

12. HETEROSMILAX Kunth, Enum. Pl. 5: 270. 1850.

肖菝葜属 xiao ba qia shu

Liang Songyun (梁松筠 Liang Song-jun); Tetsuo Koyama

Oligosmilax Seemann; *Pseudosmilax* Hayata.

Vines climbing, woody or somewhat herbaceous, dioecious. Stem and branches smooth, not prickly. Petiole narrowly winged basally or proximally, with a subapical abscission zone; tendrils usually present. Leaf blade usually ovate or oblong-lanceolate, main veins 5–9, outermost pair usually running along margins. Inflorescence borne in axil of leaf or scalelike bract, a solitary, many-flowered umbel; peduncle usually compressed, without a scalelike prophyll at base. Flowers small; tepals connate, forming a bottle-shaped tube with opening only at toothed apex. Male flowers: stamens 3, 6, or 9–12; filaments connate proximally or throughout, forming a column (synandrium); anthers free, introrse; connective usually projecting beyond locules. Female flowers: ovary 3-loculed; ovules 1 or 2; stigmas 3, usually recurved; staminodes 3–6. Fruit a berry, black, globose, 1–6-seeded. Seeds dark brown.

Twelve species: tropical and subtropical Asia; nine species (five endemic) in China.

- 1a. Male flowers with 9–13 stamens.
 - 2a. Stamens 1/4–1/3 as long as perianth.
 - 3a. Male perianth ovoid, narrowly ovoid, or suboblong, (5–)7–10 mm; filament column ca. 1 mm 4. *H. polyandra*
 - 3b. Male perianth lanceolate-bottle-shaped, 11–20 mm; filament column 2–3.5 mm 5. *H. longiflora*
 - 2b. Stamens 3/5–4/5 as long as perianth.
 - 4a. Male umbel 5–9-flowered; filaments connate throughout, forming a column 3. *H. yunnanensis*
 - 4b. Male umbel 20–60-flowered; filaments connate only proximally, forming a column but leaving apices free.
 - 5a. Male perianth 4–8 mm; peduncle 5–40 mm 1. *H. septemnervia*
 - 5b. Male perianth 2.5–3 mm; peduncle 32–55 mm 2. *H. seisuiensis*
- 1b. Male flowers with (2 or)3(or 4) stamens.
 - 6a. Stem, branches, and petiole pubescent, rarely glabrescent; male perianth oblong, teeth acute at apex 6. *H. chinensis*
 - 6b. Stem, branches, and petiole glabrous; male perianth subobovoid, teeth obtuse at apex.
 - 7a. Male filaments connate only proximally, forming a column but leaving apices free 7. *H. japonica*
 - 7b. Male filaments connate throughout, forming a column.
 - 8a. Male perianth 4–4.5 mm, apically 3-dentate; female perianth 3.7–4 mm 8. *H. gaudichaudiana*
 - 8b. Male perianth 3–3.5 mm, apically scarcely dentate and subtruncate; female perianth ca. 2.3 mm 9. *H. micrandra*

1. *Heterosmilax septemnervia* F. T. Wang & Tang, Sinensia 5: 428. 1934.

短柱肖菝葜 duan zhu xiao ba qia

Vines climbing. Stem to more than 1 m, woody. Petiole 1.5–4 cm, narrowly winged for 1/7–1/3 its length; tendrils vestigial or well developed. Leaf blade ovate to orbicular, 6–22 (–25) × 4.5–15 cm. Peduncle (0.5–)1.5–4 cm. Umbels of both sexes 20–60-flowered, base thickened, 3–5 mm in diam.; pedicels 1.5–2.5 cm. Male flowers: perianth ellipsoid, 4–8 × 3–4 mm, teeth obtuse at apex; stamens 8–10; filaments 3–5 mm, connate for 1/3–1/2 their length, forming a column but leaving apices free; anthers ovate, ca. 1.2 mm. Female flowers: perianth ovoid-globose, 3–5 × 3–3.5 mm, teeth obtuse at apex; staminodes 3–6. Berries purple, subglobose, 5–10 × 6–8 mm. Fl. May–Jun, fr. Sep–Nov.

Densely forested slopes, hillsides along valleys or streams; 700–2400 m. Guangdong, Guangxi, Guizhou, Hubei, Hunan, Sichuan, Yunnan [Vietnam].

2. *Heterosmilax seisuiensis* (Hayata) F. T. Wang & Tang, Sinensia 5: 427. 1934.

台湾肖菝葜 tai wan xiao ba qia

Pseudosmilax seisuiensis Hayata, Icon. Pl. Formos. 9: 125. 1920; *Heterosmilax hogoensis* (Hayata) T. Koyama; *P. hogoensis* Hayata.

sis Hayata.

Vines climbing. Stem branched, to 3 m, woody. Petiole 1.5–3 cm, narrowly winged for 1/4–1/5 its length; tendrils well developed. Leaf blade usually becoming yellowish brown when dried, ovate or cordate-ovate, 7–20(–25) × 3.5–15(–18) cm. Male inflorescence: peduncle (4–)5–6 cm, slightly compressed; umbel 50–60-flowered, base thickened, globose, 1.5–3 mm in diam.; pedicels 1–2 cm. Male flowers: perianth oblong or obovoid, 2.5–3 × 1.5–2 mm, teeth obtuse at apex; stamens 9; filaments 2–2.5 mm, connate proximally, forming a column 1–1.5 mm but leaving apices free; anthers lanceolate-ovate, 0.8–1 mm. Female flowers unknown. Berries suboblate-globose, 5–8 × 6–9 mm. Fl. Apr–May, fr. Oct.

• About 1300 m. Taiwan.

3. *Heterosmilax yunnanensis* Gagnepain, Bull. Soc. Bot. France 81: 70. 1934.

云南肖菝葜 yun nan xiao ba qia

Vines climbing. Stem slender, woody. Petiole 0.8–2 cm, narrowly winged for ca. 1/3 its length; tendrils well developed. Leaf blade ovate or broadly so, 2.5–5.5 × (1–)1.5–3.8 cm. Male inflorescence: peduncle 5–10 mm, slightly compressed; umbel 5–9-flowered, base slightly thickened, 1–1.5 mm in diam.; pedicels very slender, 1–1.2 cm. Male flowers: perianth narrowly

ellipsoid to narrowly obovoid, 6.5–9 × 2.5–3.5 mm, tapering toward base, apically contracted to orifice; stamens 6(or 9); filaments connate throughout, forming a fusiform-cylindric column 5.5–6 mm, apically 1.5–1.8 mm thick; anthers ovate-deltoid, 1–1.5 mm. Female flowers and fruit unknown.

- W Yunnan (Binchuan Xian).

4. *Heterosmilax polyandra* Gagnepain, Bull. Soc. Bot. France 81: 70. 1934.

多蕊肖菝葜 duo rui xiao ba qia

Vines climbing. Stem branched, woody. Petiole 0.5–2 cm, narrowly winged for 1/4–1/3 its length; tendrils well developed. Leaf blade lanceolate-elliptic to lanceolate-ovate, 5–13 × 1.5–7 cm. Peduncle 2–10 cm. Umbels of both sexes 10–30-flowered, base 1.5–2 mm in diam.; pedicels 1–2 cm. Male flowers: perianth suboblong or subovoid, 3–7(–10) × 2–4 mm; stamens 9–12, 1–2.5 mm; filaments connate throughout, forming a short column ca. 1 mm; anthers elliptic, ca. 1 mm. Female flowers: perianth broadly ellipsoid, 2.8–3 × 2–2.5 mm; ovary ca. 2.5 mm; staminodes 3–6, filiform. Berries suboblate-globose, ca. 9 mm in diam. Fl. and fr. Nov.

Dense forests; 100–1800 m. S Yunnan [India, Laos, Thailand].

5. *Heterosmilax longiflora* K. Y. Guan & Noltie, Edinburgh J. Bot. 50: 59. 1993.

长花肖菝葜 chang hua xiao ba qia

Vines climbing. Stem branched, terete, woody, rigid. Petiole 1–1.5 cm, narrowly winged near base; tendrils well developed. Leaf blade lanceolate to ovate, 9–12 × 2.5–7.5 cm, herbaceous, thin, adaxially slightly shiny, main veins 7, base cordate to rounded, margin weakly undulate, apex acuminate or acute. Male inflorescence: peduncle 3.5–6.5 cm, compressed; umbel 15–30-flowered, base thickened, globose, 2–3.5 mm in diam.; pedicels 1–1.8 cm. Male flowers: perianth lanceolate-bottle-shaped, 1.1–2 cm × 1.5–4 mm, teeth 0.3–0.5 mm; stamens 12; filaments connate, forming a column 2–3.5 mm; anthers ovate, 1–1.5 mm. Female flowers and fruit unknown.

- Forested hills. S Yunnan (Xishuangbanna Dai Zu Zizhizhou).

No specimens of this species have been seen by the present authors.

6. *Heterosmilax chinensis* F. T. Wang, Bull. Fan Mem. Inst. Biol. 5: 121. 1934.

华肖菝葜 hua xiao ba qia

Vines climbing. Stem and branches pubescent, rarely eventually glabrescent. Petiole 0.5–2.5 cm, pubescent, narrowly winged for ca. 1/3 its length; tendrils well developed. Leaf blade oblong to lanceolate-ovate, 3.5–16 × 1–6 cm. Inflorescence borne in axil of leaf or scalelike bract; peduncle 0.5–3 cm, puberulent; umbels of both sexes 10–30-flowered, base 2–3 mm in diam.; pedicels 3–10 mm. Male flowers: perianth oblong-ellipsoid, 5–6 × 1.5–2 mm, tapering to both ends, teeth ca. 1 mm; stamens 3; filaments ca. 2 mm, connate for ca. 1/2 their length; anthers ca. 1 mm. Female flowers: perianth red-brown, ovoid, 2.5–3.8 × ca. 2 mm, narrowed to orifice; stigmas reaching base of perianth teeth; staminodes 3, filiform, ca. 1 mm.

Berries subglobose, 7–10 mm in diam. Fl. May–Jun, fr. Sep–Dec.

- Dense forests, thickets along valleys; 300–2100 m. Guangdong, Guangxi, Sichuan, Yunnan.

7. *Heterosmilax japonica* Kunth, Enum. Pl. 5: 270. 1850.

肖菝葜 xiao ba qia

Heterosmilax arisanensis Hayata; *H. indica* A. de Candolle; *H. raishaensis* Hayata; *H. tsaii* F. T. Wang & Tang; *Smilax bockii* Warburg; *S. planipedunculata* Hayata; *S. stemonifolia* H. Léveillé & Vaniot.

Vines climbing. Stem woody. Petiole 1–3 cm, narrowly winged for 1/4–1/3 its length; tendrils well developed. Leaf blade ovate-lanceolate to subcordate, (3–)6–22 × 2.5–12 cm. Inflorescence borne in axil of leaf or scalelike bract; peduncle 1–3 cm; umbels of both sexes 20–50-flowered, base 2–4 mm in diam.; pedicels 2–7(–11) mm. Male flowers: perianth oblong or narrowly obovoid, 3.5–4.5(–6) × 2–3 mm; stamens (2 or)3(or 4); filaments connate for 1/3–2/5 length, forming a column; anthers oblong, 0.5–1 mm. Female flowers: perianth subglobose or ovoid-globose, 2.5–3 × 1.5–2 mm; stigmas erect; staminodes 3(–6). Berries black, 6–10 mm in diam. Fl. Jun–Aug, fr. Jul–Nov.

Densely forested slopes, mixed forests on hillsides, thickets; 500–1800 m. Anhui, Fujian, Gansu, Guangdong, Hunan, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, NE India, Japan].

8. *Heterosmilax gaudichaudiana* (Kunth) Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 17: 176. 1872.

合丝肖菝葜 he si xiao ba qia

Smilax gaudichaudiana Kunth, Enum. Pl. 5: 252. 1850; *Heterosmilax gaudichaudiana* var. *hongkongensis* (Seemann) A. de Candolle; *H. gaudichaudiana* var. *latifolia* Bodinier ex H. Léveillé; *H. japonica* Kunth var. *gaudichaudiana* (Kunth) F. T. Wang & Tang; *Oligosmilax gaudichaudiana* (Kunth) Seemann; *S. erythrantha* Baillon ex Gagnepain; *S. hongkongensis* Seemann; *S. mcclurei* T. Koyama.

Vines climbing. Stems woody. Petiole 1–3(–5) cm, narrowly winged for 1/5–1/3 its length; tendrils well developed. Leaf blade ovate to subcordate-orbicular, 4–14 × 2–13 cm. Peduncle 1–3.5(–9) cm, compressed. Umbels of both sexes 5–50-flowered, base globose, 2–3 mm in diam.; pedicels 0.5–1.5 cm. Male flowers: perianth red-purple, ovoid-ellipsoid or narrowly ovoid, 4–4.5 × 2–3 mm, teeth deltoid; stamens 3, 3–4 mm; filaments connate throughout, forming a column; anthers ovate, 0.5–0.7 mm. Female flowers: perianth ovoid-ellipsoid, ca. 3.8 × 2.3 mm; stigmas ca. 3 mm; staminodes 5 or 6. Berries purplish black, globose, 0.8–1.2 cm in diam. Fl. May–Jun, fr. Jul–Dec.

Dense forests, sparsely forested slopes, hillsides, shrubby slopes along valleys; 600–1000 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan [Vietnam].

9. *Heterosmilax micrandra* T. Koyama, Brittonia 36: 201. 1984.

小花肖菝葜 xiao hua xiao ba qia

Vines climbing. Stems woody. Petiole 1–4 cm, narrowly and shortly winged basally; tendrils well developed. Leaf blade ovate, lanceolate-ovate, or orbicular-ovate, 4–15 × 1.5–12 cm. Peduncle 1–3.5 cm, compressed. Umbels of both sexes 6–15-flowered, base thickened, 2–4 mm in diam.; pedicels 6–12 mm. Male flowers: perianth orange-red, suboblong or oblong-ovoid, 3–3.5 × ca. 1.6 mm, scarcely toothed apically; stamens 3; filaments connate throughout, forming a column ca. 3 mm; anthers ovate-orbicular, ca. 0.5 mm. Female flowers: perianth pale green, ovoid-globose, ca. 2.3 × 2.1 mm; stigmas erect. Berries blackish, depressed globose, 0.8–1.5 cm in diam.

- Dense forests; 400–500 m. S Hainan.

