

20. **ALLOPHYLUS** Linnaeus, Sp. Pl. 1: 348. 1753.

异木患属 yi mu huan shu

Shrubs, rarely trees [rarely woody climbers], monoecious or dioecious. Leaves digitate, stipules absent; leaflets 1–5, petiolate or sessile, usually serrate, sometimes entire. Thyrses axillary, racemose or compound racemose; bracts and bracteoles subulate or lanceolate, small. Flowers unisexual, zygomorphic, closed, small. Sepals 4, concurred, outer 2 elliptic, slightly smaller, inner 2 suborbicular. Petals 4, each 2 in a pair, adaxially with scales at base. Disk 4-sect, lobes glandlike, apex truncate or obtuse. Stamens (male flowers) 8, sometimes fewer, exerted; filaments free or connate below middle. Ovary (female flowers) 2(or 3)-partitioned, 2-loculed, lobes subglobose or obovate; ovules 1 per locule, inserted near base of middle axis; style basilar, entire or 2- or 3-lobed nearly to base; stigma recurved. Fruit parted into 2 or 3 schizocarps, often only 1 developed, berrylike, subglobose or obovoid, base with rudimentary style and small, globose, sterile schizocarp, exocarp fleshy, juicy, endocarp crustaceous. Seeds nearly same as schizocarp in shape; embryo arched, reflexed.  $2n = 28$ .

About 200 species: widely distributed in tropical and subtropical regions; 11 species (two endemic) in China.

This is a genus in need of taxonomic revision. Leenhouts (Blumea 15: 301–358. 1967), noting the clinal variation and regional intergradation, considered that the genus is monotypic comprising a single polymorphic species. Verdcourt (Fl. Trop. E. Africa, Sapindaceae, 75. 1998) noted that some species are easier to delimit than others, particularly between forest and bushland species. Within China, the 11 species are very distinct.

- 1a. Leaves 1-foliolate.
  - 2a. Inflorescences in pairs or fascicles; leaflets sparsely wavy serrate ..... 3. *A. chartaceus*
  - 2b. Inflorescences solitary.
    - 3a. Leaflets adaxially shallowly wavy toothed or wavy shallowly parted ..... 1. *A. repandifolius*
    - 3b. Leaflets adaxially sparsely serrulate ..... 2. *A. petelotii*
- 1b. Leaves 3(–5)-foliolate.
  - 4a. Leaflets 5, sometimes 3 or 4; filaments each 2 connate below middle; petals adaxially with 1 entire scale; inflorescences racemose, main rachis unbranched ..... 11. *A. dimorphus*
  - 4b. Leaflets 3; filaments free; petals adaxially with 1 or 2 scales.
    - 5a. Main rachis of inflorescences at least with one branch.
      - 6a. Terminal leaflet apically acute, mucronate, base rounded; leaflets abaxially with a villous tuft in lateral vein axils; inflorescences densely flowered ..... 10. *A. timoriensis*
      - 6b. Terminal leaflet apically caudate-acuminate, base cuneate; inflorescences sparsely flowered.
        - 7a. Leaflets abaxially without tufts of hairs in lateral vein axils, margin shallowly wavy toothed ..... 5. *A. caudatus*
        - 7b. Leaflets abaxially usually tufted villous in lateral vein axils, margin serrulate ..... 9. *A. longipes*
    - 5b. Main rachis unbranched, inflorescences racemose.
      - 8a. Leaflets abaxially glabrous or only with tufts of hairs in lateral vein axils.
        - 9a. Leaflets abaxially with tufts of hairs in lateral vein axils, margin serrulate ..... 4. *A. viridis*
        - 9b. Leaflets abaxially glabrous, margin shallowly wavy toothed ..... 5. *A. caudatus*
      - 8b. Leaflets densely tomentose abaxially or pubescent on veins of both surfaces.
        - 10a. Leaflets abaxially hispid, lateral leaflets sharply serrate from base; plants monoecious ..... 8. *A. hirsutus*
        - 10b. Leaflets villous, lateral leaflets serrulate from middle; plants dioecious.
          - 11a. Leaflets only pubescent on veins ..... 6. *A. cobbe*
          - 11b. Leaflets villous throughout ..... 7. *A. trichophyllus*

1. **Allophylus repandifolius** Merrill & Chun, Sunyatsenia 5: 113. 1940.

单叶异木患 dan ye yi mu huan

Shrubs, ca. 1 m tall. Branchlets slightly zigzag, grayish white, with scattered orbicular lenticels, only young leaves sparsely pubescent. Leaves unifoliolate; petiole 2–3.1 cm; leaflets shortly petiolate; blades abaxially pale green, adaxially deep green, obovate-cuneate, 20–30 × 7–10 cm, papery, abaxially glabrous, lateral veins 15 pairs per side, arched, upper several pairs reaching tips of teeth, base narrowly cuneate, upper 1/3 shallowly wavy toothed or lobed, apex caudate-acuminate. Flowers unknown. Inflorescences unbranched or with 1 or 2 short branches, erect, 4–10 cm, sparsely pubescent. Fruit obovoid, ca. 8 mm, glabrous or pilosulose. Fr. autumn.

- Forests; ca. 400 m. Hainan (Wanning).

2. **Allophylus petelotii** Merrill, J. Arnold Arbor. 19: 46. 1938.

广西异木患 guang xi yi mu huan

Shrubs, to 3.5 m tall. Branchlets grayish white, only upper part pilosulose. Leaves unifoliolate; petioles 1–4 cm; leaflets shortly petiolate; blades broadly oblanceolate or obovate, 13–20 × 4–7 cm, thinly papery, glabrous, midvein and 10 pairs of lateral veins prominent on both surfaces, base cuneate or sometimes slightly obtuse, margin sparsely serrate above middle, apex caudate-acuminate. Inflorescences solitary, racemose, main rachis unbranched, 5–7 cm, pubescent; peduncles ca. 1.5 cm, glabrous. Flowers white, shortly pedicellate. Sepals: outer 2 ovate, ca. 1 mm, pilosulose; inner 2 obovate, ca. 2 mm. Petals 1.5–1.8 mm; scales ca. 1 mm. Fruit unknown. Fl. early summer.

Forests. Guangxi (Fangcheng) [N Vietnam].

3. **Allophylus chartaceus** (Kurz) Radlkofer in Engler & Prantl,

Nat. Pflanzenfam. III(5): 313. 1895.

大叶异木患 da ye yi mu huan

*Schmidelia chartacea* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 43: 183. 1874; *Allophylus zeylanicus* Linnaeus var. *grandifolius* Hiern.

Shrubs, small. Branchlets brown, gradually becoming grayish white, terete. Leaves unifoliolate (sometimes lateral rudimentary leaflets extant); petioles 2–8 cm, stout, strong, grooved; leaflets petiolate; blades shiny, broadly lanceolate or elliptic, 18–32 × 8–14 cm, membranous-papery, glabrous, lateral veins slightly sparse, ascending to tooth-tips, prominent abaxially, veinlets reticulate, margin wavy toothed. Thyrses unbranched, in pairs or fascicles, nearly as long as petioles or sometimes nearly as long as leaves; rachis striate, glabrous. Flower buds ca. 2 mm in diam. Sepals subglabrous. Petals cuneate, claws hairy; scales with long red hairs. Fruit red, subglobose, ca. 1 cm in diam.

Thickets; ca. 1100 m. SE Xizang (Médog) [Bhutan, India].

4. *Allophylus viridis* Radlkofer, Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 38: 229. 1909.

异木患 yi mu huan

Shrubs, 1–3 m tall. Branchlets grayish white, pilosulose. Leaves trifoliolate; petioles 2–4.5 cm or longer, pilose; leaflets with petiolules 5–8 mm; blades adaxially blackish brown when dry, papery, abaxially with tufts of hairs in lateral vein axils, margin serrulate; terminal blade narrowly elliptic or lanceolate-elliptic, rarely ovate or broadly ovate, 5–15 × 2.5–4.5 cm, base cuneate, apex acuminate; lateral ones smaller, lanceolate-ovate or ovate, bilaterally slightly asymmetrical, base obtuse. Inflorescences racemose, main rachis unbranched, densely flowered, suberect or ascending, nearly as long as or slightly longer than petioles, pilose; peduncles 1–1.5 cm. Flowers small, 1–1.5 mm wide; bracts subulate, shorter than pedicels. Sepals glabrous. Petals broadly cuneate, ca. 1.5 mm; scales deeply 2-lobed, ciliate. Disk, bases of filaments, and ovary hairy. Fruit red, globose, 6–7 mm in diam. Fl. Aug–Sep, fr. Nov.

Forests, thickets. Guangdong, Hainan [N Vietnam].

This species is used medicinally.

5. *Allophylus caudatus* Radlkofer, Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 38: 231. 1909.

波叶异木患 bo ye yi mu huan

Trees, small, or shrubs, usually not more than 5 m tall. Branchlets with slightly dense lens-shaped lenticels, pubescent. Leaves trifoliolate; petioles 6–12.5 cm; leaflets with petiolules 5–15 mm; blades membranous or thinly papery, abaxially glabrous, adaxially hairy on midvein, lateral veins ca. 10 pairs, prominent on both surfaces, margin shallowly wavy toothed; terminal blade oblong-lanceolate, 8–22 (or more) × 3.5–7.5 cm, base cuneate, apex caudate-acuminate; lateral ones smaller, ovate, extremely asymmetrical, base broadly cuneate to subrounded. Inflorescences racemose, main rachis unbranched, rarely with 1 slender branch at base, longer than leaves, sometimes nearly as long as or slightly longer than petioles; rachis

slender, tips usually pendulous; peduncles 1.5–2.5 cm. Pedicels ca. 1 mm. Petals narrowly cuneate; scales deeply 2-parted. Disk subglabrous. Filaments villous at lower part. Fruit red, subglobose, 7–8 mm in diam. Fl. Aug–Sep, fr. Sep–Nov.

Forests, thickets. SE and SW Yunnan (Hekou, Maguan) [Vietnam].

6. *Allophylus cobbe* (Linnaeus) Rauschel var. *velutinus* Corner, Gard. Bull. Straits Settlement. 10: 41. 1939.

滇南异木患 dian nan yi mu huan

Shrubs, 1.5–3 m tall. Branchlets grayish brown, terete, with small orbicular lenticels, ± hairy when young. Leaves trifoliolate; petioles 5–11 cm, pilosulose; leaflets with petiolules 3–12 mm; blades thinly papery, both surfaces pubescent on veins, abaxially ciliate at vein axils, margin sparsely serrulate, apex acuminate or caudate-acuminate; terminal blade elliptic or elliptic-lanceolate, 9–20 × 4–6.5 cm; lateral ones smaller, obliquely ovate or obliquely ovate-lanceolate. Inflorescences axillary, unbranched, usually ca. as long as leaves, shortly tomentose. Flowers white, small. Sepals suborbicular, 1–1.5 mm in diam. Petals spoon-shaped, ca. 1 mm; scales 2, villous. Disk pilose. Filaments hairy at base. Fruit red, subglobose, 5–7 mm in diam. Fl. Jun–Sep, fr. Dec.

Dense forests; 300–1200 m. Yunnan (Mengla) [India, Malaysia, Myanmar, Thailand, Vietnam].

7. *Allophylus trichophyllus* Merrill & Chun, Sunyatsenia 2: 270. 1935.

毛叶异木患 mao ye yi mu huan

Shrubs, 1–3 m tall, monoecious. Branchlets grayish yellow pilose. Leaves trifoliolate; petioles 5–8 cm, slightly denser hairy than branchlets; leaflets with petiolules 5–10 mm; blades abaxially dark brown and adaxially black when dry, papery, abaxially densely pilose, adaxially only densely hairy on midvein and lateral veins, sometimes thoroughly scattered adnate pilose, lateral veins slender, 10–12 pairs, prominent on both sides, margin sharply serrulate above middle; terminal blade oblong or broadly lanceolate to elliptic-obovate, 8–15 × 2.5–6 cm, base cuneate or slightly obtuse, apex acuminate; lateral ones smaller. Inflorescences racemose, main rachis unbranched, solitary, longer than petioles, sometimes those on lateral veins longer than leaves. Pedicels ca. 1 mm, slender. Sepals ciliate. Petals oblong-obovate, ca. 1 mm; scales 2-lobed. Filaments slightly hairy at lower part. Fruit red, subglobose, 5–6 mm in diam. Fl. Jul, fr. Oct.

• Forests. S Hainan (Sanya).

8. *Allophylus hirsutus* Radlkofer, Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 38: 228. 1909.

云南异木患 yun nan yi mu huan

Shrubs, 1–4 m tall, dioecious. Branchlets, petioles, and rachis densely brownish yellow hispid. Leaves trifoliolate; petioles 5–11 cm or longer; leaflets with petiolules 5–12 mm; blades brownish yellow when dry, membranous, abaxially densely irregularly and shiny hispid, adaxially sparsely adnate

hispid; terminal blade oblong-lanceolate or elliptic-obovate, 6–18 × 2–6 cm, base cuneate, margin sharply serrate above middle, apex acuminate; lateral ones smaller, obliquely ovate, base obtuse, bilaterally asymmetrical, margin sharply serrate from base. Inflorescences racemose, unbranched; female ones strong, stout, sparsely flowered, nearly as long as or slightly shorter than leaves; male ones slender, densely flowered, nearly as long as petioles. Pedicels 1–2 mm. Petals broadly cuneate, ca. 1.5 mm; scales 2-lobed. Fruit red, broadly obovoid, ca. 9 × 8 mm. Fl. summer, fr. autumn.

Sparse forests. Yunnan (Xishuangbanna) [Cambodia, Thailand].

**9. *Allophylus longipes*** Radlkofer, Sitzungsber. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. München 38: 233. 1909.

长柄异木患 chang bing yi mu huan

Trees, small, or shrubs, to 10 m tall. Branchlets pale white or yellowish gray, subglabrous. Leaves trifoliate; petioles 4–10 cm; leaflets with petiolules 5–10 mm; blades abaxially olive-green, adaxially brown when dry, papery, abaxially with tufts of hairs in lateral vein axils, margin sparsely serrulate above middle; terminal blade lanceolate or narrowly elliptic-lanceolate, 12–24 × 3–9 cm, base cuneate or broadly so, apex caudate-acuminate; lateral ones ovate or broadly ovate, bilaterally asymmetrical. Inflorescences compound racemose, usually with several or numerous branches, solitary, or sometimes accompanied with 1 or 2 unbranched inflorescences, rachis and branches grooved, grayish yellow pubescent; peduncles 3–4.5 cm; female ones ascending, male ones slender and curved. Pedicels 2–3 mm. Petals shortly cuneate, ca. 1.3 mm, claw villous; scales 2-lobed. Filaments slightly stouter proximally. Ovary (2 or)3-lobed, (2 or)3-loculed, lobes often unequal. Fruit red, ellipsoid, 9–10 × 6–7 mm. Fl. summer–autumn, fr. autumn–winter.

Dense forests; 1100–1600 m. S Guizhou, S Yunnan [N Vietnam].

**10. *Allophylus timoriensis*** (Candolle) Blume, Rumphia 3: 130. 1847 [“*timorensis*”].

海滨异木患 hai bin yi mu huan

*Schmidelia timoriensis* Candolle, Prodr. 1: 611. 1824.

Shrubs, 1–3 m tall. Branchlets grayish white, slightly zigzag, strong, stout, glabrous or pilosulose. Leaves trifoliate; petioles 1–6 cm; leaflets with petiolules 5–18 mm; blades abaxially brown and adaxially black when dry, papery or slightly fleshy, broadly ovate, abaxially only with tufts of hairs in lateral vein axils, lateral veins 8 pairs, prominent abaxially; terminal blade 6–10 × 3–6.5 cm, base rounded, margin sparsely toothed, apex acute and mucronate; lateral ones slightly smaller, same as terminal one in shape. Inflorescences compound racemose, usually with one pair of branches at lower part of main rachis, solitary, erect, longer than petioles, glabrous or pilosulose. Pedicels 1–2 mm. Sepals glabrous. Petals spoon-shaped, ca. 1 mm, abaxially villous, apex rounded or slightly emarginate; scales shallowly 2-lobed, densely long hairy. Fruit red, ovoid or subglobose, 8–10 × 7–8 mm. Fl. Jul, fr. Oct–Nov.

Seaside sparse forests or thickets. Hainan, Taiwan [Indonesia, Malaysia, Myanmar, New Guinea, Philippines, Thailand, Timor].

**11. *Allophylus dimorphus*** Radlkofer, Actes Congrès Int. Bot., Amsterdam 1877: 126. 1879.

五叶异木患 wu ye yi mu huan

Shrubs, 2–4 m tall. Stems slender, few branched; branch

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lets green, pubescent. Leaves digitate, (3–)5-foliolate; petioles 5–9 cm, pubescent; leaflets with petiolules 1–1.5 cm, outermost one nearly sessile; blades papery, abaxially with tufts of hairs in lateral vein axils, lateral veins 9 or 10 per side, slightly prominent on both sides; terminal blade broadly lanceolate or narrowly elliptic, 8–18 × 3–6.5 cm, base cuneate, margin sharply serrulate above middle, apex caudate-acuminate; lateral ones smaller, outermost pair usually much smaller or undeveloped. Inflorescences racemose, unbranched, densely flowered, solitary, suberect or sometimes spreading, slightly longer than petioles, densely pubescent; peduncles 1–2 cm. Pedicels 1.5–2 mm. Sepals sparsely pilose at base. Petals spoon-shaped; scales entire. Filaments connate in pairs below middle. Fruit red, globose or subglobose, sparsely hairy. Fl. Sep.

Rubber plantations. Hainan [Philippines, Vietnam].

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