CELASTRACEAE

卫矛科 wei mao ke

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Trees, erect or scandent shrubs, lianas, evergreen or deciduous; stems sometimes producing rootlets (Euonymus spp.), sometimes thorny (Maytenus spp.), rarely with buttressed trunks. Leaves simple, alternate or opposite; petiolate; leaf blade laminar, venation pinnate, secondary veins reticulate, margins entire, crenate, serrate, or dentate; stipules small and caducous, or estipulate. Inflorescences axillary or terminal, few to many flowered, cymose, thyrsoid, racemose, fasciculate, or flowers solitary, rarely paniculate. Flowers actinomorphic, bisexual or unisexual; perianth (3 or)4–5-merous; sepals and petals free. Disk intrastaminal, stamens on disk, or extrastaminal, annular, margins upturned, pulvinate, or cupular, conspicuous, rarely obscure (Microtropis spp.), entire, lobed, or angular. Stamens 3–5, alternate with petals; anther (1 or)2-celled, basifixed to dorsifixed, dehiscing longitudinally or obliquely, intorse, extrorse, or latrorse. Ovaries 3–5, superior to half-inferior, often partially immersed in disk, completely or incompletely 2–5-locular, placentation axile, ovules erect, axile, or pendulous, ovules (1 or)2(or 3 or more) per locule; style terminal, simple, short to absent; stigma simple or lobed. Fruit a loculicidally dehiscent capsule, schizocarp of 2–5 indehiscent mericarps, drupe, berry, or samara with a single surrounding wing, rarely an indehiscent capsule or nut with lateral style, pericarp bony, leathery, chartaceous, or fleshy, capsules smooth, angular, deeply lobed, transversely flattened and lobed to base, or connate, rarely prickly, laterally winged. Seeds 1–12, smooth or occasionally furrowed, albuminous or exalbuminous, sometimes winged, wing membranous, basal, exarillate or aril basal to completely enveloping seed, aril membranous, fleshy, rarely mucilaginous; cotyledons flat, foliaceous or thick, connate, germination epigeous. 2n = 8, 12, 14.

About 97 genera and 1194 species: mainly in the tropics and subtropics, some in temperate regions; 14 genera (one endemic, one introduced) and 192 species (120 endemic, two introduced) in China.

Some species are used as ornamentals (Celastrus, Euonymus, and Tripterygium) and/or medicines, including traditional Chinese medicines (Celastrus, Euonymus, Maytenus, and Tripterygium).

Plagiopteran Griffith is treated in this volume as a separate family, the Plagiopteraceae; see the comments under that family (p. 493). Dipentodon Dunn and Perrottetia Kunth are also treated in this volume (pp. 494–495) as comprising a separate family, the Dipentodontaceae, following Zhang and Simmons (Syst. Bot. 31: 122–137. 2006). On the other hand, Bhesa is included here in the Celastraceae, although Zhang and Simmons (loc. cit.) found that it belongs in the Malpighiales, where it comprises a separate lineage sister to the W African Centroplocus. Hippocrateaceae (Loeseneriella, Pristimera, and Salacia) are included here in the Celastraceae following Simmons et al. (Amer. J. Bot. 88: 313–325. 2001).


1a. Disk extrastaminal; flowers bisexual; fruit baccate with seeds surrounded by mucilaginous arils or capsules transversely flattened, 1–3-fascicled.
2a. Fleshy or ligneous berry; seeds wingless; scandent often arboreous shrubs or small trees ........................................ 12. Salacia
2b. Trilocular capsules, compressed, dehiscing into 2 valves; seeds winged; ligneous lianas.
3a. Flowers large, petals at least 4 mm, recurved in bloom; disk conspicuous, cupular and protuberant ...... 13. Loeseneriella
3b. Flowers small, petals up to 3 mm, erect in bloom; disk inconspicuous ................................................................. 14. Pristimera

1b. Disk intrastaminal or stamens on disk; flowers unisexual or bisexual; fruit capsular, drupaceous, samaroid, or baccate.
4a. Fruit samaroid, drupaceous, or baccate.
5a. Samara, 3-winged at maturity; scandent shrubs .............................................................. 10. Tripterygium
5b. Drupe or berry; shrubs, small trees, or lianas ................................................................. 11. Plectrostylea
4b. Fruit capsular.

6a. Sepals, petals, and ovaries 4– or 5-merous; disk unlobed, thick; seeds arillate.
7a. Leaves alternate, stipulate; stipules long and fimbriate, persistent after blooming; petals persistent during fruiting, enlarging into 4 wings ................................................................. 3. Monimopetalum
7b. Leaves opposite, stipulate; stipules thin and small, caducous; petals caducous.
8a. Flowers and fruit 4– or 5-merous; disk flat, not circling ovary; ovules 2–12 per locule; fruit axis splitting with valves when fruit dehisces; seeds 2 or more per cell, attached to top or base at inner angle; raphe not branched .................................................................................................................. 1. Euonymus

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5 Missouri Botanical Garden, P.O. Box 299, Saint Louis, Missouri 63166-0299, U.S.A.
8b. Flowers and fruit 4-merous only; disk lobes suberect, circling ovary; ovule 1 per locule; fruit axis splitting or not, free from valves when fruit dehisces; seeds only 1 per cell, hanging from top of persistent axis; raphe branch usually at base of seed, bands ascending on other side toward hilum ................................................................. 2. Glyptopetalum

6b. Sepals and petals 4- or 5-merous, ovaries only 2- or 3-merous; disk lobed or nearly nonexistent; seeds typically arillate, sometimes aril absent.
9a. Leaves opposite; aril partially covering seed or absent.
10a. Aril decurrent in wing-form, partially covering seed (cultivated) ......................................................... 8. Catha
10b. Aril absent (native) ................................................................................................................................. 9. Microtropis

9b. Leaves alternate; aril incompletely or so at base of seeds.
11a. Leaf blade veins regular in dense nets, petiole bent, enlarged; aril dry, white or brown ......................... 7. Bhesa
11b. Leaf blade veins irregular in sparse nets, petiole erect, not enlarged; aril fleshy, reddish, yellow, or white.
12a. Typically scandent shrubs; carpels usually 3 in separate locules; stigma 3, each dividing, similar to 6 lobes; aril completely covering seeds ........................................................................... 4. Celastrus
12b. Typically erect small trees or shrubs; carpels 2 or 3 in 2 or 3 locules; stigma 2 or 3, slightly lobed; seeds only basally or lower half covered by arils.
13a. Plants usually thorny; twigs thornlike, bearing leaves and flowers, or twigs with needlelike thorns; leaf blade small, usually shorter than 7 cm .............................................. 5. Gymnosporia
13b. Twigs usually unarmed or few thorned, old branches often with sturdy thorns; leaf blade large, usually 7–25 cm .......................................................... 6. Maytenus


卫矛属 wei mao shu

Ma Jinshuang (马金双); A. Michele Funston

Shrubs, sometimes small trees, ascending or clambering, evergreen or deciduous, glabrous, rarely pubescent. Leaves opposite, rarely also alternate or whorled, entire, serrulate, or crenate, stipulate. Inflorescences axillary, occasionally terminal, cymate. Flowers bisexual, 4(or 5)-merous; petals light yellow to dark purple. Disk fleshy, annular, 4- or 5-lobed, intrastaminal or stamens on disk; anthers longitudinally or obliquely dehiscent, intorse. Ovary 4- or 5-locular; ovules erect to pendulous, 2(–12) per locule. Capsule globose, rugose, prickly, laterally winged or deeply lobed, occasionally only 1–3 lobes developing, loculicidally dehiscent. Seeds 1 to several, typically 2 developing, ellipsoid; aril basal to enveloping seed.

Two subgenera and ca. 130 species: Asia, Australasia, Europe, Madagascar, North America; 90 species (50 endemic, one introduced) in China.

Euonymus oreineus W. P. Fang (J. Sichuan Univ., Nat. Sci. Ed. 1: 38. 1955) was described from Sichuan (Emei Shan, Shishangou, ca. 1300 m). This putative species was misdiagnosed; it is a synonym of Reesias pubescens Masters in the Sterculiaceae (see Fl. China 12: 317. 2007). The protologue describes the fruit as having bracts.

The placement of Euonymus tibeticus W. W. Smith (Rec. Bot. Surv. India 4: 264. 1911), described from Xizang (3000–3100 m) and also occurring in Bhutan (Lhakhang) and India (Sikkim), is unclear, as only a specimen with flower buds is available.

Euonymus cinereus M. A. Lawson (in J. D. Hooker, Fl. Brit. India 1: 611. 1875) was described from India. The occurrence of this species in China (FRPS 45(3): 24. 1999) has not been confirmed.

1a. Winter buds usually conical, very acute, large; stamens sessile, anthers 1-celled; capsule winged (E. subg. Kalonymus) .................................................................................................................. 1. E. sect. Uniloculares
1b. Winter buds usually ovoid, acute, small; stamens filamentosus or subsessilis, anthers 2-celled; capsule without wings (E. subg. Euonymus).
2a. Capsule 4-lobed almost to base, sometimes only 1–3 lobes developing ................................................... 3. E. sect. Melanocarya
2b. Capsule unlobed.
3a. Capsule prickly or tuberculata ........................................................... 2. E. sect. Echinococcus
3b. Capsule smooth or rugose and angulate.
4a. Capsule smooth, rounded or globose .................................................. 4. E. sect. Ilicifolii
4b. Capsule usually rugose and angulate ................................................... 5. E. sect. Euonymus


翅果卫矛亚属 chi guo wei mao ya shu

Evergreen or deciduous shrubs to small trees; winter buds conical, large, 0.7–2 cm. Flowers 4- or 5-merous. Anthers sessile, of 1 theca. Ovaries 4- or 5-loculed. Capsule with wings, 4- or 5-lobed at maturity.
Sixteen species: Asia; 15 species (eight endemic) in China.


Morphological characters and geographical distribution are the same as those of the subgenus.

1a. Flowers and fruit 4-merous only.

2a. Leaf blade entire, narrowly lanceolate ................................................................. 7. *E. kweichowensis*

2b. Leaf blade crenulate to denticulate, ovate to elliptic, widest at mid-blade.

3a. Leaves sessile; leaf blade ovate-oblong, base cordate, margin large serrate ........................................ 14. *E. subcordatus*

3b. Leaves petiolate; leaf blade base not cordate, margin not serrate.

4a. Flowers red to purple.

5a. Wings of capsule short, less than 6 mm, obtuse at apex ........................................ 5. *E. frigidus*

5b. Wings of capsule long, more than 6 mm, sharp at apex ........................................ 6. *E. giraldii*

4b. Flowers green to yellow.

6a. Wings of capsule obtuse at apex ............................................................................ 13. *E. schensianus*

6b. Wings of capsule sharp at apex.

7a. Leaf blade ovate or obovate, 9–14 × 4–6 cm ...................................................... 8. *E. macropterus*

7b. Leaf blade ovate-elliptic, 6–8 × 3–4 cm ...................................................... 12. *E. sanguineus*

1b. Flowers and fruit usually 5-merous, sometimes combined with 4-merous.

8a. Capsule nearly without wing, subglobose, or with small angles at connection of locules ........................................ 9. *E. oxyphyllus*

8b. Capsule always with long and evident wings.

9a. Leaf blade linear or oblong, bamboolike, entire length of equal width ........................................ 2. *E. cornutus*

9b. Leaf blade ovate, elliptic, or lanceolate, widest at mid-blade.

10a. Leaf margin entire.

11a. Leaf blade broadly elliptic, ovate, or ovate-elliptic, 9–13 × 4–6 cm; capsule ca. 1.5 cm in diam., with obscure wings ...................................................... 3. *E. ficoideus*

11b. Leaf blade elliptic-ovate or obovate-elliptic, 6–9 × 2.5–4 cm; capsule 1.2–1.4 cm in diam., with wings less than 5 mm ...................................................... 10. *E. rehderianus*

10b. Leaf margin crenulate to serrate.

12a. Flowers white, yellow, or greenish; capsule 4-winged, wings up to 1 cm, sometimes combined with 5-winged fruit ...................................................... 4. *E. fimбриatus*

12b. Flowers pink, red to purple; capsule usually 5-winged.

13a. Leaf blade ovate-lanceolate, more than 5 × as long as wide ........................................ 1. *E. clivicola*

13b. Leaf blade ovate to elliptic, less than 3 × as long as wide.

14a. Flowers large, up to 1.2 cm in diam.; capsule with 5 wings developing ...... 15. *E. szechuanensis*

14b. Flowers small, 7–9 mm in diam.; capsule usually with 5 wings developing, sometimes only 3 or 4 wings developing .............................................. 11. *E. sachalinensis*

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岩波卫矛 yan bo wei mao

*Euonymus clivicola* var. *rongchuensis* (C. Marquand & Airy Shaw) Blakelock; *E. elegantissimus* Loesener & Rehder; *E. rongchuensis* C. Marquand & Airy Shaw.

Deciduous shrubs, 2–3 m tall; branches and twigs moderately sturdy, striate, brown or gray-brown when dry. Petiole ca. 4 mm; leaf blade thinly leathery or thickly papery, elliptic-lanceolate, 8–12 × 2–3 cm, widest at mid-blade, base subrotund, margin finely crenulate, apex acuminate; lateral veins 5–7 pairs, disappearing before reaching margin. Peduncle slender, 3–6 cm, 1 or 2 × dichotomously branched, several flowered; pedicel slender, 4–5 mm. Flowers 5-merous, 8–11 mm in diam.; sepals suborbicular, short; petals reddish to purple, ovate, base cuneate. Ovary weakly angulate. Capsule green to brown, or yellow-brown when dry, nearly globose, 1–1.2 cm in diam., with 5 long and thin wings, up to 1.2 cm when fully developed. Aril bright red. Fl. May–Jul, fr. Jul–Nov.

Mixed forests, scrub; 2400–3900 m. Hubei, Qinghai, Shaanxi, Sichuan, Xizang, Yunnan [Bhutan, Myanmar, Nepal].

The distribution report from Qinghai has not been confirmed.


角姬卫矛 jiao chi wei mao

*Euonymus cornutoides* Loesener; *E. cornutus* var. *quinquecornutus* (H. F. Comber) Blakelock; *E. frigidus* Wallich var. *cornutoides* (Loesener) C. Y. Cheng; *E. quinquecornutus* H. F. Comber.

Deciduous shrubs, 2–3 m tall; branches and twigs moderately slender, striate, brown or gray-brown when dry. Petiole ca. 4 mm; leaf blade thinly leathery or thickly papery, linear, oblong, or bamboolike, 7–15 cm, less than 1(–1.5) cm wide,
entire length of equal width, base subrotund, margin sparsely crenulate, apex acuminate; lateral veins 8–13 pairs, invisible or disappearing before reaching margin. Peduncle slender, 3–5 cm, 1 or 2 × dichotomously branched, several flowered; pedicel slender, 4–5 mm. Flowers 4- or 5-merous, 7–10 mm in diam.; sepals suborbicular, short; petals reddish to purple, ovate, base cuneate. Ovary weakly angulate. Capsule green to brown, or yellow-brown when dry, nearly globose, ca. 1 cm in diam., with 4 or 5 long and thin wings, up to 1 cm when fully developed. Aril bright red. Fl. Apr–Jul, fr. Aug–Nov.

Mixed forests, scrub; 2200–4300 m. ?Gansu, Henan, Hubei, ?Hunan, Shaanxi, Sichuan, Xizang, Yunnan [India, Myanmar].

The distribution reports from Gansu and Hunan have not been confirmed; those from Shaanxi and Xizang are from local work.


榕叶卫矛  rong ye wei mao

Evergreen shrubs, 2–3 m tall; branches and twigs sturdy, brown or gray-brown when dry. Petiole 1.5–2 cm, sturdy; leaf blade thickly leathery, ovate or ovate-elliptic, 9–13 × 4–6 cm, base semiorbund, attenuate, or cuneate, margin nearly entire, sometimes revolute, apex acuminate or acute; lateral veins 8–12 pairs, curved forward, netting and disappearing before reaching margin. Peduncle 5–6 cm, 1 or 2 × dichotomously branched, several flowered; pedicel short, less than ca. 1 cm. Flowers 5-merous (not seen). Capsule red when fresh, or dark brown when dry, nearly globose, ca. 1 cm in diam., with 5 obscure wings at maturity. Seeds 2; aril orange. Fl. unknown, fr. Oct–Nov.

● Mixed forests, scrub; 1200–2100 m. Yunnan.

4. Euonymus fimbriatus Wallich in Roxburgh, Fl. Ind. 2: 408. 1824.

纤齿卫矛  xian chi wei mao

Euonymus fimbriatus var. serratus Blakelock.

Deciduous trees, to 15 m tall, ca. 45 cm d.b.h.; branches and twigs sturdy, young ones usually slender, brown or gray-brown when dry. Petiole 5–10 mm; leaf blade leathery, elliptic-ovate, 6.5–10(–15) × 4–6 cm, base semiorbund, attenuate, or cuneate, margin sharply double-serrulate, sometimes combined with single sharp serrulation, apex acuminate or acute; lateral veins 5–7 pairs, disappearing before reaching margin. Peduncle from new branches only, slender, 3–4 cm, 2–4 × dichotomously branched with several to many flowers; pedicel short and slender, ca. 6 mm. Flowers 4-merous, sometimes combined with 5-merous, less than 6 mm in diam.; sepals deltoid, very small; petals yellow-green or greenish yellow, ovate-rotund. Capsule pink to red when fresh, or brown to greenish brown when dry, nearly compressed globose, ca. 1.2 cm in diam., with 4 long and flat wings, up to more than ca. 1 cm, sometimes combined with 5 wings. Seeds 2; aril orange. Fl. Apr–May, fr. Jul–Aug.

Open ground, woodlands; 2100–3300 m. Xizang [Afghanistan, India, Kashmir, Nepal, Pakistan].

This is a common species that can be easily identified by its sharp and double-serrulate leaf margin. The species sometimes combines 4-merous flowers and fruit with 5-merous anatomy. This is a very rare character in the genus.

5. Euonymus frigidus Wallich in Roxburgh, Fl. Ind. 2: 409. 1824.

冷地卫矛  leng di wei mao


Deciduous shrubs to small trees, 3–7 m tall; branches and twigs moderately sturdy, striate, brown or gray-brown when dry. Petiole less than 1 cm; leaf blade thickly papery or thinly leathery, variously elliptic-lanceolate to ovate-elliptic, 6–11 × 2–3.5 cm, widest at mid-blade, base subrotund, cuneate, or attenuate, margin finely crenulate, apex acuminate or acute; lateral veins 5–7 pairs, disappearing before reaching margin. Peduncle slender, 7–10 cm, 1 or 2 × dichotomously branched, several flowered; pedicel slender, 5–6 mm. Flowers 4-merous, less than 8 mm in diam.; sepals suborbicular, short; petals reddish to purple or brown, ovate, base cuneate. Ovary weakly angulate. Capsule green to brown, or yellow-brown when dry, nearly globose, ca. 1 cm in diam., with 4 short and obseuse wings, less than ca. 6 mm when fully developed. Aril bright red. Fl. May–Jul, fr. Aug–Nov.

Mixed forests, scrub; 500–4000 m. ?Gansu, Guizhou, Henan, Hubei, Ningxia, Qinghai, ?Shanxi, Sichuan, Xizang, Yunnan [Bhutan, India, Myanmar, Nepal].

The gathering H. L. Tsang 37838 from Sichuan was found to have 3- and 4-merous flowers co-existing on the same plant. The only other such occurrence is in Euonymus sachalinensis. The distribution reports from Gansu and Shanxi have not been confirmed.


纤齿卫矛  xian chi wei mao

Euonymus giralldii var. angustilatus Loesener; E. giralldii var. ciliatus Loesener; E. kansuensis Nakai; E. pashanensis S. Z. Qu & Y. H. He; E. perbellus C. Y. Chang.

Deciduous shrubs or small trees, 3–7 m tall; branches and twigs moderately sturdy, striate, brown or gray-brown when dry. Petiole less than 1 cm; leaf blade thickly papery or thinly leathery, variously elliptic-lanceolate to ovate-elliptic, 6–8 × 2–3.5 cm, widest at mid-blade, base subrotund, cuneate, or attenuate, margin finely crenulate, apex acuminate or acute; lateral veins 5–7 pairs, disappearing before reaching margin. Peduncle slender, 5–7 cm, 1 or 2 × dichotomously branched, several flowered; pedicel slender, 5–6 mm. Flowers 4-merous, less than 8 mm in
diam.; sepals suborbicular, short; petals reddish to purple, ovate, base cuneate. Ovary weakly angulate. Capsule green to brown, or yellow-brown when dry, nearly globose, less than ca. 1 cm in diam., with 4 short and sharp wings, greater than ca. 6 mm when fully developed. Aril bright red. Fl. Apr–Jun, fr. Jul–Oct.

- Mixed forests, scrub; 1000–3700 m. Anhui, Gansu, Hebei, Henan, Hubei, Ningxia, Qinghai, Shaanxi, Sichuan, Yunnan.

This species was misidentified as *Euonymus sachalinensis* in some local works; however, it differs from *E. sachalinensis* by having smaller leaves and shorter wings, as well as being separated by a disjunct distribution.


贵州卫矛 guizhou wei mao

*Euonymus integrifolius* Blakelock.

Deciduous shrubs, ca. 3 m tall; branches and twigs moderately sturdy, striate, brown or gray-brown when dry. Petiole less than ca. 1 cm; leaf blade thickly papery or thinly leathery, narrowly lanceolate, 8–12 × 1.5–2 cm, widest at mid-blade, base cuneate or attenuate, margin entire, apex acuminate, caudate, or acute; lateral veins 5–7 pairs, disappearing with obscure netting before reaching margin. Peduncle slender, up to 10 cm, 1 or 2 × dichotomously branched, several flowered. Flowers 4-merous (not seen). Capsule green to brown, or yellow-brown when dry, nearly globose, ca. 1 cm in diam., with 4 wide and short wings, more than ca. 5 mm when fully developed. Seeds 2, dark brown; aril bright red. Fl. unknown, fr. Aug.

- Forests, scrub; 900–1100 m. Guizhou.

This species is reported from only a few locations; further collections are needed.


黄心卫矛 huang xin wei mao

*Euonymus usuriensis* Maximowicz.

Deciduous shrubs, 2–3 m tall; branches and twigs moderately sturdy, striate, brown or gray-brown when dry. Petiole sturdy, less than ca. 1 cm; leaf blade thickly papery or thinly leathery, ovate-elliptic, ovate, or obovate, 9–14 × 4–6 cm, widest at mid-blade, base subrotund, cuneate, or attenuate, margin crenulate, apex acuminate or acute; lateral veins 7–9 pairs, branching and disappearing before reaching margin. Peduncle slender, 7–10 cm, 2 or 3 × dichotomously branched with several to many flowers; pedicel slender, 5–6 mm. Flowers 4-merous, ca. 7 mm in diam.; sepals suborbicular, short; petals whitish green or yellow-green, ovate, base cuneate. Ovary weakly angulate. Capsule green to brown, or yellow-brown when dry, nearly globose, ca. 6 mm in diam., with 4 long and sharp wings, more than ca. 1 cm when fully developed. Aril bright red. Fl. Apr–May, fr. Aug–Oct.

- Forests, scrub; 400–1600 m. Guangxi, Guizhou, Sichuan, Yunnan.


贵州卫矛 guizhou wei mao

Deciduous shrubs to small trees, 3–4 m tall; branches and twigs terete, sturdy, brown or dark brown when dry. Petiole less than ca. 1 cm; leaf blade thickly papery or thinly leathery, ovate-elliptic or ovate-lanceolate, 7–12 × 3.5–5 cm, base cuneate or attenuate, margin finely serrulate, apex acuminate or acute; lateral veins 5–7 pairs, netting and disappearing before reaching margin. Peduncle slender, 6–10 cm, 1–3 × dichotomously branched with several to many flowers; pedicel thin and slender, less than 10 mm. Flowers 5-merous, 6–8 mm in diam.; sepals suborbicular, short; petals white with a little purple, obovate, apex rotund or acute, base cuneate. Capsule green to brown, or yellow-brown when dry, nearly globose, ca. 1.2 cm in diam., without wings or at most slightly 5-angled. Aril bright red. Fl. Apr–Jun, fr. Aug–Nov.

- Forests, woodlands; near sea level to 2300 m. Anhui, Fujian, Henan, Hunan, Jiangxi, Liaoning, Shandong, Taiwan, Zhejiang [Japan, Korea].

This species is well known and widespread throughout E. Asia. The fruit is often identified as a member of *Euonymus sect. Ilicifolii* because the wings are too short to observe with the naked eye; however, the other characters used to separate the sections place *E. oxyphyllus* in *E. sect. Uniloculares*.


短翅卫矛 duan chi wei mao

*Euonymus bicolor* H. Léveillé; *E. proteus* H. Léveillé.

Deciduous shrubs to small trees, ca. 5 m tall; branches and twigs sturdy, brown or gray-brown when dry. Petiole 1–2 cm; leaf blade thickly leathery, elliptic-ovate or obovate-elliptic, 6–9 × 2.5–4 cm, base attenuate or cuneate, margin entire, apex acuminate or acute; lateral veins 5–7 pairs, disappearing before reaching margin. Peduncle from new branches usually slender, 5–8 cm, ca. 2 × dichotomously branched, several flowered; pedicel short and slender, ca. 6 mm. Flowers 5-merous, 6–7 mm in diam.; sepals deltoid, very small; petals ovate-rotund, yellow-green or greenish yellow. Capsule pink to red when fresh, or brown to greenish brown when dry, nearly compressed globose, 1.2–1.4 cm in diam., with 5 short and flat wings, less than ca. 5 mm when fully developed. Seeds 2; aril orange. Fl. Apr–May, fr. Jul–Oct.

- Forests, scrub; 300–1600 m. Guangxi, Guizhou, Sichuan, Yunnan.


东北卫矛 dong bei wei mao


Deciduous shrubs, 2–3 m tall; branches and twigs moderately sturdy, striate, brown or gray-brown when dry. Petiole sturdy, less than ca. 1 cm; leaf blade thickly papery or thinly leathery, ovate-elliptic, ovate, or broadly elliptic, 9–15 × 5.5–8.5 mm when fully developed. Aril bright red. Fl. Apr–Jun, fr. Aug–Oct.

- Mixed forests, scrub; 1000–3700 m. Anhui, Gansu, Hebei, Henan, Hubei, Qinghai, Shaanxi, Sichuan, Yunnan.
cm, widest at mid-blade, base subrotund, cuneate, or attenuate, margin crenulate, apex acuminate or acute; lateral veins 7–9 pairs, branching and disappearing before reaching margin. Peduncle slender, 5–8 cm, 1–3 × dichotomously branched, several flowered; pedicel slender, 5–6 mm. Flowers 5-merous, 7–9 mm in diam.; sepals suborbicular, short; petals reddish to purple or brown, ovate, base cuneate. Ovary weakly angulate, 5-loculed, sometimes only 3 or 4 locules developing. Capsule green to brown, or yellow-brown when dry, nearly globose, ca. 1 cm in diam., with 5 short and obtuse wings, less than ca. 5 mm when fully developed, sometimes only 3 or 4 wings developing. Aril bright red. Fl. Apr–Jul, fr. Aug–Nov.

Mixed forests, scrub; 100–2700 m. Heilongjiang, Jilin, Liaoning [Japan, Korea, Russia (Far East)].

The syntype specimen of *Euonymus latifolius var. sachalinensis*, collected by Przewalski from Gansu, belongs to *E. giralddi*.

The flowers and fruit of this species are 5-merous, but sometimes only 3 or 4 locules develop, especially in plants from N Japan and Russia (Far East). These character states are sometimes found in the same specimen, making it impossible to separate taxa by the number of wings or locules of the fruit. This species is very similar to *Euonymus oxyphillus* in the texture of its leaves, but it can be separated from that species and from *E. macropterus* by its fruit with very short wings.


石枣子  shi zao zi

_Euonymus monbeigii_ W. W. Smith; _E. sanguineus_ var. _brevipedunculatus_ Loesener; _E. sanguineus_ var. _camptoneurus_ Loesener; _E. sanguineus_ var. _lanceolatus_ S. Z. Qu & Y. H. He; _E. sanguineus_ var. _orthoneurus_ Loesener; _E. sanguineus_ var. _pachyphyllus_ Pampanini.

Deciduous shrubs or small trees, 3–5 m tall; branches and twigs sturdy, striate, brown or gray-brown when dry. Petiole typically less than ca. 1 cm; leaf blade leathery, variously ovate-elliptic, 6–8 × 3–4 cm, base subrotund, cuneate, or attenuate, margin sharply and finely serrate, sometimes combined with fine crenulations, apex acuminate or acute; lateral veins 5–7 pairs, disappearing before reaching margin. Peduncle 5–7 cm, 1 or 2 × dichotomously branched with several to many flowers; pedicel 5–6 mm, less than ca. 6 mm in diam. Flowers 4-merous; sepals suborbicular, short; petals whitish green or greenish white, ovate, base cuneate. Ovary weakly angulate. Capsule green to brown, or yellow-brown when dry, nearly globose, less than 1 cm in diam., with 4 wide and sharp wings, more than ca. 8 mm when fully developed. Aril bright red. Fl. Apr–Jun, fr. Jul–Oct.


The distribution report from Guizhou has not been confirmed.


陕西卫矛  shan xi wei mao


四川卫矛  si chuan wei mao

Deciduous shrubs, ca. 3 m tall; branches and twigs moderately sturdy, striate, brown or gray-brown when dry. Petiole less than 1 cm; leaf blade thickly papery, ovate-elliptic, obovate, or obovate-elliptic, 5–8(–10) × 2.5–4 cm, base subrotund, cuneate, or attenuate, margin finely crenulate, apex acuminate or acute; lateral veins 4–6 pairs, disappearing before reaching margin. Peduncle slender, up to 10 cm or more, 1 or 2 × dichotomously branched with several to many flowers; pedicel thin and slender, ca. 10 mm. Flowers 4-merous, ca. 7 mm in diam.; sepals suborbicular, short; petals whitish green or greenish white, obovate, apex acute, base cuneate. Ovary weakly angulate. Capsule green to brown, or yellow-brown when dry, nearly globose, ca. 1 cm in diam., with 4 wide and obtuse wings, more than ca. 8 × 6 mm when fully developed. Aril bright red. Fl. Apr–May, fr. Sep–Nov.

- Forests; ca. 600 m. Guangxi.

This species is known only from the type, which has very young fruit.


近心卫矛  jin xin ye wei mao

Shrubs, ca. 2 m tall; branches and twigs sturdy, 4-angled or winglike when young, brown or gray-brown when dry. Leaf blade sessile, thickly leathery, ovate-oblong, 13–15 × 4–6 cm, base cordate, margin coarsely serrate, apex acuminate; lateral veins impressed adaxially, prominent abaxially. Pedicel thin, ca. 10 mm. Flowers 4-merous (not seen). Capsule green when immature, globose, with 4 wings, ca. 1 cm in diam. Fl. before Jul, fr. Aug or later.

- Forests; ca. 600 m. Guangxi.

This species is known only from the type, which has very young fruit.


四川卫矛  si chuan wei mao

Deciduous shrubs, ca. 3 m tall; branches and twigs moderately sturdy, striate, brown or gray-brown when dry. Petiole less than 1 cm; leaf blade thickly papery, ovate-elliptic, obovate, or obovate-elliptic, 6–11 × 3–4 cm, base cuneate or attenuate, margin finely crenulate, apex acuminate, cاعد, or acute; lateral veins 5 or 6 pairs, disappearing before reaching margin. Peduncle slender, up to 10 cm or more, 1 or 2 × dichotomously branched with several to many flowers; pedicel slender, ca. 10 mm. Flowers 5-merous, up to 1.2 cm in diam.; sepals suborbicular, short; petals dark red or purple, obovate, apex rotund, base cuneate. Ovary weakly angulate. Capsule green to brown, or yellow-brown when dry, nearly globose, ca. 1 cm in diam., with 5 wide and sharp wings, less than ca. 6 × 5 mm when fully developed. Aril bright red. Fl. Apr–Jul, fr. Jul–Aug.

- Forests; 700–1600 m. Shaanxi, Sichuan, Yunnan.

This species has 5 spreading wings on the capsule, and the flower is very large and purple; these characters are very different from the others in the section.
2. Euonymus subg. Euonymus

卫矛亚属 weı mao ya shu

Evergreen or deciduous shrubs to small trees; winter buds ovoid, small, 2–5 mm. Flowers 4- or 5-merous. Stamens filamentous or subsessile; anthers 2-celled. Ovaries 4- or 5-loculed. Capsule rugose, without wings, echinate or lobed, opening by 4 or 5 lobes at maturity.

About 113 species: Asia and Europe, cultivated in Africa, Asia, Europe, North and South America, and Oceania; 75 species (42 endemic, one introduced) in China.


刺果卫矛组 ci guo wei mao zu

Shrubs or small trees, deciduous or evergreen. Flowers 4-merous, rarely 5-merous. Capsule with tubercles or prickles, 4- or 5-lobed at maturity.

Eighteen species: E, S, and SE Asia; 14 species (ten endemic) in China.

1a. Capsule with tubercles (not prickles), entire surface densely tuberculate ......................................................... 28. E. verrucocarpus
1b. Capsule with prickles, not tubercles.

2a. Capsule with needle to threadlike prickles, sparsely covering surface.
3a. Prickles fine and slender or sometimes needlelike; capsule large, 1.3–1.8 cm in diam. .......... 25. E. lushanensis
3b. Prickles straight, not fine and slender; capsule small, less than 1 cm in diam.

4a. Leaf blade entire .................................................................................................................................. 26. E. potingensis
4b. Leaf blade crenulate to serrate.

5a. Dwarf shrubs, under 30 cm tall ................................................................................................................ 19. E. aculeolus
5b. Shrubs, more than 1 m tall.

6a. Leaf blade 5–12 × 3–4.5 cm, veins impressed adaxially, prominent abaxially; capsule ca. 8 mm in diam. .............................................................. 23. E. huai
6b. Leaf blade 4–6 × 2–3 cm, veins invisible; capsule 8–10 mm in diam. .................................................. 27. E. spraguei

2b. Capsule with sturdy prickles, densely covering surface.

7a. Capsule grayish green or gray when dry, prickles more than 1 cm, flattened at base .......... 17. E. actinocarpus
7b. Capsule brown, yellow, tawny, black, or purple when dry, prickles less than 1 cm.

8a. Inflorescences more than 10 cm; flowers more than 10.

9a. Leaf blade ovate or ovate-elliptic, adaxially wrinkled, petiole 5–8 mm ......................... 20. E. balansae
9b. Leaf blade oblong to elliptic, adaxially never wrinkled, petiole 1–2 cm .................... 16. E. acanthocarpus
8b. Inflorescences less than 9 cm; flowers less than 9.

10a. Leaf blade pubescent on both sides ................................................................. 21. E. acanthoxanthus
10b. Leaf blade glabrous.

11a. Leaves sessile or petiole less than 4 mm.

12a. Leaf blade less than 4 × 2 cm ........................................................................ 22. E. chenmoui
12b. Leaf blade ca. 5 × 2–3 cm ................................................................ 24. E. echinatus
11b. Leaf petiole more than 8 mm.

13a. Leaf blade leathery, 7–10 × 3–6 cm; capsule 1–1.5 cm in diam. ................................. 18. E. aculeatus
13b. Leaf blade thinly leathery or papery, 10–15 × 2.5–4.5 cm; capsule 1.5–2 cm in diam. ......... 29. E. wilsonii


刺果卫矛 ci guo wei mao

Echinocarpus erythrocarpus H. Léveillé; Euonymus acanthocarpus var. laxus (Chen H. Wang) C. Y. Cheng; E. acanthocarpus var. longipes (Lace) Blakelock; E. acanthocarpus var. scandens (Loesener) Blakelock; E. acanthocarpus var. sutchuenensis Franchet ex Loesener; E. laxus H. Wang; E. longipes Lace; E. tenuifolius W. W. Smith; E. theifolius Wallich ex M. A. Lawson var. scandens Loesener.

Deciduous shrubs, erect or ascending, 2–3(–8) m tall; branches and twigs sturdy, brown or gray. Petiole 1–2 cm; leaf blade leathery, oblong, oblong-elliptic, or elliptic, 7–12 × 3–5.5 cm, base subrounded, rounded, cuneate, or attenuate, margin irregularly crenulate to crenate, apex acuminate or acute; lateral veins 5–8 pairs, disappearing before reaching margin. Peduncle 6–10 cm, typically more than 3 × dichotomously branched, many flowered; pedicel 4–6 mm. Flowers 4-merous, small, 6–8 mm in diam.; sepals suborbicular; petals yellow-green, obovate, base attenuate. Disk rounded. Filament 2–3 mm. Ovary densely prickled; stigma long. Capsule brown-red, nearly globose, 1–1.2 cm in diam., 4-lobed, densely prickly, prickles 1–2 mm. Aril orange. Fl. May–Aug, fr. Aug–Nov.

Forests, woodlands; 700–2000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Xizang, Yunnan, Zhejiang [Myanmar].

星刺卫矛 xìng cuī wèi máo

*Euonymus angustatus* Sprague; *E. contractus* Sprague; *E. hemsleyanus* Loesener.

Deciduous shrubs, erect or ascending, to 4 m tall; branches and twigs sturdy, with 4 angles, brown-green or gray. Petiole 8–12 mm; leaf blade leathery, ovate to ovate-elliptic or elliptic, 7–10 × 3–5 cm, base cuneate or attenuate, margin crenulate, apex acute; lateral veins ca. 8 pairs, netted before reaching margin. Peduncle 6–10 cm, typically more than 3 × dichotomously branched, many flowered; pedicel slender, ca. 5 mm, sometimes with 4 wings. Flowers 4-merous, small, 4–5 mm. Ovary densely long prickly; stigma short. Capsule gray, nearly globose, base flat, 2–2.5 cm in diam., 4-lobed, densely prickly, prickles 1–1.5 cm. Aril orange. Fl. Jan–Apr, fr. Jun–Jan.

- Forests, woodlands; below 1700 m. Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Yunnan.


小千金 xiǎo qiān jīn

*Echinocarpus hederirhizus* L. Héveillé; *Euonymus xantho-carpus* C. Y. Cheng & Z. M. Gu.

Evergreen shrubs, scandent, 2–3 m tall; branches and twigs sturdy, strigate, brown or gray-brown when dry. Petiole 8–12 mm; leaf blade leathery, ovate, elliptic, or ovate-elliptic, 7–10 × 3–6 cm, base cuneate or attenuate, margin crenulate distally, nearly entire proximally, apex acute; lateral veins 5 or 6 pairs, disappearing before reaching margin. Peduncle 4–6 cm, or 3 × dichotomously branched, several flowered; pedicel glabrous, 4–5 mm. Flowers 4-merous, small, 6–7 mm in diam.; sepals suborbicular; petals yellow-green, ovate, base cuneate. Disk 4-lobed. Filament absent. Ovary densely long prickly; stigma short. Capsule gray, nearly globose, base flattened, 2–2.5 cm in diam., 4-lobed, densely prickly, prickles 1–1.5 cm. Aril orange. Fl. Jan–Apr, fr. Jun–Jan.

- Forests, woodlands; below 1700 m. Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Yunnan.


微刺卫矛 wēi cuī wèi máo

Dwarf shrubs, 20–30 cm tall; young branches and twigs sturdy, 4-angled, green-brown. Leaf blade sessile, leathery, ovate, 3–5 × 1–1.5 cm, base truncate, margin crenulate, apex acute or acuminate; lateral veins 5 or 6 pairs, netting before reaching margin. Flowers 4-merous (not seen). Capsule typically 1, occasionally 2 or 3 in cluster, axillary, red when fresh, yellow-brown when dry, nearly globose, 6–8 mm in diam., 4-grooved, with very small and slender, needle or threadlike prickles. Seeds ovoid, black; aril bright red. Fl. unknown, fr. May–Aug.

- Forest mountains. Yunnan.

This species is very unusual because it is the only dwarf (less than 30 cm tall) in the genus.


刺猬卫矛 cì wèi wèi máo

*Euonymus hystrix* W. W. Smith; *E. mengtzeanus* (Loesener) Sprague; *E. theifolius* Wallich ex M. A. Lawson var. *mengtzeanus* Loesener.

Evergreen shrubs, scandent, ca. 3 m tall; branches and twigs 4-angled, brown or gray-brown when dry. Petiole 5–8 mm; leaf blade papery, ovate to ovate-elliptic, 10–15 × 4–8 cm, base cuneate or attenuate, margin crenulate, apex acute or acuminate; lateral veins 6–9 pairs, netting before reaching margin, impressed adaxially and prominent abaxially. Peduncle 4–6 cm, 2 or 3 × dichotomously branched, several flowered; pedicel glabrous, 4–5 mm. Flowers 4-merous, 9–10 mm in diam.; sepals suborbicular; petals yellow-green, ovate, base cuneate. Ovary densely prickly; stigma absent. Capsule red when fresh, black when dry, nearly globose, 1–1.3 cm in diam., 4-lobed, densely prickly, prickles ca. 3 mm. Aril bright red. Fl. May–Aug, fr. Jul–Sep.

- Forests, scrub; 1000–3000 m. Yunnan [Vietnam].


三脉卫矛 sān mài wèi máo

*Echinocarpus cavaleriei* L. Héveillé; *E. esquirolii* H. Léveillé; *Euonymus blini* H. Léveillé; *E. subtrinervis* Rehder.

Evergreen shrubs, scandent; branches and twigs slender, strigate, green or brown when dry. Petiole ca. 3 mm; leaf blade papery, ovate-elliptic, 8–10 × 3–4 cm, pubescent abaxially, base cuneate or attenuate, margin crenulate to serrate, apex acute or acuminate; lateral veins 5–7 pairs, slightly prominent abaxially, disappearing before reaching margin. Peduncle up to 4 cm, or 2 × dichotomously branched, several flowered. Flowers 4-merous (not seen). Capsule yellow-brown when dry, nearly globose, 1–1.5 cm in diam., slightly 4-grooved, densely prickly, prickles ca. 3 mm. Aril orange. Fl. unknown, fr. May–Sep.

- Forest mountains; 500–800 m. Guizhou, Yunnan [N Vietnam].


陈谋卫矛 chén móu wèi máo

Deciduous shrubs, prostrate, less than 1 m tall; branches and twigs 4-angled, brown or gray-brown when dry. Petiole 1–2 mm; leaves papery, ovate to ovate-elliptic, 1.8–3.6 × 0.9–1.7 cm, base broadly cuneate or subrotund, margin finely crenulate, apex acute or shortly acuminate; lateral veins 4–6 pairs, slightly prominent on both sides. Pedicel glabrous, ca. 2 cm. Flowers
4-merous, only 1 axillary, 7–8 mm in diam.; sepals rotund, very small; petals greenish yellow, suborbicular, 2–3 mm. Ovary densely prickly. Capsule dark red to red-purple when fresh, black when dry, nearly globose, 1–1.2 cm in diam., densely prickly, prickles ca. 2 mm. Seeds only 1 per locule; aril orange. Fl. May–Jul, fr. Sep–Oct.

- Woodlands; 1000–1500 m. Anhui, Jiangxi, Zhejiang.


隐刺卫矛 yin ci wei mao

Deciduous shrubs, scandent, 2–3 m tall; branches and twigs strigate, angulate, brown or gray-brown when dry, sometimes black. Petiole less than ca. 1 cm; leaf blade thinly leathery or slightly papery, ovate, obovate, elliptic, or ovate-oblong, 5–12 × 3–4.5 cm, base cuneate or truncate, margin sparsely serrate, apex acute or acuminate; lateral veins 6–8 pairs, obviously impressed adaxially, prominent abaxially, disappearing before reaching margin. Peduncle 1–2 cm, 1–3-flowered. Flowers 4-merous; sepals very small, semirotund; petals orbicular, greenish yellow. Capsule red when fresh, brown when dry, nearly globose, ca. 8 mm in diam., sparsely prickly, prickles 1–2 mm. Aril bright orange. Fl. May–Jul, fr. Sep–Nov.

- Forests, scrub; 1400–2600 m. Gansu, Hubei, Hunan, Sichuan, Yunnan.


棘刺卫矛 ji ci wei mao

Euonymusarmoricola Hayata; E. fungosus Ohwi subsp. chinensis P. S. Hsu; E. mupinensis Loesener & Rehder; E. scandens Graham; E. subsessilis Sprague; E. trichocarpus Hayata.

Evergreen or semievergreen shrubs, scandent, 2–3 m tall; branches and twigs slender, strigate, angulate, brown or gray-brown when dry, sometimes black. Petiole short, ca. 3 mm; leaf blade thinly leathery, ovate, ca. 5 × 2–3 cm, base cuneate or truncate, margin sparsely serrate, apex acute or acuminate; lateral veins 6–8 pairs, sometimes impressed adaxially and prominent abaxially, disappearing before reaching margin. Peduncle 2–3 cm, 1–3-flowered; pedicel ca. 1 cm. Flowers 4-merous, 6–8 mm in diam.; sepals small, semirotund; petals orbicular, attenuate at base, greenish yellow. Capsule red when fresh, brown when dry, nearly globose, ca. 10 mm in diam., densely prickly, prickles 1–2 mm. Aril bright orange. Fl. Apr–Jul, fr. Sep–Jan.

- Forests, scrub; 1300–3500 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Japan (Ryukyu Islands), Myanmar, Nepal, Pakistan, Thailand].

This is one of the most complicated and variable species in the section. Euonymus scandens appears to be conspecific; however, the type is without flowers and fruit, making a definitive determination impossible.


庐山卫矛 lu shan wei mao


Deciduous shrubs, scandent, 2–3 m tall; branches and twigs strigate, angulate, brown or gray-brown when dry. Petiole 1–2 cm; leaf blade thinly leathery or thickly papery, ovate to elliptic, or ovate-oblong, 9–15 × 3–4.5 cm, base cuneate or truncate, margin crenate, apex acute or acuminate; lateral veins 6–8 pairs, disappearing before reaching margin, slightly impressed adaxially, slightly prominent abaxially. Peduncle 2–10 cm, 2 or 3 dichotomously branched with several to many flowers. Flowers 4-merous (not seen). Capsule red when fresh, brown when dry, nearly globose, 1.3–1.8 cm in diam., 4-lobed, with sparse needlelike prickles, prickles ca. 3 mm. Aril bright red. Fl. May–Aug, fr. Oct–Nov.

- Forests, scrub; 600–1000 m. Anhui, Guizhou, Hubei, Hunan, Jiangxi, Zhejiang.

This species' large fruit with few needlelike prickles is unique in the section. The distribution report from Anhui has not been confirmed.


保亭卫矛 bao ting wei mao

Evergreen shrubs or small trees, scandent; branches and twigs brown or dark brown, obscurely angled when young. Petiole ca. 4 mm; leaf blade thinly leathery or slightly papery, oblong-elliptic to elliptic, 6–10 × 3–4.5 cm, base and apex attenuate, margin entire; lateral veins 5–7 pairs, disappearing before reaching margin. Peduncle 3–4 cm, several flowered. Flowers 4-merous (not seen). Capsule (immature) globose, sparsely prickly. Fl. unknown, fr. May.

- Valley forests; ca. 1100 m. Hainan.

This is the only species in Hainan Island with prickles on the capsule. The entire leaf margin is also unique to the section.


疏刺卫矛 shu ci wei mao

Euonymus kurauensis Hayata.

Deciduous shrubs, scandent, 4–5 m tall; branches and twigs strigate, angulate, brown or gray-brown when dry, sometimes green. Petiole 5–14 mm; leaf blade thinly leathery, ovate-elliptic, ca. 5 × 2–3 cm, base cuneate or truncate, margin sparsely crenate, apex acute or acuminate; lateral veins 6–8 pairs, sometimes invisible and disappearing before reaching margin. Peduncle 2–3 cm, 1–3-flowered; pedicel ca. 1 cm or less. Flowers 4-merous, 6–8 mm in diam.; sepals small, semirotund; petals orbicular, attenuate at base, greenish yellow. Capsule red when fresh, brown when dry, nearly globose, 8–10 mm in diam., 4-lobed, sparsely prickly or nearly smooth, prickles 1–2 mm. Aril bright orange. Fl. Apr–Jul, fr. Aug–Feb.

- Forests, scrub; 1100–2800 m. Taiwan.


瘤果卫矛 liu guo wei mao

Deciduous shrubs to small trees, to 5 m tall, to 13 cm d.b.h.;
stem green to gray-green, 4-angled, glabrous; twigs green to light green, 4-angled when dry; winter buds very small, with several yellow scales, generally acute. Pediole 2–3 mm; leaf blade ± papery, ovate or elliptic-ovate, base and apex acuminate or acute, margin denticulate; lateral veins 4–6 pairs, disappearing before reaching margin or unclear, glabrous on both sides. Peduncle axillary, up to 10 mm, typically 1-flowered, occasionally few flowered. Flowers 4-merous (not seen). Capsule usually 1, sometimes 2 or 3, with dense and very short tubercles, less than ca. 6 × 5 mm, red when fresh (field record); pedicel ca. 5 mm. Seeds 2 per locule, nearly round, ca. 4 × 3 mm, black when dry, partially covered by aril. Fl. unknown, fr. Nov.

- Scrub; ca. 2400 m. Yunnan.


- Shrub; ca. 1500 m. Yunnan.

- Forests; ca. 2000 m. Guangxi, Guizhou, Hubei, Shaanxi, Sichuan, Yunnan.

6b. Flowers 4-merous only; cymes with less than 7 flowers; leaf blade margin without cilia.

7a. Leaf blade entire ................................................................. 30. **E. alatus**

7b. Leaf blade margin crenulate to serrate.

8a. Leaf blade small, 4–7 cm .......................................................... 38. **E. tashiroi**

8b. Leaf blade large, 9–15 cm.

9a. Leaf blade margin crenulate to serrate; capsule lobes often bending backward .............................................. 32. **E. dielsianus**

9b. Leaf blade margin elliptic, margin entire or obscurely crenulate; capsule lobes never bending backward .................................................... 35. **E. hainanensis**


- Scrub; ca. 1500 m. Yunnan.

- Forests; ca. 2000 m. Guangxi, Guizhou, Hubei, Shaanxi, Sichuan, Yunnan.

- Scrub; ca. 2400 m. Yunnan.
5–7 pairs, curving forward and disappearing before reaching margin. Pedicule slender and short, 1–2 cm, typically 1 dichotomous branch with 3 flowers, rarely 2 branches with more flowers; pedicel slender, 5–7 mm. Flowers 4-merous, ca. 9 mm in diam.; sepals suborbicular; petals green, light yellow, or greenish yellow, ovate, base attenuate. Capsule reddish brown when fresh, dark brown or gray when dry, 4-lobed, 1.1–1.3 cm in diam., only 1–3 lobes developing, lobes ovoid. Aril bright red. Fl. Apr–Jul, fr. Jul–Nov.


This species is widespread, not only as a common shrub in the distribution area but also as a cultivated ornamental in the Old and New Worlds. The leaves change from pinkish to reddish and even purple in late autumn. The distribution reports from Guangxi and Yunnan have not been confirmed.


百齿卫矛  bai chi wei mao

*Euonymus euscaphioideus* F. H. Chen & M. C. Wang; *E. euscaphioideus* var. *serrulatus* F. H. Chen & M. C. Wang; *E. streptopterus* Merrill.

Deciduous shrubs, 2–4(–5) m tall; branches terete, twigs 4-angled, green or brown when dry. Petiole sessile or very short, less than ca. 3 mm; leaf blade thinly leathery or thickly papery, obovate or elliptic-obovate, 6–11 × 2.5–4.5 cm, base cuneate or attenuate, margin crenulate, serratulate to serrate, sometimes ciliate, apex acute, acuminate, or caudate; lateral veins 3–5 pairs, obscure to clear, curving forward, netting and disappearing before reaching margin. Cymes single or clustered when young, axillary; peduncle slender, 2–3 cm, 1 or 2 × dichotomously branched with 3 flowers, rarely more than 3; pedicel 4–6 mm. Flowers 4-merous, ca. 6 mm in diam.; sepals suborbicular; petals green, light yellow, or greenish yellow, ovate, base attenuate. Capsule reddish brown when fresh, dark brown or gray when dry, 4-lobed, lobes bidenticulate, 1.8–2.4 cm in diam., sometimes only 2 or 3 lobes developing, lobes ovoid. Seeds dark brown; aril bright red. Fl. Apr–Jul, fr. Sep–Nov.


双歧卫矛  shuang qi wei mao

*Euonymus euscaphis streptopterus* Handel-Mazzetti; *E. fertilis* var. *serrulatus* Loesener; *E. tsoi* Merrill.

Deciduous shrubs, 1–2 m tall; young branches and twigs 4-angled, green or brown when dry. Petiole sessile or very short, 1–3 mm; leaf blade thinly leathery or thickly papery, obovate or elliptic-obovate, 3.5–5 × 1.8–2.5 cm, base cuneate or suborbicular, margin crenulate, apex acute or acuminate; lateral veins ca. 5 pairs, invisible, disappearing before reaching margin. Pedicel slender, less than ca. 1 cm. Flowers single, axillary, 4-merous, 8–9 mm in diam.; sepals orbicular; petals light yellow or greenish yellow, orbicular, base nearly attenuate. Capsule reddish brown when fresh, brown or gray when dry, ca. 1 cm in diam., 4-lobed, sometimes only 3 lobes developing, lobes ovoid. Seeds dark brown; aril bright red. Fl. May–Jul, fr. Aug–Nov.

- *Scrub on slopes of lower mountains;* ca. 1000 m. ?Guangdong, Guizhou, Hunan, Sichuan.

The distribution report from Guangdong has not been confirmed.


双歧卫矛  shuang qi wei mao

*Euonymus euscaphis* var. *gracilipes* Rehder; *E. tsoi* Merrill subsp. *brevipes* P. S. Hsu.

Deciduous shrubs, 1–2 m tall; branches terete, twigs 4-angled, green or brown when dry. Petiole short, ca. 3 mm; leaf blade thickly papery, broadly linear or oblong-lanceolate, 8–12 × 1.8–2.2 cm, base cuneate to rounded, margin crenulate, apex acute or acuminate; lateral veins 10–12 pairs, obscure, curving forward, netting and disappearing before reaching margin. Pedicule slender, 1–2 cm, 1 or 2 × dichotomously branched with 3 flowers, rarely more than 3; pedicel 4–5 mm. Flowers 4-merous, 6–8 mm in diam.; sepals suborbicular; petals green or greenish yellow, orbicular, base nearly attenuate. Capsule reddish brown when fresh, brown or gray when dry, 4-lobed, sometimes only 3 lobes developing, lobes ovoid. Seeds dark brown; aril bright red. Fl. Apr–Jun, fr. Jul–Oct.

- *Forests, Anhui, Fujian, Guangdong, Hunan, Jiangxi, Zhejiang.*

海南卫矛 hai nan wei mao

Evergreen shrubs, 3–4 m tall; branches terete, twigs striate, green or brown when dry. Petiole sturdy, short, less than 6 mm; leaf blade thickly leathery, elliptic, 9–11.5 × 3–4.5 cm, base cuneate or attenuate, adaxially ± farinose, margin entire, revolute, or obscurely crenulate, apex acute or acuminate; lateral veins 8–10 pairs, impressed adaxially and prominent abaxially, sometimes obscure, curving forward, netting and disappearing before reaching margin. Peduncle short, less than ca. 1 cm, usually with 1 dichotomous branch and 1–3 flowers; pedicel short, less than ca. 2 mm. Flowers 4-merous, 7–8 mm in diam.; sepals suborbicular; petals white. Capsule reddish brown when fresh, brown or gray when dry, 1.5–1.6 cm in diam.; 4- or 5-lobed, lobes wide and thin, wing up to 7 × 5 mm. Seeds typically 1, dark brown; aril red. Fl. Apr–May, fr. Aug–Nov.

- Forests; 700–1000 m. Hainan.


湖广卫矛 hu guang wei mao

Evergreen shrubs to small trees, to 6 m tall; branches terete, twigs striate, green to brown when dry. Petiole sturdy, short, 5–9 mm; leaf blade leathery, elliptic, ovate-elliptic, or obovate-elliptic, 6–9 × 2.5–4 cm, base cuneate or attenuate, margin entire, apex acute, acuminate, or sometimes shortly apiculate; lateral veins 7 or 8 pairs, obscure or invisible, curving forward before reaching margin. Peduncle ca. 9 mm, usually 1 or 2 × dichotomously branched, several flowered; pedicel short, less than 3 mm. Flowers 4-merous, ca. 10 cm in diam.; sepals suborbicular; petals white, suborbicular. Capsule reddish brown when fresh, dark brown or gray when dry, 1–1.3 cm in diam., 4-lobed, usually only 1 or 2 lobes developing, lobes ovoid. Seeds 2 per locule, brown. Aril red. Fl. Apr–Jun, fr. Aug–Nov.

- Forests; 500–1200 m. Fujian, Guangdong, Guangxi, Hunan.

The specific epithet “hukuangensis” derives from “hu,” from Hunan, and “kuang,” from Kwangtung and Kwansi (i.e., Guangdong and Guangxi).


垂序卫矛 chui xu wei mao

*Euonymus pendulus* Wallich ex Roxburgh.

Evergreen shrubs to small trees, 4–12 m tall; branches terete, twigs striate or sometimes 4-angled, green or brown when dry. Petiole sturdy, short, less than ca. 1 cm; leaf blade thickly leathery or leathery, elliptic or obovate-elliptic, 10–11.5 × 3–4.5 cm, base cuneate or attenuate, adaxially ± farinose, margin long and sharply ciliate, apex acute or acuminate; lateral veins invisible, or sometimes in ca. 10 pairs, slightly curving forward, netting and disappearing before reaching margin. Cymes many, axillary or clustered; peduncle up to 4 cm, usually 1–3 × dichotomously branched with many flowers; pedicel short, less than ca. 5 mm. Flowers 5-merous, sometimes combined with 4-merous, 7–8 mm in diam.; sepals suborbicular; petals white. Capsule reddish brown when fresh, dark brown or gray when dry, 1.5–1.6 cm in diam.; 4- or 5-lobed, lobes wide and thin, wing up to 7 × 5 mm. Seeds typically 1, dark brown; aril red. Fl. Apr–May, fr. Aug–Nov.

- Forests, woodlands; 1600–3200 m. Xizang [Bhutan, India, Myanmar, Nepal, Pakistan].

The flowers and fruit of this species are usually 5-merous; however, in alpine conditions, it sometimes includes 4-merous anatomy. This combination of characters is unique in the section.


菱叶卫矛 ling ye wei mao

*Euonymus acutorhombifolius* Hayata; *E. matsudae* Hayata; *Glyptopetalum matsudae* (Hayata) Nakai.

Evergreen shrubs, 1.5–2 m tall; young branches and twigs 4-angled, green when dry. Petiole sessile or very short, 2–4 mm; leaf blade thinly papery, elliptic or ovate-elliptic, sometimes oblong-elliptic, 4–5(–7) × 2.2–3.5(–5) cm, base cuneate or attenuate, margin remotely and obtusely serrate, apex acute, acuminate, or slightly caudate; lateral veins ca. 5 pairs, sometimes invisible, curving forward and disappearing before reaching margin. Pedicel slender, ca. 5 mm. Flowers typically 1(or 2 or more), axillary, 4-merous, ca. 1 cm in diam.; sepals suborbicular; petals green, light yellow or greenish yellow, ovate, base attenuate. Capsule dark brown when fresh, brown or gray when dry, 1.1–1.3 cm in diam., 4-lobed, 1–3 lobes developing, lobes ovoid. Aril bright red. Fl. Apr–Dec, fr. May–Dec.

- Forests, woodlands, scrub; 100–1400 m. Taiwan [Japan (Ryukyu Islands)].


疣点卫矛 you dian wei mao

*Euonymus alatus* (Thunberg) Siebold var. *apertus* Loesener; *E. verrucosoides* var. *viridiflorus* Loesener & Rehder.

Deciduous shrubs, 1–3 m tall; young branches and twigs 4-angled, with evident nodes, green or brown when dry. Petiole sessile or very short, 2–4 mm; leaf blade papery, ovate-elliptic to obovate-elliptic, sometimes oblong-elliptic, 3.5–4(–9) × 1.5–2(–3.5) cm, base cuneate or attenuate, sometimes narrowly attenuate, margin finely and sharply serrulate, apex acute or acuminate to long acuminate; lateral veins 7–10 pairs, curving forward and disappearing before reaching margin. Peduncle slender and short, 1.5–3(–8) cm, 1 dichotomous branch with 3 flowers, rarely 2 × branched with more than 3 flowers; pedicel slender, 5–7 mm. Flowers 4-merous, 7–8 mm in diam.; sepals triangular; petals greenish pink to pinkish red, oblong, apex subrounded, base attenuate. Ovary with long style persisting. Capsule reddish brown when fresh, brown, gray, or dark colored when dry, 1.3–1.5(–2) cm in diam., 4-lobed, sometimes only 1–3
lobes developing, lobes ellipsoid. Aril bright red. Fl. May–Jul,

- Woodlands, scrub, dry mountain slopes; 1400–3700 m. Gansu,
- The distribution report from Guizhou has not been confirmed.


冬青卫矛组 dong qing wei mao zu

Shrubs, shrublike, scandent, ascending, prostrate, or climbing on other vegetation, occasionally small trees to ca. 3 m tall, mostly evergreen, a few deciduous. Flowers usually 4-merous, occasionally 5-merous. Fruit globose, rotond or spherical, without prickles or wings, opening by 4 or 5 lobes at maturity.

Twenty species: E, S, and SE Asia, cultivated in Africa, Asia, Europe, North and South America, and Oceania; 14 species (six endemic, one introduced) in China.

1a. Deciduous, shrubs to small trees ................................................................. 53. **E. venosus**
1b. Evergreen.

2a. Capsule with white spots when mature.

3a. Leaves without petiole or with very short petiole, less than 3 mm, base round or cordate, lateral veins impressed adaxially and prominent abaxially; capsule without light-colored grooves when mature .......... 40. **E. bockii**
3b. Leaves with short petiole, 4–9 mm, base cuneate, lateral veins neither impressed adaxially nor prominent abaxially; capsule with light-colored grooves when mature ........................................ 47. **E. pseudovagans**

2b. Capsule without white spots when mature.

4a. Leaves small, 3–5 cm.
5a. Leaves triangular- or elliptic-lanceolate, with sparse and sharp denticles on margin .......... 44. **E. jinyangensis**
5b. Leaves mainly ovate, sometimes combined with elliptic or obovate.

6a. Subshrubs, ascending or procumbent on ground or other vegetation; leaf blade acute or obtuse at apex ........................................................................................................... 41. **E. fortunei**
6b. Shrubs to ascending subshrubs; leaf blade apex rounded, sometimes weakly acute.

7a. Peduncle 7–8 cm, usually with more than 20 flowers; capsule 8–10 mm in diam. .......... 50. **E. tonkinensis**
7b. Peduncle 1–5 cm, usually with less than 7 flowers; capsule ca. 6 mm in diam. .............. 52. **E. vagans**

4b. Leaves large, 5–20 cm.
8a. Peduncle more than 7 cm, usually with many flowers.

9a. Leaves papery, secondary veins ca. 4 pairs ................................................. 45. **E. kengmaensis**
9b. Leaves leathery or thinly leathery, secondary veins ca. 7 pairs.

10a. Leaves ovate to elliptic, densely arranged on branches or twigs, petiole 3–10 mm .......... 42. **E. japonicus**
10b. Leaves obovate to ovate-elliptic, sparsely arranged on branches or twigs, petiole 2–4 cm ........................................................................................................... 43. **E. hupehensis**

8b. Peduncle less than 4 cm, usually ca. 3-flowered.

11a. Capsule purple when fresh, dark red when dry, usually clustered at top of branches .......... 51. **E. vaganoides**
11b. Capsule pink to red when fresh, brown to red-brown when dry, axillary only.

12a. Flowers ca. 6 mm in diam.; capsule 5–9 mm in diam. ........................................... 48. **E. theacola**
12b. Flowers ca. 5 mm in diam.; capsule ca. 8 mm in diam.

13a. Leaves entire and revolute on margin ................................................................ 46. **E. pallidifolius**
13b. Leaves crenulate to serrate on margin ....................................................... 49. **E. theilfouis**


南川卫矛 nan chuan wei mao

Euonymus bockii var. orgyalis (W. W. Smith) C. Y. Cheng; **E. orgyalis** W. W. Smith; **E. petelotii** Merrill; **E. subsessilis** Sprague var. latifolius Loesener.

Evergreen shrubs or ascending subshrubs, 6–8 m tall; branches and twigs rounded, with lenticels when old, usually brown or dark brown. Leaves sessile or with very short petiole, less than ca. 3 mm; leaf blade elliptic or ovate-elliptic, 8–16 × 4–8 cm, base rounded to cordate, apex acute; lateral veins 6–9 pairs, prominent abaxially. Peduncle 3–4 cm, slender, usually several flowered, sometimes more than 5-flowered; pedicel usually less than ca. 9 mm. Flowers 4-merous, ca. 6 mm in diam.; sepals semirotund; petals nearly orbicular, greenish. Capsule brown or green-brown, densely white spotted, sometimes white scalelike, less than ca. 8 mm in diam. Aril red. Fl. Apr–Jun, fr. Aug–Dec.

Mixed forests; 1000–2300 m. Chongqing, Guangxi, Guizhou, Sichuan, Yunnan [India, Vietnam].

This is an easily recognized species in Euonymus sect. Ilicifoli due to its large sessile leaves and fruit densely white spotted at maturity. Leaf blade variation has been used to circumscribe new taxa; however, taking variation across the genus into account, those taxa are not supported.

扶芳藤 *fu fang teng*


Evergreen shrubs, ascending or procumbent on ground or rock, trees sometimes dwarfed, to 10 m tall; branches and twigs rounded, sometimes strigate, usually brown or green-brown. Leaves densely arranged on branches; petiole 2–9 mm, sometimes sessile; leaf blade variously ovate or ovate-elliptic, 2–5.5 × 2–3.5 cm, glabrous, base nearly truncate, at times ± cuneate, margin crenulate to serrate, apex obtuse to acute; lateral veins 4–6 pairs, invisible. Penduncle usually with few flowers; pedicel usually less than ca. 5 mm. Flowers 4-merous, ca. 5 mm in diam.; sepals semirotund; petals nearly orbicular, greenish or whitish. Capsule brown to red-brown, 5–6 mm in diam.; aril orange-red. Fl. Apr–Aug, fr. Aug–Dec.

Common in woodlands, scrub, and forests, often cultivated in gardens; near sea level to above 3400 m. Anhui, Fujian, Hebei, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan (Lan Yu), Xinjiang, Yunnan, Zhejiang [India, Indonesia, Japan, Korea, Laos, Myanmar, Pakistan, Philippines, Thailand, Vietnam; also cultivated in Africa, Europe, North America, Oceania, South America].

This is the commonest and widespread species in the genus. It is also the most complex and polymorphic species in _E._, and SE Asia, and can be confused with _Euonymus japonicus_, *E. theifolius*, or _E. vagans_. Numerous taxa have been named within the _E. fortunei_ complex but many of these refer to cultivated plants and are best treated as cultivars.

Cao and Ma (Taxon 55: 233. 2006) proposed the name _Elaeodendron fortunei_ Turczaninow (1863) for conservation against the senior taxonomic synonym _Euonymus hederaceus_ Champion ex Bentham (Hooker’s J. Bot. Kew Gard. Misc. 3: 333. 1851). Conservation as proposed was subsequently recommended by the Committee for Vascular Plants (Brummitt, Taxon 56: 1291. 2007).


冬青卫矛 *dong qing wei mao*

_Euonymus sinensis_ Carrière (1883), not _E. chinensis_ Lour-eiro (1790), nor Lindley (1826).

Evergreen shrubs or small trees, erect, to 3 m tall, sometimes dwarfed; branches gray-green to gray-brown, terete, glabrous, sturdy, twigs green to light green, glabrous, not evidently strigate, especially when fresh. Petiole 3–10 mm; leaf blade leathery or thickly leathery, ovate, obovate, orbicular-ovate, or long ovate, (3–)5–10(–12) × (2–3)–5(–5.5) cm, base orbicular or semielliptic, margin crenulate distally, nearly entire proximally, apex orbicular or semielliptic; lateral veins 6–8 pairs, slightly visible or unclear, especially when dry. Cymes axillary, sometimes terminal, many branched with many flowers; peduncle up to 8 cm, sub-branches 2–4 cm; pedicel 4–7 mm. Flowers 4-merous, 5–6 mm in diam.; sepals nearly orbicular; petals green or yellowish green, sometimes cream, nearly orbicular. Capsule globose or subglobose, brown or yellow-brown to red-brown, 6–9(–12) mm in diam., 4-lobed. Seeds 2 per locule, dark brown, globose; aril orange-red. Fl. Apr–Aug, fr. Aug–Jan.

Cultivated, especially in gardens and arboreta; near sea level to 1400 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Liaoning, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan (Lan Yu), Xinjiang, Yunnan, Zhejiang [native to Japan; cultivated in Cambodia, India, Indonesia, Korea, Laos, Myanmar, Pakistan, Philippines, Thailand, Vietnam; also cultivated in Africa, Europe, North America, Oceania, South America].

This species is a native of Japan, and it is from here that the cultivated form was introduced to the world. *Euonymus japonicus*, especially in the cultivated condition, is very similar to _E. fortunei_. The native species differs by having an erect habit vs. climbing or procumbent in _E. fortunei_. Ding Hou used the name _E. japonicus_ (Fl. Males., Ser. 1, Spermat. 6: 252. 1963) to represent the taxa in S and SE Asia; however, it is _E. fortunei_ that is native to this region, while _E. japonicus_ is only cultivated in the area.


湖北卫矛 *hu bei wei mao*

_Euonymus chinensis_ Lindley var. _hupehensis_ Loesener, Bot. Jahrb. Syst. 29: 436. 1900; _E. hupehensis_ var. _brevipedunculatus_ Loesener; _E. hupehensis_ var. _longipedunculatus_ Loesener; _E. hupehensis_ var. _maculatus_ Loesener.

Evergreen shrubs, ascending subshrubs; branches gray-green to gray-brown, terete, glabrous, twigs green to light green, glabrous. Petiole 2–4 cm; leaf blade thinly leathery, obovate, elliptic, or ovate-elliptic, 6–10 × 3–5 cm, base cuneate or attenuate, margin crenulate, apex acute; lateral veins ca. 7 pairs. Peduncle up to 8 cm, several flowered; pedicel 4–7 mm. Flowers 4-merous, ca. 6 mm in diam.; sepals semirotund; petals green, yellowish green, or whitish, suborbicular. Capsule globose or subglobose, brown or yellow-brown to red-brown, 6–9 mm in diam., 4-lobed. Seeds dark brown; aril orange-red. Fl. Apr–Jul, fr. Aug–Dec.

- Forests, woodlands, scrub; 1000–3000 m. Guangdong, Guangxi, Guizhou, Hubei, Hunan, Sichuan, Yunnan.


金阳卫矛 *jin yang wei mao*

Evergreen shrubs, climbing on rock or other vegetation in alpine conditions, to 1 m tall; branches and twigs mainly black or dark brown when dried. Petiole ca. 3 mm; leaf blade triangular-elliptic, 4–5 × 1.2–1.5 cm, base and apex attenuate, margin with sparse and sharp denticles; lateral veins obscure. Cymes axillary, 3–5(–7)-flowered. Flowers 4-merous, small, ca. 6 mm in diam.; sepals rotund; petals pale green, ovate or rotund, nearly entire. Ovary smooth. Capsule globose, ca. 6 mm in diam., 4-lobed. Fl. and fr. Jun–Oct.
Evergreen shrubs (scandent) to small trees, to 8 m tall; branches gray-green to gray-brown, terete, glabrous, twigs green to light green. Petiole ca. 4 mm; leaf blade papery or papery, ovate to elliptic, 8–12 × 3–5 cm, base and apex acuminate or acute, margin crenulate; lateral veins ca. 4 pairs, slightly curved upward, disappearing before reaching margin. Inflorescence terminal or axillary, with many flowers, up to 8 cm, ca. 6 cm in diam. Flowers 4-merous, ca. 7 mm in diam.; petals greenish yellow or yellowish green, nearly orbicular. Capsule globose or subglobose, brown or yellow-brown, 4-lobed. Seeds dark brown; aril orange. Fl. Mar–Jun, fr. Jul–Nov.

### Euonymus theacola

Evergreen shrubs or ascending subshrubs, 2–3 m tall; branches and twigs round, sturdy, usually green or yellow. Petiole 4–6 mm; leaf blade elliptic or elliptic-ovate, 6–8 × 3–4 cm, base attenuate, margin entire and revolute, apex acute; lateral veins and veinlets invisible. Peduncle 2–3 cm, usually with less than 3 flowers; pedicel ca. 3 mm. Flowers 4-merous, ca. 5 mm in diam.; sepals semirotund; petals nearly orbicular, greenish or whitish. Capsule brown or brown-yellow, sometimes shallowly grooved, ca. 8 mm in diam. Aril red. Fl. Mar–Jun, fr. Aug–Nov.

### Euonymus pallidifolius

Evergreen shrubs, or ascending subshrubs, to 3 m tall; branches and twigs round, sturdy, usually green or yellow. Petiole 4–9 mm; leaf blade elliptic or ovate-elliptic, 7–14 × 3–6 cm, base cuneate, margin serrate to crenulate, apex acute; lateral veins 5–7 pairs. Peduncle 3–4 cm, usually several flowered, sometimes more than 5-flowered; pedicel usually less than ca. 1 cm. Flowers 4-merous (not seen). Capsule brown or yellow-brown, densely white spotted with 4 bright or yellow-brown grooves, up to 1 cm in diam. Aril red. Fl. unknown, fr. Jul–Jan.

Mixed forests, forest ravines; 1200–2900 m. Guangxi, Guizhou, Yunnan [Bangladesh, India (Assam), Myanmar, Thailand].

This species is among the complex *Euonymus bockii*, *E. fortunei*, and *E. jinyangensis*, which are very similar. The distribution reports from Guizhou and Sichuan have not been confirmed.

### Euonymus theifolius

Evergreen shrubs or ascending subshrubs, 2–3 m tall; branches and twigs round, usually brown or yellow. Petiole 3–5 mm; leaf blade elliptic or elliptic-lanceolate, 5–10 × 2.5–5 cm, base cuneate, margin crenulate to serrate, apex acute or acuminate; lateral veins 5–8 pairs. Peduncle 2–3 cm, slender, usually with more than 7 flowers, sometimes only 5-flowered; pedicel ca. 5 mm. Flowers 4-merous, ca. 5 mm in diam.; sepals semirotund; petals nearly orbicular, greenish or whitish. Capsule brown or brown-yellow, ca. 8 mm in diam. Aril red. Fl. Mar–Jun, fr. Aug–Dec.

Forests, woodlands, scrub; 1500–3400 m. ?Guizhou, ?Sichuan, ?Xizang, Yunnan [Bangladesh, Bhutan, India, Myanmar, Nepal, Thailand].

This species is very similar to *Euonymus japonicus*; however, due to limited materials, further study is still needed. The distribution report from Hainan has not been confirmed.

Evergreen shrubs, climbing; branches terete, twig sturdy, brown or dark brown. Leaves clustered at apex of branches; petiole sturdy, ca. 3 mm; leaf blade elliptic-obovate, 8–10 × 3–5 cm, thickly leathery, base widely attenuate, margin sparsely crenulate, apex cuspidate or acumenate; lateral veins 5–7 pairs, prominent abaxially. Flowers not seen. Capsule few, terminal on branches, nearly globose, 7–9 mm in diam.; pedicel usually less than ca. 6 mm in diam. Aril orange-red. Fl. unknown, fr. Sep–Nov.

- Forests, woodlands, scrub; 1100–1300 m. Guangxi, Hunan, Yunnan.

52. Euonymus vagans  Wallich in Roxburgh, Fl. Ind. 2: 412. 1824.

Curvaturae卫矛 you teng wei mao

Euonymus jinfoshanensis  Z. M. Gu; E. jinggangshanensis M. X. Nie; E. pseudosootepensis Y. R. Li & S. K. Wu.

Evergreen shrubs or ascending subshrubs, to 3 m tall; branches and twigs rounded, usually brown or dark brown, sometimes gray. Petiole ca. 5 mm; leaf blade ovate-elliptic, or rounded-ovate, 4.5 × 2.5–3.5 cm, base rounded to truncate, even cuneate, apex nearly rounded; lateral veins ca. 5 pairs, usually impressed adaxially. Peduncle 1–2 cm, usually several flowered; pedicel usually less than ca. 6 mm. Flowers 4-merous, ca. 6 mm in diam.; sepals semiorbicular; petals nearly orbicular, greenish or whitish. Capsule brown or red-brown, less than ca. 6 mm in diam. Aril red. Fl. May–Jul, fr. Aug–Nov.

- Forests, woodlands, scrub; 1100–3300 m. ?Guangdong, Guangxi, Guizhou, ?Henan, ?Hubei, Jiangxi, Shanxi, Sichuan, Xizang, Yunnan [Bangladesh, Bhutan, India, Myanmar, Nepal].

The distribution reports from Guangdong, Henan, Hubei, and Shanxi have not been confirmed.


Qu mai卫矛 qu mai wei mao

Euonymus venosus

Deciduous shrubs to small trees, 2–6 m tall; branches and twigs sturdy, gray or brown, terete, glabrous. Petiole 3–5 mm; leaf blade thinly leathery or leathery, oblong-elliptic, 6–12 × 1.5–2 cm, base and apex acuminate or acute, margin finely crenulate to nearly entire; lateral veins and veinlets curved or bent, even in tortuous form, prominent on both surfaces. Peduncle 2–4 cm, with few flowers, rarely 7. Flowers 4-merous, 6–8 mm in diam.; petals light yellow, nearly rotund. Capsule globose or subglobose, slightly grooved, 8–10 cm in diam., pink-brown to yellow-brown, 4-lobed. Seeds yellow-brown; aril orange-red. Fl. May–Jul, fr. Aug–Sep.


This is a distinctive species in the genus and can be recognized even without flowers or fruit. The leaf blade is typically narrowly oblong and has curved or bending veins and veinlets. The record from Yunnan has not been confirmed; that from Henan results from local work.

5. Euonymus sect. Euonymus

卫矛组 wei mao zu

Shrubs to small trees, sometimes shrublike or rarely climbing, evergreen or deciduous. Flowers usually 4-merous, occasionally 5-merous. Fruit rugose, without prickles and wings, not globose, opening by 4 or 5 lobes at maturity.

About 65 species: Asia, Europe, cultivated in Europe and North America; 37 species (19 endemic) in China.

1a. Flowers large, more than 1 cm in diam.; disk large, 7–8 mm in diam., usually 3–12 ovules per cell.

2a. Flowers and fruit 4-merous.

3a. Petals with obvious black or purple veins toward margin; leaf blade elliptic, less than 6 cm; capsule 1.2–1.6 cm ................................................................. 84. E. tingens

3b. Petals without black or purple veins; leaf blade linear to lanceolate, or obovate; capsule ca. 2.5 cm ...... 89. E. yunnanensis

2b. Flowers and fruit 4-merous.

4a. Capsule with 4 large winglike angles, up to 1 cm ................................................................. 56. E. chengii

4b. Capsule without wings, only angular.

5a. Leaf blade usually long elliptic to oblong, or oblongate ........................................ 62. E. grandiflorus

5b. Leaf blade usually ovate to elliptic, or obovate ........................................................................ 55. E. carnosus

1b. Flowers small, less than 1 cm in diam.; disk small, 2–5 mm in diam., usually 2 ovules per cell.

6a. Leaf blade usually small, less than 6(–7) cm; branches and twigs tuberculate or black warty.

7a. Leaf blade ovate, oblong, elliptic, or lanceolate, usually more than 1 cm wide.

8a. Branches and twigs with tubercle or black warts; capsule subglobose ........................................ 86. E. verrucosus

8b. Branches and twigs without tubercle or black warts; capsule oblong or pear-shaped.

9a. Leaf blade thickly leathery, rotund-oblong; capsule wider than long .......................... 76. E. percioriaceus

9b. Leaf blade papery, lanceolate; capsule longer than wide, pear-shaped ....................... 80. E. semenovii

7b. Leaf blade linear, oblong-linear, linear-elliptic, or linear-lanceolate, usually less than 1 cm wide.
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10a. Branches and twigs terete; flowers pale yellow .............................................................. 83. E. termifolius
10b. Branches and twigs with 4 corky wings; flowers white-green or greenish yellow.

11a. Leaf blade linear, 2–4 × ca. 2 mm ......................................................................................... 68. E. lichiangensis
11b. Leaf blade linear-elliptic or linear-lanceolate, 2–7 × 2–20 mm.

12a. Leaf blade linear-elliptic, 2–4 × 3–10 mm; flowers white-green or greenish yellow .......... 73. E. nanoideas
12b. Leaf blade linear-lanceolate, 2–7 × 2–20 mm; flowers white-green ............................. 72. E. nanus

6b. Leaf blade usually large, more than 7 cm; branches and twigs smooth.

13a. Leaves deciduous.
13b. Leaves evergreen.

14a. Flowers and fruit 5-merous ............................................................................................... 58. E. dolichopus
14b. Flowers and fruit 4-merous.

15a. Young branches with narrow corky wings ........................................................................ 77. E. phellomanus
15b. Young and old branches without wings.

16a. Capsule with obscure angles.

17a. Capsule apiculate; leaf blade apex acute or acuminate, margin crenate or serrate .................. 64. E. hui
17b. Capsule without apiculus; leaf blade apex rounded, margin small crenate ...................... 87. E. viburnoides

16b. Capsule with strong angles and grooves.

18a. Leaf blade smooth on both surfaces .................................................................................. 69. E. maackii
18b. Leaf blade rugose on both surfaces.

19a. Leaf blade 11–13(–15 cm), apex acute or acuminate ...................................................... 63. E. hamiltonianus
19b. Leaf blade 9–10 cm, apex rounded ................................................................................... 75. E. parasimilis

13b. Leaves evergreen.

20a. Petals usually fimbriate to denticulate on margin.
20b. Petals entire.

21a. Petals pink to red or purple, cymes 15–20 cm ............................................................. 66. E. laxicymosus
21b. Petals white to green, fimbriate, cymes up to 8 cm ......................................................... 59. E. gibber

22a. Flowers and fruit 5-merous.
22b. Flowers and fruit 4-merous.

23a. Leaf blade margin large denticulate; petals red-pink to black-purple, ca. 1 cm in diam. .... 57. E. chloranthoides
23b. Leaf blade margin without large denticles; petals purple, white, cream, or greenish white to green.

24a. Petals white, cream, or greenish white to green.

25a. Leaf blade long lanceolate, leathery, margin finely remotely serrate .............................. 85. E. tsai
25b. Leaf blade ovate, elliptic to oblong, margin distally crenulate, proximally entire ............. 60. E. glaber

24b. Petals purple.

26a. Leaf blade with serrate margin .......................................................................................... 81. E. serratifolius
26b. Leaf blade entire to crenulate to sparsely denticulate.

27a. Leaf blade elliptic-obovate or ovate, 6–10 × 2.5–3.5 cm .................................................... 67. E. laxiflorus
27b. Leaf blade long subulate or broadly linear, ca. 14 × 2 cm ............................................... 90. E. prismatomerosioides

28a. Leaf blade narrowly elliptic, delicate .................................................................................. 61. E. gracillimus
28b. Leaf blade variously ovate.

29a. Veins curved or nearly arched; leaf blade elliptic to ovate.

30a. Leaf blade veins even with surface .................................................................................... 70. E. microcarpus
30b. Leaf blade veins concave adaxially and prominent abaxially.

31a. Leaf blade usually entire, sometimes slightly serrate toward apex ................................. 54. E. bullatus
31b. Leaf blade margin ciliate to sharply and finely denticulate .............................................. 82. E. temuiserratus

29b. Veins pinnate; leaf blade lanceolate to oblong.

32a. Leaf blade large, ca. 16 cm.

33a. Leaf blade oblong-elliptic or oblong-lanceolate, 7–11 × 2.5–5 cm, margin large denticulate ................................................................. 71. E. myrianthus
33b. Leaf blade long lanceolate, 10–15 × ca. 3 cm, margin remotely serrulate .................... 79. E. salicifolius

32b. Leaf blade small, less than 13 cm.

34a. Capsule 2–2.8 cm .............................................................................................................. 88. E. wui
34b. Capsule 0.8–1.7 cm.

35a. Leaf blade thickly papery to thinly leathery; capsule more than 1.5 cm .............................. 65. E. kachinensis
35b. Leaf blade thickly leathery; capsule 0.8–1.7 cm.

36a. Leaf blade narrowly lanceolate, acuminate or acute at both ends, pubescent on both surfaces; mature fruit pubescent .................................................. 78. E. pittsporoides

凸脉卫矛 tu mai wei mao

Evergreen small trees, to 8 m tall; branches sturdy and terete. Petiole sturdy, 1–2 cm; leaf blade thinly leathery to leathery, ovate-elliptic to broadly oblong-elliptic, 12–21 × 7–11 cm, base widely attenuate, margin entire, apex acute or acuminate; lateral veins ca. 15 pairs, curving forward, webbing before reaching margin, impressed and evidently prominent abaxially. Peduncle 3–5 cm, more than 2 × dichotomously branched with many flowers; pedicel ca. 5 mm. Flowers 4-merous, 6–8 mm in diam.; sepals semiorbicular; petals red, nearly ovate. Capsule obovoid, 4-angled with deep grooves, brown or yellow-brown to red-brown, ca. 1.2 × 1.5 cm, 4-lobed. Seeds ellipsoid, brown; aril yellow-brown to red-brown, 1.2–1.5(–2) × 1–1.2(–1.5) cm, brown-green, orbicular. Capsule 4-angled (immature), brown or yellow-brown, 1.2–1.5 cm, 4-lobed, sometimes only 3 or 4 lobes developing. Seeds subglobose, partly covered by orange-red aril.

Mixed forests; 900–3300 m. Yunnan [Bangladesh, India, Myanmar, Thailand].


肉花卫矛 rou hua wei mao

*Euonymus bataiensis* Hayata; *E. huangii* H. Y. Liu & Y. P. Yang; *E. playchylene* Ohwi.

Deciduous shrubs to small trees, to 8 m tall, ca. 10 cm d.b.h.; branches and twigs gray-green to gray-brown, terete, sturdy. Petiole 5–20 mm; leaf blade thickly papery to leathery, elliptic or oblong-elliptic to ovate or obovate-elliptic, 6–13 × 1.5–7 cm, base cuneate or attenuate, margin crenulate, apex obtuse or mucronulate; lateral veins 8–12 pairs, curving forward, redivided and webbing with veinlets before reaching margin. Peduncle 2–6 cm, 1–3 × dichotomously branched with several to many flowers; pedicel 5–10 mm. Flowers 4-merous, 10–12 mm in diam.; sepals semiorbicular, persistent; petals yellow or brown-green, orbicular. Capsule 4-angled (immature), brown or yellow-brown to red-brown, 1.2–1.5(–2) × 1–1.2(–1.5) cm, 4-lobed (mature). Seeds 3–6 per locule, ellipsoid, dark brown, arillate. Fl. May–Aug, fr. Aug–Nov.

Forests, woodlands; near sea level to 2000 m, typically 200–900 m. Anhui, Fujian, Guangdong, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Taiwan, Zhejiang [Japan].

This is a typical E Asian species distributed in the Sino-Japanese region. It has ovate-oblong leaf blades that turn a fresh red or purple in late autumn, giving it high ornamental value. It is similar to *E. grandiflorus*, which typically has narrower leaf blades and larger flowers, and is distributed in the Sino-Himalayan region from SW China to the Himalayas. In the local floras, the species has been erroneously described as evergreen.

*Euonymus huangii* H. Y. Liu & Y. P. Yang (Taiwania 45: 129. 2000) was published to validate the name “*E. morrisonensis*” Kaneshira & Sasaki (*Formosan Trees, rev. ed.*, 388, 1936, without Latin description or indication of type.) It is an abnormal alpine form of *E. carnosus* from the high mountains of Taiwan, being smaller in stature and sometimes with only three of the four flower parts developing.


静容卫矛 jing rong wei mao

Evergreen shrubs, 3–5 m tall; branches gray-black to gray-brown, terete, sturdy, twigs greenish or yellow-greenish, with 4 striae when young. Leaves sessile or subsessile; leaf blade leathery to thickly papery, elliptic, 5–10 × 2.3–3.6 cm, base cuneate or acuminate, margin entire, apex slightly caudate; lateral veins invisible. Peduncle 1.5–3.5 cm, 1–3(–4) × dichotomously branched, several flowered; pedicel 5–10 mm. Flowers 4-merous, 10–14 mm in diam.; sepals semioblong; petals light green, orbicular to obovate. Capsule tetra-globose, with 4 long winglike angles when fully mature, reddish when fresh, brown or yellow-brown to red-brown when dry, 1.8–3 × 3–3.6 cm, 4-lobed. Seeds ovoid, dark brown, 2 or more per locule; aril orange. Fl. Mar–Jul, fr. Jul–Jan.

● Forests and woodlands in lower mountains or valleys; near sea level to 200 m. S Guangdong, Hainan.

This species was mistakenly treated as a synonym of *E. nitidus* in a recent revision (J. S. Ma, Thaisizia 11: 1–264. 2001). Further collections from S Guangdong confirm that this is an unusual species in the genus, with winglike angles and more than 2 ovules and seeds per locule; this differs from most of the species in the section.


缙云卫矛 jin yun wei mao

Evergreen shrubs, ca. 1 m tall; branches terete, young twigs with 4 striae or angles. Petiole sturdy, 1–2 mm or subsessile; leaf blade thickly leathery, obovate, oblong-obovate, or elliptic to oblong-elliptic, 8–12.5 × 2.5–5 cm, base attenuate to broadly attenuate, margin large denticulate, apex acuminate; lateral veins 7–9 pairs, redividing and webbing into veinlets. Peduncle 1–2 cm, 1 or 2 × dichotomously branched, several flowered; pedicel ca. 5 mm. Flowers 5-merous, ca. 10 × 10 mm; sepals suborbicular; petals red-pink to black-purple at maturity, obovate. Capsule oblongicoelate, with 5 angles and little grooves, brown or yellow-brown to red-brown, ca. 1 × 1.2 cm, 5-lobed, sometimes only 3 or 4 lobes developing. Seeds subglobose, red, partly covered by orange-red aril. Fl. May–Aug, fr. Oct–Nov.

● Forests, woodlands; 300–400 m. Sichuan.

This is a rare species: only a few collections have been made since it was first described in the 1940s. The regular and large-denticulate leaf margin make it unique in the genus.


长梗卫矛 chang geng wei mao

Evergreen shrubs, 2–3 m tall; branches and twigs gray-green to gray-brown, terete, sturdy. Petiole 3–4 mm; leaf blade thickly papery to leathery, elliptic or oblong-elliptic, 8–12 × 3–4.5 cm, base cuneate or suborbicular, margin nearly entire or obscurely finely crenulate, apex acute or acuminate; lateral veins...
9–11 pairs, obscure, curving forward, webbing before reaching margin. Peduncle ca. 6 cm, 1 or 2 × dichotomously branched, several flowers; pedicel ca. 10 mm. Flowers 5-merous (not seen). Capsule subglobose, with 5 obscure small angles, apex emarginate, yellow, ca. 0.9 × 1 cm. Seeds ellipsoid, dark brown, partly covered by orange aril. Fl. unknown, fr. Oct.

- **Guangxi.**

  This species is known only from the type specimen.


流苏卫矛 liu su wei mao

_Euonymus miquelii_ Hayata; _E. xylocarpus_ C. Y. Cheng & Z. M. Gu.

Evergreen shrubs to small trees, to 3 m tall; branches terete, sturdy, twigs green to light green, 4-angled, twigs and leaves sometimes farinose. Petiole sturdy, less than 1 cm; leaf blade thinly leathery or thickly papyraceous, obovate-elliptic, 6–10 × 3–4.5 cm, base cuneate or attenuate, margin entire, apex obtuse or rounded; lateral veins invisible. Peduncle 3–4 cm, 1 or 2 × dichotomously branched, several flowers; pedicel ca. 5 mm. Flowers 5-merous, 10–12 mm in diam.; sepals semiorbicular; petals white to pink, obovate, apex fimbriate. Capsule obovoid, with 5 angles and deep grooves, brown or yellow-brown to red-brown, ca. 1 × 1.2–1.4 cm, 5-lobed, basal sepals persistent. Seeds ellipsoid, dark brown, partly covered by orange-red aril. Fl. Jun–Aug, fr. Aug–Oct.

- **Forests, woodlands; 100–1600 m. Guangdong, Hainan, Taiwan, Yunnan.**

**60. Euonymus glaber** Roxburgh, Fl. Ind. 2: 403. 1824.

帽果卫矛 ma guo wei mao

_Euonymus mitratus_ Pierre.

Evergreen small trees or shrubs, 5(–15) m tall; branches and twigs dark brown to purplish brown, terete. Petiole 5–10 mm; leaf blade papyraceous, elliptic to oblong-elliptic, 9–11 × 4–4.5 cm, base cuneate to attenuate, margin distal 3/4 crenulate, proximal 1/4 entire or subentire, apex acute or acuminata; lateral veins 6–9 pairs, curving forward, disappearing before reaching margin. Peduncle short, less than 2.5 cm, 1 or rarely 2 × dichotomously branched, several flowers; pedicel 2–3.5 mm. Flowers usually 5-merous; occasionally combined with 4-merous, ca. 6 mm in diam.; sepals semiorbicular, very small; petals cream, ovate to ovate-oblong. Capsule compressed globose and concave at apex, (4 or)5-angled and grooved (immature), narrowing toward base, 1.4–1.5 × ca. 1 cm, (4 or)5-lobed (mature). Seeds ellipsoid, sometimes only 1 developing, arillate. Fl. and fr. unknown.

Mixed forests; 500–1600 m. Guangxi, Yunnan [Bangladesh, Cambodia, India, Malaysia, Myanmar, Thailand, Vietnam].


纤细卫矛 xian xi wei mao

Deciduous shrubs, slender, to 4 m tall; branches terete, slender, twigs green to light green, slender, 4-angled. Petiole slender, 2–4 mm; leaf blade thinly leathery or thickly papyraceous, elliptic or narrowly elliptic, 4–5 × 1.2–2 cm, base cuneate or attenuate, margin entire to crenulate or remotely serrate distally, apex acuminate or long acute; lateral veins not obvious, curving forward and webbing and disappearing before reaching margin. Peduncle 3–4 cm, slender, 1 or 2 × dichotomously branched, several flowers; pedicel 3–5 mm. Flowers 4-merous (not seen). Capsule rhombic, 4-angled and deeply grooved, brown or yellow-brown to red-brown, 8(–10) mm × 1.2(–1.4) cm. Seeds ellipsoid, dark brown; aril orange-red. Fl. unknown, fr. Aug–Nov.

- **Forests, scrub; ca. 1200 m. Guangdong, Guangxi, Hainan.**

This species is readily distinguished by its extreme slenderness, narrow leaves, and minute flowers on a filiform peduncle. It is rare in the wild. The original description lists a 5-merous flower; however, on the type specimen (K), it is difficult to examine the number because the specimen is just before the flower bud stage. All specimens corresponding with the description and the type have only 4-lobed fruits.

_Euonymus gracilimus_ is based on material collected by Reeves without exact locality. It undoubtedly came from S China, where John Reeves resided in Guangzhou (Canton) and Macao from 1812–1813. Its relationship with _E. mitratus_ , which has slightly larger leaves but the same fruit, needs further study.

**62. Euonymus grandiflorus** Wallich in Roxburgh, Fl. Ind. 2: 404. 1824.

大花卫矛 da hua wei mao


Deciduous shrubs to small trees, to 15 m tall; branches and twigs gray-green to gray-brown, terete, sturdy. Petiole 5–10 mm; leaf blade thickly papyraceous to leathery, oblong-elliptic to obovate-elliptic, 4–10 × 2–4 cm, base cuneate or long attenuate, margin finely crenulate, apex obtuse or mucronulate; lateral veins 10–13 pairs, slightly curving forward, disappearing before reaching margin. Peduncle single or clustered, 2–3.5 cm, 1–3 × dichotomously branched with several to many flowers; pedicel 10–15 mm. Flowers 4-merous, 17–22 mm in diam.; sepals semicordate, persistent; petals yellow or brown-green, orbicular. Capsule with 4 right angles, brown or yellow-brown to red-brown, 1.2–1.4 × 1.1–1.4 cm. Seeds usually 2 per locule, sometimes 3, ellipsoid, dark brown, arillate. Fl. Mar–May, fr. Aug–Nov.


This species is very similar to _Euonymus carnosus_ ; however, it differs by having smaller leaves, larger flowers, and a Sino-Himalayan distribution, rather than Sino-Japanese. These two species hybridize across Guangxi, Hunan, and Hubei in SC China.

**63. Euonymus hamiltonianus** Wallich in Roxburgh, Fl. Ind. 2: 403. 1824.

西南卫矛 xi nan wei mao

Deciduous shrubs to small trees, 3–20 m tall, to 25 cm d.b.h.; branches and twigs terete, sturdy, green to light green. Petiole sturdy, 9–20 mm; leaf blade thinly leathery or thickly papery, elliptic, or sometimes ovate-elliptic, 11–13(–15) × 3–5(–7) cm, base attenuate, margin finely crenulate, surfaces rough, apex acuminate; lateral veins 6–9 pairs, curving forward, webbing and disappearing before reaching margin. Peduncle 3–4.5 cm, 1–3 × dichotomously branched, several flowered; pedicel 5–7 mm. Flowers 4-merous, 9–10 mm in diam.; sepals ovate; petals white, lanceolate or long ovate, apex acuminate or obsolete. Capsule rhombic, with 4 angles and deep grooves, brown or yellow-brown to red-brown, ca. 8 mm × 1–1.3 cm. Seeds ellipsoid, brown dark; aril orange-red. Fl. Apr–Jul, fr. Aug–Nov.

Forest, woodlands; near sea level to 3000 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hunan, Jiangsu, Jiangxi, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Cambodia, India, Myanmar, Vietnam].

This species is known only from the type. It is similar to Euonymus europaeus Linnaeus, but they are quite distinct in their distributions.


秀英卫矛 xi u ying wei mao

Deciduous trees, to 25 m tall, ca. 10 cm d.b.h.; branches terete, sturdy, twigs green to light green, 4-angled. Petiole sturdy, 1–1.3 cm; leaf blade thinly leathery or thickly papyraceous, elliptic, 8–14 × 3–6 cm, base cuneate or attenuate, margin crenate or serrate, apex acute or acuminate; lateral veins 8–11 pairs, curving forward, webbing and disappearing before reaching margin. Peduncle 2.5–3 cm, sturdy, 1 or 2 × dichotomously branched, several flowered; pedicel 4–6 mm. Flowers 4-merous (not seen). Capsule subglobose, 4-angled, green when fresh, brown or yellow-brown when dry, ca. 8 × 6–7 mm, slightly apiculate at apex. Seeds ellipsoid, dark brown; aril orange-red. Fl. unknown, fr. Jul–Sep.

- About 600 m. W Sichuan (Tianquan).

This species is known only from the type. It is similar to Euonymus nitidus, E. hamiltonianus, and species in E. sect. Illicifolii but differs from these by having smaller obliquely angled fruit.


克钦卫矛 ke qin wei mao

Deciduous shrubs, ca. 2 m tall; branches terete, sturdy, twigs green to light green, 4-angled. Petiole sturdy, 4–7 mm; leaf blade thinly leathery or thickly papyraceous, elliptic, or sometimes obovate-elliptic, 6–8 × 2–3 cm, base cuneate or attenuate, margin crenulate to crenate, apex acute, mucronate; lateral veins 7–9 pairs, unclear, curving forward, disappearing before reaching margin. Peduncle 1–2 cm, slender, 1 or 2 × dichotomously branched, several flowered; pedicel 5–7 mm, slender. Flowers 4-merous, 5–6 mm in diam.; sepals ovate; petals red to purple. Capsule broadly pear-shaped, more than 1.5 cm, strongly 4-angled. Seeds not seen. Fl. Jul, fr. unknown.

2600–3500 m. Yunnan [India (Assam), Myanmar].

This species is in need of further collection.


稀序卫矛 xi xu wei mao

Evergreen shrubs, to 4 m tall; branches terete, sturdy, dark brown to brown, twigs 4-angled. Petiole sturdy, 5–10 mm; leaf blade leathery and rigid, lanceolate, sometimes elliptic-lanceolate, 12–16 × 3–4.5 cm, base cuneate or attenuate, margin entire, sometimes finely and remotely crenulate, apex acute or acuminate; lateral veins 8–11 pairs, curving forward, webbing and disappearing before reaching margin. Peduncle 10–15 cm, 1 or 2 × dichotomously branched, several flowered; pedicel 1–1.8 cm. Flowers 5-merous, 8–9 mm in diam.; sepals semiobicular; petals dark pink to purple or purplish brown, obovate, margin ciliate. Capsule subglobose, 5-angled, red when fresh, brown or yellow-brown when dry, ca. 1.2 × 1.5 cm. Seeds ellipsoid, dark brown, partially covered by orange-red aril. Fl. May–Dec, fr. Jul–Jan.

Forests, woodlands; 1200–1400 m. Guangdong, Guangxi, Yunnan [Vietnam].

The protologue cites two misidentified specimens, S. Z. Wang 17 (KUN) and S. Z. Wang 357 (KUN, PE), which in fact belong to Euonymus prismatomeroides.


疏花卫矛 shu hua wei mao


Deciduous shrubs to small trees, 3–12 m tall, to 18 cm d.b.h.; branches greenish gray, terete, sturdy, twigs greenish, 4-angled or striate when dry. Petiole subsessile or only 2–4 mm; leaf blade thinly leathery, elliptic-obovate or ovate, 6–10(–12) × 2.5–3.5 cm, base attenuate, margin nearly entire proximally, crenate distally, apex caudate or with a long tail; lateral veins unclear or invisible. Peduncle slender, 2–3.5 cm, 1–3 × dichotomously branched with few flowers; pedicel 6–10 mm. Flowers 5-merous, ca. 8 mm in diam.; sepals semiobicular, very small; petals purple, subobicular. Capsule obovoid, base attenuate, 5-angled and grooved, pinkish or reddish when fresh, brown or yellow-brown to red-brown when dry, 8–10 mm × ca. 1.2 cm. Seeds ovoid, dark brown, partially covered by orange-aril. Fl. Mar–Aug, fr. May–Nov.

Forests, woodlands, scrub; 300–2200 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Cambodia, India, Myanmar, Vietnam].

丽江卫矛 li jiang wei mao

Deciduous dwarf shrubs, 1–1.5 m tall; branches greenish gray, 4-angled, sturdy, twigs greenish, with 4 right angles. Petiole subsessile or only 1–2 mm; leaf blade thinly leathery, linear, 2–4 × ca. 2 mm, base subrounded, margin entire, revolute, apex obtuse or acute; lateral veins invisible. Pseuduncle short, 0.5–1.5(-2) cm, 1 dichotomous branch with few flowers, typically only central flower developing; pedicel ca. 5 mm. Flowers 4-merous, 5–6 mm in diam.; sepals semi-ovariable, very small; petals white-green, subovariable. Capsule obovoid-rhombic, base attenuate, 4-angled, pinkish or reddish when fresh, brown or yellow-brown to red-brown when dry, ca. 8 mm × 1 cm, sometimes only 2 or 3 locules developing. Seeds ovoid, dark brown, partially covered by orange aril. Fl. May–Jul, fr. Sep–Nov.

- Forests, scrub. NW Yunnan.


白杜 bai du


Deciduous shrubs to trees, 3–10 m tall, to 15 cm d.b.h.; branches and twigs terete, sturdy, green to light green. Petiole 1–2.5 mm; leaf blade thinly leathery or thickly papyraceous, ovate, orbicular-ovate, elliptic, or ovate-lanceolate, 6–10.5 × 2–4 cm, base subattenuate, margin crenulate, apex acute or acuminate, sometimes crenate, both surfaces smooth; lateral veins 6–8 pairs, curving forward, webbing and disappearing before reaching margin. Pseuduncle 2–3.5 cm, 1–3 × dichotomously branched, several flowered; pedicel 5–7 mm. Flowers 4-merous, 8–9 mm in diam.; sepals ovate; petals white, lanceolate or long ovate, apex acuminated or obtuse. Capsule rhombic, with 4 angles and deep grooves, base attenuate, brown or yellow-brown to red-brown, ca. 8 × 9 mm. Seeds subglobose, dark brown, partially covered by orange aril. Fl. Apr–Jul, fr. Aug–Nov.

- Forests, scrub; 300–2600 m. Henan, Hubei, Shaanxi, Sichuan, Xizang, Yunnan.

The distribution report from Yunnan has not been confirmed.


大果卫矛 da guo wei mao

Euonymus lipoensis Z. R. Xu; E. myrianthus var. crassifolius (Loesener) Blakelock; E. myrianthus var. tenuifolius (Loesener) Blakelock; E. myrianthus var. tenuis C. Y. Cheng ex T. L. Xu & Q. H. Chen; E. rosthornii Loesener; E. rosthornii var. crassifolius Loesener; E. rosthornii var. tenuifolius Loesener; E. sargentianus Loesener & Rehd.

Evergreen shrubs to small trees, 3–12 m tall; branches gray-brown to gray-brown, terete, sturdy, twigs greenish, sometimes with 4 striae. Petiole ca. 5 mm, sturdy; leaf blade thickly leathery, ovate-elliptic or oblong-lanceolate, 7–11 × 2.5–5 cm, base attenuate or acuminate, margin large denticate, apex acute or acuminate; lateral veins 7–9 pairs, slightly curving forward and dividing into veinlets before reaching margin. Pseuduncle 2–3.5 cm, 1 or 2 × dichotomously branched, several flowered; pedicel 15–20 mm. Flowers 4-merous, ca. 1 cm in diam.; sepals semi-ovariable; petals greenish yellow, orbicular or oblong. Capsule tetra-globose, usually with 4 right angles, pinkish or reddish when fresh, brown or yellow-brown to red-brown when dry, 1.5–1.8 × 1.2–1.5 cm. Seeds ovoid, dark brown; aril orange. Fl. Apr–Jul, fr. Aug–Nov.

- Forests, woodlands; near sea level to 1200 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang.

This is a common species. It is variable in morphology and habitat.


矮卫矛 ai wei mao

Deciduous procumbent or ascending shrubs, 1–2 m tall; branches greenish gray, 4-angled, sturdy, twigs greenish, with 4
right angles. Petiole subsessile or only 1–2 mm; leaf blade thinly leathery, linear to linear-lanceolate, 2–7 × 2–20 mm, base subrounded or attenuate, margin entire, revolute, apex obtuse or acute; lateral veins invisible. Peduncle short and slender, 0.5–1.5(–2) cm, 1 dichotomous branch with few flowers, typically only central flower developing; pedicel 5–10 mm. Flowers 4-merous, 5–6 mm in diam.; sepals semiorbicular, very small; petals white-green, suborbicular. Capsule obovoid-thomibic, base attenuate, 4-angled, pinkish or reddish when fresh, brown or yellow-brown to red-brown when dry, ca. 8 mm × 1 cm, sometimes only 2–3 locules developing. Seeds ovoid, dark brown, partially covered by orange aril. Fl. May–Jul, fr. Sep–Nov.

High mountain forests and scrub, dry habitats. Gansu, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi [Mongolia, Russia; C, E, and S Europe].

The leaves of this species are very variable and fruit growth can be dwarfed in poor growing conditions. It is clear that *Euonymus oblongifolius* is an extreme form of this species. *Euonymus chengii*, which was included in this species in the revision work of *Euonymus* (J. S. Ma, Thaiszia 11: 1–264, 2001), is now recognized after careful examination of new collections.


*bi jiang wei mao*

Evergreen trees, to 10 m tall, to 30 cm d.b.h. (field record); branches and twigs gray-brown, terete, sturdy. Petiole 3–6 mm, sturdy; leaf blade thickly leathery, elliptic to broadly elliptic, 9–10 × 4–6 cm, base nearly rounded, margin entire to finely crenulate, apex obtuse; lateral veins 6–9 pairs, distal part curving forward and disappearing before reaching margin, surface sometimes rugose, especially during fruiting time. Peduncle 6–8 cm, 1 or 2 × dichotomously branched, several flowers; pedicel 1–2 cm. Flowers 4-merous (not seen). Capsule obpyramidal, 4-angled, pinkish or reddish when fresh, brown or yellow-brown to red-brown when dry, ca. 8 mm × 1.5 cm. Seeds ellipsoid, dark brown; aril orange. Fl. unknown, fr. Aug–Oct.

- Rocky mountains; ca. 1500 m. Yunnan.

This species is known only from the type.


*xi chou wei mao*

Evergreen shrubs to small trees, 2–8 m tall; branches and twigs gray-green to gray-brown, terete, twigs striate. Petiole 3–5 mm; leaf blade leathery, ovate-elliptic or obovate-elliptic, 5–7 × 2.8–3 cm, base cuneate or attenuate or suborbicular, margin crenulate distally, entire proximally, apex obtuse or acuminate, even caudate; lateral veins unclear. Peduncle 1.5–2.5 cm, 1 or 2 × dichotomously branched, several flowers; pedicel 5–10 mm. Flowers 4-merous, ca. 9 mm in diam.; sepals semiorbund; petals light green or greenish white, orbicular. Capsule oblong-obovate, 4-angled, brown or yellow-brown to red-brown, ca. 8 × 10 mm. Seeds subglobose, dark brown; aril orange. Fl. May, fr. Dec.

- Forests, woodlands; 1000–1500 m. Yunnan.


*shuan chi wei mao*
Deciduous shrubs, 2–3(–5) m tall; branches and twigs gray-green to gray-brown, terete, corky winged or striate. Petiole 3–5 mm; leaf blade thickly papery, ovate-elliptic or oblong-elliptic, 6–10 × 2–3 cm, base cuneate or attenuate, margin crenulate, slightly pubescent, apex obtuse or acuminate; lateral veins 10–14 pairs, curving forward, disappearing before reaching margin. Peduncle 1.8–3 cm, 1–3 × dichotomously branched, several flowered, very slender; pedicel 5–10 mm. Flowers 4-merous, ca. 10 mm in diam.; sepals semirotund; petals greenish white, oblong. Capsule subglobose, 4-angled, brown or yellow-brown to red-brown, ca. 8 × 9 mm. Seeds ovoid, dark brown, partially covered by orange aril. Fl. May–Jul, fr. Aug–Nov.

- Woodlands, dry slopes; 1000–3000 m. Gansu, Henan, Hubei, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan.

The distribution report from Anhui (J. S. Ma, Thaiszia 11: 1–264. 2001) is a mistake.


海桐卫矛 hai tong wei mao

Small trees, 3–7 m tall, to 30 cm d.b.h. (field record), sometimes shrublike; stem gray to gray-brown, terete, glabrous; twigs green to light green, terete; winter buds very small, generally pubescent. Petiole 5–10 mm; leaf blade ± leathery, lanceolate or willowlike, base and apex acuminate or acute, margin crenulate; lateral veins 6–9 pairs, disappearing before reaching margin, glabrous or pubescent on both surfaces. Peduncle axillary, up to 10 cm, usually with only 1 flower, sometimes to few flowered. Flowers 4-merous (not seen); petals white to pinkish (field record). Fruit usually 1, sometimes 2 or 3, with pedicel 5 cm. Capsule 4-lobed, usually only 2 or 3 locules developing, red when fresh, brown or yellow-brown when dry, ca. 8 × 6 mm. Seeds 2 per locule, nearly round or oblong, ca. 4 × 3–4 mm in diam., red when fresh, or black when dry, partially covered by aril. Fl. Feb–Jul, fr. May–Dec.

Forests, shaded woodlands; 100–1800 m. Guangdong, Guangxi, Guizhou, Sichuan, Yunnan [Vietnam].


柳叶卫矛 liu ye wei mao

Euonymus georgei H. F. Comber; E. lawsonii C. B. Clarke ex Prain f. salicifolius (Loesener) C. Y. Cheng; E. lawsonii var. salicifolius (Loesener) Blakelock.

Evergreen shrubs, 2–3 m tall; branches terete, sturdy, twigs green to light green, striate. Petiole sturdily, 6–10 mm; leaf blade leathery, long lanceolate, 10–15 × ca. 3 cm, base cuneate or attenuate, margin remotely serrulate, apex acuminate; lateral veins 10–12. Peduncle ca. 3 cm, several flowered; pedicel ca. 5 mm. Flowers 4-merous (not seen). Capsule obovate, 4-angled with little deep grooves, brown or yellow-brown to red-brown, ca. 1 × 1.5 cm. Seeds ovoid, dark brown; aril orange-red. Fl. unknown, fr. Dec.

Mixed forests. Yunnan [Vietnam].

Records of Euonymus lawsonii C. B. Clarke ex Prain from China (e.g., in FRPS 45(3): 42. 1999) are misidentifications of E. salicifolius. True E. lawsonii is distributed in India and Myanmar.


中亚卫矛 zhong ya wei mao

Euonymus przewalskii Maximowicz.

Deciduous shrubs, 2–3 m tall; branches and twigs gray-green to gray-brown, with corky wing, sometimes terete. Petiole 3–5 mm; leaf blade papery, ovate-lanceolate, 3.5–5 × 1–1.5 (–2.5) cm, base subrounded or attenuate, margin crenulate, apex acuminate or acute; lateral veins 4–6 pairs, slightly curving forward and disappearing before reaching margin. Peduncle slender, 1.8–2.5 cm, 1 or 2 × dichotomously branched, several flowered; pedicel 10–15 mm. Flowers 4-merous, 6–9 mm in diam.; sepals semirotund; petals dark red, oblong. Capsule subglobose, 4-angled, base attenuate, brown or yellow-brown to red-brown, ca. 8 × 9–10 mm. Seeds subglobose, dark brown or black, partially covered by orange aril. Fl. May–Jul, fr. Aug–Oct.

Forests, woodlands, sparse dried grasslands; 1000–3200 m. Gansu, Hebei, Henan, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xinjiang, Xizang, Yunnan [C Asia].

81. Euonymus serratifolius Beddome, Fl. Sylv. S. India 64. 1870.

印度卫矛 yin du wei mao

Evergreen shrubs, ca. 2 m tall; branches terete, sturdy, twigs green to light green, terete with striate. Petiole sturdily, 6–10 mm; leaf blade papery, long lanceolate, 15–22 × 3–5.5 cm, base subrounded, margin variously serrate, denticles ciliate, apex acuminate or caudate; lateral veins 12–15 pairs, webbing and disappearing before reaching margin. Peduncle slender, 2–5 cm, several flowered; pedicel 6–8 mm. Flowers 5-merous, 7–9 mm in diam., purple. Capsule obpyramidal, 5-angled with deep grooves, brown or yellow-brown to red-brown, ca. 3 × 2.5 cm. Seeds ellipsoid, dark brown; aril orange-red. Fl. May–Aug.

Forests; ca. 1800 m. Guangxi, Yunnan [India].


柔齿卫矛 rou chi wei mao

Evergreen shrubs, ca. 3 m tall; branches terete, sturdy, twigs green to light green, terete, striate. Petiole sturdily, 6–10 mm; leaf blade papery, ovate to ovate-elliptic, 6–10 × 2–5.5 cm, base subrounded to suborbicular, margin ciliate to sharply and finely denticate, apex ciliate; lateral veins ca. 8 pairs, webbing and disappearing before reaching margin. Peduncle slender, 2–3 cm, several flowered; pedicel 6–8 mm. Flowers 4-merous, 7–9 mm in diam., green. Capsule not seen. Fl. May, fr. unknown.

- Woodlands; ca. 2000 m. Yunnan.

This species is known only from the type and is very similar to Euonymus serratifolius.


韩氏卫矛 han shi wei mao

Deciduous dwarf shrubs, ca. 1 m tall, much branched;
branches and twigs gray, terete, sturdy. Petiole very short or sessile; leaf blade thickly papery, oblong-linear, 1.8–2.3 × ca. 3 mm, base subattenuated, margin subentire, minutely crenulate, apex obtuse; lateral veins invisible. Peduncle few from upper branches, typically several flowered; pedicel 5–10 mm. Flowers 4-merous, 9–10 mm in diam.; sepals semi-elliptic; petals pale yellow, suborbicular. Capsule not seen. Fl. May–Jun, fr. unknown.

- Forests, scrub; 2800–3000 m. Sichuan.

There are only a few collections available for this species, and the type has the only flower. The type was collected between Yen Yuen (Yanyuan, Sichuan) and Yungning (Ningliang, Yunnan), from the Sichuan side, according to Handel-Mazzetti’s description and the type record. The leaves appear clustered on the young twigs, and the flowers larger than the other small Euonymus species; the pale yellow flower color is also distinct.

84. Euonymus tingsens Wallich in Roxburgh, Fl. Ind. 2: 406. 1824.

染用卫矛 ran yong wei mao

Evergreen shrubs to small trees, 2–8 m tall; branches gray-black to gray-brown, terete, sturdy, twigs greenish, with striae. Petiole 3–5(–8) mm; leaf blade thickly leathery, elliptic or oblong-elliptic, 4–6 × 2–2.5 cm, base cuneate or suborbicular, margin crenulate, apex obtuse or acute; lateral veins 8–12 pairs, curving forward and disappearing before reaching margin. Peduncle many, 1.5–3.5 cm, 1–3 × dichotomously branched, several flowered; pedicel 5–20 mm. Flowers 5-merous, ca. 1.5 cm in diam.; sepals semi-elliptic; petals creamy white with purplish veining around edges, orbicular to obovate. Capsule obovoid-globose, 5-angled, pinkish or reddish when fresh, brown or yellow-brown to red-brown when dry, 1.2–1.3 × 1.2–1.4(–1.5) cm. Seeds ellipsoid, dark brown, partially covered by orange aril. Fl. May–Aug, fr. Aug–Nov.

- Forests, woodlands; 1300–3700 m. ?Guangxi, Guizhou, Sichuan, Xizang, Yunnan [Bhutan, India, Myanmar, Nepal].

The distribution report from Guangxi has not been confirmed.

85. Euonymus tosi Merrill, Sunyatsenia 1: 198. 1934.

狭叶卫矛 xia ye wei mao

Euonymus kwangtungensis C. Y. Cheng; E. longifolius Champion ex Bentham (1851), not Medikus (1782); E. nitidus Bentham f. tosi (Merrill) C. Y. Cheng.

Evergreen shrubs, 1–5 m tall; branches terete, sturdy, twigs gray to light green-gray, young branches striate. Petiole slender, 6–14 mm; leaf blade leathery, long lanceolate or elliptic-lanceolate, 13–18.5 × ca. 3 cm, base cuneate or attenuate, margin remotely serrulate, apex acuminate; lateral veins 10–12. Peduncle 3–7 cm, several flowered; pedicel ca. 5 mm. Flowers 4-merous, dark. Capsule oblong, 5-angled with little deep grooves, brown or yellow-brown to red-brown, ca. 1 × 1–1.4 cm. Seeds ovoid, dark brown; aril orange-red. Fl. Apr–Jul, fr. Aug–Dec.

- Dense mixed forests; near sea level to 1200 m. Guangdong, Guangxi.


瘤枝卫矛 liu zhi wei mao

Euonymus integerrimus Prokhanov; E. pacificus Maximowicz; E. pacificus var. chinensis (Maximowicz) Rehder; E. verrucosus var. chinensis Maximowicz; E. verrucosus var. pacificus (Maximowicz) Regel.

Deciduous shrubs, ca. 3 m tall; branches and twigs gray-green to gray-brown, terete, densely verrucate. Petiole very short or subsessile, sometimes 2–3 cm; leaf blade thickly papery, ovate-elliptic or oblong-elliptic, even rhombic, 5–7 × 2–3 cm, base cuneate or attenuate, margin crenulate, sparsely pubescent, apex obtuse or acuminate; lateral veins 5–8 pairs, curving forward, disappearing before reaching margin. Peduncle 2–4 cm or absent with petioles axillary in clusters, 1–3 × dichotomously branched, several flowered, very slender; pedicel 5–10 mm. Flowers 4-merous, 7–10 mm; sepals semiorbicular; petals pinkish to dark red, orbicular. Capsule subglobose, 4-angled, brown or yellow-brown to red-brown, ca. 8 mm × 1 cm. Seeds ovoid, dark brown, partially covered by orange aril. Fl. May–Jul, fr. Aug–Nov.

- Forests, woodlands; 200–1300 m. Gansu, Heilongjiang, Jilin, Liaoning, Ningxia, Qinghai, Shaanxi [Japan, Korea, Russia (including European part); C and N Asia].


荚谜卫矛 jia mi wei mao


Deciduous shrubs to small trees, 2–6 m tall; branches and twigs gray-green to gray-brown, terete, sturdy, striate. Petiole 4–12 mm; leaf blade thickly papery or thinly leathery, variously ovate, ovate-elliptic, or oblong-ovate, 6–10 × 2–4 cm, base cuneate or suborbicular, margin crenulate to crenate, apex obtuse or acute; lateral veins 6–8 pairs, curving forward, disappearing before reaching margin. Peduncle 3–4 cm, 1–3 × dichotomously branched with several to many flowers; pedicel 5–10 mm. Flowers 4-merous, 5–6 mm in diam.; sepals semiorbucnt; petals pinkish brownish red. Capsule subglobose, with 4 little striae or angles, brown or yellow-brown to red-brown, 1–3.2 × ca. 1 cm. Seeds 1 or 2 per locule, ellipsoid, dark brown, partially covered by orange aril. Fl. May–Jul, fr. Jul–Nov.

- Mixed forests, woodlands; 1300–3400 m. ?Guangxi, Guizhou, Sichuan, Yunnan [Bhutan, India, Myanmar].

The report from Guangxi has not been confirmed.


征镒卫矛 zheng yi wei mao

Deciduous shrubs, 2–3 m tall; branches terete, slender, dark brown to brown, twigs slender, striate. Petiole short, 3–4 mm; leaf blade leathery, elliptic, 5–6 × 1.5–4 cm, base cuneate or attenuate, margin entire, apex acute or caudate; lateral veins invisible. Peduncle very short, ca. 5 mm, 1 or 2 × dichotomously
branched, few flowered; pedicel ca. 1.5 cm. Flowers 4-merous (not seen); sepals triangular, persistent. Capsule oblong-obovoid, 4-angled with little grooves, red when fresh, brown or yellow-brown when dry, 2–2.8 × ca. 1 cm. Seeds 2 or 3 each locule, ovoid to globose, dark brown, arillate. Fl. unknown, fr. Aug.

- Mixed forests; 1900–2400 m. SW Guangxi, S Yunnan.


**云南卫矛** yun nan wei mao

*Euonymus decorus* W. W. Smith; *E. linearifolius* Franchet; *E. pinchuanaensis* Loesener; *E. pulvinatus* Chun & F. C. How; *E. stenophyllus* J. W. Ren.

Evergreen shrubs, 2–3 m tall; branches terete, sturdy, dark brown to brown, twigs slender, striate. Petiole short, 3–5 mm; leaf blade leathery, variously linear to elliptic or obovate-elliptic, 5–9 cm × 6–24 mm, base cuneate or attenuate, margin remotely crenate and revolute, apex acute or obtuse; lateral veins invisible. Pedicel 2–3.5 cm, usually only middle flower developing; pedicel 1.5–2.5 cm. Flowers 5-merous, 2–2.5 cm in diam.; sepals triangular, persistent; petals light green, ovate, revolute, apex obtuse and entire. Capsule cylindric-rhombic to oblong, 5-angled with small grooves, red when fresh, brown or yellow-brown when dry, 1.5–1.8 × 1.2–1.4 cm. Seeds usually 2, ellipsoid, dark brown, partially covered by orange-red aril. Fl. Mar–Apr, fr. May–Jul.

- Forests, woodlands; 1700–2400 m. ?Guizhou, Sichuan, ?Xizang, Yunnan.

The distribution reports from Guizhou and Xizang have not been confirmed. *Euonymus stenophyllus* J. W. Ren (Acta Boreal. Occid. Sin. 23: 1635. 2003) was described from Gansu. Its affinity to *E. yunnanensis* needs further study.


**显脉卫矛** xian mai wei mao

Evergreen shrubs, 2–4 m tall; branches gray-black, terete, glabrous, twigs green to light brown, 4-angled, glabrous. Petiole ca. 5 mm; leaf blade long subulate or broadly linear, up to 14 cm, less than 2 cm in diam., base cuneate, margin unclearly and sparsely denticulate, apex long attenuate; main vein impressed axially and prominent abaxially, lateral veins obscure and reticulate before reaching margin. Cymes axillary or terminal on young twig, typically 3–5-flowered; pedicel less than 3 cm. Flowers purple-red when fresh, 5-merous; sepals 5, semi-elliptic, ca. 2 mm × as wide; petals 5, orbicular, 3–4 mm × as wide, slightly attenuate at base, nearly entire or mildly crenulate on margin, not ciliate. Stamens 5; filament short; anther cells 2. Ovary and fruit not seen. Fl. May, fr. unknown.

- Evergreen broad-leaved forests; ca. 1600 m. Yunnan.

*Euonymus prismatomerioides* is provisionally accepted here. A fruiting specimen is needed for a more definitive placement.


**沟瓣属** gou ban shu

Liu Quanru (刘全儒); A. Michele Funston

Evergreen shrubs or small trees, glabrous. Leaves opposite, entire or crenulate; stipulate. Inflorescences axillary, cymose, 1–4 × dichotomous. Flowers bisexual, 4-merous; petals green-yellow, green-white, red, or purple. Disk fleshy, annular, 4-angled or lobed; stamens on disk; anthers obliquely dehiscent, latrorse. Ovary immersed in disk, 4-locular; ovules pendulous, 1 per locule. Capsule oblong-obovoid, 5-angled with small grooves, red when fresh, brown or yellow-brown when dry, 1.5–1.8 × 1–2 cm, slightly attenuate at base, nearly entire or mildly crenulate on margin, not ciliate. Stamens 5; filaments short; anther cells 2. Ovary and fruit not seen. Fl. May, fr. unknown.

About 20 species: tropical and subtropical Asia; nine species (seven endemic) in China.

*Glyptopetalum reticulineerve* C. Y. Wu ex G. S. Fan & Y. J. Xu (Bull. Bot. Res., Harbin 27: 129. 2007) was recently described from evergreen forests at 600–800 m in SE Yunnan (Hei, Honghe). We have not treated it here because we were unable to examine any specimens.

1a. Disk bowl-shaped, tightly invaginated and coalescent with ovary at base, emergence plane; filament apparent, 1–2 mm.

2a. Leaf blade obovate or oblong-obovate, to 5 cm; petiole 2–3 mm; flowers yellow-green ................................. 8. *G. fengii*

2b. Leaf blade elliptic, rarely narrowly obovate-elliptic, to 12 cm; petiole ca. 5 mm; flowers white-green ....... 9. *G. gelonifolium*

1b. Disk disciform, not coalescent with ovary, most of ovary immersed in disk; filament very short, less than 1 mm or absent.

3a. Leaf blade margin with coarse spiny teeth.

4a. Leaf blade obovate or elliptic, rarely narrowly elliptic, base broadly cuneate, petiole 2–6 mm ............... 6. *G. ilicifolium*

4b. Leaf blade ovate or oblong-ovate, base cordate, clasping stem, sessile ...................................................... 7. *G. aquifolium*

3b. Leaf blade margin dentate, denticulate, serrate, or nearly entire.

5a. Leaf blade leathery or thickly leathery, adaxial surface plane or when dry with large irregular bullations present.

6a. Capsule pallid, densely maculate, spots small, squarrose; aril crimson .............................................. 4. *G. longipedicellatum*

6b. Capsule brown or fulvous, rough with minute tubercles; aril yellow ...................................................... 5. *G. sclerocarpum*

5b. Leaf blade papery, thickly papery, or thinly leathery, adaxial surface smooth or rugose due to impressed nerves.


Evergreen shrubs, 1–2 m tall. Petiole slightly thick, 5–8 mm; leaf blade thickly papery or thinly leathery, oblong, oblong-ovate, or narrowly elliptic, 10–22 × 4–8 cm, base broadly cuneate, margin sparsely denticate or serrate, apex often obliquely acuminate; lateral veins 7–9 pairs, sometimes appearing rugose due to depressed veins. Cymes 1–3 × dichotomously branched; peduncle 2–4 cm, branches 1.5–3 cm; pedicels 4–10 mm; bract and bractlets 3–6 mm. Flowers white-green, 0.8–1 cm in diam.; petals orbicular. Stamens inserted on margin of disciform disk; filament short; anther diverging. Ovary without style; stigma disciform. Capsule globose, pallid, with densely small lamellate tubercles. Seeds crimson, ca. 1/2 covered by aril. Fl. Aug–Jun, fr. Sep–Dec.

- Dense forests, forest margins, mountain regions; 600–900 m. Guangxi (Longlin), Yunnan.


Trees or shrubs, 2–12 m tall, often scandent when growing in dark conditions; twigs sturdy, yellow-green, terete, smooth. Petiole very sturdy, (0.6–)1.2–1.8 cm × 2–3 mm; leaf blade leathery, usually narrowly elliptic, (6–)15–25 cm, base cuneate or broadly cuneate, margin with very shallow teeth or entire, apex acuminate or acute; lateral veins (7–)10–18 pairs, smooth adaxially, slightly prominent and obvious abaxially. Cymes 2 or 3 × dichotomously branched; peduncle 2–5 cm, branches 1–3 cm; pedicels 2–3.5 cm; bract and bractlets ca. 3 mm. Flowers not seen. Capsule subglobose, 1.2–1.5 cm in diam., pallid, with densely small lamellate tubercles. Seeds crimson, ca. 1/2 covered by aril. Fl. unknown, fr. Oct–Dec.

- Valley forests, streamsides; 500–600 m. Guangdong, Hainan (Baoting, Lingshui).


Evergreen trees or shrubs, 2–12 m tall, often scandent when growing in dense shade. Petiole sturdy, 8–10 mm, wider than 2 mm in diam.; leaf blade leathery or thickly leathery, narrowly oblong to elliptic, rarely obovate, 12–27 × 4.5–9 cm or smaller, base broadly cuneate to rounded, margin sparsely denticate or serrate; apex long acuminate; lateral veins 8–18 pairs, appearing rugose due to depressed veins. Cymes 1 or 2 × dichotomously branched; peduncle 2–4 cm, branches 1.5–3 cm; pedicels 5–8 mm; bractlets subulate, ca. 1.2 cm, persistent. Flowers slightly green; petals broadly obovate. Stamens inserted on margin of disciform disk; filament short; anther diverging. Ovary without style; stigma disciform. Capsule globose, pallid or slightly brown, 1–1.4 cm in diam., squarrose maculate. Seeds brown-red; aril yellow when dry. Fl. Aug–Jun, fr. Sep–Dec.

- Dense forests, forest margins, mountain regions; 600–900 m. Guangxi (Longlin), Yunnan.
tire, apex acuminate or obtuse; lateral veins more than 10 pairs, dense, both surfaces plane, obvious. Cymes 1 or 2 × dichotomously branched, usually 3-flowered; peduncle 2–5 cm; pedicels 1–1.5 cm. Flowers yellow-white; petals slightly thick, obovate. Filament very short; anther diverging. Styles short and thick, elongating in bloom. Capsule subglobose, 1.2–2.2 cm in diam.; pericarp brown or fulvous, very thick and rigid, rough with minute tubercles. Seeds oblong, 1–1.5 × 0.8–1 cm; aril yellow, covering ca. 1/2 of seed. Fl. Aug–Jun, fr. Sep–Dec.

Dense forests, mountain slopes; 900–2500 m. Yunnan [India].


刺叶沟瓣 ci ye gou ban


Shrubs, 1–4 m tall; branches green. Petioles 2–6 mm; leaf blade thickly leathery, usually pruinose, obovate, elliptic, or narrowly elliptic, 3.5–9 × 2–4 cm, base broadly cuneate, margin sparsely spiny denticulate, apex rounded or acute; lateral veins 5–7 pairs, reaching margin. Cymes usually 3-flowered; peduncle ca. 15 mm; pedicels 1–1.3 cm, median ones slightly longer; bracts very small, shorter than 1 mm. Flowers slightly purple; calyx 4-lobed; petals broadly rounded. Filament short; anther with enlarged connective. Ovary without style; stigma disciform. Capsule subglobose, 1–1.5 mm in diam., pallid and pale yellowish brown, weakly squarrose maculate. Seeds brown-red, ca. 1 cm, ca. 1/2 covered by aril. Fl. Aug–Jun, fr. Jul–Dec.

● Dense forests, mountain slopes. Guizhou, Sichuan (Puge), NW Yunnan (Lijiang).


冬青沟瓣 dong qing gou ban


Shrubs, ca. 3 m tall; branches yellow-brown. Leaf blade leathery, ovate or oblong-ovate, 4–7 × 2.5–4.5 cm, base cordate, amplexicaul, margin with clear and irregular large spiny teeth, apex acute or shortly acuminata; lateral veins 6 or 7 pairs, curved. Cymes 1– to several flowered; peduncle 1.8–2.2 cm (infructescence); pedicels 1–1.2 cm, up to 2.5 cm when only 1-flowered. Flowers not seen. Capsule globose, 6–8 mm in diam., green-white, squarrose maculate. Seeds oblong, brown-purple, ca. 10 mm, more than 1/2 covered by aril. Fl. unknown, fr. Sep–Dec.

● Rocky mountains, cliffs; ca. 2200 m. Sichuan (Ebian, Wa Shan).


海南沟瓣 hai nian gou ban


Shrubs, to 4 m tall. Petioles short, 2–3 mm; leaf blade thickly papery, obovate or oblong-ovobate, 4–7 × 2.5–4.5 cm, base narrowly cuneate, margin entire, apex obtuse, often emarginate; lateral veins not obvious. Cymes usually 3-flowered; peduncle 2–4 cm; branches ca. 1 cm. Flowers yellow-green, 6–8 mm in diam.; petals broadly elliptic, slightly carnose. Stamens inserted on margin of cupuliform disk; filament longer than styles; anther introrse, dorsifixed. Ovary coalescent with thin disk; style absent; stigma capitate. Capsule unknown. Fl. Dec–Feb.

● Lowland forests. Hainan.


白果树沟瓣 bai shu gou ban


Evergreen shrubs, 1–3 m tall. Petioles ca. 5 mm; leaf blade leathery, elliptic, narrowly elliptic, or narrowly obovate-elliptic, 5–12 × 2.5–6 cm, base broadly cuneate, margin crispatate, apex obtuse or often emarginate. Cymes 1 or 2 × dichotomously branched; peduncle 2–3 cm, branches 1–1.5 cm; pedicels 1–2 mm. Flowers white-green, ca. 8 mm in diam.; calyx lobes membranous; petals with erose margins. Stamens inserted on margin of cupuliform disk; filament ca. 1.5 mm. Ovary coalescent with disk; style very short; stigma small. Capsule oblate, red, ca. 1.5 cm in diam., squarrose maculate. Seeds brown-purple, ca. 8 mm; aril slightly yellow, partially covering seed. Fl. Jul–Aug, fr. Dec–Feb.

● Sparse forests, mountain slopes, seacoasts, riversides. Guangdong, Guangxi, Hainan.

3. MONIMOPETALUM Rehder, J. Arnold Arbor. 7: 233. 1926.

永瓣藤属 yong ban teng shu

Ma Jinshuang (马金双); A. Michele Funston

Scandent shrubs, glabrous; bud scales persistent on nodes of young shoots. Leaves alternate, papery, margin entire-ciliate; stipules 2, persistent. Inflorescences axillary, cymose; peduncle and pedicel slender and thin; bracts and bractlets awl-shaped, margin ciliate, persistent. Flowers bisexual, 4-merous. Disk compressed globose. Stamens sessile on disk. Ovary connected with disk basally, 4-locular; ovules erect, 2 per locule. Capsule deeply 4-lobed, loculicidally dehiscent, only 1 or 2 developing, persistent petals becoming winglike. Seeds 1(or 2) per locule; basal aril thin and small.

永瓣藤 yong ban teng

Vinelike shrubs, 1.5–6 m tall; young branches slightly 4-angled, base usually with persistent bud scales, scales usually triangular-ovate, margin entire-ciliate, apex thin and elongate or caudate. Leaves alternate; stipules usually thin and linear, 5–6 mm, persistent; petiole thin, 8–12 mm; leaf blade papery, ovate, narrowly ovate, or elliptic-ovate, 5–9 × 1.5–5 cm, base rounded or widely attenuate, margin finely serrulate, often fimbriate at tip of teeth, apex long acuminate or abruptly acute; lateral veins 4 or 5 pairs, slender and thin, usually not evident. Cymes (1 or) 2 (or 3)-branched; peduncle 2–12 mm; pedicel 3–8 mm, slender and thin; bracts and bractlets narrowly ovate or awl-shaped, margin ciliate, persistent. Flowers 3–4 mm in diam., whitish or light green; sepals 4, slightly lobed, lobes semi-orbicular, margin denticulate; petals ovate-rotund or obovate. Style very short or nearly absent; stigma small and round. Capsule deeply 4-lobed, persistent petals enlarging and becoming winglike, 10–12 × up to 3 mm. Seeds black, with thin aril at base. Fl. May–Oct, fr. Jun–Nov.

- Coniferous and broad-leaved mixed forests; 400–700 m. S Anhui (Qimen), E Hubei (Tongshan), N Jiangxi (Jingdezhen).

This is a very rare species in China. It is listed at the second grade of Chinese plant protection by Chien (in Fu & Jin, China Pl. Red Data Book, 210–211. 1992). The first fruiting specimen was collected in 1926 from S Anhui, while the first flowering specimen was collected from N Jiangxi in 1959. This species was collected from E Hubei for the first time in 1997.


南蛇藤属 nan she teng shu

Zhang Zhixiang (张志翔); A. Michele Funston


Scandent to twining shrubs, deciduous or evergreen, glabrous or pubescent, with oblong or circular gray lenticels; bud scales imbricate. Leaves alternate, subentire or serrate; stipules small, linear, deciduous. Inflorescences axillary or terminal, cymose, thyrsoid, separate from or slightly adnate to disk; ovules erect, 1 or 2 per locule. Capsule globose, yellowish, leathery, loculicidally dehiscent. Seeds 1–6, ellipsoid, enclosed in aril; aril carnose, red to orange-red.

About 30 species: tropical, subtropical, and temperate zones of Asia, Australia, and North and South America, as well as Madagascar; 25 species (16 endemic) in China.

This genus is divided into two subgenera: Celastrus subg. Celastrus and C. subg. Racemocelastrus Ding Hou; the latter does not occur in China.

1a. Fruit 1-loculed, 1-seeded; evergreen (C. sect. Sempervirentes).

2a. Lenticels of young branchlets not obvious; floral disk thin, cupuliform; stamens inserted on margin of disk; fruit small, 6.5–10 mm wide, globose.

3a. Leaves narrowly rectangular-elliptic, narrowly ovate-elliptic to elliptic-ob lanceolate; secondary veins 5–7 pairs; valves without transverse rugae .............................. 22. C. hindsi

3b. Leaves ovate or widely elliptic; secondary veins 7–10 pairs; valves with transverse rugae ............................. 23. C. tonkinensis

2b. Lenticels of young branchlets obvious; floral disk carnose, shallowly discoid or slightly pillow-form; stamens inserted below disk; fruit large, 8–12 mm wide, widely elliptic, rarely globose.

4a. Young branchlets, leaves, and valves puce when dry; leaf blade papery to thinly leathery; valves rugose and curly when fruit ripe ................................................................. 24. C. monospermus

4b. Young branchlets, leaves, and valves yellowish green when dry; leaf blade thickly leathery; valves not rugose and curly when fruit ripe ............................ 25. C. virens

1b. Fruit 3-loculed, 3–6-seeded; deciduous or evergreen.

5a. Inflorescences generally terminal, occasionally axillary in upper part of branches (C. sect. Celastrus).

6a. Branchlets not obviously angled; leaf blade small, 5–10 × 2.5–5 cm, narrowly elongate; sepals imbricate; disk cupulate ......................................................................................... 1. C. paniculatus

6b. Branchlets generally 4–6-angled; leaf blade large, 7–18 × 5–14 cm, relatively broad; sepals valvate; disk disciform ....................................................................................... 2. C. angulatus

5b. Inflorescences axillary, or both axillary and terminal (C. sect. Axillares).

7a. Inflorescences usually axillary; seeds generally crescentiform or curved-semiorbicular; if seeds elliptic, bud scales thornlike (C. flagellaris).

8a. Outer scales of buds thornlike, thorn 1.5–2.5 mm; seeds elliptic ............................................................. 14. C. flagellaris

8b. Bud scales not thornlike; seeds crescentiform or curved-semiorbicular.

9a. Petiole short, less than 9 mm.
10a. Leaf blade widely obovate or rarely orbicular, 1.5–4 cm; petiole 1–5 mm; peduncle slender, 4–6.5 mm; fruit 6–7 mm wide ................................................................. 15. C. cuneatus
10b. Leaf blade oblongate, rarely widely oblongate, 6.5–12.5 cm; petiole 4–9 mm; peduncle subsessile, only ca. 2 mm; fruit 7.5–8.5 mm wide ..................................................... 16. C. oblongifolius
9b. Petiole long, more than 10 mm, longest up to 30 mm.
11a. Fruit small, 4–5 mm wide; seeds small, ca. 2.5 mm ............................................................. 17. C. homalifolius
11b. Fruit large, 6.5–10 mm wide; seeds large, 3–5 mm.
12a. Cymes 3-flowered; peduncle short, 2–5 mm; pedicels jointed distally ............................................. 18. C. aculeatus
12b. Cymes 3–14-flowered; peduncle long, 5–20 mm; pedicels jointed below middle or near base.
13a. Leaf blade obvate or obvate-elliptic; cymes 7–14-flowered; young branchlets, peduncles, and pedicels densely brown hirsute ......................................................... 19. C. hirsutus
13b. Leaves oblong or elliptic; cymes 3–7-flowered; young branchlets, peduncles, and pedicels with very short brown or yellowish white stiff hairs.
14a. Young branchlets, peduncles, and pedicels with dense and very short brown stiff hairs; leaf blade widely elliptic to orbicular; secondary veins in 3 or 4 pairs ........................................... 20. C. kusanoi
14b. Young branchlets, peduncles, and pedicels with very short yellowish white stiff hairs; leaf blade rectangular-elliptic, rarely rectangular-ovobate; secondary veins in 5–7 pairs .......... 21. C. stylosus
7b. Inflorescences both axillary and terminal; seeds usually elliptic.
15a. Leaf blade abaxially pallid.
16a. Leaf blade narrowly lanceolate ................................................................. 3. C. franchetianus
16b. Leaf blade broad, elliptic to broadly lanceolate or obovate-lanceolate.
17a. Petiole short, 8–12 mm; seeds elliptic ................................................................. 4. C. glaucophyllus
17b. Petiole long, 12–20 mm; seeds convex or slightly crescentiform.
18a. Terminal inflorescence long, 7–10 cm; leaf blade small, ovate or rectangular-elliptic, 6–9.5 × 2.5–5.5 cm, base widely cuneate; fruit stalk long, 10–25 mm ............................................. 5. C. hypoleucus
18b. Terminal inflorescence short, 3–7 cm; leaf blade large, widely ovate, widely ovate-elliptic or orbicular, 6–13.5 × 3.5–9.5 cm, base widely rounded; fruit stalk short, 5–10 mm ............ 6. C. hypoleucoides
15b. Leaf blade same color on both surfaces.
19a. Veinlets obviously prominent and cancellate netted; leaf blade abaxially pubescent along veins .......... 7. C. rugosus
19b. Veinlets not cancellate netted; leaf blade glabrous, or sometimes sparsely with short hair along veins.
20a. Terminal inflorescences long, 6–18 cm; valves adaxially maculate, macula small, brown .................... 8. C. vaniotii
20b. Terminal inflorescence short, generally 1–6 cm (C. hookeri: sometimes up to 9 cm); valves without macula.
21a. Winter buds large, 5–12 mm; fruit large, 10–12 mm wide; filament sometimes with papillate hairs ................................................................. 9. C. gemmatus
21b. Winter buds small, 1–3 mm; fruit small, 5.5–10 mm wide; filament smooth.
22a. Petiole 2–8 mm; leaf blade up to 9 cm, elliptic.
23a. Leaf blade glabrous; pedicels jointed above middle ................................................................. 10. C. punctatus
23b. Leaf blade slightly pubescent along veins abaxially; pedicels jointed at or below middle ................................................................. 11. C. rosthornianus
22b. Petiole usually more than 10 mm, longest up to 20 mm; leaf blade up to 13 cm, oblong, ovate, or nearly rounded.
24a. Terminal inflorescence long, 3–9 cm; pedicels jointed at or above middle; capsule 6–7 mm wide ................................................................................................. 12. C. hookeri
24b. Terminal inflorescence short, 1–3 cm; pedicels jointed below middle or near base; capsule 8–10 mm wide ............................................................................................. 13. C. orbiculatus

1. Celastrus sect. Celastrus

圆锥组 yuan zhui zu

Deciduous or evergreen. Panicles typically terminal; foliage bud at axil of branching inflorescences absent if inflorescences axillary at upper part of branches. Fruit 3-loculed. Seeds 3–6.

About six species: S and SE Asia, Australia, Madagascar, North America, Pacific Islands; two species (one endemic) in China.


灯油藤 deng you teng

*Celastrus dependens* Wallich; *C. euplcephyllum* (Hayata) Kanehira; *C. multiflorus* Roxburgh (1824), not Lamarck (1785); *C. paniculatus* subsp. *multiflorus* Ding Hou; *C. paniculatus* subsp. *serratus* (Blanco) Ding Hou; *Diosma serrata* Blanco; *Euonymus euplcephyllum* Hayata.
Large deciduous twining shrubs, stem up to 23 cm in diam.; bark pale brown, rough and cracked, exfoliating in small scales; branchlets pubescent or glabrous, with prominent elliptic lenticels; axillary buds small, 1–2 mm, triangular. Petiole 6–16 mm; leaf blade elliptic, oblong, rectangular, ovate, or obovate to sub-ovate, 5–10 × 2.5–5 cm, glabrous, base cuneate, margin serrate, apex mucronate to acuminate; secondary veins 5–7 pairs, rarely abaxially pubescent at axil of veins. Thyrses terminal, 5–10 cm, 1- or 2-ramous; rachis and pedicels occasionally with short tomentum; pedicels 3–6 mm. Flowers greenish, 5-merous, dioecious, 2–3 × 1.2–1.8 mm; sepals free, imbricate, semiorbicular, ciliate; petals oblong to obovate-rectangular. Disk membranous, cupulate, slightly 5-lobed. Stamens ca. 3 mm, inserted on margin of disk. Ovary globose. Capsule 1–1.3 cm in diam., depressed, globose, 3-valved, bright yellow, 3–6-seeded. Seeds elliptic, 3.5–5.5 × 2–5 mm; aril orange-red. Fl. Apr.–Jun, fr. Jun–Sep.

Forest slopes; 200–2000 m. Guangdong, Guangxi, Guizhou, Hainan, Taiwan, Yunnan [Butan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam; Australia, Pacific islands (New Caledonia)].

Seed oiliness in this species is more than 50%. It is used for making lamp oil and soap in Yunnan. Many pharmacological studies deal with its effects on the central nervous system and the tranquilizing property of the alkaloidal fractions of the oil.

The variable leaf blade shape led to the creation of three subspecies: Celastrus paniculatus subsp. paniculatus, C. paniculatus subsp. serratus (Blanco) Ding Hou (not in China), and C. paniculatus subsp. multiflorus (Roxburgh) Ding Hou. However, there are so many transitional blade forms that it is hard to distinguish between them; therefore, the subspecies are not recognized here.


Ku pi teng

Celastrus latifolius Hemsley.

Deciduous twining shrubs; branchlets dark brown, 4–6-angular; lenticels dense, prominent, orbicular to elliptic, white; axillary buds ovate, 2–4 mm. Petiole 1.5–3 cm, strong; leaf blade ovate to orbicular, 7–18 × 5–14 cm, leathery, light green, glabrous, base cuneate, margin crenate, apex acute to shortly acuminate; secondary veins 5–7 pairs, obviously prominent on adaxial surface. Paniculate thyrses terminal, apically branched, 10–20 cm, 1- or 2-ramous; rachis and pedicels glabrous or with rust short hairs; pedicels short, jointed at apex. Flowers small, greenish, dioecious; sepals valvate, triangular to ovate, ca. 1.2 mm, margin approximately entire; petals rectangular, ca. 2 × 1.2 mm, margin erose. Disk carnosae, discoid, slightly 5-lobed. Stamens ca. 3 mm, inserted on disk; staminodia in female flowers ca. 1 mm. Pistils 3–4 mm; ovary globose; style reflexed; pistillodes in male flowers ca. 1.2 mm. Capsule globose, yellow, 8–10 mm wide, 3-valved, adaxial side of valves with brown macula. Seeds elliptic, 3.5–5.5 × 1.5–3 mm; aril bright red. Fl. May–Jun.

- Mountain thickets, slopes; 1000–2500 m. Anhui, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, Sichuan, Yunnan.


Deciduous twining shrubs. Inflorescences axillary, or both axillary and terminal; foliage buds at axil of branching inflorescences. Capsule 3-loculed. Seeds 3–6.

About 19 species: E and S Asia; 19 species (14 endemic) in China.


腋花组 ye hua zu


Deciduous twining shrubs. Inflorescences axillary, or both axillary and terminal; foliage buds at axil of branching inflorescences. Capsule 3-loculed. Seeds 3–6.

About 19 species: E and S Asia; 19 species (14 endemic) in China.

3. Celastrus franchetianus


Axillares er yun nan she teng


Deciduous twining shrubs; branchlets terete; young branchlets green, lenticels usually absent. Petiole 5–11 mm; leaf blade lanceolate, 5–13 × 2–4 cm, thinly papery to coriaceous, base cuneate, margin serrate, apex acuminate; secondary veins 5–7 pairs, prominent. Thyrses terminal, elongate; peduncle very short, less than 5 mm. Flowers 5-merous, white to pea green, ca. 5 mm wide. Disk slightly orbicular, lobe triangular. Ovary 3-loculed; ovules 2 per locule; style columnar; stigma 3-lobed. Capsule ovate to shortly globose.

- Forests in mountain regions; ca. 2300 m. Yunnan.

4. Celastrus glaucophyllus


Greyi nan she teng hui ye nan she teng

Celastrus glaucophyllus var. angustus Q. H. Chen.

Deciduous twining shrubs; branchlets with elliptic to oblong sparse lenticels. Petiole 8–12 mm; leaf blade broadly elliptic, obovate-elliptic, or rarely narrowly elliptic, 5–10 × 2.5–6.5 cm, leathery during fruiting period, axially green, abaxially gray-white, base orbicular or broadly cuneate, margin sparsely finely serrate, apex shortly acuminate; secondary veins 4 or 5 pairs, rarely 6. Racemose panicles axillary to terminal, 3–6 cm, axillary inflorescences only 3–5-flowered; rachis short, only 1–2 mm; pedicels 2.5–3.5 mm, jointed at or above middle. Sepals elliptic or ovate, 1.5–2 mm, margin sparsely erose-denticulate; petals obovate-rectangular to narrowly ovate, 4.5–5 × ca. 2.2 mm. Disk shallowly cupulate, slightly carnosae, edge approximately semicircular. Stamens ± shorter than petals; anthers broadly elliptic to approximately orbicular. Pistillobus 1.5–2 mm in male flowers. Fruit globose, 8–10 mm wide; stipes 5–9 mm. Fl. Mar–Jun, fr. Aug–Oct.
The leaf blades are quite variable in this species.


Deciduous twining shrubs; branchlets purplish brown, glabrous; lenticels small, elliptic or oblong, slightly flat; winter buds globose or ovate, ca. 2 mm wide. Petiole 1–1.7 cm, glabrous; leaf blade elliptic, obovate, or rectangular-elliptic, 6–13 × 3–8(–9) cm, thinly papery in flower, papery in fruit, rarely hard papery, glabrous, abaxially whitish green, base cuneate, broadly cuneate, or suborbicular, margin serrate, apex acuminate or broadly orbicular, mucronulate; secondary veins 4–6 pairs, veins with yellowish white short hairs, veinlets parallel. Inflorescences terminal and axillary, terminal inflorescences 3–6 cm, axillary ones mainly 3–5-flowered; rachis 2–5 mm; pedicels 2–6 mm, jointed generally below middle. Sepals ovate, ca. 2 × 1.5 mm, apex obtuse, ciliate; petals slightly ovate-rectangular, ca. 4 × 1.5 mm. Disk shallowly cupuliform, slightly carnosus, lobe semicircular or slightly narrow. Stamens ca. 4 mm; filament filiform; anther rectangular-elliptic; staminodia in female flowers short and small. Pistils ampullaceous; ovary globose; styles slender and long; stigma slightly 3-lobed; pistillodes in male flowers 1–1.5 mm. Capsule globose, 8–10 mm wide. Seeds elliptic, 4.5 × 1.5–2.5 mm, brown. Fl. May–Jun, fr. Aug–Oct.


Twining shrubs; branchlets with lenticels; lenticels elliptic to orbicular, white, prominent; winter buds large, long ovate to long conical, up to 12 mm, base ca. 5 mm in diam. Petiole 1–2.3 cm; leaf blade rectangular, ovate-elliptic, or elliptic, 6–12 × 3.5–7 cm, abaxially glabrous, or rarely with brown shortomentum on veins, adaxially glabrous, asperose, base rounded or broadly orbicular, margin shallowly serrate, apex acuminate; secondary veins 5–7 pairs, veinlets densely netted, prominent on both surfaces. Cymes terminal and axillary, terminal inflorescences ca. 3 cm, axillary ones short and few flowered; racis 5–10 mm; pedicels 2.5–5 mm, jointed above middle. Sepals ovate, ca. 1.5 mm, margin erose; petals rectangular-ovate, 3–4 × 1.2–2 mm. Disk shallowly cupuliform, lobe approximately triangular, lobe in female flowers often obtuse. Stamens as long as corolla; filament sometimes with papillate hairs; anther sometimes apically mucronulate; staminodia in female flowers ca. 1.5 mm. Pistils ampullaceous; ovary globose; styles ca. 1.5 mm; pistillodes in male flowers 1–2 mm. Capsule globose, 5.5–8 mm wide; stipe 4–8 mm. Seeds broadly elliptic, 3–4 × 2–3 mm.


Celastrus articulatus Thunberg var. punctatus (Thunberg) Rehder; C. geminiflorus Hayata; C. gracilimus Hayata; C. leiocarpus Hayata; C. longeracemosus Hayata; C. punctatus var. microphyllus Li & Ding Hou.

Deciduous twining shrubs; branchlets tenuous, spreading, glabrous; axillary buds small, ovate, ca. 2 mm; apex of outer scales acute, spinelike. Petiole 2–8 mm; leaf blade elliptic, oblong, broadly elliptic, or rectangular-elliptic, rarely obovate-elliptic, 1.5–7 × 1–3 cm, papery or thickly papery, glabrous, base cuneate, margin serrulate or obtusely serrate, apex acute or shortly acuminate; secondary veins (3 or)4 or 5 pairs. Inflorescences generally axillary, terminal inflorescences occurring in male plants, 1- or 2-flowered or more flowers in a small cyme, somewhat racemose-monochasial; pedicels 3–5 mm, jointed above middle. Male flowers: sepals elliptic, 1–1.2 mm, margin unequally serrulate; petals oblong-elliptic to obvate-rectangular, ca. 4.5 × 1.5 mm; disk deeply lobed, lobe elliptic; filament slightly flat, ca. 3.5 mm; anther broadly rectangular, apex abrupt; staminodia undeveloped. Female flowers unknown. Capsule globose, 5.5–7 mm wide, valves orbicular. Seeds broadly elliptic, ca. 3.5 × 2 mm, brown or brownish. Fl. Mar–May, fr. May–Oct.

Forests, valleys, slopes; 100–2300 m. Anhui, Fujian, Taiwan, Zhejiang [Japan].


Celastrus articulatus Thunberg var. punctatus (Thunberg) Rehder; C. geminiflorus Hayata; C. gracilimus Hayata; C. leiocarpus Hayata; C. longeracemosus Hayata; C. punctatus var. microphyllus Li & Ding Hou.

Deciduous twining shrubs; branchlets tenuous, spreading, glabrous; axillary buds small, ovate, ca. 2 mm; apex of outer scales acute, spinelike. Petiole 2–8 mm; leaf blade elliptic, oblong, broadly elliptic, or rectangular-elliptic, rarely obovate-elliptic, 1.5–7 × 1–3 cm, papery or thickly papery, glabrous, base cuneate, margin serrulate or obtusely serrate, apex acute or shortly acuminate; secondary veins (3 or)4 or 5 pairs. Inflorescences generally axillary, terminal inflorescences occurring in male plants, 1- or 2-flowered or more flowers in a small cyme, somewhat racemose-monochasial; pedicels 3–5 mm, jointed above middle. Male flowers: sepals elliptic, 1–1.2 mm, margin unequally serrulate; petals oblong-elliptic to obvate-rectangular, ca. 4.5 × 1.5 mm; disk deeply lobed, lobe elliptic; filament slightly flat, ca. 3.5 mm; anther broadly rectangular, apex abrupt; staminodia undeveloped. Female flowers unknown. Capsule globose, 5.5–7 mm wide, valves orbicular. Seeds broadly elliptic, ca. 3.5 × 2 mm, brown or brownish. Fl. Mar–May, fr. May–Oct.

Forests, valleys, slopes; 100–2300 m. Anhui, Fujian, Taiwan, Zhejiang [Japan].


Celastrus articulatus Thunberg var. punctatus (Thunberg) Rehder; C. geminiflorus Hayata; C. gracilimus Hayata; C. leiocarpus Hayata; C. longeracemosus Hayata; C. punctatus var. microphyllus Li & Ding Hou.

Deciduous twining shrubs; branchlets tenuous, spreading, glabrous; axillary buds small, ovate, ca. 2 mm; apex of outer scales acute, spinelike. Petiole 2–8 mm; leaf blade elliptic, oblong, broadly elliptic, or rectangular-elliptic, rarely obovate-elliptic, 1.5–7 × 1–3 cm, papery or thickly papery, glabrous, base cuneate, margin serrulate or obtusely serrate, apex acute or shortly acuminate; secondary veins (3 or)4 or 5 pairs. Inflorescences generally axillary, terminal inflorescences occurring in male plants, 1- or 2-flowered or more flowers in a small cyme, somewhat racemose-monochasial; pedicels 3–5 mm, jointed above middle. Male flowers: sepals elliptic, 1–1.2 mm, margin unequally serrulate; petals oblong-elliptic to obvate-rectangular, ca. 4.5 × 1.5 mm; disk deeply lobed, lobe elliptic; filament slightly flat, ca. 3.5 mm; anther broadly rectangular, apex abrupt; staminodia undeveloped. Female flowers unknown. Capsule globose, 5.5–7 mm wide, valves orbicular. Seeds broadly elliptic, ca. 3.5 × 2 mm, brown or brownish. Fl. Mar–May, fr. May–Oct.

Forests, valleys, slopes; 100–2300 m. Anhui, Fujian, Taiwan, Zhejiang [Japan].
Twining shrubs; branchlets pubescent, glabrous later; axillary buds ovate, 2–3 mm. Petiole 7–15 mm; leaf blade oblong, broadly oblong, or oblong-elliptic, rarely orbicular, 6–12 × 4–7 cm, membranous during flowering period, papery or leathery during fruiting period, adaxial surface light brownish purple maculate, margin shallowly serrate, apex broadly cuneate or rounded. Inflorescences axillary and terminal, 3–9 cm, terminal inflorescences paniculate, with numerous flowers, axillary ones 3–5, or more flowered, tufted; pedicels 2–2.5 mm. Sepals ob- tuse-triangular, ca. 1.5 mm; petals oblong or rectangular-elliptic, 3–3.5 mm. Disk cupuliform, very shallowly lobed. Stamens ca. 2.5 mm; anther apically mucronulate; staminodes in female flowers ca. 1.5 mm. Pistils ca. 4 mm; pistillodes in male flowers ca. 1.5 mm. Capsule approximately globose, 6–7 mm wide. Seeds elliptic, sometimes slightly curved, ca. 4 mm. Fl. May– Jun, fr. Jul–Oct.

Forests; 2500–3500 m. Xizang, NW Yunnan [Bhutan, India, Myanmar, Nepal, Pakistan].


南蛇藤 nan she teng

Celastrus orbiculatus Thunberg; C. articulatus var. pubescens Makino; C. Jeholensis Nakai; C. oblongifolius Hayata; C. tartarinowii Ruprecht.

Deciduous twining shrubs; branchlets glabrous, gray-brown or brown, with sparse and inconspicuous lenticels; axillary buds small, ovate to elliptic, 1–3 mm. Petiole slender, 1–2 cm; leaf blade generally broadly ovate, suborbicular, or rectangular-elliptic, 5–13 × 3–9 cm, glabrous or abaxially sparsely pubescent on veins, base broadly cuneate to obtuse-orbicular, margin serrate, apex broadly rounded, muriculate, or shortly acuminate; secondary veins 3–5 pairs. Cymes axillary, sometimes terminal, 1–3 cm, 1–7-flowered; pedicels jointed below middle or nearly to base. Male flowers: sepals obtuse-triangular; petals obovate-elliptic to rectangular, 3–4 × 2–2.5 mm; disk shallowly cupuliform, lobe shallow, apex rounded-obtuse; stamens 2–3 mm. Female flowers: corolla relatively shorter than that of male flower; disk slightly thick, carnosse; staminodes very short; ovary approximately globose; styles ca. 1.5 mm; stigma deeply 3-lobed, lobe apex shallowly 2-lobed. Capsule approximately globose, 8–13 mm wide, yellow, 3-valved. Seeds elliptic, slightly flat, 4–5 × 2.5–3 mm, reddish brown; aril orange-red. Fl. May–Jun, fr. Jul–Oct.

Mixed forests, forest margins, thickets on grassy slopes; 400–2200 m. Anhui, Gansu, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Shaanxi, Shandong, Shanxi, Sichuan, Zhejiang [Japan, Korea].

This is one of the most widely distributed Celastrus species in China. The ripe fruit is used in Chinese traditional medicine, called “wattle fruit” in NE and N China. The bark is used for fine fiber, and seed oiliness is 50%. It is also widely distributed in Asia and its leaf morphology is very variable.


刺苞南蛇藤 ci bao nan she teng

Celastrus ciliidens Miquel.

Deciduous twining shrubs; branchlets glabrous; winter buds small, triangular, apex obtuse, outer pairs of bud scales persistent and thornlike, 1.5–2.5 mm, reddish brown. Petiole slender, generally as long as 1/3–1/2 leaf blade; stipules filiform, deeply lacerate, 2–3 mm, deciduous; leaf blade broadly elliptic or broadly ovate-elliptic, somewhat obovate-elliptic, 3–6 × 2–4.5 cm, base narrowly cuneate, margin serrulate to serrate, teeth generally with minute spines, apex mucronate or very shortly acuminate; secondary veins 4 or 5 pairs, midvein sparsely and shortly pubescent or approximately glabrous. Cymes axillary, 1–5-flowered or more, rachis very short, 1–2 mm or absent; pedicels 2–5 mm, jointed below middle. Male flowers: sepals rectangular, ca. 1.8 mm; petals narrowly rectangular-ovobate, 3.5–3 × 1–1.2 mm; disk shallowly cupuliform, apex approximately truncate; stamens slightly longer than corolla. Female flowers: staminodes ca. 1 mm; ovary globose. Capsule globose, 2–8 mm. Seeds approximately elliptic, ca. 3 × 2 mm, brown. Fl. Apr–May, fr. Aug–Sep.

Riverside forests, thickets, valleys, sunny slopes. Hebei, Heilongjiang, Jilin, Liaoning [Japan, Korea, Russia (Far East)].


小南蛇藤 xiao nan she teng


Tenuous twining shrubs; branchlets purplish brown, with sparse longitudinal-elliptic lenticels; annotal branchlets setulose; axillary buds approximately globose, 1–2 mm wide. Petiole 1–5 mm; leaf blade broadly obovate or rarely approximately orbicular, 1.5–4.5 × 1.5–4 cm, base cuneate to broadly cuneate, margin serrulate, apex broadly rounded to approximately truncate, mucronate; secondary veins 2–5 pairs. Cymes axillary, 1–4-flowered, rarely terminal; rachis slender, 4–6.5 mm; pedicels 2–3 mm, jointed at or below middle. Male flowers: sepals triangular or triangular-elliptic, ca. 1.5 × 2 mm, broadest above middle part; disk cupuliform, lobe approximately curved or truncate; stamens shorter than petals; filament ca. 2.5 mm; anther approximately globular; pistillodes small, long triangular. Female flowers: perianths similar to male flowers; disk slightly longer than male flowers, lobe obvious; staminodes small, ca. 1.5 mm; pistils ampullaceous; ovary globose; styles ca. 1 mm; stigma sticklike, deeply 3-lobed, extorse, apex flat and enlarged. Capsule globose, 6–7 mm wide. Seeds elliptic, 3.5–4 mm, slightly convex. Fl. Apr–May, fr. Jun–later.

● Slopes, thickets along roadsides; near sea level to 600 m. Hubei, E Sichuan.


窄叶南蛇藤 zhai ye nan she teng

Celastrus aculeatus Merrill var. ob lanceifolius (Chen H. Wang & P. C. Tsoong) P. H. Hsu.
Twining shrubs; branchlets angulate, brown pubescent. Petioles 4–9 mm; leaf blade ob lanceolate, rarely broadly ob lanceolate, 6.5–12.5 × 1.5–3.5(–4) cm, glabrous or abaxially brown pubescent on veins, base narrowly cuneate or cuneate, margin sparse serrulate, apex narrow, acute or shortly acut ate; secondary veins 7–10 pairs. Cymes axillary or lateral, 1–3-flowered; rachis 2–5 mm, brown pubescent; pedicels 2–3 mm, with brown short hairs, jointed distally. Sepals elliptic-ovate, ca. 2 × 1 mm; petals rectangular-ob lanceolate, ca. 4 × 1.5 mm, margin ciliate. Disk carnose, slightly flat, entire. Stamen s as long as sepals; filament slender, papillate; anther broadly ovate, apex mucronulate. Capsule globose, 7.5–8.5 mm wide. Seeds crescentiform, ca. 5 mm. Fl. Mar–Apr, fr. Jun–Oct.

- Thickets, slopes, stream sides; 500–1000 m. Anhui, Fujian, Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang.

17. 


Evergreen twining shrubs; branchlets with russet short hairs. Petiole 1.5–2.5 cm; leaf blade elliptic, narrowly elliptic, rectangular-elliptic, or obovate, 7–14 × 3–8 cm, papery to thickly papery, abaxially sparsely hirsute on veins, adaxially glabrous, base cuneate or widely cuneate, rarely obtuse-cuneate, margin with thick obtuse teeth, apex shortly acumin ate; secondary veins 5–7 pairs, obviously prominent on lower surface. Cymes mainly lateral; rachis 3–6 mm, with russet short hairs; pedicels 2–4 mm, brown hirsute, jointed above middle. Sepals narrowly triangular, up to 2.5 mm, margin approximately entire; petals rectangular to rectangular-elliptic, ca. 2.5 mm, apex erose. Disk shallowly cupuliform, 5-lobed, lobes broadly orbicular. Staminodia in female flowers ca. 1.5 mm. Pistils ampullaceous; ovary globose; styles slender, 2–3 mm. Fruits tufted at base of branchlets. Capsule small, globose, 4–5 mm wide, valves approximately orbicular, inner side brown maculate. Seeds crescentiform, ca. 2.5 × 1.5 mm, purplish or blackish brown; aril yellowish brown. Fl. Apr–May, fr. Aug–Oct.

- Thickets, forests, 1400–2300 m. Sichuan, N Yunnan.


Deciduous and small twining shrubs; branchlets densely brown hirsute and glabrate later; winter buds large, ovate, 3.5–5 × 2.5–3.5 mm, bud scales persistent. Petiole 1.5–3 cm, brown hirsute; leaf blade ovate, broadly obovate, or obovate-elliptic, 7–14 × 4–10 cm, thickly membranous during flowering period, papery to thickly papery during fruiting period, brown hirsute-pubescent, densely so on young leaves and veins, base widely cuneate or approximately orbicular, margin with obtuse teeth, apex broadly rounded, mucronate; secondary veins 6–8 pairs, prominent on both surfaces, closely parallel and curved. Cymes axillary or lateral at twig base, 7–14-flowered; rachis 5–10 mm, pubescent; pedicels 2–4 mm, pubescent, jointed near base. Sepals obtusely rounded-triangular, ca. 1.5 mm, margin sparsely ciliate; petals ovate-elliptic, ca. 4 × 2.8 mm, midribs of outer petals papillate. Disk slightly carnose, flat or slightly concave in center, lobes obvious and broad. Male flowers: filament subulate, ca. 3 mm, papillate on lower part; anther broadly ovate; pistillodes undeveloped. Female flowers: pistils 3–5 mm; styles short and thick, columnar; stigma obviously 3-lobed, ca. 1 mm; stam nodia small. Capsule globose, 7–8 mm wide. Seeds crescentiform, ca. 5 × 1.5–2 mm. Fl. Mar–May, fr. Aug–Oct.

- Valleys, wetlands; 1400–2500 m. Sichuan, Yunnan.


Deciduous and small twining shrubs; branchlets often with very short and brown setae, often glabrescent when mature; lenticels sparse and small, broadly elliptic to suborbicular. Petioles 1.5–2.8(–3.5) cm; leaf blade broadly elliptic to orbicular, 6–10 × 4–9(–10) cm, approximately membranous during fruiting, adaxially generally with brownish white short hairs at vein base, abaxially glabrous, base rounded, rarely very widely cuneate or approximately cordate, only distal margin slightly serrate, apex widely rounded and mucronate; secondary veins 3 or 4 pairs, curved, veinlets netting. Cymes axillary or terminal at top of axillary branches, small, 3–7-flowered; rachis ca. 1 cm, pubescence of very short brown setae; pedicels 2–3 mm, jointed at base, pubescence of very short setae. Sepals rectangular-triangular, apex flat and obtuse, ca. 1 mm; petals narrowly rectangular-elliptic, ca. 4 mm, margin slightly erose. Disk thin, entire. Stamens ca. 3 mm, papillate-hairy on lower part of filament. Ovary approximately globose; stigma 3-lobed, extrorse. Capsule approximately globose, 7–10 mm wide, persistent sepals small and truncate; valves transversely rugose; fructiferous stipes to 2 cm, with very short setae. Seeds globose or subcrescentiform, 3.5–5 mm, blackish brown when ripe.

- Sparse forests, thickets, mountainous regions, roadsides; 100–1000 m. Fujian, Guangdong, Guangxi, Jiangxi, Yunnan, Zhejiang.

显柱南蛇藤 xian zhu nan she teng

Twining shrubs, 3–5 m tall; branchlets generally glabrous, rarely setaceous; winter buds small, ovate-globose, ca. 2 mm wide. Petiole 1–1.8 cm; leaf blade rectangular-elliptic, rarely rectangular-obovate, 6.5–12.5 × 3–6.5 cm, abaxially pubescent along veins, glabrous later, adaxially slightly green or light brown when dry, often membranous during flowering and leathery in fruit, base cuneate, widely cuneate to obtuse-ornicular, margin obtusely serrate, apex shortly acuminate to acute; secondary veins (4 or)5–7 pairs. Cymes axillary and lateral, 3–7-flowered; rachis 7–20 mm; pedicels 5–7 mm, with very short yellowish white setae, joined below middle. Sepals subovate or subelliptic, 1–2 mm, margin slightly erose; petals rectangular-obovate, 3.5–4 × ca. 2 mm, margin erose. Disk shallowly cupuliform, lobe semicircular or approximately obtuse-triangular. Stamens slightly shorter than corolla; filament glabrous or papillate proximally; staminodes in female flowers ca. 1 mm. Pistils ampullaceous, ca. 3 mm, degenerate in male flowers; stigma revolute. Capsule globose, 6.5–8 mm wide; fructiferous stipe and fruit stipe glabrous, often with elliptic lenticels. Seeds adaxially flat, slightly crescentiform, 4.5–5.5 × 1.5–2 mm. Fl. Mar.–May, fr. Aug.–Oct.

Forests, mountain slopes; 300–2500 m. Anhui, Chongqing, Guangdong, Guangxi, Guizhou, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang [Bhutan, India, Myanmar, Nepal, N Thailand].

1a. Petiole glabrous, veins of leaf blade somewhat sparsely pubescent abaxially ........................................... 21a. var. *stylosus*

21a. *Celastrus stylosus* var. *stylosus*

显柱南蛇藤(原变种) xian zhu nan she teng (yuan bian zhong)

*Celastrus crassifolius* Chen H. Wang; *C. hypoleucus* Warburg ex Loesener f. *puberulus* Loesener; *C. stylosus* var. *angustifolius* C. Y. Cheng & T. C. Kao; *C. stylosus* subsp. *glaber* Ding Hou; *Gymnosporia neglecta* Wall. ex M. A. Lawson.

Petiole glabrous; leaf blade 6.5–12.5 × 3–6.5 cm, glabrous, somewhat sparsely pubescent along veins abaxially; secondary veins 5–7 pairs.

*Forests, mountain slopes; 1000–2500 m. Anhui, Chongqing, Guangdong, Guangxi, Guizhou, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan [Bhutan, India, Myanmar, Nepal, N Thailand].*


毛脉显柱南蛇藤 mao mai xian zhu nan she teng


Petiole and veins of leaf blade densely shortly setiferous; leaf blade broadly elliptic or rectangular-elliptic, 7–14 × 4–9.5 cm; secondary veins (3 or)4 or 5( or 6) pairs.

- Forests in valleys; 300–1000 m. Anhui, Guangdong, Hunan, Jiangsu, Jiangxi, Zhejiang.


皱果南蛇藤 zhou guo nan she teng

*Celastrus cantonensis* Evergreen twining shrubs; branchlets terete, gray or purple, with very sparse lenticels; axial buds ovate-triangular, 1–1.5 mm. Petiole 6–10 mm; leaf blade narrowly rectangular-elliptic, or narrowly ovate-elliptic to elliptic-oblancoate, 7–14 × 3–6 cm, papery or leathery, often gray-green when dry, base cuneate or rounded, margin sparsely serrate, apex acute, caudate-acumineto acuminate to acuminate; secondary veins 5–7 pairs, veinlets between secondary veins parallel, prominent. Thyrse terminal and axillary, 5–14 cm, axillary inflorescences 1–3-flowered; pedicels 4–5 mm, jointed at upper middle. Flowers lightly green; sepals approximately semicircular, imbricate, ca. 1 mm; petals rectangular, ca. 2.5 mm, margin ciliate. Disk cupuliform, membranous, shallowly lobed, lobe triangular. Stamens inserted on margin of disk; filament subulate; anther ovate-ornicular. Pistils ampullaceous; ovary approximately globose; styles ca. 1 mm; stigma slightly 3-lobed; anther of staminodia hastate. Fruits approximately globose, 7–9 × 6.5–8.5 mm; style persistent on young fruit, up to 1.5 mm, valves slightly rugose. Seed broadly elliptic to globose, 5–8 mm; aril orange. Fl. May–Jul, fr. Jul–Oct.

*Forests, thicket, mountainous regions; 300–2500 m. Fujian, Guangdong, Guangxi, Hainan, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, E Xizang, Yunnan [NE India, Malaysia, Myanmar, N Vietnam].


青江藤 qing jiang teng

*Celastrus cantonensis* Hance; *C. szingangensis* Y. R. Li.

Evergreen twining shrubs. Thyrse terminal or axillary; foliage buds at axil of branching inflorescences. Capsule ca. 3-loculed. Seed ca. 1.

*About four species: S and SE Asia; four species (one endemic) in China.*
Twining shrubs, 4–5 m tall; branchlets gray-brown, lenticles absent; axillary buds triangular-ovate, ca. 2 mm. Petiole 1–1.5(–2) cm; leaf blade obovate or broadly elliptic, 7–13 × 4–6.5 cm, leathery, gray-green, margin slightly revolute, only serrulate on distal half; secondary veins 7–10 pairs, prominent on both surfaces, veinlets sparse. Inflorescences terminal or axillary. Flowers 5-merous. Fruit approximately globose or very broadly elliptic, ca. 10 mm, valves hard, lower surface transversely rugose, brown, persistent sepals thickened; stipules sturdy, 5–8 × 1–2 mm. Seed 1, broadly elliptic, ca. 7 × 5 mm. Fr. Oct.

Forest, thickets, mountainous regions; 1000–1800 m. W Guangxi, E Yunnan [N Vietnam].


独子藤 du zi teng


Evergreen twining shrubs, to 10 m tall; annotinal branchlets purplish brown; lenticles sparse, elliptic or suborbicular. Petiole 1–2 cm; leaf blade broadly rectangular-elliptic to narrowly elliptic, rarely obovate-elliptic, 5.17 × 3–7 cm, approximately leathery, glabrous, base cuneate, rarely widely cuneate, margin serrulate, apex acuminate or acute; secondary veins 5–7 pairs. Thyrses axillary, sometimes terminal; rachis 1–2.5 cm, glabrous; pedicels 1–4 mm, jointed at base, generally glabrous. Flowers yellowish green or whitish. Male flowers: sepals triangular-semiorbicular, ca. 1 mm; petals triangular or rectangular-elliptic, ca. 2.5 × 1.8 mm, revolute during blossoming; disk carnose, flat, shallowly 5-lobed, lobe apex approximately truncate; stamens 5, 2.5–3 mm, inserted on disk; filament subulate. Female flowers: pistils approximately amplexicaulaceous; styles 3-lobed, revolute; staminodes ca. 1 mm. Capsule broadly elliptic, rarely globose, 10–18 × 9–14 mm; valves elliptic, 12–20 × 8–10 mm, revolute when dry, margin crissate. Seed 1, elliptic, 10–15 × 6–9 mm, glabrous, slightly verrucose; aril purplish brown. Fl. Mar–Jun, fr. Jun–Oct.

Dense forests, thickets, slopes; 300–1500 m. Fujian, Guangdong, Guangxi, Hainan, Yunnan [Bhutan, India, Myanmar, Pakistan, Vietnam].


绿独子藤 lü du zi teng


Evergreen twining shrubs; branchlets yellowish green, lenticles very few, narrowly elliptic. Petiole 7–12 mm; leaf blade oblong, rarely narrowly rectangular-elliptic, 8–13 × 3–5 cm, thickly papery, yellowish green when dry, margin sparsely serrulate; secondary veins 6–8 pairs, veinlets prominent on both surfaces. Inflorescences paniculate. Sepals broadly obovate, margin irregularly serrulate; petals rectangular, ca. 2.5 mm. Disk carnose, shallowly discoid or flat, with 5 shallow lobes, lobe apex widely rounded. Stamens shorter than corolla, inserted on disk. Pistilodes in male flowers slightly subulate. Infructescence conical, axillary, 5–13 cm, stipes 4–6 cm. Fruit stipe 6–12 mm. Capsule broadly elliptic, yellowish green, 14–18 × 10–13 mm, valves elliptic to elliptic-ovate, 15–23 mm, leathery, straight when dry. Seed 1, elliptic, 12–17 mm; aril purplish brown. Fl. Mar, fr. Jun–Oct.

● Slopes; 800–1200 m. S Yunnan (Xishuangbanna).


裸实属 luo shi shu

Liu Quanru (刘全儒); A. Michele Funston


Shrubs or small trees, usually erect, glabrous or pubescent; branches often thorny. Leaves alternate or fasciculate, entire or serrate, estipulate. Inflorescences axillary, fasciculate, cymose, or flowers solitary. Flowers bisexual, (4 or)5-merous. Disk fleshy, annular, (4 or)5-angled or lobed, intrastaminal; anthers longitudinally dehiscent, introrse. Ovary (2 or)3-locular, base confluent with disk; ovules erect, 2 per locule. Capsule obovoid or nearly globose, leathery, loculicidally dehiscent. Seeds usually 3–6, ellipsoid; aril basal to enveloping seed.

About 80 species: tropics and subtropics of both the Old and New Worlds, but mainly tropics of Africa and Asia; 11 species (seven endemic) in China.

1a. Twigs thornlike, bearing leaves and flowers, bearing needllelike thorns.

2a. Twigs and petioles pubescent with short dense hairs, gradually glabrescent; leaf blade usually 1–5 cm.

3a. Capsule 2-valved, 5–8 mm; peduncle 0.5–1 cm; flowers 3–5 mm in diam.; petiole shorter than 3 mm ... 1. _G. diversifolia_

3b. Capsule 3-valved, 1–1.2 cm; peduncle 1–2 cm; flowers 5–8 mm in diam.; petiole 3–8 mm ................. 2. _G. berberoides_

2b. Twigs and petioles glabrous; leaf blade usually 3–7(–12) cm.

4a. Leaf blade leathery, broadly obovate or broadly elliptic, rounded or obcordate, netting veins obvious ....... 3. _G. orbiculata_

4b. Leaf blade papery or subleathery, narrowly elliptic or elliptic-lanceolate, netting veins not obvious ........ 4. _G. variabilis_

1b. Twigs without an apical thorn, bearing many thorns, rarely few thorned or unarmed.

5a. Twigs unarmed.
6a. Leaf blade elliptic-lanceolate or oblanceolate, 3.5–6.5 × 0.5–1.5 cm, lateral veins 6–9 pairs .......................... 10. Gymnosporia tiaoshanensis
6b. Leaf blade obtuse, ca. 5 × 3 cm, lateral veins 4–6 pairs ................................................................. 11. Gymnosporia emarginata

5b. Twigs thorny, thorns often axillary.
7a. Ovary with 2 carpels; capsule 2-valved ................................................................. 5. Gymnosporia esquirolii
7b. Ovary with 3 carpels; capsule 3-valved.
8a. Aril saccate; cymes usually dichotomous; thorns thick ......................................................... 8. Gymnosporia royleana
8b. Aril cupulate, only covering seed at base or not exceeding the middle; cymes usually monochasial; thorns slender.
9a. Leaf blade broadly obtuse, obtuse, or elliptic, 1–2 cm; petiole 1–2 mm; peduncle 2–5 mm
9b. Leaf blade lanceolate, narrowly elliptic, narrowly obtuse, or oblanceolate, 2–8(–14) cm;
petiole 2–8(–12) mm; peduncle 1–3(–4.5) cm.
10a. Leaf blade lanceolate, 6.5–8 cm, subleathery; petiole 5–8 mm; peduncle 2–4.5 cm ....................... 6. Gymnosporia rufa
10b. Leaf blade narrowly elliptic, narrowly obtuse, or oblanceolate, 2–8(–14) cm, papery;
petiole 2–7(–12) mm; peduncle 1–3 cm ..................................................... 9. Gymnosporia graciliramula


● Rocky mountain slopes, meadows; 100–800 m. Guangxi, Guizhou, Hubei, Sichuan, Yunnan.


贵州裸实  


Small shrubs, 1–2 m tall; branches tenuous, black when dry, short branches spiny, 5–10 mm, thorns needlelike. Petiole 2–5 mm; leaf blade broadly elliptic or narrowly ovate, sometimes ovate-lanceolate, 2–8 × 0.5–2.5 cm, papery, slightly thick in fruit, base cuneate, margin shallowly serrate or crenate, apex shortly acute; lateral veins 3–5 pairs, webbing sparsely with veinlets, obvious on both surfaces. Cymes axillary, 1–4-flowered, monochasial; peduncle very tenuous, 0.5–1.5 cm; pedicel 3–5 mm, slightly elongate when fructiferous. Flowers white, ca. 4 mm in diam.; sepals oblong; petals narrowly ovate. Disk small. Ovary without style; stigma 3-lobed. Capsule reddish, obvoid, 5–8 mm, 6–9 mm in diam., 3-valved. Seeds red-brown, oblong-ellipsoid, basally covered by small aril. Fl. Jun–Aug, fr. Aug–Dec.

● Forest margins, scrub, mountain slopes; 500–1300 m. Sichuan, Yunnan.


被子裸实  


Shrubs, with very spiny straight or slightly zigzag branches; thorns stumpy, 1–2.5 cm, axillary on annual branches. Petiole 2–4 mm; leaf blade obovate or elliptic, 1.5–4 × 0.5–2 cm, thickly papery, base cuneate, margin entire or not obviously crenate, apex acute or obtuse, rarely rounded; lateral veins 5 or 6 pairs, quite tenuous. Cymes 1 to several, fascicled, 1–7-flowered; peduncle 2–5 mm when fruiting; branches and pedicels ca. 5 mm when fruiting. Petals white, oblong-ovate (flowers not seen). Capsule obtriangular, ca. 1 mm, dehiscing into 3 valves. Seeds long ellipsoid, black, ca. 6 mm; aril red, nearly covering seed. Fl. Jun.

Mountain slopes. ?Xinjiang, ?Xizang, ?Yunnan [Afghanistan, India, Kashmir, Pakistan].

Only one specimen is known from China, *Liou Tchen-Neo 5892* (PE), collected between Xinjiang and Kashmir and Pakistan.


细梗裸实  


Shrubs, 1–2 m tall; twigs slender, with slender thorns or unarmed, old branches usually with sturdy thorns. Petiole 2–7(–12) mm; leaf blade narrowly elliptic, narrowly obovate, obovoid, or elliptic, 1–2 × 0.6–2.4 cm, subleathery, base subrounded, broadly cuneate or crenate, margin crenate, apex subrounded, rarely retuse or shortly acute; lateral veins 3–5 pairs, tenuous. Cymes fascicled in short branches, ca. 3-flowered, 2–4 × branched, monochasial; peduncle slender and short, ca. 5 mm; bracts small, narrowly lanceolate, ca. 0.8 mm; pedicel slightly short, 1–2 mm. Flowers small, ca. 2 mm in diam.; sepals ovate, ca. 0.5 mm, ciliate; petals oblong-ovate, white, ca. 1.5 mm. Filament very short or absent. Ovary without style; stigma 3-lobed. Capsule red, obvooid, 5–8 mm, 6–9 mm in diam., 3-valved. Seeds red-brown, oblong-ellipsoid, basally covered by small aril. Fl. Jun–Aug, fr. Aug–Dec.

● Forest margins, scrub, mountain slopes; 500–1300 m. Sichuan, Yunnan.


Shrubs, 1–2 m tall; twigs slender, with slender thorns or unarmed, old branches usually with sturdy thorns. Petiole 2–7(–12) mm; leaf blade narrowly elliptic, narrowly obovate, obovoid, or elliptic, 1–2 × 0.6–2.4 cm, subleathery, base subrounded, broadly cuneate or crenate, margin crenate, apex subrounded, rarely retuse or shortly acute; lateral veins 3–5 pairs, tenuous. Cymes fascicled in short branches, ca. 3-flowered, 2–4 × branched, monochasial; peduncle slender and short, ca. 5 mm; bracts small, narrowly lanceolate, ca. 0.8 mm; pedicel slightly short, 1–2 mm. Flowers small, ca. 2 mm in diam.; sepals ovate, ca. 0.5 mm, ciliate; petals oblong-ovate, white, ca. 1.5 mm. Filament very short or absent. Ovary without style; stigma 3-lobed. Capsule red, obvooid, 5–8 mm, 6–9 mm in diam., 3-valved. Seeds red-brown, oblong-ellipsoid, basally covered by small aril. Fl. Jun–Aug, fr. Aug–Dec.
dunce slender, various in length, usually 1–2 cm, up to 3 cm when fruiting; branches and pedicles slightly short, 3–5 mm, 0.5–1 cm when fruiting. Flowers small, white, 2–5 mm in diam.; sepals broadly ovate; petals oblong. Filament ca. 1 mm. Stigma 3-lobed. Capsule red-brown, subobovoid, 6–12 mm, 3-valved. Seeds oblong, 5–7 mm, basally covered by white aril. Fl. Jun–Sep, fr. Sep–Dec.

- Dry calcareous mountain slopes; 800–1500 m. Guangxi, Yunnan.


吊罗裸实 diao luo luo shi

Maytenus tiaoloshanensis (Chun & F. C. How) C. Y. Cheng

Small shrubs, erect when young, vinelike with age, 1–2 m tall; thorns not seen. Petiole 2–5 mm; leaf blade elliptic-lanceolate or oblanceolate, 3.5–6.5 × 0.5–1.5 cm, thickly papery or slightly leathery, base cuneate, margin serrate, apex obtuse; lateral veins 6–9 pairs, weakly webbed with veinlets, tenous and obvious. Cymes axillary, long and slender, 1 or 2 × dichotomously branched or 3–5 × monochasially branched; peduncle very tenuous, 0.5–1.5 cm; pedicel 3–5 mm, both slightly elongate when fruiting; bracts and bractlets triangular-lanceolate, ca. 1 mm. Flowers white, 2–2.5 mm in diam.; sepals semi-orbicular; petals oblong. Disk thick, cupulate. Ovary subglobose; style absent; stigma slightly 2-lobed. Capsule obcordate, 5–8 mm, white, usually 2-valved. Aril small, covering seed at base. Fl. and fr. Dec–Feb.

- Sparse or dense forests, mountain valleys, riversides, roadsides. Hainan.

台湾裸实 t'ai wan luo shi

Celastrus emarginatus Willdenow, Sp. Pl. 1: 1128. 1798; Catha emarginata (Willdenow) G. Don; Gymnosporia trilocularis Hayata; Maytenus emarginata (Willdenow) Ding Hou.

Small shrubs, 1–3 m tall; branches gray-brown, shallowly longitudinally fluted, unarmored. Petiole sturdy, 3–5 mm; leaf blade obovate, 3.5–5 × 1.7–3.3 cm, leathery, base cuneate, margin remotely crenate, sometimes glandular spotted in sinus of teeth, apex rounded or subtruncate; lateral veins 4–6 pairs, quite tenuous. Cymes axillary, 1 or 2 × branched; peduncle 1–1.5 cm. Flowers white; calyx lobes deltoid; petals obovate-oblong or oblong, entire, obtuse. Stamens inserted abaxially on disk margin; anther broadly ovoid. Ovary 3-celled; style very short; stigma 3. Capsule subobovoid, trilocular, 7–8 mm in diam., dehiscing into 3 broadly rounded valves, ca. 5 mm. Seeds ellipsoid, red, ca. 3 mm, with small aril at base.

Thickets along seashores, open areas. Taiwan [Sri Lanka; Australia].

美登木属 mei deng mu shu

Liu Quanru (刘全儒); A. Michele Funston

Shrubs or small trees, usually erect, rarely viny or climbing, glabrous, rarely pubescent, branches often inermous. Leaves alternate, often distichous, coriaceous, serrate, petiolate; stipules small, caducous. Inflorcescences axillary, fasciculate, cymose, rarely racemose, or flowers solitary. Flowers white-green, bisexual, 5-merous. Disk fleshy, annular, undulate or 5-lobed, intrastaminal; anthers longitudinally dehiscent, intorse. Ovary usually 2-locular, rarely 3- or 4-locular, base confluent with disk; ovules erect, often 1 per locule. Capsule obovoid or ellipsoid, leathery, loculicidally dehiscent. Seeds 1–4, ellipsoid; aril basal to enveloping seed.

About 220 species: tropics and subtropics of America, temperate Australasia; six species (five endemic) in China.

1a. Capsule globose or subglobose, inflated; cymes terminal ................................................................. 1. M. inflata
1b. Capsule obovoid or triangular-globose, not inflated; cymes usually axillary.

2a. Cymes solitary; peduncle longer than 1 cm ...................................................................................... 2. M. austroyunnanensis
2b. Cymes several, fascicled; peduncle absent or very short, 2–5 mm.

3a. Capsule 2-valved; cymes often 4–6-fascicled; peduncles, branches, and pedicels tenuous; peduncle 2–5 mm ........................................................................................................... 3. M. hookeri
3b. Capsule 3-valved; cymes numerous, densely fascicled; peduncles, branches, and pedicels slightly sturdy; peduncle very short or absent.

4a. Leaf blade elliptic or ovate-elliptic; peduncle very short; each cyme 2–4 × branched; thorns erect ......................................................................................................................... 4. M. guangxiensis
4b. Leaf blade broadly elliptic or obovate; peduncle usually absent; each cyme 2 or 3 × branched; thorns somewhat decurved.

5a. Vinelike shrubs; flowers growing on old branches; thorns decurved, hooked; netting veins obvious ......................................................................................................................... 5. M. hainanensis
5b. Shrubs; flowers growing on annual or biennial branches; thorns slightly decurved; netting veins not obvious ..................................................................................................................... 6. M. confertiflora

The leaves of this species are used medicinally.


The leaves of this species are used medicinally.


The leaves of this species are used medicinally.

Knee-bending Tree

Ma Jinshuang (马金双); A. Michele Funston

Evergreen trees with buttressed trunks, glabrous. Leaves alternate, entire, lateral veins parallel; petiole geniculate; stipules ovate or lanceolate, membranous, stipular scar conspicuous. Inflorescences axillary, cymose, panicle, or racemose. Flowers bisexual, 5-merous. Disk fleshy, cupular to plate-form, 5-lobed, intrastaminal; anthers longitudinally dehiscent, introrse. Ovary 2-locular, glabrous or apically pubescent; ovules erect, 2 per locule. Capsule 2-valved or fusiform, leathery, loculicidally dehiscent. Seeds 1 or 2, oblong; aril basal or enveloping seed.

Five species: tropical Asia; one species in China.

1. **Bhesa robusta** (Roxburgh) Ding Hou, Blumea, Suppl. 4: 152. 1958.

Knee-bending Tree


Trees, 10(–40) m tall; twigs thick and strong, usually purplish-brown, rough and coarse on surface, often with large leaves and bud scars; bark rather rough, brown. Leaves alternate, sometimes subopposite on young twigs; petiole cylindrical, 2–3 cm; leaf blade oblong-elliptic or narrowly ovate, 11–20 × 3.5–6 cm, subleathery, glossy, base often rounded or broadly attenuate, sometimes subcuneate or slightly cordate, margin entire, apex acuminate or acute; main vein and lateral veins prominent abaxially, lateral veins 14–18 pairs, becoming dense and netted distally. Cymes 3–5-branched, many flowered; peduncle short or nearly absent; pedicel short. Flowers small, yellowish green; sepals linear-lanceolate, ca. 1.5 mm, narrowly acuminate at apex; petals narrowly obovate or oblong-lanceolate, ca. 2 mm, subrounded at apex. Filament ca. 2 mm. Ovary compressed globose, base surrounded by disk; styles 2, thick and large, basally with tufted hairs; stigma small. Capsule narrow and long ovoid, ca. 3 × 1–1.2 cm, steeply tapering to apex, with 2 vertical grooves. Seeds 1, elliptic-ovoid, ca. 1.5 cm, brown or brown-red, glossy; aril covering most of seed, white or brown.

Lowland forests; ca. 100 m. SE Guangxi (Hepu) [Bangladesh, ?Bhutan, Cambodia, E India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam].

According to FRPS (45(3): 147, 149. 1999), there exists only one tree of *Bhesa robusta* in Hepu, SE Guangxi.


Cathartic Plant

Ma Jinshuang (马金双); A. Michele Funston


The leaves contain cathinone, a natural amphetamine, and are commonly chewed for the pharmaceutical effects.


Cathartic Plant


Evergreen shrubs, 1–5 m tall; young branches with white, fine lenticels. Petiole 3–8 mm; leaf blade elliptic or narrowly elliptic, 4–7 × 2–4 cm, leathery, base narrowly attenuate, slightly decurrent, margin obtusely serrate, apex obtusely shortly acuminate. Cymes single, small, 1.5–2 × as wide; peduncle 5–10 mm, 2–4-branched, branches short, less than 3 mm; pedicel 1–3 mm, up to 5 mm in fruit. Flowers 3–5 mm in diam.; sepals 5, triangular-ovate, ca. 1 mm; petals 5, white, narrowly ovate or narrowly oblong. Stamens 5, filamentous, shorter than corolla. Ovary free, surrounded by disk; stigma 3-lobed. Capsule orange-red, cylindrical, ca. 8 × 3–4 mm, dehiscing from above, loculically in 3 valves, usually only 1 seed maturing per valve. Seeds black-brown, narrowly ovoid, 3–4 mm, with membranous basal wing.

Cultivated. Guangxi (Nanning), Hainan (Xinglong), S Yunnan (Xishuangbanna) [native to E African mountains].

The name *Catha edulis* was not validly published by Forsskål (Fl. Aegypt.-Arab. civ. 63. 1775); see Art. 46, Ex. 22 of the Vienna Code.


False Tripod Plant

Zhang Zhixiang (张志翔); A. Michele Funston
Chingithamnus Handel-Mazzetti; Otherodendron Makino; Paracelastrus Miquel.

Small trees or shrubs, evergreen or deciduous, glabrous, rarely pubescent; bark gray-brown; branchlets terete to somewhat quadrangular. Leaves opposite, entire, often revolute, stipulate. Inflorescences axillary, extra-axillary, or terminal, cymose, fascicled, or thyrsoid. Flowers bisexual, rarely unisexual, dioecious, 5-merous (occasionally 4–6-merous); sepals persistent in fruit, slightly enlarged; petals white or yellowish white. Disk shallowly calathiform to annular or absent, intrastaminal; anthers longitudinally dehiscent, intorse, rarely extrorse. Ovary 2- or 3-locular; ovules erect, 2 per locule. Capsule ellipsoid, leathery, not enclosed in or sitting on fleshy perianth parts, 1-locular, laterally split along one side. Seed 1, ovoid, furrowed, coat often slightly fleshy and aril-like.

More than 60 species: tropical and subtropical zones of Africa, America, and E and SE Asia; 27 species (20 endemic) in China.

This genus is divided into three sections: Microtropis sect. Cymosopaniculatae, M. sect. Remotiflorae, and M. sect. Microtropis.

2a. Main peduncle very long, 14–18 cm; peduncle, rachis, and branches stout and slightly flat ............................. 1. M. thyrsiflora
2b. Main peduncle short, less than ca. 4 mm; peduncle, rachis, and branches terete.

3a. Leaf blade narrowly ovate, narrowly ovate-elliptic, or ovate-lanceolate, 4.5–9 × 1.5–3.5 cm; peduncle 2–3 mm ........................................................................................................ 2. M. semipaniculata
3b. Leaf blade oblong-elliptic to oblong, 19–24 × 5.6–6.5 cm; peduncle 3–3.4 mm ................................................. 3. M. malipoensis

1b. Inflorescences without prolonged rachis.

4a. Inflorescences dichasial; peduncle more than 1 cm; flowers loosely aggregated (M. sect. Remotiflorae).
5a. Flowers 4- or 6-merous.
6a. Inflorescences 3- or 4-branched; flower buds pyramidal; flowers 4-merous .................................................. 12. M. pyramidalis
6b. Inflorescences 1- or 2-branched; flower buds subglobose; sepals 4; petals and stamens 6.
7a. Leaf blade 4–7.5 × 1.5–3 cm; inflorescences 3-flowered .................................................................................. 13. M. hexandra
7b. Leaf blade 4–15 × 3–5 cm; inflorescences 3–7-flowered ............................................................................... 14. M. henryi

5b. Flowers 5-merous.

8a. Inflorescences 2–4-branched; peduncle 1–3 cm; flowers more than 7 per inflorescence (M. macrophylla: inflorescences 1- or 2-branched, but peduncle 1.5–2 cm).
9a. Leaf blade small, 4.5–8 cm, leathery, oblillatine to ovate-elliptic, apex obtuse or obtusely acute ....................... 4. M. japonica
9b. Leaf blade large, 6.5–15 cm, papery or nearly leathery, apex acuminate, acute, or slightly caudate.
10a. Leaf blade apex narrowly caudate; secondary veins only 3–5 pairs .......................................................... 5. M. macrophylla
10b. Leaf blade apex acuminate or acute; secondary veins 8–13 pairs.
11a. Leaf blade narrowly elliptic, small, 6.5–13 × 2–4.5 cm; secondary veins 9–13 pairs, oblique, straight; capsule ca. 5 cm ........................................................................................................ 6. M. petelotii
11b. Leaf blade broadly elliptic, large, 10–15 × 5–7 cm; secondary veins 8–10 pairs; capsule up to 2 cm ...... 7. M. fallax

8b. Inflorescences 1- or 2-branched; peduncle ca. 1 cm; flowers less than 7 per inflorescence.

12a. Leaf blade narrow, length 4 × width, rectangular-lanceolate or broadly oblanceolate; inflorescences ca. 3-flowered ............................................................................................................. 11. M. triflora
12b. Leaf blade wide, length less than 3 × width, rectangular or elliptic, rarely broadly ovate; inflorescences 3–7- or more flowered.

13a. Branchlets tetragonal; leaf blade 8–13 cm ........................................................................................................ 10. M. tetragona
13b. Branchlets terete, or becoming so at maturity; leaf blade less than 9 cm.
14a. Leaf blade 3.5–7 × 1.5–3.5 cm, apex caudate, secondary veins 4–7 pairs; pedicel ca. 1.5 mm ........................................................................................................ 8. M. submembranacea
14b. Leaf blade 4–9 × 2–4 cm, apex acuminate, secondary veins 11 or 12 pairs; pedicel ± absent ......................... 9. M. pallens

4b. Inflorescences conferti-dichasial; peduncle less than 1 cm (except M. gracilipes: peduncle 1–2.5 cm); flowers subsessile or sessile, dense (M. sect. Microtropis).

15a. Peduncle long, 1–2.5 cm; branchlets, petioles, and peduncles often with sparse short hairs ......................... 15. M. gracilipes
15b. Peduncle absent, very short, or up to 1 cm, generally glabrous.

16a. Leaf blade carnose, irregularly verrucose when dry, rarely papery and without warts when dry.
17a. Leaf blade thickly papery, small, 6–11 cm, secondary veins obvious; inflorescences 2–7-flowered.
18a. Secondary veins 8–11 pairs, oblique, straight; petiole 3–5 mm; flowers 5-merous, inflorescences generally 2-flowered ........................................................................................................ 23. M. biflora
18b. Secondary veins 5–8 pairs, curved; petiole 5–15 mm; flowers 4- or 5-merous, inflorescences 3–7-flowered ............................................................................... 24. M. oligantha

17b. Leaf blade carnose, slightly fleshy, large, 7–18 cm, secondary veins not obvious; inflorescences 5–20-flowered.

19a. Leaf blade ovate, base broadly cuneate, apex narrowly acute; inflorescences 5-flowered .................. 25. M. osmanthoides
19b. Leaf blade obovate, rectangular, rectangular-elliptic, or broadly oblanceolate; inflorescences more than 10-flowered.
20a. Branchlets brownish; leaf blade ovate, obovate, or rhombic, apex obtuse; petiole 4–6 mm
20b. Branchlets bluish purple; leaf blade rectangular, elliptic, or broadly oblong-elliptic, apex acute
or shortly acuminate; petiole 8–15 mm

16b. Leaf blade papery or slightly leathery, not carnose, glabrous when dry.
21a. Fruits globose; secondary veins 3–5 pairs
21b. Fruits elongate; secondary veins 4–11 pairs.

22a. Peduncle 5–10 mm; flowers usually 4-merous, rarely 5-merous
22b. Peduncle short, 2–5 mm; flowers 5-merous (M. fokienensis 4- or 5-merous).

23a. Leaves ovate-oblong, rarely rhombic-elliptic; flowers 4- or 5-merous
23b. Leaves elliptic, rectangular, or rectangular-elliptic; flowers 5-merous.

24a. Leaves small, 3–10 × 1–4 cm, apex acute or shortly acuminate; petiole short, 3–7 mm.
24b. Leaves large, 5–19 × 2–11 cm, apex acuminate, base narrowly cuneate; petiole long, 5–15 mm.

25a. Leaves coriaceous, rhombic-elliptic or narrowly ovate-elliptic; capsule ca. 1.5 cm
25b. Leaves thickly papery, rectangular-elliptic or narrowly ovate-elliptic; capsule ca. 2 cm

26a. Secondary veins 7–11 pairs, straight; leaves abaxially brownish when dry; inflorescences
3–7-flowered; capsule smooth without any warts
26b. Secondary veins 5–8 pairs, slender and curved; leaves abaxially gray-brown when dry;
infl orescences with 7–15 flowers; capsule surface with small warts


Inflorescences generally with prolonged rachises, thyrses arranged in dichasia, branching peduncles long and obvious, inflorescence loose. Flowers 5-merous.

About ten species: mainly in SE Asia; three species (all endemic) in China.


biform cymes axillary, lax, 4- or 5-branched; peduncle 3–3.3 mm. Fruits ovate, 2.5–3 cm, including a rostrum, rostrum ca. 1 mm; stipes 2–4.5 mm; persistent sepals broadly ovate, ca. 2 mm, imbricate, 4-lobed, connected on base; lobe ca. 1 × 5 mm, entire, obtuse; persistent style 0.2–0.3 mm. Capsule ovate, 2.5–3 cm, including a rostrum, ca. 1 cm. Seed 1, elliptic.

- Evergreen forests; ca. 1700 m. E Yunnan.


**疏花组** **shu hua zu**

 Dichiasium loosely spreading, fastigate, flabellate or broadly patent. Peduncle generally up to 1 cm; secondary peduncle and pedicels obvious or at least conspicuous. Flowers 5-merous, rarely 4- or 6-merous.

Eleven species: S and SE Asia; eleven species (six endemic) in China.


日本假卫矛 **ri ben jia wei mao**

*Elaeodendron japonicum* Franchet & Savatier, Enum. Pl. Jap. 2: 310. 1879; *Cassine japonica* (Franchet & Savatier) Kuntze; *C. kotoensis* Hayata; *Microtropis kotoensis* (Hayata) Koidzumi; *Otherodendron japonicum* (Franchet & Savatier) Makino.

Evergreen small trees or shrubs; branchlets glabrous, dark gray-brown. Petiole 2–12 mm; leaf blade elliptic, broadly elliptic, rhombic-elliptic, or ovate-elliptic, 4.5–8 × 2–4 cm, leathery, base cuneate or decurrent up to 1 cm, margin slightly revolute, apex obtuse to obtusely acute, sometimes emarginate; secondary veins 4–6 pairs. Cymes axillary or terminal; peduncle 10–15 mm, 2 or 3(or 4) × dichotomously branched, secondary peduncle 1–4 cm; terminal flowers on subaxes sessile; longest pedicels up to 2.5 mm. Flowers ca. 5 mm wide, yellowish white; sepals 5, thick, broadly semiorbicular, 1–1.5 × 2–2.5 mm, margin irregularly serrulate, persistent in fruit; petals 5, slightly fleshy, oblong, ca. 3 mm. Disk annular, fleshy, with 5 very shallow lobes. Stamens 5; filament very short, inserted on disk. Ovary with short, thick style. Capsule oblong, 1.5–2 × 0.7–1 cm, apex finely mucronate, surface with fine and longitudinal crest. Seed obovate-elliptic, 1–1.2 cm, surface vermicil or dark red. Fl. ca. Apr.

- Forests. Taiwan [Japan].


大叶假卫矛 **da ye jia wei mao**


Shrubs 1.5–3 m tall; branchlets slender, brown. Petiole 5–10 mm; leaf blade rectangular or oblong, 8–15 × 3.5–7 cm, papery, abaxially green, adaxially yellowish green, base widely cuneate or decurrent, apex widely rounded, long caduate, tail 11–15 × 1–2 mm; midvein slender, obviously prominent abaxially, secondary veins 3–5 pairs, obviously prominent abaxially, curved. Cymes mainly on branched axis, 1 or 2 × dichotomously branched; peduncle 1.5–2 cm; terminal peduncle ca. 1.5 cm; lateral pedicel ca. 1 cm or longer; terminal flowers subsessile.

Flowers 5-merous. Capsule fusiform when immature, ca. 5 × 1.3 cm, apex with subulate rostrum; persistent sepals slightly thickened, approximately leathery, semiorbicular or nephroid, 3.5–4 mm wide. Fl. Jul, fr. Oct.

- Evergreen forests, thick forests, slopes; 1500–1700 m. S Xizang, SE Yunnan [Myanmar].


广序假卫矛 **guang xu jia wei mao**

Shrubs or trees, 4–10 m tall; branchlets purplish brown, slightly tetragonal. Petiole 8–12 mm; leaf blade narrowly elliptic to narrowly rectangular, 6.5–13 × 2–4.5 cm, leathery, yellowish white when dry, base cuneate, rarely widely cuneate, apex acuminate to acute; midvein fine, prominent on both surfaces, secondary veins 9–13 pairs, oblique, straight. Cymes axillary or along branch axis, mainly 3 or 4 × dichotomously branched, loose, spreading; peduncle 10–18 mm, secondary peduncle 5–7 mm; pedicels very short; terminal flowers absent on secondary and tertiary branches. Flowers 5-merous; sepals nephroid-semiorbicular, outer sepals obviously smaller; petals oblong, 2.5–3 cm. Disk annular or shallowly calathiform, slightly 5-lobed. Stamens short; filament shorter than ca. 1 mm; anther slightly scalariform-cordate. Ovary triangular-sessile. Capsule nearly terete, ca. 1.5 cm. Fl. Jun–Oct, fr. Jun–Oct.

- Evergreen and mossy forests, thick forests; 1300–2200 m. Guangxi, S Yunnan [Vietnam].


越南假卫矛 **yue nan jia wei mao**

Small trees, to 6 m tall; branchlets purple-brown, tetragonal when young, becoming gray, terete. Petiole 1–1.2 cm; leaf blade broadly elliptic, 8.5–15 × 3.2–7 cm, base cuneate or broadly cuneate, apex acuminate or apiculate, apiculus 3–5 mm; secondary veins 8–10 pairs, slightly prominent on abaxial surface. Cymes axillary, 3–5-flowered; peduncle short, 3–4 mm. Infructescence 5–10 cm, 4- or 5-branched. Persistent sepals 5, ca. 2 × 3 cm, imbricate, outer ones smaller than inner ones. Capsule elliptic, to 2 × 0.5–0.7 cm, sessile, 2-valved, blackish, enclosed on persistent sepals at base; persistent style ca. 2 mm; stigma slightly 4-lobed. Seed 1, oblong to obovate; aril red. Fl. Oct.

Microtropis submembranacea

Shrubs, 3–4 m tall; branchlets, leaves, and flowers fragrant when dry. Petiole ca. 5 mm; leaf blade ovate, ovate-elliptic to oblong, rarely broadly lanceolate, 3.5–7 × 1.5–3.5 cm, sometimes longer, abaxially gray, base widely cuneate or rounded, apex acuminate; secondary veins 4–7 pairs, fine, prominent on both surfaces. Cymes axillary, terminal or on branched axis, generally 3–7-flowered; peduncle 5–10 mm, secondary peduncle 2.5–3.5 mm; pedicels ca. 1.5 mm. Flowers 5-merous; sepals broadly semi-ovate; petals broadly obovate, ca. 2 mm. Disk shallowly annular, shallowly 5-lobed, lobe widely rounded. Filament ca. 1 mm; length of anther equal to width. Ovary narrowly ovate; style thick. Capsule broadly elliptic, ca. 1.5 × 0.5–0.6 cm. Fr. Apr.

- Evergreen forests, thick forests on hills; 1000–1800 m. Fujian, Guangdong, S Guangxi, Hainan, Yunnan.


Microtropis pallens

Shrubs, 1–2 m tall; branchlets tetragonal when young, becoming terete, glabrous. Petiole 5–6 mm; leaf blade ovate to oblong, 4–9 × 2–4 cm, papery, abaxially pallid or slightly silver, adaxially green, glabrous, base cuneate, apex acute; secondary veins 7–12 pairs, prominent on both surfaces. Cymes densely dichasial, up to 1 cm; peduncle 2–3.5 mm; pedicels ± absent. Flowers 5-merous; sepals slightly membranous, ca. 1 mm, margin erose; petals obvate. Disk absent. Ovary conical, incompletely 2-loculed, 4 ovules per ovary; style short and thick; stigma nearly 4-lobed. Capsule ovate or oblong, 2-valved, ca. 10 × 6 mm, valve up to 1.5 mm thick. Seed ca. 9 × 5 mm. Fl. Jan–Mar, fr. Sep–Oct.

Seasonal rain forests, evergreen forests; ca. 400 m. SE Yunnan [Laos, Vietnam].


Microtropis tetragona

Small trees or shrubs; branchlets obviously tetragonal, purplish brown. Petiole 5–10 mm; leaf blade rectangular-elliptic or narrowly ovate-elliptic, 8–13 × 2.5–5 cm, papery or thinly leathery, rarely falciform-acuminate, base cuneate, apex acuminate; secondary veins 6–9 pairs, slender, obliquely arching upward, closed on margin. Cymes 3–7-flowered, rarely more, loose, spreading; peduncle fine, 5–11 mm, secondary peduncle 3–5 mm; pedicels 1.5–3 mm. Flowers 5-merous; sepals semi-ovate; petals rectangular-elliptic or slightly broadly ovate-elliptic. Disk thin, annular, shallowly 5-lobed or entire. Stamens small and short; filament very short and conspicuous. Ovary broadly triangular-ovate; style often 4-lobed. Capsule nearly oblong, ca. 2 cm × 8–9 mm, apex often with short rostrum; valves abaxially finely angulate. Fl. Aug–Oct, fr. ca. Oct–Nov.

- Mossy evergreen forests, streamsides; 1000–2100 m. S Guangxi, Hainan, SE Xizang, SE Yunnan.


Microtropis triflora

Small shrubs, 2.5–5 m tall. Petiole slender, 6–12 mm; leaf blade lanceolate, oblong-lanceolate, broadly oblanceolate, or elliptic, 5.5–10 × 1–2.5(–4) cm, nearly leathery, base cuneate or decurrent, apex acute to narrowly acuminate; secondary veins 6–8 pairs, slightly curved. Cymes axillary, terminal or on branch axis, 3-flowered; peduncle 5–10 mm; terminal flowers sessile; lateral pedicels slender, 2.5–6 mm. Flowers 5-merous; sepals broadly semi-ovate, ca. 1.5 mm wide, margin ciliate; petals ovate-elliptic, ca. 3 mm, spreading in flower. Disk calathiform to annular, slightly fleshy, rim curved. Stamens ca. 2 mm. Ovary ampullaceous; stigma present. Capsule ovate-elliptic, ca. 1.5 cm. Seed ovate-elliptic, reddish brown. Fl. Aug–Sep, fr. ca. Aug–Oct.

- Evergreen forests, thick forests on hills; 1300–2100 m. Guizhou, Hubei, Sichuan, Yunnan.


Microtropis pyramidalis

Small shrubs, 1–1.5 m tall; branchlets purplish brown, slightly tetragonal. Petiole 5–9 mm; leaf blade elliptic or oblong, 7–11 × 3–5.5 cm, papery, base cuneate or widely cuneate, apex caudate-acuminate to acuminate; midvein prominent on both surfaces, secondary veins 4–7 pairs, curved, small, thin. Cymes mainly on branched axis, 3 or 4 × dichotomously branched, branches slender and patent; peduncle 1–2 cm, secondary peduncle 5–15 mm; pedicels very short, less than ca. 3 mm or absent. Sepals broadly triangular-semi-ovate; petals rectangular, ca. 3 × 1 mm or more. Disk thin, narrowly annular. Stamens slightly as long as pistils; filament short and flat; anther ovate-elliptic, connective prominent, narrowly triangular. Ovary conical, ca. 1.5 mm. Fruit unknown. Fr. Apr.

- Seasonal evergreen forests, thick forests, valleys, streamsides; 800–1500 m. SW Guangxi, SE Yunnan.


Microtropis hexandra

Shrubs, to 3 m tall. Petiole 5–8 mm; leaf blade elliptic to narrowly elliptic, 4–7.5 × 1.5–3 cm, thickly papery, base cuneate to widely cuneate, apex acuminate; secondary veins 6–8 pairs, oblique, straight, curved near apex, prominent on both surfaces. Cymes often congested distally, often 3-flowered; peduncle 5–7 mm; pedicels 1–2.5 mm, sometimes sessile. Flowers white; sepals fleshy, often 4, rarely 5, semi-ovate, ca. 2 mm wide, very slightly ciliate or absent; petals 6, rarely 5, slightly fleshy,
ovate-elliptic to rectangular-elliptic, ca. 3 mm. Disk shallowly calathiform, fleshy, very slightly lobed. Stamens 6, rarely 5, as long as pistils or longer; anther slightly rectangular, connective mucronulate. Ovary elliptic-ovate; style very short; stigma slightly lobed. Fruit unknown. Fl. Jan–Aug, fr. Nov.

- Humid evergreen forests, mountains; 1000–1800 m. SE Yunnan.


滇东假卫矛 dian dong jia wei mao

Evergreen shrubs, 2–3 m tall. Petiole 5–12 mm; leaf blade narrowly elliptic, elliptic, or narrowly oblong, 9–15 × 3–5 cm, thinly papery or papery, base cuneate, apex acuminate or apiculate; secondary veins 5–8 pairs, curved. Cymes axillary or on branched axis, outspread, (1–3)–7–flowered; peduncle 5–8 mm, secondary peduncle 3–5 mm; pedicels 1–3 mm or sessile. Sepals 4, rarely 5, lateral ones smaller, nephroid-semiorbicular, margin irregularly serrulate; petals 5 or 6, broadly elliptic or ovobovate-ovulic. Disk inconspicuous. Stamens generelly 6; filaments very short; anther rectangular, connective mucronulate. Ovary rectangular-ovate; style very short to even absent. Capsule broadly elliptic, 1.3–1.7 cm × 8–10 mm, apex rounded, mucronulate, valves slightly smooth. Fl. Jun–Oct, fr. Apr–Aug.

- Humid evergreen forests, mountains; 800–2000 m. SW Yunnan.

3. Microtropis sect. Microtropis

密花组 mi hua zu

Inflorescences glomerulate cymes, sessile or subsessile, rarely long pedunculate. Flowers sessile or subsessile.

Thirteen species: S and SE Asia; 13 species (11 endemic) in China.


密花假卫矛 mi hua jia wei mao

Microtropis confertiflora Merrill & F. L. Freeman; M. gracilipes var. parvifolia Merrill & F. P. Metcalf.

Shrubs, 2–5 m tall; branchlets slightly angular. Petiole 3–9 mm, sparsely pubescent; leaf blade broadly obovate, rarely oblong or obovate, 5–11 × 1.5–3.5 cm, leathery, glabrous, sometimes abaxially sparsely pubescent on veins, base cuneate, margin brownish white when dry, slightly revolute, apex acuminate or caudate; midvein prominent on both surfaces, secondary veins 7–11 pairs, straight, or apically slightly curved and closed. Cymes glomerate, dense, axillary or on branched axis; peduncle 1–2.5 cm, sparsely pubescent, unbranched or second-ary peduncle 1–3 mm. Flowers 5-merous, sessile, clustered capitulum-like; sepals nephroid; petals slightly fleshy, broadly ovate-elliptic, ca. 4 mm. Disk annular. Stamens ca. 1.5 mm; filament present. Ovary globose or ovate; style long, thick; stigma shallowly 4-lobed or slightly concave. Capsule broadly elliptic, 1.1–1.8 cm; persistent sepals slightly enlarged, sometimes slightly glaucous. Seed elliptic, dark red. Fl. Apr.

- Valley forests, slopes near streams, swamps; 700–1500 m. Fujian, Guangdong, Guizhou, Hunan.


圆果假卫矛 yuan guo jia wei mao

Small trees, 2–3 m tall; branchlets smooth, slightly flat. Petiole short, formed by decurrent leaf base, 3–5 mm; leaf blade elliptic or rectangular-elliptic, 6–9 × 2.5–4 cm, papery, base decurrent, apex acute or acuminate; secondary veins 3–5 pairs, slender, curved, abaxially prominent. Cymes glomerate, 1–3-flowered, rarely up to 7-flowered; peduncle 3–5 mm. Flowers 4-merous, subsessile or sessile; sepals fleshy, broadly rounded, margin brown, erose with small teeth. Capsule sub-globose, ca. 9 mm in diam., valves slightly smooth and flat, not obviously angulate.
Small trees or shrubs, 1.5–4 m tall; branchlets slightly tetragonal. Petiole 2–8 mm; leaf blade narrowly obovate, broadly oblanate, ovate-elliptic, or rhombic-elliptic, 4.9 × 1.5–3.5 cm, thickly papery or leathery, base decurrent or narrowly cuneate, apex narrowly acute or acuminate; secondary veins 4–6 pairs. Cymes glomerate, short and small, axillary or on branched axis, rarely terminal, 3–9-flowered; peduncle short, 1.5–5 mm. Flowers very shortly pedicellate or sessile, 4-merous or 5-merous; sepals semiorbicular, imbricate; petals elliptic to broadly elliptic, ca. 2 mm. Disk annular, flat and broadly semi-elliptic. Stamens shorter than petals. Ovary ovate-globose; style usually present; stigma shallowly 4-lobed. Capsule elliptic to ovate-elliptic, 1.1–1.4 × 0.5–0.7 cm.

- Slopes or forests in valleys; 800–2000 m. Anhui, Fujian, Hunan, Jiangxi, Taiwan, Zhejiang.


少脉假卫矛 shao mai jia wei mao

Small trees to shrubs; branchlets ± angulate, generally purplish brown. Petiole 3–7 mm; leaf blade elliptic, rhombic-elliptic, or obovate-elliptic, 3–8 × 1–4 cm, leathery, base cuneate or widely cuneate, rarely decurrent, margin revolute, apex obtuse-acute, rarely acuminate; secondary veins 4–7 pairs, slender, straight. Cymes axillary or on branched axis; peduncle ca. 1 cm or less. Flowers 5-merous, subsessile or sessile; sepals thick, nephroid, ca. 2 mm, margin with long cilia; petals ca. 2.5 mm, apex sometimes obtuse-marginate. Disk shallowly calathiform, margin entire. Stamens short. Ovary conical. Capsule elliptic, ca. 1.5 cm × 8 mm, persistent sepals thick and leather-like.

- Mountain areas; ca. 1200 m. Guangdong, S Guandong, Hainan.


网脉假卫矛 wang mai jia wei mao

Small shrubs, 1–2 m tall. Petiole 3–6 mm; leaf blade thickly papery, rectangular-elliptic, narrowly elliptic, or narrowly ovate-elliptic, 5–10 × 2–4 cm, base cuneate or broadly cuneate, margin slightly revolute, apex acute or acuminate; secondary veins 5–7 pairs, slender, oblique, straight, apically slightly ascending, obviously prominent abaxially. Cymes glomerate, axillary or terminal; peduncle short, thick, ca. 2 mm; pedicels very short to absent. Flowers 5-merous; sepals approximately semi-elliptic; petals rectangular, ca. 2.5 mm. Disk annular. Stamens short; filament slightly conical. Ovary approximately ovate; style stout; stigma obtuse. Capsule elliptic, ca. 2 cm.

- Guangdong, Hainan.


斜脉假卫矛 xie mai jia wei mao

Microtropis cathayensis Merrill & F. L. Freeman. Small trees or shrubs, to 5 m tall. Petiole 5–15 mm; leaf blade lanceolate or oblong-elliptic to elliptic, 5–19 × 2–2.5 cm, leathery, base widely cuneate, somewhat decurrent, margin slightly revolute, apex acuminate or slightly caudate; midvein thick, secondary veins 7–11 pairs, veinslets straight, slender and prominent on both surfaces, veins anastomosing adjacent to margin. Cymes glomerate, axillary, on branch axis, rarely terminal, 3–7-flowered, rarely more than 7-flowered; peduncle 2–5(–8) mm. Flowers subsessile or sessile, 5-merous; sepals widely rounded, semi-elliptic; petals rectangular-elliptic or slightly ovate-elliptic, ca. 3 × 2 mm. Disk slightly fleshy, annular, lobes somewhat absent, slightly prominent. Filament very short, up to ca. 1 mm, rectangular-ovate. Ovary triangular-conical; stigma shallowly 2–4-lobed. Capsule broadly elliptic, 12–14 × 7–8.5 mm. Fl. throughout year.

- Secondary forests near stream sides, scattered forests, valleys; 700–2100 m. Guangdong, N Guangxi, Guizhou, Hunan, E Yunnan.


异色假卫矛 yi se jia wei mao

Cassine discolor Wallich in Roxburgh, Fl. Ind. 2: 378. 1824; Microtropis sessiliflora Merrill & F. L. Freeman.

Evergreen small trees or shrubs, 2.5–7 m tall. Petiole 5–10 mm; leaf blade rectangular or oblong, sometimes broadly lanceolate to narrowly ovate-elliptic, 7.5–19 × 2.5–8 cm, thickly papery or leathery, abaxially gray-brown, adaxially generally pale green when dry, base cuneate or broadly cuneate, apex caudate, tail up to 1.5 cm; midvein prominent on both surfaces, abaxially more conspicuous, secondary veins 5–8 pairs, slender, curved, prominent on both surfaces. Cymes glomerate, axillary or on branch axis, mainly 7–15-flowered; peduncle short, 2.5–6 mm, secondary peduncle 1.5–2.5 mm, third peduncle ca. 1 mm. Flowers 5-merous, subsessile; sepals slightly semi-elliptic, imbricate, margin erose, teeth dark brown; petals slightly fleshy, rectangular, 2.5–3.5 × 1.5–2.5 mm, adaxially longitudinally angulate in center. Disk annular. Filament 1.5–2.5 mm; anther rectangular. Ovary elliptic-ovate; style absent; stigma 4-lobed. Capsule broadly elliptic, 10–14 × 8–10 mm, surface with thin, longitudinal costa formed by small wartlike elevations. Fl. and fr. Sep.–Mar.

Evergreen forests; 800–1600 m. S Yunnan [Bhutan, India, Malaysia (peninsular), Myanmar, Thailand (peninsular), Vietnam].


双花假卫矛 shuang hua jia wei mao

Small shrubs, to 2 m tall; branchlets terete, generally pallid, internodes long, generally 4–8.5 cm. Petiole 3–5 mm; leaf blade ovate-oblong or rectangular-elliptic, 6–10.5 × 1.8–4.5 cm, thickly papery, dark gray when dry, base broadly cuneate, apex acuminate or narrowly acuminate; veins fine, secondary veins 8–11 pairs, oblique, straight. Inflorescences terminal, axillary or on branched axis, 2-flowered, rarely 3-flowered; peduncle very short, up to 1.5 mm. Flowers 5-merous, sessile, white or light yellow; sepals erect; petals rectangular, sometimes broad near
apex, ca. 3 mm. Stamens short; filament ca. 1 mm. Ovary ovate; stigma short, thick. Capsule broadly elliptic, 1.3–1.5 cm × ca. 9 mm. Fl. Dec to early spring, fr. winter.

- Dense forests; ca. 200 m. Guangdong.


逢春假卫矛 feng chun jia wei mao

Shrubs; branchlets slender, terete, purplish brown, internodes 3–10 cm. Petiole 5–15 mm; leaf blade rectangular-elliptic, 8–11 × 3–4 cm, thickly papery, abaxially pallid, adaxially olive, base cuneate, apex acuminate to caudate-acuminate; secondary veins 5–8 pairs, curved. Cymes glomerate, axillary, 3–7-flowered; peduncle shorter than 1 mm. Flowers 4- or 5-merous, sessile; sepals slightly fleshy, semiorbicular or nephroid, 1.5–2 mm wide; petals rectangular-elliptic or elliptic, ca. 3.5 × 1.5–1.8 mm. Disk annular. Filament ca. 1 mm; anther elliptic, ca. 0.5 mm. Ovary triangular-ovate; style very short; stigma shallowly 2-lobed. Fruit unknown. Fl. Sep.

- Evergreen forests; 800–1700 m. SE Yunnan.


木樨假卫矛 mu xi jia wei mao


Shrubs, to 6 m tall; branchlets brown or gray-brown. Petiole thick, short, 2.5–5 mm; leaf blade fleshy, broadly ovate, or ovate-lanceolate, 7–13 × 2.5–8 cm, leathery, abaxially gray-green, becoming gray-brown when dry, adaxially verrucose, becoming gray when dry, with small warts, base rounded or broadly cuneate, apex acute or narrowly acuminate; midvein obvious abaxially, yellowish white when dry, secondary veins 7–11 pairs, oblique, straight, obvious. Cymes glomerate, axillary, on branched axis or terminal, generally 5-flowered; peduncle absent, 2-bracteate, bracts triangular-elliptic, ovate, ca. 1 cm. Flowers 5-merous, sessile; sepals fleshy, nephroid or cordate, 1.5–2 mm wide, margin with small teethlike cilia; petals rectangular, ca. 2.5 mm, margin with short claws, base with linear, short claws. Disk thin, annular. Filament less than 0.5 mm; anther ovate, ca. 0.5 mm. Ovary triangular-subulate; stigma shallowly 2-lobed. Capsule elliptic, 1.5–2 cm. Seed elliptic-ovate, ca. 1.5 cm.

- Evergreen forests, valleys. Guangxi, Guizhou [Vietnam].


吴氏假卫矛 wu shi jia wei mao

Shrubs, scandent, 1–2 m tall, glabrous; branchlets terete, 0.8–1.3 cm in diam., brownish; internodes 12–15 cm; leaf scars semi-elliptic. Petiole stout, 4–6 × 2.5–3.5 mm; leaf blade obovate or rhombic, 3.4–5 × 1.6–1.8 cm, abaxially gray-green, adaxially deep green, base auriculate, margin slightly revolute, apex obtuse; midvein very prominent abaxially, less so adaxially, secondary veins 12–15 pairs, anastomosing adjacent to margin. Cymes axillary or on branched axis, glomerate; peduncle 1–2 mm; pedicels incrassate, 3–3.5 mm. Sepals ovate, persistent in fruit. Capsule 15–20, ellipsoid or ovoid, 1.8–2 cm × 8–9 mm (length includes rostrum), rostrum 2–3 mm. Fl. Nov–Jan.

- Secondary forests on limestone hills; 600–800 m. SE Yunnan [Vietnam].


隐脉假卫矛 yin mai jia wei mao

Evergreen shrubs, 1–2 m tall; branchlets purplish brown or blackish purple. Petiole thick, 8–15 mm; leaf blade slightly fleshy, narrowly rectangular, narrowly rectangular-elliptic, or broadly oblong-elliptic, 8–18 × 2.5–7 cm, leathery, with irregular and small warts when dry; midvein prominent abaxially, secondary veins 7–11 pairs, oblique, straight, not obvious. Cymes glomerate, more than 10-flowered; peduncle absent. Flowers white, 5-merous, sessile, slightly urn-shaped in flower, 4–5 mm; sepals leathery, slightly nephroid, 1.2–1.4 mm; petals rectangular, 2.5–3 mm, with short claws at base. Disk thin, annular, margin entire. Ovary ovate; style short and thick; stigma shallowly 2-lobed. Capsule elliptic or approximately elliptic-ovate, 1.5–2 cm. Seed ovate-elliptic, ca. 1.5 cm.

- Forests, valleys; 800–1500 m. Hainan.

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**10. TRIPTERYGIUM** J. D. Hooker, Gen. Pl. 1: 360, 368. 1862.

雷公藤属 lei gong teng shu

Ma Jinshuang (马金双); A. Michele Funston

Scandent shrubs or sometimes semiwoody vines, glabrous or tomentose; branchlets sometimes 4–6-angled. Leaves alternate, serrate, stipulate. Inflorescences axillary or terminal, thyrsoid. Flowers bisexual or unisexual (polygamous), 5-merous. Disk fleshy, cupuliform, 5-lobed, intrastaminal; anthers longitudinally dehiscent, introrse. Ovary 3-locular; ovules erect, 2 per locule. Samara 3-winged, chartaceous. Seed 1, trigonous.

One species: from NE Myanmar through China and Korea to Japan.

**1. Tripterygium wilfordii** J. D. Hooker, Gen. Pl. 1: 368. 1862.

雷公藤 lei gong teng

Aspidopterys hypoglauca H. Léveillé; *Tripterygium hypoglauca* (H. Léveillé) Hutchinson; *T. regelii* Sprague & Takeda.

Deciduous subshrubs, or scandent and scrambling, or...
sometimes semiwoody vines, 2–6(–10) m; branching distally, slender or scrambling, minutely pubescent when young or in open sunlight, becoming glabrous when old or in shade, slightly angled, verrucose or not. Petiole 1–2 cm; stipules linear, caducous; leaf blade usually ovate or rounded-ovate, sometimes oblong or elliptic-ovate, (4.6–)8.6–12.5(–18.4) × (3.1–)5.7–8.9(–12.3) cm, papery, herbaceous (in shade or low light) to leathery (in direct sunlight or very dry conditions), glabrous or sparsely scurfy tomentose with reddish brown hairs, abaxially ± farinose, base broadly cuneate, or rounded to cordate, margin entire or less often crenulate, apex short to long acuminate or acute, tip often blunt. Thyrses large, composed of several to dozens of thyrsellets, (4.5–)12.5–23.6(–38) × (2.3–)4.7–9.3(–15) cm; flowers 1 normal and 1 an unfertilized male. Flowers whitish, greenish, or yellow-green, small, 4–6 × 4–6 mm; calyx 5-lobed, hemispheric, ca. 1 mm; petals 5, oblong to subovate, slightly narrowed to base, 2–2.5 mm, apex rounded. Stamens 5, inserted at margin of cup-shaped and compressed disk. Disk bright green, fleshy, ca. 2 mm in diam. Ovary superior, 3-edged, combined with disk at base, incompletely 3-locular, with 3 prominent ca. 1 mm lobes, short style at apex; stigma capitate, bright purple. Samara usually green or greenish brown when mature, sometimes pink or pinkish purple, (1–)1.3–1.9(–2.3 × (0.7–)1.2–1.5(–1.9) cm. Seed compressed, 3-angled, ca. 5 × 1.3–3 mm. Fl. May–Oct, fr. Aug–Nov.

Mixed forests, forest margins, woodlands, scrub; 100–3500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, S Jilin, SE Liaoning, Sichuan, N Taiwan, Xizang, Yunnan, Zhejiang [Japan, Korea, NE Myanmar].


盾柱属 dun zhu shu

Ma Jinshuang (马金双); A. Michele Funston

Evergreen trees or shrubs, glabrous. Leaves opposite, decussate, entire, stipulate. Inflorescence axillary, cymose. Flowers bisexual, 5-merous. Disk fleshy, cupular, 5-lobed, intrastaminal; anthers longitudinally dehiscent, introrse. Ovary 2-locular or reduced to 1-locular; ovules erect, 2–8 per locale. Nut ellipsoid or obovoid, bony, with a prominent persistent lateral style. Seed 1, ovoid.

About five species: Old World tropics and subtropics; one species in China.


盾柱 dun zhu

Celastrus oppositus Wallich in Roxburgh, Fl. Ind. 2: 393. 1824.

Trees, to 15 m tall, sometimes shrubs; branchlets subterete or obscurely 4-angled. Petiole short, 2–5 mm; leaf blade ovate to obovate-oblong, rarely suborbicular, 3–8 × 1.5–5.2 cm, papery, base cuneate, margin entire, sometimes slightly recurved, apex obtuse, acute, rarely acuminate, very rarely retuse; veins 5 or 6 pairs, thin and obvious. Cymes of 1 or 2 branches, few flowered; peduncle very short, 2–3 mm; pedicel 1–2 mm. Flowers green; calyx lobes rounded or subreniform, ca. 0.5 × 0.75–1 mm; petals elliptic or broadly ovate, 1.25–1.5 × ca. 1 mm, reflexed at anthesis, obtuse or slightly acute. Disk margin slightly crenate. Stamens attached just abaxially on disk margin; filament subulate, fleshy, slightly flattened; anther slightly ovoid. Ovary adnate to disk at base; style very short; stigma capitate. Nut ellipsoid or sometimes obvovoid, 5–7 × 4–5 mm. Seed sustained by persistent floral parts. Fl. May–Dec, fr. Jul–Jan.

Lower primary and secondary light rain forests; near sea level to 700 m. Hainan [S India, Indonesia, Malaysia, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; Australia (Queensland), Pacific islands (New Caledonia)].


五层龙属 wu ceng long shu

Peng Hua (彭华); A. Michele Funston

Courondi Adanson.

Climbing or scrambling shrubs or small trees, glabrous or glabrescent; branchlets subterete, internode usually dilated or slightly flat. Leaves opposite to subopposite, rarely alternate, entire, crenate, or serrate, stipulate. Inflorescences axillary or cauliflorous, thyrsoid, cymose, or fasciculate. Flowers bisexual, 5-merous. Disk fleshy, pulvinate or cupular, entire or lobed, extrastaminal. Stamens (2 or)3; anthers longitudinally, obliquely, or transversely dehiscent, extrorse or apical. Ovary (2 or)3-locular, whole or mostly concealed in disk; ovules axile, 2–9 per locale. Berry spheroid, fleshy or subligneous. Seeds 2–12, angular, exalbuminous, surrounded by mucilaginous arils.

About 200 species: chiefly in tropical regions; ten species (eight endemic) in China.

1a. Berry usually up to 2 cm in diam.; leaf blade small, 5–11 × 2–5 cm.

2a. Leaf blade entire; axillary or terminal cymes, many flowered, peduncle 4–7 mm; berry ca. 1.6 cm in diam. .......................... 9. S. confertiflora

2b. Leaf blade sinuate; axillary fascicles, 3–6-flowered, peduncle absent; berry ca. 1 cm in diam. .......................... 10. S. chinensis
1b. Berry 2–5 cm in diam.; leaf blade large, (8–)10–25 × 4–10 cm.

3a. Flowers many, fasciculate, peduncle ca. 1 cm.

4a. Leaf blade oblong or oblong-elliptic, abaxially not glaucous ..................................................... 1. *Salacia polysperma*

4b. Leaf blade ovate to narrowly ovate, abaxially glaucous .............................................................. 2. *Salacia glaucifolia*

3b. Flowers many or few, fasciculate, peduncle absent.

5a. Leaf blade margin entire.

6a. Leaf blade lanceolate .................................................................................................................. 3. *Salacia cochinichensis*

6b. Leaf blade obovate-elliptic or oblong-elliptic.

7a. Leaf blade obovate-elliptic, 15–20 × 7–11 cm; flowers 3 or 4, axillary or extra-axillary; sepal margin ciliolate ................................................................. 4. *Salacia obovatilimba*

7b. Leaf blade oblong-elliptic, 12–17 × 5–7.5 cm; flowers many, axillary; sepal margin membranous ................................................................. 5. *Salacia hainanensis*

5b. Leaf blade margin subentire to denticate or serrulate.

8a. Branches slender, smooth, glabrous, sparsely lenticellate; leaf blade papery ........................................... 8. *Salacia aurantiaca*

8b. Branches robust, densely lenticellate; leaf blade leathery or subleathery.

9a. Leaf blade narrowly or broadly oblong-elliptic, 13–23 × 6–8 cm; flowers many, pedicel 8–9 mm;

9b. Leaf blade oblong-lanceolate, 10–15 × 3.5–5 cm; flowers 3 or 4, pedicel ca. 1 mm; berry

commonly 2–2.5 cm in diam. ........................................................................................................ 7. *Salacia sessiliflora*


多籽五层龙  duo zi wu ceng long

*Salacia polysperma* subsp. *verrucosorugosa* H. W. Li.

Climbing shrubs, ca. 5 m tall; branches slender, brown-red when young, brown-gray at maturity, densely lenticellate, lenticels tumorlike, minute. Leaves alternate; petiole thick, up to 1 cm; leaf blade oblong or oblong-elliptic, (8–)10–25 × (2.5–)3–7 cm, thinly leathery, base subrounded to broadly cuneate, margin sinuate, weakly serrulate, apex shortly acuminate; midvein abaxially prominent, adaxially concave, lateral veins 9–11 pairs, obliquely ascendant, reticulate near margin, reticulate veins abaxially convex. Fascicles axillary, many flowered; peduncle up to 1 cm; petiole 5–7 mm. Flowers light green; sepals deltoid-ovate, up to 1.5 mm, margin erose, apex obtuse; petals suborbicular, recurved. Disk cupular, subpentagonaceous, ca. 0.5 mm. Stamens 3; filaments very short, inserted at margin of disk; anthers forked, dehisce horizontally. Ovary mostly concealed in disk; style terete. Berry up to 5 cm in diam., exocarp ligneous when dry, minutely verruciform or smooth, usually 12-seeded. Fl. Aug–Sep, fr. Oct–Nov.

- Montane sparsely wooded valleys; 500–1800 m. Guangxi, S Yunnan.


粉叶五层龙  fen ye wu ceng long

Climbing shrubs, ca. 5 m tall; branchlets terete, slightly compressed when young, brown-gray, sparsely lenticellate. Petiole ca. 1 cm, thick, rugose, canaliculate; leaf blade ovate to oblong, 10–15 × 5–7 cm, abaxially glaucous, light brown-gray, adaxially yellow-green when dry, shiny, margin entire; lateral veins 8–10 pairs, abaxially prominent. Cymes axillary; peduncle ca. 1 cm; pedicel slender, 2–5 mm. Flowers green; sepals elliptic, 1–1.5 × ca. 1 mm, margin lacerate; petals broadly elliptic, 1.5–2 × 1–1.5 mm, verrucose, margin membranous, apex mucronate. Disk cupular. Stamens 3; filaments flat; anthers forked. Ovary concealed in disk; ovules 2 per locule; style short. Fruit not seen. Fl. unknown.

- Humid forest valleys; ca. 400 m. S E Yunnan (Pingbian).


柳叶五层龙  liu ye wu ceng long

Shrubs, to 2 m tall; branchlets subtetragonous, compressed, becoming terete, brown-gray, minutely lenticellate. Petiole 4–5 mm, canaliculate; leaf blade oblong-lanceolate, 9–11 × (2–)3–4 cm, papery or thinly leathery, adaxially chestnut brown to light black, not shiny, base narrowly cuneate, margin entire; lateral veins (6 or)7 or 8 pairs, reticulate veins conspicuous. Fascicles axillary, many flowered; pedicel 6–10 mm, base with multicolumn small scales. Flowers light green; sepals broadly deltoid, margin membranous, apex rounded; petals up to 3 mm, obovate, fleshy, margin membranous. Stamens 3; filaments flat, tonguelike, inserted at margin of disk, reflexed; anther sacs forked. Ovary 3-locular, concealed in disk; ovules 2 per locule. Berry globose, up to 2 cm in diam., exocarp fleshy when fresh, 1–3-seeded. Seeds angular. Fl. Feb–Apr, fr. May–Jul.

Sparse woods along roadsides; ca. 500 m. S Yunnan (Xishuangbanna) [Cambodia, Vietnam].


河口五层龙  he kou wu ceng long

Shrubs, ca. 2 m tall; branchlets brown-gray, glabrous, densely verrucose lenticellate. Petiole robust, up to 1 cm, grooved; leaf blade obovate-elliptic, 15–20 × 7–11 cm, leathery, adaxially shiny, base broadly cuneate, margin entire, apex mucronate, mucro 5–10 mm; midvein abaxially prominent, adaxially slightly concave, lateral veins 7–9 pairs, reticulate veins horizontally spreading, abaxially prominent, adaxially inconspicuous. Fascicles axillary or extra-axillary, 3- or 4-flowered; pedicel tenuous, 6–8 mm, glabrous, base with multicolumn deltoid scales. Sepals broadly deltoid, ca. 2 mm, margin ciliolate,
apex subacute; petals ovate, ca. 4 mm, margin membranous, apex subrounded. Disk cupular, ca. 2 mm tall, pentagonal. Stamens 3; filaments flat, inserted at margin of disk; anthers forked, oblong. Ovary 3-locular, concealed in disk; ovules 2 per locale; style very short, subulate. Fruit not seen.

- Forest shade; below 100–200 m. S and SE Yunnan (Hekou, Maguan, Mengla).


海南五层龙 hai nan wu ceng long

Climbing shrubs; branchlets gray-brown; annual branches densely verrucose lenticellate. Petiole strong and robust, 1.5–2 cm; leaf blade oblong-elliptic, 12–17 × 5–7.5 cm, leathery, abaxially light yellow, inconspicuously papillate, adaxially light black, shiny, base rounded to cuneate, margin entire, apex shortly and broadly mucronate or inconspicuously acuminate; lateral veins 7 or 8 pairs, broadly spreading, ascending. Fascicles axillary, several flowered; pedicel 1–1.5 cm, base with multi-column small scales. Flowers yellow-green; sepals broadly elliptic, ca. 1 × 1.5 mm, margin membranous; petals horizontally spreading, elliptic, ca. 4.3 × 2.6 mm, apex rounded. Disk fleshy, cupular, ca. 2 mm tall, pentagonous. Stamens 3; filaments flat, inserted at margin of disk. Ovary concealed in disk; ovules 2 per locule; style very short. Fruit globose, ca. 4 cm in diam., exocarp thinly leathery when dry, 3- or 4-seeded. Fl. Jun, fr. Oct.

- Mountainous soils; below 100–300 m. Hainan (Baoting).


阔叶五层龙 kuo ye wu ceng long

Climbing or erect shrubs, to 4 m tall; branchlets green-yellow, glabrous. Petiole strong and robust, 1–1.5 cm, canalicate; leaf blade narrowly or broadly elliptic, 13–23 × (4–)6–8 cm, thickly papery, abaxially light yellow when dry, inconspicuously papillate, adaxially green-yellow, shiny, base broadly cuneate to rounded, margin weakly crimped, subentire or reniform, rarely serrulate, apex shortly acuminate to subacute; lateral veins 9–10 pairs, abaxially prominent, adaxially plane, reticulate veins conspicuous. Fascicles axillary or extra-axillary, several flowered; pedicel 8–9 mm, tenuous, base squamate; squamellae serrate, imbricate. Flowers green-white or light yellow; sepals broadly ovate, ca. 1.4 mm, apex subacute to obtuse, margin ciliate; petals subrounded, ca. 2.2 mm, broadly spreading. Disk cupular, brown when dry, subulate, base subulate; style very short. Fruit globose, yellow when ripe, ca. 2–3 mm in diam., glabrous, 4-seeded. Seeds ca. 2 × 1.2 cm, angular. Fr. Nov.

- Sparse forests; 100–200 m. S and SE Yunnan (Hekou, Jinhong, Mengla).


密花五层龙 mi hua wu ceng long

Climbing shrubs; branches slender, flat when young, becoming cylindrical, brown, glabrous, sparsely lenticellate. Petiole ca. 5 mm, grooved; leaf blade long elliptic, 9–14 × 4–6 cm, papery, shiny, base obtuse, margin sparsely denticulate to serrate, apex acuminate; midvein prominent on both surfaces, lateral veins tenuissimus, reticulate veins horizontally spreading, conspicuous abaxially. Flowers not seen. Berry orange, 2–3 cm in diam., exocarp thinly leathery when dry, glabrous, 4-seeded. Seeds ca. 2 × 1.2 cm, angular. Fr. Nov.

- Forests; low to middle elevations. Hainan (Baoting, Sanya).

10. Salacia chinensis Linnaeus, Mant. Pl. 2: 293. 1771.

五层龙 wu ceng long

Salacia prinoides (Willdenow) Candolle; Tontelea prionoides Willdenow.

Climbing shrubs, to 4 m tall; branchlets angular. Petiole 8–10 mm; leaf blade elliptic, narrowly ovate-rotund or obovate-elliptic, (3–)5–11 × (1.5–)2–5 cm, leathery, abaxially brown-green when dry, adaxially shiny olive-green, base cuneate, mar-
Woody lianas, puberulent or glabrescent, lenticellate, internodes slightly enlarged. Leaves opposite or subopposite, entire or crenulate. Inflorescences axillary or terminal, cymose. Flowers bisexual, 5-merous. Disk fleshy, cupular, sometimes arranged in rings, extrastaminal. Stamens 3; filaments tonguelike; anthers transversely dehiscent, extrorse. Ovary weakly triangular, partially or wholly concealed in disk, 3-locular; ovules 4–8 per locule. Fruits 1–3-fascicled capsules; capsule transversely flattened, leathery, loculicidally dehiscent. Seeds 4–8, with membranous basal wings, exalbuminous.

About 20 species: tropical Africa and Asia; five species (all endemic) in China.


$L. concinna$

Woody lianas, puberulent or glabrescent, lenticellate, internodes slightly enlarged. Leaves opposite or subopposite, entire or crenulate. Inflorescences axillary or terminal, cymose. Flowers bisexual, 5-merous. Disk fleshy, cupular, sometimes arranged in rings, extrastaminal. Stamens 3; filaments tonguelike; anthers transversely dehiscent, extrorse. Ovary weakly triangular, partially or wholly concealed in disk, 3-locular; ovules 4–8 per locule. Fruits 1–3-fascicled capsules; capsule transversely flattened, leathery, loculicidally dehiscent. Seeds 4–8, with membranous basal wings, exalbuminous.

About 20 species: tropical Africa and Asia; five species (all endemic) in China.

1. Leave blade elliptic, 3–7 × 1.5–3.5 cm.
2. Leaf blade narrowly elliptic, adaxially shiny, margin sparsely denticulate; peduncle 15–18 mm
3. Leaf blade elliptic, adaxially not shiny, margin sinuate, carvaltigious; peduncle less than 10 mm
4. Leaf blade lanceolate, ovate, or oblong-elliptic, 5–12(–21) × 2.5–6(–7.5) cm.
5. Leaf blade ovate or oblong-elliptic, apex not caudate.

4a. Peduncle 1.5–3 cm; petals 4–5 × 1.7–2.5 mm; fruit elliptic
4b. Peduncle 1–1.2 cm; petals 5–8 × 2.5–4 mm; fruit ovate-oblong


$L. concinna$

Woody lianas, puberulent or glabrescent, lenticellate, internodes slightly enlarged. Leaves opposite or subopposite, entire or crenulate. Inflorescences axillary or terminal, cymose. Flowers bisexual, 5-merous. Disk fleshy, cupular, sometimes arranged in rings, extrastaminal. Stamens 3; filaments tonguelike; anthers transversely dehiscent, extrorse. Ovary weakly triangular, partially or wholly concealed in disk, 3-locular; ovules 4–8 per locule. Fruits 1–3-fascicled capsules; capsule transversely flattened, leathery, loculicidally dehiscent. Seeds 4–8, with membranous basal wings, exalbuminous.

About 20 species: tropical Africa and Asia; five species (all endemic) in China.

1. Leave blade elliptic, 3–7 × 1.5–3.5 cm.
2. Leaf blade narrowly elliptic, adaxially shiny, margin sparsely denticulate; peduncle 15–18 mm
3. Leaf blade elliptic, adaxially not shiny, margin sinuate, cartilaginous; peduncle less than 10 mm
4. Leaf blade lanceolate, ovate, or oblong-elliptic, 5–12(–21) × 2.5–6(–7.5) cm.
5. Leaf blade ovate or oblong-elliptic, apex not caudate.

4a. Peduncle 1.5–3 cm; petals 4–5 × 1.7–2.5 mm; fruit elliptic
4b. Peduncle 1–1.2 cm; petals 5–8 × 2.5–4 mm; fruit ovate-oblong


$L. concinna$

Woody lianas, puberulent or glabrescent, lenticellate, internodes slightly enlarged. Leaves opposite or subopposite, entire or crenulate. Inflorescences axillary or terminal, cymose. Flowers bisexual, 5-merous. Disk fleshy, cupular, sometimes arranged in rings, extrastaminal. Stamens 3; filaments tonguelike; anthers transversely dehiscent, extrorse. Ovary weakly triangular, partially or wholly concealed in disk, 3-locular; ovules 4–8 per locule. Fruits 1–3-fascicled capsules; capsule transversely flattened, leathery, loculicidally dehiscent. Seeds 4–8, with membranous basal wings, exalbuminous.

About 20 species: tropical Africa and Asia; five species (all endemic) in China.

1. Leave blade elliptic, 3–7 × 1.5–3.5 cm.
2. Leaf blade narrowly elliptic, adaxially shiny, margin sparsely denticulate; peduncle 15–18 mm
3. Leaf blade elliptic, adaxially not shiny, margin sinuate, carvaltigious; peduncle less than 10 mm
4. Leaf blade lanceolate, ovate, or oblong-elliptic, 5–12(–21) × 2.5–6(–7.5) cm.
5. Leaf blade ovate or oblong-elliptic, apex not caudate.

4a. Peduncle 1.5–3 cm; petals 4–5 × 1.7–2.5 mm; fruit elliptic
4b. Peduncle 1–1.2 cm; petals 5–8 × 2.5–4 mm; fruit ovate-oblong


$L. concinna$

Woody lianas, puberulent or glabrescent, lenticellate, internodes slightly enlarged. Leaves opposite or subopposite, entire or crenulate. Inflorescences axillary or terminal, cymose. Flowers bisexual, 5-merous. Disk fleshy, cupular, sometimes arranged in rings, extrastaminal. Stamens 3; filaments tonguelike; anthers transversely dehiscent, extrorse. Ovary weakly triangular, partially or wholly concealed in disk, 3-locular; ovules 4–8 per locule. Fruits 1–3-fascicled capsules; capsule transversely flattened, leathery, loculicidally dehiscent. Seeds 4–8, with membranous basal wings, exalbuminous.

About 20 species: tropical Africa and Asia; five species (all endemic) in China.
petals lanceolate, 6–7 mm, margin ciliolate, apex acute. Disk fleshy, base subpentagonous, ca. 3.5 mm in diam. Filaments ca. 1.5 mm; anthers nearly globose. Ovary triangular, concealed in disk; style ca. 1 mm, apex truncate. Fruits 3-fascicled capsules, base attenuate to a dilated peduncle; capsule ovate-oblong, 5–6.5 × 2.5–4 cm, apex rounded, 4- or 5-seeded. Seeds ca. 2.8 × 2 cm, base broadly winged. Fl. May–Jun, fr. Aug–Oct.

- Sparse forest valleys; 600–1100 m. W Guangxi, S Yunnan.

This name was originally published by S. Y. Bao (in W. P. Fang, FRPS 46: 290. 1981) but not validly so because two gatherings were indicated as types (Vienna Code, Art. 37.2).


翅子藤 yun nan chi zi teng

Lianas; branchlets brown-gray, slightly tetragonal, glabrous, sometimes densely scabrous lenticellate. Petiole 5–8 mm, robust; leaf blade oblong-elliptic, 5–10 (–18) × 3–6 cm, leathery, base obtuse or narrowly rounded, margin sparsely denticulate to crenulate-serrate, apex abruptly cuspitate, cusp 5–10 mm; lateral veins 4–6 pairs, reticulate veins conspicuous. Cymes axillary or terminal, 2.5–6 cm; branchlet and peduncle slender, densely farinose, puberulent; petals oblong-lanceolate, 4–5 × 1.7–2.5 mm, abaxially farinose, puberulent; pedicel slender, 3–8 mm. Flowers light green; sepals deltoid, margin ciliolate; peduncle short, 1–1.2 cm; pedicel 8–10 mm. Flowers light yellow; sepals deltoid-ovate, up to 2 mm, densely farinose, pubescent; petals ovate-oblong, ca. 5 mm, margin ciliolate, apex truncate. Disk fleshy, ca. 1.5 mm tall, base subpentagonous, ca. 3 mm in diam. Filaments flat, 2–2.5 mm; anther nearly globose. Ovary nearly triangular, mostly concealed in disk, 3-loculed; style conical, 1.2–1.6 mm, apex truncate. Fruits 1–3-fascicled capsules, peduncle not dilated; capsule ovate-oblong, 7–8 × 3–4 cm, base attenuate, 4-seeded. Seeds winged, ca. 2 × 1.2 cm. Fl. Mar–Jul, fr. Oct–Nov.

- Sparse limestone forests; 700–1200 m. W Guangxi, S and SE Yunnan.


云南翅子藤 yun nan chi zi teng


Lianas; branchlets brown, nearly quadrate, glabrous, scabrous lenticellate. Petiole up to 1 cm, grooved; leaf blade ovate or ovate-oblong, 5–10 × 3.5–6 cm, papery, base rounded or broadly cuneate, margin entire or weakly denticulate, apex acuminate or acute; lateral veins 7–9 pairs, reticulate veins conspicuous. Cymes axillary or terminal, ca. 3 cm; bracts and bractlets deltoid, margin ciliolate; peduncle short, 1–1.2 cm; pedicel 8–10 mm. Flowers light yellow; sepals deltoid-ovate, up to 2 mm, densely farinose, pubescent; petals ovate-oblong, ca. 5 mm, margin ciliolate, apex subacute. Disk fleshy, base subpentagonous, ca. 3 mm in diam. Filaments flat, 2–2.5 mm; anther nearly globose. Ovary nearly triangular, mostly concealed in disk, 3-loculed; style conical, 1.2–1.6 mm, apex truncate. Fruits 1–3-fascicled capsules, peduncle not dilated; capsule ovate-oblong, 7–8 × 3–4 cm, base attenuate, 4-seeded. Seeds winged, ca. 2 × 1.2 cm. Fl. Mar–Jul, fr. Oct–Nov.


扁蒴藤属 bian shuo teng shu

Peng Hua (彭华); A. Michele Funston

Woody lianas, glabrous or puberulent; branches terete to quadrate, internodes slightly dilate, lenticellate. Leaves opposite or subopposite, entire or serrate. Inflorescences axillary, rarely terminal, cymose, rarely thyrsoid. Flowers bisexual, 5-merous, light yellow. Disk fleshy, inconspicuous, annular or cupular, extrastaminal. Stamens 3; anthers transversely dehiscent, extrorse. Ovary compressed, triangular, 3-locular; ovules axile, 2–6 per locule, binate or imbricate from apex to base per locule. Fruits commonly 3-fascicled capsules or degenerating into only 1 capsule; capsule transversely flattened, thinly leathery, grooved, loculicidally dehiscent. Seeds 2–6, with membranous basal wing, conspicuously 1-grooved at middle, exalbuminous.

About 30 species; mainly in Central and South America and tropical Asia; four species (one endemic) in China.

1a. Petals 2–3 mm; capsule 6-seeded; leaf blade leathery ................................................................. 4. **P. cambodiana**

1b. Petals ca. 1.5 mm; capsule 1-seeded; leaf blade papery.

2a. Leaf blade usually 8–15 × 5–7 cm; ripe capsule 6.5–8.5 (–12) × 2.5–3 (–3.8) cm ........................................ 3. **P. arborea**

2b. Leaf blade usually 3.5–8 (–10) × 2–4 (–5) cm; ripe capsule 2.5–4 (–4.5) × 1–1.5 cm.

3a. Young branches and inflorescence branches glabrous, usually subterete ............................................. 1. **P. indica**

3b. Young branches and inflorescence branches densely glandular, setulose, sharply quadrangular ............... 2. **P. setulosa**


扁蒴藤 bian shuo teng

sepals ovate-deltoid, ca. 1 mm, membranous, margin irregularly denticulate; petals oblong-deltoid, ca. 1.5 mm. Stamens longer than style; anthers slightly square. Ovary with 4 ovules per locule; style subtriangular. Fruits 1–3-fascicled capsules; capsule narrowly oblong-elliptic, 3–4 × 1–1.5 cm, apex emarginate. Seeds 2, ca. 2.5 cm, wing apex emarginate. Fl. May–Jul, fr. Sep–Oct.

Rare, shrubs of low-lying areas; below 100–1600 m. Guangdong (Xuwen), Hainan [India, Indonesia, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam].


毛扁蒴藤 mao bian shuo teng

Lianas; young branchlets slightly quadrangular, copiously setulose, annually glabrescent; old branches terete, cinerea. Petiole slender, 3–5 mm, slightly grooved on 2 sides; leaf blade elliptic, 4–7 × 2–4 cm, papery, yellow-green when dry, base obtuse or subacute to decurrent, margin sparsely denticulate to crenulate-serrate, apex obtuse or shortly cuspidate; lateral veins 4 or 5 pairs, reticulate veins conspicuous. Cymes solitary or binate, axillary, 1.5–3 cm; inflorescence branches copiously setulose; bracts papery, deltoid-oblong, 0.5–0.8 mm, glabrous; pedicel slender, shorter than 1 mm, obscurely setulose. Flowers yellow-white; sepals membranous, deltoid-oblong, ca. 0.5 mm, margin eroseolate; petals papyraceous, elliptic-oblong, ca. 1 mm, entire, glabrous. Disk inconspicuous. Filaments ligulate; anthers nearly globose. Ovary with 2 ovules per locule; style ca. 1 mm, apex truncate. Fruits 1–3-fascicled capsules; capsule narrowly elliptic, 6.5–8.5(–12) × 2.5–3(–3.8) cm, base cuneate, apex subacute, 2-seeded. Seed wing ca. 6 cm, apex emarginate. Fl. Jun, fr. Oct.

Shrubs of mountainous slopes and valleys; 600–1100 m. SW Guangxi, S Yunnan [Bhutan, India, Myanmar].


二籽扁蒴藤 er zi bian shuo teng

Hippocratea arborea Roxburgh, Pl. Coromandel 3: 3. 1811.

Lianas; branchlets brown-yellow, brown when old, glabrous, oblong lenticellate. Petiole 1–1.5 cm, grooved; leaf blade broadly ovate or ovate-oblong, 8–15 × 5–17 cm, papery, base rounded or broadly cuneate, margin sparsely dentate, apex acuminate; lateral veins 6 or 7 pairs, reticulate veins horizontally spreading. Cymes solitary, axillary or terminal, usually 5–6 cm, glabrous. Flowers light yellow; sepals oblong, less than 1 mm, apex rounded, entire. Stamens longer than style; filaments flattened; anthers nearly square. Ovary with 2 ovules per locule; style ca. 1 mm, apex truncate. Fruits 1–3-fascicled capsules; capsule narrowly elliptic, 6.5–8.5(–12) × 2.5–3(–3.8) cm, base cuneate, apex subacute, 6-seeded. Seeds flattened, black when dry. Fl. May–Jun, fr. Jun–Feb.

Sparse forests of mountainous slopes; 200–1500 m. S and SW Guangxi, S and SW Yunnan [Cambodia, Myanmar, Thailand, Vietnam].