

4. THUNBERGIA Retzius, Physiogr. Sölsk. Handl. 1(3): 163. 1780, nom. cons., not Montin (1773).

山牵牛属 shan qian niu shu

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Vines [or shrubs], lacking cystoliths. Leaves petiolate; leaf blade margin entire to lobed to dentate. Flowers solitary or paired in leaf axils, or in terminal dichasiate thyrses, pedunculate; bracteoles leaflike, paired, enclosing calyx and most or all of corolla tube, distinct or fused along one side, persistent. Calyx much shorter than bracteoles, cupular with 10–20 subulate lobes or reduced to an entire ring. Corolla funnel-shaped, large; tube with short cylindric base then widened; limb ± equally 5-lobed. Stamens 4, often didynamous, inserted near base of corolla tube, included; anthers 2-theous; thecae oblong or ovoid, parallel, spurred or not at base, sometimes bearded. Disk shortly annular or pulvinate. Ovary fleshy; ovules 2 per locule, collateral; style glabrous or pubescent; stigma 2-cleft, entire, or fringed. Capsule basally subglobose, apically prominently beaked, 2–4-seeded; retinacula absent. Seeds compressed to spherical, lacking trichomes.

More than 100 species: Old World tropical regions; six species (one introduced) in China.

Some species of *Thunbergia* are naturalized in the New World tropics.

Thunbergia erecta (Bentham) T. Anderson and *T. laurifolia* Lindley, both cultivated in gardens, are not treated here.

- 1a. Calyx reduced to an entire ring.
 - 2a. Leaves glabrous 3. *T. eberhardtii*
 - 2b. Leaves pubescent.
 - 3a. Corolla bluish; capsule pubescent 1. *T. grandiflora*
 - 3b. Corolla red; capsule glabrous 2. *T. coccinea*
- 1b. Calyx bearing 10–20 slender subulate lobes.
 - 4a. Leaves pinnately veined 4. *T. lutea*
 - 4b. Leaves palmately 3–5-veined.
 - 5a. Petiole conspicuously winged; corolla orange with throat dark purple internally 5. *T. alata*
 - 5b. Petiole wingless; corolla entirely white 6. *T. fragrans*

1. *Thunbergia grandiflora* Roxburgh, Bot. Reg. 6: 495. 1820.

山牵牛 shan qian niu

Thunbergia adenophora W. W. Smith; *T. chinensis* Merrill; *T. lacei* Gamble.

Vines to 10 m or longer, woody. Stems 4-angled, sulcate, pubescent. Petiole 1–7 cm, grooved, pubescent; leaf blade ovate to triangular-ovate, 5–10 × 4–8 cm, papery, both surfaces pubescent, palmately 3–7-veined, base subcordate to truncate, margin undulate, irregularly angular on basal half, or rarely entire, apex acuminate to acute. Flowers solitary, paired in leaf axils, or arranged in terminal racemes with 2–4 flowers per node; peduncle 4–7 cm, sulcate, pubescent; rachis pubescent with large cyathiform glands; apical inflorescence bracts subulate to linear-subulate, 2–6 × 1–1.5 mm, pubescent; bracteoles oblong to ovate, 2.5–4 × 1.5–2.2 cm, both surfaces pubescent, 5–7-veined, base truncate, margin entire or ciliate, apex acute with a short mucro. Calyx ca. 2 mm, annular, unlobed, densely pubescent. Corolla bluish with a yellowish throat, 4–6 cm, outside glabrous; tube basally cylindric and ca. 3 mm wide for ca. 7 mm then gradually widened to ca. 5 cm at throat; limb subactinomorphic; lobes ovate, ca. 3 × 2.5 cm. Staminal filaments 7–9 mm; anther thecae pubescent, basally appendaged. Style glabrous; stigma with 2 subequal lobes. Capsule 1.2–1.5 cm, pubescent, basal part 1.3–1.8 cm in diam., beak ca. 2.5 cm. Seeds ovate in outline, compressed, verrucose. Fl. Aug–Jan, fr.

Nov–Mar. $2n = 56$.

Thickets; 400–1500 m. Fujian, Guangdong, Guangxi, Hainan, Yunnan [India, Myanmar, Thailand, Vietnam].

Thunbergia grandiflora is naturalized in tropical regions worldwide.

2. *Thunbergia coccinea* Wallich, Tent. Fl. Nepal. 1: 48. 1826.

红花山牵牛 hong hua shan qian niu

Hexacentris coccinea (Wallich) Nees.

Vines, woody. Stems 9-angled, subglabrous, pubescent at nodes. Petiole 2–7 cm, grooved; leaf blade broadly ovate, ovate, or lanceolate, 8–15 × 3.5–11 cm, both surfaces pubescent, palmately 3–5-veined, base rounded to cordate, margin undulate or remotely toothed, apex acuminate. Racemes axillary or terminal, to 35 cm, pendulous; peduncle 3–4 cm, pubescent; bracts lanceolate, abaxially pubescent, adaxially glabrous; bracteoles oblong, 2.2–2.6 × 1.1–1.5 cm, apex acute. Calyx ca. 2 mm, reduced to a minute rim. Corolla red; tube basally cylindric for 5–6 mm, throat 1.5–1.6 cm; lobes suborbicular, ca. 7 mm in diam. Staminal filaments 1.2–1.5 cm, glabrous but with a tuft of trichomes at base; anther thecae parallel, unequal with longer one ca. 5.5 mm and shorter one ca. 4.5 mm, spurred at base. Ovary glabrous; style glabrous, exserted; stigma 2-cleft. Capsule glabrous, basal part 1–1.2 × 1.5–2 cm, beak 1.5–2.3 cm. Seeds compressed, ovate in outline, verrucose. Fl. Sep–Jan,

fr. Jan–May. $2n = 20$.

Forested montane slopes; 800–1000 m. SE Xizang, Yunnan [Laos, Myanmar, Thailand].

3. *Thunbergia eberhardtii* Benoist, Bull. Mus. Natl. Hist. Nat. 27: 543. 1921.

二色山牵牛 *er se shan qian niu*

Vines to 12 m, woody. Stems 4-angled, sulcate, pubescent, soon glabrescent, pilose at nodes. Petiole 3–4 cm; leaf blade broadly ovate to ovate-lanceolate, ca. 10×5 cm, both surfaces glabrous, palmately 5–7-veined, base cordate, margin remotely dentate or sometimes entire, apex acuminate to acute. Racemes axillary or terminal, erect; peduncle pubescent; bracts lanceolate, pubescent, 1–3-veined, margin dentate, apex acute; bracteoles ovate-lanceolate, $1-1.4 \times 0.8-1$ mm, abaxially tomentose, apex acuminate. Calyx annular, unlobed. Corolla to 2 cm; tube yellowish brown; lobes ovate-elliptic, ca. 1.1 cm, subequal, lower lobes red, upper lobes yellow. Anther thecae glabrous, those of lower pair of stamens long spurred at base, those of upper pair of stamens spurred at base of only one theca per anther. Ovary pubescent. Capsule basal part 1–1.5 cm in diam., beak ca. 1.6 cm. Seeds hemispherical, verrucose. Fl. Aug–Nov, fr. Jan–Apr.

Dense forests; 300–800 m. Hainan [Vietnam].

4. *Thunbergia lutea* T. Anderson, J. Linn. Soc., Bot. 9: 448. 1866.

羽脉山牵牛 *yu mai shan qian niu*

Thunbergia salwenensis W. W. Smith.

Vines to 5 m or longer, climbing. Stems glabrous except for a circle of trichomes on nodes. Petiole 5–7.5 cm, glabrous; leaf blade ovate to lanceolate-ovate, $4-13 \times 2-6$ cm, abaxially subglabrous, adaxially pubescent or setose, base rounded to broadly cuneate and decurrent onto petiole, margins obscurely toothed to sometimes irregularly denticulate, apex acuminate. Flowers axillary, solitary; bracteoles elliptic, $2.1-2.4 \times 1.5-1.7$ cm, abaxially glabrous, adaxially gland-tipped hairy, palmately 7-veined, apex mucronate. Calyx minute, 10-toothed. Corolla pinkish or white; tube basally cylindrical for ca. 7 mm, throat ca. 3.5 cm; lobes orbicular, ca. 1.2 cm in diam., equal. Staminal filaments glabrous, ca. 1 cm; anther thecae ca. 7 mm, barbate, spurred at base, spurs hairlike. Ovary glabrous; style ca. 2.5 cm, glabrous; stigma funnel-shaped, 2-cleft. Capsule glabrous, basal part ca. 1×1.8 cm, beak ca. 1.8 cm. Seeds reniform, ca. 8×5 mm. Fl. Aug–Dec, fr. Mar–May.

Forests or thickets; 1000–2500 m. SE Xizang, Yunnan [Bhutan, India, Myanmar].

5. *Thunbergia alata* Bojer ex Sims, Bot. Mag. 52: t. 2591. 1825.

翼叶山牵牛 *yi ye shan qian niu*

Vines, herbaceous. Stems \pm 4-angled to flattened, bisulcate, pubescent. Petiole 1.5–3 cm, winged, sparsely pubescent; leaf blade sagittate to deltoid ovate, $2-7.5 \times 2-6$ cm, abaxially

hirsute, adaxially sparsely strigose, palmately 5-veined, base hastate to cordate, margin entire or undulate, apex acute. Flowers axillary, solitary; peduncle 2.5–3 cm, sparsely strigose; bracteoles ovate, $1.5-1.8 \times 1-1.4$ cm, abaxially hirsute, 5–7-veined, apex acute, acuminate, or obtuse. Calyx annular, unequally 10–13-lobed. Corolla orange with dark purple glandular “eye” in throat, 2.5–4.5 cm; tube basally cylindrical for 2–4 mm, throat 1–1.5 cm; lobes obovate, apically truncate. Staminal filaments ca. 4 mm, glabrous; anther thecae 3.5–4 mm, unequal, pubescent at margin and base. Ovary glabrous; style ca. 8 mm, glabrous; stigma funnel-shaped, unequally 2-lobed, lower lobe spreading, upper lobe erect. Capsule pubescent, basal part ca. 7×10 mm, 2-seeded; beak ca. 1.4 cm, ca. 3 mm wide at base. Seeds reticulate on dorsal surface. Fl. Oct–Mar, fr. Feb–May. $2n = 18$.

Cultivated in gardens and naturalized along roads. Guangdong, Yunnan [native to Africa].

Thunbergia alata is widely cultivated and naturalized in tropical regions.

6. *Thunbergia fragrans* Roxburgh, Pl. Coromandel 1: 47. 1795.

碗花草 *wan hua cao*

Flemingia grandiflora Rottler; *Thunbergia bodinieri* H. Léveillé; *T. fragrans* subsp. *hainanensis* (C. Y. Wu & H. S. Lo) H. P. Tsui; *T. hainanensis* C. Y. Wu & H. S. Lo.

Vines, herbaceous. Stems almost 4-angled to flattened, sulcate, hirsute. Petiole 0.5–4.5 cm, hirsute; leaf blade oblong-ovate to ovate to broadly ovate to oblong-lanceolate to lanceolate, $3-14 \times 1.8-7$ cm, both surfaces puberulent to subglabrous except for trichomes along veins or rarely glabrous, palmately 3–5-veined, base rounded to sometimes cuneate or cordate, margin entire, irregularly sinuate, or shallowly coarsely dentate, apex acute to acuminate. Flowers axillary, solitary; peduncle 1.5–5.5 cm; bracteoles ovate, $1.5-2.5 \times 0.8-1.5$ cm, puberulent, apex acute. Calyx 3–5 mm, unequally 10–17-dentate, glabrous. Corolla white, 3–5 cm, sparsely puberulent; tube basally cylindrical for 4–7 mm, throat 1.8–2.3 cm; lobes obovate, $1.3-2.5 \times 1.5-2.3$ cm. Stamens included; filaments 6–10 mm, glabrous; anther thecae ca. 3 mm, divergent, glabrous. Ovary glabrous; style 1.5–2 cm, exserted; stigma funnel-shaped, ca. 2 mm. Capsule glabrous, basal part ca. $7 \times 10-13$ mm, beak 1.5–1.9 cm. Seeds 4–5 mm in diam., smooth or with scales. Fl. Aug–Jan, fr. Nov–Mar.

Thickets, roadsides; 800–2300 m. Guangdong, Guangxi, Guizhou, Hainan, Sichuan, Taiwan, Yunnan [Cambodia, India, Indonesia, Laos, Philippines, Sri Lanka, Thailand, Vietnam].

Variation in the shape, size, pubescence, and margin form of the leaves is extensive in *Thunbergia fragrans*, and taxa have been recognized based on these characters. Additional studies of the species from throughout its range are needed to determine whether these should be accorded formal taxonomic status.

