

6. KOELREUTERIA Laxmann, Novi Comment. Acad. Sci. Imp. Petrop. 16: 562. 1772.

栲树属 luan shu shu

Trees or shrubs, deciduous, polygamo-monoecious or polygamo-dioecious. Leaves imparipinnate or bipinnate, estipulate; leaflets alternate or opposite, usually serrate or parted, rarely entire. Thyrses terminal, rarely axillary, large; branches many, spreading. Flowers zygomorphic. Sepals (4 or)5, valvate, outer 2 smaller. Petals 4 or sometimes 5, slightly unequal in length, adaxially with 2-lobed scales at base, clawed. Disk thick, apex often crenate. Stamens often 8, sometimes fewer, inserted on disk; filaments distinct, often villous. Ovary 3-loculed; ovules 2 per locule, on upper half of middle axis; style short or slightly longer; stigma 3-lobed or entire. Capsules swollen, ovoid, ellipsoid, or subglobose, trigonous, loculicidal into 3 schizocarps; carpels membranous, reticulate. Seeds 1 per locule, globose, arillodes absent; testa black, crustaceous; embryo revolute, radicles slightly longer. $2n = 22, 30, 32$.

Three species: S China (including Taiwan), Japan, and perhaps Fiji; three species (two endemic) in China.

- 1a. Leaves pinnate or imperfectly bipinnate; leaflet margin irregularly obtusely serrate, teeth usually sparse and fissured; capsules conical, apex acuminate 1. *K. paniculata*
1b. Leaves bipinnate; leaflet margin serrulate; capsules ellipsoid, broadly ovoid, or subglobose, apex rounded or obtuse.
2a. Leaflets basally slightly oblique, apex acute to shortly acuminate; petals 4, rarely 5 2. *K. bipinnata*
2b. Leaflets basally extremely oblique, apex long acuminate to caudate; petals 5 3. *K. elegans*

1. Koelreuteria paniculata Laxmann, Novi Comment. Acad. Sci. Imp. Petrop. 16: 561. 1772.

栲树 luan shu

Koelreuteria apiculata Rehder & E. H. Wilson; *K. bipinnata* Franchet var. *apiculata* F. C. How & C. N. Ho; *K. chinensis* (Murray) Hoffmannsegg; *K. paniculata* var. *apiculata* (Rehder & E. H. Wilson) Rehder; *K. paniculata* var. *lixianensis* H. L. Tsang; *Sapindus chinensis* Murray.

Trees or shrubs, deciduous. Bark grayish brown to black, stout, fissured when dry; lenticels gray to dark brown, small; branches tuberculate, appressed pubescent or glabrous with axes and petioles. Leaves fasciated on young branches, spreading, pinnate, imperfectly bipinnate, or sometimes bipinnate, to 50 cm; leaflets (7–)11–18 (terminal one sometimes connate with uppermost pair below middle), sessile or very shortly petiolate, opposite or alternate, ovate or broadly ovate to ovate-lanceolate, (3–)5–10 × 3–6 cm, papery, abaxially barbate on vein axils, sometimes tomentose, or densely pale yellow pubescent, adaxially scattered appressed pubescent on midvein, base obtuse to subtruncate, apex acute or shortly acuminate, margin irregularly obtusely serrate, teeth mucronate at tips, sometimes teeth near base sparse and fissured, or pinnately lobed. Thyrses 25–40 cm, densely pilosulose, branches spreading and long, cymes on last branches 3–6-flowered, densely arranged and capitate; bracts narrowly lanceolate, scabrous-hairy. Flowers pale yellow, slightly fragrant. Pedicels 2.5–5 mm. Sepals ovate, margin glandular ciliate, erose. Petals 4, reflexed when flowering, linear-oblong, 5–9 mm, claw 1–2.5 mm, villous; scale yellow at first, orange when flowering, irregularly fissured, tuberculate, appressed hairy. Stamens 8, 7–9 mm in male flowers, 4–5 mm in female ones; filaments densely spreading white villous at lower half. Disk oblique, with obtuse lobes. Ovary trigonous, glabrous except on ridges; rudimentary ovary densely hispidulous. Capsules conical, 4–6 cm, 3-ridged, apex acuminate; carpels ovoid, abaxially reticulate veined, adaxially smooth and slightly shiny. Seeds subglobose, 6–8 mm in diam. Fl. Jun–Aug, fr. Sep–Oct.

- Anhui, Gansu, Hebei, Henan, Liaoning, Shaanxi, Shandong,

Sichuan, Yunnan [widely cultivated elsewhere].

This species is used as an ornamental and for timber.

2. Koelreuteria bipinnata Franchet, Bull. Soc. Bot. France 33: 453. 1886.

复羽叶栲树 fu yu ye luan shu

Koelreuteria bipinnata var. *puberula* Chun; *K. bipinnata* var. *integrifoliola* (Merrill) T. C. Chen; *K. integrifoliola* Merrill.

Trees, to 20 m tall. Branches tuberculate, lenticels orbicular to elliptic. Leaves spreading, bipinnate, 45–70 cm; axis and adaxial surface of petiole often with one line appressed pubescent; leaflets 9–17, alternate, rarely opposite; petiolules ca. 3 mm or leaflets subsessile; blades obliquely ovate, 3.5–7 × 2–3.5 cm, papery or subleathery, abaxially densely pubescent or sometimes mixed with appressed hairs, adaxially glabrous or pilosulose on midvein, base broadly cuneate or rounded, slightly oblique, margin incurved serrate or sometimes entire. Thyrses spreading, large, 35–70 cm, pubescent with pedicels. Calyx 5-lobed to middle; sepals broadly triangular or elliptic, hispidulous and fimbriate glandular, margin erose. Petals 4, oblong-lanceolate, 6–9 × 1.5–3 mm, apex obtuse or acute, claw 1.5–3 mm, villous; scales deeply 2-lobed. Stamens 8, 4–7 mm; filaments spreading white villous; anthers short and sparsely hairy. Ovary trigonous-ellipsoid, pilose. Capsules pale purplish red, brown when mature, ellipsoid or subglobose, 3-ridged, 4–7 × 3.5–5 cm, apex obtuse or rounded, mucronate; carpels ellipsoid to subcordiform, abaxially reticulate veined, adaxially shiny. Seeds subglobose, 5–6 mm in diam. Fl. Jun–Sep, fr. Aug–Oct.

- Sparse forests, slopes; 400–2500 m. Guangdong, Guangxi, Guizhou, Hubei, Hunan, Sichuan, Yunnan.

3. Koelreuteria elegans (Seemann) A. C. Smith subsp. **formosana** (Hayata) F. G. Meyer, J. Arnold Arbor. 57: 162. 1976.

台湾栲树 tai wan luan shu

Koelreuteria formosana Hayata, Icon. Pl. Formosan. 3: 64. 1913; *K. henryi* Dummer.

Trees, 15–17 m tall or higher. Branches ridged, pubescent. Leaves bipinnate, with petiole ca. 50 cm; leaflets 5–13; petioles 2–2.5 cm; blades oblong-ovate, 6–8 × 2.5–3 cm, varied in shape and size, subleathery, abaxially glabrous or only barbate at vein axils, base extremely oblique, margin slightly incurved

serrate or nearly entire below middle, apex long acuminate to caudate. Thyrses terminal, large, ca. 25 cm; branches and pedicels pubescent. Flowers yellow, ca. 5 mm in diam. Sepals 5, oval or ovate-triangular, ciliate. Petals 5, lanceolate or oblong, with 2-lobed, tuberculate toothed scale, claw hairy. Stamens 7 or 8; filaments hairy. Capsules inflated, ellipsoid, 3-ridged, ca. 4 cm; carpels subcordiform, abaxially reticulate veined, adaxially shiny. Seeds black, globose, ca. 5 mm in diam.

- Taiwan.

Koelreuteria elegans subsp. *elegans* is distributed in Fiji.

