

#### 4. CISSUS Linnaeus, Sp. Pl. 1: 117. 1753.

白粉藤属 bai fen teng shu

Ren Hui (任辉); Jun Wen (文军)

Lianas, woody or subwoody, hermaphroditic or polygamo-monoecious. Tendrils unbranched or bifurcate, sometimes racemously branched. Leaves simple or palmately compound. Inflorescence a compound dichasium or an umbel, leaf-opposed. Flowers 4-merous. Calyx cupular, glabrous. Petals falling off separately. Stamens 4. Disk well developed, margin undulate or slightly 4-lobed. Style conspicuous; stigma undivided or 2-divided. Berry obovoid or ellipsoid, 1- or 2-seeded. Seeds obovoid-elliptic or elliptic, base rostrate, apex rounded, chalazal knot at or near base; cross-section of endosperm M-shaped.

About 350 species: mainly in tropical regions of Africa, Asia, Australia, Central and South America, and North America (Mexico); 15 species (two endemic) in China.

*Cissus umbellata* Loureiro (Fl. Cochinch. 1: 84. 1790) is the basionym of *Strychnos umbellata* (Loureiro) Merrill in the Loganiaceae (see Fl. China 15: 326. 1996).

- 1a. Leaves palmately 5-foliolate ..... 7. *C. elongata*
- 1b. Leaves simple.
  - 2a. Branchlets with 4–6 winglike ridges or narrow wings.
    - 3a. Branchlets with 6 winglike ridges, tendrils unbranched ..... 2. *C. hexangularis*
    - 3b. Branchlets with 4 ridges or narrow wings, tendrils bifurcate ..... 9. *C. pteroclada*
  - 2b. Branchlets terete or slightly 4-ridged.
    - 4a. Leaf margin 5–12-toothed on each side.
      - 5a. Tendrils unbranched; leaves oblong or triangular-oblong, base truncate; inflorescence a compound dichasium; seed surface smooth ..... 1. *C. subtetragona*
      - 5b. Tendrils bifurcate; leaves triangular or cordate-oval, base cordate; inflorescence an umbel; seed surface with sparse raised ridges.
        - 6a. Branchlets terete; leaves cordate-oval ..... 3. *C. repens*
        - 6b. Branchlets slightly 4-ridged; leaves hastate ..... 4. *C. luzoniensis*
    - 4b. Leaf margin 15–44-toothed on each side.
      - 7a. Tendrils unbranched; leaves undivided or mixed with those 3–5-divided; inflorescence a compound dichasium; seed surface smooth.
        - 8a. Leaves with 3–5 shallow lobes or undivided ..... 5. *C. kerrii*
        - 8b. Leaves mostly with 3–5 deep lobes or mixed with undivided ones ..... 6. *C. triloba*
      - 7b. Tendrils 2- or 3- or racemously branched; leaves undivided; inflorescence an umbel; seed surface with sparse ridges.
        - 9a. Tendrils racemously branched; both leaf surfaces of same color when dry, margin undulate, fine teeth on curves of wavy margin; seed surface without conspicuous ridges ..... 8. *C. repanda*
        - 9b. Tendrils 2- or 3-branched; both leaf surfaces of different colors when dry, margin serrate, teeth at ends of veins; seed surface with conspicuous ridges.
          - 10a. Leaves hastate or ovate-hastate, length more than 2 × width; seed surface with obtuse ridges ..... 10. *C. javana*
          - 10b. Leaves oval or broadly cordate-ovate, length less than 2 × width; seed surface with sharp ridges.
            - 11a. Leaves glabrous ..... 11. *C. wenshanensis*
            - 11b. Leaves ± pubescent.
              - 12a. Leaves abaxially densely brown floccose, or only veins with appressed hairs.
                - 13a. Ovary glabrous ..... 12. *C. austroyunnanensis*
                - 13b. Ovary ± pubescent ..... 13. *C. adnata*
              - 12b. Abaxial leaf surface or midvein ± villous with T-shaped hairs.
                - 14a. Midvein on abaxial leaf surface ± villous with T-shaped hairs; petals glabrous ..... 14. *C. assamica*
                - 14b. Leaves abaxially densely villous with T-shaped hairs; petals pubescent ..... 15. *C. aristata*

1. *Cissus subtetragona* Planchon in A. Candolle & C. Candolle, Monogr. Phan. 5: 499. 1887.

四棱白粉藤 si leng bai fen teng

Lianas, woody. Branchlets nearly terete, upper part nearly square in cross-section, longitudinal ridges inconspicuous, glabrous; tendrils unbranched. Leaves simple; stipules caducous;

petiole 0.8–3.5 cm, glabrous; leaf blade oblong or triangular-oblong, 6–19 × 2–7 cm, glabrous, basal veins 3, lateral veins 4–6 pairs, veinlets inconspicuous, base nearly truncate, margin with 5–11 fine teeth on each side, apex acuminate or mucronate. Compound dichasium terminal or leaf-opposed; peduncle 1–3 cm, glabrous or with sparse papillary hairs. Pedicel 3–10 cm, nearly glabrous. Buds conical-elliptic, 3–4 mm, apex obtuse. Calyx entire. Petals triangular-oblong, 2–3 mm, glabrous. Anthers ovoid-elliptic. Lower part of ovary adnate to disk; style conical; stigma slightly expanded. Berry 0.8–1.2 cm in diam., 1-seeded. Seed surface smooth, raphe raised, ventral holes very short at base. Fl. Sep–Oct, fr. Oct–Dec.

Forests, shrublands; 100–1300 m. Guangdong, Guangxi, Hainan, Yunnan [Laos, Vietnam].

**2. *Cissus hexangularis*** Thorel ex Planchon in A. Candolle & C. Candolle, Monogr. Phan. 5: 511. 1887.

翅茎白粉藤 chi jing bai fen teng

Lianas, woody. Branchlets nearly terete, with 6 wings and longitudinal ridges between wings, nodes usually corrugated and contracted when dry, glabrous; tendrils unbranched. Leaves simple; stipules caducous; petiole 1.5–5 cm, glabrous; leaf blade ovate-triangular, 6–10 × 4–8 cm, glabrous, basal veins 3, lateral veins 3 or 4 pairs, veinlets inconspicuous, base truncate or nearly so, margin with 5–8 fine teeth on each side, sometimes teeth inconspicuous, apex mucronate. Compound dichasium terminal or leaf-opposed; peduncle 2–4.5 cm, glabrous. Pedicel 0.3–1 mm, with papillose and glandular hairs. Buds conical, 4–8 mm, apex obtuse. Calyx entire. Petals triangular-elliptic, 2.5–6 mm, glabrous. Lower part of ovary adnate to disk; style conical; stigma slightly expanded. Berry globose, 8–10 mm in diam., 1 (or 2)-seeded. Seed raphe raised, ventral holes short. Fl. Sep–Nov, fr. Dec–Feb of following year.

Riverside forests; 100–400 m. Fujian, Guangdong, Guangxi [Cambodia, Thailand, Vietnam].

**3. *Cissus repens*** Lamarck, Encycl. 1: 31. 1783.

白粉藤 bai fen teng

*Cissus cordata* Roxburgh; *C. glauca* Roxburgh; *C. repens* var. *sinensis* Handel-Mazzetti; *Vitis repens* (Lamarck) Wight & Arnott.

Vines, herbaceous. Branchlets terete, with longitudinal ridges, usually glaucous, glabrous; tendrils bifurcate. Leaves simple; stipules brownish, oblong, 5–6 × 2–3 mm, membranous, glabrous; petiole 2.5–7 cm, glabrous; leaf blade cordate-oval, 5–13 × 4–9 cm, glabrous, basal veins 3–5, lateral veins 3 or 4 pairs, veinlets inconspicuous, base cordate, margin with 9–12 sharp teeth on each side, apex acute or acuminate. Inflorescence umbelliform, terminal or leaf-opposed; peduncle 1–3 cm, glabrous. Pedicel 2–4 mm, nearly glabrous. Buds oval, ca. 4 mm, apex obtuse. Calyx entire or undulate. Petals triangular-ovate, ca. 3 mm, glabrous. Anthers ovoid-elliptic. Lower part of ovary adnate to disk; style conical; stigma slightly expanded. Berry 0.8–1.2 cm × 4–8 mm, 1-seeded. Seed surface smooth, with sparse ribs. Fl. Jul–Oct, fr. Nov–May of following year.  $2n = 22, 24$ .

Forests in valleys, shrublands on hillsides; 100–1800 m. Guangdong, Guangxi, Guizhou, Taiwan, Yunnan [Bhutan, Cambodia, India, Laos, Malaysia, Nepal, Philippines, Thailand, Vietnam; Australia].

**4. *Cissus luzoniensis*** (Merrill) C. L. Li, Chin. J. Appl. Environ. Biol. 2: 49. 1996.

粉果藤 fen guo teng

*Cissus repens* Lamarck var. *luzoniensis* Merrill, Philipp. J. Sci., C, 11: 131. 1916.

Vines, herbaceous. Branchlets slender, with longitudinal ridges, slightly 4-ridged, usually glaucous, glabrous; tendrils bifurcate, with one branch poorly developed and short. Leaves simple; stipules brownish, oblong, ca. 3 × 2 mm, membranous, glabrous; petiole 1.5–3 cm, glabrous; leaf blade hastate, 5–11 × 2–4 cm, glabrous, basal veins 3–5, lateral veins 3 or 4 pairs, veinlets inconspicuous, base cordate or nearly truncate, notch obtuse, margin 5–10-toothed on each side, teeth bent forward or slightly backward, apex caudate-acuminate. Inflorescence umbelliform, rarely dichotomous, terminal or leaf-opposed; peduncle 1–2.5 cm, glabrous. Pedicel 1.5–3.5 mm, nearly glabrous. Buds oval, 2–3 mm, apex obtuse. Calyx nearly glabrous, entire or undulately lobed. Petals triangular-ovate, 0.8–1.8 mm, glabrous. Anthers oval. Lower part of ovary adnate to disk; style short; stigma slightly expanded. Berry ca. 1 cm in diam., 1-seeded. Seed surface with sparse ridges, ventral holes inconspicuously linear. Fl. May–Jul, fr. Jul–Aug.

Forests, shrublands; 100–1100 m. Hainan, Yunnan [Philippines].

**5. *Cissus kerrii*** Craib, Bull. Misc. Inform. Kew 1911: 30. 1911.

鸡心藤 ji xin teng

*Cissus modeccoides* Planchon var. *kerrii* (Craib) Craib; *C. modeccoides* var. *subintegra* Gagnepain.

Climbers, herbaceous. Branchlets longitudinally obtusely 4-ridged, glaucous, glabrous; tendrils unbranched. Leaves simple; stipules brownish, oval, 3–4 × 1.5–2 mm, membranous, glabrous; petiole 1.5–7.5 cm, glabrous; leaf blade cordate, 5–11 × 4–8 cm, basal veins 5, sometimes lateral veins connate at base, lateral veins 3 or 4 pairs, veinlets inconspicuous, base cordate, margin 18–23-toothed on each side, teeth fine, apex acuminate, glabrous. Inflorescence umbelliform, terminal or leaf-opposed; peduncle 0.7–2 cm, glabrous. Pedicel 2–4 mm, glabrous. Buds oval, 1–1.5 mm, apex rounded. Calyx entire. Petals elliptic, 0.7–1.2 mm, glabrous. Anthers oval. Lower part of ovary adnate to disk; style conical; stigma slightly expanded. Berry globose, ca. 1 cm, 1-seeded. Seed elliptic, surface with sparse ridges, raphe raised, ventral holes retuse. Fl. Jun–Aug, fr. Sep–Oct.

On trees or shrubs, fields; 100–200 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [India, Indonesia, Thailand, Vietnam; Australia].

**6. *Cissus triloba*** (Loureiro) Merrill, Trans. Amer. Philos. Soc., n.s., 24: 254. 1935 [“*trilobus*”].

掌叶白粉藤 zhang ye bai fen teng

*Callicarpa triloba* Loureiro, Fl. Cochinch. 1: 70. 1790;  
*Cissus modeccoides* Planchon.

Vines, herbaceous. Branchlets terete, with longitudinal ridges, usually glaucous, glabrous; tendrils unbranched. Leaves simple; petiole 2.5–8 cm, glabrous; stipules oval, 4–6 × 3–4 mm, glabrous; leaf blade heteromorphic, undivided or 3–5-divided, glabrous, basal veins 3–5, lateral veins 5–7 pairs, veinlets slightly raised; undivided leaves oval, 7–7.5 × 5–5.5 cm, base cordate, notch obtuse, margin 20–30-toothed on each side, teeth sharp, apex acute or acuminate; divided leaves broadly ovate, base cordate, deeply 3–5-lobed, notch narrow or two sides overlapping, lobes lanceolate, apex acuminate. Compound dichasium terminal or leaf-opposed; peduncle 3–5.5 cm, glabrous. Pedicel 2–6 mm, glabrous. Buds elliptic or globose, 2–3 mm, apex rounded. Calyx undulately lobed. Petals oval or ovate-elliptic, 1.7–2.7 mm, glabrous. Anthers oval. Lower part of ovary adnate to disk; style conical; stigma slightly expanded. Berry 5–6 mm in diam., 1-seeded. Seed oval, surface smooth, raphe raised, ventral holes slightly furrowed. Fl. Jun–Oct, fr. Aug–Nov.

Forests by rivers or on hillsides; 900–1400 m. Yunnan [Vietnam].

7. *Cissus elongata* Roxburgh, Fl. Ind. 1: 429. 1820.

五叶白粉藤 wu ye bai fen teng

*Cayratia elongata* (Roxburgh) Suessenguth; *Vitis elongata* (Roxburgh) Wallich ex M. A. Lawson.

Lianas, woody. Branchlets nearly terete, with conspicuous, longitudinal ridges, glabrous; tendrils unbranched. Leaves palmately 5-foliolate; stipules caducous; petiole 6–10 cm, not or shortly petiolulate, glabrous; leaflet blade obovate-lanceolate or obovate-elliptic, 5–15 × 2–5 cm, glabrous, lateral veins 5–9(–12) pairs, veinlets inconspicuous, base cuneate, margin with 7–9 fine teeth on each side, apex cuspidate. Compound dichasium pseudo-terminal or leaf-opposed; peduncle 1.5–2 cm, glabrous. Pedicel 2–4 mm, glabrous. Buds elliptic, 2–3 mm, apex subrounded. Calyx undulate at margin. Petals ovate-elliptic, 1.5–2.5 mm, glabrous. Anthers oblong. Lower part of ovary adnate to disk; style conical; stigma slightly expanded. Berry purple-black at maturity, 1.5–2 × 1–1.5 cm, 1-seeded. Seed nearly rounded or retuse at apex, surface smooth, raphe slightly raised, ventral mid-raphé inconspicuous, ventral holes retuse at base. Fl. Jun–Jul, fr. Aug–Nov.  $2n = 24$ .

Forests, streamsides; 100–1100 m. Guangxi, Hainan, Yunnan [Bhutan, India, Malaysia, Singapore, Vietnam].

8. *Cissus repanda* Vahl, Symb. Bot. 3: 18. 1794.

大叶白粉藤 da ye bai fen teng

Lianas, woody. Branchlets terete, ± with versatile villous hairs; tendrils racemously 5–7-branched. Leaves simple, undivided or slightly 3-lobed; petiole 1.5–9 cm; stipules ovate-elliptic or oval, 2–3 mm, herbaceous, apex rounded; leaf blade ovate-orbicular, 5–15 × 2–5 cm, abaxially with sparse versatile and villous hairs when young, then nearly glabrescent, basal veins

5–7, lateral veins 4 or 5 pairs, veinlets inconspicuously raised or abaxially slightly raised, base cordate, margin with irregular teeth or undulate, fine teeth in curves of wavy margin, apex acuminate, mucronate or acute. Compound umbel terminal or leaf-opposed; peduncle 1.5–3.5 cm. Pedicel 2–6 mm. Buds oval, 2–3 mm, apex rounded. Calyx teeth inconspicuous. Petals oval, 1.7–2.7 mm. Anthers oval, abortive in female flowers. Disk undulately 4-lobed. Lower part of ovary adnate to disk; style conical, base slightly thick; stigma slightly expanded. Berry 6–8 mm, 1-seeded. Seed surface with slightly raised ridges. Fl. Apr–May, fr. May–Jun.

Forests, shrublands, grassy areas; 500–1000 m. Hainan, Sichuan, Yunnan [Bhutan, India, Sri Lanka, Thailand].

- 1a. Leaf blade 9–24 × 8–20 cm ..... 8a. var. *repanda*  
1b. Leaf blade 6–9 × 4–6.5 cm ..... 8b. var. *subferruginea*

8a. *Cissus repanda* var. *repanda*

大叶白粉藤(原变种) da ye bai fen teng (yuan bian zhong)

*Vitis pallida* Wight & Arnott; *V. repanda* (Vahl) Wight & Arnott.

Leaf blade 9–24 × 8–20 cm, abaxially with sparse versatile hairs. Peduncle and pedicels densely pubescent. Petals densely ferruginous villous. Ovary sparsely pilose at apex. Fl. May, fr. Jun.  $2n = 26$ .

Forests; 500–1000 m. Sichuan, Yunnan [Bhutan, India, Sri Lanka, Thailand].

8b. *Cissus repanda* var. *subferruginea* (Merrill & Chun) C. L. Li, Chin. J. Appl. Environ. Biol. 2: 49. 1996.

海南大叶白粉藤 hai nan da ye bai fen teng

*Parthenocissus subferruginea* Merrill & Chun, Sunyatsenia 5: 120. 1940.

Leaf blade 6–9 × 4–6.5 cm, abaxially with rubiginous hairs falling off to nearly glabrous or with sparse hairs. Peduncle ± sparsely ferruginous villous. Ovary glabrous. Fl. Apr, fr. May.

- Forests, shrublands, grassy areas. Hainan.

9. *Cissus pteroclada* Hayata, Icon. Pl. Formosan. 2: 107. 1912.

翼茎白粉藤 yi jing bai fen teng

*Vitis pteroclada* (Hayata) Hayata.

Lianas, herbaceous. Branchlets with 4 wings and longitudinal ridges, glabrous; tendrils bifurcate. Leaves simple; stipules brownish, oval, ca. 1.5 × 1 mm, herbaceous, glabrous, apex obtuse; petiole 2–7 cm, glabrous; leaf blade oval or narrowly oval, 5–12 × 4–9 cm, glabrous, basal veins 5, lateral veins 3 or 4 pairs, veinlets conspicuously raised abaxially, base cordate or subtruncate, notch obtuse and angular, margin with 6–9 fine teeth on each side, apex cuspidate or acute. Inflorescence umbelliform, terminal or leaf-opposed; peduncle 1–2 cm, pubescent. Pedicel 2–4 mm, glabrous. Buds oval, 1.5–3 mm, apex obtuse or rounded. Calyx entire. Petals 4. Anthers

oval. Lower part of ovary adnate to disk; style conical, short; stigma slightly expanded. Berry 1–1.5 × 0.8–1.4 cm, 1- or 2-seeded. Seed surface with sharp ridges, chalazal knot at lower part of seed, raphe raised, ventral holes obovate-elliptic upward to top or near middle from base. Fl. Jun–Aug, fr. Aug–Dec.

On trees or shrubs in valleys; 300–2100 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Indonesia, Malaysia, Myanmar, Thailand, Vietnam].

**10. *Cissus javana*** Candolle, Prodr. 1: 628. 1824.

青紫葛 qing zi ge

*Cissus discolor* Blume; *Vitis discolor* (Blume) Dalzell.

Lianas, herbaceous. Branchlets longitudinally nearly 4-ridged, glabrous or sparsely pubescent; tendrils bifurcate. Leaves simple; stipules oval or ovate-elliptic, 3–5 × ca. 3 mm, herbaceous, glabrous or sparsely pilose, apex obtuse; petiole 2–4.5 cm, glabrous or sparsely pilose; leaf blade hastate or ovate-hastate, 6–15 × 4–10 cm, glabrous, abaxial and adaxial surfaces of different colors when dry, basal veins 5, lateral veins 4–6 pairs, veinlets conspicuous abaxially, base cordate, margin with 15–34 sharp teeth on each side, apex acuminate. Inflorescence umbelliform, terminal or leaf-opposed; peduncle 0.6–4 cm, sparsely pubescent. Pedicel 2–15 mm, subglabrate. Buds elliptic, 2.5–3 mm, apex rounded. Calyx entire or undulately lobed. Petals elliptic, ca. 2.5 mm, glabrous. Anthers ovoid-elliptic. Lower part of ovary adnate to disk; style conical; stigma slightly expanded. Berry ca. 6 × 5 mm, 1-seeded. Seed with a sharp rostrum at base, surface with conspicuous, obtuse ridges, raphe raised, ventral holes obvious. Fl. Jun–Oct, fr. Nov–Dec.  $2n = 24$ .

On trees or shrubs, brushwood; 600–2000 m. Sichuan, Yunnan [India, Indonesia, Malaysia, Myanmar, Nepal, Thailand, Vietnam].

**11. *Cissus wenshanensis*** C. L. Li, Acta Bot. Yunnan. 19: 218. 1997.

文山青紫葛 wen shan qing zi ge

Lianas, woody. Branchlets terete, with longitudinal ridges, glabrous; tendrils bifurcate. Leaves simple; stipules oval, membranous; petiole 2.5–4.5 cm, glabrous; leaf blade cordate-oval, 5–5.8 × 3–5.5 cm, glabrous, basal veins 5, lateral veins 3 or 4 pairs, base cordate, notch rounded, margin with 20–27 sharp teeth on each side, apex acuminate. Inflorescence umbelliform, leaf-opposed; peduncle 2–4 cm, glabrous. Pedicel 1–3 mm, glabrous. Buds ovoid-elliptic, 2–2.5 mm, apex rounded. Calyx undulately lobed. Petals oval, 1.5–2 mm, glabrous. Anthers elliptic. Disk 4-lobed. Lower part of ovary adnate to disk, glabrous; style conical; stigma slightly expanded. Fl. Aug.

• Forests; ca. 1500 m. Yunnan.

**12. *Cissus austroyunnanensis*** Y. H. Li & Y. Zhang, Guihaia 9: 28. 1989.

滇南青紫葛 dian nan qing zi ge

*Cissus javana* Candolle var. *pubescens* C. L. Li.

Lianas, woody. Branchlets terete, with longitudinal ridges, brownish pubescent; tendrils unbranched. Leaves simple; stipules ovate, membranous; petiole 1.5–3.5 cm, with dense brownish hairs; leaf blade cordate-oval, 5–8 × 3.5–6 cm, adaxially with slightly stiff hairs, basal veins 5, lateral veins 3 or 4 pairs, with appressed hairs on veins, base cordate, notch rounded, margin with 35–40 sharp teeth on each side, apex acuminate. Inflorescence umbelliform, leaf-opposed; peduncle 1–2.7 cm, sparsely pubescent. Pedicel 1.5–3 mm, glabrous. Buds ovoid-elliptic, 2–2.5 mm, apex rounded or obtuse. Calyx undulately lobed. Petals oval, ca. 2 mm, glabrous. Anthers elliptic. Lower part of ovary adnate to disk, glabrous; style conical; stigma inconspicuously expanded. Fl. Jul–Aug.

• Forests, shrublands; 1600–2000 m. Yunnan.

**13. *Cissus adnata*** Roxburgh, Fl. Ind. 1: 423. 1820.

贴生白粉藤 tie sheng bai fen teng

*Vitis adnata* (Roxburgh) Wallich.

Lianas, woody. Branchlets terete, with longitudinal ridges, with dense rubiginous curly hairs; tendrils bifurcate. Leaves simple, both surfaces of same color when dry; stipules ovate-elliptic, 1.5–2 × 1–1.5 mm, apex obtuse; petiole 1.5–7 cm, densely ferruginous pilose; leaf blade cordate-oval, 6–11.5 × 5.5–8.5 cm, abaxially with dense rubiginous curly hairs, adaxially pubescent when young, then hairs falling off and with some hairs only on veins, basal veins 3–5, lateral veins 5 or 6 pairs, veinlets conspicuous abaxially, base cordate, notch rounded or obtuse and angular, margin with 35–40 sharp teeth on each side, apex mucronate, rarely acute. Inflorescence umbelliform, leaf-opposed; peduncle 1.5–4.5 cm, with dense rubiginous curly hairs. Pedicel 1.5–2.5 mm, pubescent. Buds oval, 1.5–2 mm, apex rounded or obtuse. Calyx undulately lobed, pubescent. Petals oval, 1.3–1.7 mm, pubescent. Ovary sparsely pilose; style conical; stigma expanded. Berry 6–7 × 5–6 mm, 1-seeded. Seed surface with sharp ridges, ventral holes short and narrow. Fl. Jun–Jul, fr. Aug–Sep.  $2n = 22$ .

Forests, shrublands; 500–1600 m. S Yunnan [Cambodia, India, Laos, Myanmar, Nepal, Thailand, Vietnam].

**14. *Cissus assamica*** (M. A. Lawson) Craib, Bull. Misc. Inform. Kew 1911: 31. 1911.

苦郎藤 ku lang teng

*Vitis assamica* M. A. Lawson in J. D. Hooker, Fl. Brit. India 1: 648. 1875.

Lianas, woody. Branchlets terete, with longitudinal ridges, with sparse, appressed and versatile hairs, or nearly glabrous; tendrils bifurcate. Leaves simple; stipules oval, ca. 3 × 2–2.5 mm, herbaceous, nearly glabrous, apex obtuse; petiole 2–9 cm, with sparse, appressed and versatile hairs or glabrescent; leaf blade broadly cordate or cordate-oval, 5–17 × 4–14 cm, abaxially veins with sparse appressed and versatile hairs or glabrescent, basal veins 5, lateral veins 4–6 pairs, veinlets conspicuous abaxially, base cordate, notch rounded or obtuse, margin with 20–44 sharp teeth on each side, apex mucronate or acute. In-

florescence umbelliform, leaf-opposed; peduncle 2–2.5 cm, with sparse, appressed versatile hairs or subglabrate. Pedicel ca. 2.5 mm, with sparse, appressed versatile hairs. Buds oval, 2–3 mm, apex obtuse. Calyx subglabrate, entire or undulate. Petals triangular-oval, 1.5–2 mm, glabrous. Anthers oval. Disk conspicuous, 4-divided. Lower part of ovary adnate to disk; style conical; stigma slightly expanded. Berry purple-black at maturity, 7–10 × 6–7 mm, 1-seeded. Seed surface with sharp and raised ridges, ventral holes short and narrow upward 1/3 from base. Fl. May–Jun, fr. Jul–Oct.  $2n = 48$ .

Forests or shrublands by rivers; 200–1600 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Sichuan, Taiwan, Xizang, Yunnan [Bhutan, Cambodia, India, Nepal, Thailand, Vietnam].

**15. *Cissus aristata*** Blume, Bijdr. 183. 1825.

毛叶苦郎藤 mao ye ku lang teng

*Parthenocissus assamica* Craib var. *pilosissima* Gagnepain.

Lianas, woody. Branchlets terete, with longitudinal ridges, with sparse, appressed versatile hairs; tendrils bifurcate. Leaves simple; stipules herbaceous, sparsely pilose; petiole 3–7 cm, with appressed versatile hairs; leaf blade cordate-oval, 4.5–7 × 4–9 cm, abaxially with appressed versatile hairs, adaxially nearly glabrous, basal veins 5, lateral veins 4–6 pairs, veinlets inconspicuous abaxially, base subtruncate or cordate, notch of cordate base obtuse and angular, margin 16–24-toothed on each side, apex acute. Inflorescence umbelliform, leaf-opposed; peduncle 2–3 cm, with appressed versatile hairs. Pedicel 2–2.5 mm, with sparse, appressed versatile hairs. Buds oval, 2–3 mm, apex obtuse. Calyx sparsely pilose, entire. Petals triangular-oval, ca. 2.5 mm, sparsely pubescent. Anthers oval. Lower part of ovary adnate to disk; style conical; stigma slightly expanded. Berry 8–10 × 6–7 mm, 1-seeded. Seed rostrum sharp, surface with raised ridges, ventral holes narrow upward 1/3 from base. Fl. May–Nov, fr. Dec–Feb.

Forests in valleys; 100–1300 m. Hainan, Yunnan [Indonesia, Malaysia, Myanmar, Papua New Guinea, Philippines, Thailand].

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