

2. ARCEUTHOBIMUM Marschall von Bieberstein, Fl. Taur.-Caucas. 3: 629. 1819–1820, nom. cons.

油杉寄生属 you shan ji sheng shu

Razoumofskya Hoffmann, nom. rej.

Subshrubs or herbs parasitic on gymnosperms, dioecious. Branches dichotomous or verticillate; stem internodes terete. Leaves reduced to scales, decussate, in 4 ranks, connate. Flowers axillary or terminal on branchlets, decussate or whorled; peduncle absent; pedicel short to nearly absent. Male flower subglobose or ovoid in mature bud; perianth lobes 3 or 4, ± rotate. Anthers sessile, inserted on perianth lobes, circular, 1-loculed, dehiscence transverse; central nectary present. Pollen grains subprolate, 3-lobed to circular in polar section. Female flower ovoid to ellipsoid in mature bud, epigynous; perianth tube short, 2-lobed, adnate to ovary, persistent. Placentation free, central. Style short; stigma obtuse. Berry ovoid or ellipsoid, apex different in texture from base, exocarp smooth, explosively dehiscent at maturity.

About 45 species: temperate and tropical regions of NE Africa, Asia, S Europe, and North America; five species (three endemic) in China.

All members of this genus induce "witches' brooms," which cause their hosts to suffer retarded growth and eventually die.

- 1a. Male perianth lobes 4, ca. 1.5 mm in diam.; fruit ovoid, 4–6 mm; parasites of *Keteleeria evelyniana* and *Picea likiangensis* 1. *A. chinense*
- 1b. Male perianth lobes 3(or 4), 1–2 mm in diam.; fruit ellipsoid, 2–4 mm; parasites of *Juniperus*, *Abies*, *Picea*, and *Pinus*.
 - 2a. Parasites of Cupressaceae (*Juniperus*); plants 5–16 cm tall; male flowers 2–2.5 mm in diam. 5. *A. oxycedri*
 - 2b. Parasites of Pinaceae (*Abies*, *Picea*, *Pinus*); plants 2–10 cm tall; male flowers 1.5–2.5 mm in diam.
 - 3a. Plants 5–15(–20) cm tall; branches longer than 1 cm; male flowers 2–2.5 mm in diam., lobes 1–1.5 mm; parasites of *Pinus densata*, *P. yunnanensis*, *P. griffithii* 2. *A. pini*
 - 3b. Plants usually less than 6 cm tall; branches less than 1 cm; male flowers 1.5–2 mm in diam.; parasites of *Picea* or *Abies*.
 - 4a. Parasites of *Picea*; plants 2–6 cm tall; male perianth lobes ovate, ca. 1 mm 3. *A. sichuanense*
 - 4b. Parasites of *Abies*; plants 0.5–4 cm tall; male perianth lobes subtriangular, ca. 1.2 mm 4. *A. tibetense*

1. *Arceuthobium chinense* Lecomte, Notul. Syst. (Paris) 3: 170. 1915.

油杉寄生 you shan ji sheng

Plants yellowish green or green, 2–8(–12) cm tall. Branches opposite, rarely 3–4(–6)-verticillate; internodes 3–7(–10) mm, base of dominant shoots 1–2 mm in diam. Scale leaves ca. 0.5 mm. Flowers axillary or terminal. Male flower yellow, subglobose in bud, ca. 1 mm, ca. 2 mm in diam. at flowering, with cupular bract; perianth lobes 4, subtriangular, ca. 1.5 mm in diam. Anthers circular, ca. 0.5 mm. Female flower greenish, subglobose in bud, ca. 1 mm; perianth tube ca. 0.8 mm. Style red. Fruiting pedicel 1–1.5 mm. Berry ovoid, 4–6 × 3–4 mm, basal portion glaucous or yellowish green. Fl. Jul–Nov, fr. Oct–Nov next year.

- Coniferous or mixed forests, mountain slopes; 1500–3600 m. Qinghai, SW Sichuan, NW and C Yunnan.

The plants are parasitic on *Keteleeria evelyniana* and *Picea likiangensis*.

2. *Arceuthobium pini* Hawksworth & Wiens, Brittonia 22: 267. 1970.

高山松寄生 gao shan song ji sheng

Plants greenish yellow or greenish, 5–15(–20) cm tall. Branches opposite, rarely 3–4-verticillate; internodes 5–15 mm, base of dominant shoots 1.5–2.5 mm in diam. Scale leaves 0.5–1.5 mm. Male flowers solitary or paired, terminal on branchlets, yellow, subglobose in bud, ca. 1 mm, 2–2.5 mm in diam. at

flowering, with cupular bract; pedicel ca. 0.5 mm; perianth lobes 3(or 4), ovate or elliptic, 1–1.5 mm. Anthers circular, ca. 0.5 mm. Female flower solitary, axillary or terminal on branchlets, greenish, ovoid in bud, ca. 1 mm; perianth tube ca. 0.8 mm. Style red. Fruiting pedicel 1.5–2 mm. Berry ellipsoid, 3–4 × 2–2.5 mm, basal portion greenish yellow. Fl. Apr–Jul, fr. next year Sep–Oct.

- Coniferous or mixed forests, mountain slopes; 2600–3500(–4000) m. SW Sichuan, Xizang, NW Yunnan.

The plants are parasitic on *Pinus densata*, *P. griffithii*, and *P. yunnanensis*.

3. *Arceuthobium sichuanense* (H. S. Kiu) Hawksworth & Wiens, Novon 3: 156. 1993.

云杉寄生 yun shan ji sheng

Arceuthobium pini var. *sichuanense* H. S. Kiu, Acta Phytotax. Sin. 22: 205. 1984.

Plants yellowish green or green, 2–6 cm tall. Branches opposite; internodes 7–8 mm, base of dominant shoots 1–1.5 mm in diam. Scale leaves ca. 1 mm. Male flowers solitary, terminal on branches, yellow, subglobose in bud, ca. 1 mm, 1.5–2 mm in diam. at flowering; pedicel ca. 0.5 mm; perianth lobes 3(or 4), ovate, ca. 1 mm. Anthers circular, ca. 0.3 mm. Female flower solitary, axillary or terminal on branchlets, ovoid in bud. Fruiting pedicel 1–1.5 mm. Berry ellipsoid, 3–4 × 1.5–2 mm, basal portion yellowish. Fl. Jun–Jul, fr. next year Aug–Sep.

- Coniferous forests, mountain slopes; 3400–4100 m. Qinghai,

Sichuan, Xizang (Biru, Yadong) [Bhutan].

The plants are parasitic on *Picea likiangensis* var. *balfouriana* and *P. spinulosa*.

4. *Arceuthobium tibetense* H. S. Kiu & W. Ren, J. Yunnan For. Coll. 1: 42. 1982.

冷杉寄生 leng shan ji sheng

Plants yellowish green or green, 0.5–4 cm tall. Branches opposite; internodes 2.5–6 mm, base of dominant shoots ca. 1.5 mm in diam. Scale leaves ca. 1 mm. Flowers solitary, terminal or axillary. Male flower yellow, subglobose in bud, ca. 2 mm in diam. at flowering; perianth lobes 3(or 4), subtriangular, ca. 1.2 mm. Anthers circular, ca. 0.5 mm. Female flower subglobose in bud, ca. 1 mm. Fruiting pedicel ca. 1 mm. Berry ellipsoid when young, ca. 2.5 × 1.7 mm, glaucous. Fl. May–Jun, fr. next year Jul–Aug.

• Coniferous forests, mountain slopes; 3200–3400 m. Xizang (Mainling, Nyingchi).

The plants are parasitic on *Abies forrestii* and *A. georgei*.

5. *Arceuthobium oxycedri* (Candolle) Marschall von Bieberstein, Fl. Taur.-Caucas. 3: 629. 1819–1820.

圓柏寄生 yuan bai ji sheng

Viscum oxycedri Candolle in Lamarck & Candolle, Fl. Franç., ed. 3, 4: 274. 1805.

Plants yellowish green or olive green, 5–16 cm tall. Branches opposite, rarely 3–4(–6)-verticillate; internodes 10–15 mm, base of main shoots 1.5–5 mm in diam. Scale leaves ca. 1 mm. Flowers terminal on branchlets. Male flowers solitary or 2–3 together, greenish yellow, ovoid in bud, 1–1.5 mm, 2–2.5 mm in diam. at flowering; perianth lobes 3(or 4), ovate, 1–1.4 mm. Anthers circular, ca. 0.5 mm. Female flower single, axillary or terminal on branchlets, ellipsoid in bud, ca. 1 mm. Fruiting pedicel ca. 1 mm. Berry greenish, ellipsoid when young, 2–3 × 2 mm. Fl. Aug–Sep, fr. next year Sep–Oct.

Coniferous forests, scrub, mountain slopes; 3000–4100 m. Qinghai, Xizang [India, Pakistan, Tajikistan, Turkmenistan; N Africa, SW Asia, S Europe].

The plants are parasitic on species of *Juniperus*, including *J. tibetica* and *J. wallichiana*.

