

12. Tribe INULEAE

旋覆花族 xuan fu hua zu

Chen Yousheng (陈又生); Arne A. Anderberg

Shrubs, subshrubs, or herbs. Stems with or without resin ducts, without fibers in phloem. Leaves alternate or rarely subopposite, often glandular, petiolate or sessile, margins entire or dentate to serrate, sometimes pinnatifid to pinnatisect. Capitula usually in corymbiform, paniculiform, or racemiform arrays, often solitary or few together, heterogamous or less often homogamous. Phyllaries persistent or falling, in (2 or)3–7+ series, distinct, unequal to subequal, herbaceous to membranous, margins and/or apices usually scarious; stereome undivided. Receptacles flat to somewhat convex, epaleate or paleate. Capitula radiate, disciform, or discoid. Marginal florets when present radiate, miniradiate, or filiform, in 1 or 2, or sometimes several series, female and fertile; corollas usually yellow, sometimes reddish, rarely ochroleucous or purple. Disk florets bisexual or functionally male, fertile; corollas usually yellow, sometimes reddish, rarely ochroleucous or purplish, actinomorphic, not 2-lipped, lobes (4 or)5, usually ± deltate; anther bases tailed, apical appendages ovate to lanceolate-ovate or linear, rarely truncate; styles abaxially with acute to obtuse hairs, distally or reaching below bifurcation, branches ± linear, adaxially stigmatic in 2 lines from bases to apices (lines confluent distally), apices rounded to truncate, sterile apical appendage absent. Anthers with radial or polarized endothelial tissue. Achenes usually monomorphic within capitula, usually ellipsoid or columnar to prismatic, rarely with short beak, but sometimes abruptly constricted distally, often ribbed, glabrous or hairy, often glandular, hairs not myxogenic; pappus persistent, of ± barbellate bristles, of bristles and short scales, of short scales only, or rarely missing.

About 60 genera and 600 species: nearly worldwide, in both Old and New Worlds; 14 genera (one introduced) and 92 species (16 endemic, four introduced) in China.

- 1a. Capitula radiate, disciform, or discoid, florets yellow; marginal florets when present female, radiate (rarely miniradiate or tubular); disk florets bisexual; phyllaries herbaceous or leathery, sometimes leafy; achenes with large oxalate crystals in epidermis cells (subtribe Inulinae).
 - 2a. Receptacle with paleae; style branch apex of bisexual florets rounded or truncate 187. *Buphtalmum*
 - 2b. Receptacle without paleae; style branch apex of bisexual florets broad, rounded.
 - 3a. Pappus absent 188. *Carpesium*
 - 3b. Pappus present.
 - 4a. Pappus in 2 rows, inner row of barbellate bristles, outer row of short, membranous scales 189. *Pulicaria*
 - 4b. Pappus all of barbellate bristles.
 - 5a. Pappus bristles very few, sometimes missing in ray florets 190. *Pentanema*
 - 5b. Pappus bristles numerous; all florets with pappus.
 - 6a. Marginal florets filiform, tubular 191. *Blumea*
 - 6b. Marginal florets radiate or missing.
 - 7a. Ray florets 2- or 3-seriate, lamina 10–45 mm, rarely shorter; anther appendage rounded to acute; endothelial tissue radiate 192. *Inula*
 - 7b. Ray florets 1-seriate, lamina 1–15 mm; anther appendage truncate; endothelial tissue polarized 193. *Duhaldea*
 - 1b. Capitula disciform, heterogamous or homogamous; marginal florets filiform or tubular; achenes without large epidermis crystals (subtribe Plucheinae).
 - 8a. Capitula in dense globose or elongated secondary capitula.
 - 9a. Pappus absent 194. *Sphaeranthus*
 - 9b. Pappus present 195. *Pterocaulon*
 - 8b. Capitula solitary, or in sparse compound synflorescence.
 - 10a. Pappus absent 196. *Epaltes*
 - 10b. Pappus of capillary bristles.
 - 11a. Phyllaries broad, oval to lanceolate; perennial herbs, subshrubs, or shrubs.
 - 12a. Involucre obovate, broadly campanulate, or hemispheric; herbs, subshrubs, or shrubs 197. *Pluchea*
 - 12b. Involucre oblong; perennial herbs 198. *Karelinia*
 - 11b. Phyllaries narrow, linear-lanceolate or lanceolate; annual or perennial herbs.
 - 13a. Stem generally winged; anthers without tails 199. *Laggera*
 - 13b. Stem not winged; anthers shortly tailed at base 200. *Pseudoconyzza*

187. BUPHTALMUM Linnaeus, Sp. Pl. 2: 903. 1753.

牛眼菊属 niu yan ju shu

Herbs, perennial. Stem not winged, with resin canals. Leaves alternate, sessile or petiolate, lanceolate to rhombic, entire or dentate, glabrescent or hairy. Capitula heterogamous, radiate, solitary, terminal. Receptacle paleate, paleae folded, subtending florets. Involucre hemispheric; phyllaries in 2 or 3 rows, narrowly linear, herbaceous, not subtended by leaves. Marginal florets female, in 1

row; corolla yellow, radiate. Achenes triquetrous to flattened. Pappus missing or a rim of scales. Disk florets bisexual; corolla yellow; epidermis with straight cell walls, without needlelike crystals; corolla lobes short, smooth. Anthers calcarate with very short tails; endothelial tissue polarized. Cells of antheropodium wider than long. Pollen spines with a cavity. Style branches with acute sweeping hairs not reaching furcation. Achenes flattened or somewhat triquetrous, shorter than corolla; epidermis with elongated crystals. Pappus of a rim of irregularly incised scales. $x = 10$.

Three species: Europe; one species (introduced) in China.

1. Buphthalmum salicifolium Linnaeus, Sp. Pl. 2: 904. 1753.

牛眼菊 niu yan ju

Herbs, perennial, 50–70 cm tall. Stems erect, purplish red, usually not branched or branched at upper part, pubescent or subglabrous. Lower leaves obovate-lanceolate, base gradually narrower and petiolate; middle leaves oblong to lanceolate, base gradually narrower, apex acute; upper leaves smaller, lanceolate or linear-lanceolate, surfaces pubescent, base gradually nar-

rower, sessile, margin entire or sparsely serrulate, apex acute. Capitulum solitary and terminal on stems or branches. Involucle hemispheric; phyllaries green, herbaceous, ovate-lanceolate, abaxially pubescent, apex acuminate. Corolla yellow. Ray florets female, 2–3 mm wide, apex 2–4-dentate. Disk florets bisexual; corolla tubular, ca. 4 mm, 5-lobed. Achenes in ray florets trigonous, 3–4 mm; achenes in disk florets columnar, 3–4 mm, glabrous. Pappus of irregularly incised scales. $2n = 20$.

Cultivated in China [native to C Europe].

188. CARPESIUM Linnaeus, Sp. Pl. 2: 859. 1753.

天名精属 tian ming jing shu

Perennials or rarely annuals. Stem not winged, without resin canals. Leaves alternate, entire or toothed, sessile or petiolate; petioles often winged. Capitula disciform, heterogamous, terminal or axillary, sessile or shortly pedunculate, usually nodding, solitary or few together, or many in spiciform racemes. Involucres subglobose or depressed-globose; phyllaries 3- or 4-seriate, outer ones herbaceous or with leaflike tips, inner ones dry, broad, obtuse. Receptacle flat, glabrous. Marginal florets female, tubular to miniradiate, in 2 to several series, fertile, slender; corollas 3–5-toothed. Disk florets bisexual, fertile, slender, many; corolla limb slightly dilated, 4- or 5-toothed, yellowish. Anthers ecalcarate, with branched tails. Endothelial tissue radial. Pollen spines with a cavity. Style branches with acute sweeping hairs not reaching furcation. Achenes ellipsoid, glabrous, longer than corolla, ribbed, with a short glandular beak, crowned by a cartilaginous ring, with elongated crystals. Pappus absent. $x = 10, 18$.

About 20 species: Asia, Europe; 16 species (six endemic) in China.

- 1a. Outer phyllaries membranous or subherbaceous, shorter than inner ones, not similar to bracteal leaves.
- 2a. Corolla sparsely pubescent; capitula 6–10 mm in diam., terminal on stems or branches, with distinct peduncles 1. *C. divaricatum*
- 2b. Corolla glabrous; capitula 3–5 mm in diam., axillary, sessile or shortly pedunculate.
 - 3a. Capitula 3–6 mm in diam., with distinct peduncles or subsessile.
 - 4a. Leaves long decurrent to winged petiole 2. *C. trachelifolium*
 - 4b. Leaves shortly cuneate at base, abruptly narrowed to wingless petiole.
 - 5a. Stems 10–30 cm; leaves elliptic or elliptic-lanceolate, usually glabrous and dotted with glands; peduncles distinct 3. *C. minus*
 - 5b. Stems 30–80 cm; leaves ovate to ovate-lanceolate, both surfaces pubescent; axillary capitula subsessile 4. *C. faberi*
 - 3b. Capitula 6–8 mm in diam., sessile or subsessile.
 - 6a. Lower cauline leaves broadly ovate, base cordate or rounded 5. *C. szechuanense*
 - 6b. Lower cauline leaves elliptic to lanceolate, base attenuate.
 - 7a. Lower cauline leaves broadly elliptic to oblong, densely pubescent 6. *C. abrotanoides*
 - 7b. Lower cauline leaves oblong-lanceolate to lanceolate, glabrous 7. *C. longifolium*
- 1b. Outer phyllaries herbaceous or leafy, equal to or longer than inner ones, similar to bracteal leaves.
 - 8a. Capitula campanulate, 4–10 mm in diam. 8. *C. triste*
 - 8b. Capitula cupuliform, over 10 mm in diam.
 - 9a. Corolla glabrous; plants sparsely pubescent; rarely corolla sparsely pubescent and plants densely lanate.
 - 10a. Capitula 2.5–3.5 cm in diam. 9. *C. macrocephalum*
 - 10b. Capitula 1–2 cm in diam.
 - 11a. Phyllary apex obtuse; lower leaves decurrent to petiole at base 10. *C. cernuum*
 - 11b. Phyllary apex acute; lower leaves rounded, truncate, or cordate at base, not decurrent to petiole 11. *C. nepalense*
 - 9b. Corolla pubescent; plants pubescent or densely yellowish pilose.
 - 12a. Lower cauline leaves broadly ovate, base cordate or rounded; petiole wingless 12. *C. cordatum*
 - 12b. Lower cauline leaves elliptic, base decurrent to petiole.

- 13a. Cauline leaves semiamplexicaul; plants tomentose-pilose; corolla sparsely pubescent 13. *C. velutinum*
 13b. Cauline leaves petiolate or sessile, base not amplexicaul; corolla densely pubescent.
 14a. Bracteal leaves and outer phyllaries spatulate or linear-spatulate, apex rounded or obtuse, densely pubescent 14. *C. scapiforme*
 14b. Bracteal leaves and outer phyllaries lanceolate, apex acuminate, sparsely pubescent.
 15a. Stems 12–35 cm tall, tomentose-pilose; capitula shortly pedunculate or subsessile; phyllaries usually not reflexed 15. *C. humile*
 15b. Stems 35–70 cm tall, sparsely pubescent; capitula long pedunculate; phyllaries reflexed 16. *C. lipskyi*

1. Carpesium divaricatum Siebold & Zuccarini, Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 4(3): 187. 1846.

金挖耳 jin wa er

Carpesium atkinsonianum Hemsley.

Herbs, perennial. Stems 25–150 cm tall, densely pubescent, branched above middle. Lower leaves thin, petiolate; petiole shorter than or as long as blade, shortly winged; blade ovate to ovate-oblong, 7–23 cm, pubescent on surfaces, abaxially pale and gland-dotted, adaxially green, base mostly rounded, sometimes shallowly cordate or truncate, rarely shortly cuneate, margin irregularly mucronulate-dentate, apex acute to obtuse; median leaves oblong, cuneate-attenuate at base, acuminate at apex; upper leaves much smaller, oblong or oblong-lanceolate, sessile. Capitula 6–8 mm in diam., terminal and solitary on branches or in subracemose synflorescences, nodding at anthesis, subtending bracteal leaves 2–4, lanceolate, reflexed, 2–5 × as long as head. Involucre ovoid, 6–8 × 5–6 mm; phyllaries 4-seriate, imbricate, outermost shortest, broadly ovate, cuspidate, herbaceous, median oblong, rounded, innermost linear, obtuse. Corolla of marginal florets cylindric, ca. 1.5 mm, 4-lobed; corolla of disk florets cylindric, 3–3.5 mm, limb 5-lobed. Achenes cylindric, ca. 3.5 mm. Fl. Jul–Oct, fr. Oct–Nov. 2n = 40.

Broad-leaved forests, mixed forests; 600–1600 m. Anhui, Fujian, Guangdong, Guizhou, Henan, Hubei, Hunan, Jiangxi, Jilin, Liaoning, Sichuan, Taiwan, Zhejiang [Japan, Korea].

2. Carpesium tracheliiifolium Lessing, Linnaea 6: 233. 1831.

粗齿天名精 cu chi tian ming jing

Carpesium cernuum Linnaeus var. *tracheliiifolium* (Lessing) C. B. Clarke.

Stems 30–50 cm tall, usually sparsely pubescent. Leaves ovate, 4–15 × 2–8 cm, sparsely pubescent on surfaces, with subsessile glands abaxially, base usually acuminate to attenuate, margin subentire to coarsely serrate; lower leaves broadly (rarely narrowly) petiolate; upper ones sessile or shortly petiolate. Capitula 1–8 in racemes or spikes at branch ends, suberect to pendulous, 2–10 mm in diam., surrounded by leaflike bracts 4.5–37 × 2–9 mm. Involucre 4- or 5-seriate; phyllaries mostly oblong, to 3.5–5.2 mm, scarious, obtuse, outer ones sometimes shorter or herbaceous above or ovate and rounded to acuminate at apex. Disk florets: corollas ca. 2 mm, tube glabrous or hairy. Achenes ca. 3 mm, narrowed above to glandular apex. Fl. Jul–Aug, fr. Sep–Oct.

Valleys, forests; 2000–3500 m. Sichuan, Taiwan, Xizang, Yunnan [Bhutan, India, Kashmir, Nepal].

3. Carpesium minus Hemsley, J. Linn. Soc., Bot. 23: 431. 1888.

小花金挖耳 xiao hua jin wa er

Stems 10–30 cm tall, erect, densely pubescent, often purplish, internodes 5–16 mm. Lower cauline leaves petiolate; petiole 1–3 cm, usually purple; blade elliptic or elliptic-lanceolate, 4–9 × 1–2.2 mm, thick, both surfaces glabrous or sparsely pubescent along veins, dotted with glands, base cuneate, margin with sparse tooth in middle and upper part, apex acute or obtuse; upper leaves gradually smaller upward, lanceolate or linear-lanceolate, subentire, shortly petiolate or sessile. Capitula ca. 5 mm in diam., solitary on ends of branches or branchlets, nodding at anthesis, subtended by many leaflike bracts; bracts linear-lanceolate, 6–15 mm. Involucres campanulate-globose, ca. 5 × 4–5 mm; phyllaries 3- or 4-seriate, outermost shortest, ovate, cuspidate, pubescent, median narrowly oblong, denticulate, rounded at apex, inner linear. Corolla of marginal florets cylindric, 1–1.5 mm; corolla of disk florets tubular, ca. 2 mm, limb 5-lobed. Achenes ca. 2 mm. Fl. Jul–Sep, fr. Sep–Oct.

• Grassy slopes along streams; 700–1000 m. Hubei, Hunan, Jiangxi, Sichuan, Yunnan.

This species is characterized by a dwarf, slender habit; narrow, rather thick leaves; and small, erect, slenderly pedunculate capitula.

4. Carpesium faberi C. Winkler, Trudy Imp. S.-Peterburgsk. Bot. Sada 14: 65. 1895.

中日金挖耳 zhong ri jin wa er

Carpesium hosokawai Kitamura; *C. kweichowense* C. C. Chang.

Herbs, perennial. Stems 30–80 cm tall, erect, densely pubescent, often purplish, branched in upper half. Lower cauline leaves long petiolate with petioles wingless, ovate-oblong, 7–10 × 2.5–3.5 mm, thin, base cuneate, apex obtuse to acuminate; median cauline leaves shortly petiolate or sessile, lanceolate, base cuneate-attenuate, apex acuminate; upper leaves linear-lanceolate, gradually smaller upward. Capitula numerous, ca. 4.5 mm in diam., solitary on branches, nodding at anthesis, subtended by many leaflike bracts; bracts longer than capitula. Involucres campanulate-globose, ca. 4 × 4–5 mm; phyllaries 4-seriate, outermost shortest, ovate, cuspidate, pubescent, median narrowly oblong, denticulate, rounded at apex, inner linear. Florets ca. 80; corolla of marginal florets cylindric, ca. 1.5 mm; corolla of disk florets tubular, ca. 1.5 mm, limb 4- or 5-lobed. Achenes 2–2.5 mm. Fl. Aug–Sep, fr. Oct–Nov.

Grassy slopes or thickets; 700–2000 m. Guangxi, Guizhou, Hubei, Sichuan, Taiwan [Japan].

This species is somewhat similar to *Carpesium minus* but differs by its stems usually taller; lower leaves ovate to ovate-lanceolate, pubescent on both surfaces; and axillary capitula subsessile, arranged in spikelike form.

5. *Carpesium szechuanense* F. H. Chen & C. M. Hu, Acta Phytotax. Sin. 12: 499. 1974.

四川天名精 si chuan tian ming jing

Herbs, perennial. Rhizome stout, with numerous fibrous roots. Stems 50–80 cm tall, pubescent, branched in upper part. Leaves alternate; lower and middle leaves petiolate; petiole 3–8 cm, wingless, densely tomentose; blade broadly ovate, 9–12 × 6.5–12 cm, abaxially white glandular, sparsely pubescent, white pilose along veins, adaxially hispid, base cordate or truncate, margin irregularly toothed, apex acute or shortly acuminate; upper leaves shortly petiolate or subsessile, elliptic or elliptic-lanceolate, base cuneate, margin subentire, apex acuminate. Capitula spicately arranged; terminal ones with bracteal leaves; axillary ones with smaller bracteal leaves or inconspicuous. Involucre hemispheric, ca. 7 × 8–10 mm; phyllaries 4-seriate, outer ones shorter, ovate-lanceolate, ca. 4 mm, abaxially pubescent, base membranous, apex herbaceous, acute, median dry membranous, ca. 5 mm, inner linear. Marginal florets tubular, ca. 1.5 mm, 5-dentate; disk florets tubular, ca. 3 mm, 5-dentate. Achenes ca. 2.5 mm. Fl. Jul–Sep, fr. Sep–Oct.

• Grassy slopes, forest margins; 1400–2500 m. Hubei, Sichuan, Yunnan.

6. *Carpesium abrotanoides* Linnaeus, Sp. Pl. 2: 860. 1753.

天名精 tian ming jing

Carpesium thunbergianum Siebold & Zuccarini.

Herbs, perennial. Stems 50–100 cm tall, stout, terete, leafy, pubescent apically, much branched. Lower cauline leaves thin, broadly elliptic to oblong, 20–28 × 8.5–15 cm, gland-dotted abaxially, shortly pubescent on both surfaces, narrowed at base into a broadly winged petiole, margin irregularly mucronulate-dentate, apex obtuse to acute; upper leaves sessile, oblong, gradually smaller, apex acute. Capitula many, 6–8 mm wide, sessile, spicately arranged, usually without bracts, deflexed in anthesis. Involucre campanulate-globose; phyllaries 3-seriate, outer ones shortest, ovate, acuminate, shortly pubescent, scarious-leathery at base, herbaceous toward apex, median and inner oblong, rounded at apex. Florets 130–300; corolla of marginal florets cylindric, ca. 1.5 mm; corolla of disk florets ca. 2.5 mm. Achenes ca. 3.5 mm, beak ca. 0.7 mm. Fl. Aug–Oct, fr. Oct–Dec. $2n = 40$.

Roadsides, grassy slopes, thickets, forest margins, streamsides; below 2800(–3400) m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Afghanistan, Bhutan, India, Japan, Korea, Myanmar, Nepal, Russia, Vietnam; SW Asia (Caucasus, Iran), Europe].

7. *Carpesium longifolium* F. H. Chen & C. M. Hu, Acta Phytotax. Sin. 12: 498. 1974.

长叶天名精 chang ye tian ming jing

Carpesium leptophyllum F. H. Chen & C. M. Hu; *C. leptophyllum* var. *linearibracteatum* F. H. Chen & C. M. Hu.

Herbs, perennial. Stems 50–100 cm tall, base woody and subglabrous, upper branched, puberulent. Leaves radical and caudine; radical leaves withering before flowering; lower and middle caudine leaves with 2–4 cm long petioles, elliptic or elliptic-lanceolate, 10–23 × 3.5–6 cm, both surfaces subglabrous or very sparsely pilose, abaxially light green, white and yellow globose glandular, adaxially deep green, costa purple, base cuneate, margin entire or with small cusps, apex acuminate; upper leaves sessile to shortly petiolate, lanceolate, 8–15 × 1.5–3 cm, base cuneate, margin subentire, apex acuminate. Capitula spicately arranged; axillary ones usually without bracteal leaves or very small bracteal leaves; terminal ones with 2–4 lanceolate 1.5–3.5 cm long bracteal leaves. Involucre hemispheric, 6–7 × 8–12 mm; phyllaries 4-seriate, outer ones ovate, ca. 3 mm, dry membranous, abaxially sparsely pubescent, apex acute, median oblong, 5–6 × ca. 2 mm, margin ciliate or serrulate, apex obtuse, innermost linear-lanceolate, 6–7 × ca. 1 mm, apex obtuse. Marginal florets 3- or 4-seriate, corolla tubular, ca. 2 mm, 5-dentate; disk florets tubular, 3–3.5 mm, limb 5-dentate. Achenes ca. 3 mm. Fl. Jul–Sep, fr. Sep–Oct.

• Moist forests, riversides, grasslands; 600–2300 m. Gansu, Guizhou, Hubei, Shaanxi, Sichuan.

8. *Carpesium triste* Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 19: 479. 1874.

暗花金挖耳 an hua jin wa er

Carpesium manshuricum Kitamura; *C. pseudotrachelifolium* Y. Ling; *C. triste* var. *manshuricum* Kitamura; *C. triste* var. *sinense* Diels; *C. tristiforme* Handel-Mazzetti.

Herbs, perennial. Stems slender, 40–100 cm tall, densely spreading pubescent, especially at base, branched in upper part. Leaves radical and caudine; radical leaves withering before flowering; lower caudine leaves with long, winged petiole, ovate-oblong, 13–20 × 3–5 cm, densely pubescent on surfaces, base rounded, margin irregularly mucronate-toothed; median leaves narrower, long acuminate; upper leaves gradually smaller, lanceolate or linear-lanceolate, acuminate at both ends. Capitula several to many, on branches; bracts linear-lanceolate, as long as or longer than capitula, reflexed. Involucre campanulate, 5–6 × 6–10 mm; phyllaries 3-seriate, mostly all alike, outer oblong-lanceolate, scarious. Corolla of marginal florets narrow, tubular, ca. 2.5 mm; corolla of disk florets ca. 3.5 × 1 mm, glabrous or sparsely pubescent. Achenes 3–3.5 mm. Fl. Jul–Sep, fr. Sep–Oct. $2n = 40$.

Forests, streamsides; 700–3700 m. Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jilin, Liaoning, Shaanxi, Taiwan, Xinjiang, Zhejiang [Japan, Korea, Russia].

9. *Carpesium macrocephalum* Franchet & Savatier, Enum. Pl. Jap. 2: 405. 1878.

大花金挖耳 da hua jin wa er

Carpesium eximium C. Winkler.

Herbs, perennial. Stems flexuous, crisp pubescent, ca. 1 m tall, branch thickened below capitula. Leaves radical and caudine; radical leaves withering before flowering; lower caudine leaves winged petiolate, broadly ovate, 30–40 × 10–13 cm, shortly pubescent on both surfaces especially on veins, margin

irregularly coarsely doubly toothed, apex acute; median leaves gradually smaller, obovate-oblong, abruptly narrowed in lower half, apex acute; upper leaves narrow, apex acuminate. Capitula terminal, on long peduncles; bracts linear or lanceolate. Involucrum cupuliform, 8–10 × 23–30 mm; phyllaries 4-seriate, outer ones similar to bracteal leaves, median oblong-linear, densely pubescent, acute, inner linear-spatulate, 5.5–6 mm. Marginal florets many seriate, corolla tubular, ca. 3.5 mm, 5-lobed; disk corolla ca. 4 mm, 5-lobed. Achenes cylindric, 5.5–6 mm, beak ca. 1 mm, gland-dotted. Fl. Jul–Sep, fr. Sep–Oct. 2n = 40.

Moist humus in deciduous or mixed forests; 700–2300 m. Gansu, Heilongjiang, Henan, Jilin, Liaoning, Shaanxi, Sichuan [Japan, Korea, Russia].

10. *Carpesium cernuum* Linnaeus, Sp. Pl. 2: 859. 1753.

烟管头草 yan guan tou cao

Carpesium spathiforme Hosokawa.

Herbs, perennial. Stems 50–100 cm tall, robust, erect, densely white villous and crisp puberulent at base, much branched. Lower cauline leaves thin, spatulate-oblong, 9–25 × 4–6 cm, densely white villous on both surfaces, abaxially pale, adaxially green, base contracted and attenuate into winged petiole, margin irregularly doubly serrate, mucronulate, apex acute or obtuse; median leaves slightly smaller, oblong, apex obtuse or sometimes acuminate. Capitula solitary, 15–18 mm wide, long pedunculate, subtending leaves many, linear-lanceolate, 2–5 cm, base narrow, apex obtuse. Involucres cupuliform, 7–8 mm; outer phyllaries leaflike, scarious near base, abaxially white pilose, inner ones narrowly oblong, scarious, obtuse. Corolla of marginal florets tubular, ca. 1.5 mm; disk florets tubular, ca. 2.5 mm, limb ca. 1 mm. Achenes linear, 4.5–5 × ca. 1 mm. Fl. Jun–Aug, fr. Sep–Oct. 2n = 40.

Waste fields, montane slopes; below 2900(–3400) m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Afghanistan, India, Indonesia, Japan, Korea, Pakistan, Papua New Guinea, Philippines, Russia, Vietnam; Australia, SW Asia (Caucasus), Europe].

“*Carpesium ciliatum*,” “*C. pedunculosum*,” and “*C. pubescens*” (Wallich, Numer. List, nos. 3214, 3200, 3199. 1831) belong here but are nomina nuda and were therefore not validly published (*Vienna Code*, Art. 32.1(d)).

11. *Carpesium nepalense* Lessing, Linnaea 6: 234. 1831.

尼泊尔天名精 ni bo er tian ming jing

Stems erect, 23–60 cm tall, robust, appressed lanate at base, branching toward base, flexuous apically. Lower cauline leaves long petiolate; petiole 2–2.5 × as long as blade; blade ovate, 12–18 × 2.5–4 cm, densely villous on surfaces, abaxially pale, adaxially green, base rounded or truncate, margin irregularly dentate or mucronulate, apex shortly acuminate; upper leaves becoming gradually smaller and with shorter petioles, ovate-oblong or oblong, acuminate; uppermost leaves oblong-lanceolate. Capitula 9–20 mm in diam., solitary, long pedunculate, subtended by leaflike bracts; bracts longer than or as long as capitula, oblong-lanceolate or lanceolate, coarsely serrate. Involucrum cupuliform, 9–11 × 5–6 mm; phyllaries 4-seriate, equal

in length. Corolla of marginal florets ca. 1.5 mm. Achenes ca. 3.5 mm. Fl. Jun–Sep, fr. Sep–Nov.

Mountain slopes, forests; 1100–3200 m. Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Taiwan, Xizang, Yunnan [Bhutan, India, Nepal, Pakistan].

- 1a. Stems not white lanate; capitula 9–11 mm in diam.; corolla glabrous 11a. var. *nepalense*
- 1b. Entire plant white lanate, especially dense on stems; capitula 12–20 mm in diam.; corolla sometimes sparsely pubescent 11b. var. *lanatum*

11a. *Carpesium nepalense* var. *nepalense*

尼泊尔天名精(原变种) ni bo er tian ming jing (yuan bian zhong)

Carpesium acutum Hayata; *C. cernuum* Linnaeus var. *nepalense* (Lessing) C. B. Clarke.

Stems not white lanate. Capitula 9–11 mm in diam. Corolla glabrous.

Mountain slopes, forests; 1400–3200 m. Taiwan, Xizang, Yunnan [Bhutan, India, Nepal, Pakistan].

- 11b. *Carpesium nepalense* var. *lanatum*** (J. D. Hooker & Thomson ex C. B. Clarke) Kitamura in H. Hara, Fl. E. Himalaya, 335. 1966.

棉毛尼泊尔天名精 mian mao ni bo er tian ming jing

Carpesium cernuum var. *lanatum* J. D. Hooker & Thomson ex C. B. Clarke, Compos. Ind. 130. 1876; *C. verbascifolium* H. Léveillé.

Entire plant white lanate, especially dense on stems. Capitula 12–20 mm in diam. Phyllaries acute. Corolla sometimes sparsely pubescent. Fl. Jul–Sep, fr. Sep–Nov.

Montane slopes; 1100–2700 m. Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Yunnan [Bhutan, India].

12. *Carpesium cordatum* F. H. Chen & C. M. Hu, Acta Phytotax. Sin. 12: 497. 1974.

心叶天名精 xin ye tian ming jing

Herbs, perennial. Stems up to 60 cm tall, vertically striped, sparsely pubescent. Basal leaves withered at anthesis; cauline leaves ovate or oblong, 7–13 × 6–10 cm, abaxially light green, sparsely pubescent on veins, adaxially green and sparsely pubescent, base cordate or rounded, margin irregularly and sparsely dentate, apex acute. Capitula terminal on stems and branches; peduncles 5–10 cm; bracteal leaves 3–5, shortly petiolate, ovate or ovate-oblong, 1–2.5 cm, surfaces sparsely pubescent, apex acuminate. Involucrum hemispheric, 6–7 × 1–1.5 mm; phyllaries ca. 4-seriate, subequal, outer ones herbaceous, narrowly oblong or oblong-lanceolate, abaxially sparsely pubescent, apex acute, inner lanceolate, dry membranous, apex acute. Marginal florets tubular, ca. 2 mm. Disk florets ca. 2.5 mm; corolla ca. 1.5 mm, pubescent, limb funnelform, 5-lobed; lobes triangular, ca. 0.5 mm. Achenes slenderly cylindric, 4–4.5 mm. Fl. Jul–Aug, fr. Sep–Oct.

Grassy slopes, conifer forests; 2300–3500 m. Sichuan, Xizang, Yunnan [India, Nepal].

13. *Carpesium velutinum* C. Winkler, Trudy Imp. S.-Peterburgsk. Bot. Sada 14: 73. 1895.

绒毛天名精 rong mao tian ming jing

Carpesium zhouquense J. Q. Fu.

Herbs, perennial. Stems 30–50 cm tall, grayish yellow pilose, sometimes densely tomentose, usually not branched except peduncles. Basal leaves persistent, 3 or 4, elliptic, 4–10 × 2–4.5 cm, abaxially velutinous, more densely so on costa, adaxially hispid, base cuneate, decurrent to broadly winged petiole, margin serrate, apex obtuse or acute; lower caudine leaves similar to basal leaves, base semiamplexicaul, with winged 3–10 cm long petiole; upper leaves sessile, much smaller, elliptic-oblong, base semiamplexicaul, apex acute or obtuse. Capitula solitary on stems or axils, in racemose synflorescences, sessile or with peduncles to 3–5 cm; bracteal leaves numerous, lanceolate, with 1 or 2 larger ones 10–15 mm; other ones equal to phyllaries in length, densely pilose and glandular. Involucro hemispheric, 5–6 × 6–12 mm; phyllaries 4-seriate, subequal, outer ones lanceolate or linear-spatulate, pilose, herbaceous above, membranous below, inner dry membranous, lanceolate, apex obtuse. Marginal florets tubular, 1.5–2 mm, 5-dentate, sparsely pubescent or glabrous; disk florets tubular, 2.5–3 mm, 5-dentate, sparsely pubescent. Achenes ca. 3 mm. Fl. Jul–Sep, fr. Sep–Oct.

• Forests, montane slopes; 2000–3200 m. Gansu, Shaanxi, Sichuan.

14. *Carpesium scapiforme* F. H. Chen & C. M. Hu, Acta Phytotax. Sin. 12: 497. 1974.

葶茎天名精 ting jing tian ming jing

Herbs, perennial, 25–50 cm tall. Stems erect, simple, sparsely pilose, rarely villous. Leaves 4 or 5(–8) per stem below synflorescence, ovate-lanceolate to oblanceolate, pubescent (usually sparsely), with shorter glandular hairs more numerous abaxially, rarely villous on veins abaxially, base attenuate, margin subentire, rarely serrulate, apex rounded to subacute; lower leaves close together, 7–28 × 2.5–6 cm, usually long petiolate; middle and upper leaves distant, (±) sessile, much reduced. Capitula 1 or 2(or 3)[–6], 8–20 mm in diam., surrounded by several whorls of ± regular, spatulate, obtuse, herbaceous, pilose bracts 7–15 × 1.5–6 mm, rarely oblong, acute or few much larger. Phyllaries oblong, ca. 6 × 1.6 mm, scarious, acute or obtuse. Disk florets yellow; corollas ca. 2 mm, tube hairy. Achenes 4–5 mm. Fl. Jul–Sep, fr. Sep–Oct.

Alpine meadows, forest margins, streambeds; 3000–4100 m. Sichuan, Xizang, Yunnan [Bhutan, India, Nepal].

In Fl. Pakistan (210: 86. 2003), *Carpesium scapiforme* is treated as a synonym of *C. nepalense* var. *glandulosum* (J. D. Hooker & Thomson ex C. B. Clarke) Qaiser & Abid. Considering that the habitat

of *C. scapiforme* is so distinct, it seems inappropriate to treat it as a variety of *C. nepalense*.

15. *Carpesium humile* C. Winkler, Trudy Imp. S.-Peterburgsk. Bot. Sada 14: 70. 1895.

矮天名精 ai tian ming jing

Herbs, perennial. Rhizome short and stout, with numerous fibrous roots. Stems 12–35 cm tall, simple or branched in upper part, grayish yellow pilose, more densely so on upper part and peduncles. Basal leaves persistent at anthesis, spatulate-oblong, 6–9 × 2.5–4 cm, surfaces glandular, abaxially white pilose, adaxially pubescent, base cuneate, decurrent to very short petiole, margin serrulate or subentire, apex obtuse or acute; upper leaves sessile, oblong to oblong-lanceolate, base cuneate, apex acute. Capitula solitary on stems, branches, or axils, shortly pedunculate; bracteal leaves 3–7, lanceolate, 8–16 mm, pubescent, apex acuminate. Involucro discoid, ca. 8 × 1–1.5 cm; phyllaries 4-seriate, outer ones lanceolate, 7–8 × 2–3.5 mm, herbaceous above, dry membranous below, abaxially pilose, apex acuminate, inner linear, dry membranous, apex acute. Marginal florets tubular, ca. 2 mm, 5-dentate, pubescent. Disk florets 2.5–3 mm, pubescent; limb funneliform, 5-dentate. Achenes ca. 3 mm. Fl. Jul–Sep, fr. Sep–Oct.

• Grassy slopes, river beaches, forest margins; 2000–3700 m. Gansu, Qinghai, Sichuan, Xizang, Yunnan.

16. *Carpesium lipskyi* C. Winkler, Trudy Imp. S.-Peterburgsk. Bot. Sada 14: 68. 1895.

高原天名精 gao yuan tian ming jing

Herbs, perennial. Rhizome prostrate. Stems 35–70 cm tall, densely pilose. Basal leaves usually withering before flowering, blade elliptic or spatulate, 7–15 × 3–7 cm, glandular on both surfaces, abaxially white pilose, more densely so along veins, adaxially pubescent, base decurrent to petiole, margin subentire or serrulate, apex obtuse or acute; upper leaves sessile, elliptic to elliptic-lanceolate, base broadly cuneate, apex acuminate. Capitula solitary on ends of stems, branches, or in axils, pendulous; bracteal leaves 5–7, lanceolate, subequal, 8–16 × 2–3 mm, reflexed, sparsely pubescent, more densely so along costae. Involucro discoid, 1–1.5 cm in diam.; phyllaries 4-seriate, outer ones similar to bracteal leaves, lanceolate, ca. 7 mm, herbaceous above, dry membranous below, abaxially pubescent, usually reflexed, median lanceolate, dry membranous, apex acuminate, innermost linear-lanceolate, apex irregularly serrulate. Marginal florets narrowly funneliform, ca. 2.5 mm, limb 5-dentate. Disk florets 3–3.5 mm; corolla white pubescent, limb funneliform, 5-dentate. Achenes 3.5–4 mm. Fl. Jul–Sep, fr. Aug–Oct.

• Forest margins, thickets; 2000–3700 m. Gansu, Qinghai, Sichuan, Yunnan.

189. PULICARIA Gaertner, Fruct. Sem. Pl. 2: 461. 1791.

蚤草属 zao cao shu

Annual or perennial herbs or subshrubs. Stems not winged, without resin canals. Leaves alternate, usually sessile or rarely petiolate. Capitula heterogamous radiate or disciform, or homogamous discoid, in corymbiform or racemiform arrays. Involucres hemispheric to campanulate, [3–]5–10[–20+] mm in diam.; phyllaries persistent (sometimes reflexed in fruit), in (2 or)3 or 4+ series,

unequal to subequal. Receptacles flat, smooth or minutely alveolate, epaleate. Ray florets when present female, fertile; corollas yellow, laminae 1.5–2+ mm. Disk florets bisexual; corollas yellow, lobes 5. Anthers ecalcarate, with branched tails; endothecial tissue radial. Pollen spines with a cavity. Style branches with acute sweeping hairs, not reaching furcation. Achenes ellipsoid, shorter than corolla and often apically contracted and glandular, hairy, with elongated crystals. Pappus of barbellate, capillary to ± flattened bristles in 1 row with an outer cup of free or connate scales. $x = 6, 7, 8, 9, 10$.

About 77 species: Africa, Asia, Europe; six species (one endemic, one introduced) in China.

- 1a. Annual or perennial herbs, densely branched; capitula small; involucre 5–8(–10) mm in diam.
 - 2a. Annual herbs; leaves oblong-lanceolate; phyllaries in 5 or 6 series, margin membranous; inner pappus of 6–12 bristles, 1–1.5 mm 1. *P. vulgaris*
 - 2b. Perennial herbs; leaves oblong-spatulate; phyllaries in 2 or 3 series, outer one herbaceous; inner pappus of 15–25 bristles, 4–5 mm 2. *P. gnaphalodes*
- 1b. Perennial herbs or subshrubs, not branched or few branched; capitula large; involucre 9–25 mm in diam.
 - 3a. Capitula solitary, rarely 2 or 3 3. *P. insignis*
 - 3b. Capitula numerous.
 - 4a. Subshrubs 4. *P. chrysanthra*
 - 4b. Perennial herbs.
 - 5a. Leaves oblong, apex acute, base cordate and slightly amplexicaul; phyllaries in 5 or 6 series, densely lanate 5. *P. dysenterica*
 - 5b. Leaves obovate-spatulate, apex rounded, base narrower; phyllaries in 2 or 3 series, slightly pubescent 6. *P. salviifolia*

1. *Pulicaria vulgaris* Gaertner, Fruct. Sem. Pl. 2: 461. 1791.

蚤草 zao cao

Inula pulicaria Linnaeus, Sp. Pl. 2: 882. 1753; *Aster pulicaria* (Linnaeus) Scopoli; *Diplopappus vulgaris* (Gaertner) Bluff & Fingerhuth; *Pulicaria inuloides* Vahl ex Hornemann, nom. illeg. superfl.; *P. prostrata* Ascherson, nom. illeg. superfl.; *P. uliginosa* Gray, nom. illeg. superfl.

Herbs, annual, entire plant tomentose-pilose pubescent or lanate-villous (*Pulicaria vulgaris* var. *villosa* Hohenacker). Stems erect or ascending, almost from base, more rarely branched from middle, clothed above with villous tomentum of rather long thin hairs and dispersed fine yellowish transparent sessile or very shortly stalked glands, less densely pubescent below. Leaves (0.7–)1–3(–40) × 0.2–0.8(–1) cm, lower ones oblong, basally narrowed into very short petiole, others sessile, oblong-lanceolate with truncately rounded base, somewhat undulate at margin, entire, or slightly finely distantly toothed, apex acute or obtuse; both surfaces, but more densely abaxially, tomentose-pilose or sublanate and, also mostly densely, finely sessile or subsessile glandular, glands transparent golden yellow. Capitula semiglobose, numerous, (10–)20–80(–100) per plant, borne in a few or solitarily at ends of sprigs in loose irregularly paniculate synflorescences. Involucres 5–8(–10) mm in diam., semiglobose; phyllaries numerous, arranged in 5 or 6 rows, inner ones longer, all appressed, linear or narrowly oblanceolate-linear, villous-pilose and finely dotted sessile glandular outside, apex acute and sometimes unbent. Radiate marginal florets short, not exceeding involucre or only slightly so, almost as long as or slightly longer than tubular disk florets; corollas of ray florets 2.5–3.5 mm, almost as long as style, slightly longer than inner row of pappus, outside, mainly in upper part, beset with dispersed transparent golden yellow glands and simple hairs; lamina erect, almost oval, ca. 1 mm wide; corolla of tubular disk floret ca. 2 mm, slightly longer than inner row of pappus, outside also as corollas of ray florets covered with glands and simple hairs. Achenes 1.5–1.8 × ca. 0.5 mm, equal

in length to inner row of pappus bristles or even slightly longer, oblong, slightly compressed and longitudinally costate, entire surface not densely shortly appressed pilose. Inner row of pappus consisting of 6–12 denticulate-scabrid hairs, ca. 1.5 mm, somewhat unequal in length; outer pappus shortly coroniform, ca. 0.3 mm. Fl. Jun–Sep. $2n = 18$.

Dry grasslands, sandy places, riverbeds, roadsides; 600–2800 m. Xinjiang [Kazakhstan, Mongolia, Pakistan, Russia, Turkmenistan, Uzbekistan; N Africa, SW Asia, Europe].

2. *Pulicaria gnaphalodes* (Ventenat) Boissier, Diagn. Pl. Orient., ser. 1, 6: 76. 1846.

鼠麴蚤草 shu qu zao cao

Inula gnaphalodes Ventenat, Descr. Pl. Nouv. t. 75. 1802; *Strabonia gnaphalodes* (Ventenat) Candolle.

Herbs, perennial. Stems very densely branched; entire plant, especially at base, covered with rather dense and long white and thin lanate tomentum, less dense toward apex. Leaves sessile, except very lower ones tapered into short petiole; blade oblong, oblong-spatulate, or at base rounded or slightly cordate, 5–30(–40) × 1–10 mm, both surfaces covered with somewhat less dense pubescence of thin tomentum and glands, midrib impressed adaxially, but prominent abaxially and lateral veins less distinct, base semiamplexicaul, margin distinctly crisped-undulate, apex obtuse. Capitula small, numerous, terminal on slightly thickened ends of terminal and axillary sprigs. Involucres 5–8(–10) mm in diam.; phyllaries loosely arranged in 2(or 3) rows, 2–4 × 0.5–0.7 mm, outer ones slightly shorter and wider than inner ones, oblong-lanceolate, pubescent outside, with ± dense tomentum and sessile glands, apex acute, inner less densely pubescent, margin somewhat membranous and slightly dentate-fimbriate. Ray florets small, slightly longer than involucres; corolla 4–5 mm, sparsely glandular outside; lamina ca. 1 mm wide, suboval. Disk florets tubular; corolla 3–4.5 mm, with prominent anther tips, stigma branches sparsely glandular outside. Achenes 2–2.5 × ca. 0.5 mm, slightly compressed,

not densely patent, or appressed silky-pilose above, mostly coroniform, granulose-glandular. Inner row of pappus of 15–25 pinnate scabrid hairs, 4–5 mm; outer row of pappus coroniform, ca. 0.5 mm. Fl. May–Sep. $2n = 14$.

Stony places, dried riverbeds. W Xizang [Afghanistan, Kyrgyzstan, Pakistan, Tajikistan, Turkmenistan; SW Asia (Iran, Iraq)].

3. *Pulicaria insignis* J. R. Drummond ex Dunn, Bull. Misc. Inform. Kew 1922: 118. 1922.

臭蚤草 chou zao cao

Herbs, perennial. Rhizome long, stout and densely branched, with densely white lanate buds. Stems 5–25 cm tall, not branched or with 2 or 3 flowering branches, densely tomentose. Basal leaves oblanceolate, base gradually narrowed to petiole, apex obtuse; cauline leaves sessile, 4–8 × 1.2–2 cm, oblong or ovate-oblong, surfaces densely pubescent, base semiamplexicaul, margin entire, apex obtuse; lateral veins 4 or 5 pairs, inconspicuous. Capitula solitary, rarely with additional 1 or 2 axillary capitula. Involucre broadly campanulate, 1.2–1.5 × 2–2.5 cm; phyllaries in 2 or 3 series, linear-lanceolate or linear, apex acuminate, outer ones 10–15 × ca. 1 mm, herbaceous above, abaxially densely hispid, apex acuminate, inner herbaceous, 14–20 × ca. 1 mm, abaxially hispid, apex acuminate. Ray florets yellow, pubescent outside; lamina 1–1.5(–2) × ca. 1.5 mm, apex 3-dentate. Disk florets: corolla tubular, ca. 7 mm, glabrous. Achenes cylindric, 2.5–3.5 mm, light brown sericeous, apex truncate, base narrower. Pappus white, in 2 series; outer ones of ca. 5 chaffs of 1–1.3 mm, apex acuminate; inner ones of 5 plumose bristles ca. 7 mm. Fl. Jul–Sep.

Rocky slopes, alpine meadows; 3400–4600 m. SW Qinghai, Xizang [N India].

4. *Pulicaria chrysanthia* (Diels) Y. Ling, Acta Phytotax. Sin. 10: 180. 1965.

金仙草 jin xian cao

Inula chrysanthia Diels, Bot. Jahrb. Syst. 29: 614. 1901; *I. wardii* J. Anthony.

Subshrubs. Rhizome stout, with several caespitose stems and dense pubescent shoots. Stems 30–50 cm tall, branched, densely leafy, pubescent; axillary buds densely white pubescent. Leaves linear-lanceolate to oblong-lanceolate, 15–55 × 3–12 mm, abaxially grayish pubescent and glandular, adaxially sparsely pubescent, base rounded or slightly cordate, margin serrulate, apex acute or obtuse. Capitula terminal on stems or branches, solitary, 15–35 mm in diam. Involucre broadly campanulate, 10–13 × ca. 15 mm; phyllaries in 5 or 6 series, outer ones shorter, oblanceolate or lingulate, leathery below, herbaceous above, usually reflexed, abaxially glandular and pubescent, inner linear-lanceolate, dry membranous, margin ciliate, apex acuminate. Ray florets in 1 series; lamina oblong-linear, yellow, ca. 10 mm, apex 3-dentate. Disk florets: corolla slenderly tubular, ca. 8 mm, glandular outside; lobes deep yellow, lanceolate, apex acute; anthers apex acuminate, base caudate. Achenes cylindric, ca. 2.7 mm, striped, densely pubescent, apex truncate. Pappus white, later slightly yellowish, in 2 series; inner ones of serrulate bristles; outer ones of 5–8 chaffs, ca. 0.3 mm. Fl. Jul–Aug, fr. Aug–Sep.

• Grasslands, forest margins; 2500–3000 m. Sichuan.

5. *Pulicaria dysenterica* (Linnaeus) Bernhardi, Syst. Verz. 153. 1800.

止痢蚤草 zhi li zao cao

Inula dysenterica Linnaeus, Sp. Pl. 2: 882. 1753; *Aster dysentericus* Scopoli; *Diplopappus dysentericus* Bluff & Fingerhuth.

Herbs, perennial. Stems 20–60 cm tall, branched, lanatetomentose and sparsely glandular, in lower part less densely pubescent. Leaves sessile, soft, 1.7–6 × 0.7–2.3 cm, most lower leaves oblong or oblanceolate, narrowed to base, other cauline leaves lanceolate, with auriculate profoundly cordate and slightly amplexicaul base, thinly gray tomentose or sublanate abaxially, green and scabrid adaxially, with short sessile fine tuberculate hairs, rarely subglabrous, margin almost entire or slightly undulate. Capitula 3–15(–20) per plant, in loose, corymbiform or racemose synflorescences, on rather long lanate tomentose peduncles, 2–6 mm. Involucre semiglobose, 1.1–1.5 cm in diam.; phyllaries numerous, in 5 or 6 series, linear, long and tapered-acuminate at apex, almost filiform, sometimes, mostly outer ones, hamate-unbent, tomentose-pilose and not densely dotted granulate-glandular outside, sparsely pilose or subglabrous inside. Ray florets ca. 2 × as long as involucre and almost 3 × as long as tubular disk florets; corolla 8–11 mm, sparsely glandular outside, mainly in upper part; lamina unbent, 1–1.3 mm wide, longitudinally 4-veined. Disk florets tubular, 3.5–4.5 mm. Achenes oblong, 1.25–1.5 × 0.3–0.4 mm, slightly compressed, longitudinally costate, ribs in upper half covered with short bristly hairs. Inner row of pappus consisting of 15–22 denticulate-scabrid hairs, 3–4.3 mm; outer row coroniform, ca. 0.25 mm. Fl. Jun–Sep. $2n = 18$.

Introduced in China [native to N Africa, SW Asia, Europe, India, Nepal, and Pakistan].

6. *Pulicaria salviifolia* Bunge, Beitr. Fl. Russl. 155. 1852 [*salviaefolia*].

鼠尾蚤草 shu wei zao cao

Herbs, perennial. Stems solitary or a few, densely branched, entire plant grayish tomentose or densely white tomentose. Leaves obovate-spatulate, 8–45 × 4–15 mm, lower one larger, glandular, basally gradually tapered into petiole, margin slightly undulate. Capitula numerous, in rather loose racemose synflorescences at ends of branches. Involucre 9–15 mm in diam., pubescent; phyllaries in 2 or 3 series, of equal length, lanceolate, ca. 4.7 × 0.5–1.2 mm, apex rounded. Ray florets 7–8 mm, with glands outside; lamina obovate, 1.5–2 mm, narrowed at apex. Disk florets: corolla 5–8 mm, sparsely glandular outside. Achenes 2–2.8 × ca. 0.5 mm, slightly compressed. Pappus in 2 series; inner ones of numerous 5–8 mm, pinnately scabrid whitish bristles; outer ones coroniform, ca. 0.5 mm. Fl. Jul–Oct.

Pebble and stony slopes, sandy-stony riverbanks. Xinjiang [Afghanistan, Kashmir, Kyrgyzstan, Pakistan, Tajikistan, Uzbekistan; SW Asia (Iran)].

190. PENTANEMA Cassini, Bull. Sci. Soc. Philom. Paris 1818: 74. 1818.

苇谷草属 wei gu cao shu

Shrublets or annual herbs. Stems not winged, without resin canals. Leaves alternate, oblong to lanceolate, entire to serrate, often villous. Capitula generally heterogamous, radiate, but in some species heterogamous disciform, or homogamous discoid. Hibernating young capitula often present in frutescent species. Receptacle epaleate, smooth. Marginal florets female; corolla yellow, radiate, miniradiate, or ± tubular; epidermis not crested. Disk florets bisexual; corolla yellow; epidermis with straight cell walls, with needlelike crystals; corolla lobes short, smooth. Anthers ecalcarate, with branched tails; endothelial tissue radial; cells of antheropodium wider than long. Pollen spines with a cavity. Style branches with acute sweeping hairs, not reaching furcation. Achenes with elongated crystals. Pappus of barbellate, capillary bristles in 1 row. $x = 9$.

About 18 species: Africa, C, S, and SE Asia; three species in China.

- 1a. Leaf base hastate or auriculate; achenes densely pubescent 1. *P. indicum*
- 1b. Leaf base narrower or cordate; achenes sparsely pubescent.
 - 2a. Plants puberulent; capitula pendulous; leaves scabrid on both surfaces 2. *P. cernuum*
 - 2b. Plants densely pilose; capitula erect; leaves densely pilose on both surfaces 3. *P. vestitum*

1. Pentanema indicum (Linnaeus) Y. Ling, Acta Phytotax. Sin. 10: 179. 1965.

苇谷草 wei gu cao

Herbs, annual or perennial, up to 1 m tall. Stems erect, branched, 1–4 mm in diam., striped, pubescent or rarely glabrous. Leaves sessile, oblong-lanceolate or linear-lanceolate, abaxially yellowish green and hispidulous or densely white tomentose, adaxially deep green and strigillose, base truncate or auriculate and subclasping or hastate, margin entire or shallowly serrulate, apex acuminate. Capitula solitary and terminal; peduncles 3–5 cm. Involucre broadly campanulate, ca. 6 mm; phyllaries in numerous series, outer ones subulate, herbaceous, pubescent and glandular, inner narrowly linear, glandular, innermost 4–5 × as long as outer. Receptacle hemispheric, glabrous. Florets yellow, glandular in outer surfaces. Ray florets in 1 series; lamina narrow, 6–10 × 1–1.2 mm. Disk florets numerous; corolla ca. 4 mm. Achenes terete, 0.6–0.7 mm, densely pubescent, apex truncate. Pappus white, or yellowish later, of ca. 15 bristles, ca. 4 mm in disk florets, absent in ray florets. Fl. Sep–Apr.

Waste fields, grassy slopes; 700–2000 m. Guangxi, Guizhou, Sichuan, Yunnan [India, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam; tropical Africa].

- 1a. Leaves broader, 3–8 cm × 3–10 mm, base truncate or auriculate, subclasping, margin entire, abaxially yellowish green, hispidulous 1a. var. *indicum*
- 1b. Leaves narrower, 2–9 cm × 2–8 mm, base hastate, apex obtuse, margin entire or shallowly serrulate, abaxially densely white tomentose 1b. var. *hypoleucum*

1a. Pentanema indicum var. ***indicum***

苇谷草(原变种) wei gu cao (yuan bian zhong)

Inula indica Linnaeus, Sp. Pl., ed. 2, 2: 1236. 1763; *Vicoa appendiculata* Candolle; *V. auriculata* Cassini; *V. indica* (Linnaeus) Candolle.

Leaves broader, 3–8 cm × 3–10 mm, abaxially yellowish green, hispidulous, base truncate or auriculate, subclasping, margin entire. $2n = 18$.

Waste fields, grassy slopes; 700–2000 m. Guangxi, Guizhou, Yunnan [India, Myanmar, Pakistan, Sri Lanka, Thailand, Vietnam; tropical Africa].

“*Inula appendiculata*” and “*I. auriculata*” (Wallich, Numer. List, nos. 2966, 2965. 1831) belong here but are nomina nuda and were therefore not validly published (*Vienna Code*, Art. 32.1(d)).

1b. Pentanema indicum var. ***hypoleucum*** (Handel-Mazzetti) Y. Ling, Acta Phytotax. Sin. 10: 179. 1965.

白背苇谷草 bai bei wei gu cao

Inula indica var. *hypoleuca* Handel-Mazzetti, Symb. Sin. 7: 1107. 1936; *Aster lofouensis* H. Léveillé & Vaniot.

Leaves narrower, 2–9 cm × 2–8 mm, abaxially densely white tomentose, base hastate, margin entire or shallowly serrulate, apex obtuse. Fl. Feb–Jul, fr. Oct.

Waste fields, grassy slopes; 700–2000 m. Guangxi, Guizhou, Sichuan, Yunnan [India, Myanmar, Sri Lanka, Vietnam].

2. Pentanema cernuum (Dalzell) Y. Ling, Acta Phytotax. Sin. 10: 180. 1965.

垂头苇谷草 chui tou wei gu cao

Vicoa cernua Dalzell in Dalzell & A. Gibson, Bombay Fl. 126, 314. 1861; *Inula dalzellii* Handel-Mazzetti.

Herbs, annual. Stems 25–50 cm tall, pubescent. Petiole very short; leaf blade oblong-lanceolate, 5–7.5 × 2–2.5 cm, both surfaces shortly pubescent, base narrower, margin shallowly serrulate or dentate, rarely entire, apex acute or acuminate. Capitula 5–7 mm in diam., pendulous, in sparse corymbs; peduncles slender, usually with 1 small bracteal leaf. Phyllaries linear, apiculate, pubescent; outer ones squamiform. Ray florets 20–40; lamina yellow, linear, longer than involucre, apex 3-toothed. Achenes oblong, ca. 0.6 mm, sparsely pubescent. Pappus of disk florets few, brown, 3–4 mm.

Grassy slopes; ca. 1500 m. Yunnan [Bhutan, India, Nepal].

3. Pentanema vestitum (Wallich ex Candolle) Y. Ling, Acta Phytotax. Sin. 10: 180. 1965.

毛苇谷草 mao wei gu cao

Inula vestita Wallich ex Candolle, Prodr. 5: 470. 1836;

Pentanema radiatum Boissier; *Vicoa vestita* (Wallich ex Candolle) Bentham.

Herbs, annual or biennial, 10–50 cm tall. Stems simple or branched above, pilose. Leaves oblong or ovate in synflorescence, 1–3 × 0.5–1 cm, pilose on both surfaces, base cordate, semiamplexicaul, or lower ones tapered, margin partially and usually shallowly serrate, apex acute or obtuse. Involucre 4- or 5-seriate; outer phyllaries herbaceous, linear, 4.5–6 mm, inner

ones linear-lanceolate, 6–7.2 mm, scarious margined, apex acuminate. Ray corolla tube ca. 2.7 mm; lamina ca. 4.5 × 0.6 mm, pilose at base. Disk 0.6–1 cm in diam.; corollas 3.3–4.5 mm, glandular at apex. Achenes brown, ca. 0.8 mm, sparsely pubescent. Pappus bristles fine, usually 10, yellowish white, 2.5–3.5 mm. Fl. Apr–Jul.

Riverbeds, stony places; ca. 1500 m. W Xizang [Afghanistan, India, Nepal, Pakistan].

191. BLUMEA Candolle, Arch. Bot. (Paris) 2: 514. 1833, nom. cons.,
not *Blumia* Nees (1825).

艾纳香属 ai na xiang shu

Blumeopsis Gagnepain.

Herbs or shrubs. Stems not winged, with resin canals. Leaves alternate, simple, sessile or shortly petiolate, mucronate-toothed to laciniate or sometimes pinnately lobed. Capitula heterogamous, disciform, solitary or paniculate. Involucre campanulate-globose; phyllaries numerous, imbricate or reflexed, in 4 or 5 series, outer series shortest. Receptacle epaleate, with scalelike ridges. Marginal florets female, in several rows; corolla yellow, filiform, minutely 2- or 3-toothed. Disk florets bisexual; corollas often yellow, rarely white to purplish, tubular, 5-toothed. Anthers ecalcarate, tailed; tails connate, caudate-acuminate; endothecial tissue radial or polarized. Pollen spines with a cavity. Style branches with acute sweeping hairs, not reaching furcation. Achenes cylindric, hirsute, terete or obscurely 4-angular or 5- or 10-ribbed, shorter than corolla; epidermis with elongated crystals. Pappus of barbellate, capillary bristles in 1 row, white to reddish. $x = 8, 9, 10, 11$.

About 50 species: Africa, tropical Asia, Australia, Pacific islands; 30 species (five endemic) in China.

Blumeopsis is treated here as a synonym of *Blumea*. It is a derived ingroup in this large genus and should be included therein; see Pornpongngueng et al. (Pl. Syst. Evol. 269: 223–243. 2007).

The name *Blumea gomphrena* (Walpers) Schultz-Bipontinus ex Handel-Mazzetti (Oesterr. Bot. Z. 88: 310. 1939), based on *Vernonia gomphrena* Walpers (Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 19(Suppl. 1): 253. 1843), is of uncertain application. The only known specimen associated with the name, the type, collected by Meyen from an island (“Lintin”) near Guangzhou, was probably destroyed in the Berlin herbarium fire of 1943. The protologue describes a pubescent annual with amplexicaul leaves, cymes with few capitula, and lanceolate phyllaries, but it is completely lacking in useful information on floral morphology including microcharacters. A specimen at GH comprises a drawing of the type together with two fragments (leaves and immature capitula) of the type. Merrill (J. Arnold Arbor. 18: 75. 1937), who saw this material, treated *V. gomphrena* as a synonym of *B. obliqua* (Linnaeus) Druce, a species not otherwise recorded from China. Certainly the material resembles a *Blumea*, but examination of the microcharacters of the capitula are needed to confirm its identity. In particular, the shape of the style sweeping hairs, the endothecial tissue thickenings, the shape and size of the anther thecae (calcarate, tailed, etc.), and the pollen morphology could be informative.

- 1a. Anthers with sagittate or obtuse bases, without tails 1. *B. flava*
- 1b. Anthers tailed.
- 2a. Outer phyllaries ovate or ovate-oblong; receptacle densely pilose; pappus white.
 - 3a. Erect herbs; old leaves abaxially densely pubescent or tomentose, margin biserrate 2. *B. repanda*
 - 3b. Climbers; old leaves abaxially very sparsely pubescent or glabrescent, margin regularly and sparsely serrate.
 - 4a. Capitula 12–13 mm in diam., usually 1–7 axillary or in sparse terminal panicles; involucre hemispheric; receptacle 6–11 mm in diam. 3. *B. megacephala*
 - 4b. Capitula 5–8 mm in diam., usually axillary or in dense terminal panicles; involucre campanulate; receptacle 2–3 mm in diam. 4. *B. riparia*
- 2b. Outer phyllaries linear to linear-lanceolate (or if ovate-lanceolate then pappus not white); receptacle glabrous; pappus white, reddish brown, yellowish brown, or yellow.
 - 5a. Pappus reddish brown, yellowish brown, or yellow.
 - 6a. Leaf blade sagittate at base; marginal florets bilabiate at apex 5. *B. sagittata*
 - 6b. Leaf blade rounded or acute at base; marginal florets equally 2–4-lobed at apex.
 - 7a. Leaf blade pinnatisect 6. *B. hookeri*
 - 7b. Leaf blade margin serrate, rarely deeply dentate.
 - 8a. Leaf blade linear 7. *B. linearis*
 - 8b. Leaf blade oblong.
 - 9a. Stems, leaves, and peduncles densely white lanate 8. *B. martiniana*
 - 9b. Stems, leaves, and peduncles pubescent or tomentose.

- 10a. Outer phyllaries ovate-lanceolate 9. *B. lanceolaria*
 10b. Outer phyllaries oblong, linear, or linear-lanceolate.
 11a. Leaf base usually with 1–5 pairs of appendages 10. *B. balsamifera*
 11b. Leaf base without appendages.
 12a. Leaf base acuminate, margin serrulate 11. *B. formosana*
 12b. Leaf base acute, margin coarsely dentate.
 13a. Leaf blade 20–30 × 6–12 cm; capitula 8–15 mm in diam. 12. *B. aromatica*
 13b. Leaf blade 30–45 × 10–15 cm; capitula 4–5 mm in diam. 13. *B. conspicua*
- 5b. Pappus white.
- 14a. Capitula few, in axillary or terminal small and compact racemes; leaf blade linear-lanceolate 14. *B. tenuifolia*
 14b. Capitula in large and sparse panicles or dense spikes; leaf blade much broader.
 15a. Plants prostrate; leaves spinose-toothed 15. *B. oxyodonta*
 15b. Plants erect; leaves not spinose-toothed.
 16a. Leaf blade lyrately lobed or pinnatisect.
 17a. Leaves abaxially white lanate, adaxially tomentose 16. *B. lacera*
 17b. Leaves pubescent or subglabrous.
 18a. Capitula in spiciform panicle; phyllaries not reflexed after anthesis 17. *B. sessiliflora*
 18b. Capitula in sparse or dense panicle, peduncles obvious; phyllaries reflexed after anthesis.
 19a. Receptacle 4–5 mm in diam., pilose; phyllary apex purplish red.
 20a. Leaf blade pinnatisect, base amplexicaul; achenes 6-ribbed 18. *B. saussureoides*
 20b. Leaf blade lyrately lobed, base narrow; achenes 10-ribbed 19. *B. sinuata*
 19b. Receptacle 2–3 mm in diam., glabrous; phyllary apex green.
 21a. Stems, peduncles, and phyllaries glabrous or sparsely pubescent, without glands 20. *B. virens*
 21b. Stems, peduncles, and phyllaries pubescent and glandular.
 22a. Leaf blade upper lobe orbicular, apex rounded; capitula pedunculate, in sparse panicle 21. *B. napifolia*
 22b. Leaf blade upper lobe ovate-oblong or elliptic, apex acute; capitula subsessile, in dense panicle 22. *B. membranacea*
- 16b. Leaf blade unlobed, margin dentate, serrate, or biserrate.
 23a. Receptacle pilose.
 24a. Capitula 8–12 mm in diam.
 25a. Leaf blade margin regularly serrate; capitula sessile or with 0.5–1(–2) cm long peduncles, in dense panicles; innermost phyllaries ca. 1 mm wide, apex acute 23. *B. clarkei*
 25b. Leaf blade margin biserrate; capitula with up to 2 cm long peduncles, in sparse panicles; innermost phyllaries ca. 0.5 mm wide, apex caudate-acuminate 24. *B. oblongifolia*
 24b. Capitula 3–6 mm in diam.
 26a. Stems green, long pilose, glandular; blade oblong or oblong-lanceolate, glandular; capitula few, in short and dense panicles 25. *B. adenophora*
 26b. Stems purplish red, pubescent or tomentose, without glands; blade obovate to oblanceolate; capitula many, sessile, in spikelike panicles 26. *B. fistulosa*
- 23b. Receptacle glabrous.
 27a. Achenes not ribbed.
 28a. Florets purplish red 27. *B. axillaris*
 28b. Florets yellow 16. *B. lacera*
 27b. Achenes distinctly ribbed.
 29a. Leaves abaxially whitish sericeous or lanate.
 30a. Leaves mainly cauline, elliptic, margin denticulate; phyllary apex purplish red 28. *B. hieraciifolia*
 30b. Leaves mainly basal, obovate-spatulate or obovate-oblong, margin serrate or biserrate; phyllaries green or yellowish 29. *B. sericans*
 29b. Leaves abaxially glabrous.

- 31a. Leaves mainly basal, subsessile, caudine leaves 4–6; capitula few, in globose panicles; phyllaries and corollas purplish red 30. *B. veronicifolia*
- 31b. Leaves mainly caudine, with 2.5–3.5 cm long petioles; capitula many, in sparse panicles; phyllaries green; corollas yellow 21. *B. napifolia*

1. *Blumea flava* Candolle, Prodr. 5: 439. 1836.

拟艾纳香 ni ai na xiang

Blumea lecomtei Vaniot & H. Léveillé; *Blumeopsis flava* (Candolle) Gagnepain; *Laggera flava* (Candolle) Bentham.

Herbs, annual, erect, 25–100 cm tall. Leaves 1.5–8 × 0.5–4 cm, spinulose-dentate, lower ones obovate, obtuse, narrowed to base, upper ones ovate-oblong, acute with an amplexicaul base. Capitula 3–4 mm in diam. Phyllaries 5-seriate, imbricate, glabrous, outer ones ovate, subacute, inner ones linear-oblong, acuminate. Marginal florets female, filiform, 3-toothed. Disk florets bisexual or with few sub-bisexual ones (with partially developed androecium), tubular 4- or 5-toothed. Achenes very small, glabrous, 10-ribbed. Pappus white, 2.5–5 mm. Fl. Oct–Mar.

Grassy slopes, sparse forests; below 2000 m. Guangxi, Guizhou, Hainan, Yunnan [Bhutan, India, Indonesia, Malaysia, Myanmar, Pakistan, Thailand, Vietnam].

2. *Blumea repanda* (Roxburgh) Handel-Mazzetti, Symb. Sin. 7: 1378. 1936.

高艾纳香 gao ai na xiang

Conyzia repanda Roxburgh, Fl. Ind., ed. 1832, 3: 431. 1832; *Blumea eberhardtii* Gagnepain; *B. procera* Candolle; *Leveillea procera* (Candolle) Vaniot.

Herbs (or subshrubs), perennial, erect, 1–3.5 m tall. Stems sparsely pubescent at base, densely velutinous-villous in younger parts especially synflorescence axes. Leaves subsessile, oblanceolate-oblong to elliptic-oblong, 6–18.5 × 2.5–8 cm, abaxially scabrid to tomentose, adaxially densely villous, base tapering, sometimes nearly semiamplexicaul, margin coarsely biserrate or dentate, apex acuminate; upper epidermal cells with undulate walls, lower with sinuate walls. Capitula in large, terminal, divaricate panicles, densely aggregated at ends of branches, clusters sometimes lax, subsessile, 5–7 mm in diam. Phyllaries slightly longer than florets, 1–7 mm, outer ones oblong-ovate, inner ones linear-oblong and with scarious margins, all acute, densely pubescent abaxially. Receptacle 1.5–2.5 mm in diam., flat, alveolate, pubescent. Corollas yellow, tubular; those of marginal florets filiform, 4–5 mm, with 2–4 lobes, occasionally pubescent on lobes; those of central florets 4.5–6 mm, with 5 lobes, lobes triangular, papillate, pubescent with colleters. Anther tails shorter than thickened portion of filament. Achenes pale brown, pubescent, ribbed. Pappus copious, white, ca. 5 mm. Fl. Jan–May.

Evergreen forests or thickets; 1200–2000 m. Yunnan [Bhutan, India, Myanmar, Nepal, Pakistan, Vietnam].

3. *Blumea megacephala* (Randeria) C. C. Chang & Y. Q. Tseng in Y. Ling, Fl. Reipubl. Popularis Sin. 75: 11. 1979.

东风草 dong feng cao

Blumea riparia Candolle var. *megacephala* Randeria, Blumea 10: 215. 1960.

Subshrubs or shrubs, perennial, scandent; branches elongated, to 4–6 m. Stems woody, 2–3 cm in diam., terete, striate, glabrate or sparsely puberulent particularly on synflorescence axes and on younger parts. Cauline leaves thick, oblong, 9–11 × 2.5–4 cm, glabrate or minutely pilose on surfaces, base obtuse to cuneate, margin remotely mucronulate or mucronulate-denticulate, apex shortly acuminate; veins 5 or 6 pairs. Capitula hemispheric, 10–15 × 12–13 mm, in terminal and axillary lax panicles. Phyllaries in 3 or 4 series, usually distinctly purple tipped, outer ones shorter, linear-lanceolate, 2–4 × ca. 1 mm, with multicellular hairs, inner linear-lanceolate, 8–9 × ca. 0.9 mm, ciliate. Receptacle flat, 6–11 mm in diam., with white, multicellular hairs. Corollas yellow, tubular; marginal florets 8–9 mm, 3- or 4-lobed; central florets 9–10 mm with 5 triangular lobes, lobes with sessile glands and multicellular hairs. Achenes oblong to cylindric, 1.2–1.4 × ca. 0.5 mm, 10-ribbed, sparsely hirsute. Pappus white, 5–6 mm. Fl. Aug–Apr. 2n = 16.

Thickets, grassy slopes at forest margins; 100–1900 m. Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan (Ryukyu Islands), Thailand, Vietnam].

4. *Blumea riparia* Candolle, Prodr. 5: 444. 1836.

假东风草 jia dong feng cao

Conyzia riparia Blume, Bijdr. 899. 1826, not Kunth (1818).

Shrubs, scandent. Stems 0.5–2.5 m tall, somewhat pubescent among synflorescences. Leaves petiolate; petioles usually distinct, narrow, up to 6 mm, not amplexicaul; leaf blade ovate-lanceolate, 5–13 × 1.5–4 cm, ± glabrous on both surfaces, base rounded or sometimes subacute, margin remotely denticulate without coarser teeth, apex acuminate. Capitula 5–8 mm in diam., on short peduncles (1–7 mm) in tight or loose clusters in axillary and terminal panicles. Involucle 5-seriate; phyllaries of outer 2 series ovate, 2.2–3.5 mm, pubescent, of inner 2 series narrowly oblong to linear, ca. 7 mm. Receptacle 2–3 mm in diam., densely long hairy. Corollas yellow, 5.5–7 mm; lobes of central florets with glandular and few or many eglandular hairs. Pappus white. Fl. Jan–Jun. 2n = 18.

Forests, thickets, streamsides; 400–1800 m. Guangdong, Guangxi, Taiwan, Yunnan [Bhutan, India, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Thailand, Vietnam; Pacific islands (Solomon Islands)].

5. *Blumea sagittata* Gagnepain, Bull. Soc. Bot. France 68: 43. 1921.

戟叶艾纳香 ji ye ai na xiang

Herbs. Stems 60–150 cm tall, usually not branched, terete, densely pale brown pilose. Leaves sessile or very shortly petiolate up to 5 mm, oblong-lanceolate or lanceolate, rarely elliptic, 6–20 × 2.5–7 cm, abaxially densely pilose, adaxially scabrid with prominent hairs, base sagittate with 2 distinct acute auricles, margin distantly and minutely dentate, apex acute or shortly acuminate. Capitula in a large, terminal, bracteate panicle. Involucre campanulate, ca. 10 mm; phyllaries in 5 series, outer ones lanceolate, ca. 1.5 mm, abaxially pubescent and glandular, median linear, 3–5 mm, pubescent and glandular adaxially, inner linear, ca. 7 mm, dry membranous, glabrous. Receptacle 2–3 mm in diam., alveolate, fimbriate. Corollas yellow, tubular; marginal florets filiform, ca. 5 mm, subequally 5-lobed; central florets 5–6 mm, with 5 ovate, acute lobes. Anther tails longer than thickened portion of filament. Achenes spindly, ca. 1.2 mm, pubescent, 10-ribbed. Pappus light yellow or whitish yellow, ca. 8 mm. Fl. Aug–Dec.

Mixed forests, moist grassy slopes, thickets; 500–1000 m. Guangxi, Guizhou, Yunnan [Laos, Vietnam].

6. *Blumea hookeri* C. B. Clarke ex J. D. Hooker, Fl. Brit. India 3: 269. 1881.

薄叶艾纳香 bao ye ai na xiang

Blumea densiflora Candolle var. *hookeri* (C. B. Clarke ex J. D. Hooker) C. C. Chang & Y. Q. Tseng.

Herbs, perennial, coarse. Stems erect, puberulent. Leaves pinnatifid, subsessile, elliptic, 7–38 × 3–18 cm, puberulent on both surfaces, base long attenuate, apex acuminate; lobes 3–5 pairs, oblong to lanceolate, acuminate, subentire or remotely serrulate, sometimes also with few coarse teeth. Capitula numerous, in open, leafy, rounded or elongate, terminal panicles. Involucre in 5 or 6 series; phyllaries 2–6 mm, outermost oblong-lanceolate, pubescent, others linear. Receptacle glabrous, sometimes sparsely hairy. Corolla lobes of central florets with minute glandular pubescence and eglandular hairs. Ovaries pubescent; pappus somewhat reddish. Fl. Jan–Apr.

Forests; 1200–2800 m. Yunnan [Bhutan, NE India, Vietnam].

7. *Blumea linearis* C. I Peng & W. P. Leu, Bot. Bull. Acad. Sin. 40: 53. 1999.

条叶艾纳香 tiao ye ai na xiang

Subshrubs, to 1.5–2.5(–3) m tall. Stems striate, center hollow, base woody, 1.5–2.5 cm in diam., puberulent or sometimes glabrate; main stems usually simple or 2–4-branched from middle. Leaves linear, 25–35 × 2.5–3.5 cm, herbaceous, rugose, villosus abaxially, sparsely pilose adaxially, base attenuate into a short petiole, margin remotely biserrate, apex acute; veins 24–30 pairs. Capitula numerous, pedunculate, terminal and axillary, in a pyramidal panicle. Involucre globose-campanulate; phyllaries in 2 or 3 series, outer ones shorter, linear-lanceolate, 2–3 × 0.7–0.9 mm, compressed, abaxially with numerous sessile glands and multicellular hairs, inner linear-lanceolate, 7–8 × ca. 0.6 mm, margins scarious, margins and apices ciliate. Receptacle convex, 1.5–2 mm in diam., alveolate, sparsely pilose. Marginal florets ca. 6 mm, 2- or 3-lobed, glabrous. Central flo-

rets yellowish, 6–7 mm, with 5 triangular lobes, lobes with sessile glands and sparsely multicellular hairs. Achenes pale brown, oblong-terete, 1.1–1.3 × ca. 0.3 mm, pilose, 10-ribbed. Pappus pale brown to yellowish white, 5–6 mm. Fl. and fr. Mar–May. 2n = 18*.

• Roadsides, riverbanks; below 400 m. Taiwan.

8. *Blumea martiniana* Vaniot, Bull. Acad. Int. Géogr. Bot. 12: 26. 1903.

裂苞艾纳香 lie bao ai na xiang

Blumea henryi Dunn; *B. tonkinensis* Gagnepain; *Leveillea martini* Vaniot.

Subshrubs, 1.5–2.5 m tall. Stems branched, woody; branches terete, densely matted-lanate with long, white hairs. Leaves ± sessile, oblanceolate to oblong-oblanceolate, 15–40 × 4–15 cm, very densely lanate abaxially with long white hairs, pilose adaxially with prominent multicellular hairs, base tapering into an indistinct petiole, margin distantly denticulate-mucronulate, apex shortly acuminate; epidermal cells with sinuate walls, stomata only on abaxial surface. Capitula in axillary clusters of 2–4, arranged ultimately in large panicles, pedunculate, 14–17 mm in diam.; peduncles up to 15 mm, along with rest of panicle branches densely white lanate. Phyllaries slightly longer than florets, 3–12 mm, linear, apex acute, outer densely lanate on abaxial surface, inner gradually scarious. Receptacle 4–6 mm in diam., flat, alveolate, glabrous. Corollas reddish yellow, tubular; those of marginal florets filiform, ca. 6 mm, 2- or 3-lobed, glabrous; those of central florets 6–7 mm, with 5 lobes, lobes triangular-ovate, acute, papillate, pubescent with long multicellular hairs and colleters. Anther tails equal in length to thickened portion of filament. Achenes brown, columnar, densely pubescent, finely ca. 10-ribbed. Pappus yellowish white, 5–7 mm. Fl. Oct–Feb.

Ravines, forests; 600–1300 m. Guangxi, Guizhou, Yunnan [Vietnam].

9. *Blumea lanceolaria* (Roxburgh) Druce, Rep. Bot. Soc. Exch. Club Brit. Isles 4: 609. 1917.

千头艾纳香 qian tou ai na xiang

Coryza lanceolaria Roxburgh, Fl. Ind., ed. 1832, 3: 432. 1832; *Bileveillea granulatifolia* H. Léveillé; *Blumea lanceolaria* var. *spectabilis* (Candolle) Randeria; *B. myriocephala* Candolle; *B. spectabilis* Candolle.

Herbs or subshrubs, perennial, erect, 1–2.5 m tall. Stems striate, green, woody at base, hollow in center, 1–25 cm in diam., glabrate or puberulent particularly on younger parts and in synflorescence, usually unbranched except for synflorescence. Leaves herbaceous, dark green adaxially, narrowly oblong to oblanceolate, 20–30 × 4–8 cm, abaxially glabrate or puberulent with sparse multicellular hairs, adaxially often rugose and glabrous, base attenuate into auriculate petiole, margin minutely serrate-dentate, apex acuminate; veins 14–16 pairs. Capitula numerous, 7.5–8.5 × 2.5–3.5 mm, terminal, in a pyramidal panicle. Involucre campanulate-globose; phyllaries in 2 or 3 series, outer ones shorter, ovate-lanceolate to linear, 6.5–7.5 ×

ca. 0.5 mm, with prominent scarious margins, margins and apices ciliate. Receptacle flat, 1.5–2.5 mm in diam., alveolate, fimbriate or densely pilose. Marginal florets 6–7 mm, 2- or 3-lobed, glabrous. Central florets yellowish, 6.5–7.5 mm, with 5 broadly triangular lobes, lobes with sessile glands and remote multicellular hairs. Anthers sagittate, tailed. Achenes oblong, ca. 1 × 0.3–0.4 mm, 10-ribbed, pubescent. Pappus pale reddish, ca. 5 mm. Fl. Jan–Apr. 2n = 18.

Forests, grassy slopes, riversides; 400–1500 m. Guangdong, Guangxi, Guizhou, Taiwan, Yunnan [Bhutan, India, Indonesia, Japan, Myanmar, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam].

10. *Blumea balsamifera* (Linnaeus) Candolle, Prodr. 5: 447. 1836.

艾纳香 ai na xiang

Conyzia balsamifera Linnaeus, Sp. Pl., ed. 2, 2: 1208. 1763; *Baccharis salvia* Loureiro; *Blumea balsamifera* var. *microcephala* Kitamura; *Pluchea balsamifera* (Linnaeus) Lessing.

Shrubs or subshrubs, perennial, erect, 1–3 m tall. Stems corymbosely branched, woody at base; bark grayish brown; branches terete, densely lanate-villous with yellowish white hairs. Leaves narrowly oblong, 15–18 × 3.5–5 cm, abaxially densely silky-lanate, adaxially rugose and pilose with blunt multicellular hairs, base narrowed, auriculate, auricles 10–12 mm on short petiole, margin serrulate to serrate usually with upcurved teeth, apex acuminate; veins 10–12 pairs. Capitula 6–7 mm, in spreading pyramidal panicles, pedunculate. Involucres campanulate; phyllaries in 3 or 4 series, densely lanate on outer surface, outer ones smaller, oblong-lanceolate 1–3 mm, compressed, inner longer, linear 5–6 mm. Receptacle 2.5–3 mm in diam., flat, alveolate, glabrous. Marginal florets filiform, to 6 mm, 2–4-lobed. Central florets yellow, tubular, 6–7 mm, lobes papillate, with sessile glands and sparse multicellular hairs. Achenes brown, terete, oblong, ca. 1 mm, sparsely hirsute. Pappus reddish, 4–6 mm. Fl. year-round. 2n = 18.

Dry fields, thickets, grasslands, mountain slopes, riverbanks; below 1200 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Taiwan, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Thailand, Vietnam].

11. *Blumea formosana* Kitamura, Acta Phytotax. Geobot. 2: 38. 1933.

台北艾纳香 tai bei ai na xiang

Herbs, annual, erect, 70–90 cm tall. Stems pale, striate, densely white villous particularly in younger parts, somewhat woody at base, 0.4–0.7 cm in diam., branched above. Lower leaves larger, obovate-oblong to spatulate, 16–18 × 4–7 cm, papery, appressed white lanate abaxially, puberulent adaxially, base attenuate, margin regularly and remotely mucronulate, apex acute; veins 10–12 pairs. Capitula 8–10 × 4–5 mm, in lax panicles, pedunculate. Involucre globose-campanulate; phyllaries in 3 or 4 series, outer ones shorter, linear-lanceolate, 2–3 × 0.5–0.6 mm, outer surface with numerous sessile glands and multicellular hairs, inner ones linear, 6–7 × ca. 0.5 mm, margins ciliate. Receptacle slightly convex, 3–4 mm in diam., alveolate, glabrous. Marginal florets filiform, 5–6 mm, limbs 2- or 3-lobed. Central florets yellowish, tubular, 6–7 mm, with 5

broadly triangular lobes, lobes with sessile glands and sparse multicellular hairs. Achenes brownish, oblong, ca. 1 × 0.4 mm, ribbed, glandular hairy. Pappus brownish, 4–5 mm. Fl. Aug–Nov.

- Semishaded broad-leaved forests, plantation floors, forest margins, grassy slopes. Fujian, Guangdong, Guangxi, Hunan, Jiangxi, Taiwan.

12. *Blumea aromatica* Candolle, Prodr. 5: 446. 1836.

馥芳艾纳香 fu fang ai na xiang

Blumea emeiensis Z. Y. Zhu; *B. leptophylla* Hayata; *Conyzia setschwanica* Handel-Mazzetti; *Gynura taiwanensis* S. S. Ying.

Subshrubs, perennial, erect, 0.8–2.2 m tall. Stems green, striate, solid, usually woody at base, 0.5–2.5 cm in diam., branching apically; branches terete, viscid-tomentose particularly in synflorescence axes with intermixed glands and multicellular hairs. Lower leaves larger, narrowly oblong, 24–30 × 10–12 cm, villous abaxially, with multicellular hairs and numerous sessile glands (colleters), pilose adaxially, base attenuate, margin irregularly doubly dentate mucronulate, apex acuminate; veins 14–16 pairs. Capitula 8–12 × 8–15 mm, in large terminal and axillary lax panicles, pedunculate, viscid. Involucre globose-campanulate; phyllaries in 3 or 4 series, outer ones shorter, linear-lanceolate, acuminate, with numerous colleters and multicellular hairs on outer surface, reflexed, inner linear. Receptacle 2.5–3 mm in diam., slightly convex, alveolate, minutely fimbriate. Marginal florets filiform, 6.5–7.5 mm, 2- or 3-lobed, generally glabrous. Central florets yellow, tubular, 7–8 mm, lobes 5, broadly triangular, pubescent, with colleters and sparse multicellular hairs. Achenes pale brown, oblong, 1–1.4 mm, 6–10-ribbed, hirsute. Pappus pale brown, 5–6 mm. Fl. Oct–Apr. 2n = 18.

Forest margins, grassy slopes; 300–2400 m. Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, India, Myanmar, Nepal, Thailand, Vietnam].

13. *Blumea conspicua* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 151. 1911.

大花艾纳香 da hua ai na xiang

Blumea fruticosa Koidzumi.

Subshrubs, perennial, erect, 2.5–3.5 m tall. Stems green, striate, terete, usually ligneous at base, 2–3.5 cm in diam. Leaves narrowly oblong, 30–45 × 10–15 cm, villous abaxially, sparsely pilose adaxially, base attenuate, margin doubly dentate, spinescent, apex acuminate; veins 11–13 pairs. Capitula 7–9 × 4–5 mm, in large, terminal and axillary lax panicles, pedunculate. Involucre globose-campanulate; phyllaries in 3 or 4 series, outer ones shorter, linear-lanceolate, 2–3 × 0.7–0.9 mm, with numerous sessile glands and multicellular hairs, inner linear, 6–7 × 0.6–0.8 mm, margins ciliate. Receptacle slightly convex, 2.5–3 mm in diam., alveolate, remotely pilose. Marginal florets filiform, 6–7 mm. Central florets yellow, 7–8 mm, with 5 triangular lobes, lobes with sessile glands and multicellular hairs. Achenes pale brown, oblong, terete, 1.2–1.4 × 0.4–0.5 mm, pilose, 10-ribbed. Pappus brownish, 5–6 mm. 2n = 54.

Broad-leaved monsoon forests. Taiwan [Japan].

14. *Blumea tenuifolia* C. Y. Wu ex C. C. Chang & Y. Q. Tseng, Fl. Reipubl. Popularis Sin. 75: 44. 1979.

狭叶艾纳香 xia ye ai na xiang

Blumea gracilis Dunn, J. Linn. Soc., Bot. 35: 502. 1903, not Candolle (1836).

Perennials. Stems 45–85 cm tall, unbranched, pilose and glandular above. Lower leaves sessile, linear-lanceolate, 4–7.5 cm × 4–8 mm, abaxially densely pilose, adaxially scabrid or glabrescent, base decurrent, margin sparsely serrulate, apex obtuse. Capitula few, 6–8 mm in diam., in panicles. Involucres campanulate, 6–8 mm; phyllaries in 4 series, linear, outer ones leaf-like, 2–3 mm, abaxially pilose and glandular, inner 6–8 mm, membranous, apex pubescent abaxially. Receptacle flat, ca. 2 mm in diam., glabrous. Corollas yellow; marginal florets numerous, 2–3 mm, limbs 3-dentate, glabrous; central florets few, corolla tubular, 3–3.5 mm, limbs 5-lobed, densely pubescent. Achenes columnar, pubescent, ca. 1 mm. Pappus white, ca. 4 mm. Fl. Nov.

• Evergreen forests, moist valleys; 900–1900 m. Yunnan.

15. *Blumea oxyodonta* Candolle in Wight, Contr. Bot. India, 15. 1834.

尖齿艾纳香 jian chi ai na xiang

Placus oxyodontus (Candolle) Kuntze.

Perennials, with short taproot. Stems usually numerous, prostrate or ascending, 15–30(–40) cm, finely pubescent. Leaves ± sessile, elliptic to obovate, 1–5 × 0.5–1.5 cm, both surfaces sparsely to densely villous and stipitate glandular, base cuneate, margin with a few sharp subspinose teeth, apex acute. Capitula few in terminal and axillary panicles. Involucres ca. 4-seriate; phyllaries lanceolate to linear, 2–6 mm, with long eglandular hairs and some stalked glands. Receptacle glabrous. Corollas yellow, ca. 4 mm; lobes of marginal florets with few eglandular hairs, lobes of central florets with dense minute glandular pubescence and some long eglandular hairs. Anthers white, unribbed, ca. 0.6 mm. Pappus white, 3–4 mm. Fl. Mar–Jul. 2n = 18.

Grasslands, forests; 1200–1700 m. Yunnan [Bhutan, India, Myanmar, Nepal, Pakistan, Thailand, Vietnam].

16. *Blumea lacera* (N. L. Burman) Candolle in Wight, Contr. Bot. India, 14. 1834.

见霜黄 jian shuang huang

Conyzia lacera N. L. Burman, Fl. Indica, 180. 1768; *Blumea bodinieri* Vaniot; *B. chevalieri* Gagnepain; *B. duclouxii* Vaniot; *B. glandulosa* Candolle; *B. subcapitata* Candolle; *B. velutina* (H. Léveillé & Vaniot) H. Léveillé & Vaniot; *C. velutina* (H. Léveillé & Vaniot) H. Léveillé; *Senecio velutinus* H. Léveillé & Vaniot.

Herbs, annual or biennial, erect, 20–100 cm tall. Stems simple or more often branched, terete, densely velutinous with silky hairs or glandular trichomes; branches sometimes ascending. Leaves sessile or petiolate, elliptic to oblong, 10–12 ×

3.5–4.5 cm, lanate abaxially, tomentose adaxially, base attenuate, margin doubly serrate or sometimes slightly variously lyrate lobed, apex obtuse; veins 5–8 pairs. Capitula 7–8 × 2.5–3.5 mm, in axillary and terminal dense to lax panicles. Involucres campanulate; phyllaries in 2 or 3 series, outer ones shorter, linear-lanceolate, 1.5–2.5 × 0.2–0.3 mm, densely velutinous with multicellular and glandular hairs, inner linear, 4–5 × 0.2–0.3 mm, margins ciliate. Receptacle convex, alveolate, glabrous. Marginal florets ca. 5 mm, 2–5-lobed, limb glandular. Central florets yellowish, 6–7 mm, with 5 triangular lobes, lobes with sessile glands and multicellular hairs. Achenes oblong, sparsely hirsute. Pappus white, ca. 4 mm. Fl. Feb–Jun. 2n = 18, 36.

Common, dry fields, grasslands, roadsides, forest margins; 100–800 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, India, Japan, Laos, Malaysia, Myanmar, Nepal, New Guinea, Pakistan, Sri Lanka, Thailand, Vietnam; Africa, N Australia, Pacific islands (Guam)].

17. *Blumea sessiliflora* Decaisne, Nouv. Ann. Mus. Hist. Nat. 3: 410. 1834.

无梗艾纳香 wu geng ai na xiang

Herbs. Stems branched or simple, terete, 0.8–2 m tall, glabrate at base, tomentose above. Leaves sessile, 4–16 × 1.4–6 cm, oblanceolate, lower leaves usually lyrate lobed, upper leaves entire, all velutinous-pilose on both surfaces. Capitula 3–5, in spiciform panicle, sessile or sometimes pedunculate, 5–6 mm; peduncles when present up to 10 mm. Involucres columnar or campanulate, 4–6 × 1.5–6.5 mm, herbaceous; phyllaries in ca. 5 series, outer and middle ones lanceolate or linear-lanceolate, 2–4 mm, abaxially densely pubescent, margin dry membranous, inner linear, 4–6 mm, dry membranous, abaxially glabrous or sparsely pubescent, apex acuminate. Receptacle 1.5–3 mm in diam., slightly convex, alveolate, glabrous. Corollas yellow, tubular; marginal florets numerous, corolla filiform, 3.5–4 mm, limbs 3-dentate, glabrous; central florets few, corolla tubular, 4–5 mm, with 5 triangular, papillate and pubescent lobes. Achenes brown, puberulent, ca. 1 mm, 8–10-ribbed. Pappus white, 4–5 mm. Fl. Jun–Oct.

Grassy slopes; below 700 m. Guangdong, Hainan, Jiangxi [India, Indonesia, Myanmar, Thailand, Vietnam].

18. *Blumea saussureoides* C. C. Chang & Y. Q. Tseng, Acta Phytotax. Sin. 16(3): 84. 1978.

全裂艾纳香 quan lie ai na xiang

Herbs, perennial. Stems up to 1.5 m tall, ca. 1.2 mm in diam., branched above, pubescent, more densely so on young branches and peduncles. Middle leaves with 1–3 cm long petioles or sessile, blade oblong, 12–15 × 5–7 cm, pinnatisect, both surfaces sparsely pilose and densely tomentulose, base sheathed, amplexicaul, apex obtuse; lateral lobes 3 or 4 pairs, unequal, alternate or subopposite above, oblong or obovate-oblong, 1.2–4 × 0.3–2 cm, margin irregularly toothed, apex shortly acute or obtuse, terminal lobe large, ovate-triangular to ovate-oblong, 5–7.5 × 2.5–5 cm, apex obtuse; upper leaves smaller, pinnatisect, 4.5–7 × 2–3.5 cm, both surfaces densely pilose, terminal lobes ovate-oblong or elliptic, apex shortly

acute; lateral lobes small; uppermost leaves very small, dissected, toothed or sometimes entire, bractlike. Capitula ca. 10 mm in diam., without or with 5–10 mm long peduncles, in terminal panicles. Involucre hemispheric, ca. 6 mm; phyllaries in 5 series, linear, apex light red, outer ones very small, 2–3 × 0.25–0.33 mm, abaxially densely pilose, apex acute, middle and inner ones 4–5 mm, abaxially pubescent, apex shortly acute. Receptacle 4–5 mm in diam., alveolate, pubescent. Corollas yellow; marginal florets filiform, 3–4 mm, limbs 3-lobed, glabrous; central florets few, corolla tubular, limbs 5-lobed, densely pubescent. Achenes ca. 0.8 mm, 6-ribbed, puberulent. Pappus white, ca. 3 mm. Fl. Mar–Apr.

• Riversides, roadsides; ca. 1600 m. Yunnan (Shuangbai).

19. *Blumea sinuata* (Loureiro) Merrill, Trans. Amer. Philos. Soc., ser. 2, 24(2): 388. 1935.

六耳铃 liu er ling

Gnaphalium sinuatum Loureiro, Fl. Cochinch. 2: 497. 1790; *Blumea glandulosa* Bentham (1861), not Candolle (1834); *B. laciiniata* Candolle; *B. okinawensis* Hayata; *B. onnaensis* Hayata.

Herbs, annual or biennial, erect, 0.5–1.5 m tall. Stems striate, often branched from base, pilose with multicellular hairs and stipitate glands; branches sometimes ascending. Leaves membranous, 12–20 × 6–8 cm, pilose on both surfaces, base attenuate into petiole, margin often runcinate-lyrate and distantly dentate, teeth apiculate, apex obtuse; veins 8–10 pairs. Capitula numerous in terminal, dense to lax panicles, pedunculate; peduncles villous, glandular. Phyllaries in 2 or 3 series, outer ones shorter, linear-lanceolate, 2–3 × ca. 0.6 mm, villous on outer surface, inner longer, linear, 7–8 × ca. 0.6 mm, margins ciliate. Receptacle convex, 3–4 mm in diam., alveolate, pilose around alveolae or sometimes glabrous. Marginal florets ca. 7 mm, 3–5-lobed, glabrous. Central florets yellow, 7–8 mm, with 5 broadly triangular lobes, lobes with sessile glands and remote multicellular hairs. Achenes brown, oblong, ca. 1 × 0.3 mm, 10-ribbed, sparsely hirsute. Pappus white, 3–4 mm. Fl. Oct–May. 2n = 18.

Waste fields, thickets; 200–1500 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Taiwan, Yunnan [Bhutan, India, Indonesia, Malaysia, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Sri Lanka, Vietnam; Pacific islands (Hawaii, Solomon Islands)].

20. *Blumea virens* Candolle in Wight, Contr. Bot. India, 14. 1834.

绿艾纳香 lü ai na xiang

Herbs, 10–180 cm tall. Rhizome fibrous. Stems simple or branched, quite glabrous or rarely sparingly pilose. Leaves sessile, 3–22 × 0.7–10 cm; lower ones oblanceolate, lyrate lobed with terminal lobe obovate and lateral lobes broadly triangular to oblong, margin serrate with apiculate teeth, apex apiculate; upper ones obovate to oblanceolate, lobed or not, apiculate-serrate with minute teeth, both surfaces glabrate or sparingly pilose. Capitula usually in large, spreading, lax, terminal, leafy panicles, pedunculate, 5–7 mm in diam.; ultimate peduncles ca. 3 cm, bracteate, glabrous. Involucre columnar, 6–7 mm; phyl-

laries in 5 or 6 series, herbaceous, entirely reflexed at maturity, linear, 1–7.5 mm, sparsely pilose on abaxial surface with white, spreading hairs and colleters, apex mucronate, inner series with prominent scarious margins. Receptacle 2–2.5 mm in diam., convex, alveolate, glabrous. Corollas yellow, tubular; marginal florets filiform, 4–4.5 mm, 2- or 3-lobed, glabrous; central florets 4.5–5 mm, with 5 triangular, papillate lobes. Achenes oblong-columnar, ribbed, sparsely hairy. Pappus white, up to 4 mm. Fl. Feb–Apr. 2n = 18.

Dry places, open thickets; ca. 1400 m. Yunnan [Bhutan, Cambodia, India (including Andaman Islands), Laos, Malaysia, Myanmar, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam].

This species is similar to *Blumea membranacea* but differs in the plant entirely lacking glandular hairs except on bisexual corolla lobes; stems and synflorescence axes glabrous or sparsely pilose; and leaves membranous, usually more regularly serrate, glabrescent or sparsely pilose on both surfaces.

21. *Blumea napifolia* Candolle, Prodr. 5: 440. 1836.

菁叶艾纳香 wu jing ye ai na xiang

Herbs, 15–70 cm tall. Stems subglabrous at base, densely puberulent with numerous colleters above, especially on synflorescence axes. Leaves 1–12 × 0.5–5.6 cm, lower ones distinctly petiolate, upper ones subsessile, obovate, upper leaves entire, lower leaves lyrate lobed with terminal lobe ± orbicular, lateral lobes smaller, linear-oblong, all puberulent abaxially, sparsely pilose adaxially, margin dentate with broadly triangular, apiculate teeth, apex obtuse. Capitula at ends of axillary branches, clustered, ultimately disposed into a lax panicle, pedunculate, 3–5 mm in diam.; peduncles up to 15 mm, densely glandular, elongating in fruit. Involucre with phyllaries longer than florets, entirely reflexed at maturity, 1–5 mm, linear, tapering, with broad, scarious margins. Receptacle 1–2 mm in diam., flat, glabrous. Corollas orange-yellow, tubular; corollas of marginal florets filiform, 2–3 mm, 2- or 3-lobed, glabrous; those of central florets pubescent with colleters. Anther tails shorter than thickened portion of filament. Achenes brown, oblong, sparsely pubescent, 5-ribbed. Pappus white, up to 3 mm. Fl. Jan–Mar.

Fields, grasslands, open hillslopes. Yunnan (Yangbi) [India, Laos, Malaysia, Myanmar, Thailand, Vietnam].

22. *Blumea membranacea* Candolle, Prodr. 5: 440. 1836.

长柄艾纳香 chang bing ai na xiang

Blumea balansae Gagnepain.

Annuals, 7–100 cm. Stems usually simple, glandular-pubescent, sometimes with few longer eglandular hairs above. Leaves simple; petiole to 3 cm; blade obovate or lyrate, often oblanceolate in outline, with 1 or 2(or 3) pairs of lateral lobes, 2–13 × 1–5 cm, thinly herbaceous, pubescent on both surfaces, sometimes stipitate glandular adaxially at least in synflorescence, base narrowly attenuate, usually petiolate, margin denticulate (to shallowly dentate), apex acute or obtuse. Capitula rather few in narrow terminal panicles. Involucre ca. 4 mm in diam.; phyllaries purplish tinged, 6-seriate, 2–6.5 mm, glandular-pubescent, sometimes with few eglandular hairs, outermost

lanceolate, inner ones linear. Receptacle glabrous. Corollas yellow; marginal florets 3.5–4.5 mm; central florets 4.5–5.5 mm, lobes with glandular hairs and sometimes very reduced eglandular ones. Pappus white. Fl. Feb–Jun.

Forests, valleys along streams; 300–1400 m. Guangdong, Guangxi, Hainan, Yunnan [India, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Sri Lanka, Thailand, Vietnam].

23. *Blumea clarkei* J. D. Hooker, Fl. Brit. India 3: 267. 1881.

七里明 qi li ming

Blumea hongkongensis Vaniot; *B. hirsuta* King-Jones, nom. illeg. superfl.; *B. lessingii* Merrill; *B. malabarica* J. D. Hooker.

Perennials, 1.2–1.4 m tall. Stems erect, pubescent at least above. Leaves subsessile or sometimes petiolate up to 5 mm, elliptic or oblanceolate, 4.5–12 × 0.7–2.5 cm, grayish abaxially, sparsely pubescent on both surfaces, base attenuate, margin remotely serrulate, apex briefly acuminate. Capitula in narrow often spicate panicles; peduncles 5–10(–20) mm. Involucres ca. 5-seriate, ca. 6 mm in diam.; phyllaries linear, 2.5–8 mm, appressed pubescent and sparsely glandular. Receptacle densely pilose. Corollas yellow, 5.5–7 mm, lobes of central florets with few glandular and eglandular hairs. Pappus white, ca. 7 mm. Fl. Oct–May. $2n = 20$.

Grasslands, thickets; below 1000 m. Fujian, Guangdong, Guangxi, Hainan, Jiangxi [India, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

24. *Blumea oblongifolia* Kitamura, Acta Phytotax. Geobot. 2: 37. 1933.

长圆叶艾纳香 chang yuan ye ai na xiang

Herbs, erect, 0.8–1.2 m tall, rootstock fibrous. Stems terete, striate, usually unbranched except in synflorescence, velutinous particularly on younger parts, terete. Leaves subsessile or shortly petiolate, oblong-lanceolate, 11–13 × 3–5 cm, velutinous, hairs with prominent base adaxially, ± villous abaxially, base attenuate, margin distantly serrate with mucronate teeth, apex acute; veins 5 or 6 pairs. Capitula 10–12 × 6–8 mm, in terminal and axillary panicles; peduncles to 20 mm. Involucres globose-campanulate; phyllaries in 2–4 series, sometimes purple tipped, outer ones linear-lanceolate, 3–4 × 0.5–0.6 mm, margins ciliate. Receptacle slightly convex, 4–5 mm in diam., alveolate, remotely pilose. Corollas yellowish, tubular; marginal florets filiform, 7–8 mm, with 3–5 lobes; central florets 8–9 mm, with 5 triangular lobes, lobes with sessile glands and multicellular hairs. Achenes pale brown, oblong, sparsely hirsute, ribbed. Pappus white, 5–6 mm. Fl. Aug–Apr.

Fields, grassy slopes, streamsides, roadsides. Fujian, Guangdong, Jiangxi, Taiwan, Zhejiang [India, Myanmar, Vietnam].

25. *Blumea adenophora* Franchet, J. Bot. (Morot) 10: 382. 1896.

具腺艾纳香 ju xian ai na xiang

Herbs, slender, 20–40 cm tall. Stems branched from base, terete, pubescent with white hairs and stipitate glands. Leaves sessile, lanceolate, 2–4 × 0.5–1 cm, pubescent on both surfaces

with stipitate hairs, clavate glands, and short whitish hairs, base tapering, margin distantly serrate with 2–4 teeth, apex apiculate. Capitula axillary and terminal, in short, dense, racemose panicles, subsessile to shortly pedunculate, 4–6 mm in diam. Involucres campanulate or columnar; phyllaries in 3 or 4 series, linear, purple red adaxially, outer ones ca. 3 mm, abaxially densely pubescent, apex shortly acute, middle and inner ones dry membranous, 6–7 mm, abaxially densely pubescent. Receptacle 2–3 mm in diam., alveolate, slightly pilose. Corollas yellow; marginal florets numerous, corolla tubular, 3–4 mm, limbs 2- or 3-dentate, glabrous; central florets 4–5 mm, with 5 ovate, acute, papillate and densely pubescent lobes. Achenes brown, oblong, puberulent, 10-ribbed. Pappus white, 3–4 mm. Fl. Apr–May.

Mountain slopes, fields; ca. 1800 m. Yunnan [Vietnam].

26. *Blumea fistulosa* (Roxburgh) Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 46: 187. 1877.

节节红 jie jie hong

Conyzia fistulosa Roxburgh, Fl. Ind., ed. 1832, 3: 429. 1832; *Blumea amethystina* Hance; *B. glomerata* Candolle; *B. purpurea* Candolle; *B. racemosa* Candolle; *B. vaniotiana* H. Léveillé.

Herbs, annual. Stems simple, erect, 15–100 cm, shaggily pubescent above. Leaves oblanceolate to obovate, 3–15 × 0.5–5 cm, pubescent (rarely sparsely pilose) on both surfaces, base narrowly long attenuate, margin bidentate (sometimes sublobulate), apex acute. Capitula in small ± sessile clusters arranged in interrupted spikelike terminal racemes or sparsely branched panicles. Involucres 4- or 5-seriate, ca. 3.5 mm in diam.; phyllaries purplish adaxially, mostly recurved from middle by anthesis, 2.5–6 mm, pubescent, sparsely glandular, outer series ± lanceolate, remainder linear. Receptacle sparsely shortly pubescent. Corollas yellow, 4.2–5 mm, lobes of central florets with glandular and few eglandular hairs. Pappus white. Fl. Oct–Apr. $2n = 18, 30$.

Grasslands, sparse forests; 300–1900 m. Guangdong, Guangxi, Guizhou, Hainan, Sichuan, Yunnan [Bhutan, India, Myanmar, Nepal, Thailand, Vietnam].

27. *Blumea axillaris* (Lamarck) Candolle, Prodr. 5: 434. 1836.

柔毛艾纳香 rou mao ai na xiang

Conyzia axillaris Lamarck, Encycl. 2: 84. 1786; *Blumea mollis* (D. Don) Merrill; *B. wightiana* Candolle; *Erigeron mollis* D. Don.

Herbs, annual or biennial, erect, 5–120 cm tall, with a taproot. Stems terete, softly pilose with spreading hairs and glands, viscid-tomentose particularly on younger parts and on synflorescence axes. Leaves ovate-oblong, 9–11 × 3.5–4 cm, papery, densely silvery-villous on both surfaces with soft multicellular hairs and glands, base attenuate, margin closely doubly serrate, apex obtuse to apiculate; veins 5–7 pairs. Capitula in terminal, narrow, compact, spiciform panicle, subsessile to pedunculate. Involucres campanulate; phyllaries in 3 or 4 series, outer ones shorter, linear-lanceolate, 3–4 × 0.6–0.8 mm, densely softly villous and with multicellular hairs and glands, inner linear, 5–6 × 0.2–0.3 mm, margins scarious, ciliate. Marginal florets 3.5–4.5 mm, 2- or 3-lobed, glandular. Central florets pinkish purple

apically, whitish or yellowish at base, 3.5–4.5 mm, with 5 triangular lobes, lobes pubescent and with sessile glands. Receptacle convex, 1.8–2 mm in diam., alveolate, glabrous. Achenes oblong, ca. 0.8 × 0.2–0.3 mm, pubescent. Pappus white, 3–4 mm. Fl. year-round. $2n = 18, 36$.

Open waste fields, hillslopes, roadsides; below 1500 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Afghanistan, Bhutan, Cambodia, India, Indonesia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; Africa, Australia, Pacific islands (New Caledonia)].

28. *Blumea hieraciifolia* (Sprengel) Candolle in Wight, Contr. Bot. India, 15. 1834 [“*hieraciifolia*”].

毛毡草 mao zhan cao

Conyzia hieraciifolia Sprengel, Syst. Veg. 3: 514. 1826 [“*hieraciifolia*”], based on *Erigeron hieraciifolius* D. Don, Prodr. Fl. Nepal. 172. 1825 [“*hieraciifolium*”], not Poiret (1808); *Blumea chinensis* Walpers (1843), not (Linnaeus) Candolle (1836), nor Hooker & Arnott (1837); *B. hieraciifolia* var. *macrostachya* (Candolle) J. D. Hooker; *B. macrostachya* Candolle.

Herbs, perennial, erect, 50–120 cm tall, with a fibrous rootstock. Stems terete, usually unbranched or sometimes branched from base, densely silky-villous to lanate particularly on younger shoots. Leaves elliptic, 12–14 × 4–5 cm, densely sericeous to lanate abaxially, silky-villous adaxially, base attenuate into petiole, margin minutely denticulate to nearly doubly denticulate, apex obtuse or acute; veins 5 or 6 pairs. Capitula 9–11 × 5–6 mm, in crowded axillary and terminal clusters, forming dense interrupted spicate synflorescences, sessile. Involucle globose-lanceolate, 3–4 × 0.6–0.7 mm, densely silky villous abaxially; phyllaries linear, 6–7 × 0.5–0.6 mm, margins ciliate. Receptacle convex, 2–4 mm in diam., alveolate, glabrous. Marginal florets 6–7 mm, 2- or 3-lobed. Central florets yellow, 7–8 mm, with 5 broadly triangular lobes, lobes with colleters and sparse multicellular hairs. Achenes oblong, 1–1.2 × ca. 0.25 mm, ribbed, sparsely pubescent. Pappus white, 3–4 mm. Fl. Sep–Mar. $2n = 48$.

Fields, grasslands; 300–1200 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [India, Indonesia, Japan, Myanmar, Nepal, New Guinea, Pakistan, Philippines, Thailand].

29. *Blumea sericans* (Kurz) J. D. Hooker, Fl. Brit. India 3: 262. 1881.

拟毛毡草 ni mao zhan cao

Blumea barbata Candolle var. *sericans* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 46: 188. 1877; *B. cavaleriei* H. Léveillé

& Vaniot; *B. gnaphaloides* Hayata; *B. hamiltonii* Candolle; *B. hieraciifolia* (Sprengel) Candolle var. *hamiltonii* (Candolle) C. B. Clarke.

Herbs. Stems 60–100 cm tall, not branched or branched, white sericeous, more densely so in upper part. Leaves mostly basal, nearly in rosette; basal leaves obovate-spatulate, or lanceolate, 6–12 × 2.5–3.5 cm, abaxially sericeous, adaxially white tomentose, later glabrescent, base decurrent into petioles forming wings, margin irregularly serrulate, apex obtuse; lateral veins 5 or 6 pairs, prominent; cauline leaves sparse, smaller upward, spatulate, spatulate-oblong, rarely oblong, 6–12 × 1.5–3 cm, surfaces densely sericeous or lanate, sessile or with winged petioles, margin regularly serrulate, apex rounded. Capitula 2–7 in spicate panicles, 6–10 mm in diam., sessile or with ca. 3 mm long peduncles. Involucle campanulate, ca. 8 mm; phyllaries in 4 series, outer ones 3–4 mm, abaxially densely white tomentose, apex shortly acute, middle and inner ones 5–8 mm, abaxially tomentose, margin membranous, apex acute to acuminate. Receptacle 2–4 mm in diam., glabrous, bullate. Corollas yellow; marginal florets numerous, corolla tubular, 6–7 mm, limbs shallowly 5-dentate, glabrous; central florets tubular, subequal to marginal ones in length, limbs 5-dentate, sparsely pubescent and papillary. Achenes columnar, 10–12 mm, pubescent, 4–10-ribbed. Pappus white, ca. 6 mm, scabrid. Fl. Apr–Aug.

Waste fields, grassy slopes. Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Taiwan, Zhejiang [India, Indonesia, Myanmar, Philippines, Vietnam].

30. *Blumea veronicifolia* Franchet, J. Bot. (Morot) 10: 382. 1896.

纤枝艾纳香 xian zhi ai na xiang

Herbs, 20–30 cm tall. Stems branched from base, pubescent. Leaves shortly petiolate, mostly radical and a few cauline, lanceolate to obovate, 1.5–5 × 0.3–1 cm, both surfaces pubescent, base tapering into petiole, margin with multicellular hairs and serrate-dentate, apex obtuse or apiculate. Capitula few, crowded in terminal globose panicles, 3–5 mm in diam.; peduncles densely villous with stipitate glands, up to 5 mm. Involucle columnar, ca. 12 mm; phyllaries in 4 series, subequal in length, purple adaxially, lanceolate, outer ones abaxially densely hairy with glands, inner ones with scarious margins. Receptacle ca. 2 mm in diam., convex, alveolate, glabrous. Corollas rose-colored; marginal florets filiform, ca. 4 mm, usually 2-lobed, glabrous; central florets ca. 5 mm, with 5 triangular papillate lobes. Anther tails almost equal in length to thickened portion of filament. Achenes dark brown, columnar, sparsely pubescent, 5-ribbed. Pappus white, 3–4 mm. Fl. Apr–May.

- Waste fields; 600–1200 m. Sichuan, Yunnan.

192. INULA Linnaeus, Sp. Pl. 2: 881. 1753.

旋覆花属 xuan fu hua shu

Corvisartia Mérat.

Perennials or annuals. Stems not winged, sometimes with decurrent leaves, with or more frequently without resin canals. Leaves basal and cauline, alternate, simple, usually sessile, sometimes in a basal rosette, margins usually serrate to dentate, sometimes entire. Capitula heterogamous radiate to miniradiate, heterogamous disciform, or homogamous discoid, borne singly or in open, corymbiform arrays. Involucres hemispheric or campanulate, [5–]10–40 mm in diam.; phyllaries persistent, in 4–7+ series. Receptacles flat

or convex, smooth or alveolate, epaleate. Ray florets (15–)50–150+, female, fertile; corolla yellow to orange, lamina 10–30+ mm. Disk florets bisexual, mostly (50–)100–250+; corolla yellow, lobes 5; epidermis with straight cell walls, without needlelike crystals. Anthers ecalcarate, with branched tails; endothecial tissue radial; cells of antheropodium generally longer than wide. Pollen spines with a cavity. Style branches with acute sweeping hairs, not reaching furcation. Achenes ellipsoid or cylindric, ribbed; epidermis with elongated crystals. Pappus persistent, of basally connate, barbellate bristles or setiform scales usually in 1 series. $x = 8, 9, 10$.

About 100 species: Africa, Asia, Europe; 14 species (two endemic) in China.

Inula taiwanensis S. S. Ying (Mem. Coll. Agric. Natl. Taiwan Univ. 29(1): 78. 1989) could not be treated here because no material was seen by the present authors.

- 1a. Plants acaulescent; basal leaves rosette, obovate-spatulate; capitula densely congested, encircled by rosette of leaves 1. *I. rhizocephala*
- 1b. Stems erect, leafy; capitula terminal on stems or branches, solitary or in corymbs.
 - 2a. Capitula 5–8 cm in diam.; involucre 2.5–4.5 cm in diam.; outer phyllaries broadly ovate, herbaceous; perennial herbs; achenes glabrous, 4- or 5-angled; leaves abaxially densely white lanate.
 - 3a. Peduncles 6–12 cm, capitula in loose corymb 2. *I. helenium*
 - 3b. Peduncles 0–4 cm, capitula in raceme 3. *I. racemosa*
 - 2b. Capitula generally less than 5 cm in diam., rarely up to 6–10 cm; outer phyllaries narrowly linear or lanceolate, herbaceous or dry membranous; herbs or shrubs; achenes pubescent or glabrous; leaves abaxially glabrous or pubescent or sericeous.
 - 4a. Subshrubs; phyllaries unequal, innermost ones more than 2 × as long as outer, outer ones linear or subulate, dry membranous; leaves short, triangular 4. *I. salsoloides*
 - 4b. Perennial herbs; phyllaries subequal, rarely inner ones longer, outer ones linear, herbaceous; leaves not short and triangular.
 - 5a. Capitula 6–10 cm in diam.; involucre 1.8–4 cm in diam.; outer phyllaries narrowly linear, usually reflexed, with long spreading purplish brown hairs; ray floret lamina 2–3 × as long as involucre, abaxially pilose; pappus white, achenes glabrous 5. *I. hookeri*
 - 5b. Capitula 1–5 cm in diam.; involucre 0.5–2 cm in diam.; outer phyllaries similar to inner ones, erect, pubescent or glandular; ray floret lamina abaxially glabrous; pappus white, slightly yellow, or red.
 - 6a. Stems profusely branched from a woody rootstock 6. *I. obtusifolia*
 - 6b. Stems simple or corymbosely branched above.
 - 7a. Basal and lower cauline leaves larger than upper leaves, decurrent to long petioles, persistent at anthesis; upper leaves erect; blade abaxially white lanate; achenes glabrous 7. *I. sericophylla*
 - 7b. Basal and lower cauline leaves similar to upper cauline leaves, withering at anthesis; leaves spreading, abaxially glabrous or subglabrous; achenes pubescent, pilose, or glabrous.
 - 8a. Leaf blade elliptic or oblong-lanceolate; involucre densely surrounded by bracteal leaves; outer phyllaries lanceolate-oblong; achenes glabrous 8. *I. salicina*
 - 8b. Leaf blade ovate, elliptic, lanceolate, or linear-lanceolate; involucre not surrounded by bracteal leaves; outer phyllaries linear, spatulate-linear, or linear-lanceolate; achenes pubescent, pilose, or glabrous.
 - 9a. Leaves abaxially glabrous or pubescent on veins; pappus shorter than disk corolla; achenes glabrous.
 - 10a. Leaf blade ovate or ovate-lanceolate, base rounded, cuneate, or auriculate, semiamplexicaul; pappus of 10 or 11 bristles 9. *I. helianthus-aquatis*
 - 10b. Leaf blade elliptic-lanceolate, base rounded-auriculate; pappus of 5 or 6 bristles 10. *I. hupehensis*
 - 9b. Leaves abaxially sparsely pubescent; pappus as long as disk corolla; achenes pubescent or pilose.
 - 11a. Capitula 2–3.5 cm in diam.; outer phyllaries shorter than inner ones; upper stems, peduncles, and leaves abaxially scabrid pubescent; biennials 11. *I. caspica*
 - 11b. Capitula 2.5–5 cm in diam.; phyllaries subequal or outer ones slightly shorter than inner ones; upper stems, peduncles, and leaves abaxially pubescent; perennials.
 - 12a. Leaves linear-lanceolate, margin reflexed, base not auriculate; capitula 1–2.8 cm in diam.; outer phyllaries abaxially glandular 12. *I. linariifolia*
 - 12b. Leaves oblong, elliptic-lanceolate, or elliptic, margin not reflexed, base auriculate or not; capitula 2.5–5 cm in diam.; outer phyllaries abaxially glandular or not.
 - 13a. Leaf base cordate, auriculate, semiamplexicaul 13. *I. britannica*
 - 13b. Leaf base narrower and not auriculate 14. *I. japonica*

1. Inula rhizocephala Schrenk ex Fischer & C. A. Meyer, Enum. Pl. Nov. 1: 51. 1841.

羊眼花 yang yan hua

Conyza rhizocephala (Schrenk ex Fischer & C. A. Meyer) Ruprecht; *Inula rhizocephala* var. *intermedia* Kitamura; *I. rhizocephala* var. *rhizocephalooides* (C. B. Clarke) Kitamura; *I. rhizocephalooides* C. B. Clarke.

Perennials or biennials. Plants acaulescent. Leaves numerous, all radical, arranged in rosette, (5–)8–25(–35) cm in diam.; blade oblong or oblong-ovate, (2.5–)4–16 cm (together with petiole), (2–)2.5–3.5 cm wide, longer than synflorescence, both surfaces sparsely covered, but densely along prominent midvein abaxially, with long white multicellular appressed and sparse fine glandular hairs, base narrowed into winged petiole 2–3.5 cm, margin indistinctly and widely sinuate-dentate and densely ciliate, apex obtuse. Capitula numerous (8–20), 1.5–3 cm in diam., sessile or on densely pubescent peduncles 2–3 cm, arranged in dense semispherical sessile subcapitate synflorescences. Involucro 1.2–2 cm in diam., polyphyllous, multiseriate; phyllaries acute, violet and shortly ciliate distally, outer ones lanceolate-linear, 7–9 × 1–1.1 mm, unbent above, covered with hairs, inner ones linear or narrowly linear, ca. 1.2 cm × 0.8–1 mm, membranous, straight, finely glandular-pubescent. Ray florets yellow, ca. 1.5 cm, slightly longer than phyllaries, smooth; tube small, ca. 7 mm, almost 1/2 as long as pappus; lamina linear, as long as small tube, shortly tridentate. Disk florets yellow, ca. 9 mm, slightly shorter than pappus, with 5 smooth teeth. Achenes brown, terete, 1.5–2 × ca. 0.3 mm, longitudinally finely ribbed, covered with appressed short fox-red hairs or glabrous. Pappus 6–7 × as long as achene, with numerous bristles. Fl. Jun–Aug. 2n = 16.

Conifer forests, meadows, thickets; 1700–3800 m. Xinjiang, Xizang [Afghanistan, India, Kazakhstan, Pakistan, Tajikistan, Turkmenistan, Uzbekistan; SW Asia (Iran)].

2. Inula helenium Linnaeus, Sp. Pl. 2: 881. 1753.

土木香 tu mu xiang

Aster helenium (Linnaeus) Scopoli; *Corvisartia helenium* (Linnaeus) Mérat.

Herbs, perennial. Stems 60–150(–250) cm tall, pubescent. Basal leaves ± elliptic, mostly 15–40 × 10–20 cm, abaxially velvety lanate, adaxially thinly hairy, bases decurrent to strongly ribbed petioles, margins callose-denticulate, otherwise entire; cauline leaves ovate or elliptic to lanceolate, 10–30 × 4.5–12 cm, bases cordate, clasping, margins serrate. Involucro (20–)30–40 mm in diam.; outer phyllaries ovate, oblong, or deltate to lanceolate, 12–20(–25) × 6–8(–20) mm, abaxially velvety hairy, inner ones progressively narrower, less hairy, more scarious. Ray florets (15–)50–100; corolla lamina (10–)20–30+ mm. Disk corollas 9–11 mm. Achenes 3–4 mm, glabrous. Pappus of (40–)50–60 basally connate, barbellate bristles or setiform scales 6–10 mm. Fl. Jun–Sep. 2n = 20.

Roadsides, wastelands, streamsides; below 2000 m. Xinjiang; widely cultivated in China [Russia, Tajikistan, Uzbekistan; SW Asia, Europe, North America].

Inula grandis Schrenk ex Fischer & C. A. Meyer (Enum. Pl. Nov. 1: 50. 1841) was recorded from Xinjiang by Fl. URSS (25: 441–442).

1959) and Fl. Kazakhst. (8: 391. 1965). It is similar to *I. helenium* but distinct in having capitula numerous; outer phyllaries glabrous, ovate-lanceolate, middle phyllaries linear, apex acute; and stem and leaves glabrous. We have not seen any specimens, and its distribution in China requires confirmation.

3. Inula racemosa J. D. Hooker, Fl. Brit. India 3: 292. 1881.

总状土木香 zong zhuang tu mu xiang

Inula royleana C. B. Clarke.

Herbs, perennial. Rhizome tuberous. Stems 60–200 cm tall, grooved, densely pubescent. Leaves leathery; radical leaves elliptic-lanceolate, 20–50 × 10–20 cm, narrowed into petiole; cauline leaves oblong or ovate-lanceolate, often deeply lobed at base, semiamplexicaul; leaf blade densely tomentose abaxially, scabrid adaxially, margin crenate. Capitula 4–8 cm in diam., in raceme. Phyllaries in 5 or 6 series; inner phyllaries linear, apex acute. Achenes ca. 4 mm, glabrous. Pappus white, of ca. 40 bristles 9–10 cm. Fl. Aug–Sep. 2n = 20.

River beaches, grasslands; 1500–3100 m. Xinjiang [Afghanistan, Kashmir, Nepal, Pakistan].

4. Inula salsoloides (Turczaninow) Ostenfeld in Hedin, S. Tibet 6(3): 39. 1922.

蓼子朴 liao zi pu

Conyza salsoloides Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 5: 197. 1832; *Inula ammophila* Bunge ex Candolle; *I. schugnanica* C. Winkler.

Perennials. Stems up to 35 cm tall, lower part covered with white straight hairs, upper almost smooth, with numerous long, thin, spreading, thinly angulate, densely leaved branches. Leaves sessile, lanceolate or lanceolate-linear, lower ones 5–9 × 5–6 mm, upper ones 3–6 × 1.8–3 mm, all leaves thick, pubescent abaxially with white, long, straight hairs and dispersed golden, sessile glands, base almost cordate, margin entire, involute, apex acuminate, spreading. Capitula numerous, ca. 1.5 cm in diam., solitary at ends of sprigs. Involucro ca. 0.8 cm in diam., polyphyllous, multiseriate and with appressed phyllaries; phyllaries acute, upper part shortly pilose, external surface sparsely golden glandular and ciliate at margins, outer ones oblong-lanceolate or lanceolate, ca. 3 × 1.2 mm, median linear, ca. 2 × as long as outer, ca. 0.4 mm wide, inner narrowly linear, 7–9 × ca. 0.3 mm. Ray florets yellow, 1.1–1.3 cm, longer than phyllaries by ca. 1/3; tube small, ca. 5 mm, shorter than pappus; lamina narrowly linear, 6–8 × 1–1.2 mm, 3- or 4-veined, tridentate, teeth ca. 0.8 mm. Disk florets yellow, as long as or slightly longer than pappus, 5-dentate, teeth smooth. Achenes brown, cylindric, 1.2–2 × ca. 0.2 mm, longitudinally finely ribbed, covered with dispersed golden, orbicular, sessile glands. Pappus 6–8 mm, with numerous bristles. Fl. May–Aug, fr. Jul–Sep.

Dry grasslands, sand banks, alluvium; 500–2000 m. Gansu, Hebei, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Xinjiang [Afghanistan, Mongolia, Russia].

5. Inula hookeri C. B. Clarke, Compos. Ind. 122. 1876.

锈毛旋覆花 xiu mao xuan fu hua

Herbs, perennial, 60–150 cm tall. Stems loosely lanate at

first. Leaves elliptic-lanceolate, 7–17 × 2.5–4 cm, pubescent and shortly glandular on surfaces but more sparsely so adaxially, base attenuate to petiole ca. 5 mm, margin minutely denticulate, apex acuminate. Capitula 6–10 cm in diam., solitary on top of stem or branchlet. Involucre hemispheric, 18–40 mm in diam.; phyllaries persistent and reflexed in fruiting, in 3 or 4+ series, to ca. 15 × 1 cm, brown villous. Receptacles flat, smooth or minutely alveolate, epaleate. Ray florets 20–30(–50+); corolla yellow, tube 5–7 mm, lamina linear, 18–45 × ca. 1 mm. Disk florets 40–100(–150); corolla yellow, 5–6.5 mm, 5-lobed. Achenes ellipsoid, ca. 1.5 mm, glabrous, with 12 sulci. Pappus white, subequal to disk corollas. Fl. Jul–Oct, fr. Oct. $2n = 20$.

Mountain slopes, shrublands, sparse forests, grasslands; 2400–3600 m. SE Xizang, NW Yunnan [Bhutan, India (Sikkim), Myanmar, Nepal].

6. *Inula obtusifolia* A. Kerner, Ber. Naturwiss.-Med. Vereins Innsbruck 1: 111. 1870.

钝叶旋覆花 dun ye xuan fu hua

Herbs, perennial, with a woody rootstock. Stems many from woody rootstock, 12–30 cm tall, densely papillate-glandular and long pilose. Leaves sessile, elliptic-lanceolate, 3–7 × 2–2.5(–4) cm, pilose and papillate-glandular, margin entire to obscurely dentate, apex acute-obtuse. Capitula usually solitary, terminal, 1.5–3 cm in diam. Involucre depressed semiglobose; phyllaries 4- or 5-seriate, regularly imbricate, outermost herbaceous-leaflike, lanceolate-oblanceolate, 4–6 × 2–3 mm, apex acute-obtuse, inner membranous, acuminate. Marginal florets radiate, 1–2 cm. Disk florets tubular, 6–7 mm. Achenes 2–3 mm, sericeous-villous. Pappus setae uniseriate, 20–22, pale reddish, 5–6 mm. Fl. Jun–Aug.

Rock crevices, dry cliffs, slopes, stony places; 2000–4500 m. W Xizang [E Afghanistan, India, Kashmir, Pakistan].

According to Fl. India (13: 20. 1995) and Fl. Pakistan (210: 21. 2003), *Inula obtusifolia* is fairly common in the Himalaya. J. D. Hooker and T. Thomson collected this species in W Xizang.

7. *Inula sericophylla* Franchet, J. Bot. (Morot) 10: 383. 1896.

绢叶旋覆花 juan ye xuan fu hua

Herbs, perennial. Stems 30–60 cm tall, usually simple, white lanate above, sparsely leafy. Radical leaves persistent at anthesis, ovate, elliptic, or oblong-oblanceolate, 4–7 × 1.5–2 cm, abaxially densely sericeous, adaxially pubescent or glabrescent, base decurrent to petiole, margin serrulate, apex obtuse or rounded; lower leaves nearly similar to radical leaves in shape, or spatulate or oblong, smaller; upper leaves oblong-lanceolate to linear, base semiamplexicaul, apex acute. Capitula solitary on top of stems and branches, ca. 3 mm in diam. Involucre broadly campanulate or hemispheric, ca. 10 mm, white lanate outside; phyllaries in numerous series, subequal, outer ones linear-lanceolate, herbaceous or basally leathery, apex acute, inner linear-lanceolate, dry membranous, margin ciliate, apex acuminate. Ray florets yellow; lamina linear, ca. 15 × 1.5 mm. Disk florets yellow; corolla ca. 4 mm. Achenes 10-striped, ca. 1.5 mm, glabrous, apex truncate. Pappus white, later light brown, of ca. 20 bristles, ca. 4 mm. Fl. May–Jun, fr. Jun–Jul.

Grassy slopes; 1500–3000 m. Yunnan [Vietnam].

8. *Inula salicina* Linnaeus, Sp. Pl. 2: 882. 1753.

柳叶旋覆花 liu ye xuan fu hua

Aster salicinus (Linnaeus) Scopoli; *Conyzia salicina* (Linnaeus) Ruprecht; *Inula salicina* subsp. *asiatica* (Kitamura) Kitagawa; *I. salicina* var. *asiatica* Kitamura.

Herbs, perennial. Stems 20–80 cm tall, densely leafy; internodes 1–2.5 cm. Basal leaves lanceolate, 2–6 cm × 5–15(–30) mm; cauline leaves broadly elliptic to lanceolate, (3–)5–8 × 1–2 cm, both surfaces usually glabrous, adaxial venation raised, reticulation prominent, base cordate, clasping, apex acute. Capitula solitary on top of stems and branches, densely surrounded by bractlike leaves. Involucre hemispheric, 10–15(–20) mm in diam.; phyllaries in 4 or 5 series; outer ones lanceolate or spatulate-oblong, 5–7 × 1.5–2.5 mm, abaxially densely pubescent, apex obtuse or acute, inner linear-lanceolate, abaxially densely pubescent, apex acuminate. Ray florets 35–70; lamina linear, 10–15 mm. Disk corollas 5–9 mm. Achenes 1.5–2 mm, glabrous. Pappus white, of 30–40 distinct or basally connate, barbellate bristles 7–8 mm. Fl. Jun–Sep, fr. Sep–Oct. $2n = 16$.

Roadsides, wastelands; 200–1000 m. Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol [Japan, Korea, Russia, Uzbekistan; Europe].

9. *Inula helianthus-aquatalis* C. Y. Wu ex Y. Ling, Acta Phytotax. Sin. 10: 178. 1965.

水朝阳旋覆花 shui chao yang xuan fu hua

Inula serrata Bureau & Franchet, J. Bot. (Morot) 5: 50. 1891, not Persoon (1807).

Herbs, perennial. Rhizome long, usually with scalelike leaves and stolons. Stems 30–80 cm tall, pubescent and glandular. Leaves ovate-lanceolate or lanceolate, rarely ovate, 4–10 × 1.4–4 cm, abaxially yellow glandular, pubescent on abaxial veins, adaxially glabrous, margin densely toothed, apex acute or acuminate; bases of lower leaves usually gradually narrower to petioles; upper leaves sessile, base rounded or cuneate, or auriculate, semiamplexicaul; lateral veins 7 or 8 pairs, abaxially prominent. Capitula solitary on top of stems and branches, 2.5–4.5 cm in diam. Involucre hemispheric, 7–9 mm × 1–1.5 cm; phyllaries in 4 or 5 series, subequal, outer ones linear-lanceolate, leaflike adaxially, pubescent, inner linear-lanceolate, abaxially glabrous, margin membranous and ciliate. Ray florets yellow; lamina linear, ca. 15 mm. Disk florets yellow; corolla ca. 3 mm, with lanceolate lobes. Achenes cylindric, 10-striped, glabrous. Pappus white, of 10 or 11 bristles, ca. 2 mm. Fl. Jun–Oct, fr. Sep–Oct.

• Grassy slopes, fields, shrublands; 1200–3000 m. Gansu, Guizhou, Sichuan, Yunnan.

Inula helianthus-aquatalis f. *rotundifolia* Y. Ling (Acta Phytotax. Sin. 10: 178. 1965; 圆叶旋覆花 yuan ye xuan fu hua), described from NW Yunnan (Lijiang; 2600–2700 m, marshy grasslands), has stems densely leafy and middle leaves ovate, 2.5–4.5 × 2–3 cm, with base cordate and amplexicaul, margin coarsely serrate, and apex rounded.

10. *Inula hupehensis* (Y. Ling) Y. Ling, Acta Phytotax. Sin. 16(3): 82. 1978.

湖北旋覆花 hu bei xuan fu hua

Inula helianthus-aquatica C. Y. Wu subsp. *hupehensis* Y. Ling, Acta Phytotax. Sin. 10: 178. 1965.

Herbs, perennial. Rhizome prostrate. Stems 30–50 cm tall, densely pubescent above, glabrescent below. Leaves oblong-lanceolate to lanceolate, 6–10 × 1.5–2.5 cm; upper leaves sessile, abaxially yellow glandular, pubescent on veins, adaxially glabrous, base amplexicaul, margin sparsely serrulate, apex acuminate; lateral veins 7 or 8 pairs, abaxially prominent. Capitula solitary, 2.5–3.5 cm in diam. Involucre subglobose, 5–7 mm × 1–1.3 cm; phyllaries subequal in length, outer ones leaflike, linear-lanceolate, glandular, pubescent, inner linear-lanceolate, glabrous, margin membranous and ciliate. Ray florets yellow; lamina linear, ca. 15 mm, apex 3-dentate. Disk floret corollas ca. 3 mm, with lanceolate lobes. Achenes subcylindric, 10-striped, glabrous, apex truncate. Pappus white, of 5 or 6 bristles. Fl. Jun–Aug, fr. Aug–Sep.

• Grassy slopes, forests; 1300–1900 m. Hubei, Sichuan.

11. *Inula caspica* Ledebour, Index Sem. Horti Dorpat. 1822: 10. 1822.

里海旋覆花 li hai xuan fu hua

Inula caspica var. *paniculata* C. H. An; *I. falconeri* J. D. Hooker.

Herbs, biennial. Plants bluish green, 30–50(–70) cm tall; stems mostly solitary, sometimes a few woody at base, smooth, reddish, or ± scabrid, squarrose white pilose in upper part, thinly ribbed, erect, rarely corymbiform-branched, branches rod-shaped, straight. Lower leaves narrowly oblong or lanceolate, 7–17 × 0.8–2.5 cm, narrowed at base into a petiole ca. 1 cm; upper leaves sessile, linear-lanceolate to linear, 5–10 × 0.5–0.6 cm, glabrous, sometimes covered with fine rigid bristles at margins and abaxially, verruculose, prominently 1-veined abaxially in middle, base subauriculate, slightly cordate-semiamplexicaul, margin entire, apex acute. Capitula 2–3.5 cm in diam., numerous, arranged in loose corymbiform synflorescences, on peduncles (0.3–)1.5–4(–6) cm, densely covered with rigid, tuberculate bristles and white multicellular long hairs. Involucre 1.5–2 cm in diam.; phyllaries acute, 1-veined, margins covered with short rigid, tuberculate squarrose cilia, sometimes in upper part reddish and unbent, outer phyllaries lanceolate-linear or linear, 5–6(–8) × 1–1.3 mm, leathery, inner ones narrowly linear, 7–10 × ca. 1 mm, membranous. Ray florets yellow, 9–10(–14) mm, exceeding phyllaries by ca. 1/3; tube small, 3–4 mm, as long as or slightly shorter than pappus; lamina linear, ca. 7 × 1 mm, unbent, 3- or 4-veined, lower part covered outside with yellow, sessile glands, tridentate, teeth deltate, equal, obtuse. Disk florets yellow, obconical, ca. 6 mm, slightly longer than pappus, 5-dentate, teeth equal, acute, glandular outside. Achenes brown, linear-oblong, 1.2–1.5 × ca. 0.5 mm, ribbed, pubescent with white long appressed hairs, 3–4 × as long as achenes. Pappus of 20–25 straight bristles. Fl. Jul–Sep.

Streamsides or riverbanks in deserts; 200–2400 m. Xinjiang, Xizang [India, Kazakhstan, Pakistan, Russia (Siberia), Turkmenistan, Uzbekistan; SW Asia].

Inula falconeri was described based on specimens from W Xizang. According to Fl. India (13: 17. 1995) and Fl. Pakistan (210: 24. 2003), it is also distributed in India and Pakistan. Its descriptions and illustrations are comparable with those of *I. caspica*, and it appears to be a synonym of the latter, which is widely distributed.

12. *Inula linariifolia* Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 10(7): 154. 1837 [“*linariaefolia*”].

线叶旋覆花 xian ye xuan fu hua

Inula britannica Linnaeus subsp. *linariifolia* (Turczaninow) Kitamura; *I. britannica* var. *linariifolia* (Turczaninow) Regel; *I. britannica* var. *maximowiczii* Regel; *I. linariifolia* var. *intermedia* Regel.

Herbs, perennial. Plants 30–80 cm tall; stems simple or branched, covered with white sparse multicellular appressed hairs. Leaves linear-lanceolate, acuminate, sparsely pilose abaxially, glabrous adaxially, margin entire or with fine rare denticles; lower leaves ca. 10 × 1 cm, petioles ca. 3 cm; upper leaves sessile, 6–10 × 0.5–1 cm; floral leaves 1–4 cm × 1.5–5 mm. Capitula 1–2.8 cm in diam., 5–25 in corymbiform synflorescences and borne on glandular-pubescent peduncles 0.6–3 cm. Involucre 1–1.3 cm in diam.; phyllaries straight, in 4 series, gland-dotted abaxially, sometimes outer ones unbent, acute, margin with golden, appressed, elliptic, sessile or shortly stalked glands, outer phyllaries lanceolate, 3–3.5 × ca. 0.8 mm, leathery at base, herbaceous, pilose adaxially, median membranous, 4–5 × ca. 0.6 mm, upper part sometimes reddish, inner linear, membranous, as long as median ones, ca. 0.3 mm wide, glabrous. Ray florets yellow, 0.7–1.2 cm, 2–3 × as long as phyllaries, covered outside with sparse golden glands, tube small, 2–2.5 mm, slightly shorter than pappus; lamina linear, 4–7.5 × ca. 0.8 mm, 3- or 4-veined and with 3 denticles above. Disk florets as long as pappus, yellow, with 5 acute glandular denticles at margin. Achenes brown, cylindric, longitudinally ribbed, 1–1.2 × 0.2–0.4 mm, pubescent with sparse appressed hairs. Pappus ca. 3 mm, with ca. 25 bristles. Fl. Jul–Aug, fr. Aug–Oct. 2n = 24.

Riverbanks, meadows, grassy slopes, waste fields; below 1800 m. Anhui, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanxi, Zhejiang [Japan, Korea, Mongolia, Russia].

13. *Inula britannica* Linnaeus, Sp. Pl. 2: 882. 1753.

欧亚旋覆花 ou ya xuan fu hua

Herbs, perennial, 10–40(–75) cm tall. Stems erect, villous. Leaves sessile; basal blades lanceolate, (3–)6–7 cm × 8–20(–30) mm; caudine blades lanceolate-elliptic to lanceolate-linear, 2–5+ cm × 5–12(–20) mm, abaxially usually densely villous and glandular, adaxially sparsely strigillose to glabrate, bases cordate or auriculate, clasping, margins entire or serrulate. Capitula 1–8, 2.5–5 cm in diam.; peduncles 1–4 cm, densely villous. Involucre (7–)15–22 mm in diam.; phyllaries in 4 or 5 series, outer ones lanceolate-linear, 4–6 × 0.5–0.8 mm, bases sericeous, inner similar, more scarious. Ray florets 40–70+;

lamina 10–15(–20) mm. Disk floret corollas 4–6 mm, 5-lobed. Achenes cylindric, 1–1.2 mm, puberulent. Pappus white, of 20–25 distinct or basally connate bristles 4–6 mm. Fl. Jun–Sep. $2n = 16, 32$.

Roadsides, wastelands, fields, sandy places; 300–1700 m. Hebei, Heilongjiang, Nei Mongol, Xinjiang [Russia, Tajikistan, Turkmenistan, Uzbekistan; Europe].

- 1a. Stems, peduncles, abaxial surface of leaves, and involucle densely lanate-villous 13d. var. *sublanata*
- 1b. Stems, peduncles, abaxial surface of leaves, and involucle glabrous, or sometimes shortly pubescent.
- 2a. Capitula sparsely arranged 13a. var. *britannica*
- 2b. Capitula densely arranged.
 - 3a. Leaves narrowly linear, 3–10 × 0.3–1 cm 13b. var. *angustifolia*
 - 3b. Leaves broader than 1 cm 13c. var. *ramosissima*

13a. *Inula britannica* var. *britannica*

欧亚旋覆花(原变种) ou ya xuan fu hua (yuan bian zhong)

Conyzza britannica (Linnaeus) Ruprecht.

Capitula usually sparsely arranged.

Roadsides, wastelands; 300–1700 m. Hebei, Nei Mongol, Xinjiang [Russia; Europe].

13b. *Inula britannica* var. *angustifolia* Beck, Denkschr. Kaiserl. Akad. Wiss., Wien. Math.-Naturwiss. Kl. 44(2): 318. 1882.

狭叶欧亚旋覆花 xia ye ou ya xuan fu hua

Leaves narrowly linear, 3–10 × 0.3–1 cm. Capitula densely arranged.

Fields, sandy places. Xinjiang [Russia; Europe].

13c. *Inula britannica* var. *ramosissima* Ledebour, Fl. Ross. 2: 506. 1845.

多枝欧亚旋覆花 duo zhi ou ya xuan fu hua

Stems strongly branched in upper part. Leaves broader than 1 cm, pubescent on both surfaces or only abaxially. Capitula numerous, smaller, 2–3 cm in diam., usually densely arranged. Involucle 7–10 mm in diam.

Xinjiang [Russia].

13d. *Inula britannica* var. *sublanata* Komarov, Trudy Imp. S.-Peterburgsk. Bot. Sada 25: 626. 1907.

棉毛欧亚旋覆花 mian mao ou ya xuan fu hua

Inula britannica f. *sublanata* (Komarov) Kitagawa.

Stems, peduncles, abaxial surface of leaves, and involucle densely lanate-villous.

Heilongjiang, Nei Mongol, Xinjiang [Russia].

14. *Inula japonica* Thunberg, Nova Acta Regiae Soc. Sci. Upsal. 4: 39. 1783.

旋覆花 xuan fu hua

Herbs, perennial, from short rhizomes. Stems 15–100 cm tall, striate, appressed pilose, sometimes glabrescent, simple, branched up to synflorescence. Leaves radical and caudine; radical and lower caudine leaves smaller than median leaves, withering before flowering; median leaves lanceolate, oblong, or ovate, appressed pilose or subglabrous on both surfaces, base abruptly narrowed, sessile or semiclasping, apex subacute; upper leaves gradually smaller, 10–25 mm. Capitula usually few or solitary, radiate, ca. 3.5 cm in diam., sometimes with subtending bracteal leaves. Involucre subglobose, 7–8 mm tall; phyllaries in 5 series, subequal, outer ones lanceolate, apex acuminate, inner narrow, scarious, ciliolate. Marginal florets in 1 series; lamina yellow, 16–19 × 1.5–2 mm. Disk 1.5–1.7 cm in diam.; corollas ca. 3 mm. Achenes cylindric, ca. 1 mm, 10-ribbed, pilose. Pappus of capillary bristles, sordid, ca. 5 mm, bristles minutely scabrid. Fl. Jun–Oct. $2n = 16, 24$.

Montane slopes, grasslands, riverbanks, fields, broad-leaved forests, streamsides; 100–2400 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Zhejiang [Japan, Korea, Mongolia, Russia].

- 1a. Stems to 1 m tall, branched in upper part; capitula numerous 14c. var. *ramosa*
- 1b. Stems 15–60 cm tall, usually simple; capitula usually 1–6.
 - 2a. Leaves lanceolate to oblong, margin entire 14a. var. *japonica*
 - 2b. Leaves ovate, broadly ovate, or oblong-ovate, margin slightly serrulate 14b. var. *ovata*

14a. *Inula japonica* var. *japonica*

旋覆花(原变种) xuan fu hua (yuan bian zhong)

Inula britannica Linnaeus var. *chinensis* (Ruprecht ex Maximowicz) Regel; *I. britannica* subsp. *japonica* (Thunberg) Kitamura; *I. britannica* var. *japonica* (Thunberg) Franchet & Savatier; *I. chinensis* Ruprecht ex Maximowicz; *I. giraldii* Diels; *I. japonica* f. *giraldii* (Diels) J. Q. Fu.

Stems 20–60 cm tall. Leaves lanceolate to oblong, 5–10 × 1–3 cm, margin entire. Capitula usually few or solitary.

Montane slopes, grasslands, riverbanks, fields; 100–2400 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Zhejiang [Japan, Korea, Mongolia, Russia].

14b. *Inula japonica* var. *ovata* C. Y. Li, Fl. Liaoning. 2: 1158. 1992.

卵叶旋覆花 luan ye xuan fu hua

Stems 15–30(–50) cm tall. Leaves ovate, broadly ovate, or oblong-ovate, 4–7(–13) × 2–4 cm, base cuneate, auriculate, semiamplexicaul, margin slightly serrulate, apex acute. Capitula 1–6.

- Fields, mountain slopes, riverbanks. Jilin, Liaoning, Nei Mongol.

14c. *Inula japonica* var. *ramosa* (Komarov) C. Y. Li in C. Y. Li & W. Cao, Fl. Pl. Herb. Chin. Bor.-Orient. 9: 83. 2004.

多枝旋覆花 duo zhi xuan fu hua

Inula britannica var. *ramosa* Komarov, Trudy Imp. S.-Peterburgsk. Bot. Sada 25: 626. 1907.

Stems to 1 m tall, branched in upper part. Median leaves lanceolate or linear-lanceolate, 10–15 × 1.5–2 cm, abaxially gland-dotted. Capitula numerous, in corymbs, ca. 3.5 cm in

diam. Involucre subglobose, 5–7 mm; phyllaries in 4 or 5 series, nearly all alike, margin gland-dotted. Ray corollas ca. 10 mm, abaxially gland-dotted. Pappus ca. 3.5 mm. Fl. Aug–Sep.

Broad-leaved forests, mountain slopes, streamsides. Anhui, Heilongjiang, Jilin, Liaoning, Nei Mongol, Shaanxi [Japan, Korea].

193. DUHALDEA Candolle, Prodr. 5: 366. 1836.

羊耳菊属 yang er ju shu

Shrubs or perennial herbs. Stems not winged, without resin canals. Leaves alternate, simple, small to very large, hairy. Capitula heterogamous, radiate or disciform, solitary, few together, or in dense terminal corymbs. Receptacle epaleate, with scalelike ridges. Marginal florets female; corolla yellow to white, radiate to miniradiate; epidermis not crested. Disk florets bisexual; corolla yellow or whitish; epidermis with straight cell walls, without needlelike crystals; corolla lobes short, smooth. Anthers ecalcarate, with branched tails; apical appendix truncate and almost emarginate; endothecial tissue polarized. Cells of antheropodium longer than wide. Pollen spines with a cavity. Style branches with acute sweeping hairs not reaching furcation. Achenes ellipsoid, hairy; epidermis with elongated crystals. Pappus of barbellate, capillary bristles in 1 row. $x = (9 \text{ or } 10)$.

About 15 species: C, E, and SE Asia; seven species (two endemic) in China.

- 1a. Perennial herbs; capitula 1.5–2.5 cm in diam.; phyllaries herbaceous; ray florets white, lamina distinct, 8–13.5 × 1.5–2.5 mm 1. *D. nervosa*
- 1b. Shrubs or perennials; capitula 0.5–1.5(–2) cm in diam.; phyllaries dry membranous; ray florets yellow, lamina usually indistinct or distinct.
 - 2a. Leaves thin, both surfaces glabrous; capitula 1.5–2 cm in diam., 1–5 axillary in short branches, forming cyme-panicles; ray floret lamina 6–8.5 mm 2. *D. rubricaulis*
 - 2b. Leaves thick, densely tomentose or lanate; capitula 0.5–1 cm in diam., terminal on stems or branches; ray floret lamina less than 6 mm or ray florets absent.
 - 3a. Leaves decurrent along stems, forming wings; pappus light reddish brown 3. *D. pterocephala*
 - 3b. Stems wingless; pappus white or grayish white.
 - 4a. Leaves persistently lanate abaxially; ray floret lamina to 1 mm or absent; involucre densely tomentose .. 4. *D. cappa*
 - 4b. Leaves pubescent and scabrid abaxially; ray floret lamina at least 3 mm (rarely absent); involucre glandular or pubescent.
 - 5a. Leaves lanceolate or oblanceolate, both surfaces with short glandular hairs, abaxially densely pubescent along veins; capitula few 5. *D. forrestii*
 - 5b. Leaves oblong, elliptic, or oblong-lanceolate, both surfaces scabrid; capitula numerous.
 - 6a. Leaf blade ca. 10 × 3 cm, apex acute; involucre 7–8 mm, pubescent 6. *D. wissmanniana*
 - 6b. Leaf blade 10–18 × 4–6 cm, apex acuminate; involucre 4–5 mm, tomentose 7. *D. eupatorioides*

1. Duhaldea nervosa (Wallich ex Candolle) Anderberg, Pl. Syst. Evol. 176: 104. 1991.

显脉旋覆花 xian mai xuan fu hua

Inula nervosa Wallich ex Candolle, Prodr. 5: 471. 1836; *I. asperrima* Edgeworth; *I. esquirolii* H. Léveillé; *I. verrucosa* Klatt.

Plants subherbaceous with tuberous roots. Stems often decumbent, 0.2–1 m, usually simple, sparsely long (2.5–3 mm) tawny pilose or strigose, sometimes with rounded densely softly hairy buds at base. Petiole 0–6 mm; leaf blade elliptic, 5–13 × 2–4.5 cm, sparsely spreading pilose on both surfaces, base narrowed and cuneate, margin distantly and shallowly serrate, apex acute or acuminate. Capitula 1 or few, loosely corybose. Involucre 5(–8)-seriate; inner phyllaries linear-lanceolate, mainly scarious, 7–10 × 0.7–1.2 mm, pilose, tips sometimes purple, apex acute to acuminate, outer ones suberect, similar but smaller or herbaceous, dilated above, sometimes to 22 mm, apex obtuse. Ray floret corollas 3.5–4.7 mm; lamina white, 8–

13.5 × 1.5–2.5 mm. Disk floret corollas yellow, 6–6.7 × 8–15 mm. Achenes 2–2.5 mm, sericeous. Pappus white, as long as disk floret, rarely shorter. Fl. Jul–Oct, fr. Sep–Dec.

Dry grassy slopes, thickets; 1000–2600 m. Guizhou, SW Sichuan, SE Xizang, Yunnan [Bhutan, India (Sikkim), Myanmar, Nepal, Thailand, Vietnam].

2. Duhaldea rubricaulis (Candolle) Anderberg, Pl. Syst. Evol. 176: 104. 1991.

赤茎羊耳菊 chi jing yang er ju

Amphirhapis rubricaulis Candolle, Prodr. 5: 343. 1836; *Inula rubricaulis* (Candolle) Bentham & J. D. Hooker.

Subshrubs, 1–2 m tall. Stems sparsely gray tomentose at first, later reddish, glabrous. Leaves sessile, elliptic-lanceolate, 6–19 × 1–4 cm, sparsely pubescent on both surfaces, base cuneate, margin serrulate, apex acuminate. Capitula radiate, 2–6 in small lateral racemes or corymbs. Involucre 5- or 6-seriate; phyllaries acuminate, outer ones spreading, lanceolate, inner

ones linear-lanceolate, to 8–9 mm. Ray florets few; corolla tube ca. 5 mm; lamina 6–8.5 × 1.7–2 mm. Disk florets ca. 7 mm in diam.; corollas 6–7 mm. Achenes oblong, ca. 2.5 mm, sericeous. Pappus white, 5–6 mm, of ca. 20 bristles. Fl. May–Aug, fr. Jul–Nov. 2n = 20.

Slopes in valleys; 1000–2000 m. Yunnan [Bhutan, NE India, Myanmar, Nepal, Thailand, Vietnam].

3. *Duhaldea pterocaula* (Franchet) Anderberg, Pl. Syst. Evol. 176: 104. 1991.

翼茎羊耳菊 yi jing yang er ju

Inula pterocaula Franchet, J. Bot. (Morot) 10: 383. 1896.

Perennial herbs or subshrubs, with woody roots. Stems 60–100 cm tall, ca. 1.2 cm in diam., striped, densely reddish brown pubescent and glandular, branched. Lower leaves lanceolate to elliptic-lanceolate, 18–20 × 4–5 cm; upper leaves smaller, oblong-lanceolate to linear-lanceolate, 1–4 cm, glandular on both surfaces, abaxially reddish brown pubescent, adaxially densely pubescent, base gradually narrower, extending to stem and forming wings 1–10 mm wide, margin bi-serrate, apex acute; lateral veins 7–10 pairs and abaxially prominent, usually densely pubescent. Capitula 5–6 mm in diam., in thyrsoid or compound corymbose synflorescences; peduncles very short or up to 10 mm, slender, with filiform bracteal leaves. Involucre campanulate, ca. 7 × 5–6 mm; phyllaries in ca. 5 series, linear-lanceolate, outer ones shorter, abaxially densely pubescent. Corolla all tubular, ca. 4.5 mm, yellow glandular outside. Achenes cylindric, densely pubescent. Pappus in 1 series, light reddish brown, as long as corolla. Fl. Jul–Sep, fr. Sep–Oct.

• Thickets, grasslands; 2000–2800 m. SW Sichuan, Yunnan.

4. *Duhaldea kappa* (Buchanan-Hamilton ex D. Don) Pruski & Anderberg, Compositae Newslett. 40: 44. 2003.

羊耳菊 yang er ju

Conyza kappa Buchanan-Hamilton ex D. Don, Prodr. Fl. Nepal. 176. 1825; *Baccharis chinensis* Loureiro; *Blumea arnotiana* Steudel; *B. chinensis* Hooker & Arnott (1837), not (Linnaeus) Candolle (1836), nor Walpers (1843); *C. dentata* Blanco (1837), not Willdenow (1803); *Duhaldea chinensis* Candolle; *D. chinensis* var. *cappa* (Buchanan-Hamilton ex D. Don) Steetz; *D. lanuginosa* (C. C. Chang) Anderberg; *Inula kappa* (Buchanan-Hamilton ex D. Don) Candolle; *I. eriophora* Candolle; *I. intermedia* C. C. Chang & Y. C. Tseng (1974), not Steudel (1821); *I. lanuginosa* C. C. Chang; *I. oblonga* Candolle; *I. pseudocappa* Candolle; *Moquinia eriosematoides* (Walpers) Walpers; *Vernonia congesta* Benthem; *V. eriosematoides* Walpers.

Shrubs, 70–200 cm tall. Stems lanate-tomentose, branched. Petiole ca. 5 mm (rarely to 20 mm); leaf blade elliptic, lanceolate, or narrowly oblong, 8–23 × 2.5–5.5 cm, thick, rather papery, whitish lanate abaxially, obscuring minor veins, green and sparsely coarsely pubescent adaxially, base rounded (rarely tapered), margin remotely serrulate, apex acute or shortly acuminate. Capitula radiate or disciform, in dense corymbs. Involucre

6-seriate; phyllaries lanceolate, tomentose, inner ones 4.5–6 × ca. 0.7 mm. Ray florets few; corollas yellow, usually 4.5–5.3 mm, tubular and erect or curved outward or with short lamina to 1 × 1 mm, rarely tube 2.9–3.5 mm with lamina 2.3–2.9 mm. Disk floret corollas yellow, 4.7–6 × 4–6 mm. Achenes cylindric, ca. 1.8 mm, white tomentose. Pappus whitish, sometimes brownish tipped, 4–5 cm. Fl. Jun–Oct, fr. Aug–Dec. 2n = 20.

Dry hills, waste fields, thickets, grasslands; 200–3200 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Sichuan, Yunnan, Zhejiang [Bhutan, India, Malaysia, Nepal, Pakistan, Thailand, Vietnam].

5. *Duhaldea forrestii* (J. Anthony) Anderberg, Pl. Syst. Evol. 176: 104. 1991.

拟羊耳菊 ni yang er ju

Inula forrestii J. Anthony, Notes Roy. Bot. Gard. Edinburgh 18: 197. 1934.

Shrubs, 40–100 cm tall, multibranched; old branches gray or brownish gray, 3–4 mm, young branches reddish brown, pubescent, clustered with dense leaves. Leaves elliptic or oblanceolate, 2–7 × 0.7–3 cm, subleathery, abaxially densely pubescent, base cuneate, margin shallowly and sparsely serrulate, apex acute. Capitula obovoid, ca. 1 × 1–1.5 cm, single or several in racemes. Involucre campanulate, 8–10 mm; phyllaries 4- or 5-seriate, linear-lanceolate, pubescent, ciliate, outer ones shorter than inner ones. Marginal florets radiate; corollas ca. 9 mm; lamina linear-oblong, ca. 6 × 1.5 mm. Disk florets ca. 5 mm. Achenes narrowly terete, ca. 3 mm, whitish pubescent. Pappus whitish, nearly as long as disk florets, of ca. 20 bristles. Fl. Aug, fr. Nov.

• Open gravelly slopes, riversides; 2000–3000 m. SW Sichuan, NW Yunnan.

6. *Duhaldea wissmanniana* (Handel-Mazzetti) Anderberg, Pl. Syst. Evol. 176: 104. 1991.

滇南羊耳菊 dian nan yang er ju

Inula wissmanniana Handel-Mazzetti, Oesterr. Bot. Z. 87: 127. 1938.

Subshrubs. Stems erect, ca. 1 m tall, yellowish brown pubescent or caducous villous; flowering branches densely pubescent. Leaves sessile or with petiole ca. 2 mm, oblong, ca. 10 × 3 cm, abaxially and margin strigillose or hirsute, adaxially sparsely strigillose, base narrowed, obtuse, or slightly rounded, margin sparsely serrulate, apex acute; lateral veins 7–10 pairs, abaxially prominent. Capitula obovoid, ca. 1 cm in diam., forming terminal corymbose panicles; peduncles slender, with oblong-linear to filiform bracteal leaves, densely pubescent. Involucre subcampanulate, 7–8 mm; phyllaries in 4 or 5 series, light yellowish, linear-lanceolate, subleathery, shortly glandular, apex acuminate, inner ones ciliate at apex, innermost ca. 5 × as long as outer. Ray florets in 1 series; lamina yellow, oblong, 2–3 mm. Disk florets yellow, cylindric; corolla ca. 5 mm. Achenes ca. 1.5 mm, white tomentose. Pappus in 1 series, white, ca. 5 mm, of ca. 20 bristles. Fl. Jul–Sep, fr. Oct.

Open slopes; 1200–1700 m. S Yunnan [Vietnam].

7. Duhaldea eupatorioides (Candolle) Steetz, Bonplandia 5: 308. 1857.

泽兰羊耳菊 ze lan yang er ju

Inula eupatorioides Candolle, Prodr. 5: 469. 1836.

Shrubs, 1–2 m tall. Stems lanate-tomentose. Leaves sessile or with petiole up to 5 mm, oblong or oblong-lanceolate, 10–18 × 4–6 cm, papery, densely pubescent at least on veins abaxially, green and sparsely scabridulous adaxially, minor veins prominent abaxially, base acute or obtuse, margin remotely serrulate,

apex acuminate. Capitula 5–7 mm in diam., in dense corymbs. Involucre 4- or 5-seriate; phyllaries tomentose, inner ones linear-lanceolate, ca. 4 mm, outer oblong-lanceolate, ca. 1 mm. Ray florets female, yellow; corolla tube ca. 5 mm, usually ca. 3 mm in diam.; lamina 3–4 × 1–1.4 mm. Disk florets yellow, 4–6 mm in diam.; corollas ca. 5 mm. Achenes cylindric, ca. 2 mm, pubescent. Pappus whitish yellow, brownish tipped, slightly shorter than disk corollas, of ca. 20 bristles. Fl. Jul–Sep, fr. Dec. $2n = 20$.

Thickets, under *Pinus* forests; 1700–1800 m. SE Xizang [Bhutan, India, Laos, Myanmar, Nepal, Pakistan, N Thailand, Vietnam].

194. SPHAERANTHUS Linnaeus, Sp. Pl. 2: 927. 1753.

戴星草属 dai xing cao shu

Low erect annuals. Stems winged, branches spreading. Leaves alternate, obovate to oblong, mucronulate-serrulate to dentate, decurrent, gland-dotted. Capitula disciform, heterogamous, in terminal solitary, globose, or ovoid clusters, with or without bracts between capitula, clusters sessile on a common receptacle. Involucre campanulate, narrow; phyllaries narrow, dry, few seriate, unequal, scarious, acute or obtuse. Receptacles naked, commonly globose or disciform, with few bracts or not. Marginal florets female, few to many, fertile, slender, minutely 2- or 3-dentate. Disk florets bisexual, solitary or few, fertile or sterile, tube thickened, limb 4- or 5-dentate. Base of anthers obtuse to sagittate, auricles acute or tailed; endothelial tissue radial. Style of disk florets terete, style branches filiform or connate, with obtuse sweeping hairs reaching below furcation. Achenes oblong, somewhat flattened, truncate at apex, base contracted. Pappus absent. $x = 10$.

About 40 species: tropical and subtropical Africa and Asia, also in Australia; three species in China.

- 1a. Leaves shortly pubescent or glabrescent; stems and branches with usually entire wings; phyllaries glabrous or only outermost ones abaxially glandular; corolla grayish white adaxially 1. *S. africanus*
- 1b. Leaves tomentose or lanate; stems and branches with densely dentate wings; phyllaries densely pubescent and ciliate on margin; corolla purplish red adaxially.
 - 2a. Leaf margin biserrulate, with stipitate glands 2. *S. indicus*
 - 2b. Leaf margin long dentate, with sessile glands 3. *S. senegalensis*

1. Sphaeranthus africanus Linnaeus, Sp. Pl., ed. 2, 2: 1314. 1763.

戴星草 dai xing cao

Sphaeranthus cochinchinensis Loureiro; *S. microcephalus* Willdenow; *S. suberiflorus* Hayata.

Stems 40–50 cm tall, usually robust, glabrous or pubescent, curved, ascending, branched, winged, wings entire. Cauline leaves obovate-oblong, 3–5 × 1.5–2.2 cm, shortly pubescent or glabrescent, base narrowed, apex rounded. Clusters of capitula globose or ovoid, ca. 8 mm in diam.; peduncle glabrous, winged, bracts slender, acuminate. Capitula campanulate, ca. 3 × 2.5 mm. Involucre ca. 3 × 2.5 mm; phyllaries subequal, oblanceolate, glabrous or only outermost ones abaxially glandular. Receptacle naked. Marginal florets numerous; corolla tubular, ca. 1.5 mm; style apex obtuse. Central florets ca. 3; corolla ca. 1.5 mm, 5-dentate; base of anthers entire, filaments dilated, glabrous; style cylindric, shortly bifid. Achenes cylindric, ca. 1 mm, gland-dotted, without pappus. Fl. Dec–May. $2n = 20$.

Waste fields, grassy slopes. Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Cambodia, Malaysia, Myanmar, Thailand, Vietnam; tropical Africa, Australia].

2. Sphaeranthus indicus Linnaeus, Sp. Pl. 2: 927. 1753.

绒毛戴星草 rong mao dai xing cao

Sphaeranthus hirtus Willdenow; *S. mollis* Roxburgh.

Plants rank-smelling. Stems 10–45 cm tall with 4 irregularly and sharply toothed wings, minutely stipitate glandular and whitish pubescent. Leaves oblanceolate or spatulate, 2.5–6 × 0.8–2.5 cm, minutely stipitate glandular and white lanate on both surfaces, base semiamplexicaul and strongly decurrent, margin rather irregularly biserrate-dentate, apex obtuse or acute, apiculate, attenuate. Clusters of capitula ovoid-globose, ca. 12 × 10 mm; capitulum bracts linear-lanceolate, 4–5 mm, ciliate, hispid and stipitate glandular, apex finely acuminate. Phyllaries ca. 12, linear-oblong to linear-spatulate, more scarious and less glandular than bracts. Marginal florets 10–15; central florets 2 or 3; corollas purplish, ca. 2.4 mm. Achenes ca. 1 mm, puberulent. Fl. Dec–Apr. $2n = 20$.

Sandy banks along rivers, grasslands, thickets; 700–1000 m. Yunnan [Bhutan, Cambodia, India, Laos, Malaysia, Nepal, Thailand, Vietnam; Africa, Australia].

3. Sphaeranthus senegalensis Candolle, Prodr. 5: 370. 1836.

非洲戴星草 fei zhou dai xing cao

Sphaeranthus lecomteanus O. Hoffmann & Muschler.

Stems 20–90 cm tall, usually robust, densely pubescent, ascending, branched, winged, wings dentate. Cauline leaves usually oblong, 3–10 × 1–3.5 cm, both surfaces densely lanate,

base narrowed, margin with densely spinelike denticles, apex obtuse. Clusters of capitula globose or ovoid, 11–18 × 9–10 mm; peduncle pubescent. Capitula campanulate. Phyllaries 9–14, subequal, outer ones linear-lanceolate, 4–4.5 mm, densely pubescent. Receptacle naked. Marginal florets 7–12; corolla tubular, ca. 2.5 mm; style apex obtuse. Central florets 2–5; co-

rolla 3–3.5 mm, 5-dentate; base of anthers entire, filaments dilated, glabrous; style cylindric, shortly bifid. Achenes cylindric, ca. 1 mm, gland-dotted, without pappus. Fl. Dec–Apr. $2n = 20$.

Roadsides, thickets, riverbanks; 600–1300 m. Yunnan [tropical Africa and Asia].

195. PTEROCAULON Elliott, Sketch Bot. S. Carolina 2: 323. 1823.

翼茎草属 yi jing cao shu

Herbs, perennial, usually rhizomatous and/or lignescence-tuberous-rooted. Stems erect, simple, internodes winged by decurrent leaf bases, lanate-tomentose and/or glandular. Leaves cauline, alternate, sessile; blade linear to elliptic or obovate, base decurrent, margin usually serrate to serrulate or denticulate, rarely entire. Capitula disciform, sessile, in spiciform arrays. Involucre cylindric-campanulate to campanulate; phyllaries persistent, in 4–6 series, distinct, narrowly lanceolate, unequal. Receptacles flat, epaleate. Ray florets absent. Marginal florets female, in 1–3+ series, fertile; corollas yellowish. Central florets bisexual, but functionally male, (1 or)2–15; corollas yellowish, lobes 5. Style with acute sweeping hairs reaching furcation. Achenes cylindric to fusiform, angled or slightly compressed, ribs 6–9, faces usually sparsely strigose to hispidulous, minutely sessile glandular between ribs. Pappus persistent, of distinct, scabrid bristles in 1 or 2 series. $x = 10$.

About 18 species: SE Asia, Australia, North and South America; one species in China.

1. Pterocaulon redolens (Willdenow) Fernández-Villar in Blanco, Fl. Filip., ed. 3, 4(13A–21A): 116. 1880.

翼茎草 yi jing cao

Conyzia redolens Willdenow, Sp. Pl. 3: 1915. 1803; *Tessaria redolens* (Willdenow) Lessing.

Herbs, up to 1 m tall. Stems and branches winged, branched, lanate. Middle leaves sessile, obovate or obovate-oblong, 4–6 × 1.5–2 cm, both surfaces lanate, more densely so on abaxial surface, base decurrent, margin serrulate, apex obtuse; costa adaxially prominent, lateral veins 5–10 pairs, inconspicuous; upper leaves sessile, smaller, narrowly oblong or ovate-oblong, 15–25 × 4–6 mm, base gradually narrower, margin undulate, inconspicuously serrulate, apex acute or obtuse. Capitula

1.5–2 mm in diam., 2–7 in spikes 2–9 cm. Involucre campanulate, ca. 4 mm; phyllaries in 4 or 5 series, apex purplish red, outer ones spatulate or ovate-oblong, ca. 3 mm, abaxially densely lanate, apex 1–3-dentate or obtuse, middle narrowly oblong or linear, 3–3.5 mm, dry membranous, apex abaxially pubescent or glabrous, apex sometimes fimbriate, innermost linear or filiform, ca. 4 mm, glabrous, apex acute or acuminate. Marginal florets in numerous series, filiform, apex 3-dentate or truncate. Central florets 1 to several, tubular, 3–4 mm; limbs 5-dentate or rarely 6- or 7-dentate. Achenes ca. 0.5 mm, ribbed. Pappus in 1 series, white, ca. 3 mm, connate at base. Fl. Dec–Apr.

Waste fields; low elevations. Hainan [India, Indonesia, Laos, Philippines, Vietnam; Australia].

196. EPALTES Cassini, Bull. Sci. Soc. Philom. Paris 1818: 139. 1818.

鹅不食草属 e bu shi cao shu

Herbs, small, pubescent, branches spreading, prostrate, rather woody. Leaves alternate, obovate, dentate, sessile, not decurrent. Capitula axillary, solitary, shortly pedunculate, heterogamous, disciform, florets yellow. Involucre hemispheric; phyllaries 1- or 2-seriate, oblong, obtuse, scarious, entire, incurved in fruit. Receptacle naked. Marginal florets female, numerous, many seriate, fertile; corolla elongate, slender, tubular, inflated below. Central disk florets bisexual, fewer, functionally male, tubular, 4- or 5-dentate. Anthers sagittate at base; endothecial tissue radial. Style of female and bisexual florets bifid; style branches with obtuse sweeping hairs reaching below furcation. Achenes cylindric, slender, broadly 10-ribbed, hairy at base. Pappus absent. $x = 10$.

About 14 species: Africa, Asia, Australia, Central and South America; two species in China.

1a. Leaves obovate or obovate-oblong, margin distinctly and coarsely dentate; stems and branches not winged 1. *E. australis*
1b. Leaves linear or linear-oblong, margin entire or inconspicuously serrulate; stems and branches winged 2. *E. divaricata*

1. Epaltes australis Lessing, Linnaea 5: 148. 1830.

鹅不食草 e bu shi cao

Sphaeromorphaea australis (Lessing) Kitamura.

Herbs, annual. Stems much branched, branches straggling, flexuous, woody toward base. Cauline leaves oblanceolate-oblong, 3.5–4 × 1–1.8 cm, sparsely pilose on both surfaces, base narrowed into petiole, margin irregularly toothed or lyrate-pin-

natifolied, lobes often obtuse, mucronulate and irregularly mucronulate-dentate, apex obtuse or rounded; upper leaves ± same size as median ones. Capitula globose, 4–6 mm in diam., shortly pedunculate; peduncle 3–12 mm, few bracteate or not. Involucre depressed hemispheric, ca. 6 × 1 mm; phyllaries in 1 or 2 series, outer ones shorter, ovate, apex acute, others oblong, scarious, apex obtuse. Corolla of marginal florets ca. 0.7 mm; corolla of central florets ca. 1.3 mm, 5-dentate. Achenes cylindric, ca. 0.5 mm, gland-dotted. Fl. Mar-Jun and Sep-Nov.

Fields, roadsides; low elevations. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [India, Malaysia, Thailand, Vietnam; Australia].

2. Epaltes divaricata (Linnaeus) Cassini, Bull. Sci. Soc. Philom. Paris 1818: 139. 1818.

翅柄球菊 chi bing qiu ju

Ethulia divaricata Linnaeus, Syst. Nat., ed. 12, 2: 536; Mant. Pl. 1: 110. 1767; *Poilania laggeroides* Gagnepain.

Herbs, annual. Stems 10–20 cm tall, branched, glabrous, winged; wings entire. Leaves sessile, linear or linear-oblong, 20–65 × 2–7 mm, both surfaces glabrous, base narrowed into

petiole, margin entire or inconspicuously serrulate, apex obtuse. Capitula solitary or 3–6, 6–8 mm in diam., in sparse corymbs; peduncles 5–17 mm, narrowly winged. Involucre ca. 5 × 7 mm; phyllaries in 4 or 5 series, longer than corollas, apex purplish red, outer ones ovate, ca. 3.5 mm, membranous or margin dry membranous, glabrous, margin serrulate, apex acuminate, inner ones ovate-oblong, ca. 5 mm, dry membranous, glabrous. Corollas of marginal florets tubular, 2–2.5 mm, 3-lobed; corollas of central florets 3–3.5 mm, 5-lobed. Achenes oblong or obovate, ca. 1 mm, gland-dotted. Fl. Dec–Feb.

Waste fields, farmlands; low elevations. Hainan [India, Indonesia, Sri Lanka, Vietnam].

197. PLUCHEA Cassini, Bull. Sci. Soc. Philom. Paris 1817: 31. 1817.

阔苞菊属 kuo bao ju shu

Shrubs or herbs, ± aromatic. Leaves alternate, simple. Synflorescences elongate panicles or flat-topped. Capitula many flowered, disciform, usually numerous. Phyllaries imbricate. Marginal florets numerous, in several rows, filiform, female, fertile; achenes 4- or 5-angled, longitudinally grooved. Central florets far fewer than marginal ones, tubular, bisexual, functionally male; anthers obtuse at apex, tailed at base. Style entire, sometimes divided, style branches with obtuse sweeping hairs reaching below furcation; achenes often indistinct or vestigial as a small ring of basal sclerenchymatous cells of carpopodium. Pappus of basally connate, barbellate bristles in 1 row. $x = 10$.

About 80 species: Africa, SE Asia, Australia, Caribbean, North and South America, Pacific islands; five species (two introduced) in China.

- 1a. Plants decumbent-ascending, herbaceous, slightly woody at base; branches glabrous or sparingly puberulent; peduncles and involucres glabrous 1. *P. pteropoda*
- 1b. Plants erect, shrubby; branches densely pubescent; peduncles and involucres tomentose.
 - 2a. Stems and branches conspicuously winged by decurrent leaves; capitula hemispheric (when fresh); central florets 50–60 2. *P. sagittalis*
 - 2b. Stems and branches not winged; capitula campanulate (when fresh); central florets usually less than 25.
 - 3a. Leaves linear 3. *P. eupatorioides*
 - 3b. Leaves obovate to elliptic.
 - 4a. Branches densely tomentose; leaves thinly papery, petiolate, margins subentire; central florets 20–25; receptacle glabrous 4. *P. carolinensis*
 - 4b. Branches finely crisp hairy; leaves thickly papery, subsessile, margins dentate; central florets 2–7; receptacle densely hirsutulous 5. *P. indica*

1. Pluchea pteropoda Hemsley ex Forbes & Hemsley, J. Linn. Soc., Bot. 23: 422. 1888.

光梗阔苞菊 guang geng kuo bao ju

Herbs or subshrubs, procumbent to ascending. Stems well branched, sulcate-striate, glabrous, rarely sparingly puberulent. Leaves sessile, obovate to oblanceolate, 3–5 × 0.7–1.7 cm, glabrous on both surfaces, base gradually narrowed, margin irregularly and sparsely dentate, apex obtuse to rounded; upper leaves smaller and narrower. Capitula 6–8 mm in diam. when fresh, to 10 mm in diam. when dried, ca. 7 mm, shortly pedunculate or sessile, densely congested in terminal corymbs. Involucro ovoid to broadly campanulate; phyllaries 5- or 6-seriate, glabrous, outer ones broadly ovate, 2.5–4 × 2–3 mm, subentire, apex obtuse to rounded, inner linear to lanceolate, 4–5 × 0.5–1 mm, margin subentire, apex acute. Receptacle flat, foveolate. Marginal florets numerous; corolla filiform, narrowed apically, 3.5–4 mm, glandular; achenes reddish brown, with pale ribs, cylindric, 1–1.4 × 0.2–0.3 mm, appressed strigillose and glandular; pappus nearly as long as corolla. Central florets 18–22;

corolla 4–5 mm, 5-lobed, lobes triangular, glandular; achenes yellowish, cylindric, grooved, 0.8–1.2 × 0.4–0.5 mm, strigillose; pappus shorter than corolla. $2n = 40$.

Coastal brackish areas and tidal flats, often associated with mangroves and near graveyards on seashores. Guangdong, Guangxi, Hainan, Taiwan [Vietnam].

2. Pluchea sagittalis (Lamarck) Cabrera, Bol. Soc. Argent. Bot. 3: 36. 1949.

翼茎阔苞菊 yi jing kuo bao ju

Conyzia sagittalis Lamarck, Encycl. 2: 94. 1786; *Gnaphalium suaveolens* Vellozo; *Pluchea suaveolens* (Vellozo) Kuntze.

Herbs, perennial, erect, aromatic, coarse, 1–1.5 m tall, ca. 1.5 cm in diam. at base, much branched, branches densely tomentose. Stems conspicuously winged by decurrent leaves. Median leaves sessile, lanceolate to broadly lanceolate, 6–12 × 2.5–4 cm, thinly tomentose with viscid glands on surfaces, base attenuate, margin serrate, apex acuminate. Capitula 7–8 mm in diam. when fresh, to ca. 10 mm in diam. when dried, 4–5 mm,

in compound terminal and axillary corymbs; peduncle 5–25 mm. Involucre hemispheric; phyllaries greenish brown, 4- or 5-seriate, outer ones widely elliptic to widely obovate, 1–2 × 1–1.5 mm, tomentose abaxially, margins ciliate, apex acuminate, inner lanceolate to linear-lanceolate, 3–4 × 0.4–0.6 mm, grading to glabrous. Receptacle flat, glabrous. Marginal florets numerous; corolla white, 3–3.5 mm, 3-lobed; achenes brown, cylindric, with 5 pale ribs, 0.6–0.8 × ca. 0.2 mm, with viscid glands; pappus white, slightly longer than corolla. Central florets 50–60; corolla white, purplish toward summit, 2.5–3 mm, sparingly glandular hairy at base; anthers acute at apex, shortly tailed at base; anthers and style exserted; achenes vestigial. Fl. and fr. Mar–Oct. $2n = 20$.

Exposed flat areas, riverbeds, and swamps, often in large numbers in abandoned rice paddies and grassy fields. Naturalized in Taiwan [native to North and South America].

3. *Pluchea eupatorioides* Kurz, Forest Fl. Burma 2: 575. 1877.

长叶阔苞菊 chang ye kuo bao ju

Herbs or subshrubs. Stems 1–2 m tall, 4–7 mm in diam., branched; young branches densely powdery puberulent, later glabrescent. Middle leaves subsessile or with petiole ca. 4 mm, blade broadly linear, 7–10 × 1.2–2 cm, both surfaces densely powdery puberulent, abaxially more densely so, base decurrent, margin sparsely serrulate, apex acuminate; upper leaves subsessile, linear, 5–7 × 0.7–1 cm. Capitula numerous, ca. 5 mm in diam., in terminal corymbs; peduncles slender, 1–5 mm, densely powdery puberulent. Involucre campanulate, 5–6 mm; phyllaries in 5 or 6 series, outer ones ovate or broadly ovate, 1.5–3 mm, apex acute. Marginal florets numerous; corolla filiform, 4–5 mm, limbs 3- or 4-dentate. Central florets fewer; corolla tubular, ca. 5 mm, limbs 5-dentate. Achenes 5-ribbed, ca. 0.8 mm, white pubescent. Pappus white, persistent, ca. 5 mm, connate at base in central florets. Fl. Apr–Jun.

Fields, roadsides. Guangxi, Yunnan [Cambodia, Laos, Myanmar, Thailand, Vietnam].

4. *Pluchea carolinensis* (Jacquin) G. Don in Sweet, Hort. Brit., ed. 3, 350. 1839.

美洲阔苞菊 mei zhou kuo bao ju

Conyzia carolinensis Jacquin, Collectanea 2: 271. 1789.

Shrubs, erect, 1–2.5 m tall, much branched, branches densely tomentose. Petiole 1–2.5 cm; leaf blade oblong-ovate to elliptic, 6–15 × 2–6 cm, thinly tomentose and glandular on both surfaces, abaxially grayish, adaxially green, base attenuate, mar-

gin entire or nearly so, apex mucronulate-obtuse. Capitula 5–7 mm in diam. when fresh, ca. 10 mm in diam. in dried specimen, ca. 6 mm, in dense terminal and axillary corymbs; peduncle 3–8 mm. Involucre ovate to campanulate; phyllaries greenish purplish, 4- or 5-seriate, outer ones very widely elliptic to very widely obovate, 2–4 × 1.5–2 mm, tomentose abaxially, margins ciliate, apex rounded, inner lanceolate to linear-lanceolate, 4–5 × 0.5–1 mm, less pubescent to glabrous, apex acute. Receptacle flat, glabrous. Marginal florets numerous; corolla pale greenish white, pinkish toward summit, filiform, 3.5–4 mm, 3-lobed; mature achenes not seen; pappus white, slightly shorter than corolla. Central florets 20–25; corolla whitish, pinkish toward summit, 4–5 mm, sparingly glandular hairy at base; anthers obtuse at apex, shortly tailed at base; anthers and style exserted; achenes vestigial. $2n = 20$.

Naturalized in disturbed ruderal sites, often on barren mudstone slopes or associated with scrubby vegetation along roads; below 100–200 m. Taiwan [native to warmer regions of the New World and W Africa].

5. *Pluchea indica* (Linnaeus) Lessing, Linnaea 6: 150. 1831.

阔苞菊 kuo bao ju

Baccharis indica Linnaeus, Sp. Pl. 2: 861. 1753.

Shrubs, erect, to 2 m tall, sulcate-striate, much branched, branches finely shortly crisp hairy, later glabrate. Leaves sessile or very shortly petiolate, obovate, 2.3–8 × 1–4 cm, thickly papery, abaxially loosely puberulent to subglabrous, adaxially minutely puberulent, veinlets distinct, base attenuate, margin acutely dentate, apex acute to mucronate. Capitula narrowly cylindric to campanulate, 5–6 mm in diam. when fresh, to 9–10 mm in diam. in dried specimen, 6–7 mm, in dense terminal and axillary corymbs; peduncle 0–10 mm. Involucre ovate, 4–6 mm; phyllaries 6- or 7-seriate, outer ones 2–2.5 × ca. 1.5 mm, margins ciliolate, apex obtuse, inner lanceolate to linear, 4–6 × 0.25–1 mm, margins entire, apex obtuse. Receptacle densely hirsutulous. Marginal florets numerous; corolla 3–5 mm; style greatly exserted; achenes brown, cylindric, with 5–7 pale ribs, slightly curved, ca. 1 × 0.3 mm, subglabrous; pappus white, ca. 5 mm, slightly exceeding corolla. Central florets 2–7; corolla 4.5–5.5 mm, 5-lobed, lobes glandular; anthers and style greatly exserted; achenes vestigial; pappus white, as long as corolla. $2n = 20, 60$.

Brackish marshes and other saline habitats widespread along the W coast; low elevations. Guangdong, Hainan, Taiwan [Cambodia, India, Japan, Laos, Malaysia, Philippines, Singapore, Thailand, Vietnam; N Australia, Pacific islands (Hawaii)].

198. KARELINIA Lessing, Linnaea 9: 187. 1834.

花花柴属 hua hua chai shu

Herbs, perennial. Stem without resin canals and fibers in phloem. Leaves alternate, elliptic-oblong, entire, not decurrent, sparsely hairy. Capitula heterogamous, disciform, solitary, terminal. Phyllaries broadly oblong, hard. Receptacle epaleate. Marginal florets female; corolla filiform, 3-lobed. Disk florets functionally male. Style bifid; cells of antheropodium mammillate; endothecial tissue radial. Style branches with obtuse sweeping hairs reaching below furcation. Achenes stout, without resin ducts, hairy with straight hairs. Pappus of free, barbellate, capillary bristles, in 1 row; each bristle with patent teeth. $x = 10$.

One species: C and SW Asia, Caspian region.

1. Karelinia caspia (Pallas) Lessing, Linnaea 9: 187. 1834.

花花柴 hua hua chai

Serratula caspia Pallas, Reise Russ. Reich. 2: 743. 1773; *Karelinia caspia* f. *angustifolia* Smoljaninova; *K. caspia* f. *ovalifolia* Smoljaninova; *Pluchea caspia* (Pallas) O. Hoffmann ex Paulsen.

Perennials. Stems to 1.5 m tall, erect, terete, ribbed, leafy up to synflorescences, mainly in upper portion, corymbosely branched, gray-blue, glabrous or shortly pubescent, branches alternate, almost of equal height, scabrid. Leaves alternate, simple, sessile, oblong, 2–6 × 0.5–1.5 cm, glabrous, scabrid, uneven at margin, apex acuminate, upper leaves basally cordate, semiamplexicaul-auriculate. Capitula 1.3–2 × 0.8–2 cm, many flowered, arranged in terminal corymbiform synflorescences, 2–9; peduncles 7–25 × ca. 1 mm, scabrid. Involucre cylindric-campanulate, 13–15 × 7–10 mm; phyllaries 6- or 7-seriate, light brown, sometimes reddish at apex, imbricate, rigid (subleathery), appressed, glabrous inside, with strong short appressed gray pubescence outside, margin with ciliate hairs, longer in inner phyllaries, outer ones ovate or ovate-oblong, 5–8 × 3–4 mm, middle lanceolate, ca. 10 × 2 mm, inner sublinear, 10–15 × ca. 1 mm, acuminate. Receptacle flat, with long hairs.

Marginal florets multiseriate, carpogenous, reddish, 10–12 mm, with filiform, ± heteromerous, 4-dentate corolla; tube ca. 10 × 0.5 mm in upper portion. Style as long as tube, thin, flat, glabrous, with 2-lobed stigma, lobes reddish, thin, flat, 3–5 mm, ascending, slightly divergent, glabrous. Disk florets sterile, 10–20, reddish, with 5-dentate corolla, 10–12 × ca. 1 mm in upper portion, denticles ca. 1 mm, lanceolate, acuminate. Anthers oblong, ca. 2 × 0.3 mm, glabrous, united in a tube, surrounding style, basally with short entire appendages, filaments 5–6 × ca. 0.25 mm, flat, glabrous, attached to base of corolla tube. Style ca. 15 mm, filiform, ca. 0.3 mm wide, with closely arranged fine mammillae up to half of length, stigma bipartite with short (ca. 0.5 mm) upright reddish lobes, covered with mammillae; ovary cylindric, ca. 1.5 × 0.3 mm, slightly flattened, smooth, glabrous. Achenes dark brown, cylindric, slightly recurved, 1.5–2 × ca. 0.3 mm, narrowed to base, triquetrous, with a ring at base, glabrous. Pappus white, 9–14 mm, sinuate at base, monostichous; in female florets consisting of numerous very thin, fine, often crenate hairs; in bisexual florets of finely crenate, slightly barbate-thickened hairs at apex. Fl. Jul–Sep, fr. Sep–Oct.

Gobi Desert, dunes, saline meadows; 900–1300 m. Gansu, Nei Mongol, Qinghai, Xinjiang [Kazakhstan, Mongolia, Russia, Turkmenistan; SW Asia (Iran, Turkey)].

199. LAGGERA Schultz Bipontinus ex Bentham & J. D. Hooker, Gen. Pl. 2: 290. 1873.

六棱菊属 liu leng ju shu

Herbs, annual to perennial. Stems with resin canals, but without fibers in phloem. Leaves dentate, long decurrent, hairy, sessile or petiolate. Capitula heterogamous, disciform, few to many, terminal in large open leafy panicles. Involucre campanulate; phyllaries 4–8-seriate, imbricate, narrow, usually squarrose. Receptacle naked. Marginal florets female, corolla filiform, 3-lobed; disk florets bisexual, few, tubular. Corolla pink or mauve. Anthers with sagittate bases, without tails; cells of antheropodium flattened; endothelial tissue radical. Style branches with obtuse sweeping hairs reaching below furcation. Achenes oblong-ellipsoid, without resin ducts, sparsely hairy with straight hairs. Pappus of free, barbellate, capillary bristles in 1 row; each bristle with adpressed teeth. $x = 10$.

About 17 species: tropical Africa, Arabia, and Asia; two species in China.

The two species in China are often synonymized. If treated as separate species, the correct name for the species *Laggera pterodonta* is *L. crispata*, based on *Conyzza crispata* Vahl (1790), which antedates Candolle's name *Blumea pterodonta* from 1834.

- 1a. Stems bearing entire herbaceous wings 1–5 mm deep 1. *L. alata*
- 1b. Stems bearing lines of narrow uneven herbaceous teeth 2–16 mm deep, usually joined by a narrow wing 2. *L. crispata*

1. Laggera alata (D. Don) Schultz Bipontinus ex Oliver, Trans. Linn. Soc. London 29: 94. 1873.

六棱菊 liu leng ju

Erigeron alatus D. Don, Prodr. Fl. Nepal. 171. 1825; *Blumea alata* (D. Don) Candolle; *Conyzza alata* (D. Don) Roxburgh; *Inula exsiccata* H. Léveillé; *Laggera angustifolia* Hayata; *Triplostegia epilobiifolia* H. Léveillé.

Herbs, robust, much branched, up to 60(–75) cm tall, glandular pubescent. Stems winged, wings 1–5 mm deep, herbaceous, entire, rarely somewhat denticulate, continuous. Leaves oblong, 2–8(–10) × 0.7–1.5 cm, densely covered with long multiseptate hairs, base decurrent, margin denticulate, apex acute to subobtuse. Capitula 1–1.3 cm in diam., arranged in leafy racemes, on short axillary winged branches. Involucle ovoid, ca. 9 mm in diam.; phyllaries 4- or 5-seriate, outer lan-

ceolate, ca. 9 × 1 mm, inner longer, up to 10 mm, green at apex, glandular pubescent on outer side. Corolla of marginal florets ca. 6 mm, minutely toothed; corolla of disk florets 7–8 mm, 5-lobed. Style with obtuse sweeping hairs reaching below furcation. Achenes dark brown, ca. 1 mm. Pappus setae white, 6–7 mm, bristles equal, minutely scabrid. Fl. Mar–Oct. 2n = 20.

Wastelands and sunny meadows; below 2300 m. Fujian, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Taiwan, Yunnan, Zhejiang [Bhutan, India, Indonesia, Laos, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam; E Africa, Madagascar].

2. Laggera crispata (Vahl) Hepper & J. R. I. Wood, Kew Bull. 38: 83. 1983.

翼齿六棱菊 yi chi liu leng ju

Conyzza crispata Vahl, Symb. Bot. 1: 71. 1790; *Blumea*

pterodonta Candolle; *Laggera intermedia* C. B. Clarke; *L. pterodonta* (Candolle) Schultz Bipontinus ex Oliver; *L. purpurascens* Schultz Bipontinus ex Hochstetter.

Herbs. Stems much branched, 40–100 cm tall, stems and branches narrowly winged with irregular deeply toothed lobes or interrupted wing; stem teeth and leaves densely pubescent, mainly with short erect glandular hairs. Lower leaves sessile or sometimes with winged, deeply toothed petiole to 15 mm, blade narrowly obovate, 5–17 × 1.5–6 cm, base long attenuate, mar-

gin subentire to serrate-dentate, apex acute; upper leaves narrower, slightly tapered below, oblong, sometimes subobtuse. Capitula terminal, pink to purple, 10–15 mm in diam.; peduncles slender. Involucre ca. 7 mm in diam.; phyllaries 4.5–9 mm, at least outer ones glandular-pubescent. Corolla 6.5–8 mm. Achenes ca. 1 mm. Pappus ca. 6 mm. Fl. Jan–Jul. $2n = 20$.

Strongly aromatic glandular weedy herbs on dry hill slopes, old clearings, upland rice fields, and wastelands; below 2000 m. Guangxi, Guizhou, Hubei, Sichuan, SE Xizang, Yunnan [Bhutan, India, Thailand, Vietnam; tropical Africa].

200. PSEUDOCONYZA Cuatrecasas, Ciencia 21: 30. 1961.

假飞蓬属 jia fei peng shu

Herbs, perennial. Leaves alternate, entire or pinnatisect, serrate to dentate or basally shallowly lobed, sometimes petiolate, amplexicaul, decurrent on stem as 1 or 2(or 3) pairs of lobes. Capitula disciform in small, loose corymbs on leafy branches. Phyllaries 5- or 6-seriate, imbricate, lanceolate to linear. Marginal florets female, filiform, many. Disk florets few, bisexual. Anthers tailed; endothecial tissue radial. Achenes oblong-ellipsoid with straight hairs. Pappus uniseriate of free barbellate bristles with appressed teeth.

One species: Africa, Asia, Central America.

1. Pseudoconyza viscosa (Miller) D'Arcy, Phytologia 25: 281. 1973.

假飞蓬 jia fei peng

Conyza viscosa Miller, Gard. Dict., ed. 8, *Conyza* no. 8. 1768.

Herbs, to 1 m tall, erect, sometimes branched at base, usually branched on upper part of stem; culms cylindric, villous and glandular. Leaves alternate, sessile, oblanceolate-ovate to obovate, 1–8 cm, both surfaces villous, parted or not, base cuneate to attenuate, margin serrate to doubly serrate, apex rounded to acute. Capitula terminal and axillary, 8–9 × 4–6 mm, in lax corymbs or cymose panicles, branches leafy. Involucre 4-seriate, margin entire or pilose, apex acuminate; outer phyllaries

lanceolate, 2.5–5 mm, abaxially villous and glandular, adaxially glabrous to sparsely villous, innermost linear, central part glabrous to sparsely villous, margin membranous, 1-veined, ca. 8 mm. Receptacle concave, glabrous. Marginal disk florets numerous, female and fertile; corolla whitish to pale purplish, filiform, 3.5–4.5 mm; stigma exposed, 0.5–1 mm. Central disk florets fewer than 10 per capitulum, bisexual and fertile; corolla whitish to pale purplish, tubular, ca. 4.5 mm, 5-lobed, lobes ca. 0.5 mm; anthers obtuse at apex, shortly tailed at base; style sparsely pilose, stigma bifid, extracted. Achenes cylindric, 10-ribbed, sparsely pilose; carpodium a broad circle, conspicuous. Pappus white, 4–5 mm. Fl. Jan–Apr.

Grows as a weed and also in disturbed lowland habitat. Taiwan [India, Pakistan; Africa, SW Asia, Central America].