

1. DAPHNIPHYLLUM Blume, Bijdr. 13: 1152. 1826–1827.

虎皮楠属 hu pi nan shu

Morphological characters and geographical distribution are the same as those of the family.

- 1a. Calyx absent.
 - 2a. Female flower with staminodes around ovary.
 - 3a. Stamines 10; leaf blade not papillate below, lateral veins slender and dense, visible on both surfaces 1. *D. macropodum*
 - 3b. Stamines 5; leaf blade finely (or minutely) papillate below, lateral veins laxly arcuate, slightly impressed adaxially, prominent abaxially 2. *D. himalense*
 - 2b. Female flower without staminodes.
 - 4a. Leaf blade narrowly lanceolate, 11.5–15 × 2.5–3 cm; infructescence ca. 2.5 cm; fruit smooth, style branches deciduous 3. *D. angustifolium*
 - 4b. Leaf blade large, oblong-elliptic, 16–26 × 6–9 cm; infructescence 10–16 cm; fruit tuberculate, style branches persistent 4. *D. longeracemosum*
- 1b. Calyx present.
 - 5a. Calyx 0.5–1 mm, deciduous.
 - 6a. Leaf blade lanceolate, obovate-lanceolate, oblong, or oblong-lanceolate, 9–14 × 2.5–4 cm, glaucous and finely papillate below 5. *D. oldhamii*
 - 6b. Leaf blade oblong-elliptic or oblong, 10–15(–21) × 3–6(–7) cm, not glaucous and not papillate below 6. *D. chartaceum*
 - 5b. Calyx persistent.
 - 7a. Calyx 2–3 mm; leaf blade green in dried state, glaucous below.
 - 8a. Leaf blade obovate or obovate-elliptic, 9–16 × 4–9 cm, apex obtuse or rounded; fruit ca. 7 mm, glaucous, densely arranged 7. *D. calycinum*
 - 8b. Leaf blade oblong-elliptic, (16–)20–37 × 7–14 cm, apex acuminate; fruit 10–15 mm, not glaucous, laxly arranged 8. *D. majus*
 - 7b. Calyx less than 1.5 mm; leaf blade dark brown in dried state, not glaucous below.
 - 9a. Leaf blade thinly coriaceous, 9–17 × 3–6 cm, apex falcate-acuminate or shortly acuminate, base broadly cuneate or cuneate, lateral and reticulate veins prominent on both surfaces, petiole 1.5–3.5 cm 9. *D. paxianum*
 - 9b. Leaf blade thickly coriaceous, 6–9 × 2–2.5 cm, apex acute, base rounded or truncate, lateral veins visible on both surfaces, reticulate veins obscure, petiole 5–7 mm 10. *D. subverticillatum*

1. *Daphniphyllum macropodum* Miquel, Ann. Mus. Bot. Lugduno-Batavi 3: 129. 1867.

交让木 jiao rang mu

Daphniphyllum himalense (Benth) Müller Argoviensis subsp. *macropodum* (Miquel) T. C. Huang; *D. membranaceum* Hayata.

Trees or shrubs, 3–10(–20) m tall; branchlets stout, dark brown, with orbicular leaf scars. Petiole 3–6 mm, purplish red; leaf blade oblong or oblanceolate, 14–25 × 3–6.5 cm, leathery, light green and lightly glaucous abaxially, deep green and shining adaxially, base cuneate or broadly cuneate, apex acuminate; lateral veins slender and dense, 12–18 pairs, visible on both surfaces. Male flowers: inflorescence 5–7 cm; pedicel ca. 5 mm; calyx absent; stamens 8–10; filaments very short, ca. 1 mm; anthers ca. 2 mm. Female flowers: inflorescence 4.5–8 cm; pedicel 3–5 mm; calyx absent; staminodes 10 around ovary; ovary ovoid, ca. 2 mm, glaucous; style branches recurved. Drupe ellipsoidal, ca. 10 × 5–6 mm, purplish brown, tuberculate, glaucous; style branches persistent. Fl. Mar–May, fr. Aug–Oct.

Forests; 600–1900 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Ja-

pan, Korea].

The timber is used for building and furniture as well as stationery.

2. *Daphniphyllum himalense* (Benth) Müller Argoviensis in A. Candolle, Prodr. 16(1): 4. 1869 [“*himalayense*”].

西藏虎皮楠 xi zang hu pi nan

Goughia himalensis Benth, Hooker’s J. Bot. Kew Gard. Misc. 6: 9.1854; *Daphniphyllum himalense* var. *triangulatum* T. C. Huang.

Trees or small trees, 5–12 m tall; branchlets stout, white lenticellate, young branches dark brown. Petiole 2–5 mm; leaf blade oblong-lanceolate, oblong, or oblong-elliptic, 10–21 × 2.5–7 cm, chartaceous or thinly coriaceous, glaucous and finely papillate abaxially, green and shining adaxially in dried state, base cuneate or obtuse, apex acute or acuminate; lateral veins 10–14 pairs, prominent abaxially and slightly impressed adaxially. Male flowers: inflorescence 3–5 cm; pedicel 4–8 mm; calyx absent; stamens 8–12; filaments ca. 1 mm; anthers oblong, ca. 1 mm. Female flowers: inflorescence 4–6 cm; pedicel 7–13 mm; calyx absent; staminodes 5 around ovary; ovary ovoid, glaucous; style branches recurved. Infructescence 7.5–9.5 cm; drupe ellipsoidal, 12–14 × 7–9 mm, ± smooth,

glaucous; style branches persistent. Fr. Sep–Nov.

Forests; 1200–2500 m. SE Xizang (Médog), NW Yunnan (Gongshan) [Bhutan, NE India, N Myanmar, E Nepal].

3. *Daphniphyllum angustifolium* Hutchinson in Sargent, Pl. Wilson. 2: 521. 1916.

狭叶虎皮楠 xia ye hu pi nan

Daphniphyllum himalense (Benth) Müller Argoviensis subsp. *angustifolium* (Hutchinson) T. C. Huang.

Shrubs or small trees, 2–5 m tall; branchlets stout, brown. Petiole 1–1.5 cm; leaf blade narrowly lanceolate, 11.5–15 × 2.5–3 cm, coriaceous, lightly glaucous abaxially, brown adaxially in dried state, base broadly cuneate or obtuse, apex triangular-acute; lateral veins slender, 14–16 pairs, prominent on both surfaces, reticulate veins lightly prominent. Male flowers: inflorescence 2–3 cm; pedicel ca. 2 mm; calyx absent; stamens 8–10; anthers ovoid, ca. 1.5 mm. Female flowers: inflorescence 1–1.5 cm; pedicel ca. 1 mm; calyx absent; ovary ovoid, ca. 1 mm; style branches recurved. Infructescence ca. 2.5 cm; drupe oblong, ca. 8 × 6 mm, ± smooth, glaucous; style branches deciduous. Fl. Apr–May, fr. Aug–Oct.

• Forests; 1500–2300 m. W Hubei, E Sichuan.

4. *Daphniphyllum longeracemosum* K. Rosenthal in Engler, Pflanzenr. 68(IV. 147a): 14. 1919.

长序虎皮楠 chang xu hu pi nan

Daphniphyllum himalense (Benth) Müller Argoviensis var. *longeracemosum* (K. Rosenthal) T. C. Huang.

Trees, 12–20 m tall; branchlets stout, lenticellate. Petiole 5–7 cm; leaf blade oblong-elliptic, 16–26 × 6–9 cm, chartaceous, neither glaucous nor papillate abaxially, shining adaxially, base broadly cuneate, apex acute; lateral veins 12–14 pairs, prominent abaxially. Male flowers: inflorescence ca. 4 cm; pedicel ca. 5 mm; calyx absent; stamens 10–16; filaments ca. 1 mm; anthers ovate, ca. 1.2 mm. Female flowers: inflorescence 6–7 cm; pedicel ca. 5 mm; calyx absent; ovary ellipsoidal, ca. 2 mm, glaucous; style branches recurved or circinate. Infructescence 10–16 cm, erect; drupe ellipsoidal, 15–20 × ca. 8 mm, tuberculate, glaucous; style branches persistent. Fl. Apr–May, fr. Aug–Nov.

Dense forests; 100–1800 m. S Guangxi, SE Yunnan [N Vietnam].

5. *Daphniphyllum oldhamii* (Hemsley) K. Rosenthal in Engler, Pflanzenr. 68(IV. 147a): 8. 1919.

虎皮楠 hu pi nan

Daphniphyllum glaucescens Blume var. *oldhamii* Hemsley, J. Linn. Soc., Bot. 26: 429. 1894; *D. formosanum* K. Rosenthal; *D. kengii* Hurusawa; *D. longistylum* S. S. Chien; *D. marchandii* (H. Léveillé) Croizat & F. P. Metcalf; *D. oblongum* S. S. Chien; *D. oldhamii* var. *oblongolanceolatum* J. X. Wang; *D. pentandrum* Hayata; *D. roxburghii* Baillon; *D. salicifolium* S. S. Chien.

Trees or shrubs, 4–15 m tall; branchlets slender, dark brown. Petiole 2–3.5 cm, slender; leaf blade lanceolate,

obovate-lanceolate, oblong, or oblong-lanceolate, 9–14 × 2.5–4 cm, chartaceous, abaxially shining, glaucous, and small papillate, adaxially dark green in dried state, base cuneate or obtuse, margins revolute, apex acute, acuminate, or shortly caudate; lateral veins 8–15 pairs, slender, prominent on both surfaces, reticulate veins prominent adaxially. Male flowers: inflorescence 2–4 cm; pedicel slender, ca. 5 mm; calyx small, irregularly 4–6-parted, lobes triangular-ovate, 0.5–1 mm; stamens 7–10; filaments ca. 0.5 mm; anthers ovate, ca. 2 mm. Female flowers: inflorescence 4–6 cm; pedicel slender, 4–7 mm; calyx lobes lanceolate; ovary long ovate, ca. 1.5 mm, glaucous; style branches recurved or circinate. Drupe ellipsoidal or obovate-globose, ca. 8 × 6 mm, dark brown, tuberculate; calyx absent or rarely persistent; style branches persistent. Fl. Mar–May, fr. Aug–Nov.

Forests; 100–1400 m. Fujian, Guangdong, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Zhejiang [Japan, Korea].

The timber is used for building and furniture as well as stationery.

6. *Daphniphyllum chartaceum* K. Rosenthal in Engler, Pflanzenr. 68(IV. 147a): 11. 1919.

纸叶虎皮楠 zhi ye hu pi nan

Daphniphyllum bengalense K. Rosenthal; *D. divaricatum* (T. C. Huang) J. X. Wang; *D. himalense* (Benth) Müller Argoviensis var. *chartaceum* (K. Rosenthal) T. C. Huang; *D. himalense* var. *divaricatum* T. C. Huang.

Trees or small trees, 5–12(–20) m tall; branchlets stout, purplish brown, white lenticellate. Petiole 2–5 cm, purplish red; leaf blade oblong-elliptic to oblong, 10–15(–21) × 3–6(–7) cm, chartaceous, light green abaxially, deep green adaxially, base broadly cuneate, apex acuminate; lateral veins 11–13 pairs and reticulate veins prominent abaxially, slightly impressed adaxially. Inflorescence erect. Male flowers: pedicel 4–6 mm; calyx absent; stamens 10; filaments ca. 1 mm; anthers ovate, ca. 1 mm, connective exerted. Female flowers: pedicel ca. 2 mm; calyx lobes lanceolate, 1–1.5 mm, caducous; staminodes absent; style branches recurved. Infructescence 6–9 cm, erect; drupe ellipsoidal, 11–13 × 7–8 mm, tuberculate; calyx and style branches persistent. Seeds oblong, 9–10 × ca. 4 mm. Fl. Aug–Sep, fr. Dec.

Forests; (1200–)1500–2100 m. SE Xizang (Médog), NW and SE Yunnan [Bhutan, India, N Myanmar, Nepal, Pakistan, N Vietnam].

7. *Daphniphyllum calycinum* Benth, Fl. Hongk. 316. 1861.

牛耳枫 niu er feng

Shrubs, 1.5–4 m tall; branchlets grayish brown, sparsely lenticellate. Petiole 4–8 cm; leaf blade obovate or obovate-elliptic, 12–16 × 4–9 cm, chartaceous, glaucous and inconspicuously papillate abaxially, green and shining adaxially, base broadly cuneate, margin slightly reflexed, apex obtuse or rounded, mucronate; lateral veins 8–11 pairs, visible adaxially, prominent abaxially. Male flowers: pedicel 8–10 mm; calyx discoid, 3- or 4-lobed, lobes broadly triangular; stamens 9 or 10, ca. 3 mm; filaments very short; anthers

oblong, laterally compressed, connective exerted. Female flowers: pedicel 5–6 mm; calyx lobes broadly triangular, ca. 1.5 mm; ovary ellipsoidal, 1.5–2 mm; style very short; stigmas 2, recurved. Infructescence 4–5 cm, densely arranged; drupe ovoid-ellipsoidal, ca. 7 × 4 mm, tuberculate, glaucous; calyx and style branches persistent. Fl. Apr–Jun, fr. Aug–Nov.

Forests, thickets; (below 100–)200–700 m. Fujian, Guangdong, Guangxi, S Hunan, S Jiangxi [Japan, Vietnam].

The seeds are rich in oil, which is used for lubrication and refined soap. The roots and leaves are used in Chinese medicine.

8. *Daphniphyllum majus* Müller Argoviensis, *Linnaea* 34: 76. 1865.

大叶虎皮楠 da ye hu pi nan

Daphniphyllum candelabrum Croizat & F. P. Metcalf; *D. latifolium* K. Rosenthal; *D. longipes* Craib; *D. yunnanense* C. C. Huang ex T. L. Ming.

Shrubs or trees, 2–10 m tall; branchlets stout, grayish brown, densely lenticellate. Petiole 6.5–12 cm; leaf blade oblong-elliptic or obovate-oblong, (16–)20–37 × 7–14 cm, chartaceous, glaucous abaxially, green adaxially, base cuneate or broadly cuneate, apex acuminate or acute; midrib elevated abaxially, lateral veins 15–18 pairs and reticulate veins prominent on both surfaces. Male flowers: inflorescence 2–6 cm; pedicel ca. 2 mm; calyx 4-lobed, lobes ovate, ca. 2.5 mm; stamens 9–12; filaments very short; anthers recurved, 1.5–2 mm. Female flowers: inflorescence 3.5–5 cm; calyx 4-lobed, lobes ovate, 2–3 mm; ovary globose, ca. 2 mm. Infructescence ca. 4 cm; drupe obovoid-ellipsoidal, 10–15 × 6–7 mm, tuberculate; calyx persistent, lobes ovate-lanceolate, ca. 3 mm; style branches persistent. Fl. Mar–Apr, fr. Oct–Dec.

Forests; 1100–1500 m. S Yunnan (Jinghong, Maguan, Malipo, Menghai, Pingbian, Simao) [NE India, N Myanmar, N Thailand, N Vietnam].

9. *Daphniphyllum paxianum* K. Rosenthal in Engler, *Pflanzenr.* 68(IV. 147a): 13. 1919.

显脉虎皮楠 xian mai hu pi nan

Daphniphyllum atrobadium Croizat & F. P. Metcalf; *D. beddomei* Craib; *D. glaucescens* Blume subsp. *atrobadium* (Croizat & F. P. Metcalf) T. C. Huang; *D. glaucescens* subsp. *paxianum* (K. Rosenthal) T. C. Huang.

Shrubs or small trees, 3–8 m tall; branchlets dark brown, sparsely white lenticellate. Petiole 1.5–3.5 cm, purplish brown; leaf blade oblong or oblong-lanceolate, 9–17 × 3–6 cm, thinly coriaceous or chartaceous, brown in dried state, neither glaucous nor papillose abaxially, shining adaxially, base cuneate or broadly cuneate, margin entire and crisped, apex falcate-acuminate or shortly acuminate; lateral veins 11–13 pairs and reticulate veins prominent on both surfaces. Male flowers: inflorescence 2–3 cm; pedicel 5–7 mm; bracts ovate, 1.5–2 mm; calyx disciform, 4- or 5-lobed, lobes ca. 0.5 mm; stamens 8–10; filaments ca. 1.5 mm; anthers oblong, ca. 2 mm, apex rounded or retuse. Female flowers: inflorescence 3–5 cm; pedicel 5–8 mm; calyx 4- or 5-lobed, lobes ovate, 0.5–

1.5 mm, persistent; ovary ellipsoidal, ca. 1.5 mm; style branches recurved. Drupe ellipsoidal, 8–10 × 5–6 mm, slightly tuberculate, not glaucous; calyx persistent; style branches persistent. Fl. Mar–May, fr. Aug–Nov.

• Forests on mountain slopes or in valleys; 400–2300 m. S Guangxi, S Guizhou, Hainan, Sichuan (Emei Shan), S Yunnan.

The timber is used for building and furniture as well as paper-making.

10. *Daphniphyllum subverticillatum* Merrill, *Lingnan Sci. J.* 13: 34. 1934.

假轮叶虎皮楠 jia lun ye hu pi nan

Daphniphyllum glaucescens Blume subsp. *subverticillatum* (Merrill) T. C. Huang.

Shrubs, 1.5–3 m tall; branchlets dark brown, lenticellate. Leaves subverticillate on top of branchlet; petiole 5–7 mm; leaf blade thickly oblong or oblong-lanceolate, 6–9(–17) × 2–3 cm, coriaceous, dark brown in dried state, neither glaucous nor papillate abaxially, shining adaxially, base rounded or obtuse, apex acute or acuminate; lateral veins 8–10 pairs, visible on both surfaces. Inflorescence 3–6 cm. Male flower: pedicel ca. 1 mm; calyx 4- or 5-lobed; stamens 7 or 8; anthers elliptic, connective slightly exerted. Female flower: pedicel ca. 2 mm; calyx 4- or 5-lobed, lobes deltoid, ca. 1 mm. Drupe ovoid, ca. 7 × 5 mm, dark brown, rugose, not glaucous; calyx and style branches persistent. Fl. Apr–May, fr. Oct.

• Forests; 400–700 m. Guangdong (Conghua, Fengshun, Longmen, Raoping, Yangchun).

