forest margins; 500–1300 m. Chongqing, Guizhou, Sichuan, Yunnan.

Material of *Vernonia bockiana* has been incorrectly identified as *V. arborea* or *V. esculenta* in several herbaria.

4. *Vernonia esculenta* Hemsley, J. Linn. Soc., Bot. 23: 401. 1888.

斑鸠菊 ban jiu ju

Gymnanthemum esculentum (Hemsley) H. Robinson; *Strobocalyx esculenta* (Hemsley) H. Robinson et al.; *Vernonia arbor* H. Léveillé; *V. papillosa* Franchet.

Shrubs or small trees, 2–6 m tall. Branches terete, ± angled, striate, gray or gray-brown tomentose. Petiole 5–20 mm, densely gray tomentulose; leaf blade oblong-lanceolate or lanceolate, 10–23 × 3–8 cm, thinly papery, abaxially pale, uniformly densely gray pilose to sparsely tomentulose on veins only, adaxially dark green, rather scabrid, papillose, glandular on both surfaces, lateral veins 9–13-paired, adaxially prominent, veinlets reticulate, base cuneate, rarely subrounded, mar-

gin mucronate-denticulate, repand, or entire, apex acute or acuminate. Synflorescences terminal, panicles dense, broad. Capitula many, 2–4 mm in diam.; peduncles 2–5 mm or almost absent, slender, densely tomentose. Involucre obconical, 2–3 mm wide, base acute; phyllaries few, ca. 4-seriate, dark green, ovate, ovate-oblong, or oblong, leathery, gray pilose, apex acute or rather acute, mucronulate. Receptacle small, foveolate. Florets 5 or 6; corolla reddish purple, tubular, ca. 7 mm, glandular, dilated toward apex; lobes linear-lanceolate, glandular. Achenes yellowish brown, subcylindric, ca. 3 mm, rather angled, sparsely puberulent and glandular. Pappus 2-seriate, white or sordid white; outer setae short; inner setae 6–7 mm, scabrid. Fl. Jul–Dec.

• Sunny places on slopes, grassy slopes, lax thickets, forests, forest margins; 1000–2700 m. W Guangxi, Guizhou, SW and W Sichuan, Yunnan.

Vernonia esculenta differs from *V. bockiana* in having smaller capitula with obconical involucre 2–3 mm in diam., 5 or 6 florets, and fewer phyllaries that are ca. 4-seriate, ovate or ovate-oblong, acute, and gray pilose on the margins.

5. *Vernonia sylvatica* Dunn, J. Linn. Soc., Bot. 35: 501. 1903.

林生斑鸠菊 lin sheng ban jiu ju

Strobocalyx sylvatica (Dunn) H. Robinson et al.

Scandent shrubs. Stems terete, striate, densely reddish brown pubescent. Petiole 5–10 mm, densely reddish brown pubescent; leaf blade ovate or oblong, 6–13 × 2–5.5 cm, papery, both surfaces densely pubescent along veins and concavely glandular, lateral veins 7- or 8-paired, adaxially prominent, veinlets reticulate, base obliquely rounded, margin entire or sometimes sinuately denticulate, apex shortly acute or acuminate, or obtuse. Synflorescences terminal, panicles broad. Capitula many, 7–12 mm in diam.; peduncles 5–15 mm; bracteoles 1 or

2, ovate-lanceolate. Involucre hemispheric, 3–5 mm; phyllaries ca. 4-seriate, black in center when dry, ovate or ovate-lanceolate, densely brownish pubescent, apex acute, outer short, ovate. Receptacle flat, foveolate. Florets ca. 10, 3–4 × as long as involucre; corolla purple or pink-purple, tubular, ca. 7 mm, lobes lanceolate, glandular. Immature achenes cylindrical, 4- or 5-ribbed, glabrous or sparsely puberulent. Pappus 2-seriate, white; outer setae very short; inner setae subequal to corolla, scabrid. Fl. and fr. Sep–Mar.

• Open forests in valleys, thickets on roadsides; 500–1900 m. Guangxi, Yunnan.

6. *Vernonia chunii* C. C. Chang, Sunyatsenia 3: 272. 1937.

少花斑鸠菊 shao hua ban jiu ju

Strobocalyx chunii (C. C. Chang) H. Robinson et al.

Scandent shrubs. Stems inconspicuously striate, fulvous tomentulose, mixed with glands. Leaf blade oblong or elliptic-oblong, rarely ovate, 7–13 × 2.8–5.7 cm, papery, gray or fulvous tomentulose except on veins, lateral veins 3–6-paired, adaxially prominent, veinlets reticulate, base rounded or attenuate, margin entire or repand, apex shortly acute, rarely rounded-obtuse. Synflorescences terminal, panicles broad. Capitula many, 3–5 mm in diam.; peduncles to 2 mm, fulvous tomentulose; bracteole 1, at base. Involucre tubular, 4–5 mm; phyllaries 4–6-seriate, midrib often purple, thinly leathery, ovate to oblong, 1-veined, dorsally and margin tomentulose, apex obtuse, rarely acute, outer short, ovate, 1–1.5 mm. Receptacle flat, subfoveolate. Florets 2 or 3; corolla violaceous, tubular, 5–6 mm, lobes linear-lanceolate, glabrous. Achenes suboblong, ca. 2.5 mm, inconspicuously 5-ribbed, glabrous, glandular. Pappus 2-seriate, white or dirty white; outer setae very short; inner setae ca. 6.5 mm, scabrid. Fl. and fr. Jul–Oct.

• Forests on slopes in valleys. Hainan.

2. *Tarlmounia* group

Tarlmounia H. Robinson et al.

One species: India, Myanmar, Thailand; introduced to China.

7. *Vernonia elliptica* Candolle in Wight, Contr. Bot. India, 5. 1834.

光耀藤 guang yao teng

Strobocalyx elliptica (Candolle) Schultz Bipontinus; *Tarlmounia elliptica* (Candolle) H. Robinson et al.

Scandent shrubs. Stems striate, all parts gray sericeous, hairs T-shaped. Petiole curved, ca. 2 mm; leaf blade elliptic-oblong, 2–6.5(–10) × 1–4(–6) cm, abaxially densely sericeous, adaxially sericeous on main veins, glabrous to thinly hairy between, lateral veins ca. 7-paired, base cuneate to rounded, margins entire, apex subacute. Synflorescences terminal and subter-

minal, panicles elongated, thyrse-like. Capitula clustered at tips of branches. Involucre tubular, 3–4 × 1.5–2.5 mm; phyllaries ca. 4-seriate, tinged purple at tip, outer suborbicular, adpressed sericeous, apex rounded, inner oblong-elliptic. Florets 5; corolla pale pink, 5–6 mm, sparsely glandular, lobes ca. 2 mm. Achenes pale brown, cylindrical-clavate, 1.8–2.2 mm, 5-angled, densely and minutely glandular. Pappus tawny-white; inner setae 4–5.5 mm, scabrid.

Occasionally cultivated, locally escaped and naturalized. S Taiwan [native to India, Myanmar, and Thailand].

This species is cultivated in Hong Kong.

3. *Monosis* group

Monosis Candolle.

Seven species: India to China; two species in China.

8. *Vernonia volkameriifolia* Candolle, Prodr. 5: 32. 1836 [“*volkameriaefolia*”].

大叶斑鸠菊 da ye ban jiu ju

Gymnanthemum volkameriifolium (Candolle) H. Robinson; *Monosis volkameriifolia* (Candolle) H. Robinson & Skvarla; *Vernonia acuminata* Candolle; *V. esquirolii* H. Léveillé

(1912), not Vaniot (1907); *V. leveillei* Fedde ex H. Léveillé; *V. punduana* Candolle.

Trees, 3–8 m tall. Branches robust, terete, yellowish brown tomentose. Petiole short and broad, basally often expanded into a sheath, 10–18 mm, densely tomentose; leaf blade obovate or obovate-cuneate, rarely oblong-oblancoolate, 15–50 × 4–20 cm, abaxially glabrous or sparsely pubescent on midrib, adaxially pubescent along veins, glandular, lateral veins 12–17-paired, veins adaxially raised, veinlets reticulate, base cuneately attenuate, margin sinuate or sparsely coarsely dentate, rarely entire, apex shortly acute or obtuse, rarely acuminate. Synflorescences terminal, panicles flat-topped, 20–30 cm, leafless, lower branches of panicles 8–10 cm. Capitula many, 5–8 mm in diam., densely fulvous tomentose. Involucre narrowly campanulate, 5–6 mm wide; phyllaries ca. 5-seriate, brownish or apically purplish, ovate or ovate-oblong, 3–6 mm, pubescent or ± glabrescent, apex acuminate, outer short and obtuse, inner rather acute. Receptacle flat, foveolate. Florets 10–12; corolla pink or reddish purple, tubular, 7–8 mm, glabrous, with short tube and narrowly campanulate limb; lobes linear-lanceolate, glandular. Achenes oblong-cylindric, 3–4 mm, 10-ribbed, glandular between ribs or ± puberulent. Pappus 2-seriate, white or dirty white; outer setae short; inner setae 8–9 mm. Fl. Oct–Apr.

Thickets or mixed forests in valleys; 800–1600 m. Guangxi, Guizhou, Xizang, Yunnan [Bhutan, India, Laos, Myanmar, Nepal, Thailand, Vietnam].

This taxon was first named invalidly as “*Conyza volkameriaefolia*” by Wallich (Numer. List, no. 3001. 1831) and listed as “*Eupatorium volkameriaefolium*” by Candolle (Prodr. 5: 33. 1836).

4. *Gymnanthemum* group

Decaneurum Candolle, nom. illeg. superfl.; *Gymnanthemum* Cassini.

More than 40 species: mostly in Africa and Madagascar, extending into Asia; one species in China.

10. *Vernonia extensa* Candolle, Prodr. 5: 33. 1836.

展枝斑鸠菊 zhan zhi ban jiu ju

Gymnanthemum extensum (Candolle) Steetz; *Vernonia subarborea* Vaniot.

Shrubs or subshrubs, 2–3 m tall. Branches terete, striate, densely yellowish brown puberulent and glandular. Petiole 5–10 mm, densely puberulent; leaf blade oblong or oblong-lanceolate, 9–12 × 3–7.5 cm, thick or submembranous, abaxially densely or sparsely yellow puberulent, glandular, adaxially dark green, adpressed hispidulous or ± glabrescent, lateral veins 9- or 10-paired, veins abaxially ± raised, veinlets inconspicuously reticulate, base cuneately attenuate, margin mucronate-serrate, apex acuminate. Synflorescences usually terminal and subterminal, panicles lax or dense, flat-topped. Capitula many, 4–5 mm in diam.; peduncles (3–)5–8 mm; bracteoles 1 or 2, linear,

9. *Vernonia parishii* J. D. Hooker, Fl. Brit. India 3: 240. 1881.

滇斑斑鸠菊 dian mian ban jiu ju

Monosis parishii (J. D. Hooker) H. Robinson & Skvarla; *Vernonia laosensis* Gandoger; *V. volkameriifolia* Candolle var. *lanata* S. Y. Hu.

Small trees, rarely shrubs, 2–3 m tall. Stems erect, 1–1.5 cm in diam. at base, branches robust, terete, densely fulvous or brown tomentose. Petiole short and broad, 5–10 mm, densely tomentose; leaf blade obovate or oblanceolate, 10–30 × 4–9 cm, papery, abaxially sparsely minutely pubescent or ± glabrescent, adaxially fulvous or brown tomentose, glandular on both surfaces, lateral veins 7–12-paired, reticulate, base cuneately attenuate, margin obscurely toothed, rarely subentire, apex obtuse or subacute. Synflorescences terminal or axillary, panicles to 20 cm or more long. Capitula many, 5–8 mm in diam.; peduncles 2–5 mm or subsessile, densely tomentose; bracteoles ovate-lanceolate, at base. Involucre narrowly campanulate to subcylindric, 5–7 mm wide, white tomentose; phyllaries 5-seriate, purple, ovate, ovate-lanceolate, or oblong, 2–7 mm, outer short and obtuse, inner rather acute, white villous. Receptacle flat, foveolate. Florets ca. 10; corolla red-purple, tubular, ca. 7 mm, glandular, with dilated limb; lobes linear, apically glandular. Achenes yellowish brown, subcylindric, 2.5–3 mm, 3-ribbed adaxially, glabrous or subglabrous, glandular. Pappus 2-seriate, white; outer setae short; inner setae as long as corolla. Fl. Mar–May.

Thickets or mixed forests on slopes; 500–1700 m. SE and W Yunnan [Laos, Myanmar, Thailand].

densely yellowish puberulent and glandular. Involucre cylindrical, 6–7 × 4–5 mm; phyllaries few, ca. 5-seriate, yellow-green or with reddish purple tip, leathery, concave, ovate-oblong, puberulent or subglabrous, apex obtuse, outermost very short, inner linear-oblong, 6–7 × 1–1.5 mm. Receptacle small and flat, foveolate. Florets 8–10; corolla white or reddish, tubular, 8–10 mm, glandular-puberulent; lobes linear-lanceolate, 2.5–3 mm, apically glandular. Achenes oblong-cylindric, ca. 4 mm, 10-ribbed, puberulent and glandular. Pappus 2-seriate, reddish; outer setae few, short; inner setae 8–10 mm, scabrid. Fl. Oct–Mar.

Open forests or thickets in valleys, roadsides on slopes; 1200–2100 m. Guizhou, Yunnan [Bhutan, India (Sikkim), Myanmar, Nepal].

This taxon was first named “*Conyza extensa*” (in Wallich, Numer. List, no. 3016. 1831), which is a nomen nudum and was therefore not validly published. Material of this species has been misidentified as *Vernonia cylindriceps* C. B. Clarke (see Merrill, Brittonia 4: 182. 1941).

5. *Decaneuropsis* group

Decaneuropsis H. Robinson & Skvarla.

Twelve species: SE Asia, China, India; four species (two endemic) in China.

11. *Vernonia cumingiana* Benth., Hooker's J. Bot. Kew Gard. Misc. 4: 232. 1852.

毒根斑鸠菊 du gen ban jiu ju

Decaneuropsis cumingiana (Benth.) H. Robinson & Skvarla; *Gymnanthemum cumingianum* (Benth.) H. Robinson.

Scandent shrubs, 3–12 m. Stems terete, striate, densely ferruginous or gray-fulvous tomentose. Petiole 5–15 mm, densely ferruginous tomentose; leaf blade ovate-oblong, oblong-elliptic, or oblong-lanceolate, 7–21 × 3–8 cm, thickly papery, abaxially puberulent except midrib and lateral veins, glabrous, or subglabrous, adaxially densely or more densely ferruginous pubescent, glandular on both surfaces, lateral veins 5–7-paired, joined near margin, veins adaxially prominent, veinlets conspicuously reticulate, base cuneate or subrounded, margin entire or rarely remotely sinuate, apex acute or shortly acuminate. Synflorescences terminal, often on short lateral branches, or axillary, sometimes more than 1 per axil, panicles often longer than wide. Capitula usually very many, 8–10 mm in diam.; peduncle 5–10 mm; bracteoles often 1 or 2, linear, densely ferruginous or gray-brown tomentose and glandular. Involucre ovoid-globose or campanulate, 6–8 × 8–10 mm; phyllaries 5-seriate, ovate to oblong, ferruginous or fulvous tomentose, apex obtuse or slightly acute, outer short, inner oblong, 6–7 × 1–1.5 mm. Receptacle flat, ca. 3 mm in diam., ferruginous puberulent, foveolate. Florets 18–21; corolla reddish or reddish purple, tubular, 8–10 mm, glandular; lobes linear-lanceolate, apically glandular. Achenes subcylindric, 4–4.5 mm, 10-ribbed, puberulent. Pappus 1- or 2-seriate, red or reddish brown; outer setae few or absent; inner setae 8–10 mm, scabrid-barbellate. Fl. Oct–Apr.

Climbing on trees in *Quercus* forests or thickets in valleys; 300–1500 m. Fujian, Guangdong, Guangxi, Guizhou, Sichuan, Taiwan, Yunnan [Cambodia, Laos, Thailand, Vietnam].

The roots or stems can be used medicinally for lumbago, muscular strain of the lumbar region, and numbness of limbs, as well as for fever, malaria, toothache, and conjunctival hyperemia. The roots and stem contain the glucoside Vernonein.

There has been confusion between this and *Vernonia gratiosa* members of the possible segregate genus *Decaneuropsis* H. Robinson & Skvarla, with much material having been labeled as *V. andersonii* C. B. Clarke. Robinson and Skvarla include *V. andersonii* in their treatment of the tribe in China, but the material so named examined to date has proved to be *V. cumingiana*. In view of this confusion, *V. andersonii* has been included in the key to species. The error seems to have been first introduced by Forbes and Hemsley (J. Linn. Soc., Bot. 23: 400. 1888). Material has also been misidentified as *V. scandens* Candolle (e.g., Merrill, Lingnan Sci. J. 5: 182. 1927).

12. *Vernonia gratiosa* Hance, J. Bot. 20: 290. 1882.

台湾斑鸠菊 tai wan ban jiu ju

Decaneuropsis gratiosa (Hance) H. Robinson & Skvarla; *Vernonia andersonii* C. B. Clarke var. *albipappa* Hayata.

Scandent shrubs, to 3 m. Stems many, terete, striate, densely gray-brown tomentose. Petiole 4–10 mm, densely pubescent; leaf blade oblong or lanceolate-oblong, 6–12 × 1.5–4 cm, papery, abaxially sparsely puberulent or subglabrous, adaxially densely gray-green or gray-brown pubescent, lateral

veins 6–12-paired, veins adaxially inconspicuously raised, veinlets reticulate, base cuneate-rounded, margin entire or laxly mucronulate, apex shortly acuminate. Synflorescences terminal or axillary, paniculate. Capitula several, 10–15 mm in diam.; peduncles 2–12 mm. Involucre campanulate, ca. 6 × 7 mm, usually 1/2 as long as pappus; phyllaries ca. 4-seriate, outer short, linear or linear-lanceolate, densely brown pubescent, apex acute, median and inner oblong. Receptacle rather convex, foveolate. Florets ca. 10; corolla purple, tubular, ca. 10 mm, tube ca. 5 mm, densely puberulent; lobes linear-lanceolate, glabrous. Achenes cylindric, rather compressed, 3–3.5 mm, 10-ribbed, puberulent. Pappus 2-seriate, sordid brown or reddish brown; outer setae very short, deciduous; inner setae 9–10 mm, scabrid-barbellate. Fl. and fr. Aug–Feb.

• Forest margins on slopes; 400–700 m. Fujian, Taiwan.

13. *Vernonia blanda* Candolle, Prodr. 5: 32. 1836.

喜斑鸠菊 xi ban jiu ju

Decaneuropsis blanda (Candolle) H. Robinson & Skvarla; *Vernonia tavoyana* C. E. C. Fischer.

Scandent shrubs, up to 3 m. Stems terete, distinctly striate, brown puberulent, rarely glabrous, glandular. Petiole 4–8 mm, puberulent; leaf blade elliptic or ovate-elliptic, rarely ovate-oblong, 4.5–12 × 2–5 cm, leathery, abaxially glabrous except midrib and lateral veins, glandular, adaxially glabrous, lateral veins 4- or 5-paired, veins adaxially prominent, base cuneate-rounded, margin entire, apex acuminate or shortly acute. Synflorescences terminal and axillary, panicles small, rarely solitary capitula in upper axils, ± thyrse-like, leafy. Capitula usually 3–5, 7–8 mm in diam.; peduncles 5–8 mm, densely brown puberulent; bracteole often 1, linear-lanceolate. Involucre narrowly campanulate, 8–10 × 5–7 mm; phyllaries 5- or 6-seriate, yellow-green, dark brown on veins, ovate or oblong-lanceolate, glabrous or subglabrous, 3-veined, margins ciliate especially in upper part, apex acute or rather acute, outer ca. 2 mm, inner 7–8 × ca. 1.5 mm. Receptacle foveolate. Florets 20–25; corolla purplish, tubular, 7–8 mm, tube ca. 3 mm, slender, limb funnel-shaped; lobes lanceolate, glandular. Achenes subcylindric, 3–3.5 mm, ± angled, ribbed, patently puberulent and glandular. Pappus 1-seriate, reddish, ca. 8 mm. Fl. Sep–Feb.

Thickets or forests on slopes; 1700–2000 m. Guangxi, Xizang, Yunnan [India, Laos, Malaysia, Myanmar, Vietnam].

This taxon was first named "*Conyza blanda*" (in Wallich, Numer. List, no. 3033. 1831), which is a nomen nudum and was therefore not validly published. Material of this species was treated as *Vernonia scandens* by Gagnepain (in Lecomte, Fl. Gen. Indo-Chin. 3: 468. 1924).

14. *Vernonia chingiana* Handel-Mazzetti, Sinensia 7: 622. 1936.

广西斑鸠菊 guang xi ban jiu ju

Decaneuropsis chingiana (Handel-Mazzetti) H. Robinson & Skvarla.

Scandent shrubs, 1.5–3 m tall. Stems brown or olive-brown, distinctly striate, puberulent when young, glabrescent, sparsely yellow lenticellate, buds ferruginous tomentose. Petiole 5–15 mm, puberulent; leaf blade obovate-oblong or elliptic-oblong, 4–14 × 1.5–6.5 cm, leathery, brown when dry, glabrous,

nitid, adaxially adpressed puberulent, lateral veins 4- or 5-paired, midrib and lateral veins abaxially prominent, veinlets laxly reticulate, base cuneately attenuate into petiole, margin entire or laxly denticulate, reflexed, apex acute or acuminate, rarely obtuse or shortly acute. Synflorescences terminal and subterminal, \pm racemelike, lower capitula subtended by well-developed leaves. Capitula 3–6, ca. 20 mm in diam.; peduncles 3–10 mm; bracteoles several, leaflike, densely puberulent. Involucre broadly campanulate, 12–15 \times 15–20 mm; phyllaries ca. 5-seriate, hard, often overtopping disk, apically many striate, apex obtuse or rather acute, outer ovate, ca. 3 mm, inner sub-lanceolate or oblong-lanceolate, 8–10 \times ca. 3 mm, with nar-

rowly scarious margins, glabrous or ciliate on margins. Receptacle convex, 4–5 mm in diam., foveolate. Florets many, fragrant; corolla white, tubular, tube 10–11 mm, limb broadly campanulate; lobes lanceolate, acute, often reflexed, glabrous. Achenes cylindric, 7–9 mm, obscurely 7-ribbed, glabrous or sparsely puberulent. Pappus 2-seriate, yellow or fulvous; outer setae short, easily deciduous; inner setae ca. 12 mm, scabrid-barbellate.

• Open forests on stony mountains, on rocks, thickets on slopes; 400–600 m. Guangxi.

The roots and leaves of *Vernonia chingiana* are used for treating infantile convulsions and injuries of the skin.

6. *Acilepis* group

Acilepis D. Don; *Lysistemma* Steetz; *Xipholepis* Steetz.

Thirty-three species: India to China; 11 species (two endemic) in China.

15. *Vernonia saligna* Candolle, Prodr. 5: 33. 1836.

柳叶斑鸠菊 liu ye ban jiu ju

Acilepis saligna (Candolle) H. Robinson; *Aster coriaceifolius* H. Léveillé & Vaniot; *Vernonia longicaulis* Candolle; *V. martini* Vaniot; *V. seguinii* Vaniot.

Herbs, perennial, hard, 60–100(–200) cm tall. Stems erect, woody at base, to 8 mm in diam., terete, striate, sparsely adpressed-puberulent or subglabrous, glandular. Petiole short to almost absent; leaf blade elliptic-oblong or oblanceolate, 5–18 \times 1–5 cm, papery, both surfaces scabrid-puberulent and glandular, lateral veins 7- or 8-paired, veins abaxially prominent, reticulate veins sometimes very prominent, base narrowly cuneate, margin remotely serrate, apex acuminate or acute. Synflorescences terminal or axillary, panicles flat-topped, leafy. Capitula usually 6–8, 5–8 mm in diam.; peduncles 5–8 mm, densely puberulent and glandular. Involucre narrowly campanulate, 5–7 \times ca. 6 mm; phyllaries 4- or 5-seriate, reddish purple in upper part, ovate or oblong, 1.5–6 mm, scabrid, sparsely tomentose-ciliate or subglabrous, apex obtuse and mucronulate. Florets 16–20; corolla reddish pink to pale violet, occasionally \pm white, tubular, 6–7 mm, with slender tube and narrowly campanulate limb; lobes lanceolate, glandular. Achenes cylindric, ca. 2 mm, 10-ribbed, glabrous, glandular. Pappus 1-seriate, setae whitish, ca. 7 mm, scabrid-barbellate. Fl. Sep–Feb.

Thickets or open forests on slopes; 500–1600(–2100) m. Guangdong, Guangxi, Yunnan [Bangladesh, India, Myanmar, Nepal, Vietnam, Thailand].

This taxon was first named "*Conyza saligna*" (in Wallich, Numer. List, no. 3061. 1831), which is a nomen nudum and was therefore not validly published.

The leaves are used to treat fever, including malaria.

16. *Vernonia aspera* Buchanan-Hamilton, Trans. Linn. Soc. London 14: 219. 1824.

糙叶斑鸠菊 cao ye ban jiu ju

Acilepis aspera (Buchanan-Hamilton) H. Robinson; *Eupatorium pyramidale* D. Don; *Vernonia pyramidalis* (D. Don) S. N. Mitra; *V. roxburghii* Lessing; *V. thorelii* Gagnepain; *Xipholepis aspera* (Buchanan-Hamilton) Steetz.

Herbs, perennial, 1–2 m tall. Stems erect, rigid, woody at base, 6–7 mm in diam., simple or rarely branched, green or reddish purple tinged, striate, pale fulvous hispidulous or subglabrous in lower part. Petiole very short to almost absent; leaf blade oblanceolate or obovate-lanceolate, rarely elliptic, 5–12 \times 1.5–4.5 cm, stiffly papery, abaxially densely hispidulous, both surfaces glandular, adaxially papillose-hispidulous, lateral veins 7–10-paired, veins abaxially prominent, veinlets reticulate, base narrowly cuneate, margin serrate, obscure or subentire in lower part, apex acuminate or acute. Synflorescences terminal or subterminal, panicles usually (2 or) 3–5, dense, flat-topped. Capitula 10–15 mm in diam., shortly pedunculate or sessile. Involucre campanulate, 10–12 \times ca. 15 mm; phyllaries 5- or 6-seriate, purplish red at apex, ovate, oblong, or linear, 3–12 mm, sparsely pubescent or \pm glabrescent, apex mucronulate. Receptacle flat, foveolate. Florets ca. 30; corolla reddish purple, tubular, 7–8 mm; lobes linear, glandular. Achenes oblong-cylindric, 2–2.5 mm, 10-ribbed, puberulent. Pappus 2-seriate, sordid white or \pm reddish later; outer setae few, very short; inner setae 8–9 mm, scabrid-barbellate. Fl. Oct–Mar.

Open grasslands on slopes, roadsides; ca. 1400 m. Guizhou, Hainan, Yunnan [India, Laos, Myanmar, Nepal, Thailand, Vietnam].

The epithet was first introduced by Roxburgh as "*Eupatorium asperum*" (Hort. Bengal. 61. 1814), which is a nomen nudum. Merrill (Lingnan Sci. J. 5: 182. 1927) treated material of this species as *Vernonia teres* (a synonym of *V. squarrosa*).

17. *Vernonia clivorum* Hance, J. Bot. 7: 164. 1869.

岗斑鸠菊 gang ban jiu ju

Acilepis clivorum (Hance) H. Robinson; *Vernonia kingii* C. B. Clarke.

Herbs, perennial, 50–90 cm tall. Stems erect, simple or rarely branched, angled or striate, puberulent, densely in upper part. Petiole 3–5 mm, puberulent; leaf blade oblong or oblong-lanceolate, 7–12 \times 1.5–5 cm, papery, abaxially puberulent and glandular along veins, adaxially glabrous or sparsely puberulent along midrib, lateral veins 7- or 8-paired, veins abaxially convex, veinlets reticulate, base broadly cuneate or rounded, margin entire basally, sparsely serrate toward leaf apex, apex acuminate or shortly acuminate. Synflorescences terminal and sub-

terminal, panicles small, divaricately branched, \pm grouped into thyrses. Capitula up to 4, 6–8 mm in diam.; peduncles slender, 8–21 mm, puberulent; bracteoles mostly clustered below involucre, ca. 1 mm, linear. Involucre bowl-shaped, 6–7 \times 6–8 mm; phyllaries 5-seriate, green or purple-red at apex, scarious, upper part arachnoid pubescent and glandular, apex acute, mucronulate, outer short, subulate, inner 6–8 \times ca. 1 mm, with narrowly scarious margins. Receptacle flat, fimbriate, foveolate. Florets 15–20; corolla purple, tubular, 6–8 mm, glabrous, sparsely glandular. Achenes oblong-cylindric, 3–3.5 mm, 10-ribbed, hispidulous and glandular. Pappus 2-seriate, white; outer setae short; inner setae ca. 6 mm, scabrid-barbellate. Fl. Oct–Feb.

Open places in valleys or thickets by lakes; ca. 1900 m. Guangdong, S Yunnan [Myanmar].

Dunn and Tutcher (Bull. Misc. Inform. Kew, Addit. Ser. 10: 138. 1912) treated material of this species as *Vernonia saligna*.

18. *Vernonia attenuata* Candolle, Prodr. 5: 33. 1836.

狭长斑鸠菊 xia chang ban jiu ju

Acilepis attenuata (Candolle) H. Robinson & Skvarla.

Herbs, perennial, 30–70 cm tall or more. Stems erect, \pm woody at base, simple or inflorescence-branched in upper part, green, striate, adpressed puberulent and glandular. Leaves clustered below synflorescence branches; petiole sometimes absent, 2–5 mm, densely puberulent; leaf blade of lower leaves obovate or obovate-elliptic, rarely obovate-oblong, 7–14 \times 3–5 cm, thinly leathery, abaxially sparsely puberulent along veins, adaxially glabrous, concavely glandular, lateral veins 6–8-paired, convex, veinlets prominently reticulate on both surfaces, base broadly cuneate or subrounded, margin sparsely mucronulate-denticulate, apex acuminate or shortly acute, rarely obtuse; upper leaves few, remote, linear or linear-lanceolate, 3.5–12 \times 0.8–2 cm, base rounded, margin inconspicuously finely toothed or subentire, apex acuminate. Synflorescences terminal, lax, flat-topped panicles sometimes plus solitary, axillary capitula at lower nodes. Capitula usually 3–5, 10–12 mm in diam.; peduncles 7–15(–20) mm, densely yellowish puberulent and glandular; bracteole 1, at base. Involucre obconical, 8–10 \times ca. 8 mm; phyllaries 6-seriate, green or apically reddish purple, oblong to linear, margin and apex yellowish puberulent, dorsally subglabrous, apex subscarious, apiculate, outer short and small, subulate, inner ca. 8 \times 1 mm, glabrous, with narrowly scabrid margins. Receptacle flat, foveolate. Florets 15–20; corolla reddish purple, tubular, 7–8 mm, sparsely glandular; lobes linear-lanceolate, glandular at apex. Achenes subcylindric, ca. 3 mm, 10-ribbed, densely villous and glandular. Pappus 2-seriate, white; outer setae few, short; inner setae ca. 6 mm, scabrid. Fl. Oct–Feb. $2n = 18$.

Thickets or lax forests in valleys; 600–1100 m. S Yunnan [India (Sikkim), Myanmar].

The taxon was first named "*Conyza attenuata*" (in Wallich, Numer. List, no. 3030. 1831), which is a nomen nudum and was therefore not validly published.

19. *Vernonia divergens* (Candolle) Edgeworth, J. Asiat. Soc. Bengal 21: 172. 1853.

叉枝斑鸠菊 cha zhi ban jiu ju

Decaneurum divergens Candolle in Wight, Contr. Bot. India, 8. 1834; *Acilepis divergens* (Candolle) H. Robinson & Skvarla; *Eupatorium divergens* Roxburgh (1832), not Lessing (1830); *Lysystemma divergens* (Candolle) Steetz; *L. multiflorum* Steetz; *Vernonia nilgherryensis* Candolle.

Shrubby herbs, (0.6–)1–3 m tall. Stems erect, robust, divaricately branched, striate, red-brown pubescent-tomentulose, more densely so in upper part and branches. Petiole 5–7 mm, densely tomentulose; leaf blade elliptic-ovate or lanceolate, 5–12 \times 2.5–10 cm, abaxially yellowish or reddish brown tomentose, denser along veins, adaxially papillose-scabrid-hairy, lateral veins 7-paired, veinlets reticulate, base cuneately attenuate, margin shallowly serrate, apex acuminate or shortly acute. Synflorescences usually terminal, panicles many branched, flat-topped. Capitula many; peduncles very short. Involucre campanulate, 5–6 mm wide; phyllaries 3- or 4-seriate, with greenish or purplish tip, ovate-oblong or ovate, 1–5 mm, puberulent or subglabrous, apex obtuse or shortly acute, outer short, ovate. Receptacle flat or rather convex, foveolate. Florets 8–12; corolla pink, tubular, 5–6 mm; lobes acute, glabrous. Achenes subcylindric, conspicuously 10-ribbed, glabrous, glandular between ribs. Pappus 2-seriate, sordid white or reddish; setae linear-lanceolate. $2n = 18$.

Grasslands, thickets, forest margins; 1000–2400 m. Guangxi, Guizhou, Yunnan [Laos, Myanmar, N Thailand].

Candolle included the illegitimate name *Eupatorium divergens* within his new species.

20. *Vernonia nantcianensis* (Pampanini) Handel-Mazzetti, Notizbl. Bot. Gart. Berlin-Dahlem 13: 608. 1937.

南漳斑鸠菊 nan zhang ban jiu ju

Vernonia bracteata Wallich ex C. B. Clarke var. *nantcianensis* Pampanini, Nuovo Giorn. Bot. Ital., n.s., 18: 98. 1911; *Acilepis nantcianensis* (Pampanini) H. Robinson; *V. silhetensis* (Candolle) Handel-Mazzetti var. *nantcianensis* (Pampanini) Handel-Mazzetti.

Herbs, annual or perennial, 50–80(–100) cm tall. Stems erect or ascending branched above, distinctly striate, sparsely scabrid, rarely subglabrous and glandular hairy. Petiole 5–15 mm; leaf blade ovate or lanceolate-elliptic, 3–10 \times 1–4 cm, thinly papery, abaxially puberulent and glandular along veins, adaxially sparsely adpressed hispidulous, lateral veins 5–7-paired, midrib and lateral veins adaxially inconspicuous, base cuneately attenuate into petiole, margin laxly serrate at middle, apex acuminate. Synflorescences terminal or axillary. Capitula solitary, 13–15 mm in diam.; peduncles robust, rather dilated above, densely puberulent and glandular. Involucre campanulate, 10–13 \times 12–15 mm; phyllaries 5- or 6-seriate, upper part and margin purple-red, ovate to ovate-oblong, densely pubescent, apex mucronulate, inner 1.5–2.2 mm, acuminate. Receptacle slightly convex, foveolate. Florets many; corolla pink-purple, tubular, ca. 12 mm, with 7–8 mm tube and campanulate limb; lobes linear-lanceolate, glandular. Achenes dark brown, cylindric, ca. 4 mm, 10-ribbed, sparsely sericeous, eglandular. Pappus 1-seriate, yellowish brown; outer setae short, easily deciduous; inner setae 7–8 mm, scabrid. Fl. and fr. Aug–Oct.

• Forest margins in valleys or on slopes; 700–2000 m. W Hubei, Sichuan.

21. Vernonia silhetensis (Candolle) Handel-Mazzetti, Symb. Sin. 7: 1084. 1936.

反苞斑鸠菊 fan bao ban jiu ju

Decaneurum silhetense Candolle, Prodr. 5: 67. 1836; *Acilepis silhetensis* (Candolle) H. Robinson; *Gymnanthemum silhetense* (Candolle) Schultz Bipontinus; *Vernonia bracteata* Wallich ex C. B. Clarke; *V. bracteata* var. *subserrata* Hosseus; *V. silhetensis* var. *subserrata* (Hosseus) Craib ex Kerr; *Xipholepis silhetensis* (Candolle) Steetz.

Erect herbs, to 60 cm tall or more. Stems erect, terete, striate, purplish hispidulous, denser toward apex, sparsely glandular. Leaves rather crowded, mostly uniform in size; petiole ± absent; leaf blade oblanceolate, 5.5–9 × 2.1–2.5 cm, stiffly papery, abaxially hispidulous on veins, glandular, adaxially sparsely minutely hispidulous between veins, eglandular, lateral veins 5–7-paired, adaxially prominent, reticulate veins abaxially very prominent, base cuneate, sometimes ± attenuate into petiole, margin sparsely serrate to subentire, apex acute or slightly acuminate; upper leaves smaller. Synflorescences terminal and subterminal, forming ill-defined panicle, sometimes reduced to single capitulum. Capitula 1–5 or more, 15–25 mm in diam.; peduncle to 5 cm, very variable, densely hispidulous, often with leaflike bracteoles. Involucre campanulate, 15–20 × 15–25 mm; phyllaries 5- or 6-seriate, upper part dark purplish, outer ovate to lanceolate, arachnoid when young, apex acuminate, often recurved, innermost oblong-ob lanceolate, ca. 2.5 mm wide, apex often obtuse. Florets more than 50; corolla deep rose-purple, tubular, ca. 12 mm, sparsely glandular toward apex. Achenes cylindrical, 2.5–3 mm, 10-ribbed, glabrous, glandular. Pappus 1-seriate, off-white; setae ca. 10 mm.

Open dry stony meadows at forest margins; 1300–1800(–3000) m. Yunnan [Bhutan, Cambodia, India, Myanmar, Thailand].

H. Koyama (Bull. Natl. Sci. Mus., Tokyo, B 30: 28. 2004) placed all collections from outside Assam in *Vernonia silhetensis* var. *subserrata* and included *V. spirei* within this taxon.

22. Vernonia doichangensis H. Koyama, Bull. Natl. Sci. Mus., Tokyo, B 30: 22. 2004.

泰国斑鸠菊 tai guo ban jiu ju

Acilepis doichangensis (H. Koyama) H. Robinson & Skvarla.

Herbs, perennial, 0.5–2 m tall. Rootstock a woody rhizome. Stems erect, branched above, terete, finely striate, shortly pubescent throughout. Petiole to 5 mm; leaf blade elliptic to oblanceolate, 7–15 × 2–5.5 cm, abaxially shortly pubescent, adaxially sparsely scaberulous, both surfaces gland-dotted, base cuneate, margin subentire or remotely serrulate, apex acute or acuminate; upper leaves gradually smaller. Synflorescences terminal and axillary, thyrse-like, panicles small, relatively long pedunculate, axillary ones narrowly divergent from main axis. Capitula to 5, clustered at tips of branches, ca. 20 mm in diam.; peduncle to 15 mm, shortly pubescent. Involucre narrowly campanulate, ca. 12 × 20 mm; phyllaries ca. 6-seriate, outer ovate, apex acuminate, spreading, often shortly recurved, inner lanceolate, lanate, gland-dotted toward apex, apex acute. Recep-

tae alveolate, glabrous. Florets ca. 35; corolla reddish- or purplish violet, lilac, or purple, ca. 10 mm, gland-dotted lobes ca. 5 mm. Achenes pale brown, cylindrical, ca. 5 mm, 10-ribbed, glabrous. Pappus 2-seriate, straw-colored; outer setae few, 1.5–3 mm, caducous; inner setae ca. 8 mm. $2n = 54$.

Yunnan [Thailand].

In his protologue, H. Koyama cited a collection from China for this species (Yunnan: Tien-sin, *Maire s.n.* (P)), but that specimen has not been seen by the present authors.

23. Vernonia spirei Gandoger, Bull. Soc. Bot. France 54: 194. 1907.

折苞斑鸠菊 zhe bao ban jiu ju

Acilepis spirei (Gandoger) H. Robinson; *Serratula darrisii* H. Léveillé; *Vernonia stibaliae* Handel-Mazzetti.

Herbs, perennial, 40–80 cm tall. Stems erect, hard, branched, rarely simple, distinctly striate, ferruginous puberulent. Petiole 3–5 mm, densely pubescent; leaf blade elliptic-ovate or oblong-lanceolate, rarely oblanceolate, 5–12 × 2.5–4 cm, thickly papery, abaxially or along veins puberulent and white glandular, adaxially dark green, slightly scabrid, hispidulous, lateral veins 5–7-paired, veins abaxially prominent, veinlets reticulate, base rather narrowed or cuneately attenuate, margin sparsely serrulate or serrate, apex shortly acute or acuminate, or sometimes obtuse. Synflorescences terminal, ± racemelike, leafy. Capitula few, sometimes solitary, 15–20 mm; peduncle 3–9 cm, densely ferruginous pubescent, often with 1 or 2 reduced leaflets. Involucre conic or subspheroidal, 10–15 × 15–20 mm; phyllaries 6-seriate, green or apex reddish purple, outer subulate, short, yellow or yellowish brown arachnoid villos, abruptly attenuate into 3–5 mm recurved mucro, median ovate or ovate-oblong, inner linear, 10–12 × ca. 1.5 mm, margins broadly scarious, sparsely puberulent, apex red-purple, ± lacerate, hardly mucronate. Receptacle flat, ca. 5 mm in diam., foveolate. Florets many; corolla tubular, 9–10 mm, glandular; lobes linear-lanceolate, 3–4 mm, glandular. Achenes oblong-cylindrical, ca. 4 mm, 10-ribbed, adpressed puberulent, glandular. Pappus 2-seriate, yellowish brown; outer setae few, short; inner setae ca. 8 mm, scabrid. Fl. Sep–Nov.

Grasslands, thickets, forest margins; 1000–2400 m. Guangxi, Guizhou, Yunnan [Laos].

24. Vernonia squarrosa (D. Don) Lessing, Linnaea 6: 627. 1831.

刺苞斑鸠菊 ci bao ban jiu ju

Acilepis squarrosa D. Don, Prodr. Fl. Nepal. 169. 1825; *Vernonia rigiophylla* Candolle; *V. squarrosa* var. *orientalis* Kitamura; *V. teres* Wallich ex Candolle.

Herbs, perennial, 15–35 cm tall or higher. Stems erect, hard, usually simple, terete, finely striate, rather scabrid, adpressed brownish puberulent and glandular. Leaves crowded together; petiole short to almost absent; leaf blade obovate, elliptic-obovate, or oblong-lanceolate, 5–8 × 1.5–2.5 cm, hard, abaxially sparsely adpressed puberulent and glandular, adaxially and marginally scabrid-papillose or scabrid-hairy, lateral

veins 6-paired, veins adaxially prominent, veinlets conspicuously reticulate, base attenuate or sometimes rounded, margin finely serrate, apex shortly acute or obtuse. Synflorescences terminal and axillary. Capitula solitary, 20–25 mm in diam.; peduncle short to almost absent, with reduced leaflets. Involucre obconic, 15–16 × ca. 15 mm; phyllaries 6-seriate, with red-purple tinge, outer short, subulate or subulate-lanceolate, white arachnoid tomentose, glandular, apex rigid-spinescent, median oblong-lanceolate, inner sublinear, 14–15 × ca. 1 mm, margins narrowly scarious, glabrous, apex long acuminate. Receptacle flat and foveolate. Florets 30–50; corolla reddish purple or purple, tubular, 13–14 mm, glandular; lobes linear, ca. 4 mm, apically glandular. Achenes oblong-cylindric, 3–4 mm, 10-ribbed, densely sericeous, glandular. Pappus 2-seriate, sordid white or yellowish; outer setae few, short; inner setae 8–9 mm, scabrid. Fl. Sep–Nov. $2n = 36$.

Grassy slopes; 1200–1800 m. Yunnan [Bhutan, Cambodia, India, Myanmar, Nepal, Thailand, Vietnam].

25. *Vernonia albosquama* Y. L. Chen, Kew Bull. 39: 157. 1984.

白苞斑鸠菊 bai bao ban jiu ju

“Small tree.” Branches robust, striate, buds densely ferruginous tomentose. Petiole stout, 3–7 mm, densely ferruginous tomentose; leaf blade ovate-oblong or oblanceolate, 11–

18 × 3–7.5 cm, leathery or thinly leathery, brownish when dry, abaxially densely brownish fulvous tomentose, adaxially puberulent, glabrescent later, lateral veins 18–20, midrib and lateral veins abaxially prominent, reticulate veins prominent on both surfaces, base cuneate, margin obscurely denticulate and callose-mucronulate, apex shortly acuminate or acute. Synflorescences terminal and subterminal, panicles flat-topped, subglobose. Capitula 8 or 9, up to 30 mm in diam.; peduncle 1.5–4 cm, densely fulvous tomentose; bracteoles linear-lanceolate. Involucre obconical, ca. 25 × 30 mm; phyllaries 7- or 8-seriate, leathery, outer ovate, 3–4 × 2–2.5 mm, median ovate-oblong, 8–10 × ca. 4 mm, inner oblong, 15–17 × 2.5–3 mm, densely yellowish tomentose and glandular, apex rounded. Florets many; corolla reddish, ca. 12 mm, glandular and puberulent; lobes lanceolate, 3–4 mm, apex white pilose. Achenes cylindric, 7–8 mm, 10-ribbed, sparsely adpressed puberulent and glandular. Pappus 2-seriate, sordid white; outer setae few, scalelike; inner setae ca. 11 mm, scabrid. Fl. Jun.

• Mixed forests on limestone hills. Guangxi (Jishan).

One of us (Gilbert) believes that this species belongs with the group of species placed by Robinson in *Acilepis* and that the description of it as a “tree” is rather misleading. Based on the image of the herbarium sheet, it seems much more likely that it came from a robust erect herb, perhaps with a single stem and hence the description as a small tree.

7. *Cyanthillium* group

Cyanopsis Blume; *Cyanthillium* Blume; *Isonema* Cassini (1817), not R. Brown (1810); *Seneciodes* Linnaeus ex Post & Kuntze.

More than seven species: tropical Africa, E and SE Asia, Oceania, widely adventive; four species in China.

26. *Vernonia cinerea* (Linnaeus) Lessing, Linnaea 4: 291. 1829.

夜香牛 ye xiang niu

Conyza cinerea Linnaeus, Sp. Pl. 2: 862. 1753; *Blumea chinensis* (Linnaeus) Candolle (1836), not Walpers (1843), nor Hooker & Arnott (1837); *B. esquirolii* H. Léveillé & Vaniot; *Cacalia cinerea* (Linnaeus) Kuntze; *Conyza chinensis* Linnaeus; *Cyanthillium cinereum* (Linnaeus) H. Robinson; *Seneciodes cinerea* (Linnaeus) Kuntze; *Serratula cinerea* (Linnaeus) Roxburgh; *Vernonia abbreviata* Candolle; *V. cinerea* var. *parviflora* (Reinwardt) Candolle; *V. exilis* Miquel; *V. parviflora* Reinwardt ex Blume.

Herbs, annual or perennial, to 100 cm tall. Root vertical, ± woody, branched, with fibrous rootlets. Stems erect, usually branched above, or rarely from base, striate, gray adpressed puberulent with T-shaped hairs, glandular. Lower and middle leaves: petiole 10–20 mm, leaf blade rhombic-ovate, rhombic-oblong, or ovate, 3–6.5 × 1.5–3 cm, abaxially gray-white or yellowish puberulent, especially along veins, both surfaces glandular, adaxially green, sparsely puberulent, lateral veins 3- or 4-paired, base cuneately attenuate into winged petiole, margin remotely mucronate-serrate, or repand, apex acute or slightly obtuse; upper leaves progressively smaller, shortly petiolate or sessile, narrowly oblong-lanceolate or linear. Synflorescences terminal, flat-topped, panicles branching often rather divaricate. Capitula many, rarely few, 6–8 mm in diam.; peduncle 5–15 mm; bracteoles linear, sometimes absent, densely puberulent. Involucre campanulate, 4–5 × 6–8 mm; phyllaries 4-

seriate, green or sometimes becoming purple, outer linear, 1.5–2 mm, puberulent and glandular, apex acuminate, median linear, inner linear-lanceolate, spinescent, 1-veined or sometimes conspicuously 3-veined in upper part. Receptacle flat, foveolate. Florets 19–28; corolla reddish purple, tubular, 5–6 mm, sparsely puberulent, glandular; lobes linear-lanceolate, puberulent and glandular at apex. Achenes cylindric, ca. 2 mm, densely puberulent and glandular. Pappus 2-seriate, white; outer setae many, short; inner setae 4–5 mm, scabrid. Fl. year-round. $2n = 18$.

Weed of open disturbed sites. Fujian, Guangdong, Guangxi, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [India, Indonesia, Japan, Malaysia, Myanmar, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Africa, Arabia, Australia, Pacific islands; introduced to the Americas].

Vernonia cinerea is used medicinally for a variety of purposes, including to reduce fever, draw out pus, promote digestion, relieve dyspepsia, and as a tranquilizer and sedative.

Dwarf plants, usually less than 20 cm tall, with smaller capitula and more sparsely hairy leaves are sometimes placed in *Vernonia cinerea* var. *parviflora* (Reinwardt) Candolle (Prodr. 5: 24. 1836; 小花夜香牛 xiao hua ye xiang niu).

27. *Vernonia benguensis* Elmer, Leafl. Philipp. Bot. 1: 361. 1908.

本格特斑鸠菊 ben ge te ban jiu ju

Herbs, perennial, 45–55 cm tall. Stems erect, branched above, subglabrous. Middle stem leaves linear-elliptic, ca. 3 ×

0.8 cm, abaxially pubescent, especially along veins, gland-dotted, adaxially subglabrous, base cuneate, margin subentire, apex obtuse; upper leaves progressively smaller, linear. Synflorescences terminal, flat-topped, panicles to ca. 10 cm wide. Capitula ca. 10 mm in diam. Involucre campanulate, 5–6 mm; phyllaries 5-seriate, outer linear, ca. 2 mm, brownish pubescent and glandular, apex acuminate, median linear-lanceolate, awntipped. Florets to 20; corolla violet, 6–7 mm. Achenes densely shortly hispid. Pappus 2-seriate, brownish white; outer setae ca. 0.1 mm; inner setae 4–5 mm, scabrid.

Yunnan [Philippines, Thailand].

Vernonia benguetensis is included on the basis of the collection Legendre 1841 (P), as cited by H. Koyama (Bull. Natl. Sci. Mus., Tokyo, B 24: 110. 1998).

28. *Vernonia maritima* Merrill, Philipp. J. Sci., C, 3: 440. 1909.

滨海斑鸠菊 bin hai ban jiu ju

Cyanthillium maritimum (Merrill) H. Robinson & Skvarla.

Dwarf shrubs, 7–10 cm tall, rarely higher. Stems often curved or procumbent, obliquely ascending in upper part, many branched, striate, gray-white hispidulous. Lower leaves withered by anthesis, middle leaves many, closely spaced; leaf blade spatulate, 1.5–2.5 × 0.4–0.7 cm, densely gray-white hispidulous, base progressively attenuate into slender petiole, margin entire or repand, apex rounded or obtuse; upper leaves smaller, spatulate. Synflorescences terminal, panicles ± flat-topped. Capitula few, usually 3–5, 5–7 mm in diam.; peduncle 5–12 mm; bracteoles 1 or 2, subulate, densely hispidulous. Involucre ca. 4 × 5–7 mm; phyllaries 5-seriate, outer subsubulate, 1.5–2 mm, spinescent, puberulent, median ovate, ca. 3 mm, apex acute and mucronulate, inner oblong, sparsely puberulent, with scarious margins. Receptacle flat, foveolate. Florets more than 20; corolla tubular, ca. 2.5 mm, with campanulate limb; lobes lanceolate, apically glandular. Achenes subcylindric, 1–1.2 mm, 5-angled, glandular between ribs or sometimes sparsely puberulent, apex truncate. Pappus 1-seriate, white, ca. 1 mm, readily deciduous.

Taiwan [Philippines].

“*Vernonia maritima* Hayata” (J. Coll. Sci. Imp. Univ. Tokyo 22: 202. 1906) is a nomen nudum not mentioned by Merrill.

29. *Vernonia patula* (Aiton) Merrill, Philipp. J. Sci., C, 3: 439. 1909.

咸虾花 xian xia hua

Conyza patula Aiton, Hortus Kew. 3: 184. 1789; *Cacalia patula* (Aiton) Kuntze; *Cyanopsis madagascariensis* Candolle; *Cyanthillium patulum* (Aiton) H. Robinson; *C. pubescens* Blume; *C. villosum* Blume; *Isonema ovata* Cassini; *Staelhelina conyzoides* Sprengel, nom. illeg. superfl.; *Vernonia chinensis* Lessing; *V. kawakamii* Hayata; *V. pratensis* Klatt.

Herbs, annual, 30–90 cm tall. Root vertical, with many fibrous rootlets. Stems erect, many branched, branches spreading, terete, conspicuously striate, gray puberulent and glandular. Lower leaves withered by anthesis; middle and upper leaves: petiole 1–2 cm, upper part winged; leaf blade ovate, ovate-elliptic, rarely orbicular, 2–9 × 1–5 cm, abaxially densely addressed gray pubescent and glandular, adaxially green, sparsely puberulent or glabrous, lateral veins 4- or 5-paired, ascending, base broadly cuneate into petiole, margin crenate-mucronate toothed, repand, or subentire, apex obtuse or rather acute; upper leaves gradually smaller. Synflorescences terminal, panicles broad, often flat-topped. Capitula usually 2 or 3 clustered at tips of branches, 8–10 mm in diam.; peduncle 5–25 mm, densely sericeous-villous; bracteoles absent. Involucre compressed spheroidal, 6–7 × 8–10 mm, base rounded, ± concave; phyllaries 4- or 5-seriate, green or rather purple, with straw-colored margins, lanceolate, 3–4 mm, subleathery, sericeous-villous and glandular, apex subspinellike-acuminate, outermost spreading, median and inner narrowly oblong-lanceolate, ca. 6 mm, spiculate. Receptacle slightly convex, foveolate. Florets 75–100; corolla reddish purple, tubular, 4–5 mm; lobes linear-lanceolate, puberulent and glandular, apex acute. Achenes subcylindric, 1–1.5 mm, 4- or 5-angled, glabrous, glandular. Pappus 1-seriate, white; setae 2–3 mm, scabrid, easily deciduous. Fl. Jul–May.

Open places on slopes, fields, and roadsides. Fujian, Guangdong, Guangxi, Guizhou, Taiwan, Yunnan [India, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Thailand, Vietnam; Madagascar; introduced to the Caribbean].

Vernonia patula is a medicinal plant, and its many uses include reducing fevers and treating malaria, stomach and intestinal disorders, and common cold headaches.

“*Vernonia patula* Martius ex Candolle” (Prodr. 5: 55. 1836) appears to be an unpublished name for the Brazilian taxon *V. tricholepis* Candolle.

8. *Khasianthus* group

Khasianthus H. Robinson & Skvarla.

One species: China, India, Myanmar.

30. *Vernonia subsessilis* Candolle var. ***macrophylla*** J. D. Hooker, Fl. Brit. India 3: 230. 1881.

腾冲斑鸠菊 teng chong ban jiu ju

Khasianthus subsessilis H. Robinson & Skvarla var. *macrophyllus* (J. D. Hooker) H. Robinson & Skvarla.

Herbs, to 60 cm tall or more. Stems erect or ascending, few branched, terete, striate, densely addressed gray puberulent.

Lower leaves lost by anthesis; middle and upper leaves: petiole to 5 mm, abaxially densely pubescent, adaxially shallowly channeled, almost flat; leaf blade oblanceolate, papery, abaxially puberulent when very young, soon glabrous except for puberulent main veins, adaxially glabrous except for very minutely puberulent midvein, lateral veins 9–12-paired, adaxially prominent, reticulate veins prominent on both surfaces, base minutely rounded, margin coarsely toothed to subentire, apex rounded. Synflorescences terminal, panicles ± flat-topped to

somewhat elongated, lower branches subtended by leaflike bracts. Capitula peduncle bracteoles several just below involucre, linear. Involucre obconic, 10–12 mm; phyllaries 5- or 6-seriate, subulate or subulate-lanceolate, sparsely pubescent, apex acute, sometimes recurved, outer much shorter, almost subulate, inner 10–12 × ca. 0.8 mm. Florets 40–50; corolla mauve, tubular, ca. 14 mm, sparsely glandular; lobes linear, ca. 3.5 mm. Immature achenes cylindrical, 2–2.5 mm, 10-ribbed, densely sericeous. Pappus 2-seriate, pale reddish; outer setae

few, short; inner setae to 13 mm.

Yunnan [India, Myanmar, Nepal].

The variety recognized here, as seen in the collection *Rock 7839* from between Tengyueh in Yunnan and Bhamo in N Myanmar, has leaf apex almost rounded and synflorescences nearly racemiform rather than broadly corymbiform. The leaves are also somewhat more pubescent abaxially. In Rock's field notes, on file in US, this collection is cited as "one day from Tengyueh," evidently inside China.

9. Baccharoides group

Ascaricida (Cassini) Cassini; *Baccharoides* Moench; *Candidea* Tenore; *Stengelia* Steetz; *Vernonia* subg. *Ascaricida* Cassini.

About 25 species: mostly African; one species in China.

31. Vernonia anthelmintica (Linnaeus) Willdenow, Sp. Pl. 3: 1634. 1803.

驱虫斑鸠菊 qu chong ban jiu ju

Conyza anthelmintica Linnaeus, Sp. Pl., ed. 2, 2: 1207. 1763; *Ascaricida anthelmintica* (Linnaeus) Sweet; *A. indica* Cassini, nom. illeg. superfl.; *Baccharoides anthelmintica* (Linnaeus) Moench; *Centratherum anthelminticum* (Linnaeus) Gamble; *Phyllocephalum anthelminticum* (Linnaeus) S. R. Paul & S. L. Kapoor; *Serratula anthelmintica* (Linnaeus) Roxburgh; *Vernonia stenolepis* Oliver.

Herbs, annual, up to 60 cm tall. Stems erect, robust, branched above, conspicuously canaliculate, glandular-pubescent. Leaves ovate, ovate-lanceolate, or lanceolate, 1.5–4.5 cm, membranous, both surfaces shortly pubescent, adaxially glandular, lateral veins 8-paired or more, veinlets fine and dense,

reticulate, base attenuate into petiole, margin coarsely or sharply serrate, apex acute or acuminate. Synflorescences terminal, laxly corymbose. Capitula many, 15–20 mm in diam.; peduncle 5–15 mm, often bearing linear bracts, apically dilated, densely shortly pubescent and glandular. Involucre hemispheric; phyllaries 3-seriate, green, leaflike, subequal, outer slightly patent, 10–12 mm, pubescent and glandular, median oblong-linear, acute, inner oblong, somewhat membranous, acute; all bracts reflexed in fruit. Receptacle flat or rather concave, areolate. Florets 40–50; corolla purplish, tubular, 9–12 mm, with 6–7 mm slender tube and narrowly campanulate limb; lobes 5, lanceolate. Achenes black, cylindrical, 4–5 mm, 10-ribbed, pubescent, glandular between ribs. Pappus 2-seriate, reddish; outer setae to 1.8 mm, scalelike, shiny, deciduous; inner setae 5.5–8 mm, rigid, flattened. Fl. Nov–Feb.

Grasslands, roadsides. SW Yunnan [Afghanistan, India, Laos, Malaysia, Myanmar, Nepal, Pakistan, Sri Lanka; Africa].

88. DISTEPHANUS Cassini, Bull. Sci. Soc. Philom. Paris 1817: 151. 1817.

黄花斑鸠菊属 huang hua ban jiu ju shu

Antunesia O. Hoffmann; *Gongrothammus* Steetz; *Newtonia* O. Hoffmann (1892), not Baillon (1888).

Shrubs, sometimes climbing; indumentum of simple hairs and sessile globose glands. Leaves alternate, petiolate or subsessile, often ill-defined, margin entire, 3-veined. Synflorescence terminal, paniculate. Involucre campanulate or hemispheric; phyllaries to 6-seriate, imbricate, apex acute to long acuminate. Florets many; corolla golden yellow. Pappus double, outer pappus of short bristles, inner pappus of many distinctly flattened, scabrid, barbellate or plumose bristles, persistent.

Forty or more species: most numerous in Madagascar, also in Africa, SW China, and India; two species (both endemic) in China.

- 1a. Capitula usually 3–7 together in dense flat-topped panicles; involucre 12–18 mm in diam.; phyllaries sparsely lanate or ± glabrescent; achenes 4–5 mm, pilose and glandular; scandent shrubs 1. *D. henryi*
 1b. Capitula solitary, terminal; involucre ca. 20 mm in diam.; phyllaries glabrous or sometimes arachnoid lanate; achenes ca. 3 mm, densely sericeous-villous; erect shrubs 2. *D. forrestii*

1. Distephanus henryi (Dunn) H. Robinson, Proc. Biol. Soc. Washington 112: 238. 1999.

黄花斑鸠菊 huang hua ban jiu ju

Vernonia henryi Dunn, J. Linn. Soc., Bot. 35: 500. 1903.

Scandent shrubs. Stems conspicuously angled, at first white lanate, glabrescent, most parts yellow gland-dotted; new shoots white lanate-tomentose. Petiole 3–5 mm, densely pubescent; leaf blade ovate, 5–12.5 × 2–7.5 cm, papery, abaxially glabrescent except for scabrid veins, adaxially glabrescent ex-

cept for very sparsely scabridulous veins, both surfaces yellow gland-dotted, basally 3-veined, veins adaxially distinctly raised, veinlets ± netted, base rounded or broadly cuneate, somewhat oblique, margin entire, apex long acuminate; upper leaves gradually smaller. Synflorescences densely corymbose at top of stem and branches. Capitula usually 3–7, 12–18 mm in diam.; peduncle to 1 cm, slender, ascending, with 1 ovate-lanceolate bracteole, thinly white tomentose. Involucre campanulate, 8–10 mm; phyllaries 5- or 6-seriate, tips dark brown when dry, subleathery, ovate to oblong, ca. 2 mm wide, lower part glabrescent, upper part sparsely lanate, apex acute, outer ovate. Recep-

tacle flat and foveolate. Florets 2 × as long as involucre; corolla golden yellow, fragrant, tubular, 7–8 mm; lobes linear-lanceolate, glandular. Achenes cylindric, 4–5 mm, 10-ribbed, puberulent and glandular. Pappus 2-seriate, yellowish; outer setae few, very short; inner setae 6–7 mm, scabrid. Fl. Sep–Nov.

- Sunny places on slopes; 1200–1400 m. Yunnan.

2. *Distephanus forrestii* (J. Anthony) H. Robinson & B. Kahn, Proc. Biol. Soc. Washington 99: 499. 1986.

滇西斑鸠菊 dian xi ban jiu ju

Vernonia forrestii J. Anthony, Notes Roy. Bot. Gard. Edinburgh 18: 35. 1933.

Shrubs, up to 3 m tall. Stems gray-white, conspicuously angled, at first white lanate, glabrescent, most parts yellow gland-dotted; new shoots white lanate-tomentose. Petiole 10–15 mm; leaf blade ovate, 4–5 × 1.5–2.5 cm, papery, abaxially or

along veins gray-white pubescent, both surfaces yellow gland-dotted, densest adaxially, basally 3-veined, veinlets abaxially raised, base cuneate or subrounded, margin entire, apex acuminate; upper leaves gradually smaller. Synflorescences terminal, very open flat-topped panicles. Capitula 1–4, ca. 20 mm in diam.; peduncle to 4 cm, stiffly spreading, sometimes with leaflike bracteoles, white tomentose. Involucre obconical-campanulate, to 20 mm; phyllaries 5- or 6-seriate, tips dark brown when dry, leathery, linear-lanceolate, ca. 2 mm wide, lower part lanate, upper part glabrescent, attenuate into very slender recurved tip, outer very short, extending slightly down peduncle, sometimes arachnoid lanate. Receptacle flat and foveolate. Florets many (ca. 80); corolla golden yellow, tubular, 8–10 mm glandular; lobes linear-lanceolate. Achenes obconical, ca. 3 mm, 10-ribbed, densely silky-villous. Pappus 2-seriate, white; outer setae few, short; inner setae longer than corolla, scabrid. Fl. Sep–Oct.

- SW Sichuan, NW Yunnan.

89. CAMCHAYA Gagnepain, Notul. Syst. (Paris) 4: 14. 1920.

凋纓菊属 diao ying ju shu

Thorelia Gagnepain (1920), nom. cons., not Hance (1877); *Thoreliella* C. Y. Wu.

Herbs, annual; indumentum of simple hairs and sessile globose glands. Leaves alternate, petiolate, margin repand or serrate, pinnately veined. Synflorescence terminal, paniculate, often reduced to 1 or 2 capitula. Involucre hemispheric; phyllaries to 6-seriate, imbricate, herbaceous, with marginal setae. Receptacle flat, rounded foveolate, naked. Florets many; corolla purple or purplish, tubular, slender, with narrowly campanulate limb; lobes 5, triangular or linear-lanceolate, often glandular hairy. Anthers obtusely auriculate at base. Style branches linear, acuminate, puberulent. Achenes obovate or oblong-obovoid, rather compressed, 10-ribbed or rarely 5-ribbed, glabrous though sometimes glandular between ribs. Pappus sparse or absent, bristles 1–10, scabrid, easily deciduous.

Five species: China, Laos, Thailand, Vietnam; one species in China.

Species have been transferred recently to *Vernonia* and *Iodocephalopsis* S. Bunwong & H. Robinson.

1. *Camchaya loloana* Kerr, Bull. Misc. Inform. Kew 1935: 327. 1935.

凋纓菊 diao ying ju

Herbs, annual, 50–80 cm tall. Stems erect, branched in upper part, striate, with adpressed hairs and sparsely glandular hairs. Lower leaves lanceolate, 5–6 × 2–2.5 cm, papery, both surfaces adpressed sparsely hispidulous and glandular, lateral veins 7–9-paired, abaxially prominent, base progressively attenuate into a short petiole, margin repand or shallowly dentate, apex shortly acute or acuminate; upper leaver smaller, ovate, rounded at base, obtuse. Synflorescence terminal or axillary, solitary. Capitula large, ca. 10 mm in diam.; peduncle 0.5–2 cm, densely adpressed pilose. Involucre hemispheric; phyllaries multiseriate, outer small, lanceolate, 3–7 × 0.7–1.3 mm, dor-

sally adpressed setose and glandular, margin setose, apex long acuminate, innermost oblong-lanceolate, ca. 8 × 1 mm, dorsally sparsely pilose and glandular, margin shortly ciliate, apex acute. Florets purple; corolla tubular, ca. 5 mm, with slender tube and narrowly campanulate limb; lobes triangular. Achenes obovoid, ca. 2 mm, 10-ribbed, glabrous. Pappus bristles very few, ca. 2 mm, easily deciduous. Fl. Aug–Nov.

Thickets in valleys, forest margins, open forests; 500–1600 m. S Yunnan [Thailand].

The inclusion of *Thorelia montana* Gagnepain as a synonym in FRPS (74: 42. 1985) is incorrect; *Camchaya montana* (Gagnepain) Kerr is a distinct species restricted to Laos and Vietnam, differing by the almost linear outer phyllaries and smaller florets, ca. 3.5 mm, only 12–30 per capitulum. If it were synonymous then the name *C. montana* would have priority.

90. ELEPHANTOPUS Linnaeus, Sp. Pl. 2: 814. 1753.

地胆草属 di dan cao shu

Herbs, perennial. Leaves alternate, sessile or shortly petiolate, entire or serrate, or rarely pinnately lobulate, pinnately veined. Synflorescence terminal, compound with dense clusters of capitula densely aggregated in secondary heads surrounded by leaflike bracts, secondary heads solitary or variously arranged into panicles or spikes. Involucre cylindric, slightly compressed; phyllaries generally 8, in 4 decussate pairs, oblong, apex acute or apiculate, outer 4 shorter than inner 4. Receptacle small, naked. Florets 4;

corolla purplish or white, tubular, with funnelform limb; lobes 5, usually more deeply cleft between 2 inner lobes. Anthers shortly acute, shortly hastate at base, obtusely auriculate. Style branches filiform, apically subulate. Achenes oblong-obovoid, somewhat flattened, 10-ribbed, setose, often glandular between ribs. Pappus sparse, bristles 5 to many, scabrid-barbellate, basally widened, rarely reduced to a scaly corona. $x = 11$.

About 30 species: pantropical, mostly in South America; two species in China.

1a. Stems \pm dichotomously branched, adpressed hirsute; basal leaves persistent by anthesis; florets white 1. *E. scaber*

1b. Stems multibranched, villous; basal leaves withered by anthesis; florets purplish or pink 2. *E. tomentosus*

1. *Elephantopus scaber* Linnaeus, Sp. Pl. 2: 814. 1753.

地胆草 di dan cao

Asterocephalus cochinchinensis Sprengel; *Scabiosa cochinchinensis* Loureiro.

Herbs, perennial, 20–60 cm tall. Rhizomes procumbent or obliquely ascending, with many fibrous roots. Stems erect, \pm dichotomously branched, slightly scabrid, densely white adpressed hirsute. Basal leaves persistent by anthesis, rosulate, spatulate or oblanceolate, 5–18 \times 2–4 cm, abaxially densely hirsute and glandular, adaxially sparsely hirsute, base gradually attenuate into short, broad petiole, margin crenate-serrate, apex rounded or shortly acute; cauline leaves few and small, oblanceolate or oblong-lanceolate, progressively smaller toward apex. Synflorescence densely aggregated in compound heads, surrounded by leaflike bracts; bracts broadly ovate or oblong-ovate, 1–1.5 \times 0.5–1 cm, hirsute and glandular, with conspicuously raised veins, apex acuminate. Capitula many. Involucre narrow, 8–10 \times ca. 2 mm; phyllaries green or apically purple-red, oblong-lanceolate, hirtellous and glandular, 1- or 3-veined, apex acuminate and spinescent, outer 4–5 mm, inner ca. 10 mm. Florets 4, herbaceous, purplish or pink; corolla 7–9 mm, tube 4–5 mm. Achenes oblong-linear, ca. 4 mm, angled, puberulent. Pappus sordid white, of 5(or 6) basally widened bristles, 4–5 mm. Fl. Jul–Nov. $2n = 22^*$.

Often on open slopes, roadsides or forest margins in valleys; ca. 1400 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Taiwan, Yunnan, Zhejiang [widely distributed in tropical areas of Africa, America, and Asia].

Elephantopus scaber is used medicinally to promote diuresis and

reduce edema, as well as to treat a variety of ailments, including common cold headaches, stomach disease, pharyngolaryngitis, tonsillitis, conjunctival hyperemia, and furuncles.

2. *Elephantopus tomentosus* Linnaeus, Sp. Pl. 2: 814. 1753.

白花地胆草 bai hua di dan cao

Elephantopus bodinieri Gagnepain.

Herbs, perennial, 0.8–1 m tall or more. Rhizomes robust, obliquely ascending or procumbent, with fibrous roots. Stems erect, multibranched, angled, white villous. Basal leaves withered by anthesis, subsessile or shortly petiolate, lower leaves oblong-obovate, 8–20 \times 3–5 cm, abaxially densely villous and glandular, adaxially rugose and verrucose, sparsely or densely puberulent, basally progressively attenuate into winged, rather amplexicaul petiole, margin mucronate-serrate, rarely entire, apex acute; upper leaves elliptic or oblong-elliptic, 7–8 \times 1.5–2 cm; uppermost very small. Synflorescence laxly corymbose, aggregated into compound heads, surrounded by 3 leaflike bracts; bracts green, ovate-cordate. Capitula 12–20; peduncle slender, long. Involucre oblong, 8–10 \times 1.5–2 mm; phyllaries green or sometimes apically purple-red, outer 4 lanceolate-oblong, 4–5 mm, glabrous or subglabrous, 1-veined, apex acute, inner 4 elliptic-oblong, 7–8 mm, sparsely adpressed shortly hairy and glandular, 3-veined, apex acute. Florets 4, white, funnelform, 5–6 mm, with slender tube; lobes lanceolate, glabrous. Achenes oblong-linear, ca. 3 mm, 10-ribbed, puberulent. Pappus sordid white, of 5 basally widened bristles. Fl. Aug–May. $2n = 22^*$.

Open slopes, roadsides, or thickets. Fujian, Guangdong, Taiwan [widely distributed in tropical areas].

91. PSEUDELEPHANTOPUS Rohr, Skr. Naturhist.-Selsk. 2(1): 214. 1792

[“*Pseudo-Elephantopus*”], nom. cons.

假地胆草属 jia di dan cao shu

Chaetospira S. F. Blake; *Distreptus* Cassini; *Matamoria* La Llave; *Spirochaeta* Turczaninow.

Herbs, perennial. Leaves alternate, basal leaves usually aggregated and rosulate, subsessile, entire or remotely serrate, pinnately veined. Synflorescence compound, spikelike, long, capitula in axillary clusters of 1–6, subtended by leaflike bracts. Involucre cylindrical; phyllaries generally 8, in 4 decussate pairs, oblong, outer 2 shorter than inner. Receptacle small, naked. Florets: corolla white to bluish purple, tubular, lobes 5, slightly zygomorphic and pseudoligulate, more deeply cleft between 2 of inner lobes. Anthers apically rather short and obtuse, shortly hastate at base, obtusely auriculate. Style branches filiform, acute, hairy. Achenes obovoid, somewhat flattened, 10-ribbed, setose, often glandular between ribs. Pappus bristles flattened, scabrid-barbellate, some or all bent or curved. $x = 11$.

Two species: tropical Africa and America; one species (introduced) in China.

1. *Pseudelephantopus spicatus* (Jussieu ex Aublet) C. F. Baker, Trans. Acad. Sci. St. Louis 12: 45, 55, 56. 1902.

假地胆草 jia di dan cao

Elephantopus spicatus Jussieu ex Aublet, Hist. Pl. Guiane 2: 808. 1775; *Distreptus spicatus* (Jussieu ex Aublet) Cassini.

Herbs (40–)60–100 cm tall. Stems erect, branched, striate,

sparsely hirsute or subglabrous. Leaves sessile, slightly amplexicaul, lower leaves oblong-obovate or oblong-spatulate, 7–20 × 1–5 cm, abaxially especially hirtellous on veins and densely glandular, adaxially scabrid, sparsely scabrid hairy or subglabrous and glandular, lateral veins 8–11-paired, base attenuate, margin entire or remotely serrate, apex obtuse or shortly acute; upper leaves oblong-lanceolate, 2.5–11.5 × 0.5–1.5 cm, attenuate at both ends. Synflorescence arranged in terminal

spikes. Capitula in clusters of 1–6. Involucre oblong, 10–12 × ca. 4 mm; phyllaries dark green, elliptic-oblong, ca. 10 × 2 mm, glandular, 1-veined, apex acuminate or acute. Florets: corolla white, subtubular; lobes 5, lanceolate. Achenes linear-oblong, ca. 6 mm, 10-ribbed, densely setose, glandular between ribs. Pappus setae few, ca. 4 mm, 2 setae often bent. $2n = 22^*$.

Grasslands. Guangdong, Taiwan [Indonesia, Malaysia, Philippines, N Thailand; native to tropical Africa and America].