

## STEMONACEAE

百部科 *bai bu ke*

Ji Zhanhe (吉占和 Tsi Zhan-huo)<sup>1</sup>; B. E. E. Duyfjes<sup>2</sup>

Subshrubs, vines, or herbs perennial, with tuberous roots or creeping rhizomes. Stems erect or climbing. Leaves whorled, opposite, or alternate, petiolate or sessile; main veins 3 or more, transverse veinlets numerous. Inflorescences racemes or cymes, 1- to few flowered; peduncle axillary or attached to petiole or leaf midvein. Flowers bisexual, actinomorphic. Perianth segments 4, in 2 whorls, petaloid, free. Stamens 4, subhypogynous; filaments free or basally connate in a ring, very short; anthers dorsifixed or basifixed, erect, linear, introrse; connective usually appendaged, appendage extending beyond apex of anther locule, perianthlike, linear-lanceolate, long. Ovary superior or subinferior, 1-loculed; ovules 2 or more, basally or apically attached to placenta. Stigma sessile, small. Capsule slightly compressed, 2-valved. Seed appendages on or near funicle, arillate; testa leathery; embryo hard, albuminous.

Four genera and ca. 32 species: Asia, tropical Australia, one species in E North America; two genera and eight species (five endemic) in China.

Ji Zhanhe. 1997. Stemonaceae. *In*: Wu Kuo-fang, ed., *Fl. Reipubl. Popularis Sin.* 13(3): 254–260.

- 1a. Plants with tuberous, fleshy roots; anther connective appendage present; ovules basally attached to placenta ..... 1. *Stemona*
- 1b. Plants with creeping rhizomes; anther connective appendage absent; ovules apically attached to placenta ..... 2. *Croomia*

### 1. STEMONA Loureiro, *Fl. Cochinch.* 2: 401, 404. 1790.

百部属 *bai bu shu*

Subshrubs or vines, perennial. Roots tufted, tuberous, fusiform, fleshy. Stems erect or climbing. Leaves whorled, opposite, or alternate, shining. Inflorescences axillary, sometimes borne on petiole or leaf midvein. Perianth segments subequal, lanceolate, many veined. Stamens erect, inserted at base of perianth segments; filaments free or basally ± connate; anthers basifixed, apex often adaxially appendaged; connective extended into a perianthlike, linear-lanceolate, long appendage. Ovary superior; ovules basally attached to placenta. Capsule ovoid to oblong. Seeds erect, oblong, longitudinally ribbed; funicle bearded.

About 27 species: Asia, Australia; seven species (five endemic) in China.

- 1a. Plants shortly hairy ..... 7. *S. kerrii*
- 1b. Plants glabrous or tubers with patches of hair.
  - 2a. Subshrubs; stems simple ..... 1. *S. sessilifolia*
  - 2b. Vines; stems sometimes branched.
    - 3a. Leaves alternate ..... 5. *S. parviflora*
    - 3b. Leaves opposite or whorled, rarely alternate.
      - 4a. Leaf blade obovate ..... 3. *S. shandongensis*
      - 4b. Leaf blade ovate to linear.
        - 5a. Leaves sessile or subsessile, leaf blade narrowly lanceolate to linear, 0.2–1.2(–3) cm wide ..... 6. *S. mairei*
        - 5b. Leaves long petiolate, leaf blade ovate to ovate-lanceolate, 1.5–4 cm wide.
          - 6a. Peduncle or pedicel borne on leaf midvein ..... 2. *S. japonica*
          - 6b. Peduncle or pedicel axillary or borne on base of petiole ..... 4. *S. tuberosa*

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**1. *Stemona sessilifolia*** (Miquel) Miquel, Prolus. Fl. Jap. 386. 1867.

直立百部 zhi li bai bu

*Roxburghia sessilifolia* Miquel, Ann. Mus. Bot. Lugduno-Batavi 2: 211. 1866; *Stemona erecta* C. H. Wright.

Subshrubs. Roots ca. 1 cm thick. Stems erect, simple, 30–70 cm, ribbed. Leaves 2–5-whorled, shortly petiolate or subsessile; leaf blade obovate- or ovate-elliptic or ovate-lanceolate, 3.5–6 × 1.5–4 cm, base cuneate, apex shortly acute. Inflorescences borne in scale axils at base of stem, 1-flowered; pedicel 1–1.5 cm, articulate near or above middle; bracts scalelike, ca. 8 mm. Perianth segments pale green, ovate-lanceolate, 10–15 × 2–4 mm. Stamens purple, shorter than perianth or only slightly so; filaments 2–4 mm, stout; anthers ca. 3.5 mm; appendages adherent, adaxial one flat, broad, 5–7 mm. Capsule (from Japan) ovoid, 7–9 × 4–6 mm, 1- or 2-seeded. Fl. Mar–May, fr. Jun–Jul.

• Mountain slopes. Anhui, Fujian, Henan, Hubei, Jiangsu, Jiangxi, Shandong, Zhejiang [?Japan].

This species is naturalized in Japan; Wu Zhengyi (editor's note) believes that it may be native there.

The roots are used medicinally.

**2. *Stemona japonica*** (Blume) Miquel, Prolus. Fl. Jap. 386. 1867.

百部 bai bu

*Roxburghia japonica* Blume, Enum. Pl. Javae 1: 9. 1827; *Helwingia argyi* H. Léveillé & Vaniot; *Stemona argyi* (H. Léveillé & Vaniot) H. Léveillé; *S. ovata* Nakai.

Vines. Roots 1–1.5 cm thick. Stems erect, base woody. Leaves whorled; petiole 1–4 cm, slender; leaf blade ovate, ovate-lanceolate, or ovate-oblong, 4–9(–11) × 1.5–4.5 cm, veins 5–9, base subtruncate to rounded, rarely rounded-cordate or cuneate, margin slightly undulate, apex acuminate. Inflorescences cymes, 1- to several flowered; peduncle or pedicel borne on leaf midvein, 0.5–4 cm, slender; bracts narrowly lanceolate, ca. 3 mm. Perianth segments green, lanceolate, 10–15 × 2–3 mm, margin revolute. Stamens purple, slightly shorter than perianth; filaments ca. 1 mm, stout; anthers 2–2.5 mm; appendages adherent, with a silky hair on either side, adaxial one ca. 2 mm. Capsule oblong, 10–14 × 4–8 mm, often 2- or 3-seeded, apex obtuse. Fl. May–Jul.

• Hillsides, densely grassy roadsides; 300–400 m. Anhui, Fujian, Hubei, Jiangsu, Jiangxi, Zhejiang [?Japan].

This species is naturalized in Japan; Wu Zhengyi (editor's note) believes that it may be native there.

The roots are used medicinally.

**3. *Stemona shandongensis*** D. K. Zang in D. K. Zang & W. D. Peng, Bull. Bot. Res., Harbin 16: 413. 1996.

山东百部 shan dong bai bu

Vines glabrous. Roots 10–20-fascicled. Stems simple or branched, to 1 m. Leaves (2 or)3- or 4-whorled; petiole 5–7 cm; leaf blade obovate or rarely oblong, 4–5 × 3–4 cm, veins 5–7, base narrowly cuneate, apex acute. Inflorescences axillary, sometimes basal ones in scale axils, 1-flowered; pedicel 1.5–2(–3) cm, basal 1/3(–1/2) adnate to leaf base. Perianth segments 4, erect, narrowly ovate to lanceolate, 1.2–1.5 × 0.4–0.6 cm, outer 2 segments narrower than inner ones. Stamens purple, shorter than perianth; filaments ca. 2 mm, basally connate; anthers 3–4 mm; appendage pale yellow, ca. 6 mm. Capsule ovoid. Seeds 4. Fl. Apr–Jul.

• Mountain slopes; 400–500 m. Shandong.

**4. *Stemona tuberosa*** Loureiro, Fl. Cochinch. 2: 404. 1790.

大百部 da bai bu

*Stemona acuta* C. H. Wright.

Vines. Roots 9–13(–30) × 1–2 cm. Stems often branched, base woody. Leaves opposite or whorled, rarely alternate; petiole 3–10 cm; leaf blade ovate to ovate-lanceolate, 6–24 × (2–)5–17 cm, membranous, veins 7–13, base cordate, margin slightly undulate, apex acuminate. Inflorescences racemes, 1–3-flowered; peduncle or pedicel axillary or rarely borne on petiole, 2.5–5(–12) cm; bracts lanceolate, 5–10 mm. Perianth segments greenish with purplish veins, 3.5–7.5 × 0.7–1 cm, apex acuminate. Stamens purple, slightly shorter than perianth; filaments stout, 2–5 mm; anthers linear, ca. 10 mm; appendages partially adherent, adaxial one ca. 5 mm. Capsule ovoid-oblong, 2.5–6 × 1–3 cm. Seeds several. Fl. Apr–Jul.

Forest margins, thickets, mountain slopes, trail sides; 300–2300 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan [Bangladesh, Cambodia, NE India, Laos, Myanmar, Philippines, Thailand, Vietnam].

The roots are used medicinally.

**5. *Stemona parviflora*** C. H. Wright, J. Linn. Soc., Bot. 32: 496. 1896.

细花百部 xi hua bai bu

Vines. Roots long fusiform. Stems many branched, usually 40–70 cm, ribbed, base woody. Leaves alternate; petiole sometimes curved, 1–3.5 cm, slender; leaf blade lanceolate, 5–7.5(–9.5) × 0.6–2(–4.5) cm, veins 5, base subrounded to cuneate, margin minutely undulate, apex acuminate to caudate-acuminate. Inflorescences axillary, racemes, 2–6-flowered; pedicel ca. 5 mm, slender, articulate at middle; bracts subulate, small. Flowers small. Perianth segments purplish red tinged with green, broadly ovate-lanceolate, ca. 10 × 3 mm. Stamens slightly shorter than perianth; filaments free, ca. 1 mm, slender; anthers ca. 2 mm, slender; appendages partially adherent, adaxial one 2–3 mm. Ovary ovoid, ca. 1.5 × 1 mm. Fl. Apr–Jul.

• Streamsides, rock crevices in valleys, waste places; ca. 700 m. Hainan.

The roots are used medicinally.

**6. *Stemona mairei*** (H. Léveillé) K. Krause, Notizbl. Bot. Gart. Berlin-Dahlem 10: 289. 1928.

云南百部 yun nan bai bu

*Dianella mairei* H. Léveillé, Bull. Acad. Int. Géogr. Bot. 25: 39. 1915; *Disporum mairei* H. Léveillé; *Stemona filifolia* Schlechter; *S. stenophylla* Diels ex Schlechter; *S. vagula* W. W. Smith; *S. wardii* W. W. Smith.

Vines. Roots ovoid-oblong. Stems sometimes branched, 20–100 cm × ca. 2.5 mm. Leaves opposite or whorled, subsessile; leaf blade narrowly ovate to linear, 1.5–7 × 0.2–1.2(–3) cm, veins 3–5, base rounded to cuneate, apex acute. Inflorescences axillary or at base of leaf midvein, erect, racemes, 1(or 2)-flowered; peduncle filiform, 1–2.5 cm; bracts setaceous, ca. 3 mm. Flowers opening fully or not. Perianth segments white tinged with pink, 20–25 × 5–8 mm, apex acute. Stamens shorter than perianth; filaments very short; anthers ca. 6 mm; adaxial appendage broad, ca. 5 mm, apex obtuse. Ovary obliquely ovoid, small; ovules 6. Capsule globose-ovoid, ca. 8 × 7 mm, ca. 5-seeded. Fl. Apr–Jul.

• Scrub, mountain slopes, dry grasslands, limestone rocks; 800–3300 m. Sichuan, N Yunnan.

**7. *Stemona kerrii*** Craib, Bull. Misc. Inform. Kew 1912: 408. 1912.

克氏百部 ke shi bai bu

*Stemona saxorum* Gagnepain.

Vines shortly hairy. Roots (from N Thailand) 4–7 mm thick. Stems to 70 cm, base woody. Leaves alternate; petiole 2–3 cm, slender; leaf blade ovate to broadly so, 7–10 × 3–6 cm, membranous, veins 11–13, base deeply cordate, apex acuminate. Inflorescences axillary, racemes, few flowered; peduncle filiform, 1.5–2 cm; bracts small, ca. 3 mm. Perianth segments pink, 10–15 × 3–4 mm, margin of inner ones crenulate, apex acute. Stamens equaling or longer than perianth; filaments very short; anthers 5–6 mm, separated by a lamellate outgrowth of

connective; appendage apical, with a fleshy outgrowth below apex. Capsule (from N Thailand) globose-ovoid, 8–10 × 6–9 mm, 1- or 2-seeded.

Mountain slopes; ca. 1700 m. S Yunnan [N Thailand, Vietnam].

The material from Yunnan, *Henry 10935* (K), deviates somewhat from specimens from N Thailand in having larger flowers.

## 2. *CROOMIA* Torrey in Torrey & A. Gray, Fl. N. Amer. 1: 663. 1840.

黄精叶钩吻属 *huang jing ye gou wen shu*

Herbs perennial. Rhizomes creeping, rooting from nodes. Roots slightly fleshy. Stems usually erect, simple. Proximal leaves scalelike, distal ones few to several, alternate, membranous. Racemes spreading, 1–4-flowered; peduncle axillary, slender; bracteoles small, scalelike. Flowers small. Stamens inserted at base of perianth segments; filaments thick; anthers dorsifixed, arched; connective not appendaged. Ovary superior, ovoid, compressed; ovules few, apically attached to placenta, pendent. Stigma capitate. Capsule ovoid, valvate. Seeds subglobose, longitudinally ribbed; funicle bearded.

Three species: China, Japan; E North America; one species in China.

Wu Zhengyi (editor's note) believes that *Croomia*, together with *Stichoneuron* J. D. Hooker (from SE Asia), are more primitive and should be treated in the segregate family Croomiaceae, as was done by Takhtajan (Diversity Classific. Fl. Pl. 519. 1997).

### 1. *Croomia japonica* Miquel, Ann. Mus. Bot. Lugduno-Batavi 2: 138. 1865.

黄精叶钩吻 *huang jing ye gou wen*

Roots ca. 2 mm thick. Stems 14–45 cm, ribbed. Proximal leaves 4 or 5, sheathing; distal ones 3–5; petiole purple, 0.5–1.5 cm; leaf blade ovate to ovate-oblong, 5–11 × 3.5–8 cm, veins 7–9, base slightly cordate and decurrent, margin slightly rough, apex shortly acute. Racemes 1–4-flowered; pedicel 0.8–4 cm, articulate at or above middle; bracts ca. 3 mm, 1-veined. Perianth segments arranged in a cross pattern, broadly ovate to ovate-oblong, subequal or inner ones longer than outer, 1.5–3.5(–6) × 2.5–3 mm, persistent, margins reflexed, papillose. Filaments minutely papillose; anthers elliptic, arched. Capsule ovoid, 1.6–1 × 0.8–1.2 cm, 2-valved.

Mixed forests; 800–1200 m. Anhui, Fujian, Jiangxi, Zhejiang [Japan].

