

**4. HOLBOELLIA** Wallich, Tent. Fl. Nepal. 1: 23. 1824.

八月瓜属 ba yue gua shu

Woody climbers, evergreen or deciduous. Monoecious. Stems twining. Winter bud outer scales numerous, seriate. Leaves alternate, usually long petiolate; leaf blade palmately 3–9-foliolate or pinnately 3-foliolate; petiolules usually unequal with terminal one longest; leaflet margins entire. Inflorescences axillary, clustered, corymbiform racemes, rarely elongated racemes; several to many flowered. Sepals 6, greenish white or purple, oblong, slightly fleshy, outer 3 valvate, inner 3 usually smaller. Petals 6, minute, opposite stamens, rudimentarily nectariferous. Male flowers: stamens 6, free; connective apically appendaged or unappendaged. Pistillodes 3, minute. Female flowers: carpels 3, straight. Stigma terminal or oblique, often cleft. Fruit oblong to ellipsoid, fleshy, indehiscent. Seeds embedded in pulp.

Twenty species: SE Asia, China, Himalayas; nine species (five endemic) in China.

1a. Leaves pinnately 3-foliolate.

2a. Leaflets papery; outer sepals of male flower 1.6–1.8 cm ..... 3. *H. brachyandra*

2b. Leaflets subleathery to thick leathery; outer sepals of male flower to 1 cm.

3a. Leaflets thick leathery, abaxially farinaceous green; outer sepals of male flower to 1 cm .... 1. *H. coriacea*

3b. Leaflets leathery to subleathery, abaxially pale green; outer sepals of male flower 3–7 mm 2. *H. parviflora*

1b. Leaves palmately 3–7(–9)-foliolate.

4a. Stems and branches angular or narrowly winged.

5a. Veins of leaflets conspicuously impressed on adaxial surface; outer sepals of male flower 0.7–0.8

cm ..... 8. *H. chapaensis*

5b. Veins of leaflets prominent on both surfaces, sometimes plane but never impressed on adaxial surface;

outer sepals of male flower 1.2–1.3 cm ..... 9. *H. pterocaulis*

4b. Stems and branches terete, striate, neither angular nor winged.

6a. Leaflets 4–14 × as long as wide (less than 2 × in subsp. *obtusata*) ..... 5. *H. angustifolia*

6b. Leaflets 1.5–2.5 × as long as wide.

7a. Outer sepals of male flower ca. 0.8 × 0.3 cm; petals orbicular ..... 7. *H. medogensis*

7b. Outer sepals of male flower 1.1–2.2 × 0.4–1 cm; petals not orbicular (sometimes suborbicular in

*H. grandiflora*).

8a. Stamens ca. 1.5 cm, filaments ca. 1 cm; seeds black ..... 4. *H. grandiflora*

8b. Stamens 0.8–1.2 cm, filaments 0.5–7 cm; seeds brown ..... 6. *H. latifolia*

**1. *Holboellia coriacea*** Diels, Bot. Jahrb. Syst. 29: 342. 1900.

鹰爪枫 ying zhao feng

*Artabotrys esquirolii* H. Léveillé; *Holboellia brevipes* (Hemsley) P. C. Kuo; *H. coriacea* var. *angustifolia* Pampanini; *Stauntonia brevipes* Hemsley.

Evergreen. Stems brown. Leaf blade pinnately 3-foliolate; petiolules 0.5–3 cm; leaflets elliptic to ovate-elliptic, rarely lanceolate to oblong, terminal one sometimes obovate, (2–)6–10 × (1–)4–5(–8) cm, thick leathery, abaxially farinaceous green, adaxially dark green and shiny, base rounded to cuneate, margin slightly narrowly revolute, apex acuminate to emarginate and cuspidate; primary veins 3 from base; secondary veins 4 pairs; tertiary veinlets prominent on both surfaces when young, adaxially slightly impressed or inconspicuous when old. Racemes fascicled, short corymbiform; bracts persistent, scaly; peduncle short. Male flowers: pedicel ca. 2 cm. Sepals white, purple striate; outer 3 sepals oblong, ca. 10 × 4 mm; inner 3

sepals narrower, apex obtuse. Petals suborbicular, less than 1 mm in diam. Stamens 6–7.5 mm; connective apical appendage very short, apiculate. Pistillodes subulate, ca. 1.5 mm. Female flowers: pedicel 3.5–5 cm, slightly thick. Sepals reddish purple; outer 3 sepals ovate, 12–14 × 9–10 mm; inner 3 sepals elliptic to lanceolate. Petals 6, minute. Staminodes 6, smaller than petals, sessile. Carpels ovoid-clavate, ca. 9 mm. Fruit purple at maturity, blackish when dry, oblong-terete, 5–6 × ca. 3 cm, densely verruculose. Seeds ellipsoid, slightly compressed, ca. 8 × 5–6 mm; seed coat black, shiny. Fl. Apr–May, fr. Jun–Aug.

• Mixed forests, mountain slopes, among shrubs, trailsides; 500–2000 m. Anhui, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Zhejiang.

The fruits are edible, and the roots and stems are used medicinally.

**2. *Holboellia parviflora*** (Hemsley) Gagnepain, Bull. Mus. Hist. Nat. (Paris) 14: 68. 1908.

小花鹰爪枫 xiao hua ying zhao feng

*Stauntonia parviflora* Hemsley, Hooker's Icon. Pl. 29: t. 2849. 1907; *Holboellia latistaminea* T. Chen.

Evergreen. Branches striate. Petiole slender, terete, 4–8 cm; leaf blade pinnately 3-foliolate; petiolules 0.5–2.5 cm; leaflets lanceolate, oblong-lanceolate, or ovate, 7–11 × 3–5 cm, subleathery, slightly folded in central part at base, abaxially pale green but pale brown when dry, adaxially dark green and shiny, base broadly cuneate to rounded, apex acuminate to long acuminate; midvein adaxially impressed, abaxially raised; secondary veins 5 or 6 pairs, tertiary veinlets and secondary veins slightly prominent on both surfaces. Inflorescences several, clustered, corymbose, 1.5–2 cm, several flowered; male and female flowers clustered together; peduncle 4–5 mm. Flowers greenish, small. Male flowers: pedicel 5–10 mm, slender. Outer 3 sepals broadly ovate, concave, 4–5 mm, slightly fleshy, apex acute and slightly thickened; inner 3 sepals lanceolate, ca. 3 mm, thinner than outer ones. Petals elliptic, less than 1 mm. Stamens 3.5–4 mm, unequal, 3 opposite inner sepals as long as outer sepals, other 3 shorter; filaments slightly thickened, trigonate, base cuneate; connective apex unappendaged. Pistillodes as long as petals. Female flowers: pedicel 8–10 mm, thicker than those of male flowers. Outer 3 sepals ovate, ca. 7 × 4 mm, apex acute; inner 3 sepals narrower, shorter. Staminodes minute. Carpels conical, ca. 4 mm. Stigma oblique. Fruit ellipsoid, 2.5–6 × 2–3 cm. Fl. Nov–Dec, fr. Sep–Oct.

• Mixed forests, forest margins along valleys, mountain slopes; 1800–1900 m. Guangxi, Guizhou, Hunan, SE Yunnan.

**3. *Holboellia brachyandra*** H. N. Qin, Cathaya 8–9: 126. 1997.

短蕊八月瓜 duan rui ba yue gua

Stems grayish white, young shoots green, twining. Petiole 2–6.5 cm; leaf blade pinnately 3-foliolate; petiolules (1–)2.5–4 cm; leaflets ovate to ovate-elliptic, rarely obovate, 6–12 × 2.7–5.5 cm, papery, abaxially light green, adaxially dark green, base subrounded, apex acuminate; primary veins 3, abaxially slightly conspicuous. Racemes fascicled, 5–12 cm, androgynous with 4 or 5 male and 1 or 2 female flowers. Flowers white, mildly fragrant. Male flowers: sepals equal in size, narrowly elliptic, 16–18 × 3–5 mm. Petals obovate, less than 1 mm. Stamens 4–5 mm; filaments free; anthers ca. 3 mm; connective apical appendage ca. 0.5 mm. Pistillodes 3, ca. 1.5 mm. Female flowers: sepals fleshy; outer 3 sepals elliptic, 2–3 × 0.7–0.8 cm; inner 3 sepals narrowly elliptic. Petals less than 1 mm. Staminodes 6, opposite petals, ca. 1 mm; connective apical appendage apiculate. Carpels free, ellipsoid, ca. 5 mm. Stigma sessile, capitate. Fruit unknown. Fl. Apr.

• Evergreen forest margins along valleys, climbing on small trees; 1500–1600 m. SE Yunnan (Xichou Xian).

**4. *Holboellia grandiflora*** Réaumur, Bull. Soc. Bot. France 53: 453. 1906.

牛姆瓜 niu mu gua

Evergreen, large. Branches terete, striate, lenticellate. Stems brown. Bud bracts persistent, scaly. Petiole 7–20 cm, slightly thick; leaf blade palmately 3–7-foliolate; petiolules 2–5 cm; leaflets obovate-oblong to oblong, sometimes elliptic to lanceolate, 6–14 × 4–6 cm, leathery to subleathery, abaxially dull pale green when dry, adaxially dark green and shiny, base cuneate, margin slightly revolute, apex acuminate to acute; midvein adaxially impressed; secondary veins 7–9 pairs; tertiary veinlets and secondary veins abaxially slightly prominent, adaxially inconspicuous. Inflorescences of 2–4 corymbose racemes; peduncle 2.5–5 cm. Flowers several, pale greenish white or pale purple. Male flowers: outer 3 sepals narrowly obovate, 2–2.2 × 0.8–1 cm, base rounded to truncate, apex obtuse; inner 3 sepals linear-oblong, as long as outer sepals but narrower. Petals ovate to suborbicular, ca. 1 mm in diam. Stamens straight, ca. 1.5 cm; filaments terete, ca. 1 cm; connective apical appendage small, apiculate. Pistillodes subulate, ca. 3 mm. Female flowers: outer 3 sepals broadly ovate, thick, 2–2.5 × 1.2–1.6 cm, base rounded, apex acute; inner 3 sepals ovate-lanceolate, narrower than outer ones. Petals ovate to suborbicular, ca. 1 mm in diam. Staminodes minute, subsessile, locules incurved. Carpels lanceolate-terete, ca. 1.2 cm. Stigma conical, oblique. Fruit often in pairs, oblong, 6–9 cm. Seeds numerous, black. Fl. Apr–May, fr. Jul–Sep. Mixed forests, mountain slopes, scrub along valleys; 1100–3000 m. Guizhou, Sichuan, Yunnan [Vietnam].

**5. *Holboellia angustifolia*** Wallich, Tent. Fl. Nepal 1: 25. 1824.

五月瓜藤 wu yue gua teng

Evergreen. Stems and branches grayish brown, striate. Bud bracts persistent, broad, scaly. Petiole long; leaf blade palmately (3–)5–7(–9)-foliolate; petiolules 0.5–2.5 cm; leaflets 3–13 × 0.3–5 cm, subleathery to leathery, abaxially glaucous and densely very minutely papillose, adaxially green and shiny, base cuneate, margin entire, apex acuminate, acute, or obtuse, sometimes emarginate; secondary veins 6–10 pairs, tertiary veinlets and secondary veins conspicuously prominent on both surfaces or abaxially slightly prominent and adaxially inconspicuous. Racemes several, short; peduncle short, 0.8–2 cm. Male flowers: pedicel 1–1.5 cm. Outer 3 sepals linear-oblong, 1–1.5 × 0.3–0.4 cm, apex obtuse; inner 3 sepals smaller. Petals suborbicular, less than 1 mm in diam. Stamens straight, ca. 1 cm; filaments terete; anthers linear; connective apical appendage apiculate, ca. 0.7 mm. Pistillodes small, subulate. Female flowers: pedicel 3.5–5 cm. Sepals purplish red; outer 3 sepals obovate-orbicular to broadly ovate, 14–16 × 7–9 mm; inner 3 sepals smaller. Petals ovate-triangular, ca. 0.4 mm wide. Staminodes sessile, ca. 0.7 mm. Carpels clavate. Stigma capitate, cleft. Fruit purple at maturity, oblong, 5–9 cm, apex rounded and apiculate. Seeds ellipsoid, 5–8 × 4–5 mm; seed coat brownish black, shiny. Fl. Apr–Jun, fr. Aug–Oct.

Mixed forest on mountain slopes, edge of forests, hillsides, along valleys, by streams; 1000–2700 m. Anhui, Guangdong, Guangxi, Guizhou, Hubei, Shaanxi, Sichuan, E Xizang, Yunnan [Bhutan, N India, Myanmar, Nepal, Sikkim].

The fruits are edible, and the roots and stems are used medicinally.

1a. Leaflets linear to linear-lanceolate, more than  $5 \times$  as long as wide ..... 5b. subsp. *linearifolia*

1b. Leaflets ovate-elliptic, oblong, lanceolate-oblong, or oblanceolate, less than  $4 \times$  as long as wide.

2a. Leaflets 3(–5), leathery ..... 5c. subsp. *trifoliata*

2b. Leaflets 5–7, subleathery.

3a. Leaflets oblong, less than  $2 \times$  as long as wide, apically obtuse ..... 5d. subsp. *obtusa*

3b. Leaflets ovate-elliptic, more than  $2 \times$  as long as wide, apically acute ..... 5a. subsp. *angustifolia*

**5a. *Holboellia angustifolia* subsp. *angustifolia***

五月瓜藤(原亚种) wu yue gua teng (yuan ya zhong) *Holboellia acuminata* Lindley; *H. angustifolia* Diels (1900), not Wallich (1824); *H. angustifolia* var. *angustissima* Diels; *H. angustifolia* var. *minima* Réaumur; *H. fargesii* Réaumur; *H. latifolia* Franchet (1885), not Wallich (1824); *H. latifolia* Wallich var. *acuminata* (Lindley) Gagnepain; *H. latifolia* Wallich var. *angustifolia* (Wallich) J. D. Hooker & Thomson; *H. latifolia* var. *bracteata* Gagnepain; *H. marmorata* Handel-Mazzetti; *Stauntonia longipes* Hemsley. Leaflets 5–7, ovate-elliptic, 4.5–13 cm, more than  $2 \times$  as long as wide, base cuneate, margin entire, apex acute. Fl. Apr–May, fr. Sep–Oct.

Edge of forests, hillsides, by streams. Anhui, Guangdong, Guangxi, Guizhou, Hubei, Shaanxi, Sichuan, Yunnan [Bhutan, N India, Myanmar, Nepal, Sikkim].

**5b. *Holboellia angustifolia* subsp. *linearifolia*** T. Chen & H. N. Qin in H. N. Qin, *Cathaya* 8–9: 112. 1997.

线叶八月瓜 xian ye ba yue gua

Leaflets (3–)5–7, linear to linear-lanceolate,  $3-7 \times 0.3-1$  cm, more than  $5 \times$  as long as wide, base cuneate, margin entire, apex acute to acuminate. Fl. May–Jun, fr. Aug–Oct.

• Edge of forests in alpine areas, scrub by streams; 1300–2700 m. W Sichuan.

**5c. *Holboellia angustifolia* subsp. *trifoliata*** H. N. Qin, *Cathaya* 8–9: 114. 1997.

三叶五风藤 san ye wu feng teng

Leaflets 3(–5), lanceolate-oblong to oblanceolate, leathery, base cuneate, margin entire, apex acute. Fl. Apr–May.

• Forests, hillsides, by streams; 1000–1900 m. W Hubei, E Sichuan.

**5d. *Holboellia angustifolia* subsp. *obtusa*** (Gagnepain) H. N. Qin, *Cathaya* 8–9: 116. 1997.

钝叶五风藤 dun ye wu feng teng

*Holboellia latifolia* var. *obtusa* Gagnepain, *Bull. Mus. Hist. Nat.* 14: 68. 1908.

Leaflets oblong, (3–)5–7, thinly leathery, base cuneate, margin entire, apex obtuse. Fl. Apr–May, fr. Sep–Oct.

• W and SW Sichuan, E Xizang, N Yunnan.

**6. *Holboellia latifolia*** Wallich, *Tent. Fl. Nepal.* 1: 24. 1824.

八月瓜 ba yue gua

Evergreen. Stems and branches conspicuously striate. Petiole slender, 3.5–12 cm; leaf blade palmately 3–9-foliolate; petiolules slender, 2–4 cm; leaflets 4–13  $\times$  1–7 cm, papery or leathery, abaxially pale green, adaxially dark green and shiny, base rounded, broadly cuneate, or sometimes subtruncate, apex acuminate to caudate-acuminate; veins abaxially conspicuously prominent; secondary veins 5–8 pairs, anastomosing near margin. Inflorescences several, fascicled racemes; bracts broadly ovate to suborbicular, scaly, persistent; peduncle 1–3.5(–5) cm. Flowers several per raceme. Male flowers: sepals greenish white; outer 3 sepals oblong, 11–15  $\times$  4–5 mm, apex obtuse; inner 3 sepals oblong-lanceolate, apex acute. Petals obovate to elliptic, less than 1 mm. Stamens 8–12 mm; filaments linear, 5.5–7 mm, slightly thick; anthers 3.5–5 mm; connective apical appendage short, apiculate. Pistillodes ovoid-subulate, ca. 1.5 mm. Female flowers: sepals purple; outer 3 sepals ovate-oblong, 16–22  $\times$  7–9 mm; inner 3 sepals narrower and shorter. Staminodes minute; anthers clavate. Carpels oblong to conical. Stigma sessile, oblique. Fruit reddish purple at maturity, irregularly oblong to ellipsoid, (3–)5–7  $\times$  ca. 4 cm, densely and minutely tuberculate, obtuse at both ends, apex often mucronate. Seeds numerous, obovoid; seed coat brown. Fl. Apr–May, fr. Jul–Sep.

Forests, mixed forests by streams or other shady moist sites, forest margins on mountain slopes, along valleys; 600–3000 m. Guizhou, Sichuan, Xizang, Yunnan [Bhutan, NE India, Nepal, Sikkim].

1a. Leaflets 3(–9); blades leathery, main

veins not impressed ..... 6a. subsp. *latifolia*

1b. Leaflets (3–)5(–7); blades papery,

main veins impressed ..... 6b. subsp. *chartacea*

**6a. *Holboellia latifolia* subsp. *latifolia***

八月瓜(原亚种) ba yue gua (yuan ya zhong)

*Holboellia ovatifoliolata* C. Y. Wu & T. Chen ex S. H. Huang; *Stauntonia latifolia* Wallich.

Leaflets 3(–9), ovate, oblong, or ovate-lanceolate, 4–13  $\times$  1–5 cm, leathery, base widely cuneate, margin entire, apex acute, main veins not impressed.

Forests, forest margins on mountain slopes, along valleys; 600–2600 m. Guizhou, Sichuan, Xizang, Yunnan [Bhutan, NE India, Nepal, Sikkim].

The roots are used medicinally for rheumatism.

**6b. *Holboellia latifolia* subsp. *chartacea*** C. Y. Wu & S. H. Huang ex H. N. Qin, *Cathaya* 8–9: 124. 1997.

纸叶八月瓜 zhi ye ba yue gua

Leaflets (3–)5(–7), elliptic, ovate, or obovate-oblong, 5–11 × 2.5–7 cm, papery, base round or widely cuneate, margin entire, apex acute, main veins impressed.

Mixed forests by streams or other shady moist sites; 1800–3000 m. S Xizang, NW Yunnan [Bhutan, Sikkim].

**7. *Holboellia medogensis*** H. N. Qin, *Cathaya* 8–9: 93. 1997.

墨脱八月瓜 mo tuo ba yue gua

Deciduous. Stems dull gray; lenticels numerous, elliptic. Petiole 15–19 cm; leaf blade palmately 5- or 6-foliolate; leaflets ovate to ovate-elliptic, 8–11 × 4–5.5 cm, papery, abaxially pale green, adaxially dark green, base broadly cuneate, apex acuminate; primary veins 3 from base.

Racemes several, fascicled, ca. 11 cm, 6–8-flowered.

Male flowers: bracteoles linear, ca. 2 mm. Sepals greenish; outer 3 sepals oblong, ca. 8 × 3 mm; inner 3 sepals narrowly oblong to linear, 5–7 × ca. 1 mm.

Petals orbicular, ca. 1 mm in diam. Stamens 6; filaments connate into a tube, ca. 3 mm; anthers ca. 3 mm; connective apical appendage ca. 0.5 mm.

Pistillodes 3, linear, ca. 1.5 mm. Female flowers and fruit not seen. Fl. Apr.

• Forest margin; 800–900 m. Xizang (Mêdog Xian).

**8. *Holboellia chapaensis*** Gagnepain, *Bull. Soc. Bot. France* 85: 165. 1938.

沙坝八月瓜 sha ba ba yue gua

*Holboellia reticulata* C. Y. Wu ex S. H. Huang.

Evergreen. Stems grayish brown, terete, ca. 9 mm in diam., slightly angular but not winged; young branchlets conspicuously angular; lenticels numerous, fusiform. Winter bud scales broadly triangular. Petiole 3–11 cm; leaf blade palmately 3–5-foliolate; petiolules 2–5 cm; leaflets oblong to oblanceolate-oblong, 6–16 × (2–)3.5–7 cm, leathery, abaxially grayish green, adaxially green, base broadly cuneate to sometimes rounded, margin narrowly revolute, apex acute to short acuminate; secondary veins 6 or 7 pairs; tertiary veinlets prominently reticulate. Male inflorescences 2- or 3-fascicled, 1–2 cm; female inflorescences ca. 8 cm. Male flowers: sepals pale greenish white; outer 3 sepals ovate-oblong, cucullate, 7–8 × 3–4 mm; inner 3 sepals smaller. Petals broadly elliptic, ca. 1 mm wide. Stamens 5–7 mm; filaments terete, 2–3 mm; anthers 3–4 mm; connective apical appendage small, obtuse. Pistillodes minute, awl-like. Female flowers: sepals purple, fleshy, slightly thick; outer 3 sepals broadly ovate, 10–11 × 6.5–7 mm; inner 3 sepals ca. 9 × 6 mm. Petals broadly elliptic, ca. 1 mm wide. Staminodes subulate, ca. 1.5 mm, apex short. Carpels ovoid-terete, ca. 7 mm. Fruit ellipsoid to oblong, 6–12 × 3.5–5 cm. Seeds numerous, black, suborbicular, ca. 7 mm in diam., shiny. Fl. Mar–Apr, fr. Aug–Nov.

Dense forest along valleys, mixed forest margins; 1000–2200 m. SW Guangxi, SE Yunnan [Vietnam].

**9. *Holboellia pterocaulis*** T. Chen & Q. H. Chen, *Fl. Guizhou* 2: 675. 147. 1986.

棱茎八月瓜 leng jing ba yue gua

Stems brown to dull brown, winged; wings 5, ca. 1 mm wide; lenticels numerous, pale brown, elliptic to fusiform. Petiole 3–9 cm, striate; leaf blade palmately 5–7-foliolate; petiolules slightly angular, unequal, lateral ones 1–2.5 cm, terminal one 2–4 cm; leaflets elliptic, oblong, or obovate-oblong, 7–12 × 3–5 cm, leathery, abaxially pale yellowish green, adaxially dark green and shiny, base rounded to rarely cuneate, margin slightly revolute, apex rounded and mucronate; primary veins 3; secondary veins 5–7 pairs; tertiary veinlets and secondary veins prominent on both surfaces. Inflorescences of several fascicled racemes; bracts persistent, ovate-lanceolate, ca. 7 × 2.5 mm, scaly; peduncle 1.5–3 cm. Male flowers: pedicel 0.8–1.5 cm. Sepals purplish red, subfleshy; outer 3 sepals oblong to oblanceolate, 12–13 × 4.5–5.5 mm, apex obtuse; inner 3 sepals 11–12 × ca. 3 mm. Petals suborbicular to obovate, 1–1.5 mm in diam. Stamens straight, 9–10 mm; filaments slightly broad, complanate; anthers ca. 4 mm; connective apical appendage minute. Pistillodes clavate, ca. 2.5 mm. Female flowers: sepals purplish red; outer 3 sepals ovate-orbicular, 1.5–2.1 × 1–1.2 cm; inner 3 sepals oblong, smaller. Carpels clavate. Fruit ob-long-terete, ca. 7 × 3 cm. Seeds blackish brown. Fl. Apr–May, fr. Aug–Sep.

• Sparse to dense forests, by streams along valleys; 800–1500 m. Guizhou, Sichuan.

