

35. CYSTACANTHUS T. Anderson, J. Linn. Soc., Bot. 9: 457. 1867.

鳔冠花属 biao guan hua shu

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Shrubs or perennial herbs, with cystoliths. Leaf blade margin entire or obscurely crenate. Inflorescences thyrses or rarely axillary cymes or racemes; bracteoles 2, small. Calyx deeply 5-lobed; lobes usually covered with gland-tipped trichomes. Corolla orange or pink, funnel-shaped, usually bent ca. 90° and abruptly inflated near middle; limb 2-lipped; lower lip 3-lobed, lobes orbicular or ovate and equal; upper lip 2-lobed; lobes ascending cochlear in bud. Stamens 2, included; anthers 2-theous; thecae parallel, equal, hirsute, muticous at base; staminodes 2. Ovary ovoid, long hirsute; style filiform; stigma 2-cleft. Capsule cylindrical, 8–12-seeded; retinacula present. Seeds ovate in outline, compressed, tomentose.

About 15 species: mainland Asia; eight species (three endemic) in China.

Five of the Chinese species treated here in *Cystacanthus* have also been treated in *Phlogacanthus*. In addition to the macromorphological characteristics (geniculate corolla with an inflated throat in *Cystacanthus*) distinguishing *Cystacanthus* and *Phlogacanthus*, R. W. Scotland (Rev. Palaeobot. Palynol. 72: 229–243. 1992) discussed palynological differences between them in ornamentation of the aperture margins (i.e., aperture margins with spines ± restricted to a single row in *Phlogacanthus* and with the spines throughout the aperture margin in *Cystacanthus*). A thorough reevaluation of taxa treated in these two genera will be necessary to determine whether both genera are worthy of recognition and if so, to which genus each species pertains.

- 1a. Corolla outside pubescent with gland-tipped trichomes.
  - 2a. Thyrses to 2.5 cm, 3- or 4-flowered ..... 1. *C. affinis*
  - 2b. Thyrses longer than 5 cm, many flowered.
    - 3a. Corolla purple; leaf blade oblong to oblong-lanceolate ..... 2. *C. paniculatus*
    - 3b. Corolla blue, red, white, or purplish blue; leaf blade ovate to ovate-lanceolate.
      - 4a. Young stems pubescent but not densely whitish or yellowish brown villous ..... 3. *C. yangtsekiangensis*
      - 4b. Young stems densely whitish to yellowish brown villous ..... 4. *C. yunnanensis*
- 1b. Corolla outside glabrous or non-glandular pubescent.
  - 5a. Bracts leaflike, much longer than calyx; corolla glabrous outside ..... 5. *C. pyramidalis*
  - 5b. Bracts small and not leaflike, subequal to calyx; corolla pubescent outside.
    - 6a. Leaf blade secondary veins ca. 6 on each side of midvein ..... 6. *C. abbreviatus*
    - 6b. Leaf blade secondary veins 9–17 on each side of midvein.
      - 7a. Leaf blade secondary veins 9–11 on each side of midvein; inflorescences spikelike thyrses; rachis with 1 flower per node; calyx ca. 6 mm; corolla densely pubescent outside ..... 7. *C. vitellinus*
      - 7b. Leaf blade secondary veins 12–17 on each side of midvein; inflorescences paniculate thyrses; rachis with several flowers per node; calyx ca. 3 mm; corolla sparsely pubescent outside ..... 8. *C. colaniae*

1. *Cystacanthus affinis* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 103. 1916.

丽江鳔冠花 li jiang biao guan hua

Shrubs to 2 m tall. Stems terete. Petiole 5–10 mm; leaf blade oblong to ovate, 2.5–6 × 1.5–3 cm, both surfaces pubescent, secondary veins 5 or 6 on each side of midvein, base cuneate, margin entire, apex acuminate. Thyrses terminal, to 2.5 cm, 3- or 4-flowered; bracts oblong-lanceolate, shorter than calyx, gland-tipped pubescent, caducous; bracteoles similar to bracts. Pedicel ca. 3 mm, gland-tipped pubescent. Calyx 1.5–2 cm, outside pubescent with gland-tipped trichomes; lobes linear, ca. 1 mm wide, apex acute. Corolla yellow outside and light yellow inside with purplish striae, 3.5–4 cm; lobes ovate, to 1.5 cm. Stamens slightly exserted; filaments barbate; anther thecae to 1 mm, connective barbate; staminodes ca. 2 mm. Ovary ca. 5 mm; style ca. 2 cm, glabrous; stigma slightly 2-cleft. Capsule light yellow, ca. 2 cm, glabrous, 6-seeded. Seeds ovate in outline, ca. 3 × 3 mm.

• Thickets, streamsides, trailsides; 1700–2200 m. Sichuan, Xizang, Yunnan.

2. *Cystacanthus paniculatus* T. Anderson, J. Linn. Soc., Bot. 9: 458. 1867.

鳔冠花 biao guan hua

*Phlogacanthus paniculatus* (T. Anderson) J. B. Imlay.

Shrubs to 2 m tall. Stems 4-angled, glabrous; young branches winged. Petiole 1–1.5 cm; leaf blade oblong to oblong-lanceolate, 10–12 × 2.5–4 cm, abaxially pubescent along veins, adaxially glabrous, base attenuate and decurrent onto petiole, margin undulate to crenulate, apex acuminate. Thyrses terminal, to 18 cm, many flowered; rachis densely villous with gland-tipped trichomes; bracts oblong-lanceolate, shorter than calyx, gland-tipped pubescent, caducous; bracteoles similar to bracts. Pedicel 2–4 mm, gland-tipped pubescent. Calyx 1.2–1.4 cm, gland-tipped pubescent; lobes lanceolate. Corolla light purple, 2–2.4 cm, ventricose, outside gland-tipped pubescent, inside glabrous; lower lip with lobes orbicular, subequal, patent.

Stamens included; filaments barbate; anther thecae ca. 1 mm, connective barbate; staminodes very small. Ovary pubescent, with 4 ovules per locule; style 1.6–2 cm, glabrous; stigma slightly 2-cleft. Capsule grayish brown, clavate, ca. 2.3 cm, pubescent, 8-seeded. Seeds ovate in outline, ca. 3.5 × 3.5 mm.

Forests; 300–2100 m. Yunnan [Myanmar].

**3. *Cystacanthus yangtsekiangensis*** (H. Léveillé) Rehder, J. Arnold Arbor. 16: 315. 1935.

金江鳧冠花 jin jiang biao guan hua

*Strobilanthes yangtsekiangensis* H. Léveillé, Cat. Pl. Yunnan, 6. 1915.

Shrubs to 1 m tall. Stems subterete, striate, pubescent. Petiole 3–7 mm, pubescent; leaf blade ovate, ca. 3.5 × 1.5 cm, both surfaces pubescent and glaucous, secondary veins 10–12 on each side of midvein, base cuneate, margin entire, apex acute. Thyrses terminal or axillary, racemose, secund, to 7 cm; bracts linear-lanceolate, 5–8 mm, densely gland-tipped villous; bracteoles similar to bracts. Pedicel 2–4 mm, gland-tipped pubescent. Calyx 7–10 mm; lobes linear, densely yellowish pubescent. Corolla blue or red, campanulate, ca. 2.5 × 1.2–1.3 cm, ventricose and curved; tube basally ca. 5 mm wide and short; lobes broadly triangular, apex obtuse. Stamens included; filaments barbate; anther thecae ovoid, connective barbate with yellowish brown trichomes; staminodes ca. 2 mm. Ovary pubescent; style ca. 2 cm, glabrous; stigma slightly 2-cleft. Capsule and seeds not seen.

• 400–500 m. Yunnan.

**4. *Cystacanthus yunnanensis*** W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 104. 1916.

滇鳧冠花 dian biao guan hua

Shrubs 1–1.5 m tall, erect. Stems subterete or slightly 4-angled, densely whitish or yellowish brown villous. Petiole 0.5–1.5 cm; leaf blade ovate to ovate-lanceolate, 5–10 × 3–4 cm, abaxially white villous, adaxially densely yellowish villous, secondary veins ca. 6 on each side of midvein, base attenuate, margin entire, apex acuminate to acute. Thyrses paniculate, to 15 cm; bracts linear-lanceolate, 5–10 mm, densely gland-tipped villous; bracteoles similar to bracts. Pedicel 1–2 mm, gland-tipped villous. Calyx ca. 1.5 cm, outside densely gland-tipped villous, inside slightly villous; lobes linear, ca. 13 × 2 mm, subequal, apex acute. Corolla white or purplish blue and with a whitish base, 3–3.5 cm, ventricose, incurved, outside gland-tipped pubescent; tube basally ca. 1.5 mm wide and very short then wide at middle; lobes orbicular, ca. 10 × 7 mm, unequal with anterior one longer. Stamens 2; filaments ca. 1.5 cm, basally pilose; anther thecae oblong, ca. 6 mm, connective barbate; staminodes filiform, ca. 2 mm. Ovary ca. 4 mm, villous, with 6 ovules per locule; style ca. 2 mm, sparsely villous; stigma minutely 2-dentate. Capsule ca. 3.5 cm, ca. 5 mm wide, gland-tipped villous. Seeds disciform, 2–3 × 2–3 mm, puberulent.

• Forests; 800–1600 m. Yunnan.

**5. *Cystacanthus pyramidalis*** Benoist, Bull. Soc. Bot. France

74: 907. 1928.

金塔火焰花 jin ta huo yan hua

*Phlogacanthus pyramidalis* (Benoist) Benoist.

Herbs to 1 m tall, perennial. Stems 4-angled, glabrous. Petiole ca. 2.5 cm; leaf blade elliptic to elliptic-ovate, 9–23 × 5.5–10 cm, abaxially glabrous or pubescent along veins, adaxially glabrous, secondary veins 8–10 on each side of midvein, base cuneate and decurrent onto petiole, margin entire, apex acute to shortly acuminate. Thyrses terminal, to 26 cm; cymes 3-flowered; peduncle 1–3 mm, pubescent; bracts leaflike, ovate to lanceolate, 0.6–3 × 0.3–1.2 cm, diminished in size apically on inflorescence, pubescent; bracteoles subulate, ca. 1 mm. Pedicel 3–5 mm. Calyx ca. 3.5 mm, glabrous or sparsely pubescent; lobes equal, linear, apex acuminate to acute. Corolla light purplish red, ca. 1 cm, bent to 90° and abruptly inflated at middle, glabrous; lobes ovate, ca. 2 × 1.5 mm. Stamens 2; filaments ca. 0.8 cm, glabrous; anther thecae ovoid, ca. 1.5 mm, connective hirsute; staminodes ca. 2 mm. Ovary glabrous; style ca. 1 cm, glabrous; stigma slightly 2-cleft. Capsule clavate, ca. 2.2 cm, 4-angled, 8-seeded. Seeds ca. 2 × 2 mm, compressed.

Forests. Hainan [Vietnam].

**6. *Cystacanthus abbreviatus*** Craib, Bull. Misc. Inform. Kew 1911: 438. 1911.

缩序火焰花 suo xu huo yan hua

*Phlogacanthus abbreviatus* (Craib) Benoist.

Shrubs to 1 m tall. Stems green, terete or 4-angled, slightly pubescent. Petiole 1.5–3.5 cm; leaf blade oblanceolate to obovate-lanceolate, ca. 15 × 5 cm, abaxially slightly pubescent along veins, adaxially glabrous, secondary veins ca. 6 on each side of midvein, base narrowly attenuate, margin entire, apex shortly acuminate. Thyrses terminal, 8–12 cm; bracts minute, caducous; bracteoles subulate. Pedicel ca. 3 mm. Calyx ca. 8 mm; lobes linear-lanceolate, outside appressed strigose, margin sparsely gland-tipped ciliate, apex obtuse. Corolla purple, ca. 1.5 cm, bent to 90° and abruptly inflated at middle. Stamens included; filaments ca. 1.2 cm, hirsute at base; anther thecae oblong, connective gland-tipped hirsute; staminodes 2. Ovary ca. 2 mm, glabrous; style ca. 1 cm, glabrous; stigma slightly 2-cleft. Capsule and seeds not seen.

Yunnan [Vietnam].

**7. *Cystacanthus vitellinus*** (Roxburgh) Y. F. Deng, **comb. nov.**

糙叶火焰花 cao ye huo yan hua

Basionym: *Justicia vitellina* Roxburgh, Fl. Ind. 1: 117. 1820; *Endopogon vitellinus* (Roxburgh) Nees; *J. asperula* (Nees) G. Loddiges; *Phlogacanthus asperulus* Nees; *P. vitellinus* (Roxburgh) T. Anderson; *Sphinctacanthus siamensis* C. B. Clarke.

Shrubs to 1.5 m tall. Stems terete, glabrous. Petiole 1–5 cm; leaf blade broadly ovate to oblong-lanceolate, 10–30 × 6–11 cm, abaxially slightly pubescent or glabrescent, adaxially

Fl. China 19: 475–477. 2011.

glabrous or slightly pubescent, secondary veins 9–11 on each side of midvein, base attenuate and decurrent onto petiole, margin slightly undulate, apex acute to acuminate. Thyrses 10–20 cm; bracts minute; bracteoles linear, ca.  $1.5 \times 0.5$  mm, pubescent. Pedicel 1–3 mm. Calyx ca. 6 mm, pubescent; lobes linear-lanceolate. Corolla purplish red or white, 1.2–1.8 cm, bent to  $90^\circ$  and abruptly inflated at middle, outside pubescent. Stamens ca. 1 cm; filaments hirsute at base; anther thecae oblong, ca. 2 mm, connective glabrous; staminodes very small. Ovary glabrous; style 1–1.5 cm, glabrous; stigma slightly 2-cleft. Capsule clavate, ca. 2 cm, 8-seeded. Seeds ovate in outline, ca.  $2.5 \times 2$  mm.

Forests; 200–1100 m. Yunnan [Bhutan, India, Myanmar].

**8. *Cystacanthus colaniae* (Benoist) Y. F. Deng, *comb. nov.***

广西火焰花 *guang xi huo yan hua*

Basionym: *Phlogacanthus colaniae* Benoist, Notul. Syst. (Paris) 5: 109. 1936.

Shrubs to 1 m tall. Stems terete, pubescent, soon glabrescent. Petiole 1–5 cm, puberulent; leaf blade ovate to ovate-lanceolate, (5–)12–30  $\times$  (2–)5–12 cm, abaxially slightly pubescent, adaxially glabrous or puberulent along veins, secondary veins 8–17 on each side of midvein, base shortly attenuate, margin entire or slightly crenate, apex shortly acuminate. Thyrses 10–20 cm; cymes few flowered; bracts triangular, 1.5–2  $\times$  0.7–1 mm, pubescent; bracteoles linear, ca.  $1 \times 0.5$  mm, pubescent. Pedicel 1–2 mm, pubescent. Calyx ca. 3 mm, pubescent; lobes linear. Corolla ca. 1.2 cm, ventricose, bent to  $90^\circ$  and abruptly inflated at middle, outside slightly grayish white pubescent, inside pubescent on lobes; lobes oblong-ovate, ca.  $5 \times 3$  mm, unequal, apex acute. Stamens 2; filaments hirsute at base, ca. 6 mm; anther thecae oblong, ca. 2 mm, connective black and glabrous; staminodes filiform, very short, hirsute. Ovary oblong, ca. 2 mm, glabrous; style ca. 8 mm, glabrous; stigma slightly 2-cleft. Capsule 1.8–2 cm, glabrous. Seeds ovate in outline, ca.  $2.5 \times 2$  mm.

Limestone hills; 200–500 m. Guangxi, Hainan, Yunnan [Vietnam].

Fl. China 19: 475–477. 2011.