

**40. ORMOSIA** Jackson, Trans. Linn. Soc. London 10: 360. 1811, nom. cons.

红豆属 hong dou shu

Sun Hang (孙航); Michael A. Vincent

*Arillaria* Kurz; *Fedorovia* Yakovlev; *Layia* Hooker & Arnott (1833), not Hooker & Arnott ex Candolle (1838, nom. cons.); *Macroule* Pierce; *Ormosiopsis* Ducke; *Podopetalum* F. Mueller; *Ruddia* Yakovlev; *Toulichiba* Adanson; *Trichocycos* Yakovlev.

Trees or shrubs; buds naked or subtended by stipules. Leaves alternate, rarely subopposite, imparipinnate, paripinnate, or rarely simple (1-foliolate); stipules usually small or inconspicuous, rarely lacking; leaflets (1–)3–11(–19), opposite, often leathery or thickly papery; stipules usually absent. Inflorescences paniculate or racemose, axillary or terminal. Bracts small, caducous. Calyx campanulate; teeth 5, unequal, upper 2 connate. Corolla white, yellow, lavender, or purple, longer than calyx; petals clawed; standard suborbicular; wings and keel oblique, obovate-oblong, keel petals free. Stamens 10, exserted, free or only slightly basally connate, subequal, incurved; anthers small, versatile, undeveloped or degenerate on a few filaments. Ovary subsessile; ovules 1 to many; style long, filiform, incurved; stigma oblique or terminal. Legumes woody or leathery, 2(or 3)-valved, rarely indehiscent, ovate to oblong or obovate, laterally compressed to nearly cylindrical; valves internally septate between seeds or without septae; sutures without wings; calyx persistent or deciduous. Seeds 1 to many, red, scarlet, brown, or black, sometimes 2-toned; hilum seldom over 1/2 length of seed, white; cotyledon often fleshy.

About 130 species: tropical America, SE Asia, N Australia; 37 species (34 endemic) in China.

*Ormosia monosperma* (Swartz) Urban was reported for Taiwan by F. C. Ho (J. Taiwan Mus. 36(2): 1–5. 1983), but the species is not known as an escape, only as a cultivated ornamental.

The Asian species of *Ormosia* are in need of a complete revision.

1a. Valves of fruit not internally septate.

2a. Leaves simple.

3a. Flowers pink; standard retuse; ovary glabrous ..... 17. *O. simplicifolia*

3b. Flowers white; standard broadly rounded; ovary yellow pubescent ..... 18. *O. boluoensis*

2b. Leaves imparipinnate.

4a. Legumes densely appressed pubescent.

5a. Legumes indehiscent or tardily dehiscent; hilum 15–18 mm, over 1/2 circumference of seed ..... 1. *O. balansae*

5b. Legumes dehiscent; hilum less than 4 mm.

6a. Hilum 3–4 mm, seed light red; legumes slightly convex; branchlets and leaves abaxially with short hairs, glabrous at maturity; leaves widest at middle ..... 13. *O. nanningensis*

6b. Hilum small, 1–1.5 mm, seed dark brown or chestnut-brown; legumes turgid or somewhat turgid; branchlets and leaves abaxially densely appressed pubescent; leaves often widest above middle.

7a. Leaflet apex caudate, narrow, length ca. 4 × width ..... 4. *O. inflata*

7b. Leaflet apex acute to abruptly mucronate, length less than 3 × width.

8a. Legumes with stipe; branchlets and leaves abaxially densely appressed yellow-brown tomentose ..... 5. *O. sericeolucida*

8b. Stipe absent; branchlets and leaves abaxially sparsely to densely appressed yellow tomentose, or white or brown woolly.

9a. Leaflets 5–7, densely appressed white woolly, becoming gray woolly ..... 2. *O. pachycarpa*

9b. Leaflets 5–9, glabrous adaxially, sparsely to densely yellow-brown tomentose abaxially ..... 3. *O. merrilliana*

4b. Legumes glabrous or sparsely pubescent, sometimes only at margin.

10a. Seeds large, more than 2 cm, hilum inconspicuous.

11a. Legumes compressed, brownish outside, ivory inside; seed red-brown; branchlets densely rusty brown pubescent ..... 7. *O. fordiana*

11b. Legumes swollen, brownish to black outside, brownish inside; seed chestnut-brown; branchlets glabrous or finely white pilose ..... 6. *O. longipes*

10b. Seeds smaller, less than 18 mm, hilum conspicuous, large or small.

12a. Seeds 14–18 mm; legumes yellowish brown.

13a. Hilum small, less than 3 mm; leaflets 3–5; branchlets brownish pilose ..... 16. *O. napoensis*

13b. Hilum 9–10 mm; leaflets 5–7; branchlets glabrous.

14a. Legumes compressed, suborbicular, valves leathery, mesocarp absent; leaflets ovate ..... 14. *O. hosiei*

14b. Legumes fleshy, elliptic, protuberant, valves woody, mesocarp conspicuous; leaflets oblong ..... 15. *O. elliptica*

- 12b. Seeds less than 14 mm; legumes black or light blackish brown.
- 15a. Legumes oblique-elliptic, obovate, or oblong-elliptic, length greater than width; seeds 1–3.
- 16a. Valves thickly leathery; branchlets densely appressed rusty brown tomentose; leaves appressed pubescent abaxially ..... 12. *O. yunnanensis*
- 16b. Valves thinly leathery; branchlets glabrous or glabrescent; leaves glabrous abaxially ..... 11. *O. pingbianensis*
- 15b. Legumes suborbicular, length equaling width; seed 1, rarely 2.
- 17a. Legumes apiculate at apex, mucro 4–6 mm, curved, stipe 5–8 mm; both petiole and rachis glabrous ..... 8. *O. apiculata*
- 17b. Legumes apiculate at apex, mucro less than 4 mm, stipe less than 4 mm; petiole and rachis pubescent.
- 18a. Legumes inequilateral; valves thickly leathery, sparsely pubescent, more conspicuous at margin; leaflets oblong-obovate, thickly leathery, widest above middle, apex acute; rachis prolonged 5–8 mm below terminal leaflet ..... 10. *O. howii*
- 18b. Legumes equilateral; valves thinly leathery, sparsely pubescent at margin when young, becoming glabrescent; leaflets oblong, leathery, widest below (rarely above) middle, apex acuminate; rachis prolonged more than 10 mm below terminal leaflet ..... 9. *O. semicastrata*
- 1b. Valves of fruit internally septate, or if 1-seeded then wall convex at both ends of valve.
- 19a. Legumes very fleshy, valves 6–10 mm thick, often stained red internally; seeds large, 2.5–3 cm, elliptic, red-brown ..... 19. *O. hekouensis*
- 19b. Legumes compressed or slightly fleshy, valves thinly woody or leathery, less than 5 mm thick, not stained red internally; seeds small, less than 2 cm.
- 20a. Branchlets, petiole, and rachis densely appressed brownish or rusty brown tomentose.
- 21a. Legumes densely appressed fulvous sericeous ..... 26. *O. xylocarpa*
- 21b. Legumes glabrous or only basally pubescent at maturity.
- 22a. Valves thinly woody, swollen around seed; leaflets leathery, glossy, pale green when dry; leaf scar flat to concave.
- 23a. Legumes 4–6 cm; seeds 2–4; calyx ca. 7 mm; leaflets 13–19, sparsely appressed pubescent abaxially; branchlets dark rusty brown pubescent ..... 24. *O. ferruginea*
- 23b. Legumes 5–12 cm; seeds 4–8; calyx 12–14 mm; leaflets fewer than above, densely appressed tomentose abaxially; branchlets pale fulvous pubescent ..... 22. *O. henryi*
- 22b. Valves thickly woody, flattened or slightly convex; leaflets papery or rigidly papery, dull, dark green when dry; leaf scar protruding.
- 24a. Leaflets (14–)17–23, both surfaces densely appressed fulvous velvety, more so abaxially ..... 34. *O. saxatilis*
- 24b. Leaflets often fewer than 17, rarely more, glabrous, rarely sparsely appressed pubescent.
- 25a. Leaves larger, often more than 4.5 cm, apex acuminate, lateral veins impressed adaxially when dried ..... 32. *O. olivacea*
- 25b. Leaves smaller, often less than 4.5 cm, apex obtuse, lateral veins slightly raised when dried ..... 33. *O. microphylla*
- 20b. Branchlets, petiole, and rachis glabrous or sparsely appressed pubescent, old branches sparsely glabrous.
- 26a. Leaflets 11–19, abaxially pale when dried.
- 27a. Leaflets 15–19, widest above middle, apex long acuminate or caudate, rachis convex between pair of leaflets ..... 23. *O. pachyptera*
- 27b. Leaflets 11–13, widest at middle or slightly lower, apex obtuse, not long acuminate, rachis not convex ..... 25. *O. purpureiflora*
- 26b. Leaflets 3–9(–11), not pale abaxially when dried.
- 28a. Ovary and legume glabrous.
- 29a. Racemes axillary; leaflets 7–9(–11), apex caudate; valves fulvous when dried; seeds 1.1–1.8 cm, striate ..... 27. *O. striata*
- 29b. Panicles terminal; leaflets 5–7, apex not caudate; valves blackish when dried; seeds 1–1.5 cm, not striate.
- 30a. Leaflets obovate or obovate-elliptic, apex obtuse, emarginate; calyx pubescent along outer margin and inside; standard apex rounded ..... 20. *O. emarginata*
- 30b. Leaflets ovate or elliptic-lanceolate, apex acuminate; calyx pubescent inside and out; standard apex retuse ..... 21. *O. glaberrima*

- 28b. Ovary completely pubescent or at least on margin; legumes ± pubescent, rarely glabrous.
- 31a. Legumes cylindric or slightly compressed, orange-red at maturity and brownish when dry ..... 28. *O. pinnata*
- 31b. Legumes compressed, brownish at maturity and blackish brown when dry.
- 32a. Leaflets obovate or oblanceolate, apex obtuse or emarginate; legumes 2–4.5 cm.
- 33a. Young branchlets sparsely fulvous velvety; leaflets 7–9, often oblanceolate, lateral veins 4–6 pairs ..... 29. *O. indurata*
- 33b. Young branchlets densely appressed fulvous pubescent; leaflets (5–)7, obovate, lateral veins 5–8 pairs ..... 30. *O. eugeniifolia*
- 32b. Leaflets elliptic or oblong, apex acute; legumes 3–10 cm.
- 34a. Legumes somewhat fleshy, swollen, densely appressed short grayish brown pubescent; leaflets 5, often elliptic, apex acute ..... 31. *O. pubescens*
- 34b. Legumes slightly compressed; leaflets 7–23, oblong, apex acuminate, caudate, or acute.
- 35a. Rachis prolonged more than 1 cm below terminal leaflet; legumes more than 4 cm; plants of mainland China ..... 37. *O. nuda*
- 35b. Rachis prolonged less than 1 cm below terminal leaflet; legumes less than 3 cm; plants restricted to Taiwan.
- 36a. Leaflets 3–5(–7), apex acute to acuminate, margin entire, not sinuous; flowers white; seeds globose ..... 35. *O. formosana*
- 36b. Leaflets (5–)7(–9), apex acute to obtuse, slightly retuse, margin entire, often sinuous; flowers reddish purple; seeds angular ..... 36. *O. hengchuniana*

**1. *Ormosia balansae*** Drake, J. Bot. (Morot) 5: 215. 1891.

长脐红豆 chang qi hong dou

*Macroule balansae* (Drake) Yakovlev; *Ormosia elliptilimba* Merrill & Chun.

Trees evergreen, trunk vertical, to 30 m, to 60 cm d.b.h. Bark of young trees grayish, smooth, of old trees grayish brown, minutely longitudinally striate. Branchlets terete, densely appressed brownish pannose. Leaves imparipinnate, 15–20(–35) cm; petiole 2–6.3 cm; petiole and rachis densely appressed pubescent; leaflets 5–7, often 7 near inflorescence; petiolule 5–9 mm, pubescent; blades oblong or elliptic, (5–)8–13(–20) × (2.5–)4–5.5(–8.5) cm, leathery or thinly so, ± yellowish appressed pannose abaxially, glabrous, sometimes villosulous at midvein, adaxially, base rounded or broadly cuneate, apex obtuse, retuse, or acute, rarely acuminate or caudate; midvein raised abaxially, impressed adaxially, lateral veins 16 or 17 pairs, angled 50° with midvein, raised. Panicles terminal or axillary, large, to ca. 19 cm, branches to 20 cm at base of inflorescence; peduncle and pedicel densely appressed grayish brown tomentulose; pedicel 2–3 mm. Calyx campanulate; teeth dimorphic, upper 2 triangular, others lanceolate, densely brownish velvety. Corolla white; standard suborbicular, shortly stipitate; wings and keel oblong. Stamens unequal. Ovary densely appressed short grayish brown velvety; ovules 2; style glabrous. Legumes indehiscent or tardily dehiscent, broadly ovate, suborbicular, or obovate, 3–4.5 × 2.4–3 cm (excluding stipe), swollen around seed, beak oblique, stipe 3–4 mm; valves thinly leathery, fragile, densely appressed brownish velvety; calyx persistent. Seed 1(or 2), red or carmine, rounded or elliptic, 1.3–2 × 1.2–1.7 cm; hilum 1.5–1.8 cm, over 1/2 circumference of seed. Fl. Jun–Jul, fr. Oct–Dec.

Valleys and streamsides in broad-leaved mixed forests; 300–1000 m. Guangxi (Shiwan Dashan), Hainan, Jiangxi, Yunnan (Hekou) [Vietnam].

**2. *Ormosia pachycarpa*** Champion ex Bentham, Hooker's J. Bot. Kew Gard. Misc. 4: 76. 1852.

茸荚红豆 rong jia hong dou

Trees evergreen, to 15 m, to 20 cm d.b.h. Bark grayish green. Branchlets densely appressed pallid pannose. Leaves imparipinnate, 18–30 cm; stipule broadly triangular, densely appressed white woolly; petiole 3–6.2 cm, densely appressed pubescent; leaflets 5–7; petiolule 4–9 mm; blades obovate-oblong, 6.7–11.7 × 2.5–4.7 cm, leathery, base cuneate-subrounded, apex acute, mucronate; lateral veins 12–22 pairs, arcuate, pubescent abaxially with brown hairs or densely white woolly hairs. Panicles terminal, up to 20 cm; flowers subsessile. Calyx broadly campanulate; teeth woolly abaxially, sparsely hairy adaxially. Corolla white; standard suborbicular, ca. 8 × 1 mm, apex retuse; petal stalk ca. 3 × 2 mm; wings oblong, ca. 10 × 4 mm; keel falcate, nearly same size as wings, laterally 1-auriculate at base. Stamens nearly equal, 0.7–1.5 cm. Ovary ovate or elliptic, densely appressed pubescent; ovules 3–6; style filiform, glabrous. Legumes elliptic or suborbicular, 2.5–5 × 2.5–3 × ca. 1.3 cm, turgid, ends obtuse; valve walls ca. 2 mm thick, septum absent. Seeds 1 or 2, brownish red, subrhombic or rounded, asymmetric at base, 1.8–2.5 × ca. 1.4 cm, fleshy, glossy; hilum small, ca. 1 mm, elliptic, indented, slightly oblique. Fl. Jun–Jul.

• Mountain slopes, valleys or streamsides in mixed forests, roadsides. Guangdong.

1a. Lateral veins of leaflets 12–14 pairs,

- densely white woolly abaxially ..... 2a. var. *pachycarpa*  
1b. Lateral veins of leaflets 18–22 pairs,  
sparsely brown hairy abaxially ..... 2b. var. *tenuis*

**2a. *Ormosia pachycarpa* var. *pachycarpa***

茸荚红豆(原变种) rong jia hong dou (yuan bian zhong)

*Trichocycamos pachycarpum* (Champion ex Benth) Yakovlev.

Leaflet lateral veins 12–14 pairs, densely white woolly abaxially.

- Mountain slopes, valleys or streamsides in mixed forests. Guangdong.

**2b. *Ormosia pachycarpa* var. *tenuis* Chun ex R. H. Chang, Acta Phytotax. Sin. 22: 14. 1984.**

薄毛茸荚红豆 bao mao rong jia hong dou

Leaflet lateral veins 18–22 pairs, sparsely appressed brown hairy abaxially, without white woolly pubescence.

- Valleys, roadsides. Guangdong.

**3. *Ormosia merrilliana* L. Chen, Sargentia 3: 99. 1943.**

云开红豆 yun kai hong dou

*Trichocycamos merrillianum* (L. Chen) Yakovlev.

Trees evergreen, to 20 m. Stems with grayish brown bark and shallower longitudinal stripes; young branches fulvous tomentose. Leaves imparipinnate, 20–30 cm; stipule triangular, densely appressed fulvous velvety; petiole 4–5 cm; rachis 8–12 cm, not elongate at uppermost leaflet pair; leaflets 5–9; stipel lanceolate, densely appressed tomentose; petiolule thickened, 2–5 mm, densely appressed brown pubescent; blades elliptic-oblong to oblanceolate, 5–20 × 3–7 cm, leathery, sparsely to densely gray to yellow-brown pubescent abaxially, glabrous and greenish adaxially, base cuneate to broadly acute, apex shortly acute to acuminate; lateral veins 12–17 pairs, raised on both surfaces, somewhat arcuate at margin. Panicles terminal, 17–30 cm, sparsely branched, slightly to densely patulous or appressed hairy; pedicel 2–5 mm; bracts deciduous. Calyx teeth triangular-oblong, ca. 4 × 3 mm, densely appressed rusty brown hairy. Corolla white; standard broadly ovate, ca. 1.2 × 1 cm including claw; wings broadly elliptic, ca. 9 × 6 mm, base 2-auriculate; keel ca. 7 × 4 mm, base shortly laterally 1-auriculate, claw 4–5 mm. Stamens subequal; filaments glabrous, 6–12 mm. Ovary broadly ovate, sessile, densely appressed pilose; ovule 1; style filiform, 6–12 mm, base laterally pubescent. Legumes broadly ovate or obovate, turgid, 3.5–4.5 × 2.5–3.5 × ca. 1.5 cm, base rounded, apex obtuse or mucronate, stipe absent; valves densely appressed tomentose, internal septum absent. Seed 1, dark chestnut-brown or blackish, suborbicular or broadly obovate, slightly compressed, 1.5–2.4 × 1–1.5(–2.1) cm, glossy; testa densely concavely dotted; hilum small, elliptic, 1–1.5 mm. Fl. Jun, fr. Oct.

- Mountain slopes, valleys in open forests, forest margins; below 100–1200 m. Guangdong, Guangxi, Yunnan (Funing).

**4. *Ormosia inflata* Merrill & Chun, Sargentia 3: 100. 1943.**

胀荚红豆 zhang jia hong dou

*Trichocycamos inflatum* (Merrill & Chun) Yakovlev.

Trees evergreen, 6–10 m, to 30 cm d.b.h. Stems terete, glabrous; bark brownish. Branchlets, petiole, rachis, and inflorescence densely appressed rusty brownish pubescent. Leaves imparipinnate, 10.5–19.5 cm; petiole 1.5–2.1 cm; rachis 3–6 cm, not elongate at uppermost leaflet pair; leaflets 5–7; petiolule 2–5 mm, densely appressed pilose; blades oblong-lanceolate or oblong, 5–11 × 1.5–3.5 cm, densely appressed rusty or brownish pilose abaxially, glabrous adaxially, base narrowly cuneate, apex caudate; midvein raised abaxially, impressed adaxially, lateral veins 10–15 pairs, arcuate with conspicuous veinlets abaxially, inconspicuous adaxially. Panicles terminal, 12–15 cm, sparsely branched. Flowers congested, 1–1.2 cm; pedicel short. Calyx teeth ovate, abaxially densely appressed brownish tomentose, apex obtuse. Corolla white; standard suborbicular, apex retuse, 7–8 mm, claw 2–5 mm; wings and keel oblong, ca. 8 × 2 mm, claw ca. 3 mm. Ovary densely appressed villous; ovules 2 or 3; style slightly puberulent. Legumes ovate or elliptic, fleshy, turgid, 3–5 × 2–2.5 × ca. 1.5 cm; valves thickly leathery, densely appressed brownish tomentose outside, glabrous inside, septum absent. Seeds 1 or 2, chestnut-brownish, subelliptic or suborbicular, slightly compressed, ca. 1.5 × 1.7 × 1 cm, glossy; hilum small, ca. 1 mm. Fl. May, fr. Oct–Nov.

- Streamsides in open or dense forests; 300–1100 m. Hainan.

**5. *Ormosia sericeolucida* L. Chen, Sargentia 3: 107. 1943.**

亮毛红豆 liang mao hong dou

*Trichocycamos sericeolucidum* (L. Chen) Yakovlev.

Trees evergreen, to 24 m, to 34 cm d.b.h. Bark grayish brown with shallow longitudinal stripes. Branches, branchlets, petiole, rachis, and inflorescence densely appressed fulvous pubescent. Leaves imparipinnate, 16–21 cm; petiole 3.5–4 cm; rachis 7.6–7.8 cm, prolonged 3–15 mm below terminal leaflet; leaflets 5–7; petiolule 8–10 mm, densely appressed pubescent; blades oblong-oblong to obovate-oblong, or oblong, widest above middle, 5.5–11.6 × 2.3–4.8 cm, leathery, adnate yellow sericeous abaxially, olive-green, glossy, and glabrous adaxially, base cuneate, margin slightly revolute, apex acute or obtuse; midvein impressed adaxially, lateral veins 10–12 pairs, conspicuous and raised abaxially, inconspicuous adaxially. Panicles terminal, ca. 20 cm, much branched. Calyx ca. 1 cm, persistent; teeth unequal, densely appressed pilose. Corolla white. Legumes slightly compressed, elliptic or obovate, oblique, 3–5 × 2.2–2.6 cm, apex rounded to shortly acuminate, sometimes oblique; stipe 4–5 mm; valves leathery, ca. 1 mm thick, densely appressed fulvous pubescent, internal septum absent. Seeds 1 or 2, reddish brown, becoming chestnut-brown at maturity, oblique, subrhombic-square or obovate, compressed, 1.6–1.8 × 1.2–2 × 0.3–0.4 cm, glossy; hilum small, less than 1 mm, slightly oblique. Fl. Aug, fr. Oct.

- Valleys or streamsides in mixed forests; 300–2400 m. Guangdong (Yangchun), Guangxi (Shangsi).

**6. *Ormosia longipes* L. Chen, Sargentia 3: 100. 1943.**

纤柄红豆 xian bing hong dou

Trees, 6–30 m, to 50 cm d.b.h. Branchlets brownish, glabrous or inconspicuously pilose. Leaves imparipinnate, 25–49 cm; petiole 6.5–7.5 cm; rachis 12–17 cm, prolonged 0.3–1.7 cm below terminal leaflet; leaflets 7–9; petiolule 5–8 mm, thick, rough; blades pale green abaxially, green or olive-green adaxially, narrowly oblong or broadly oblong-lanceolate, 12–24 × 2.5–6.2 cm, papery, glabrous or very sparsely white pubescent, base acute to cuneate, apex acuminate to caudate; lateral veins 8–10 pairs, conspicuously raised, arcuate, anastomosing. Panicles terminal, to 26 cm, branches few at base, up to ca. 18 cm, flowers sparse; pedicel 5–6 mm, peduncle and pedicel glabrous or sparsely grayish pubescent; bractlets acicular, caducous or absent, glabrous or grayish hairy. Calyx ca. 1.2 cm; teeth oblong, ca. 7 mm, both surfaces grayish pubescent. Corolla russet-red; standard suborbicular, ca. 10 × 12 mm, apex retuse, claw ca. 1 mm, thickened at base; wings obovate-elliptic, ca. 1 × 0.4 cm, claw ca. 2 mm; keel elliptic, ca. 9 × 5 mm, laterally 1-auriculate, claw ca. 3 mm. Stamens unequal, 7–13 mm. Ovary sparsely yellow pubescent, becoming glabrescent. Legumes elliptic or oblong-elliptic, 3.5–4 × ca. 2.5 × 2 cm, stipe ca. 5 mm; valves brownish or black, ca. 1 mm thick, leathery, glabrous, rugose, internal septum absent. Seeds 1–3, elliptic or ovate, 2–2.3 × 1.7–2.3 × ca. 1.8 cm; testa brownish, fragile, easy to separate from cotyledon; hilum small, inconspicuous. Fl. Jul, fr. Sep–Oct.

• Valleys and streamsides in dense or open forests; 1000–1600 m. SE Yunnan.

7. *Ormosia fordiana* Oliver, Hooker's Icon. Pl. 25: t. 2422. 1895.

肥荚红豆 fei jia hong dou

*Ruddia fordiana* (Oliver) Yakovlev.

Trees, to 17 m, to 20 cm d.b.h. Bark of stems dark gray, with shallow longitudinal stripes. Young branches and leaves densely appressed rusty brown pubescent, becoming sparsely hairy or glabrescent. Leaves imparipinnate, 19–40 cm; petiole 3.5–7 cm; rachis 5.5–15.5 cm, prolonged 3–15 mm below terminal leaflet; leaflets (5–)7–9(–13); petiolule 6–8 mm, grooved, rusty pubescent, becoming glabrate; blades obovate-lanceolate or obovate-elliptic, rarely elliptic, terminal leaflet larger, 6–20 × 1.5–7 cm, thinly leathery, base cuneate or suborbicular, apex acute or caudate; midvein raised abaxially, impressed adaxially, lateral veins 11 pairs, angled 40° with midvein, lateral veins and veinlets inconspicuous on both surfaces, scattered rusty brown appressed pubescent or glabrous abaxially, glabrous adaxially. Panicles terminal on young branches, 15–26 cm; peduncle and pedicel densely appressed rusty pubescent. Pedicel 6–12 mm; bractlets 2, at pedicel apex, lanceolate, 3–5 mm, densely appressed rusty brown pubescent. Flowers 2–2.5 cm. Calyx light brown-green, 1.5–2 cm; teeth oblong-lanceolate, slightly obtuse, upper 2/3 of upper pair connate, densely appressed rusty pubescent; tube short. Corolla purplish red, ca. 1.5 cm; standard rounded, cucullate, upper margin strongly inflexed, yellow spotted subcentrally, claw short, thick, compressed; keel similar to wings, elliptic-obovate, apex obtuse, claw short. Stamens unequal, all functional; filaments basally thickly compressed. Ovary flattened, densely appressed rusty brown silky pubescent; ovules usually 4; style incurved, glabrescent. Legumes

semicircular or oblong, 5–12 × 5–6.8 cm, apex obliquely beaked, stipe compressed, 5–10 mm, convex at seed; valves woody, dehiscent, ca. 2 mm thick, externally yellow pubescent or glabrescent, internally glossy, often whitish, stained reddish, septum absent, slightly thickened at margin, tip reflexed; calyx persistent. Seeds 1–4, large, oblong, obtuse at ends, 2.5–3.3 × 1.7–2.7 cm, slightly flattened; testa red or red-purple, fleshy, becoming thin and fragile when dry; hilum suborbicular, 3–4 mm. Fl. Jun–Jul, fr. Nov.

Valleys, roadsides on mountain slopes, streamsides in mixed open forests; 100–1400 m. Guangdong, Guangxi, Hainan, S to SE Yunnan [Bangladesh, Myanmar, Thailand, Vietnam].

8. *Ormosia apiculata* L. Chen, Sargentia 3: 111. 1943.

喙顶红豆 hui ding hong dou

*Ormosia semicastrata* Hance f. *apiculata* (L. Chen) Yakovlev.

Trees evergreen, ca. 19 m tall. Bark of stems grayish, smooth. Branchlets grayish green, grayish brown tomentose or glabrescent. Leaves imparipinnate, 14–24.5 cm; petiole 2–4 cm; rachis 3–4.7 cm, prolonged 0.3–2.8 cm below terminal leaflet, glabrous; leaflets 3–5; petiolule 5–7 mm; blades dark green abaxially, oblong, 6–14.5 × 2.5–3.7 cm, terminal leaflet larger, leathery, both surfaces glabrous, base cuneate, apex acuminate, obtuse, or retuse; midvein raised abaxially, impressed adaxially, lateral veins 7–11 pairs, angled 40° with midvein, veinlets anastomosing, raised on both surfaces, conspicuous abaxially. Panicles terminal, up to 20 cm in fruit, lower branches up to 15 cm; peduncle appressed fulvous pubescent, becoming sparsely pubescent to glabrescent. Legumes broadly orbicular or obliquely elliptic, 1.5–2.5 × 1.8–2.4 cm (excluding beak and stipe), compressed to slightly swollen, abruptly contracted to oblique beak, 4–6 mm, base truncate to suborbicular, stipe 5–8 mm; valves leathery, ca. 1 mm thick, sparsely pubescent, glabrescent when old; calyx persistent, densely appressed yellowish brown pubescent. Seed 1(or 2), dark red, oblate, rarely prolate, 10–13 mm in diam., thick; hilum elliptic, ca. 1 mm. Fl. Apr, fr. Sep–Oct.

• Forests of mountain slopes; ca. 1400 m. Guangxi (Lingyun).

9. *Ormosia semicastrata* Hance, J. Bot. 20: 78. 1882.

软荚红豆 ruan jia hong dou

*Ormosia cathayensis* L. Chen; *O. semicastrata* f. *litchii-folia* F. C. How; *O. semicastrata* f. *pallida* F. C. How.

Trees evergreen, up to 14 m. Bark of stems brown; lenticels convex with irregular cracks. Branchlets yellowish pilose. Leaves imparipinnate, 18.5–24.5 cm; petiole, rachis, and petiolule appressed grayish brown pilose; rachis prolonged 1–2.4 cm below terminal leaflet; leaflets 3–9(–13), green or sometimes glaucous abaxially, ovate-oblong, elliptic, or lanceolate, 4–14.2 × 1–5.7 cm, leathery, glabrous on both surfaces, sometimes appressed pilose along midvein abaxially, base rounded or broadly to narrowly cuneate, apex acuminate or acute, obtuse or retuse; lateral veins 10 or 11 pairs, angled 60° with midvein, arcuate, inconspicuous. Panicles terminal, sometimes axillary, subequal to leaves; peduncle and pedicel densely appressed fulvous pi-

lose. Flowers ca. 7 mm. Calyx broadly campanulate, 4–5 mm; teeth triangular, subequal, abaxially densely appressed fulvous tomentose, adaxially sparsely rusty brown pilose. Corolla white, ca. 2 × as long as calyx; standard suborbicular, ca. 4 × 4 mm, claw ca. 4 mm; wings linear-oblongate, ca. 4.5 × 2 mm, claw ca. 4.5 mm; keel oblong, ca. 4 × 2 mm, claw ca. 2 mm. Stamens unequal, 5 developed, 5 shorter, reduced and without functional anthers. Ovary ovate, ovary sutures and lower style densely appressed fulvous pubescent; ovules 2. Legumes small, dark brown when dried, suborbicular, compressed, slightly swollen, leathery, 1.5–2 cm, apex shortly beaked, stipe 2–3 mm. Seed 1, red to red-brown, compressed laterally, ca. 9 × 9 × 6 mm; hilum ca. 2 mm. Fl. Apr–May, fr. Aug–Sep.

• Mixed forests, mountains, valleys, streamsides, roadsides; 100–1700 m. SE Fujian, Guangdong, Guangxi, SE Guizhou, Hainan, Hunan, S Jiangxi.

**10. *Ormosia howii*** Merrill & Chun, Sargentia 3: 112. 1943.

缘毛红豆 yuan mao hong dou

*Ormosia semicastrata* Hance f. *howii* (Merrill & Chun) Yakovlev.

Trees evergreen, to 10 m, to 12 cm d.b.h. Bark of stem grayish brown. Branchlets terete to angled, densely appressed grayish brown pubescent, becoming glabrate. Leaves imparipinnate, 14.5–36 cm; petiole 4.2–5 cm; rachis 6.5–7 cm, prolonged 5–8 mm below terminal leaflet; petiole, rachis, and petiolule grayish pubescent; leaflets 5–7; petiolule 7–10 mm, slightly grooved adaxially; blades oblong-obovate or oblong, 6–17 × 2–6.5 cm, thickly leathery, both surfaces glabrous or pubescent only on midvein abaxially, base cuneate or rounded, apex mucronate, obtuse, or retuse; lateral veins ca. 12 pairs, rarely 17, angled 60° with midvein, veinlets raised abaxially, impressed adaxially. Panicles terminal, up to 15 cm at fruiting, densely appressed brownish pubescent. Legumes obliquely elliptic-ovate or ovate-rhombic, slightly compressed, 2–2.5 × 1.5–2 cm, apex abruptly contracted to oblique beak, 3–4 mm, stipe 3–4 mm; valves light brown, thickly leathery, young valves and margin brownish pubescent, glabrescent or sparsely appressed brownish villous along margin at maturity; calyx persistent, densely appressed rusty brown pubescent. Seeds 1 or 2, dark red, suborbicular, slightly compressed or triangular, one surface flattened, 8–9 × 8–9 mm, glossy; hilum retuse, elliptic, ca. 2 mm.

• Open forests of mountain slopes, mostly on granite mountains; below 100–900 m. Hainan.

**11. *Ormosia pingbianensis*** Cheng & R. H. Chang, Acta Phytotax. Sin. 22: 18. 1984.

屏边红豆 ping bian hong dou

Trees evergreen, to 15 m tall. Youngest branchlets appressed yellowish brown pubescent, glabrous with age; bud naked, stalked, gray pubescent. Leaves imparipinnate, alternate or rarely subopposite, 15–17 cm; petiole and rachis glabrous; petiole 2.5–3.5 cm; rachis 3–5 cm, prolonged 1.4–2 cm below terminal leaflet; leaflets (5–)7; petiolule ca. 3 mm, glabrous, grooved; blades oblong, 5.2–8.5 × 1.7–2.6 cm, thinly leathery, both surfaces glabrous, base cuneate or rarely rounded, apex

acuminate or long acuminate; midvein impressed adaxially, lateral veins and veinlets raised when dried. Inflorescence rachis brown pubescent. Legumes oblong, elliptic-obovate, or long ovate, 3.2–4.4 × 1.8–2 cm, base rounded or cuneate, apex obtuse, mucronate, stipe 3–4 mm; calyx persistent and small, densely appressed fulvous pilose; valves thinly leathery, less than 1 mm thick, blackish brown when dried, glabrous, internal septum absent. Seeds 1–3, red to red-purple, suborbicular, slightly compressed, ca. 10 × 9 × 7 mm; hilum elliptic, retuse, ca. 2 mm.

• Valleys of open forests; 900–1000 m. Guangxi (Ningming), Yunnan (Jinping, Pingbian).

This species is similar to *Ormosia glaberrima* but differs from that species in having legumes without septae, valves thinly leathery (vs. woody), and leaflets usually 7 (vs. (3–)5–7) and smaller.

**12. *Ormosia yunnanensis*** Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 183. 1900.

云南红豆 yun nan hong dou

Trees evergreen, to 25 m, ca. 80 cm d.b.h. Bark of stems gray. Branchlets and buds densely appressed rusty brown tomentose. Leaves imparipinnate, 14–31 cm; petiole, rachis, and petiolule densely appressed rusty brown tomentose; petiole 3.3–5.5 cm; rachis 6.5–12.5 cm, prolonged 0.6–1.5 cm or not prolonged below terminal leaflet; leaflets (7–)9–13(–15), opposite or upper rarely alternate; petiolule 2–3 mm, grooved; blades oblong or oblong-lanceolate, rarely obovate-oblong, 4.7–13.4 × (1.5–)2.2–3.8 cm, leathery, densely appressed rusty brown tomentose abaxially, becoming glabrescent, glabrous and glossy adaxially, base broadly cuneate to rounded, apex acute to acuminate or obtuse; lateral veins 7–9 pairs, raised abaxially, impressed adaxially. Panicles terminal and axillary, congested, 14–25 cm; peduncle and pedicel densely appressed rusty brown pilose; pedicel 2–3 mm; bracts 2–5 × ca. 1.5 mm, acute, deciduous, rusty pilose. Flowers 0.9–1.1 cm. Calyx campanulate, ca. 8 mm; teeth divided to middle part of calyx, triangular, densely appressed rusty brown tomentose inside and out. Corolla pink to orange-red. Ovary rusty brown pilose at margin. Legumes obovate, oblique, or oblong, 2.5–6 × 1.8–2.5 cm, beak acute, stipe ca. 5 mm, densely appressed rusty brown pilose at margin and base; valves thinly leathery, black when dry, glabrous, swollen around seeds, constricted between seeds; calyx persistent. Seeds 1–3, bright red, ovate or oblate, 8–13 × 6–12 × ca. 5 mm, glossy; hilum elliptic, sunken, 1–1.5 mm. Fl. Mar, fr. Oct.

• Plains, bottoms of ravines, mixed forests of mountain slopes; 500–1700 m. S Yunnan.

It is difficult to distinguish between this species and *Ormosia olivacea* from vegetative characters. The former has dense appressed rusty brown hairs; leaflets acute at the apex, glossy adaxially, with lateral veins arcuate; and legume valves thinly leathery, constricted between seeds. The latter has yellowish brown hairs; leaflets acuminate at the apex, dull adaxially, with lateral veins straight; and legume valves woody, not constricted between seeds.

“*Ormosia lancifolia*” (Cheng & Q. W. Yao, Sylva Sin. 2: 1324. 1985) belongs here but was not validly published because no Latin description or diagnosis was provided and no type was indicated (*Vienna Code*, Art. 36.1, 37.1).

**13. *Ormosia nanningensis*** L. Chen, *Sargentia* 3: 113. 1943.

南宁红豆 nan ning hong dou

*Ormosia semicastrata* Hance f. *nanningensis* (L. Chen) Yakovlev.

Trees evergreen, to ca. 20 m. Branchlets appressed grayish brown pubescent. Leaves imparipinnate, 13–28 cm; rachis and petiolule densely appressed grayish pubescent; leaflets 5; petiolule 7–10 mm, thin; blades green adaxially and paler abaxially, oblong or oblong-lanceolate, widest at middle, 6–15 × 1.5–4 cm, thinly leathery, young leaves densely appressed pilose abaxially, becoming glabrate, glabrous adaxially, base cuneate or rounded, apex obtuse or acuminate, rarely retuse; lateral veins 9–11 pairs, fine, slightly raised on both surfaces. Inflorescence 10–15 cm, densely appressed very short grayish pubescent. Legumes suborbicular or elliptic, slightly convex, 2.4–4 × 2–2.8 cm, apex beak acute, stipe ca. 4 mm; valves densely appressed grayish brown pubescent, internal septum absent; calyx persistent, densely appressed grayish pubescent. Seeds 1 or 2, dark red, suborbicular, slightly compressed, 9–13 × 8–11 mm, hard; hilum 3–4 mm. Fr. Oct.

• Mountain slopes, valley forests, infrequent; 100–700 m. Guangxi (Shiwan Dashan).

**14. *Ormosia hosiei*** Hemsley & E. H. Wilson, *Bull. Misc. Inform. Kew* 1906: 156. 1906.

红豆树 hong dou shu

*Ormosia taiana* C. Y. Chiao.

Trees evergreen or deciduous, 20–30 m, to 1 m d.b.h. Bark of stems grayish green, smooth. Branchlets green, yellowish brown pubescent, becoming glabrescent; winter buds brownish yellow pubescent. Leaves imparipinnate, 12.5–23 cm; petiole 2–4 cm; rachis 3.5–7.7 cm, prolonged 0.2–2 cm below terminal leaflet, petiolule and rachis sparsely appressed pubescent or glabrous; leaflets (3–)5(–9); petiolule 2–6 mm, rounded, without groove; blades pale green abaxially, dark green adaxially, ovate or ovate-elliptic, rarely suborbicular, 3–10.5 × 1.5–5 cm, thinly leathery, young leaves sparsely appressed pubescent, becoming glabrate or with scattered hairs only on midvein abaxially, base rounded or broadly cuneate, apex acute or acuminate; lateral veins 8–10 pairs, angled 60° with midvein, both lateral veins and veinlets conspicuously reticulate when dried. Panicles terminal or axillary, 15–20 cm, pendulous. Flowers few, fragrant; pedicel 1.5–2 cm. Calyx broadly campanulate; teeth purplish green, triangular, densely appressed brownish pubescent. Corolla white or purplish; standard obovate, 1.8–2 cm; both wings and keel oblong. Stamens unequal; anthers yellow. Ovary glabrous; ovules 5 or 6; style purple, filiform, curved; stigma oblique. Legumes suborbicular, compressed, 3.3–4.8 × 2.3–3.5 cm, apex shortly beaked, stipe 5–8 mm; valves subleathery, 2–3 mm thick, brownish when dried, glabrous, veins obvious, internal septum absent. Seeds 1 or 2, red, suborbicular or elliptic, 15–18 × 12–15 × ca. 5 mm; hilum 9–10 mm. Fl. Apr–May, fr. Oct–Nov.

• Riversides, mountain slopes, valley forests; 200–900(–1400) m. Anhui, Fujian, Gansu, Guizhou, Hubei, SE Jiangsu, Jiangxi, S Shaanxi, Sichuan, Zhejiang.

**15. *Ormosia elliptica*** Q. W. Yao & R. H. Chang, *Acta Phytotax. Sin.* 22: 20. 1984.

厚荚红豆 hou jia hong dou

Trees, ca. 15 m tall. Leaves imparipinnate, 15–18 cm; petiole 2.3–3.2 cm; rachis ca. 3 cm, prolonged 1–1.5 cm below terminal leaflet, glabrous or sparsely hairy at base; leaflets 5(–7), oblong, 3.3–9 × 1–3 cm, glabrescent or sparsely hairy only on midvein abaxially, glabrous adaxially, base cuneate, apex obtuse; lateral veins 6–8 pairs, angled 40° with midvein, veinlets indistinct, conspicuous, raised on both surfaces when dried. Inflorescence racemose, terminal or axillary. Legumes elliptic, 4.5–5.6 × 2.5–3 cm; valves fleshy, woody, 3–4 mm thick, glabrous externally, internal septum absent. Seeds 1 or 2(or 3), ellipsoid, ca. 1.6 × 1–1.3 × 0.7–0.8 cm; hilum 8–10 mm.

• Roadsides, riversides. Fujian, Guangdong, Guangxi.

This species is close to *Ormosia hosiei* but differs from that species by its oblong leaflets, elliptic legumes, and fleshy valves.

**16. *Ormosia napoensis*** Z. Wei & R. H. Chang, *Acta Phytotax. Sin.* 22: 21. 1984.

那坡红豆 na po hong dou

Trees small, to ca. 10 m, to 25 cm d.b.h. Branchlets appressed rusty brown pubescent. Leaves imparipinnate, 8.3–19 cm; petiole 1.5–4.8 cm; petiole and petiolule glabrous or glabrescent; rachis 1–3.5 cm, prolonged 0.5–1.5 cm below terminal leaflet; leaflets 3–5; petiolule ca. 2 mm; blades oblong, terminal leaflet larger, 6–13.2 × 1.5–4 cm, glabrous or glabrescent on both surfaces, base rounded or cuneate, apex acuminate to caudate. Panicles terminal. Inflorescence 11–12 cm. Legumes compressed, suborbicular or elliptic, 2.8–4.5 × 2.4–2.8 cm, stipe 3–5 mm, sparsely grayish pubescent, sometimes glabrous, pubescent only at apex and base; valves woody, dehiscent at maturity, reflexed outward, 2–3 mm thick, externally yellowish, internally rough, yellowish brown. Seed 1, dark red-brown, large, elliptic, 1.4–1.8 × 1–1.2 cm, slightly mucilaginous, slightly hard but fragile, easily separated from cotyledons; hilum on shorter axis but slightly off-center, white, convex, aril a yellow ring.

• Forests of mountain slopes; 400–500 m. Guangxi (Napo).

This species is close to *Ormosia fordiana* but has fewer leaflets, smaller legumes, with valves that are not internally glossy or stained reddish, and a smaller seed. Also it differs by its hilum not at the center of axis but slightly oblique, with white funicle and yellow aril ring.

**17. *Ormosia simplicifolia*** Merrill & Chun, *Sargentia* 3: 102. 1943.

单叶红豆 dan ye hong dou

*Fedorovia simplicifolia* (Merrill & Chun) Yakovlev.

Shrubs or small trees, 2–5 m. Branches glabrous; buds triangular-ovoid, densely appressed brownish tomentose. Leaves simple, alternate or sometimes subopposite at apex; stipules absent; petiole 4–8 mm, with short hairs; leaf blade oblong or lanceolate, 4.7–25 × 1.4–6 cm, leathery, sparsely appressed reddish brown hirtellous abaxially, glabrous adaxially, base cuneate or rounded, apex long caudate, sometimes retuse; lateral

veins 8–10 pairs, inconspicuous. Inflorescence paniculate or racemose, terminal or in upper axils, 6–10 cm, grayish brown pubescent or glabrescent. Flowers 1.2–1.5 cm, fragrant; pedicel thin, 0.7–1 cm, appressed yellowish gray pubescent. Calyx appressed short yellowish gray hairy; teeth triangular, blunt, slightly longer than calyx tube. Corolla rose-pink; standard broadly ovate, ca. 1.5 cm wide, base broadly truncate to rounded, apex retuse, claw 1.8–2 mm; wings and keel oblong to oblanceolate, 1.2–1.4 × ca. 0.5 cm, claw ca. 4 mm. Stamens unequal, 8–15 mm. Ovary glabrous; ovules 4. Legumes compressed, oblong or obovate, 3–4.5(–6) × 2–2.5 cm; valves nearly woody, ca. 2 mm thick, internal septum absent. Seeds 1–3, red, elliptic, ca. 1.5 × 1.2 × 0.6 cm, glossy; hilum small, aril absent. Fl. Jul, fr. Sep–Oct.

- Valley forests; 400–1300 m. Guangxi, Hainan.

**18. *Ormosia boluoensis*** Y. Q. Wang & P. Y. Chen, J. Trop. Subtrop. Bot. 3: 29. 1995.

博罗红豆 bo luo hong dou

Shrubs or small trees, 2–4 m. Branchlets glabrous. Leaves simple, alternate; petiole 1.8–3 cm; leaf blade oblong-elliptic, 5–9 cm, leathery, glabrous, base cuneate, apex acuminate; midvein raised abaxially, impressed adaxially. Inflorescence paniculate (terminal) or racemose (axillary), 3–13 cm, densely yellow pubescent. Flowers 1.2–1.5 cm; pedicels 1–3 mm. Calyx bilateral, broader toward base, narrowing toward mouth, 0.6–0.7 mm, densely yellow pubescent; teeth 0.3–0.4 mm, apex acute. Corolla white; standard broadly ovate, 1–1.2 × 1.3–1.5 cm, base truncate-rounded to broadly cuneate, apex rounded, claw thickened, ca. 1 mm; wings narrowly obovate to broadly spatulate, 1–1.2 × 0.5–0.6 cm, oblique, claw ca. 1 mm; keel narrowly ovate to elliptic, 1–1.2 × 0.5–0.6 cm, base cuneate, 1- or 2-auriculate, apex blunt to obliquely narrowly rounded, claw ca. 1 mm. Stamens unequal, free, 0.9–1.5 cm, curved; anthers well developed on 5, poorly developed and infertile on 5. Ovary ovate-elliptic, yellow pubescent; style curved. Legumes unknown. Fl. May.

- Sparse riverine forests; 800–900 m. Guangdong.

**19. *Ormosia hekouensis*** R. H. Chang, Acta Phytotax. Sin. 22: 110. 1984.

河口红豆 he kou hong dou

Trees, to 20 m. Branchlets dark brown pubescent, becoming glabrescent; buds densely appressed black pubescent. Leaves imparipinnate, 26–41 cm; petiole 3–5 cm; rachis 10–20 cm, prolonged 0.8–1.8 cm below terminal leaflet, glabrous or glabrescent; leaflets 9–11; petiolule 3–5 mm, grooved, glabrous or sparsely pubescent; blades lanceolate, obovate-lanceolate, or oblong, 6.5–18 × 2.7–6.4 cm, young leaves dark brownish pubescent, becoming glabrescent, hairs short abaxially, base narrowly cuneate, apex acute; midvein impressed adaxially, lateral veins 9 or 10 pairs, raised abaxially. Panicles terminal; rachis densely appressed grayish brown pubescent. Legumes large, very fleshy, woody, spheroidal or oblong, 4.5–9 × ca. 4 cm, beak 6–8 mm, stipe absent or short; valves grayish brown, 6–10 mm, apex and base densely appressed yellowish brown pubescent, internally white, tinged reddish near seed, septum between

seeds membranous. Seeds 1–3, reddish brown, elliptic, 2.5–3 × 1.7–2 cm, fragile; hilum 2–3 mm, slightly off-center.

- Humid open forests and riversides; ca. 300 m. Yunnan (Hekou, Mengla).

*Ormosia hekouensis* is similar to *O. crassivalvis* Gagnepain (of Vietnam) but differs by its larger, differently shaped leaflets and its terminal panicles. The latter has linear-lanceolate leaflets, ca. 15 × 2 cm, and axillary inflorescences.

**20. *Ormosia emarginata*** (Hooker & Arnott) Bentham, Hooker's J. Bot. Kew Gard. Misc. 4: 77. 1852.

凹叶红豆 ao ye hong dou

*Layia emarginata* Hooker & Arnott, Bot. Beechey Voy. 183. 1833; *Fedorovia emarginata* (Hooker & Arnott) Yakovlev; *Macrotropis emarginata* (Hooker & Arnott) Walpers.

Trees evergreen, small, 6(–12) m, 8(–30) cm d.b.h., sometimes shrubs; bark of young trees greenish, becoming grayish green. Branchlets green, smooth, glabrous, lenticels inconspicuous; buds rusty brown pubescent. Leaves imparipinnate, (6.5–)11–20.5 cm; petiole (2.3–)3.4–4.8 cm; rachis (2.3–)4–8.6 cm, not prolonged or prolonged 1.2–2 cm below terminal leaflet, young petiole, rachis, and leaves abaxially sparsely appressed yellowish brown pilose, becoming glabrescent, both petiole and rachis grooved; leaflets (3–)5–7; petiolule 3–5 mm, stout, grooved, wrinkled; blades obovate, obovate-elliptic, long-obovate, or oblong, (1.4–)3.7–7 × (0.9–)1.6–3.2 cm, thickly leathery, base cuneate or rounded, apex obtuse, emarginate; lateral veins 7 or 8 pairs, fine, angled 45° with midvein, veinlets fine, raised, more conspicuous abaxially. Panicles terminal, 10–11.5 cm, few flowered. Flowers fragrant; pedicel 3–5 mm, glabrous. Calyx broadly campanulate, flared out and appearing flat-faced; teeth isometric, margin and inner surface gray tomentose. Corolla white or pink; standard semiorbicular, ca. 7 × 8 mm, apex rounded, claw ca. 2 mm; wings oblong, base auriculate, claw 2.5–3 mm; keel oblong, somewhat curved, slightly auriculate, claw ca. 2.5 mm. Stamens unequal. Ovary glabrous. Legumes dark brown or black, compressed, rhombic or oblong, 3–5.5 × 1.7–2.4 cm, apiculate, stipe 2–3 mm; valves woody, septate. Seeds 1–4, red-brown, suborbicular or elliptic, slightly compressed, 7–10 × ca. 7 mm; hilum whitish yellow, small, ca. 2 mm. Fl. May–Jun, fr. Aug–Oct.

Mountain slopes, mixed valley forests. Guangdong, S Guangxi (Dongxing), Hainan [Vietnam].

**21. *Ormosia glaberrima*** Y. C. Wu, Bot. Jahrb. Syst. 71: 182. 1940.

光叶红豆 guang ye hong dou

*Fedorovia glaberrima* (Y. C. Wu) Yakovlev; *Ormosia kwangsiensis* L. Chen.

Trees evergreen, 15(–21) m, to 40 cm d.b.h., or shrubs. Bark of stems grayish green, smooth. Branchlets green, dark green when dried, rusty brown pubescent, becoming glabrescent; buds brown pubescent. Leaves imparipinnate, 12.5–19.7 cm; petiole 2.5–3.7 cm; rachis 3.5–7.2(–10.8) cm, prolonged 0.7–0.8 cm below terminal leaflet, not grooved, yellowish brown pubescent when young, becoming glabrescent; leaflets



(3–)5–7, ovate or elliptic-lanceolate, (2.7–)4–9.5 × 1.4–3.6 cm, leathery or thinly so, both surfaces glabrous, base broadly cuneate to rounded, apex acute to acuminate, slightly retuse, lateral veins 9 or 10 pairs, angled 45° with midvein; petiolule 3–6 mm, grooved. Panicles terminal or axillary, 9–12 cm; peduncle and pedicel densely appressed rusty pubescent, becoming glabrescent. Flowers ca. 1 cm; pedicel short. Calyx campanulate; teeth broadly flared out and appearing flat-faced, appressed yellowish pubescent abaxially, fulvous pubescent adaxially. Standard suborbicular, ca. 8 × 8 mm, apex retuse, claw 2–3 mm; wings oblong, 8–9 × 3.5–4 mm, 2-auriculate, claw 2–3 mm; keel oblong, 8–9 × 3.5–4 mm, curved, 2-auriculate, claw 2–3 mm. Stamens unequal, 3–5 longer, others shorter, incurved. Ovary glabrous; ovules 5. Legumes compressed, elliptic or oblong, 3.5–5 × 1.7–2 cm, base cuneate, apex acute, beak short, slightly curved, stipe ca. 1 mm; valves black, woody, glabrous, internally septate. Seeds 1–4, red-brown, oblate or oblong, 1–1.1 × 0.8–0.9 cm, glossy; hilum elliptic, concave, 1–3 mm. Fl. Jun, fr. Oct.

• Mountain slopes, open valley forests; 200–800 m. W Guangdong, SE Guangxi, Hainan, Hunan (Jianghua), Jiangxi.

*Ormosia glaberrima* is similar to *O. emarginata* due to the color and shape of the legumes and to the flat-faced calyx. The former has ovate or elliptic-lanceolate leaflets that are thinly leathery, with tapering, slightly retuse apices; its calyx is hairy on both surfaces; the standard apex is emarginate; and the peduncle is often covered with appressed yellow-brown silky hairs. The latter has obovate, obovate-elliptic, or oblong leaflets that are thickly leathery, with broadly rounded, emarginate apices; its calyx is glabrous on the outside, hairy only on the margin and inside; the apex of the standard is rounded; and the peduncle is glabrous.

**22. *Ormosia henryi*** Prain, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 69: 180. 1900.

花榈木 hua lü mu

*Fedorovia henryi* (Prain) Yakovlev; *Ormosia mollis* Dunn.

Trees evergreen, to 16 m, to 40 cm d.b.h. Bark of stems grayish green, smooth, shallowly striate. Branchlets, rachis, and inflorescence densely appressed tawny tomentose. Leaves imparipinnate, 13–32.5(–35) cm; leaflets (3–)5–7; petiolule 3–6 mm; blades elliptic or oblong-elliptic, 4.3–13.5(–17) × 2.3–6.8 cm, leathery, abaxial surface and petiole densely appressed yellowish brown tomentose, adaxial surface dark green and glabrous, base rounded or broadly cuneate, sometimes slightly cordate, margin slightly repand, apex broadly rounded or acute, blunt or mucronate; lateral veins 6–11 pairs, angled 45° with midvein. Panicles terminal, or racemes axillary, (8–)11–17 cm, densely appressed brownish tomentose. Flowers ca. 2 × 2 cm; pedicel 7–12 mm. Calyx campanulate, 5.5–6 mm; teeth ca. 2/3 length of calyx, triangular-ovate, densely appressed brownish tomentose on both surfaces. Corolla greenish white, darker at center, margin green and slightly purplish; standard suborbicular, apex rounded or retuse, claw thickened; wings purplish green, obovate-oblong, ca. 1.4 × 1 cm, claw ca. 3 mm; keel obovate-oblong, ca. 1.6 × 0.7 cm, claw ca. 3.5 mm. Stamens free, 1.3–2.5 cm, unequal; filaments light green; anthers light grayish purple. Ovary flattened, densely appressed brownish villous along suture, otherwise glabrous; ovules 9 or 10; style

filiform; stigma oblique. Legumes compressed, oblong, 5–12 × 1.5–4 cm, apex beaked, stipe ca. 5 mm; valves purplish brown, 2–3 mm thick, leathery, glabrous, internally septate. Seeds (1–)4–8, red-brown to scarlet, ellipsoid or ovoid, 0.8–1.5 cm, glossy; hilum ca. 3 mm. Fl. Jul–Aug, fr. Oct–Nov.

• Mountain slopes, streamsides in mixed forests; 100–1300 m. Anhui, Guangdong, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, SE Yunnan, Zhejiang.

**23. *Ormosia pachyptera*** L. Chen, Sargentia 3: 104. 1943.

菱荚红豆 ling jia hong dou

*Fedorovia pachyptera* (L. Chen) Yakovlev.

Trees, ca. 8 m, ca. 18 cm d.b.h. Bark of stems gray, smooth, not fissured. Branchlets glabrous, lenticels inconspicuous, buds superposed, suborbicular, brown pubescent, leaf scars circular and convex. Leaves imparipinnate, congested at ends of branches, 25–28.5 cm; petiole 5.8–6.4 cm; rachis 15.2–19.7 cm, prolonged 0.7–2.8 cm below terminal leaflet, a convex gland at junction of 2 leaflets; petiole, rachis, and petiolule sparsely appressed white pubescent or glabrescent; leaflets 15–19; petiolule 4–6 mm; blades oblong-oblong-elliptic or oblong, often widest above middle, 3.7–8.6 × 1.3–2.4 cm, leathery, pale green and sparsely appressed pubescent abaxially, dark green and glabrous adaxially, base cuneate, apex acute to acuminate; midvein raised abaxially, impressed adaxially, lateral veins 6 or 7 pairs, veinlets inconspicuous, lateral veins raised abaxially when dried, veinlets slightly raised. Inflorescence axillary, 15–18 cm; peduncle sparsely pubescent; pedicel 6–7 mm, hairs brownish. Legumes rhombic to obovate, compressed, 4–6.5 × 3.7–5.2 cm (excluding stipe), apex broadly rounded, abruptly acuminate, stipe 5–6 mm; valves black, thinly woody, densely appressed short grayish pubescent, broadly winged along suture, wings 1–1.6 cm wide, internally septate; calyx persistent, abaxially sparsely appressed short pallid pubescent, adaxially densely yellowish brown pubescent. Seeds 1 or 2(–4), red, prolate, slightly compressed, 13–15 × 7–12 × ca. 3 mm; hilum small, ellipsoid and slightly concave, ca. 3 mm.

• Sandy acidic lowland slopes, scattered at forest margins; 400–1000 m. SW Guangxi.

**24. *Ormosia ferruginea*** R. H. Chang, Acta Phytotax. Sin. 22: 112. 1984.

锈枝红豆 xiu zhi hong dou

Trees small, evergreen, ca. 2.5 m. Branches, buds, petiole, and rachis densely appressed rusty tomentose. Leaves imparipinnate or paripinnate, 11–15.5 cm; petiole 1.3–2 cm; rachis 5–8.3 cm, prolonged ca. 2 mm below terminal leaflet, or terminating rachis; leaflets 13–19; petiolule ca. 2 mm, densely appressed rusty brown tomentose; blades green adaxially, elliptic or obovate-elliptic, (2.1–)3–5.8 × 1.7–2 cm, leathery, midvein with brown tomentose hairs, sparsely appressed brownish pubescent abaxially, base rounded or cuneate, apex obtuse, slightly retuse; midvein raised, lateral veins 6–8 pairs, angled 40° with midvein, slightly arcuate, raised abaxially. Panicles or racemes terminal or axillary. Calyx deeply cleft to slightly below middle; teeth triangular, adaxially densely appressed rusty tomentose, obtuse at apex. Inflorescence ca. 13 cm; pedicels

3–5 mm, densely appressed rusty tomentose. Legumes elliptic, 4–6 × 1.6–2 cm, apex shortly beaked, stipe 3–5 mm, dark blue-gray at maturity; valves thinly woody, smooth, glabrous, internally septate. Seeds 2–4, red-brown, elliptic, slightly compressed, ca. 1 × 0.7 cm; hilum small, elliptic, ca. 3 mm, indented at narrow end. Fl. Jul, fr. Oct.

- Mountain slopes, open forest margins. Guangdong (Yangchun).

*Ormosia ferruginea* is similar to *O. emarginata*, but the former (excluding leaflets) is densely appressed rusty tomentose and has 13–19 leaflets that are sparsely appressed brown pubescent abaxially, while the latter is largely glabrous and has only 5–7 leaflets.

**25. *Ormosia purpureiflora*** L. Chen, *Sargentia* 3: 105. 1943.

紫花红豆 *zi hua hong dou*

Shrubs or small trees, ca. 3 m. Bark of stems smooth. Branchlets inconspicuously grayish pubescent. Leaves imparipinnate, 21–31 cm; petiole 3.3–9 cm; rachis 5.5–13 cm, prolonged 6–10 mm below terminal leaflet; petiole and rachis short gray pubescent; leaflets 11–13 pairs; petiolule 2–5 mm, corrugated, grooved, sparsely gray pubescent; blades pale abaxially, dark green adaxially, ovate-elliptic or oblong-lanceolate, 6–12 × (1.5–)2–2.5 cm, widest below middle, leathery, sparsely short gray pubescent abaxially, glabrous adaxially, base broadly cuneate to rounded, apex obtuse, slightly apiculate; midvein raised abaxially and impressed adaxially, lateral veins 5–8 pairs, arcuate, both lateral veins and veinlets slightly raised, inconspicuous. Panicles terminal, 12–20 cm, appressed gray pubescent; pedicel 5–6 mm, densely appressed short gray pubescent. Calyx teeth oblong-ovate, slightly longer than calyx tube, 3–5 mm, abaxially appressed pubescent, adaxially gray pubescent inside. Corolla purple; standard broadly ovate, ca. 1.5 cm wide, widest at base, truncate-rounded, claw ca. 2 mm; wings 2-auriculate at base; keel marginally puberulent. Stamens unequal; filaments 0.8–1.5 cm, free. Ovary sessile, ovate or oblong, glabrous; ovules 6. Legumes ellipsoid or oblong, 3.5–7.2 × 2–2.3 cm, stipe 2–3 mm; valves black and glabrous, thinly leathery, internally septate, tissue loose, velvety, spongy. Seeds 2–6, red, ellipsoid, ca. 1.1 × 0.7 × 0.6 cm; hilum elliptic, ca. 3 mm. Fl. Jun, fr. Sep.

- Dense forests. Guangdong (Longmen, Luoding).

**26. *Ormosia xylocarpa*** Chun ex Merrill & L. Chen, *Sargentia* 3: 105. 1943.

木荚红豆 *mu jia hong dou*

*Fedorovia xylocarpa* (Chun ex Merrill & L. Chen) Yakovlev; *Ormosia polysperma* L. Chen.

Trees evergreen, 12–20 m, 0.4–1.5 m d.b.h. Bark of stems gray or brown, glabrous. Branches densely appressed tawny pubescent. Leaves imparipinnate, (8–)11–24.5 cm; petiole 3–5 cm; rachis 3.2–5.4 cm, prolonged 6–10 mm below terminal leaflet; petiole and rachis sparsely or densely appressed yellow pubescent; leaflets (3–)5–7; petiolule (4–)7–12 mm, grooved, densely appressed short pubescent; blades oblong or oblong-ob lanceolate, 3–14 × 1.3–5.3 cm, thickly leathery, densely or sparsely appressed short tawny pubescent abaxially, more densely so along midvein, glabrous adaxially, base narrowly to

broadly cuneate, margin slightly repand, apex obtuse or acute. Panicles terminal, 8–14 cm, pubescent. Flowers 2–2.5 cm, fragrant; pedicel ca. 8 mm. Calyx ca. 10 mm; teeth oblong, ca. 8 mm, subequal, densely appressed short brownish yellow sericeous. Corolla white or pink. Ovary densely appressed short tawny sericeous; ovules 7–9. Legumes obovate to oblong or rhombic, 5–7 × 2–4 × ca. 1.5 cm, compressed, slightly rounded around seeds; valves thickly woody, ventral suture margin reflexed outward, densely appressed short yellowish brown sericeous, internally septate. Seeds 1–5, red, prolate or suborbicular, slightly inequilateral, 0.8–1.3 × 0.6–0.8 × 0.4–0.5 cm, glossy, often viscid when moist; hilum small, 1.5–2.5 mm, somewhat oblique. Fl. Jun–Jul, fr. Oct–Nov.

- Mountain slopes, valleys, roadsides, streamsides, open or dense forests; 200–1600 m. Fujian, Guangdong, Guangxi, E Guizhou, Hainan, S Hunan, S Jiangxi.

**27. *Ormosia striata*** Dunn, *J. Linn. Soc., Bot.* 35: 492. 1903.

槽纹红豆 *cao wen hong dou*

*Fedorovia striata* (Dunn) Yakovlev.

Trees, 7–30 m, ca. 50 cm d.b.h. Branchlets glabrous; terminal bud large, densely appressed brownish pubescent. Leaves imparipinnate, 17–35.5 cm; petiole 4.2–9.5 cm; rachis 7–10.5 cm, prolonged 1.4–2.3 below terminal leaflet; petiole and rachis glabrous; leaflets 7–9(–11); petiolule glabrous; blades oblong or ovate-lanceolate, upper leaflets larger, 5–15 × 1.9–6 cm, thinly leathery, both surfaces glabrous, base obtuse, apex acuminate to caudate; veinlets conspicuous when dried. Racemes axillary, equal to leaves or slightly shorter. Flowers ca. 1 cm, 2 flowers nearly opposite at apex of inflorescence, alternate below. Calyx abaxially densely appressed pubescent, adaxially glabrous; teeth broadly triangular, obtuse. Corolla yellow, ca. 3 × as long as calyx; standard striate. Ovary stipitate, glabrous; ovules 2–4. Legumes rhombic-oval or ellipsoid, 2.3–4.8 × 1.7–2.3 cm, apex obliquely beaked, gibbous, constricted between seeds; valves thickly leathery, yellowish brown when dry, glabrous, internally septate. Seeds 1 or 2, red, elliptic, 1.1–1.8 × 0.7–1.2 × 0.6–0.8 cm, striate; hilum small, 2–3 mm, grooved along one side of long axis, 9–13 mm. Fl. in summer.

- Riversides, mountain slope forests; 1000–1500 m. S Yunnan.

**28. *Ormosia pinnata*** (Loureiro) Merrill, *Lingnan Sci. J.* 14: 12. 1935.

海南红豆 *hai nan hong dou*

*Cynometra pinnata* Loureiro, *Fl. Cochinch.* 1: 268. 1790; *Fedorovia pinnata* (Loureiro) Yakovlev; *Ormosia hainanensis* Gagnepain.

Trees or shrubs, evergreen, 3–18(–25) m, ca. 0.3 m d.b.h. Bark of stems grayish; xylem mucilaginous. Young branches brownish pubescent, becoming glabrescent. Leaves imparipinnate, 16–22.5 cm; petiole 2–3.5(–6.5) cm; rachis 2.5–9 cm, prolonged 0.2–2.6 cm below terminal leaflet; leaflets 7(–9); petiolule 3–6 mm, grooved, pubescent or nearly glabrous; blades lanceolate to oblanceolate, 12–15 × 4(–5) cm, thinly leathery, both surfaces glabrous, apex obtuse or acute, rarely acuminate;

lateral veins 5–7 pairs. Panicles terminal, 20–30 cm. Flowers 1.5–2 cm. Calyx campanulate, longer than pedicel, pubescent; teeth broadly triangular. Corolla pink and yellowish white; standard ca. 13 mm, base shallowly 2-auriculate, claw short and stout; wings spatulate-obovate, claw ca. 4 mm, narrow; keel broadly spatulate-obovate, slightly to not auriculate at base, claw ca. 4 mm, narrow. Ovary densely appressed brown pubescent; ovules 4; style glabrous, curved. Legumes 3–7 × ca. 2 cm, body turgid and slightly curved, constricted between seeds; valves thickly woody, orange-red at maturity, brown when dried, with light-colored spots, glabrous; stipe conspicuous, curved obliquely from body of legume. Seeds 1–4, red, ellipsoid, 1.5–2 cm; hilum less than 1 mm. Fl. Jul–Aug, fr. Oct.

• Valleys, mountain slopes, roadside forests, at middle and low elevations. SW Guangdong, S Guangxi, Hainan.

**29. *Ormosia indurata*** L. Chen, Sargentia 3: 104. 1943.

韧荚红豆 ren jia hong dou

*Fedorovia indurata* (L. Chen) Yakovlev.

Trees evergreen, 5–9 m. Old branches dark purplish brown or yellowish brown, glabrous, leaf scars convex, lenticels convex. Young branchlets conspicuously or sparsely yellow-brown pilose. Leaves imparipinnate, 8–15.5 cm; petiole 1.7–2.5 cm; rachis 3.8–5 cm, prolonged 2–10 mm (rarely not prolonged) below terminal leaflet; petiole and rachis glabrous; leaflets (5–)7–9, opposite; petiolule 3–5 mm, thin, grooved; blades pale greenish abaxially, narrowly oblanceolate or elliptic, 2.5–6 × 0.7–2 cm, leathery, sparsely yellowish pubescent or glabrous abaxially, glabrous adaxially, base cuneate, margin slightly repand, apex acute to obtuse-acuminate, slightly retuse; lateral veins 4–6 pairs, fine, inconspicuous adaxially, veinlets slightly raised abaxially. Panicles terminal, ca. 5 cm before flowering, bud obovate, inflorescence and bud appressed short rusty sericeous. Petals white. Ovary densely appressed grayish brown pilose; ovules 4. Legumes obovate or oblong, 3–4.5 × 2–2.5 cm, woody, apex acute, stipe ca. 5 mm; valves thickly woody, slightly turgid, slightly appressed short brown pubescent when young, becoming glabrescent, internally septate; calyx persistent, densely appressed short grayish brown pubescent. Seeds 1 or 2, ellipsoid, slightly compressed, ca. 1 × 0.7 cm; testa red-brown, hard, glossy; hilum elliptic, excavated, ca. 2 mm.

• Mixed forests. Fujian (Hua'an), Guangdong (Luofu Shan).

**30. *Ormosia eugeniifolia*** Tsiang ex R. H. Chang, Acta Phytotax. Sin. 22: 115. 1984.

蒲桃叶红豆 pu tao ye hong dou

Trees evergreen, 5–16 m. Buds and branchlets densely appressed yellow-brown pubescent. Older branches with convex lenticels, nearly glabrous. Leaves imparipinnate, 8–12 cm; petiole 1–2.2 cm; rachis 2.7–3.7 cm, prolonged 0.4–1.7 mm below terminal leaflet; petiole and rachis sparsely appressed short pubescent or glabrescent, brown hairy at junction of leaflets; leaflets (5–)7; petiolule 2–6 mm, grooved adaxially when dry, nearly glabrous; blades obovate, obovate-spatulate, or elliptic, 3.6–6.3 × 1.6–2.8 cm, thickly leathery, sparsely appressed short pubescent, becoming glabrescent abaxially, glabrous adaxially, base cuneate, margin slightly rolled upward, apex

rounded, obtuse, or retuse; lateral veins 5–8 pairs, inconspicuous, angled 40° with midvein. Inflorescences terminal panicles or axillary racemes, brown pubescent. Legumes rhombic or ellipsoid, 2–4.1 × 2–2.4 cm; fruiting pedicel 5–6 mm, both ends acute; stipe 3–5 mm; valves dark brown, woody, 2–3 mm thick, ± brown pubescent toward base, internally septate. Seeds 2 or 3, purple, elliptic, slightly compressed, 1–1.3 × 0.7–0.8 × ca. 0.5 cm; hilum white, slightly oblique, elliptic, ca. 2 mm. Fr. Nov.

• Valleys, riversides, sparse forests; 200–800 m. Guangxi (Shangsi).

**31. *Ormosia pubescens*** R. H. Chang, Acta Phytotax. Sin. 22: 115. 1984.

柔毛红豆 rou mao hong dou

Trees evergreen, to 20 m, to 40 cm d.b.h. Branchlets brown pubescent. Leaves imparipinnate, 12–16 cm; petiole 1.5–4 cm; rachis 2–2.7 cm, prolonged 1.2–1.5 cm below terminal leaflet; petiole and rachis slightly pubescent or subglabrate; leaflets 5; petiolule ca. 6 mm, impressed adaxially, nearly glabrous; blades elliptic or oblong, 4.5–9.5(–11) cm, light colored pubescent abaxially, green adaxially, base cuneate, apex acute, mucronate. Inflorescences terminal panicles or axillary racemes, ca. 8 cm; peduncle and pedicel densely appressed short brown pubescent, pedicel ca. 5 mm. Calyx teeth triangular, abaxially densely appressed brownish pubescent. Standard fan-shaped, ca. 7.5 × 10 mm, claw ca. 1.5 mm; wings elliptic, ca. 9 × 3 mm, claw ca. 3 mm; keel oblong, ca. 8 × 3–5 mm, claw ca. 4 mm. Stamens 5–10 mm, unequal. Ovary densely appressed yellow-brown pubescent. Legumes rhombic or ellipsoid, turgid, 3.3–5.6 × ca. 2.7 × 1.2 cm; valves woody, ca. 4 mm thick, densely appressed yellowish brown pubescent, internally septate. Seeds 1–4, red, ellipsoid, ca. 1.4 × 0.8 × 0.7 cm; hilum ca. 2 mm. Fr. Sep–Oct.

• Valleys of mountain slopes. S Guangxi (Dongxing, Shangsi).

*Ormosia pubescens* is similar to *O. xylocarpa*, but the former has 5 leaflets, which are elliptic or oblong, with an acute and mucronate apex, and legumes that are more turgid, with valves densely appressed yellowish brown pubescent and margins not reflexed. The latter has 5–7 leaflets, which are oblong or oblong-lanceolate, with an obtuse or shortly acute apex, and legumes that are compressed, with valves densely appressed short yellowish brown sericeous and margins reflexed outward.

**32. *Ormosia olivacea*** L. Chen, Sargentia 3: 110. 1943.

榄绿红豆 lan lü hong dou

*Fedorovia olivacea* (L. Chen) Yakovlev.

Trees, 20–25 m, to 1 m d.b.h. Branchlets and buds densely appressed brown pilose. Leaves imparipinnate, 17–38 cm; petiole ca. 5.3 cm; rachis ca. 18.5 cm, densely appressed brown pubescent, prolonged ca. 7 mm below terminal leaflet; leaflets (9–)15–17, opposite, sometimes subopposite on lower rachis; petiolule 2–4 mm, pubescent; blades lanceolate to lanceolate-oblong or ovate, 3.4–10.5 × 1.6–2.7 cm, thickly papery, brownish pilose abaxially, glabrous or slightly hairy only along midvein adaxially, base broadly cuneate to rounded, apex acuminate; midvein raised abaxially, impressed adaxially, lateral veins 5–8 pairs, straight or slightly arcuate, raised abaxially,

slightly impressed adaxially. Inflorescences terminal panicles, or terminal or axillary racemes, densely appressed brown pilose to nearly glabrous. Legumes compressed, elliptic or obovate-lanceolate, 5.2–8.9 × 2.5–4 cm, apex acute, shortly mucronate, stipe 5–8 mm, often yellowish brown hirtellous; valves internally septate, woody; persistent calyx densely appressed rusty brown pilose. Seeds (1 or)2–4, red-brown, obovate or subreniform, ca. 1 × 1 cm, slightly compressed, hard, glossy; hilum ca. 3 mm. Fl. Apr, fr. Nov–Dec.

• Forest margins, secondary forests on mountain slopes; 700–2100 m. N Guangxi, S Yunnan.

**33. *Ormosia microphylla*** Merrill, *Sargentia* 3: 109. 1943.

小叶红豆 xiao ye hong dou

*Fedorovia microphylla* (Merrill) Yakovlev; *Ormosia microphylla* var. *tomentosa* R. H. Chang.

Trees or shrubs, 3–10 m. Bark of stems gray-brown. Old branches purplish brown, terete, nearly glabrous; branchlets densely appressed brownish pubescent; bud naked, densely appressed yellowish brown pilose. Leaves imparipinnate, 12–16 cm; petiole 2.2–3.2 cm; rachis 6.5–7.8 cm, densely appressed yellowish brown pilose, prolonged 5–7 mm below terminal leaflet; leaflets 11–15(–17); petiolule 1.5–2 mm, densely appressed yellowish brown pilose; blades dark green adaxially, paler abaxially, elliptic, (1.5–)2–4 × 1–1.5 cm, papery, ± appressed pubescent abaxially, glabrous or sparsely pilose adaxially, base rounded, apex acute or shortly acuminate; midvein densely yellowish pubescent, lateral veins 5–7 pairs, fine, raised abaxially, inconspicuous, arcuate, not anastomosing along margin, veinlets reticulate. Inflorescence terminal. Legumes subrhombic or oblong, 5–6 cm, compressed, apex mucronate, stipe short; valves dark brown or black, thickly leathery or woody, glossy, internally transversely septate. Seeds 3 or 4, red, ca. 2.2 × 0.6–0.8 cm, hard, slightly glossy; hilum 3–3.5 mm.

• Dense forests, mixed forests, valleys, mountain slopes, roadsides; 500–700 m. Fujian, Guangdong, E and S Guangxi, SE Guizhou.

**34. *Ormosia saxatilis*** K. M. Lan, J. Nanjing Technol. Coll. Forest Prod. 1: 134. 1981.

岩生红豆 yan sheng hong dou

Trees evergreen, trunk vertical, to 15 m, to 44 cm d.b.h. Bark of stems grayish green, smooth when young, with rounded convex lenticels or longitudinal striations forming with age. Branchlets densely appressed yellowish brown tomentose; winter buds naked. Leaves imparipinnate, 14–17(–23) cm; petiole and rachis densely appressed gray pubescent; leaflets 17–23; petiolule short, ca. 2 mm; blades oblong-lanceolate or ovate-lanceolate, 2.7–5(–7) × 1.1–1.5 cm, thinly leathery, densely appressed yellowish brown pubescent abaxially, faintly appressed pubescent or glabrous adaxially, base rounded or broadly cuneate, apex acute, acuminate, or obtuse, sometimes retuse; midvein raised abaxially, impressed adaxially, lateral veins 5 or 6(or 7) pairs. Inflorescence racemose or few branched, terminal and axillary. Legumes oblong or rhombic, compressed, 4–6 × 1.6–2.3 cm, glabrous; valves thickly woody, black at maturity. Seeds 1–3, red-brown, suborbicular, ca. 10 × 8 mm; hilum ca. 3 mm.

• Limestone neutral or slightly acidic soil of forests, often mixed with *Carpinus*, *Quercus*, etc.; 1100–1200 m. Guizhou (Qianling Shan).

*Ormosia saxatilis* is similar to *O. microphylla*, but its branchlets are densely appressed yellowish brown tomentose, its leaves are 17–23-foliolate, and its leaflets are densely appressed yellowish brown tomentose abaxially.

**35. *Ormosia formosana*** Kanehira, Bot. Mag. (Tokyo) 30: 420. 1916.

台湾红豆 tai wan hong dou

*Fedorovia formosana* (Kanehira) Yakovlev.

Trees evergreen, 5–15 m, 17(–50) cm d.b.h. Bark smooth, tawny. Branchlets green, brown pubescent, becoming glabrate. Leaves imparipinnate, 9–11 cm; petiole 1.8–2.5 cm; rachis 1.8–2 cm, prolonged 0.2–0.8 cm below terminal leaflet; leaflets (3–)5–7; petiolule ca. 5 mm, with short hairs; blades pale green abaxially, green and smooth adaxially, oblong-lanceolate or oblong, 3.5–4 × 1.1–2 cm, thinly leathery, base cuneate to rounded, margin entire, apex acute, acuminate to shortly caudate; midvein conspicuously raised abaxially, impressed adaxially, lateral veins 5–7 pairs, angled 40° with midvein, both lateral veins and veinlets inconspicuous. Racemes terminal, 8–10 cm; peduncle rusty pilose; pedicel 7–10 mm, rusty brown pilose. Flowers ca. 1.2 × 1 cm. Calyx campanulate, sparsely rusty brown pilose; teeth triangular, 3–4 mm; tube 2–3 mm. Corolla creamy white; standard suborbicular, 1–1.2 cm, apex rounded, claw 1.5–2 mm; wings long elliptic, ca. 1.4 × 0.7 cm, claw ca. 3 mm; keel oblong-elliptic, ca. 1.4 × 0.8 cm, claw ca. 3 mm. Stamens unequal; filaments 0.8–1.4 cm; anthers oblong. Ovary hispid; style filiform, incurved at tip, with curved hispid oblique stigma; ovules 1–4. Legumes elliptic, 1.2–1.5 cm, slightly compressed to nearly globose, acute at both ends, apex beaked, stipe 1.5–1.9 mm; valves woody, appressed short brown pubescent, internally septate. Seeds 1–4, scarlet, suborbicular, slightly compressed, ca. 1 cm, glossy; hilum ca. 3 mm. Fl. May, fr. Oct.

• Evergreen broad-leaved forests; 300–1000 m. C Taiwan.

**36. *Ormosia hengchuniana*** T. C. Huang, S. F. Huang & K. C. Yang, *Taiwania* 35: 2. 1990.

恒春红豆树 heng chun hong dou shu

Trees evergreen, to 8 m. Branchlets golden yellow pubescent. Leaves imparipinnate, 7–9(–10) cm; petiole 3.8–4.5 cm; rachis 3–6.5 cm, prolonged 0.2–0.4 cm below terminal leaflet; leaflets (5–)7(–9); petiolule 5–7 mm; blades oblong-lanceolate or oblong, 1.5–12 × 0.8–5 cm, thinly leathery, golden yellow pubescent abaxially, becoming glabrate, green and smooth adaxially, base cuneate to rounded, rarely slightly cordate, margin entire, often slightly sinuous, apex acute to obtuse, slightly retuse; midvein raised abaxially, impressed adaxially, lateral veins 7–12 pairs, angled 40° with midvein. Racemes terminal, rarely axillary, 8–10 cm, golden yellow pilose; pedicel 5–7 mm, golden yellow pilose. Flowers ca. 1 × 1.2 cm. Calyx campanulate, sparsely rusty brown pilose; teeth broadly triangular, ca. 1 mm; tube ca. 2 mm. Corolla reddish purple; standard oblong-orbicular, obcordate, 0.9–1 cm, apex deeply emarginate, claw 1–2 mm; wings narrowly obovate, inequilateral, midvein along one margin, ca. 1.2 × 0.7 cm, claw ca. 6 mm; keel narrowly

obovate, inequilateral, midvein along one margin, ca.  $1.2 \times 0.6$  cm, claw ca. 5 mm. Stamens unequal; filaments 0.7–1.2 cm; anthers oblong. Ovary glabrous; ovules 1–4; style thickened, incurved at tip; stigma oblique. Legumes oblong, 2–2.5 cm, slightly compressed, acute at both ends, apex beaked, stipe 3–5 mm; valves woody, glabrous, internally septate. Seeds 1–3, pale red, globose-angular, ca. 1 cm, slightly glossy; hilum 3–4 mm. Fl. May, fr. Oct.

• Forest margins, stream banks; 200–500 m. S Taiwan (Hengchun Peninsula).

**37. *Ormosia nuda*** (F. C. How) R. H. Chang & Q. W. Yao, *Acta Phytotax. Sin.* 22: 117. 1984.

秃叶红豆 tu ye hong dou

*Ormosia henryi* Prain var. *nuda* F. C. How, *Acta Phytotax. Sin.* 1: 232. 1951; *Fedorovia henryi* (Prain) Yakovlev var. *nuda* (F. C. How) Yakovlev; *O. yaanensis* N. Chao.

Trees evergreen, 7–27 m, to 50 cm d.b.h. Bark of stems

gray or grayish brown. Branches brownish green, appressed short pubescent when young, becoming glabrous; buds superposed. Leaves imparipinnate, 11.5–25 cm; petiole 2–4.5 cm; rachis 2.7–7.8 cm, prolonged 1.4–2.5 cm below terminal leaflet; petiole and rachis sparsely tomentose or glabrescent; leaflets 5–7; petiolule ca. 5 mm, rounded, sparsely pubescent; blades elliptic,  $5-9.5 \times 2-3.5$  cm, leathery, slightly yellow tomentose or glabrous abaxially, green and glabrous adaxially, base cuneate or rounded, apex acuminate or caudate; midvein slightly raised abaxially, slightly impressed adaxially, lateral veins 7 or 8 pairs, inconspicuous. Flowers not seen. Infructescence with short pubescence. Legumes oblong or elliptic,  $4.3-6.6 \times 2.6-3$  cm; valves black, thickly woody, 3–7 mm thick, appressed short yellowish brown bristly, densely pubescent at apex and base, internally septate. Seeds 1–5, dark red, elliptic,  $8-10 \times 5-7 \times$  ca. 6 mm; hilum 2–2.5 mm. Fl. Jul–Aug, fr. Oct.

• Valleys, mixed forests; 800–2000 m. N Guangdong, S Guizhou, Hubei (Liquan), Yunnan (Jingdong).

