

9. GOMPHOSTEMMA Bentham, Edward's Bot. Reg. 15: t. 1292. 1830.

锥花属 zhui hua shu

Shrubs or perennial herbs. Stems with stellate hairs. Leaves petiolate; leaf blade margin serrate, adaxially stellate puberulent/hirsute, abaxially densely stellate lanate. Inflorescences axillary, sometimes basal, rarely terminal, cymes pedunculate or sessile, sometimes in spikes or panicles; bracts subcircular to linear-lanceolate. Calyx campanulate to tubular, 10-veined, 5-toothed, teeth equal or subequal. Corolla purple-red or yellow to white, 2-lipped, straight or curved, long exserted; tube abruptly or gradually dilated at throat, not hairy annulate inside; upper lip straight, slightly galeate, entire or emarginate, sometimes mucronulate; lower lip spreading, 3-lobed, middle lobe longest. Stamens 4, underlying upper lip, anterior 2 longest; filaments complanate, hairy on two sides or glabrous; anthers close together in pairs, cells parallel, transverse. Style included, apically subequally 2-cleft. Nutlets 1–4 maturing per flower, obovoid to ovoid, rarely globose, rugulose, glabrous or hirsute, drupelike, areole oblique.

About 36 species: China, India, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam; 15 species in China. *Gomphostemma* is one of few tropical rain forest genera in the Lamiaceae.

- 1a. Inflorescences clearly pedunculate, inserted near base of stem.
 - 2a. Bracts linear to capillary, 0.3–1.5 mm wide 6. *G. pseudocrinitum*
 - 2b. Bracts lanceolate to ovate, 5–15 mm wide.
 - 3a. Peduncle 2.5–7 cm; bracts purplish red, brownish purple when dry 15. *G. pedunculatum*
 - 3b. Peduncle 0.2–2.2 cm; bracts greenish 14. *G. chinense*
- 1b. Inflorescences often subsessile, inserted at mid and upper stem leaf axils.
 - 4a. Inflorescence an elongated thyrses of decussate, 1- or 2-flowered cymes.
 - 5a. Calyx ca. 9 mm, teeth 3–3.2 mm; corolla 3.5–3.7 cm 1. *G. deltodon*
 - 5b. Calyx 5–7 mm, teeth ca. 1 mm; corolla 1.6–2 cm 2. *G. microdon*
 - 4b. Inflorescence a many-flowered cyme or group of cymes, often forming dense capitula.
 - 6a. Bracts 0.5–3 mm wide.
 - 7a. Cymes 3- or 4-flowered; calyx teeth 8–9 mm 4. *G. leptodon*
 - 7b. Cymes many flowered; calyx teeth 3–7 mm.
 - 8a. Bracts 1- or 3-veined; calyx teeth linear to triangular-lanceolate 3. *G. parviflorum*
 - 8b. Bracts inconspicuously 1- or 3-veined; calyx teeth linear 5. *G. crinitum*
 - 6b. Bracts 3–18 mm wide.
 - 9a. Calyx teeth triangular, obtuse to short needlelike.
 - 10a. Calyx teeth needlelike; nutlets compressed obovate, 3.5–4 mm wide, ± stellate at maturity 8. *G. lucidum*
 - 10b. Calyx teeth obtuse; nutlets oblong triquetrous, 3–3.5 mm wide, glabrous at maturity 9. *G. arbusculum*
 - 9b. Calyx teeth triangular-lanceolate to linear-lanceolate, ± acuminate.
 - 11a. Leaf blade adaxially densely appressed tawny hirsute, abaxially with stipitate, tawny, stellate pubescence; corolla purple-red 11. *G. stellatohirsutum*
 - 11b. Leaves sparsely pubescent or stellate hirsute/villous, abaxially stellate tomentose; corolla white to yellow (not recorded for *G. callicarpoides*).
 - 12a. Leaves (7–)18–30×(4–)7–14.5 cm, adaxially sparsely pubescent or minutely hispid.
 - 13a. Bracts 3–3.5 mm wide; calyx teeth subacuminate 10. *G. latifolium*
 - 13b. Bracts 7–14 mm wide; calyx teeth caudate-acuminate 13. *G. sulcatum*
 - 12b. Leaves 4–16×2–7 cm, adaxially sparsely stellate hirsute.
 - 14a. Leaf blade adaxially sparsely stellate hirsute 12. *G. callicarpoides*
 - 14b. Leaf blade adaxially densely stellate pubescent 7. *G. hainanense*

1. *Gomphostemma deltodon* C. Y. Wu, Acta Phytotax. Sin. 10: 143. 1965.

三角齿锥花 san jiao chi zhui hua

Herbs erect. Stems ca. 1 m tall, densely stipitate stellate tomentose. Petiole 1.8–3 cm; leaf blade elliptic to oblong, 11.5–25×4.7–11 cm, adaxially stellate hirtellous, abaxially densely gray-yellow stipitate stellate tomentose, hairs on veins longer, becoming tawny, base cuneate to subrotund, generally asymmetrical, margin crenate-serrate to shallowly serrate, apex obliquely subacute. Cymes axillary, in erect spike-panicles with 2–5 pairs of 1- or 2-flowered cymes, 3.5–6.5 cm, or solitary and 1- or 4-flowered; peduncle 1–3 cm; bracts ovate to oblong, 1.1–1.8×0.45–1 cm, reduced apically, margin remotely denticulate to subentire; bracteoles linear, 5–8 mm. Pedicel 1–2.5 mm. Calyx narrowly campanulate, ca. 9×4–4.5 mm, conspicuously veined, densely tawny stellate velutinous; teeth triangular, 3–3.2×2.6–3 mm, apically acute.

Corolla purple-red, 3.5–3.7 cm; tube ca. 2 mm wide at base, apical 1/3 abruptly dilated to throat ca. 10.5 mm wide; upper lip circular, ca. 5 mm in diam.; lower lip ca. 12 ×6 mm, middle lobe obcordate, emarginate; ovary glabrous except for tawny tomentose apex. Nutlets unknown. Fl. Aug.

• Tropical forests; 900–1100 m. Yunnan.

2. *Gomphostemma microdon* Dunn, Notes Roy. Bot. Gard. Edinburgh 8: 170. 1913.

小齿锥花 xiao chi zhui hua

Herbs erect. Stems ca. 1 m tall, densely gray stellate tomentulose. Petiole 1–4 cm; leaf blade oblong to elliptic, 8.5–24×3.5–10 cm, adaxially with overlapping stellate hairs, abaxially densely dark gray stellate tomentose, base acute to cuneate and sometimes asymmetrical, crenate-serrate or shallowly serrate, apex somewhat obliquely acute to obtuse. Inflorescences erect, axillary, 6.5–10.5 cm; peduncle 1.6–

3.2(–7) cm; cymes 1- or 2- (or 3)-flowered; bracts oblong to lanceolate, 1.1–2.2 cm×3–8 mm; bracteoles linear, 6–11 mm. Calyx narrowly campanulate, 5–7×ca. 3.5 mm, veins very conspicuous; teeth broadly triangular, ca. 1 mm. Corolla purplish to yellowish, 1.6–2 cm; tube 1–2 mm wide at base, 6–7 mm wide at throat; upper lip circular, ca. 3.5×4.5 mm; lower lip ca. 6×7.5 mm, middle lobe longest. Nutlets 3, blackish brown, compressed oblong, ca. 4×2.5–3 mm, apically somewhat dilated, glabrous, grooved. Fl. and fr. Aug–Dec.

Tropical rain forest valleys and plains; 600–1300 m. Yunnan [Laos].

A folk remedy for pneumonia, bronchitis, nephritis, urinary tract infections, and urolithiasis.

3. *Gomphostemma parviflorum* Wallich ex Benth. *Pl. Asiat. Rar.* 2: 12. 1830.

小花锥花 xiao hua zhui hua

Herbs robust, ascending. Stems ca. 70 cm tall, densely gray tomentose. Leaf blade elliptic to obovate-elliptic, 14–24×5–11 cm, adaxially with short stellate, dusty hairs, abaxially densely gray stellate tomentose, base obliquely cuneate, decurrent, margin widely spaced serrulate, apex obtuse to acute. Cymes axillary, many flowered, densely stellate tomentose, ca. 3×2.5 cm, subsessile; bracts and bracteoles ovate-lanceolate to linear-lanceolate, ca. 1.2×3 mm, 1- or 3-veined. Calyx narrowly campanulate, 8–10 mm, densely stellate tomentose, veins comparatively conspicuous; teeth linear to triangular lanceolate, ca. as long as calyx tube. Corolla yellow, rarely white to purplish, exerted part 1.1–1.3(–1.5) cm, pubescent, somewhat dilated, ca. 2 mm wide at base, ca. 3.5 mm wide at throat; upper lip ovate, ca. 5×5 mm; lower lip ca. 4×6 mm. Nutlets brown, glabrous, smooth or striate. Fl. Jun.

Densely forested valleys, shady areas in dense forests; 600–1500 m. Yunnan [India, Malaysia, Myanmar, Thailand].

- 1a. Bracts and bracteoles linear-lanceolate, 1-veined; calyx teeth linear, as long as to slightly longer than calyx tube; nutlets smooth 3a. var. *parviflorum*
- 1b. Bracts and bracteoles lanceolate to lanceolate-ovate, 3-veined; calyx teeth linear-lanceolate to triangular-lanceolate, slightly shorter than calyx tube; nutlets striate 3b. var. *farinosum*

3a. *Gomphostemma parviflorum* var. *parviflorum*

小花锥花 xiao hua zhui hua

Bracts and bracteoles linear-lanceolate, 1-veined. Calyx teeth linear, as long as to slightly longer than calyx tube. Nutlets smooth.

Shady areas in dense forests; 800 m. Yunnan [India, Malaysia].

3b. *Gomphostemma parviflorum* var. *farinosum* Prain, *Ann. Roy. Bot. Gard. (Calcutta)* 3: 253. 1891.

被粉变种 bei fen bian zhong

Leonurus farinosus Buchanan-Hamilton ex Mukerjee.

Bracts and bracteoles ovate-lanceolate to lanceolate, 3-veined. Calyx teeth linear-lanceolate to triangular-lanceolate, slightly shorter than calyx tube. Nutlets striate.

Densely forested valleys, shady forest margins near streams; 600–1500 m. Yunnan [India, Myanmar, Thailand].

4. *Gomphostemma leptodon* Dunn, *Notes Roy. Bot. Gard. Edinburgh* 8: 170. 1913.

细齿锥花 xi chi zhui hua

Shrubs erect, 1–1.5 m tall. Petiole 5.5–6.7 cm; leaf blade broadly ovate, 10–18×6–13 cm, adaxially stellate hirtellous, abaxially gray stellate tomentose, base obtuse to subrotund, rarely attenuate-cuneate, margin dentate, apex acute, slightly oblique. Cymes solitary, axillary, with short, dense branches; peduncle ca. 2–3 mm; bracts and bracteoles 6–8×1–1.5 mm, 1-veined. Calyx campanulate, ca. 1.4 cm, ± conspicuously veined, teeth narrowly lanceolate, 8–9 mm; fruiting calyx enlarged, with teeth to 1.5 cm, tube eventually splitting. Corolla ca. 2.8 cm, puberulent outside, tube dilated beyond middle; upper lip straight, circular; lower lip as long as upper lip. Nutlets 1 or 2, subglobose, ca. 5 mm, not shiny. Fl. Mar–Apr, fr. Apr–Aug.

Dense forests, valley thickets, limestone mountains. Guangxi [Vietnam].

Used as a folk remedy for scalds and burns in Guangxi.

5. *Gomphostemma crinitum* Wallich ex Benth. *Pl. Asiat. Rar.* 2: 12. 1830.

长毛锥花 chang mao zhui hua

Herbs. Leaf blade oblong, 15–23×7–10 cm, bullate, adaxially sparsely hirtellous with stellate hairs, abaxially densely gray stellate tomentose, base attenuate-decurrent, margin irregularly coarse dentate, apex acute, slightly oblique. Cymes grouped in axils, much branched, subsessile, ca. 5 cm in diam.; bracts linear-lanceolate, ca. 12×3 mm, 1(–3)-veined; bracteoles linear. Calyx narrowly campanulate, 1–1.2 cm, 3–3.5 mm in diam., somewhat enlarged in fruit; teeth linear, 6–7 mm. Corolla yellow, ± straight, 2–2.5 cm; tube ca. 2 mm wide at base, to 3.5 mm at throat; upper lip ca. 5×3.5 mm, lower lip ca. 6×7 mm. Nutlet 1 at maturity, ca. 6×3 mm, glabrous, smooth. Fl. and fr. Oct.

Forests; 900 m. Yunnan [Malaysia, Myanmar, India].

6. *Gomphostemma pseudocrinitum* C. Y. Wu, *Acta Phytotax. Sin.* 10: 144. 1965.

拟长毛锥花 ni chang mao zhui hua

Shrubs erect. Stems simple, ca. 1.2 m tall, apically herbaceous, flexuous, densely tawny stellate tomentose. Petiole 2.2–4.5 cm; leaf blade ovate-oblong to oblong, 13–17×6.5–7 cm, adaxially stellate hirtellous, abaxially densely gray stellate tomentose, base obtuse to rounded, margin irregularly coarse dentate, apex acuminate. Cymes chestnut to purple-brown when dry, inserted at stem base, 2–3 cm; peduncle 3–10 mm; bracts and bracteoles linear to capillary, curved, 1–1.2(–1.5) cm×0.3–1.5 mm. Calyx narrowly campanulate, 1.2–1.5 cm, ca. 3 mm in diam.; teeth 7–8 mm, basally triangular, apically capillary, sparsely stipitate stellate villous and minutely hispid. Corolla yellow, ca. 3.5 cm, puberulent; tube incurved, base ca. 1.3 mm wide, gradually dilated for 3/4 its length, abruptly dilated to 7 mm wide at throat; upper lip subcircular, ca. 8×6 mm; lower lip ca. 10 mm, puberulent; middle lobe obcordate, apex emarginate, ca. 4×5.5 mm; lateral lobes subcircular, ca. 2.5 mm in diam. Nutlets unknown. Fl. Jul–Aug.

- Densely forested valleys; 1100 m. Guangxi.

7. *Gomphostemma hainanense* C. Y. Wu, Acta Phytotax. Sin. 10: 145. 1965.

海南锥花 hai nan zhui hua

Herbs perennial. Stems ca. 50 cm tall, very densely gray appressed stellate lanate. Petiole 1.5–2.5 cm; leaf blade lanceolate, 10–16×2.1–3.4 cm, adaxially densely stellate pubescent, abaxially densely gray appressed stellate tomentose, base attenuate-cuneate to subobtusate, margin undulate, apex acuminate. Cymes axillary, 3- or 4-flowered, subsessile; bracts ovate to oblong, 10–14×4–7 mm, margin entire to slightly dentate; bracteoles linear, ca. 9×less than 1 mm. Calyx narrowly campanulate, ca. 8.5×4 mm, gray stellate lanate; teeth lanceolate, ca. 4.5 mm, apically acuminate. Corolla white, tinged yellow, ca. 3.8 cm, puberulent; tube ca. 1 mm wide, apical 2/3 dilated to ca. 7 mm wide at throat; upper lip straight, circular, ca. 5 mm wide; lower lip ca. 9 mm, middle lobe circular, ca. 3.5 mm wide; lateral lobes ca. 2 mm wide, undulate. Ovary white granular. Nutlets unknown. Fl. Aug.

- Forests; 700 m. Hainan.

8. *Gomphostemma lucidum* Wallich ex Benth, Pl. Asiat. Rar. 2: 12. 1830.

光泽锥花 guang ze zhui hua

Herbs or shrubs, erect, robust. Stems to 1.5 m tall, apically tawny stellate lanate, basally scabrid or sparsely stellate lanate. Petiole 1–3 cm; leaf blade 19–21×3–9 cm, abaxially densely gray or tawny stellate tomentose, base cuneate or obtuse, margin coarsely serrate to inconspicuously serrulate, apex acuminate to obtuse. Cymes axillary, crowded, many flowered, subsessile; bracts and bracteoles linear-lanceolate to linear, 7–10×1–2 mm. Calyx campanulate, 9–10×5–6 mm, densely stellate tomentose, dilated and eventually splitting in fruit; teeth triangular, 2–3 mm, apically short needlelike. Corolla white to yellowish, ca. 3.5 cm, puberulent; tube ca. 2 mm wide at base, ca. 10 mm wide at throat; upper lip straight, circular, ca. 6.5×7.5 mm; lower lip ca. 10 mm, middle lobe circular, ca. 5 mm in diam., lateral lobes ca. 4.5×6.5 mm. Nutlets 4, compressed obovoid, 4.5–5.5×3.5–4 mm, white, tawny when dry, scabrid, covered with sparse, stellate hairs. Fl. Apr–Jul and Oct–Jan.

Densely forested valleys, grassy streamside slopes; 100–1400 m. Guangdong, Guangxi, Yunnan [India, Laos, Myanmar, Thailand, Vietnam].

- 1a. Herbs or small shrubs; leaf blade obovate-elliptic to oblanceolate, adaxially scabrid, hirtellous, sometimes also stellate hirtellous 8a. var. *lucidum*
- 1b. Shrubs; leaf blade obovate-elliptic, adaxially finely stellate, hirsute, somewhat scabrid 8b. var. *intermedium*

8a. *Gomphostemma lucidum* var. *lucidum*

光泽锥花 guang ze zhui hua

Herbs or small shrubs. Petiole 1–3 cm; leaf blade obovate-elliptic to oblanceolate, adaxially hirtellous and scabrid or stellate hirtellous, abaxially densely tawny stellate tomentose.

Densely forested valleys; 100–1100 m. Guangdong, Guangxi, Yunnan [India, Laos, Myanmar, Thailand, Vietnam].

8b. *Gomphostemma lucidum* var. *intermedium* (Craib) C. Y. Wu, Acta Phytotax. Sin. 10: 145. 1965.

中间变种 zhong jian bian zhong

Gomphostemma intermedium Craib, Bull. Misc. Inform. 23. 1910.

Shrubs erect. Petiole 2–2.5 cm; leaf blade obovate-elliptic, adaxially hirsute and somewhat scabrid with fine stellate hairs, abaxially densely gray or tawny stellate tomentose.

Forested valleys, grassy streamside slopes; 500–1400 m. Yunnan [Laos, Vietnam].

9. *Gomphostemma arbusculum* C. Y. Wu, Acta Phytotax. Sin. 10: 146. 1965.

木锥花 mu zhui hua

Shrubs or robust herbs. Stems 1–5 m tall, flexuous, densely tawny stellate lanate. Petiole 1–4.5 cm; leaf blade oblong to broadly ovate, 11.5–26.5×4–11.5 cm, adaxially with minutely hispid and stipitate furcate-stellate hairs, abaxially densely gray stellate pubescent, base cuneate to cuneate-attenuate, margin coarsely serrate to crenate-dentate, apex acute to acuminate. Cymes many flowered, crowded, subsessile; bracts oblong, 9–14×3–4 mm; bracteoles linear, 6–9×to 1.5 mm. Calyx campanulate, 9–11×5–6 mm, densely tawny stellate lanate, conspicuously veined, slightly enlarged and eventually splitting in fruit; teeth broadly triangular, 1–1.5×ca. 3.5 mm. Corolla white or purplish, 2.4–3 cm, densely stellate lanate; tube ca. 1.5 mm in diam., apical half abruptly dilated to 9 mm wide at throat; upper lip straight, circular, ca. 5×7–8 mm; lower lip ca. 8×11 mm, middle lobe larger and obcordate, lateral lobes ovate. Ovary densely tawny hispidulous. Nutlets 4, abaxially oblong, triquetrous rounded, 4–5×3–3.5 mm, chestnut brown, with deciduous hairs. Fl. May, fr. Aug–Dec.

- Valley thickets, evergreen streamside forests; 700–1100 m. Yunnan.

10. *Gomphostemma latifolium* C. Y. Wu, Acta Phytotax. Sin. 10: 147. 1965.

宽叶锥花 kuan ye zhui hua

Shrubs erect. Stems (0.6–)1–2 m tall, densely tawny stellate lanate. Petiole 1.5–5 cm; leaf blade ovate to ovate-elliptic, (7–)20–28×(4–)9.5–14.5 cm, adaxially sparsely pubescent, abaxially densely gray-yellow stellate tomentose, veins conspicuously impressed adaxially, base cuneate to subrotund, margin shallowly crenate, apex apiculate. Cymes subsessile, dense, many flowered; bracts oblong, ca. 5–7×3–3.5 mm; bracteoles linear, 6–9 mm. Calyx campanulate, ca. 10×6 mm, densely tawny stellate lanate, slightly dilated and eventually splitting in fruit; teeth triangular-lanceolate, ca. 3.5×2.5 mm. Corolla white or yellowish, to 4.8 cm, stellate puberulent; tube ca. 1.5 mm wide, apical half dilated to 10 mm wide at throat; upper lip straight, rounded, ca. 5×10 mm; lower lip ca. 1.3×1.4 cm, middle lobe obcordate, ca. 8×9 mm; lateral lobes circular, ca. 10 mm wide. Ovary densely tawny hirsute. Nutlets oblong, triquetrous, dorsiventrally flattened, 6–6.5×3–3.5 mm, adaxially ribbed, abaxially rounded, covered with early deciduous tawny stellate hairs. Fl. Jul–Aug, fr. Sep–Apr.

- Wet forests, thickets, waste places; 800–1500 m. Guangdong, Yunnan.

11. *Gomphostemma stellatohirsutum* C. Y. Wu, Acta Phytotax. Sin. 10: 148. 1965.

硬毛锥花 ying mao zhui hua

Herbs robust. Stems to 1 m tall, base trailing, densely tawny stellate lanate or sparsely stellate villous, hairs early deciduous. Petiole 1.4–3.2 cm; leaf blade oblong-elliptic to narrowly oblong, 13–22×4–7 cm, adaxially densely tawny hirsute, abaxially tawny stipitate stellate especially on veins, base cuneate-attenuate to cuneate, margin shallowly serrate to irregularly denticulate, apex obtuse to acuminate. Cymes axillary, sessile, many flowered, dense; bracts leaflike, oblong to ovate-elliptic, 1.4–3.5×0.7–1.8 cm; bracteoles linear, 6–13×1–1.5 mm. Calyx campanulate, 14×ca. 5 mm, conspicuously veined; teeth triangular-lanceolate, ca. 5 mm, apex linear-acuminate. Corolla purple-red, ca. 3.3 cm, densely stellate puberulent and glandular pilose; tube ca. 2 mm wide, apical half gradually dilated to ca. 8 mm at throat; upper lip erect, oblong, ca. 9×5.5 mm; lower lip ca. 11×8 mm, middle lobe circular, ca. 6.5×6.5 mm, margin irregularly undulate; lateral lobes ovate, ca. 6.5×4.5 mm. Nutlets oblong, triquetrous, ca. 4.5×3 mm, somewhat tawny, sparsely stellate villous on apical half. Fl. Jun-Aug, fr. Aug-Feb.

• Grassy slopes, sparse forests, fully exposed stony crevices; 1300–2100 m. Yunnan.

12. *Gomphostemma callicarpoides* (Yamamoto) Masamune, Trans. Nat. Hist. Soc. Taiwan 32: 4. 1942.

紫珠状锥花 zi zhu zhuang zhui hua

Taitonia callicarpoides Yamamoto, J. Soc. Trop. Agric. 10: 278. 1938; ? *Gomphostemma formosana* Masamune.

Shrubs. Stems 60–75 cm tall, suberect or ascending, stellate hirsute. Petiole 1–3 cm; leaf blade elliptic, 4.5–11×2–5 cm, adaxially sparsely stellate hirsute, abaxially gray stellate tomentose, base obtuse or cuneate, margin very shallowly serrate with teeth less than 1 mm, apex acute. Cymes short pedunculate, axillary, crowded into a capitulum, stellate hirsute; outer bracts oblong to linear-lanceolate, 1.5–2×3–6 mm, margin 2- or 3-aristate-serrate, apex acute; inner bracts linear, 10×1.5 mm, margin entire. Calyx obconic-campanulate, leathery, stellate hirsute, 5 main veins conspicuously elevated, tube 4–5×3 mm; teeth linear-lanceolate, ca. 6–7×1.5 mm, with glandular sinuses. Corolla ca. 3×as long as calyx tube, abaxially pubescent, base ca. 2.5 mm in diam., gradually dilated to 6 mm in diam. at throat; upper lip galeate, undulate, 2-lobed; lower lip spreading, middle lobe rounded, lateral lobes triangular, undulate. Fl. Jul.

• Forests; 1200 m. Taiwan.

Huang & Cheng (Fl. Taiwan 4: 465. 1978) stated that *Gomphostemma formosana* differs from *G. callicarpoides* only by leaf margin with coarsely serrate teeth 2–5 mm and that they may prove to be inseparable from each other. The illustration labeled *G. formosana* in that work is *Leucosceptrum stellipilum* (Miquel) Kitamura & Murata var. *formosana* (Ohwi) Kitamura & Murata.

13. *Gomphostemma sulcatum* C. Y. Wu, Acta Phytotax. Sin. 10: 149. 1965.

槽茎锥花 cao jing zhui hua

Herbs perennial. Stems ca. 1 m tall, deeply grooved, densely appressed, tawny stellate tomentose. Petiole 3–6 cm, narrowly winged; leaf blade broadly ovate-elliptic, 18–30×7–

15 cm, adaxially corrugate and sparsely minutely hispid, abaxially densely gray stellate tomentose, base cuneate-attenuate, decurrent, margin irregularly shallowly dentate, apex acuminate. Cymes axillary, dense, many flowered, ca. 5 cm; peduncle 2–5 mm; bracts ovate, 2–2.8×7–1.4 cm, apically acuminate; bracteoles linear, 1–2.3 cm. Calyx narrowly campanulate, ca. 13×4.5 mm, densely gray stellate tomentose; teeth triangular, ca. 1/2 as long as calyx, apically linear, ciliate inside. Corolla yellow, ca. 4.6 cm, puberulent; tube ca. 2 mm in diam., abruptly dilated from apical 1/3 to 1.1–1.3 cm wide at throat; upper lip straight, 6–9×ca. 8 mm, lower lip ca. 1.3×1.3 cm. Fl. Aug.

• Valleys; 1100 m. Yunnan.

14. *Gomphostemma chinense* Oliver, Hooker's Icon. Pl. 15: 54. 1884.

中华锥花 zhong hua zhui hua

Herbs rhizomatous. Stems 24–80 cm tall, densely stellate tomentose. Petiole 2–6 cm, concave-convex, densely stellate tomentose; leaf blade elliptic to ovate-elliptic, 4–13×2–7 cm, herbaceous, adaxially stellate villous and sparsely appressed hispidulous, abaxially dense gray stellate tomentose, base obtuse to rounded, margin irregularly coarse serrate to subentire, apex obtuse. Cyme inserted at stem base or leaf axils, 4- to many flowered, 2.5–10 cm; peduncle to ca. 2.2 cm; bracts elliptic to lanceolate, 11–16×5–7 mm, margin coarsely serrate or entire on apical half; bracteoles linear, shorter than bracts. Calyx narrowly campanulate in flower, 12–13×5–6 mm, densely gray stellate tomentose outside, sparsely hirtellous or subglabrous inside except on teeth; teeth lanceolate to narrowly lanceolate, 6–7 mm, apically acuminate. Corolla yellowish to white, ca. 5.2 cm, sparsely puberulent outside, glabrous inside; tube ca. 3 mm wide, abruptly dilated from apical 1/3 to 9 mm wide at throat; upper lip erect, ca. 6×8 mm, apex rounded and emarginate; lower lip 1–1.4×1.3–1.9 cm, middle lobe obovate-subcircular, 7–8×6–7 mm; lateral lobes ovate, ca. 5×5 mm. Stamens almost as long as upper lip of corolla; filaments complanate, margin puberulent. Style shorter than stamens, slightly thicker on apical 2/3, apically unequally 2-cleft. Nutlets 4 per flower at maturity, obovoid, triquetrous, ca. 4×2.8 mm, brown, bullate, hairy. Fl. Jul-Aug, fr. Oct-Dec.

Moist, densely forested valleys; 500–700 m. Fujian, Guangdong, Guangxi, Hainan, Jiangxi [Vietnam].

- 1a. Leaf blade adaxially densely stellate villous and sparsely appressed hispidulous; inflorescences inserted at stem base 14a. var. *chinense*
- 1b. Leaf blade adaxially sparsely hispidulous with a few stellate hairs; inflorescences inserted mostly at leaf axils along stem 14b. var. *cauliflorum*

14a. *Gomphostemma chinense* var. *chinense*

中华锥花 zhong hua zhui hua

Leaf blade adaxially densely stellate villous and sparsely appressed hispidulous. Inflorescences at stem base.

Moist, densely forested valleys; 500–700 m. Fujian, Guangdong, Guangxi, Jiangxi [Vietnam].

14b. *Gomphostemma chinense* var. *cauliflorum* C. Y. Wu, Acta Phytotax. Sin. 10: 149. 1965.

茎花变种 jing hua bian zhong

Leaf blade adaxially sparsely minutely hispid and barely stellate hairy. Inflorescences mostly in leaf axils along stem.

- Forests; 700 m. Hainan.

15. *Gomphostemma pedunculatum* Bentham ex J. D. Hooker, Fl. Brit. India 4: 696. 1885.

抽葶锥花 *chou ting zhui hua*

Herbs perennial. Stems 0.3–2.7 m tall, trailing, apically flaccid, densely stellate tomentose and long stipitate stellate lanate. Petiole 2.5–7 cm; leaf blade ovate to elliptic, 12–27.5×7–19 cm, adaxially stellate tomentose and strigose, abaxially tawny or gray, densely stellate tomentose, base broadly cuneate to subtruncate, margin serrate-crenulate, apex acute to obtuse. Inflorescences thyrses at stem base, 6–10 cm including peduncle 2.5–7 cm; cymes 2- or 3-flowered; bracts purple-red, ovate to subcircular, 1.4–2×1.3–1.5 cm, margin remotely serrulate; bracteoles subcircular to spatulate, unequal, shorter than bracts. Calyx campanulate, 11–13×6–8 mm; teeth ovate-oblong, 4–4.5 mm, apically acute, ± gray stellate tomentose. Corolla yellow, ca. 3.6 cm, puberulent, ca. 2 mm wide at base, apical half of tube abruptly dilated to 9 mm wide at throat; upper lip erect, oblong, ca. 11×8 mm, apex rounded and mucronate; lower lip ca. 1.3×1.2 cm, middle lobe circular, ca. 6×6 mm; lateral lobes ovate, ca. 3.5×3.5 mm. Nutlets orange when fresh, purple-brown when dry, 2–4, oblong, triquetrous, 4.5–5×ca. 3 mm, adaxially ribbed, abaxially rounded, Fl. and fr. Sep-Feb.

Thickets, densely forested valleys, hilly slopes; 700–2700 m. Yunnan [India].

