

LEEACEAE

火筒树科 huo tong shu ke

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Shrubs, small trees, scramblers, or rarely large perennial herbs. Stems unarmed or with rows of prickles; tendrils absent. Leaves 1–4-pinnate to 3-foliolate or simple; stipules sheathing petiole margins with conspicuous, persistent or caducous stipular wings; leaflets glabrous to pubescent with simple hairs, crenate to serrate to dentate at margin, teeth with small glandular apex, lower surface usually with specialized multicellular, stellate or globular caducous “pearl” glands. Inflorescences paniculate, often corymbiform, terminal or axillary, erect or pendulous. Flowers hermaphroditic, (4 or)5-merous. Calyx campanulate with triangular lobes and glandular tips. Petals valvate, apically often cucullate, reflexed at anthesis, basally connate, adnate to staminodial tissue and lower portion of floral disk; floral disk tubular, intrastaminal. Stamens 4 or 5, antepetalous, alternating with lobes of floral disk; anthers tetrasporangiate and 2-locular, introrse and sometimes appearing extrorse. Ovary superior but sometimes partly sunken in disk, 2–3(–5)-carpellate but with a secondary septum in each carpel and 4–6(–10)-locular; ovule 1 per locule, anatropous, bitegmic and crassinucellate; style elongate; stigma discoid and capitate. Fruit a berry, rather dry, depressed subglobose, purple, black, or orange. Seeds endotestal; endosperm ruminant with roughly 5 ingrowths; embryo linear. $2n = 24$ or 48 (rarely 20, 22, or 28).

One genus and ca. 34 species; widespread in tropical and subtropical Asia, extending into the Himalayan region and Australia, two species in Africa and Madagascar; ten species (two endemic) in China.

Li Chaoluan. 1998. *Leea*. In: Li Chaoluan, ed., Fl. Reipubl. Popularis Sin. 48(2): 3–12.

1. LEEA D. Royen ex Linnaeus, Syst. Nat., ed. 12, 2: 608, 627; Mant. Pl. 1: 17, 124. 1767, nom. cons.

火筒树属 huo tong shu shu

Nalagu Adanson.

Erect shrubs or small trees. Leaves alternate, 1–4-pinnate, rarely simple or 3-foliolate. Inflorescences compound dichasial or umbelliform. Flowers 4- or 5-merous, bisexual. Lower part of petals adnate to staminodial tube on disk. Apex of staminodial tube 5-lobed, connate to each other by thinner tissue to form sinuses; apex of lobes retuse or 2-lobed, retusely apiculate to bifid. Filaments flattened, light brown, alternating with staminodial lobes, curved inward; anthers inverted and packed within staminodial tube in bud; filaments straight and anthers long-exserted in open flower. Disk deeply cupulate. Ovary discoid, 4–6(–10)-locular; ovule 1 per locule; style short; stigma slightly thickened. Berry depressed-subglobose, 4–6(–10)-seeded. Endosperm ruminant.

Geographic distribution is the same as that of the family.

- 1a. Leaves 1–4-pinnate, abaxial leaflet surface glabrous.
 - 2a. Leaflets lanceolate to narrowly so, margin wavy with glandular teeth; leaves 2- or 3-pinnate 5. *L. longifolia*
 - 2b. Leaflets elliptic, narrowly elliptic, or elliptic-lanceolate, margin serrulate.
 - 3a. Leaves pinnate; flowers 4-merous 4. *L. philippinensis*
 - 3b. Leaves 2–4-pinnate; flowers 5-merous.
 - 4a. Inflorescences compact; bracts large, ovate; leaflet margin with irregular and big teeth 3. *L. glabra*
 - 4b. Inflorescences loose; bracts narrowly long, elliptic-lanceolate; leaflet margin with shallow and irregular teeth.
 - 5a. Leaves 2(or 3)-pinnate; leaflets usually 13–32 cm; flowers greenish white 1. *L. indica*
 - 5b. Leaves (2 or)3- or 4-pinnate; leaflets usually 6–11 cm; flowers red to orange 2. *L. guineensis*
 - 1b. Leaves simple, or 1- or 2-pinnate, at least abaxial leaflet surface pubescent.
 - 6a. Abaxial leaflet surface pubescent with dense peltate glands 10. *L. aequata*
 - 6b. Abaxial leaflet surface pubescent without peltate glands.
 - 7a. Leaves highly variable in size and shape, from simple to 1–3-pinnate, blade large and broadly ovate 6. *L. macrophylla*
 - 7b. Leaves pinnate.
 - 8a. Leaflet margin with dull and obtuse dentate teeth, adaxial surface glabrous or adaxial veins sparsely with scabrous hairs, abaxial veins conspicuously with scabrous hairs 9. *L. asiatica*
 - 8b. Leaflet margin with sharp teeth.
 - 9a. Adaxial leaflet surface glabrous, abaxial surface pubescent; bracts conspicuously broad and large, elliptic or oval-elliptic 7. *L. compactiflora*

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- 9b. Both abaxial and adaxial leaflet surfaces sparsely with setaceous hairs; bracts narrowly triangular 8. *L. setuligera*

1. *Leea indica* (N. L. Burman) Merrill, Philipp. J. Sci. 14: 245. 1919.

火筒树 *huo tong shu*

Staphylea indica N. L. Burman, Fl. Indica, 75. 1768; *Aquilegia sambucina* Linnaeus, nom. illeg. superfl.; *Leea sambucina* Willdenow, nom. illeg. superfl.; *L. umbraculifera* C. B. Clarke.

Erect shrubs to small trees. Branchlets terete, longitudinal ridges obtuse, glabrous. Leaves 2- or 3-pinnate, glabrous; stipules broadly obovate, 2.5–4.5 × 2–3.5 cm, apex rounded, glabrous; petiole 13–23 cm, central petiolules 2–5 cm, lateral petiolules shorter, 0.2–0.5 cm, glabrous; leaf axis 14–30 cm, glabrous; leaflets elliptic, elongate elliptic, or elliptic-lanceolate, 6–32 × 2.5–8 cm, base rounded, or rarely broadly cuneate, margin with irregular or slightly regular teeth, teeth sharp, apex acuminate or caudate; lateral veins 6–11 pairs, abaxial veinlets conspicuous but not protruding. Inflorescences opposite to leaves, compound dichasial or umbelliform; peduncle 1–2 cm, with brown hairs. Involucre elliptic-lanceolate, ca. 0.8 × 0.3–0.8 cm, apex acuminate, glabrous; bracts oval elliptic-lanceolate, 3–4 × 2.5–3 mm, apex shortly acute and acuminate, glabrous, deciduous. Pedicel 1–2 mm, ferruginous pubescent; buds 1.5–2 mm, apex suborbicular. Calyx tube urceolate; sepal triangular, glabrous. Petals elliptic, 1.8–2.5 mm, glabrous, white or greenish white. Staminodial tube 0.5–1 mm, with lower fused part 0.2–0.3 mm, upper 0.3–0.7 mm, lobes 0.1–0.2 mm. Stamens 5; filaments 0.5–0.8 mm; anthers elliptic, 0.8–1.5 × 0.4–0.8 mm. Ovary globose; style 0.5–0.7 mm; stigma expanded slightly. Berry 0.8–1 cm in diam., 4–6-seeded. Fl. Apr–Jul, fr. Aug–Dec. $2n = 24$.

Forests, shrublands; 200–1200 m. Guangdong, Guangxi, Guizhou, Hainan, Yunnan [Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Sri Lanka, Thailand, Vietnam; N Australia, Pacific islands].

2. *Leea guineensis* G. Don, Gen. Hist. 1: 712. 1831.

台湾火筒树 *tai wan huo tong shu*

Leea manillensis Walpers.

Shrubs or small trees. Branchlets terete, almost glabrous. Leaves 2- or 3-pinnate; petiole 6–13 cm, central petiolules 1.5–4 cm, lateral petiolules 0.5–1.5 cm, glabrous; leaflets oval elliptic to long and roundly lanceolate, 5–15 × 2.5–8 cm, base broadly cuneate, or rarely suborbicular, margin with acute teeth, apex acuminate, glabrous; lateral veins 6–11 pairs, abaxial veinlets conspicuous but not protruding. Inflorescences a corymboselike compound dichasium, ca. 50 cm in diam. Pedicel very short or nearly none, sparsely with papillary hairs; buds ca. 3 mm. Calyx tube cupulate; sepal triangular, with an acute apex, glabrous. Petals 5, elliptic, red. Stamens 5; filaments 1.2–1.6 mm; anthers yellow. Ovary ovate; stigma expanded slightly. Berry subglobose, ca. 0.8 cm in diam.

Forests, shrublands. Taiwan [Bangladesh, Bhutan, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, New Guinea, Philippines, Thailand, Vietnam; Africa, Madagascar].

3. *Leea glabra* C. L. Li, Chin. J. Appl. Environ. Biol. 2(1): 43. 1996.

光叶火筒树 *guang ye huo tong shu*

Erect shrubs. Branchlets terete, with longitudinal ridges, glabrous. Leaves 2- or 3-pinnate; stipules broadly obovate, 3–3.5 × 2–2.5 cm, apex rounded, glabrous; petiole 7–21 cm, central petiolules 1.5–2.3 cm, lateral petiolules 1.5–4 cm, glabrous; leaflets ovate-oblong or elliptic-lanceolate, 5–17 × 2–6.5 cm, base suborbicular or broadly cuneate, margin with irregular teeth, apex acuminate or caudate, glabrous; lateral veins 5–14 pairs, abaxial veinlets conspicuous but not protruding. Inflorescences leaf-opposed; peduncle very short, ferruginous pubescent; bracts ovate, 3.5–5 × 3–4 mm, glabrous, apex acuminate or mucronate. Pedicels ca. 1 mm, with brown hairs; buds oblate, 2–2.5 mm, apex truncate or obtuse. Calyx tube cupulate with 5 triangular denticles, glabrous. Petals 5, elliptic, 1.5–2 mm, glabrous. Staminodial tube 0.7–1 mm, with lower fused part 0.25–0.35 mm. Stamens 5; filaments 1.3–1.8 mm; anthers elliptic and yellow, 0.8–1.2 mm. Ovary ovate; style 0.6–0.9 mm, base slightly enlarged; stigma not expanded. Fl. May.

• Forests in valleys, hillsides, roadsides; 200–1200 m. Guangxi, Yunnan.

4. *Leea philippinensis* Merrill, Philipp. J. Sci. 1(Suppl.): 89. 1906.

菲律宾火筒树 *fei lü bin huo tong shu*

Trees. Leaves pinnate with 5–13 leaflets; petiole 5–7 cm, lateral petiolules 1–1.3 cm, pubescent; leaflets narrowly ovate to lanceolate, 9–15 × 4.2–5 cm, base acute, margin with rounded teeth, apex long acuminate, glabrescent, abaxial surface rough with rounded peltate glands; lateral veins 9–11 pairs, abaxial veinlets conspicuous but not protruding. Inflorescences leaf-opposed and terminal, 10–27 × ca. 20 cm, ferruginous pubescent; peduncle 6–12 cm, pubescent; bracts caducous. Pedicels short, 0.5–1 mm, pubescent; buds greenish, ovate-spherical. Calyx tube cupulate with triangular denticles. Petals 4, ovate to narrowly so, 2.5–3 mm, yellowish or greenish, and pink as flowering, apex acute, glabrous. Berry oblate, ca. 1 cm, 3- or 4-seeded. Seeds globose, ca. 0.6 cm in diam. Fl. Jul–Aug.

Taiwan (Lan Yu) [Philippines].

5. *Leea longifolia* Merrill, Lingnan Sci. J. 14: 33. 1935.

窄叶火筒树 *zhai ye huo tong shu*

Erect shrubs. Branchlets terete, glabrous. Leaves 2- or 3-pinnate; stipules caducous; petiole 18–25 cm, petiolules of terminal leaflets 0.4–5 cm, lateral petiolules 0.4–1 cm, glabrous; leaflets narrowly lanceolate, 4.5–24 × 0.8–3 cm, base suborbicular, margin wavy with sparse glandular teeth, apex caudate acuminate, glabrous; lateral veins 4–13(–16) pairs, abaxial veinlets conspicuously protruding. Inflorescences loose; peduncle pubescent; bracts minute, broadly triangular. Pedicels pilose to pubescent, 2–3 mm; buds globose. Calyx with 5 sepals, triangular to rounded. Petals 5, ovate, ca. 2 mm. Berry 0.6–0.8 cm in diam., 4–6-seeded. Fr. Oct–Feb.

- Forests, moist thickets; 100–400 m. Hainan, rare.

The species is characterized by its long and lanceolate leaflets with undulate teeth.

6. *Leea macrophylla* Roxburgh ex Hornemann, Hort. Bot. Hafn. 1: 231. 1813.

大叶火筒树 da ye huo tong shu

Leea aspera Wallich ex G. Don; *L. robusta* Roxburgh.

Erect shrubs, small trees, or perennial herbs. Branchlets terete with longitudinal ridges, hairy to mealy pubescent. Leaves variable in shape and size, simple, 3-foliolate, or 1–3-pinnate; stipules large and obovate, 4–6 × 2–6 cm, caducous; petiole 15–20 cm, pubescent, or glabrescent; simple leaf blade broadly ovate, 40–65 × 35–60 cm, base rounded, margin dentate, apex acuminate, pubescent; lateral veins 12–15 pairs, veinlets inconspicuously protruding. Inflorescences opposite to leaves, compound corymbose-dichasial; peduncle 20–25 cm, mealy pubescent; bracts triangular to narrowly so. Pedicel 2–3 mm, pubescent; buds oval-elliptic, 2–3 mm, apex rounded. Calyx tube cupulate, with 5 triangular teeth, pubescent. Petals elliptic, 2.5–4 mm, pubescent. Staminodial tube 2–2.2 mm, with lower part 0.3–0.5 mm, upper 1.4–1.7 mm, lobes 1.3–1.6 mm. Stamens 5; filaments 1.5–2 mm; anthers elliptic, 1.4–1.8 × 0.6–0.8 mm. Ovary nearly globose; style 1.2–1.5 mm; stigma slightly capitate. Berry oblate, 0.8–1.3 cm, 6-seeded. $2n = 24, 48$.

Yunnan [Cambodia, India, Laos, Myanmar, Nepal, Thailand].

7. *Leea compactiflora* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 65. 1873.

密花火筒树 mi hua huo tong shu

Leea bracteata C. B. Clarke; *L. trifoliata* M. A. Lawson.

Erect shrubs. Branchlets terete, longitudinal ridges obtuse, densely ferruginous pubescent when young. Leaves 2- or 3-pinnate; stipules narrowly winglike, 3.5–6.7 × 2–6 cm, densely ferruginous pubescent; petiole 8–15 cm, central petiolules 2–5 cm, lateral petiolules 0.3–1.5 cm, densely ferruginous pubescent; leaflets narrowly elliptic or elliptic-lanceolate, 12–23 × 3–9 cm, base rounded or broadly cuneate, margin with irregular teeth, apex acuminate or caudate, abaxial surface ferruginous pubescent, adaxial surface glabrous; lateral veins 5–14 pairs, adaxial veinlets inconspicuous, abaxial veinlets conspicuously protruding. Inflorescences leaf-opposed, umbelliform, glomerate; peduncle 1.5–4 cm, densely ferruginous pubescent. Involucre large, elliptic-lanceolate, 1–1.5 × 0.5–0.8 cm, apex acuminate and ferruginous pubescent; bracts conspicuous, elliptical, or oval-elliptical, 0.8–1.2 × 0.4–0.8 cm, apex acute, ferruginous pubescent. Pedicel 2–4 mm, densely pubescent; buds ovate, 2–4 mm, apex suborbicular. Calyx tube urceolate, 2–3 mm; sepals triangular, 0.8–1.2 mm, apex acuminate, densely pubescent. Petals elliptic, 3.2–3.5 mm, densely pubescent. Staminodial tube 2–2.5 mm, with lower part 1.5–2 mm, upper 0.7–1.2 mm, lobes 0.2–0.3 mm. Stamens 5; filaments 1.6–1.8 mm; anthers elliptic, 1.2–1.5 × 0.6–0.8 mm. Ovary globose, 0.5–0.7 mm; style 1.3–1.5 mm; stigma slightly capitate. Berry oblate, 0.8–1 cm, 4–6-seeded. Fl. May–Jun, fr. Aug–Jan.

Hillsides or shrublands in valleys; 600–2200 m. Xizang, Yunnan [Bangladesh, Bhutan, India, Laos, Myanmar, Vietnam].

8. *Leea setuligera* C. B. Clarke, J. Bot. 19: 105. 1881.

糙毛火筒树 cao mao huo tong shu

Leea mastersii C. B. Clarke; *L. mastersii* var. *siamensis* Craib; *L. tenuifolia* Craib.

Erect shrubs or trees. Branchlets terete with longitudinal ridges, glabrous. Leaves 1- or 2-pinnate; stipules deciduous; petiole 7.5–18 cm, central petiolules 1–3.5 cm, lateral petiolules to 1.2 cm, glabrous; axis of leaf 12–20 cm, glabrous; leaflets oval-elliptic or oblong, 5–15 × 2–8.5 cm, base rounded to subcordate, margin irregularly serrate, apex acuminate or mucronate, slightly setose on abaxial surface, sparsely so on adaxial surface; lateral veins 6–8 pairs, veinlets inconspicuously protruding. Inflorescences leaf-opposed, compound dichasial; peduncle 2–9.5 cm, almost glabrous; bracts small, narrowly triangular, caducous. Pedicel 1–4 mm, pubescent; buds ovate, 1–2 mm, apex suborbicular. Calyx tube cupulate, 2–3 mm; sepals ovate-triangular, apex obtuse or cuspidate, glabrous. Petals elliptic, 0.8–1.8 mm. Staminodial tube 0.8–1.8 mm, lower part 0.15–0.2 mm, upper part 0.5–1 mm, lobes 0.15–0.2 mm. Anthers elliptic, 6–8 × 5–6 mm. Ovary ovate, 0.2–0.3 mm; style 0.5–0.7 mm; stigma expanded slightly. Berry oblate, 0.4–0.5 cm, 4–6-seeded. Fl. Jun–Jul, fr. Aug–Sep. $2n = 24$.

Shrublands, roadsides; 1300–1800 m. Yunnan [India, Thailand].

9. *Leea asiatica* (Linnaeus) Ridsdale in Manilal, Bot. Hist. Hort. Malab. 189. 1980.

单羽火筒树 dan yu huo tong shu

Phytolacca asiatica Linnaeus, Sp. Pl. 1: 474. 1753; *Leea crispa* Linnaeus; *L. edgeworthii* Santapau; *L. herbacea* Buchan-Hamilton; *L. pumila* Kurz.

Erect shrubs or small trees. Branchlets terete with longitudinal ridges obtuse, sparsely pubescent. Leaves pinnate or 3-foliolate; stipules deciduous; petiole 3–7 cm, central petiolules 3–6 cm, lateral petiolules 0.7–2.5 cm, pubescent or subglabrate; leaflets oblong, ovate-elliptic, or long ovate, 8–22 × 4–13 cm, base rounded or slightly cordate, margin with rounded and obtuse teeth, apex acuminate or caudate, abaxial surface sparsely with scabrous hairs on veins to sometimes pubescent, adaxial surface glabrous or with sparse bristles on veins; lateral veins 11–15 pairs, adaxial veinlets conspicuously protruding. Inflorescences leaf-opposed, compound dichasial, usually branched at base; peduncle 1.2–2 cm, sparsely pubescent. Involucre narrow, triangular, 0.3–0.5 cm; bracts small, long triangular, 1.5–2 × 0.4–0.6 cm, glabrous. Pedicel 1–2 mm, with papillate hairs; buds ovate-elliptic, 2–3 mm, apex rounded. Calyx tube cupulate, margin undulately lobed. Petals elliptic, 1.5–2.5 mm, glabrous. Staminodial tube 1.2–1.5 mm, with lower part 0.2–0.25 mm, upper 1–1.2 mm, lobes 0.5–0.7 mm. Stamens 5; filaments 0.8–1.2 mm; anthers elliptic, 0.8–1 × 0.4–0.5 mm. Ovary globose; style 0.8–1 mm; stigma expanded slightly. Berry oblate, 0.5–0.7 cm, 4–6-seeded. Fl. Apr–Jul, fr. Aug–Dec. $2n = 48$.

Forest margins, valleys, along streams; 500–1800 m. Yunnan [Bangladesh, Bhutan, Cambodia, India, Laos, Nepal, Thailand, Vietnam].

10. *Leea aequata* Linnaeus, Syst. Nat., ed. 12, 2: 627; Mant. Pl. 1: 124. 1767.

圆腺火筒树 yuan xian huo tong shu

Leea hirta Roxburgh ex Hornemann; *L. hispida* Gagnepain; *L. kurzii* C. B. Clarke.

Erect shrubs or small trees. Branchlets terete with longitudinal ridges, densely ferruginous pubescent. Leaves 1- or 2-pinnate; stipules cuneate or lanceolate, 2–4 × 0.4–0.6 cm, deciduous; petiole 7–15 cm, central petiolules 2–6 cm, lateral petiolules to 2 cm, densely ferruginous pubescent; leaf axis 20–35 cm, densely ferruginous pubescent; leaflets elliptic-lanceolate or ovate-lanceolate, 6–22 × 3–7 cm, base cuneate or rounded, margin with irregular teeth, apex acuminate or caudate

acuminate, abaxial surface pubescent and rough with rounded brown peltate glands, adaxial surface with short hairs; lateral veins 6–14 pairs, veinlets inconspicuously protruding. Inflorescence leaf-opposed; peduncle 1–4 cm, densely ferruginous pubescent. Pedicel 1–6 mm, densely pubescent; buds ovate, 3–4 mm, apex rounded. Calyx tube cupulate; sepals triangular and densely with glands. Petals elliptic, 3–3.5 mm, glabrous. Staminal tube 1.7–2.5 mm, with lower part 1.5–2.3 mm, upper 0.4–0.6 mm, lobes 0.3–0.4 mm. Stamens 5; filaments 2–3 mm; anthers elliptic, 1.5–2 × 0.8–1 mm. Ovary globose, 0.5–0.7 mm; style 0.5–0.8 mm; stigma slightly capitate. Berry oblate, 0.5–0.7 cm, 4–6-seeded. Fl. Apr–May, fr. Jul–Sep. $2n = 24$.

Forests, shrublands; 200–1100 m. Yunnan [Bangladesh, Bhutan, Cambodia, India, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam].