

## SIMAROUBACEAE

苦木科 ku mu ke

Peng Hua (彭华)<sup>1</sup>; Wm. Wayt Thomas<sup>2</sup>

Trees or shrubs usually with bitter bark. Leaves alternate, sometimes opposite, pinnate to unifoliolate or rarely simple; stipules present or absent. Inflorescences axillary, racemose, paniculate, cymose, rarely spicate. Flowers generally small, bisexual or unisexual (andromonoecious, functionally dioecious, or distinctly dioecious), often with rudiments of opposite sex, actinomorphic. Calyx of 4 or 5(–8) sepals, imbricate or valvate. Petals usually 4 or 5(–8), free, imbricate or valvate. Stamens same number as petals and alternate with them, or 2 × as many as petals (or more); filaments free, base often with an appendage; anthers oblong, versatile, bicelled, with a longitudinal slit. Disk usually present, sometimes a gynophore or androgynophore. Gynoecium weakly united at base, or virtually free, usually 2–5-carpellate; ovary superior, with axile placentation; ovules 1 or 2 per locule, apical or basal; style connate or free; stigmas 2–5. Fruit a “drupe” or “samara,” actually 1–5 fruitlike monocarps produced per flower, each a druparium or a samarium; endosperm present or absent; embryo straight or curved, with thick cotyledons.

Twenty genera and ca. 95 species: mainly in tropical and subtropical regions, some species in temperate regions; three genera and ten species (six endemic) in China.

*Harrisonia* R. Brown ex A. Jussieu and *Suriana* Linnaeus, treated in the Simaroubaceae in FRPS (43(3): 13–15. 1997), are treated in the Cneoraceae and the Surianaceae, respectively, in this volume.

Chen Pangyu. 1997. Simaroubaceae (excluding *Harrisonia* and *Suriana*). In: Chen Shukun, ed., Fl. Reipubl. Popularis Sin. 43(3): 1–16.

- 1a. Fruit a samarium, flat, oblong-elliptic ..... 1. *Ailanthus*
- 1b. Fruit a druparium, ovate or oblong-ovate.
  - 2a. Druparium with persistent calyx; leaflets glabrous on both surfaces or pubescent on midvein or lateral veins when young ..... 2. *Picrasma*
  - 2b. Druparium without persistent calyx; leaflets pubescent abaxially or on both surfaces ..... 3. *Brucea*

### 1. AILANTHUS Desfontaines, Mém. Acad. Sci. (Paris) 1786: 265. 1788, nom. cons.

臭椿属 chou chun shu

Trees or small trees. Branchlets pubescent, with a pith. Leaves alternate, pinnate; leaflets 13–41, opposite or nearly so; blades papery or thinly leathery, base oblique, margin entire or serrate, apex acuminate, base sometimes 1- or 2-dentate on either side, teeth glandular abaxially at apex. Flowers small, polygamo-dioecious, in axillary or terminal thyrses. Sepals 5, imbricate. Petals 5, valvate. Disk 10-lobed. Stamens 10, inserted at base of disk, undeveloped or rudimentary in pistillate flowers. Carpels 2–5, free or slightly connate only at base; ovules 1 or 2 per locule, campylotropous or anatropous; styles 2–5, connate, but only with female trace in male flowers. Samarium oblong-elliptic, with a seed surrounded by wing. Seed flat, rounded, obovate or slightly deltoid, with some endosperm or without; endocarp thin; cotyledons compressed.

About ten species: Asia to N Oceania; six species (five endemic) in China.

- 1a. Leaflet blade entire, base without marked teeth on either side; carpels 3–5.
  - 2a. Small trees; carpels 5, lower portion of filaments glabrous ..... 3. *A. fordii*
  - 2b. Trees, 15–40(–45) m tall; carpels 3, filaments pilose proximally (unknown in *A. guanxiensis*).
    - 3a. Samarium 4.5–8 × 1.5–2.5 cm ..... 1. *A. triphysa*
    - 3b. Samarium 12–15 × 3.5–4 cm ..... 2. *A. guangxiensis*
- 1b. Leaflet blade entire, sinuous, or shallowly sinuous-dentate, base with 1 to several teeth on each side; carpels 5.
  - 4a. Branches with soft thorns when young; leaflet blade with 2–4 teeth on either side, petiole sometimes with thorns ..... 4. *A. vilmoriniana*
  - 4b. Branches without soft thorns when young; leaflet blade base with 1 or 2 teeth on either side, petiole without thorns.
    - 5a. Branches yellow or yellow-brown, pilose when young, then glabrescent; leaflet blade margin entire ..... 5. *A. altissima*
    - 5b. Branches gray-white or gray-brown, pilose; leaflet blade margin sinuous or shallowly sinuous-dentate ..... 6. *A. giraldii*

1. *Ailanthus triphysa* (Dennstedt) Alston in Trimen, Handb. Fl. Ceylon 6(suppl.): 41. 1931.

*Adenanthera triphysa* Dennstedt, Schlüssel Hortus Malab. 32. 1818; *Ailanthus malabarica* Candolle.

岭南臭椿 ling nan chou chun

Trees, evergreen, usually 15–20(–45) m tall. Leaves pin-

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nate, 30–60 cm; leaflets 6–17(–30) pairs; petiolule pubescent, 5–7 mm; blades ovate-lanceolate or oblong-lanceolate, 15–20 × 2.5–5.5 cm, thinly leathery, base broadly cuneate or slightly rounded, oblique, margin entire, apex acuminate, abaxially ± shortly pubescent or glabrous. Panicles axillary, ± shortly pubescent, 25–50 cm; bracts small, ovate or deltoid, 5–7 mm, early caducous. Pedicel ca. 2 mm. Calyx abaxially pilose, 5-lobed, lobes shorter than 1 mm, deltoid, as long as tube. Petals 5, glabrous or nearly so, ca. 2.5 × 1–1.5 mm, valvate. Stamens 10, inserted at base of disk; filaments gracile, curved and folded in buds, lower part pilose, 1–3 mm in females, 3–6 mm in males; anthers ca. 1 mm in male, shorter in female. Carpels 3, glabrous, 2–2.5 mm; styles free or connate at base; stigmas 3-lobed, lobes shield-shaped, ca. 2 mm wide. Samarium 4.5–8 × 1.5–2.5 cm, both tops slightly obtuse. Seeds flat, surrounded by wing. Fl. Oct–Nov, fr. Jun–Mar.

Montane regions, sparse or thick woods, roadsides; below 100–600 m. Fujian, Guangdong, Guangxi, S Yunnan [India, Malaysia, Myanmar, Sri Lanka, Thailand, Vietnam].

**2. *Ailanthus guangxiensis*** X. L. Mo ex C. F. Liang & X. L. Mo, *Guihaia* 2: 145. 1982.

广西臭椿 *guang xi chou chun*

Trees, to 40 m tall; trunk straight; bark gray or gray-brown, nearly smooth, annulate or subannulate, lenticels prominently rounded. Branchlets robust, nearly glabrous, leaf-scars conspicuous. Leaves even-pinnate, crowded at apex of branches, 25–50 cm; leaflets 4–6 pairs, alternate, very rarely opposite; petiolules 1–2 cm; blades ovate or oblong-ovate, 7–16(–20) × 4–8 cm, abaxially light green, adaxially dark green, lucid, papery, thin, both surfaces glabrous, base oblique, both sides with several semi-transparent glands ca. 3 mm in diam., margin entire, apex acuminate; lateral veins 5–8 pairs, midrib and lateral veins prominent on both surfaces, reticulate veins inconspicuous. Flowers not seen. Infructescence paniculate, 15–35 cm, lax. Samarium compressed, oblong, 12–15 × 3.5–4 cm, apex somewhat contorted, reticulate. Seed 1, at middle of wing, compressed, 1.5–2 cm in diam. Fr. Aug–Oct.

• Forests of limestone valleys; ca. 300 m. SW Guangxi (Longzhou, Ningming).

**3. *Ailanthus fordii*** Nootboom in Steenis, *Fl. Males.*, Ser. 1, *Spermat.* 6: 220. 1962.

常绿臭椿 *chang lü chou chun*

Small trees, evergreen. Branchlets gray-brown, densely puberulent. Leaves crowded at apex of branches, 40–60 cm; petiole 7–13 cm; leaflets 6–13 pairs, opposite or nearly so; blades oblong-ovate, 7–13 × 4–6 cm, base obtuse-rounded, oblique, margin entire, apex shortly acuminate or obtuse-rounded; rachis puberulent. Panicles terminal, 20–40 cm, base of branches at different levels articulate. Flowers unisexual or polygamous, 1–3-fasciculate; subtending bracts small, deltoid; pedicel 1–2 mm. Calyx cup-shaped, puberulent, ca. 0.5 mm high, with 5 short and obtuse lobes. Petals 5, glabrous, 2–3 × ca. 1 mm. Stamens curved and folded, glabrous, 3–5 mm in buds of males, 1–3 mm in females; anthers ca. 0.8 mm, degenerate in

female. Carpels 5, densely puberulent; styles connate, 0.5–1 mm high, ± puberulent; stigmas 5, free or only base slightly connate, 1–1.5 mm. Samarium 3–5 × 1–1.8 cm. Fr. Dec–Apr.

• Mixed forests of hills and mountains; ca. 600 m. S Guangdong, S Yunnan (Xishuangbanna).

**4. *Ailanthus vilmoriniana*** Dode, *Rev. Hort.* (Paris) 1904: 444. 1904.

刺臭椿 *ci chou chun*

*Ailanthus glandulosa* Desfontaines var. *spinosa* M. Vilmorin & Bois.

Trees, usually over 10 m tall. Branches with soft thorns when young. Leaves odd-pinnate, 50–90 cm, with petiole violet-red and spiny; leaflets 8–17 pairs, opposite or nearly so; blades lanceolate-oblong, 9–15(–20) × 3–5 cm, abaxially gray-green, pilose, adaxially glabrous or puberulent except for veins which are pubescent, base broadly cuneate or somewhat rounded, each side 2–4-dentate, teeth abaxially glandular. Panicles ca. 30 cm. Samarium ca. 5 cm.

• Sparse woods of mountainous slopes or valleys; 500–2800 m. Hubei, Sichuan, Yunnan.

**5. *Ailanthus altissima*** (Miller) Swingle, *J. Wash. Acad. Sci.* 6: 495. 1916.

臭椿 *chou chun*

Trees, deciduous, up to 20 m tall; bark smooth and straightly grained. Branches with pith, yellow or yellow-brown pubescent when young, then glabrescent. Leaves odd-pinnate, 40–60 cm; petiole 7–13 cm; leaflets 13–27, opposite or nearly so; blades ovate-lanceolate, abaxially dark green, adaxially gray-green, smelly when rubbed. Panicles 10–30 cm. Flowers light green; pedicel 1–2.5 mm. Sepals 5, imbricate, 0.5–1 mm. Petals 5, 2–2.5 mm, base hispid. Stamens 10; filaments densely hispid basally, longer than petals in males, shorter than petals in females; anthers oblong, ca. 1 mm. Carpels 5; styles connate; stigmas 5-lobed. Samarium oblong, 3–4.5 × 1–1.2 cm. Seed in middle of wing, flat-globose. Fl. Apr–May, fr. Aug–Oct.

• Found in many habitats; 100–2500 m. All regions of China except Hainan, Heilongjiang, Jilin, Ningxia, Qinghai [widely cultivated and naturalized elsewhere].

1a. Samarium 5–7 × 1.4–1.8 cm ..... 5c. var. *sutchuenensis*

1b. Samarium 3–4.5 × 0.7–1.2 cm.

2a. Samarium 1–1.2 cm wide ..... 5a. var. *altissima*

2b. Samarium 0.7–0.8 cm wide ..... 5b. var. *tanakae*

**5a. *Ailanthus altissima* var. *altissima***

臭椿(原变种) *chou chun* (yuan bian zhong)

*Toxicodendron altissimum* Miller, *Gard. Dict.*, ed. 8, *Toxicodendron* no. 10. 1768; *Ailanthus cacodendron* (Ehrhart) Schinz & Thellung; *A. glandulosa* Desfontaines; *Albonia peregrina* Buc'hoz; *Pongelion glandulosum* Pierre; *Rhus cacodendron* Ehrhart.

Bark smooth and straightly grained. Petiolules 0.6–1.5 cm. Samarium oblong, 3–4.5 × 1–1.2 cm.

• Found in many habitats; 100–2500 m. All regions of China except Hainan, Heilongjiang, Jilin, Ningxia, Qinghai [widely cultivated and naturalized elsewhere].

**5b. *Ailanthus altissima* var. *tanakae*** (Hayata) Kanehira & Sasaki in Kanehira, *Formosan Trees*, rev. ed., 321. 1936 [*“tanakai”*].

台湾臭椿 tai wan chou chun

*Ailanthus glandulosa* var. *tanakae* Hayata, *Icon. Pl. Formos.* 4: 2. 1914 [*“tanakai”*].

Bark yellow-gray, smooth. Petiolules shorter. Samarium 7–8 mm wide.

• Mainly in alpine forests. N Taiwan.

**5c. *Ailanthus altissima* var. *sutchuenensis*** (Dode) Rehder & E. H. Wilson in *Sargent, Pl. Wilson.* 3: 449. 1917.

大果臭椿 da guo chou chun

*Ailanthus sutchuenensis* Dode, *Bull. Soc. Dendrol. France* 1907: 192. 1907; *A. cacodendron* var. *sutchuenensis* (Dode) Rehder & E. H. Wilson; *A. glandulosa* var. *sutchuenensis* (Dode) Rehder.

Bark white lenticellate. Samarium 5–7 × 1.4–1.8 cm.

• Mainly in valleys and in wet sparse forests or shrub forests; 1700–2500 m. Guangxi, Hubei, Hunan, Jiangxi, Sichuan, Yunnan.

**6. *Ailanthus giraldii*** Dode, *Bull. Soc. Dendrol. France* 1907: 191. 1907.

毛臭椿 mao chou chun

*Ailanthus giraldii* var. *duclouxii* Dode.

Trees deciduous, ca. 10 m tall. Branches densely gray-white or gray-brown, puberulent when young. Leaves odd-pinnate, 30–60(–90) cm; leaflets 9–16(–20) pairs; petiolules 3–7 mm, puberulent; blades broadly lanceolate or sickle-shaped-lanceolate, 7–15 × 2.5–5 cm, abaxially gray-green, densely white puberulent, adaxially dark green, glabrous but puberulent on veins, base cuneate, oblique, both margins 1- or 2-dentate, teeth abaxially glandular, margin shallowly sinuous to sinuous, apex long acuminate or acuminate; lateral veins 14 or 15 pairs. Panicles 20–30 cm. Flowers not seen. Samarium 4.5–6 × 1.5–2 cm. Fl. Apr–May, fr. Sep–Oct.

• Sparse forests or mixed forests in mountains. Gansu, Shaanxi, Sichuan, Yunnan.

## 2. PICRASMA Blume, *Bijdr.* 247. 1825.

苦木属 ku mu shu

Trees with bitter bark. Branches with a pith, glabrous. Leaves odd-pinnate; base of petiole or petiolule often dilated into a pulvinus that withers when dry; stipules early deciduous or persistent; leaflets opposite or nearly so; blades entire or serrate. Inflorescences axillary, cymose panicles. Flowers unisexual or polygamous, 4- or 5-merous; subtending bracts small or early deciduous; pedicel with lower half articulated. Sepals small, free or lower half connate, persistent. Petals valvate or nearly valvate in bud, apex shortly incurved, cuspidate, longer than sepals, persistent in females. Stamens 4 or 5, inserted at base of disk. Disk slightly thickened, entire or shallowly 4- or 5-lobed, sometimes dilate in fruit. Carpels 2–5, free, degenerate or rudimentary in males, each with a single ovule; style connate basally, apex free; stigma free. Fruit comprising one or more drupelike monocarps (each a druparium); exocarp thin, fleshy, wrinkled when dry; endocarp bony. Seeds with a broad hilum, exalbuminous; testa membranous, slightly thick and hard.

About nine species: tropical and subtropical America and Asia; two species (one endemic) in China.

- 1a. Sepals 5, sometimes 4; leaflets 9–15, blades irregularly serrate; druparium blue-green when ripe, 6–8 × 5–7 mm ..... 1. *P. quassioides*  
 1b. Sepals 4; leaflets 5–9, blades entire or sometimes sinuate or wrinkled-sinuate; druparium red-brown when ripe, 10–13 × 7–9 mm ..... 2. *P. chinensis*

**1. *Picrasma quassioides*** (D. Don) Bennett, *Pl. Jav. Rar.* 198. 1844.

苦树 ku shu

Trees, deciduous, up to 10 m tall; bark purplish brown, smooth, with gray stripes. Leaves alternate, odd-pinnate, 15–30 cm; stipules lanceolate, early deciduous; leaflets 9–15; blades ovate-lanceolate or broadly ovate, base cuneate, oblique except for terminal leaflet, both surfaces glabrous except abaxially pubescent on midrib or lateral veins when young, then glabrescent, apex acuminate; leaf scar conspicuous, semirounded or rounded. Flowers dioecious, in axillary cymes; rachis densely yellow-brown puberulent. Sepals 4 or 5, small, ovate or oblong, abaxially yellow-brown puberulent, imbricate. Petals as many as sepals, ovate or broadly ovate, both surfaces with midrib puberulent. Stamens 2 × as long as petals in males, shorter than

petals in females, opposite sepals. Disk 4- or 5-lobed. Carpels 4 or 5, free. Druparium blue-green when ripe, globose, 6–8 × 5–7 mm, calyx persistent, testa thin. Fl. Apr–May, fr. Jun–Sep.

Mountainous mixed forests; 1400–3200 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Japan, Kashmir, Korea, Nepal, Sri Lanka].

- 1a. Leaflet blades abaxially pubescent only on midrib or lateral veins when young; inflorescence rachis densely yellow-brown puberulent ..... 1a. var. *quassioides*  
 1b. Leaflet blades glabrous; inflorescences and infructescence glabrous or sparsely pubescent then glabrescent ..... 1b. var. *glabrescens*

**1a. *Picrasma quassioides* var. *quassioides***苦树(原变种) *ku shu* (*yuan bian zhong*)*Simaba quassioides* D. Don, Prodr. Fl. Nepal. 248. 1825; *Picrasma japonica* A. Gray; *Rhus ailanthoides* Bunge.

Leaflet blades glabrous, but abaxially pubescent along midrib or lateral veins when young. Inflorescence rachis densely yellow-brown puberulent.

Mountainous mixed forests; 1400–2400 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Japan, Kashmir, Korea, Nepal, Sri Lanka].

**1b. *Picrasma quassioides* var. *glabrescens* Pampanini, Nuovo Giorn. Bot. Ital., n.s., 18: 171. 1911.**光序苦树 *guang xu ku shu*

Leaflet blades glabrous. Inflorescences and infructescence glabrous or sparsely pubescent then glabrescent.

- Mountainous mixed forests; 1800–3200 m. Hubei, Yunnan.

**2. *Picrasma chinensis* P. Y. Chen, Acta Bot. Austro Sin. 1: 71. 1983.**中国苦树 *zhong guo ku shu*

Trees, ?deciduous, up to 15 m tall. Branches yellow-green

when young, glabrous, purplish red, gray-white lenticellate when old. Leaves alternate, odd-pinnate; stipules early deciduous; petiole 4–7 cm, ca. 1/3 of rachis, terete, sparsely puberulent or glabrous; leaflets 5–9, opposite or nearly so; petiolule 3–9 mm; blades oblong or ovate-oblong, 7–13 × 2.5–5 cm, papery or thickly papery, glabrous, base cuneate or broadly cuneate, oblique with one side sometimes slightly rounded, margin entire or sometimes sinuate or shallowly sinuate-serrate, apex long acuminate or caudate-acuminate; midrib and lateral veins prominent, especially abaxially, lateral veins 5–8 pairs. Panicles axillary, 5–12 cm, longer in males than in females. Flowers polygamous, usually 4-merous, sometimes 5-merous, smaller in males than in bisexuals; pedicel 2.5–3 mm. Sepals 4, ovate, 0.6–1 mm, abaxially puberulent. Petals 4, yellow-green, ovate-oblong, 2–2.5 mm, apex obtuse, abaxially very sparsely puberulent or glabrous. Stamens 4, as long as petals; filaments white, long hairy. Disk 4-lobed, long white hairy. Bisexual flowers: pedicel 4–5 mm; sepals 4, broadly ovate, ca. 1.5 mm, abaxially puberulent; petals 4, ovate-oblong, 4–5 mm, apex obtuse or acute, abaxially very sparsely puberulent or glabrous; stamens 4, ca. 1/2 as long as petals, filaments white, long hairy; ovary 4-loculed; style terete, stigma 4-lobed. Druparium reddish brown when ripe, globose, 10–13 × 7–9 mm; testa wrinkled when dry; petals persistent, oblong or ovate-oblong, 10–13 × 7–9 mm. Fl. Apr–May, fr. Jun–Aug.

- Sparse forests, mountain thickets; 600–1400 m. Guangxi, Xizang, Yunnan.

**3. BRUCEA J. F. Miller, Icon. Anim. Pl. t. 25. 1779–1780, nom. cons.**鸦胆子属 *ya dan zi shu*

Shrubs or small trees, monoecious or dioecious, with bitter root cortex and bark. Branches pubescent or puberulent when young. Leaves odd-pinnate; stipules absent; leaflets 3–15; blades ovate or lanceolate, base slightly oblique, margin entire or serrate, apex acuminate. Flowers unisexual, rarely bisexual, in narrow axillary cymose panicles. Sepals 4, small, ovate, oblong-ovate, or deltoid, bases connate, imbricate in bud. Petals 4, small, free, imbricate in bud, oblong-ovate, oblong, or linear. Disk thick, 4-lobed. Stamens 4, only with rudiments in female flowers or fully degenerated; filaments short, inserted between lobes of disk; anthers cordate or ovate. Ovary 4-carpellate; carpels free, ovoid, with 1 ovule; styles free or basally connate. Fruit comprising 1 or more drupelike monocarps (each a druparium), hard, somewhat fleshy. Seeds exalbuminous.

About six species: mainly in Africa, Asia, and N Oceania; two species in China.

- 1a. Leaflet blades ovate or ovate-lanceolate, margin coarsely toothed; druparium 6–8 × 4–6 mm, exocarp reticulately wrinkled when dry ..... 1. *B. javanica*
- 1b. Leaflet blades elliptic-lanceolate, ovate-lanceolate, or broadly lanceolate, margin entire; druparium 8–12 × 6–8 mm, exocarp shallowly reticulately wrinkled when dry ..... 2. *B. mollis*

**1. *Brucea javanica* (Linnaeus) Merrill, J. Arnold Arbor. 9: 3. 1928.**鸦胆子 *ya dan zi**Rhus javanica* Linnaeus, Sp. Pl. 1: 265. 1753; *Brucea sumatrana* Roxburgh; *Gonus amarissimus* Loureiro.

Shrubs or small trees. Young branches, petioles, and inflorescences yellow tomentose. Leaves 20–40 cm; leaflets 3–15; petiolule 4–8 mm; blades ovate or ovate-lanceolate, 5–10(–13) × 2.5–5(–6.5) cm, base broadly cuneate or nearly rounded, usually somewhat oblique, margin serrate, apex acuminate, both sur-

faces villous, especially along veins and abaxially. Panicles 15–25(–40) cm in males, ca. half as long in females. Flowers small, dark purple, 1.5–2 mm in diam. Male flowers: pedicel slender, ca. 3 mm; sepals densely puberulent, 0.5–1 × 0.3–0.5 mm; petals sparsely puberulent or nearly glabrous, 1–2 × 0.5–1 mm; filaments subulate, ca. 0.6 mm; anthers ca. 0.4 mm. Female flowers: pedicel ca. 2.5 mm; sepals and petals same as in males; stamens rudimentary. Druparia 1–4, free, oblong-ovoid, 6–8 × 4–6 mm, gray-black when ripe; exocarp reticulately wrinkled when dry; endocarp hard bony. Seeds yellow-white, ovoid, thinly membranous, with copious oil, terribly bitter. Fl. Jun–Jul, fr. Aug–Oct.

Open shrubby forests in foothills; below 100–1000 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Taiwan, Yunnan [India, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Sri Lanka; Australia].

**2. *Brucea mollis*** Wallich ex Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 64. 1873.

柔毛鸦胆子 rou mao ya dan zi

*Brucea acuminata* H. L. Li; *B. mollis* var. *tonkinensis* Lecomte.

Shrubs or small trees, usually 1–2 m tall, sometimes up to 5 m. Branchlets yellow-green, puberulent; branches red-purple, densely white lenticellate. Leaves odd-pinnate, 20–45(–60) cm; rachis and petiole densely yellow pubescent; leaflets 5–15;

petiolules 3–7 mm; blades elliptic-lanceolate, ovate-lanceolate, or broadly lanceolate, 5–12(–15) × 2.5–5 cm, yellow tomentose when young, then puberulent or glabrescent, base broadly cuneate or slightly rounded, somewhat oblique, margin entire, apex long acuminate or acuminate; lateral veins 8–10 pairs, abaxially conspicuously prominent. Panicles long, 10–25 cm, slender; rachis densely yellow tomentose, then sparsely pubescent or glabrescent. Flowers 2–3 mm in diam. Petals spoon-shaped, shortly pubescent, longer than stamens. Disk flat and globose in males, shallowly disk-shaped in females. Ovary densely pubescent. Druparium ovoid, 8–12 × 6–8 mm, glabrous, red-brown when dry, shallowly reticulately wrinkled.

Mountainous sparse forests, thickets, roadside shrubs; 700–1200 (–1900) m. Guangdong, Guangxi, Yunnan [Bhutan, Cambodia, India, Laos, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam].