

1. EUONYMUS Linnaeus, Sp. Pl. 1: 197. 1753 [“*Evonymus*”], nom. cons.

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, cymose. 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, introrse. 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 omeiensis W. P. Fang (J. Sichuan Univ., Nat. Sci. Ed. 1: 38. 1955) was described from Sichuan (Emei Shan, Shishungou, ca. 1300 m). This putative species was misdiagnosed; it is a synonym of *Reevesia 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 filamentous or subsessile, 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 tuberculate 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*

1. Euonymus subg. **Kalonymus** R. Beck, Fl. Nied.-Oesterr. 2: 588. 1892.

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.

1. Euonymus sect. **Uniloculares** Rouy & Foucaud, Fl. France 4: 159. 1897.

翅果卫矛组 chi guo wei mao zu

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. ficoides*
 - 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. fimbriatus*
 - 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*

1. *Euonymus clivicola* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 31. 1917.

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.

2. *Euonymus cornutus* Hemsley, Bull. Misc. Inform. Kew 1893: 209. 1893.

角翅卫矛 *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.

3. *Euonymus ficoides* C. Y. Cheng ex J. S. Ma, Harvard Pap. Bot. 10: 94. 1997.

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 semirovate, 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. 1.5 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.

遂叶卫矛 *sui ye 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 semirotund, 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*

Euonymus amygdalifolius Franchet; *E. assamicus* Blake-lock; *E. austrotibetanus* Y. R. Li; *E. burmanicus* Merrill; *E. crinitus* Pampanini; *E. dasydictyon* Loesener & Rehder; *E. frigidus* f. *elongatus* (Cowan & A. H. Cowan) H. Hara; *E. frigidus* var. *elongatus* Cowan & A. H. Cowan; *E. frigidus* var. *wardii* (W. W. Smith) Blakelock; *E. porphyreus* Loesener; *E. porphyreus* var. *angustifolius* L. C. Wang & X. G. Sun; *E. porphyreus* var. *ellipticus* Blakelock; *E. pygmaeus* W. W. Smith; *E. roseoperulatus* Loesener; *E. taliensis* Loesener; *E. wardii* W. W. Smith.

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 obtuse 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. Tsiang 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.

6. *Euonymus giraldii* Loesener, Bot. Jahrb. Syst. 29: 442. 1900.

纤齿卫矛 *xian chi wei mao*

Euonymus giraldii var. *angustialatus* Loesener; *E. giraldii* 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, Shanxi, 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.

7. *Euonymus kweichowensis* Chen H. Wang, Chin. J. Bot. 1: 51. 1936.

贵州卫矛 *gui zhou 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.

8. *Euonymus macropterus* Ruprecht, Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 15: 359. 1857.

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. May–Jul, fr. Aug–Oct.

Mixed forests, scrub; 300–2100 m. [Hebei, Heilongjiang, Jilin, Liaoning [Japan, Korea, Russia (Far East)].

The distribution report from Hebei has not been confirmed.

9. *Euonymus oxyphyllus* Miquel, Ann. Mus. Bot. Lugduno-Batavi 2: 86. 1865.

垂丝卫矛 *chui si 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, Hubei, 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. *Illicifolii* 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*.

10. *Euonymus rehderianus* Loesener in Sargent, Pl. Wilson. 1: 488. 1913.

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; 400–1600 m. Guangxi, Guizhou, Sichuan, Yunnan.

11. *Euonymus sachalinensis* (F. Schmidt) Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 27: 446. 1881.

东北卫矛 *dong bei wei mao*

Euonymus latifolius (Linnaeus) Miller var. *sachalinensis* F. Schmidt, Reis. Amur-Land., Bot. 121. 1868; *E. maximowiczianus* (Prokhanov) Voroschilov; *Kalonymus maximowiczianus* Prokhanov; *K. sachalinensis* (F. Schmidt) Prokhanov.

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 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. giraldii*.

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 oxyphyllus* 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.

12. *Euonymus sanguineus* Loesener, Bot. Jahrb. Syst. 29: 441. 1900.

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.

• Mixed forests, scrub; 1800–3700 m. Gansu, ?Guizhou, Henan, Hubei, Hunan, Ningxia, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang, Yunnan.

The distribution report from Guizhou has not been confirmed.

13. *Euonymus schensianus* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 27: 444. 1881.

陕西卫矛 shan xi wei mao

Euonymus haoi Loesener ex Chen H. Wang.

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.

2. *Euonymus* subg. *Euonymus*

卫矛亚属 wei 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.

2. *Euonymus* sect. *Echinococcus* Nakai, J. Jap. Bot. 17: 617. 1941.

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-

• Foothills. Gansu, ?Guizhou, Henan, Hubei, Ningxia, Shaanxi, Sichuan.

The distribution report from Guizhou has not been confirmed.

14. *Euonymus subcordatus* J. S. Ma, Harvard Pap. Bot. 10: 95. 1997.

近心叶卫矛 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.

15. *Euonymus szechuanensis* Chen H. Wang, Contr. Bot. Surv. Northw. China 1: 49. 1939.

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, caudate, 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.

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. chui*
 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*

16. *Euonymus acanthocarpus* Franchet, Pl. Delavay. 2: 129. 1889.

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* Chen H. Wang; *E. longipes* Lace; *E. tengyuehensis* 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].

17. *Euonymus actinocarpus* Loesener, Bot. Jahrb. Syst. 30: 459. 1902.

星刺卫矛 *xing ci wei mao*

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, ca. 5 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.

18. *Euonymus aculeatus* Hemsley, Bull. Misc. Inform. Kew 1893: 209. 1893.

小千金 xiao qian jin

Echinocarpus hederirhizus H. Léveillé; *Euonymus xanthocarpus* C. Y. Cheng & Z. M. Gu.

Evergreen shrubs, scandent, 2–3 m tall; branches and twigs sturdy, striate, 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, 2 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. Ovary densely long prickly; stigma absent. Capsule red when fresh, yellow-brown when dry, nearly globose, 1–1.5 cm in diam., 4-lobed, densely prickly, prickles ca. 6 mm. Aril bright red. Fl. Apr–May, fr. Jul–Sep.

• Forests, scrub; 300–1500 m. ?Guangdong, Guangxi, Guizhou, ?Henan, Hubei, Hunan, Sichuan, Yunnan.

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

19. *Euonymus aculeolus* C. Y. Cheng ex J. S. Ma, Harvard Pap. Bot. 10: 94. 1997.

微刺卫矛 wei ci wei mao

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. Nov.

• Mountain slopes. Yunnan.

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

20. *Euonymus balansae* Sprague, Bull. Misc. Inform. Kew 1908: 180. 1908.

刺猬卫矛 ci wei wei mao

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–Nov.

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

21. *Euonymus acanthoxanthus* Pitard in Lecomte, Fl. Indo-Chine 1: 870. 1912.

三脉卫矛 san mai wei mao

Echinocarpus cavaleriei H. Léveillé; *E. esquirolii* H. Léveillé; *Euonymus blinii* H. Léveillé; *E. subtrinervis* Rehder.

Evergreen shrubs, scandent; branches and twigs slender, striate, 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, 1 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].

22. *Euonymus chenmoui* W. C. Cheng, Contr. Biol. Lab. Sci. Soc. China, Bot. Ser. 10: 75. 1935.

陈谋卫矛 chen mou wei mao

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.

23. *Euonymus chui* Handel-Mazzetti, Oesterr. Bot. Z. 90: 121. 1941 [“*chuii*”].

隐刺卫矛 yin ci wei mao

Deciduous shrubs, scandent, 2–3 m tall; branches and twigs striate, angulate, brown or gray-brown when dry, sometimes black. Petiole less than ca. 1 cm; leaf blade thinly leathery or thickly papery, ovate, obovate, elliptic, or ovate-oblong, 5–12 × 3–4.5 cm, base cuneate or attenuate, 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.

24. *Euonymus echinatus* Wallich in Roxburgh, Fl. Ind. 2: 410. 1824.

棘刺卫矛 *ji ci wei mao*

Euonymus arboricola 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, striate, 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, semirovate; 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.

25. *Euonymus lushanensis* F. H. Chen & M. C. Wang, Acta Phytotax. Sin. 3: 239. 1954.

庐山卫矛 *lu shan wei mao*

Euonymus acanthocarpus Franchet var. *lushanensis* (F. H. Chen & M. C. Wang) C. Y. Cheng; *E. furfuraceus* Q. H. Chen.

Deciduous shrubs, scandent, 2–3 m tall; branches and twigs striate, 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 attenuate, 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.

26. *Euonymus potingensis* Chun & F. C. How ex J. S. Ma,

Harvard Pap. Bot. 10: 94. 1997.

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 thickly 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.

27. *Euonymus spraguei* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 59. 1911.

疏刺卫矛 *shu ci wei mao*

Euonymus kuraruensis Hayata.

Deciduous shrubs, scandent, 4–5 m tall; branches and twigs striate, 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 crenulate, 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, semirovate; 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.

28. *Euonymus verrucocarpus* C. Y. Cheng ex J. S. Ma, Harvard Pap. Bot. 3: 231. 1998.

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. Petiole 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 or oblong-round, ca. 4 × 3 mm, black when dry, partially covered by aril. Fl. unknown, fr. Nov.

• Scrub; ca. 2400 m. Yunnan.

29. *Euonymus wilsonii* Sprague, Bull. Misc. Inform. Kew 1908: 180. 1908.

长刺卫矛 *chang ci wei mao*

Evergreen shrubs, scandent, 3–4 m tall; branches and twigs sturdy, striate, green or brown when dry. Petiole 1–1.4 cm; leaf blade thinly leathery or papery, elliptic, ovate-elliptic, or long elliptic, 10–15 × 2.5–4.5 cm, base cuneate or attenuate, margin crenulate on distal 2/3, nearly entire on proximal 1/3, apex acute, acuminate, or caudate; lateral veins 6–8 pairs, impressed adaxially, prominent abaxially, netting before reaching margin. Peduncle 4–6 cm, 2 or 3 × dichotomously branched with many flowers; pedicel glabrous, 5–7 mm.

Flowers 4-merous, small, 6–7 mm in diam.; sepals suborbicular; petals green, ovate, base attenuate. Ovary densely long prickly; stigma absent. Capsule red when fresh, yellow-brown or gray when dry, nearly globose, 1.5–2 cm in diam., 4-lobed, densely prickly, prickles 6–7 mm. Aril bright red. Fl. Apr–May, fr. Jul–Sep.

• Forests, scrub; 1000–2600 m. Guangxi, Guizhou, Hubei, Shaanxi, Sichuan, Yunnan.

3. *Euonymus* sect. *Melanocarya* (Turczaninow) Nakai, J. Jap. Bot. 17: 618. 1941.

深裂卫矛组 *shen lie wei mao zu*

Melanocarya Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 31: 453. 1858.

Shrubs or small trees, mostly deciduous, a few evergreen. Flowers 4-merous. Capsule 4-lobed into base, opening by 4 lobes at maturity, sometimes only 1–3 lobes developing.

About 11 species: E and S Asia, cultivated in Europe and North America; ten species (seven endemic) in China.

1a. Leaves deciduous.

2a. Young branches and twigs with 4 corky wings 30. *E. alatus*

2b. Young branches and twigs without wings.

3a. Leaf blade broadly linear or oblong-lanceolate, 4–7 × as long as wide 34. *E. euscaphis*

3b. Leaf blade ovate to elliptic, less than 4 × as long as wide.

4a. Leaf blade obovate or elliptic-obovate 31. *E. centidenis*

4b. Leaf blade ovate to ovate-elliptic.

5a. Leaf blade margin finely and sharply serrulate; flowers from greenish pink to red; style long and persistent 39. *E. verrucosoides*

5b. Leaf blade margin crenulate; flowers light yellow or greenish yellow; style short and invisible 33. *E. distichus*

1b. Leaves evergreen.

6a. Flowers 4- or 5-merous; cymes with many flowers; leaf blade margin ciliate 37. *E. lucidus*

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

7a. Leaf blade entire 36. *E. hukuangensis*

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 mainly obovate, margin often serrulate to ciliate; capsule lobes often bending backward 32. *E. dielsianus*

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

30. *Euonymus alatus* (Thunberg) Siebold, Verh. Batav. Genootsch. Kunst. 12: 49. 1830.

卫矛 *wei mao*

Celastrus alatus Thunberg in Murray, Syst. Veg., ed. 14, 237. 1784; *C. striatus* Thunberg; *Euonymus alatus* var. *ellipticus* Chen H. Wang; *E. alatus* var. *microphyllus* Chen H. Wang; *E. alatus* var. *pilosus* Loesener & Rehder; *E. alatus* var. *pubescens* Maximowicz; *E. ellipticus* (Chen H. Wang) C. Y. Cheng; *E. striatus* (Thunberg) Loesener; *E. verrucosus* Scopoli var. *tchefouensis* Debeaux.

Deciduous shrubs, 1–4 m tall; young branches usually with 2 or 4 winglike corks, wings up to 5 mm wide, 1–2 mm thick, twigs 4-angled, green or brown when dry. Petiole sessile or very short, 2–4 mm; leaf blade thinly leathery to papery, obovate or obovate-elliptic, sometimes ovate-elliptic or

oblong-elliptic, 4.5–10 × 2–4 cm, base cuneate or attenuate, margin crenulate to serrulate, apex acute, acuminate, or even caudate; lateral veins 5–7 pairs, curving forward and disappearing before reaching margin. Peduncle 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, 1–1.3 cm in diam., only 1–3 lobes developing, lobes ovoid. Aril bright red. Fl. Apr–Jul, fr. Jul–Nov.

Forests, woodlands, scrub; near sea level to 2700 m. Anhui, Gansu, Guangdong, ?Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan, ?Yunnan, Zhejiang [Japan, Korea, Russia (Sakhalin)]; cultivated in Europe and North America].

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.

31. *Euonymus centidens* H. Léveillé, Repert. Spec. Nov. Regni Veg. 13: 262. 1914.

百齿卫矛 *bai chi wei mao*

Euonymus euscaphioides F. H. Chen & M. C. Wang; *E. euscaphioides* 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, serrulate to serrate, even ciliate, apex acute, acuminate, or caudate; lateral veins 5–7 pairs, obscure to apparent adaxially, curving forward, netting and disappearing before reaching margin. Cymes single or clustered, axillary or terminal; peduncle slender, 2–3 cm, 1 or 2 × dichotomously branched with 3 flowers, rarely more than 3; pedicel slender, 5–7 mm. Flowers 4-merous, 7–8 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, 1.3–1.5 cm in diam., sometimes only 2 or 3 lobes developing, lobes ovoid. Aril bright red. Fl. May–Jun, fr. Sep–Nov.

• Forests, woodlands, scrub; 200–1400 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang.

32. *Euonymus dielsianus* Loesener ex Diels, Bot. Jahrb. Syst. 29: 440. 1900.

裂果卫矛 *lie guo wei mao*

Euonymus cavaleriei H. Léveillé; *E. dielsianus* var. *euryanthus* Handel-Mazzetti; *E. dielsianus* var. *fertilis* Loesener; *E. dielsianus* var. *latifolius* Loesener; *E. fertilis* (Loesener) C. Y. Cheng ex C. Y. Chang; *E. fertilis* var. *euryanthus* (Handel-Mazzetti) C. Y. Chang; *E. leclerei* H. Léveillé.

Evergreen shrubs to small trees, 2–8 m tall; branches terete, twigs striate, green or brown when dry. Petiole sturdy, short, less than 1 cm; leaf blade leathery or thickly leathery, obovate or elliptic-obovate, 9–15 × 4.5–6 cm, base cuneate or attenuate, margin proximal 1/5–2/5 entire, distal 3/5–4/5 crenulate, serrulate to serrate, sometimes ciliate, apex acute, acuminate, or caudate; lateral veins 6–8 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 bending backward, 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.

• Forests, woodlands, scrub; 500–1800 m. Guangdong, Guangxi, Guizhou, ?Henan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang.

33. *Euonymus distichus* H. Léveillé, Repert. Spec. Nov. Regni Veg. 13: 261. 1914.

双歧卫矛 *shuang qi wei mao*

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 papery, ovate or ovate-elliptic, 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. 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.

34. *Euonymus euscaphis* Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 58: 148. 1921.

鸭椿卫矛 *ya chun 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. Peduncle slender, 1–2 cm, 1 or 2 × dichotomously branched with 3 flowers, rarely more than 3; pedicel slender, 5–7 mm. Flowers 4-merous, 6–8 mm in diam.; sepals suborbicular; petals green or greenish yellow, rotund, base subrounded. Capsule reddish brown when fresh, dark brown or gray when dry, 1.1–1.3 cm in diam., 4-lobed, sometimes only 2 or 3 lobes developing, lobes ovoid. Aril bright red. Fl. Apr–Jun, fr. Jul–Oct.

• Forests. Anhui, Fujian, Guangdong, Hunan, Jiangxi, Zhejiang.

35. *Euonymus hainanensis* Chun & F. C. How, Acta Phytotax. Sin. 7: 47. 1958.

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, dark brown or gray when dry, less than ca. 1 cm in diam., 4-lobed, usually only 1 or 2 lobes developing, lobes ovoid. Seeds typically 1, dark brown; aril red. Fl. Apr–Jun, fr. Aug–Nov.

- Forests; 700–1000 m. Hainan.

This species is very distinct and the only one in Hainan with a lobed capsule.

36. *Euonymus hukuangensis* C. Y. Cheng ex J. S. Ma, Harvard Pap. Bot. 10: 94. 1997.

湖广卫矛 hu guang wei mao

Evergreen shrubs to small trees, to 6 m tall; branches terete, twigs striate, green or 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, disappearing 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 mm in diam.; sepals suborbicular; petals white, suborbicular. Capsule reddish brown when fresh, dark brown or gray when dry, 1–1.5 cm in diam., 4-lobed, 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).

37. *Euonymus lucidus* D. Don, Prodr. Fl. Nepal. 191. 1825.

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 oblong-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, Myan-

mar, 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.

38. *Euonymus tashiroi* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 31: 23. 1887.

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, 1–1.3 cm in diam., 4-lobed, only 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)].

39. *Euonymus verrucosoides* Loesener, Bot. Jahrb. Syst. 30: 462. 1902.

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, fr. Aug–Oct.

- Woodlands, scrub, dry mountain slopes; 1400–3700 m. Gansu,

?Guizhou, Henan, Hubei, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang, Yunnan.

The distribution report from Guizhou has not been confirmed.

4. *Euonymus* sect. *Ilicifolii* Nakai, J. Jap. Bot. 17: 619. 1941 [“*Ilicifolia*”].

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, rotund 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. theifolius*

40. *Euonymus bockii* Loesener, Bot. Jahrb. Syst. 29: 439. 1900.

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. *Ilicifolii* 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.

41. *Euonymus fortunei* (Turczaninow) Handel-Mazzetti,

Symb. Sin. 7: 660. 1933.

扶芳藤 fu fang teng

Elaeodendron fortunei Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 36: 603. 1863, nom. cons. prop.; *Euonymus fortunei* var. *acuminatus* F. H. Chen & M. C. Wang; *E. fortunei* var. *patens* (Rehder) Handel-Mazzetti; *E. hederaceus* Champion ex Benth; *E. japonicus* Thunberg var. *acutus* Rehder; *E. japonicus* var. *chinensis* Pampanini; *E. japonicus* var. *radicans* Miquel; *E. kiautschovicus* Loesener; *E. kiautschovicus* var. *patens* (Rehder) Loesener; *E. patens* Rehder; *E. radicans* (Miquel) Siebold ex Handel-Mazzetti var. *alticola* Handel-Mazzetti; *E. wensiensis* J. W. Ren & D. S. Yao.

Evergreen subshrubs, ascending or procumbent on ground or rock, trees sometimes dwarfed, to 10 m tall; branches and twigs rounded, sometimes striate, 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. Peduncle 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 red. Fl. Apr–Jul, fr. Sep–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, Xinjiang, Yunnan, Zhejiang [India, Indonesia, Japan, Korea, Laos, Myanmar, Pakistan (?cultivated), Philippines, Thailand, Vietnam; cultivated in Africa, Europe, North America, Oceania, South America].

This is the most common and widespread species in the genus. It is also the most complex and polymorphic species in E, S, 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 Benth (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).

42. *Euonymus japonicus* Thunberg, Nova Acta Regiae Soc. Sci. Upsal. 3: 208. 1780.

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 striate, especially when fresh. Petiole 3–10 mm; leaf blade leathery or thickly leathery, ovate, orbicular-ovate, or long ovate, (3–)5–10(–12) × (2–)3–5(–5.5) cm, base orbicular or semiorbicular, margin crenulate distally, nearly entire proximally, apex orbicular or semiorbicular; lateral veins

6–8 pairs, slightly visible or unclear, especially when dry. Cymes usually 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.

43. *Euonymus hupehensis* (Loesener) Loesener, Bot. Jahrb. Syst. 30: 454. 1902.

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.

44. *Euonymus jinyangensis* C. Y. Chang, Bull. Bot. Res., Harbin 5(1): 85. 1985.

金阳卫矛 jin yang wei mao

Evergreen subshrubs, 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- or elliptic-lanceolate, 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.

• Forested mountains and valleys; 1600–2900 m. Sichuan, Xizang, Yunnan.

45. *Euonymus kengmaensis* C. Y. Cheng ex J. S. Ma, Harvard Pap. Bot. 10: 93. 1997.

耿马卫矛 *geng ma wei mao*

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.

• Dense forests and scrub; 1300–2900 m. Yunnan.

46. *Euonymus pallidifolius* Hayata, Icon. Pl. Formos. 3: 57. 1913.

淡绿叶卫矛 *dan lü ye wei mao*

Evergreen shrubs; 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 semirobund; 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.

• Beach scrub; near sea level to 200 m. Taiwan.

This species is in need of further work because there are very few specimens available.

47. *Euonymus pseudovagans* Pitard in Lecomte, Fl. Indo-Chine 1: 871. 1912.

假游藤卫矛 *jia you teng wei mao*

Evergreen shrubs, or ascending subshrubs, to 3 m tall; branches and twigs brown and green, usually 4-angled. 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. Oct–Jan.

Mixed forests, scrub; 300–2400 m. Guangxi, Guizhou, Yunnan [N Vietnam].

48. *Euonymus theacola* C. Y. Cheng ex T. L. Xu & Q. H. Chen, Bull. Bot. Res., Harbin 14: 349. 1994 [*“theacola”*].

茶色卫矛 *cha se wei mao*

Evergreen shrubs or subshrubs, 2–4 m tall, sometimes climbing. Petiole sturdy, less than ca. 1 cm; leaf blade ovate to long elliptic, 6–12 × 2–3 cm, base subrounded, cuneate or attenuate, margin obscurely entire, crenulate, or sparsely large crenate, apex acuminate or acute, even caudate; lateral veins 5–7 pairs, appearing as rugae on surface, impressed adaxially and prominent abaxially, curved forward, netting and disappeared before reaching margin. Peduncle 2–3 cm, sturdy, several flowered. Flowers 4-merous, ca. 6 mm in diam.; sepals semi-orbicular, small; petals orbicular, from light pink (immature) to yellow-green (mature), nearly rounded. Ovary small verrucose. Capsule globose, 5–6 mm in diam., lavender-white when fresh (from record), brown or yellow when dry, 4-lobed. Aril orange. Fl. Mar–Jun, fr. Jul–Nov.

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

49. *Euonymus theifolius* Wallich ex M. A. Lawson in J. D. Hooker, Fl. Brit. India 1: 612. 1875.

茶叶卫矛 *cha ye wei mao*

Euonymus paravagans Z. M. Gu & C. Y. Cheng.

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 semi-rotund; 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 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.

50. *Euonymus tonkinensis* (Loesener) Loesener, Bot. Jahrb. Syst. 30: 453. 1902.

北部湾卫矛 *bei bu wan wei mao*

Euonymus chinensis Lindley var. *tonkinensis* Loesener, Notizbl. Königl. Bot. Gart. Berlin 3: 77. 1900.

Evergreen shrubs, to 2 m tall; branches and twigs round, usually brown or yellow. Petiole 3–5 mm; leaf blade rotund to ovate, 4–5 × 3–3.5 cm, base rounded to cuneate, distal margin crenulate, apex rounded or subacute; lateral veins ca. 5 pairs. Peduncle 7–8 cm, sturdy, usually several × dichotomously branched with 20–30 flowers; pedicel ca. 5 mm. Flowers 4-merous, ca. 5 mm in diam.; sepals semirotund; petals nearly orbicular, greenish. Capsule brown or brown-yellow, 8–10 mm in diam. Aril red. Fl. Feb–Aug, fr. Jul–Jan.

Forests, woodlands, scrub; 1500–3400 m. Guangdong, Guangxi, ?Hainan [N Vietnam].

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.

51. *Euonymus vaganooides* C. Y. Cheng ex J. S. Ma, Harvard Pap. Bot. 10: 93. 1997.

拟游藤卫矛 ni you teng wei mao

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 acuminate; lateral veins 5–7 pairs, prominent abaxially. Flowers not seen. Capsule few, terminal on branches, nearly globose, 7–9 mm in diam., purple, densely spotted with small white dots when dry. 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.

游藤卫矛 you teng wei mao

Euonymus jinshananensis 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, 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 semirotund; 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.

Mixed forests, 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.

53. *Euonymus venosus* Hemsley, Bull. Misc. Inform. Kew 1893: 210. 1893.

曲脉卫矛 qu mai wei mao

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.

• Forests, rock slopes, scrub; 700–2500 m. Henan, Hubei, Hunan, Shaanxi, Sichuan, ?Yunnan.

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 5-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 oblanceolate 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. percoriaceus*
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.
10a. Branches and twigs terete; flowers pale yellow 83. *E. ternifolius*
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. nanoides*
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.
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.
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*
20b. Petals entire.
22a. Flowers and fruit 5-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. tsoi*
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. prismatomeroides*
22b. Flowers and fruit 4-merous.
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. tenuiserratus*
29b. Veins pinnate; leaf blade lanceolate to oblong.
32a. Leaf blade large, ca. 16 cm.
33a. Leaf blade obovate-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. pittosporoides*

36b. Leaf blade usually oblong to ovate, cordate or nearly so at base; leaf and fruit without pubescence 74. *E. nitidus*

54. *Euonymus bullatus* Wallich ex Loddiges, Bot. Cab. 18: t. 1749. 1831.

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 semirovate; petals red, nearly obovate. 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 orange-red. Fl. Apr–Jun, fr. Aug–Nov.

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

55. *Euonymus carnosus* Hemsley, J. Linn. Soc., Bot. 23: 118. 1886.

肉花卫矛 rou hua wei mao

Euonymus batakensis Hayata; *E. huangii* H. Y. Liu & Y. P. Yang; *E. platycline* 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 semirovate, 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 *Euonymus 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*” Kanehira & 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.

56. *Euonymus chengii* J. S. Ma, Harvard Pap. Bot. 10: 95. 1997.

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 semiorbicular; 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 *Euonymus nitidus* in a recent revision (J. S. Ma, Thaiszia 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.

57. *Euonymus chloranthoides* Yang, J. W. China Border Res. Soc., Ser. B, 15: 90. 1945.

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 thinly 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 obovate, 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.

58. *Euonymus dolichopus* Merrill ex J. S. Ma, Harvard Pap. Bot. 10: 95. 1997.

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 flowered; 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.

59. *Euonymus gibber* Hance, J. Bot. 20: 77. 1882.

流苏卫矛 *liu su wei mao*

Euonymus miyakei 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 flowered; pedicel ca. 5 mm. Flowers 5-merous, 10–12 mm in diam.; sepals semiorbicular; petals white to pink, obovate, apex fimbriate. Capsule obrhombic, 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 *mao 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 papery, 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 acuminate; 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

flowered; 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 obovate. 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].

61. *Euonymus gracillimus* Hemsley, J. Linn. Soc., Bot. 23: 119. 1886.

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 papery, 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 flowered; 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 gracillimus 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. nitidus*, 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*

Euonymus grandiflorus var. *angustifolius* Chen H. Wang; *E. grandiflorus* f. *longipedunculatus* C. Y. Chang; *E. grandiflorus* f. *salicifolius* Stapf & Ballard; *E. mairei* H. Léveillé.

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 papery 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 semirotund, 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.

Forests, woodlands; 1400–3300 m. Gansu, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Yunnan [Bhutan, India, Myanmar, Nepal, Vietnam].

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

Euonymus bodinieri H. Léveillé; *E. darrisii* H. Léveillé; *E. hamiltonianus* f. *lanceifolius* (Loesener) C. Y. Cheng ex Q. H. Chen; *E. hamiltonianus* var. *pubinervius* S. Z. Qu & Y. H. He; *E. lanceifolius* Loesener; *E. rugosus* H. Léveillé; *E. yedoensis* Koehne var. *koehneanus* Loesener.

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 obtuse. Capsule rhombic, with 4 angles and deep grooves, brown or yellow-brown to red-brown, ca. 8 mm × 1–1.3 cm. Seeds ellipsoid, dark brown; aril orange-red. Fl. Apr–Jul, fr. Aug–Nov.

Forests, woodlands; near sea level to 3000 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shanxi, Sichuan, SE Xizang (Zayü), Yunnan, Zhejiang [Afghanistan, Bhutan, India, Japan, Kashmir, Korea, Myanmar, Nepal, Pakistan, Russia (?Sakhalin), Thailand].

This is one of the most common species in the genus. Growing in large populations, it can be found throughout the distribution area. It is undoubtedly similar to *Euonymus europaeus* Linnaeus, but they are quite distinct in their distributions.

64. *Euonymus hui* J. S. Ma, Harvard Pap. Bot. 10: 96. 1997.

秀英卫矛 xiu 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 papery, 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. *Ilicifolii* but differs from these by having smaller obliquely angled fruit.

65. *Euonymus kachinensis* Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 73: 193. 1904.

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.

66. *Euonymus laxicymosus* C. Y. Cheng ex J. S. Ma, Harvard Pap. Bot. 10: 96. 1997.

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 semiorbicular; 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*.

67. *Euonymus laxiflorus* Champion ex Bentham, Hooker's J. Bot. Kew Gard. Misc. 3: 333. 1851.

疏花卫矛 shu hua wei mao

Euonymus crosnieri H. Léveillé & Vaniot; *E. forbesianus* Loesener; *E. incertus* Pitard; *E. pellucidifolius* Hayata; *E.*

rostratus W. W. Smith; *E. rubescens* Pitard; *E. vaniotii* H. Léveillé.

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 semiorbicular, very small; petals purple, suborbicular. 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, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Cambodia, India, Myanmar, Vietnam].

68. *Euonymus lichiangensis* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 33. 1917.

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. Peduncle 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 semiorbicular, very small; petals white-green, suborbicular. 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.

69. *Euonymus maackii* Ruprecht, Bull. Cl. Phys.-Math. Acad. Imp. Sci. Saint-Petersbourg 15: 358. 1857.

白杜 *bai du*

Euonymus bungeanus Maximowicz; *E. bungeanus* var. *latifolius* Chen H. Wang; *E. bungeanus* var. *mongolicus* (Nakai) Kitagawa; *E. bungeanus* var. *ovatus* F. H. Chen & M. C. Wang; *E. bungeanus* f. *pendulus* Rehder; *E. forbesii* Hance; *E. hamiltonianus* Wallich var. *semipersistens* Rehder; *E. maackii* f. *lanceolatus* Rehder; *E. maackii* f. *salicifolius* T. Chen; *E. maackii* var. *trichophyllus* Y. B. Chang; *E. micranthus* Bunge; *E. mongolicus* Nakai; *E. oukiakensis* Pampanini.

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 papery, ovate, orbicular-ovate, elliptic, or ovate-lanceolate, 6–10.5 × 2–

4 cm, base subattenuate, margin crenulate, apex acute or acuminate, sometimes caudate, both surfaces smooth; lateral veins 6–8 pairs, curving forward, webbing and disappearing before reaching margin. Peduncle 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 acuminate 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.

Edges of woodlands and forests; near sea level to 1000 m. Anhui, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jiangxi, Jilin, Liaoning, Nei Mongol, Ningxia (cultivated), Qinghai (cultivated), Shaanxi, Shandong, Shanxi, Sichuan (cultivated), Xinjiang, Yunnan, Zhejiang [Japan, Korea, Russia (Far East); cultivated in Europe and North America].

This is one of the most common species in the genus. Its growth is quite variable under both cultivated and wild conditions.

70. *Euonymus microcarpus* (Oliver ex Loesener) Sprague, Bull. Misc. Inform. Kew 1908: 35. 1908.

小果卫矛 *xiao guo wei mao*

Euonymus chinensis Lindley var. *microcarpus* Oliver ex Loesener, Bot. Jahrb. Syst. 30: 456. 1902; *E. aureovirens* Handel-Mazzetti.

Deciduous small trees to shrubs, 3–8 m tall; branches greenish gray, terete, sturdy, twigs greenish, terete. Petiole subsessile to 10 mm, sturdy; leaf blade thinly leathery, ovate to ovate-elliptic or ovate-linear, 4.5–6.3 × (1–)2–3 cm, base attenuate, suborbicular, or acute, margin entire, apex obtuse or acute; lateral veins fine, straight, veinlets obvious, not impressed adaxially but prominent abaxially, both disappearing before reaching margin. Peduncle 2–3 cm, 1–3 × dichotomously branched, several flowered; pedicel ca. 5 mm. Flowers 4-merous, 6–7 mm in diam.; sepals semiorbicular, very small; petals white-green, suborbicular. Capsule rhombic, 4-angled, base truncate, apex emarginate, pinkish or reddish when fresh, brown or yellow-brown to red-brown when dry, 4–5 × 9–10 mm. Seeds ovoid, dark brown, partially covered by orange aril. Fl. Apr–May, fr. Jul–Oct.

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

The distribution report from Yunnan has not been confirmed.

71. *Euonymus myrianthus* Hemsley, Bull. Misc. Inform. Kew 1893: 210. 1893.

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 & Rehder.

Evergreen shrubs to small trees, 3–12 m tall; branches gray-black to gray-brown, terete, sturdy, twigs greenish, sometimes with 4 striae. Petiole ca. 5 mm, sturdy; leaf blade thickly leathery, obovate-elliptic or oblong-lanceolate, 7–11 × 2.5–5 cm, base attenuate or acuminate, margin large denticulate, apex acute or acuminate; lateral veins 7–9 pairs, slightly curving forward and dividing into veinlets before reaching margin. Peduncle 2–3.5 cm, 1 or 2 × dichotomously branched, several flowered; pedicel 15–20 mm. Flowers 4-merous, ca. 1 cm in diam.; sepals semiorbicular; 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.

72. *Euonymus nanus* M. Bieberstein, Fl. Taur.-Caucas. 3: 160. 1819.

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 sessile 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 ca. 5 mm. Flowers 4-merous, 5–6 mm in diam.; sepals semiorbicular, very small; petals white-green, suborbicular. 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 2–3 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].

73. *Euonymus nanoides* Loesener & Rehder in Sargent, Pl. Wilson. 1: 492. 1913.

小卫矛 xiao wei mao

Euonymus nanoides var. *oresbius* (W. W. Smith) Y. R. Li; *E. oresbius* W. W. Smith; *E. pachycladus* Handel-Mazzetti.

Deciduous dwarf shrubs, ascending, many branches at middle and up, 1–3 m tall; branches greenish gray, 4-angled, sturdy, twigs greenish, with corky wings. Petiole very short, 2–3 mm; leaf blade thickly papery, linear-elliptic, 2–4 × 3–10 mm, base subrounded, margin entire to crenulate, apex obtuse or acute; lateral veins invisible. Peduncle few, clustered axillary, mostly several flowered; pedicel 1–5 mm. Flowers 4-merous, 5–7 mm in diam.; sepals semiorbicular, very small;

petals white-green or greenish yellow, suborbicular. 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. Apr–Jul, fr. Jul–Oct.

• Forests, scrub; 2900–3400 m. Gansu, Hebei, Henan, ?Nei Mongol, Shaanxi, Shanxi, Sichuan, Xizang, Yunnan.

The distribution report of this species from Nei Mongol has not been confirmed.

74. *Euonymus nitidus* Benth, London J. Bot. 1: 483. 1842.

中华卫矛 zhong hua wei mao

Euonymus chinensis Lindley var. *nitidus* (Benth) Loesener; *E. esquirolii* H. Léveillé; *E. flavescens* Loesener; *E. merrillii* Chen H. Wang; *E. merrillii* var. *longipetiolatus* Chen H. Wang; *E. nantoensis* Loesener ex Handel-Mazzetti; *E. oblongifolius* Loesener & Rehder; *E. uniflorus* H. Léveillé & Vaniot.

Evergreen shrubs to small trees, 2–10 m tall; branches gray-black to gray-brown, terete, sturdy, twigs greenish or yellow-greenish, striate. Petiole 5–8(–12) mm; leaf blade leathery to thickly papery, elliptic or oblong-elliptic, 6.5–10(–15) × 3–4(–6) cm, base cuneate or acuminate, margin entire to crenulate, apex acute or acuminate, sometimes shortly caudate; lateral veins 7–9 pairs, not evident, slightly curving forward, redividing and disappearing before reaching margin. Peduncle typically many, 1.5–3.5 cm, 1–3(–4) × dichotomously branched with many flowers; pedicel 5–10 mm. Flowers 4-merous, 5–6 mm in diam.; sepals semiorbicular; petals whitish green, orbicular to obovate. Capsule tetra-globose, 4-angled, pinkish or reddish when fresh, brown or yellow-brown to red-brown when dry, (0.9–)1.5–1.7 × (1.2–)1.4–1.6 cm. Seeds ovoid, dark brown; aril orange. Fl. Mar–Jul, fr. Jul–Jan.

Forests and woodlands in lower mountains and valleys; 100–1500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang [Bangladesh, Cambodia, Japan, N Vietnam].

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.

75. *Euonymus parasimilis* C. Y. Cheng ex J. S. Ma, Harvard Pap. Bot. 10: 96. 1997.

碧江卫矛 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 ± rounded; lateral veins 6–9 pairs, distal part curving forward and disappearing before reaching margin, sur-

face sometimes rugose, especially during fruiting time. Peduncle 6–8 cm, 1 or 2 × dichotomously branched, several flowered; 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.

76. *Euonymus percoriaceus* C. Y. Wu ex J. S. Ma, Harvard Pap. Bot. 10: 97. 1997 [*“pereoriacea”*]

西畴卫矛 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 cm, 1 or 2 × dichotomously branched, several flowered; pedicel 5–10 mm. Flowers 4-merous, ca. 9 mm in diam.; sepals semirotund; petals light green or greenish white, orbicular. Capsule obturbinate, 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.

77. *Euonymus phellomanus* Loesener, Bot. Jahrb. Syst. 29: 444. 1900.

栓翅卫矛 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.

78. *Euonymus pittosporoides* C. Y. Cheng ex J. S. Ma, Harvard Pap. Bot. 3: 232. 1998.

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, lan-

ceolate or willowlike, base and apex acuminate or acute, margin denticulate; 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 ca. 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].

79. *Euonymus salicifolius* Loesener, Bot. Jahrb. Syst. 30: 458. 1902.

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 sturdy, 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 obrhombic, 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.

80. *Euonymus semenovii* Regel & Herder, Bull. Soc. Imp. Naturalistes Moscou 39: 557. 1866.

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 semiorbicular; 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 striae. Petiole sturdy, 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].

82. *Euonymus tenuiserratus* C. Y. Cheng ex J. S. Ma, Harvard Pap. Bot. 3: 232. 1998.

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 sturdy, 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 denticulate, apex caudate; 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*.

83. *Euonymus ternifolius* Handel-Mazzetti, Symb. Sin. 7: 659. 1933.

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 subattenuate, 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 semiorbicular; 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 tingens* 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 semiorbicular; 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. Jul–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 tsoi* Merrill, Sunyatsenia 1: 198. 1934.

狭叶卫矛 xia ye wei mao

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

Evergreen shrubs, 1–5 m tall; branches terete, sturdy, twigs gray to light green-gray, young branches striate. Petiole sturdy, 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 obhombic, 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.

86. *Euonymus verrucosus* Scopoli, Fl. Carniol., ed. 2, 1: 166. 1772.

瘤枝卫矛 liu zhi wei mao

Euonymus integerrimus Prokhanov; *E. pauciflorus* Maximowicz; *E. pauciflorus* var. *chinensis* (Maximowicz) Rehder; *E. verrucosus* var. *chinensis* Maximowicz; *E. verrucosus* var. *pauciflorus* (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 semirovate; 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].

87. *Euonymus viburnoides* Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 73: 194. 1904.

荚谜卫矛 jia mi wei mao

Euonymus chengkangensis C. W. Wang; *E. crenatus* Chen H. Wang; *E. forrestii* H. F. Comber; *E. leishanensis* Q. H. Chen; *E. saxicola* Loesener & Rehder.

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 semirovate; petals brownish red. Capsule subglobose, with 4 little striae or angles, brown or yellow-brown to red-brown, 1–1.2 × 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.

88. *Euonymus wui* J. S. Ma, Harvard Pap. Bot. 10: 97. 1997.

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 obtrihedral-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.

89. *Euonymus yunnanensis* Franchet, Bull. Soc. Bot. France 33: 454. 1886.

云南卫矛 yun nan wei mao

Euonymus decorus W. W. Smith; *E. linearifolius* Franchet; *E. pinchuanensis* 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. Peduncle 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 cylindrical-rhombic to obtrihedral, 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 Bot. Boreal. Occid. Sin. 23: 1635. 2003) was described from Gansu. Its affinity to *E. yunnanensis* needs further study.

90. *Euonymus prismatomerioides* C. Y. Wu ex J. S. Ma, Harvard Pap. Bot. 3: 232. 1998.

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 adaxially and prominent abaxially, lateral veins obscure and reticulate before reaching margin. Cymes axillary or terminal on young twig, typically 3–5-flowered; peduncle less than 3 cm. Flowers purple-red when fresh, 5-merous; sepals 5, semiorbicular, 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.

