

## 17. Tribe MILLETTIEAE

崖豆藤族 ya dou teng zu

Wei Zhi (韦直), Chen Dezhaoyao (陈德昭 Chen Te-chao), Zhang Dianxiang (张奠湘), Sun Hang (孙航); Les Pedley

Trees, lianas, or shrubs. Stipules often caducous. Leaves pulvinate, usually imparipinnate; leaflets (1–)5–15 (to over 40), usually opposite, rarely alternate; stipels present or absent. Inflorescences various, but not in elongated racemes. Flowers often in fascicles and these arranged in pseudoracemes or pseudopanicles, sometimes on leafless branches or on main trunk. Bracteoles usually present. Calyx various, truncate or with 4 or 5 short lobes. Corolla papilionaceous; standard with or without basal calluses; wings free or  $\pm$  adherent to keel. Stamens 10, monadelphous or diadelphous; vexillary filament free or connate to others; anthers versatile, sometimes with trichomes. Disk generally present, tubular, surrounding stipe of ovary; ovary with 1–12 or more ovules. Legumes dehiscent or indehiscent, winged or not; valves woody or papery. Seeds variously shaped, flat or round in cross section; testa hard or woody.

About 45 genera and 900–920 species: widespread in tropical and subtropical regions of the world, poorly represented in Australia, *Callerya* extending into temperate parts of China, and *Wisteria* extending into temperate parts of E Asia and North America; 13 genera and 84 species (35 endemic, five introduced) in China.

This tribe was incorrectly named Tephrosieae in FRPS. The name Millettieae has priority.

- 1a. Inflorescences racemes or panicles; flowers solitary in axil of a bract.
  - 2a. Inflorescences racemes (or sometimes panicles in *Afgekia*); bracts longer than corresponding flower buds, persistent and covering them completely until anthesis.
    - 3a. Corolla standard with 2 basal curved laminar calluses; ovary with trichomes, with 2 ovules; legume inflated, tardily dehiscent with 1 or 2 seeds; valves thickly woody ..... 69. *Afgekia*
    - 3b. Corolla standard without basal calluses; ovary glabrous, with 9–12 ovules; legume linear, raised over seeds, dehiscent along adaxial suture, with 4–10 seeds; exocarp fleshy (papery when dry) and endocarp thin, leathery, lining seed cavity ..... 70. *Sarcodum*
  - 2b. Inflorescences racemes or panicles; bracts occasionally as long as flower buds, not persistent or not covering them completely.
    - 4a. Trees; stipels absent; flowers 0.8–1 cm; corolla standard long ovate, length:width ratio 2–2.5; anthers dehiscent by short terminal slits; legumes dehiscent, thickly woody, not winged, with 1 (or 2) seeds ..... 68. *Antheroporum*
    - 4b. Lianas or sprawling trees or shrubs; stipels present, caducous, or absent; flowers 0.8–3 cm or more; corolla standard ovate to orbicular, length:width ratio less than 2; legume tardily or not dehiscent, leathery or woody, winged or not, with 1–10 seeds.
      - 5a. Flowers in pendent racemes; corolla standard with 2 distinct basal calluses forming a ridge on distal part of claw; legume leathery, compartmented, not winged ..... 75. *Wisteria*
      - 5b. Flowers in terminal or axillary panicles, not pendent; corolla standard either without calluses or calluses not forming a ridge on distal part of claw; legume not compartmented, winged or not.
        - 6a. Corolla wings free from keel at least proximally; ovary sessile or stipitate; legume with 1 or 2 wings; seed hilum eccentric ..... 67. *Aganope*
        - 6b. Corolla wings often partially adnate to keel; ovary stipitate; legume not winged; seed hilum not markedly eccentric ..... 73. *Callerya*
  - 1b. Inflorescences pseudoracemes or pseudopanicles; flowers inserted on short lateral branches of floral axis (brachyblasts), these occasionally reduced to a bract subtending 2 or 3 bracteate flowers.
    - 7a. Leaflet secondary veins numerous, straight, closely parallel, few or not anastomosing, extending to margins; legumes not woody; shrubs or herbs with woody bases ..... 77. *Tephrosia*
    - 7b. Leaflet secondary veins relatively few, curved, usually anastomosing, not extending to margins; shrubs, trees, or lianas.
      - 8a. Inflorescences cauliflorous on trunk or older branches or axillary on branchlets of previous year; supra-axillary buds covered by many subulate cataphylls ..... 71. *Fordia*
      - 8b. Inflorescences not on older branches, trunks, or branchlets of previous year; buds not covered by cataphylls.
        - 9a. Flowers borne on slight protuberances of floral axis, mixed occasionally with solitary flowers.
          - 10a. Ovary with (1 or) 2–10 ovules; legume dehiscent, flat, sometimes inflated but then secondary veins reaching margins, or legume velutinous ..... 72. *Millettia*
          - 10b. Ovary with 2 ovules; legume indehiscent, thick with secondary veins not reaching margins, glabrous ..... 74. *Pongamia*
        - 9b. Flowers borne on distinct projections of floral axis (brachyblasts).

- 11a. Leaves 3-foliolate, lateral leaflets markedly asymmetric; stamens diadelphous ..... 76. *Craspedolobium*  
 11b. Leaves 7–21-foliolate, or if fewer leaflets (1–5) then lateral ones symmetric; stamens monadelphous or rarely vexillary stamen free in bud and adherent to others in mature flowers.  
 12a. Legume dehiscent, not winged on sutures or with 2 wings perpendicular to adaxial or both adaxial and abaxial sutures; flowers 2–5 in clusters or fascicles on knoblike brachyblasts ..... 72. *Millettia*  
 12b. Legume indehiscent, winged on both abaxial and adaxial sutures; flowers 3–15 or more at tip of brachyblasts or scattered along them.  
 13a. Flowers 3–15 or more usually scattered along knoblike or slender brachyblasts; corolla standard without calluses; anthers without indumentum ..... 65. *Derris*  
 13b. Flowers 2 or 3(–5) at tip of slender brachyblasts; corolla standard with prominent basal calluses; anthers usually with some indumentum ..... 66. *Paraderris*

### 65. DERRIS Loureiro, Fl. Cochinch. 2: 423, 432. 1790, nom. cons.

鱼藤属 *yu teng shu*

Chen Dezha (陈德昭 Chen Te-chao); Les Pedley

*Brachypterum* (Wight & Arnott) Bentham; *Dalbergia* subg. *Brachypterum* Wight & Arnott.

Lianas, rarely erect shrubs or trees. Stipules small. Leaves imparipinnate; stipels absent; leaflets opposite, margins entire. Inflorescences axillary pseudoracemes, these often combined with terminal or axillary pseudopanicles; rachis nodes with 1 to many flowers, fascicled or on a short spur or branchlet; bracts and bracteoles small, deciduous. Calyx campanulate or cup-shaped, apex subtruncate or with 4 or 5 short and broad teeth. Corolla white, purplish red, or pink, longer than calyx; standard broad, usually glabrous but outside sometimes subglabrous or pubescent, without basal calluses; wings long clawed, often auriculate, adhering to keel; keels incurved, base often auriculate, apex blunt. Stamens monadelphous. Ovary sessile or with a short stipe, with 1–11 ovules; style incurved; stigma capitate. Legume globose, oblong, or ligulate-oblong, indehiscent; adaxial suture or both adaxial and abaxial sutures with a narrow wing. Seeds 1 to several per legume, reniform, compressed.

About 50 species: tropical and subtropical Africa, Asia, Australia, and Pacific islands; 16 species (nine endemic) in China.

- 1a. Legume winged only on adaxial suture.  
 2a. Leaves more than 13-foliolate.  
 3a. Leaflet blades 1.5–4 cm; trees ..... 1. *D. robusta*  
 3b. Leaflet blades 5–7.5 cm, lianas ..... 2. *D. eriocarpa*  
 2b. Leaves 11-foliolate or less.  
 4a. Leaves (3 or)5(or 7)-foliolate ..... 5. *D. trifoliata*  
 4b. Leaves 7–11-foliolate.  
 5a. Leaflet blades abaxially densely puberulent ..... 3. *D. yunnanensis*  
 5b. Leaflet blades abaxially glabrous ..... 4. *D. harrowiana*  
 1b. Legume winged on both sutures.  
 6a. Leaflet blades abaxially pubescent or puberulent.  
 7a. Branchlets robust, densely rust-colored pubescent; leaves 5–9-foliolate, leaflet blades adaxially shiny; legume with wing of abaxial suture only slightly narrower than wing of adaxial suture ..... 6. *D. ferruginea*  
 7b. Branchlets slender, glabrescent; leaves 5-foliolate, leaflet blades adaxially not shiny; legume with wing of abaxial suture almost 1/2 width of adaxial suture wing ..... 7. *D. cavaleriei*  
 6b. Leaflet blades abaxially glabrous.  
 8a. Flowers in pseudoracemes.  
 9a. Leaflet blade apices caudate-acuminate; calyx glabrous ..... 8. *D. caudatilimba*  
 9b. Leaflet blade apices obtusely acuminate to shortly acuminate; calyx puberulent or pilose.  
 10a. Legume adaxial wing ca. 5 mm wide, abaxial wing 1–2 mm wide ..... 11. *D. tonkinensis*  
 10b. Legume adaxial wing 3–5 mm wide, abaxial wing 0.5–1 or 2–3 mm wide.  
 11a. Leaves 5- or 7-foliolate; legume abaxial wing 2–3 mm wide ..... 9. *D. breviramosa*  
 11b. Leaves 7–13-foliolate; legume abaxial wing 0.5–1 mm wide ..... 10. *D. scabricaulis*  
 8b. Flowers in pseudopanicles.  
 12a. Rachis of inflorescences pilose, hispidulous, or pubescent.  
 13a. Trees or climbing shrubs ..... 11. *D. tonkinensis*  
 13b. Lianas.  
 14a. Leaves 5- or 7-foliolate, leaflet blades thickly papery to thinly leathery; legume 4–10 cm, thinly leathery ..... 12. *D. fordii*

- 14b. Leaves (3 or)5-foliolate, leaflet blades leathery; legume 2–5 cm, leathery ..... 13. *D. alborubra*  
 12b. Rachis of inflorescences glabrous.  
 15a. Leaflet blades 5, closely inserted on a very short rachis, forming subpalmate leaves ..... 16. *D. palmifolia*  
 15b. Leaflet blades 5 or 7, forming distant pinnate leaves.  
 16a. Leaflet blades obovate-elliptic to obovate; flowers fascicled on branches of  
 inflorescences ..... 14. *D. marginata*  
 16b. Leaflet blades elliptic; flowers scattered on branches of inflorescences ..... 15. *D. laxiflora*

**1. *Derris robusta*** (Roxburgh ex Candolle) Bentham, J. Proc. Linn. Soc., Bot. 4(Suppl.): 104. 1860.

大鱼藤树 da yu teng shu

*Dalbergia robusta* Roxburgh ex Candolle, Prodr. 2: 417. 1825; *Brachypterum robustum* (Roxburgh ex Candolle) Dalzell & Gibson.

Trees, 10–15 m tall, deciduous. Branches slightly sparsely pubescent, glabrescent. Leaves 13–21-foliolate; rachis 10–15 cm, including petiole 1.5–4 cm; leaflet blades oblong to obovate, 1.5–4 × 0.9–1.5 cm, membranous, both surfaces puberulent or adaxially glabrous, base obliquely cuneate, apex obtuse and shortly cuspidate. Pseudoracemes axillary, elongated, 5–15 cm; rachis nodes with 2 or 3 fascicled flowers. Pedicel 4–5 mm, slender. Flowers ca. 8 mm. Calyx campanulate, 2–5 mm, outside sericeous; teeth minute, deltoid. Corolla white; petals clawed; standard orbicular-subcordate. Ovary puberulent. Legume linear-oblong, flat, 3.5–5 × 0.9–1 cm, glabrous or puberulent, both ends narrowed; adaxial suture with a 2–3 mm wide wing. Seeds 1–5(–10) per legume. Fl. Feb–Apr, fr. May–Jan. *2n* = 22.

Mountain slopes; 300–1600 m. Yunnan [India, Laos, Myanmar, Thailand, Vietnam].

**2. *Derris eriocarpa*** F. C. How, Acta Phytotax. Sin. 3: 223. 1954.

毛果鱼藤 mao guo yu teng

Lianas. Young shoots rust-colored puberulent. Leaves 13- or 15-foliolate; rachis 20–30 cm, including petiole 5–6 cm; rachis and petiole canaliculate, sparsely puberulent; leaflet blades oblong to ovate-oblong but apical one obovate-elliptic, 5–7.5 × 2–2.5 cm, stiffly papery, both surfaces appressed scattered yellowish puberulent, base obliquely rounded to obtuse, apex shortly acuminate to slightly obtuse. Pseudoracemes axillary, solitary, longer than leaves; rachis yellowish puberulent; rachis nodes with 3–10 flowers, fascicled or on a 2–4 mm spur. Pedicel filiform, 4–5 mm, appressed yellowish pubescent. Flowers 1–1.2 cm. Calyx cup-shaped, 3–4 mm long and wide, outside densely yellowish pubescent; teeth small, unequal in length. Corolla white flushed with red; standard elliptic-ovate, outside glabrous or sparsely puberulent along veins, base truncate and shallowly cordate, apex slightly emarginate. Stamens unequal in length. Ovary villous. Legume linear-oblong, flat, 6–11 × 1.2–1.6 cm, sparsely villous, base attenuate into a stipe, apex apiculate; adaxial suture with a ca. 2 mm wide wing. Seeds 1–8 per legume. Fl. Jun–Jul, fr. Sep–Jan.

Sparse forests on mountain slopes; 800–1600 m. Guangxi, S Guizhou, S Yunnan [N Thailand].

**3. *Derris yunnanensis*** Chun & F. C. How, Acta Phytotax. Sin. 2: 69. 1952.

云南鱼藤 yun nan yu teng

Lianas, large. Young shoots, petioles, pedicels, bracteoles, and legumes yellowish puberulent. Branchlets robust. Leaves 9- or 11-foliolate; rachis ca. 25 cm, including petiole 4–4.5 cm; leaflet blades oblong or apical one oblanceolate, 6.5–11 × 2–3.5 cm, subleathery, abaxially densely yellowish puberulent, adaxially glabrous or yellowish puberulent in vein axils, base broadly cuneate, apex obtusely acuminate. Infructescences axillary. Pseudoracemes axillary, 20–30 cm; rachis nodes with 2 or 3 flowers borne singly along a short branchlet; bracts linear. Pedicel ca. 2.5 mm. Flowers 1.4–2 cm. Calyx cup-shaped, 4–6 mm, puberulent; teeth 5, abaxial tooth longer than others, adaxial 2 teeth subconnate. Corolla glaucous whitish, 1–1.4 cm; petals all long clawed. Ovary sessile, densely pubescent; style long and incurved, glabrous. Legume oblong, flat, 5–15 × 2–2.5 cm, densely yellowish brown shortly villous, base abruptly constricted, apex obtusely acute; adaxial suture with a 1–2 mm wide wing. Seeds 1–4 per legume. Fl. Jul–Aug, fr. Oct.

• Cliff bases in mountains; ca. 2000 m. Guangxi, Guizhou, Yunnan.

**4. *Derris harrowiana*** (Diels) Z. Wei, Acta Phytotax. Sin. 23: 290. 1985.

大理鱼藤 da li yu teng

*Millettia harrowiana* Diels, Notes Roy. Bot. Gard. Edinburgh 5: 246. 1912.

Lianas. Branches with tuberculate whitish lenticels. Leaves 7–11-foliolate, juvenile at anthesis; rachis 10–12 cm, including petiole 6–8 cm; leaflet blades oblong-elliptic to sometimes narrowly ovate, 4.5–5.5 × 1.5–2.5 cm, both surfaces glabrous, apex shortly acuminate. Pseudoracemes 12–16 cm including peduncle; rachis nodes with 2 or 3 fascicled flowers. Pedicel 2–3 mm. Flowers ca. 1.2 cm. Calyx campanulate, ca. 5 mm, densely rust-colored sericeous; teeth short. Corolla whitish or rose-red, ca. 7 mm. Stamens 7–8 mm. Ovary sericeous. Legume narrowly oblong, 7–16 × 2–2.3 cm, compressed, glabrous, apex mucronate; adaxial suture with a 2–4 mm wide wing. Seeds 2 or 3 per legume. Fl. Apr–May, fr. Jun–Aug.

• Forests on mountain slopes; 1900–2000 m. Yunnan (Dali).

**5. *Derris trifoliata*** Loureiro, Fl. Cochinch. 2: 433. 1790.

鱼藤 yu teng

*Derris uliginosa* (Roxburgh ex Willdenow) Bentham; *Robinia uliginosa* Roxburgh ex Willdenow.

Lianas, glabrous. Leaves (3 or)5(or 7)-foliolate; rachis

7–15 cm, including petiole 5–9 cm; leaflet blades ovate-oblong, 5–10 × 2–4 cm, firmly papery to subleathery, base rounded to slightly cordate, apex obtusely acuminate. Pseudoracemes axillary, 5–10 cm; rachis nodes with 2 or 3(–6) fascicled flowers sometimes borne on a short branchlet. Pedicel 2–4 mm. Flowers ca. 1.2 cm. Calyx campanulate, ca. 2 mm, glabrous or subglabrous; teeth very short, obtuse. Corolla whitish to pink, ca. 1 cm; standard suborbicular. Ovary sparsely pubescent. Legume obliquely ovoid, globose, or oblong, 2.5–4 × 2–3 cm, compressed, glabrous; adaxial suture with a narrow wing. Seeds 1 or 2 per legume. Fl. Apr–Aug, fr. Aug–Dec.  $2n = 22$ .

Coastal areas along beaches or riverbanks, thickets, forests; below 1000 m. Fujian, Guangdong, Guangxi, Hainan, Taiwan [Cambodia, India, Indonesia, Japan, Malaysia, Papua New Guinea, Sri Lanka, Thailand, Vietnam; E Africa, Australia, Pacific islands].

**6. *Derris ferruginea*** Benth in Miquel, Pl. Jungh. 252. 1852.

锈毛鱼藤 xiu mao yu teng

*Robinia ferruginea* Roxburgh, Fl. Ind., ed. 1832, 3: 329. 1832, not Kunth (1823).

Lianas. Branchlets densely rust-colored pubescent. Leaves 5–9-foliolate; rachis 5.5–9(–15) cm, including petiole 3.5–5(–10) cm; leaflet blades elliptic to obovate-oblong, 6–13 × 2–5 cm, leathery, abaxially slightly rust-colored puberulent, adaxially glabrous and shiny, base rounded, apex obtusely acuminate. Pseudopanicles axillary, 15–30 cm, densely rust-colored puberulent; rachis nodes with 2 or 3(–8) fascicled flowers often borne on a short branchlet. Pedicel slender, 4–6 mm. Flowers 1–1.4 cm. Calyx ca. 3 mm; teeth minute. Corolla pale red to whitish, 8–10 mm. Ovary pubescent. Legume oblong to ligulate-oblong, 5–8 × ca. 2.5 cm, leathery, flat, densely rust-colored sericeous when young, nearly glabrescent when old; abaxial suture with a 2–4 mm wide wing, adaxial suture with a 3–5 mm wide wing. Seeds 1 or 2 per legume. Fl. Apr–Jul, fr. Sep–Dec.

Sparse forests and thickets, low elevation mountain slopes; 500–1200 m. Guangdong, S Guangxi, SW Guizhou, Hainan, S Yunnan [Bangladesh, India, Laos, Myanmar, Thailand, Vietnam].

**7. *Derris cavaleriei*** Gagnepain, Notul. Syst. (Paris) 2: 347. 1913.

黔桂鱼藤 qian gui yu teng

Lianas. Branches slender, yellowish pubescent when young, glabrescent, dark brown when dried. Leaves 5-foliolate; rachis 9–12 cm, including petiole 5–7 cm; leaflet blades ovate-oblong, 5–10 × 2–4 cm, leathery, abaxially densely appressed yellowish brown pubescent, adaxially sparsely pubescent or glabrous and not shiny, secondary veins 7–10 on each side of midvein, base rounded to broadly cuneate, apex obtusely acuminate. Pseudopanicles terminal or lateral, 7–10 cm, compact, with few branches; rachis nodes with 2–5 fascicled flowers. Pedicel ca. 6 mm. Flowers ca. 1.3 cm. Calyx campanulate, ca. 3 mm, hispidulous. Corolla whitish, 8–10 mm; standard elliptic. Ovary pubescent. Legume broadly ellipsoid, 6–13 × 3–4.5 cm, compressed, densely rust-colored pubescent, both ends subtruncate; abaxial suture with a 3–6 mm wide wing, adaxial suture with a 0.7–1.3 cm wide wing. Seeds 1 or 2 per legume. Fl. Apr–May, fr. Oct–Dec.

• Thickets or sparse forests on mountain slopes; 300–1300 m. Guangdong, Guangxi, Guizhou, Yunnan.

**8. *Derris caudatilimba*** F. C. How, Acta Phytotax. Sin. 3: 221. 1954.

尾叶鱼藤 wei ye yu teng

Lianas. Branches glabrous, with pale gray lenticels. Leaves 7- or 9-foliolate; rachis 10–15 cm, including petiole 4–5 cm; leaflet blades oblong, 4–10 × 1.4–2.8 cm, papery, abaxially glabrous, midvein raised on both surfaces, secondary veins 6 or 7 on each side of midvein, base broadly cuneate to slightly obtuse, apex caudate-acuminate. Racemes axillary, narrow and elongated, 10–25 cm; rachis sparsely puberulent, with 2–6 fascicled flowers. Pedicel filiform, 3–5 mm, sparsely puberulent. Flowers 9–10 mm. Calyx campanulate, ca. 3 mm long and wide, glabrous; teeth deltoid. Corolla whitish, 6–7 mm; standard elliptic to orbicular, base subtruncate, apex emarginate. Ovary puberulent. Legume ligulate-oblong, 4–9 × 1.2–1.5 cm, compressed, glabrous; abaxial suture with a 0.8–1.5 mm wide wing, adaxial suture with a 3–4 mm wide wing. Seed 1 per legume. Fl. May–Aug, fr. Nov–Dec.

• Thickets or sparse forests on mountain slopes; 500–1400 m. Guangdong, Yunnan.

**9. *Derris breviramosa*** F. C. How, Acta Phytotax. Sin. 3: 219. 1954.

短枝鱼藤 duan zhi yu teng

Lianas. Leaves 5- or 7-foliolate; rachis 15–20 cm, including petiole 6–7 cm; leaflet blades obovate-oblong to oblong, 5–10 × 2.5–4.5 cm, subpapery, glabrous, secondary veins 7 or 8 on each side of midvein, slender, and raised on both surfaces, base broadly cuneate to obtuse, apex obtusely acuminate to shortly acuminate. Pseudoracemes axillary, much longer than leaves, without branches or paniculate and with a few branches near base of rachis; rachis nodes with several fascicled flowers on a 4–6 mm branchlet. Pedicel puberulent, 3–6 mm. Flowers 9–10 mm. Calyx campanulate, ca. 3 mm long and wide, puberulent, with numerous minute orange glandular dots. Corolla whitish, 8–9 mm; petals all clawed; standard oblong. Ovary pubescent. Legume oblong, inserted on scarred nodal short branchlets, 5–7.5 × 1.8–2 cm, compressed, finely veined, glabrous, both ends slightly obtuse; abaxial suture with a 2–3 mm wide wing, adaxial suture with a 3.5–5 mm wide wing. Seed 1 per legume. Fl. Jun, fr. Aug.

• Mountain valleys, streamsides. Hainan.

**10. *Derris scabricalis*** (Franchet) Gagnepain, Notul. Syst. (Paris) 2: 367. 1913.

粗茎鱼藤 cu jing yu teng

*Millettia scabricalis* Franchet, Pl. Delavay. 158. 1889.

Lianas. Branches scabrous, with convex lenticels, brownish pubescent when young. Leaves 7–13-foliolate; rachis 9–14 cm, including petiole 4.5–6 cm; petiolules blackish brown; leaflet blades obovate-oblong to oblong, 5–9 × 1.5–3 cm, papery, glabrous, base obtuse, rounded, or broadly cuneate and rather oblique except for apical one, apex shortly acumi-

nate. Pseudoracemes axillary or terminal, ca. 25 cm or much longer; rachis nodes with 2 or 3 fascicled flowers. Pedicel 2–3 mm, puberulent. Flowers 1–1.2 cm. Calyx campanulate, 2–3 mm, appressed yellowish puberulent; teeth obscure. Corolla reddish, glabrous, ca. 5 × as long as calyx; standard orbicular. Ovary pubescent. Legume oblong, 6–9 × ca. 3 cm, thin, glabrous; abaxial suture with a 0.5–1 mm wide wing, adaxial suture with a 3–5 mm wide wing. Seeds 1 or 2 per legume. Fl. May, fr. Aug–Sep.

- Valleys in mountains, scrub; 1400–2500 m. Xizang, Yunnan.

**11. *Derris tonkinensis*** Gagnepain, Notul. Syst. (Paris) 2: 349. 1913.

东京鱼藤 *dong jing yu teng*

Trees or climbing shrubs. Branches brown to red, glabrous. Leaves 5(or 7)-foliolate; rachis 4–8 cm, including petiole 1.5–6 cm; leaflet blades ovate-lanceolate or broadly ovate to ovate-oblong, 3–10 × 1.5–4 cm, firm in texture, glabrous, base rounded but apical one cuneate, apex shortly acuminate to obtuse. Pseudoracemes axillary or terminal, lax or somewhat congested, 7–10 × ca. 5 cm, sometimes paniculate with 1 to many 3–4 cm slender branches, thinly reddish pilose; rachis nodes with 4–6 flowers congested and fascicled or lax and borne on 1.5–2 cm branchlets. Pedicel 6–7 mm, appressed reddish pilose. Flowers 1–1.2 cm. Calyx cup-shaped, 2.5–3 mm, appressed reddish pilose; teeth obscure. Corolla whitish to pink; petals all clawed; standard elliptic, 10–12 × ca. 6 mm, reflexed, base abruptly attenuate. Ovary slightly pilose. Legume ellipsoid, 8–11 × ca. 2.5 cm, flat, glabrous, finely veined, both ends obtusely attenuate; abaxial suture with a 1–2 mm wide wing, adaxial suture with a ca. 5 mm wide wing. Seed 1(or 2) per legume. Fl. Mar–Jun, fr. May–Nov.

Scrub or sparse forests on mountain slopes. Guangdong, Guangxi, Guizhou [Vietnam].

- 1a. Leaves 5-foliolate; leaflet blades ovate-lanceolate, 3–6 cm; inflorescences with 1–3 or more branches; flowers lax on 1.5–2 cm branchlets ..... 11a. var. *tonkinensis*  
 1b. Leaves 5(or 7)-foliolate; leaflet blades broadly ovate to ovate-oblong, 5–10 cm; inflorescences with many branches; flowers congested and fascicled ..... 11b. var. *compacta*

**11a. *Derris tonkinensis* var. *tonkinensis***

东京鱼藤(原变种) *dong jing yu teng* (*yuan bian zhong*)

Leaves 5-foliolate; leaflet blades ovate-lanceolate, 3–6 cm. Inflorescences with 1–3 branches. Flowers lax on 1.5–2 cm branchlets. Corolla whitish to pink. Fl. Mar–Jun, fr. May–Oct.

- Guangxi, Guizhou [Vietnam].

**11b. *Derris tonkinensis* var. *compacta*** Gagnepain in Lecomte, Fl. Indo-Chine 2: 458. 1916.

大叶东京鱼藤 *da ye dong jing yu teng*

Leaves 5(or 7)-foliolate; leaflet blades broadly ovate to ovate-oblong, 5–10 cm. Inflorescences with many branches.

Flowers congested and fascicled. Corolla pink. Fl. Apr–May, fr. Oct–Nov.

- Guangdong, Guangxi.

**12. *Derris fordii*** Oliver, Hooker's Icon. Pl. 18: t. 1771. 1888.

中南鱼藤 *zhong nan yu teng*

Lianas. Leaves 5- or 7-foliolate; rachis 15–28 cm, including petiole 3–8 cm; leaflet blades ovate-elliptic, ovate-oblong, or elliptic, 3–13 × 1.5–6 cm, thickly papery to thinly leathery, both surfaces glabrous, reticulate veins slightly prominent or obscure, base rounded, apex acuminate to slightly obtuse. Inflorescences and pedicels sparsely yellowish brown hispidulous or densely brownish pubescent. Pseudopanicles axillary, slightly shorter than leaves; rachis nodes with several fascicled flowers on short branchlets. Pedicel 3–5 mm. Flowers 1.2–1.3 cm. Calyx campanulate, 2–3 mm, sparsely pubescent; teeth orbicular to deltoid, short. Corolla whitish, ca. 1 cm; standard obovate-elliptic, claw short. Ovary sessile, whitish villous. Legume oblong to ligulate-oblong, 4–10 × 1.5–2.3 cm, compressed, swollen or not when mature, thinly leathery, glabrous; abaxial suture wing up to 1.5 mm wide, adaxial suture with a 2–3 mm wide wing. Seeds 1–4 per legume. Fl. Mar–May, fr. Jun–Nov.

- Mountain valleys, scrub, sparse to dense forests, mountain slopes, near trails; 500–1600 m. Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Yunnan, Zhejiang.

- 1a. Leaflet blades 4–13 × 2–6 cm, reticulate veinlets slightly prominent; inflorescences and pedicels sparsely yellowish brown hispidulous; legume slightly thick, swollen when mature, abaxial suture with a less than 1 mm wide obscure wing .. 12a. var. *fordii*  
 1b. Leaflet blades 3–8 × 1.5–3 cm, reticulate veinlets obscure; inflorescences and pedicels densely brownish pubescent; legume thin, not swollen when mature, abaxial suture with a 1–1.5 mm wide distinct wing ..... 12b. var. *lucida*

**12a. *Derris fordii* var. *fordii***

中南鱼藤(原变种) *zhong nan yu teng* (*yuan bian zhong*)

*Derris rubromaculata* Chun & F. C. How.

Leaflet blades 4–13 × 2–6 cm, reticulate veinlets slightly prominent. Inflorescences and pedicels sparsely yellowish brown hispidulous. Legume slightly thick, swollen when mature, abaxial suture with a less than 1 mm wide obscure wing. Fl. Apr–May, fr. Oct–Nov.

- Mountain valleys, scrub, sparse forests, mountain slopes, near trails. Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Yunnan, Zhejiang.

**12b. *Derris fordii* var. *lucida*** F. C. How, Acta Phytotax. Sin. 3: 218. 1954.

亮叶中南鱼藤 *liang ye zhong nan yu teng*

Leaflet blades 3–8 × 1.5–3 cm, adaxially shiny, reticulate

veinlets obscure. Inflorescences and pedicels densely brownish pubescent. Legume thin, not swollen when mature, abaxial suture with a 1–1.5 mm wide distinct wing. Fl. Mar–Apr, fr. Jun–Aug.

• Dense or sparse forests on rocky mountain slopes. Guangdong, Guangxi, Guizhou, Yunnan.

**13. *Derris alborubra*** Hemsley, Bot. Mag. 131: t. 8008. 1905.

白花鱼藤 bai hua yu teng

Lianas, 6–7 m, evergreen. Leaves (3 or)5-foliolate; rachis 5–14 cm, including petiole 2.5–3.5 cm; leaflet blades elliptic, oblong, or obovate-oblong, 5–8(–15) × 2–5(–7) cm, leathery, glabrous, base broadly cuneate to rounded, apex obtuse and slightly emarginate. Inflorescence rachis and pedicels thinly puberulent; pseudopanicles terminal or axillary, 15–30 cm, narrow; rachis nodes with up to 15 flowers on short filiform branchlets. Pedicel ca. 1 cm. Flowers 1–1.2 cm. Calyx red, obliquely campanulate, ca. 4.5 mm, appressed pubescent but glabrescent. Corolla whitish, 1–1.2 cm; standard suborbicular, puberulent, apex emarginate. Ovary sessile, yellowish pubescent. Legume obliquely ovoid to obliquely oblong, 2–5 × 2.2–2.5 cm, compressed, glabrous; abaxial suture with a ca. 1 mm wide wing, adaxial suture with a 3–4 mm wide wing. Seeds 1 or 2 per legume. Fl. Apr–Jun, fr. Jul–Oct.

Sparse forests or thickets on mountain slopes. Guangdong, Guangxi, Hainan [Cambodia, Laos, Vietnam].

*Derris alborubra* is represented in China by the typical variety. Another variety, *Derris alborubra* var. *honheoensis* P. K. Lóc, is endemic to Vietnam.

**14. *Derris marginata*** (Roxburgh) Benth in Miquel, Pl. Jungh. 252. 1852.

边莱鱼藤 bian jia yu teng

*Dalbergia marginata* Roxburgh, Fl. Ind., ed. 1832, 3: 230. 1832.

Lianas, glabrous except for pilose calyces and ovaries. Leaves 5- or 7-foliolate; rachis 13–25 cm, including petiole (3.5–)5–10 cm; leaflet blades obovate-elliptic to obovate, 5–15 × 2.5–6 cm, subleathery, secondary veins 6–8(–10) on each side of midvein and slightly prominent, base rounded, apex shortly and obtusely acuminate. Pseudopanicles axillary, 6–20 cm, with few branches, glabrous; rachis nodes with 1–3 fascicled flowers. Pedicel 5–12 mm. Flowers 1–1.2 cm. Calyx shallowly cup-shaped, 2–3 mm. Corolla whitish to pale red, 8–10(–12) cm, glabrous; standard broadly ovate. Ovary sessile, glabrescent. Legume ligulate-oblong, 7–10(–15) × 2–4 cm, thin, glabrous, reticulate veined; abaxial suture with a 2–3 mm wide wing,

adaxial suture with a 6–8 mm wide wing. Seeds 1(or 2) per legume. Fl. Apr–May, fr. Nov–Jan.

Open or dense forests, mountain slopes; 400–600 m. Guangdong, Guangxi, Guizhou, Yunnan [Bangladesh, India, Laos, Myanmar, Nepal, Thailand, Vietnam].

The place of publication of the basionym is often given incorrectly. Roxburgh used the epithet “marginata” in Flora Indica for distinct species in two genera. Both were treated by Benth as species of *Derris*. In making the transfer of *Dalbergia marginata*, Benth cited the wrong page number. See R. Geesink (Leiden Bot. Ser. 8: 110. 1984) for discussion.

**15. *Derris laxiflora*** Benth, J. Proc. Linn. Soc., Bot. 4(Suppl.): 105. 1860.

疏花鱼藤 shu hua yu teng

Lianas, glabrous except for pilose calyces. Leaves 5- or 7-foliolate; rachis 6–9(–12) cm, including petiole 3–6 cm; leaflet blades elliptic, 5–8 × 2.5–4 cm, subleathery, base broadly cuneate, apex obtuse. Pseudopanicles terminal, 15–30 cm, laxly flowered, basal branch elongated but others short; rachis nodes with 2 or 3 fascicled flowers. Pedicel 6–8 mm. Flowers ca. 1.2 cm. Calyx broadly campanulate, ca. 2 mm. Corolla whitish, 7–9 mm; petals all clawed; standard suborbicular, base broadly cuneate. Ovary glabrous. Legume ellipsoid, 5–8 × 1.5–2.5 cm, flattened, glabrous; abaxial suture with a distinct but narrow wing, adaxial suture with a ca. 3 mm wide wing. Seeds 1–3 per legume. Fl. Apr–Jun, fr. Jul–Oct.

• Semi-open areas, thicket margins; below 1000 m. Taiwan.

**16. *Derris palmifolia*** Chun & F. C. How, Acta Phytotax. Sin. 2: 68. 1952.

掌叶鱼藤 zhang ye yu teng

Lianas, glabrous except for pubescent young branchlets and flower buds. Leaves subpalmately pinnate, 5–7 cm, with 5 closely inserted leaflets on an abbreviated rachis; leaflet blades ovate-elliptic to oblong, basal pair each 2–3.5 × 1.3–1.5 cm, remaining pairs each 4–5 × ca. 1.5 cm but sometimes apical one larger, secondary veins 6–9 on each side of midvein and very slender, base cuneate to slightly subrounded, apex shortly acuminate. Flowers unknown. Infructescences axillary, 2–3 × as long as leaves, broadly paniculate, with few elongated spreading branches. Legume oblong-ligulate, 4–7 × 1.3–1.7 cm, reticulate veined when dry, base rounded to truncate, apex obliquely pointed; abaxial suture with a less than 1 mm wide wing, adaxial suture with a ca. 2 mm wide wing. Seed 1(or 2) per legume. Fr. Sep.

• Mountain valleys; ca. 1700 m. Yunnan.

**66. PARADERRIS** (Miquel) R. Geesink, Leiden Bot. Ser. 8: 109. 1984.

拟鱼藤属 ni yu teng shu

Chen Dezha (陈德昭 Chen Te-chao); Les Pedley

*Derris* sect. *Paraderris* Miquel, Fl. Ned. Ind. 1: 145. 1855.

Lianas. Stipules small. Leaves imparipinnate; stipels much reduced or absent. Flowers in axillary pseudoracemes, occasionally

aggregated into pseudopanicles. Brachyblasts rather thin, with (1 or)2 or 3(–5) flowers. Bracts shorter than corresponding flower buds. Bracteoles present. Calyx with 5 short lobes. Corolla white to rose-red; standard blade elliptic to suborbicular, reflexed at base; basal calluses distinct, large; wings and keel petals  $\pm$  equally long. Stamens monadelphous; upper staminal filament adnate to other 9; anthers usually with trichomes. Disk distinct, flat to slightly hollow. Ovary with trichomes; ovules 1–7. Legume indehiscent, woody to thickly woody; either both sutures with a longitudinal wing or winged only on adaxial suture. Seeds 1 to several per legume, lens-shaped; radicle folded.

About 15 species: through SE Asia to New Guinea, absent from Australia and Pacific islands; six species (three endemic, two introduced) in China.

- 1a. Flowers in pseudopanicles; leaflets 9–15.  
 2a. Leaflet blades subleathery, apex obtuse to acute; flowers less than 1.2 cm; legume ca. 3 cm ..... 3. *P. canarensis*  
 2b. Leaflet blades membranous, apex caudate-acuminate to acuminate; flowers 1.5–1.8 cm; legume more than 4 cm.  
 3a. Leaflets 9–13, blades abaxially glaucous when dry; branchlets yellowish pubescent; corolla rose-red; pedicel 0.8–1 cm ..... 1. *P. glauca*  
 3b. Leaflets 13 or 15, blades abaxially olive-green when dry; branchlets glabrous; corolla whitish; pedicel 1–2 cm ..... 2. *P. hainanensis*  
 1b. Flowers in pseudoracemes; leaflets 5–13.  
 4a. Leaflets 9–13, blades abaxially sericeous; corolla standard sericeous outside ..... 4. *P. elliptica*  
 4b. Leaflets 5–9, blades abaxially glabrous; corolla standard glabrous outside.  
 5a. Leaflet blades papery, 5–9 cm, apex shortly and obtusely acuminate; rachis of inflorescences puberulent ..... 5. *P. hancei*  
 5b. Leaflet blades subleathery, 10–15 cm, apex caudate-acuminate; rachis of inflorescences glabrous; cultivated ..... 6. *P. malaccensis*

**1. *Paraderris glauca*** (Merrill & Chun) T. C. Chen & Pedley, **comb. nov.**

粉叶鱼藤 fen ye yu teng

Basionym: *Derris glauca* Merrill & Chun, Sunyatsenia 2: 246. 1935.

Lianas. Branches and young shoots yellowish pubescent; branchlets tuberculate, very sparse pilose or glabrescent. Leaves 9–13-foliolate; rachis 7–14 cm, including petiole 3–7 cm; leaflet blades obovate-oblong, 5–7  $\times$  2–3.5 cm, membranous, abaxially greenish white when young but glaucous when old, base cuneate to broadly cuneate, apex caudate-acuminate. Cymose pseudopanicles 10–15  $\times$  6–8 cm; rachis nodes usually with 3 fascicled flowers at apex of a 8–10 mm branchlet. Pedicel 8–10 mm, slender. Flowers 1.6–1.8 cm. Calyx reddish brown, broadly cup-shaped, 6–7 mm in diam., mouth yellowish pubescent. Corolla rose-red; standard broadly ovate, 1.6–1.7  $\times$  ca. 1.2 cm, apex emarginate. Ovary yellowish puberulent on basal part. Legume oblong to ligulate, 4–8  $\times$  1.5–2.5 cm, thin, base attenuate to obtuse, apex acuminate; abaxial suture with a 1–2 mm wide wing, adaxial suture with a 3–4 mm wide wing. Seeds 1–3 per legume. Fl. Apr–May, fr. Jul–Aug.

- Forests in mountains; below 700 m. S Guangxi, Hainan.

**2. *Paraderris hainanensis*** (Hayata) Adema, Blumea 48: 138. 2003.

海南鱼藤 hai nan yu teng

*Derris hainanensis* Hayata, Icon. Pl. Formosan. 3: 77. 1913.

Lianas. Branches terete, glabrous, with scattered elliptic lenticels. Stipules oblong-triangular, pilose, apex acute. Leaves 13- or 15-foliolate; rachis 8–15 cm, including petiole (4.5–)6–8 cm; leaflet blades obovate to long elliptic, 4–7  $\times$  1.8–3.5 cm,

membranous, both surfaces glabrous, abaxially olive-green and slightly whitish green, base broadly cuneate to sometimes subrounded, apex caudate-acuminate to cuneate. Cymose pseudopanicles axillary, 10–15 cm. Pedicel 1–2 cm. Calyx campanulate, ca. 4  $\times$  7 mm, subglabrous. Corolla whitish; standard suborbicular, ca. 1.5 cm, claw ca. 3 mm, limb base cordate and with 2 triangular calluses, apex emarginate. Ovary linear, hirsute. Legume oblong to ligulate, 4.5–10  $\times$  ca. 2 cm; abaxial suture with a 1–2 mm wide wing, adaxial suture with a 3–4 mm wide wing. Seeds 1 or 2 per legume. Fl. Apr–Jun, fr. Jul–Oct.

- Open forests, scrub on mountain slopes. Hainan.

**3. *Paraderris canarensis*** (Dalzell) Adema, Blumea 48: 137. 2003.

兰屿鱼藤 lan yu yu teng

*Pongamia canarensis* Dalzell, Hooker's J. Bot. Kew Gard. Misc. 2: 37. 1850; *Derris oblonga* Bentham.

Lianas. Branches subglabrous. Leaves 9–15-foliolate; rachis to 30 cm, including petiole 4–6 cm; leaflet blades oblong to oblanceolate-oblong, 4–6  $\times$  1–2 cm, subleathery, both surfaces  $\pm$  glabrous, abaxially glaucous, apex obtuse to acute. Pseudopanicles much shorter than leaves, rachis short, branches densely compact. Pedicel 3–4 mm, grayish velutinous. Flowers ca. 1.2 cm. Calyx ca. 5 mm. Corolla white or light purple, ca. 1.2 cm; standard ca. 1 cm wide, reflexed, glabrous. Legume broadly oblong, ca. 3  $\times$  2 cm, glabrous; adaxial suture with a wing ca. 2 mm wide. Seed 1 per legume. Fl. Apr, fr. Jun–Jul.

Coastal forest margins; below 100 m. Taiwan (Lan Yu) [Philippines].

**4. *Paraderris elliptica*** (Wallich) Adema, Thai Forest Bull., Bot. 28: 11. 2001.

毛鱼藤 mao yu teng

*Pongamia elliptica* Wallich, Pl. Asiat. Rar. 3: 20. 1832; *Derris elliptica* (Roxburgh) Benth; *Galedupa elliptica* (Wallich) Roxburgh.

Lianas, 7–10 m, robust. Young branchlets, leaf rachises, petioles, and petiolules densely brown pubescent. Branches glabrous when old, scattered with brown lenticels. Leaves 9–13-foliolate; rachis 20–35 cm, including petiole 4–8 cm; leaflet blades oblong, obovate-oblong, or oblanceolate, 6–15 × 2–4 cm, thickly papery, abaxially greenish white and finely brown sericeous, adaxially glabrous or only pubescent along veins, base cuneate to broadly cuneate, apex shortly obtusely acuminate. Pseudoracemes axillary, 15–25 cm, rachis densely pubescent; rachis nodes with 3 or 4 flowers fascicled on short branchlets; peduncle 8–12 cm or much longer, densely pubescent. Pedicel 6–8 mm, densely pubescent. Flowers ca. 2 cm. Calyx shallowly cup-shaped, ca. 4 × 6–7 mm, densely sericeous. Corolla pink to whitish, 1.5–1.8 cm; standard suborbicular, 1.2–1.5 cm wide, outside brown pubescent, apex emarginate. Ovary densely pubescent. Legume oblong, 3.5–8 × 1.7–2 cm, compressed, pubescent when young, glabrescent; abaxial suture with a ca. 0.5 mm wide wing, adaxial suture with a ca. 2 mm wide wing. Seeds 1–4 per legume. Fl. Apr–May, fr. Jun.

Cultivated in Guangdong, Guangxi, Hainan, Taiwan, and Yunnan [native to Cambodia, India, Indonesia, Laos, Malaysia, Philippines, Thailand, and Vietnam].

This species is cultivated for use as an insecticide.

**5. *Paraderris hancei* (Hemsley) T. C. Chen & Pedley, comb. nov.**

粤东鱼藤 yue dong yu teng

Basionym: *Derris hancei* Hemsley, Bot. Mag. 131: t. 8008. 1905.

Lianas. Leaves (5 or) 7- or 9-foliolate; rachis 12–17 cm, including petiole 4.5–9 cm; leaflet blades obovate-oblong, 5–9 × 2–3.5 cm, papery, both surfaces glabrous, abaxially greenish

white and midvein conspicuously prominent, base cuneate, broadly cuneate, or slightly rounded, apex shortly and obtusely acuminate. Pseudoracemes axillary, 7–12 cm, narrow, scattered puberulent. Pedicel slender, 3–5 mm. Flowers 1.1–1.3 cm. Calyx purplish red, 3–4 mm, subtruncate, outside glabrous, inside with a ring of pubescence around mouth. Corolla white tinged with red outside, 1–1.2 cm; standard suborbicular, apex emarginate. Ovary sericeous. Legume obliquely ovoid to narrowly ovoid, 2.5–4 × 1.5–1.8 cm, glabrous, with transverse reticulate veins when mature; both sutures with a 1–1.5 mm wide wing. Seeds 1 (or 2) per legume. Fl. Apr–Aug, fr. Jul–Jan.

• Along trails, near pond banks. Guangdong, Guangxi.

**6. *Paraderris malaccensis* (Benth) Adema, Thai Forest Bull., Bot. 28: 11. 2001.**

异翅鱼藤 yi chi yu teng

*Derris cuneifolia* Benth var. *malaccensis* Benth, J. Proc. Linn. Soc., Bot. 4(Suppl.): 112. 1860; *D. malaccensis* (Benth) Prain.

Lianas, 10–15 m, glabrous except ovaries and mouth of calyces. Leaves 5- or 7(or 9)-foliolate; rachis 20–30 cm, including petiole 3–7 cm; leaflet blades elliptic, 10–15 cm, subleathery, base rounded, apex caudate-acuminate. Pseudoracemes shorter than leaves; rachis nodes with flowers often on short branchlets. Flowers ca. 1.7 cm. Calyx pink, campanulate, ca. 3 mm, apical margin sinuate and ciliate. Corolla rose-red, pink, or whitish, 1.3–1.4 cm; standard orbicular, apex truncate or emarginate. Ovary velutinous. Legume oblong, 5–8 cm; both sutures winged, abaxial suture with wing 1 mm wide or less. Seeds 1–4 per legume. Fl. Feb–May, fr. Apr–Aug.

Cultivated in Guangdong (Guangzhou) and Hainan [native to Cambodia, Indonesia, Laos, Malaysia, Myanmar, Thailand, and Vietnam].

Adema (Blumea 48: 139. 2003) synonymized *Paraderris malaccensis* under *P. montana* (Benth) Adema (*Derris montana* Benth).

**67. AGANOPE Miquel, Fl. Ned. Ind. 1: 151. 1855.**

双束鱼藤属 shuang shu yu teng shu

Chen Dezha (陈德昭 Chen Te-chao); Les Pedley

Lianas, woody, or sprawling trees. Leaflets (sub)opposite, papery to subleathery; stipules caducous; stipels caducous or absent. Inflorescences terminal or supra-axillary in well-developed pseudopanicles; bracts shorter than corresponding buds; bracteoles caducous. Calyx with cupular or campanulate tube, subtruncate or with distinct teeth. Petals glabrous or slightly pubescent; standard truncate to subcordate, with or without calluses; wings free from keel at least proximally. Stamens diadelphous, vexillary stamen free from other 9. Disk present; ovary with 1–10 ovules. Legumes compressed, woody; abaxial or both sutures with longitudinal wing. Seeds 1 to several per legume; hilum eccentric; radicle short, straight.

About seven species: tropical and subtropical Africa, Asia, and Pacific islands; three species (one endemic) in China.

- 1a. Trees; panicles glabrous; leaflets 5 or 7 ..... 1. *A. latifolia*  
 1b. Lianas or scandent shrubs; panicles pilose or pubescent; leaflets 5–9.  
 2a. Calyx ca. 3 mm, sparsely pilose; flowers ca. 0.8 cm; legume 5–10 cm ..... 2. *A. thyrsoiflora*  
 2b. Calyx ca. 6 mm, densely pubescent; flowers 1.5–1.7 cm; legume 10–15 cm ..... 3. *A. dinghuensis*

**1. *Aganope latifolia* (Prain) T. C. Chen & Pedley, comb. nov.**

大叶鱼藤 da ye yu teng

Basionym: *Derris latifolia* Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 67: 288. 1898.

Trees. Leaves 5- or 7-foliolate; rachis 45–60 cm, including

petiole 9–15 cm; leaflet blades ovate-oblong to ovate-lanceolate, 14–25 × 7–10 cm, thickly papery, both surfaces glabrous, midvein abaxially conspicuously raised and adaxially impressed, base broadly cuneate to subrounded, apex acuminate. Pseudopanicles axillary, copious, 50–65 cm, glabrous; branches 5–10 cm; branchlet nodes close together, with 1 flower. Pedicel ca. 2 mm. Flower ca. 6.5 mm. Calyx broadly campanulate, ca. 2.5 × 3 mm, glabrous, apex subtruncate. Corolla standard erect, orbicular, ca. 7.5 mm in diam., without basal calluses. Legume woody, 9–11 × ca. 3.5 cm, thin, smooth, glabrous, without reticulate veins; both sutures with a 3–5 mm wide wing. Seed 1 per legume. Fl. unknown, fr. Jan.

Open forests on mountain slopes; 600–1200 m. Guangxi, Yunnan [N Myanmar].

**2. *Aganope thyrsoflora*** (Benth) Polhill, Kew Bull. 25: 268. 1971.

密锥花鱼藤 mi zhui hua yu teng

*Millettia thyrsoflora* Benth in Miquel, Pl. Jungh. 249. 1852; *Derris thyrsoflora* (Benth) Benth.

Lianas or scandent shrubs. Branchlets glabrous or very sparsely pilose. Leaves 5–9-foliolate; rachis 30–45 cm, including petiole 8–14 cm; leaflet blades oblong to oblong-lanceolate, 10–15 × 3.5–7 cm, subleathery, both surfaces glabrous, secondary veins 5–7 on each side of midvein, base rounded, apex shortly acuminate to sometimes obtuse. Pseudopanicles axillary or terminal, narrowly pyramidal, 12–35 cm, compact, brown or reddish pilose; branches numerous, ascending or spreading; branchlet nodes with several close but not fascicled flowers on a short branchlet. Pedicel very short. Flowers ca. 8 mm. Calyx campanulate, ca. 3 mm, very sparsely pilose, apex truncate or obscurely deltoid toothed. Corolla whitish to purplish red, 8–10 mm; standard orbicular, with calluses cordate at

base, emarginate at apex. Ovary pilose. Legume oblong, 5–10 × 2.5–3(–4) cm, thin, glabrous, with conspicuous reticulate veins; both sutures with a 3–8 mm wide wing. Seeds 1–3 per legume, oblong-reniform. Fl. May–Jun, fr. Aug–Nov.

Scrub by streams in mountains; low elevations but to ca. 2000 m in Yunnan. Guangdong, S Guangxi, Hainan, S Yunnan [India, Indonesia, Laos, Malaysia, Myanmar, Papua New Guinea, Philippines, Thailand, Vietnam; Pacific islands].

**3. *Aganope dinghuensis*** (P. Y. Chen) T. C. Chen & Pedley, **comb. nov.**

鼎湖鱼藤 ding hu yu teng

Basionym: *Derris dinghuensis* P. Y. Chen, Acta Phytotax. Sin. 22: 81. 1984.

Lianas. Branches brownish when dry, sparsely rust-colored pubescent, scattered with brownish oblong to orbicular lenticels. Leaves 9-foliolate; rachis 35–50 cm, including petiole 10–12 cm; leaflet blades oblong to broadly oblong-ovate, 10–18 × 7–11 cm, thickly papery, both surfaces glabrous, midvein abaxially conspicuously raised and adaxially slightly impressed, secondary veins 6–8 on each side of midvein, base rounded, apex shortly and obtusely acuminate. Pseudopanicles axillary, ca. 20 cm, densely brownish pubescent, only basal part of rachis with few branches. Pedicel 3–5 mm, densely brownish pubescent. Flowers 1.5–1.7 cm. Calyx broadly campanulate, ca. 6 × 8 mm, densely brownish pubescent; teeth obscure. Corolla whitish, 1.5–1.7 cm; standard orbicular, without basal calluses. Ovary puberulent. Legume ligulate-oblong, 10–15 × 3–3.5 cm, glabrous, conspicuously veined, base narrowed, apex shortly acuminate; both sutures with a 5–8 mm wide wing. Seed 1 per legume, reniform, ca. 2.5 × 1.3 cm. Fl. Jan–Jul, fr. Nov–Dec.

• Forests, low-elevation mountains. Guangdong (Dinghu Shan).

## 68. ANTHEROPORUM Gagnepain, Notul. Syst. (Paris) 3: 180. 1915.

肿荚豆属 zhong jia dou shu

Wei Zhi (韦直); Les Pedley

Trees, evergreen. Stipules and stipels absent. Leaves imparipinnate; petiole and petiolules often basally thickened; leaflet blades (sub)opposite. Inflorescences terminal and with racemes in groups of 2–5 in axils of leaves at tips of branches; bracts longer than corresponding buds and covering them, soon caducous. Calyx cup-shaped; teeth inconspicuous. Petals ± equal, all long clawed, glabrous; standard curved upward, without basal calluses; wings partly fused to keel. Stamens monadelphous; anthers orbicular, dehiscing by a short slit at tip. Ovary stipitate or subsessile, with trichomes, with 2–6 ovules; style subulate, short. Legume inflated, not winged, dehiscent; valves woody, vacuous inside. Seeds 1(or 2), compressed globose, shiny; hilum round, ca. 3 mm in diam.

Five species: S China, Thailand, Vietnam; two species in China.

- 1a. Branchlets and leaves glabrous; inflorescences tawny pubescent; petiolules blackened when dry; leaflet blades broadly elliptic-ovate, abaxially glaucous, base tapering to petiolule ..... 1. *A. glaucum*  
 1b. Branchlets, leaves, and inflorescences with yellowish trichomes; petiolules with grayish trichomes; leaflet blades oblong, abaxially densely appressed sericeous, base rounded, asymmetric ..... 2. *A. harmandii*

**1. *Antheroporum glaucum*** Z. Wei, Acta Phytotax. Sin. 19: 351. 1981.

粉叶肿荚豆 fen ye zhong jia dou

Trees, glabrous except tawny pubescent inflorescences. Branchlets olive-green becoming gray, smooth. Leaves 7-folio-

late; rachis 30–35 cm, including petiole 6–7 cm; petiolules 5–10 mm, blackened when dry; leaflet blades broadly elliptic-ovate, 12–22 × 4–7 cm, abaxially glaucous, adaxially shiny, secondary veins 8–10 on each side of midvein, base tapering, apex acuminate to caudate. Racemes axillary, usually 2–5 apically on branchlets, 7–10 cm; rachis nodes congested, with 1 or

2 flowers; peduncle variable in length. Pedicel ca. 3 mm, slender. Flower ca. 1 cm. Calyx ca. 5 × 2.5 mm. Corolla white, ca. 1 cm; standard suborbicular, base tapering into a long claw. Ovary linear, with trichomes, with 2–4 ovules. Legume oblong-rhomboid. Fl. Mar–Aug, fr. Jun–Aug.

Seasonal rain forests; 500–1300 m. S Yunnan [Thailand].

**2. *Antheroporum harmandii*** Gagnepain, Notul. Syst. (Paris) 3: 181. 1915.

肿荚豆 *zhong jia dou*

Trees, to 10 m tall. Branchlets yellowish velutinous, with scattered minute lenticels. Leaves 7- or 9(-13)-foliolate; rachis 30–40 cm, including petiole 6–8 cm; petiolules 6–9 mm,

grayish velutinous; leaflet blades oblong, 11–18 × 3–5 cm, leathery, abaxially densely sericeous, adaxially shiny, secondary veins 5–8 on each side of midvein, base rounded and asymmetric, apex acute. Racemes axillary, usually 2–5 congested apically on branches to form a large panicle, 7–15 cm, velutinous. Pedicel ca. 3 mm, slender. Flowers ca. 8 mm. Calyx ca. 4 × 3 mm, puberulent. Corolla pale pink; standard obcordate. Ovary with trichomes, with 2 ovules. Legume oblong-rhomboid, ca. 8 × 3.5 cm, densely yellow velutinous, apex shortly straight beaked. Seed chestnut-brown, ca. 1.8 × 1.4 cm, shiny. Fl. Mar–Oct, fr. Jul–Nov.

Mixed woodlands in valleys; 200–1000 m. W Guangxi, SW Guizhou, SE and SW Yunnan [Vietnam].

## 69. *AFGEKIA* Craib, Bull. Misc. Inform. Kew 1927: 376. 1927.

猪腰豆属 *zhu yao dou shu*

Wei Zhi (韦直); Les Pedley

Shrubs, scandent. Stipules caducous. Leaves imparipinnate; stipels present; leaflets opposite. Inflorescences axillary or cauliflorous racemes or elongated panicles, with large imbricate-tailed sericeous bracts covering flower buds, caducous. Bracteoles minute. Calyx shortly 5-toothed. Corolla standard basally with 2 curved laminar calluses; wings and keels equal in length, both clawed. Stamens diadelphous; vexillary stamen free from other 9. Ovary stipitate, with trichomes, with 2 ovules. Legume inflated, tardily dehiscent; valves thickly woody. Seeds 1[or 2] per legume, ellipsoid, shiny; hilum ca. 1/2 as long as seed.

Three species: SW China, Myanmar, Thailand; one species in China.

**1. *Afgekia filipes*** (Dunn) R. Geesink, Leiden Bot. Ser. 8: 77. 1984.

猪腰豆 *zhu yao dou*

Shrubs, scandent. Bark yellow, split longitudinally. Stems to 20 m, terete, sericeous and scarlet strigose when young, glabrescent. Stipules narrowly triangular, ca. 6 mm. Leaves (13–)17- or 19-foliolate; rachis 25–35 cm, including petiole 5–8 cm; stipels filiform, caducous; petiolules 3–4 mm; leaflet blades oblong, 6–10 × 2–3.5 cm, papery or leathery, both surfaces silvery pubescent but glabrescent or abaxially densely bright brown hirsute and adaxially rough, secondary veins 7–9 on each side of midvein, base rounded and asymmetric. Panicles cauliflorous, rough with scars of fallen bracts; bracts ca. 2 cm, membranous, sericeous. Pedicel ca. 2 cm. Flowers ca. 2.5 cm. Calyx cup-shaped, with trichomes, adaxial pair of teeth connate. Corolla lilac, abaxially puberulent. Legume spindle-shaped, ca. 17 × 9 cm, velutinous, indehiscent, persistently hanging on trunk. Seed 1 per legume, dark brown, reniform, ca. 8 × 4.5 cm, smooth, shiny; hilum 3.5–4 cm. Fl. Jul–Aug, fr. Sep–Nov.

Sparse thickets, evergreen broad-leaved forest margins; 200–1300 m. Guangxi, S Yunnan [Laos, Myanmar, Thailand, Vietnam].

- 1a. Leaflet blades papery, both surfaces silvery pubescent but glabrescent ..... 1a. var. *filipes*  
1b. Leaflet blades leathery, abaxially

densely bright brown hirsute,  
adaxially rough ..... 1b. var. *tomentosa*

### 1a. *Afgekia filipes* var. *filipes*

猪腰豆(原变种) *zhu yao dou* (yuan bian zhong)

*Adinobotrys filipes* Dunn, Bull. Misc. Inform. Kew 1911: 195. 1911; *Padbruggea filipes* (Dunn) Craib; *Whitfordiodendron filipes* (Dunn) Dunn.

Leaflet blades papery, both surfaces silvery pubescent but glabrescent.

Sparse thickets; 200–1300 m. W Guangxi, S Yunnan [Laos, Myanmar, Thailand, Vietnam].

**1b. *Afgekia filipes* var. *tomentosa*** (Z. Wei) Y. F. Deng & H. N. Qin, Ann. Bot. Fenn. 42: 133. 2005.

毛叶猪腰豆 *mao ye zhu yao dou*

*Whitfordiodendron filipes* var. *tomentosum* Z. Wei, Acta Phytotax. Sin. 27: 75. 1989.

Leaf rachises, petiolules, and leaflet blades abaxially densely bright brown hirsute. Leaflet blades leathery, adaxially rough and dark green.

• Evergreen broad-leaved forest margins; 1100–1300 m. Guangxi, S Yunnan.

## 70. *SARCODUM* Loureiro, Fl. Cochinch. 2: 425, 461. 1790.

耀花豆属 *yao hua dou shu*

Sun Hang (孙航); Les Pedley

Lianas. Apical vegetative bud dormant during anthesis and fruit set. Stipules and stipels persistent. Racemes in axil of terminal

leaves forming a leafy panicle; bracts longer than corresponding flowers, caducous. Bracteoles present. Calyx campanulate, subtruncate, bilabiate. Corolla standard reflexed at base, calluses absent; wings and keel  $\pm$  equally long; wings free from keel. Stamens diadelphous, vexillary staminal filament distinct from other 9. Ovary glabrous, with 9–12 ovules. Legume linear, cylindrical, raised over seeds, dehiscing along adaxial suture; exocarp fleshy but papery when dry; endocarp thin, leathery, lining seed cavity. Seeds ellipsoid; hilum rather elongated, surrounded by prominent rim; radicle folded.

Three species: SE Asia, Pacific islands (Solomon Islands); one species in China.

*Sarcodum* is here recognized as a genus distinct from *Clianthus* Solander ex Lindley. *Clianthus* is now considered to be a genus with one or two species restricted to New Zealand, and the Australian species formerly recognized in *Clianthus* are referred to *Swainsona* Salisbury.

**1. *Sarcodum scandens*** Loureiro, Fl. Cochinch. 2: 462. 1790.

耀花豆 yao hua dou

*Clianthus scandens* (Loureiro) Merrill.

Lianas. Branchlets villous with long spreading trichomes, glabrescent. Stipules 1–1.5 cm. Leaves 19–35-foliolate; rachis 10–25 cm, including petiole 1.5–3 cm; stipels 4–5 mm; leaf blade oblong, 2.3–3.3  $\times$  0.7–1.2 cm, papery, abaxially pubescent with appressed trichomes, adaxially sprinkled with whitish appressed trichomes, base rounded, apex rounded to obtuse and mucronate. Racemes 5–10 cm; bracts lanceolate-caudate,

slightly keeled, 1.6–2 cm. Pedicel 7–10 mm; bracteoles 2–4 mm. Calyx 3–4 mm, with dense brown appressed trichomes. Corolla purplish; standard elliptic, 1.5–1.7  $\times$  ca. 1.1 cm, base subcordate, apex rounded. Ovary linear, ca. 1 cm, stipitate, with 6–10 ovules, glabrous. Legume 7–9 cm  $\times$  4–9 mm, 6–10-seeded, slightly constricted between seeds; stipe ca. 5 mm. Seeds bright blackish, ca. 6  $\times$  3.5 mm; hilum broadly ovoid. Fl. Apr–May, fr. Jul–Aug.

Valleys, escarpment forests, climbing in trees. C and S Hainan [Indonesia (Maluku Islands), Philippines, Vietnam].

**71. FORDIA** Hemsley, J. Linn. Soc., Bot. 23: 160. 1886.

干花豆属 gan hua dou shu

Wei Zhi (韦直); Les Pedley

*Imbralyx* R. Geesink.

Shrubs. Supra-axillary buds covered with many conspicuous subulate cataphylls. Stipules present, persistent or caducous. Leaves spirally arranged, imparipinnate; stipels filiform in Chinese species, persistent; leaflets opposite, rather larger pairs at middle of leaf rachis, basal 1 or 2 pairs rather smaller. Pseudoracemes cauliflorous or axillary on branchlets of previous year. Bracts shorter than corresponding flower buds. Calyx indistinctly 5-toothed. Petals clawed, sericeous at basal and apical margins; standard reflexed at base, without basal calluses. Stamens diadelphous; vexillary stamen free from other 9. Ovary sessile, with trichomes, with 2(or 3) ovules. Legume clavate, flat, thinly woody, without wings. Seeds 1 or 2 per legume, lenticular, smooth; radicle folded.

Eight species: SE Asia; two species (both endemic) in China.

- 1a. Stipules falcate, persistent; leaves (19–)23- or 25-foliolate; leaflet blades oblong, 4–12  $\times$  2.5–3 cm; pseudoracemes 15–40 cm; flowers 1.1–1.3 cm; legume 7–10  $\times$  2–2.5 cm ..... 1. *F. cauliflora*  
 1b. Stipules triangular-lanceolate, caducous; leaves 17–21-foliolate; leaflet blades ovate-lanceolate, 2.5–6  $\times$  ca. 1.5 cm; pseudoracemes 8–13 cm; flowers 0.8–1 cm; legume 3.5–6  $\times$  ca. 1.5 cm ..... 2. *F. microphylla*

**1. *Fordia cauliflora*** Hemsley, J. Linn. Soc., Bot. 23: 160. 1886.

干花豆 gan hua dou

*Millettia cauliflora* (Hemsley) Gagnepain.

Shrubs, 2–4 m tall. Stems rusty tomentose, glabrescent, rough with round traces of fallen leaves. Buds covered with many subulate 1.3–1.9 cm cataphylls. Stipules falcate, 2–2.5 cm, persistent. Leaves (19–)23- or 25-foliolate; rachis to 50 cm, including petiole ca. 10 cm; stipels subulate 2–2.5 cm; leaflet blades oblong to ovate-oblong, 4–12  $\times$  2.5–3 cm, abaxially densely pubescent, base rounded, apex acuminate. Pseudoracemes 15–40 cm, thick, straight, usually 2 or 3 together; branchlet nodes wartlike, with 3–6(–10) flowers; bracts and bracteoles minute. Flowers 1.1–1.3 cm. Corolla roseate to purple. Legume clavate, 7–10  $\times$  2–2.5 cm, glabrescent, apex shortly beaked. Seeds 1 or 2 per legume, dark brown, orbicular, ca. 1 cm. Fl. May–Sep, fr. Jun–Dec.  $2n = 22^*$ .

• Thickets on hills; near sea level to 500 m. Guangdong, Guangxi, SW Guizhou.

**2. *Fordia microphylla*** Dunn ex Z. Wei, Acta Phytotax. Sin. 27: 75. 1989.

小叶干花豆 xiao ye gan hua dou

Shrubs, to 2 m tall, erect. Stems yellowish tomentose. Stipules triangular-lanceolate, caducous. Leaves gathered at top of branchlets, 17–21-foliolate; rachis 15–20 cm, including petiole 3–5 cm; stipels filiform, ca. 1.5 mm; leaflet blades ovate-lanceolate, 2.5–6  $\times$  ca. 1.5 cm, abaxially densely pubescent to tomentose. Pseudoracemes at base of branchlets of previous year, 8–13 cm; branchlet nodes obscure, with 2–5 flowers. Flowers 8–10 mm. Corolla mauve to purple. Legume clavate, 3.5–6  $\times$  ca. 1.5 cm, flat, glabrescent, dehiscence. Seeds 1(or 2) per legume, brown, orbicular, flattened, smooth. Fl. Apr–Jun, fr. Jul–Dec.

• Rocky slopes in valleys; 800–2000 m. Guangxi, Guizhou, Yunnan.

**72. MILLETTIA** Wight & Arnott, Prodr. Fl. Ind. Orient. 263. 1834, nom. cons.崖豆藤属 *ya dou teng shu*

Wei Zhi (韦直); Les Pedley

Trees, shrubs, or lianas. Stipules present, persistent or caducous. Leaves imparipinnate; stipels present or absent; leaflet blades opposite or rarely subalternate. Inflorescence a pseudoraceme, unbranched (but branched in *Millettia ichthyochtona*), rachis with lateral flowering branchlets reduced to knobs or short spur at each node, flowers 2–5 in a clusters or fascicles per node; bracts and bracteoles present. Calyx tube broad, shortly 5-toothed; adaxial 2 teeth  $\pm$  connate. Corolla standard large, with or without basal lobes. Vexillary stamen free in bud sometimes and becoming adherent to other 9 when mature. Ovary linear; style straight or inflexed. Legume 2-valved, flat, sometimes cylindrical or inflated only around ellipsoid seeds, tardily dehiscent, not winged or with 2 wings perpendicular to abaxial or both sutures. Seeds 1 to several per legume, lenticular or globose; funicle fleshy, swelling at adaxial side, surrounding and clasping hilum as a short ringlike aril.

About 100 species: subtropical and tropical Africa, Asia, and Australia; 18 species (six endemic) in China.

Many species are used in China as medicinal drugs, insecticide, or fish poison. A few species are cultivated as ornamentals.

- 1a. Petals outside glabrous (but not always explicitly stated in description; corolla unknown in *M. entadoides*).
- 2a. Leaf rachis and leaflet blades glabrous.
- 3a. Leaflets subalternate, blades obliquely ovate, base asymmetric; legume stipitate ..... 1. *M. ichthyochtona*
- 3b. Leaflets opposite, blades oblong-lanceolate, oblanceolate, or oblong, base symmetric; legume sessile.
- 4a. Leaflet blades 12–25 cm, secondary veins 11–13 on each side of midvein; seeds thickly lenticular; trees ..... 3. *M. leptobotrya*
- 4b. Leaflet blades 9–12 cm, secondary veins 9–12 on each side of midvein; seeds reniform; lianas ..... 13. *M. entadoides*
- 2b. Leaf rachis and leaflet blades at least abaxially with trichomes.
- 5a. Leaflets 13–17, blades abaxially brown sericeous; legume inflated, rough with dense warts; lianas ..... 12. *M. pachycarpa*
- 5b. Leaflets 7–11 (or 13), blades abaxially yellow tomentose, scarlet strigose on midvein and margins, or pilose on midvein; legume flat, without warts; trees.
- 6a. Leaflet blades abaxially yellow tomentose; legume sutures both with 2 ca. 1 cm wide woody wings ..... 2. *M. tetraptera*
- 6b. Leaflet blades abaxially scarlet strigose on midvein and margins or pilose on midvein; legume sutures both only thickened.
- 7a. Leaflet blades abaxially scarlet strigose on midvein and margins; pseudoracemes erect ..... 4. *M. erythrocalyx*
- 7b. Leaflet blades abaxially pilose on midvein; pseudoracemes pendulous ..... 5. *M. leucantha*
- 1b. Petals outside pubescent.
- 8a. Stipels absent.
- 9a. Leaflet blades broadly elliptic, membranous, both surfaces pubescent, apex acute; legume flat ..... 6. *M. pubinervis*
- 9b. Leaflet blades oblong-elliptic to lanceolate-elliptic or lanceolate to oblong-lanceolate, glabrous or sparsely pilose adaxially, apex caudate; legume inflated.
- 10a. Leaflet blades oblong-elliptic to lanceolate-elliptic, papery, abaxially brown tomentose, adaxially shiny and sparsely pilose ..... 11. *M. sapindifolia*
- 10b. Leaflet blades lanceolate to oblong-lanceolate, subleathery, abaxially sparsely strigose and adaxially glabrous ..... 7. *M. austroyunnanensis*
- 8b. Stipels present.
- 11a. Leaflets 13–19.
- 12a. Stipules ca. 8 mm, persistent; branchlets reddish brown tomentose ..... 8. *M. cubittii*
- 12b. Stipules 1–3 mm, caducous; branchlets yellow tomentose or grayish yellow pubescent.
- 13a. Pseudoracemes 20–25 cm; flowers 1.3–1.6 cm; corolla white or lilac; legume tomentose; trees 8–15 m tall ..... 16. *M. velutina*
- 13b. Pseudoracemes 6–15 cm; flowers 0.9–1.2 cm; corolla pale red to scarlet; legume gray pubescent but glabrescent; erect shrubs or trees 3–8 m tall ..... 17. *M. pulchra*
- 11b. Leaflets (5 or) 7–13 (or 15).
- 14a. Leaf rachis 15–20 cm; leaflet blades 4–5.5 cm ..... 18. *M. oraria*
- 14b. Leaf rachis 25–40 cm; leaflet blades 7–18 cm.
- 15a. Leaflets 5; stems slender, without lenticels ..... 9. *M. lantsangensis*
- 15b. Leaflets 7–13; stems thick, with scattered lenticels.
- 16a. Leaflet blade secondary veins 13–17 on each side of midvein; lianas ..... 10. *M. pachyloba*
- 16b. Leaflet blade secondary veins 7–10 on each side of midvein; trees or erect shrubs.

- 17a. Leaflet blades abaxially glabrescent; inflorescences longer than subtending leaf; flowers ca. 1.8 cm; trees ..... 14. *M. macrostachya*  
 17b. Leaflet blades abaxially densely brown pubescent especially on veins; inflorescences shorter than subtending leaf; flowers ca. 1 cm; erect shrubs ..... 15. *M. griffithii*

**1. *Millettia ichthyochtona*** Drake, J. Bot. (Morot) 5: 188. 1891.

闹鱼崖豆 *nao yu ya dou*

Trees, 10–15 m tall. Branchlets flexuous, with longitudinal ridges, glabrous. Buds rounded; scales 6–8, broadly ovate. Leaves 5–9-foliolate; rachis 12–17 cm, including petiole 2–3 cm; leaflet blades subalternate, obliquely ovate, 5–8 × 1.5–2.5 cm, papery, base cuneate and asymmetric, apex acuminate. Pseudoracemes axillary, main axis often repeatedly branched, with white crisped trichomes. Pedicel 1–1.5 cm, slender. Flowers ca. 1.5 cm. Calyx 5–6 mm; teeth triangular. Corolla white; standard broadly ovate, without basal calluses. Stamen monadelphous. Ovary stipitate, glabrous, with 2 ovules. Legume falcate-oblongate, 11–14 × 2–3 cm, flat, thinly woody, smooth, apex shortly beaked; stipe ca. 1 cm. Seeds 1 or 2 per legume, pale brown, ellipsoid, ca. 1.3 × 1 cm, flat, shiny; hilum white. Fl. Feb–Apr, fr. year-round.

Sandy riverbanks; 100–800 m. SE Yunnan [Vietnam].

The pale, nearly white wood is used for construction. The seeds are used as a fish poison. The stems or roots are soaked in water and applied to relieve itching.

**2. *Millettia tetraptera*** Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 69. 1873.

四翅崖豆 *si chi ya dou*

Trees, 15–26 m tall. Branchlets grayish yellow, rough, yellowish tomentose, glabrescent. Leaves 7–11 (or 13)-foliolate; rachis 15–30 cm, including petiole 2–3 cm; stipels absent; leaflet blades elliptic-obovate, 8–13 × 2.5–3.5 cm, papery, abaxially yellow tomentose, base rounded to subcordate, apex obtuse, acute, or retuse. Pseudoracemes axillary at top of branchlets; rachis nodes with clusters of 2–5 flowers. Pedicel ca. 7 mm. Flowers 0.9–1.1 cm. Calyx 2–2.5 mm; teeth shortly triangular. Corolla lilac; standard broadly orbicular, basally thickened and emarginate. Stamens monadelphous. Ovary villous, with 4 ovules. Legume linear to oblong, 15–27 × 3–3.5 cm, flat, base tapering; stipe ca. 2 cm; both sutures with 2 ca. 1 cm wide woody wings perpendicular to them. Seeds 1 or 2 per legume, black, orbicular, ca. 1 cm in diam. Fl. May–Jun, fr. Sep–Jan.

Seasonal rain forests; 700–800 m. S Yunnan [Myanmar].

**3. *Millettia leptobotrya*** Dunn, J. Linn. Soc., Bot. 41: 189. 1912.

思茅崖豆 *si mao ya dou*

*Fordia leptobotrya* (Dunn) Schot, Dasuki & Buijsen.

Trees, 18–25 m tall. Bark gray, rough. Branchlets brown pubescent, brittle, glabrescent. Leaves 7- or 9-foliolate; rachis 20–50 cm, including petiole 5–6 cm; leaflet blades oblong-lanceolate, 12–25 × 5–8 cm, papery, secondary veins 11–13 on each side of midvein, base cuneate to obtuse, apex acuminate. Pseudoracemes axillary, 35–50 cm, straight, brown pubescent;

rachis nodes with 2–5 flowers. Pedicel ca. 2 mm. Flowers 1.1–1.3 cm. Calyx ca. 5 mm, pubescent. Corolla white; standard orbicular, without basal calluses. Stamens monadelphous. Ovary sericeous, with 3–5 ovules. Legume linear-oblong, 7–20 × 3.5–4 cm, flat, base obtuse, apex beaked; valves leathery; both sutures obscure. Seeds 1–3 per legume, pale yellow, thickly lenticular, shiny. Fl. Apr, fr. Oct–Jan.

Woodlands on slopes; 300–1000 m. S Yunnan [Laos, Vietnam].

*Millettia leptobotrya* is represented in China by the typical variety. Another variety, *Millettia leptobotrya* var. *macrocarpa* P. K. L6c, is endemic to Vietnam.

**4. *Millettia erythrocalyx*** Gagnepain, Notul. Syst. (Paris) 2: 356. 1913.

红萼崖豆 *hong e ya dou*

Trees. Bark gray. Branchlets rusty strigose, glabrescent, spotted lenticels prominent. Leaves 7–11-foliolate; rachis ca. 25 cm, including petiole ca. 8 cm; leaflet blades ovate-lanceolate to elliptic-lanceolate, 3–6 × 1.5–2 cm, papery, abaxially scarlet strigose on midvein and margins, adaxially glabrous and shiny, base narrowly cordate, apex caudate. Pseudoracemes axillary near apex of branchlets, 6–7 cm, densely dark brown strigose; rachis nodes with 2 or 3 flowers. Pedicel ca. 3 mm. Flowers ca. 9 mm. Calyx dark red, ca. 3 mm, with sparse trichomes; teeth truncate, ciliate. Corolla lilac; standard glabrous, basally with 2 minute calluses, base rounded. Ovary villous, with 4 or 5 ovules. Legume linear-oblong, 9–10 × ca. 2 cm, flat, slightly curved, brown tomentose when young, glabrescent, base tapered; sutures thickened; valves woody, spirally twisted. Seeds 2 or 3 per legume, chestnut-brown, lenticular, ca. 1.3 × 1 cm, smooth. Fl. Mar–Jun, fr. year-round.

Evergreen broad-leaved forests; 600–700 m. S Yunnan [Cambodia, Laos, Thailand, Vietnam].

**5. *Millettia leucantha*** Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 68. 1873.

垂序崖豆 *chui xu ya dou*

*Millettia pendula* Benthams ex Baker, nom. illeg. superfl.

Trees, 6–7 m tall. Bark gray. Branchlets smooth, striate, rusty pilose when young, gradually glabrescent, scattered with minute, smooth lenticels. Leaves (5 or) 7- or 9-foliolate; rachis 15–50 cm, including petiole 4.5–14 cm, rusty pilose; stipels aciculate, ca. 1 mm, caducous; petiolules densely pubescent, 5–6 mm; leaflet blades lanceolate to oblong, 8–30 × 2.5–6 cm, papery, abaxially appressed puberulent, pilose along midvein, adaxially sparsely appressed puberulent except along midvein, secondary veins 6–10 on each side of midvein, base rounded or broadly cuneate, apex caudate or long caudate. Pseudoracemes axillary or terminal, pendulous, slender, (15–)25–45 cm, brown pubescent; peduncle 1–4 cm, densely rusty scabrous; rachis nodes with 2–5 flowers. Pedicel 1–3 mm. Flowers 1.1–1.3 cm.

Calyx 5–6 mm, densely brown pubescent; teeth shorter than tube, apex cuspidate. Corolla white; standard broadly orbicular, glabrous, base auriculate, with 2 minute calluses and claw ca. 2.5 mm. Ovary ca. 6 mm, densely sericeous, with (3 or) 4 ovules. Legume oblong, flat, 10–17 × 2.7–3.5 cm, woody, brown tomentose, apex obtuse, with a beak. Seeds (3 or) 4 per legume, orbicular, ca. 1.5 × 6 mm. Fl. Mar–Apr, fr. Jun–Nov.

Sparse woodlands; ca. 1100 m. S Yunnan (Jiangcheng) [Laos, Myanmar, Thailand].

This species was first recorded from China by Y. Y. Qian (Acta Phytotax. Sin. 39: 464–465. 2001, as *Millettia pendula*).

**6. *Millettia pubinervis*** Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 68. 1873.

薄叶崖豆 bao ye ya dou

Trees, to 8 m tall. Bark gray, rough. Branchlets pubescent, glabrescent. Leaves 7–11-foliolate; rachis 20–25 cm, including petiole 8–12 cm; stipels absent; leaflet blades broadly elliptic, 6–14 × 3–5 cm, membranous, both surfaces appressed pubescent but adaxially sparsely so, base broadly cuneate, apex acute. Pseudoracemes axillary or supra-axillary, 10–15 cm; rachis nodes with 1 or 2 flowers on a ca. 1 mm spur; peduncle 4–5 cm. Pedicel filiform, 4–5 mm. Flowers ca. 1 cm. Calyx ca. 3 mm, densely brown pubescent. Corolla pale red; standard orbicular, without basal calluses, outside finely woolly, base auriculate. Ovary pubescent, with 2–6 ovules. Legume linear, 9–12 × 1.3–2 cm, flat, yellow tomentose, base rounded, apex abruptly beaked; valves thinly leathery, twisted. Seeds 1–3 per legume, dark brown, oblate when immature but unknown when mature. Fl. Apr–Aug, fr. Sep.

Thickets at forest margins; 500–800 m. S Yunnan [Laos, Myanmar, Thailand, Vietnam].

**7. *Millettia austroyunnanensis*** Y. Y. Qian, Acta Phytotax. Sin. 35: 183. 1997.

滇南崖豆 dian nan ya dou

Trees, 4–6 m tall. Bark gray, rough. Branchlets pubescent. Leaves 7- or 9-foliolate; rachis 20–40 cm, including petiole 3.5–8 cm; stipels absent; leaflet blades lanceolate to oblong-lanceolate, 4–20 × 1.3–5 cm, subleathery, abaxially sparsely strigose, adaxially glabrous, secondary veins 7–11 on each side of midvein, base cuneate, apex caudate. Pseudoracemes axillary, 4–14 cm; rachis nodes with 1 or 2 flowers. Pedicel 1–2 mm. Flowers 1–1.5 cm. Calyx 5–6 mm, densely yellow pubescent. Corolla white; standard orbicular, without basal calluses or auricles, outside puberulent. Ovary stipitate, villous, with 7–9 ovules. Legume linear, 10–15 × 1.8–2.8 cm, woody, inflated, stipitate, gray tomentose, apex beaked. Seeds 3–5 per legume, narrowly ovoid, 2–2.5 cm. Fl. Apr, fr. Sep–Dec.

• Sparse woodlands; ca. 2000 m. S Yunnan.

**8. *Millettia cubittii*** Dunn, J. Linn. Soc., Bot. 41: 188. 1912.

红河崖豆 hong he ya dou

Trees, 8–10 m tall. Branchlets ridged, reddish brown tomentose, with evident leaf traces. Stipules subulate, ca. 8 mm, sturdy and straight, persistent. Leaves 13–17-foliolate; rachis

25–35 cm, including petiole 7–9 cm; stipels present; leaflet blades oblong-lanceolate, 8–11 × 2.2–3 cm, subleathery, both surfaces appressed brown pubescent on midvein, base rounded and asymmetric, apex acuminate. Pseudoracemes axillary, gathered apically on branchlets, 15–25 cm; rachis nodes laxly arranged, with 2–4 flowers. Pedicel ca. 1 cm. Flowers ca. 2.2 cm. Calyx 6–7 mm. Corolla purple; standard orbicular, outside puberulent, base auriculate and with 2 columnar calluses near claw. Ovary densely red villous, with numerous ovules. Legume linear-oblong, 18–22 × 2.5–3 cm, flat, brown tomentose; valves woody. Seeds ca. 5 per legume, mature ones unknown. Fl. Apr–Jun, fr. Jan.

Woodlands by river margins; 300–1000 m. S Yunnan [Myanmar, Vietnam].

**9. *Millettia lantsangensis*** Z. Wei, Acta Phytotax. Sin. 23: 277. 1985.

澜沧崖豆藤 lan cang ya dou teng

*Callerya lantsangensis* (Z. Wei) H. Sun.

Lianas, 2–4 m. Young branchlets, leaf rachises, and inflorescences yellowish green and appressed retrorse hirsute. Branches soft, ridged longitudinally, without lenticels. Stipules linear, ca. 4 mm, apex acuminate. Leaves 5-foliolate; rachis 25–35 cm, including petiole 8–13 cm; stipels acicular, ca. 4 mm; leaflet blades rhombic-ovate, 8–18 × 3.5–6 cm, papery, abaxially densely hirsute, adaxially pilose on midvein, base broadly cuneate and asymmetric, apex acuminate. Pseudoracemes axillary, 30–50 cm, slender; rachis nodes with 3 or 4 clustered flowers densely gathered at apical part; peduncle 6–10 cm. Pedicel ca. 1 mm. Flowers ca. 8 mm. Calyx ca. 6 × 4 mm, densely hirsute; teeth longer than tube, adaxial pair connate. Corolla pale pink; standard orbicular, without basal calluses, outside densely sericeous, base with a short claw. Vexillary stamen free. Ovary shortly stipitate, sericeous, with 10–12 ovules. Legume rhomboid-oblong to clavate, ca. 7 × 3 cm, inflated, brown tomentose, base tapering to short stipe, apex beaked. Seed usually 1 per legume, dark brown, ellipsoid, ca. 2.5 × 2 cm, shiny. Fl. May, fr. Jul.

• Thickets on slopes; 1200–1600 m. SW Yunnan.

**10. *Millettia pachyloba*** Drake, J. Bot. (Morot) 5: 187. 1891.

海南崖豆藤 hai nan ya dou teng

*Callerya pachyloba* (Drake) H. Sun; *Derris lasiopetala* Hayata; *Millettia lasiopetala* (Hayata) Merrill; *M. obovata* Gagnepain; *M. pachyloba* var. *lasiopetala* (Hayata) P. K. Lôt.

Lianas, to 20 m. Bark yellow, splitting longitudinally. Branches straight, hollow, densely brown sericeous, glabrescent, sparsely scattered with large lenticels. Leaves 9-foliolate; rachis 25–35 cm, including petiole 6–8 cm; stipels acicular, ca. 3 mm; leaflet blade elliptic-oblong to obovate-oblong, 7–17 × 3–5.5 cm, papery, abaxially yellow sericeous, secondary veins 13–17 on each side of midvein, base rounded, apex acute to obtuse and sometimes emarginate. Pseudoracemes axillary near apex of branchlets, 20–30 cm, brown sericeous; rachis nodes with 3–7 flowers clustered on a 4–5 mm spur. Pedicel 2–3 mm. Flowers 1.2–1.5 cm. Calyx ca. 3 × 4–5 mm, sericeous. Corolla

lilac; standard without basal calluses, outside sericeous. Ovary sericeous, with 4–6 ovules. Legume rhomboid-oblong, 5–8 × 3–4 cm, inflated, woody, yellow tomentose, base rounded, apex beaked. Seeds 1–4 per legume, dark brown, ovoid, shiny, 1.8–2 × ca. 1.5 cm. Fl. Apr–Jun, fr. Jul–Nov.

Evergreen broad-leaved forests in valleys; below 1500 m. Guangdong, Guangxi, SW Guizhou, Hainan, SW Hunan, Yunnan [Vietnam].

*Millettia pachyloba* is represented in China by the typical variety. Another variety, *Millettia pachyloba* var. *spireana* (Gagnepain) P. K. Lóc, occurs in Cambodia, Laos, Thailand, and Vietnam.

**11. *Millettia sapindifolia*** T. C. Chen, Acta Phytotax. Sin. 3: 361. 1954.

无患子叶崖豆藤 wu huan zi ye ya dou teng

Lianas. Branchlets yellow tomentose. Leaves 7–11-foliolate; rachis 25–30 cm, including petiole 3.5–5.5 cm; stipels absent; leaflet blades oblong-elliptic to lanceolate-elliptic, 6.5–11 × 2.8–3.5 cm, papery, abaxially brown tomentose, adaxially shiny and sparsely pilose, secondary veins 9–12 on each side of midvein, base broadly cuneate, apex caudate. Pseudoracemes axillary near apex of branchlets, 15–27 cm, yellow tomentose; rachis nodes with 3–5 flowers clustered on a 2–3 mm spur. Pedicel 2–3 mm. Flowers ca. 1.2 cm. Calyx ca. 5 mm. Corolla white; standard obovate, outside brown sericeous, apex emarginate. Vexillary stamen free. Ovary shortly stipitate, sericeous, with 3 or 4 ovules. Legume (immature) oblong, inflated, densely yellow villous, base tapering to stipe, apex beaked. Mature seeds unknown. Fl. Jun–Jul, fr. Jul–Aug.

• Thickets on slopes; 1100–1200 m. Guangxi, Guizhou.

**12. *Millettia pachycarpa*** Benth in Miquel, Pl. Jungh. 250. 1852.

厚果崖豆藤 hou guo ya dou teng

*Millettia dumii* Merrill; *M. fooningensis* Hu; *M. taiwaniana* (Hayata) Hayata; *Pongamia taiwaniana* Hayata; *Whitfordiodendron taiwaniana* (Hayata) Ohwi.

Lianas, to 15 m. Branchlets brown, yellow tomentose when young, glabrescent, scattered with brown lenticels. Leaves 13–17-foliolate; rachis 30–50 cm, including petiole 7–9 cm; leaflet blades elliptic-oblong to lanceolate-oblong, 10–18 × 3.5–4.5 cm, papery, abaxially brown appressed sericeous, adaxially flat and glabrous, base cuneate to rounded, apex acute. Pseudoracemes with 2–6 branches beneath new stems, 15–30 cm, brown tomentose; rachis nodes with 2–5 flowers clustered on a 1–3 mm spur. Pedicel 6–8 mm. Flowers 2.1–2.3 cm. Calyx ca. 6 mm. Corolla lilac; standard obovate, glabrous or ciliate on apical margin, without basal calluses. Ovary tomentose, with 5–7 ovules. Legume dark brown, oblong or when 1-seeded ovoid, 5–25 × ca. 4 cm, inflated, densely covered with pale yellow warts, glabrescent; valves thick, woody. Seeds 1–5 per legume, dark brown, reniform, 2.5–3.5 × ca. 2 cm. Fl. Apr–Jun, fr. Jul–Nov.  $2n = 22$ .

Evergreen broad-leaved forests in valleys; 100–2000 m. Fujian, Guangdong, Guangxi, Guizhou, SW Hubei, Hunan, S Jiangxi, Sichuan, Taiwan, SW Xizang, Yunnan, S Zhejiang [Bangladesh, Bhutan, India, Laos, Myanmar, Nepal, Thailand, Vietnam].

The seeds and roots are ground into a powder that is used as an insecticide. The bark fiber is used for making rough ropes.

**13. *Millettia entadoides*** Z. Wei, Acta Phytotax. Sin. 23: 278. 1985.

榼藤子崖豆藤 ke teng zi ya dou teng

Lianas. Branchlets yellow, trailing, glabrous, with dense prominent tiny lenticels. Leaves 7–13-foliolate; rachis 20–30 cm, including petiole 8–10 cm; leaflet blades oblanceolate to oblong, 9–12 × 2–3 cm, papery, glabrous, secondary veins 9–12 on each side of midvein, base broadly cuneate, apex caudate. Pseudoracemes axillary or cauliflorous, 12–15 cm, glabrescent; rachis nodes with 2 or 3 clustered flowers. Pedicel ca. 5 mm. Calyx ca. 4 × 5 mm; teeth obscure. Corolla unknown. Legume yellow, linear-oblong, ca. 20 × 4 cm, inflated, woody, glabrous, contracted between seeds, both ends rounded; sutures thickened. Seeds 2–4 per legume, dark brown, reniform, ca. 3 × 2.6 cm. Fl. Apr, fr. Aug–Nov.

• Thickets on upland slopes; 1500–2600 m. SW Yunnan.

**14. *Millettia macrostachya*** Collett & Hemsley, J. Linn. Soc., Bot. 28: 41. 1890.

大穗崖豆 da sui ya dou

*Millettia macrostachya* var. *multifoliolata* Y. Y. Qian.

Trees, to 10 m tall. Branchlets dark brown, ridged, glabrous, scattered with fine lenticels. Leaves 7–11 (or 13)-foliolate; rachis 30–40 cm, including petiole 8–9 cm; stipels present; leaflet blades broadly oblong to obovate-elliptic, 8–16 × 4–8 cm, papery, both surfaces glabrescent, secondary veins 8–10 on each side of midvein, base broadly cuneate and slightly asymmetric, apex acute. Pseudoracemes axillary, 35–50 cm, longer than subtending leaf, thick, straight, slightly puberulent; rachis nodes ± whorled with 3–7 flowers clustered on a 2–4 mm spur. Pedicel 4–5 mm, brown puberulent. Flowers ca. 1.8 cm. Calyx ca. 7 mm. Corolla pale red to lilac; standard orbicular, without basal calluses, outside puberulent, base auriculate, apex purple striped. Ovary with trichomes, with numerous ovules. Legume linear, 8–22 × ca. 1.5 cm, leathery, apex beaked; sutures thickened. Seeds 5–8 per legume, olive-green, ellipsoid, ca. 1.5 × 8 mm. Fl. Mar, fr. Jun–Aug.

Thickets on slopes; 800–900 m. S Yunnan [Myanmar].

This species occasionally is cultivated in courtyards.

**15. *Millettia griffithii*** Dunn, J. Linn. Soc., Bot. 41: 146. 1912.

孟连崖豆 meng lian ya dou

Shrubs, erect. Branchlets grayish brown, yellow pubescent when young, glabrescent, scattered with lenticels. Leaves 7–13-foliolate; rachis 25–40 cm, including petiole 4–8 cm; stipels present; leaflet blades oblong-lanceolate, 7–16 × 4–5 cm, papery, abaxially densely brown pubescent especially on veins, adaxially glabrescent, secondary veins 8–10 on each side of midvein, base cuneate, apex acute. Pseudoracemes axillary, gathered apically on branchlets, ca. 20 cm, shorter than subtending leaf; rachis nodes sparse, with 1–3 flowers clustered on a short spur. Pedicel 1.5–2 mm, finely puberulent. Flowers ca. 1

cm. Corolla pale pink; standard orbicular, outside apically puberulent. Ovary stipitate, with trichomes, with 3 ovules. Legume linear, 9–10 × ca. 1.5 cm, flat, appressed cream-colored pubescent, apex rounded and with a short beak; valves thinly leathery, twisted; suture conspicuously thickened. Seeds ca. 3 per legume, oblate when immature, unknown when mature. Fl. May–Jul, fr. Aug–Nov.

Sparse woodlands on slopes, near villages; ca. 1100 m. S Yunnan [Myanmar].

**16. *Millettia velutina*** Dunn, J. Linn. Soc., Bot. 41: 149. 1912.

绒毛崖豆 rong mao ya dou

*Millettia yunnanensis* Pampanini var. *robusta* Pampanini.

Trees, 8–15 m tall. Bark grayish brown, rough. Branchlets yellow tomentose, gradually glabrescent, scattered with minute prominent lenticels. Leaves 15–19-foliolate; rachis 25–30 cm, including petiole 5–7 cm; stipels ca. 1.5 mm, caducous; leaflet blades oblong-lanceolate to oblong, 4–9 × 1.5–2.5 cm, papery, abaxially yellow velutinous especially on veins, adaxially finely appressed pubescent, secondary veins 7 on each side of midvein, base obtuse to broadly cuneate, apex acute. Pseudoracemes axillary, 20–25 cm, shorter than subtending leaf; rachis nodes with 4 or 5 flowers clustered on a short decumbent spur; peduncle 3.5–8 cm, yellow tomentose. Pedicel 4–5 mm. Flowers 1.3–1.6 cm. Calyx ca. 5 mm; teeth longer than tube, cuspidate. Corolla white or lilac; standard broadly orbicular, outside apically sparsely puberulent. Ovary densely sericeous, with 6 or 7 ovules. Legume linear, 9–14 × 1.3–1.6 cm, flat, thinly leathery, brown tomentose, apex truncate and with a beak; suture prominent. Seeds 3–5 per legume, chestnut-brown, oblong, ca. 12 × 8 mm, compressed. Fl. May–Aug, fr. Jul–Nov.

• Thickets, woodlands, evergreen broad-leaved forests; 500–1900 m. N Guangdong, N Guangxi, S Guizhou, S Hunan, SW Sichuan, Yunnan.

**17. *Millettia pulchra*** (Benth) Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 69. 1873.

印度崖豆 yin du ya dou

Shrubs or trees, 3–8 m tall. Branchlets and inflorescences grayish yellow pubescent, glabrescent. Leaves 13–19-foliolate; rachis 8–20 cm, including petiole 3–4 cm; stipels acicular, 1–3 mm, caducous; petiolules ca. 2 mm, with trichomes; leaflet blades lanceolate, elliptic-lanceolate, narrowly elliptic, oblong, or ovate, 1.2–10 × 0.7–4 cm, papery to stiffly papery, abaxially pale green, adaxially dark green, base attenuate, cuneate, or subcordate and symmetric or slightly asymmetric, apex acute to attenuate. Pseudoracemes axillary, 6–15 cm; rachis nodes with 3 or 4 clustered flowers. Pedicel 3–4 mm. Flowers 0.9–1.2 cm. Calyx ca. 4 mm; teeth triangular, shorter than tube. Corolla pale red to scarlet; standard oblong, distally outside somewhat pubescent, apex retuse. Ovary pubescent, with 5 ovules. Legume linear, 5–10 × 1–1.5 cm, flat, gray pubescent but glabrescent; valves subleathery. Seeds 2–4 per legume, brown, ellipsoid, ca. 1 cm. Fl. Apr–Aug, fr. Jun–Oct.

Open places of lowland woodlands, thickets, grasslands, sparse or mixed woodlands, woodland margins; near sea level to 1700 m. Fujian,

Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, S Taiwan, Yunnan [India, Laos, Myanmar, Vietnam].

- 1a. Leaflet blades adaxially glabrous but pilose on midvein and margins when young.
- 2a. Leaflet blades ovate, 1.2–1.8 cm, base subcordate and asymmetric ..... 17f. var. *parvifolia*
- 2b. Leaflet blades elliptic, 2–6 cm, base cuneate-rounded and symmetric ..... 17g. var. *microphylla*
- 1b. Leaflet blades adaxially pubescent or villous.
  - 3a. Leaflet blades 2–3.5(–6) cm.
    - 4a. Leaflet blades lanceolate, midvein adaxially flat, secondary veins 5 or 6 on each side of midvein ..... 17a. var. *pulchra*
    - 4b. Leaflet blades narrowly elliptic, midvein adaxially sunken, secondary veins 8 or 9 on each side of midvein ..... 17c. var. *chinensis*
  - 3b. Leaflet blades 3.5–10 cm.
    - 5a. Leaflet blades oblong, base conspicuously asymmetric ..... 17e. var. *yunnanensis*
    - 5b. Leaflet blades lanceolate-elliptic, base symmetric or only slightly asymmetric.
      - 6a. Leaflet blades abaxially appressed pilose ..... 17b. var. *laxior*
      - 6b. Leaflet blades abaxially gray tomentose ..... 17d. var. *tomentosa*

**17a. *Millettia pulchra* var. *pulchra***

印度崖豆(原变种) yin du ya dou (yuan bian zhong)

*Mundulea pulchra* Benth in Miquel, Pl. Jungh. 248. 1852; *Tephrosia tutcheri* Dunn.

Leaves and inflorescences gathered near apex of branchlets. Leaflet blades lanceolate, 2–3.5(–6) × 0.7–1.5 cm, abaxially appressed pubescent, adaxially sparsely puberulent, midvein adaxially flat, secondary veins 5 or 6 on each side of midvein, base attenuate to cuneate, apex acuminate.

Open places of lowland woodlands; near sea level to 1200 m. Guangxi, Guizhou, Hainan, Yunnan [India, Laos, Myanmar].

**17b. *Millettia pulchra* var. *laxior*** (Dunn) Z. Wei, Acta Phytotax. Sin. 23: 280. 1985.

疏叶崖豆 shu ye ya dou

*Millettia pulchra* f. *laxior* Dunn, J. Linn. Soc., Bot. 41: 151. 1912.

Leaves and inflorescences scattered on branches rather than near apex of branchlets. Leaflet blades oblong-elliptic, 3.5–10 × 1.5–4 cm, abaxially pale green and finely appressed pilose, adaxially pubescent, secondary veins 6 or 7 on each side

of midvein, base symmetric or only slightly asymmetric, apex acute.

Thickets on riverbanks; 200–1100 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Yunnan [India].

**17c. *Millettia pulchra* var. *chinensis*** Dunn, J. Linn. Soc., Bot. 41: 152. 1912.

华南小叶崖豆 hua nan xiao ye ya dou

*Millettia chenkangensis* Hu.

Leaflet blades narrowly elliptic, 2–3.5(–6) cm, adaxially pubescent but glabrescent, midvein adaxially sunken, secondary veins 8 or 9 on each side of midvein and curved toward apex, both ends acute but sometimes apex retuse, margins slightly revolute. Calyx teeth cuspidate.

• Grasslands, sparse woodlands; 800–1500 m. Guangxi, Yunnan.

**17d. *Millettia pulchra* var. *tomentosa*** Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 66: 358. 1897.

绒叶印度崖豆 rong ye yin du ya dou

Leaflet blades 3.5–10 cm, abaxially gray tomentose, adaxially villous but become sparsely so with age, base symmetric or only slightly asymmetric. Calyx with dense trichomes.

Thickets on dry slopes; 100–800 m. Guangxi, Yunnan [India, Myanmar].

**17e. *Millettia pulchra* var. *yunnanensis*** (Pampanini) Dunn, J. Linn. Soc., Bot. 41: 152. 1912.

云南崖豆 yun nan ya dou

*Millettia yunnanensis* Pampanini, Nuovo Giorn. Bot. Ital., n.s., 17: 26. 1910.

Leaflet blades oblong, 3.5–10 cm, adaxially pubescent, secondary veins 6 or 7 on each side of midvein, adaxially sunken, and densely yellow villous, base conspicuously asymmetric, apex acute.

Thickets, sparse woodlands; 500–1200 m. Yunnan [Myanmar].

**17f. *Millettia pulchra* var. *parvifolia*** Z. Wei, Acta Phytotax. Sin. 23: 281. 1985.

景东小叶崖豆 jing dong xiao ye ya dou

Leaflet blades ovate, 1.2–1.8 cm, adaxially glabrous but pilose on midvein and margin when young, base subcordate and asymmetric.

• Thickets, woodland margins; ca. 1700 m. S Yunnan.

**17g. *Millettia pulchra* var. *microphylla*** Dunn, J. Linn. Soc., Bot. 41: 512. 1912.

台湾小叶崖豆 tai wan xiao ye ya dou

Leaflet blades elliptic, 2–6 cm, abaxially gray villous especially on margins, secondary veins 4 or 5 on each side of midvein but obscure, base cuneate-rounded and symmetric.  $2n = 22^*$ .

• Thicket margins; below 200 m. S Taiwan.

**18. *Millettia oraria*** (Hance) Dunn, J. Linn. Soc., Bot. 41: 149. 1912.

香港崖豆 xiang gang ya dou

*Tephrosia oraria* Hance, J. Bot. 24: 17. 1886.

Shrubs or trees, to 5 m tall, erect. Bark smooth, dark gray. Branchlets ridged, tomentose, scattered with prominent lenticels. Stipules lanceolate, 2–3 mm. Leaves (7 or)9–13(or 15)-foliolate; rachis 15–20 cm, including yellow tomentose petiole 3.5–4.5 cm; stipels present; leaflet blades broadly ovate to elliptic, 4–5.5 × 2–3 cm, papery, abaxially tomentose, adaxially densely pubescent, secondary veins 6 or 7 on each side of midvein and reaching to margins, base rounded to subcordate, apex rounded. Pseudoracemes axillary, gathered near apex of branchlets, shorter than subtending leaf, yellow tomentose. Flowers 8–11 mm. Calyx ca. 3 mm. Corolla purple; standard suborbicular, outside puberulent. Ovary sericeous, with 2–4 ovules. Legume linear, 5–9 × 1–1.5 cm, flat, brown tomentose, somewhat glabrescent. Seeds 2 or 3 per legume, orange, oblate, ca. 7 mm. Fl. May–Jul, fr. Nov–Dec.

• Thickets; 300–800 m. Guangdong, S Guangxi.

## 73. CALLERYA Endlicher, Gen. Pl., Suppl. 3: 104. 1843.

鸡血藤属 ji xue teng shu

Wei Zhi (韦直); Les Pedley

*Marquartia* Vogel, Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 19(Suppl. 1): 35. 1843, non Hasskarl (1842); *Adinobotrys* Dunn; *Padbruggea* Miquel; *Whitfordia* Elmer (1910), not Murrill (1908); *Whitfordiodendron* Elmer.

Lianas, scandent shrubs, or rarely trees. Stipules glabrous, mostly deciduous. Leaves imparipinnate; stipels narrowly triangular, persistent or deciduous; leaflets (sub)opposite. Flowers neither paired nor clustered, in axillary or terminal racemes, sometimes forming axillary or terminal panicles; bracts shorter or longer than corresponding flower, usually deciduous; bracteoles on calyx or rarely on distal part of pedicel, persistent or not. Calyx usually truncate with short teeth. Corolla standard glabrous to densely sericeous outside, Chinese taxa with or without basal calluses, basally reflexed; wings and keel petals ± equally long; wings often partially adnate to keel. Stamens diadelphous; vexillary filament free from other 9. Ovary sometimes stipitate. Legume indehiscent or tardily dehiscent, thin to thickly woody, flat or inflated; sutures not winged, sometimes thickened. Seeds 1–9 per legume, roundish; radicle folded.

About 30 species: S and SE Asia, Australia, New Guinea; 18 species (ten endemic) in China.

- 1a. Standard outside glabrous.
- 2a. Calyx densely sericeous, hirsute, or tomentose; ovary sericeous or tomentose.
- 3a. Leaflets 7, blades 4–8 × 1–2 cm, apex acuminate to caudate; flowers ca. 1.8 cm; corolla yellow ..... 3. *C. fordii*
- 3b. Leaflets 7–13, blades 4–13 × 1–4 cm, apex acute; flowers 2.5–3.5 cm; corolla white, creamy, pale pink, or lilac.
- 4a. Leaflet blades shiny, glabrous on adaxial surface, rusty pubescent and glabrescent on abaxial surface; ovules numerous; standard with 2 basal calluses ..... 1. *C. speciosa*
- 4b. Leaflet blades villous on both surfaces; ovules 4–6; standard without basal calluses ..... 2. *C. bonatiana*
- 2b. Calyx sparsely pubescent; ovary glabrous.
- 5a. Stipules inserted at tip of persistent gibbosity on stem.
- 6a. Calyx pubescent; legume carmine when dry, oblong, 10–11 cm, convex, suture thickened; panicles ca. 30 cm ..... 4. *C. eurybotrya*
- 6b. Calyx glabrescent; legume blackened when dry, linear, ca. 15 cm, flat, suture not thickened; panicles 10–20 cm ..... 5. *C. reticulata*
- 5b. Stipules not inserted at tip of persistent gibbosity on stem.
- 7a. Panicle terminal, branchlets ascending; corolla yellowish white with a pink halo; leaf blade glabrous and shiny, abaxially pale green when dry, secondary and tertiary veins distinct and raised on both surfaces, apex acuminate to caudate ..... 6. *C. championii*
- 7b. Racemes axillary, pendulous; corolla white or purple; leaf blade flat and rough, abaxially dull grayish green when dry, secondary and tertiary veins indistinct, apex acute ..... 7. *C. kiangsiensis*
- 1b. Standard outside densely sericeous.
- 8a. Leaflets 3(or 5).
- 9a. Stipels absent; leaflet blades subleathery ..... 8. *C. tsui*
- 9b. Stipels present; leaflet blades papery ..... 13. *C. sphaerosperma*
- 8b. Leaflets 5 or 7 (3 or 5 in *C. dorwardii*).
- 10a. Legume flat, not distinctly contracted between seeds; seeds lenticular.
- 11a. Panicles straight, branchlets contiguous, flowers closely arranged.
- 12a. Corolla violet to purple; legume stipitate, brown tomentose; leaflet blades ovate-lanceolate or oblong, subleathery; stipels subulate, ca. 2 mm ..... 16. *C. nitida*
- 12b. Corolla white or pale pink; legume sessile, gray hirsute; leaflet blades broadly elliptic to ovate, papery; stipels filiform, 5–6 mm ..... 17. *C. congestiflora*
- 11b. Panicles spreading, branchlets slender, flowers laxly arranged.
- 13a. Leaflets (5 or) 7, blades caudate at apex; panicles long pedunculate ..... 15. *C. longipedunculata*
- 13b. Leaflets 5, blades acute at apex; panicles subsessile ..... 18. *C. dielsiana*
- 10b. Legume inflated, usually distinctly contracted between seeds; seeds globose or reniform.
- 14a. Branchlets, leaf rachises, and leaflet blades abaxially with dense trichomes, not glabrescent; legume densely brown tomentose.
- 15a. Leaflet blades 4–8 cm wide, abaxially brown velutinous; legume 2–2.5 cm wide ..... 9. *C. oosperma*
- 15b. Leaflet blades 1.8–3 cm wide, abaxially rusty tomentose; legume ca. 1.5 cm wide ..... 14. *C. sericosema*
- 14b. Branchlets, leaf rachises, and leaflet blades abaxially with sparse trichomes or glabrescent; legume gray pubescent, yellow tomentose, or gray tomentose.
- 16a. Panicles compact, branchlets congested; legume not contracted between seeds ..... 12. *C. dorwardii*
- 16b. Panicles lax, branchlets spread out; legume contracted between seeds.
- 17a. Floriferous branchlets slender; leaflet blades obovate; petiolules ca. 4 mm; stipels ca. 4 mm ..... 10. *C. cinerea*
- 17b. Floriferous branchlets straight; leaflet blades oblong; petiolules 2–3 mm; stipels ca. 1 mm ..... 11. *C. gentiliana*

**1. *Callerya speciosa*** (Champion ex Bentham) Schot, *Blumea* 39: 32. 1994.

美丽鸡血藤 mei li ji xue teng

*Millettia speciosa* Champion ex Bentham, Hooker's J. Bot. Kew Gard. Misc. 4: 73. 1852.

Lianas, 1–3 m. Bark brown. Branchlets brown tomentose, glabrescent. Leaves 13-foliolate; rachis 15–25 cm, including petiole 3–4 cm; leaflet blades oblong-lanceolate to elliptic-lanceolate, 4–8 × 2–3 cm, papery, abaxially rusty pubescent, gla-

brscent, and reddish brown when dry, adaxially glabrous and shiny but glaucous when dry, base rounded, margins slightly revolute, apex acute and with a short tip. Racemes axillary, usually congested near apex of branchlets to form large panicles, ca. 30 cm, brown tomentose. Pedicel and calyx tomentose. Flowers 2.5–3.5 cm, fragrant. Corolla white, creamy, or pale pink; standard orbicular, glabrous, with 2 basal calluses. Ovary tomentose, with numerous ovules. Legume linear, 10–15 × 1–2 cm, flat, brown tomentose, base tapering to a short stipe, apex beaked; valves woody. Seeds 4–6 per legume, black, ovoid, ca. 10 × 8 mm. Fl. Jul–Sep, fr. Aug–Oct.

Open places, sparse woodlands; 200–1700 m. Fujian, Guangdong, Guangxi, S Guizhou, Hainan, S Hunan, Yunnan [Vietnam].

The roots are rich in starch and used to make a tonic wine.

**2. *Callerya bonatiana*** (Pampanini) P. K. Lôc, Bot. Zhurn. (Moscow & Leningrad) 81(10): 99. 1996.

滇桂鸡血藤 dian gui ji xue teng

*Millettia bonatiana* Pampanini, Nuovo Giorn. Bot. Ital., n.s., 17: 24. 1910.

Lianas, to 10 m. Branchlets ridged, densely yellow pubescent, gradually glabrescent. Leaves 11- or 13-foliolate; rachis 25–30 cm, including petiole 2–3 cm; stipels absent; leaflet blades ovate to ovate-elliptic, 6–10 × 3–4 cm, papery, both surfaces villous but especially dense abaxially, secondary veins 4 or 5 on each side of midvein, base rounded to subcordate, apex acute. Pseudoracemes axillary, 8–12 cm, yellow pubescent. Pedicel ca. 1 cm. Flowers ca. 2.5 cm. Calyx ca. 1.2 cm, densely sericeous. Corolla lilac; standard oblong, without a basal callus, outside densely yellow sericeous, apex retuse. Ovary stipitate, sericeous, with 4–6 ovules. Legume linear-oblong, 10–11 × ca. 1.8 cm, leathery, with a ca. 1 cm stipe, grayish brown tomentose. Seeds ca. 4 per legume, brown, oblate, ca. 1.1 cm. Fl. Apr–Jun, fr. Jun–Oct.

Thickets in valleys; ca. 1000 m. Guangxi, Yunnan [Laos].

The plants are poisonous but used medicinally in small amounts.

Although P. K. Lôc made the necessary transfer to *Callerya*, a note by the same author in Fl. Cambodge, Laos & Vietnam (30: 43. 2001) suggests that the author saw only one incomplete specimen from that Flora region and that more material in flower and fruit would be required to confirm its identity.

**3. *Callerya fordii*** (Dunn) Schot, Blumea 39: 23. 1994.

广东鸡血藤 guang dong ji xue teng

*Millettia fordii* Dunn, J. Linn. Soc., Bot. 41: 156. 1912.

Lianas, 1–2 m. Stems dark brown, terete, slender, soft. Branchlets yellow pubescent when young, glabrescent. Leaves 7-foliolate; rachis 10–20 cm, including petiole 2–4 cm; leaflet blades linear-lanceolate, 4–8 × 1–2 cm with terminal one largest, papery, both surfaces slightly shiny and blackened when dry, base rounded to cordate, apex acuminate to caudate. Racemes axillary, 5–7 cm, shorter than subtending leaf, yellow tomentose. Flowers ca. 1.8 cm. Calyx ca. 8 mm, hirsute. Corolla yellow; standard broadly ovate, glabrous, with 2 basal calluses. Ovary stipitate, tomentose, with numerous ovules. Legume linear, 10–12 × ca. 1 cm, flat, brown tomentose, apex cuspidate. Seeds 4–8 per legume, brown, ovoid, ca. 7 × 6 mm, smooth. Fl. Jun–Oct, fr. Oct–Jan.

Sparse woodlands on slopes; ca. 500 m. Guangdong, Guangxi [Vietnam].

**4. *Callerya eurybotrya*** (Drake) Schot, Blumea 39: 22. 1994.

宽序鸡血藤 kuan xu ji xue teng

*Millettia eurybotrya* Drake, J. Bot. (Morot) 5: 187. 1891.

Shrubs, scandent, 4–10 m. Bark smooth. Branchlets pale

yellow, ridged, appressed pubescent, glabrescent, with scattered obscure lenticels. Leaves (5 or)7-foliolate; rachis 20–25(–40) cm, including petiole (3–)5–6(–7) cm; leaflet blades ovate-oblong to elliptic-lanceolate, 6–16 × 2.5–8 cm, papery, both surfaces dark green and glabrous, base broadly cuneate to rounded, apex acute. Panicles terminal, ca. 30 cm; flowering branchlets 8–10 cm, spreading, yellowish brown tomentose. Flowers 1.4–1.5 cm. Calyx pubescent. Corolla purple, with yellow-green spots in center; standard orbicular, without basal calluses, base tapering into a claw. Ovary glabrous, with numerous ovules. Legume carmine when dry, oblong, 10–11 × 2–3 cm, inflated, woody, contracted between seeds; suture thickened. Seeds 2–7 per legume, brown, ellipsoid, ca. 2 cm; hilum white. Fl. Jul–Aug, fr. Sep–Nov.

Thickets in valleys or ravines; 100–1200 m. N Guangdong, NW Guangxi, S Guizhou, S Hunan, S Yunnan [Laos, Thailand, Vietnam].

The plants are poisonous and also used medicinally.

**5. *Callerya reticulata*** (Benth) Schot, Blumea 39: 29. 1994.

网络鸡血藤 wang luo ji xue teng

Lianas, 2–10 m. Stems thick, many branched, thinly ridged, brown pubescent, glabrescent. Leaves (5 or)7- or 9-foliolate; rachis 10–20 cm, including petiole 2–5 cm; leaflet blades ovate-elliptic, oblong, linear, or narrowly lanceolate, (3–)5–6(–8) × (0.5–)1.5–4 cm, papery, both surfaces glabrous or rarely sparsely puberulent, base rounded, tapering, or cuneate, apex obtuse, acuminate, or retuse. Panicles terminal or axillary near apex of branchlets, 10–20 cm, often pendulous, brown pubescent; flowering branchlets densely congested. Pedicel 3–5 mm. Flowers 1.3–1.7 mm. Calyx 3–4 × ca. 5 mm, glabrescent; teeth short, margin yellow ciliate. Corolla purple; standard ovate-oblong, glabrous, without basal calluses, base shortly clawed. Ovary glabrous, with numerous ovules. Legume blackened when dry, linear, ca. 15 × 1–1.5 cm, flat, thinly leathery; suture not thickened. Seeds 3–6 per legume, black, oblong, ca. 11 × 7 mm. Fl. Apr–Aug, fr. Jun–Nov.

Thickets on slopes or in valleys, thickets by streams; 100–1200 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [N Vietnam].

- 1a. Leaflet blades ovate-elliptic to oblong, 1.5–4 cm wide, base rounded ..... 5a. var. *reticulata*
- 1b. Leaflet blades linear to narrowly lanceolate, 0.5–1.2 cm wide, base tapering to cuneate ..... 5b. var. *stenophylla*

**5a. *Callerya reticulata* var. *reticulata***

网络鸡血藤(原变种) wang luo ji xue teng (yuan bian zhong)

*Millettia reticulata* Benth in Miquel, Pl. Jungh. 249. 1852; *M. cognata* Hance.

Leaflet blades ovate-elliptic to oblong, 5–6(–8) × 1.5–4 cm, base rounded.  $2n = 48$ .

Thickets on slopes or in valleys; 100–1000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [N Vietnam].

**5b. *Callerya reticulata* var. *stenophylla*** (Merrill & Chun) X. Y. Zhu in X. Y. Zhu et al., *Legumes China*, 455. 2007.

线叶鸡血藤 xian ye ji xue teng

*Millettia reticulata* var. *stenophylla* Merrill & Chun, *Sunatsenia* 5: 83. 1940.

Leaflet blades linear to narrowly lanceolate, (3–)3.5–5 × 0.5–1.2 cm, base tapering to cuneate.

- Thickets by streams; 200–1200 m. Hainan.

**6. *Callerya championii*** (Benth) X. Y. Zhu in X. Y. Zhu et al., *Legumes China*, 450. 2007.

绿花鸡血藤 lü hua ji xue teng

*Millettia championii* Benth, Hooker's J. Bot. Kew Gard. Misc. 4: 74. 1852; *Callerya reticulata* (Benth) Schot var. *championii* (Benth) H. Sun.

Lianas, to 2 m, glabrous except inflorescences. Stems reddish brown, with scattered lenticels. Leaves 5(or 7)-foliolate; rachis 10–20 cm, including petiole 3–5 cm; leaflet blades ovate to ovate-oblong, (3–)4–6 × 1.5–2(–3) cm, papery, both surfaces glabrous and shiny, pale green when dry, secondary and tertiary veins distinct and raised on both surfaces, base rounded, apex acuminate to caudate. Panicles terminal, 15–20 cm; flowering branchlets 6–8 cm, ascending, straight and solid, nodes congested. Flowers ca. 1.2 cm. Corolla yellowish white with a pink halo; standard orbicular, glabrous, without basal calluses. Ovary glabrous, with numerous ovules. Legume linear, 6–12 × 0.5–1.2 cm, flat; valves thin. Seeds 2 or 3 per legume, lenticular when immature. Fl. May–Aug, fr. Jul–Nov.

- Thickets by ravines of rocky valleys; 200–800 m. Fujian, Guangdong, Guangxi.

The stems and roots are poisonous but also used medicinally.

Although P. K. Lóc made the combination *Callerya championii* (Bot. Zhurn. (Moscow & Leningrad) 81(10): 97. 1996), it was not validly published because he did not provide a full bibliographic reference to the basionym (*Vienna Code*, Art. 33.4).

**7. *Callerya kiangsiensis*** (Z. Wei) Z. Wei & Pedley, **comb. nov.**

江西鸡血藤 jiang xi ji xue teng

Basionym: *Millettia kiangsiensis* Z. Wei, *Acta Phytotax. Sin.* 23: 283. 1985; *M. kiangsiensis* f. *purpurea* Z. H. Cheng.

Lianas. Stems reddish brown, terete, slender, with dense minute lenticels. Leaves 7- or 9-foliolate; rachis 6–18 cm, including petiole 2–3 cm; leaflet blades ovate, (1.5–)3–5(–6) × 1–2.5 cm, papery, both surfaces glabrous, abaxially dull grayish green when dry, adaxially dark green, secondary and tertiary veins indistinct, base rounded, apex acute. Racemes axillary, 8–12 cm, as long as subtending leaf, puberulent. Flowers 1.2–1.5 cm. Corolla white or purple, apically slightly roseate at margin; standard oblong, glabrous, without basal calluses. Ovary stipitate, glabrous, with numerous ovules. Legume linear, ca. 10 × 1.2 cm, flat, straight, base tapering to a ca. 3 mm stipe, apex with a short hooked beak. Seeds 5–9 per legume, black, lenticular, ca. 7 × 5 mm. Fl. Jun–Aug, fr. Sep–Oct.

- Sparse thickets, thickets on slopes; 200–600 m. S Anhui, N Fujian, SE Hubei, E Hunan, Jiangxi, W Zhejiang.

**8. *Callerya tsui*** (F. P. Metcalf) Z. Wei & Pedley, **comb. nov.**

喙果鸡血藤 hui guo ji xue teng

Basionym: *Millettia tsui* F. P. Metcalf, *Lingnan Sci. J.* 19: 554. 1940.

Lianas, 3–10 m. Stems dark brown, terete, straight, fine ridged, brown tomentose, glabrescent, without lenticels. Leaves 3(or 5)-foliolate; rachis 12–28 cm, including petiole 5–8 cm; stipels absent; leaflet blades broadly elliptic to elliptic, (6–)10–18 × 5–8 cm, subleathery, both surfaces glabrous and shiny, reticulate veins prominent, base obtuse to broadly cuneate, apex rounded and with a cusp. Panicles terminal, 15–30 cm; flowering branchlets spreading, often leafy at base, brown tomentose, nodes congested. Flowers 1.5–2.5 cm. Corolla pale yellow flushed with red or lilac; standard oblong, without basal calluses, outside densely sericeous. Ovary stipitate, sericeous, with 4–7 ovules. Legume ellipsoid when 1-seeded and ca. 5.5 × 4 cm, linear-oblong when 2- or 3-seeded and ca. 7 × 3 cm, inflated but contracted between seeds, brown tomentose but generally glabrescent, base tapering to 5 mm stipe, apex with a hard hooked beak. Seeds 1–3 per legume, dark brown, subglobose to oblatly spheroid, 2–2.5 × 1–2.5 cm. Fl. Jul–Sep, fr. Oct–Dec.

- Thickets, woodlands in valleys; 200–1600 m. Guangdong, Guangxi, S Guizhou, Hainan, S Hunan, S Yunnan.

The stem and root are used medicinally. The bast fibers are rather tough and used for making rope. The seeds are edible after stewing.

**9. *Callerya oosperma*** (Dunn) Z. Wei & Pedley, **comb. nov.**

皱果鸡血藤 zhou guo ji xue teng

Basionym: *Millettia oosperma* Dunn, *J. Linn. Soc., Bot.* 41: 157. 1912.

Lianas, to 20 m. Stem brown, terete, strong and ridged, brown tomentose, generally glabrescent. Leaves 5-foliolate; rachis 20–40 cm, including petiole 6–11 cm; leaflet blades elliptic-lanceolate to ovate-oblong, 8–20 × 4–8 cm with basal pair usually smallest, papery, abaxially densely brown velutinous, adaxially glabrous or sparsely villous, base cuneate to rounded, apex obtuse to sometimes retuse. Panicles terminal, 10–20 cm, brown tomentose; flowering branchlets spreading. Flowers 1.5–2 cm. Corolla scarlet; standard broadly ovate, with 2 basal calluses and also auriculate, outside densely sericeous. Ovary densely sericeous, with 5 or 6 ovules. Legume ovoid when 1-seeded, cylindrical when several seeded, 6–13 × 2–2.5 cm, inflated but contracted between seeds, brown tomentose, tardily dehiscent, apex beaked. Seeds (1 or)2–4 per legume, tawny, ovoid, 2–3 cm in diam. Fl. May–Jul, fr. Aug–Nov.

Sparse woodlands in valleys; 200–1700 m. SW Guangdong, Guangxi, Guizhou, Hainan, SW Hunan, Yunnan [Vietnam].

The seeds are poisonous and used as an insecticide.

**10. *Callerya cinerea*** (Benth) Schot, *Blumea* 39: 17. 1994.

灰毛鸡血藤 hui mao ji xue teng

*Millettia cinerea* Benth in Miquel, *Pl. Jungh.* 249. 1852.

Shrubs, scandent, to 6 m. Stems terete, rough, ridged, glabrescent. Leaves 5-foliolate; rachis 15–25 cm, including petiole 3–4 cm; stipels ca. 4 mm; petiolules ca. 4 mm; leaflet blades obovate-elliptic, basal pair ca. 5.5 × 3 cm, lateral pair and terminal one ca. 15 × 7 cm with laterals rather smaller than terminal, papery, abaxially sparsely hirsute and particularly evident on veins, adaxially glabrous except midvein, base broadly cuneate, rounded, or rarely subcordate, apex acute. Panicles terminal, 10–15 cm; flowering branchlets spreading to 6 cm, with dense appressed trichomes. Flowers 1.2–1.6 cm. Corolla red to mauve; standard ovate, outside rusty sericeous, basally thickened and emarginate. Ovary shortly stipitate, tomentose, with 5–7 ovules. Legume linear-oblong, ca. 13 × 2 cm, inflated but contracted between seeds, densely gray pubescent. Seeds 1–4 per legume, dark violet, ellipsoid, 1.4–1.8 cm. Fl. Feb–Jul, fr. Aug–Nov.

Secondary evergreen broad-leaved forests by ravines; 500–1200 m. SW Sichuan, SE Xizang, S Yunnan [Bangladesh, Bhutan, India, Myanmar, Nepal, Thailand].

**11. *Callerya gentiliana* (H. Léveillé) Z. Wei & Pedley, *comb. nov.***

黔滇鸡血藤 qian dian ji xue teng

Basionym: *Millettia gentiliana* H. Léveillé, Fl. Kouy-Tchéou, 239. 1914–1915 [“*Gentiliana*” with “*n*” deleted].

Lianas, 1.5–3 m. Stems grayish brown, rough, gray puberulent, glabrescent. Leaves 5-foliolate; rachis 12–18 cm, including petiole 3–5 cm; stipels ca. 1 mm; petiolules 2–3 mm; leaflet blades ovate-elliptic to oblong-elliptic, lateral pairs 6–8(–10) × 2–3(–4) cm, terminal one ca. 18 × 8 cm, papery, with sparse trichomes or glabrescent, base cuneate to subcordate, apex acute to obtuse. Panicles terminal, 8–15 cm; flowering branchlets spreading, straight, brown tomentose. Flowers 1.5–2 cm. Corolla purple; standard obovate, without basal calluses, outside densely sericeous. Ovary velutinous, with numerous ovules. Legume linear, 8–15 × 1.5–2 cm, inflated, shortly stipitate, yellow tomentose, contracted between seeds, apex with a curved beak. Seeds 5 or 6 per legume, dark brown, ovoid, ca. 2 × 1.5 cm; hilum in middle. Fl. Jun–Jul, fr. Oct–Nov.

• Sparse woodlands of mountains, especially in limestone valleys; 1200–2500 m. Guizhou, S Sichuan, Yunnan.

**12. *Callerya dorwardii* (Collett & Hemsley) Z. Wei & Pedley, *comb. nov.***

滇缅鸡血藤 dian mian ji xue teng

Basionym: *Millettia dorwardii* Collett & Hemsley, J. Linn. Soc., Bot. 28: 40. 1890 [“*dorwardi*”]; *M. shunningensis* Hu.

Lianas, to 6 m. Stems brown, rough, without lenticels. Branchlets yellowish white pubescent, generally glabrescent. Leaves 3- or 5-foliolate; rachis 12–25(–35) cm, including petiole (4–)6–7(–9) cm; leaflet blades broadly ovate to elliptic, 8–15(–22) × 3.5–6(–10) cm with basal pair usually smallest, papery, abaxially with yellow or white scattered trichomes but glabrescent when mature, adaxially glabrous or with sparse trichomes on veins, base cuneate, rounded, or rarely cordate, apex acute. Panicles axillary, strong, 12–18 cm, densely pubescent;

flowering branchlets short. Flowers 1.8–2.3 cm. Corolla lilac to mauve; standard orbicular, with 2 basal calluses, outside densely sericeous, base shortly clawed. Ovary tomentose, with 5 ovules. Legume oblong, ca. 9 × 3 cm, inflated, yellow tomentose, apex beaked. Seeds 1 or 2 per legume, pale brown, broadly ovoid, ca. 2.5 × 2 cm. Fl. Apr–May, fr. Sep–Oct.

Thickets on slopes; 800–1900 m. Guizhou, Yunnan [Myanmar, Thailand].

**13. *Callerya sphaerosperma* (Z. Wei) Z. Wei & Pedley, *comb. nov.***

球子鸡血藤 qiu zi ji xue teng

Basionym: *Millettia sphaerosperma* Z. Wei, Acta Phytotax. Sin. 23: 285. 1985.

Shrubs, scandent. Bark pale yellow. Stems puberulent when young, glabrescent, sparsely scattered with minute lenticels, basally brown and peeled off. Leaves 3-foliolate; rachis 15–25 cm, including petiole 4–6 cm; stipels ca. 2 mm; leaflet blades elliptic-lanceolate, lateral ones 9–12 × 3.5–5 cm, terminal one 11–18 × 6–9 cm, papery, abaxially straw-green with prominent veins, adaxially dark green and flat. Panicle terminal 12–15 cm; flowering branchlets spreading, puberulent. Flowers ca. 1.5 cm. Corolla red to purple; standard oblong, without basal calluses, outside densely sericeous. Ovary sericeous, with 6–8 ovules. Legume globose, 5–6.5 × ca. 3 cm, leathery, brown tomentose, apex beaked; suture evident. Seeds 1 or 2 per legume, dark brown, broadly ovoid. Fl. Jun–Aug, fr. Oct–Nov.

• Shady ravines; ca. 1000 m. Guangxi, Guizhou.

**14. *Callerya sericosema* (Hance) Z. Wei & Pedley, *comb. nov.***

锈毛鸡血藤 xiu mao ji xue teng

Basionym: *Millettia sericosema* Hance, J. Bot. 20: 259. 1882; *M. bodinieri* H. Léveillé.

Shrubs, scandent, 1.5–2 m. Branchlets brown, terete, rusty tomentose, glabrescent. Leaves 5-foliolate; rachis 13–18 cm, including petiole 3–6 cm; leaflet blades broadly lanceolate, 6–10 × 1.8–3 cm with basal pair smallest, papery, abaxially rusty tomentose, adaxially appressed pubescent and rather densely so on midvein and margin, base obtuse, apex acute to acuminate. Panicles terminal, 8–10 cm; flowering branchlets straight, rusty tomentose, nodes congested. Flowers ca. 1.7 cm. Corolla lilac to pale pink; standard ovate, without basal calluses, outside densely sericeous. Ovary yellow tomentose, with 5 or 6 ovules. Legume linear, 4–10 × ca. 1.5 cm, inflated, brown tomentose, apex beaked. Seeds 1–4 per legume, brown, ovoid to oblate. Fl. Jun–Aug, fr. Aug–Oct.

• Open places or sparse thickets in river valleys; 500–1300 m. Guangxi, Guizhou, W Hubei, Hunan, Sichuan, NE Yunnan.

**15. *Callerya longipedunculata* (Z. Wei) X. Y. Zhu in X. Y. Zhu et al., Legumes China, 453. 2007.**

长梗鸡血藤 chang geng ji xue teng

*Millettia longipedunculata* Z. Wei, Acta Phytotax. Sin. 23: 287. 1985; *Callerya cinerea* (Benth) Schot var. *longipedunculata* (Z. Wei) H. Sun.

Lianas. Branchlets brown, smooth and slender, yellow tomentose, glabrescent, without lenticels. Leaves (5 or)7-foliolate; rachis 30–35 cm, including petiole 5–7 cm; leaflet blades lanceolate, basal pair 4–8 × 2.5–3.5 cm, lateral pairs and terminal one 12–20 × 3.5–6 cm with terminal one largest, papery, abaxially densely villous, adaxially appressed pubescent, base broadly cuneate to narrowly subcordate, apex caudate. Panicles terminal, 20–40 cm, slender; flowering branchlet nodes scattered; peduncle rather long, yellow tomentose. Flowers 1.5–1.7 cm. Corolla red; standard obovate, outside densely sericeous. Ovary tomentose, with 6 ovules. Legume rhomboid to oblong, 3.5–8 × ca. 2.2 cm, dark brown tomentose, gradually glabrescent, slightly contracted between seeds, apex with a hooked beak. Seeds 1–3 per legume, reddish brown, oblate, ca. 1.5 × 2 cm. Fl. May–Aug, fr. Jul–Oct.

• Evergreen broad-leaved forests in shady places in valleys; ca. 1400 m. NW Guangxi, SW Guizhou, E Yunnan.

**16. *Callerya nitida*** (Benth) R. Geesink, *Leiden Bot. Ser.* 8: 83. 1984.

亮叶鸡血藤 liang ye ji xue teng

Shrubs, scandent, 2–10 m. Stems rusty brown, finely puberulent, glabrescent. Leaves 5-foliolate; rachis 15–20 cm, including petiole 3–6 cm; leaflet blades lanceolate, oblong, or ovate, 3.5–9(–11) × 2–4 cm, papery, secondary veins 5 or 6 on each side of midvein, curved apically near margins, and prominent on both surfaces, base obtuse to rounded, apex cuspidate, acute, or acuminate. Panicles terminal, 10–12 cm, thick, rusty tomentose; flowering branchlets 6–10 cm, straight. Flowers 1.6–2.4 cm. Pedicel and calyx tomentose. Corolla violet to purple; standard oblong, with 2 basal calluses, outside densely sericeous. Ovary stipitate, tomentose, with 4–8 ovules. Legume linear-oblong, 10–14 × 1.5–2 cm, stipitate, flat, brown tomentose, apex beaked. Seeds 4 or 5 per legume, chestnut-brown, obliquely oblong, ca. 1 × 1.2 cm. Fl. May–Sep, fr. Jul–Nov.

• Thickets, lowland sparse woodlands, forest margins, open places on slopes; near sea level to 1500 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang.

- 1a. Leaflet blades 5–9(–11) × 3–4 cm, abaxially glabrous or sparsely puberulent, adaxially glabrous and shiny but sometimes sparsely puberulent on midvein, apex acute to cuspidate; flowers 2.2–2.4 cm ..... 16a. var. *nitida*
- 1b. Leaflet blades 3.5–5.5 × 2–3 cm, both surfaces glabrous or glabrescent or abaxially densely reddish brown hirsute becoming blackened when dry and adaxially opaque and rough, apex acuminate or cuspidate; flowers 1.6–1.8 cm.
- 2a. Leaflet blades lanceolate, both surfaces glabrous or glabrescent, apex acuminate ..... 16b. var. *minor*
- 2b. Leaflet blades ovate, abaxially densely reddish brown hirsute becoming blackened when dry, adaxially opaque and rough, apex cuspidate ..... 16c. var. *hirsutissima*

**16a. *Callerya nitida* var. *nitida***

亮叶鸡血藤(原变种) liang ye ji xue teng (yuan bian zhong)

*Millettia nitida* Benth, *London J. Bot.* 1: 484. 1842; *M. kueichouensis* Hu.

Leaflet blades lanceolate to oblong, 5–9(–11) × 3–4 cm, abaxially glabrous or sparsely puberulent, adaxially glabrous and shiny but sometimes sparsely puberulent on midvein, apex acute to cuspidate. Flowers 2.2–2.4 cm.  $2n = 32^*$ .

• Coastal thickets, lowland sparse woodlands; near sea level to 800 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Jiangxi, Taiwan.

**16b. *Callerya nitida* var. *minor*** (Z. Wei) X. Y. Zhu in X. Y. Zhu et al., *Legumes China*, 454. 2007.

峨眉鸡血藤 e mei ji xue teng

*Millettia nitida* var. *minor* Z. Wei, *Acta Phytotax. Sin.* 23: 288. 1985.

Leaf rachis slender; leaflet blades lanceolate, 3.5–5.5 × 2–3 cm, both surfaces glabrous or glabrescent, apex acuminate. Flowers 1.6–1.8 cm.

• Thickets, forest margins; 800–1500 m. Fujian, Guangdong, Guangxi, Guizhou, Jiangxi, Sichuan, Yunnan, Zhejiang.

**16c. *Callerya nitida* var. *hirsutissima*** (Z. Wei) X. Y. Zhu in X. Y. Zhu et al., *Legumes China*, 454. 2007.

丰城鸡血藤 feng cheng ji xue teng

*Millettia nitida* var. *hirsutissima* Z. Wei, *Acta Phytotax. Sin.* 23: 288. 1985.

Leaflet blades ovate, 3.5–5.5 × 2–3 cm, abaxially densely reddish brown hirsute becoming blackened when dry, adaxially opaque and rough, apex cuspidate. Flowers 1.6–1.8 cm.

• Thickets and open places on slopes; 500–1000 m. Fujian, Guangdong, Guangxi, Hunan, Jiangxi.

The stem and roots are used medicinally for improving blood circulation.

**17. *Callerya congestiflora*** (T. C. Chen) Z. Wei & Pedley, **comb. nov.**

密花鸡血藤 mi hua ji xue teng

Basionym: *Millettia congestiflora* T. C. Chen, *Acta Phytotax. Sin.* 3: 362. 1955.

Lianas, to 5 m. Stems yellowish brown, terete, ridged, densely villous, glabrescent. Leaves 5-foliolate; rachis 15–30 cm, including petiole 4.5–8.5 cm; leaflet blades broadly elliptic to ovate, 11–13 × 6–8 cm with basal pair smallest, papery, abaxially sparsely villous, adaxially glabrous except midvein, base obtuse to broadly cuneate, apex acute. Panicles terminal, 14–16 cm; flowering branchlets grouped in twos or threes, densely yellow villous, nodes crowded. Flowers ca. 1.6 cm. Calyx outside densely sericeous. Corolla white or pale pink; standard broadly ovate, without basal calluses, outside densely sericeous abaxially. Ovary densely villous, with 6 or 7 ovules. Legume linear, 10–12 × 1.2–1.4 cm, flat, densely brown sericeous,

contracted between seeds, base tapering, apex with a prolonged hooked beak. Seeds 3–6 per legume, chestnut-brown and oblong when immature. Fl. Jun–Aug, fr. Sep–Oct.

• Mountain woodlands; 500–1200 m. S Anhui, W Fujian, Guangdong, Guizhou, Hubei, Hunan, Jiangxi, Sichuan.

**18. Callerya dielsiana** (Harms) P. K. Lôt ex Z. Wei & Pedley, **comb. nov.**

香花鸡血藤 xiang hua ji xue teng

Shrubs, scandent, 2–5 m. Stems grayish yellow, splitting, glabrous or puberulent. Leaves 5-foliolate; rachis 15–30 cm, including petiole 5–12 cm; leaflet blades lanceolate, oblong, or narrowly oblong, 5–15 × 1.5–6 cm, abaxially grayish glabrous, sparsely puberulent, or yellow hirsute, adaxially glabrous, midvein abaxially raised and adaxially sunken, secondary veins 6–9 on each side of midvein, reticulate veins evident on both surfaces or only abaxially, base rounded or sometimes subcordate, apex acute, acuminate, or rarely obtuse. Panicles terminal, 10–25(–40) cm, yellow puberulent; flowering branchlets 6–15 cm, spreading, nodes close together. Flowers 1.2–2.4 cm. Corolla purple; standard broadly ovate, without basal calluses, outside silvery to rusty sericeous, base subcordate. Ovary linear, tomentose, with 8 or 9 ovules. Legume linear to oblong, 7–12 × 1.5–2 cm, flat, gray tomentose; valves thin or woody. Seeds 3–5 per legume, tawny, oblong or subglobose, ca. 8 × 6 mm. Fl. May–Sep, fr. Jun–Nov.

• Mixed woodlands and thickets on slopes, thickets in river valleys, open places at forest margins; 300–2500 m. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Yunnan, Zhejiang.

- 1a. Leaflet blades abaxially grayish yellow hirsute ..... 18c. var. *solida*  
 1b. Leaflet blades abaxially glabrous or sparsely puberulent.  
 2a. Leaflet blades lanceolate to narrowly oblong, adaxially shiny and without prominent reticulate veins; valves subwoody; seeds oblong ..... 18a. var. *dielsiana*  
 2b. Leaflet blades oblong, adaxially rough with prominent reticulate veins; valves thinly leathery; seeds subglobose ..... 18b. var. *heterocarpa*

**18a. Callerya dielsiana** var. *dielsiana*

香花鸡血藤(原变种) xiang hua ji xue teng (yuan bian zhong)

Basionym: *Millettia dielsiana* Harms, Bot. Jahrb. Syst. 29:

412. 1900; *M. argyraea* T. C. Chen; *M. blinii* H. Léveillé; *M. champotongensis* Hu; *M. cinerea* Benth var. *yunnanensis* Pampanini; *M. duclouxii* Pampanini; *M. dunniana* H. Léveillé; *M. fragrantissima* H. Léveillé; *M. obtusifoliolata* Hu.

Leaflet blades lanceolate to narrowly oblong, 5–10(–12) × 1.5–3.5 cm, papery, abaxially glabrous or sparsely puberulent, adaxially glabrous and shiny. Panicles 10–15 cm. Flowers 1.2–1.8 cm. Legume linear, 7–9 × ca. 1.5 cm, valves subwoody. Seeds oblong.

• Mixed woodlands and thickets on slopes; 800–2500 m. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Yunnan, Zhejiang.

Although P. K. Lôt attempted to make the combination *Callerya dielsiana* (Bot. Zhurn. (Moscow & Leningrad) 81(10): 99. 1996), it was not validly published because he did not provide a full bibliographic reference to the basionym (*Vienna Code*, Art. 33.4). Consequently (Art. 43.1), the two varietal combinations made below were not validly published by X. Y. Zhu (in X. Y. Zhu et al., Legumes China, 452. 2007).

**18b. Callerya dielsiana** var. *heterocarpa* (Chun ex T. C. Chen) X. Y. Zhu ex Z. Wei & Pedley, **comb. nov.**

异果鸡血藤 yi guo ji xue teng

Basionym: *Millettia heterocarpa* Chun ex T. C. Chen, Acta Phytotax. Sin. 3: 364. 1955; *M. dielsiana* var. *heterocarpa* (Chun ex T. C. Chen) Z. Wei.

Leaflet blades oblong, 7–9(–13) × 3–4.5 cm, papery, abaxially sparsely puberulent, adaxially glabrous, rough, and with reticulate veins prominent. Panicles 12–20 cm. Flowers 1.2–1.8 cm. Legume oblong, 7–11 × ca. 2 cm, valves thinly leathery. Seeds subglobose.

• Thickets in river valleys; 300–1900 m. Fujian, Guangdong, Guangxi, Guizhou, Jiangxi.

**18c. Callerya dielsiana** var. *solida* (T. C. Chen ex Z. Wei) X. Y. Zhu ex Z. Wei & Pedley, **comb. nov.**

雪峰山鸡血藤 xue feng shan ji xue teng

Basionym: *Millettia dielsiana* var. *solida* T. C. Chen ex Z. Wei, Acta Phytotax. Sin. 23: 289. 1985.

Leaflet blades oblong, 9–15 × 4–6 cm, papery, abaxially grayish yellow hirsute, reticulate veins prominent. Panicles 15–25(–40) cm. Flowers 1.8–2.4 cm. Legume oblong, 8–12 × ca. 2 cm, valves leathery. Seeds subglobose.

• Open places at forest margins; 600–1400 m. Guangxi, W Hunan.

**74. PONGAMIA** Adanson, Fam. Pl. 2: 322, 593. 1763 [“*Pongam*”], nom. cons.

水黄皮属 shui huang pi shu

Zhang Dianxiang (张奠湘); Les Pedley

Trees. Stipules caducous. Leaves imparipinnate; stipels absent. Inflorescences axillary, racemose; bracts small, caducous. Calyx campanulate to calathiform, apex truncate. Corolla longer than sepals; standard orbicular, with 2 calluses on claw, basally auriculate; wings oblong, oblique, auriculate; keels falcate, apically adherent, apex truncate. Stamens 10, diadelphous; vexillary stamen free from other 9; anthers basifixed. Ovary sessile, with 2 ovules; style inflexed, glabrous; stigma capitate. Seed 1 per legume.

One species: pantropical and extending into subtropics.

**1. *Pongamia pinnata*** (Linnaeus) Merrill, *Interpr. Herb. Amboin.* 271. 1917.

水黄皮 *shui huang pi*

*Cytisus pinnatus* Linnaeus, *Sp. Pl.* 2: 741. 1753; *Derris indica* (Lamarck) Bennet; *Galedupa indica* Lamarck; *G. pinnata* (Linnaeus) Taubert; *Millettia pinnata* (Linnaeus) Panigrahi; *Pongamia glabra* Ventenat; *P. mitis* (Linnaeus) Kurz; *Robinia mitis* Linnaeus.

Trees, 8–15 m tall. Branchlets sometimes tomentose, glabrescent, with dense minute cinereous lenticels. Leaves 5- or 7-foliolate; rachis 20–26 cm, including petiole 5–6 cm; petiolules 6–8 mm; leaflet blades ovate, broadly elliptic, or oblong, 5–10 × 4–8 cm, leathery, base rounded, broadly cuneate, or truncate, apex rounded to acuminate. Inflorescences axillary, racemose, 15–20 cm, rachis nodes usually with 2 flowers. Pedicel 5–8 mm; bracteoles 2, inserted at base of calyx, ovate. Calyx cam-

panulate to calathiform, ca. 3 mm, outside sparsely yellowish pubescent; teeth obscure. Corolla white or pink, 1.2–1.4 cm; standard orbicular, outside thinly sericeous, base auriculate, claw 2-callose; wings oblong, oblique, base auriculate; keels falcate, apically adherent, apex truncate. Stamens 10, vexillary stamen distinct, others connate; anthers basifixed. Ovary subsessile, with 2 ovules; style inflexed, glabrous; stigma capitate. Legume ellipsoid to oblong, flat, 4–5 × 1.5–2.5 cm, indehiscent, covered with obscure warts, apex shortly beaked. Seed reniform. Fl. May–Jun, fr. Aug–Oct.  $2n = 22$ .

Coastal areas along beaches or riverbanks, thickets; near sea level. Fujian, Guangdong, Hainan, Taiwan [Bangladesh, India, Indonesia, Japan, Malaysia, Myanmar, Papua New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; C Africa, Australia, Central America, Pacific islands].

*Pongamia pinnata* is represented in China by the typical variety. Another variety, *Pongamia pinnata* var. *xerocarpa* (Hasskarl) Alston, occurs in S and SE Asia.

## 75. WISTERIA Nuttall, *Gen. N. Amer. Pl.* 2: 115. 1818, nom. cons.

紫藤属 *zi teng shu*

Wei Zhi (韦直); Les Pedley

*Phaseoloides* Duhamel; *Rehsonia* Stritch.

Lianas, deciduous. Winter buds ovoid; scales 3–5. Stipules present. Leaves imparipinnate; leaflet blades opposite, margin entire; stipels present. Racemes terminal, elongate, pendulous; nodes scattered on rachis, with 1 flower. Flowers 1.5–2.5 cm. Corolla standard orbicular, large, reflexed, glabrous or outside with some trichomes at base, with 2 basal calluses; wings free from keel. Stamens diadelphous; vexillary stamen distinct from other 9 or slightly connate at middle of sheath. Ovary stipitate, with trichomes, with 5–16 ovules. Legume linear to oblanceolate, leathery, convex over seeds. Seeds 1–3[or more] per legume, reniform to lenticular, without a strophiole; radicle folded.

About six species: E Asia, North America; four species (three endemic) in China.

The Japanese species *Wisteria floribunda* (Willdenow) Candolle is commonly cultivated as a garden plant in China.

- 1a. Mature leaflet blades glabrescent or with sparse trichomes; corolla purple, occasionally white.
  - 2a. Flowers 2–2.5 cm; pedicel 2–3 cm; corolla standard glabrous, apex truncate; abaxial calyx tooth longer than others ..... 1. *W. sinensis*
  - 2b. Flowers ca. 1.5 cm; pedicel 0.6–1.2 cm; corolla standard outside sparsely villous, apex emarginate; abaxial calyx tooth as long as others ..... 2. *W. brevidentata*
- 1b. Mature leaflet blades with trichomes on both surfaces but abaxially especially dense; corolla violet or white.
  - 3a. Racemes 30–35 cm, densely gray villous; flowers 2.2–2.5 cm, blooming in sequence from base to apex along raceme rachis; corolla violet; leaflet blades villous but abaxially especially dense ..... 3. *W. villosa*
  - 3b. Racemes 10–20 cm, yellow tomentose; flowers ca. 2 cm, blooming almost at same time along whole raceme rachis; corolla white; leaflet blades abaxially sericeous, adaxially appressed pubescent ..... 4. *W. venusta*

**1. *Wisteria sinensis*** (Sims) Sweet, *Hort. Brit.* 121. 1826.

紫藤 *zi teng*

*Glycine sinensis* Sims, *Bot. Mag.* 46: t. 2083. 1819; *Wisteria alba* Lindley; *W. praecox* Handel-Mazzetti; *W. sinensis* f. *alba* (Lindley) Rehder & E. H. Wilson; *W. sinensis* var. *albiflora* Lemaire.

Lianas, to 25 m. Stems twined leftward, white villous when young, soon glabrescent. Leaves 7–13-foliolate; rachis 15–25 cm, including petiole 3–5 cm; leaflet blades elliptic-ovate to lanceolate-ovate, 5–8 × 2–4 cm with basal pair smallest and becoming larger apically, both surfaces appressed pubescent when young but glabrescent, base rounded to cuneate and some-

what asymmetric, apex attenuate to caudate. Racemes terminal or axillary from branchlets of previous year, 15–30 × 8–10 cm, white villous. Pedicel 2–3 cm, slender. Flowers 2–2.5 cm, fragrant. Calyx with adaxial tooth longer than others. Corolla purple or occasionally white; standard orbicular, sometimes retuse, glabrous, apex truncate. Ovary tomentose, with 6–8 ovules. Legume oblanceolate, 10–15 × 1.5–2 cm, tomentose, hanging on branches persistently. Seeds 1–3 per legume, brown, thickly lenticular, ca. 1.5 cm in diam., shiny. Fl. Apr–May, fr. May–Aug.  $2n = 16$ .

Mountain forests; 500–1800 m. Anhui, Fujian, NE Guangxi, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Shandong, S Shanxi, Zhejiang [Japan].

This species is cultivated extensively in areas beyond its native range.

**2. *Wisteria brevidentata*** Rehder, J. Arnold Arbor. 7: 163. 1926.

短梗紫藤 duan geng zi teng

Lianas. Stems appressed villous, glabrescent and grayish yellow in second year. Leaves 9- or 11(or 13)-foliolate; rachis 13–17 cm, including petiole 3–4 cm; petiolules sparsely hirsute; leaflet blades elliptic to ovate-oblong, 2.5–5 × 1–1.8 cm, both surfaces sparsely hirsute especially on midvein, base broadly cuneate to rounded, apex obtuse and apiculate. Racemes 10–18 cm. Pedicel 6–12 mm, villous. Flowers ca. 1.5 cm. Calyx with abaxial tooth as long as others. Corolla purple; standard suborbicular, outside sparsely villous, base subcordate, apex emarginate. Ovary tomentose. Legume and seeds not seen.

- Hill slopes and river valleys, cultivated. Fujian, Yunnan.

The status of this species is uncertain, and it may be just a variant of *Wisteria sinensis*. Collections are known from both cultivated and wild plants, but it is uncertain whether or not the wild plants had escaped from cultivation.

**3. *Wisteria villosa*** Rehder, J. Arnold Arbor. 7: 162. 1926.

藤笏 teng luo

Lianas. Stems thick, densely gray villous. Leaves 9- or 11-foliolate; rachis 15–32 cm, including petiole 2–5 cm; leaflet blades ovate-oblong to elliptic-oblong, 5–10 × 2.5–3.5 cm, gradually decreasing in size from basal to apical pair, abaxially densely white villous, adaxially sparsely white villous, trichomes persistent on both surfaces, base broadly cuneate to rounded, apex acute to acuminate. Racemes terminal, 30–35 ×

8–10 cm. Pedicel 1.5–2.5 cm, straight. Flowers 2.2–2.5 cm, fragrant. Calyx violet, both surfaces tomentose. Corolla violet; standard orbicular, glabrous. Ovary tomentose, with 5 ovules. Legume oblanceolate, 18–24 × ca. 2.5 cm, brown tomentose. Seeds ca. 3 per legume, dark brown, flat and orbicular, ca. 1.5 cm in diam. Fl. Apr–May, fr. Jul–Oct.

- Thickets and trailsides on slopes. Henan, Shaanxi.

This species is cultivated in Anhui, Jiangsu, and Shandong.

**4. *Wisteria venusta*** Rehder & E. H. Wilson in Sargent, Pl. Wilson. 2: 514. 1916.

白花藤笏 bai hua teng luo

*Wisteria brachybotrys* Siebold & Zuccarini var. *alba* W. Miller.

Lianas, 2–10 m. Stems densely appressed yellow pubescent when young, glabrescent. Leaves 9- or 11-foliolate; rachis 18–35 cm, including petiole 3–5 cm; leaflet blades ovate-oblong to lanceolate-oblong, 6–10 × 2.5–5 cm with pair at middle of rachis somewhat larger than others, both surfaces appressed pubescent but abaxially more densely so especially on midvein and margin, base truncate to subcordate and asymmetric, apex acute. Racemes terminal, emerged at same time as leaves, ca. 15 × 10 cm, yellow tomentose. Pedicel 2.5–3(–3.5) cm, straight. Flowers ca. 2 cm. Corolla white; standard suborbicular, apex truncate and cuspidate. Ovary with trichomes, with 12 ovules. Legume oblanceolate, flat, yellow tomentose. Seeds brown, round, ca. 1.2 cm in diam. Fl. Apr–Jun, fr. Aug–Sep.

- Mountain valleys. Hebei, Henan, Shandong, Shanxi.

This species usually is cultivated as an ornamental in shade.

**76. CRASPEDOLOBIUM** Harms, Repert. Spec. Nov. Regni Veg. 17: 135. 1921.

巴豆藤属 ba dou teng shu

Wei Zhi (韦直); Les Pedley

Shrubs, scandent. Stipules present. Leaves pinnately 3-foliolate; stipels present. Pseudoracemes terminal or axillary near branchlet apex, elongated; flowering branchlet nodes with flowers in fascicles; bracts and bracteoles minute. Pedicel short. Calyx teeth 5, ± equal in length. Corolla red; petals equal in length; standard orbicular, shortly clawed, without basal calluses. Stamens diadelphous; vexillary stamen free from other 9. Ovary stipitate, with trichomes, with 5–8 ovules. Legumes flat, with a narrow wing on adaxial suture, dehiscent. Seeds with folded radicle.

One species: SE Asia and China.

**1. *Craspedolobium unijugum*** (Gagnepain) Z. Wei & Pedley, **comb. nov.**

巴豆藤 ba dou teng

Basionym: *Millettia unijuga* Gagnepain, Notul. Syst. (Paris) 2: 365. 1913; *Callerya unijuga* (Gagnepain) H. Sun; *Craspedolobium schochii* Harms.

Shrubs, scandent, to 3 m. Stems dark brown, pithy, ridged, appressed puberulent when young, glabrescent when mature, with dense brown lenticels. Leaves 3-foliolate; stipels acicular; leaflet blades obovate to broadly elliptic, 5–9 × 3–6 cm, both surfaces appressed puberulent but abaxially especially dense on veins, adaxially sometimes glabrescent, base broadly cuneate to rounded and asymmetric on lateral ones, apex obtuse and cuspi-

date. Pseudoracemes usually congested near apex of branchlets, 15–25 cm; flowering branchlet nodes with 3–5 fascicled flowers. Pedicels, calyces, and bracteoles yellow sericeous. Corolla red, 0.9–1.1 cm, glabrous. Legume linear, 6–9 × ca. 1.2 cm, flat, papery, brown tomentose, base rounded, apex acute and shortly beaked; abaxial suture narrowly winged, continuous within. Seeds 3–5(–7) per legume, reniform, lenticular. Fl. Jun–Sep, fr. Sep–Oct.

Sparse woodlands in moist soil, along trails; 600–2000 m. NW Guangxi, SW Guizhou, S Sichuan, Yunnan [Laos, Myanmar, Thailand].

The record of *Millettia unijuga* as treated in FRPS (40: 160. 1994) is based on a single specimen (*P. I. Mao 6915*, 24 Oct 1955, KUN) from S Yunnan, which was used for the illustration in FRPS (t. 47, f. 1–2). This specimen may possibly represent an as yet undescribed species.

## 77. **TEPHROSIA** Persoon, Syn. Pl. 2: 328. 1807, nom. cons.

灰毛豆属 *hui mao dou shu*

Wei Zhi (韦直); Les Pedley

*Cracca* Linnaeus.

Herbs, perennial or rarely annual, often suffrutescent, usually sericeous. Stipules caducous. Leaves imparipinnate; stipels absent; leaflet blades opposite, abaxially often sericeous, secondary veins to ca. 30 on each side of midvein and closely parallel, margin entire. Pseudoracemes terminal or axillary, sometimes opposite a leaf; bracts usually caducous. Bracteoles absent. Corolla white, cream-colored, or mauve, occasionally orange or red; standard reflexed, suborbicular, outside villous or sericeous. Stamens monadelphous; vexillary stamen somewhat distinct from other 9. Ovary sessile, with trichomes, with numerous ovules. Legume flat, occasionally inflated, dehiscent, apex often beaked; valves twisted. Seeds 5–16 per legume, oblong, ellipsoid, or occasionally globose; radicle folded.

More than 400 species: tropical and subtropical regions of the world; 11 species (one endemic, three introduced) in China.

- 1a. Flowers 1–2.5 cm; legume 5.5–13 cm × 5.5–14 mm.
- 2a. Flowers 1–1.7 cm; legume 5.5–6 cm; leaflet blades obovate-elliptic, narrowly elliptic, linear-oblong-lanceolate, or oblong-oblong-lanceolate.
- 3a. Inflorescences 3–7 cm, with congested flowers; corolla white; leaflet blades abaxially velutinous, secondary veins 15–20 on each side of midvein ..... 4. *T. vestita*
- 3b. Inflorescences to 25 cm, with scattered flowers; corolla red; leaflet blades abaxially silvery sericeous, secondary veins 9 or 10 on each side of midvein ..... 5. *T. coccinea*
- 2b. Flowers 2–2.5 cm; legume 8–13 cm; leaflet blades oblong-elliptic, lanceolate-elliptic, oblong, or oblong-lanceolate.
- 4a. Pedicel 2–2.3 cm, densely rusty villous; legume 10–13 cm × ca. 14 mm, densely creamy villous ..... 1. *T. vogelii*
- 4b. Pedicel 0.5–1 cm, densely white villous or sericeous; legume 8–10 cm × 6–8.5 mm, brown tomentose or yellow sericeous.
- 5a. Calyx teeth ca. 1 mm, apex rounded; leaflet blades 0.6–1.4 cm in width, oblong, secondary veins 30–50 on each side of midvein; pedicel ca. 10 mm, villous; corolla white, rarely yellow or pale pink; legume brown tomentose ..... 2. *T. candida*
- 5b. Calyx teeth ca. 5 mm, apex acute; leaflet blades 1.5–2 cm in width, oblong-lanceolate, secondary veins 20 on each side of midvein; pedicel ca. 5 mm, sericeous; corolla red; legume yellow sericeous ..... 3. *T. kerrii*
- 1b. Flowers ca. 1 cm; legume 2–5 cm × 3.5–5(–6) mm.
- 6a. Inflorescences 10–25 cm (but only ca. 2 cm in *T. purpurea* var. *glabra*), flowers scattered.
- 7a. Calyx teeth ± equal; legume with sparse appressed trichomes, ca. 6-seeded ..... 6. *T. purpurea*
- 7b. Calyx teeth unequal, most abaxial tooth longer and narrow, other ones shorter and broad; legume densely brown tomentose, 7–9-seeded ..... 7. *T. noctiflora*
- 6b. Inflorescences 1–5 cm, flowers congested.
- 8a. Legume with 7–14 seeds.
- 9a. Inflorescences with 1–3 flowers; legume apex with curved or hooked beak ..... 8. *T. pumila*
- 9b. Inflorescences with 4–8 flowers; legume apex with a short straight beak ..... 9. *T. luzonensis*
- 8b. Legume with 5–7 seeds.
- 10a. Leaves 13–17-foliolate; leaflet blades oblanceolate, abaxially sparsely pubescent, secondary veins ca. 9 on each side of midvein, mauve, conspicuous; legume slightly curved at tip, 3.5–4 cm ..... 10. *T. ionophlebia*
- 10b. Leaves 11- or 13-foliolate; leaflet blades obovate, both surfaces densely sericeous, secondary veins 5–8 on each side of midvein, almost inconspicuous; legume straight, 2–2.5 cm ..... 11. *T. obovata*

**1. *Tephrosia vogelii*** J. D. Hooker in Hooker, Niger Fl. 296. 1849.

西非灰毛豆 *xi fei hui mao dou*

Herbs, perennial, erect, many branched. Stems tomentose with short and long white and yellow trichomes, trichomes ca. 1.5 mm. Leaves 13–29-foliolate; rachis 10–25 cm, including petiole 1–3 cm; leaflet blades oblong-elliptic to lanceolate-elliptic, 3–7 × 0.9–1.8 cm, abaxially densely mixed white and yellow tomentose, adaxially appressed white sericeous, secondary veins 12–15 on each side of midvein. Pseudoracemes terminal

or axillary near apex of branchlets, 10–15 cm, rusty tomentose, long pedunculate. Pedicel 2–2.3 cm, rusty villous. Flowers ca. 2.5 cm. Calyx ca. 1.2 × 1 cm, brown tomentose; teeth oblong, ca. 1 cm, apex rounded but adaxial one narrowly acute. Corolla white or occasionally violet; standard orbicular, sericeous. Ovary sericeous, with numerous ovules. Legume linear, 10–13 cm × 12–14 mm, straight, yellowish white tomentose, rusty on suture, apex beaked. Seeds 12–16 per legume, black, broadly ovoid, ca. 7 × 4.5 mm, smooth. Fl. and fr. year-round.  $2n = 22$ .

Cultivated in S Guangdong, Hainan, and Taiwan [native to tropical Africa].

This species is grown as a green mulch.

**2. *Tephrosia candida*** Candolle, Prodr. 2: 249. 1825.

白灰毛豆 bai hui mao dou

*Robinia candida* (Candolle) Roxburgh.

Herbs, perennial, suffrutescent, 1–3.5 m tall. Stems ridged, grayish white tomentose, trichomes ca. 1 mm. Leaves 17–25-foliolate; rachis 15–25 cm, including petiole 1–3; leaflet blades oblong, 3–6 × 0.6–1.4 cm, abaxially densely sericeous, adaxially glabrous, secondary veins 30–50 on each side of midvein. Pseudoracemes terminal or lateral, 15–20 cm. Pedicel ca. 1 cm, densely white villous. Flowers ca. 2 cm. Calyx ca. 5 × 5 mm; teeth equal, ca. 1 mm, apex rounded. Corolla white, rarely yellow or pale pink; standard densely sericeous. Ovary tomentose, with numerous ovules. Legume linear, 8–10 cm × 7.5–8.5 mm, straight, brown tomentose with a mixture of long and short trichomes, apex truncate and with a straight ca. 1 cm beak. Seeds 10–15 per legume, olive-green with dark patches, ellipsoid, ca. 5 × 3.5 mm, smooth. Fl. Oct–Nov, fr. Dec.  $2n = 22, 24$ .

Cultivated or escaped, grasslands, open places, slopes. Fujian, Guangdong, Guangxi, Taiwan, Yunnan [native to India; widely cultivated and escaped elsewhere].

This species is grown as a green mulch.

**3. *Tephrosia kerrii*** J. R. Drummond & Craib, Bull. Misc. Inform. Kew 1912: 149. 1912.

银灰毛豆 yin hui mao dou

Herbs, perennial, to 3 m tall, densely yellow spreading villous. Stems erect, sturdy, ridged, apically branched. Leaves 11–17-foliolate; rachis 9–15 cm, including petiole ca. 5 mm; leaflet blades oblong-lanceolate, 5–8 × 1.5–2 cm, abaxially densely silvery sericeous, adaxially olive-green and glabrous, secondary veins 20 on each side of midvein and conspicuous, base obtuse to cuneate, apex acute and cuspidate. Pseudoracemes terminal, when immature cone-shaped and covered by bracts, elongated to ca. 10 cm at anthesis. Pedicel ca. 5 mm, densely white sericeous. Flowers ca. 2.2 cm. Calyx ca. 8 × 6 mm; teeth narrowly triangular, most abaxial one longest and ca. 5 mm, apex acute. Corolla red; standard obovate, yellow sericeous. Ovary sericeous, with numerous ovules. Legume linear, 8–10 cm × 6–8 mm, straight, spreading and slightly nodding, yellow sericeous, apex with a ca. 1 cm slightly ascending beak. Seeds 10–12 per legume but characters unknown. Fl. Oct, fr. Dec.

Moist places in valleys, open places, along trails; 700–1000 m. S Yunnan [Laos, Thailand, Vietnam].

**4. *Tephrosia vestita*** Vogel, Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 19(Suppl. 1): 15. 1843.

黄灰毛豆 huang hui mao dou

Herbs, perennial, suffrutescent, 1–2 m tall, many branched, yellowish white velutinous. Stems zigzag ascending, ridged. Leaves 7–11(or 13)-foliolate; rachis ca. 10 cm, including petiole 1–1.5 cm; leaflet blades obovate-elliptic to narrowly elliptic, 2–4 × 1–1.8 cm, abaxially velutinous, adaxially rough and glabrous, secondary veins 15–20 on each side of midvein, base cu-

neate, apex rounded to retuse. Pseudoracemes terminal or opposite leaf near apex of branchlets, 3–7 cm, with congested flowers. Pedicel ca. 2 mm. Flowers ca. 1.7 cm, fragrant. Calyx ca. 3 × 4 mm. Corolla white; standard suborbicular, yellow velutinous. Ovary sericeous, with numerous ovules. Legume linear, 5.5–6 cm × ca. 5 mm, straight, flat, densely yellow velutinous, apex abruptly pointed and with a ca. 1 cm beak. Seeds 10–12 per legume, black, reniform, ca. 3 × 2.5 mm. Fl. Jun–Oct, fr. Jul–Nov.

Sparse woodlands, open places, grasslands. Guangdong, Guangxi, Hainan, Jiangxi [Cambodia, Indonesia, Laos, Malaysia, Papua New Guinea, Philippines, Thailand, Vietnam].

**5. *Tephrosia coccinea*** Wallich var. *stenophylla* Hosokawa, Trans. Nat. Hist. Soc. Formosa 32: 195. 1942.

狭叶红灰毛豆 xia ye hong hui mao dou

Herbs, perennial, suffrutescent, 40–50 cm tall, many branched. Stems woody, terete; young branchlets 4-sided, silvery or white appressed sericeous. Leaves subsessile, 5- or 7(or 9)-foliolate; rachis 6–10 cm; leaflet blades linear-oblongate to oblong-oblongate, 4–6 × ca. 1 cm with basal pair smallest and terminal one longest, abaxially silvery sericeous, secondary veins 9 or 10 on each side of midvein. Pseudoracemes terminal or opposite a leaf, ca. 25 cm, with scattered flowers. Pedicel 3–6 mm. Flowers ca. 1 cm. Calyx ca. 5 mm. Corolla red; standard orbicular, outside sericeous, inside glabrous. Ovary stipitate, sericeous, with 10–12 ovules. Legume linear, ca. 6 cm × 7–8 mm, flat, tomentose. Seeds 8–12 per legume, black, reniform, ca. 8 × 5 mm. Fl. and fr. Dec–Feb.

- Sandy fields in open areas. Hainan.

*Tephrosia coccinea* var. *coccinea* occurs in India, Laos, Myanmar, and Vietnam.

**6. *Tephrosia purpurea*** (Linnaeus) Persoon, Syn. Pl. 2: 329. 1807.

灰毛豆 hui mao dou

Herbs, perennial, 30–60(–150) cm tall, many branched, puberulent, densely spreading villous, or glabrescent. Stems nearly erect to spreading, with a woody base, ridged. Leaves 9–17(–21)-foliolate; rachis 7–15 cm, including petiole ca. 1 cm; leaflet blades oblong-elliptic, oblanceolate-elliptic, or obovate-elliptic, 1.5–3.5(–4.5) × 0.4–1.5 cm, secondary veins 7–12 on each side of midvein, base narrowly rounded, apex obtuse, truncate, or retuse and cuspidate. Pseudoracemes terminal, opposite to a leaf or axillary near apex of branchlets, ca. 2 or 10–15 cm. Pedicel 2–4 mm, slender, slightly elongate in fruit. Flowers ca. 8 mm. Calyx 2–4 × ca. 3 mm; teeth equal. Corolla mauve; standard orbicular, white puberulent. Ovary with trichomes, with 5–8 ovules. Legume linear, 3–5 cm × 3.5–4(–6) mm, with sparse appressed trichomes, apically slightly curved. Seeds ca. 6 per legume, grayish brown, ellipsoid, ca. 3 × 1.5 mm, with or without spots, smooth or rough. Fl. Mar–Oct, fr. Sep–Dec.

Open places, slopes, sandy grasslands by oceans, grasslands by river margins; near sea level to 700 m. Fujian, Guangdong, Guangxi, Hainan, Sichuan, Taiwan, Yunnan [Cambodia, India, Indonesia, Laos, Malaysia, Nepal, Sri Lanka, Thailand, Vietnam].

- 1a. Plants glabrescent; inflorescences ca. 2 cm; legume ca. 3 cm × 3.5 mm, glabrous ..... 6b. var. *glabra*
- 1b. Plants ± pubescent or densely spreading villous; inflorescences 10–15 cm; legume 4–5 cm × 4(–6) mm, with trichomes.
- 2a. Plants puberulent; stipules ca. 4 mm; leaflet blades abaxially appressed pubescent, adaxially glabrous; seeds grayish brown, spotted, smooth ..... 6a. var. *purpurea*
- 2b. Plants densely spreading villous; stipules ca. 12 mm; leaflet blades with both surfaces villous but abaxially more densely so especially on midvein and margin; seeds rough, without spots ..... 6c. var. *yunnanensis*

**6a. *Tephrosia purpurea* var. *purpurea***

灰毛豆(原变种) hui mao dou (yuan bian zhong)

*Cracca purpurea* Linnaeus, Sp. Pl. 2: 752. 1753; *Galega purpurea* (Linnaeus) Linnaeus; *Glycyrrhiza mairei* H. Léveillé.

Plants ± pubescent. Stipules ca. 4 mm. Leaflet blades oblong-elliptic to oblanceolate-elliptic, 1.5–3.5 × 0.4–1.4 cm, abaxially appressed pubescent, adaxially glabrous. Racemes ca. 10 cm, slender. Legume 4–5 cm × 4(–6) mm, with trichomes. Seeds grayish brown, spotted, smooth.  $2n = 22, 44$ .

Open places, slopes. Fujian, Guangdong, Guangxi, Hainan, Taiwan, Yunnan [Cambodia, India, Laos, Malaysia, Nepal, Sri Lanka, Vietnam].

**6b. *Tephrosia purpurea* var. *glabra*** Hosokawa, J. Soc. Trop. Agric. 4: 200. 1932.

秃净灰毛豆 tu jing hui mao dou

Herbs suffrutescent, glabrescent. Leaves 13-foliolate. Racemes ca. 2 cm, shorter than subtending leaf. Legume ca. 3 cm × 3.5 mm, glabrous.

- Sandy grasslands by oceans; near sea level. S Taiwan.

**6c. *Tephrosia purpurea* var. *yunnanensis*** Z. Wei, Acta Phytotax. Sin. 27: 76. 1989.

云南灰毛豆 yun nan hui mao dou

Plants densely spreading villous. Stipules ca. 1.2 cm. Leaflet blades obovate-elliptic, 1.5–2(–4.5) × 0.6–1.5 cm, both surfaces villous but abaxially more densely so especially on midvein and margin. Racemes 10–15 cm. Legume 4–5 cm × 4(–6) mm, with trichomes. Seeds rough, without spots.

- Grasslands by river margins; ca. 700 m. Sichuan, Yunnan.

**7. *Tephrosia noctiflora*** Bojer ex Baker, Fl. Trop. Afr. 2: 112. 1871.

长序灰毛豆 chang xu hui mao dou

*Tephrosia hookeriana* Wight & Arnott var. *amoena* Prain.

Herbs, perennial, suffrutescent, 0.5–1.5 m tall. Stems terete, with dense spreading trichomes. Stipules narrowly tri-

angular, 6–11 mm, persistent, apex acuminate. Leaves 15–25-foliolate; rachis 7–11 cm, including petiole 0.7–1.3 cm; leaflet blades oblong-oblanceolate, 2.2–3.2 × 0.5–0.8 cm with terminal one slightly larger than others, abaxially densely appressed sericeous, adaxially glabrous, secondary veins 9–11 on each side of midvein, base cuneate, apex rounded to retuse and cuspidate. Pseudoracemes terminal, 15–25 cm, rigid and straight, with scattered flowers. Pedicel 2–4 mm. Flowers ca. 1 cm. Calyx ca. 5 × 5 mm, densely brown pubescent; teeth unequal, most abaxial one 4–6 mm and narrow, other ones short and broad. Corolla yellow, violet, or white; standard orbicular, brown sericeous. Ovary sericeous, with numerous ovules. Legume linear, 4.5–5 cm × ca. 5 mm, straight, densely brown pubescent, apex ascending curved. Seeds 7–9 per legume, black, reniform, ca. 4 × 2.5 mm, usually transversely rugose. Fl. and fr. Nov–Jan.  $2n = 22$ .

Introduced and escaped in ravines near shorelines, coastal grasslands; below 100–700 m. Guangdong, Taiwan, Yunnan [native to tropical Africa].

**8. *Tephrosia pumila*** (Lamarck) Persoon, Syn. Pl. 2: 330. 1807.

矮灰毛豆 ai hui mao dou

*Galega pumila* Lamarck, Encycl. 2: 599. 1788.

Herbs, annual or perennial, procumbent or straggling, 20–30 cm tall. Stems thin and hard, ridged, densely spreading strigose. Stipules 3–4 mm. Leaves 7(–13)-foliolate; rachis 2–4 cm, including petiole 3–10 mm; leaflet blades narrowly obovate to oblanceolate, 1.2–2 × 0.4–0.8 cm, abaxially strigose, adaxially appressed pubescent, secondary veins 6 or 7 on each side of midvein and obscure, base cuneate, apex truncate to obtuse and cuspidate. Pseudoracemes terminal or opposite a leaf, ca. 2 cm, strigose, with 1–3 flowers. Pedicel 2.5–4 mm. Flowers ca. 6 mm. Calyx ca. 3 × 2 mm. Corolla white, yellow, or rarely pale pink; standard orbicular, pilose. Ovary with trichomes, with numerous ovules. Legume linear, 3.5–4 cm × ca. 4 mm, shortly strigose, apex slightly ascending curved and with a beak; style remnant sharply reflexed. Seeds 8–14 per legume, brown, oblong-rhomboid, ca. 4 × 3 mm, mottled. Fl. and fr. year-round.  $2n = 22, 44$ .

Sunny places on slopes or trailsides; ca. 500 m. Guangdong [tropical Africa, Asia, and N Australia].

**9. *Tephrosia luzonensis*** Vogel, Nov. Actorum Acad. Caes. Leop.-Carol. Nat. Cur. 19(Suppl. 1): 15. 1843.

西沙灰毛豆 xi sha hui mao dou

Herbs, annual, 10–15(–100) cm tall, many branched, white spreading pilose. Stems erect, procumbent, or ascendant, base slightly woody. Stipules ca. 4 mm. Leaves (5–)9–13(–21)-foliolate; rachis 5–10 cm, including petiole ca. 1 cm; leaflet blades narrowly oblong to oblanceolate, 1–3 × 0.3–0.7 cm, abaxially densely gray pubescent, adaxially appressed puberulent, secondary veins 10 on each side of midvein, base cuneate, apex rounded or retuse and cuspidate. Pseudoracemes axillary, with 4–8 flowers gathered on apical half of rachis. Pedicel 3–4 mm. Flowers ca. 7 mm. Corolla pale red flushed with purple. Legume linear, 2.5–3.5 cm × ca. 4 mm, slightly curved, strigose,

apex with a straight beak. Seeds 7–12 per legume, black, subglobose, ca. 2 mm. Fl. and fr. year-round.

Open sandy seashores; near sea level. Guangdong (Xisha Qundao: Yongxing Dao) [Indonesia, Philippines, Thailand].

**10. *Tephrosia ionophlebia*** Hayata, Icon. Pl. Formosan. 9: 21. 1920.

台湾灰毛豆 tai wan hui mao dou

Herbs, perennial, suffrutescent. Stems erect or ascendant, appressed yellow puberulent. Stipules 3–6 mm, abaxially strigose, apex acuminate. Leaves 13–17(–21)-foliolate, sometimes with axillary cataphylls; rachis 6–8 cm, including petiole 1–1.5 mm; leaflet blades oblong-oblongate, 15–18 × ca. 5 mm with largest at middle of rachis, abaxially sparsely strigose, adaxially glabrescent, secondary veins ca. 9 on each side of midvein, reticulate veins clearly marked and purplish red especially abaxially, base broadly cuneate, apex rounded to retuse and cuspidate. Pseudoracemes terminal or opposite a leaf, 2–5 cm, straight, strigose, elongated in fruit. Pedicel ca. 4 mm, slender. Flowers ca. 1 cm. Calyx ca. 5 × 3 mm. Corolla red; standard broadly orbicular, outside pubescent. Ovary linear, with numerous ovules. Legume linear, 3.5–4 cm × ca. 4 mm, strigose, apically slightly curved. Seeds 5–7 per legume, pale brown, ellipsoid, ca. 3 × 1.5 mm, scabrous. Fl. and fr. Sep–Dec.

• Open places or wastelands. Taiwan.

This species was treated as *Tephrosia purpurea* in Fl. Taiwan (ed. 2, 3: 371. 1993).

**11. *Tephrosia obovata*** Merrill, Philipp. J. Sci., C, 5: 69. 1910.

卵叶灰毛豆 luan ye hui mao dou

Herbs, perennial, small. Stems straggling, appressed pubescent, base woody. Stipules subulate, 2–4 mm. Leaves (9 or) 11- or 13-foliolate; rachis ca. 5 cm, including petiole ca. 1.5 cm; leaflet blades obovate, ca. 1.4 × 0.6 cm, both surfaces appressed sericeous but abaxially especially dense, secondary veins 5–8 on each side of midvein and obscure, base rounded-cuneate, apex emarginate and cuspidate. Pseudoracemes terminal or axillary, short. Flowers ca. 1 cm. Calyx campanulate, ca. 3 mm. Corolla red; standard orbicular, outside pubescent. Ovary with trichomes. Legume linear, 2–2.5 cm × ca. 4 mm, straight, densely velutinous. Seeds 6 or 7 per legume, pale brown, ellipsoid, ca. 2.5 × 2.2 mm. Fl. and fr. Mar–Aug.

Sandy or rocky areas; near sea level. Taiwan [Philippines].

The report (FRPS 40: 222. 1994) of *Tephrosia filipes* Benth from Taiwan is most likely a misidentification of this species and is based on a single specimen from the Hengchun peninsula of S Taiwan in the Herbarium of the Shanghai Museum of Natural History (SHM) collected at “Ma-lan-bi” on cliffs.