

## 28. ALCHORNEA Swartz, Prodr. 6: 98. 1788.

山麻杆属 shan ma gan shu

Qiu Huaxing (丘华兴 Chiu Hua-hsing, Kiu Hua-shing, Kiu Hua-xing); Michael G. Gilbert

*Caturus* Loureiro; *Cladodes* Loureiro; *Stipellaria* Benth (1854), not Klotzsch (1848).

Trees or shrubs, dioecious or monoecious; indumentum of simple hairs. Leaves alternate; stipules small, deciduous; leaf blade simple, junction with petiole usually with 2–4 glands, mostly with 2 stipels, margin crenate or dentate; pinnately veined and shortly petiolate or palmately veined and long petiolate. Inflorescences terminal and/or axillary, branched or unbranched, male often axillary, female and bisexual terminal; bracts small, usually with 2 basal glands; flowers sometimes sessile. Male flowers fascicled; calyx closed in bud, 2–5-partite, valvate; petals absent; disk absent; stamens 4–8; filaments shortly connate; anthers 2-locular, introrse; pistillode absent. Female flowers usually 1 per bract; sepals 4–8, imbricate, sometimes 1–4-glandular; ovary 2- or 3-locular; ovules 1 per locule; styles 2 or 3, free or basally connate, simple, usually long. Fruit a capsule, 2- or 3(or 4)-locular, smooth or muricate. Seed globose, usually tuberculate.

About 50 species: tropical and subtropical regions; eight species (three endemic) in China.

- 1a. Leaves pinnately veined, stipels absent, petiole 0.5–3 cm; male inflorescence terminal, paniculate ..... 1. *A. rugosa*
- 1b. Leaves with 3 basal veins, stipels present at base of leaf blade, petiole 2–20 cm; male inflorescence cauliflorous or at leafless node, unbranched, or if terminal then bisexual.
  - 2a. Capsules verrucate or tuberculate.
    - 3a. Branchlets villous; female sepals lanceolate, 2–2.5 mm; capsule subglobose, villous, verrucate ..... 7. *A. hunanensis*
    - 3b. Branchlets densely pubescent; female sepals subovate, 3–4 mm; capsule ellipsoid, puberulent, tubercled .... 8. *A. tiliifolia*
  - 2b. Capsules smooth, not verrucate or tuberculate.
    - 4a. Plants monoecious; inflorescences often bisexual.
      - 5a. Inflorescence branched, terminal; styles filiform, ca. 8 mm; ovary tomentulose ..... 5. *A. androgyna*
      - 5b. Inflorescence not branched, axillary; styles thick, sublanceolate, 4–5 mm; ovary puberulent ..... 4. *A. kelungensis*
    - 4b. Plants dioecious; male inflorescence spicate; female inflorescence racemose, terminal.
      - 6a. Male inflorescence 1.5–3.5 cm; bracts ovate, ca. 2 mm ..... 2. *A. davidii*
      - 6b. Male inflorescence more than 5 cm; bracts triangular.
        - 7a. Leaves abaxially puberulent; capsule subglobose, tomentulose ..... 6. *A. mollis*
        - 7b. Leaves abaxially puberulent only along veins; capsule strongly 3-lobed, puberulent ..... 3. *A. trewioides*

**1. *Alchornea rugosa*** (Loureiro) Müller Argoviensis, Linnaea 34: 170. 1865.

羽脉山麻杆 yu mai shan ma gan

Shrubs or small trees, 1.5–5 m tall, dioecious. Branchlets pubescent when young, becoming glabrous. Stipules subulate, 5–7 mm; petiole 0.5–3 cm; leaf blade cuneate-obovate or elliptic to broadly lanceolate, 10–21 × 4–10 cm, thickly papery, base obtuse or slightly cordate, with 2 glands, stipels absent, margins serrulate, apex acuminate; venation pinnate, lateral veins 8–12 pairs. Inflorescence terminal, branched, 7–25 cm, puberulent or glabrous; bracts triangular, ca. 1.5 mm, base usually with 2 glands. Male flowers 5–11 per bract; pedicel ca. 0.5 mm; buds globose, ca. 1 mm in diam., pilose; sepals 2–4; stamens 4–8. Female flowers: pedicel ca. 1 mm, pubescent; sepals 5, triangular, pubescent; ovary densely puberulent; styles 3, filiform. 3.5–7 mm. Fruiting pedicel ca. 2 mm; capsule 3-lobed, ca. 8 mm in diam., subglabrous. Seeds ovoid, ca. 5 mm, brownish, verrucate. Fl. and fr. year-round.

Forests; below 600 m. Guangdong, Guangxi, Hainan, Yunnan [India (Nicobar Island), Indonesia, Malaysia, Myanmar, New Guinea, Philippines, Thailand; N Australia].

- 1a. Leaf blade abaxially pubescent only in axils of veins, adaxially glabrous; styles 6–7 mm

- ..... 1a. var. *rugosa*
- 1b. Leaf blade uniformly densely yellowish pubescent; styles 3.5–4 mm ..... 1b. var. *pubescens*

### **1a. *Alchornea rugosa* var. *rugosa***

羽脉山麻杆(原变种) yu mai shan ma gan (yuan bian zhong)

*Cladodes rugosa* Loureiro, Fl. Cochinch. 2: 574. 1790; *Adelia glandulosa* Blanco; *Alchornea hainanensis* Pax & K. Hoffmann; *A. hainanensis* var. *glabrescens* Pax & K. Hoffmann; *A. javanensis* Müller Argoviensis; *A. rugosa* var. *macrocarpa* Airy Shaw; *Aparisthium javanense* (Blume) Hasskarl; *A. javanicum* Baillon; *Conceveiba javanensis* Blume; *Croton apetalus* Blume; *Tragia innocua* Blanco (1845), not Walter (1788).

Leaf blade abaxially pubescent only in axils of veins, adaxially glabrous. Styles 6–7 mm. Fl. and fr. year-round.

Forests; below 600 m. E Guangdong, S and SW Guangxi, Hainan, S Yunnan [India (Nicobar Island), Indonesia, Malaysia, Myanmar, New Guinea, Philippines, Thailand; N Australia].

- 1b. *Alchornea rugosa* var. *pubescens*** (Pax & K. Hoffmann) H. S. Kiu, Fl. Reipubl. Popularis Sin. 44(2): 69. 1996.

海南山麻杆 hai nan shan ma gan

*Alchornea hainanensis* var. *pubescens* Pax & K. Hoffmann in Engler, Pflanz. 63(IV. 147. VII): 243. 1914.

Leaf blade uniformly densely yellowish pubescent. Styles 3.5–4 mm. Fl. and fr. Mar–Nov.

- Forests on limestone hills; 100–300 m. SW Guangxi, Hainan.

**2. *Alchornea davidii*** Franchet, Pl. David. 1: 264. 1884.

山麻杆 shan ma gan

*Acalypha silvestrii* Pampanini.

Deciduous shrubs, 1–5 m tall. Branchlets gray tomentulose, becoming puberulent. Stipules lanceolate, 6–8 mm, pubescent; petiole 2–10 cm, pubescent; leaf blade broadly ovate or subrounded, 8–15 × 7–14 cm, papery, abaxially puberulent, adaxially puberulous along veins, base cordate to subtruncate, with 2–4 glands, stipels filiform, 3–4 mm, margins dentate or serrulate, apex acuminate; basal veins 3. Plants dioecious. Male inflorescences 1–3 at leafless node, unbranched, catkinlike, 1.5–3.5 cm; peduncle subsessile; bracts ovate, ca. 2 mm, pubescent, overlapping in bud. Male flowers 3–5 per bract; pedicel ca. 2 mm; bud globose, ca. 2 mm in diam., glabrous; sepals 3(or 4); stamens 6–8. Female inflorescences terminal, unbranched, 4–8 cm, pubescent; bracts triangular, ca. 3.5 mm. Female flowers: pedicel ca. 0.5 mm; sepals 5, triangular, 2.5–3 mm, pubescent; ovary subglobose, tomentose; styles 3, filiform, 10–12 mm, connate for 1.5–2 mm. Capsule subglobose, 3-lobed, 10–12 mm, densely pubescent. Seeds ovoid, ca. 6 mm, brownish or gray, tuberculate. Fl. Apr–May, fr. Jun–Jul.

- Valleys, slopes of streams or rivers, deciduous forests; 300–2000 m. Fujian, NE Guangdong, N Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shanxi, Sichuan, NE Yunnan, Zhejiang.

**3. *Alchornea trewioides*** (Benth.) Müller Argoviensis, Linnaea 34: 168. 1865.

红背山麻杆 hong bei shan ma gan

Shrubs, 1–3 m tall, dioecious. Branchlets puberulent or almost glabrous. Stipules subulate, 3–5 mm, pilose; petiole 7–12 cm; leaf blade broadly ovate, 8–15 × 7–13 cm, papery, abaxially puberulent along veins, base subcordate or subtruncate, with 4 glands, stipels lanceolate, 2–5 mm, margins serrulate or obscurely serrulate, apex acuminate or acute; basal veins 3. Male inflorescences axillary, often at leafless nodes, unbranched, 7–15 cm, puberulent; bracts triangular. Male flowers 3–15-fascicled; pedicel ca. 2 mm, glabrous; sepals 4, ca. 1.5 mm, glabrous; stamens (7 or)8. Female inflorescences terminal, unbranched, 5–6 cm, puberulent; bracts narrowly triangular, ca. 4 mm, base with 2 glands. Female flowers: pedicel ca. 1 mm; sepals 5–8, lanceolate, 2.5–4 mm, pubescent, sometimes one with basal gland; ovary globose, tomentulose; styles 3, filiform, connate at base. Capsule subglobose, 8–10 mm in diam., puberulent. Seeds compressed-ovoid, ca. 6 mm, brownish, tuberculate. Fl. Apr–May, fr. Jun–Aug.

Plains, mountains, slopes, thickets, open scrub, limestone hills; below 1200 m. Fujian, Guangdong, Guangxi, Hainan, S Hunan, S

Jiangxi, Sichuan, SE Yunnan [Cambodia, Japan (Ryukyu Islands), Laos, N Thailand, N Vietnam].

- 1a. Female flowers: sepals 5(or 6), 3–4 mm, 1 with basal gland, ovary tomentulose, styles 12–15 mm, connate for less than 1 mm ..... 3a. var. *trewioides*
- 1b. Female flowers: sepals 6–8, 2.5–3 mm, all eglandular, ovary yellowish tomentose, styles 7–9 mm, connate for 1.5–2 mm ..... 3b. var. *sinica*

**3a. *Alchornea trewioides* var. *trewioides***

红背山麻杆(原变种) hong bei shan ma gan (yuan bian zhong)

*Stipellaria trewioides* Benth., Hooker's J. Bot. Kew Gard. Misc. 6: 4. 1854; *Alchornea coudercii* Gagnepain; *A. liukiensis* Hayata.

Leaf blade adaxially puberulent along midrib, stipels 2–3.5 mm. Female flowers: sepals 5(or 6), 3–4 mm, 1 with basal gland; ovary tomentulose; styles 12–15 mm, connate for less than 1 mm. Fl. Apr–May, fr. Jun–Aug.

Plains, mountains, slopes, thickets, open scrub, sometimes on limestone hills; below 1000 m. Fujian, Guangdong, Guangxi, Hainan, S Hunan, S Jiangxi [Cambodia, Japan (Ryukyu Islands), Laos, N Thailand, N Vietnam].

**3b. *Alchornea trewioides* var. *sinica*** H. S. Kiu, Acta Phytotax. Sin. 26: 460. 1988.

绿背山麻杆 lü bei shan ma gan

Leaf blade abaxially pubescent, stipels 2–5 mm. Male inflorescence bracts usually with one gland. Female flowers: sepals 6–8, 2.5–3 mm, all eglandular; ovary yellowish tomentose; styles 7–9 mm, connate for 1.5–2 mm. Fl. Apr–May, fr. Jun–Sep.

- Open thickets, limestone hills; 500–1200 m. NW and SW Guangxi, Sichuan (Gulin), SE Yunnan.

**4. *Alchornea kelungensis*** Hayata, Icon. Pl. Formos. 9: 102. 1920.

厚柱山麻杆 hou zhu shan ma gan

*Alchornea formosae* Müller Argoviensis ex Pax & K. Hoffmann; *A. liukiensis* Hayata var. *formosae* (Pax & K. Hoffmann) Hurusawa; *A. trewioides* var. *formosae* (Pax & K. Hoffmann) Pax & K. Hoffmann.

Shrubs, 1–2 m tall, monoecious. Branchlets puberulent or glabrous. Stipules lanceolate, 3–6 mm; petiole 3–7 cm; leaf blade broadly ovate or triangular-ovate, 9–12 × 6–11 cm, papery, abaxially pilose along midrib, base broadly cuneate or subcordate, with 4 glands, stipels subulate, ca. 2 mm, margins remotely serrulate, apex acuminate; basal veins 3. Inflorescence axillary or terminal, unbranched, usually bisexual, 7–10 cm, pilose; bracts triangular-ovate, 3–4 mm. Male flowers 9–11 per bract; pedicel 1–2 mm; sepals 3 or 4, ca. 2.5 mm, glabrous; stamens 8. Female flowers: pedicel ca. 1 mm; sepals 5, triangular-ovate, unequal, 2.5–3.5 mm, pilose; ovary puberulent; styles 3, sub lanceolate, thick, 4–5 mm, connate for ca. 1 mm. Capsule

globose, 3-lobed, ca. 10 mm in diam., subglabrous. Fl. Mar–Apr, fr. Jun–Jul.

- Secondary forests; 100–200 m. N Taiwan.

**5. *Alchornea androgyna*** Croizat, J. Arnold Arbor. 23: 47. 1942.

同序山麻杆 tong xu shan ma gan

Shrubs, 2–3 m tall, monoecious. Branchlets gray tomentulose. Stipules subulate, ca. 2 mm; petiole 2.5–13 cm; leaf blade ovate or broadly ovate to elliptic, 10–15 × 6–12 cm, papery, abaxially pilose along veins, base obtuse to subtruncate, with 4 glands, stipels subulate, ca. 3 mm, margins remotely serrulate, apex acuminate to caudate-acuminate; basal veins 3. Inflorescences terminal, branched, bisexual; peduncle tomentulose; bracts lanceolate, ca. 3 mm. Male flowers 5–7 per bract; pedicel ca. 1 mm; sepals 3, ovate, ca. 1.5 mm; stamens 5 or 6. Female flowers: pedicel ca. 0.5 mm; sepals 5, lanceolate, 2–2.5 mm, pubescent, 1 with basal gland; ovary globose, tomentulose; styles 3, filiform, ca. 8 mm, connate for ca. 1 mm. Fl. Sep–Oct.

Hills, thickets; below 100 m. Hainan (Wanning) [N Vietnam].

**6. *Alchornea mollis*** Bentham ex Müller Argoviensis, Linnaea 34: 168. 1865.

毛果山麻杆 mao guo shan ma gan

*Stipellaria mollis* Bentham, Hooker's J. Bot. Kew Gard. Misc. 6: 3. 1854, not Klotzsch (1848).

Shrubs or small trees, 3–5 m tall, dioecious. Branchlets gray puberulent. Stipules lanceolate, 5–6 mm, pilose; petiole 8–20 cm; leaf blade broadly ovate, 9–20 × 8–20 cm, papery, abaxially puberulent, base subcordate, with 4 glands, stipels filiform, ca. 3 mm, pilose, margins serrulate, apex acuminate or cuspidate; basal veins 3. Male inflorescences 1–3 at leafless node, unbranched, puberulent; bracts triangular, 1–2 mm. Male flowers 9–11 per bract; pedicel ca. 1.5 mm; sepals 3, ovate, ca. 1.5 mm, subglabrous; stamens 8. Female inflorescences terminal, unbranched, 6–8 cm, puberulent; bracts lanceolate, 3–5 mm. Female flowers: pedicel ca. 2 mm; sepals 5 or 6, lanceolate, 2.5–3 mm, puberulent, one with basal gland; ovary globose, tomentulose; styles 3, filiform, 6–8 mm, connate for ca. 1 mm. Capsule subglobose, ca. 10 mm in diam., tomentulose. Seeds compressed-ovoid, ca. 7 mm, rugose. Fl. Apr–Aug.

Valleys, streamside forests; 1200–1900 m. Sichuan (Luding), NW Yunnan [Bhutan, NE India, Nepal].

**7. *Alchornea hunanensis*** H. S. Kiu, Acta Phytotax. Sin. 26: 458. 1988.

湖南山麻杆 hu nan shan ma gan

Shrubs ca. 2 m tall, dioecious. Branchlets villous. Stipules lanceolate, 6–8 mm; petiole 5–8 cm; leaf blade broadly ovate, 10–12 × 8–19 cm, membranous or papery, abaxially villous, adaxially pilose along veins, base slightly cordate to subtruncate, with 4 glands, stipels subulate, 2–5 mm, margins serrulate, apex acuminate; basal veins 3. Male inflorescences axillary, unbranched, 9–15 cm, pilose; bracts broadly ovate, ca.

2 mm. Male flowers 5–7 per bract; pedicel 1.5–2 mm; sepals 3, ovate, ca. 2 mm; stamens 6–8. Female inflorescences terminal, unbranched, 3–4 cm, puberulent; bracts triangular, 4–4.5 mm. Female flowers: sepals 5, lanceolate, 2–2.5 mm, puberulent; ovary globose, densely villous; styles 3, filiform, 10–15 mm, connate for 1.5–3 mm. Fruiting pedicel 1–1.5 mm, pilose. Capsule subglobose, ca. 10 mm in diam., villous, verrucose. Seeds compressed-ovoid, ca. 8 mm, brownish, tuberculate. Fl. Apr–May, fr. Jun–Jul.

• Limestone slopes, valleys, forests, thickets; 300–900 m. NW Guangxi, E Hunan.

Fl. China 11: 241–244. 2008.

**8. *Alchornea tiliifolia*** (Bentham) Müller Argoviensis, *Linnaea* 34: 168. 1865.

緞叶山麻杆 duan ye shan ma gan

*Stipellaria tiliifolia* Bentham, Hooker's J. Bot. Kew Gard. Misc. 6: 4. 1854.

Shrubs or small trees, 2–8 m tall, dioecious. Branchlets densely pubescent. Stipules lanceolate, 6–7 mm; petiole 6–20 cm; leaf blade ovate-rhombic to broadly ovate, 10–17 × 6–16 cm, papery, abaxially pubescent, adaxially pubescent along veins, base cuneate or subtruncate, with 4 glands, stipels lanceolate, 2.5–4 mm, margins serrate, apex acuminate to caudate; basal veins 3. Plants dioecious. Male inflorescences ± cauliflorous, unbranched, 5–9 cm, pubescent; bracts ovate, 2–2.5 mm. Male flowers 7–11-fascicled; pedicel ca. 1 mm; sepals 3, ca. 1.5 mm; stamens 8. Female inflorescences terminal, unbranched or few branched, 8–15 cm, pubescent; bracts triangular, ca. 6 mm. Female flowers: sepals 5(or 6), subovate, unequal, 3–4 mm, puberulent, one with basal gland; ovary globose, tomentose; styles 3, filiform, 7–11 mm, connate for 1.5–3 mm. Capsule ellipsoid, 6–8 mm in diam., puberulent, tubercled. Seeds subcylindric, ca. 8 mm, brown, rugose. Fl. Mar–Jun, fr. Jun–Sep.

Forested or scrubby slopes or valleys; 200–1300 m. W Guangxi, S Guizhou, S Yunnan [Bangladesh, Bhutan, NE India, Malaysia (peninsular), Myanmar, Thailand, Vietnam].

Fl. China 11: 241–244. 2008.