Flora of China 14: 242–517. 2005. [part 1]

ERICACEAE

杜鹃花科 du juan hua ke

Fang Mingyuan (方明渊)[1], Fang Ruizheng (方瑞征 Fang Rhui-cheng)[2], He Mingyou (何明友)[1], Hu Linzhen (胡琳贞 Hu Ling-cheng)[1], Yang Hanbi (杨汉碧 Yang Han-pi)[3], Qin Haining (覃海宁)[3], Min Tianlu (闵天禄 Ming Tien-lu)[2]; David F. Chamberlain[4], Peter F. Stevens[5], Gary D. Wallace[6], Arne Anderberg[7]

Plants usually woody, or herbs, sometimes lacking chlorophyll. Leaves spiral, sometimes decussate, margin often toothed. Inflorescence racemose; bracteoles paired, basal. Flowers (4 or)5-merous. Calyx imbricate. Corolla connate, imbricate. Stamens 10, sometimes with spurs or awns, dehiscing by pores, pollen in tetrads, rarely single. Ovary superior or inferior, placentation axile, rarely parietal, often many ovules per locule. Style ± as long as corolla, slender. Fruit a capsule or berry, rarely a drupe; calyx persistent.

About 125 genera and 4000 species: widely distributed in temperate and subarctic regions, also at high elevations in tropical regions; 22 genera and 826 species (524 endemic) in China.

The Monotropoideae are here included in the Ericaceae; previously in FRPS (56: 157–216. 1990), they were treated as the Pyrolaceae. *Chiogenes,* recorded from China in FRPS (57(3): 69–71. 1991), is here included in *Gaultheria*. Over the last half century, the Empetraceae have usually been separated from, but closely associated with, the Ericaceae. In their ecology, leaf morphology and insertion, rusts, embryology, stamen anatomy, etc., they largely agree with that family. Molecular data place *Empetrum* and its relatives firmly within the Ericaceae, and in particular within the subfamily Ericoideae, in agreement with phytochemical and palynological data, and there they are best recognized as a separate tribe. There are distinctive features of the Empetreae that were responsible for their past familial status, e.g., reduced perianth with separate members, low ovule number, enlarged stigmas, etc. However, these are likely to be derived features associated with wind pollination. See Kron et al. (Bot. Rev. 68: 335–423. 2002) and the recent treatment of the Ericaceae by Stevens et al. (in Kubitzki, Fam. Gen. Vasc. Pl. 6: 145–194. 2004).

Several genera and many species are ornamentals. Some fruits of *Vaccinium* in N China are sweet and edible, but of no particular value to humans. Some species of *Chamaedaphne, Craibiodendron, Leucothoë, Lyonia, Pieris,* and *Rhododendron* contain more or less toxic diterpenes, which are harmful to humans or domestic animals.

Fang Rhuicheng, Yang Hanbi & Chin Tsenli. 1999. Ericaceae (1). *In*: Fang Rhuicheng, ed., Fl. Reipubl. Popularis Sin. 57(1): 1–213; Hu Wenkuang, Hu Lincheng, Fang Mingyuan & He Mingyou. 1994. Ericaceae (2). *In*: Hu Lincheng, Fang Mingyuan, ed., Fl. Reipubl. Popularis Sin. 57(2): 1–438; Hsu Tingzhi, Gao Baochun, Fang Rhuicheng & Huang Shuhua. 1991. Ericaceae (3). *In*: Fang Rhuicheng, ed., Fl. Reipubl. Popularis Sin. 57(3): 1–207; Chou Yiliang & Zhou Ruichang. 1990. Pyrolaceae. *In*: Fang Wenpei & Hu Wenkuang, eds., Fl. Reipubl. Popularis Sin. 56: 157–216; Ming Tien lu. 1980. Empetraceae. *In*: Cheng Mien & Ming Tien lu, eds., Fl. Reipubl. Popularis Sin. 45(1): 60–62.

1a. Herbs to subshrubs; petals free.
  2a. Achlorophyllous plant without green leaves; anthers without pores.
    3a. Fruit a capsule; ovary 5-loculed, with axile placentation ..... 6. *Monotropa*
    3b. Fruit a berry; ovary 1-loculed, with parietal placentation ..... 7. *Monotropastrum*
  2b. Plant usually with green leaves, usually autotrophic; anthers opening by pores.
    4a. Subshrub; leaves along stem; flowers in corymbs or umbels, or solitary; filaments ciliate on lower half; style thick, short ..... 2. *Chimaphila*
    4b. Herb; leaves generally basal; flowers in racemes, or solitary; filaments not ciliate; style slender.
      5a. Flower solitary; capsule opening from tip to base, valves without fibers at margins ..... 3. *Moneses*
      5b. Flowers in racemes; capsule opening from base to tip, valves with fibers at margins.
        6a. Leaves cauline; racemes with flowers on one side; upper portion of scape papillate; disk present ..... 4. *Orthilia*
        6b. Leaves appearing basal; racemes with flowers on all sides; scape not papillate; disk absent ..... 5. *Pyrola*
1b. Plants woody; petals nearly always fused (absent and replaced by petaloid sepals in *Empetrum*).
  7a. Fruit fleshy.
    8a. Ovary superior, free from calyx; seeds 4–9, enclosed in stones.
      9a. Leaf blade linear, margin entire, slightly reflexed; corolla absent, sepals petaloid, free ..... 13. *Empetrum*
      9b. Leaf blade broad, margin serrate or crenate, flat; corolla urceolate, shortly lobed ..... 8. *Arctous*
    8b. Ovary inferior, completely or rarely mostly adnate to hypanthium; seeds separate, numerous.
      10a. Corolla usually short, to 1 cm, urceolate or campanulate, rarely tubular; anthers free; pedicels usually not expanded toward apex; plants usually terrestrial, rarely epiphytic ..... 21. *Vaccinium*

[1] Department of Biology, Laboratory of Systematic Botany, Sichuan University, Chengdu, Sichuan 610064, People's Republic of China.
[2] Kunming Institute of Botany, Chinese Academy of Sciences, Heilongtan, Kunming, Yunnan 650204, People's Republic of China.
[3] Institute of Botany, Chinese Academy of Sciences, 20 Nanxincun, Xiangshan, Beijing 100093, People's Republic of China.
[4] Royal Botanic Garden Edinburgh, 20a Inverleith Row, Edinburgh EH3 5LR, Scotland, United Kingdom.
[5] Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.
[6] Rancho Santa Ana Botanic Garden, 1500 North College Avenue, Claremont, California 91711-3101, U.S.A.
[7] Botany Departments, Swedish Museum of Natural History, P.O. Box 50007, S-104 05 Stockholm, Sweden.

10b. Corolla usually long, (0.5–)2–6 cm, tubular or cylindric, rarely urceolate; anthers weakly connate or free; pedicels usually expanded toward apex, sometimes forming a cup below calyx; plants often epiphytic ..... 22. *Agapetes*

7b. Fruit a capsule.
11a. Persistent calyx ± accrescent and succulent; capsule loculicidal, enclosed in fleshy calyx; anthers with 2–4 awns or minute projections ..... 20. *Gaultheria*
11b. Persistent calyx withered.
12a. Capsule septicidal; anthers without appendages.
13a. Corolla lobes free ..... 11. *Ledum*
13b. Corolla sympetalous.
14a. Corolla actinomorphic or somewhat zygomorphic, funnel-shaped, campanulate, rarely rotate or cylindric, more than 10 mm; stamens exserted, rarely included; leaf blade not linear ..... 12. *Rhododendron*
14b. Corolla actinomorphic, cylindric or urceolate, 4–7(–11) mm; stamens included; leaf blade linear to linear-oblong.
15a. Inflorescence shortly racemose to subcapitate; pedicels very short; corolla cylindric; anthers opening by slits ..... 9. *Diplarche*
15b. Inflorescence umbellate; pedicels elongate, 2–2.5(–4) cm; corolla urceolate; anthers opening by terminal pores ..... 10. *Phyllodoce*
12b. Capsule loculicidal; anthers with or without appendages.
16a. Inflorescence a solitary flower; leaves decussate, imbricate, sessile, scalelike, 5–8 mm ..... 14. *Cassiope*
16b. Inflorescences racemose, paniculate, or umbellate, many flowered, or flowers rarely solitary in *Enkianthus*; leaves spirally arranged, petiolate, leaf blade never scalelike, more than 3 cm.
17a. Anthers tipped with 2 awns or with dorsal spurs; filaments straight; leaf margin usually serrate.
18a. Anther awns reflexed; inflorescences paniculate ..... 17. *Pieris*
18b. Anther awns erect or spreading; inflorescences racemose, umbellate, or corymbose.
19a. Inflorescences umbellate or corymbose, rachis abbreviated or nearly absent; corolla broadly campanulate to urceolate; seeds winged ..... 1. *Enkianthus*
19b. Inflorescences racemose, rachis elongate; corolla suburceolate to tubular; seeds angled or rounded ..... 15. *Leucothoë*
17b. Anthers usually without appendages; filaments geniculate, rarely straight; leaf margin entire.
20a. Young shoots and both surfaces of leaves lepidote ..... 19. *Chamaedaphne*
20a. Young shoots and both surfaces of leaves not lepidote.
21a. Corolla tubular or urceolate; capsule subglobose, less than 5 mm in diam., sutures thickened; seeds wingless ..... 18. *Lyonia*
21b. Corolla shortly campanulate; capsule depressed globose, more than 10 mm in diam., sutures not thickened; seeds winged on 1 side ..... 16. *Craibiodendron*

1. **ENKIANTHUS** Loureiro, Fl. Cochinch. 1: 276. 1790.

吊钟花属 diao zhong hua shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); Peter F. Stevens

Shrubs or small trees, deciduous, rarely evergreen. Leaves clustered at ends of twigs, petiolate; leaf blade serrate or subentire. Inflorescence terminal, in umbels or corymbose racemes, flowers rarely solitary or in pairs, 5-merous. Corolla broadly campanulate to urceolate; lobes short. Stamens much shorter than corolla; filaments flattened, distinctly dilated towards base; anthers oblong, thecae each dehiscing by an elongate slit, awned at apex; pollen grains single. Ovary superior, with few ovules per locule; stigma truncate. Capsule loculicidal, ovoid. Seeds several or one; testa lamellate-winged.

Twelve species: from the E Himalayas through China to Japan, extending south to Indochina; seven species (four endemic) in China.

1a. Flowers solitary, rarely in pairs; leaves abaxially puberulous, adaxially glabrous ..... 3. *E. pauciflorus*
1b. Flowers in corymbose racemes or umbels; leaves glabrous, or with other than unicellular hairs.
2a. Pedicels in fruit pendulous; flowers in corymbose racemes.
3a. Leaves glabrous on both surfaces; pedicels glabrous or pubescent ..... 1. *E. chinensis*
3b. Leaves abaxially densely or sparsely hispidulous on veins, adaxially sparsely shortly setulose and puberulous on veins or glabrous; pedicels densely pubescent, sometimes also with glandular hairs ..... 2. *E. deflexus*
2b. Pedicels in fruit erect; flowers in umbels.
4a. Corolla urceolate; leaf margin ciliate, both surfaces glabrous ..... 7. *E. perulatus*
4b. Corolla campanulate; leaf margin denticulate or entire, both surfaces glabrous or with hairs.
5a. Leaf margin denticulate from base to apex, leaf blade sometimes hispidulous ..... 4. *E. serrulatus*
5b. Leaf margin entire or only sinuolate-serrulate towards apex; leaf blade never hispidulous.

6a. Corolla broadly campanulate; leaf with fine veins distinctly raised on both surfaces; both surfaces glabrous ..... 5. *E. quinqueflorus*

6b. Corolla tubular-campanulate; leaf with fine veins inconspicuous on both surfaces; abaxially densely floccose towards base on midvein ..... 6. *E. serotinus*

1. Enkianthus chinensis Franchet, J. Bot. (Morot) 9: 371. 1895.

灯笼吊钟花 deng long diao zhong hua

Bodinierella cavaleriei H. Léveillé; *Enkianthus brachyphyllus* Franchet; *E. cerasiflorus* (H. Léveillé) H. Léveillé; *E. leveilleanus* Craib; *E. rosthornii* Diels; *E. sinohimalaicus* Craib; *Zenobia cerasiflora* H. Léveillé.

Shrubs or small trees, deciduous, 2.5–8 m tall. Twigs glabrous. Leaf petiole 0.5–1.5 cm, glabrous; leaf blade elliptic or oblong-elliptic, ca. 1.5 × 1.5–2.5 cm, papery to thinly papery, glabrous, midvein raised abaxially, impressed adaxially; secondary and fine veins inconspicuous, base cuneate or broadly cuneate, margin serrulate, apex acute. Inflorescences corymbose-racemose or umbellate; rachis 3–7 cm, slender, 10–20-flowered, glabrous or pubescent. Pedicel 1.5–3 cm, slender, glabrous or pubescent. Calyx glabrous or slightly ciliolate; lobes triangular, 2–3 mm. Corolla yellowish orange-striped and red, broadly campanulate, 7–10 mm; lobes slightly recurved, usually dark red. Filaments puberulous. Ovary glabrous; style glabrous or pubescent. Capsule pendulous, 4–7 mm; stalk distinctly recurved, 1–3.5 cm. Fl. May–Jul, fr. Jul–Sep.

● Mixed forests, disturbed forests, thickets, sunny mountain slopes, mountain ridges; 900–1200(–3100) m. Anhui, Fujian, Guangdong, Guizhou, Guangxi, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang.

2. Enkianthus deflexus (Griffith) C. K. Schneider, Ill. Handb. Laubholzk. 2: 521. 1911.

毛叶吊钟花 mao ye diao zhong hua

Shrubs or trees, deciduous, 1.5–5 m tall. Twigs subglabrous. Leaf petiole 0.5–1.5 cm, pubescent, hispidulous, or glabrous; leaf blade elliptic, obovate-elliptic, or oblong-elliptic, 3–7 × 1.5–3 cm, thinly papery, abaxially hispidulous on veins or glabrescent, adaxially sparsely shortly setulose and puberulous on veins or glabrous, midvein raised abaxially, adaxially slightly impressed, secondary and fine veins slender and inconspicuous, base cuneate to broadly cuneate, margin serrulate, apex acute. Inflorescence corymbose-racemose; rachis to 5–7 cm, many flowered, densely pubescent or scattered glandular pubescent. Pedicel flattened, terete, 1.5–3 cm, slender, densely pubescent, with glandular hairs or not. Calyx ciliolate; lobes ovate-triangular, 2–3 mm. Corolla white, brick red, or pale yellow, broadly campanulate, 0.8–1.5 cm; lobes erect, broadly triangular. Filaments puberulous. Ovary shortly setulose, pubescent, or glabrous; style pubescent to glabrous. Capsule pendulous, 5–7 mm; stalk erect or distinctly recurved, 2.5–3.5 cm. Fl. Apr–Jul, fr. Jun–Jul.

Pinus or *Quercus* forests, mixed forests on mountain slopes, disturbed forests, thickets; 1000–3300(–3900) m. S Gansu, Guizhou, Guangdong, Hubei, Sichuan, Xizang, Yunnan [Bhutan, NE India (Darjiling), Myanmar, Nepal, Sikkim].

1a. Leaf blade with conspicuous hairs on both surfaces, abaxially hispidulous on veins ..... 2a. var. *deflexus*

1b. Leaf blade glabrescent on both surfaces or abaxially very sparsely hispidulous on midvein ..... 2b. var. *glabrescens*

2a. Enkianthus deflexus var. **deflexus**

毛叶吊钟花(原变种) mao ye diao zhong hua (yuan bian zhong)

Rhodora deflexa Griffith, Itin. Pl. Khasyah Mts. [Posthum. Papers 2]: 148. 1848; *Enkianthus deflexus* var. *variegatus* (Forrest) Forrest; *E. himalaicus* J. D. Hooker & Thomson; *E. sulcatus* Craib; *E. variegatus* Forrest.

Leaf petiole pubescent or hispidulous; leaf blade with conspicuous hairs on both surfaces, abaxially hispidulous on veins. Inflorescence rachis and pedicels pubescent.

Pinus or *Quercus* forests, disturbed forests, thickets; 1000–3300(–3900) m. Guizhou, Guangdong, Hubei, Sichuan, Xizang, Yunnan [Bhutan, NE India (Darjiling), Myanmar, Nepal, Sikkim].

2b. Enkianthus deflexus var. **glabrescens** R. C. Fang, Novon 9: 162. 1999.

腺梗吊钟花 xian geng diao zhong hua

Leaf petiole glabrous; leaf blade glabrescent on both surfaces or abaxially sparsely hispidulous on midvein. Inflorescence rachis and pedicels pubescent, also with glandular hairs.

● Mixed forests on mountain slopes; ca. 1600 m. S Gansu (Wenxian).

3. Enkianthus pauciflorus E. H. Wilson, Gard. Chron., ser. 3, 41: 363. 1907.

少花吊钟花 shao hua diao zhong hua

Shrubs 1–3 m tall. Twigs puberulous. Leaf petiole 2–6 mm, puberulous, winged in upper part; leaf blade elliptic or obovate, 1.5–3 × 1–1.2 cm, thinly papery, abaxially puberulous, adaxially glabrous, midvein raised abaxially, inconspicuous adaxially, secondary and fine veins slightly distinct abaxially, inconspicuous adaxially, base cuneate, margin serrulate, apex acuminate, mucronate. Flowers solitary, rarely in pairs, axillary. Pedicel flattened, ca. 1 cm, puberulous. Calyx glabrous; lobes ovate, 1–1.5 mm, apex acute. Corolla yellow with red stripes, or red, urceolate, 8–10 mm; lobes usually reflexed, short. Filaments pubescent. Ovary glabrous or puberulous; style glabrous. Capsule 3–5 mm; stalk distinctly recurved, ca. 1 cm, slender. Fl. May, fr. Jun–Oct.

● Alpine thickets, humus-clad cliffs on mountains; 3000–3700 m. Sichuan, Yunnan.

4. Enkianthus serrulatus (E. H. Wilson) C. K. Schneider, Ill. Handb. Laubholzk. 2: 519. 1911.

齿缘吊钟花 chi yuan diao zhong hua

Enkianthus quinqueflorus Loureiro var. *serrulatus* E. H. Wilson, Gard. Chron., ser. 3, 41: 344. 1907; *E. calophyllus* T. Z. Hsu; *E. hirtinervus* M. Y. Fang; *E. serrulatus* var. *hirtinervus* (M. Y. Fang) T. Z. Hsu; *E. serrulatus* var. *sichuanensis* (T. Z. Hsu) R. C. Fang; *E. sichuanensis* T. Z. Hsu.

Shrubs or small trees, deciduous, 3–6 m tall. Twigs glabrous. Leaf petiole 6–10 mm, glabrous or sparsely hispidulous; leaf blade elliptic, oblong-elliptic, or obovate-elliptic, 5–8 × 1.6–2.6 cm, papery, both surfaces hispidulous or glabrous, or abaxially densely floccose toward base and adaxially glabrous, midvein strongly raised abaxially, flat to slightly raised adaxially, secondary and fine veins slightly raised abaxially, inconspicuous adaxially, base broadly cuneate to narrowly obtuse, margin denticulate, apex shortly acuminate. Inflorescence umbellate, 2–6-flowered. Pedicel 1–2 cm, glabrous or pubescent. Calyx lobes triangular, ca. 2.2 mm, glabrous or ciliate. Corolla white, campanulate, ca. 1 cm; lobes recurved. Filaments pubescent. Ovary glabrous or pubescent; style glabrous. Capsule 5-angled, 7–10 mm; stalk erect, 2–3 cm. Fl. Apr, fr. May–Oct.

● Forest margins, mountain slopes, roadsides; 800–1800 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang.

5. Enkianthus quinqueflorus Loureiro, Fl. Cochinch. 1: 277. 1790.

吊钟花 diao zhong hua

Enkianthus cavaleriei H. Léveillé; *E. dunnii* H. Léveillé; *E. quinqueflorus* var. *ciliatoserrulatus* P. C. Huang & K. M. Li; *E. uniflorus* Bentham; *E. xantoxanthus* H. Léveillé.

Shrubs or small trees, deciduous, 1–3(–10) m tall. Twigs glabrous. Leaf petiole 0.5–1.5 cm, glabrous; leaf blade elliptic, elliptic-lanceolate, or obovate-lanceolate, rarely lanceolate, 5–15 × 1.6–5 cm, leathery, glabrous, midvein abaxially raised, adaxially ± flat, secondary and fine veins distinctly raised on both surfaces, base cuneate, margin entire, sometimes sparsely sinuolate-serrulate towards apex, apex acuminate or shortly abruptly acuminate. Inflorescence umbellate, 3–8-flowered. Pedicel 1–2 cm, glabrous. Calyx glabrous; lobes ovate-lanceolate or triangular-lanceolate, 2–3 mm. Corolla pink, red, or white, broadly campanulate, 0.8–1.2 cm; lobes recurved, triangular-ovate. Stamens ca. 4 mm; filaments pubescent. Ovary glabrous or densely pubescent. Capsule 5-angled, 7–12 mm; stalk erect, 2–3.5 mm. Fl. Jan–Jun, fr. Mar–Sep.

Mixed forests, hillsides, dry places; 600–1500(–2400) m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangxi, Sichuan, Yunnan [Vietnam].

6. Enkianthus serotinus Chun & W. P. Fang, Acta Phytotax. Sin. 6: 159. 1957.

晚花吊钟花 wan hua diao zhong hua

Enkianthus tubulatus P. C. Tam.

Shrubs deciduous, 1.5–4 m tall. Twigs pilose or subglabrous. Leaf petiole 1–2 cm, glabrous; leaf blade elliptic, rhombic-elliptic, or lanceolate, 5–9 × 1.7–4 cm, thinly leathery, glabrous except abaxially densely floccose towards base on midvein, midvein distinct on both surfaces, secondary and fine veins inconspicuous on both surfaces, base cuneate, margin entire or sinuolate-serrulate towards apex, apex acuminate or abruptly acuminate. Inflorescence umbellate, 2–7-flowered. Pedicel recurved, 1–1.5 cm, pilose. Calyx glabrous; lobes lanceolate, 2.5–3 mm. Corolla white, tubular-campanulate, gibbous at base, 8–9 mm; lobes recurved, broadly ovate, ciliate. Filaments pilose. Ovary glabrous. Capsule 8–11 mm tall; stalk erect, 2–3.5 cm. Fl. Apr–Jun, fr. Jul–Sep.

● Forests, thickets on slopes; 800–1500 m. Guangdong, Guangxi, Guizhou, Sichuan, Yunnan.

7. Enkianthus perulatus C. K. Schneider, Ill. Handb. Laubholzk. 2: 520. 1911.

台湾吊钟花 tai wan diao zhong hua

Enkianthus perulatus var. *taiwanianus* (S. S. Ying) Y. C. Liu; *E. taiwanianus* S. S. Ying.

Shrubs deciduous, to 4 m tall. Twigs glabrous. Leaf petiole 1–2 cm, glabrous; leaf blade oblong, obovate-oblong, or oblong-lanceolate, 4–6 × ca. 1.5 cm, papery, glabrous except ciliate at margin, hairs 1–1.5 mm, midvein raised abaxially, impressed adaxially, base attenuate-cuneate or cuneate, margin and midvein ciliate, apex acuminate, mucronate. Inflorescence umbellate, several flowered. Pedicel 0.8–1.2 cm. Calyx lobes triangular, 2–3 mm. Corolla white, urceolate, 8–9 mm; lobes green, ovate-triangular, 1–1.2 mm. Stamens ca. 2/3 as long as corolla; filaments villous at base. Ovary glabrous. Capsule unknown.

Fagus forest margins; 1100–1600 m. N Taiwan (Taoyuan) [Japan].

This is a rare species.

2. CHIMAPHILA Pursh, Fl. Amer. Sept. 1: 279. 1814.

喜冬草属 xi dong cao shu

Qin Haining (覃海宁); Peter F. Stevens

Chimaza R. Brown ex de Candolle; *Pipseva* Rafinesque; *Pseva* Rafinesque.

Herbs perennial, decumbent or shrubs dwarf, erect, evergreen. Leaves opposite or subverticillate, shortly petiolate, often crowded; leaf blade leathery, margin serrate. Flowers solitary, terminal, or 1 or 2 on simple or branched, bracteate peduncles, nodding, regular. Sepals 5, persistent. Petals 5, concave. Filaments pilose; anthers opening by pores. Ovary depressed-globose, 5-locular; style obconic, straight, very short. Capsules depressed-globose, long persistent, erect. $n = 13$.

Five species: Bhutan, China, Japan, Korea, Russia; Europe, North America, Central America (Mexico); three species (one endemic) in China.

1a. Flowers 2–7, rarely solitary; bracts broadly linear; sepals ovate-orbicular, ca. as long as wide ..... 3. *C. umbellata*

1b. Flower usually solitary; bracts lanceolate or ovate-elliptic; sepals narrowly lanceolate or obovate, ca. as long as to 2 × as long as wide.
  2a. Bracts broadly ovate-lanceolate; sepals 4–6 mm ..... 1. *C. japonica*
  2b. Bracts elliptic; sepals 1.5–2 mm ..... 2. *C. monticola*

1. Chimaphila japonica Miquel, Ann. Mus. Bot. Lugduno-Batavi 2: 165. 1866.

喜冬草 xi dong cao

Chimaphila astyla Maximowicz; *C. fukuyamae* Masamune.

Herbs perennial, to 15 cm tall. Rhizome descending or creeping, somewhat short, slender, 0.5–1 mm in diam., sparsely branched. Aerial stems erect, 0.5–2 mm in diam. Leaves in 2–5 subverticils of 2–4(–6) each, alternating with 5–7 persistent or caducous scales. Petiole 3–10 mm, glabrous; leaf blade abaxially pale green, rather shiny, adaxially deep green, not shiny, with paler or white midvein, lanceolate to broadly lanceolate, ovate, or broadly elliptic, 1–3.5 cm × 3–15 mm, leathery, glabrous, base rounded to subacute, margin serrate, apex acute or rarely obtuse, mucronate. Flower usually solitary, usually not opening fully. Peduncle erect, 2–5.5(–7) cm, slender, 0.2–0.6 mm in diam., papillose, rarely glabrous, 1(or 2)-flowered. Bracts 1–3, on upper part of peduncle, broadly ovate-lanceolate, 4–7 × 1–3 mm, membranous, base narrowed, sometimes into short stalk, margin irregularly toothed. Sepals 5(or 6), white with black veins when dry, narrowly lanceolate, 4–6(–7) × 1.5–3 mm, membranous, margin irregularly toothed, apex acute, rarely obtuse. Petals white, obovate-orbicular, 6–8 × 3–6 mm, concave, margin irregularly toothed. Stamens: lower dilated portion of filaments obovoid, pilose at margin and abaxially; anthers 1.2–2 mm, without distinct tubes, apex truncate. Ovary glabrous; stigma rounded with 5 undulate teeth, 1.5–2.5 mm in diam. Capsules 4–7 mm in diam. Seeds fusiform to oblong. Fl. Jun–Aug, fr. Sep–Oct.

Common, mainly in dry forests; sea level to 3000 m. Anhui, Guizhou, Hubei, Jilin, Liaoning, Shaanxi, Shanxi, Sichuan, Taiwan, Xizang, Yunnan [Bhutan, Japan, Korea, Russia (Sakhalin)].

2. Chimaphila monticola Andres, Acta Horti Gothob. 1: 174. 1924.

川西喜冬草 chuan xi xi dong cao

Herbs suffruticose, to 15 cm tall. Rhizomes long creeping. Aerial stems 10–20 cm long. Leaves opposite and verticillate; petiole 4–7 mm; leaf blade deep green, with paler midvein adaxially, narrowly to broadly elliptic, 1.5–4.6 cm × 6–25 mm, subleathery, base cuneate, margin few toothed, apex acute, mucronate. Flower solitary, or inflorescence 2- or 3-flowered, white, ca. 1 cm in diam.; peduncle 3–7 cm, papillose; bracts elliptic, ca. 3 mm. Sepals obovate, 1.5–2 × ca. 2 mm. Petals oblong-orbicular, 7–8 × ca. 5 mm. Stamens ca. 4 mm. Style sessile, obconoidal; stigma peltate. Capsules depressed-globose, ca. 5 mm in diam. Fl. Sep, fr. unknown.

● Moss-rich virgin forests, mossy ground beneath *Tsuga* canopies; 2600–3000 m. Sichuan, Taiwan.

1a. Plant to 15 cm tall; largest leaf broadly elliptic, 2.3–4.6 × 1.3–2.5 cm; inflorescence (1- or)2- or 3-flowered ..... 2a. subsp. *monticola*
1b. Plant to 10 cm tall; largest leaf narrowly elliptic, 1.5–2.5 × 0.6–1.1 cm; inflorescence 1- or 2-flowered ..... 2b. subsp. *taiwaniana*

2a. Chimaphila monticola subsp. **monticola**

川西喜冬草(原亚种) chuan xi xi dong cao (yuan ya zhong)

Plant usually to 15 cm tall. Largest leaf broadly elliptic, 2.3–4.6 × 1.3–2.5 cm. Inflorescence (1- or)2- or 3-flowered. Fl. Sep.

● Moss-rich virgin forests; ca. 3000 m. Sichuan.

2b. Chimaphila monticola subsp. **taiwaniana** (Masamune) H. Takahashi, J. Jap. Bot. 65: 376. 1990.

台湾喜冬草 tai wan xi dong cao

Chimaphila taiwaniana Masamune, Trans. Nat. Hist. Soc. Formosa 23: 205. 1933; *C. japonica* Miquel var. *taiwaniana* (Masamune) C. F. Hsieh; *C. monticola* var. *taiwaniana* (Masamune) S. S. Ying.

Plant usually to 10 cm tall. Largest leaf narrowly elliptic, 1.5–2.5 cm × 6–11 mm. Inflorescence 1- or 2-flowered.

● Mossy ground beneath *Tsuga* canopies; 2600–3000 m. Taiwan.

3. Chimaphila umbellata (Linnaeus) W. Barton, Veg. Mater. Med. U.S. 1: 17. 1817.

伞形喜冬草 san xing xi dong cao

Pyrola umbellata Linnaeus, Sp. Pl. 1: 396. 1753; *Chimaphila corymbosa* Pursh; *P. corymbosa* (Pursh) Bertoloni.

Shrubs or herbs, to 15 cm tall, clonal, often forming extensive mats. Rhizome long creeping, 1–2 mm in diam., branched. Aerial stems erect or ascending, 1–2.2 mm in diam., simple or branched, angled, glabrous. Leaves cauline, in 2–6 subverticils of 4–9 each, alternating with caducous scales; petiole 3–6 mm, glabrous; leaf blade abaxially pale green, adaxially deep green, oblanceolate, 1–5 cm × 6–8 mm, thickly leathery, shiny, adaxially glabrous and with veins impressed, base cuneate, margin serrate above middle, apex obtuse to subacute. Peduncle erect, 3–6 cm, papillose, 2–7-flowered. Bract broadly linear, 3–4 mm. Sepals 5, persistent, ovate-orbicular, 1–2 × 1–2 mm, margin irregularly toothed, ciliate. Petals white, sometimes rosy, suborbicular, 4–6 × 3–5 mm, concave, margin irregularly toothed, opening fully. Stamens: lower dilated portion of filaments broadly ellipsoid, sparsely papillose; anthers 1.5–2.3 mm, papillate at base, tubes short, pores ca. 0.4 mm wide. Ovary longitudinally papillose, 5-loculed; stigma rounded, with 5 shallow lobes, 1.5–2.5 mm in diam. Capsules 4–7 mm in diam., fibers absent or oblong, 0.6–0.7 mm. Fl. Jul, fr. Sep–Oct. $2n = 26$.

Dry coniferous or deciduous broad-leaved forests; low elevations. Jilin, Liaoning, Nei Mongol [Japan, Russia; widely distributed elsewhere in N temperate zone].

Chimaphila umbellata is an evergreen subshrub occurring princi-

pally in the coniferous forests of the temperate regions of the N hemisphere. This species has been divided into five geographically delimited infraspecific taxa, and only the typical subsp. *umbellata* is distributed in China.

3. MONESES Salisbury ex S. F. Gray, Nat. Arr. Brit. Pl. 2: 403. 1821.

独丽花属 du li hua shu

Qin Haining (覃海宁); Peter F. Stevens

Bryophthalmum E. Meyer; *Odostima* Rafinesque.

Herbs perennial, small, glabrous, stoloniferous. Leaves radical, petiolate, leathery, serrulate. Flower solitary, terminal on long stalk. Sepals 5, deeply lobed, persistent. Petals spreading, white or pink, orbicular. Stamens (8–)10; filaments subulate, base glabrous; anthers with tubes, opening by 2 apical pores; disk obscure. Ovary globose or subglobose; ovules on thickened placentas on inner angles of loculi; style straight, apex clavate; stigma 5-toothed. Seeds small, testa elongated at both ends. $n = 13$.

One or two species: Asia, Europe, North America; one species in China.

1. Moneses uniflora (Linnaeus) A. Gray, Man. Bot. 273. 1848.

独丽花 du li hua

Pyrola uniflora Linnaeus, Sp. Pl. 1: 397. 1753; *Bryophthalmum uniflorum* (Linnaeus) E. Meyer; *Chimaphila rhombifolia* Hayata; *Moneses grandiflora* Salisbury; *M. rhombifolia* (Hayata) Andres.

Herbs evergreen. Rhizome creeping, slender, 0.2–0.6 mm in diam.; roots long, slender, branched. Aerial stems erect or ascending, terete to angular, 1–5 cm, 0.6–1 mm in diam., not branched, glabrous. Leaves in 3 or 4 subverticils of 2 or 3 each, alternating with ca. 5 scales; petiole (0.5–)1–1.5 cm; leaf blade abaxially pale green, adaxially deep green and slightly shiny, broadly rhombic, 1–1.6 × 1–1.5 cm, abaxially glabrous, base subrounded to broadly cuneate, margin minutely toothed, apex rounded to obtuse. Flower nodding, regular, opening fully. Scape erect, (4–)5–10 cm tall, 1-flowered, glabrous. Bracts 1 or 2 on upper part of scape, 4–5 × ca. 2 mm, ciliolate. Sepals (4 or)5, ovate-elliptic, ca. 2.5 mm, ciliolate, apex rounded. Petals (4 or)5, white, orbicular to broadly ovate, sessile. Stamens (8–)10; anthers 3–4 mm, tubes distinct and strongly curved. Ovary subglobose; style 4–5 mm; stigma peltate with 5 distinct marginal papillae. Capsules subglobose, 5–6 mm in diam., fibers absent at margin. Seeds narrowly fusiform; testa generally with 7 or 8 cells along longest axis, inner testa walls with scalariform pits. Fl. Jul, fr. Sep. $2n = 26$.

Moist mossy coniferous forests, more rarely in wet *Betula* or *Pinus* woods; middle elevations. Gansu, Heilongjiang, Jilin, Shanxi, N Sichuan, Taiwan, Xinjiang, NW Yunnan [Japan, N Korea, Mongolia, Russia; widely distributed in N temperate and subarctic zones, particularly Europe].

4. ORTHILIA Rafinesque, Autik. Bot. 103. 1840.

单侧花属 dan ce hua shu

Qin Haining (覃海宁); Peter F. Stevens

Actinocyclus Klotzsch (1857), not Ehrenberg (1837, fossil); *Ramischia* Opiz ex Garcke.

Subshrubs evergreen, herbaceous, small. Leaves spiral or subverticillate at middle of stem, thin. Inflorescence racemose, small; scape small papillose. Flowers 4–15 along one side of raceme, small. Petals not persistent. Anthers lacking tubules. Disk 10-lobed. Stamens 10, erect, projecting; tubes absent. Styles erect, slender; stigmas peltate. Capsule pubescent at margin of valve.

One or two species: circumboreal; two species in China.

1a. Leaves broadly ovate, 1.2–2.3 cm, apex obtuse or broadly rounded; inflorescences 4–8-flowered ..... 1. *O. obtusata*
1b. Leaves oblong-ovate, 2.2–3.7 cm, apex acute; inflorescences 8–15-flowered ..... 2. *O. secunda*

1. Orthilia obtusata (Turczaninow) H. Hara, J. Jap. Bot. 20: 328. 1944.

钝叶单侧花 dun ye dan ce hua

Pyrola secunda Linnaeus var. *obtusata* Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 21(4): 507. 1848; *Orthilia nummularia* (Ruprecht) Y. L. Chou; ?*O. obtusata* var. *xizangensis* Y. L. Chou; *O. secunda* (Linnaeus) House var. *nummularia* (Ruprecht) H. Hara; *O. secunda* subsp. *obtusata* (Turczaninow) Böcher; *O. secunda* var. *obtusata* (Turczaninow) House; *Pyrola nummularia* (Ruprecht) Ruprecht ex Komarov; *P. obtusata* (Turczaninow) Turczaninow ex Komarov; *P. secunda* var. *nummularia* Ruprecht; *P. secunda* subsp. *obtusata* (Turczaninow) Hultén; *P. secunda* var. *pumila* Chamisso; *Ramischia obtusata* (Turczaninow) Freyn; *R. secunda* (Linnaeus) Garcke subsp. *obtusata* (Turczaninow) Andres.

Shrubs evergreen, herbaceous, 4–15 cm high. Rhizome long branched. Leaves subverticillate at base of stem; petiole 0.5–1.5 cm; leaf blade dark green abaxially, light green adaxially, broadly ovate, 1.2–2.3 × 1–2 cm, thinly leathery, base rounded or obtuse to truncate, margin crenulate-serrulate, apex obtuse or nearly rounded. Scape slender, loosely and minutely papillose, scales 1–3 at base, ovate-lanceolate, 3–5 mm. Raceme 1.5–4 mm, with 4–8 rather densely arranged flowers along one side. Bracts broadly lanceolate, 2–3 mm, mem-

branous, apex abruptly acute. Pedicel ca. 2 mm, slender, prominently papillose. Sepals ovate-orbicular, ca. 1 mm, margin minutely toothed, apex obtuse. Petals broadly elliptic, 4–5 × 2–3 mm, margin toothed. Anthers 1.5–1.8 mm, apex truncate; pores 0.6–0.9 mm wide. Style exserted, straight, (1.5–)2–4 mm; stigma peltate with 5 shallow lobes. Capsules depressed-globose, ca. 4 mm in diam. Fl. Jul, fr. Jul–Aug. 2*n* = 38.

Coniferous forests. Gansu, Heilongjiang, Nei Mongol, Qinghai, Shanxi, N Sichuan, Xinjiang, Xizang [Mongolia, ?Russia (Siberia)].

2. Orthilia secunda (Linnaeus) House, Amer. Midl. Nat. 7: 134. 1921.

单侧花 dan ce hua

Pyrola secunda Linnaeus, Sp. Pl. 1: 396. 1753; *Actinocyclus secundus* (Linnaeus) Klotzsch; *Orthilia parvifolia* Rafinesque; *P. secunda* var. *vulgaris* Turczaninow; *Ramischia secunda* (Linnaeus) Garcke; *R. secundiflora* Opiz.

Shrubs evergreen, herbaceous. Rhizome long creeping, slender, 0.5–1 mm in diam., woody, branched. Stems erect or ascending, 2–10 cm, 0.8–1.5 mm in diam., simple, angular, longitudinally minutely papillose. Leaves in 1–3 subverticils of 2–4 each, alternating with 5–7 scales; petiole 1–2 cm, minutely papillose; leaf blade pale green abaxially, light green adaxially, oblong-ovate to broadly ovate or elliptic, 2.2–3.7 × 1.4–2.6 cm, thinly leathery to herbaceous, abaxially glabrous, adaxially slightly shiny, base obtuse to truncate, margin crenulate-serrulate, apex acute to subobtuse or mucronulate. Scape 7–14 cm tall, slender, 0.4–1 mm in diam., loosely and minutely papillose, angled; scales 5–8 at middle and base, narrowly ovate or broadly lanceolate, 2–5 mm. Raceme with 8–15 rather densely arranged flowers along one side. Bracts broadly oblanceolate or broadly lanceolate, 3–5 mm, membranous, somewhat hyaline-margined, apex abruptly acute. Pedicel ca. 3 mm, slender, rather prominently papillose. Sepals overlapping at base, depressed-orbicular, 0.8–1 mm, margin minutely toothed, apex obtuse. Petals erect, greenish white, 3–5 mm. Anthers 1–1.5 mm, apex truncate; pores 0.3–0.4 mm wide. Style exserted, straight or slightly curved, ca. 4 mm; stigma peltate with 5 shallow lobes. Capsules 5-angular, ca. 4 mm in diam. Seeds with thin testa prolonged at both ends, fusiform to oblong; testa generally with 6–8 cells along longest axis. Fl. Jul–Aug, fr. Sep–Oct. 2*n* = 38.

Deciduous broad-leaved or subalpine coniferous forests; sea level to 3200 m. Heilongjiang, Jilin, Liaoning, Nei Mongol, Xinjiang [Japan, Kashmir, N Korea, Mongolia, Russia; widely distributed in N temperate and subarctic zones].

5. PYROLA Linnaeus, Sp. Pl. 1: 396. 1753.

鹿蹄草属 lu ti cao shu

Qin Haining (覃海宁); Peter F. Stevens

Amelia Alefeld; *Braxilia* Rafinesque; *Erxlebenia* Opiz ex Rydberg; *Thelaia* Alefeld.

Herbs suffruticose, evergreen, erect, glabrous. Rootstock long, slender, branched, with sparse fine roots. Aerial stem ascending, not branched, scaly at base. Leaves in a rosette at base of caudex, long petiolate; leaf blade abaxially light green, adaxially green, margin entire or serrate. Scapes long, slender, with scalelike bracts at base. Flowers many, nodding, in racemes. Calyx 5-lobed, persistent. Stamens glabrous; anthers opening by pores. Ovary depressed-globose; style exserted, usually curved distally and dilated apically into a ring; stigma capitate, shortly 5-lobed. Capsules nodding, valves connected by fibers at valve margins. Seeds many, small, with thin testa prolonged at both ends. *n* = 23, 46.

Between 30 and 40 species: N temperate regions, extending south to Indonesia (N Sumatra); 26 species (15 endemic) in China.

Pyrola chouana Chang Y. Yang (Bull. Bot. Res., Harbin 5: 167. 1985) was described from N Xinjiang (Burqin). However, we have seen no specimens and are therefore unable to treat it in this account. Further revision is necessary.

1a. Leaves reniform to cordate-ovate, base cordate.
  2a. Leaves cordate-ovate, adaxially green, abaxially purplish red, margin crenate; calyx lobes triangular; bracts ovate ..... 3. *P. atropurpurea*
  2b. Leaves reniform or reniform-orbicular, adaxially dark green, abaxially light green, margin sinuate; calyx lobes suborbicular; bracts narrowly lanceolate ..... 19. *P. renifolia*
1b. Leaves not as above.
  3a. Corolla purplish red or only brownish purple outside.
    4a. Plants 8–10 cm tall; leaves 1.8–2.5 × 1.2–1.7 cm; anthers yellow ..... 13. *P. markonica*
    4b. Plants taller than 15 cm; leaves ca. 2.5 × 1.7 cm or more; anthers dark purple or red.
      5a. Leaves oblong or oblong-ovate; scale-leaf at base of scape narrowly ensiform; sepals oblong, 2.5–3 mm; style not exserted ..... 6. *P. corbieri*
      5b. Leaves suborbicular, ovate, or ovate-elliptic; scale-leaf at base of scape narrowly oblong or ovate-oblong; sepals triangular-lanceolate, 3.5–5 mm; style exserted ..... 2. *P. asarifolia*
  3b. Corolla white, green, yellow, or yellowish green, sometime pinkish red.
    6a. Leaves only 1(or 2).
      7a. Leaves ovate-oblong or elliptic, 1.5–2(–2.5) × 0.8–1(–1.2) cm; sepals lanceolate; style 8–10 mm ..... 11. *P. japonica*
      7b. Leaves broadly elliptic or suborbicular, 2.7–3 × 2.5–2.6 cm; sepals oblong; style 4–5 mm .....17. *P. monophylla*
    6b. Leaves more numerous.

8a. Leaves thickly leathery, rough, wrinkled.
9a. Bracts broadest above middle; petals oblong, margin dentate, apex broadly rounded ..... 26. *P. xinjiangensis*
9b. Bracts broadest at or below middle; petals ovate-lanceolate to ± triangular, margin entire, apex obtuse or acuminate.
10a. Margin of leaf blade sinuate; petals ovate-lanceolate or triangular-lanceolate, apex acuminate ..... 21. *P. rugosa*
10b. Margin of leaf blade crenate; petals triangular or triangular-ovate, apex obtuse, rarely acute ..... 10. *P. forrestiana*
8b. Leaves papery to leathery, smooth, not wrinkled.
11a. Sepals broadly triangular, ovate-triangular, or triangular-ovate.
12a. Leaves 1–1.6 × 1–1.2 cm; petals triangular-ovate ..... 5. *P. chlorantha*
12b. Leaves ca. 2 × 1.5 cm or more; petals broadly triangular or ovate-triangular.
13a. Leaves elliptic or ovate-elliptic; style 6–7 mm ..... 22. *P. shanxiensis*
13b. Leaves broadly elliptic or suborbicular to broadly ovate; style less than 4 mm.
14a. Margin of leaf blade sinuate; styles 3–3.5 mm, slightly curved towards apex ..... 23. *P. sororia*
14b. Margin of leaf blade crenate; styles 2–2.2 mm, erect ..... 16. *P. minor*
11b. Sepals ovate to oblong or ligulate.
15a. Styles less than 6 mm, not or slightly exserted.
16a. Leaves elliptic or oblong, 5–7.5 × 2.2–3 cm, margin subentire or sparsely dentate ..... 14. *P. mattfeldiana*
16b. Leaves suborbicular, elliptic, or broadly ovate, 2.9–3.5 × 2.3–2.6(–3) cm, margin sparsely dentate ..... 15. *P. media*
15b. Styles ca. 6 mm or more.
17a. Raceme 1.5–2.8 cm, 3–5-flowered ..... 25. *P. tschanbaischanica*
17b. Raceme longer than 2.8 cm, 5- or more flowered.
18a. Sepals ligulate, apex mucronate, margin slightly sinuate ..... 24. *P. szechuanica*
18b. Sepals usually ovate, apex acuminate, margin entire or nearly so.
19a. Leaves often with white stripes over veins adaxially.
20a. Leaves ovate or ovate-elliptic, 3–4 × 1.5–3 cm, base broadly rounded to cuneate, often oblique; petals obovate-orbicular ..... 1. *P. alboreticulata*
20b. Leaves oblong or obovate-oblong, (3–)5–7 × 2.5–3.5(–4) cm, base cuneate; petals ovate-oblong ..... 8. *P. decorata*
19b. Leaves without white stripes over veins adaxially, or inconspicuous if present.
21a. Leaf margin crenate; petiole more than 1.5 × as long as leaf blade ..... 18. *P. morrisonensis*
21b. Leaf margin entire or sinuate; petiole less than 1.5 × as long as leaf blade.
22a. Leaves narrowly oblong, leaf blade 2.5–3 × as long as wide, apex acute ..... 9. *P. elegantula*
22b. Leaves suborbicular, broadly ovate to elliptic, leaf blade less than 2 × as long as wide, apex obtuse to rounded.
23a. Sepals lanceolate-triangular; style 1.1–1.3 cm; bracts linear-lanceolate ..... 11. *P. japonica*
23b. Sepals narrowly lanceolate to ovate-lanceolate or ligulate; style shorter than 1 cm; bracts lanceolate or long ligulate.
24a. Sepals lanceolate.
25a. Flowers 0.8–1 cm in diam.; sepals ca. as long as or slightly longer than petals ..... 12. *P. macrocalyx*
25b. Flowers 1.5–2 cm in diam.; sepals ca. 1/2–2/3 as long as petals ..... 20. *P. rotundifolia*
24b. Sepals ligulate or ovate-lanceolate.
26a. Leaves light green abaxially; flowers ca. 1 cm in diam.; sepals 3–4 mm, margin sparsely slightly denticulate ..... 7. *P. dahurica*
26b. Leaves often glaucous abaxially; flowers 1.5–2 cm in diam.; sepals 5–7.5 mm, margin entire ..... 4. *P. calliantha*

1. Pyrola alboreticulata Hayata, Icon. Pl. Formos. 3: 142. 1913.

花叶鹿蹄草 hua ye lu ti cao

Herbs to 20 cm tall. Leaves approximate to remote; petiole 3–4 cm; leaf blade deep green with pale veins adaxially, ovate or ovate-elliptic, 3–4 × 1.5–3 cm, leathery, base rounded, abruptly decurrent, margin with remote, minute teeth, apex acute, mucronulate. Scape ca. 10 cm; scales basal; raceme 1–4-flowered, 2–4 cm. Pedicel ca. 4 mm; bract linear, 8–10 mm. Flowers semipendent, 1.5–1.8 cm in diam. Sepals narrowly oblong, 5–6 × ca. 2.5 mm, apex obtuse. Petals white, obovate-orbicular, 7–7.5 × ca. 6 mm, apex rounded. Filaments complanate, yellow, 3–3.5 × 1–1.2 mm, tubules present. Style exserted, 8–10 mm, upper part curved, dilated at apex, without ring of lobes. Capsules 7–8 mm in diam. Fl. and fr. Jan.

● Middle elevations. Taiwan.

2. Pyrola asarifolia Michaux subsp. **incarnata** (de Candolle) E. Haber & H. Takahashi, Bot. Mag. (Tokyo) 101: 492. 1988.

红花鹿蹄草 hong hua lu ti cao

Pyrola rotundifolia Linnaeus var. *incarnata* de Candolle, Prodr. 7: 773. 1839; *P. asarifolia* var. *incarnata* (de Candolle) Fernald; *P. incarnata* (de Candolle) Freyn; *P. incarnata* var.

ovatifolia Y. Z. Zhao; *P. rotundifolia* subsp. *incarnata* (de Candolle) Krylov; *P. rotundifolia* var. *purpurea* Bunge.

Herbs 1–5 cm tall. Rhizome creeping, long, somewhat thick, 0.7–2 mm in diam., branched, with sparse fine roots. Stems ascending. Leaves appearing radical, 3–8, in 2 or 3 subverticils of 3 or 4 each; petiole 3–5 cm; leaf blade pale green abaxially, green and shiny adaxially, elliptic or ovate-elliptic, 2–5.5 × 1.5–5.5 cm, base rounded or scarcely cordate, rarely subacute, margin obscurely serrulate, apex rounded to obtuse. Scape erect, 10–25 cm tall, angled, glabrous, with 4 or 5 broadly lanceolate-elliptic membranous basal scales and 1–4 lanceolate scales near middle; raceme densely 7–15-flowered. Bracts broadly lanceolate, membranous, apex acuminate. Flowers drooping, zygomorphic. Sepals narrowly ovate to broadly lanceolate, ca. 2 × as long as wide, 1.7–4.7 × 1.1–2.3 mm, apex acute to acuminate. Petals rose, 5–9 × 3–6 mm. Filaments curved upward; anthers dark purple, gathered above style, 1.4–3 mm, tubules present, opening by narrow terminal pores. Style exserted, curved, 6–10 mm, dilated at apex into a ring; stigma with a collar and 5 erect cylindric lobes. Capsules 7–8 mm in diam. Fl. Jun, fr. Jul–Oct.

Dry deciduous broad-leaved and coniferous forests; sea level to 2500 m. Hebei, Heilongjiang, ?Henan, Jilin, Liaoning, E Nei Mongol, ?Ningxia, Shanxi, ?Sichuan, Xinjiang [Japan, N Korea, Mongolia, Russia].

3. Pyrola atropurpurea Franchet, J. Bot. (Morot) 9: 372. 1895.

紫背鹿蹄草 zi bei lu ti cao

Pyrola atropurpurea var. *gracilis* Andres; *P. gracilis* (Andres) Andres.

Herbs 7–18 cm tall. Rhizome slender, branched. Leaves 2–4, crowded at base of aerial shoots; leaf blade reddish purple abaxially, green adaxially, cordate-ovate, (1–)1.5–3 × (1–)1.2–3 cm, papery, base cordate, margin slightly crenulate, apex obtuse. Scape erect, slender, without scales or 1 or 2 scale-shaped leaves, green-brown, lanceolate, membranous; raceme 2–4(–5) mm, naked or with 1 or 2 minute lanceolate bracts, 2–4-flowered. Pedicel 3–5 mm; bracts ovate, ca. 2 mm. Flowers nodding, cup-shaped, 0.8–1.5 cm in diam. Sepals reddish purple, ovate-triangular, ca. 1.5 × 1.5 mm, apex obtuse. Petals white, oblong-obovate, 5–7 × 3–5 mm, apex obtuse. Filaments glabrous; anthers yellow, ca. 3 × 1.5 mm, tubules present. Style exserted, recurved, 9–11 mm, dilated at apex into ring; stigma thickened, with 5 round lobes. Capsules 5–6 mm in diam. Fl. Jun–Jul, fr. Aug–Sep.

● Montane coniferous forests, mixed forests; 1800–4000 m. Gansu, ?Henan, Qinghai, ?Shaanxi, Shanxi, Sichuan, Xizang, Yunnan.

4. Pyrola calliantha Andres, Acta Horti Gothob. 1: 173. 1924.

鹿蹄草 lu ti cao

Pyrola andresii Křísa; *P. calliantha* var. *tibetana* (Andres) Y. L. Chou; *P. hopeiensis* Nakai; *P. rockii* Křísa; *P. rotundifolia* Linnaeus subsp. *chinensis* (Andres) Andres; *P. rotundifolia* var. *chinensis* Andres; *P. rotundifolia* var. *communis* Andres; *P. rotundifolia* var. *laurifolia* Andres; *P. rotundifolia* var. *sphaeroides* Andres; *P. rotundifolia* subsp. *tibetana* (Andres) Andres; *P. rotundifolia* var. *tibetana* Andres.

Herbs (10–)15–30 cm tall. Rhizome long, slender, branched, producing adventitious roots and aerial stems at nodes; caudex ribbed, 15–30 cm, with a basal rosette of crowded leaves and 1 or 2 bracts; bracts brownish, oblong-ovate, sheathing, scales. Petiole 2–5.5 cm; leaf blade purplish and often glaucous abaxially, green adaxially, elliptic or ovate, (2.5–)3–6 × 2–3.5 cm, leathery, base broadly cuneate or suborbicular, margin entire or crenate, apex obtuse or rounded. Scape with 1 or 2 ovate-lanceolate or lanceolate scalelike bracts sheathing at base; raceme 9–13-flowered, 12–16 cm. Pedicel 5–8(–10) mm; bracts ligulate, 6–7.5 mm. Flowers spreading or rarely nodding, rotate, 1.5–2 cm in diam. Sepals ligulate, (3–)5–7.5 × (1.5–)2–3 mm, margin entire, apex often acute. Petals pure white, obovate-elliptic or obovate, 6–10 × 5–8 mm. Filaments glabrous; anthers yellow, (2.1–)2.5–4 × 1–1.4 mm, tubules present. Style ± exserted, light red, 6–8(–10) mm, nearly erect or upper part slightly curved upward, dilated at apex into a ring. Capsule 7–9 mm in diam. Fl. Jun–Aug, fr. Aug–Sep.

● Montane coniferous forests, mixed forests; 700–4100 m. Anhui, Fujian, Gansu, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Qinghai, Shandong, Shanxi, Sichuan, Xizang, Yunnan, Zhejiang.

5. Pyrola chlorantha Swartz, Kongl. Vetens. Acad. Nya Handl. 190. 1810.

绿花鹿蹄草 lü hua lu ti cao

Pyrola solunica S. D. Zhao; *P. virens* Schweigger; *Thelaia chlorantha* (Swartz) Alefeld.

Herbs 11–18 cm tall. Rhizome long, slender, branched. Aboveground stem very short. Leaves 2–4, basal; petiole 2–5 cm; leaf blade pale abaxially, dark green adaxially, rather dull, suborbicular, 1–1.6 × 1–1.2 cm, leathery, base rounded to acute, margin minutely crenulate, apex rounded. Scape including inflorescence 10–20 cm high, usually with a solitary scale; raceme laxly 2–8-flowered, slightly nutant, nodding, 1.5–3.5 cm. Pedicel 4–5 mm; bracts lanceolate. Flowers cup-shaped, ca. 1 cm in diam. Sepals triangular-ovate, ca. as long as wide, 1–1.5 mm, basal widest 1–1.5 mm, apex ± acute or obtuse. Petals greenish white, ovate or elliptic, 5–6 mm. Filaments dilated at base; anthers yellow, oblong, mucronate at distal end; tubules curved, pores oblique. Style exserted, longer than petals, strongly bent, somewhat thickened upwards, dilated at apex into ring. Capsule ca. 6 mm in diam. Fl. Jun, fr. Aug.

Pinus sylvestris var. *mongolica* forests; below 1000 m. Nei Mongol [Mongolia].

6. Pyrola corbieri H. Léveillé, Bull. Acad. Int. Géogr. Bot. 12: 254. 1903.

贵阳鹿蹄草 gui yang lu ti cao

Pyrola chlorantha Swartz subsp. *fallax* Křísa.

Herbs 11–33 cm tall. Rhizome ascending, slender, branched. Leaves 2–6, basal. Scales at stem base 1–3 mm wide, not or slightly sheathing. Petiole 1–3.5 cm; leaf blade dark green with pale veins adaxially, oblong or oblong-ovate, 3.5–7 × 1.5–3.5 cm, slightly leathery, base cuneate or attenuate, margin entire or shallowly crenate, apex subacute. Scape ca. 2 mm in diam., narrowly winged, scalelike leaves 1 or 2, brown, narrowly lin-

ear, 1–1.5 cm, base slightly amplexicaul, apex acuminate or acute; raceme 4–9-flowered, short, 1.5–2.5(–4) cm. Flowers nodding, broadly saucer-shaped, relatively large. Pedicel 5–8 mm, bract axillary, narrowly lanceolate, 5–8 mm, longer or ca. as long as pedicel, membranous, apex acuminate. Sepals purplish brown, oblong, ca. 4 × 1.5–2 mm, apex obtuse or acute. Petals white, obovate or orbicular, 5–7 × 4–5 mm. Filaments glabrous; anthers red, ca. 3 mm. Style included or slightly exserted, distinctly curved, dilated at apex into a ring. Capsule 6–8 mm in diam. Fl. Jul–Aug, fr. Sep–Oct.

Streamsides in *Pinus* forests; 2100–2700 m. Guangxi, Guizhou, Sichuan [Bhutan].

7. Pyrola dahurica (Andres) Komarov, Trudy Imp. S.-Peterburgsk. Bot. Sada 39: 96. 1923.

兴安鹿蹄草 xing an lu ti cao

Pyrola americana Swartz var. *dahurica* Andres, Deutsche Bot. Monatsschr. 22: 50. 1911; *P. forrestiana* Andres subsp. *dahurica* (Andres) Křísa; *P. incarnata* (de Candolle) Freyn subsp. *dahurica* (Andres) Křísa; *P. rotundifolia* Linnaeus subsp. *dahurica* (Andres) Andres.

Herbs 15–23 cm tall. Rhizome long, slender, branched. Leaves (2 or)3–6(or 7), crowded at base of caudex; petioles 2.8–4.5 cm; leaf blade light green abaxially, green adaxially, suborbicular or broadly ovate, (2.5–)3–5 × 2.5–4 cm, leathery, base broadly cuneate or orbicular, margin entire or slightly crenate, apex obtuse or rounded. Raceme 5–10-flowered, 4–8(–10) cm. Pedicel 4–5 mm; bracts ligulate or lanceolate, 4–5 mm. Flowers nodding, spreading, ca. 1 cm in diam. Sepals ligulate, rarely lanceolate, 3–4 × ca. 1.5 mm, margin remotely denticulate, apex often acute. Petals white, obovate, 5–7 × 4–5 mm, apex rounded. Filaments short, ca. 5 mm, glabrous; anthers yellow, 2.5–2.7 × 1–1.5 mm, tubules present. Style slightly exserted, 6–7 mm, upper part curved upward, dilated at apex into a ring, conspicuously so at least at fruiting. Capsule ca. 5 mm in diam. Fl. Jul, fr. Aug.

Coniferous forests, mixed forests, becoming dominant in herbaceous layer; 700–1800 m. Heilongjiang, Jilin, Liaoning, Nei Mongol [Mongolia].

8. Pyrola decorata Andres, Notes Roy. Bot. Gard. Edinburgh 8: 7. 1913.

普通鹿蹄草 pu tong lu ti cao

Pyrola alba Andres; *P. alba* var. *viridiflora* Andres; *P. decorata* var. *alba* (Andres) Y. L. Chou & R. C. Zhou; *P. handeliana* Andres; *P. oreodoxa* Andres.

Herbs 15–35 cm tall. Rootstock long, slender, branched. Leaves 3–6, crowded at base of caudex; petiole 2–3 cm; leaf blade light green and purplish abaxially, deep green with pale veins adaxially, oblong or obovate-oblong, (3–)5–7 × 2.5–4 cm, thinly leathery, base cuneate, decurrent, margin with remote minute teeth, apex acute or mucronulate. Scape slender, with 1 or 2 scalelike leaves at base; raceme 4–10-flowered, 2.5–4 cm. Pedicel 5–9 mm; bract lanceolate, 5–9 mm, membranous. Flowers ± nodding, saucer-shaped, 1–1.5 cm in diam. Sepals ovate-oblong, 3–6 × 2–2.5 mm, apex acute. Petals light green to white, obovate-oblong, 6–8 × 5–7 mm, apex rounded. Filaments glabrous; anthers yellow, 3–4 × 1–1.5 mm, tubules present. Style exserted, 6–10 mm, curved, dilated at apex into a ring. Capsules 7–11 mm in diam. Fl. Jun–Jul, fr. Jul–Aug.

Pinus or broad-leaved forests, scrub; 600–3000 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Xizang, Yunnan, Zhejiang [Bhutan].

9. Pyrola elegantula Andres in Handel-Mazzetti, Symb. Sin. 7: 764. 1936.

长叶鹿蹄草 chang ye lu ti cao

Pyrola elegantula var. *jiangxiensis* Y. L. Chou & R. C. Zhou.

Herbs 14–25 cm tall. Rhizome long, slender, branched. Leaves 3–6, crowded at base of caudex; petiole 2–3 cm; leaf blade light green abaxially, deep green adaxially, narrowly oblong, 4–8 × 1.5–3 cm, thinly leathery, base cuneate, decurrent to petiole, margin with remote minute teeth, apex acute. Scape slender, with 1 or 2 scalelike leaves; raceme 4–6-flowered, 2–4 cm. Pedicel 4–9 mm; bracts lanceolate, 4–9 mm, membranous. Flowers spreading, broadly cup-shaped, 1–1.5 cm in diam. Sepals narrowly ligulate, 3–6 × 1–2 mm, apex acuminate. Petals white, obovate-oblong, 7–10 × 4–6 mm, apex rounded. Filaments 5–6 mm, glabrous; anthers yellow, 3–4 mm, tubules present. Style exserted, curved, 9–13 mm, dilated at apex into a ring. Capsules 8–10 mm in diam. Fl. Jun, fr. Jul.

● Montane forests; 1200–1800 m. Fujian, Guangdong.

10. Pyrola forrestiana Andres, Notes Roy. Bot. Gard. Edinburgh 8: 8. 1913.

大理鹿蹄草 da li lu ti cao

Herbs 20–27 cm tall. Rhizome slender, branched. Leaves 3–7; petiole 2–4.5 cm; leaf blade light green abaxially, green adaxially, triangular ovate, obovate, or suborbicular, 2.5–4.5 × 2–3.5 cm, thickly leathery, rough, base rounded or truncate, margin conspicuously crenate, apex obtuse. Scales at base of scape, narrowly oblong, 8–12 × 3–5 mm; raceme 6–9 cm, 9–12-flowered. Pedicel 5–10 mm; bracts oblong-lanceolate, slightly longer than pedicel, membranous, apex acute. Flowers nodding, saucer-shaped, 1–1.5 cm in diam. Sepals triangular or triangular-ovate, 1.5–2.5 × 1.5–2 mm, apex obtuse. Petals greenish yellow, ovate or suborbicular, 7–9 × 5–7 mm. Filaments flattened; anthers yellow, oblong, tubules present. Style exserted, ca. 1 cm, curved at upper part, dilated at apex into a ring. Capsules 5–7 mm in diam. Fl. Jul–Aug, fr. Aug–Sep.

● Moist shaded forests; 1500–3800 m. Hubei, Hunan, Sichuan, ?Xizang, Yunnan.

11. Pyrola japonica Klenze ex Alefeld, Linnaea 28: 57. 1856.

日本鹿蹄草 ri ben lu ti cao

Pyrola asarifolia var. *japonica* (Klenze ex Alefeld) Miquel; *P. incarnata* (de Candolle) Freyn var. *japonica* (Klenze ex Alefeld) Koidzumi; *P. japonica* var. *subaphylla* (Maximowicz) Andres; *P. japonica* f. *subaphylla* (Maximowicz) Ohwi; *P. rotundifolia* Linnaeus var. *albiflora* Maximowicz; *P. rotundifolia* f. *subaphylla* (Maximowicz) Makino; *P. subaphylla* Maximowicz.

Herbs 5–30 cm tall. Rhizome descending and sometimes creeping, somewhat thick, 0.8–2 mm in diam., sparsely branched; roots somewhat thick, to 0.5 mm in diam. Stems ascending, sometimes branched. Leaves appearing radical, 3–6, in 1 or 2 subverticils of 1–3 each; petiole 3–8 cm; leaf blade pale green or reddish abaxially, deep green with pale or white veins adaxially, elliptic, broadly elliptic, or obovate, rarely orbicular, (3–)4–7 × 2.5–4.5 cm, somewhat thick, base rounded, obtuse, or subacute, margin rather sparsely and obscurely serrulate, apex rounded to obtuse. Scape erect, (6–)15–30 cm tall, with 3–6 scales near base; scales narrowly to broadly lanceolate or oblanceolate, costate, up to 2 leaflike scales and sometimes 1 smaller, lanceolate scale near middle; raceme rather sparsely 5–12-flowered, 6–10 cm. Pedicel with bracts broadly linear to lanceolate, 5–8 mm, apex long acuminate. Flowers drooping, zygomorphic, 10–12 mm in diam. Sepals broadly lanceolate to narrowly ovate, (1–)2.5–5(–6) × (2–)4–6 mm, apex acute. Petals ovate-elliptic, 3.5–4 × 1.6–2 mm, apex acuminate. Filaments curved upward; anthers creamy white, orange-yellow near apex, 2–3 mm, prolonged into terminal tubules, opening by terminal pores. Style exserted, sometimes scarcely so, curved to somewhat slightly so, 1.1–1.3 cm, dilated at apex but without ring-shaped protuberance; stigma with a collar and 5 erect cylindric lobes. Capsules 7–8 mm in diam. Fl. Jun–Aug, fr. Sep–Oct.

Common, mainly in dry forests; sea level to 1500 m. Hebei, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Taiwan [Japan, Korea].

12. Pyrola macrocalyx Ohwi, Acta Phytotax. Geobot. 1: 80. 1932.

长萼鹿蹄草 chang e lu ti cao

Herbs 14–21 cm tall. Rhizome long, slender, branched. Leaves 2–6, crowded at base of caudex; petiole 1.5–3.5 cm, often shorter than blade; leaf blade light green with purple abaxially, green adaxially, elliptic, obovate, or ovate, 2.3–4.2 × 1.4–3.8 cm, leathery, base broadly cuneate or orbicular, margin entire or slightly crenate, apex obtuse or rounded. Scape subtended by 1–3 scalelike bracts; raceme 6–10(–15)-flowered, 3–5 cm. Pedicel 3–4 mm; bracts lanceolate, 5–7 × 1.4–1.5 mm, longer than pedicel, membranous. Flowers spreading, saucer-shaped, ca. 1 cm in diam. Sepals lanceolate, 4.5–5 × ca. 1 mm, margin entire, apex acuminate. Petals white, obovate, 5–6 × 3–4 mm, apex acute or obtuse. Filaments glabrous; anthers yellow, 2–2.5 × ca. 1 mm, tubules present. Style not or slightly exserted, 6–6.5 mm, nearly erect or upper part curved upward, without dilated ring at apex. Capsule 4–6 mm in diam. Fl. Jul–Aug, fr. Aug–Sep.

Betula forests, coniferous forests; 700–2100 m. S Jilin (Changbai Shan) [Korea].

13. Pyrola markonica Y. L. Chou & R. C. Zhou, Bull. Bot. Res., Harbin 1(4): 113. 1981.

马尔康鹿蹄草 ma er kang lu ti cao

Herbs 8–10 cm tall. Rhizome long, slender, branched. Leaves 4–7, basal, petiole 1–2 cm; leaf blade light green abaxially, deep green adaxially, broadly obovate-elliptic or elliptic, 1.8–2.5 × 1.2–1.7 cm, subleathery, base rounded or broadly cuneate, margin minutely glandular sinuate, apex obtuse. Scape subtended by 2 or 3 ovate-oblong, scalelike leaves; raceme 6–8-flowered, 1.5–2 cm. Pedicel 3–4 mm; bracts lanceolate, 6.5–7 mm, longer than pedicel, membranous. Flowers slightly nodding, broadly cup-shaped, 1–1.5 cm in diam. Sepals oblong, 4–4.5 × 2–2.5 mm, apex cuspidate. Petals purplish red, obovate-oblong, 8–9 × 5–6 mm, apex rounded. Filaments glabrous; anthers yellow, ca. 3 mm, tubules present, with acuminate base and projecting at apex. Style exserted, curved, ca. 7 mm, apex dilated but without ring-shaped protuberance. Capsules ca. 6 mm in diam. Fl. Jul–Aug, fr. Aug–Sep.

● *Abies* and *Picea* forests; ca. 3500 m. Sichuan.

14. Pyrola mattfeldiana Andres, Repert. Spec. Nov. Regni Veg. 40: 235. 1936.

贵州鹿蹄草 gui zhou lu ti cao

Herbs 20–28 cm tall. Rhizome long, branched, ascending. Leaves 3–7, crowded at base of caudex; petiole usually shorter than blade; leaf blade abaxially brown, adaxially deep green, elliptic or oblong, 5–7.5 × 2–3 cm, thinly leathery, base cuneate, margin entire or with obscure small teeth, apex obtuse. Scapes thick, with 2 or 3 acute bracts; raceme 5–12-flowered, 3.5–5 cm. Pedicel 5–6 mm; bracts ovate-lanceolate, 5–6 mm. Flowers nodding, 7–8 mm in diam., subglobose. Sepals ovate-oblong or ovate-lanceolate, ca. 4 × 2 mm, margin yellowish, apex obtuse. Petals white, oblong, ca. 7 × 6 mm, apex rounded. Filaments glabrous, flattened, ca. 1.5 mm wide at base; anthers yellow, ca. 3 × 1.5 mm, tubules present. Style not exserted, earlier erect, later declined and curved, dilated at apex into a ring. Capsule 7–9 mm. Fl. Jun, fr. Jul.

● Montane forests; 2600–3000 m. Guizhou, Sichuan.

15. Pyrola media Swartz, Kongl. Svenska Vetenskapsakad. Handl. 257. 1804.

小叶鹿蹄草 xiao ye lu ti cao

Amelia media (Swartz) Alefeld; *Thelaia media* (Swartz) Alefeld.

Herbs 10–30(–33) cm tall. Rhizome brown, slender, strongly branched. Leaves 4–6, rosulate; petiole usually longer than blade; leaf blade slightly green abaxially, green adaxially, orbicular or orbicular-ovate, 2.9–3.5 × 2.3–2.6(–3) cm, leathery, base rounded or cuneate-rounded, margin obscurely crenate with shallow and broad or sometimes flat crenations, apex rounded. Scapes 10–33 cm, with a solitary acute bract at or below middle; raceme 3–5(–7) cm, 5–12-flowered. Pedicels (5–)8–9 mm in fruit; bract oblong, longer than pedicel, 4–6 × 1.5–2.5 mm, apex rounded. Flowers slightly nodding, half-opened, saucer-shaped. Sepals reddish, ovate-lanceolate, margins not overlapping, apex acuminate, often recurved at tip. Petals white or at base pinkish, elliptic or suborbicular, 6–8 × 4.5–6 mm, apex rounded. Filaments connivent around pistil, flattened, glabrous; anther yellow, (1.9–)2.1–2.3(–2.5) mm. Style slightly exserted, somewhat declined, 5–5.5 mm, dilated at apex into a ring; stigma 5-lobed. Capsule compressed-globose, 4–5 × 6.5–8 mm. Fl. Jun–Jul.

Coniferous forests; 1900–2600 m. S Jilin (Changbai Shan), N Xinjiang (Altay Shan) [Mongolia, Russia; C Asia, Europe].

16. Pyrola minor Linnaeus, Sp. Pl. 1: 396. 1753.

短柱鹿蹄草 duan zhu lu ti cao

Amelia minor (Linnaeus) Alefeld; *Braxilia minor* (Linnaeus) House; *B. parvifolia* Rafinesque; *Erxlebenia minor* (Linnaeus) Rydberg; *E. rosea* Opiz.

Herbs (7–)12–20 cm tall. Rhizome creeping, long, somewhat slender, 0.5–1 mm in diam., branched, with sparse fine roots. Aerial stems ascending, short or somewhat long, 0.5–2.5 cm, not branched. Leaves appearing radical, 4–8, in 2 or 3 subverticils of 2–4 each; petiole 1–2.5 cm; leaf blade pale green abaxially, green adaxially, broadly elliptic to orbicular, 1.5–4.5 × 1.5–3 cm, base obtuse to truncate, margin crenulate to obsoletely serrulate, apex obtuse or mucronulate. Scape erect, 8–18 cm tall, angled, glabrous, with 3–5 broadly lanceolate-elliptic or broadly oblanceolate scales at base, up to 2 leafy scales or leaves near base, and up to 2 narrowly lanceolate to broadly linear scales near middle; raceme densely 7–16-flowered, 2–3.5 cm. Pedicel 3–6 mm; bracts broadly linear, 3–6 mm, usually longer than pedicel. Flowers drooping, regular, 6–7 mm in diam. Sepals depressed-deltoid or broadly ovate, 1–2 × 1–2 mm, apex obtuse to acuminate. Petals white, 3–6 mm, apex retuse. Filaments connivent, surrounding pistil, short, thick, glabrous; anthers yellow, 0.9–1.4 mm, without distinct tubules, apex truncate, opening by wide terminal pores. Style included, ca. 2 mm, straight or slightly curved, not dilated at apex into a ring; stigma with a collar and 5 radially arched lobes. Capsules 4–6 mm in diam. Fl. Jul, fr. Aug. 2*n* = 46.

Subalpine deciduous broad-leaved forests; 500–2500 m. Heilongjiang, Jilin, Xinjiang, Xizang, Yunnan [Japan, N Korea, Russia; widely distributed in cool N temperate and subarctic zones].

This is a rare species in China.

17. Pyrola monophylla Y. L. Chou & R. C. Zhou, Bull. Bot. Res., Harbin 1(4): 111. 1981.

单叶鹿蹄草 dan ye lu ti cao

Herbs 11–19 cm tall. Rhizome long, slender, branched. Leaf solitary, basal; petiole ca. 3 cm; leaf blade glaucous abaxially, green adaxially, broadly elliptic or suborbicular, ca. 3 × 2.5 cm, thinly leathery, base subrounded, margin entire or crenulate, apex obtuse or rounded. Scape thick, with 3–5 ovate-lanceolate bracts, sheathed at base; raceme 5- or 6(–9)-flowered, 3–4(–8.5) cm. Pedicel 5–6 mm; bracts oblong-lanceolate, 6–7 mm, membranous. Flowers nodding. Sepals ovate-oblong or triangular-oblong, 3.5–4 × 2–2.5 mm, apex often acute. Petals white, ovate-oblong, 6–7 × 3–3.5 mm. Filaments glabrous; anthers yellow with purple, ellipsoid, 2.6–2.9 mm, tubules present. Style upper part curved upward, short, ca. 4 mm, dilated at apex into a ring; stigma shallowly 5-lobed. Capsule 5–6 mm in diam. Fl. Aug, fr. Sep.

● Montane mixed forests; ca. 2700 m. Yunnan.

18. Pyrola morrisonensis (Hayata) Hayata, J. Coll. Sci. Imp. Univ. Tokyo 25(19): 155. 1908.

台湾鹿蹄草 tai wan lu ti cao

Pyrola elliptica Nuttall var. *morrisonensis* Hayata, Bot. Mag.(Tokyo) 20: 18. 1906.

Herbs to 20 cm tall. Rhizome ascending, slender, branched. Leaves 3–8, basal, alternate or subopposite; petiole 5–6 cm, complanate; leaf blade slightly green abaxially, green adaxially, ovate-suborbicular to ovate-rhombic, 2–3 × 2–2.5 cm, base rounded or truncate to subacute, margin crenulate-serrulate, apex rounded, obtuse, or emarginate. Scape 4–8.5(–25) cm; scales narrowed; raceme 6–11-flowered, 10–25 cm. Pedicel 7–8 mm; bracts narrowly oblong, ca. 8 × 3 mm, apex acute. Flowers ± nodding, saucer-shaped, ca. 1.5 cm in diam. Sepals ovate, ca. 2.5 × 2 mm, apex obtuse or acute. Petals white, orbicular-oblong, 6–7 × 5–6 mm, margin obscurely denticulate, apex rounded. Filaments 6–7 mm; anthers yellow, occasionally with purple, 2–2.6 × 1–1.5 mm, tubules present. Style upper part curved upward, 7–9 mm, exserted, dilated at apex into ring. Capsules ca. 5 mm in diam. Fl. and fr. unknown.

● High mountains; 1900–3200 m. Taiwan.

19. Pyrola renifolia Maximowicz, Mém. Acad. Imp. Sci. St.-Pétersbourg Divers Savans 9 [Prim. Fl. Amur.]: 190. 1859.

肾叶鹿蹄草 shen ye lu ti cao

Pyrola soldanellifolia Andres.

Herbs 10–21 cm tall. Rhizome creeping, long, slender, 0.2–0.8 mm in diam., branched, with sparse fine roots. Aerial stems ascending, short, usually ca. 0.5 cm, rarely to 2 cm. Leaves appearing radical, 1–3(–6), in 1 or 2 subverticils, long petiolate; leaf blade pale green abaxially, deep green with paler or white veins adaxially, reniform, 1–3 × 1.5–4 cm, base cordate, often with overlapping margins, margin crenulate or obsoletely serrulate, apex rounded or shallowly emarginate. Scapes erect, but nodding earlier, 7–21 cm tall, slender, somewhat angled, glabrous, with 2–4 minute lanceolate or broadly linear or oblanceolate scales at base and sometimes one minute scale near middle; raceme rather sparsely 1–3(–6)-flowered, 1.8–3.5(–5) cm. Pedicel 3–8 mm; bracts linear-lanceolate, 1–2 mm. Flowers drooping, zygomorphic, 1–1.(–1.5) mm in diam. Sepals suborbicular to depressed-triangular, 1–1.5 × 1.4–2 mm, apex obtuse to rounded. Petals white to greenish, sometimes becoming black when dry, obovate, 5–7 × 3–5.5 mm. Filaments curved upward; anthers creamy white, 2–4 mm, prolonged into terminal tubules, opening by small terminal pores, terminal tubules orange-yellow. Style exserted, 5–10 mm, curved, slightly dilated at apex into a ring; stigma with a collar and 5 erect cylindric lobes. Capsules 5–7 mm in diam. Fl. Jun–Jul, fr. Aug–Sep.

Shaded coniferous, mixed, and deciduous broad-leaved forests, mossy soil especially near rotting tree trunks; sea level to 200 m. Hebei, Heilongjiang, Jilin, Nei Mongol, Liaoning [Japan, Korea, Russia (Sakhalin)].

20. Pyrola rotundifolia Linnaeus, Sp. Pl. 1: 396. 1753.

圆叶鹿蹄草 yuan ye lu ti cao

Thelaia rotundifolia (Linnaeus) Alefeld.

Herbs 15–25(–30) cm tall. Rhizome long, slender, branched, producing adventitious roots and aerial stems at nodes; aerial stems 15–30 cm, ribbed, with a basal rosette of

crowded leaves, and higher up with 1 or 2 oblong-ovate sheathing, scalelike, brownish bracts. Rosulate leaves 4–7, semievergreen; petiole ca. 2 × or ca. as long as blades; leaf blade slightly green abaxially, green adaxially, slightly shiny, orbicular to ovate, (2–)3–6 × (1.5–)2.5–5.5 cm, leathery, base sometimes subcordate, margin obscurely crenate or nearly entire, apex rounded. Rachis-inserted scale-shaped leaves 1 or 2; raceme 8–15-flowered, 6–16 cm. Pedicel 4.5–5 mm; bracts axillary, imbricate, lanceolate, membranous. Flowers spreading or rarely nodding, 1.5–2 cm in diam., widely opened, fragrant (scent of *Convallaria majalis* Linnaeus). Sepals ovate-lanceolate to lanceolate, 3.5–5.5 mm, reflexed at tip, apex rounded. Petals incurved, pure white, orbicular-ovate, 6.5–10 × 4–6 mm, rather thick, apex obtuse. Stamens arched toward upper side of flower; filaments glabrous, anthers yellow, tubules present. Style 7.5–10 mm, deflexed at base and facing lower part of corolla, dilated at apex into a ring. Capsule (6–)7–8 mm in diam. Fl. Jun–Jul, fr. unknown.

Picea forests, mountain thickets, grassy slopes; 1400–3200 m. Gansu, ?Hebei, ?Jiangsu, ?Liaoning, ?Ningxia, ?Shaanxi, Sichuan, N Xinjiang (Altay), Xizang, Yunnan [Japan, Mongolia, Myanmar, Russia; Europe].

According to Haber (Syst. Bot. 8: 277–298. 1983), one of the main areas of taxonomic difficulty in *Pyrola* occurs in *P.* sect. *Pyrola* (see Křísa, Bot. Jahrb. Syst. 90: 476–508. 1971, for sectional subdivisions). The type of the section is *P. rotundifolia* Linnaeus, a white-flowered species common throughout Europe and eastward to just beyond Lake Baikal in Siberia (cf. Hultén, Amphi-Atlantic Pl. map 123. 1958). Numerous taxa, both white- and pink-flowered, have been recognized as segregates of this widespread species, or described as distinct but related to *P. rotundifolia*. The assessment of taxonomic affinities within this "complex" has been problematic because of the lack of clear morphological discontinuities (Haber & Takahashi, Bot. Mag. (Tokyo) 101: 483–495).

21. Pyrola rugosa Andres, Repert. Spec. Nov. Regni Veg. 40: 233. 1936.

皱叶鹿蹄草 zhou ye lu ti cao

Herbs 14–27 cm tall. Rhizome ascending, slender, branched. Leaves 3–7; petiole 4.5–6.5 cm; leaf blade reddish abaxially, green and shiny adaxially, broadly ovate or suborbicular, 3–4.5 × 2.5–3.5 cm, thickly leathery, base rounded or truncate, margin conspicuously crenate, apex obtuse. Scape: scales 1 or 2, oblong, 8–10 × 3–4 mm; raceme 5–13-flowered, 4–9 cm. Pedicel 5–7 mm; bracts lanceolate, ca. as long as petiole or slightly longer, membranous. Flowers nodding, saucer-shaped, ca. 1 cm in diam. Sepals lanceolate or lanceolate-triangular, 3–4 × 1.5–2 mm, margin entire or obscurely crenate, apex acuminate. Petals white, ovate-lanceolate or suborbicular, 6–8 × 4–6 mm, apex acute. Filaments flattened, 7–8 mm; anthers yellow, ellipsoid, ca. 3 × 1 mm, tubules present. Style not exserted, 7–10 mm, slightly curved at upper part, dilated at apex into a ring. Capsules 5–9 mm in diam. Fl. Jun–Jul, fr. Aug–Sep.

● Montane coniferous or broad-leaved forests; 1900–4000 m. Gansu, Shaanxi, Sichuan, Yunnan.

22. Pyrola shanxiensis Y. L. Chou & R. C. Zhou, Bull. Bot. Res., Harbin 1(4): 112. 1981.

山西鹿蹄草 shan xi lu ti cao

Herbs 16–21 cm tall. Rhizome long creeping, somewhat slender, 0.5–1 mm in diam., branched. Leaves 2–6, appearing radical; petiole 1.8–2 cm; leaf blade pale green abaxially, green adaxially, elliptic or ovate-elliptic, ca. 2.5 × 1.5 cm, thinly leathery, base obtuse to broadly truncate, margin entire or crenulate, apex obtuse. Scape erect, 9–17 cm tall, glabrous, with 1 scalelike leaf at base; raceme 5–8(or 9)-flowered, 5–7 cm. Pedicels shorter than bracts, 3.5–4 mm; bracts broadly linear, 4–5 mm. Flower horizontal. Sepals triangular or ovate-triangular, ca. 2.5 × 2.5 cm, apex acute. Petals white. Style 6–7 mm at fruiting, straight to slightly curved, dilated at apex into a ring. Capsules 7–8 mm in diam. Fl. unknown.

● Forests on shaded mountain slopes; ca. 1800 m. Shanxi.

23. Pyrola sororia Andres, Notes Roy. Bot. Gard. Edinburgh 8: 8. 1913.

珍珠鹿蹄草 zhen zhu lu ti cao

Herbs 15–30 cm tall. Rhizome ascending, branched. Scales at stem base 4–8 mm wide, sheathing. Leaves 6–8, basal; petiole 1–3 cm; leaf blade pale green abaxially, green adaxially, broadly ovate or suborbicular, 2.5–3 × 2–2.5 cm, thinly leathery, base rounded, margin remotely sinuate, apex rounded or subacute. Raceme 7–11-flowered, 3–7 cm. Pedicel 3–4 mm; bracts axillary, strap-shaped, longer than pedicel, membranous. Flowers nodding, saucer-shaped, 7–9 mm in diam. Sepals ovate-triangular, 2–2.5 mm, apex retuse. Petals white or yellowish green, broadly ovate or suborbicular, 7–8 × 5–6 mm, apex rounded. Filaments flattened, glabrous; anthers yellow, ca. 2 mm, base usually with mucro. Style slightly exserted, straight or becoming curved in upper half, 3–3.5 mm. Capsules 7–9 mm in diam. Fl. Jul–Aug, fr. Aug–Sep.

● Forests, scrub; 2700–3900 m. Xizang, Yunnan.

24. Pyrola szechuanica Andres, Acta Horti Gothob. 1: 170. 1924.

四川鹿蹄草 si chuan lu ti cao

Herbs 15–25 cm tall. Rhizome long, slender, branched. Leaves 3–7, crowded at base of caudex; petiole 6–7.5 cm; leaf blade light green abaxially, green and slightly shiny adaxially, broadly ovate, ovate, or broadly oblong, 4–5(–6) × (3.5–)4–5(–6.5) cm, thinly leathery, base suborbicular or subcordate, margin with remote teeth, apex obtuse. Scape with 2–4 scalelike leaves at base; raceme 6–12-flowered, 4–6 cm. Pedicel to 1 cm at fruiting; bracts lanceolate, 8–10 mm. Flowers ± nodding, widely opened, saucer-shaped, ca. 1 cm in diam. Sepals ligulate, 4–6 × 1.5–3 mm, apex mucronulate. Petals yellow or yellowish white, broadly ovate, 6–10 × 5–7 mm, apex rounded. Filaments glabrous; anthers yellow, ca. 2 mm. Style exserted, 7–9 mm, curved, dilated inconspicuously at apex into a ring. Capsules 7–8 mm in diam. Fl. Jun–Jul, fr. Aug–Sep.

● Evergreen or mixed forests; 1400–2700 m. Sichuan.

25. Pyrola tschanbaischanica Y. L. Chou & Y. L. Chang, Bull. Herb. N.-E. Forest. Acad., Harbin 1: 6. 1959.

长白鹿蹄草 chang bai lu ti cao

Herbs 8–13 cm tall. Rhizome long, slender, branched. Leaves 3–5(or 6); petiole 1.8–4 cm; leaf blade light green abaxially, green adaxially, elliptic, 1.8–2.5 × 1.3–1.9 cm, leathery, base cuneate, margin entire, slightly incurved, apex obtuse or rounded. Scape with 1–3 scalelike leaves at base; raceme 3–5-flowered, 1.5–2.8 cm, with 1–3 scalelike bracts subtending scape. Pedicels 3–4 mm; bracts ovate-lanceolate, 4.3–4.5 mm. Flowers nodding, spreading, broadly saucer-shaped, ca. 1 cm in diam. Sepals oblong or ovate-oblong, ca. 3 × 1.5 mm, apex acute. Petals white, obovate, 5–6 × 3–4 mm, margin entire and incurved, apex obtuse. Filaments glabrous; anthers yellow, ca. 2 × 1 mm. Style exserted, upper part slightly curved, ca. 8 mm, dilated at apex into an inconspicuous ring. Capsule 5–6 mm in diam. Fl. Aug, fr. Sep.

● Alpine tundra; ca. 2100 m. S Jilin (Changbai Shan).

26. Pyrola xinjiangensis Y. L. Chou & R. C. Zhou, Bull. Bot. Res., Harbin 1(4): 113. 1981.

新疆鹿蹄草 xin jiang lu ti cao

Herbs 19–21 cm tall. Rhizome ascending, slender. Leaves 6–9, basal; petiole 2.5–4 cm; leaf blade light green abaxially, dark green adaxially, elliptic or suborbicular, 3–4 × 2.5–3.5 cm, thickly leathery, veins raised abaxially, impressed adaxially, base rounded or truncate, margin crisped, entire or remotely glandular, apex obtuse. Scape with 1 scalelike leaf or not at base; raceme 7–11-flowered, 6.5–7.5 cm. Pedicel 5–7 mm; bracts oblong or lanceolate. Flowers nodding, saucer-shaped, ca. 1 cm in diam. Sepals oblong, 3–4 × ca. 2 mm, margin entire or remotely crenate, apex obtuse. Petals 5, white, oblong, ca. 6 × 4 mm, adaxially sparsely hairy, margin dentate, apex rounded. Filaments flattened, ca. 5.5 mm; anthers yellow, ellipsoid, ca. 3 mm, tubules present. Style slightly exserted, ca. 6 mm, curved at upper part, dilated at apex into a ring. Fl. Jul, fr. Aug.

● Montane forests; ca. 1800 m. Xinjiang (Urumqi).

6. MONOTROPA Linnaeus, Sp. Pl. 1: 387. 1753.

水晶兰属 shui jing lan shu

Qin Haining (覃海宁); Gary D. Wallace

Hypopithis Rafinesque (1808); *Hypopitys* Hill (1756); *Monotropion* Saint-Lager.

Herbs perennial, mycoparasitic, lacking chlorophyll. Axis nodding, white to reddish. Leaves absent or reduced to laminar structures. Inflorescence scapose or racemose arising from persistent root system. Flowers solitary or in several-flowered racemes, often nodding at anthesis, usually erect in fruit, bracteate. Sepals 4 or 5, usually appressed to petals. Petals 3–6, oblong, often saccate at base, apex dilated. Stamens 8–12 in two series of alternating unequal lengths; anthers horizontally reniform, with terminal slit. Disk of 8–10 distended paired lobes adnate to base of ovary. Ovary (3–)5(or 6)-loculed, with axile placentation; style base sharply differentiated from ovary. Capsules globose to narrowly ovoid, loculicidally dehiscent, valves with marginal fibers; perianth segments early deciduous at fruiting. Seeds many, fusiform, minute; testa thin, prolonged at both ends, minutely reticulate. $n = 16, 24$.

Two species: cool to temperate regions of the N hemisphere, extending to N South America; two species in China.

One of us (Wallace) notes that several taxa included here in synonymy under species of *Monotropa* and *Monotropastrum* are ambiguous minor variants in numbers of flowers per raceme and degree of pubescence. Numbers of perianth parts often differ among flowers in the same inflorescence or clump. "Features such as color, number of perianth segments, degree of pubescence, numbers of flowers per axis in multiflowered taxa, and floral sizes were found to be extremely variable even among inflorescences from a single root cluster" (Wallace, Taxon 36: 128–130. 1987).

1a. Inflorescence pale yellow-brown, racemose, (1 or)2–11-flowered; style slender, about as long as ovary; disk lobes stout ..... 1. *M. hypopitys*
1b. Inflorescence white, scapose, 1-flowered; style thick, shorter than ovary; disk lobes slender, elongate ..... 2. *M. uniflora*

1. Monotropa hypopitys Linnaeus, Sp. Pl. 1: 387. 1753.

松下兰 song xia lan

Hypopitys monotropa Crantz; *H. multiflora* Scopoli; *H. multiflora* var. *glabra* Ledebour; *Monotropa chinensis* Koidzumi; *M. hypophegea* Wallroth; *M. hypopitys* f. *atricha* (Domin) Kitagawa; *M. hypopitys* subvar. *atricha* Domin; *M. hypopitys* var. *glaberrima* H. Hara; *M. hypopitys* var. *glabra* Roth; *M. hypopitys* var. *hirsuta* Roth; *M. hypopitys* subsp. *lanuginosa* (Michaux) H. Hara; *M. lanuginosa* Michaux; *M. multiflora* (Scopoli) Fritsch; *M. taiwaniana* S. S. Ying.

Herbs pale yellow-brown, rather fleshy, becoming brown when dry, usually pubescent on upper part of inflorescence. Inflorescence racemose, (1 or)2–11-flowered, 5–30 cm tall, 1–5 mm in diam. below lowermost flower, emerging from soil in nodding position. Inflorescence bracts below soil level shorter and thicker and more densely crowded on axis than upper bracts. Inflorescence bracts above soil level, sessile, ± erect, ovate to oblong, 7–15 × 3–15 mm, rather fleshy, somewhat pubescent to glabrous, margin entire or erose to irregularly toothed, apex acute to acuminate. Flowers nodding, tubular-campanulate. Bracts 1, rarely to 3, similar to inflorescence bracts in size and shape. Sepals 3–5, occasionally absent, oblong to broadly elliptic, 6–10 × 2–5 mm, shorter than petals, base attenuate, margin irregularly toothed, apex acute or acuminate. Petals 4–6, oblong, 1–1.5 cm × 3–6 mm, abaxially finely pubescent, adaxially long pubescent, base saccate, margin entire and irregularly denticulate or erose in upper part, apex acute or rounded. Stamens 8–12; filaments 7–14 mm, pubescent; anthers hippocrepiform, short, 0.8–1.5 mm, opening by a solitary terminal slit over connate sacs. Ovary 4–8 mm, 3–6 mm in diam.

at anthesis, placentae axile; style 2–10 mm, ca. as long as ovary, slender, pubescent, articulation between style and ovary conspicuous. Stigma yellow, funnelform, 1.5–3 mm in diam., often subtended by a ring of short hairs, usually pubescent. Nectary at base of ovary with 8–10 paired lobes directed downward between staminal bases opposite saccate bases of petals. Capsules erect, broadly ellipsoid, 6–10 mm, 4–8 mm in diam. Fl. Jul–Aug, fr. Sep–Oct.

Damp mixed and coniferous forests; 100–2500 m. Anhui, Fujian, Gansu, W Hubei (Shennongjia), Hunan, Jilin, Jiangxi, Liaoning, Qinghai, Shaanxi, Shanxi, N Sichuan (Barkam), Taiwan, Xinjiang, Xizang, Yunnan [Afghanistan, Bhutan, India, Japan, Kashmir, Korea, Mongolia, Myanmar, Nepal, Pakistan, Russia, Sikkim, Thailand; SW Asia, Europe, North America, Central America (Mexico)].

2. Monotropa uniflora Linnaeus, Sp. Pl. 1: 387. 1753.

水晶兰 shui jing lan

Herbs white when fresh, fleshy, becoming black when dry, usually glabrous. Inflorescence erect, scapose, 1-flowered, 10–30 cm tall, 1.5–2 mm in diam. below flower, emerging from soil in nodding position. Inflorescence bracts scale-form, below soil level shorter and thicker and more densely crowded than upper bracts. Inflorescence bracts above soil level thin, ± erect, ovate to oblong, 1–2 cm × 4–8 mm, sessile, usually glabrous, margin entire or erose to irregularly toothed, apex acuminate. Flowers nodding at anthesis, tubular-campanulate. Bracts not distinguishable from upper inflorescence bracts. Sepals 3–5, scalelike, lanceolate to oblong, 1–1.5 cm × 3–5 mm, mostly glabrous, margin irregularly toothed, apex acute to acuminate. Petals 3–8, obovate-oblong, 1.2–2.2 cm × 4–8 mm, fleshy, abaxially glabrous, adaxially usually pubescent, base saccate, margin entire, irregularly denticulate or erose in upper part, apex rounded. Stamens usually 10; filaments 1–1.5 cm, pubescent; anthers yellowish, short, appearing peltate, to 2 mm in diam.; sacs connate, opening by a distal slit. Ovary essentially glabrous, grooved along sides where capsule segments separate; placenta axile; style 2–3 mm, shorter than ovary, thick, articulation between style and ovary conspicuous; stigma yellow-brown, ca. 4 mm in diam., funnelform, glabrous. Nectary at base of ovary usually with 10 paired lobes directed downward between staminal bases. Capsules erect, ellipsoid-globose, 1–1.5 cm. Old spent axes remaining erect throughout season. Fl. (Aug–)Sep–Oct(–Nov), fr. Oct–Nov.

Damp deciduous or mixed forests; 100–1500 m. Anhui, Gansu, Guizhou, Hubei, Jiangxi, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang, Yunnan, Zhejiang [Bangladesh, Bhutan, India, Japan, Korea, ?Myanmar, Nepal, Sikkim ; North, Central, and N South America].

7. MONOTROPASTRUM Andres in Handel-Mazzetti, Symb. Sin. 7: 766. 1936.

沙晶兰属 sha jing lan shu

Qin Haining (覃海宁); Gary D. Wallace

Eremotropa Andres; *Monotropanthum* Andres.

Herbs perennial, obligate mycoparasitic, from persistent root system. Roots forming a rather dense mass. Stems absent. Leaves absent. Inflorescences scapose or racemose, arising in nodding position from roots; inflorescence bracts laminar, sessile, usually appressed to inflorescence axis. Flowers solitary on scapes or in several flowered racemes, each flower usually nodding at anthesis, erect in fruit. Sepals (1–)3(–5), occasionally absent, appressed to petals. Petals 3–5, oblong, abaxially glabrous, adaxially finely pubescent, base broadly saccate, apex dilated. Stamens ca. as long as petals, usually 6–10 in two series of alternating lengths. Anthers horizontally reniform, with terminal slits. Disk of paired lobes at bases of shorter series of stamens. Ovary 1-loculed, with 4 or 5 or more parietal placentae; style 3–6 mm, slender, merging imperceptibly with ovary, without visible dehiscence lines. Fruit an indehiscent berry. Seeds minute, numerous, ovoid, cell reticulate, without wings or appendages.

Two species: Bhutan, China, India, Indonesia (Sumatra), Japan (including Ryukyu Islands), Korea, Laos, Myanmar, Nepal, Russia (Sakhalin), Sikkim, Thailand, Vietnam; two species (one endemic) in China.

See the taxonomic comment under *Monotropa* above.

Monotropastrum arisanarum Andres (Notizbl. Bot. Gart. Berlin-Dahlem 12: 698. 1935) was described from Taiwan. We have seen no specimens and are therefore unable to treat it in this account. Further revision is necessary.

1a. Inflorescence scapose, flower solitary; petals similar to sepals but broadly saccate at base; disk lobes elongate, slender ..... 1. *M. humile*

1b. Inflorescence racemose, flowers 2 to several; petals distinct from sepals, narrowly saccate at base; disk lobes short, stout ..... 2. *M. sciaphilum*

1. Monotropastrum humile (D. Don) H. Hara, J. Jap. Bot. 36: 78. 1961.

球果假沙晶兰 qiu guo jia sha jing lan

Monotropa humilis D. Don, Prodr. Fl. Nepal. 151. 1825; *Cheilotheca humilis* (D. Don) H. Keng; *C. humilis* var. *glaberrima* (H. Hara) H. Keng & C. F. Hsieh; *C. humilis* var. *pubescens* (K. F. Wu) C. Ling; *C. macrocarpa* (Andres) Y. L. Chou; *C. pubescens* (K. F. Wu) Y. L. Chou; *Monotropa uniflora* Linnaeus var. *pentapetala* Makino; *M. uniflora* var. *tripetala* Makino; *Monotropanthum ampullaceum* Andres; *Monotropastrum baranovii* Y. L. Chang & Y. L. Chou; *M. globosum* Andres ex H. Hara; *M. globosum* var. *baranovii* (Y. L. Chang & Y. L. Chou) Y. C. Zhu; *M. globosum* var. *pentapetalum* (Makino) Honda; *M. globosum* var. *tripetalum* (Makino) Honda; *M. humile* var. *glaberrimum* H. Hara; *M. humile* var. *tripetalum* (Makino) H. Hara; *M. lungchuanense* K. F. Wu; *M. macrocarpum* Andres; *M. pubescens* K. F. Wu; *M. tschanbaischan-*

icum Y. L. Chang & Y. L. Chou; *M. tschanbaischanicum* var. *baranovii* (Y. L. Chang & Y. L. Chou) Y. L. Chou.

Inflorescences scapose, 10–20 cm tall, 2–8 mm in diam. below flower, emerging from soil in nodding position, 1-flowered. Flowers nodding at anthesis, tubular-campanulate. Sepals 1–5, oblong, 8–20 × 2–11 mm, usually glabrous. Petals 3–5, usually oblong, 10–20 × 5–15 mm, slightly longer than sepals, abaxially glabrous, adaxially pubescent, base broadly saccate. Disk of paired, elongate, slender lobes protruding from ovary toward basal saccate portions of petals. Berries erect to nodding, white, ovoid-globose, 9–20 × 10–24 mm, seeds numerous embedded in fleshy interior. Fl. Apr–Aug, fr. May–Sep.

Damp deciduous and mixed forests; 100–2500 m. Heilongjiang, Hubei, Jilin, Liaoning, Taiwan, Xizang, Yunnan, Zhejiang [Bhutan, India, Indonesia (Sumatra), Japan (including Ryukyu Islands), Korea, Laos, Myanmar, Nepal, Russia (Sakhalin), Sikkim, Thailand, Vietnam].

2. Monotropastrum sciaphilum (Andres) G. D. Wallace, Taxon 36: 129. 1987.

荫生沙晶兰 yin sheng sha jing lan

Eremotropa sciaphila Andres, Bot. Jahrb. Syst. 76: 107. 1955; *E. wuana* Y. L. Chou.

Inflorescences to 4–11 cm tall, to 5 mm diam. below lowermost flower, 2- to several flowered racemes. Flowers nodding at anthesis, tubular-campanulate. Sepals 4 or 5, elliptic-oblong, to 9 × 4 mm. Petals 4 or 5, oblong, to 15 × 8 mm, decidedly longer than sepals, base shallowly saccate. Disk of paired, short blunt lobes protruding from base of ovary opposite saccate portions of petal bases. Fl. and fr. unknown.

● *Quercus* forests; ca. 2200 m. Yunnan (near Kunming).

The berry is not mature on the type specimen of *Eremotropa sciaphila*, the only specimen seen by one of us (Wallace).

8. ARCTOUS (A. Gray) Niedenzu, Bot. Jahrb. Syst. 11: 180. 1889.

北极果属 bei ji guo shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); Peter F. Stevens

Arctostaphylos Adanson sect. *Arctous* A. Gray, Syn. Fl. N. Amer. 2(1): 27. 1878.

Shrubs dwarf, deciduous. Twigs smooth, bark exfoliating in papery sheets; leaf or leaf bases marcescent. Leaf blade broad, margin serrate or crenate, flat. Flowers pendulous, 5-merous, in short terminal racemose clusters, with scales at base. Corolla urceolate, shortly lobed, abaxially glabrous, adaxially pubescent. Stamens included; filaments pubescent, much dilated below 1/3 length; anthers with 2 reflexed awns near apex, opening by 2 terminal pores. Ovary superior, glabrous, with one ovule per locule. Fruit a drupe; stones separate.

Four species: E and N Asia, Europe, North America, extending to the Arctic; three species (one endemic) in China.

1a. Leaves 0.2–0.6(–1.7) × 0.2–0.7 cm; plants 2.5–3.5 cm tall ..... 2. *A. microphyllus*
1b. Leaves 2–5 × 0.7–2 cm; plants 3–20(–40) cm tall.
  2a. Leaves thickly papery; berry black-purple ..... 1. *A. alpinus*
  2b. Leaves papery; berry brick-red or scarlet ..... 3. *A. ruber*

1. Arctous alpinus (Linnaeus) Niedenzu, Bot. Jahrb. Syst. 11: 180. 1889.

北极果 bei ji guo

Arbutus alpina Linnaeus, Sp. Pl. 1: 395. 1753; *Arctostaphylos alpina* (Linnaeus) Sprengel; *Mairania alpina* (Linnaeus) Desvaux; ?*Arctous alpinus* var. *japonicus* (Nakai) Ohwi; ?*A. japonicus* Nakai.

Shrubs dwarf, tufted or prostrate, 3–20(–40) cm tall. Twigs terete, glabrous. Leaf blade obovate to spatulate-obovate, rarely oblanceolate, 2–5 (including petiole) × 0.7–2 cm, thickly papery, glabrous, fine veins abaxially reticulate, subglaucous, adaxially distinctly impressed, base attenuate-cuneate, decurrent into winged petiole, margin crenate-serrate, ciliate in basal 1/2 at least along petiole, apex acute or rounded. Racemes 3–7-flowered. Pedicel ca. 5 mm, glabrous. Calyx lobes broadly ovate, apex acute. Corolla white, 4–6 mm; lobes greenish. Stamens 1–2 mm; filaments pubescent. Drupe black-purple, globose, 6–9 mm in diam. Fl. May–Jul, fr. Jul–Aug. $2n = 26, 28$.

Alpine thickets, among rocks, sandy areas; 1900–3000 m. Gansu, Nei Mongol, Qinghai, Shaanxi, N Sichuan, Xinjiang [Japan, Mongolia, Russia; Europe, North America].

The fruit is edible.

2. Arctous microphyllus C. Y. Wu, Yunnan Redai Yaredai Zhiwu Quxi Yanjiu Baogao [Rep. Stud. Pl. Trop. Subtrop. Yunnan] 1: 5. 1965.

小叶当年枯 xiao ye dang nian ku

Shrubs dwarf, tussock-forming or prostrate, 2.5–3.5 cm tall. Twigs terete, glabrous. Leaf blade pale abaxially, dark green adaxially, oblanceolate, obovate, or elliptic, 2–6(–17) × 2–7 mm, thickly papery, glabrous, veins impressed adaxially, base attenuate, decurrent into winged petiole, margin crenate-serrate, densely ciliate or white setose along petiole, apex obtuse-acute. Racemes 2- or 3-flowered; scales brown, elliptic, longer than pedicel, margin ciliate, apex acute. Pedicel ca. 5 mm. Calyx lobes triangular, 1–1.5 mm, apex acuminate. Corolla and stamens unknown. Immature drupe white-green, subglobose, 4–5 mm in diam. Fl. May–Jun, fr. Jul.

● Low valley forests; ca. 3500 m. NW Yunnan (Zhongdian).

One of us (Stevens) questions whether this is a good species.

3. Arctous ruber (Rehder & E. H. Wilson) Nakai, Trees Shrubs Japan 1: 156. 1922.

红北极果 hong bei ji guo

Arctous alpinus (Linnaeus) Niedenzu var. *ruber* Rehder & E. H. Wilson in Sargent, Pl. Wilson 1: 556. 1913; *Arctostaphylos rubra* (Rehder & E. H. Wilson) Fernald.

Shrubs dwarf, 3–15(–20) cm tall. Twigs terete, glabrous. Leaf blade pale abaxially, dark green adaxially, obovate or oblanceolate, 2–4 (including petiole) × 1–1.4 cm, papery, glabrous, veins impressed adaxially, base attenuate-cuneate, decurrent into winged petiole, margin crenate, sparsely ciliate along petiole, apex obtuse-acute. Racemes 2–5-flowered; scales broadly ovate, 5–7 mm, margin densely ciliate. Pedicel ca. 6 mm. Calyx lobes ovate, ca. 1 mm. Corolla white to cream, 3–4 mm; lobes spreading, ovate or orbicular. Stamens 1.5–2 mm; filaments puberulous. Drupe brick-red or scarlet, globose, 6–10 mm in diam. Fl. Jun, fr. Aug–Sep. 2*n* = 26.

Among mosses and rocks on mountain summits, streamsides, localities rich in calcareous deposits; 2900–3300(–4000) m. Gansu, Jilin, Nei Mongol, Ningxia, N Sichuan [Japan, Korea; NW North America (Alaska)].

9. DIPLARCHE J. D. Hooker & Thomson, Hooker's J. Bot. Kew Gard. Misc. 6: 382. 1854.

杉叶杜鹃属 shan ye du juan shu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Shrubs dwarf, evergreen, densely pulvinate. Leaves crowded, sessile; leaf blade linear or linear-elliptic, small, leathery, margin serrate or long-ciliate, apex subacute or ending in a gland. Inflorescence terminal, racemose or subcapitate. Bracts and bracteoles leaflike, margin glandular-ciliate. Calyx lobes 5, leathery, margin glandular-ciliate. Corolla rose, small, deciduous; tube cylindric; lobes 5, patent. Stamens 10, included: 5 basal or hypogynous, 5 inserted high on corolla and alternating with corolla lobes; anthers elliptic, dehiscing longitudinally. Ovary globose, 5-celled, glabrous; style short; stigma capitate, 5-lobed. Capsule globose, enclosed by calyx, septicidally 5-valved; wall of cells splitting into two layers. Seeds many; testa with reticulate veins.

Two species: China, Myanmar, Sikkim; two species in China.

1a. Inflorescence 8–12(–20)-flowered; leaf blade 6–6.5 mm; branches sparsely glandular-pubescent; lower 5 stamens attached to corolla; calyx lobes linear-oblong ..... 1. *D. multiflora*
1b. Inflorescence 2–6-flowered; leaf blade 3–4 mm; branches usually glabrous; lower 5 stamens free from corolla; calyx lobes ovate-oblong ..... 2. *D. pauciflora*

1. Diplarche multiflora J. D. Hooker & Thomson in Hooker's J. Bot. Kew Gard. Misc. 6: 383. 1854.

多花杉叶杜鹃 duo hua shan ye du juan

Plants 8–16 cm tall. Branchlets dark brown, sparsely glandular-pubescent. Leaf blade linear, 6–6.5 × 1–1.1(–1.4) mm, base obtuse, margin spinescent-serrate (teeth usually ending in a glabrous, shining gland), apex subacute. Inflorescence subcapitate, ca. 1 cm, 8–12(–20)-flowered. Bracts elliptic-ovate, 2.5–5.5 mm. Calyx lobes linear-oblong, ca. 4 mm. Corolla ca. 7 mm; tube ca. 4 mm; lobes rounded, ca. 3 mm, patent apex usually slightly sinuate. Stamens: lower 5 attached to corolla, ca. 2 mm. Style purple, ca. 1 mm. Capsule peduncle elongating in fruit to 7 cm, pubescent. Fl. and fr. Jun–Sep.

Thickets, alpine meadows, rocky slopes, cliffs; 3500–4100 m. SE Xizang, NW Yunnan [Myanmar, Sikkim].

2. Diplarche pauciflora J. D. Hooker & Thomson, Hooker's J. Bot. Kew Gard. Misc. 6: 383. 1854.

少花杉叶杜鹃 shao hua shan ye du juan

Plants 4–7 cm tall. Branchlets usually glabrous. Leaf blade linear-elliptic, 3–4 × 1(–1.2) mm, base tapering, margin spinescent-serrate, glabrous, shining, apex obtuse, mucronate. Inflorescence subcapitate, ca. 1 cm, 2–6-flowered. Bracts oblong-ovate to broadly ovate, ca. 4 mm. Calyx lobes ovate-oblong, ca. 3 mm. Corolla ca. 4 mm; tube ca. 2 mm; lobes as long as tube, patent, rounded or ovate apex usually slightly sinuate. Stamens: lower 5 free from corolla and often surrounding capsule after corolla has fallen. Style ca. 1 mm. Capsule peduncle elongating in fruit to 4 cm, glandular-pubescent. Fl. Jun–Jul, fr. Aug–Sep.

Pastures, slopes, alpine rocks, cliffs; 3500–4800 m. NW Sichuan, NW Yunnan [Sikkim].

10. PHYLLODOCE Salisbury in Hooker, Parad. Lond. t. 36. 1806.

松毛翠属 song mao cui shu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Shrubs evergreen, small. Leaves alternate or decussate; leaf blade linear, margin serrulate. Inflorescence terminal, umbellate, 2–15-flowered, bracteate. Calyx small, 5-parted, persistent. Corolla urceolate, 5-toothed. Stamens (8–)10(–12), included; anthers dehiscing by pores. Style slender. Capsule globose, 5-locular, loculicidal. Seeds ovoid, lustrous.

About seven species: widespread N temperate regions; two species (one endemic) in China.

1a. Calyx lobes strongly deflexed in flower; style longer than corolla tube, nearly as long as whole corolla; leaf blade ca. 10 × 1 mm; pedicels geniculate above middle ..... 1. *P. deflexa*
1b. Calyx lobes not deflexed in flower; style slightly shorter than corolla tube; leaf blade (5–)7(–10) × ca. 1.2 mm; pedicels somewhat recurved ..... 2. *P. caerulea*

1. Phyllodoce deflexa Ching ex H. P. Yang, Acta Phytotax. Sin. 28: 403. 1990.

反折松毛翠 fan zhe song mao cui

Shrubs ca. 20 cm tall; usually much branched. Branchlets purplish brown, slender, very leafy, sparsely glandular-hairy. Leaves decussate, usually subsessile; leaf blade linear, ca. 10 × 1 mm, abaxially densely lanate along midvein, adaxially glabrous, base cuneate, margin serrulate, apex obtuse. Inflorescence subumbellate, 3–7-flowered; bracts 2, broadly ovate, 2–3 mm; pedicels geniculate above middle, purple, filiform, to 2.5 cm in flower, elongating in fruit, densely purple glandular-hairy. Calyx purple-brown, cylindric-oblong; lobes strongly deflexed in flower, lanceolate, ca. 3 mm, glandular-pilose. Corolla long-ovoid-urceolate, ca. 8 mm, densely glandular-hairy outside. Stamens 10, included; anthers purple. Style longer than corolla tube, nearly as long as whole corolla; stigma capitate. Capsule subglobose. Fl. and fr. Jun–Aug.

● Forests; ca. 1700 m. Jilin.

2. Phyllodoce caerulea (Linnaeus) Babington, Man. Brit. Bot. 194. 1843.

松毛翠 song mao cui

Andromeda caerulea Linnaeus, Sp. Pl. 1: 393. 1753; *Phyllodoce taxifolia* Salisbury, nom. illeg. superfl.

Shrubs 10–30(–40) cm tall, prostrate to erect, much branched. Branchlets slender, leafy, glabrous. Leaves alternate; petiole ca. 0.5 mm; leaf blade linear, (5–)7(–10) × ca. 1.2 mm, adaxially with prominent midvein, base broadly cuneate, margin slightly serrulate, glabrous, apex obtuse. Inflorescence clustered, (1–)2–5(–6)-flowered; bracts 2, persistent; pedicels somewhat recurved, reddish, ca. 2 cm in flower, elongating to 4 cm in fruit, glandular-hairy. Calyx red-purple, glandular-pilose; lobes not deflexed in flower, lanceolate, 3–4(–5.5) mm. Corolla red or bluish rose, urceolate, 7–8(–11) mm, sparsely glandular-hairy outside. Stamens 10, included; anthers purple. Style slightly shorter than corolla tube; stigma capitate. Capsule globose, 3–4 mm. Fl. Jun–Jul, fr. Aug.

Subalpine scrub, alpine meadows, grasslands, stony tundra, rocks. Jilin, Nei Mongol, Xinjiang [Japan, Korea, Russia; Europe, North America].

11. LEDUM Linnaeus, Sp. Pl. 1: 391. 1753.

杜香属 du xiang shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); David F. Chamberlain

Shrubs evergreen, small, multibranched, with fragrant resin. Leaves shortly petiolate; leaf blade linear, linear-lanceolate, or narrowly oblong, leathery, abaxially with white and/or rusty brown-pilose or woolly indumentum, margin entire, recurved. Inflorescences terminal, racemose, many-flowered; bracts present at peduncle base, dry, membranous, soon deciduous; bractlets absent. Calyx small, 5-lobed, persistent. Corolla white, divided to base; lobes imbricate in bud. Stamens (5–)8–10, protruding beyond corolla; filaments linear; anthers small, abaxially connected, globose, without appendages. Flower disk 8–10-lobed. Ovary globose, 5-locular, lepidote. Style linear; stigma obtuse, 5-lobed. Capsule ellipsoid or cylindric, opening from base. Seeds tiny.

Three or four species: circumboreal in temperate and cold-temperate regions; one species in China.

DNA sequencing has shown that this genus should be included within *Rhododendron* subg. *Rhododendron,* as *R.* subsect. *Ledum* (Linnaeus) Kron & Judd (Syst. Bot. 15: 67. 1990). It has affinities with *R.* subsect. *Micrantha*.

Ledum subulatum (Nakai) A. P. Khokhrjakov & Mazurenko (in Kharkevich, Sosud. Rast. Sovetsk. Dal'nego Vostoka 5: 125. 1991; *L. palustre* var. *subulatum* Nakai, Bot. Mag (Tokyo) 31: 103. 1917; *Rhododendron subulatum* (Nakai) Harmaja) was described from N Korea and has been recorded also from Japan and (mainly) Russia. Harmaja (Ann. Bot. Fenn. 39: 183–184. 2002) also cited "NE China," but without locality. The taxon is said to have a subulate leaf blade, 10–36 × 1–3 mm, with a revolute margin and reddish brown, floccose hairs abaxially. From this description it is unclear how distinct *L. subulatum* is from *L. palustre*.

1. Ledum palustre Linnaeus, Sp. Pl. 1: 391. 1753.

杜香 du xiang

Shrubs erect or creeping, to 50 cm tall. Branches slender; young branches densely covered with rust-colored wool; terminal buds conspicuous, ovoid, scales densely rufous-woolly. Leaf blade linear, linear-lanceolate, or narrowly oblong, 1–8 × 0.1–1.5 cm, abaxially densely rufous-hairy or woolly, sometimes also white-pubescent, with raised midvein, adaxially dark green and wrinkled, margin strongly or slightly recurved. Inflorescence many-flowered; pedicels thin. Calyx lobes 5, ovate, 5–8 mm, persistent. Corolla milky white, 5–25 mm, densely rufous-woolly. Stamens 10; filaments pilose at base. Style persistent, 2–4 mm. Capsule ovoid, 3.5–4 mm. Fl. Jun–Jul, fr. Jul–Aug.

Coniferous forests, forest margins, marshes, wet meadows; 400–1400 m. Heilongjiang, Jilin, Nei Mongol [N Korea, Mongolia, Russia; NE Asia, C and N Europe, North America].

1a. Leaf blade linear-lanceolate or narrowly oblong, 2–8 × 0.4–1.5 cm ..... 1b. var. *dilatatum*
1b. Leaf blade linear, 1–3 × 0.1–0.3 cm.
  2a. Shrubs creeping; leaf blade abaxially densely rufous-hairy and white-pubescent ..... 1c. var. *decumbens*
  2b. Shrubs often erect; leaf blade abaxially densely rufous-woolly, not white-pubescent ..... 1a. var. *palustre*

1a. Ledum palustre var. **palustre**

杜香(原变种) du xiang (yuan bian zhong)

Ledum tomentosum Stokes, nom. illeg. superfl.; *Rhododen-*

dron palustre (Linnaeus) Kron & Judd (1990), not Turczaninow ex de Candolle (1839); *R. tomentosum* Harmaja.

Shrubs often erect. Leaf blade linear, 1–3 × 0.1–0.3 cm, abaxially densely rufous-woolly, not white-pubescent, margin strongly recurved.

Often dominant in coniferous forests, marshes; 400–1400 m. Heilongjiang, Nei Mongol [Mongolia; NE Asia, C and N Europe, North America].

1b. Ledum palustre var. **dilatatum** Wahlenberg, Pl. Lapp. 103. 1812.

宽叶杜香 kuan ye du xiang

Leaf blade linear-lanceolate or narrowly oblong, 2–8 × 0.4–1.5 cm, abaxially rufous-hairy and white-pubescent, margin slightly recurved.

Coniferous forests, forest margins, marshes, wet meadows. Heilongjiang, Jilin [N Korea, Russia; NE Asia, N Europe].

1c. Ledum palustre var. **decumbens** Aiton, Hort. Kew. 2: 65. 1789.

小叶杜香 xiao ye du xiang

Ledum decumbens (Aiton) Loddiges ex Steudel; *Rhododendron subarcticum* Harmaja; *R. tomentosum* Harmaja subsp. *subarcticum* (Harmaja) G. D. Wallace.

Shrubs creeping. Leaf blade linear, 1–1.5 × 0.1–0.15 cm, abaxially densely rufous-hairy and white-pubescent, margin slightly recurved.

Often dominant in coniferous forests, marshes. Heilongjiang, Nei Mongol [Mongolia; NE Asia, C and N Europe, North America].

Flora of China 14: 260–455. 2005.

12. **RHODODENDRON** Linnaeus, Sp. Pl. 1: 392. 1753.

杜鹃属 du juan shu

Fang Mingyuan (方明渊), Fang Ruizheng (方瑞征 Fang Rhui-cheng), He Mingyou (何明友), Hu Linzhen (胡琳贞 Hu Ling-cheng), Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Shrubs or trees, terrestrial or epiphytic, with various hairs, and/or with peltate scales or glabrous, indumentum sometimes detersile (the hairs tangled and coming away as a layer). Leaves evergreen, deciduous or semideciduous, alternate, sometimes clustered at stem apex; margin entire, very rarely crenulate, abaxial indumentum sometimes with a pellicle (a thin skinlike layer on the surface). Inflorescence a raceme or corymb, mostly terminal, sometimes lateral, few- to many-flowered, sometimes reduced to a single flower. Calyx persistent, 5–8-lobed, sometimes reduced to a rim, lobes minute and triangular to large and conspicuous. Corolla funnelform, campanulate, tubular, rotate or hypocrateriform, regular or slightly zygomorphic, 5(–8)-lobed, lobes imbricate in bud. Stamens 5–10(–27), inserted at base of corolla, usually declinate; filaments linear to filiform, glabrous or pilose towards base; anthers without appendages, opening by terminal or oblique pores. Disk usually thick, 5–10(–14)-lobed. Ovary 5(–18)-locular, with hairs and/or scales, rarely glabrous. Style straight or declinate to deflexed, persistent; stigma capitate-discoid, crenate to lobed. Capsule cylindrical, coniform, or ovoid, sometimes curved, dehiscent from top, septicidal; valves thick or thin, straight or twisted. Seeds very numerous, minute, fusiform, always winged, or both ends with appendages or thread-like tails.

About 1000 species: Asia, Europe, North America, two species in Australia; 571 species (409 endemic) in China.

1a. Inflorescence buds lateral, usually in axils of upper or lower leaves of last year's shoots; uppermost inflorescence buds (or leaf bud) in axils of uppermost leaves, subterminal.
  2a. New foliage shoots from axils of leaves below inflorescence buds; leaves with peltate scales, deciduous or semievergreen; flowers appearing before leaf emergence ..... 4. *R.* subg. *Rhodorastrum*
  2b. New foliage shoots arising from uppermost (pseudoterminal) buds, and from axils of leaves; leaves evergreen.
    3a. Plants with peltate scales; capsule short, cylindric ..... 3. *R.* subg. *Pseudorhodorastrum*
    3b. Plants without peltate scales; capsule conical-ovoid or cylindric ..... 6. *R.* subg. *Azaleastrum*
1b. Inflorescence buds terminal, sometimes with additional lateral floral buds immediately below, vary rarely axillary from lower leaves (as in some species of *R.* subsect. *Cinnabarina*).
  4a. Plant with peltate scales, sometimes also with other hairs.
    5a. Leaves evergreen, very rarely semideciduous to deciduous; flowers appearing after leaf emergence; style usually straight; plant usually without hairs ..... 1. *R.* subg. *Rhododendron*
    5b. Leaves deciduous or semideciduous, very rarely evergreen; flowers appearing before leaf emergence; style usually short and recurved; plant usually hairy ..... 2. *R.* subg. *Pseudazalea*
  4b. Plant without peltate scales, with various hairs, or glabrous.
    6a. Corolla divided nearly to base on lower side; peduncle bearing leafy bracts; style curved ..... 9. *R.* subg. *Therorhodion*
    6b. Corolla not divided to base; peduncle without bracts; style slender, straight.
      7a. Flowers and new leafy shoots from same terminal buds; leaves persistent to deciduous; indumentum often with strap-shaped setae ..... 8. *R.* subg. *Tsutsusi*
      7b. Flowers from terminal buds; new leafy shoots from lateral buds, i.e., from axils of leaves of previous season; indumentum without flattened setae.
        8a. Leaves evergreen; stamens 10(–20) ..... 5. *R.* subg. *Hymenanthes*
        8b. Leaves deciduous; stamens 5 (in Chinese species) ..... 7. *R.* subg. *Pentanthera*

1. **Rhododendron** subg. **Rhododendron**

杜鹃亚属 du juan ya shu

Shrubs, more rarely trees, usually evergreen, seldom deciduous, sometimes epiphytic; young shoots densely scaly, often without hairs, sometimes also pubescent, hispid or woolly. Leaf blade normally leathery; abaxial surface densely scaly, often also adaxial leaf surfaces, pedicels, calyx, corolla, ovary, and style, hairs generally absent, rarely simple pilose. Inflorescence terminal or axillary, umbellate-racemose or shortly racemose, 1- to many-flowered: flowers opening after leaf emergence. Calyx usually small or not well-developed, 5-lobed; corolla small to large, funnelform to campanulate, tubular-campanulate or salver-shaped, only rarely actinomorphic, white, red, yellow or purple, flecked within; stamens (5–)10(–27). Ovary 5–6(–12)-locular; style declinate to deflexed. Capsule oblong or ovoid, densely scaly, valves subwoody, deflexed on splitting. Seeds many, sometimes with appendages at both ends.

About 500 species: Asia, Europe, North America, two species in Australia; 184 species (113 endemic) in China.

1a. Capsules with rather thin valves that twist after dehiscence; placenta generally free from central axis of capsule; seeds with tail-like appendages at both ends ..... 3. *R.* sect. *Vireya*
1b. Capsules with hard or woody valves; placenta remaining joined to central axis of capsule; seeds with finned wings.

2a. Stamens (5–)10(–27), usually exserted from corolla tube; corolla often large, funnelform, campanulate or tubular; scales with margin entire, rarely crenulate ..... 1. *R.* sect. *Rhododendron*
2b. Stamens 5–8, rarely 10, included within corolla tube; corolla often small, salver-shaped; scales with margin lacerate ..... 2. *R.* sect. *Pogonanthum*

1. **Rhododendron** sect. **Rhododendron**

杜鹃组 du juan zu

Shrubs, sometimes prostrate or cushion-forming, or small trees, usually evergreen, seldom deciduous, sometimes epiphytic. Leaves small to large; leaf blade margin usually entire, sometimes crenulate or revolute; abaxial surface scaly, sometimes also uniformly woolly, or pubescent or strap-shaped-setose along main veins. Inflorescence terminal, 1–28-flowered, or 2- or 3-flowered and axillary, usually umbellate-racemose, shortly racemose or capitate; flowers small to large. Calyx generally short, lobes leaflike or absent, rarely well-developed; corolla funnelform, to campanulate or tubular-campanulate. Stamens (4–)5–10(–25); filaments mostly pubescent towards base, rarely glabrous; ovary 5(–12)-locular, always scaly, sometimes also hairy; style long, slender, straight, curved, or sharply deflexed, glabrous or with scales or shortly pilose at base. Capsule ovoid to cylindric, valves woody, 2–23(–70) mm, scaly or not, sometimes pubescent. Seeds wingless or with a finlike wing.

About 170 species: mostly in Asia, especially from the E Himalayas to SW China, a few species in Europe and North America; 153 species (92 endemic) in China.

1a. Style short, thick, distinctly curved.
  2a. Stamens 12–16; corolla with woolly hairs in the throat ..... 15. *R.* subsect. *Camelliiflora*
  2b. Stamens (8–)10; corolla glabrous inside.
    3a. Scales strongly dimorphic, the larger dark brown, the smaller golden ..... 16. *R.* subsect. *Glauca*
    3b. Scales on abaxial leaf surface monomorphic.
      4a. Pedicels shorter than corolla; corolla usually yellow, rarely white or pink ..... 14. *R.* subsect. *Boothia*
      4b. Pedicels distinctly longer than corolla.
        5a. Inflorescences corymbose, 1–3(–5)-flowered; leaves 0.4–2.6(–4) cm.
          6a. Corolla fleshy, crimson or purple, with scales outside; abaxial leaf surface with distant scales ..... 17. *R.* subsect. *Campylogyna*
          6b. Corolla thinner, variable in color, with dense scales outside; abaxial leaf surface with dense scales ..... 19. *R.* subsect. *Lepidota*
        5b. Inflorescences racemose, 4–10(–18)-flowered; leaves (2–)4–5 cm.
          7a. Scales entire, small, distant on abaxial surface of leaves; corolla campanulate ..... 18. *R.* subsect. *Genestieriana*
          7b. Scales crenulate, overlapping on abaxial surface of leaves; corolla rotate ..... 20. *R.* subsect. *Baileya*
1b. Style slender and straight.
  8a. Leaf blade abaxially woolly, hairs obscuring small golden scales ..... 1. *R.* subsect. *Edgeworthia*
  8b. Leaf blade abaxially without hairs, or rarely with hairs that do not obscure the scales.
    9a. Style with scales, at least at base, sometimes up to tip, rarely without scales; calyx usually conspicuously lobed, occasionally with underdeveloped lobes, then with margin ciliate.
      10a. Corolla (3–)5–7(–13.5) cm, often white or pink, rarely yellow ..... 2. *R.* subsect. *Maddenia*
      10b. Corolla 1.5–3 cm, yellow, white, pink or dark purple ..... 12. *R.* subsect. *Tephropepla*
    9b. Style entirely without scales; calyx lobes inconspicuous, rarely more than 4 mm.
      11a. Inflorescences racemose; corolla tubular or campanulate.
        12a. Corolla usually pendulous, 2–3.8 cm, often brightly colored, never white, outer surface not lepidote ..... 11. *R.* subsect. *Cinnabarina*
        12b. Corolla not pendent, 0.4–1.2 cm, white or yellow, outer surface lepidote ..... 13. *R.* subsect. *Micrantha*
      11b. Inflorescences corymbose; corolla funnelform or broadly campanulate, rarely tubular-campanulate.
        13a. Corolla thin or fleshy, tubular or narrowly campanulate, lobes short, straight or spreading, though not markedly so.
          14a. Inflorescences 1–3-flowered; flowers erect; corolla thin, often yellow, outer surface scaly ..... 4. *R.* subsect. *Monantha*
          14b. Inflorescences 2–6(–8)-flowered; flowers usually pendulous; corolla fleshy, various in color, sometimes yellow, outer surface not scaly ..... 11. *R.* subsect. *Cinnabarina*
        13b. Corolla thin, funnelform or rotate, lobes spreading.
          15a. Low to tall shrubs, rarely small trees, leaves large, (0.9–)1.3–12 × (0.3–)0.8–3.5(–4) cm.
            16a. Inflorescences mostly 5–7(–10)-flowered; corolla always scaly outside ..... 6. *R.* subsect. *Heliolepida*

16b. Inflorescences mostly 1–3-flowered, sometimes with 2 or 3 lateral buds below terminal buds; corolla with or without scales outside.
17a. Small shrubs, usually epiphytic; calyx well-developed, lobes red or rosy-purple, rarely green; young shoots usually setose; corolla open-campanulate ..... 3. *R.* subsect. *Moupinensia*
17b. Medium to tall shrubs, rarely small trees, terrestrial; calyx rim-like or shortly lobed; young shoots usually glabrous; corolla broadly funnelform ..... 5. *R.* subsect. *Triflora*
15b. Low to dwarf shrubs; leaves small to very small, 0.3–4(–7) × 0.15–1.7(–2.8) cm.
18a. Pedicels 1–5(–15)mm; corolla usually glabrous outside (puberulous in *R. dasypetalum*).
19a. Leaf margin entire; scales on abaxial surface flat, with relatively broad rims ..... 7. *R.* subsect. *Lapponica*
19b. Leaf margin crenulate; scales on abaxial surface vesicular ..... 9. *R.* subsect. *Fragariiflora*
18b. Pedicels (7–)15–30 mm; corolla pubescent outside.
20a. Abaxial leaf surface with scales dense and overlapping, margin crenulate ..... 8. *R.* subsect. *Saluenensia*
20b. Abaxial leaf surface with scales sparser, 0.5–6 times their own diameter apart, margin entire ..... 10. *R.* subsect. *Uniflora*

1. Rhododendron subsect. Edgeworthia (Hutchinson) Sleumer, Bot. Jahrb. Syst. 74: 532. 1949.

泡泡叶杜鹃亚组 pao pao ye du juan ya zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Rhododendron ser. *Edgeworthia* Hutchinson in J. B. Stevenson, Sp. Rhodod. 228. 1930 [*"Edgeworthii"*].

Shrubs, 0.3–1.3(–5.6) m tall, often epiphytic; young shoots with scales golden, small, densely woolly. Leaf blade leathery; abaxial surface densely woolly, scales very small, brown; adaxial surface often bullate, sometimes sparsely pubescent. Inflorescence terminal, 1–3-flowered. Pedicel densely woolly; calyx large, often red or tinged red, 5–17 mm, 5-lobed; corolla funnel-campanulate or campanulate, usually fragrant, white, often flushed pink, or yellow; outer surface scaly; stamens 10; ovary 5-locular, densely woolly; style straight or sharply deflexed. Capsule 7–22 mm, scaly, densely woolly. Seeds winged and finned.

About three species: Bhutan, China, India, Myanmar, Nepal, Sikkim; three species in China.

1a. Style long, declinate; corolla 3.4–7.6 cm; calyx 11–19 mm; flowers fragrant ..... 1. *R. edgeworthii*
1b. Style short, sharply bent; corolla 1.5–2.5 cm; calyx 5–9 mm; flowers not fragrant.
2a. Corolla yellow; calyx pale green; adaxial leaf surface bullate ..... 3. *R. seinghkuense*
2b. Corolla white, white flushed pink, rarely pale yellow; calyx red or tinged red; adaxial leaf surface not bullate ..... 2. *R. pendulum*

1. Rhododendron edgeworthii J. D. Hooker, Rhododendr. Sikkim-Himalaya 3: t. 21. 1851.

泡泡叶杜鹃 pao pao ye du juan

Rhododendron bullatum Franchet.

Shrubs, evergreen, often epiphytic, (0.3–)1(–5.6) m tall; indumentum dark orange to pale beige-brown. Petiole 5–25 mm; leaf blade leathery, ovate-elliptic, oblong or oblong-lanceolate, 4–16 × 2–6 cm; base rounded; apex acuminate or shortly acuminate; abaxial surface densely brown or fawn, woolly, scales dense, very small, rather equal, pale brown; adaxial surface strongly bullate, glabrous. Inflorescence 1–3-flowered. Flowers fragrant. Pedicel 1–2 cm, densely woolly; calyx red or tinged red, deeply 5-lobed; lobes 11–17 mm, oblong, ovate or rounded, unequal, persisting to enclose mature capsule, scales present on margin and abaxially, also densely woolly; corolla funnelform-campanulate, white, sometimes flushed pink and/or with a yellow blotch at base, 3.4–7.5 cm; tube 25–35 mm; outer surface scaly; inner surface glabrous; stamens 10, unequal, filaments densely pilose below; ovary densely woolly, sparsely scaly; style straight, ca. as long as corolla, base scaly and woolly. Capsule cylindric-ovate or globose, 10–22 mm, scaly, densely woolly. Fl. Apr–Jun, fr. Nov.

Dense forests, cliffs, rocks, often epiphytic; 2000–4000 m. SW Sichuan, SE Xizang, C and NW Yunnan [Bhutan, N India, Myanmar, Sikkim].

2. Rhododendron pendulum J. D. Hooker, Rhododendr. Sikkim-Himalaya 2: t. 13. 1851.

凸叶杜鹃 tu ye du juan

Straggling shrubs, evergreen, epiphytic, 0.3–1.3 m tall; indumentum whitish to beige. Petiole 4–8 mm, densely woolly; leaf blade oblong or oblong-elliptic, 2–5 × 1–2.5 cm; margin slightly revolute; apex obtuse or rounded; abaxial surface densely brown or fawn-woolly, scales ca. 0.5 × their own diameter apart, small, brown; adaxial surface smooth, shiny, scales and hairs absent. Inflorescence (1–)2- or 3-flowered. Flowers not fragrant. Pedicel 0.6–1.6 cm, densely woolly; calyx red or tinged red, lobes 5–9 mm, oblong or oblong-obovate, unequal, persisting to enclose mature capsule, sparsely reddish scaly, woolly, margin long ciliate; corolla funnelform-campanulate, white, white tinged pink, or rarely pale yellow, 1.5–2.2

cm; tube 7–10 mm; outer surface scaly; stamens 10, filaments pilose below; ovary densely woolly, scaly; style sharply deflexed, shorter than stamens, usually with a few hairs and scales at base. Capsule ovate or cylindric-ovate, 7–10 mm, densely woolly. Fl. Apr–Jun, fr. Jul–Oct.

Dense forests, cliffs, rocks, often epiphytic; 2200–3700 m. S Xizang [Bhutan, Nepal, Sikkim].

3. Rhododendron seinghkuense Kingdon Ward ex Hutchinson in J. B. Stevenson, Sp. Rhodod. 234. 1930.

黄花泡泡叶杜鹃 huang hua pao pao ye du juan

Prostrate or upright shrubs, often epiphytic, 0.3–0.9 m tall. Petiole 4–13 mm, densely woolly; leaf blade ovate, ovate-lanceolate, oblong-lanceolate or oblong-elliptic, 3–8 × 1.5–4 cm; base rounded or obtuse; apex acuminate, acute or obtuse; abaxial surface densely brown-woolly, scales distant, very small; adaxial surface bullate, scaly, sparsely pubescent. Inflorescence 1- or 2-flowered. Pedicel 1–2 cm, densely woolly; calyx pale green, lobes 5–9 mm, rounded, persisting to enclose mature capsule, scales sometimes present on margin and abaxially, densely woolly; corolla shortly campanulate, yellow, 1.5–2.5 cm; outer surface scaly, glabrescent; stamens 10, slightly shorter than corolla; ovary densely woolly, scaly; style short, sharply deflexed, usually without scales or hairs. Capsule ellipsoid, 8–14 mm, scaly, densely brown-woolly. Fl. Apr–May, fr. Aug–Nov.

Dense forests, epiphytic on trees, cliffs, shady rocks; (1800–) 2000–2500(–3500) m. SE Xizang, NW Yunnan [N Myanmar].

2. Rhododendron subsect. Maddenia (Hutchinson) Sleumer, Bot. Jahrb. Syst. 74: 533. 1949.

有鳞大花亚组 you lin da hua ya zu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); David F. Chamberlain

Rhododendron ser. *Maddenia* Hutchinson in J. B. Stevenson, Sp. Rhodod. 447. 1930 [*"Maddenii"*].

Shrubs or small trees, 0.3–4(–8) m tall; epiphytic or terrestrial; young shoots with scales often brown, otherwise glabrous, hispid or villous. Leaf blade leathery; adaxial surface scales dense, unequal, otherwise often glabrous except for midrib; adaxial surface often glabrous, sometimes scaly and/or hairy. Inflorescence terminal, a broad and large umbel or short raceme, 1–5(–11)-flowered. Calyx developed or not, 1–30 mm, 5-lobed, ciliate or not; corolla tubular-campanulate to funnelform, white or yellow, sometimes tinged pink, rarely pale purple or red, outer surface usually scaly, hairy in tube; stamens (9–)10 (15–25 in *R. maddenii*); ovary 5- or 6-locular (10–12-locular in *R. maddenii*); style rarely shorter than stamens, slightly curved, lower part scaly, rarely glabrous. Capsule often large, ovoid to cylindric, 5–50(–70) mm, densely scaly. Seed winged, with flipperlike structure.

About 45 species: Bhutan, China, India, Laos, Myanmar, Nepal, Sikkim, Thailand, Vietnam; 34 species (18 endemic) in China.

1a. Stamens 15–25(–27); ovary 10–12-locular; petioles adaxially grooved ..... 4. *R. maddenii*
1b. Stamens (8–)10(–14); ovary 5–7-locular.
  2a. Calyx margin not or only rarely hairy, lobes large, 0.8–3 cm; petiole rounded adaxially (concave in *R. megacalyx,* then with pedicels and calyx whitish pruinose).
    3a. Pedicels and calyx not scaly, whitish pruinose; calyx lobed to the middle, lobes 2–3 cm; capsule shorter than persistent calyx; midrib and petiole concave adaxially ..... 5. *R. megacalyx*
    3b. Pedicels and calyx scaly; calyx lobed to the base; capsule longer than persistent calyx; midrib and petiole raised or flat adaxially.
      4a. Leaf blade 11–26 × (3.5–)6–12 cm; corolla 9–13.5 cm.
        5a. Leaf blade with veins flat on adaxial surface ..... 8. *R. excellens*
        5b. Leaf blade with veins strongly impressed on adaxial surface.
          6a. Pedicels and calyx glabrous; capsule 3–3.5 cm; abaxial leaf surface with dense small scales and scattered large scales ..... 6. *R. nuttallii*
          6b. Pedicels and calyx densely pubescent; capsule 5–7 cm; abaxial leaf surface with more large scales ... 7. *R. sinonuttallii*
      4b. Leaf blade less than 16 × 6 cm; corolla 3.5–10 cm.
        7a. Young shoots sparsely hispid; pedicels and calyx pubescent ..... 9. *R. dalhousieae*
        7b. Young shoots, pedicels and calyx with scales only.
          8a. Leaf blade 2–5 × (0.5–)1.5–2.5 cm; corolla 3.5–6 cm; petiole 3–5 mm (not recorded for *R. mianningense*).
            9a. Calyx 15–18 mm; corolla ca. 3.5 cm, pale yellow, outer surface not scaly; abaxial leaf surface with scales overlapping or only slightly apart; petiole glabrous ..... 10. *R. mianningense*
            9b. Calyx 7–8 mm; corolla 4–6.2 cm, white, outer surface scaly; abaxial leaf surface with scales 1–2 × their diameter apart; petiole hispid ..... 11. *R. kiangsiense*
          8b. Leaf blade 6–16 × (1.5–)2–6 cm; corolla 6–9(–10) cm; petiole 10–30 mm.
            10a. Stamens 5; corolla lobes denticulate; calyx not scaly outside ..... 13. *R. chunienii*
            10b. Stamens 10; corolla lobes entire; calyx scaly outside.
              11a. Calyx lobes 15–20 mm, leaflike; pedicel ca. 20 mm; abaxial leaf surface with scales uniform in size ..... 12. *R. taggianum*
              11b. Calyx lobes 1–10(–14) mm; pedicel 10–15 mm; abaxial leaf surface with scales unequal in size.

12a. Calyx 1–5 mm; adaxial leaf surface with scales ..... 14. *R. lindleyi*
12b. Calyx 8–10(–14) mm; adaxial leaf surface without scales ..... 15. *R. liliiflorum*
2b. Calyx margin hairy, rarely glabrous, small or with obvious lobes; petiole grooved adaxially.
13a. Calyx lobes 6–12 mm; young shoots hispid, rarely glabrous; petiole, and usually also leaf blade, hairy.
14a. Leaf blade without hairs on both surfaces, sometimes hairy on margin; petioles glabrous or hispid; styles glabrous or with a few scales at base.
15a. Leaf margin glabrous; abaxial surface with scales contiguous; corolla scaly outside; calyx margin glabrous ..... 18. *R. changii*
15b. Leaf margin hairy, abaxial surface with scales sparse, 3–6 × their diameter apart; corolla not scaly outside; calyx margin densely hairy.
16a. Leaf margin hispid, slightly dentate; calyx lobes ovate-lanceolate; corolla yellow ..... 16. *R. fletcherianum*
16b. Leaf margin villous, hairs caducous, entire; calyx lobes oblong; corolla white, or tinged pale red ..... 17. *R. yungchangense*
14b. Leaf blade hispid or villous, at least along central vein; petioles hispid or villous; styles glabrous to densely scaly.
17a. Young shoots, leaves and pedicels rusty brown-villous; leaf margin glabrous; calyx lobes linear, 6–12 × ca. 2 mm wide ..... 19. *R. linearilobum*
17b. Young shoots, leaves and pedicels hispid, or petioles glabrous; leaf margin often densely hispid; calyx lobes ovate, broadly ovate, or oblong-ovate.
18a. Corolla white or tinged with pale red, not scaly outside.
19a. Leaf apex obtuse to rounded, sometimes emarginate, pubescent below; scales on abaxial leaf surface slightly more than their own diameter apart (see also 21. *R. yizhangense* and 22. *R. yaogangxianense*) ..... 20. *R. levinei*
19b. Leaf apex acute to acuminate, hispid along central vein below; scales on abaxial leaf surface 2–3 × their diameter apart ..... 23. *R. ciliatum*
18b. Corolla pale or fresh yellow, scaly outside.
20a. Young shoots not hispid; pedicels glabrous; corolla pale yellow, glabrous; leaf margin flat or slightly revolute, villous or glabrous near the base ..... 24. *R. amandum*
20b. Young shoots densely brownish hispid; pedicels sometimes strap-shaped-setose; corolla fresh yellow, densely pubescent; leaf margin revolute, densely strap-shaped-setose ..... 25. *R. valentinianum*
13b. Calyx lobes obsolete or with lobes 2–6 mm; young shoots, leaf blade or petiole hispid or glabrous.
21a. Inflorescence 1(–2)-flowered.
22a. Young shoots densely brownish scaly; leaf margin densely villous, abaxial surface pale green, scales 1–2 × their own diameter apart ..... 26. *R. ciliipes*
22b. Young shoots and leaf margin sparsely hispid, abaxial surface dark brown, scales less than 1 × their own diameter apart ..... 27. *R. pseudociliipes*
21b. Inflorescence 2–5-flowered.
23a. Abaxial leaf surface densely scaly; scales unequal, generally less than (rarely 1 ×) their own diameter apart.
24a. Abaxial leaf surface brown when dry; blade rhombic-elliptic or rhombic-lanceolate ..... 28. *R. rhombifolium*
24b. Abaxial leaf surface grayish green or grayish white when dry; blade elliptic or oblong-elliptic, ovate, obovate or elliptic-lanceolate.
25a. Corolla 3.5–4.3 cm, yellow, 5-lobed to the middle ..... 29. *R. leptocladon*
25b. Corolla 5–7 cm, white tinged with pale red, 5-lobed to upper 1/3.
26a. Calyx obsolete, margin not ciliate; scales on abaxial leaf surface unequal, to 1 × their own diameter apart ..... 30. *R. dendricola*
26b. Calyx undulate, 5-lobed, margin long ciliate hairs; scales on abaxial leaf surface of leaves ± uniform, less then their own diameter apart to almost contiguous.
27a. Leaf blade ovate, widest below the middle; pedicel 1–2 cm ..... 31. *R. roseatum*
27b. Leaf blade elliptic, oblong-elliptic, elliptic-lanceolate or obovate, widest at or above the middle; pedicel 0.5–1 cm ..... 32. *R. pachypodum*
23b. Abaxial surface of leaves sparsely scaly; scales unequal, (0.5–)1.5–5 × their own diameter apart.
28a. Shoots and petioles densely hispid when young; corolla not scaly, only pubescent outside ..... 33. *R. ciliicalyx*
28b. Shoots and petioles glabrous or sometimes sparsely hispid when young; corolla ± scaly outside, sometimes also pubescent.
29a. Leaf blade oblong-lanceolate or oblong-elliptic; apex acuminate or acute; style longer than corolla.
30a. Pedicel densely pubescent; calyx margin glabrous; corolla 4–5 cm, white, with or without yellow spots inside ..... 34. *R. taronense*
30b. Pedicel glabrous; calyx margin sometimes long ciliate; corolla 6–7 cm, white or creamy

yellow, with green spots inside ..... 35. *R. walongense*

29b. Leaf blade oblong-obovate, oblong-elliptic or obovate; apex rounded to acute or apiculate; style as long as corolla.

31a. Leaf blade 3.4–4.5 cm, hispid; pedicel 0.6–0.8 cm; corolla glabrous outside; capsule ca. 0.9 cm ..... 36. *R. wumingense*

31b. Leaf blade 4–12 cm, margin glabrous; pedicel 0.8–1.8 cm; corolla pubescent or shortly hairy outside; capsule 1.2–2 cm.

32a. Leaf blade 7–12 cm; abaxial surface densely or sparsely scaly, adaxial surface sparsely scaly; corolla ca. 7 cm; scales unequal ..... 30. *R. dendricola*

32b. Leaf blade 4–8 cm; abaxial surface sparsely scaly, adaxial surface without scales; corolla 4–6 cm; scales nearly uniform in size ..... 37. *R. scopulorum*

4. Rhododendron maddenii J. D. Hooker, Rhododendr. Sikkim-Himalaya 2: t. 18. 1851 [*"maddeni"*].

隐脉杜鹃 yin mai du juan

Shrubs or small trees, 3–6 m tall; branches many; young shoots brownish scaly. Petiole grooved, 5–10 mm; leaf blade leathery, lanceolate, oblong-oblanceolate, or elliptic, 5–15(–18) × 2–8 cm; base cuneate; apex acute or obtuse; abaxial surface scales dense, reddish brown; adaxial surface scales present in young leaves, glabrescent. Inflorescence 3–5-flowered. Flowers fragrant. Pedicel 1.3–1.5 cm; calyx lobes 3–5 mm, orbicular or oblong, scaly; corolla funnelform, white, (3.5–)6–8.5(–10) cm; tube (20–)30–50(–60) mm; outer surface scaly; stamens 15–25, filaments glabrous or pubescent; ovary 10–12-locular; style exserted, upper 1/3 with scales; stigma large, discoid. Capsule ovoid or ellipsoid, 10–35 × 10–15 mm. Fr. Aug.

Forests, *Tsuga-Rhododendron* thickets, scrub, river valleys; (1500–)2600–3200 m. S Xizang, N and W Yunnan [Bhutan, N India, NE Myanmar, Sikkim, Thailand, N Vietnam].

1a. Leaf blade 2–4 cm wide; filaments usually glabrous; capsule ovoid, 1–2 cm ..... 4a. subsp. *maddenii*

1b. Leaf blade (4–)5.5–8 cm wide; filaments often pubescent; capsule ellipsoid, 2–3.5 cm ..... 4b. subsp. *crassum*

4a. Rhododendron maddenii subsp. **maddenii**

隐脉杜鹃(原亚种) yin mai du juan (yuan ya zhong)

Rhododendron brachysiphon I. B. Balfour ex Hutchinson; *R. brevitubum* I. B. Balfour & R. E. Cooper (1917), not J. J. Smith (1914); *R. calophyllum* Nuttall; *R. jenkinsii* Nuttall; *R. macranthum* Griffith (1848), not (Bunge) D. Don (1834); *R. maddenii* var. *longiflorum* W. Watson; *R. polyandrum* Hutchinson.

Leaf blade lanceolate, oblanceolate, or elliptic, 2–4 cm wide. Filaments usually glabrous. Capsule ovoid, 10–20 × ca. 10 mm.

Forests, scrub, river valleys; ca. 2600 m. S Xizang [Bhutan, NE India, Sikkim].

4b. Rhododendron maddenii subsp. **crassum** (Franchet) Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 107. 1978.

滇隐脉杜鹃 dian yin mai du juan

Rhododendron crassum Franchet, Bull. Soc. Bot. France 34: 282. 1887; *R. chapaense* Dop; *R. odoriferum* Hutchinson.

Leaf blade elliptic to elliptic-lanceolate, (4–)5.5–8 cm wide. Filaments often pubescent. Capsule ellipsoid, 20–35 × 12–15 mm.

Dry secondary forests, *Tsuga-Rhododendron* thickets, shrubby slopes; (1500–)2600–3200 m. S Xizang, N and W Yunnan [N India (Manipur), NE Myanmar, Thailand, N Vietnam].

5. Rhododendron megacalyx I. B. Balfour & Kingdon Ward, Notes Roy. Bot. Gard. Edinburgh 9: 246. 1916.

大萼杜鹃 da e du juan

Shrubs or small trees, 1.5–3 m tall; old branches glabrous; young shoots stout, brownish purple, cylindric, densely scaly. Petiole shallowly grooved, 10–30 mm; leaf blade leathery, obovate-elliptic or elliptic, 10–17 × 2.5–7 cm; base narrowed; apex rounded, apiculate, sometimes slightly concave; abaxial surface pale white, scales dense, reddish brown, appressed; adaxial surface dark green, scales dense on young leaves, glabrescent. Inflorescence terminal, shortly racemose, 3–5-flowered. Flowers fragrant. Pedicel stout, 2.5–3 cm, glabrous; calyx campanulate, 5-lobed to middle, 20–30 mm, enlarging and persisting to enclose mature capsule, scales absent; corolla broadly funnelform, white, 6.5–9.5 cm; tube 50–60 mm; outer surface scaly on lobes, lobes suborbicular, ca. 3 cm wide; stamens 10, unequal, slightly shorter than corolla tube; filaments slender, lower part pubescent; ovary 5-locular, densely scaly; style slightly exserted; base sparsely scaly; stigma large, discoid. Capsule cylindric, ca. 20 mm. Fl. Apr–Jun.

Evergreen broad-leaved forests, *Tsuga* forests; 2200–3000 m. SE Xizang, NW Yunnan [NE India, NE Myanmar].

6. Rhododendron nuttallii Booth ex Nuttall, Hooker's J. Bot. Kew Gard. Misc. 5: 355. 1853 [*"nuttalii"*].

木兰杜鹃 mu lan du juan

Small trees, to 10 m tall, or epiphytic, with thick roots, to 4 m tall; old branches glabrous; young shoots dark, densely scaly. Petiole convex, ca. 20 mm, sparsely scaly; leaf blade leathery, elliptic, 12–20 × 6–10 cm; base rounded; apex rounded; abaxial surface scales dense, small, unequal, brownish red; adaxial surface scales dense when young, glabrescent; midrib raised on both surfaces; lateral veins 12–16-paired. Inflorescence terminal, 5(–11)-flowered. Pedicel pendulous, ca. 3 cm; calyx lobes 15–25 mm, oblong-elliptic; apex rounded, scales present, dense; corolla white tinged with yellow on tube and with lobes tinged pale red, (7.5–)10(–12.5) cm; tube (45–)70–80 mm, outer surface scaly at base; lobes rounded, shorter than tube; stamens 10,

as long as corolla tube, filaments pubescent, anthers reddish brown, ca. 8 mm; ovary 5-locular; style curved upwards; base densely scaly; stigma large, discoid. Capsule 30–35 mm, scaly, lobes keeled. Fl. Apr–May.

Rhododendron thickets, epiphytic or terrestrial; ca. 2400 m. SE Xizang [N India, N Vietnam].

7. Rhododendron sinonuttallii I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 60. 1920.

华木兰杜鹃 hua mu lan du juan

Shrubs, 1–3(–5) m tall; branches stout, densely scaly. Petiole stout, not grooved, 15–30 mm, densely scaly; leaf blade oblong-elliptic, 14–26 × 4.5–12 cm, narrowing toward both ends; apex acute; abaxial surface dirty white, scales dense, small, unequal, brownish red; adaxial surface dark green, scales sparse or absent; veins conspicuously wrinkled, raised abaxially, concave adaxially. Inflorescence terminal, subumbellate, 3–6-flowered; rachis enlarged, 15–20 mm; flower bud scales falling off early. Flowers fragrant. Pedicel stout, ca. 2.5 cm, densely scaly, pubescent; calyx pale red, deeply 5-lobed; lobes 20–28 mm, oblong, persistent in fruit, densely scaly, gray-pubescent; corolla broadly campanulate, pale yellowish white, lower tube yellow, 1–1.4 cm, outer surface densely scaly; lobes rounded, shorter than tube; stamens 10, as long as corolla tube, filaments lower half white pubescent, anthers ca. 12 mm; ovary 5-locular, densely scaly; style stout, longer than stamens, basal part densely scaly; stigma discoid, 6–9 mm in diam. Capsule cylindric, lobes keeled, 50–70 × ca. 24 mm. Fl. May–Jun.

● *Pinus* forests, cliffs in forests, thickets, epiphytic or terrestrial; 1200–2800 m. SE Xizang, NW Yunnan.

8. Rhododendron excellens Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1910: 113. 1910.

大喇叭杜鹃 da la ba du juan

Shrubs, sometimes small trees, 1.5–3(–5) m tall; young branches brownish purple, cylindric, densely dark brown scaly. Petiole not grooved, 15–30 mm, densely scaly; leaf blade leathery, oblong-elliptic, 11–19 × 3.5–8 cm; base rounded, sometimes slightly cordate to auriculate; apex acuminate; abaxial surface dirty white; adaxial surface sparsely scaly when young, glabrescent; midrib raised abaxially, concave adaxially. Inflorescence terminal, umbellate, 3–4-flowered; bud scales falling off early. Flowers fragrant. Pedicel stout, 1.2–2 cm, densely scaly; calyx lobes ovate, 8–12 mm, persistent in fruit, 1.5–1.8 cm, scaly at base; corolla broadly campanulate, white, 9–11 cm, outer surface scaly; lobes rounded; stamens 10(or 11 or 15), shorter than corolla tube; filaments pubescent below; anthers ca. 8 mm; ovary 5-locular, densely scaly; style slightly exserted from corolla tube, basal half scaly; stigma discoid. Capsule cylindric, lobes keeled, 45–55 mm. Fl. May.

Evergreen broad-leaved forests or thickets; 1100–2400 m. S Guizhou, SE Yunnan [N Vietnam].

Rhododendron excellens was originally described as having 15 stamens, which does not agree with this description. One solution would be to describe those plants with 10(–11) stamens as a new taxon, which could be called "var. *decandrum*". This would account for the vast majority of the specimens available. It is possible that the type of *R. excellens* was a chance hybrid between "var. *decandrum*" and *R. maddenii* subsp. *crassum*. In Vietnam, where the distribution of "var. *decandrum*" overlaps with that of *R. nuttallii* (which it closely resembles), there appear to be intermediates between the two taxa.

9. Rhododendron dalhousieae J. D. Hooker, Rhododendr. Sikkim-Himalaya 1: t. 1, 2. 1849 [*"dalhousiae"*].

长药杜鹃 chang yao du juan

Shrubs, often epiphytic, ca. 2 m tall; young branches scaly, otherwise glabrous or sparsely ciliate. Petiole ca. 15 mm, scaly; leaf blade thinly leathery, oblong, oblong-obovate, or oblanceolate, 9–11 × 3–4 cm; base cuneate; apex rounded; abaxial surface pale whitish green, scales glandular, reddish brown; adaxial surface glabrous; midrib raised on both surfaces. Inflorescence 2- or 3-flowered. Flowers fragrant. Pedicel ca. 1 cm, densely scaly, white pubescent; calyx lobes ca. 11 mm, oblong-elliptic, persistent in fruit, scaly at base, abaxially pubescent around the middle; corolla pale yellow, sometimes with pale red stripes, 8–10.5 cm; tube 60–75 mm, outer surface not scaly, or with a few scales only; stamens 10, filaments hairy, anthers ca. 12 mm, brown; ovary 5-locular, densely scaly; style sparsely scaly below. Capsule cylindric-spindle-shaped, ca. 45 mm, lobes keeled. Fl. Jun.

Forests, secondary mixed forest margins, hillsides, crevices on slopes, epiphytic or terrestrial; 1500–2600 m. S Xizang [Bangladesh, Bhutan, India, E Nepal, Sikkim].

1a. Corolla without 5 longitudinal red lines ..... 9a. var. *dalhousieae*

1b. Corolla with 5 five longitudinal red lines ..... 9b. var. *rhabdotum*

9a. Rhododendron dalhousieae var. **dalhousieae**

长药杜鹃(原变种) chang yao du juan (yuan bian zhong)

Corolla without any longitudinal red lines.

Secondary mixed forest margins, epiphytic on tree trunks, crevices on slopes; 2000–2500 m. S Xizang [Bangladesh, Bhutan, India, E Nepal, Sikkim].

9b. Rhododendron dalhousieae var. **rhabdotum** (I. B. Balfour & R. E. Cooper) Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 107. 1978.

红线长药杜鹃 hong xian chang yao du juan

Rhododendron rhabdotum I. B. Balfour & R. E. Cooper, Notes Roy. Bot. Gard. Edinburgh 10: 141. 1917.

Corolla with 5 longitudinal red lines.

Forests, hillsides, epiphytic or terrestrial; 1500–2600 m. S Xizang [Bhutan, NE India].

10. Rhododendron mianningense Z. J. Zhao, Bull. Bot. Res., Harbin 7(3): 59. 1987.

冕宁杜鹃 mian ning du juan

Shrubs, ca. 2 m tall; bark yellow, peeling; young branches densely purple-scaly. Petiole densely rusty-red scaly; leaf blade leathery, elliptic, 2–3.5 × 0.5–1.5 cm; base cuneate or widely cuneate; apex rounded or mucronate; abaxial surface yellowish

green, scales ± overlapping; adaxial surface deep green, sparsely scaly. Inflorescence terminal, cymose, 2-flowered. Pedicel stout, ca. 0.5 cm, scaly; calyx pale yellow, 5-lobed, 15–18 mm; lobes membranous, 13–15 × ca. 5 mm, sparsely scaly; corolla funnelform, pale yellow, ca. 3.5 cm; tube ca. 25 mm, outer surface glabrous; stamens 10, unequal, 2.5–2.8 cm; filaments pale yellow-pubescent in lower half, base glabrous; style 2.5–3 cm, lower part sparsely pubescent. Capsule not known.

● About 3500 m. S Sichuan (Mianning).

11. Rhododendron kiangsiense W. P. Fang, Acta Phytotax. Sin. 7: 192. 1958.

江西杜鹃 jiang xi du juan

Shrubs, ca. 1 m tall; bark gray, grayish brown or grayish black; young branches green, cylindric, scaly. Petiole not grooved, 3–5 mm, scaly, sparsely hispid; leaf blade leathery, oblong-elliptic, 4–5 × 2–2.5 cm; base cuneate; margin slightly revolute; apex obtuse to acute, apiculate; abaxial surface gray, scales 1–2 × their own diameter apart; adaxial surface deep green, without scales; lateral veins 8–9-paired, slightly raised on both sides. Inflorescence terminal, cymose, 2-flowered. Pedicel brown, stout, 1–1.4 cm, scaly; calyx 5-lobed; lobes 7–8 mm, ovate, scaly, margin undulate; corolla broadly funnelform, white, 4–6.2 × ca. 4 cm, outer surface scaly, lobes 5, rounded, ca. 2.4 cm in diam., margin undulate; stamens 10, ca. 2.5 cm; filaments filiform, flat at base, lower 1/3 white-pubescent; anthers ca. 4 mm; ovary ca. 6 mm, densely scaly; style ca. 3.5 cm, scaly at base; stigma large. Capsule not known.

● Slopes; ca. 1100 m. W Jiangxi (Pingxiang).

12. Rhododendron taggianum Hutchinson in J. B. Stevenson, Sp. Rhodod. 499. 1930.

白喇叭杜鹃 bai la ba du juan

Rhododendron headfortianum Hutchinson.

Shrubs, 1.5–4 m tall; young shoots densely dark brown scaly. Petiole not grooved, 10–25 mm, scaly; leaf blade leathery, oblong-lanceolate, 6–15 × 2.5–6 cm; base rounded; apex obtuse, shortly apiculate; abaxial surface dirty white, scales glandular; adaxial surface scaly on central vein; midrib raised on both surfaces. Inflorescence terminal, umbellate, 3-flowered. Pedicel ca. 2 cm, densely scaly; calyx 5-lobed to near base; lobes leaflike, 15–20 mm, broadly elliptic-ovate, scales at least at base, sparse; corolla campanulate, white, 6–9 cm, outer surface scaly at base; stamens 10, as long as corolla tube; filaments pubescent below; anthers ca. 6 mm; ovary 5-locular, densely scaly; style slightly longer than stamens. Capsule erect, lobes keeled, ca. 50 mm, densely glandular-scaly. Fl. Apr–May.

Broad-leaved forests, slopes, often epiphytic; 1800–2300 m. ?SE Xizang, Yunnan [?NE India (Assam), NE Myanmar].

13. Rhododendron chunienii Chun & W. P. Fang, Acta Phytotax. Sin. 6: 169. 1957.

椿年杜鹃 chun nian du juan

Shrubs, ca. 2 m tall; third-year shoots with flesh-colored bark that often peels, second year shoots brown scaly; young shoots purplish brown. Petiole stout, subcylindrical, not grooved, 20–25 mm, densely scaly; leaf blade leathery, oblong-elliptic, 9–12 × 3–3.5 cm; base rounded; apex rounded, apiculate; abaxial surface yellowish green, scales tiny, golden; adaxial surface not shiny, without scales; midrib flat raised abaxially, flat adaxially; lateral veins 10–14-paired, inconspicuous above and slightly raised below. Inflorescence terminal, cymose, 1–3-flowered. Pedicel stout, 0.1–0.15 cm, densely scaly; calyx lobes leafy, 10–14 mm, elliptic-ovate, persistent in fruit, ca. 14 mm, scales absent; corolla white, 9–10 × 10–12 cm; tube 3–4 cm wide, lobes spreading, margin round-denticulate; stamens 5, unequal, 3.5–4 cm; filaments stellate-pilose below; ovary 5-locular, densely scaly; style longer than stamens, basal 1/3 densely scaly; stigma large, discoid, 5-lobed. Capsule cylindric, ca. 35 mm, densely brown-scaly.

● Scattered forests; 1300–1400 m. NE Guangxi, Hunan.

14. Rhododendron lindleyi T. Moore, Gard. Chron. 1864: 364. 1864.

大花杜鹃 da hua du juan

Rhododendron bhotanicum C. B. Clarke.

Shrubs, often epiphytic, 1.5–3 m tall; sparsely branched; young shoots scaly. Petiole convex, 15–20 mm, scaly; leaf blade thinly leathery, ovate-lanceolate, or narrowly elliptic, 6–15 × 1.5–5.5 cm; base cuneate or rounded; apex rounded; abaxial surface pale white, scales 2–3 × their own diameter apart, variable in size; adaxial surface deep green, sparsely scaly. Inflorescence terminal, umbellate, 4–6-flowered. Pedicel 1–1.5 cm, densely brownish red scaly; calyx lobes 1–5 mm, oblong, persistent and surrounding base of fruit, scaly at base; corolla broadly tubular-campanulate, white, 7–8 cm, outer surface scaly at base; stamens 10, filaments pubescent below; ovary 5-locular, densely reddish brown scaly; style base scaly. Capsule ca. 50 mm, not keeled. Fl. Apr–May.

Forests, sometimes epiphytic; 1600–2900 m. Xizang [Bangladesh, Bhutan, N India, Myanmar, Nepal, Sikkim].

15. Rhododendron liliiflorum H. Léveillé, Repert. Spec. Nov. Regni Veg. 12: 102. 1913.

百合花杜鹃 bai he hua du juan

Shrubs or trees, 3(–8) m tall; young shoots scaly, otherwise glabrous. Petiole convex, not grooved, 15–30 mm; leaf blade leathery, oblong, 7–16 × 2–5 cm; base cuneate or rounded; apex rounded; abaxial surface pinkish green, scales 1–3 × their own diameter apart, unequal, reddish brown; adaxial surface dark green, without scales. Inflorescence terminal, cymose, 2- or 3-flowered. Flowers fragrant. Pedicel stout, 1.2–1.6 cm, densely scaly; calyx lobes 8–10 mm, oblong-ovate, persistent in fruit, ca. 1.4 cm, scaly at least at base; corolla tubular-campanulate, white, 8–9 cm; outer surface densely scaly; lobes 5, entire; stamens 10, 4.8–5.7 cm; filaments densely pubescent in lower 1/3; anthers 6–7 mm; ovary 5-locular, densely scaly; style slightly longer than corolla, basal part densely scaly. Capsule 25–45 mm.

● Scattered forests, thickets on slopes. Guangxi, Guizhou, Hunan, SE Yunnan.

16. Rhododendron fletcherianum Davidian, Rhododendron Camellia Year Book 16: 103. 1961.

翅柄杜鹃 chi bing du juan

Shrubs, 0.6–1.2 m tall; young shoots sparsely scaly, hispid. Petiole flat, narrowly winged, 4–6 mm, sparsely scaly, hispid; leaf blade oblong-lanceolate or oblong-obovate, 2.5–5 × 1.2–2.6 cm; base obtuse or cuneate decurrent; apex acute or obtuse, apiculate; abaxial surface scales 3–6 × their own diameter apart, small, pale brown, glabrous on both surfaces; adaxial surface sometimes sparsely scaly; midrib and lateral veins raised abaxially, concave adaxially; lateral veins inconspicuous on both surfaces; veins conspicuously concave adaxially. Inflorescence terminal, cymose, 2–4(–5)-flowered; bractlets linear-spathulate. Pedicel 0.6–1.2 cm, sparsely scaly, densely hispid; calyx green, deeply 5-lobed; lobes 8–12 mm, ovate-lanceolate, scaly at base, persistent in fruit; corolla broadly funnelform, yellow, 3–4.6 cm, nearly glabrous; stamens 10, unequal, long ones as long as corolla, filaments densely pubescent at base; ovary 5-locular, densely scaly and pubescent, at least above; style longer than corolla, glabrous. Capsule 6–9 × 5–7 mm, scaly, hispid. Fl. May–Jun.

● Forests in high mountains, slopes, cliffs; ca. 3400 m. SE Xizang, NW Yunnan.

17. Rhododendron yungchangense Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 123. 1978.

少鳞杜鹃 shao lin du juan

Shrubs, 0.8–1.3 m tall; young shoots thinly hispid. Petiole scaly; leaf blade narrowly elliptic or narrowly obovate, 7–10 × 2.8–3.8 cm; apex obtuse; abaxial surface pale gray green, papillate, scales sparse, golden; adaxial surface deep green, glabrous. Inflorescence (1–)2–4-flowered. Pedicel sparsely scaly; calyx 5-lobed, lobes ca. 7 mm, oblong; corolla funnelform-campanulate, white or pale red, ca. 6 cm, tube ca. 32 mm, glabrous outside; stamens 10; filaments pubescent at base; ovary scaly; style base sparsely scaly. Capsule cylindric, 12–16 mm, scaly.

● Valley sides, cliffs; 2100–2500 m. W Yunnan.

18. Rhododendron changii (W. P. Fang) W. P. Fang, Acta Phytotax. Sin. 21: 465. 1983.

树枫杜鹃 shu feng du juan

Rhododendron valentinianum Forrest ex Hutchinson var. *changii* W. P. Fang, Contr. Biol. Lab. Chin. Assoc. Advancem. Sci., Sect. Bot. 12: 71. 1939.

Shrubs, 1–1.5 m tall; branches cylindric; young shoots tinged with purple, thinly hispid. Petiole ca. 3 mm or nearly sessile, scaly, hispid; leaf blade leathery, oblong-elliptic or early oblong, 3–4.5(–5.5) × 2–2.5(–3) cm; apex and base rounded; abaxial surface pale green, scales nearly contiguous; adaxial surface deep green, without scales; lateral veins inconspicuous on both surfaces. Inflorescence terminal, cymose, (2-)3- or 4-flowered. Pedicel 0.5–0.8 cm, scaly, without hairs; calyx lobes ca. 10 mm, oblong-ovate, scaly; corolla funnelform-campanulate, deep yellow, 3.5–4 cm, tube 18–20 mm, outer surface scaly on lobes; lobes ± rounded, 1.5–2 cm; stamens 10, as long as or slightly shorter than corolla; filaments white-pubescent in lower 2/3; ovary 5-locular, densely scaly; style 4–4.5 cm, glabrous. Capsule cylindric-ovoid, 12–15 mm.

● Thickets; 1600–2000 m. Chongqing.

Rhododendron changii is very close to *R. valentinianum*.

19. Rhododendron linearilobum R. C. Fang & A. L. Chang, Acta Bot. Yunnan. 4: 250. 1982.

线萼杜鹃 xian e du juan

Shrubs, ca. 1 m tall; young shoots scaly, densely rusty-red-villous. Petiole 6–18 mm, scaly, densely rusty-red-villous; leaf blade narrowly obovate, 4–7.5 × 1.5–2.5 cm; base cuneate; apex obtuse, apiculate; abaxial surface scales 1–2 × their own diameter apart, equal in size, brown, sometimes sparsely villous along midrib; adaxial surface without scales, villous along midrib; veins raised abaxially, concave adaxially. Inflorescence terminal, cymose, 2–4-flowered. Pedicel stout, 0.6–1.5 cm, scaly, pubescent; calyx tinged with red, 5-lobed to base; lobes 6–12 × ca. 2 mm, linear, longer than capsule in fruit, sparsely scaly; corolla narrowly funnelform, ca. 4 cm, tube 18–20 mm, outer surface pubescent at base, otherwise glabrous; stamens 10, unequal, shorter than corolla, filaments pubescent at base; ovary 5-locular, densely scaly; style exserted from corolla; base sparsely scaly, pubescent. Capsule ovoid, 5–9 mm. Fl. Mar, fr. Oct–Nov.

● Limestone slopes; ca. 2200 m. Yunnan.

20. Rhododendron levinei Merrill, Philipp. J. Sci. 13: 153. 1918.

南岭杜鹃 nan ling du juan

Shrubs or small trees, 1–4 m tall; young shoots sparsely scaly, hispid. Petiole 5–15 mm, scaly, densely villous; leaf blade leathery, elliptic or elliptic-obovate, 4–8 × 2–4 cm; base broadly cuneate to rounded; apex obtuse to broadly rounded, sometimes emarginate, apiculate; abaxial surface pubescent, scales slightly more than their own diameter apart; adaxial surface sparsely scaly, densely long-hispid, hairs caducous. Inflorescence terminal, cymose, 2–4-flowered. Pedicel 1–2 cm, densely scaly, hispid when young, stout in fruit; calyx deeply 5-lobed; lobes 8–10 mm, long-ovate, sparsely scaly, hispid; corolla broadly funnelform, white, with yellow marks inside, 5–8(–9) cm, outer surface glabrous; stamens 10, unequal, long ones reaching to half way up corolla lobes; filaments pubescent below; ovary densely scaly, pubescent; style densely scaly below. Capsule cylindric, ca. 20 mm, densely scaly. Fl. Mar–Apr, fr. Sep–Oct.

● Forests, forest margins in mountains, thickets; 1300–1500 m. Fujian, Guangdong, Guangxi, Guizhou, Hunan.

21. Rhododendron yizhangense Q. X. Liu, Bull. Bot. Res., Harbin 8(3): 86. 1988.

宜章杜鹃 yi zhang du juan

Small shrubs, 0.5–1.2 m tall; young shoots sparsely scaly and hispid. Petiole 6–8 mm, scaly, hispid; leaf blade leathery, oblong to oblong-elliptic, 3–5 × 1.2–2.2 cm; base broadly cune-

ate to rounded; apex rounded, mucronate; abaxial surface scales dense, pubescent; adaxial surface sparsely scaly, densely hispid; midrib and lateral veins grooved adaxially. Inflorescence 1- or 2-flowered. Pedicel 0.7–1 cm, densely scaly, hispid when young; calyx deeply 5-lobed, lobes ca. 6 mm, ovate, densely scaly; corolla funnelform, white, ca. 4 cm; stamens 10, ca. 2.8 cm, filaments pubescent below; ovary densely scaly and pubescent; style densely scaly below. Capsule not described. Fl. Apr.

● About 1600 m. Hunan (Yizhang).

The original author compared this species with *Rhododendron levinei*. However, the midrib is impressed above, suggesting that this affinity may not be correct. The present authors have seen no material of this species and so cannot confirm its true affinities.

22. Rhododendron yaogangxianense Q. X. Liu, Bull. Bot. Res., Harbin 8(3): 87. 1988.

瑶岗仙杜鹃 yao gang xian du juan

Small shrubs, 0.4–0.6 m tall; young shoots sparsely scaly and hispid. Petiole 6–8 mm, scaly, densely villous; leaf blade leathery, elliptic to obovate-elliptic, 2.5–5 × 1.5–2.8 cm; base broadly cuneate to rounded; apex obtuse, mucronate; abaxial surface densely brownish-scaly and pubescent; adaxial surface densely hispid, midrib prominent abaxially. Inflorescence 1- or 2-flowered. Pedicel 0.8–1 cm, densely scaly; calyx deeply 5-lobed; lobes ca. 6 mm, long-ovate, sparsely scaly and hairy above, glabrous below; corolla funnelform, creamy white, sparsely scaly outside, ca. 4.4 × 6 cm; stamens 10, 2.5–2.8 cm; filaments pubescent below; ovary densely scaly and pubescent; style ca. 4.3 cm, densely scaly in lower 1/3. Capsule cylindrical to cylindrical-ovoid, ca. 25 × 10 mm. Fl. May.

● Dry rock crevices; ca. 1100 m. Hunan (Yizhang).

The original author compared this species with *Rhododendron yizhangense,* pointing out that it differed in having a leaf blade abaxially with a raised midrib and densely hairy surface, calyx lobes pubescent above, and in features of the capsule. The raised midrib on the abaxial surface of the leaf blade suggests an affinity with *R. levinei,* but the two species are otherwise perfectly distinct. The present authors have seen no material of this species and so cannot confirm its true affinities.

23. Rhododendron ciliatum J. D. Hooker, Rhododendr. Sikkim-Himalaya 3: t. 24. 1851.

睫毛杜鹃 jie mao du juan

Shrubs, 0.3–2 m tall; young shoots scaly or hispid. Petiole ca. 6 mm, scaly, hispid; leaf blade leathery, elliptic or oblong-elliptic to oblong-lanceolate, 3–8 × 1.6–3.7 cm; base rounded or obtuse; apex acute, obtuse or acuminate, apiculate; abaxial surface scales 2–3 × their own diameter apart, small, hispid along midrib; adaxial surface scaly, hispid. Inflorescence terminal, racemose or cymose, 2–4-flowered; rachis 2–3 mm, scaly and pubescent or glabrous. Pedicel 0.5–1 cm, scaly, densely hispid; calyx pale green or red, deeply 5-lobed; lobes ca. 8 mm, broadly ovate, sparsely scaly at base; corolla funnelform, white tinged with pale red, 3.7–5 cm, glabrous throughout; lobes 5, emarginate; stamens 10, unequal, 1.2–3.1 cm, filaments densely pubescent at base; ovary 5–6-locular, densely scaly; style as long as corolla, glabrous. Capsule broadly ovoid, 10–16 mm, densely scaly. Fl. Feb–Mar.

Rhododendron thickets on slopes, rocky cliffs; 2700–3500 m. S Xizang [Bhutan, E Nepal, Sikkim].

24. Rhododendron amandum Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 245. 1937.

细枝杜鹃 xi zhi du juan

Shrubs, 1.3–1.6 m tall; young shoots scaly. Petiole 4–5 mm, densely scaly and hispid; leaf blade leathery, elliptic or oblong-elliptic, 5–8.5 × 2–3.5 cm; base blunt to rounded; apex obtuse, apiculate; abaxial surface scales ca. 0.5 × their own diameter apart, brown, midrib slightly hairy; adaxial surface without scales, midrib hispid. Inflorescence terminal, shortly racemose or cymose, 2- or 3-flowered; rachis 2–3 mm, scaly and densely pubescent. Pedicel 0.6–1 cm, densely scaly; calyx red, deeply 5-lobed to base; lobes ca. 10 mm, ovate or oblong ovate, scaly; corolla funnelform, campanulate, 5-lobed, pale yellow, 3–3.8 cm, outer surface sparsely scaly, without hairs; stamens 10, unequal, 1.9–2.4 cm, filaments pubescent below; ovary 5-locular, densely scaly, otherwise glabrous; style shorter than corolla, longer than stamens, scales absent. Capsule not known.

● *Rhododendron* thickets, rocky cliffs; ca. 3500 m. Xizang.

25. Rhododendron valentinianum Forrest ex Hutchinson, Notes Roy. Bot. Gard. Edinburgh 12: 45. 1919.

毛柄杜鹃 mao bing du juan

Shrubs, 0.3–3 m tall; old branches deep gray, glabrous, branches short; young shoots scaly, densely brown-villous. Petiole stout, 3–5(–15) mm, scaly, hispid; leaf blade thick, leathery, oblong-elliptic, 3–4(–10) × 1.5–2(–6.5) cm; base broadly cuneate or bluntly rounded; apex obtuse and rounded or acute, apiculate; abaxial surface scales ca. 0.5 × their own diameter apart or contiguous, brown, midrib ± brown-hispid; adaxial surface sparsely scaly, brown or hispid along center when young; midrib and lateral veins raised abaxially, concave adaxially; lateral veins inconspicuously concave above. Inflorescence terminal, cymose, 2–4-flowered; bractlets present at anthesis, linear-spathulate, longer than pedicel, densely white-pubescent outside. Flowers fragrant. Pedicel 0.5–1.5 cm, scaly, sometimes also strap-shaped-setose; calyx 5-lobed to the base; lobes membranous, 4–8 mm, oblong or oblong-ovate to ovate, persistent in fruit, densely glandular scaly, margin strap-shaped-ciliate or without hairs; corolla funnelform-campanulate, intensely yellow, 2–3.5 cm, densely glandular-scaly and pubescent outside, lobes orbicular; stamens 10, unequal, shorter than corolla; filaments densely villous below, anthers oblong, pale red; ovary 5-locular, densely scaly; style slightly curved, as long as corolla or shorter than stamens, base with a few scales only. Capsule ovoid, 9–15 mm. Fl. Apr–May.

Mixed forests, *Rhododendron* and *Rhododendron-Lyonia* thickets, dry slopes; 1800–3100 m. Guizhou, Yunnan [NE Myanmar, N Vietnam].

1a. Pedicel strap-shaped-setose; calyx lobes to 8 mm, oblong-ovate to ovate, margin strap-shaped-ciliate ..... 25a. var. *valentinianum*

1b. Pedicel not setose; calyx lobes 4–5 mm, oblong, margin not ciliate

..... 25b. var. *oblongilobatum*

25a. Rhododendron valentinianum var. **valentinianum**

毛柄杜鹃(原变种) mao bing du juan (yuan bian zhong)

Pedicel strap-shaped-setose; calyx lobes to 8 mm, oblong-ovate to ovate, margin strap-shaped-ciliate.

Rhododendron thickets; ca. 2400 m. Guizhou, Yunnan [NE Myanmar, N Vietnam].

25b. Rhododendron valentinianum var. **oblongilobatum** R. C. Fang, Acta Bot. Yunnan. 4: 250. 1982.

滇南毛柄杜鹃 dian nan mao bing du juan

Pedicel not setose; calyx lobes 4–5 mm, oblong, margin not ciliate.

Mixed forests, *Rhododendron-Lyonia* thickets, dry slopes; 1800–3100 m. Yunnan [N Vietnam].

26. Rhododendron ciliipes Hutchinson in J. B. Stevenson, Sp. Rhodod. 457. 1930.

香花白杜鹃 xiang hua bai du juan

Shrubs, 1–2 m tall; old branches gray, glabrous; young shoots scaly, densely brown-hispid. Petiole 5–8 mm, scaly, hispid; leaf blade oblong, ovate or ovate-elliptic, 4–7.5 × 2–3.5 cm; base rounded or broadly cuneate; apex acute or acuminate; abaxial surface pale green, scales 1–2 × their own diameter apart, brown; adaxial surface sparsely scaly; midrib flat raised abaxially, slightly concave adaxially; lateral veins 7–8-paired, thin, inconspicuous on both sides. Inflorescence terminal, 1(or 2)-flowered; bractlets present at anthesis, linear-spathulate, longer than pedicel, densely white-pubescent outside. Flowers fragrant. Pedicel 0.6–1 cm, densely scaly; calyx undeveloped or 2–6 mm, scaly abaxially, dense; corolla broadly funnelform, white tinged with red, with yellowish green markings at base within, 5.5–7 cm, outer surface scaly, tube gray-white-pubescent; stamens 10, unequal, half as long as corolla; filaments pubescent below; ovary 6-locular, densely scaly; style as long as corolla or slightly longer, basal half sparsely scaly. Capsule cylindric-ovoid, 15–20 mm, densely brown-scaly. Fl. Apr–May, fr. Jul.

● Mixed forests, coniferous forests on hilltops, rocky valley sides, cliffs; 2500–3000 m. W Yunnan.

27. Rhododendron pseudociliipes Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 122. 1978.

褐叶杜鹃 he ye du juan

Shrubs, 0.6–2 m tall; young shoots densely brown-scaly, sparsely hispid. Petiole 6–9 mm, hispid on both sides, glabrescent; leaf blade narrowly elliptic or oblong, 3.5–6(–8) × 1.6–2.7 cm; base rounded or cuneate; apex acuminate, apiculate; abaxial surface deep brown when dry, scales to 1 × their own diameter apart, unequal; adaxial surface brownish scaly when young. Inflorescence terminal, 1(or 2)-flowered. Flowers fragrant. Pedicel (0.6–)0.7–1 cm, densely scaly; calyx rounded or wavy, persistent in fruit, densely scaly abaxially; corolla broadly funnelform, white tinged with pale reddish purple, 5–7 cm, tube 25–35 mm; outer surface sparsely scaly, pubescent; stamens 10, unequal, half as long as corolla; filaments pubescent below; ovary 6-locular, scaly; style as long as corolla or slightly longer, scaly near base. Capsule cylindric-cylindric, 15–20 mm. Fl. Apr, fr. Aug–Sep.

Thickets, cliffs, sometimes epiphytic on large trees; 2400–3100 m. NW Yunnan [NE Myanmar].

28. Rhododendron rhombifolium R. C. Fang, Acta Bot. Yunnan. 4: 251. 1982.

菱形叶杜鹃 ling xing ye du juan

Shrubs, often epiphytic, 2–3 m tall; old branches gray; young shoots densely brown-scaly. Petiole short, 5–12 mm, densely brown-scaly; hispid on both surfaces when young, glabrescent; leaf blade rhomboidal or rhomboidal-lanceolate, 5–8.5 × 2–3 cm; base cuneate; apex acuminate; abaxial surface brown when dry, scales less than 1 × their own diameter apart, large, unequal, brownish red; adaxial surface glabrous; midrib raised abaxially, concave adaxially; lateral veins thin, inconspicuous on both surfaces. Flowers not seen, infructescence umbellate, 3- or 4-fruited. Pedicel stout, 0.6–1 cm, densely brown-scaly; fruiting calyx margin wavy, ciliate, ca. 2 mm, persistent; style persistent, basal 1/3 with scales. Capsule cylindric or ovoid-cylindric, 6-lobed, 12–20 × 8–12 mm, densely brown-scaly.

● Broad-leaved forests, sometimes epiphytic on trees in dense forests; 1800–1900 m. Yunnan.

The leaf shape of *Rhododendron rhombifolium* is close to that of the sympatric *R. taronense,* but the clearly ciliate calyx of the former distinguishes the two species. Flowering material is required before the true affinities of *R. rhombifolium* can be ascertained, as the type specimen is in fruit. The label on the isotype at E ("Salwin-Kiukiang Divide, Muchielung, 1800 m, 8 Oct. 1938, *T. T. Yü 20581*") is somewhat at variance with the citation in the protologue ("Gongshan, *ad truncos in sylvis densis,* alt. 1800 m, 8 Oct. 1937, *T. T. Yü 20581*").

29. Rhododendron leptocladon Dop in Lecomte, Fl. Indo-Chine 3: 745. 1930.

金平林生杜鹃 jin ping lin sheng du juan

Rhododendron nemorosum R. C. Fang.

Shrubs, epiphytic, 0.5–1 m tall; young shoots densely brown-scaly, otherwise glabrous. Petiole 5–7 mm, densely brown-scaly, glabrous; leaf blade leathery, elliptic, oblong-elliptic or ovate, 4–6(–8) × 2–3.5 cm; base cuneate to rounded; apex acute, apiculate; abaxial surface gray green, scales contiguous, or less than their own diameter apart, unequal, brown, without hairs; adaxial surface green, glabrous; midrib raised abaxially, concave adaxially; lateral veins 6-paired, slightly concave above and raised below, or inconspicuous on both surfaces. Inflorescence terminal, umbellate, 3- or 4-flowered. Pedicel stout, 0.3–0.4 cm, densely scaly; calyx 5-lobed; lobes 1–2 mm, ovate, apex rounded, densely scaly abaxially; corolla broadly funnelform, lobed to the middle, yellow, 3.5–4.3 cm, outer surface sparsely scaly, tube gray-white-pubescent, lobes 5, ovate; stamens 10, unequal, shorter than corolla; filaments densely spreading pubescent at base, anthers brown, ca. 5 mm; ovary densely scaly; style slightly longer than corolla, basal part scaly. Capsule ovoid-cylindric, 5-lobed, ca. 11 mm, densely

scaly.

Forests, often epiphytic on trees; 2000–2300 m. S Yunnan [N Vietnam].

One of us (Chamberlain) has observed this species in the field in Vietnam. Research at Edinburgh by T. Holland (A bio-geographical study of Vietnamese *Rhododendron*. MSc thesis, University of Edinburgh. 1997) has shown that *R. nemorosum* is synonymous with *R. leptocladon*.

30. Rhododendron dendricola Hutchinson, Notes Roy. Bot. Gard. Edinburgh 12: 60. 1919.

附生杜鹃 fu sheng du juan

?*Rhododendron atentsiense* Handel-Mazzetti; *R. notatum* Hutchinson.

Shrubs, sometimes epiphytic, 1–3.5 m tall; old branches gray, less scaly; young shoots green, thin and long, sparsely brown or brownish red scaly. Petiole 5–13 mm, sparsely scaly; leaf blade oblong-elliptic or obovate-elliptic, 7–12 × 2–4.5 cm; base narrow to rounded; apex obtuse, acute, apiculate; abaxial surface pinkish green, scales less than, or 1–4 × their own diameter apart, unequal, reddish brown; adaxial surface sparsely scaly; midrib flat raised abaxially, slightly concave adaxially; lateral veins 8-paired, thin, inconspicuous on both surfaces. Inflorescence terminal, umbellate, 2- or 3-flowered. Flowers fragrant. Pedicel ca. 1 cm, densely scaly; calyx undeveloped, circular, densely scaly; corolla broadly funnelform, white tinged with pale red, ca. 7 cm, tube gray-white-pubescent; stamens 10, unequal, half as long as corolla lobes; filaments pubescent below; ovary 6-locular, densely scaly; style as long as corolla, sparsely scaly below. Capsule cylindric-ovoid, 15–20 mm, densely brown-scaly. Fl. Apr–May, fr. May–Nov.

Mixed forests, thickets, rocks, sometimes epiphytic on trees; 1300–1900 m. SE Xizang, NW Yunnan [NE India, N Myanmar].

Rhododendron atentsiense may not be a synonym of *R. dendricola*. The calyx lobes of the former taxon are comparatively well developed, up to 5 mm, and they are clearly ciliate. The type specimen of *R. atentsiense* is said to have been collected at close to 4000 m, which is assumed to be an error.

31. Rhododendron roseatum Hutchinson, Notes Roy. Bot. Gard. Edinburgh 12: 57. 1919.

红晕杜鹃 hong yun du juan

Rhododendron lasiopodum Hutchinson.

Shrubs, sometimes small trees, 1.2–3(–4) m tall; young shoots pale brown, sparsely scaly. Petiole 5–12 mm, sparsely scaly; leaf blade ovate, 6–10 × 2–4.5 cm; base obtuse, rounded or broadly cuneate; apex triangular, acute, or acuminate, apiculate; abaxial surface pink green, gray-white, scales less than 1 × their own diameter apart to nearly contiguous, rarely 1 × their own diameter apart, unequal, brown or brownish red; adaxial surface densely brown scaly when young; midrib flat raised abaxially, slightly concave adaxially; lateral veins 6–8-paired, thin, inconspicuous on both sides. Inflorescence terminal, umbellate, 2–4-flowered. Flowers fragrant. Pedicel 1–2 cm, densely scaly; base gray-white-pubescent; calyx undeveloped, lobes 5, densely scaly; corolla broadly funnelform, 5-lobed to the middle, pinkish in bud, white tinged with pale red at anthesis, 5.5–7 cm, tube gray-white-pubescent, lobes rounded, densely scaly; stamens 10, unequal, half as long as corolla lobes; filaments pubescent below; ovary 6-locular, densely scaly; style as long as corolla, basal part scaly. Capsule cylindric-ovoid, ca. 15 mm, densely brown-scaly. Fl. May–Jul.

Evergreen broad-leaved forests, forests on hilltops, open slopes, rocks; 2000–3000 m. Yunnan [NE Myanmar].

32. Rhododendron pachypodum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 254. 1916.

云上杜鹃 yun shang du juan

Rhododendron pilicalyx Hutchinson; *R. rufosquamosum* Hutchinson; *R. scottianum* Hutchinson, nom. illeg. superfl.; *R. supranubium* Hutchinson.

Shrubs, rarely small trees, rarely epiphytic, 1–4(–5) m tall; young shoots densely brown-scaly, otherwise glabrous. Petiole 6–16 mm, densely scaly, sometimes long-villous; leaf blade leathery, elliptic, elliptic-lanceolate or obovate, 6–11 × 2–5 cm; base narrower; apex acuminate or acute; abaxial surface gray white, scales less than 1 × their own diameter apart to nearly contiguous, sometimes 1 × their own diameter apart, brown or brownish red; adaxial surface sparsely scaly; midrib and lateral veins raised abaxially, concave adaxially; lateral veins thin. Inflorescence terminal, umbellate, (2–)3(–4)-flowered. Pedicel 0.5–1 cm, densely scaly; calyx undeveloped, 5-lobed; lobes ca. 1 mm, rounded or triangular, persistent in fruit, scaly; corolla broadly funnelform, white tinged with pale red, inside with pale yellow markings, 5–7 cm, densely scaly, tube gray-white-pubescent outside; stamens 10, unequal, long ones half as long as corolla lobes; filaments pubescent below; ovary (5 or)6-locular, densely scaly; style rarely longer than corolla, basal part scaly. Capsule ovoid or cylindric-ovoid, 15–25 mm. Fl. Mar–May.

Mixed forests, thickets, open areas on rocky mountains, dry slopes; 1200–2800(–3100) m. Yunnan [NE Myanmar].

Cullen (Notes Roy. Bot. Gard. Edinburgh 39: 47, 53. 1980) maintained *Rhododendron rufosquamosum* as a species distinct from *R. pachypodum*.

33. Rhododendron ciliicalyx Franchet, Bull. Soc. Bot. France 33: 233. 1886.

睫毛萼杜鹃 jie mao e du juan

Shrubs, 1–2 m tall; old branches gray-white, bark peeling, glabrous; young shoots brown, sparsely scaly, densely yellow-hispid. Petiole 6–10 mm, sparsely scaly; leaf blade oblong-elliptic, narrowly ovate to oblong-elliptic, 4.5–7 × 1.5–4.5 cm; base cuneate; apex acute; abaxial surface gray-green, scales 0.5–1.5 × their own diameter apart, unequal, brown; adaxial surface sparsely scaly when young; midrib and lateral veins raised abaxially, concave adaxially; lateral veins 8-paired, thin. Inflorescence umbellate, 2- or 3-flowered. Pedicel 0.6–1 cm, densely scaly; calyx undulate, 5-lobed; lobes to 6 mm, rounded or triangular, densely scaly; corolla broadly funnelform, pale purple, pale red or white, 3–5 cm, outer surface not scaly but pubescent; lobes ovate, as long as tube; stamens 10, unequal, shorter than corolla; filaments sparsely pubescent below, anthers ca. 6 mm; ovary 5(or 6)-locular, densely scaly; style as

long as stamens, basal half scaly. Capsule cylindric-ovate, 10–20 mm, densely scaly. Fl. Apr, fr. Oct–Dec.

Mixed forests, thickets on rocky mountains, dry slopes; 1000–3100 m. Guizhou, Yunnan [NE India, Laos, Myanmar, Thailand, Vietnam].

1a. Leaf blade abaxial surface scales 0.5–1.5 × their own diameter apart; ovary 5(–6)-locular; style not much longer than corolla ... 33a. subsp. *ciliicalyx*
1b. Leaf blade abaxial surface scales less than 1 × their own diameter apart; ovary 6-locular; style much longer than corolla ..... 33b. subsp. *lyi*

33a. Rhododendron ciliicalyx subsp. **ciliicalyx**

睫毛萼杜鹃(原亚种) jie mao e du juan (yuan ya zhong)

Rhododendron missionarium H. Léveillé; *R. pseudociliicalyx* Hutchinson.

Leaf blade abaxial surface scales 0.5–1.5 × their own diameter apart. Ovary 5(–6)-locular; style not much longer than corolla. Fl. Apr.

Mixed forests, thickets on rocky mountains, dry slopes; 1000–3100 m. Yunnan [N Vietnam].

33b. Rhododendron ciliicalyx subsp. **lyi** (H. Léveillé) R. C. Fang, Fl. Reipubl. Popularis Sin. 57(1): 48. 1999.

长柱睫毛萼杜鹃 chang zhu jie mao e du juan

Rhododendron lyi H. Léveillé, Repert. Spec. Nov. Regni Veg. 13: 147. 1914.

Leaf blade abaxial surface scales less than 1 × their own diameter apart. Ovary 6-locular; style much longer than corolla. Fl. Apr.

Guizhou, Yunnan [NE India, Laos, Myanmar, Thailand, Vietnam].

34. Rhododendron taronense Hutchinson in J. B. Stevenson, Sp. Rhodod. 480. 1930.

薄皮杜鹃 bao pi du juan

Shrubs, sometimes epiphytic on trees, 1.2–3 m tall; bark on old branches dark purple, smooth and peeling; young shoots sparsely scaly. Petiole grooved, 8–15 mm, sparsely scaly; leaf blade leathery, narrowly elliptic or oblong-lanceolate, 7–12 × 2.3–4.3 cm, acute at both ends; abaxial surface scales (2–)3–5 × their own diameter apart, brown or yellowish brown, most concave; adaxial surface sparsely scaly; lateral veins more than 10-paired, thin, inconspicuous on both surfaces. Inflorescence terminal, cymose, 4- or 5-flowered; rachis ca. 10 mm, sparsely scaly and densely pubescent. Flowers fragrant. Calyx slightly 5-lobed, densely scaly abaxially, margin glabrous; corolla broadly funnelform, 5-lobed to the middle, white with yellow markings inside, 4–5 cm, lobes rounded, spreading; stamens 10, unequal, long ones as long as or exserted from corolla; filaments pubescent below; ovary 6-locular, densely scaly; style longer than corolla, basal 1/4 scaly. Capsule cylindric-ovate, base oblique, 18–25 mm, densely scaly. Fl. Nov.

● Broad-leaved forests by rivers, sometimes epiphytic on trees; 1200–1600 m. Yunnan.

Cullen (Notes Roy. Bot. Gard. Edinburgh 39: 48. 1980) reduced this species to a synonym of *Rhododendron dendricola*.

35. Rhododendron walongense Kingdon Ward, Gard. Chron., ser. 3, 133: 5. 1953.

瓦弄杜鹃 wa nong du juan

Small trees or large shrubs, sometimes epiphytic, 2–3 m tall; branches scaly, otherwise glabrous. Petiole grooved, 8–10 mm, densely scaly, glabrous or sparsely hispid; leaf blade leathery, oblong-lanceolate, oblanceolate, or oblong-elliptic, 10–13 × 3–4.4 cm; base cuneate; apex acute or acuminate, apiculate; abaxial surface pale gray-green or pale green, scales 1–3 × their own diameter apart, large, brown or darker; adaxial surface deep green, without scales; midrib and lateral vein raised; lateral veins 10–14-paired, concave. Inflorescence terminal, cymose, 3–6-flowered; rachis 2–3 mm, scaly and pubescent. Flowers fragrant. Pedicel stout, 0.8–1.5 cm, densely scaly, without hairs; calyx undeveloped, ca. 1 mm, scaly, margin sometimes long ciliate; corolla funnelform, creamy yellow or creamy white, with green markings inside, 6–7 cm, lobes lacking or 5; stamens 10, unequal, 3.5–5 cm, filaments densely pubescent below; ovary truncate at apex, 6-locular, densely scaly, glabrous; style 6–7 cm, longer than corolla, basal half scaly. Capsule cylindric-elliptic, base oblique, ca. 17 × 8–9 mm, densely scaly.

Valley forests, mixed forests on rocky slopes, cliffs; 1500–2200 m. S Xizang [NE India].

36. Rhododendron wumingense W. P. Fang, Acta Phytotax. Sin. 21: 464. 1983.

武鸣杜鹃 wu ming du juan

Shrubs, 2–4 m tall; young shoots purplish green, scaly, otherwise glabrous or sparsely hispid. Petiole 4–6 mm, pale yellow-scaly; leaf blade leathery, oblong-obovate, or oblong-elliptic, 3.5–4.5 × 1.8–2.4 cm; base broadly cuneate; apex rounded, rarely acute, apiculate; abaxial surface gray, scales 1–3 × their own diameter apart, golden; adaxial surface deep green, not scaly; lateral veins 10–12-paired. Inflorescence terminal, cymose, 2-flowered. Pedicel 0.6–0.8 cm, sparsely pale yellow-scaly; calyx pale yellowish purple, 5-lobed; lobes short, triangular; corolla broadly funnelform, white, 4–5 cm, tube 25–28 × ca. 16 mm in diam.; outer surface sparsely scaly, without hairs; stamens 9 or 10, unequal, 2.5–4 cm; filaments villous or white-pubescent below; ovary 5-locular, densely scaly; style ca. 5 cm, scaly throughout. Capsule cylindric, 8–9 mm, densely brown-scaly.

● About 1000 m. C Guangxi (Wuming).

37. Rhododendron scopulorum Hutchinson in J. B. Stevenson, Sp. Rhodod. 475. 1930.

石峰杜鹃 shi feng du juan

Shrubs, 2–4 m tall; old branches smooth, sparsely scaly; young shoots sparsely scaly. Petiole grooved, 8–13 mm, densely scaly, rarely hispid or glabrous; leaf blade leathery, oblong-obovate, or oblong-oblanceolate, 4–8 × 1.6–3.6 cm; base obtuse or cuneate; apex rounded or obtuse; abaxial surface pale gray-green, scales sparse, 2–4 × their own diameter apart, average to small, brown; adaxial surface deep green when dry, often convex, without scales. Inflorescence terminal, cymose, 2–4-flowered; rachis 2–3 mm, scaly. Flowers fragrant. Pedicel 0.8–1.8 cm, densely scaly; calyx obliquely 5-lobed; lobes ca. 2 mm, ovate, scaly, without hairs; corolla funnelform, white tinged with pale red, with yellow markings inside, 4–6 cm, outer surface sparsely scaly and pubescent; stamens 10(or 11), unequal, 2.4–4.7 cm; filaments densely pubescent at base; ovary 6-locular, densely scaly; style as long as corolla, base scaly. Capsule cylindric, oblique at base, 12–20 mm, densely scaly.

● Rocky thickets, cliffs. SE Xizang.

3. Rhododendron subsect. **Moupinensia** (Hutchinson) Sleumer, Bot. Jahrb. Syst. 74: 534. 1949.

川西杜鹃亚组 chuan xi du juan ya zu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); David F. Chamberlain

Rhododendron ser. *Moupinensia* Hutchinson in J. B. Stevenson, Sp. Rhodod. 502. 1930 [*"Moupinense"*].

Shrubs, 0.5–1.5 m tall, often epiphytic; young shoots scaly, densely or sparsely brown-hispid; leaf blade leathery, margin revolute; abaxial surface scales dense, brown, unequal; adaxial surface often hairy at least near base of midrib. Inflorescence terminal, cymose, 1- or 2-flowered. Calyx developed, 2–4 mm, 5-lobed; corolla broadly funnelform, white, sometimes tinged pale red, or rosy red, outer surface glabrous, pubescent in tube; stamens 10, unequal; ovary 5-locular; style erect or curved, without scales, glabrous or base pubescent. Capsule oblong or ellipsoid, 10–23 mm. Seed winged.

● Three species: China.

1a. Style longer than corolla; corolla ca. 4 cm; leaf blade 2–4(–6) cm ..... 38. *R. moupinense*
1b. Style shorter than corolla; corolla 1.5–3 cm; leaf blade 1–2 cm.
  2a. Corolla rosy red, tube pubescent inside; scales on leaf abaxial surface ca. 1 × their own diameter apart ... 39. *R. dendrocharis*
  2b. Corolla white, tube glabrous inside; scales on leaf abaxial surface contiguous ..... 40. *R. petrocharis*

38. Rhododendron moupinense Franchet, Bull. Soc. Bot. France 33: 233. 1886.

宝兴杜鹃 bao xing du juan

Shrubs, sometimes epiphytic, 1–1.5 m tall; old branches glabrous; shoots spreading; young shoots scaly, sparsely brown-hispid. Petiole 3–7 mm, densely brown-scaly; leaf blade leathery, oblong-elliptic or ovate-elliptic, 2–4(–6) × 1.2–2.3(–4) cm; base obtuse, apex obtuse, apiculate; abaxial surface gray-white, scales contiguous to 1 × their own diameter apart, small, unequal, brown; adaxial surface pubescent along midrib only near the base; midrib raised abaxially, concave adaxially; lateral veins inconspicuous on both surfaces. Inflorescence terminal, cymose, 1- or 2-flowered. Pedicel 0.5–0.7 cm, scaly, pubescent or hispid, sometimes glabrous; calyx lobes 5, 2–4 mm, oblong or ovate, persistent in fruit, scales present; corolla broadly funnelform, white or tinged with pale red, with red markings inside, ca. 4 cm, outer surface glabrous; stamens 10, unequal, 2–3 cm, shorter than corolla; filaments with lower part white pubescent; ovary 5-locular, densely scaly; style slightly longer than corolla, glabrous. Capsule ovate, 15–23 mm. Fl. Apr–May, fr. Jul–Oct.

● Epiphytic on trees in forests, rocks; 1900–4000 m. Guizhou, Sichuan, NE Yunnan.

39. Rhododendron dendrocharis Franchet, Bull. Soc. Bot. France 33: 233. 1886.

树生杜鹃 shu sheng du juan

Shrubs, often epiphytic, 0.5–0.7 m tall; branches thin and short; young shoots scaly, densely brown-hispid. Petiole scaly, hispid; leaf blade thickly leathery, elliptic, 0.9–1.8 × 0.3–1 cm; base broadly cuneate to blunt; apex obtuse, apiculate; abaxial surface scales dense, ca. 1 × their own diameter apart, small, unequal, brown; adaxial surface with a very short-lived brown-hispid indumentum. Inflorescence terminal, cymose, 1- or 2-flowered. Pedicel 0.2–0.5 cm, scaly, densely hispid; calyx lobes 5, 2–3 mm, ovate, sparsely scaly; corolla broadly funnelform, fresh rosy red, with deep red markings inside tube, 1.5–2.5 cm, outer surface glabrous, inner surface of tube pubescent; stamens 10, unequal, 1.2–1.5 cm, shorter than corolla; filaments densely pubescent in lower half; ovary 5-locular, densely scaly; style slender, erect or curved, shorter than corolla, shorter or slightly longer than stamens; base densely pubescent. Capsule ovate or cylindric, 10–13 mm. Fl. Apr–Jun, fr. Sep–Oct.

● Epiphytic on *Abies, Tsuga,* or broad-leaved trees; 2600–3000 m. Sichuan.

40. Rhododendron petrocharis Diels, Repert. Spec. Nov. Regni Veg. 17: 196. 1921.

饰石杜鹃 shi shi du juan

Shrubs, epiphytic, 0.5–1 m tall; branches thin and long; old branches hispid; young shoots scaly, pubescent and brown-hispid. Petiole 2–7 mm, scaly, densely hispid; leaf blade thickly leathery, ovate or elliptic, 1–2 × 0.5–1 cm; base broadly cuneate; apex rounded, apiculate; abaxial surface scales con-

tiguous, unequal, brown; adaxial surface sparsely scaly when young or scales absent, sometimes hairy along midrib. Inflorescence terminal, cymose, 1- or 2-flowered. Pedicel ca. 0.4 cm, scaly, hispid or pubescent; calyx lobes 5, 2–3 mm, ovate, scaly at base abaxially; corolla broadly funnelform, white, 2–3 cm, outer surface glabrous; tube ± pubescent within; stamens 10, unequal, ca. 1.5 cm, shorter than corolla; filaments densely pubescent in lower half; ovary 5-locular, densely scaly; style slender, erect, shorter than corolla and stamens, glabrous. Capsule not known.

● Cliffs; ca. 1800 m. NC Sichuan.

4. Rhododendron subsect. **Monantha** Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 122. 1978.

黄绿杜鹃亚组 huang lü du juan ya zu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); David F. Chamberlain

Shrubs, 0.3–3 m tall, sometimes epiphytic; young shoots scaly, hairs absent. Leaf blade leathery; abaxial surface scales large, flat, with wide margin, brown, often unequal; adaxial surface with scales only. Inflorescence terminal, subumbellate, 1–3-flowered. Calyx undeveloped, undulate, or 5-lobed, 0.5–4 mm; corolla tubular or tubular-campanulate, lobes not spreading, yellow, tinged with green when dry, rarely purple, outer surface scaly; stamens 10, longer than corolla; ovary 5-locular; style longer than corolla, glabrous or scaly below. Capsule oblong, 8–18 mm, densely scaly. Seed winged.

Four species: China, India, Myanmar; three species (one endemic) in China.

1a. Inflorescence 1(or 2)-flowered; abaxial leaf surface densely brownish scaly, these ± their own diameter apart ..... 41. *R. monanthum*
1b. Inflorescence 2- or 3-flowered; abaxial leaf surface pale brown scaly, these 0.5–3 × their own diameter apart.
2a. Calyx 2.5–4 mm; lobes 5, oblong-ovate or nearly rounded; style scaly at the base ..... 42. *R. flavantherum*
2b. Calyx ca. 0.5 mm, 5-toothed; style not scaly ..... 43. *R. kasoense*

41. Rhododendron monanthum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 250. 1916.

一朵花杜鹃 yi duo hua du juan

Shrubs, sometimes epiphytic, 0.3–1 m tall; old branches gray-white, bark peeling, glabrous, branches short and dense; young shoots densely scaly. Petiole 4–8 mm, densely scaly; leaf blade leathery, elliptic, 2–5 × 1–2.5 cm; base cuneate to broadly cuneate; apex blunt, rounded or acute, apiculate; abaxial surface grayish white, scales dense, ca. their own diameter apart, unequal, brown; adaxial surface sparsely or densely scaly. Inflorescence terminal, 1-flowered. Pedicel ca. 0.5 cm, densely scaly; calyx undulate, 1–2 mm, densely scaly; corolla tubular-campanulate, creamy or lemon yellow, 1.6–2.4 cm, outer surface scaly, without hairs; stamens 10, unequal, ca. 1.5 cm, some slightly longer than corolla, others shorter; filaments densely villous at base; ovary 5-locular, densely scaly; style longer than corolla, glabrous. Capsule cylindric, 8–14 mm. Fl. Jul–Sep, fr. Jul–Oct.

Shrubby meadows in high mountains, sometimes epiphytic on trees; 2000–3000(–3600) m. SE Xizang, NW Yunnan [SE Myanmar].

The name *Rhododendron sulfureum* Franchet has been misapplied to this species.

42. Rhododendron flavantherum Hutchinson & Kingdon Ward in J. B. Stevenson, Sp. Rhodod. 786. 1930.

黄药杜鹃 huang yao du juan

Shrubs, 1.8–3 m tall; young shoots scaly. Petiole 5–8 mm, scaly; leaf blade oblong-elliptic, 3–4 × 1.3–2 cm; base rounded; apex obtuse, apiculate; abaxial surface scaly, scales 2–3 × their own diameter apart, unequal, pale brown; adaxial surface scaly. Inflorescence terminal, subumbellate, 3-flowered; rachis ca. 2 mm, scaly. Pedicel 0.6–0.8 cm, scaly; calyx 5-lobed; lobes 2.5–4 mm, rounded or oblong-ovate, scaly; corolla tubular or tubular-campanulate, fresh yellow, 1.5–2 cm, outer surface scaly; stamens 10, unequal, 1.3–1.8 cm; filaments densely villous at base; ovary 5-locular, densely scaly; style slender, long, base scaly. Capsule cylindric, ca. 10 mm, densely scaly.

● Cliffs; 2500–2800 m. Xizang.

43. Rhododendron kasoense Hutchinson & Kingdon Ward in J. B. Stevenson, Sp. Rhodod. 787. 1930.

黄管杜鹃 huang guan du juan

Shrubs, sometimes epiphytic, 0.3–2 m tall; branches thin and dense; young shoots scaly. Petiole 5–15 mm, scaly; leaf blade lanceolate or oblong-lanceolate, 3–7 × 1–2.8 cm; base blunt or narrower; apex acute, acuminate or obtuse, apiculate; abaxial surface scaly, scales 1.5–3 × their own diameter apart, unequal, pale brown; adaxial surface scaly. Inflorescence terminal, subumbellate, 2- or 3-flowered; rachis 1–2 mm, scaly. Pedicel 0.4–0.6 cm, densely scaly; calyx 5-lobed; lobes ca. 0.5 mm, triangular, densely scaly abaxially; corolla tubular-campanulate, yellow, 1.6–2 cm, outer surface scaly; stamens 10, unequal, 0.8–1.9 cm; filaments densely villous in lower part; ovary 5-locular, densely scaly; style glabrous. Capsule cylindric, 9–18 mm, densely scaly.

Epiphytic on trees in dense forests, rocks in thickets; 2100–2800 m. SE Xizang [India].

5. Rhododendron subsect. **Triflora** (Hutchinson) Sleumer, Bot. Jahrb. Syst. 74: 536. 1949.

三花杜鹃亚组 san hua du juan ya zu

Flora of China 14: 260–455. 2005.

Fang Ruizheng (方瑞征 Fang Rhui-cheng); David F. Chamberlain

Rhododendron ser. *Triflora* Hutchinson in J. B. Stevenson, Sp. Rhodod. 758. 1930 [*"Triflorum"*].

Shrubs, rarely small trees, usually evergreen, rarely deciduous or semievergreen, 0.6–10 m tall; young shoots scaly or glandular-scaly or sometimes glabrous, rarely pubescent, or hispid. Leaf blade leathery, less often papery; abaxial surface scales dense, yellow to brown, large, unequal or all similar, often without hairs, sometimes pubescent along midrib; adaxial surface sparsely or densely scaly, scales unequal, often absent by maturity, hairs usually absent, rarely pubescent along midrib. Inflorescence terminal or subterminal, umbellate or shortly racemose, (1–)2–5(–10)-flowered; rachis 0.5–8 mm. Calyx undeveloped, 0.5–5 mm; corolla broadly funnelform-campanulate, lobed to middle, red to purple, white or yellow, rarely pale green or blue, sometimes with darker spots, with or without scales on outer surface, rarely hairy; stamens 10, unequal; ovary 5-locular, usually densely scaly, rarely also pubescent; style often longer than corolla, usually glabrous, rarely pubescent at base, not scaly. Capsule cylindric, 6–20 mm. Seed wingless.

Twenty-five species: Bhutan, China, India, Japan, Myanmar, Nepal, Sikkim; 24 species (20 endemic) in China.

1a. Leaf blade ± hairy on both sides, or at least midrib pubescent or hispid abaxially and pubescent adaxially.
  2a. Corolla pale yellow; abaxial leaf surface with scales 3–5 × their own diameter apart ..... 44. *R. shimianense*
  2b. Corolla white, pale green, purple or rosy red; abaxial leaf surface densely or sparsely scaly.
    3a. Young shoots, petiole, leaf adaxial surface, corolla tube, and ovary hispid ..... 45. *R. trichanthum*
    3b. Young shoots, petiole, leaf adaxial surface, corolla tube, and ovary pubescent or glabrous, not hispid.
      4a. Corolla 1.5–2 cm.
        5a. Leaf obovate or elliptic; apex obtuse or rounded; corolla rosy red; leaf abaxial surface densely scaly, scales at most 1 × their own diameter apart; pedicel 7–10 mm ..... 46. *R. bivelatum*
        5b. Leaf ovate; apex apiculate; corolla white; leaf abaxial surface sparsely scaly, scales 1–3 × their own diameter apart; pedicel 3–6 mm ..... 47. *R. guangnanense*
      4b. Corolla 2.5–3.5 cm.
        6a. Leaf blade 3–7 cm; corolla purple, red, or white ..... 48. *R. augustinii*
        6b. Leaf blade 7–10 cm; corolla pale green ..... 49. *R. brachypodum*
1b. Leaf blade glabrous on both surfaces, or at most pubescent along midrib adaxially.
  7a. Corolla yellow, creamy yellow or pale green.
    8a. Leaf blade papery, abaxial surface sparsely scaly, scales 0.5–6 × their own diameter apart; leaf apex acuminate or caudate; corolla densely pubescent outside ..... 50. *R. lutescens*
    8b. Leaf blade leathery, abaxial surface densely scaly, scales ± contiguous to their own diameter apart; leaf apex acute, acuminate or obtuse; corolla glabrous or pubescent outside.
      9a. Corolla outer surface not scaly, 1.6–2.2 cm ..... 51. *R. wongii*
      9b. Corolla outer surface scaly, 2–3.5 cm.
        10a. Corolla with yellowish green markings inside; scales on abaxial leaf surface dimorphic, the larger deep brown, the smaller yellowish brown; leaf midrib adaxially hairy ..... 52. *R. ambiguum*
        10b. Corolla with brown spots inside; scales on abaxial leaf surface uniform; leaf midrib adaxially glabrous ..... 53. *R. triflorum*
  7b. Corolla white, pale red or purple, never yellow.
    11a. Scales on abaxial leaf surface scattered, (1–)2–4(–8) × their own diameter apart.
      12a. Mature leaves with abaxial surface pinkish white, scales 0.5–4 × their own diameter apart; corolla white to lavender pink, densely glandular-scaly outside, sometimes pubescent on tube ..... 54. *R. zaleucum*
      12b. Mature leaves with abaxial surface pale green or pale brown; corolla pale red, pale purple or white, sparsely scaly or not outside, without hairs.
        13a. Leaf blade V-shaped in cross section; scales on abaxial surface contiguous to 4 × their own diameter apart; adaxial surface and petioles glabrous ..... 55. *R. davidsonianum*
        13b. Leaf blade flat; scales on abaxial surface 2–8 × their own diameter apart; adaxial surface and petioles sometimes hairy.
          14a. Evergreen; young shoots, leaf adaxially along midrib, leaf margin and petioles glabrous or pubescent; corolla pale purple in bud ..... 56. *R. rigidum*
          14b. Evergreen or semievergreen; young shoots, leaf adaxial surface, leaf margin and petioles glabrous or pubescent or sparsely hispid; corolla white in bud (see also 58. *R. pleistanthum*) ..... 57. *R. yunnanense*
    11b. Scales on abaxial leaf surface dense, ± contiguous to 1 × their own diameter apart.
      15a. Leaves 1.6–2.6 × 0.5–1.2 cm; corolla 1.3–1.6 cm, not scaly outside ..... 59. *R. gemmiferum*
      15b. Leaves 2–11 × 1–3.5 cm; corolla 1.5–4 cm, scaly or not outside.
        16a. Calyx lobes irregular, to 4–6 mm.
          17a. Leaf blade base cuneate, rarely rounded, abaxial surface with scattered large scales; calyx with long

hairs; corolla white or pale reddish purple, inside with deep green spots ..... 60. *R. searsiae*
17b. Leaf blade base rounded, rarely broadly cuneate, abaxial surface scales all similar; calyx scaly along margin; corolla pale or deep purplish red, inside with or without brownish red spots ..... 61. *R. concinnum*
16b. Calyx often undeveloped, rimlike or undulate, lobes 0.5–2 mm.
18a. Leaf blade base rounded or broadly cuneate.
19a. Petiole hispid; corolla purple or deep red, 3–4 cm ..... 62. *R. amesiae*
19b. Petiole glabrous; corolla pale yellow, pale red or rosy red, 1.2–3 cm.
20a. Leaf blade apex rounded, scales on abaxial surface flat, veins inconspicuous on both sides; corolla not scaly outside ..... 63. *R. oreotrephes*
20b. Leaf blade apex obtuse to acute, apiculate; scales on abaxial surface concave, veins conspicuous on both sides; corolla scaly outside ..... 64. *R. tatsienense*
18b. Leaf base narrower, cuneate to rounded.
21a. Leaf blade elliptic, 2.5–5 × 0.8–1.8 cm; corolla 1.5–1.8 cm ..... 65. *R. xichangense*
21b. Leaf blade elliptic, elliptic-lanceolate or oblong-lanceolate, 3–11 × 1.2–3.5 cm; corolla 1.6–3.5 cm.
22a. Leaf blade oblong or oblong-lanceolate; abaxial leaf surface with scales thin, gray-brown, contiguous or overlapping, to 0.5 × their own diameter apart ..... 66. *R. polylepis*
22b. Leaf blade elliptic or elliptic-lanceolate; abaxial leaf surface with scales rusty brown, 0.5–1(–2) × their own diameter apart ..... 67. *R. siderophyllum*

44. Rhododendron shimianense W. P. Fang & P. S. Liu, Bull. Bot. Res., Harbin 2(4): 3. 1982.

石棉杜鹃 shi mian du juan

Shrubs, ca. 2 m tall; young shoots pale purple, sparsely scaly. Petiole 1–1.3 mm, sparsely scaly; leaf blade thinly leathery, narrowly elliptic or oblong-elliptic, 5–8 × 1.5–3 cm; base cuneate; apex acuminate, apiculate; abaxial surface pale green, scales 3–5 × their own diameter apart, yellow, white-pubescent in lower half; adaxial surface deep green, shiny, pubescent along midrib; lateral veins inconspicuous on both surfaces. Inflorescence terminal, umbellate, 3-flowered. Pedicel pale purple, 1–1.7 cm, sparsely scaly; calyx lobes 5, ca. 1.5 mm, apex acute; corolla funnelform-campanulate, 5-lobed to middle, pale yellow, 3.5–4 cm, outer surface not scaly; stamens 10, unequal, 2–2.5 cm; filaments white-villous at base; ovary densely scaly; style 3.5–4 cm, longer than corolla. Capsule not known.

● About 2800 m. Sichuan.

45. Rhododendron trichanthum Rehder, J. Arnold Arbor. 26: 480. 1945.

长毛杜鹃 chang mao du juan

Rhododendron villosum Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1910: 119. 1910, not Roth (1807).

Shrubs, 1–3 m tall; young shoots scaly, densely hispid and pubescent. Petiole 4–10 mm, scaly, densely hispid and pubescent; leaf blade oblong-lanceolate and ovate-lanceolate, 4–11 × 1.5–3.5 cm; base cuneate to rounded; apex acuminate or acute; abaxial surface scales 1–4 × their own diameter apart, unequal, yellowish brown; hispid and pubescent, densely so along midrib; adaxial surface sparsely scaly, hispid to pubescent or glabrous. Inflorescence terminal, umbellate or shortly racemose, 2- or 3-flowered; rachis ca. 3 mm. Pedicel 1–1.5 cm, scaly, densely hairy; calyx 0.5–1 mm, scaly, densely hispid; corolla broadly funnelform-campanulate, pale purple, rose red or white, 2.5–3.5 cm, outer surface scaly, tube hispid; stamens unequal, some longer than corolla; filaments densely pubescent below; ovary 5-locular, densely scaly, hispid; style longer than corolla, usually glabrous, rarely pubescent at base. Capsule cylindric, 10–15 mm, scaly, hispid, rarely without hairs. Fl. May–Jun, fr. Sep.

● Forests, thickets; 1600–3700 m. W Sichuan.

Rhododendron ×*lochmium* I. B. Balfour (Notes Roy. Bot. Gard. Edinburgh 11: 90. 1919) was described from cultivated material derived from seed of *R. trichanthum* collected in Sichuan. It was considered to be a hybrid between *R. trichanthum* and, most probably, *R. davidsonianum* by Cullen (Notes Roy. Bot. Gard. Edinburgh 39: 80. 1980).

Rhododendron ×*trichophorum* I. B. Balfour (Notes Roy. Bot. Gard. Edinburgh 12: 173. 1920), described from Sichuan, was considered to be a hybrid between *R. trichanthum* and *R. augustinii* by Cullen (loc. cit.: 75).

46. Rhododendron bivelatum I. B. Balfour, Notes Roy. Bot. Gard. Edinburgh 10: 85. 1917.

双被杜鹃 shuang bei du juan

Shrubs; young shoots short, densely scaly, pubescent. Petiole 3–5 mm, scaly and pubescent, sometimes sparsely hispid; leaf blade obovate or elliptic, 3–3.8 × 1.5–2 cm; base obtuse; apex broad, blunt or rounded, apiculate; abaxial surface scales to 1 × their own diameter apart, midrib and lateral veins pubescent; adaxial surface without scales, midrib pubescent in lower half. Inflorescence terminal, shortly racemose, 2- or 3-flowered; rachis ca. 2 mm, scaly and pubescent. Pedicel 0.7–1 cm, scaly, pubescent; calyx lobes 5, 1–1.5 mm, rounded or triangular, scaly, sometimes also pubescent; corolla broadly funnelform-campanulate, rose red, ca. 2 cm, outer surface scaly, without hairs; stamens unequal, 1.6–2.1 cm; filaments glabrous; ovary 5-locular, densely scaly, apex with tufted hairs; style slender, long, glabrous. Capsule not known.

● Dry slopes; 800–900 m. NE Yunnan.

47. Rhododendron guangnanense R. C. Fang, Acta Bot. Yunnan. 4: 254. 1982.

广南杜鹃 guang nan du juan

Shrubs or small trees, 8–10 m tall; young shoots brown, sparsely scaly. Petiole slender, 5–7 mm, scaly; leaf blade ovate, 2.5–5.5 × 1–2.3 cm; base broadly cuneate to rounded; apex acuminate, apiculate; abaxial surface scales 1–3 × their own dia-

meter apart, all similar, midrib pubescent; adaxial surface sparsely scaly, these soon lost, pubescent along midrib; lateral veins 7-paired, thin, flat above and slightly raised below. Inflorescence terminal, shortly racemose, 4-flowered; rachis ca. 3 mm. Pedicel thin, 0.3–0.6 cm, with small scales; calyx rimlike, or undulate and 5-lobed, small, scaly; corolla broadly funnelform-campanulate, 5-lobed to the middle, white, 1.5–1.8 cm, outer surface scaly; lobes oblong; stamens 10, unequal, shorter than corolla; filaments puberulent at base; ovary densely scaly; style slightly longer than corolla, glabrous. Capsule not known. Fl. Mar.

● Rocky mountains; ca. 1500 m. SE Yunnan.

48. Rhododendron augustinii Hemsley, J. Linn. Soc., Bot. 26: 19. 1889.

毛肋杜鹃 mao lei du juan

Shrubs, 1–5 m tall; young shoots scaly, densely villous and pubescent or glabrous. Petiole 3–5(–10) mm, densely hispid and pubescent or glabrous; leaf blade elliptic, oblong or oblong-lanceolate, 3–7 × 1–3.5 cm; base cuneate to rounded; apex acuminate to acute, apiculate; abaxial surface scales (1–)1.5–5 × their own diameter apart, unequal, densely yellowish white-pubescent along lower half of midrib, mature leaves less hairy; adaxial surface scales absent or sparse to dense, densely or sparsely pubescent, with filiform-acicular hairs along midrib. Inflorescence terminal, umbellate, 2–6-flowered; rachis ca. 5 mm, glabrous. Pedicel 0.8–1.5 cm, sparsely scaly, pubescent or glabrous; calyx lobes 0.5–2 mm, rounded or triangular, densely scaly, densely pubescent or glabrous; corolla broadly funnelform-campanulate, 5-lobed to middle, blue to lavender, sometimes pale pinkish purple or white, 3–3.5 cm, outer surface glandular scaly or not, glabrous or pubescent at base; lobes oblong; stamens unequal, 2.5–3.5 cm, longer than corolla; filaments densely villous below; ovary 5-locular, densely scaly; style longer than corolla, glabrous or pubescent at base. Capsule cylindric; base oblique, 10–20 mm, densely scaly. Fl. Apr–May, fr. Jul–Aug.

● Forests, thickets, rocks on slopes; 1000–3400(–4200) m. Gansu, Hubei, Shaanxi, Sichuan, Yunnan.

1a. Leaf midrib abaxially with indumentum extending from petiole, scales 1.5–2 × their own diameter apart; adaxial leaf surface with filiform-acicular hairs on veins ..... 48a. subsp. *augustinii*

1b. Leaf midrib abaxially glabrous, scales (1–)2–5 × their own diameter apart; adaxial leaf surface without filiform-acicular hairs ..... 48b. subsp. *chasmanthum*

48a. Rhododendron augustinii subsp. **augustinii**

毛肋杜鹃(原亚种) mao lei du juan (yuan ya zhong)

Rhododendron augustinii var. *yui* W. P. Fang; *R. vilmorinianum* I. B. Balfour.

Young shoots densely villous and pubescent. Petiole densely hispid and pubescent; abaxial leaf surface scales 1.5–2 × their own diameter apart, indumentum of petiole extending along midrib, adaxial leaf surface with filiform-acicular hairs on veins; corolla blue to lavender; style glabrous or pubescent at base.

● Forests in valleys, forests or thickets on slopes, rocks on slopes; 1000–2100 m. Hubei, Shaanxi, Sichuan.

48b. Rhododendron augustinii subsp. **chasmanthum** (Diels) Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 109. 1978.

张口杜鹃 zhang kou du juan

Rhododendron chasmanthum Diels, Notes Roy. Bot. Gard. Edinburgh 5: 212. 1912; *R. augustinii* var. *chasmanthum* (Diels) R. C. Fang; *R. augustinii* f. *grandifolium* Franchet; *R. augustinii* f. *hardyi* (Davidian) R. C. Fang; *R. augustinii* subsp. *hardyi* (Davidian) Cullen; *R. augustinii* f. *rubrum* (Davidian) R. C. Fang; *R. augustinii* subsp. *rubrum* (Davidian) Cullen; *R. augustinii* var. *rubrum* Davidian; *R. augustinii* f. *subglabrum* Franchet; *R. bergii* Davidian; *R. chasmanthoides* I. B. Balfour & Forrest; *R. hardyi* Davidian; *R. hirsuticostatum* Handel-Mazzetti.

Less hairy on all parts; young shoots glabrous. Petiole often glabrous; abaxial leaf surface scales (1–)2–5 × their own diameter apart, otherwise often glabrous; adaxial surface without filiform-acicular hairs; corolla white, pinkish purple or lavender to blue; style base often glabrous, rarely pubescent.

● Evergreen broad-leaved forests, mixed forests on valley sides, *Abies* and other coniferous forests, thickets on rocky mountains; 1700–3400(–4200) m. Gansu, Sichuan, Yunnan.

In FRPS (57(1): 65. 1999) both *Rhododendron augustinii* f. *hardyi* and f. *rubrum* are mentioned. The first has leaves deciduous and corollas white with brownish spots. The second has petioles with loriform and filiform-acicular hairs and corollas pinkish purple. These two entities are clearly distinct in cultivation, but are considered to have a dubious status in the wild (see Cullen, Notes Roy. Bot. Gard. Edinburgh 39: 73–74. 1980).

49. Rhododendron brachypodum W. P. Fang & P. S. Liu, Bull. Bot. Res., Harbin 2(2): 92. 1982.

短梗杜鹃 duan geng du juan

Shrubs, ca. 4 m tall; old branches nearly glabrous; young shoots sparsely pubescent and glandular. Petiole 5–7 mm, sparsely pubescent; leaf blade papery, lanceolate or oblong-lanceolate, rarely oblong-elliptic, 7–10 × 2.5–3 cm; base cuneate to obtuse; apex acuminate to acute; abaxial surface scales 3–4 × their own diameter apart, pale yellow, sparsely pubescent, densely hispid along veins; adaxial surface deep green, sparsely pubescent. Inflorescence terminal, umbellate, 3–5-flowered. Pedicel 0.8–1.4 cm, densely scaly, sparsely glandular; calyx reduced to a rim or unequally lobed, 1–2 mm; corolla funnelform-campanulate, pale green, 2.5–3 cm, outer surface sparsely scaly, inner surface glabrous; lobes elliptic, ca. 1.5 cm; stamens 10, unequal, 2–3 cm, longer than corolla; filaments pubescent below, anthers purple; ovary densely scaly; style longer than corolla, glabrous. Capsule cylindric, 16–18 mm.

● 1000–1500 m. Sichuan.

50. Rhododendron lutescens Franchet, Bull. Soc. Bot. France 33: 235. 1886.

黄花杜鹃 huang hua du juan

Rhododendron blinii H. Léveillé; *R. costulatum* Franchet; *R. lemeei* H. Léveillé.

Shrubs, 1–3 m tall; young shoots sparsely scaly. Petiole 5–9 mm, sparsely scaly; leaf blade papery, lanceolate, oblong-lanceolate or ovate-lanceolate, 4–9 × 1.5–2.5 cm; base broadly cuneate to rounded; apex acuminate, apiculate; abaxial surface scales 5.5–6 × their own diameter apart, yellow or brown; adaxial surface sparsely scaly; midrib and lateral veins slender; lateral veins 12-paired, inconspicuous on both surfaces. Inflorescence terminal or axillary, 1–3-flowered. Pedicel 0.4–1.5 cm, scaly; calyx undeveloped, undulate, 5-lobed or rimlike, 0.5–1 mm; corolla broadly funnelform-campanulate, 5-lobed to the middle, yellow, 2–2.5 cm, outer surface sparsely scaly and densely pubescent; lobes oblong; stamens 10, unequal, long ones longer than corolla, with fewer hairs, shorter stamens with filament base densely villous; ovary 5-locular, densely scaly; style glabrous. Capsule cylindric, ca. 10 mm. Fl. Mar–Apr.

● Wet areas in mixed forests, thickets on limestone slopes; 1700–2000 m. Guizhou, W Sichuan, Yunnan.

51. Rhododendron wongii Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1910: 117. 1910.

康南杜鹃 kang nan du juan

Shrubs, 0.6–2 m tall; young shoots densely scaly, otherwise glabrous. Petiole 3–5 mm, scaly, glabrous; leaf blade leathery, oblong, elliptic or oblong-elliptic, 1.5–3 × 1–2 cm; base rounded; apex acute or obtuse, apiculate; abaxial surface gray-white or pale green, scales nearly contiguous to 0.5 × their own diameter apart, pale brown or deep brown; adaxial surface deep or pale green, scaly. Inflorescence terminal, umbellate or shortly racemose, 3-flowered; rachis 0.5–1 mm. Pedicel 0.4–1 cm, scaly; calyx 5-lobed, 0.5–1 mm, scaly; corolla funnelform-campanulate, creamy yellow or yellow, 1.6–2.2 cm, outer surface not scaly, base pubescent or not; stamens unequal, 1.5–2 cm, longer than corolla; filaments pubescent below; ovary 5-locular, densely scaly; style longer than corolla, glabrous or pubescent at base. Capsule cylindric, 8–10 mm. Fl. May–Jun.

● Forests, thickets; 3200–3700 m. W Sichuan.

52. Rhododendron ambiguum Hemsley, Bot. Mag. 137: t. 8400. 1911.

问客杜鹃 wen ke du juan

Rhododendron chengshienianum W. P. Fang.

Shrubs, 1–3 m tall; young shoots thin, densely glandular-scaly. Petiole 6–10 mm, densely glandular-scaly; leaf blade leathery, elliptic, ovate-lanceolate or oblong, 4–8 × 1.8–3 cm; base broadly cuneate to obtuse; apex acuminate, acute or obtuse, apiculate; abaxial surface gray-green, scales to 1 × their own diameter apart, unequal, yellowish brown or brown; adaxial surface scaly, young leaves with midrib hairy or not. Inflorescence terminal, rarely subterminal, umbellate or shortly racemose, 3–4(–7)-flowered; rachis 2–4 mm. Pedicel 0.5–1 cm, scaly; calyx rimlike or undulate, 0.5–1 mm, scaly; corolla broadly funnelform-campanulate, yellow or pale yellow, or pale greenish yellow, inside with yellowish green markings and pubescent, 3–3.5 cm, outer surface scaly; stamens unequal, 1.8–4.5 cm; filaments densely pubescent below; ovary 5-locular, densely scaly; style longer than corolla, glabrous. Capsule cylindric, 6–15 mm. Fl. May–Jun, fr. Sep–Oct.

● Forests, thickets; 2300–3300(–4500) m. C and W Sichuan.

Geng et al. (in Acta Phytotax. Sin. 41: 493. 2003) proposed that *Rhododendron ambiguum* should be treated as a synonym of *R. wongii*. The holotype specimen of *R. wongii* is reputed to be very poor and may be depauperate. There is evidently little to separate these two species.

53. Rhododendron triflorum J. D. Hooker, Rhododendr. Sikkim-Himalaya 2: t. 19. 1851.

三花杜鹃 san hua du juan

Shrubs or rarely small trees, often evergreen, sometimes semievergreen, 1–4 m tall; young shoots scaly. Petiole 4–9 mm, scaly; leaf blade ovate, oblong, ovate-lanceolate, or oblong-lanceolate, 2.5–6.5 × 1.5–2.5 cm; base rounded or cordate; apex acuminate, acute or obtuse, apiculate; abaxial surface gray white or pale green, scales to 1 × their own diameter apart, all similar, ± rimless; adaxial surface without scales. Inflorescence terminal, shortly racemose, 2–5(or more)-flowered; rachis 3–5 mm, scaly. Pedicel 0.6–1.6 cm, erect and ca. 1.2 cm in fruit, scaly; calyx lobes rounded, ovate or triangular, 0.5–1 mm, densely scaly; corolla broadly funnelform-campanulate, pale yellow, sometimes with lobes tinged pink, inside with brown spots, 2–3.3 cm, outer surface scaly, pubescent or without hairs; stamens unequal, 1.2–2.8 cm, longer than corolla; filaments villous; ovary 5-locular, densely scaly; style long, glabrous. Capsule cylindric, 7–12 mm. Fl. May–Jun, fr. Jul–Aug.

Forests, thickets; 2500–3700 m. S Xizang, WC Yunnan [Bhutan, India, Myanmar, Nepal, Sikkim].

1a. Inflorescence 2–3(–4)-flowered ..... 53a. subsp. *triflorum*

1b. Inflorescence 4–5- or more flowered ..... 53b. subsp. *multiflorum*

53a. Rhododendron triflorum subsp. **triflorum**

三花杜鹃(原亚种) san hua du juan (yuan ya zhong)

Inflorescence 2–3(–4)-flowered. Fl. Apr–May.

Abies, Picea, Pinus, or *Quercus* forests, thickets; 2500–3700 m. S Xizang [Bhutan, India, Myanmar, Nepal, Sikkim].

53b. Rhododendron triflorum subsp. **multiflorum** R. C. Fang, Acta Bot. Yunnan. 4: 254. 1982.

云南三花杜鹃 yun nan san hua du juan

Inflorescence 4–5- or more flowered. Fl. Apr.

● *Rhododendron* forests, mixed forests, mossy forests, *Quercus* thickets; 2500–3000 m. WC Yunnan.

54. Rhododendron zaleucum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 163. 1917.

白面杜鹃 bai mian du juan

Shrubs or small trees, 1–3(–6) m tall; young shoots sparsely scaly. Petiole 7–13 mm, sparsely brown-scaly; leaf blade elliptic, ovate-lanceolate, or lanceolate, 4–7 × 1–2.5 cm; base

cuneate to rounded; apex acute to acuminate, apiculate; abaxial surface pinkish white, papillate, scales 1.5–4 × their own diameter apart, unequal, yellow, glabrous or pubescent, at least along midrib; adaxial surface without scales, sparsely pubescent along midrib when young. Inflorescence terminal, shortly racemose, 3–5-flowered; rachis 2–5 mm, scaly, otherwise glabrous, rarely pubescent. Pedicel 1–1.5 cm, sparsely scaly; calyx rimlike or 5-lobed; lobes ca. 1 mm, rounded or ovate-triangular, scaly, glandular; corolla broadly funnelform-campanulate, 5-lobed to the middle, white to pink, 3–4 cm, outer surface densely glandular scaly, tube sometimes pubescent; lobes rounded-ovate; stamens unequal, 1.3–3.3 cm, longer than corolla; filaments at base spreading-pubescent; ovary 5-locular, densely scaly; style long, glabrous or pubescent at base. Capsule cylindric, 8–15 mm. Fl. Apr–Jul, fr. Jul–Aug.

Conifer-*Rhododendron* forests, thickets on slopes; 2800–3400 m. Yunnan [Myanmar].

1a. Abaxial leaf surface glabrous; style glabrous or pubescent at base ..... 54a. var. *zaleucum*
1b. Abaxial leaf surface pubescent, at least along midrib; style glabrous ..... 54b. var. *pubifolium*

54a. Rhododendron zaleucum var. **zaleucum**

白面杜鹃(原变种) bai mian du juan (yuan bian zhong)

Rhododendron erileucum I. B. Balfour & Forrest.

Leaf blade abaxial surface with scales only. Style base glabrous or pubescent.

Conifer-*Rhododendron* forests in high mountains, *Rhododendron* thickets on rocky slopes, thickets on slopes; 2800–3400 m. Yunnan [Myanmar].

54b. Rhododendron zaleucum var. **pubifolium** R. C. Fang, Acta Bot. Yunnan. 4: 255. 1982.

毛叶白面杜鹃 mao ye bai mian du juan

Leaf blade abaxial surface pubescent, at least along midrib. Style glabrous.

Abies-Picea-Rhododendron forests; ca. 3100 m. N Yunnan [Myanmar].

55. Rhododendron davidsonianum Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 515. 1913.

凹叶杜鹃 ao ye du juan

Rhododendron charianthum Hutchinson.

Shrubs, 1–3 m tall; young shoots sparsely or rarely densely scaly, otherwise glabrous or pubescent. Petiole 3–5 mm, scaly, pubescent; leaf blade lanceolate or oblong, 2.5–6 × 1–2 cm; base narrower or obtuse, V-shaped; apex acute, apiculate; abaxial surface scales 1–4 × their own diameter apart or contiguous, unequal, yellowish brown; adaxial surface deep or fresh green, sparsely scaly, glabrous or pubescent along midrib. Inflorescence terminal or subterminal, shortly racemose, 3–6-flowered; rachis 2–4 mm. Pedicel 1–1.5 cm, sparsely scaly, pubescent; calyx rimlike or 5-lobed, 0.5–1 mm, scaly; corolla broadly funnelform-campanulate, pale purplish white or rosy red, with red or yellow spots inside, 2.5–3 cm, outer surface scaly or not; stamens unequal, long ones longer than corolla; filaments pubescent below; ovary 5-locular, densely scaly; style longer than corolla, glabrous. Capsule cylindric, 10–13 mm. Fl. Apr–May, fr. Sep–Oct.

● Coniferous forests, open areas in forests, thickets; 1500–2800(–3600) m. Sichuan.

56. Rhododendron rigidum Franchet, Bull. Soc. Bot. France 33: 233. 1886.

基毛杜鹃 ji mao du juan

Rhododendron caeruleum H. Léveillé; *R. eriandrum* H. Léveillé ex Hutchinson; *R. hesperium* I. B. Balfour & Forrest; *R. racemosum* Franchet var. *rigidum* (Franchet) Rehnelt; *R. rarosquameum* I. B. Balfour; *R. sycnanthum* I. B. Balfour & W. W. Smith.

Shrubs, rarely small trees, 1–2(–10) m tall; old branches glabrous; young shoots with scales absent or sparse, sometimes also pubescent. Petiole 2–12 mm, scales sparse or absent, otherwise glabrous or rarely pubescent; leaf blade elliptic, oblong elliptic, oblong-lanceolate or oblanceolate, 2.5–6.8 × 1–3.2 cm; base narrow or rounded; apex obtuse, acute, or rounded, apiculate; abaxial surface gray green, scales (2–)4–8 × their own diameter apart, or contiguous, unequal; adaxial surface brownish green, sparsely scaly or absent, sometimes also pubescent along midrib. Inflorescence terminal or subterminal, shortly racemose, 2–6-flowered; rachis 2–4 mm. Pedicel 0.5–2 cm, not scaly or sparsely scaly and pubescent; calyx rimlike or 5-lobed, 0.5–1 mm, scales present or absent; corolla broadly funnelform-campanulate, pale purplish to white or deep reddish purple, with greenish brown or purple spots within, 1.8–3 cm, outer surface not scaly, rarely scaly; stamens unequal, long ones longer than corolla; filaments densely pubescent at base; ovary 5-locular, densely scaly, rarely pubescent on top; style longer than corolla, glabrous. Capsule cylindric, 8–10 mm.

● Forest margins, thickets; 2000–3400 m. Sichuan, Yunnan.

Rhododendron bodinieri Franchet (J. Bot. (Morot) 12: 257. 1898), described from S Yunnan, is intermediate between, and may be a hybrid between, *R. rigidum* and *R. siderophyllum* (see Cullen, Notes Roy. Bot. Gard. Edinburgh 39: 69. 1980).

57. Rhododendron yunnanense Franchet, Bull. Soc. Bot. France 33: 232. 1886.

云南杜鹃 yun nan du juan

Rhododendron aechmophyllum I. B. Balfour & Forrest; *R. chartophyllum* Franchet; *R. chartophyllum* f. *praecox* Diels; *R. hormophorum* I. B. Balfour & Forrest; *R. shaanxiense* W. P. Fang & Z. J. Zhao; *R. suberosum* I. B. Balfour & Forrest.

Shrubs, rarely small trees, deciduous, semievergreen or evergreen, 1–2(–4) m tall; old branches glabrous; young shoots sparsely scaly, otherwise glabrous or pubescent. Petiole 3–7 mm, sparsely scaly, pubescent or sometimes hispid; leaf blade oblong, lanceolate, oblong-lanceolate or obovate, 2.5–7 × 0.8–3 cm; base narrow to cuneate; apex acuminate or acute, apiculate; abaxial surface green or gray green, scales 2–6 × their own diameter unequal; adaxial surface not or sparsely scaly, sometimes pubescent along midrib. Inflorescence terminal or subterminal,

shortly racemose or umbellate, 3–6-flowered; rachis 2–3 mm. Pedicel 0.5–2(–3) cm, not or sparsely scaly; calyx rimlike or 5-lobed, 0.5–1 mm, scaly or not; corolla broadly funnelform-campanulate, white, pale red or pale purplish, inside with red, brownish red, yellow or yellowish green spots, 1.8–3.5 cm, outer surface sparsely scaly or not; stamens unequal, long ones longer than corolla; filaments ± pubescent below; ovary 5-locular, densely scaly; style longer than corolla, glabrous. Capsule cylindric, 6–20 mm. Fl. Apr–Jun.

Mixed forests on slopes, *Abies-Picea* or *Pinus-Quercus* forest margins, thickets; (1600–)2200–3600(–4000) m. W Guizhou, S Shaanxi, W Sichuan, Xizang, Yunnan [Myanmar].

58. Rhododendron pleistanthum E. H. Wilding, Rhododendrons Names Addresses, 73. 1923.

极多花杜鹃 ji duo hua du juan

Shrubs, evergreen to deciduous, 0.6–4 m; young shoots scaly, puberulent. Petiole lacking bristles; leaf blade narrowly elliptic, 3.5–6(–7.3) × 1.3–2.3 cm; base cuneate; margin without ciliae or bristles; apex acute; abaxial surface scales 3–5 × their own diameter apart, yellow or brown; adaxial surface ± without scales. Inflorescence lax. Pedicel (8–)10–18 mm, scaly, sometimes puberulent; calyx minute, discoid or undulate, sometimes ciliate; corolla broadly funnel-campanulate, white, sometimes flushed pink, to lilac, often with red or yellow flecks, to 3 cm. Capsule 11–18 mm. Fl. Apr–May.

● Forests, forest margins, rarely meadows and cliffs; 2000–4500 m. Sichuan, Yunnan.

This species is close to *Rhododendron yunnanense,* and has been treated by recent Chinese authors (e.g., in FRPS 57(1): 73. 1999) as a synonym of it. However, *R. pleistanthum* can be distinguished by the puberulent young growth and by the lack of cilia or bristles on the young leaves and petioles.

59. Rhododendron gemmiferum M. N. Philipson & Philipson, Notes Roy. Bot. Gard. Edinburgh 33: 493. 1975.

大芽杜鹃 da ya du juan

Shrubs, ca. 0.6 m tall; many-branched; young shoots grooved, with yellow scales. Leaf blade elliptic to broadly elliptic, 1.6–2.6 × 0.5–1.2 cm; base cuneate; apex rounded to acute, apiculate; abaxial surface gray-brown or honey yellow, scales contiguous; adaxial surface deep green, sparsely scaly, midrib and lateral veins raised abaxially, concave adaxially. Inflorescence terminal, umbellate, 4-flowered. Pedicel ca. 1.2 cm, scaly; calyx 1–1.5 mm, scaly at base; corolla broadly funnelform-campanulate, deep reddish purple to pale purple, tube 4–5.5 mm; outer surface not scaly; lobes 0.9–1 cm; stamens 10, slightly longer than corolla; filaments puberulent at base; ovary densely scaly; style longer than stamens; base pubescent. Capsule cylindric, ca. 6 mm. Fl. Jun.

● Thickets, rocky slopes; 3300–3700(–4300) m. NW Yunnan.

60. Rhododendron searsiae Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 522. 1913.

绿点杜鹃 lü dian du juan

Shrubs, 1.5–5 m tall; young shoots densely scaly. Petiole 3–10 mm, densely scaly; leaf blade leathery, lanceolate, oblong-lanceolate or oblanceolate, 2.5–8 × 1.2–2.5 cm; base narrower or obtuse; apex acuminate to acute, apiculate; abaxial surface grayish green, scales 0.5–1 × their own diameter apart, unequal, yellowish brown; adaxial surface deep or pale green, sparsely scaly, sometimes pubescent along midrib. Inflorescence terminal, rarely subterminal, shortly racemose, 4–8-flowered; rachis 3–6 mm. Pedicel 0.5–1.6 cm, densely scaly; calyx unequally 5-lobed; lobes 0.5–5 mm, oblong or triangular, with 2 longer ones; corolla broadly funnelform-campanulate, white or pale reddish purple, inside with deep green spots, 2.5–3.4 cm, outer surface not scaly or scaly only on tube; stamens unequal, 1.1–3.4 cm, longer than corolla; filaments densely pubescent below; ovary 5-locular, densely scaly; style long, scales absent, glabrous or rarely pubescent at base. Capsule cylindric, 10–14 mm. Fl. May–Jun, fr. Sep–Oct.

● Forests, thickets; 2300–3000 m. Sichuan.

61. Rhododendron concinnum Hemsley, J. Linn. Soc., Bot. 26: 21. 1889.

秀雅杜鹃 xiu ya du juan

Rhododendron apiculatum Rehder & E. H. Wilson; *R. benthamianum* Hemsley; *R. concinnum* var. *benthamianum* (Hemsley) Davidian; *R. concinnum* f. *laetevirens* Cowan; *R. concinnum* var. *lepidanthum* (Rehder & E. H. Wilson) Rehder; *R. concinnum* var. *pseudoyanthinum* (I. B. Balfour ex Hutchinson) Davidian; *R. coombense* Hemsley; *R. pseudoyanthinum* I. B. Balfour ex Hutchinson; *R. yanthinum* Bureau & Franchet; *R. yanthinum* var. *lepidanthum* Rehder & E. H. Wilson.

Shrubs, (0.4–)1.5–3 m tall; young shoots scaly. Petiole 5–13 mm, densely scaly; leaf blade oblong, elliptic, ovate, oblong-lanceolate or ovate-lanceolate, 2.5–7.5 × 1.5–3.5 cm; apex acuminate to acute, apiculate; abaxial surface pinkish green or brown, scales 0.5(–1) × their own diameter apart or contiguous, unequal, with obvious margin; adaxial surface ± scaly, sometimes pubescent along midrib. Inflorescence terminal or subterminal, umbellate, 2–5-flowered. Pedicel 0.4–1.8 cm, densely scaly; calyx 5-lobed; lobes 0.8–1.5(–6) mm, rounded, triangular or oblong, sometimes undeveloped and rim-like; corolla broadly funnelform-campanulate, pale or deep purplish red, inside with or without brownish red spots, 1.5–3.2 cm, outer surface ± scaly, glabrous or sparsely pubescent at base; stamens unequal, as long as corolla; filaments pubescent below; ovary 5-locular, densely scaly; style slightly longer than corolla, usually glabrous, rarely pubescent at base. Capsule cylindric, 10–15 mm. Fl. Apr–Jun, fr. Sep–Oct.

● *Abies-Rhododendron* forests, thickets on slopes; 2300–3000(–3800) m. Guizhou, Henan, Hubei, Shaanxi, Sichuan, Yunnan.

It is believed that *Rhododendron hutchinsonianum* W. P. Fang (Acta Phytotax. Sin. 2: 83. 1953), described from Xizang, is a variant of *R. concinnum* (see Cullen, Notes Roy. Bot. Gard. Edinburgh 39: 76. 1980).

62. Rhododendron amesiae Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 523. 1913.

紫花杜鹃 zi hua du juan

Shrubs, 2–4 m tall; young shoots densely glandular-scaly, hispid or not. Petiole 5–10 mm, scaly and hispid; leaf blade leathery, ovate, ovate-oblong or elliptic-oblong, 3–8 × 1.5–3.5 cm; base rounded to cuneate; apex acute, apiculate; abaxial surface pale green, scales 0.5–1 × their own diameter apart, unequal, yellowish brown or brown; adaxial surface deep green, sparsely scaly, pubescent along midrib. Inflorescence terminal, shortly racemose, 2–5-flowered; rachis 2–3 mm. Pedicel 1–1.5 cm, scaly, hispid or not; calyx lobes 0.5–1 mm, rounded or triangular, densely scaly; corolla broadly funnelform-campanulate, purple or deep purplish red, inside with deep red spots, 3–4 cm, outer surface sparsely scaly, glabrous or with tube pubescent; stamens unequal, 2–3.6 cm, longer than corolla; filaments pubescent below; ovary 5-locular, densely scaly; style long, glabrous. Capsule cylindric, 12–18 mm. Fl. May–Jun, fr. Sep–Oct.

● Forests; 2200–3000 m. W Sichuan.

63. Rhododendron oreotrephes W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 201. 1914.

山育杜鹃 shan yu du juan

Rhododendron artosquameum I. B. Balfour & Forrest; *R. cardioeides* I. B. Balfour & Forrest; *R. depile* I. B. Balfour & Forrest; *R. exquisitum* Hutchinson (1932), not T. L. Ming (1981); *R. hypotrichotum* I. B. Balfour & Forrest; *R. phaeochlorum* I. B. Balfour & Forrest; *R. pubigerum* I. B. Balfour & Forrest; *R. siderophylloides* Hutchinson; *R. timeteum* I. B. Balfour & Forrest; *R. trichopodum* I. B. Balfour & Forrest.

Shrubs, 1–4 m tall; young shoots deep purplish red, sparsely scaly, otherwise glabrous or pubescent. Petiole pinkish purple, 7–13 mm, sparsely scaly, sometimes pubescent; leaf blade elliptic, oblong or ovate, 1.8–6 × 1.4–3.5 cm; base rounded to cordate, rarely broadly cuneate; apex obtuse or rounded, apiculate; abaxial surface pinkish green or green, scales contiguous, or less than (rarely more than) their own diameter apart, all similar, yellowish brown or brown; adaxial surface without scales. Inflorescence terminal or subterminal, shortly racemose, 3–5(–10)-flowered; rachis 1–8 mm. Pedicel purplish red, 0.5–2 cm, sparsely scaly; calyx undulately 5-lobed or annular, ca. 1.5 mm; corolla broadly funnelform-campanulate, 5-lobed to the middle, pale purple or pale red or deep purplish red, 1.8–3 cm, outer surface glabrous, lobes ovate; stamens unequal, long ones as long as or slightly longer than corolla; filaments spreading-pubescent below; ovary 5-locular, densely scaly; style glabrous. Capsule cylindric, 8–13 mm. Fl. May–Jul.

Evergreen-deciduous mixed forests, *Abies* or *Larix* forest margins, *Quercus-Rhododendron* thickets; (2100–)3000–3700 m. SW Sichuan, SE Xizang, N Yunnan [Myanmar].

64. Rhododendron tatsienense Franchet, J. Bot. (Morot) 9: 394. 1895.

硬叶杜鹃 ying ye du juan

Shrubs, 1–3 m tall; young shoots deep purplish red, densely or sparsely scaly, otherwise glabrous or rarely pubescent. Petiole 40–80 mm, sparsely scaly; leaf blade elliptic, oblong-ovate or elliptic-lanceolate, 2–7 × 1–3 cm; base rounded to cuneate; apex obtuse or acute, apiculate; abaxial surface scales 0.5–1(–2) × their own diameter apart, unequal, brown; adaxial surface densely or sparsely scaly. Inflorescence terminal or subterminal, shortly racemose, 2–4-flowered; rachis 2–3 mm. Pedicel 0.2–0.6(–1) cm, sparsely or densely scaly; calyx rimlike or undulate, 0.5–1 mm, scaly; corolla broadly funnelform-campanulate, pale red or rose-red, 1.2–2.5 cm, outer surface sparsely scaly; stamens unequal, long ones slightly longer than corolla; filaments densely pubescent at base; ovary 5-locular, densely scaly; style longer than corolla, glabrous. Capsule cylindric, 7–14 mm. Fl. Apr–Jun.

● Forests, thickets; 2300–3600 m. N and SW Sichuan, N Yunnan.

1a. Young shoots rarely pubescent; calyx and pedicels densely scaly ..... 64a. var. *tatsienense*
1b. Young shoots and calyx without hairs; pedicels very sparsely scaly ..... 64b. var. *nudatum*

64a. Rhododendron tatsienense var. **tatsienense**

硬叶杜鹃(原变种) ying ye du juan (yuan bian zhong)

Rhododendron heishuiense W. P. Fang; *R. hypophaeum* I. B. Balfour & Forrest; *R. kangdingense* Z. J. Zhao; *R. leilungense* I. B. Balfour & Forrest; *R. stereophyllum* I. B. Balfour & W. W. Smith; *R. tapelouense* H. Léveillé.

Young shoots densely or sparsely scaly, rarely pubescent. Calyx and pedicels densely scaly. Fl. Apr–Jun.

● Coniferous forests, mixed forests, thickets in valleys; 2300–3600 m. N and SW Sichuan, N Yunnan.

64b. Rhododendron tatsienense var. **nudatum** R. C. Fang, Acta Bot. Yunnan. 4: 256. 1982.

丽江硬叶杜鹃 li jiang ying ye du juan

Young shoots, calyx, and pedicels very sparsely scaly, otherwise glabrous. Fl. Jun.

● *Picea* and *Populus* forests, *Pinus* forests on slopes, thickets; 2800–3600 m. NW Yunnan.

65. Rhododendron xichangense Z. J. Zhao, Bull. Bot. Res., Harbin 7(3): 60. 1987.

西昌杜鹃 xi chang du juan

Shrubs, 1–2 m tall. First-year shoots spreading, purple, densely scaly. Leaf blade leathery, ovate, 2.5–5 × 0.8–1.8 cm; base cuneate; apex acute; abaxial surface scales 0.5–1 × their own diameter apart, unequal, brown; adaxial surface deep green, sparsely scaly. Inflorescence terminal, umbellate, 2–5-flowered. Pedicel thin, purple, 1.8–2.5 cm, densely scaly; calyx rimlike, ca. 1.5 mm, scaly at base; corolla broadly funnelform-campanulate, white or pink, inside without spots, 1.5–1.8 cm; stamens 10, unequal, 2–2.5 cm, longer than corolla, filaments glabrous or pubescent below; ovary densely scaly; style 2.2–2.7 cm, longer than corolla, glabrous.

● About 2200 m. Sichuan.

Geng et al. (Acta Phytotax. Sin. 41: 492. 2003) proposed that *Rhododendron xichangense* should be treated as a synonym of *R. davidsonianum*. The key character separating these two species is the spacing of the scales on the abaxial surfaces of the leaves. However, the description of *R. davidsonianum* suggests that that species is very variable in

this character, encompassing the range of variation of *R. xichangense*.

66. Rhododendron polylepis Franchet, Bull. Soc. Bot. France 33: 232. 1886.

多鳞杜鹃 duo lin du juan

Rhododendron harrovianum Hemsley.

Shrubs or small trees, 1–6 m tall; young shoots long, densely scaly. Petiole 5–10 mm; leaf blade leathery, oblong, or oblong-lanceolate, 4.5–11 × 1.5–3 cm; base cuneate or broadly cuneate; apex acute or acuminate; abaxial surface scales contiguous or ca. 0.5 × their own diameter apart, unequal, the smaller pale brown, the larger brown, scattered; adaxial surface deep green, scales at first dense, later nearly absent. Inflorescence terminal or rarely subterminal, umbellate or shortly racemose, 3–5-flowered; rachis ca. 2 mm. Pedicel tinged with red, 1–2 cm, densely scaly; calyx lobes 1–2 mm, triangular or undulate; corolla funnelform-campanulate, pale or deep purplish red, inside without spots, or upper lobes with pale yellow spots, 2–3.5 cm, outer surface densely or sparsely scaly; stamens unequal, 1.8–3.8 cm, longer than corolla; ovary 5-locular, densely scaly; style longer than corolla, glabrous. Capsule cylindric, 8–17 mm. Fl. Apr–May, fr. Jun–Aug.

● Forests, thickets; 1500–3300 m. S Gansu, S Shaanxi, N to SW Sichuan.

67. Rhododendron siderophyllum Franchet, J. Bot. (Morot) 12: 262. 1898.

锈叶杜鹃 xiu ye du juan

Rhododendron ioanthum I. B. Balfour; *R. jahandiezii* H. Léveillé; *R. leucandrum* H. Léveillé; *R. obscurum* Franchet ex I. B. Balfour (1922); *R. rubropunctatum* H. Léveillé & Vaniot (1911), not Hayata (1913), nor T. L. Ming (1984).

Shrubs, 1–2(–4) m tall; young shoots brown, densely scaly. Petiole 5–15 mm, densely scaly; leaf blade elliptic or elliptic-lanceolate, 3–7(–11) × 1.2–3.5 cm; base cuneate or rounded; apex acuminate, acute or nearly obtuse; abaxial surface scales 0.5–2 × their own diameter apart, or contiguous small to mid-sized, all similar or slightly unequal, brown, concave; adaxial surface scales dense, concave, glabrous or rarely pubescent along midrib. Inflorescence terminal or subterminal, shortly racemose, 3–5-flowered; rachis 2–4 mm. Pedicel 0.3–1.3 cm, scaly; calyx rimlike or undulate and 5-lobed, densely scaly; corolla tubular funnelform-campanulate, white, pale red, pale purple or rosy red, inside with yellowish green, pale red or pinkish spots or without spots, 1.6–3 cm, outer surface not scaly or sparsely scaly on lobes; stamens unequal, long ones longer than corolla; filaments pubescent or nearly glabrous at base; ovary 5-locular, densely scaly; style longer than corolla, usually glabrous, rarely pubescent at base. Capsule cylindric, 11–16 mm. Fl. Mar–Jun.

● Mixed forests, coniferous forests on slopes, thickets; (1200–) 1800–3000 m. Guizhou, Sichuan, Yunnan.

Rhododendron seguinii H. Léveillé (Repert. Spec. Nov. Regni Veg. 13: 148. 1914) was described from Guizhou. The identity of the type specimen, *J. Cavalerie 1254,* is in doubt as it totally lacks leaves. However, there is indirect evidence that it is related to, or synonymous with, *R. siderophyllum* (see Cullen, Notes Roy. Bot. Gard. Edinburgh 39: 65, 67. 1980).

6. Rhododendron subsect. Heliolepida (Hutchinson) Sleumer, Bot. Jahrb. Syst. 74: 536. 1949.

亮鳞杜鹃亚组 liang lin du juan ya zu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); David F. Chamberlain

Rhododendron ser. *Heliolepida* Hutchinson in J. B. Stevenson, Sp. Rhodod. 320. 1930 [*"Heliolepis"*].

Shrubs or small trees, 0.9–5(–10) m tall; young shoots scaly, otherwise glabrous or pubescent. Leaves fragrant when crushed; leaf blade leathery; abaxial surface scales dense, yellow to brown, large or small, unequal or all similar; adaxial surface usually scaly, otherwise glabrous or pubescent along midrib. Inflorescence terminal, umbellate, 2–7(to many)-flowered. Calyx undeveloped, 1–2 mm, 5-lobed or undulate; corolla broadly funnelform-campanulate or campanulate, often lobed to the middle, pale red or deep purplish red, less often white, often with darker spots, outer surface scaly, otherwise glabrous or sometimes pubescent; stamens 10, unequal; ovary 5(or 6)-locular; style erect, not scaly, glabrous or pubescent at base. Capsule cylindric, 7–18 mm; seed wingless or with finlike structures.

Five species: China, Myanmar; five species (three endemic) in China.

1a. Axillary bud bracts persistent; leaf blade 1.3–5 cm; corolla 1.3–2.5 cm ..... 68. *R. bracteatum*
1b. Axillary bud bracts soon deciduous; leaf blade 3.5–12.5 cm; corolla 2.2–3.5 cm.
  2a. Young shoots, petiole and midrib pubescent, or petioles hispid.
    3a. Young shoots pubescent; corolla puberulous outside along dorsal suture; leaf abaxial surface with scales ca. 1.5 × their own diameter apart ..... 69. *R. invictum*
    3b. Young shoots glabrous; corolla outside without hairs; leaf abaxial surface with scales less than their own diameter apart or contiguous ..... 70. *R. hirsutipetiolatum*
  2b. Young shoots, petiole and leaf blade glabrous.
    4a. Leaf blade 5–12.5 cm, abaxial surface with scales uniformly large, pale yellowish or grayish white, 0.5–2 × their own diameter apart ..... 71. *R. heliolepis*
    4b. Leaf blade 3.5–8 cm, abaxial surface with scales dimorphic, rust-red; small scales overlapping or half their own diameter apart, large scales along central veins ..... 72. *R. rubiginosum*

68. Rhododendron bracteatum Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 519. 1913.

苞叶杜鹃 bao ye du juan

Shrubs, 0.9–3 m tall; young shoots thin, purple, scaly, pubescent. Petiole 3–12 mm, sparsely scaly; leaf blade thinly leathery, elliptic or oblong, ovate-oblong or ovate-lanceolate, 1.3–5 × 0.9–2.5 cm; base broadly cuneate or rounded; apex acute, apiculate; abaxial surface pale brown or pale yellow, scales 1–4 × their own diameter apart, large, dimorphic, golden, glabrous; adaxial surface deep green or olive-green, scaly, otherwise glabrous. Inflorescence terminal, umbellate, 3–6-flowered. Pedicel slender, 1.3–2.5 cm, sparsely scaly; calyx lobes 5, 1–2 mm, ovate or triangular, sparsely scaly; corolla broadly funnelform-campanulate or campanulate, white or pale red, inside with deep red spots, 1.5–2.5 cm, outer surface scaly, without hairs; stamens 10, unequal, 1.2–2.5 cm; filaments pubescent below; ovary 5-locular, densely scaly; style as long as or slightly shorter than corolla, scales absent, usually glabrous, rarely pubescent at base. Capsule cylindric, 7–15 mm, densely scaly. Fl. May–Jun, fr. Sep–Oct.

● Forests, cliffs; 2600–3500 m. NW Sichuan.

69. Rhododendron invictum I. B. Balfour & Farrer, Notes Roy. Bot. Gard. Edinburgh 10: 116. 1917.

绝伦杜鹃 jue lun du juan

Shrubs, evergreen, 1.2–2.2 m tall; young shoots scaly, sparsely pubescent. Petiole 8–10 mm, scaly, sparsely pubescent; leaf blade elliptic or oblong-elliptic, 4–5 × 2–2.5 cm; base cuneate to obtuse; apex obtuse or acute; abaxial surface scales ca. 1.5 × their own diameter apart, dimorphic, golden yellow; adaxial surface deep green, without scales, pubescent along midrib. Inflorescence terminal, umbellate, 2- to many-flowered; rachis 1–2 mm. Pedicel shorter than corolla, 0.6–0.8 cm, scaly, glabrous; calyx 5-lobed; lobes ca. 1 mm, ovate or triangular, scaly abaxially and on margin, pubescent; corolla funnelform-campanulate or campanulate, 5-lobed, purple, 2.2–2.6 × ca. 2.6 cm, outer surface scaly, puberulous along the adaxial suture, otherwise glabrous, inner surface densely pubescent at base; stamens 10, unequal, 1.2–2.5 cm, as long as or slightly longer than corolla; filaments densely villous below; ovary 5-locular, densely scaly, pubescent at apex; style erect, longer than corolla, scales absent, pubescent at base. Capsule ca. 12 × 4 mm, scaly.

● Thickets on high mountains; 2400–2800 m. S Gansu.

70. Rhododendron hirsutipetiolatum A. L. Chang & R. C. Fang, Notes Roy. Bot. Gard. Edinburgh 41: 162. 1983.

凸脉杜鹃 tu mai du juan

Shrubs, evergreen, to 5 m tall; old branches deep brown; young shoots brown, scaly, otherwise glabrous. Petiole shallowly grooved or flat, 8–12 mm, densely scaly, hispid or pubescent; leaf blade thickly leathery, oblong-elliptic, 6–8 × 2.5–3.2 cm; base cuneate to narrowly obtuse; apex acuminate; abaxial surface scales less than 1 × their own diameter apart, or contiguous small, yellowish brown, with wide margin; adaxial surface scales dense when young, caducous, midrib pubescent, raised on both surfaces; lateral veins 9-paired, slightly raised above and inconspicuous below. Inflorescence terminal, umbellate, 2–4-flowered. Pedicel stout, 0.8–1.6 cm, densely scaly; calyx rimlike or undulate, small, scales present, dense; corolla long-funnelform-campanulate, lobed to the middle, pale purplish red, inside with purple spots, 2.5–3.5 cm, outer surface densely scaly, lobes broadly ovate; stamens 10, unequal, shorter than corolla; filaments sparsely pubescent or glabrous at base; ovary 5-locular, densely scaly; style as long as corolla or stamens. Capsule not known. Fl. Apr.

● *Abies-Rhododendron* forests; ca. 3400 m. Yunnan.

71. Rhododendron heliolepis Franchet, Bull. Soc. Bot. France 34: 283. 1887.

亮鳞杜鹃 liang lin du juan

Shrubs or sometimes small trees, evergreen, (1–)2–5(–6) m tall; young shoots stout, densely scaly. Petiole 5–15 mm; leaf blade with a strong oily fragrance, elliptic or elliptic-lanceolate, 5–12 × 1.7–4 cm; base narrow or sometimes rounded; apex acute or acuminate, apiculate; abaxial surface pale green, pale yellowish green or brown, scales 0.5–2 × their own diameter apart, sometimes contiguous, large, all ± similar, thin, flat or concave in center, pale yellowish green or gray-white; adaxial surface deep green or brown, scales dense when young, quickly deciduous. Inflorescence terminal, umbellate, 5–7(–10)-flowered. Pedicel thin, 1–3 cm, densely scaly; calyx undulate; lobes ca. 2 mm, sometimes oblong, densely scaly; corolla campanulate, pink, pale purplish red or rarely white, with purple or brown spots inside, 2.5–3.5 cm, outer surface sparsely or densely scaly sometimes also pubescent; stamens 10, unequal, shorter than corolla; filaments hispid below; ovary 5(or 6)-locular, densely scaly; style shorter than or as long as, rarely longer than stamens, glabrous or pubescent below. Capsule cylindric, 10–13 mm. Fl. Jul–Aug, fr. Aug–Nov.

Coniferous-broad-leaved mixed forests, *Abies* forest margins, *Rhododendron* thickets, thickets on slopes, wet valleys; 3000–3700(–4000) m. Sichuan, Xizang, Yunnan [Myanmar].

1a. Corolla pubescent on outer surface ..... 71b. var. *oporinum*
1b. Corolla without hairs on outer surface.
  2a. Style glabrous; corolla purplish red, with reddish brown spots inside ..... 71a. var. *heliolepis*
  2b. Style pubescent below; corolla pink, pale purplish red or rarely white, with purplish spots inside ..... 71c. var. *fumidum*

71a. Rhododendron heliolepis var. **heliolepis**

亮鳞杜鹃(原变种) liang lin du juan (yuan bian zhong)

Rhododendron brevistylum Franchet; *R. heliolepis* var. *brevistylum* (Franchet) Cullen; *R. pholidotum* I. B. Balfour & W. W. Smith; *R. plebeium* I. B. Balfour & W. W. Smith; *R. porrosquameum* I. B. Balfour & Forrest.

Abaxial leaf surface pale green when dry; adaxial surface deep green. Corolla pink, pale purplish red or rarely white, with

purplish spots inside; outer surface not pubescent; style pubescent below.

Coniferous-broad-leaved mixed forests, *Abies* forest margins, *Rhododendron* thickets; 3000–3700(–4000) m. Sichuan, Xizang, Yunnan [Myanmar].

Cullen (Notes Roy. Bot. Gard. Edinburgh 39: 90. 1980) recognized *Rhododendron heliolepis* var. *brevistylum* as a distinct taxon.

71b. Rhododendron heliolepis var. **oporinum** (I. B. Balfour & Kingdon Ward) A. L. Chang ex R. C. Fang, Acta Bot. Yunnan. 4: 253. 1982.

毛冠亮鳞杜鹃 mao guan liang lin du juan

Rhododendron oporinum I. B. Balfour & Kingdon Ward, Notes Roy. Bot. Gard. Edinburgh 10: 129. 1917.

Corolla outer surface pubescent.

Thickets on slopes; ca. 3400 m. Yunnan [Myanmar].

71c. Rhododendron heliolepis var. **fumidum** (I. B. Balfour & W. W. Smith) R. C. Fang, Acta Bot. Yunnan. 4: 253. 1982.

灰褐亮鳞杜鹃 hui he liang lin du juan

Rhododendron fumidum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 112. 1917.

Abaxial leaf surface brown when dry; adaxial surface deep brown. Corolla purplish red, with reddish brown spots inside; style glabrous.

● *Rhododendron* thickets, thickets on slopes, wet valleys; 3200–3500 m. NE Yunnan.

72. Rhododendron rubiginosum Franchet, Bull. Soc. Bot. France 34: 282. 1887.

红棕杜鹃 hong zong du juan

Shrubs or sometimes small trees, evergreen, 1–3(–10) m tall; young shoots stout, brown, scaly. Petiole 5–13 mm, densely scaly; leaf blade elliptic or elliptic-lanceolate or oblong-ovate, 3.5–8 × 1.3–3.5 cm; base cuneate, broadly cuneate to rounded; apex acuminate, sometimes acute; abaxial surface scales dense, unequal rust-brown, glandlike or thin; adaxial surface scales dense when young, caducous. Inflorescence terminal, umbellate, 5–7-flowered. Pedicel 1–2.5 cm, densely scaly; calyx undulate or 5-lobed, small, scales absent except sometimes a few along margin or present and dense; corolla broadly funnelform-campanulate, pale purple to rose-red or pale red, rarely white tinged with pale purple, inside with purplish red or red spots, 2.5–3.5 cm, outer surface sparsely scaly; stamens 10, unequal, slightly longer than corolla; filaments glabrous or pubescent below; ovary 5-locular, densely scaly; style longer than stamens, glabrous or pubescent below. Capsule cylindric, up to 18 mm. Fl. Mar–Jun, fr. Jul–Aug.

Rhododendron forests, *Cunninghamia-Quercus* mixed forests, deciduous broad-leaved forests, *Abies-Larix-Picea* forest margins or openings, thickets on slopes; (2500–)2800–3600(–4200) m. Sichuan, Xizang, Yunnan [Myanmar].

1a. Filaments glabrous, calyx not scaly outside, or sparsely scaly along margin ..... 72c. var. *leclerei*
1b. Filaments pubescent below; calyx densely scaly outside.
  2a. Style glabrous ..... 72a. var. *rubiginosum*
  2b. Style pubescent below ..... 72b. var. *ptilostylum*

72a. Rhododendron rubiginosum var. **rubiginosum**

红棕杜鹃(原变种) hong zong du juan (yuan bian zhong)

Rhododendron catapastum I. B. Balfour & Forrest; *R. desquamatum* I. B. Balfour & Forrest; *R. stenoplastum* I. B. Balfour & Forrest.

Calyx densely scaly; filaments pubescent below; style glabrous.

Cunninghamia-Quercus mixed forests, *Abies-Larix-Picea* forest marins or openings, often dominant; (2500–)2800–3500(–4200) m. Sichuan, Xizang, Yunnan [Myanmar].

72b. Rhododendron rubiginosum var. **ptilostylum** R. C. Fang, Acta Bot. Yunnan. 4: 253. 1982.

毛柱红棕杜鹃 mao zhu hong zong du juan

Calyx densely scaly; filaments pubescent below; style pubescent along lower part.

● *Rhododendron* forests, deciduous broad-leaved forests, *Abies* forest margins, thickets on slopes; 3200–3300 m. Yunnan.

Based on the type and matching specimens (from Haba and Yongning) the cited differences between var. *rubiginosum* and var. *ptilostylum* are not convincing.

72c. Rhododendron rubiginosum var. **leclerei** (H. Léveillé) R. C. Fang, Acta Bot. Yunnan. 4: 253. 1982.

洁净红棕杜鹃 jie jing hong zong du juan

Rhododendron leclerei H. Léveillé, Repert. Spec. Nov. Regni Veg. 12: 284. 1913.

Calyx scales absent abaxially, or sparse along margin; filaments glabrous; style glabrous.

● Thickets on slopes; 3200–3600 m. Yunnan.

7. Rhododendron subsect. Lapponica (Hutchinson) Sleumer, Bot. Jahrb. Syst. 74: 535. 1949.

高山杜鹃亚组 gao shan du juan ya zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Rhododendron ser. *Lapponica* Hutchinson in J. B. Stevenson, Sp. Rhodod. 387. 1930 [*"Lapponicum"*].

Small shrubs, erect, cushion-forming, or prostrate, 0.15–1.6(–4) m tall; young shoots often densely brown-scaly. Leaves small. Leaf blade with abaxial surface usually papillose, scales contiguous or nearly so, yellow, brown or gray, sometimes 2-colored; adax-

ial surface densely scaly. Inflorescence 1–7(–15)-flowered; pedicels short; calyx (0.1–)0.5–8(–4.5) mm, 5-lobed, persistent in fruit, scales sometimes absent; corolla usually broadly funnelform, rarely tubular-funnelform, pale to deep lavender to purple, rarely whitish pink, occasionally yellow or blue, outer surface not scaly, sometimes pubescent; stamens (4–)5–10(–12), usually actinomorphically arranged, often shorter than corolla; ovary 5(or 6)-celled; style straight or declinate, glabrous or pubescent at base. Capsule ovoid to cylindric-ovoid, 2–7(–14) mm. Seed wingless, obscurely finned.

About 40 species: Bhutan, China, Myanmar, Nepal, Russia (Siberia), Sikkim; N Europe (Scandinavia), N North America (Alaska, Canada, Greenland); 40 species (34 endemic) in China.

1a. Scales on abaxial leaf surface all the same color.
  2a. Scales on abaxial leaf surface discontinuous, not overlapping.
    3a. Flowers yellow ..... 84. *R. flavidum*
    3b. Flowers purple, pinkish-purple, violet, rose-lavender, lavender to purple-blue, rarely white.
      4a. Erect shrubs; calyx lobes shorter than 2.5 mm ..... 87. *R. polycladum*
      4b. Tufted shrubs; calyx lobes longer than 2.5 mm.
        5a. Inflorescence 1- or 2-flowered; corolla 1.5–1.6 cm; petiole 3–5 mm ..... 112. *R. lungchiense*
        5b. Inflorescence (1–)3(–5)-flowered; corolla (0.7–)0.8–1.5(–1.8) cm.
          6a. Scales on abaxial leaf surface not opaque, fulvous or amber ..... 85. *R. impeditum*
          6b. Scales on abaxial leaf surface opaque, white, pinkish or fawn-brown ..... 86. *R. fastigiatum*
  2b. Scales on abaxial leaf surface contiguous or overlapping.
    7a. Scales on abaxial leaf surface dark.
      8a. Calyx ca. 1 mm.
        9a. Stamens and style usually included in corolla tube; corolla usually tubular-funnelform ..... 82. *R. complexum*
        9b. Stamens and style usually exserted from corolla tube; corolla usually broadly funnelform ..... 83. *R. tapetiforme*
      8b. Calyx (2–)3–4(–6) mm.
        10a. Adaxial leaf surface green, densely lepidote, scales amber ..... 79. *R. amundsenianum*
        10b. Adaxial leaf surface dark green, densely lepidote, scales pale.
          11a. Leaves spaced along shoots; inflorescence 3–4(–6)-flowered ..... 80. *R. yungningense*
          11b. Leaves mostly crowded at ends of shoots; inflorescence usually 2-flowered.
            12a. Corolla 12–15(–20) mm, puberulous; stamens 10 ..... 78. *R. dasypetalum*
            12b. Corolla ca. 10 mm, glabrous outside; stamens 8 ..... 81. *R. qinghaiense*
    7b. Scales on abaxial leaf surface pale.
      13a. Inflorescence usually 1–2-flowered.
        14a. Corolla 17–22 mm; calyx 5–7 mm ..... 74. *R. dawuense*
        14b. Corolla 12–17(–19) mm; calyx 0.5–3 mm.
          15a. Corolla 12–19 mm; calyx 2–3 mm.
            16a. Adaxial leaf surface pale green, matt, densely covered with overlapping scales; pedicels 1–5 mm; leaves usually narrowly elliptic to linear-lanceolate, 5–20 mm ..... 93. *R. websterianum*
            16b. Adaxial surface dark green, shiny, covered with contiguous or nearly contiguous scales; pedicels 1–2 mm; leaves ovate to elliptic, (5–)7–10(–12) mm ..... 94. *R. nitidulum*
          15b. Corolla 5–11 mm; calyx 0.5–1.2 mm.
            17a. Corolla 7–11 mm; stamens longer than corolla; adaxial leaf surface pale green, apex usually shortly mucronate ..... 105. *R. thymifolium*
            17b. Corolla 5–6 mm; stamens shorter than corolla; adaxial leaf surface dark green, apex not mucronate ..... 106. *R. yushuense*
      13b. Inflorescence usually 2–10-flowered.
        18a. Calyx usually 4–12 mm; corolla usually longer than 17 mm.
          19a. Plants robust, up to 1–2(–4) m tall; leaf blade 1–7 cm, apex mucronate; corolla usually pubescent outside; calyx usually reddish ..... 73. *R. cuneatum*
          19b. Plants small, 0.5–0.6 m tall; leaf blade 0.7–1.4(–1.6) cm, apex not mucronulate; corolla glabrous outside; calyx not reddish ..... 74. *R. dawuense*
        18b. Calyx usually 1–2 mm; corolla usually shorter than 17 mm.
          20a. Leaf blade (8–)12–25(–40) mm; branchlets usually slender, fastigiate ..... 75. *R. hippophaeoides*
          20b. Leaf blade 5–12(–20) mm; branchlets not fastigiate.
            21a. Stamens usually 5, exserted from corolla tube, filaments glabrous ..... 76. *R. tsaii*
            21b. Stamens usually 10, not exserted from corolla tube, filaments pubescent towards base ..... 77. *R. intricatum*
1b. Scales on abaxial leaf surface with 2 different colors.
  22a. Scales on abaxial leaf surface usually golden to yellow-brown, with a few darker scales intermixed.
    23a. Calyx 4–7.5 mm ..... 95. *R. minyaense*
    23b. Calyx shorter than 4 mm.
      24a. Erect shrubs; calyx 0.5–1.5 mm ..... 107. *R. orthocladum*

24b. Straggling or prostrate shrubs; calyx 0.5–4 mm.
25a. Leaves 12–21 mm, apex usually emarginate ..... 108. *R. bulu*
25b. Leaves 3–12 mm, apex strongly mucronate ..... 109. *R. telmateium*
22b. Scales on abaxial leaf surface usually with pale and darker scales nearly equal in number and intermixed.
26a. Young shoots densely conspicuously loriform-setose ..... 88. *R. setosum*
26b. Young shoots never loriform-setose.
27a. Inflorescence usually 3–5(–15)-flowered; style long.
28a. Calyx 1–2 mm ..... 92. *R. lapponicum*
28b. Calyx 2.5–6 mm.
29a. Corolla scaly outside ..... 90. *R. rupicola*
29b. Corolla not scaly outside.
30a. Leaf blade 16–40(–65) mm, apex shortly mucronate; corolla tube 4–9 mm ..... 89. *R. russatum*
30b. Leaf blade 7–18(–24) mm, apex rounded, not mucronate; corolla tube 3–5 mm ..... 91. *R. capitatum*
27b. Inflorescence usually 1–4-flowered; style short.
31a. Inflorescence usually 2–4-flowered.
32a. Calyx 2.5–3.5 mm, lobes oblong; leaf blade 8–14 mm ..... 96. *R. labolengense*
32b. Calyx 0.8–1.5 mm, lobes orbicular or broadly triangular; leaf blade 10–20 mm.
33a. Small shrubs, 0.3–0.4 m tall; leaf apex mucronate; calyx not scaly outside; style ca. 8 mm ..... 102. *R. declivatum*
33b. Shrubs up to 1 m tall; leaf apex rounded, not mucronate; calyx scaly outside; style to 11 mm ..... 110. *R. joniense*
31b. Inflorescence 1–2(–3)-flowered.
34a. Inflorescence only 1-flowered.
35a. Corolla yellow; plants 2–4 m tall ..... 111. *R. maowenense*
35b. Corolla blue; plants 0.5–1(–1.5) m tall.
36a. Calyx ca. 4.5 mm, lobes oblong; leaf blade 5–12 mm; corolla ca. 12 mm ..... 98. *R. zheguense*
36b. Calyx ca. 0.5 mm, lobes triangular; leaf blade 4–6 mm; corolla 4–5 mm ..... 99. *R. bamaense*
34b. Inflorescence (1–)2(–3)-flowered.
37a. Low, prostrate shrubs, usually forming cushions.
38a. Leaf blade 10–25 mm, apex mucronate; scales on adaxial leaf surface rubbing off, ruby red, shiny; corolla glabrous outside ..... 103. *R. taibaiense*
38b. Leaf blade 3.5–9(–12) mm, apex usually not mucronate; scales on adaxial leaf surface pale to golden; corolla usually pubescent outside ..... 104. *R. nivale*
37b. Erect shrubs.
39a. Calyx 4–6 mm; scales on adaxial leaf surface pale; corolla ca. 15 mm ..... 97. *R. xiguense*
39b. Calyx 2–3 mm; scales on adaxial leaf surface yellowish to golden; corolla 10–13 mm.
40a. Leaves 15–20 mm; calyx ca. 3 mm, not scaly outside, lobe margin not ciliate ..... 101. *R. gologense*
40b. Leaves 8–15 mm; calyx ca. 2 mm, scaly outside, lobe margin ciliate ..... 100. *R. zekoense*

73. Rhododendron cuneatum W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 200. 1914.

楔叶杜鹃 xie ye du juan

Rhododendron cheilanthum I. B. Balfour & Forrest; *R. ravum* I. B. Balfour & W. W. Smith; *R. sclerocladum* I. B. Balfour & Forrest.

Shrubs, 1–2(–4) m tall; bud scales deciduous. Petiole 5–15 mm, scaly; leaf blade narrowly to broadly elliptic or oblong-lanceolate, 1–7 × 0.5–2.8 cm; base cuneate to rounded; apex acute or obtuse, strongly mucronate; abaxial surface scales contiguous or overlapping, uniformly brown to dark brown or fawn, rarely with darker spots; adaxial surface pale green, matt. Inflorescence 1–6-flowered. Pedicel 2–1.5 cm; calyx usually reddish, lobes (2–)5–8(–12) mm, oblong, persistent in fruit, scales present, pale, forming a central band, margin long-ciliate; corolla funnelform, deep purple to rose-lavender, rarely white, usually with darker markings, (1.2–)2–3(–3.4) cm, outer surface usually scaly, pubescent; stamens 10, filaments pubescent in lower part; ovary scaly; style declinate, often longer than stamens and corolla, pubescent towards base. Capsule cylindric-ovoid, 6–14 mm, densely scaly. Fl. Apr–Jun, fr. Oct.

● *Pinus* and *Quercus* forests, thickets, rocky slopes; 2700–4200 m. SW Sichuan, NW Yunnan.

74. Rhododendron dawuense H. P. Yang, Bull. Bot. Res., Harbin 3(2): 98. 1983.

道孚杜鹃 dao fu du juan

Erect shrubs, 0.5–0.6 m tall. Leaf blade oblong-lanceolate, 0.7–1.4(–1.6) × 0.3–0.6 cm; base broadly cuneate to rounded; apex rounded or emarginate; abaxial surface pale green, scales contiguous or overlapping, uniformly silvery gray; adaxial surface dark green, scaly. Inflorescence 1(–4)-flowered. Pedicel ca. 0.5 cm; calyx lobes 5–7 mm, oblong, nearly equal, persistent in fruit, scales present, pale, forming a central band, margin ciliate; corolla broadly funnelform, pale rose-pink, 1.7–2.2 cm, tube ca. 10 mm, outer surface glabrous, inner surface pubescent; stamens 10, shorter than corolla, filaments pubescent towards base; ovary ca. 2 mm, scaly; style ca. 1.7 cm, longer than stamens, glabrous. Capsule ovoid, ca. 3 mm, densely scaly. Fl. May–Jun, fr. Jul–Aug.

● *Rhododendron* thickets; ca. 4500 m. NW Sichuan.

75. Rhododendron hippophaeoides I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 236. 1916.

灰背杜鹃 hui bei du juan

Erect shrubs, 0.25–1(–1.5) m tall; branchlets virgate; bud scales deciduous. Petiole 2–5 mm, scaly; leaf blade oblong, elliptic, oblong-lanceolate to oblong-ovate, (0.8–)1.2–2.5(–4) × (0.4–)0.5–1(–1.7) cm; base broadly cuneate; apex rounded or obtuse; abaxial surface yellowish buff, scales overlapping, uniformly creamy yellow; adaxial surface pale green, scaly. Inflorescence 4–7(–8)-flowered. Pedicel 2.5–7 cm; calyx reddish, lobes 1–2 mm, rounded, unequal, persistent in fruit, scaly, margin ciliate; corolla broadly funnelform, bright rose or lavender-blue to bluish purple, rarely white, 1–1.3(–1.5) cm, tube ca. 4 mm, outer surface not scaly; inner surface pubescent; stamens (8–)10, shorter than corolla, filaments pubescent towards base; ovary 1–2.5 mm, scaly; style 0.4–1.6 cm, usually as long as stamens, glabrous or occasionally pubescent at base. Capsule narrowly ovoid, 5–6 mm, densely scaly. Fl. May–Jun, fr. Oct.

● *Picea* and *Pinus* forests, *Rhododendron* thickets, moist stony pastures, open grassy marshes, open stony slopes; 2400–4800 m. SW Sichuan, C, N, and W Yunnan.

1a. Style 4–10.5 mm; leaves broad and large; inflorescence few-flowered ..... 75a. var. *hippophaeoides*

1b. Style 13–16 mm; leaves narrow and small; inflorescence many-flowered ..... 75b. var. *occidentale*

75a. Rhododendron hippophaeoides var. **hippophaeoides**

灰背杜鹃(原变种) hui bei du juan (yuan bian zhong)

Rhododendron fimbriatum Hutchinson.

Leaf blade broad and large. Inflorescence few-flowered. Style 4–10.5 mm. Fl. May–Jun, fr. Oct.

● *Picea* and *Pinus* forests, *Rhododendron* thickets, moist stony pastures, open grassy marshes; 2400–4800 m. SW Sichuan, C, N, and W Yunnan.

75b. Rhododendron hippophaeoides var. **occidentale** M. N. Philipson & Philipson, Notes Roy. Bot. Gard. Edinburgh 34: 20. 1975.

长柱灰背杜鹃 chang zhu hui bei du juan

Leaf blade narrow and small. Inflorescence many-flowered. Style 1.3–1.6 cm. Fl. Jun.

● Open stony slopes; 3500–4300 m. C and N Yunnan.

76. Rhododendron tsaii W. P. Fang, Contr. Biol. Lab. Chin. Assoc. Advancem. Sci., Sect. Bot. 12: 66. 1939.

昭通杜鹃 zhao tong du juan

Small shrubs, ca. 0.3 m tall; branchlets long; bud scales deciduous. Petiole 1–1.5 mm, scaly; leaf blade narrowly elliptic, oblong or oblong-lanceolate, 0.6–1.2 × 0.25–0.5 cm; base cuneate; apex subacute or obtuse, slightly mucronate; abaxial surface uniform, buff, scales overlapping, pale fawn; adaxial surface pale green, matt, scales dense. Inflorescence 3–7-flowered. Pedicel 0.1–0.25 cm, densely scaly; calyx reddish, lobes 0.8–1 mm, ovate-rounded, scaly, margin with scales and a few cilia; corolla broadly funnelform, pale purplish, 4.5–6.8 cm, tube 2–2.8 mm, outer surface glabrous; inner surface slightly pubescent; stamens (4 or)5(–7), shorter than corolla, filaments glabrous; ovary ca. 1 mm, densely pale-scaly; style ca. 2 cm, slightly shorter than stamens, glabrous. Capsule 3–4 mm, densely scaly. Fl. May.

● Scrub, open moss lands; 2900–3400 m. E Yunnan.

77. Rhododendron intricatum Franchet, J. Bot. (Morot) 9: 395. 1895.

隐蕊杜鹃 yin rui du juan

Rhododendron blepharocalyx Franchet; *R. peramabile* Hutchinson.

Shrubs, 0.15–1(–1.5) m tall; branchlets compact and intricate; bud scales deciduous. Petiole 1–3 mm, scaly; leaf blade oblong-elliptic to ovate, 0.5–1.2(–2) × 0.3–0.7(–1) cm; base cuneate to rounded; apex rounded, usually mucronate; abaxial surface uniform, scales contiguous to overlapping, buff to straw colored; adaxial surface pale grayish green, matt, densely scaly. Inflorescence 2–5(–10)-flowered. Pedicel 1–2(–5) cm, scaly; calyx reddish, lobes 0.5–1(–2) mm, triangular to oblong, persistent in fruit, margin with pale golden scales and usually ciliate; corolla tubular-funnelform, pale lavender, purple-blue to dark blue, rarely yellowish, (0.7–)0.8–1.2(–1.3) cm, tube 4–6(–7) mm, outer surface glabrous; inner surface pubescent; stamens (7–)10(–11), shorter than corolla tube, filaments pubescent towards base; ovary 1.5–2 mm, densely pale-scaly; style shorter than stamens, glabrous. Capsule ovoid, ca. 5 mm, densely scaly. Fl. May–Jun, fr. Jul–Aug.

● *Abies* forests, *Rhododendron* thickets, alpine meadows, moist ravines; (2800–)3500–4500(–5000) m. C and W Sichuan, N Yunnan.

78. Rhododendron dasypetalum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 45. 1919.

毛瓣杜鹃 mao ban du juan

Small shrubs, to 0.8 m tall; branchlets with dense flaky scales; bud scales deciduous. Petiole 1–2 mm, scaly; leaf blade elliptic or oblong-elliptic, 0.8–2 × 0.3–0.75 cm; base broadly cuneate to rounded; apex obtuse or rounded, mucronate; abaxial surface uniformly tawny brown, with scales contiguous to overlapping; adaxial surface dark green, shiny, sparsely scaly. Inflorescence usually 2-flowered. Pedicel 0.3–0.4(–0.8) cm, scaly; calyx crimson-purple, lobes 3–4 mm, oblong, persistent in fruit, scaly, pubescent, margin ciliate; corolla broadly funnelform, bright purplish rose, 1.2–1.5(–2) cm, tube 4–8(–10) mm, outer surface not scaly, puberulous, inner surface pubescent; stamens 10, 0.9–1.4 cm, filaments pubescent towards base; ovary 2–2.5 mm, densely pale-scaly; style ca. 1.5 cm, longer than stamens. Capsule ovoid, ca. 5 mm, densely scaly. Fl. Apr–May, fr. Jun–Jul.

● Open stony pastures; 3300–3500 m. NW Yunnan.

79. Rhododendron amundsenianum Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 58: 25. 1921.

暗叶杜鹃 an ye du juan

Small shrubs, to 0.5(–1) m tall; branchlets short, with dense flaky scales; bud scales deciduous. Petiole 1–2 mm, scaly; leaf blade oblong-ovate, broadly elliptic or orbicular, 0.9–1.5(–1.8) × 0.5–0.7(–0.9) cm; base truncate or broadly cuneate; apex rounded with a short reflexed mucro; abaxial surface uniformly rusty brown, scales irregularly contiguous; adaxial surface green, matt, scales contiguous or overlapping, amber. Inflorescence usually 3-flowered. Pedicel 0.2–0.3 cm, scaly; calyx lobes 4–5 mm, ovate, scaly, margin densely ciliate, persistent in fruit; corolla and stamens unknown; style ca. 1.5 cm, densely pilose towards base. Capsule ovoid, ca. 5 mm, densely scaly. Fl. Apr–May.

● Mountains; 3900–4300 m. SW Sichuan.

80. Rhododendron yungningense I. B. Balfour ex Hutchinson in J. B. Stevenson, Sp. Rhodod. 436. 1930.

永宁杜鹃 yong ning du juan

Rhododendron glomerulatum Hutchinson.

Erect shrubs, 1(–1.3) m tall; branchlets compact; bud scales deciduous. Petiole 1–3 mm, scaly; leaf blade elliptic, broadly elliptic, oblong or oblong-lanceolate, (0.6–)0.8–2 × (0.2–)0.4–0.8 cm; base cuneate; apex acute or obtuse, mucronate; abaxial surface fawn to ferruginous, sometimes with slightly darker spotting, scales almost contiguous; adaxial surface green, matt, scales dense. Inflorescence 3–4(–6)-flowered. Pedicel 0.2–0.3 cm, scaly; calyx pink or purple, lobes (0.5–)2–3 mm, ovate to rounded, irregular, persistent in fruit, usually scaly, glabrous, margin scaly, sometimes ciliate; corolla broadly funnelform, deep purplish blue, rose-lavender, rarely white, 1.1–1.5(–1.7) cm, tube 5–6 mm, outer surface usually glabrous, throat pubescent; stamens (8–)10(–12), 0.9–1.4 cm, filaments pubescent towards base; ovary 1.5–2.5 mm, scaly; style 0.35–0.6 cm or 1–1.5 cm, glabrous. Capsule ovoid, ca. 5 mm, densely scaly. Fl. May–Jun, fr. Jul–Sep.

● *Rhododendron* scrub, open alpine slopes, rocks; 3200–4300 m. SW Sichuan, N Yunnan.

81. Rhododendron qinghaiense Ching ex W. Y. Wang, Acta Phytotax. Sin. 20: 56. 1982.

青海杜鹃 qing hai du juan

Small, much-branched shrubs. Petiole 1–1.5 mm, scaly; leaf blade oblong, 0.6–0.8 cm; abaxial surface rusty brown, densely scaly, ferruginous; adaxial surface dark green, scales present, pale. Inflorescence usually 2-flowered. Calyx purplish rose, lobes 3–4 mm, scaly, golden, margin ciliate; corolla funnelform, ca. 1 cm, tube shorter than lobes, outer surface glabrous, throat villous; lobes oblong, ca. 0.6 cm; stamens 8, filaments villous towards base. Capsule cylindric, densely golden scaly. Fl. and fr. May–Jul.

● Shady slopes; ca. 4300 m. S Qinghai.

82. Rhododendron complexum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 222. 1916.

环绕杜鹃 huan rao du juan

Small shrubs, fastigiate or rounded, 0.08–0.6 m tall, much branched. Petiole 0.5–2 mm, scaly; leaf blade oblong, lanceolate to ovate, 0.35–1.2 × 0.16–0.65 cm; base cuneate or truncate; apex obtuse or rounded, mucronate or absent; abaxial surface scales contiguous, uniformly ferruginous; adaxial surface green, scales dense. Inflorescence 3–4(–6)-flowered. Pedicel 0.5–7.5 cm, scaly; calyx usually obsolete, lobes less than 1 mm; lobes triangular to rounded, scaly, margin scaly or ciliate, persistent in fruit; corolla tubular-funnelform, pale lilac to rose-purple, (0.9–)1.1–1.3 cm, tube 4–6 mm, outer surface glabrous, rarely puberulous, inner surface pubescent; stamens 5 or 6(–8), included in corolla tube, filaments pubescent towards base; ovary 1.2–2 mm, densely pale-scaly; style shorter than stamens. Capsule ovoid, ca. 5 mm, densely scaly. Fl. May–Jul, fr. Jul–Sep.

● *Rhododendron* thickets, alpine grassy slopes, stony pastures, rocks; 3000–4600 m. W Sichuan, NW Yunnan.

83. Rhododendron tapetiforme I. B. Balfour & Kingdon Ward, Notes Roy. Bot. Gard. Edinburgh 9: 279. 1916.

狭萼杜鹃 xia e du juan

Small, matted or rounded shrubs, prostrate, or up to 0.7–0.8(–0.9) m tall. Petiole 0.5–2(–3) mm, scaly; leaf blade broadly elliptic to orbicular, 0.4–1.2(–1.7) × (0.2–)0.3–0.8(–1) cm; base broadly cuneate; apex obtuse or rounded, usually not mucronate; abaxial surface scales contiguous, uniformly rufous; adaxial surface dark green, scales dense. Inflorescence 1–3(or 4)-flowered. Pedicel 0.15–0.3 cm, scaly; calyx lobes to 1 mm, triangular to rounded, persistent in fruit, variably scaly or ciliate; corolla broadly funnelform, purple to purplish blue or rose, 1–1.6 cm, tube 3–5 mm, outer surface usually glabrous, inner surface pubescent; stamens (5–)10, long-exserted from corolla tube, filaments villous towards base; ovary 1.6–2.6 mm, densely scaly; style longer than stamens, usually glabrous. Capsule ovoid, 5–7 mm, densely scaly. Fl. Jun–Jul, fr. Jul–Sep.

Rhododendron thickets, open alpine slopes, bare screes; 3300–4800 m. SE Xizang, NW Yunnan [NE Myanmar].

Rhododendron ×*chamaezelum* I. B. Balfour & Forrest (Notes Roy. Bot. Gard. Edinburgh 13: 241. 1922), described from Yunnan, was considered to be a natural hybrid between *R. tapetiforme* and *R. rupicola* var. *chryseum* by Philipson and Philipson (Notes Roy. Bot. Gard. Edinburgh 34: 28. 1975).

84. Rhododendron flavidum Franchet, J. Bot. (Morot) 9: 395. 1895.

淡黄杜鹃 dan huang du juan

Erect shrubs, 0.4–0.8(–2.5) m tall. Petiole 2–3(–4) mm, scaly; leaf blade ovate-elliptic, broadly elliptic to oblong, (0.7–)1–1.5(–2.5) × (0.3–)0.5–0.8 cm; base rounded to narrowly cuneate; apex rounded, shortly mucronate; abaxial surface pale gray-green, scales well-spaced, uniformly brown or dimorphic, some dark, the rest golden; adaxial surface dark green, scales dense. Inflorescence (1–)3–5-flowered. Pedicel 0.3–0.4(–0.7) cm, scaly; calyx lobes (2–)4–6(–7) mm, oblong-lanceolate to oblong, apex acute, persistent in fruit, usually scaly, ciliate; corolla broadly funnelform, yellow, 1.2–1.8 cm, tube 4–7 mm, outer surface usually sparsely scaly, pubescent, inner surface pubescent; stamens (8–)10, nearly as long as corolla, fila-

ments villous towards base; ovary 2–3.5 mm, densely scaly; style 1.2–2.2 cm, glabrous or puberulous at base. Capsule ovoid, ca. 6 mm, densely scaly. Fl. Mar–May, fr. Jun–Jul.

● Alpine forests and thickets, rocky slopes, rocks; 3000–4300 m. W Sichuan.

Rhododendron ×*verruculosum* Rehder & E. H. Wilson (in Sargent, Pl. Wilson. 1: 507. 1913), described from Sichuan, was considered to be a natural hybrid between *R. flavidum* and an unknown species by Philipson and Philipson (Notes Roy. Bot. Gard. Edinburgh 34: 40. 1975).

1a. Leaf blade narrower; abaxial surface with uniformly brown scales; calyx lobes 2–4(–7) mm; style puberulous ..... 84a. var. *flavidum*
1b. Leaf blade wider; abaxial surface with some dark scales, the rest golden; calyx lobes ca. 2 mm; style glabrous ..... 84b. var. *psilostylum*

84a. Rhododendron flavidum var. **flavidum**

淡黄杜鹃(原变种) dan huang du juan (yuan bian zhong)

Rhododendron primulinum Hemsley.

Leaf blade narrow; abaxial surface with scales uniformly brown. Calyx 2–4(–7) mm; style puberulous. Fl. Mar–May, fr. Jun–Jul.

● Alpine forests, rocks; 3000–4300 m. W Sichuan.

84b. Rhododendron flavidum var. **psilostylum** Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 513. 1913.

光柱淡黄杜鹃 guang zhu dan huang du juan

Rhododendron psilostylum (Rehder & E. H. Wilson) I. B. Balfour.

Leaf blade wider; abaxial surface with scales dimorphic, some dark, the rest golden. Calyx ca. 2 mm; style glabrous. Fl. Jun.

● Alpine thickets, rocky slopes; ca. 3300 m. NW Sichuan.

85. Rhododendron impeditum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 239. 1916.

粉紫杜鹃 fen zi du juan

Rhododendron litangense I. B. Balfour ex Hutchinson.

Small, much-branched, compact shrubs, usually forming cushions, 0.8(–1.2) m tall. Petiole 1–3 mm, scaly; leaf blade ovate, elliptic or broadly elliptic to oblong, (0.4–)0.5–1.4(–1.6) × (0.25–)0.3–0.6(–0.8) cm; base broadly cuneate; apex acute or obtuse, mucronulate; abaxial surface pale gray-green, scales markedly to slightly spaced, usually uniformly rusty or amber; shiny; adaxial surface dark green, sparsely scaly, pale. Inflorescence (2–)3- or 4-flowered. Pedicel 1–3 cm, scaly; calyx lobes 2.5–4 mm, oblong, persistent in fruit, scales present, forming a sparse central band, ciliate; corolla broadly funnelform, purple, violet or rose-lavender, rarely white, (0.7–)0.8–1.5 cm, tube (2–)3–6 mm, outer surface usually sparsely scaly, rarely also pubescent, inner surface pubescent; stamens (5–)10(or 11), filaments pubescent towards base; ovary 1.5–2.5 mm, scaly; style very variable, longer or shorter than stamens, glabrous or puberulous at base. Capsule ovoid, 4–6 mm, densely scaly. Fl. May–Jun, fr. Sep–Oct.

● Mixed thickets, *Rhododendron* thickets, alpine meadows, open slopes; 2500–4600 m. SW Sichuan, NW Yunnan.

86. Rhododendron fastigiatum Franchet, Bull. Soc. Bot. France 33: 234. 1886.

密枝杜鹃 mi zhi du juan

Rhododendron nanum H. Léveillé.

Small shrubs, usually forming dense cushions or mats, 0.8–1(–1.5) m tall. Petiole 1–2(–3) mm, scaly; leaf blade oblong, elliptic or ovate, (0.45–)0.7–1.4(–1.6) × (0.28–)0.3–0.6(–0.9) cm; base obtuse or cuneate; apex rounded or obtuse, mucronate; abaxial surface pale gray-green, scales not contiguous, usually uniformly pale fawn, opaque; adaxial surface dark green, scales dense. Inflorescence (1–)3(–5)-flowered. Pedicel 0.2–2 cm, scaly; calyx lobes (2.5–)3–4.5(–5.5) mm, oblong or broadly elliptic, persistent in fruit, scaly, ciliate; corolla broadly funnelform, purple-blue to pinkish purple, 1–1.5(–1.8) cm, tube 3–6.5(–8) mm, outer surface usually sparsely scaly, inner surface pubescent; stamens (6–)10(–11), filaments pubescent towards base; ovary ca. 2 mm, scaly; style longer than stamens, glabrous or rarely puberulous at base. Capsule ovoid, 4–6 mm, densely scaly. Fl. May–Jun, fr. Aug–Sep.

● *Pinus* forests, *Rhododendron* thickets, alpine moorlands, rocky slopes, screes, cliffs; 3000–4500 m. C and NW Yunnan.

87. Rhododendron polycladum Franchet, Bull. Soc. Bot. France 33: 234. 1886.

多枝杜鹃 duo zhi du juan

Rhododendron compactum Hutchinson; *R. scintillans* I. B. Balfour & W. W. Smith.

Erect shrubs, ca. 1.2 m tall; branchlets short, densely scaly with flaky scales. Petiole 0.5–3 mm, scaly; leaf blade narrowly elliptic, elliptic, oblong or lanceolate, (0.4–)0.6–1.5(–2) × 0.2–0.4(–0.8) cm; base cuneate; apex acute or obtuse, shortly mucronate; abaxial surface gray-green, scales contiguous or not, usually uniformly reddish brown; adaxial surface usually dark green, shiny, scales dense. Inflorescence 2–5-flowered. Pedicel 0.5–3 cm, scaly; calyx lobes 0.5–1.5(–2.5) mm, broadly ovate to rounded, unequal, persistent in fruit, margin ciliate and rarely also scaly; corolla broadly funnelform, lavender to purple-blue, rarely white, 0.8–1.3 cm, tube 2.5–5 mm, outer surface not scaly; inner surface pubescent; stamens (9 or)10, nearly as long as corolla, filaments pubescent towards base; ovary 2–3 mm, scaly; style longer than stamens, scales absent, rarely puberulous at base. Capsule cylindric, up to 6 mm, densely scaly. Fl. May–Jun, fr. Jul–Sep.

● *Pinus* forest margins, open alpine meadows, rocky slopes, cliffs; 3000–4300 m. C and NW Yunnan.

88. Rhododendron setosum D. Don, Mem. Wern. Nat. Hist. Soc. 3: 408. 1821.

刚毛杜鹃 gang mao du juan

Erect shrubs, 0.1–0.3(–1.2) m tall, usually intricately branched; young shoots densely scaly with flaky scales, densely setose. Petiole 1–3 mm, scaly, setose; leaf blade ovate, elliptic, oblong to obovate, 0.7–1.2(–1.5) × 0.4–0.6(–0.8) cm; base rounded; margin ciliate; apex usually rounded, mucronate; abaxial surface pale gray-green, densely setose, scales not contiguous, dimorphic, usually golden and dark brown, nearly equal in number and intermixed; adaxial surface usually dark green, densely scaly. Inflorescence 1–3(–8)-flowered. Pedicel 0.3–0.5(–1) cm, scaly, sometimes setose; calyx rose-purple; lobes 4–7(–8) mm, oblong, elliptic or ovate, persistent in fruit, scaly, margin usually ciliate; corolla broadly funnelform, purple-pink, (1–)1.2–1.6(–1.8) cm, tube 7–8 mm, outer surface glabrous, inner surface pubescent; stamens 8–10, exserted from corolla, filaments pubescent towards base; ovary ca. 2 mm, scaly; style longer than stamens, glabrous. Capsule cylindric-ovoid, 5–6 mm, densely scaly. Fl. Apr–May, fr. Jul–Sep.

Rhododendron thickets, open scrub, alpine meadows; 3500–4800 m. S Xizang [Bhutan, India (W Bengal), Nepal, Sikkim].

89. Rhododendron russatum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 126. 1919.

紫兰杜鹃 zi lan du juan

Rhododendron cantabile I. B. Balfour ex Hutchinson.

Small shrubs, sometimes cushions or semiprostrate, 0.3–1.5 m tall, usually intricately branched; young shoots scaly. Petiole 1–6(–9) mm, scaly; leaf blade oblong-elliptic, oblong to ovate, 11.6–4(–6.5) × 0.6–1.7 cm; base cuneate; apex rounded or obtuse, mucronate; abaxial surface scales contiguous or overlapping, 2-colored, dark brown and yellow, or uniformly red-brown or brown; adaxial surface pale or dark green, densely scaly. Inflorescence (4–)6–10(–15)-flowered. Pedicel 1–2(–5) cm, scaly; calyx greenish or reddish purple; lobes 3–6 mm, oblong or ovate, persistent in fruit, scales sparse or absent, margin usually ciliate and sometimes also with a few scales; corolla broadly funnelform, deep blue, purple, pink or rose, (1–)1.3–2 cm, tube 4–9 mm, outer surface glabrous or puberulous, throat pubescent; stamens (5–)10, filaments pubescent towards base; ovary ca. 2 mm, scaly; style 1.4–2 cm, longer than stamens, pubescent for up to 1/2 its length. Capsule ovoid, 4–6 mm, densely scaly, usually with persistent apical hairs. Fl. May–Jun, fr. Jul–Sep.

Forest margins, *Rhododendron* scrub, alpine pastures, rocky slopes, cliffs; (2500–)3400–4300 m. SW Sichuan, N Yunnan [Myanmar].

90. Rhododendron rupicola W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 203. 1914.

多色杜鹃 duo se du juan

Small shrubs, 0.6–(1.2) m tall, much-branched, scaly. Petiole 1–3(–4.5) mm, scaly; leaf blade broadly elliptic, oblong or ovate, 0.65–2.1 × 0.3–1.3 cm; base broadly cuneate to truncate; apex rounded, mucronate; abaxial surface yellowish brown, scales overlapping to slightly spaced, 2-colored, dark brown or amber and pale golden, the darker scales usually predominating; adaxial surface densely scaly. Inflorescence 2–6(–8)-flowered. Pedicel 0.2–0.4 cm, scaly; calyx reddish purple; lobes (2.4–)4–5(–6) mm, oblong or broadly ovate, persistent in fruit, scales forming a broad central band, margin with or without scales, sometimes ciliate; corolla broadly funnelform, purple to crimson, or yellow, rarely white, (0.8–)1–1.6(–1.8) cm, tube 3–6(–8) mm, outer surface scaly, sometimes pubescent, throat pubescent; stamens 5–10, number variable even within one inflorescence, filaments pubescent towards base; ovary 2–3 mm, scaly, pubescent; style 1–1.9 cm, longer than stamens, pubescent or glabrous. Capsule broadly ovoid, 4–6 mm, scaly, pubescent. Fl. May–Jul, fr. Jul–Sep.

Pinus forests, forest margins, *Rhododendron* thickets, alpine meadows, open stony grasslands, open moorlands, rocky or stony slopes; 2800–4800(–4900) m. W Sichuan, SE Xizang, C and N Yunnan [NE Myanmar].

1a. Corolla purple to crimson, rarely white ..... 90a. var. *rupicola*
1b. Corolla yellow.
  2a. Calyx lobes fringed only with cilia ..... 90b. var. *chryseum*
  2b. Calyx lobes fringed with scales and cilia ..... 90c. var. *muliense*

90a. Rhododendron rupicola var. **rupicola**

多色杜鹃(原变种) duo se du juan (yuan bian zhong)

Rhododendron achroanthum I. B. Balfour & W. W. Smith.

Calyx lobe margin sometimes without cilia; corolla purple to crimson, rarely white. Fl. May–Jul, fr. Jul–Sep.

Forest margins, *Rhododendron* thickets, rocky slopes; 2800–4300 m. W Sichuan, SE Xizang, C and N Yunnan [NE Myanmar].

90b. Rhododendron rupicola var. **chryseum** (I. B. Balfour & Kingdon Ward) M. N. Philipson & Philipson, Notes Roy. Bot. Gard. Edinburgh 34: 62. 1975.

金黄多色杜鹃 jin huang duo se du juan

Rhododendron chryseum I. B. Balfour & Kingdon Ward, Notes Roy. Bot. Gard. Edinburgh 9: 219. 1916.

Calyx lobe margin ciliate; corolla yellow. Fl. Jun.

Forest margins, open moorlands, stony slopes; 3300–4800 m. W Sichuan, SE Xizang, NW Yunnan [NE Myanmar].

90c. Rhododendron rupicola var. **muliense** (I. B. Balfour & Forrest) M. N. Philipson & Philipson, Notes Roy. Bot. Gard. Edinburgh 34: 63. 1975.

木里多色杜鹃 mu li duo se du juan

Rhododendron muliense I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 101. 1919.

Calyx lobe margin scaly and ciliate; corolla yellow. Fl. Jun.

● *Pinus* forests, alpine meadows, open stony grasslands; 3000–4500(–4900) m. SW Sichuan, NW Yunnan.

91. Rhododendron capitatum Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 23: 351. 1877.

头花杜鹃 tou hua du juan

Small shrubs, 0.5–(1.5) m tall; bud scales deciduous. Petiole 2–3 mm, scaly; leaf blade elliptic or oblong-elliptic, (0.7–)1–1.8(–2.4) × (0.3–)0.5–1 cm; base broadly cuneate; apex rounded, not mucronate; abaxial surface pale brown, scales contiguous to slightly separated, 2-colored, pale yellow and dark brown or tan to dark amber, nearly equal in number and intermixed; adaxial surface pale or olive green, densely scaly. Inflorescence 2–5(–8)-flowered. Pedicel 1–3 cm, scaly; calyx yellowish, lobes 3–6 mm, oblong or ovate, unequal, persistent in fruit, pilose or scaly at base, margin ciliate; corolla broadly funnelform, pale purple to deep purple or bluish purple, (1–)1.3–1.5(–1.7) cm, tube 3–5 mm, outer surface not scaly; throat pubescent; stamens 10, exserted, filaments pubescent towards base; ovary ca. 2 mm, scaly, pubescent; style slightly longer than stamens, occasionally pubescent towards base. Capsule ovoid, 3.5–6 mm, scaly, pubescent. Fl. Apr–Jun, fr. Jul–Sep.

● Moist grasslands, alpine meadows, rocky slopes; 2500–4300 m. Gansu, Qinghai, Shaanxi, NW Sichuan.

92. Rhododendron lapponicum (Linnaeus) Wahlenberg, Fl. Lapp. 104. 1812.

高山杜鹃 gao shan du juan

Azalea lapponica Linnaeus, Sp. Pl. 1: 151. 1753; *A. ferruginosa* Pallas; *A. parvifolia* (Adams) Kuntze; *Rhododendron confertissimum* Nakai; *R. lapponicum* subsp. *parvifolium* (Adams) T. Yamazaki; *R. palustre* Turczaninow ex de Candolle (1839), not Kron & Judd (1990); *R. parvifolium* Adams; *R. parvifolium* subsp. *confertissimum* (Nakai) A. P. Khokhrjakov.

Small, much-branched prostrate or erect shrubs, 0.2–0.45(–1) m tall. Petiole 1.5–4 mm, scaly; leaf blade oblong-elliptic, ovate-elliptic to oblong-obovate, 0.4–1.5(–2.5) × 0.2–0.5(–0.9) cm; base broadly cuneate; apex obtuse or rounded, mucronate; abaxial surface fawn to reddish brown, scales contiguous or overlapping, 2-colored, pale brown or ferruginous, nearly equal in number and intermixed; adaxial surface pale green, matt, densely scaly. Inflorescence (2–)3–5(–6)-flowered. Pedicel 0.3–1.2 cm, scaly; calyx reddish or purple; lobes (0.5–)1–2 mm, deltoid or rounded, persistent in fruit, scaly, margin ciliate and rarely scaly; corolla broadly funnelform, violet rose to purple or rarely white, (0.65–)0.7–1.3(–1.6) cm, tube (1.5–)2–5(–6) mm, outer surface glabrous, throat pubescent; stamens 5–10, filaments pubescent towards base; ovary ca. 1.2 mm, densely scaly; style 1.1–1.5 cm, longer than stamens, glabrous. Capsule cylindric-ovate, 3–6 mm, densely scaly. Fl. May–Jul, fr. Sep–Oct.

Arctic regions, mountain tundra, bogs, peat or moss lands, clayey soils, other damp places; sea level to 1900 m. Heilongjiang, Jilin, Liaoning, Nei Mongol [Japan, N Korea, Mongolia, Russia (Siberia); N Europe (Scandinavia), N North America (Canada, Greenland, N United States)].

93. Rhododendron websterianum Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 511. 1913.

毛蕊杜鹃 mao rui du juan

Small, much-branched erect shrubs, (0.2–)0.8–1(–1.5) m tall. Petiole 1–5 mm, scaly; leaf blade ovate, oblong, narrowly elliptic to linear-lanceolate, (0.5–)0.7–1.5(–2) × (0.2–)0.3–0.5(–0.9) cm; base cuneate; apex obtuse, rarely mucronate; abaxial surface scales contiguous to overlapping, uniformly fawn or golden-brown; adaxial surface pale green, matt, scales overlapping. Inflorescence 1(or 2)-flowered. Pedicel 1–3 cm, scaly; calyx lavender or yellowish red; lobes (2.8–)3–4(–5) mm, rounded to oblong, persistent in fruit, usually scaly, margin ciliate; corolla broadly funnelform, pale purple to blue-purple or yellow, (1–)1.3–1.7(–1.9) cm, tube 5–7 mm, outer surface not scaly, sometimes pubescent; throat pubescent; stamens 10, nearly as long as corolla, filaments pubescent towards base; ovary ca. 2 mm, densely scaly; style longer than stamens, with some scales near base, slightly pubescent. Capsule ovoid to cylindric, 4–5(–7) mm, densely scaly. Fl. May–Jul, fr. Sep–Oct.

● *Pinus* forests, scrub, moorlands, alpine meadows and grasslands; 3200–4900 m. NW Sichuan.

1a. Corolla pale purple to blue-purple ..... 93a. var. *websterianum*
1b. Corolla yellow ..... 93b. var. *yulongense*

93a. Rhododendron websterianum var. **websterianum**

毛蕊杜鹃(原变种) mao rui du juan (yuan bian zhong)

Corolla pale purple to blue-purple. Fl. May–Jul, fr. Sep–Oct.

● *Pinus* forests, scrub, moorlands; 3200–4900 m. NW Sichuan.

93b. Rhododendron websterianum var. **yulongense** M. N. Philipson & Philipson, Notes Roy. Bot. Gard. Edinburgh 34: 23. 1975.

黄花毛蕊杜鹃 huang hua mao rui du juan

Corolla yellow. Fl. Jul.

● Alpine meadows and grasslands; 4300–4800 m. NW Sichuan.

94. Rhododendron nitidulum Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 509. 1913.

光亮杜鹃 guang liang du juan

Small, erect or ascending shrubs, 0.2–1(–1.5) m tall; branchlets short, thick, scaly. Petiole 1–2 mm, scaly; leaf blade ovate to elliptic, (0.5–)0.7–1(–1.2) × (0.25–)0.3–0.6(–0.7) cm; base broadly cuneate to rounded; apex obtuse or rounded, mucro absent or obscure; abaxial surface scales contiguous to overlapping, fawn, sometimes with a few darker scales intermixed; adaxial surface dark green, shiny, scales contiguous. Inflorescence 1- or 2-flowered. Pedicel 0.5–1.5 cm, scaly; calyx pink; lobes (1.5–)2–3 mm, ovate to oblong-ovate, persistent in fruit, scaly, margin usually ciliate; corolla broadly funnelform, rosy lilac or violet-purple, 1.2–1.5 cm, tube 4–6 mm, outer surface not scaly; throat pubescent; stamens (8–)10, equaling or slightly longer than corolla, filaments villous towards base; ovary ca. 2 mm, densely scaly; style longer than stamens, scales and hairs absent. Capsule ovoid, 3–5 mm, densely scaly. Fl. May–Jul, fr. Oct–Nov.

● Alpine meadows, moorlands, rocky slopes, moist places by streams; 3200–4500(–5000) m. C and W Sichuan.

1a. Abaxial leaf surface uniformly fawn .... 94a. var. *nitidulum*
1b. Abaxial leaf surface with a few darker scales intermixed with fawn scales ..... 94b. var. *omeiense*

94a. Rhododendron nitidulum var. **nitidulum**

光亮杜鹃(原变种) guang liang du juan (yuan bian zhong)

Rhododendron nitidulum var. *nubigenum* Rehder & E. H. Wilson; ?*R. yulingense* W. P. Fang.

Abaxial leaf surface with uniformly fawn scales. Fl. May–Jun.

● Alpine meadows, moorlands, moist places by streams; 3200–4500(–5000) m. W Sichuan.

From the original description, it seems probable that *Rhododendron yulingense* (W. P. Fang, Acta Sci. Nat. Univ. Szechuan. 1957(2): 217. 1957), described from W Sichuan (Kangding), is a synonym of *R. nitidulum* var. *nitidulum*.

94b. Rhododendron nitidulum var. **omeiense** M. N. Philipson & Philipson, Notes Roy. Bot. Gard. Edinburgh 34: 24. 1975.

峨眉光亮杜鹃 e mei guang liang du juan

Abaxial leaf surface with 2-colored scales, mostly fawn with a few darker scales intermixed. Fl. Jun–Jul.

● Moorlands, rocky slopes; 3200–3500 m. C Sichuan.

95. Rhododendron minyaense M. N. Philipson & Philipson, Notes Roy. Bot. Gard. Edinburgh 34: 45. 1975.

黄褐杜鹃 huang he du juan

Small, erect shrubs, ca. 0.6 m tall; branchlets covered with dark brown scales. Petiole 1–3 mm, scaly; leaf blade broadly ovate or oblong-elliptic, (0.7–)0.9–1.7 × (0.4–)0.5–1 cm; base broadly cuneate to subcordate; apex obtuse or rounded, mucro obscure; abaxial surface tawny, scales contiguous, usually 2-colored, golden to yellow-brown, some with darker centers; adaxial surface dark green, scales contiguous to separate, pale. Inflorescence 2- or 3-flowered. Pedicel 1–2 cm, scaly; calyx lobes 4–7.5 mm, ovate or rounded, persistent in fruit, scales sometimes present, forming a central band, margin ciliate and rarely with a few scales; corolla funnelform, pale to deep purplish, 1.4–1.8 cm, tube 4–6 mm, outer surface rarely scaly, often pubescent, throat pubescent; stamens usually 10, 1.1–1.5 cm, slightly shorter than corolla, filaments villous towards base; ovary 2–2.5 mm, densely scaly; style 1.4–1.6 cm, longer than stamens, pubescent or glabrous towards base. Capsule ovoid, ca. 5 mm, densely scaly. Fl. and fr. May–Jun.

● Alpine meadows; ca. 4600 m. W Sichuan.

96. Rhododendron labolengense Ching & H. P. Yang, Bull. Bot. Res., Harbin 3(2): 94. 1983.

拉卜楞杜鹃 la bo leng du juan

Small, erect shrubs, ca. 0.5 m tall; branchlets virgate and intricately branched, with dense flaky dark brown scales. Petiole 1–2 mm, scaly; leaf blade broadly elliptic to ovate-oblong, 0.8–1.4 × 0.3–0.6 cm; base broadly cuneate or obtuse; apex obtuse, not mucronulate; abaxial surface brown, scales contiguous, 2-colored, golden and brown intermixed; adaxial surface deep green, scales contiguous, pale. Inflorescence 2–4-flowered. Pedicel 1–3 cm, scaly; calyx lobes 2.5–3.5 mm, oblong, persistent in fruit, scales absent, glabrous except for ciliate margin; corolla broadly funnelform, purple, 1–1.4 cm, tube ca. 4.5 mm, throat villous; stamens 10, shorter than corolla, filaments pubescent towards base; ovary ca. 2 mm, densely scaly; style 1–1.2 cm, longer than stamens, pubescent towards base. Capsule ovoid, 3–4 mm, densely scaly. Fl. Jun–Jul, fr. Aug–Sep.

● Mountain slopes; 3500–3900 m. S Gansu.

97. Rhododendron xiguense Ching & H. P. Yang, Bull. Bot. Res., Harbin 3(2): 92. 1983.

西固杜鹃 xi gu du juan

Small, erect shrubs, ca. 1 m tall; branchlets densely covered with dark brown scales. Petiole 0.8–2 mm, scaly; leaf blade oblong-elliptic or ovate-oblong, sometimes orbicular, 0.6–1.5 × 0.3–0.6 cm; base broadly cuneate or obtuse; apex rounded, not mucronulate; abaxial surface pale yellow-brown, scales contiguous, 2-colored, yellow and dark brown intermixed; adaxial surface dark green, scales nearly contiguous, pale. Inflorescence ca. 3-flowered. Pedicel ca. 0.1 cm, scaly; calyx lobes 4–6 mm, oblong or ovate, unequal, persistent in fruit, scales forming a sparse central band, margin ciliate; corolla funnelform, rose-purple, ca. 1.5 cm, tube ca. 6 mm, throat villous; stamens 10, as long as corolla, filaments pubescent towards base; ovary ca. 2 mm, densely scaly; style to 1.3 cm, longer than stamens, pubescent. Capsule ovoid, ca. 3 mm, densely scaly. Fl. and fr. Jun–Aug.

● Alpine gullies; 3400–3800 m. Gansu.

98. Rhododendron zheguense Ching & H. P. Yang, Bull. Bot. Res., Harbin 3(2): 91. 1983.

鹧鸪杜鹃 zhe gu du juan

Small, erect shrubs, 0.5–1(–1.5) m tall; branchlets intricately branched and virgate, densely dark brown scaly. Petiole 0.5–2 mm, scaly; leaf blade ovate-elliptic or ovate, 0.5–1.2 × 0.3–0.6 cm; base obtuse; apex rounded, not mucronulate; abaxial surface pale yellow-brown, scales contiguous, 2-colored, yellow and dark brown; adaxial surface dark green, scales contiguous, orange. Inflorescence 1-flowered. Pedicel 0.5–2 cm, scaly; calyx lobes ca. 4.5 mm, oblong, usually equal, persistent in fruit, scales forming a dense central band, margin ciliate and/or scaly; corolla funnelform, pale blue, ca. 1.2 cm, tube ca. 5 mm, outer surface sparsely pubescent, throat villous; stamens 10, slightly shorter than corolla, filaments villous towards base; ovary ca. 3 mm, densely scaly; style ca. 7 mm, shorter than stamens, puberulous. Capsule ovoid, ca. 4 mm, densely scaly. Fl. Jul–Aug, fr. Sep–Oct.

● Forest margins, open slopes; 3800–4900 m. N Sichuan (Zhegu Shan).

99. Rhododendron bamaense Z. J. Zhao, Fl. Lign. Qinghaica, Add. 4. 1987.

斑玛杜鹃 ban ma du juan

Small, erect shrubs, ca. 0.6 m tall; branches of current year densely black-scaled. Petiole ca. 0.5 mm, scaly; leaf blade elliptic or ovate, 0.4–0.6 × 0.15–0.25 cm; base cuneate to rounded; apex rounded; abaxial surface yellow-green, scales overlapping, 2-colored, pale yellow and brown intermixed; adaxial surface dark green, scales slightly overlapping, yellow. Inflorescence 1-flowered. Calyx lobes ca. 0.5 mm, triangular, densely scaly, margin not ciliate; corolla broadly funnelform, deep blue, 0.4–0.5 cm, outer surface glabrous, throat pubescent; stamens 10, 0.4–0.8 cm, filaments pubescent towards base; ovary ca. 2 mm, densely scaly; style ca. 8 mm, longer than stamens. Fl. Jun.

● Forests; ca. 4300 m. SE Qinghai.

100. Rhododendron zekoense Y. D. Sun & Z. J. Zhao, Fl. Lign. Qinghaica, Add. 3. 1987.

泽库杜鹃 ze ku du juan

Small shrubs, ca. 1 m tall; branches of current year short, densely dark brown-scaled. Petiole ca. 3 mm, scaly; leaf blade long-elliptic, oblong or long-obovate, 0.8–1.5 × 0.3–0.5 cm; base broadly cuneate or rounded; apex rounded or obtuse, minutely mucronate or retuse; abaxial surface yellow-green or pale yellow brown, scales contiguous or nearly contiguous, 2-colored, pale yellow and pale brown intermixed; adaxial surface dark green, scales contiguous or nearly so, 2-colored, pale yellow and yellow intermixed. Inflorescence 2- or 3-flowered. Pedicel ca. 0.1 cm, scaly; calyx lobes ca. 2 mm, oblong, with a few scales at base, margin ciliate; corolla funnelform, bluish purple or purple with tube white, 1–1.3 cm, tube 4–6 mm, throat pubescent; stamens 10, shorter than corolla, filaments villous; ovary 1.5–2 mm, densely scaly; style 0.9–1.2 cm, longer than stamens. Capsule ca. 4 mm, scaly. Fl. and fr. Jun.

● Forests; 3200–3300 m. E Qinghai.

101. Rhododendron gologense C. J. Xu & Z. J. Zhao, Fl. Lign. Qinghaica, Add. 2. 1987.

果洛杜鹃 guo luo du juan

Small, erect shrubs, 0.5–1 m tall; branches of current year slender, densely brown scaly. Petiole 1.5–2 mm, scaly; leaf blade elliptic or oblong, 1.5–2 × 0.4–0.8 cm; base broadly cuneate or rounded; apex rounded; abaxial surface pale yellow-green, scales contiguous or nearly so, 2-colored, pale yellowish white and dark brown intermixed; adaxial surface dark green, scales slightly contiguous or contiguous, golden. Inflorescence 1- or 2-flowered. Pedicel 0.5–1 cm, scaly, pubescent; calyx lobes ca. 3 mm, oblong, scales absent, glabrous; corolla funnelform, purple, 1–1.2 cm, tube ca. 5 mm, throat pubescent; stamens 10, 0.9–1 cm, shorter than or equal to corolla, filaments villous; ovary ca. 2 mm, densely scaly; style ca. 1.1 cm, longer than stamens, sparsely pubescent. Fl. Aug.

● Forests; ca. 3800 m. SE Qinghai.

102. Rhododendron declivatum Ching & H. P. Yang, Bull. Bot. Res., Harbin 3(2): 89. 1983.

徒生杜鹃 tu sheng du juan

Small shrubs, 0.3–0.4 m tall; branchlets ferruginous to black scaly. Petiole ca. 1.5 mm, scaly; leaf blade broadly elliptic, 1–1.5 × 0.6–1 cm; base broadly cuneate or rounded; apex rounded, mucronate; abaxial surface pale brown or fawn, scales contiguous, 2-colored, pale yellow and reddish brown, nearly equal in number and intermixed; adaxial surface dark green, scales slightly contiguous. Inflorescence 2–4-flowered. Pedicel ca. 0.2 cm, scaly; calyx salver-shaped; lobes 0.8–1.5 mm, broadly triangular or orbicular, scales absent, margin ciliate; corolla narrowly funnelform, purple, ca. 1.4 cm, tube ca. 4 mm, throat pubescent; stamens 10, shorter than corolla, filaments pubescent in lower part; ovary 1.5–1.8 mm, densely scaly; style ca. 8 mm, longer than stamens, sparsely pubescent at base. Capsule ovoid or globose, 3–4 mm, densely scaly. Fl. Jul–Aug, fr. Sep–Oct.

● Scrub on mountain slopes; 2600–3800 m. SW Shaanxi (Taibai Shan).

103. Rhododendron taibaiense Ching & H. P. Yang, Bull. Bot. Res., Harbin 3(2): 88. 1983.

陕西杜鹃 shan xi du juan

Small, much-branched prostrate shrubs, 0.2–0.3 m tall; branches with dense ferruginous-black flaky scales. Petiole 0.8–1 mm, scaly; leaf blade broadly elliptic or oblong, 1–2.5 × 0.5–1 cm; base obtuse; apex rounded, mucronate; abaxial surface grayish yellow-brown, scales slightly contiguous, 2-colored, pale yellow and russet brown, nearly equal in number and intermixed; adaxial surface dark green, scales nearly contiguous, ruby red, shiny. Inflorescence 2-flowered. Pedicel ca. 0.2 cm, scaly; calyx lobes 3.5–4 mm, oblong, scales forming a dense central band, margin long-ciliate; corolla funnelform, pale purple, ca. 1.6 cm, tube 4–5 mm, throat pubescent; stamens 10, shorter than corolla, varying, filaments villous in lower part; ovary 2–3 mm, sparsely scaly; style 1.4–2 cm, longer than corolla, glabrous. Capsule ovoid, 3–4 mm, scaly. Fl. Jul–Aug, fr. Aug–Sep.

● Forest margins, open alpine slopes; ca. 3000 m. C Shaanxi.

104. Rhododendron nivale J. D. Hooker, Rhododendr. Sikkim-Himalaya 3: t. 26(B). 1851.

雪层杜鹃 xue ceng du juan

Small, much-branched prostrate or erect shrubs, usually forming dense cushions, (0.3–)0.6–0.9(–1.2) m tall; branches densely dark ferruginous scaly. Petiole 0.5–2(–3) mm, scaly; leaf blade elliptic, ovate or rounded, 0.35–0.9(–1.2) × (0.15–)0.2–0.5(–0.6) cm; base broadly cuneate; apex acute or rounded, occasionally mucronulate; abaxial surface yellowish green to fawn, scales contiguous or nearly contiguous, 2-colored, pale golden and dark brown intermixed, usually either equal in number or paler scales predominating; adaxial surface dark green, densely scaly, gray-white or golden. Inflorescence 1–2-(–3)-flowered. Pedicel 0.05–0.15 cm, scaly, occasionally pubescent; calyx lobes (0.1–)2–4(–4.5) mm, oblong or narrowly lanceolate, scaly, margin ciliate and/or scaly; corolla broadly funnelform, pink, or lilac to purple, (0.7–)0.9–1.4(–1.6) cm, tube (2.5–)3–4(–6) mm, outer surface rarely scaly, often pubescent, throat pubescent; stamens (8–)10, longer or shorter than corolla, filaments villous towards base; ovary 1–2 mm, scaly; style usually longer than stamens. Capsule ovoid to rounded, 3–5 mm, scaly. Fl. May–Aug, fr. Aug–Sep.

Forest margins, *Rhododendron* thickets, alpine meadows, moorlands, swampy grassland, open bogs, damp places, open mountainsides, dry rocky slopes, screes, cliffs, ice gorges; 3100–5800 m. S Qinghai, W Sichuan, E and S Xizang, C and W Yunnan [Bhutan, Nepal, Sikkim].

1a. Calyx ± obsolete ..... 104b. subsp. *boreale*
1b. Calyx lobes 2–4(–4.5) mm.
  2a. Leaf apex rounded; calyx lobe margin scaly ..... 104a. subsp. *nivale*
  2b. Leaf apex usually acute; calyx lobe margin ciliate ..... 104c. subsp. *australe*

104a. Rhododendron nivale subsp. **nivale**

雪层杜鹃(原亚种) xue ceng du juan (yuan ya zhong)

Rhododendron paludosum Hutchinson & Kingdon Ward.

Leaf apex rounded. Calyx lobes 2–4(–4.5) mm, margin scaly. Fl. May–Jul, fr. Aug–Sep.

Rhododendron thickets, alpine meadows, open bogs, open mountainsides, screes, ice gorges; 3200–5800 m. S Qinghai, E and S Xizang [Bhutan, Nepal, Sikkim].

104b. Rhododendron nivale subsp. **boreale** M. N. Philipson & Philipson, Notes Roy. Bot. Gard. Edinburgh 34: 52. 1975.

北方雪层杜鹃 bei fang xue ceng du juan

Rhododendron alpicola Rehder & E. H. Wilson; *R. alpicola* var. *strictum* Rehder & E. H. Wilson; *R. batangense* I. B. Balfour & Forrest; *R. nigropunctatum* Bureau & Franchet; *R. oreinum* I. B. Balfour; *R. oresbium* I. B. Balfour & Kingdon Ward; *R. ramosissimum* Franchet; *R. stictophyllum* I. B. Balfour; *R. vicarium* I. B. Balfour; *R. violaceum* Rehder & E. H. Wilson; *R. yaragongense* I. B. Balfour.

Leaf apex rounded, mucronulate. Calyx small or obsolete. Fl. May–Jul, fr. Aug–Sep.

● Open moorlands, swampy grassland, dry rocky slopes; 3200–5400 m. S Qinghai, W Sichuan, E Xizang, W Yunnan.

Rhododendron ×*edgarianum* Rehder & E. H. Wilson (in Sargent, Pl. Wilson. 1: 508. 1913), described from Sichuan, was considered to be a natural hybrid between *R. nivale* subsp. *boreale* and an unknown species by Philipson and Philipson (Notes Roy. Bot. Gard. Edinburgh 34: 54. 1975).

104c. Rhododendron nivale subsp. **australe** M. N. Philipson & Philipson, Notes Roy. Bot. Gard. Edinburgh 34: 54. 1975.

南方雪层杜鹃 nan fang xue ceng du juan

Leaf apex usually acute. Calyx lobes 2–4(–4.5) mm, margin ciliate. Fl. Jul.

● Forest margins, alpine moorlands, damp places, cliffs; 3100–4500 m. SW Sichuan, C and NW Yunnan.

105. Rhododendron thymifolium Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 23: 351. 1877.

千里香杜鹃 qian li xiang du juan

Rhododendron polifolium Franchet (1895), not *R. polifolia* (Linnaeus) Scopoli (1771); *R. spilanthum* Hutchinson.

Small, much-branched, fastigiate erect shrubs, 0.3–1.3 m tall; branches densely dark brown scaly. Petiole 1–2 mm, scaly; leaf blade elliptic, oblong, narrowly obovate or ovate-lanceolate, (0.3–)0.5–1.2(–1.8) × (0.18–)0.2–0.5(–0.7) cm; base narrowly cuneate; apex acute or obtuse, usually shortly mucronate; abaxial surface yellowish green, scales contiguous or overlapping, pale fawn, rarely intermixed with a few amber; adaxial surface pale green, densely scaly, silvery or pale yellow. Inflorescence 1(or 2)-flowered. Pedicel 0.05–0.15(–0.2) cm, scaly; calyx rimlike; lobes 0.5–1.2 mm, triangular, ovate to rounded, scaly, scales various, margin ciliate or not; corolla broadly funnelform, pale lavender-blue to deep purple, 0.6–1.2 cm, tube (2–)3–4 mm, outer surface usually scaly, throat pubescent; stamens 10, 1–1.4 cm, longer than corolla, filaments villous towards base or glabrous; ovary ca. 1 mm, scaly; style 3–6 mm or 9–16 mm, usually glabrous, rarely a few scales or hairs near base. Capsule ovoid, 2–3(–4.5) mm, scaly. Fl. May–Jul, fr. Sep–Oct.

● Forests, thickets, scrub, open alpine slopes, open moist slopes; 2400–4800 m. Gansu, Qinghai, N Sichuan.

106. Rhododendron yushuense Z. J. Zhao, Fl. Lign. Qinghaica, Add. 1. 1987.

玉树杜鹃 yu shu du juan

Small, erect shrubs, tufted; branches of current year densely covered with pale and dark scales. Petiole ca. 1 mm, scaly; leaf blade elliptic or oblong, 0.6–0.8 × 0.3–0.4 cm; base broadly cuneate or cuneate; apex rounded, not mucronulate; abaxial surface yellowish green, scales overlapping; uniformly pale yellow; adaxial surface dark green, scales contiguous or slightly overlapping, gray. Inflorescence usually 2-flowered. Pedicel 0.5–1 cm, scaly; calyx lobes ca. 1 mm, oblong, unequal, glabrous except for the scaly margin; corolla broadly funnelform, purple, 0.5–0.6 cm, tube ca. 2 mm, throat pubescent; stamens 10, 0.3–0.4 cm, shorter than corolla; ovary ca. 1.5 mm, scaly; style 3.5–4.5 mm, glabrous.

● About 4200 m. S Qinghai.

107. Rhododendron orthocladum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 104. 1919.

直枝杜鹃 zhi zhi du juan

Erect much-branched shrubs, (0.5–)1(–1.3) m tall; branchlets densely brown scaly. Petiole 0.8–2.5(–3) mm, scaly; leaf blade narrowly elliptic, lanceolate to linear-lanceolate, (0.5–)0.8–1.6(–2) × (0.1–)0.25–0.5(–0.6) cm; base cuneate or obtuse; apex obtuse, shortly or obscurely mucronate; abaxial surface yellowish brown to fawn, scales contiguous or almost so, golden to yellow brown, with few to many deeper brown scales intermixed; adaxial surface gray-green, scales dense, pale, translucent. Inflorescence (1–)2–4-flowered. Pedicel 0.15–0.2(–0.3) cm, scaly; calyx reddish, lobes usually unequal, 0.5–1.5 mm, triangular to rounded, scaly at base, margin occasionally with a few scales and cilia; corolla funnelform, pale to deep lavender-blue or deep purple, rarely whitish pink, 0.7–1.4 cm, tube 2–5 mm, outer surface not or only sparsely scaly, throat pubescent; stamens (8–)10(–11), shorter than to equaling corolla, filaments villous towards base; ovary (1–)2(–3) mm; style 0.35–0.5 cm or 1.5–1.6 cm, scales sparse or absent. Capsule ovoid, 2–5 mm, scaly. Fl. May–Jun, fr. Jul–Aug.

● Forest margins, thickets, alpine slopes, cliffs; 2500–4500 m. SW Sichuan, N Yunnan.

1a. Style 3.5–5 mm ..... 107a. var. *orthocladum*
1b. Style 15–16 mm ..... 107b. var. *longistylum*

107a. Rhododendron orthocladum var. **orthocladum**

直枝杜鹃(原变种) zhi zhi du juan (yuan bian zhong)

Rhododendron microleucum Hutchinson; *R. orthocladum* var. *microleucum* (Hutchinson) Philipson & M. N. Philipson.

Style 3.5–5 mm. Fl. May–Jun, fr. Jul–Aug.

● Forest margins, thickets, cliffs; 2500–4500 m. SW Sichuan, N Yunnan.

107b. Rhododendron orthocladum var. **longistylum** M. N. Philipson & Philipson, Notes Roy. Bot. Gard. Edinburgh 34: 44. 1975.

长柱直枝杜鹃 chang zhu zhi zhi du juan

Style 15–16 mm. Fl. Jul.

● Thickets, alpine slopes; ca. 3500 m. N Yunnan.

108. Rhododendron bulu Hutchinson, Rhododendron Soc. Notes 3: 280. 1932.

蜿蜒杜鹃 wan yan du juan

Erect and tufted or straggling shrubs, 0.3–1.6 m tall; branchlets densely scaly. Petiole 1–3(–4) mm, scaly; leaf blade elliptic, elliptic-ovate or oblong-elliptic, (0.8–)1.2–2.3 × 0.3–0.6(–0.8) cm; base broadly cuneate; apex rounded, obscurely mucronate; abaxial surface pale yellow, scales irregularly contiguous to overlapping, pale, tan, straw or brown, with some larger and darker scales among them; adaxial surface dark green, scales contiguous to overlapping. Inflorescence 1–3(–5)-flowered. Pedicel 1–2 cm, scaly; calyx reddish; lobes 1–2(–4) mm, triangular to slightly rounded, scaly, margin scaly and sparsely ciliate; corolla funnelform, pinkish purple to deep purple or occasionally white, (0.9–)1.1–1.2(–1.5) cm; tube 2.5–3(–5) mm; outer surface sparsely scaly, rarely pubescent; throat pubescent; stamens (8–)10; filaments pubescent towards base; ovary (1.5–)2–2.5 mm, scaly; style 1.2–1.7 cm, longer than stamens, base sparsely scaly and pubescent. Capsule ovoid, ca. 5 mm, densely scaly. Fl. May–Jun, fr. Jul–Sep.

● Mixed forests, thickets, wooded hillsides, scrub; 2900–3900 m. S Xizang.

109. Rhododendron telmateium I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 280. 1916.

草原杜鹃 cao yuan du juan

Rhododendron diacritum I. B. Balfour & W. W. Smith; *R. drumonium* I. B. Balfour & Kingdon Ward; *R. idoneum* I. B. Balfour & W. W. Smith; *R. pycnocladum* I. B. Balfour & W. W. Smith.

Small densely branched, prostrate shrubs, usually forming cushions, (0.1–)1 m tall; branches scaly. Petiole 0.3–3 mm, scaly; leaf blade lanceolate, narrowly or broadly elliptic or orbicular, 0.3–1.2(–1.4) × 0.15–0.5(–0.65) cm; base cuneate; apex acute to rounded, strongly mucronate; abaxial surface golden fawn, pale orange, brown to reddish brown, scales overlapping, mostly pale gold to reddish brown, with few to many darker scales among them; adaxial surface dark green, scales overlapping, pale golden. Inflorescence 1- or 2(–3)-flowered. Pedicel 0.05–0.15(–0.2) cm, scaly; calyx reddish purple or green; lobes 0.5–2(–3) mm, triangular, ovate to rounded, usually unequal, scaly, margin scaly and long-ciliate; corolla broadly funnelform, lavender, rose pink to deep purplish blue, (0.6–)0.7–1.1(–1.4) cm, tube 2–4 mm, outer surface scaly, often also pubescent, throat pubescent; stamens (8–)10(–11), as long as corolla, filaments pubescent towards base; ovary 1.5–2.5(–3) mm, scaly; style 0.3–1.7 cm, rarely pubescent and scaly at base. Capsule ovoid to cylindric, 3–4 mm, densely scaly. Fl. May–Jul, fr. Aug–Oct.

● Forest margins, *Rhododendron* thickets, rocky slopes, cliffs; (2700–)3200–3800(–5000) m. W Sichuan, C and N Yunnan.

110. Rhododendron joniense Ching & H. P. Yang, Bull. Bot. Res., Harbin 3(2): 95. 1983.

卓尼杜鹃 zhuo ni du juan

Small much-branched shrubs, up to 1 m tall; branches of current year densely ferruginous to dark brown scaly. Petiole ca. 1 mm, scaly; leaf blade narrowly oblong, 1–2 × 0.4–0.7 cm; base cuneate; apex rounded, not mucronate; abaxial surface deep brown, scales contiguous, 2-colored, pale yellow, with many brown scales among them; adaxial surface dark green, scales contiguous or nearly so. Inflorescence 3- or 4-flowered. Pedicel ca. 0.1 cm, scaly; calyx salver-shaped; lobes ca. 0.8 mm, rounded, usually unequal, scales forming a central band, margin ciliate; corolla narrowly funnelform, lavender, ca. 1.6 cm, tube ca. 4 mm, throat pubescent; stamens 10, slightly shorter than corolla, filaments usually pubescent to some extent; ovary ca. 1.5 mm, densely scaly; style to 1.1 cm, slightly longer than stamens, pubescent towards at base. Capsule ovoid, 3–4 mm, densely scaly. Fl. May, fr. Jun.

● Slopes, shady places; ca. 2500 m. S Gansu.

111. Rhododendron maowenense Ching & H. P. Yang, Bull. Bot. Res., Harbin 3(2): 96. 1983.

茂汶杜鹃 mao wen du juan

Erect much-branched virgate shrubs, 2–4 m tall; branches of current year densely ferruginous to dark scaly. Petiole ca. 1 mm, scaly; leaf blade elliptic, 0.6–1.2 × 0.3–0.5 cm; base broadly cuneate; apex rounded, strongly mucronate; abaxial surface yellow brown, scales contiguous, 2-colored, fuscous, with fawn-brown scales dispersed among them; adaxial surface dull green, scales nearly contiguous, yellow. Inflorescence 1-flowered. Pedicel 0.1–0.15 cm, scaly; calyx lobes ca. 2.2 mm, oblong or broadly ovate, usually unequal, scales present, forming a central band abaxially, margin ciliate or scaly; corolla broadly funnelform, yellow, 1–1.4 cm, tube ca. 5 mm, throat villous; stamens 8–10, slightly shorter than corolla, filaments villous towards base; ovary ca. 2 mm, densely scaly; style to 1.7 cm, longer than corolla and stamens, sparsely pubescent towards base. Capsule ovoid, ca. 3.5 mm, densely scaly. Fl. May–Jun, fr. Jul–Aug.

● Alpine *Populus* and *Salix* forests; ca. 3000 m. N Sichuan.

112. Rhododendron lungchiense W. P. Fang, Acta Sci. Nat. Univ. Szechuan. 1957(2): 218. 1957.

龙溪杜鹃 long xi du juan

Shrubs small, much-branched, 0.6–1.2 m tall; branches sparsely scaly. Petiole 3–5 mm, densely scaly; leaf blade oblong to elliptic-oblong, 1.3–1.5 × 0.4–0.6 cm; base broadly cuneate; apex acute and mucronulate; abaxial surface scales ca. 1 × their own diameter apart, brown; adaxial surface densely brown scaly. Inflorescence 1- or 2-flowered; bud scales persistent. Pedicel ca. 0.2 cm; calyx lobes 3–4 mm, ovate, margin ciliate; corolla funnelform, purple, 1.5–1.6 cm, tube 3–4 mm; stamens 8 or 9, long-exserted, filaments villous towards base; style ca. 1.7 cm, glabrous. Capsule not known. Fl. Jun.

● Forests, ridges; 3000–3500 m. NC Sichuan (Lixian).

The original author suggested an affinity with *Rhododendron nivale* subsp. *boreale* in *R.* subsect. *Lapponica*. The well-spaced scales on the abaxial surface of the leaf blade distinguish this species from the purple-flowered species of *R.* subsect. *Lapponica* from C and N Sichuan.

8. Rhododendron subsect. Saluenensia (Hutchinson) Sleumer, Bot. Jahrb. 74: 534. 1949.

怒江杜鹃亚组 nu jiang du juan ya zu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); David F. Chamberlain

Rhododendron ser. *Saluenensia* Hutchinson in J. B. Stevenson, Sp. Rhodod. 587. 1930 [*"Saluenense"*].

Small shrubs, erect or creeping, 0.05–1.5 m tall; young shoots scaly, scales sessile or stalked, strap-shaped setae sometimes present. Leaf blade leathery; abaxial surface scales overlapping, often stalked, in 2 or more layers, brown or orange-pink; veins sometimes with strap-shaped setae; adaxial surface scaly or not. Inflorescence terminal, umbellate, 1–3(–5)-flowered; pedicels densely scaly, otherwise glabrous or hispid; calyx large, often tinged with red, 3–9 mm, 5-lobed to base, hairy on the margin; corolla broadly funnelform-campanulate to campanulate, purple, purplish red or deep red, often with darker spots inside, outer surface scaly or not, pubescent; stamens 10; ovary 5-locular, sometimes pubescent; style often longer than stamens, glabrous or pubescent at base. Capsule ovoid, 4–8 mm, surrounded by persistent calyx. Seed wingless.

Four species: China, India, Myanmar; four species (one endemic) in China.

1a. Young shoots, petioles, and pedicels densely hispid, with strap-shaped setae ..... 113. *R. saluenense*
1b. Young shoots, petioles, and pedicels not densely hispid, strap-shaped setae absent.
  2b. Leaf blade ovate, elliptic, or elliptic-lanceolate, 0.6–2 × 0.3–1 cm, base cuneate, apex acute, rarely obtuse, adaxial surface sparsely lepidote or not; pedicels 1.5–3.2 cm; creeping small shrubs ..... 116. *R. keleticum*
  2a. Leaf blade oblong-elliptic or ovate-elliptic, 1.5–3 × 0.8–1.8 cm, base obtuse, apex obtuse, adaxial surface densely lepidote; pedicels 0.8–1.5 cm; erect shrubs.
    3a. Leaf blade 0.5–2.5 cm, abaxial surface with scales not flattened, in 3–5 tiers ..... 114. *R. calostrotum*
    3b. Leaf blade (1.2–)1.8–3.8 cm, abaxial surface with scales flattened, in 2 or 3 tiers ..... 115. *R. riparioides*

113. Rhododendron saluenense Franchet, J. Bot. (Morot) 12: 263. 1898.

怒江杜鹃 nu jiang du juan

Erect or creeping shrubs, (0.05–)0.1–1.2(–1.5) m tall; young shoots densely scaly, hispid with brown strap-shaped setae. Petiole 2–4 mm, scaly, hispid; leaf blade elliptic or oblong-elliptic or ovate-elliptic, 0.7–3 × 0.8–1.4 cm; base often rounded, sometimes broadly cuneate; apex rounded, apiculate; abaxial surface scales overlapping, brown, pale brown or yellowish green, sometimes hispid with strap-shaped setae along veins; adaxial surface densely or sparsely scaly. Inflorescence terminal, 1–3-flowered. Pedicel red, 0.7–1.5 cm, scaly, sparsely or densely hispid; calyx reddish purple, lobes 5–9 mm, broadly ovate or ovate-elliptic, persistent in fruit, with or without abaxial scales, pubescent or sometimes hispid; corolla broadly funnelform-campanulate, purple, purplish red or deep red, inside with purple red spots, 1.4–3 cm, outer surface scaly or not, densely pubescent; stamens unequal, longer than tube but shorter than corolla; filaments densely pubescent at base; style red, longer than corolla, pubescent or not at base. Capsule ovoid, 5–9 mm. Fl. Jun–Aug, fr. after Aug.

Rhododendron thickets on rocky slopes, shrubby meadows on high mountains; 3000–4800 m. Sichuan, Xizang, Yunnan [Myanmar].

1a. Erect shrubs, to 150 cm; leaf blade (10–)15–30 mm; leaves and calyx sometimes with strap-shaped setae ..... 113a. var. *saleunense*
1b. Dwarf creeping shrubs, (5–)10–30(–60) cm; leaf blade 7–17 mm; strap-shaped setae absent ..... 113b. var. *prostratum*

113a. Rhododendron saluenense var. **saluenense**

怒江杜鹃(原变种) nu jiang du juan (yuan bian zhong)

Rhododendron amaurophyllum I. B. Balfour & Forrest.

Erect shrubs, 0.3–1.2(–1.5) m tall. Leaf blade (1–)1.5–3 cm; adaxial surface dull, ± persistently scaly, usually hispid with strap-shaped setae. Calyx with abaxial scales, pubescent, sometimes hispid with strap-shaped setae; corolla 1.8–3 cm.

Rhododendron thickets on rocky slopes; 3000–4000 m. Sichuan, Xizang, Yunnan [Myanmar].

113b. Rhododendron saluenense var. **prostratum** (W. W. Smith) R. C. Fang, Acta Bot. Yunnan. 4: 256. 1982.

平卧怒江杜鹃 ping wo nu jiang du juan

Rhododendron prostratum W. W. Smith, Notes Roy. Bot.

Gard. Edinburgh 8: 202. 1914; *R. chameunum* I. B. Balfour & Forrest; *R. charidotes* I. B. Balfour & Farrer; *R. cosmetum* I. B. Balfour & Forrest; *R. saluenense* subsp. *chameunum* (I. B. Balfour & Forrest) Cullen.

Dwarf creeping shrubs, (0.05–)0.1–0.3(–0.6) m tall. Leaf blade 0.7–1.7 cm; adaxial surface shiny, scales absent when mature, lacking strap-shaped setae. Calyx with abaxial scales sparse or absent, pubescent or nearly glabrous; corolla 1.4–2.5 cm.

● *Rhododendron* thickets on rocky slopes, shrubby meadows on high mountains; (3300–)3800–4800 m. NW Yunnan.

Cubey (A cytological and morphological taxonomic study of *Rhododendron* L. subsection *Saluenensia*. PhD thesis, University of Liverpool. 2003) maintained the name *R. saluenense* subsp. *chameunum* for this taxon, implying that there is a geographical separation in the distributions of var. *saluenense* and var. *prostratum*. From the above descriptions it may be seen that var. *prostratum* generally occurs at higher altitudes than does var. *saluenense*.

114. Rhododendron calostrotum I. B. Balfour & Kingdon Ward, Notes Roy. Bot. Gard. Edinburgh 13: 35. 1920.

美被杜鹃 mei bei du juan

Small erect shrubs, 0.2–1 m tall; young shoots with dense stipitate or sessile scales, not hispid (strap-shaped setae absent). Petiole 2–6 mm, densely scaly, without strap-shaped setae; leaf blade ovate-elliptic to oblong-elliptic, or ovate, 0.5–2.5 × 0.3–1.4 cm, rounded or acuminate on both sides, apiculate; abaxial surface brown, scales dense, overlapping or arranged in 3–5 tiers, not flattened; adaxial surface dark, scales dense, 1 or more × their own diameter apart, veins of young leaves sometimes with strap-shaped setae. Inflorescence terminal, 1–2(–5)-flowered. Pedicel 0.8–1.5 cm, densely scaly, scales sometimes stipitate; calyx reddish purple or pale red, 5-lobed to the base; lobes 3–9 mm, elliptic, ovate or nearly rounded, ± pubescent or glabrous; corolla broadly funnelform-campanulate, red or pale purple, 1–2.5 cm, outer surface scaly in the center or not scaly, densely pubescent; stamens unequal, longer than tube but shorter than corolla; filaments densely pubescent at base; ovary densely scaly, sometimes pubescent; style red, longer than stamens, glabrous or pubescent at base. Capsule ovoid, 6–8 mm. Fl. May–Jul, fr. Aug–Sep.

Rocky slopes in forests, thickets or rocky slopes in high mountains, often dominant; 3400–4600 m. Xizang, Yunnan [India, Myanmar].

1a. Calyx 4–9 mm; corolla 1.5–2.5 cm ..... 114a. var. *calostrotum*

1b. Calyx ca. 5 mm; corolla 1–1.8 cm ..... 114b. var. *calciphyllum*

114a. Rhododendron calostrotum var. **calostrotum**

美被杜鹃(原变种) mei bei du juan (yuan bian zhong)

Rhododendron calostrotum subsp. *riparium* (Kingdon Ward) Cullen; *R. kingdonii* Merrill; *R. riparium* Kingdon Ward (1930), not A. Wang & P. C. Tam (1978); *R. rivulare* Kingdon Ward (1929), not Handel-Mazzetti (1921).

Leaf blade ovate-elliptic or oblong-elliptic, 1.5–2.5 cm. Calyx 4–9 mm; corolla 1.5–2.5 cm.

Thickets or rocky slopes in high mountains, often dominant; 3400–4600 m. Xizang, Yunnan [India, Myanmar].

114b. Rhododendron calostrotum var. **calciphilum** (Hutchinson & Kingdon Ward) Davidian, Rhododendron Camellia Year Book 8: 87. 1954.

小叶美被杜鹃 xiao ye mei bei du juan

Rhododendron calciphilum Hutchinson & Kingdon Ward in J. B. Stevenson, Sp. Rhodod. 589. 1930.

Leaf blade ovate, 0.5–1.5 cm. Calyx ca. 5 mm; corolla 1–1.8 cm.

Rocky slopes in forests; 3700–3900 m. SE Xizang, NW Yunnan [Myanmar].

115. Rhododendron riparioides (Cullen) Cubey, **stat. nov.**

雪龙美被杜鹃 xue long mei bei du juan

Basionym: *Rhododendron calostrotum* I. B. Balfour & Kingdon Ward subsp. *riparioides* Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 123. 1978; *R. calostrotum* var. *riparioides* (Cullen) R. C. Fang.

Upright shrubs, to 1.5 m tall; young shoots with dense stipitate or sessile scales, strap-shaped setae absent. Petiole 2–6 mm, densely scaly, without strap-shaped setae; leaf blade elliptic to ovate-elliptic, (1.2–)1.8–3.8 × (0.6–)0.8–2 cm; margin lacking strap-shaped setae; apex generally acute; abaxial surface scales overlapping, arranged in 2–3 tiers, orange-pink; adaxial surface greenish blue-gray, matt. Inflorescence terminal, to 5-flowered. Pedicel 0.8–2 cm, lacking multicellular hairs; calyx reddish purple or pale red, 5-lobed to the base; lobes 4–7 mm, elliptic, ovate or nearly rounded, ± pubescent or glabrous; corolla openly funnel-campanulate, bright purple, with darker flecks; outer surface not scaly, pubescent; stamens 10, 1.2–1.8 cm; style longer than stamens, glabrous or pubescent at base. Capsule not known.

● Rocks above *Abies* forests; 3600–4800 m. NW Yunnan.

Janet C. Cubey (WSY) is acknowledged for her contribution to the account of this species. Recent research by Cubey (A cytological and morphological taxonomic study of *Rhododendron* L. subsection *Saluenensia*. PhD thesis, University of Liverpool. 2003) has shown that *R. calostrotum* var. (or subsp.) *riparioides* is consistently tetraploid (2*n* = 52*) and is therefore genetically isolated from the diploid *R. calostrotum* and its var. *calciphilum* (2*n* = 26). This distinction is confirmed by the morphological differences mentioned above. For these reasons Cubey here proposes the name *R. riparioides*.

116. Rhododendron keleticum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 50. 1920.

独龙杜鹃 du long du juan

Rhododendron calostrotum I. B. Balfour & Kingdon Ward subsp. *keleticum* (I. B. Balfour & Forrest) Cullen; *R. radicans* I. B. Balfour & Forrest.

Creeping small shrubs, 0.05–0.3 m tall; young shoots with dense stipitate or sessile scales, lacking strap-shaped setae. Petiole 1–3 mm, densely scaly, glabrous; leaf blade leathery, elliptic-lanceolate, elliptic, or ovate, 0.6–2 × 0.3–1 cm; apex obtuse or rounded, apiculate; abaxial surface brown, scales dense, over-

lapping, arranged in 3–4 tiers, denticulate; adaxial surface scales usually absent, rarely present. Inflorescence terminal, 1(or 2)-flowered. Pedicel 1.5–3.2 cm, scaly, scales sometimes stipitate, glabrous or rarely with strap-shaped setae; calyx pale purplish red or green tinged with red, 5-lobed to the base; lobes 5–7 mm, ovate or ovate-lanceolate, persistent in fruit, abaxially ± scaly, sometimes also pubescent; corolla broadly campanulate, fresh purple or pale purplish red, inside with dark purple spots, 1.5–2 cm, outer surface densely scaly or pubescent; stamens 10, slightly unequal, often half as long as corolla; filaments villous at base; ovary 5-locular, densely scaly; style red, longer than stamens, glabrous. Capsule ovoid, 4–7 mm. Fl. Jul–Sep, fr. Aug–Oct.

Bamboo forests and meadows in high mountains, thickets, slopes, rock faces; 3000–3900 m. SE Xizang, NW Yunnan [Myanmar].

9. Rhododendron subsect. **Fragariiflora** Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 122. 1978 [*"Fragariflora"*].

草莓杜鹃亚组 cao mei du juan ya zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Small shrublets, upright to prostrate, up to 0.3(–0.4) m tall. Leaves very small; leaf blade margin crenulate; abaxial surface scales vesicular, golden, veins prominent; adaxial surface scaly. Inflorescence terminal, 2–4(–6)-flowered. Pedicel scaly; calyx conspicuous, reddish to purple, 4–7 mm, 5-lobed, sparsely scaly Corolla openly campanulate to almost rotate; tube short, lobes spreading, purple or pinkish purple, outer surface usually glabrous; stamens 10; ovary 5-locular; style longer than stamens, declinate, glabrous. Capsule ovoid, 4–7 mm. Seed wingless, not finned.

One species: Bhutan, China.

117. Rhododendron fragariiflorum Kingdon Ward, Gard. Chron., ser. 3, 86: 504. 1929 [*"fragariflorum"*].

草莓花杜鹃 cao mei hua du juan

Shrubs dwarf, erect-spreading, usually straggling, prostrate, or forming a compact cushion, 0.05–0.3(–0.4) m tall; bud scales deciduous. Petiole 1–2 mm; leaf blade oblong-elliptic or oblong-ovate, 0.7–1.6 × 0.4–0.6 cm; base rounded; margin crenulate; apex rounded or obtuse; abaxial surface pale green, scales 0.5–6 × their own diameter apart; adaxial surface dark green, shiny, scales golden, vesicular. Inflorescence 2–4(–6)-flowered. Pedicel 0.5–0.8(–1.2) cm, scaly, pubescent; calyx reddish or purple, 5-lobed to base; lobes 4–7 mm, oblong, ovate or elliptic, sparsely scaly; corolla purple or pinkish purple, 1–1.7(–1.9) cm, tube 3–6(–7) mm, outer surface usually glabrous, inner surface pubescent; stamens 10, filaments pubescent towards base; ovary densely scaly; style glabrous. Capsule ovoid, 4–7 mm, scaly. Fl. Jul, fr. Aug–Sep.

Open mountain slopes, turf slopes, swampy pastures; 3600–4600(–5000) m. SE Xizang [Bhutan].

10. Rhododendron subsect. **Uniflora** Sleumer, Bot. Jahrb. Syst. 74: 532. 1949.

单花杜鹃亚组 dan hua du juan ya zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Dwarf shrubs, often prostrate and mat forming, to 0.5(–1) m tall. Leaves small; leaf blade margin revolute, crenate; abaxial surface scales not overlapping, golden or brown, often darkening with age; adaxial surface usually scaly. Inflorescence terminal, 1–3-flowered. Pedicel rigid, accrescent in fruit; calyx 1–7 mm, deeply 5-lobed, scaly, ciliate on margin; corolla broadly funnelform-campanulate or tubular-funnelform, purple to pinkish purple, pink, purplish mauve or yellow with spots within tube, outer surface mostly densely pubescent and sparsely scaly; stamens 10, shorter than corolla; ovary 5-locular; style straight, mostly glabrous, sometimes sparsely scaly at base. Capsule rounded or ovoid, to cylindric, 4–13 mm. Seeds wingless, obscurely finned.

About four species: Bhutan, China, India, Myanmar, Nepal, Sikkim; four species in China.

1a. Calyx 5–7 mm; corolla yellow; leaf blade crenate ..... 118. *R. ludlowii*
1b. Calyx 1–3 mm; corolla pink, rose or purple; leaf blade entire.
  2a. Corolla campanulate, 8–21 mm; style shorter than stamens; leaf blade elliptic to obovate-elliptic ..... 119. *R. pumilum*
  2b. Corolla funnelform, 20–32 mm; style longer than stamens; leaf blade lanceolate, oblanceolate or oblong-obovate.
    3a. Abaxial leaf surface sparsely scaly, the scales 3–6 × their own diameter apart ..... 120. *R. uniflorum*
    3b. Abaxial leaf surface densely scaly, the scales 0.5–1.5 × their own diameter apart ..... 121. *R. pemakoense*

118. Rhododendron ludlowii Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 243. 1937.

广口杜鹃 guang kou du juan

Dwarf shrubs, often prostrate, evergreen, ca. 0.3 m tall. Petiole 1–2 mm, scaly; leaf blade leathery, obovate or obovate-elliptic, 0.9–1.7 × 0.5–1 cm; base rounded; margin crenulate-undulate; apex rounded, mucronulate; abaxial surface pale green, scales 2–3 × their own diameter apart, large, brown; adaxial surface dark green, scaly. Inflorescence 1- or 2-flowered. Pedicel 1.5–2.5 cm, densely scaly; calyx deeply 5-lobed; lobes 5–7 mm, broadly ovate, persisting to enclose mature capsule, densely scaly, margin ciliate; corolla broadly campanulate, yellow with reddish brown spots inside tube, 1.5–3 × ca. 4 cm, tube ca. 14 mm, outer surface densely pubescent and scaly; stamens 10, shorter than corolla, filaments densely pubescent

towards base; ovary ovoid, densely scaly; style slender, straight, longer than stamens, shorter than corolla, glabrous. Capsule rounded, 4–5 mm, scaly. Fl. Apr–Jun, fr. Jul–Oct.

Rocky hillsides; 3900–4200 m. S Xizang [NE India].

119. Rhododendron pumilum J. D. Hooker, Rhododendr. Sikkim-Himalaya 2: t. 14. 1851.

矮小杜鹃 ai xiao du juan

Dwarf shrubs, evergreen, (0.05–)0.1(–0.25) m tall; branches long, prostrate, creeping or spreading, scaly. Petiole 1–2 mm, scaly; leaf blade leathery, ovate, elliptic, orbicular or obovate-elliptic, 0.8–1.9 × 0.4–1.2 cm; base rounded; apex rounded, mucronulate; abaxial surface pale grayish green, scales 2–3 (or more) × their own diameter apart, small, golden, brown, or dark brown; adaxial surface dark green, usually scaly. Inflorescence 1–3-flowered. Pedicel 1–2.6 cm, densely scaly, in fruit to 6 cm, rigid and erect; calyx reddish to purplish red, deeply 5-lobed; lobes 1–3 mm, ovate or oblong-ovate, persisting to enclose mature capsule, scaly, sparsely ciliate; corolla campanulate, pinkish purple to purple, 0.8–2.1 cm, outer surface sparsely scaly, pubescent; stamens 10, filaments densely pubescent towards base; ovary ovoid, densely scaly; style straight, shorter than stamens, ca. 1/2 as long as corolla, glabrous. Capsule ovoid or cylindric-ovoid, 6–13 mm, densely scaly. Fl. Apr–Jun, fr. Jul–Sep.

Alpine turf slopes, open hillsides, banks, rocks; 3300–4300 m. SE Xizang, NW Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim].

120. Rhododendron uniflorum Hutchinson & Kingdon Ward in J. B. Stevenson, Sp. Rhodod. 446. 1930.

单花杜鹃 dan hua du juan

Dwarf shrubs, evergreen, 0.1–0.5(–1) m tall; branches usually prostrate, creeping, scaly, sparsely puberulous. Petiole 1–4 mm, scaly; leaf blade leathery, oblong-obovate, oblong-ovate, or oblong-elliptic, 1.3–2.5 × 0.5–1.2 cm; base broadly cuneate; apex acute or rounded; abaxial surface pale green, scales 3–6 × their own diameter apart, small, at first golden; rapidly becoming dark brown; adaxial surface dark green or bright green, usually scaly. Inflorescence 1- or 2-flowered. Pedicel 1–2 cm, scaly, in fruit to 3.5 cm; calyx lobes 1–2.5 mm, ovate or oblong, persisting to enclose mature capsule, scaly, margin sparsely ciliate; corolla broadly funnelform, purple, 2.1–2.8 cm, tube 12–14 mm, outer surface densely pubescent and sparsely scaly; stamens 10, shorter than corolla, filaments pubescent towards base; ovary ovoid, 2–3 mm, densely scaly; style slender, straight, shorter than corolla, longer than stamens, glabrous. Capsule cylindric-ovoid or cylindric, 6–10 mm, densely scaly. Fl. Apr–May.

Alpine grassy slopes or steeps; 3300–4000 m. SE Xizang [NE Myanmar].

1a. Leaf apex rounded ..... 120a. var. *uniflorum*
1b. Leaf apex acute ..... 120b. var. *imperator*

120a. Rhododendron uniflorum var. **uniflorum**

单花杜鹃(原变种) dan hua du juan (yuan bian zhong)

Leaf apex rounded. Fl. Apr–May.

● Alpine grassy slopes or steeps; 3300–4000 m. SE Xizang.

120b. Rhododendron uniflorum var. **imperator** (Kingdon Ward) Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 113, 1978.

尖叶单花杜鹃 jian ye dan hua du juan

Rhododendron imperator Hutchinson & Kingdon Ward in J. B. Stevenson, Sp. Rhodod. 440. 1930.

Leaf apex acute.

SE Xizang [NE Myanmar].

Rhododendron uniflorum var. *imperator* has been found around the Doshong La in S Xizang, and is reported to be much commoner there than the type variety.

121. Rhododendron pemakoense Kingdon Ward, Gard. Chron., ser. 3, 88: 298. 1930.

假单花杜鹃 jia dan hua du juan

Dwarf shrubs, erect to prostrate, evergreen, 0.3–0.6(–0.8) m tall, scaly, pubescent. Petiole 1–3 mm, sparsely scaly; leaf blade leathery, obovate, oblong-obovate or obovate-elliptic, 1–2(–3) × 0.5–1(–1.5) cm; base cuneate; apex acute or rounded; abaxial surface pale green, scales 0.5–1.5 × their own diameter apart, small, unequal, golden when young, often becoming dark brown; adaxial surface grayish green, usually scaly. Inflorescence 1- or 2-flowered. Pedicel slender, 0.5–1.5 cm, scaly, in fruit to 3.8 cm; calyx reddish purple; lobes 1–2(–4) mm, ovate-lanceolate or oblong, densely scaly, margin long-ciliate; corolla tubular-campanulate or tubular-funnelform, pink to pale purple, purplish mauve, 2.4–3.5 cm, tube slightly longer than corolla lobes; outer surface densely pubescent and sparsely scaly; stamens 10, shorter than corolla, filaments densely pubescent towards base; ovary ovoid, 2–3 mm, densely scaly; style slender, straight, as long as or longer than corolla, base glabrous or sparsely scaly. Capsule cylindric, 6–10 mm, densely scaly. Fl. Apr–Jun, fr. Sep–Oct.

Cliffs, ledges, ravine sides; 2900–3600 m. SE Xizang [NE India].

11. **Rhododendron** subsect. **Cinnabarina** (Hutchinson) Sleumer, Bot. Jahrb. Syst. 74: 534. 1949.

朱砂杜鹃亚组 zhu sha du juan ya zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Rhododendron ser. *Cinnabarina* Hutchinson in J. B. Stevenson, Sp. Rhodod. 221. 1930 [“*Cinnabarinum*”].

Shrubs, mostly evergreen, 1–7.5 m tall, rarely epiphytic; young shoots scaly. Leaf blade papery or leathery, variable in shape; abaxial surface scales small, usually unequal, close but not contiguous, broadly or narrowly rimmed; adaxial surface usually scaly.

Inflorescence terminal or axillary, 2–6(–8)-flowered. Pedicel scaly. Flowers usually pendulous, nectar copious. Calyx small, 1–2 mm, discoid or undulate, scaly, sometimes ciliate on margin; corolla tubular to narrowly or shortly campanulate, fleshy, waxy, lobes short, cinnabar red, crimson, purple to bright pinkish mauve, or yellow to bicolored, yellow and orange, creamy yellow, or salmon pink, often pruinose outside; stamens 10(–12), shorter or slightly longer than corolla; ovary 5-locular; style longer than stamens, declinate, glabrous or pubescent at base. Capsule cylindric, 8–15 mm, scaly. Seeds wingless, obscurely finned.

About eight species: Bhutan, China, India, Myanmar, Nepal, Sikkim; six species (three endemic) in China.

1a. Abaxial leaf surface puberulous, with scales uniform in size ..... 127. *R. lateriflorum*
1b. Abaxial leaf surface not puberulous, with scales unequal in size.
  2a. Inflorescences terminal, umbellate; corolla lobes 1/3–1/2 as long as corolla, spreading.
    3a. Leaves generally more than 2.2 × as long as broad; corolla tubular to narrowly campanulate, variable in color: yellow to cinnabar red (sometimes 2-colored), deep plum crimson, or rarely plum purple ..... 122. *R. cinnabarinum*
    3b. Leaves generally less than 2.2 × as long as broad; corolla campanulate, creamy yellow or purple .... 123. *R. xanthocodon*
  2b. Inflorescences terminal and axillary, shortly racemose; corolla lobes ca. 1/4 as long as corolla, erect.
    4a. Leaf blade elliptic to obovate; inflorescence usually 2- or 3-flowered; stamens 10–12; calyx deeply 5-lobed, lobes ca. 1.5 mm ..... 126. *R. igneum*
    4b. Leaf blade lanceolate, lanceolate-oblong, oblanceolate-ovate to long-ovate; inflorescence usually 4–6-flowered; stamens 10; calyx shallowly 5-lobed, lobes ca. 1 mm.
      5a. Leaf blade leathery, (3–)4–8(–15) cm, scales on abaxial surface dense, ca. their own diameter apart; style usually pubescent towards base ..... 124. *R. keysii*
      5b. Leaf blade papery, 8–19 cm, scales on abaxial surface sparse, 1–2 × their own diameter apart; style glabrous ..... 125. *R. tenuifolium*

122. Rhododendron cinnabarinum J. D. Hooker, Rhododendr. Sikkim-Himalaya 1: t. 8. 1849.

朱砂杜鹃 zhu sha du juan

Shrubs, often straggling, usually evergreen, rarely semideciduous, 1–3(–7) m tall. Petiole 5–20 mm, scaly; leaf blade leathery, narrowly to broadly elliptic, oblong-elliptic to oblong-lanceolate or ovate, 3–6(–11) × 1.5–2.5(–5) cm, more than 2.2 × as long as broad; base usually rounded; apex obtuse, mucronate; abaxial surface pale glaucous-green, scales 0.5–1 × their own diameter apart, or nearly contiguous, usually unequal, brown or brown-red, rather fleshy; adaxial surface grayish green, usually scaly. Inflorescence terminal, umbellate, 2–4(–7)-flowered. Pedicel 0.5–1(–1.6) cm; calyx discoid or undulate, 1–2 mm, usually scaly; corolla tubular to narrowly campanulate, variable in color: yellow to cinnabar red (sometimes 2-colored), deep plum crimson, or rarely plum purple, 2.5–3.8 cm, fleshy; lobes spreading, ca. 1/3 as long as corolla, without or rarely with scales abaxially; stamens 10, slightly shorter than corolla, filaments pubescent towards base, rarely glabrous; ovary scaly, apex sometimes puberulous; style sparsely pubescent towards base or glabrous. Capsule cylindric or cylindric-ovoid, ca. 10 mm, densely scaly. Fl. May, fr. Sep.

Forests, open woodlands, forest margins, *Rhododendron* thickets, among shrubs, hillsides; 1900–4000 m. S Xizang, NW Yunnan [Bhutan, NE India, NE Myanmar, Nepal, Sikkim].

1a. Corolla plum purple, lobes with scales abaxially ..... 122b. subsp. *tamaense*
1b. Corolla yellow to cinnabar red (sometimes 2-colored) or deep plum crimson, lobes without scales abaxially ..... 122a. subsp. *cinnabarinum*

122a. Rhododendron cinnabarinum subsp. **cinnabarinum**

朱砂杜鹃(原亚种) zhu sha du juan (yuan ya zhong)

Leaf blade oblong-elliptic to oblong-lanceolate, or ovate to elliptic. Corolla tubular to narrowly campanulate, yellow to cinnabar red (sometimes 2-colored) or deep plum crimson; lobes without scales abaxially.

Forests, open woodlands, among shrubs, hillsides; 1900–4000 m. S Xizang [Bhutan, NE India, Nepal, Sikkim].

Two varieties have been recorded from China: var. *cinnabarinum* and var. *roylei* (J. D. Hooker) Hutchinson in J. B. Stevenson, Sp. Rhodod. 222. 1930; *R. roylei* J. D. Hooker, Rhododendr. Sikkim-Himalaya 1: t. 7. 1849 [*"roylii"*]). The latter taxon is distinguished by its deep plum crimson corolla. The populations of var. *cinnabarinum* in W Bengal, India, exhibit a range of corolla colors, from yellow or orange, through 2-colored forms, to deep cinnabar.

Rhododendron cinnabarinum var. *purpurellum* Cowan (Notes Roy. Bot. Gard. Edinburgh 21: 147. 1951) has also been recorded from China and was accepted by Yang in FRPS (57(1): 136. 1999). However, Cullen (Notes Roy. Bot. Gard. Edinburgh 39: 124. 1980) treated it as a purple-flowered variant in the synonymy of *R. cinnabarinum* subsp. *xanthocodon* (*R. xanthocodon* in the present account).

122b. Rhododendron cinnabarinum subsp. **tamaense** (Davidian) Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 113. 1978.

龙江朱砂杜鹃 long jiang zhu sha du juan

Rhododendron tamaense Davidian, Rhododendron Magnolias Camellias 1972: 54. 1972.

Leaves semideciduous; leaf blade more than 2.2 × as long as broad. Corolla narrowly campanulate, plum purple; lobes with scales abaxially.

Forest margins, *Rhododendron* thickets; 3300–3500 m. NW Yunnan (Dulongjiang) [NE Myanmar].

123. Rhododendron xanthocodon Hutchinson, Gard. Chron., ser. 3, 95: 409. 1934.

黄铃杜鹃 huang ling du juan

Rhododendron cinnabarinum J. D. Hooker var. *purpurellum* Cowan; *R. cinnabarinum* subsp. *xanthocodon* (Hutchinson) Cullen; *R. concatenans* Hutchinson.

Erect shrubs or small trees, evergreen, 1.5–7.5 m tall. Petiole 8–15 mm, scaly; leaf blade leathery, elliptic or oblong-elliptic, 3–7.5 × 1.5–4.5 cm, less than 2.2 × as long as broad; base usually rounded; apex obtuse, mucronate; abaxial surface pale green, scales less than 1 × their own diameter apart, unequal, dark brown, brown or golden; adaxial surface olive green, shiny, scales dense. Inflorescence terminal, shortly racemose or nearly umbellate, 2–6(–8)-flowered. Pedicel ?usually 1.5–2.5 cm, sparsely scaly; calyx lobes 1–2 mm, shortly triangular or ovate, densely scaly abaxially and on margin; corolla tubular-campanulate, creamy yellow, 2.5–3.2 cm; lobes slightly spreading, rounded to oblong, 1/3 as long as corolla; stamens 10, shorter than corolla, filaments pubescent towards base; ovary densely scaly; style longer than stamens, glabrous. Capsule cylindric, ca. 13 mm, densely scaly. Fl. May–Jul.

Abies forests, mixed forests; 2900–4100 m. Xizang [Bhutan, NE India].

The pedicels are sometimes short in material that is otherwise typical *Rhododendron xanthocodon*. Both this species and its synonym, *R. concatenans,* were described from cultivated material, so the length of the pedicels and the number of flowers per inflorescence could well have been atypical. In distinguishing *R. xanthocodon* from *R. cinnabarinum,* the ratio between the leaf length and width is reasonably, though not exclusively, diagnostic.

124. Rhododendron keysii Nuttall, Hooker's J. Bot. Kew Gard. Misc. 5: 353. 1853.

管花杜鹃 guan hua du juan

Rhododendron keysii var. *unicolor* Hutchinson.

Erect shrubs, evergreen, rarely epiphytic, 1–4(–6) m tall; branches slender, straggling. Petiole 5–16 mm, scaly; leaf blade leathery, lanceolate-elliptic or lanceolate-oblong, (3–)4–8(–15) × 1–3(–4) cm; base cuneate; apex acute; abaxial surface pale green, scales less than 1 × their own diameter apart, unequal, dark brown to brown, broadly rimmed; adaxial surface dark green, shiny, scales dense, brown, 1–3 × their own diameter apart. Inflorescence usually axillary, shortly racemose, (2–)4–6-flowered; flowers pendulous. Pedicel slender, 0.4–0.8 cm, sparsely scaly; calyx lobes ca. 1 mm, shortly ovate, scaly, margin ciliate; corolla tubular, slightly ventricose, orange or salmon pink to deep red, (1.4–)1.8–2.5 cm; lobes erect, oblong, small; stamens 10, filaments densely pubescent proximally; style usually pubescent proximally. Capsule cylindric, 8–10 mm, densely scaly. Fl. Jun–Jul, fr. Oct.

Forests, thickets; 2400–4300 m. S Xizang [Bhutan, NE India, Sikkim].

125. Rhododendron tenuifolium R. C. Fang & S. H. Huang, Fl. Xizangica 3: 647. 1986.

薄叶管花杜鹃 bao ye guan hua du juan

Erect shrubs, ca. 3 m tall; young branches brown, densely scaly. Leaf blade papery, lanceolate, or oblanceolate-ovate to long-ovate, 8–19 × 1.6–4.3 cm; base tapering; apex acute or rounded; abaxial surface scales 1–2 × their own diameter apart, unequal, the larger scales dark brown, smaller pale brown, broadly rimmed; adaxial surface sparsely scaly, scales of two colors, dark brown or pale brown. Inflorescence axillary, shortly racemose, 5- or 6-flowered; flowers pendulous. Pedicel slender, 0.4–0.8 cm, scaly; calyx undulate, small, densely scaly, margin ciliate; corolla tubular, salmon pink, ca. 2 cm; lobes erect, oblong; stamens 10, slightly longer than corolla, filaments sparsely pubescent proximally; ovary densely scaly; style glabrous.

● *Tsuga* forests; ca. 3000 m. S Xizang.

126. Rhododendron igneum Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 235. 1937.

肉红杜鹃 rou hong du juan

Shrubs, (2.5–)3–4 m tall; branches slender, scaly. Petiole 5–6 mm, densely scaly; leaf blade papery, broadly elliptic, or elliptic, sometimes nearly obovate, 3–7 × 2–3 cm; base obtuse or tapering; apex acute or obtuse, mucronate; abaxial surface pale yellowish green, scales ca. 2 × their own diameter apart; adaxial surface green, sparsely yellowish scaly. Inflorescence terminal or axillary, 2- or 3-flowered. Pedicel ca. 1 cm, densely scaly; calyx lobes distinct, ca. 1.5 mm, scaly, margin scaly and ciliate; corolla tubular, scarlet, ca. 2 cm; lobes 5–6, triangular or nearly ovate, ca. 0.4 cm; stamens 10–12, slightly longer than corolla, filaments sparsely pubescent towards base; ovary densely scaly; style longer than corolla, pubescent toward base. Fl. Jul.

● Dense mixed forests; ca. 2800 m. SE Xizang.

Rhododendron igneum is very close to *R. keysii,* but differs in the broader leaves, fewer flowers in the inflorescence, and in the slightly longer calyx lobes. It has been treated as a synonym of the latter species by some authors.

127. Rhododendron lateriflorum R. C. Fang & A. L. Chang, Notes Roy. Bot. Gard. Edinburgh 41: 160. 1983.

侧花杜鹃 ce hua du juan

Shrubs, evergreen, ca. 5 m tall; juvenile branchlets grayish brown, with dense small caducous scales. Petiole 8–14 mm, scaly; leaf blade leathery, narrowly oblong or lanceolate, 4.5–8 × 0.9–1.9 cm; base cuneate; apex acute, mucronate; abaxial surface glaucescent, scales 1–2 × their own diameter apart, puberulous; adaxial surface scales dense. Flowers not seen, infructescence shortly racemose, 2–3-fruited. Fruiting pedicels curved ca. 2–3 cm, densely scaly; fruiting calyx lobes ca. 1 mm, triangular, scaly, persistent; style slender, persistent, densely pubescent towards base. Capsule shortly cylindric, 10–15 × 4–5 mm, densely scaly. Fr. May–Nov.

● Forests, valleys; 2700–3400 m. NW Yunnan.

The flowers of this distinctive species are not known. It is possible that *Rhododendron lateriflorum* should be placed in some other subsection, as the puberulous abaxial leaf surfaces are quite unlike those of the remaining species in *R.* subsect. *Cinnabarina*.

Flora of China 14: 260–455. 2005.

12. **Rhododendron** subsect. **Tephropepla** Sleumer, Bot. Jahrb. Syst. 74: 532. 1949.

灰背杜鹃亚组 hui bei du juan ya zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Small to moderately sized shrubs, 0.3–3(–5) m tall sometimes epiphytic; young shoots scaly, sometimes puberulous. Leaf blade leathery, mostly relatively narrow; abaxial surface often pale glaucous green, papillose, scales usually deeply sunk in pits, sometimes of 2 forms, golden, brown or dark brown to black; adaxial surface usually scaly, occasionally glabrous or puberulous. Inflorescence usually terminal, rarely axillary, umbellate or racemose-umbellate, (1–)3–9-flowered. Pedicels scaly; calyx large, (2–)3–8 mm, deeply 5-lobed, scaly, margin sometimes ciliate; corolla tubular-campanulate to funnel-campanulate, pink, white, or yellow; outer surface usually scaly, sometimes glabrous; stamens 10, declinate; ovary 5-locular; style straight, glabrous or scaly at base. Capsule cylindric, 5–10 mm, scaly. Seeds wingless, obscurely finned.

Six species: China, India, Myanmar; six species (four endemic) in China.

1a. Scales on abaxial leaf surface very distant, usually 2–4 × their own diameter apart; inflorescence racemose; calyx lobes oblong to lanceolate.
  2a. Corolla purplish, 2.5–2.8 cm ..... 133. *R. tsinlingense*
  2b. Corolla white to pink, 1.3–2.5 mm.
    3a. Leaf blade 5–13 cm, with conspicuous acuminate drip tip; corolla ca. 2.5 cm, white; calyx ca. 8 mm ..... 131. *R. hanceanum*
    3b. Leaf blade 1.6–6 cm, acute, without a conspicuous drip tip; corolla 1.3–2 cm, white to pink; calyx 2–3.5 mm ..... 132. *R. longistylum*
1b. Scales on abaxial leaf surface contiguous or up to their own diameter apart; inflorescence umbellate or racemose-umbellate; calyx lobes usually rounded.
  4a. Corolla pink to deep purplish rose, outside often not scaly; calyx 5–8 mm, lobes spreading ..... 130. *R. tephropeplum*
  4b. Corolla cream to yellow, outside often scaly; calyx 3–5 mm, lobes erect or reflexed.
    5a. Stem and branches with rough bark; calyx lobes erect; scales on abaxial leaf surface not contiguous or overlapping ..... 128. *R. xanthostephanum*
    5b. Stem and branches with smooth bark; calyx lobes reflexed; scales on abaxial leaf surface contiguous or overlapping ..... 129. *R. auritum*

128. Rhododendron xanthostephanum Merrill, Brittonia 4: 148. 1941.

鲜黄杜鹃 xian huang du juan

Rhododendron aureum Franchet, J. Bot. (Morot) 9: 394. 1895, not Georgi (1775).

Shrubs, evergreen, 1–3(–5) m tall; mature bark smooth, reddish brown, somewhat pruinose; branchlets densely scaly. Petiole 5–13 mm, scaly; leaf blade leathery, oblong-lanceolate, (3–)5–8(–10) × (1–)2–2.5(–3) cm; base usually cuneate; apex acute or rounded, mucronate; abaxial surface silvery brown, scales ca. 0.5 × their own diameter apart, small, unequal, most sunk in pits; adaxial surface brownish green, scaly. Inflorescence usually terminal, racemose-umbellate, 3–5-flowered. Pedicel (0.3–)0.5–0.7(–1.8) cm, densely scaly; calyx lobes (2–)3–5(–7) mm, rounded, ovate or oblong, erect or spreading, scaly, not ciliate; corolla tubular-campanulate, bright to deep yellow, (1.8–)2–2.5(–2.8) cm, outer surface scaly, lobes shorter than tube; stamens 10, ca. as long as corolla, filaments pubescent towards base; ovary densely scaly; style slender, straight, longer than corolla, scaly at base. Capsule cylindric, (5–)8–10(–11) mm, scaly.

Abies and *Pinus* forests, woods, scrub, cliffs; 1500–3500(–4000) m. SE Xizang, NW Yunnan [NE India, N Myanmar].

129. Rhododendron auritum Tagg, Rhododendron Soc. Notes 3: 278. 1932.

折萼杜鹃 zhe e du juan

Shrubs, evergreen, 1–3 m tall; stem and branches coppery red, with brown, smooth, flaking bark. Petiole 5–8 mm, scaly; leaf blade leathery, oblong, lanceolate or oblong-lanceolate, 2.5–6.6 × 1–2.7 cm; base obtuse or cuneate; apex acute or obtuse, mucronate; abaxial surface pale glaucous-green, scales overlapping to 0.5 × their own diameter apart, unequal, smaller scales more numerous, brown or dark brown, larger scales scattered; adaxial surface green, shiny, scaly. Inflorescence terminal or axillary, umbellate, 4–7-flowered. Pedicel 0.5–1.3 cm, densely scaly; calyx lobes 3–5 mm, rounded, ovate or oblong, reflexed, persistent in fruit, scaly abaxially, margin not ciliate; corolla tubular-campanulate, pale yellow to cream, sometimes with a slight tinge of pink on lobes, (1.8–)2–2.5 cm, outer surface scaly; stamens 10, ca. as long as corolla, filaments pubescent towards base; ovary densely scaly; style slender, as long as or longer than corolla, basal 1/3–1/2 scaly, otherwise glabrous. Capsule cylindric-ovate, 8–10 mm, densely scaly. Fl. Apr–Jun, fr. Jul–Sep.

● Valleys, open stony banks, sheltered cliffs; 2100–2600 m. SE Xizang.

130. Rhododendron tephropeplum I. B. Balfour & Farrer, Notes Roy. Bot. Gard. Edinburgh 13: 302. 1922.

灰被杜鹃 hui bei du juan

Shrubs, evergreen, 0.3–1.5 m tall; bark brown, peeling. Petiole 3–10 mm, scaly; leaf blade leathery, oblong-obovate, narrowly oblanceolate, to narrowly elliptic, (2–)5–7(–10) × (1–)1.5–2.5(–4) cm; base cuneate; apex obtuse, mucronate; abaxial

surface pale glaucous-green, papillose, scales ca. 0.5 × their own diameter apart, sometimes in 2 sizes, the smaller black or brown, with or without widely scattered larger scales; adaxial surface dark green, shiny, scaly. Inflorescence terminal or axillary, umbellate, 3–9-flowered. Pedicel 1–3 cm, densely scaly; calyx lobes 5–8 mm, oblong to rounded, erect or spreading, persistent in fruit, sparsely scaly, margin ciliate or not; corolla tubular-campanulate, pale or dark rose, pink, or purple, 1.5–3.2 cm; tube 11–20 mm, outer surface usually sparsely scaly; stamens 10, shorter than corolla, filaments pubescent towards base; ovary densely scaly; style slender, nearly as long as corolla, longer than stamens, scaly at base or along lower 1/2, otherwise glabrous. Capsule cylindric-ovate, 5–10 mm, densely scaly. Fl. May–Jun, fr. Jul–Aug.

Alpine meadows, rocky slopes, open stony banks, screes, cliffs; 2400–4600 m. SE Xizang, NW Yunnan [NE India, NE Myanmar].

131. Rhododendron hanceanum Hemsley, J. Linn. Soc., Bot. 26: 24. 1889.

疏叶杜鹃 shu ye du juan

Shrubs, evergreen, 1–2 m tall; branchlets scaly. Petiole 4–9 mm, densely scaly; leaf blade leathery, ovate-lanceolate to obovate, 5–13 × 2–6 cm; base tapering to broadly cuneate or rounded; apex acuminate with a conspicuous drip tip; abaxial surface pale green, scales 2–3 × their own diameter apart, small, golden brown; adaxial surface bright green, glabrous. Inflorescence terminal, racemose, 7–9-flowered; rachis to 15 mm. Pedicel ca. 1 cm, scaly; calyx lobes ca. 8 mm, ovate-oblong to lanceolate, persistent in fruit, densely scaly abaxially, margin ciliate; corolla funnel-campanulate, white, ca. 2.5 cm, tube ca. 13 mm, outer surface sparsely scaly, inner surface sparsely pilose at base; stamens 10, filaments pilose towards base; ovary densely scaly; style slender, longer than stamens and shorter than corolla, glabrous. Capsule long-cylindric, ca. 10 mm, densely scaly. Fl. Apr–May, fr. Oct.

● Cliffs; 1200–2500 m. C Sichuan.

132. Rhododendron longistylum Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 514. 1913.

长柱杜鹃 chang zhu du juan

Shrubs, evergreen, 0.5–2 m tall; branchlets slender, sparsely scaly, usually puberulous. Petiole 2–6 mm, scaly, sometimes also puberulous; leaf blade oblong-obovate, to oblanceolate, 1.6–6 × 0.6–1.5 cm; base tapering; apex acute, mucronate; abaxial surface pale green, scales 2–4 × their own diameter apart, unequal, golden and brown, with broad rims; adaxial surface dark green, sparsely persistently scaly, puberulous along main vein. Inflorescence terminal, (1–)3-flowered. Pedicel 1–1.5 cm; calyx lobes to 4 mm, triangular, obtuse, persistent in fruit, scaly, slightly puberulous, margin fringed with scales; corolla narrowly funnelform or funnel-campanulate, white, ca. 2 cm, tube ca. 12 mm, outer surface glabrous; stamens 10, filaments pilose at base; style slender, much longer than corolla, not scaly. Capsule broadly cylindric, 5–8 mm, scaly. Fl. Apr–May, fr. Jul–Oct.

● Thickets, slopes, cliffs; 1000–2300 m. C Sichuan, NE Yunnan.

1a. Branchlets, petioles and pedicels puberulous ..... 132a. subsp. *longistylum*
1b. Branchlets, petioles and pedicels without hairs ..... 132b. subsp. *decumbens*

132a. Rhododendron longistylum subsp. **longistylum**

长柱杜鹃(原亚种) chang zhu du juan (yuan ya zhong)

Branchlets, petiole, and pedicel puberulous. Fl. Apr–May, fr. Jul–Oct.

● Thickets, scrub-covered rocky slopes, cliffs; 1000–2300 m. C Sichuan.

132b. Rhododendron longistylum subsp. **decumbens** R. C. Fang, Acta Bot. Yunnan. 4: 249. 1982.

平卧长柱杜鹃 ping wo chang zhu du juan

Branchlets, petiole, and pedicel without hairs.

● Slopes; ca. 1700 m. NE Yunnan.

133. Rhododendron tsinlingense W. P. Fang ex J. Q. Fu in K. T. Fu & J. Q. Fu, Fl. Tsinling. 1(4): 393. 1983.

秦岭杜鹃 qin ling du juan

Shrubs; young shoots sparsely scaly. Petiole 0.6–0.8 cm, sparsely scaly, puberulent or glabrescent; leaf blade stiffly papery, oblong to narrowly oblong, 7–9 × 2.5–3.5 cm; base cuneate; apex attenuate to shortly acuminate, mucronate; abaxial surface grayish, scales sparse, yellow; adaxial surface green, puberulent. Inflorescence an umbel, 3–5-flowered. Calyx cupular; lobes 1.5–2 mm, ciliate, apex acute; corolla funnelform, purplish, 2.5–2.8 cm, lobes ca. 1.5 cm; stamens 10, 1.5–3 cm, exserted, filaments densely white-villous at base; ovary cylindrical-ovoid, 3–5 mm; style ca. 3.5 cm, glabrous. Capsule not known. Fl. May.

● About 1400 m. SW Shaanxi (Lüeyang).

The present authors have seen no material of this species. The original authors considered it to be allied to *Rhododendron longistylum,* but described it as differing in its larger, papery leaf blade and larger, purplish corolla.

13. **Rhododendron** subsect. **Micrantha** (Hutchinson) Sleumer, Bot. Jahrb. Syst. 74: 533. 1949.

照山白亚组 zhao shan bai ya zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Rhododendron ser. *Micrantha* Hutchinson in J. B. Stevenson, Sp. Rhodod. 500. 1930 [“*Micranthum*”].

Shrubs, 2–3 m tall; young shoots scaly, puberulous. Leaf blade usually lanceolate; abaxial surface scales contiguous or nearly so, broadly rimmed, brownish; adaxial surface sparsely scaly. Inflorescence terminal, racemose, 10–28-flowered; rachis 6–26 mm;

pedicels scaly, sometimes puberulous. Flowers very small. Calyx 1–3 mm, 5-lobed, scaly, ciliate on margin; corolla campanulate or tubular-campanulate, 0.5–1.2 cm, sometimes deeply lobed, white, or yellow; outer surface scaly; stamens 10, about as long as corolla; ovary 5-locular; style straight, glabrous. Capsule cylindric, 4–11 mm, scaly. Seed prominently winged and finned.

Three species: China, Korea; three species (two endemic) in China.

1a. Corolla yellow ..... 136. *R. liaoxigense*
1b. Corolla white.
2a. Leaf blade (1.5–)3–5 cm, abaxial surface glabrous; corolla 4–8 mm ..... 135. *R. micranthum*
2b. Leaf blade 9–12.5 cm, abaxial surface inconspicuously arachnoid-puberulous; corolla ca. 12 mm ..... 134. *R. brevicaudatum*

134. Rhododendron brevicaudatum R. C. Fang & S. S. Chang, Acta Bot. Yunnan. 10: 369. 1988.

短尾杜鹃 duan wei du juan

Shrubs, evergreen, 2–3 m tall; branchlets densely scaly, puberulous. Petiole 8–14 mm; leaf blade leathery, lanceolate-oblong, 9–12.5 × 2.5–3.3 cm; base rounded; apex shortly caudate-acuminate; abaxial surface inconspicuously arachnoid puberulous, scales contiguous or nearly 1 × their own diameter apart, small; adaxial surface sparsely scaly. Inflorescence racemose, many-flowered; rachis 6–8(–20) mm, densely scaly. Pedicel 0.5–0.8 cm, densely scaly; calyx lobes 1.5–3 mm, ovate or triangular-ovate, densely scaly abaxially; margin ciliate; corolla tubular-campanulate, white, ca. 1.2 cm, tube more than 2 × as long as lobes, outer surface densely scaly, inner surface puberulous; lobes oblong; stamens 10, often as long as corolla, filaments pubescent; ovary densely scaly; style shorter than stamens, glabrous. Capsule 6–11 mm, densely scaly. Fl. Apr–Jun, fr. Sep–Oct.

● Forests, valleys; 1400–2000 m. E Guizhou.

This taxon is only distantly related to the other two species in *Rhododendron* subsect. *Micrantha* and may have closer affinities with some other subsection.

135. Rhododendron micranthum Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 10(7): 155. 1837.

照山白 zhao shan bai

Rhododendron pritzelianum Diels; *R. rosthornii* Diels.

Shrubs, evergreen, up to 2.5 m tall; branchlets slender, scaly, puberulous. Petiole 3–8 mm, scaly; leaf blade almost leathery, oblanceolate, oblong-elliptic, to lanceolate, (1.5–)3–4(–6) × (0.4–)9–12(–2.5) cm; base narrowly cuneate; apex obtuse or acute, mucronate; abaxial surface scales contiguous or ca. 0.5 × their own diameter apart, brownish, broadly rimmed; adaxial surface dark green, shiny, usually sparsely scaly. Inflorescence racemose, 10–28-flowered; rachis 10–26 mm. Pedicel 0.8–2 cm, densely scaly; calyx lobes 1–3 mm, linear or triangular-lanceolate, scaly, margin ciliate; corolla campanulate, white, (0.4–)0.5–0.8(–1) cm, tube slightly shorter than lobes; outer surface scaly; inner surface glabrous; stamens 10, nearly as long as corolla; filaments glabrous; ovary densely scaly; style nearly as long as stamens, glabrous. Capsule cylindric, (4–)5–6(–8) mm, scaly. Fl. May–Jun, fr. Aug–Nov.

Thickets, scrub, slopes, dry gorges, cliffs, rocks; 1000–3000 m. N China, also Henan, Hubei, Hunan, Sichuan [Korea].

136. Rhododendron liaoxigense S. L. Tung & Z. Lu, Bull. Bot. Res., Harbin 8(2): 155. 1988 [*"liaoxigensis"*].

辽西杜鹃 liao xi du juan

Shrubs, up to 2 m tall; branchlets densely puberulous. Petiole 2–8 mm; leaf blade almost leathery, obovate-elliptic, 2.5–5.5 × 1.1–1.8 cm; base cuneate; apex obtuse or acute; abaxial surface yellowish white, scales dense, yellowish brown; adaxial surface green, sparsely scaly, glandlike, yellowish brown. Inflorescence racemose, more than 13-flowered. Pedicel 1.6–1.8 cm, puberulous; calyx lobes 5, lanceolate; corolla yellow, lobes 5, obovate; stamens 10, slightly longer than corolla; style longer than corolla. Capsule cylindric, 4–5 mm, scaly. Fl. Jun, fr. Jul–Aug.

● Upland areas; ca. 500 m. W Liaoning.

14. Rhododendron subsect. Boothia (Hutchinson) Sleumer, Bot. Jahrb. Syst. 74: 530. 1949.

黄花杜鹃亚组 huang hua du juan ya zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Rhododendron ser. *Boothia* Hutchinson in J. B. Stevenson, Sp. Rhodod. 155. 1930 [*"Boothii"*].

Shrubs, (0.05–)0.3–2.5(–3) m tall, often epiphytic; young shoots scaly, mostly setose, sometimes otherwise glabrous. Leaves large; leaf blade leathery; abaxial surface whitish papillose or glaucous, scales 0.5–2 × their own diameter apart or sometimes contiguous, saucer-shaped or vesicular, deeply sunk in pits, golden yellow to brown or dark brown; adaxial surface glabrous or scaly, sometimes setose on midrib and veins. Inflorescence terminal, 1–11-flowered; pedicels scaly, usually setose; calyx (1–)2–15 mm, usually 5-lobed, sometimes reduced to undulate rim, scaly, margin mostly ciliate or setose; corolla broadly campanulate or rotate to saucer-shaped, usually yellow, rarely greenish, white or reddish, sometimes spotted, outer surface scaly, sometimes sparsely pubescent; stamens 10; ovary 5(or 6)-celled; style short, thick, sharply bent, usually scaly at base. Capsule ovoid to cylindric-ovoid, 8–17 mm, scaly. Seed prominently winged and finned.

Seven species: Bhutan, China, India, Myanmar, Sikkim; seven species (two endemic) in China.

1a. Inflorescence 1–2(–3)-flowered; scales on abaxial leaf surface vesicular, with narrow rim.

2a. Corolla yellow, broadly campanulate; adaxial leaf surface with only a few setae at base of midrib ..... 137. *R. megeratum*
2b. Corolla white, sometimes tinged pink, rotate; adaxial leaf surface setose ..... 138. *R. leucaspis*
1b. Inflorescence usually 3–11-flowered; scales on abaxial leaf surface usually saucer-shaped, with broad rim.
3a. Pedicels 20–50 mm, thin, flexuous; corolla 0.9–1.4 cm; calyx lobes usually reflexed ..... 139. *R. leptocarpum*
3b. Pedicels up to 20 mm, stout, rigid; corolla 1.5–3(–4) cm; calyx lobes usually not reflexed.
4a. Calyx saucerlike, lobes reduced to an undulate rim, 1–2 mm ..... 140. *R. chrysodoron*
4b. Calyx lobes rounded, ovate to oblong, 3–15 mm.
5a. Pedicels setose; calyx lobes (7–)10–15 mm; leaf apex acuminate; midrib and lateral veins adaxially setose ..... 141. *R. boothii*
5b. Pedicels not setose; calyx lobes 3–8 mm; leaf apex rounded or obtuse; midrib and main veins adaxially glabrous.
6a. Inflorescence 4–8-flowered; calyx 3–6 mm; corolla 13–20 mm; scales on abaxial leaf surface usually uniform, small, 0.5–1 × their own diameter apart ..... 142. *R. sulfureum*
6b. Inflorescence 2–3-flowered; calyx 6–8 mm; corolla 20–26 mm; scales on abaxial leaf surface dimorphic, larger, contiguous ..... 143. *R. dekatanum*

137. Rhododendron megeratum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 140. 1920.

招展杜鹃 zhao zhan du juan

Dwarf shrubs, evergreen, sometimes epiphytic, (0.05–)0.3–0.6(–0.8) m tall; branchlets setose. Petiole 3–6 mm, scaly, setose; leaf blade leathery, elliptic, elliptic-obovate to broadly elliptic, (1.5–)3–4 × (1–)1.5–2 cm; base rounded; margin revolute, usually setose; apex obtuse, mucronate; abaxial surface whitish papillose, scales 0.5–1 × their own diameter apart, varying in size, brown, bladderlike, sunk in pits; adaxial surface dark green, shiny, glabrous except for a few bristles at base of midrib, Inflorescence 1–2(–3)-flowered. Pedicel ca. 1 cm, scaly, setose; calyx lobes 6–10 mm, obovate to rounded, persisting to enclose mature capsule, scaly, ciliate; corolla broadly campanulate, yellow or rarely white, rarely with purple spots, (1.6–)2–2.5 cm, tube (8–)10–12 mm, scaly; stamens 10, shorter than corolla, filaments pubescent towards base or to 2/3 of their length; ovary scaly; style stout, sharply bent, short, sparsely scaly at base. Capsule ovoid to cylindric-ovoid, 8–11 mm, scaly. Fl. Apr–Jun, fr. Jul–Sep.

Forests, rocky slopes, cliff ledges, boulders, sometimes epiphytic; 2500–4200 m. S Xizang, NW Yunnan [NE India, NE Myanmar].

138. Rhododendron leucaspis Tagg, Gard. Chron. 85: 308. 1929.

白背杜鹃 bai bei du juan

Dwarf shrubs, erect, straggly, evergreen, sometimes epiphytic, 0.3–0.6(–1) m tall; branchlets scaly, setose. Petiole 4–9 mm, scaly, setose; leaf blade leathery, broadly elliptic to obovate, 3–6 × 1.5–3 cm; base cuneate; apex obtuse, mucronate; abaxial surface glaucous, scales 0.5–1 × their own diameter apart, varying in size, brown, bladderlike, sunk in pits; adaxial surface and margin sparsely setose. Inflorescence 1–2(–3)-flowered. Pedicel 0.6–1 cm, scaly, usually not setose; calyx greenish often also reddish; lobes (6–)7–8 mm, obovate to rounded, persisting to enclose mature capsule, scaly, ciliate; corolla rotate or saucer-shaped, white, often tinged pinkish, 2.5–3.2 cm, tube 8–12 mm, outer surface scaly, inner surface pilose; stamens 10, filaments pubescent towards base or for 3/4 of their length; ovary densely scaly; style stout, sharply bent, short, scaly at base. Capsule ovoid to cylindric-ovoid, 8–10 mm, scaly. Fl. Apr–Jun, fr. Jun–Aug.

● Thickets, scrub, slopes, grassy places, cliffs; 2100–3300 m. S Xizang.

139. Rhododendron leptocarpum Nuttall, Hooker's J. Bot. Kew Gard. Misc. 6: 256. 1854.

异鳞杜鹃 yi lin du juan

Rhododendron micromeres Tagg.

Shrubs, evergreen, usually epiphytic, 0.9–2(–3) m tall; branchlets scaly, otherwise glabrous. Petiole 5–10 mm, densely scaly; leaf blade leathery, narrowly elliptic to oblong-lanceolate, oblong-obovate, 3–8 × 1.5–3.6 cm; base cuneate or obtuse; apex obtuse or rounded, mucronate; abaxial surface pale, glaucous, scales dense, 0.5–1.5 × their own diameter apart, unequal, small to large, brown, sunk in pits; adaxial surface bright green, scaly or glabrous. Inflorescence (3–)5–10(–11)-flowered. Pedicel thin, flexuous, 2–4 cm, in fruit to 5 cm, scaly; calyx lobes 2–5 mm, ovate to rounded, reflexed in fruit, persisting to enclose mature capsule, scaly; corolla broadly campanulate or rotate-campanulate, yellow, 0.9–1.4 cm, tube 4–7 mm, outer surface scaly, inner surface pilose; stamens 10, filaments pubescent near base or ± apex; ovary densely scaly; style stout, sharply bent, short, scales at base or absent. Capsule narrowly cylindric or sickle-shaped, 12–16 mm, scaly. Fl. Apr–Jun, fr. Jul–Aug.

Mixed forests, cliff ledges, rocks, sometimes epiphytic; 2400–3400 m. S Xizang, NW Yunnan [Bhutan, NE India, NE Myanmar, Sikkim].

140. Rhododendron chrysodoron Tagg ex Hutchinson, Gard. Chron. 95: 276. 1934.

纯黄杜鹃 chun huang du juan

Shrubs, evergreen, usually epiphytic, 0.2–1.7 m tall; branchlets scaly, setose. Petiole 6–16 mm, setose; leaf blade leathery, broadly elliptic or obovate to oblong-elliptic, 4–9 × 2–5 cm; base rounded or obtuse; apex obtuse or rounded, mucronate; abaxial surface pale, glaucous, scales 1–2 × their own diameter apart, unequal, golden yellow to brown, slightly sunk in pits; adaxial surface green, shiny, usually sparsely scaly. Inflorescence 3–6-flowered. Pedicel 0.7–1(–2) cm, densely scaly; calyx saucerlike, reduced to an undulate rim; lobes 1–2 mm, broadly ovate, persisting to enclose mature capsule, scaly, margin setose; corolla broadly campanulate or rotate-campanulate, bright yellow, 1.5–3(–4) cm, tube ca. 15 mm, outer surface

scaly, pubescent at base, inner surface pilose; stamens 10, filaments pubescent towards base or for 1/3–2/3 of their length; ovary densely scaly; style stout, sharply bent, short, scaly at base. Capsule cylindric or cylindric-ovoid, 10–12 mm, scaly. Fl. Apr–May, fr. Jun–Aug.

Mixed forests, rocks, sometimes epiphytic; 2000–2800 m. SE Xizang, NW Yunnan [NE Myanmar].

141. Rhododendron boothii Nuttall, Hooker's J. Bot. Kew Gard. Misc. 5: 356. 1853.

柠檬杜鹃 ning meng du juan

Shrubs, evergreen, usually epiphytic, 1.5–2.5(–3) m tall; branchlets scaly, densely setose. Petiole 6–10 mm, scaly, setose; leaf blade thick and leathery, ovate, narrowly ovate to ovate-elliptic, 7–13 × 3–7 cm; base rounded or obtuse; margin ciliate; apex acuminate or acute; abaxial surface pale glaucous-green, scales ca. 1 × their own diameter apart, unequal, dark brown; adaxial surface green, somewhat shiny, without scales, setose on midrib and veins. Inflorescence (3–)7–10-flowered. Pedicel 1.3–2 cm, setose; calyx green; lobes (7–)10–15 mm, rounded, ovate to oblong, persisting to enclose mature capsule, scaly, margin ciliate; corolla broadly campanulate, bright yellow, sometimes spotted, ca. 3 cm, tube 15–17 mm, outer surface scaly, inner surface pilose, lobes spreading, rounded; stamens 10, filaments pubescent towards base for 1/3–1/2 of their length; ovary densely scaly; style stout, sharply bent, short, scaly at base. Capsule ovoid or ovoid-cylindric, 10–17 mm, scaly. Fl. Apr–May, fr. Jun–Jul.

Forests, scrub, rocks, sometimes epiphytic; 2000–2500 m. SE Xizang [NE India].

142. Rhododendron sulfureum Franchet, Bull. Soc. Bot. France 34: 283. 1887.

硫磺杜鹃 liu huang du juan

Rhododendron cerinum I. B. Balfour & Forrest; *R. commodum* I. B. Balfour & Forrest; *R. theiochroum* I. B. Balfour & W. W. Smith.

Shrubs, evergreen, usually epiphytic, 0.3–1.6 m tall; branchlets scaly, usually setose. Petiole 4–12 mm, densely scaly, often setose; leaf blade leathery, obovate, ovate, oblong-obovate, or elliptic to oblanceolate, 2.6–8.6 × 1.5–4.5 cm; base obtuse or tapering; margin often ciliate when young; apex rounded or subacute, mucronate; abaxial surface glaucous green, scales ca. 0.5 × their own diameter apart, unequal, dark brown or brown, sunk in pits, with crenulate edges, rims upturned; adaxial surface green, somewhat shiny, scaly or glabrous. Inflorescence 4–8-flowered. Pedicel 0.8–2 cm, scaly, sometimes setose; calyx lobes 3–6 mm, ovate to oblong, persisting to enclose mature capsule, scaly, margin usually cilite; corolla broadly campanulate, bright yellow, rarely greenish, not spotted, 1.3–2 cm, tube 8–11 mm, outer surface scaly, sometimes sparsely pubescent, inner surface pilose, lobes rounded; stamens 10, filaments pubescent towards base or in lower 1/2; ovary densely scaly; style stout, sharply bent, short, scaly at base. Capsule cylindric-ovoid, 8–11 mm, densely scaly. Fl. Apr–Jun, fr. Jul–Aug.

Forests, scrub, cliffs, rocks, sometimes epiphytic; 2500–4000 m. SE Xizang, W Yunnan [NE Myanmar].

143. Rhododendron dekatanum Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 226. 1937.

隆子杜鹃 long zi du juan

Shrubs, evergreen, ca. 1.5 m tall; branchlets scaly, not setose. Petiole 5–6 mm, densely scaly, not setose; leaf blade leathery, ovate, obovate, broadly obovate-oblong to oblong, 3–6 × 2–3.5 cm; base obtuse; margin often ciliate when young; apex rounded, mucronate; abaxial surface pale glaucous, scales contiguous, unequal, dark brown and brown; adaxial surface olive green, matt, without scales. Inflorescence 2- or 3-flowered. Pedicel 0.6–0.8 cm, scaly, not setose; calyx lobes 6–8 mm, ovate to rounded, scaly, margin usually glabrous; corolla broadly campanulate, bright yellow, 2–2.6 cm, outer surface scaly; stamens 10, slightly shorter than corolla, filaments densely villous in lower 1/2–2/3 of their length; ovary densely scaly; style stout, sharply bent, short, scaly at base. Fl. Apr–May.

● *Rhododendron* forests, bamboo forests; 3400–3500 m. S Xizang.

15. Rhododendron subsect. Camelliiflora (Hutchinson) Sleumer, Bot. Jahrb. Syst. 74: 533. 1949 [*"Camelliaeflora"*].

茶花杜鹃亚组 cha hua du juan ya zu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); David F. Chamberlain

Rhododendron ser. *Camelliiflora* Hutchinson in J. B. Stevenson, Sp. Rhodod. 171. 1930 [*"Camelliaeflorum"*].

Shrubs, 1–2 m tall, often epiphytic; young shoots densely scaly. Leaf blade leathery; abaxial surface scales overlapping or nearly so, rust-colored; adaxial surface glabrous or sparsely scaly. Inflorescence terminal, (1–)2-flowered; pedicels scaly; calyx ca. 6 mm, 5-lobed, sparsely scaly at base; corolla broadly campanulate; tube short and broad; lobes spreading, white tinged with pale red, outer surface sparsely scaly; stamens 12–16; filaments pubescent towards base; ovary 5–10-locular, densely scaly; style shorter than stamens, stout, sharply deflexed, not scaly. Capsule ovoid or oblong, ca. 13 mm, densely scaly. Seed winged.

One species: Bhutan, China, India, Nepal, Sikkim.

144. Rhododendron camelliiflorum J. D. Hooker, Rhododendr. Sikkim-Himalaya 3: t. 28. 1851 [*"camelliaeflorum"*].

茶花杜鹃 cha hua du juan

Shrubs, 1–2 m tall; young shoots densely scaly. Leaf blade leathery, oblong or oblong-lanceolate, 8–10 × 2.5–3.5 cm; base cuneate; apex obtuse or acute, apiculate; abaxial surface scales contiguous, overlapping or ca. 0.5 × their own diameter apart, rust-colored; adaxial surface glabrous or sparsely scaly. Inflo-

rescence terminal, 2-flowered. Pedicel stout, densely scaly; calyx lobes ca. 6 mm, broadly ovate, persistent in fruit, sparsely scaly at base; corolla thick, white tinged with pale red, 1.5–2.5 × ca. 3 cm, tube short and broad, outer surface sparsely scaly, inner surface with a circle of hairs; lobes spreading; ovary scaly; style stout, strongly deflexed, glabrous. Capsule cylindric, ca. 13 mm.

Broad-leaved forests, rocks. S Xizang [Bhutan, India, Nepal, Sikkim].

16. Rhododendron subsect. **Glauca** (Hutchinson) Sleumer, Bot. Jahrb. Syst. 74: 530. 1949.

苍白杜鹃亚组 cang bai du juan ya zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Rhododendron ser. *Glauca* Hutchinson in J. B. Stevenson, Sp. Rhodod. 293. 1930 [*"Glaucum"*].

Shrubs, 0.25–2 m tall; bark often coppery, smooth and flaking; young shoots scaly. Leaves small; leaf blade leathery, aromatic, usually lanceolate to obovate; abaxial surface white or pale glaucous, scales sparse to almost contiguous, dimorphic, the smaller golden, more numerous than the dark brown larger; adaxial surface usually sparsely scaly. Inflorescence terminal, umbellate or racemose, 3–10-flowered; pedicels slender, scaly; calyx 3–10 mm, deeply 5-lobed, scaly, margin usually ciliate; corolla ± campanulate, lobes spreading, white, pink, purple, or yellow, sometimes spotted; stamens 10, nearly as long as corolla; filaments pubescent; ovary 5-locular, mostly densely scaly; style short, stout, usually sharply deflexed, sometimes scaly and/or puberulous at base. Capsule ovoid to cylindric-ovoid, 4–10 mm, scaly. Seeds wingless, with obscure appendages.

Six species: Bhutan, China, India, Myanmar, Nepal, Sikkim; five species (one endemic) in China.

1a. Corolla pale yellow or greenish yellow; scales on abaxial leaf surface 2–10 × their own diameter apart ..... 145. *R. brachyanthum*
1b. Corolla white, pink, rose to purple; scales on abaxial leaf surface nearly contiguous to 2 × their own diameter apart.
  2a. Corolla 1–1.3 cm; scales on abaxial leaf surface very close, nearly contiguous ..... 149. *R. pruniflorum*
  2b. Corolla 1.3–2.6(–3.8) cm; scales on abaxial leaf surface at least 1/2 their own diameter apart.
    3a. Calyx lobes ovate-lanceolate to lanceolate, apex markedly acute; corolla tubular-campanulate ..... 146. *R. tubiforme*
    3b. Calyx lobes rounded, ovate to ovate-oblong, apex rounded or obtuse; corolla campanulate or broadly campanulate.
      4a. Calyx lobes 4–7 mm; style usually puberulous over its whole length; capsule ca. 5 mm ..... 147. *R. shweliense*
      4b. Calyx lobes 6–10 mm; style glabrous; capsule 8–10 mm ..... 148. *R. charitopes*

145. Rhododendron brachyanthum Franchet, Bull. Soc. Bot. France 33: 234. 1886.

短花杜鹃 duan hua du juan

Shrubs, evergreen, 0.3–1.5(–2) m tall; bark smooth, brown, flaking. Petiole 4–10 mm, scaly; leaf blade leathery, aromatic, oblong-lanceolate or oblong-elliptic to narrowly obovate, 2–6.5 × 1–2.6 cm; base obtuse or tapering; apex obtuse or acute, mucronate; abaxial surface glaucous, scales sparse, (1–)2–10 × their own diameter apart, unequal, the smaller pale yellow, the larger brown, widely separated; adaxial surface green, shiny, usually sparsely scaly. Inflorescence 3–10-flowered. Pedicel slender, 1.5–4 cm, scaly; calyx lobes 3–8 mm, rounded, ovate or broadly elliptic, persisting to enclose mature capsule, scaly; corolla campanulate, pale or greenish yellow, 1–1.5(–2) cm, tube 6–11 mm; outer surface usually sparsely scaly; stamens 10, nearly as long as corolla, filaments pubescent in lower 1/2 or nearly to apex; ovary scaly; style stout, usually sharply deflexed, short. Capsule cylindric-ovate, 4–8 mm, scaly. Fl. Apr–Jul, fr. Jul–Sep.

Open places in forests, thickets, scrub, rocky places; 3000–3700 (–4000) m. SE Xizang, C and W Yunnan [NE Myanmar].

1a. Scales on abaxial leaf surface very sparse, 4–10 × their own diameter apart ..... 145a. subsp. *brachyanthum*
1b. Scales on abaxial leaf surface much denser, usually (1–)2–3 × their own diameter apart ..... 145b. subsp. *hypolepidotum*

145a. Rhododendron brachyanthum subsp. **brachyanthum**

短花杜鹃(原亚种) duan hua du juan (yuan ya zhong)

Abaxial leaf surface with scales very sparse, 4–10 × their own diameter apart. Fl. Apr–Jul, fr. Jun–Sep.

● *Rhododendron* thickets, scrub, rocky places; 3000–3700 m. C and W Yunnan.

145b. Rhododendron brachyanthum subsp. **hypolepidotum** (Franchet) Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 114. 1978.

绿柱短花杜鹃 lü zhu duan hua du juan

Rhododendron brachyanthum var. *hypolepidotum* Franchet, J. Bot. (Morot) 12: 262. 1898; *R. hypolepidotum* (Franchet) I. B. Balfour & Forrest.

Abaxial leaf surface with scales usually (1–)2–3 × their own diameter apart. Fl. May–Jul, fr. Jul–Aug.

Open places in forests, thickets, scrub, rocky places; 3000–3600(–4000) m. SE Xizang, C and W Yunnan [NE Myanmar].

146. Rhododendron tubiforme (Cowan & Davidian) Davidian, J. Amer. Rhododendron Soc. 36: 15. 1982.

苍白杜鹃 cang bai du juan

Rhododendron glaucophyllum Rehder var. *tubiforme* Cowan & Davidian, Rhododendron Year Book 3: 86. 1948; *R. glaucophyllum* subsp. *tubiforme* (Cowan & Davidian) D. G. Long.

Shrubs, evergreen, 0.3–2 m tall; stem and branches with smooth brown flaking bark. Petiole 4–13 mm, scaly; leaf blade leathery, aromatic, obovate, oblong-obovate, lanceolate to oblanceolate, 3.8–8 × 1–2.6 cm; base obtuse or tapering; apex obtuse or acute, mucronate; abaxial surface glaucous, scales 0.5–2(–3) × their own diameter apart, unequal, smaller pale yellow, larger brown, widely separated; adaxial surface dark green, shiny, scaly. Inflorescence 3–5(–10)-flowered. Pedicel 1–2 cm, scaly; calyx lobes 6–8(–10) mm, ovate-lanceolate or lanceolate, persisting to enclose mature capsule, scaly; corolla tubular-campanulate, pink to rose, with or without darker spots, 2–3(–3.8) cm, tube 6–11 mm; outer surface usually densely scaly; stamens 10, nearly as long as corolla, filaments densely pubescent in lower 1/2; ovary densely scaly; style slender, straight, nearly as long as corolla, glabrous. Capsule ovate, 5–8 mm, scaly. Fl. Apr–May, fr. Jun–Sep.

Mixed *Rhododendron* forests, bamboo forests, *Rhododendron* thickets, scrub, rocks; 3000–3600 m. SE Xizang [Bhutan, India].

147. Rhododendron shweliense I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 293. 1922.

瑞丽杜鹃 rui li du juan

Shrubs, evergreen, 0.3–0.75 m tall; stem and branches with smooth brown flaking bark. Petiole 3–10 mm, scaly; leaf blade leathery, aromatic, obovate, obovate-oblong, to narrowly elliptic, 1.3–4.7 × 0.6–1.8 cm; base obtuse or tapering; apex obtuse or rounded, mucronate; abaxial surface glaucous, scales 0.5–4 × their own diameter apart, unequal, the smaller pale yellow, the larger brown, widely separated; adaxial surface green, matt, usually scaly. Inflorescence 2–4-flowered. Pedicel 1.5–2.3 cm, scaly; calyx lobes 4–7 mm, oblong, oblong-ovate to ovate, persisting to enclose mature capsule, scaly, margin usually sparsely ciliate; corolla campanulate, pale pink tinged yellow, upper three lobes spotted pink, (1.1–)1.3–1.5 cm, scaly; stamens 10, nearly as long as corolla, filaments pubescent in lower 1/2 or over whole of their length; ovary densely scaly; style stout, sharply bent or deflexed, short, usually scaly at base, puberulous. Capsule ovoid, 4–5 mm, scaly. Fl. May–Jun, fr. Jul–Sep.

● Grassy slopes, rocky slopes, cliffs; 3000–3400 m. W Yunnan.

148. Rhododendron charitopes I. B. Balfour & Farrer, Notes Roy. Bot. Gard. Edinburgh 13: 243. 1922.

雅容杜鹃 ya rong du juan

Shrubs, evergreen, 0.25–0.9(–1.5) m tall; branchlets scaly. Petiole 4–6 mm, scaly; leaf blade leathery, aromatic, obovate to obovate-elliptic, 2.6–7 × 1.3–4.5 cm; base tapering; apex obtuse, mucronate; abaxial surface glaucous, scales 0.5–2(–5) × their own diameter apart, unequal, the smaller pale yellow, larger brown, widely separated; adaxial surface dark green, usually sparsely scaly. Inflorescence (2–)3–4(–6)-flowered. Pedicel 1.8–3 cm, scaly; calyx lobes (3–)5–10 mm, ovate, apex rounded, persisting to enclose mature capsule, scaly, margin usually sparsely ciliate; corolla campanulate or broadly campanulate, white, pink to rose or purple, sometimes spotted, 1.5–2.6 cm, tube (8–)9–13 mm, not or only sparsely scaly; stamens 10, shorter than corolla, filaments pubescent in lower 1/2 or nearly to apex; ovary densely scaly; style stout, sharply bent or deflexed, short, usually without scales at base, otherwise glabrous. Capsule cylindric-ovate, 6–10 mm, scaly. Fl. May–Jun, fr. Jul–Aug.

Valleys, grassy slopes, rocky slopes, cliffs, rocks, among boulders; 2500–4300 m. S Xizang, NW Yunnan [NE Myanmar].

1a. Scales on abaxial leaf surface much denser, 0.5–3 × their own diameter apart; calyx lobes 6–10 mm; capsule 8–10 mm ..... 148a. subsp. *charitopes*

1b. Scales on abaxial leaf surface very sparse, 1–6 × their own diameter apart; calyx lobes (3–)5–6 mm; capsule ca. 6 mm ..... 148b. subsp. *tsangpoense*

148a. Rhododendron charitopes subsp. **charitopes**

雅容杜鹃(原亚种) ya rong du juan (yuan ya zhong)

Abaxial leaf surface with scales 0.5–3 × their own diameter apart. Calyx 6–10 mm; corolla pink. Capsule 8–10 mm. Fl. May–Jun, fr. Jul–Aug.

Valleys, rocky slopes, cliffs, among boulders; 3000–4300 m. NW Yunnan [NE Myanmar].

148b. Rhododendron charitopes subsp. **tsangpoense** (Kingdon Ward) Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 114. 1978.

藏布雅容杜鹃 zang bu ya rong du juan

Rhododendron tsangpoense Kingdon Ward, Gard. Chron., ser. 3, 86: 504. 1929; *R. tsangpoense* var. *curvistylum* Kingdon Ward ex Cowan & Davidian.

Abaxial leaf surface with scales 1–6 × their own diameter apart. Calyx (3–)5–6 mm; corolla pink or purple. Capsule ca. 6 mm. Fl. Jun, fr. Jul–Aug.

● Valleys, grassy slopes, rocks, among boulders; 2500–4100 m. S Xizang.

149. Rhododendron pruniflorum Hutchinson & Kingdon Ward in J. B. Stevenson, Sp. Rhodod. 302. 1930.

桃花杜鹃 tao hua du juan

Rhododendron tsangpoense Kingdon Ward var. *pruniflorum* (Hutchinson & Kingdon Ward) Cowan & Davidian.

Shrubs, evergreen, 0.3–1.2 m tall; stem and branches with brown smooth flaking bark. Petiole 2–8 mm, scaly; leaf blade leathery, aromatic, obovate to oblong, 2–4(–5) × 1–2(–2.5) cm; base obtuse or tapering; apex obtuse or rounded, mucronate; abaxial surface glaucous, scales almost contiguous, unequal, the smaller pale yellow, larger brown, widely separated; adaxial surface dark green, shiny, usually scaly. Inflorescence 3–5(–7)-flowered. Pedicel slender, 1.3–3.5 cm, scaly; calyx lobes 3–5

mm, oblong-ovate, persisting to enclose mature capsule, scaly, margin usually sparsely ciliate; corolla campanulate, dull crimson to plum purple, or rarely pink, 1–1.3 cm, tube 5–8 mm; outer surface not or only sparsely scaly; stamens 10, nearly as long as corolla, filaments densely pubescent in lower 1/2 or nearly to apex; ovary densely scaly; style stout, sharply bent or deflexed, short, usually scaly at base, otherwise glabrous. Capsule ovoid, 4–6 mm, densely scaly. Fl. May–Jul, fr. Jul–Aug.

Abies forests, *Rhododendron* thickets, rocky slopes; 3000–4000 m. SE Xizang [NE India, NE Myanmar].

17. Rhododendron subsect. **Campylogyna** (Hutchinson) Sleumer, Bot. Jahrb. Syst. 74: 531. 1949.

弯柱杜鹃亚组 wan zhu du juan ya zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Rhododendron ser. *Campylogyna* Hutchinson in J. B. Stevenson, Sp. Rhodod. 182. 1930 [*"Campylogynum"*].

Small shrubs, usually prostrate, rarely ascending, 2.5–10 cm (rarely to 1.8 m) tall; young shoots scaly, glabrous or sparsely pubescent. Leaves small; leaf blade leathery, margin crenulate; abaxial surface often whitish, scales sparse, small, deciduous; adaxial surface usually without scales. Inflorescence terminal, umbellate, 1–4(–5)-flowered; pedicels long, rigid, accrescent to 7 cm in fruit; calyx 1–6 mm, 5-lobed or undulate, usually glabrous; corolla broadly campanulate, fleshy, pruinose, pink to purple; stamens (8–)10, shorter than corolla; filaments pubescent towards base; ovary scaly; style thick, bent or sharply deflexed, glabrous. Capsule ovoid, 5–9 mm, scaly. Seeds wingless, obscurely finned.

One species: China, India, Myanmar.

150. Rhododendron campylogynum Franchet, Bull. Soc. Bot. France 32: 10. 1885.

弯柱杜鹃 wan zhu du juan

Rhododendron caeruleoglaucum I. B. Balfour & Forrest; *R. campylogynum* var. *celsum* Davidian; *R. campylogynum* var. *cremastum* (I. B. Balfour & Forrest) Davidian; *R. campylogynum* var. *myrtilloides* (I. B. Balfour & Kingdon Ward) Davidian; *R. cremastum* I. B. Balfour & Forrest; *R. damascenum* I. B. Balfour & Forrest; *R. glaucoaureum* I. B. Balfour & Forrest; *R. myrtilloides* I. B. Balfour & Kingdon Ward.

Small shrubs, usually prostrate, creeping or decumbent, evergreen, 0.025–0.1(–1.8) m tall; branchlets short, sparsely scaly, otherwise glabrous or pubescent. Petiole 2–4 mm, scaly; leaf blade leathery, obovate to obovate-lanceolate, 0.7–2.5(–3) × 0.3–1.2(–1.8) cm; base tapering; margin crenulate; apex rounded, mucronate; abaxial surface often whitish or silvery, scales 1–6 × their own diameter apart, small, deciduous; adaxial surface dark green, usually shiny, scales rarely present. Inflorescence umbellate, 1–4(–5)-flowered. Pedicel ca. 5 cm, erect, up to 7 cm in fruit; calyx lobes 1–6 mm, rounded to ovate-oblong, persistent, scales usually absent; corolla broadly campanulate, fleshy, pruinose, pink to purple, 1–2(–2.3) cm; tube 7–12 mm, glabrous, inner surface sparsely pubescent; stamens (8–)10, shorter than corolla, filaments puberulous in lower 1/2 their length; ovary scaly; style thick, bent or sharply deflexed, glabrous. Capsule ovoid, 5–9 mm, scaly.

Rhododendron thicket margins, scrub, moist stony moorlands, cliffs, ledges; (2700–)3500–4500(–5100) m. S Xizang, C and W Yunnan [NE India, NE Myanmar].

18. Rhododendron subsect. **Genestieriana** Sleumer, Bot. Jahrb. Syst. 74: 531. 1949.

灰白杜鹃亚组 hui bai du juan ya zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Shrubs, 1.2–3(–5) m tall, sometimes epiphytic; branchlets reddish brown; young shoots scaly. Leaf blade leathery; abaxial surface conspicuously pale and glaucous, scales sparse, small, golden yellow to brown; adaxial surface usually sparsely scaly. Inflorescence terminal, racemose, (4–)10–15-flowered, rachis 3–50 mm; pedicels pruinose; calyx rimlike, 1–2 mm, pruinose; corolla campanulate, reddish purple, outer surface glabrous; stamens (8–)10; filaments glabrous; ovary 5-celled, scaly; style short, stout, sharply deflexed, glabrous. Capsule ovoid-cylindric, 6–9 mm, scaly. Seeds wingless, obscurely finned.

One species: China, Myanmar.

151. Rhododendron genestierianum Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 122. 1920 [*"jenestierianum"*].

灰白杜鹃 hui bai du juan

Shrubs, evergreen, 1.2–3(–5) m tall; branchlets reddish brown, smooth; young shoots scaly, otherwise glabrous. Petiole 5–25 mm, scaly; leaf blade leathery, lanceolate, oblong-lanceolate or narrowly elliptic to oblanceolate, (3–)5–15 × (1.2–)1.4–3.5(–4.5) cm; base tapering; apex acuminate; abaxial surface conspicuously pale and glaucous, scales 4–6(–10) × their own diameter apart small, golden yellow to brown; adaxial surface dark green, usually sparsely scaly. Inflorescence (4–)10–15-flowered; rachis 3–50 mm. Pedicel pruinose, 1.6–3 cm; calyx pruinose, rimlike, sometimes slightly lobed, 1–2 mm, persistent; corolla campanulate, fleshy, pruinose, reddish purple, 1.3–1.8 cm, tube 12–17 mm, glabrous; stamens (8–)10, filaments glabrous; ovary scaly; style stout, sharply deflexed, short, glabrous. Capsule ovate-cylindric, 6–9 mm, scaly. Fl. Apr–May, fr. Jun–Aug.

Forest margins, thickets, scrub, rocky slopes; 2000–4500 m. SE Xizang, W Yunnan [NE Myanmar].

19. Rhododendron subsect. **Lepidota** (Hutchinson) Sleumer, Bot. Jahrb. Syst. 74: 531. 1949.

鳞腺杜鹃亚组 lin xian du juan ya zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Rhododendron ser. *Lepidota* Hutchinson in J. B. Stevenson, Sp. Rhodod. 437. 1930 [*"Lepidotum"*].

Small shrubs, evergreen (or deciduous), 0.5–1.5(–2) m tall. Leaf blade ± leathery; abaxial surface pale grayish green, scales overlapping or nearly so, with broad, translucent rims, yellow-green or brown; adaxial surface densely scaly. Inflorescence terminal, 1–3(–5)-flowered. Pedicel scaly; calyx developed, 2–4 mm, deeply 5-lobed; corolla broadly campanulate, white, pink, red to purple or yellow, often with darker spots; outer surface scaly; stamens (8–)10; filaments pubescent towards base; ovary 5-celled, scaly; style short, sharply deflexed, glabrous. Capsule small, 4–8 mm, densely scaly. Seeds wingless, obscurely finned.

Three species: Bhutan, China, India, Myanmar, Nepal, Sikkim; one species in China.

152. Rhododendron lepidotum Wallich ex G. Don, Gen. Hist. 3: 845. 1834.

鳞腺杜鹃 lin xian du juan

Rhododendron sinolepidotum I. B. Balfour.

Small shrubs, evergreen, 0.5–1.5(–2) m tall. Petiole 2–4 mm, scaly; leaf blade ± leathery, obovate, obovate-elliptic, or oblong-lanceolate to lanceolate, (0.4–)1.2–2.4(–3.8) × (0.2–)0.4–1.4(–1.8) cm; apex mucronate; abaxial surface pale grayish green, scales overlapping to 0.5 × their own diameter apart, yellow-green or brown, rims broad and translucent; adaxial surface dark green, scales dense. Inflorescence 1–3(–4)-flowered. Pedicel (0.1–)0.2–2.5(–3.8) cm, scaly; calyx reddish; lobes 2–4 mm, variable in shape, ovate, oblong to rounded, persistent, scaly, ciliate; corolla broadly campanulate, white, pink, red to purple or yellow, often with darker spots, 0.9–1.7 cm, scaly; stamens (8–)10, longer than corolla, filaments densely pubescent towards base or for up to 2/3 of their length; ovary densely scaly; style sharply deflexed, short, glabrous. Capsule 4–8 mm, densely scaly. Fl. May–Jul, fr. Jul–Sep.

Forests, scrub, grassy slopes, moorlands, rocks; (1700–)3000–3600(–4200) m. W Sichuan, S Xizang, NW Yunnan [Bhutan, N India, NE Myanmar, Nepal, Sikkim].

20. Rhododendron subsect. **Baileya** Sleumer, Bot. Jahrb. Syst. 74: 531. 1949.

辐花杜鹃亚组 fu hua du juan ya zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Small shrubs, 0.5–1(–2) m tall; young shoots scaly. Leaf blade leathery; abaxial surface scales overlapping and flaky, crenulate; adaxial surface densely scaly, quickly glabrescent. Inflorescence terminal, racemose, 5–10(–18)-flowered; rachis 5–25 mm; pedicels longer than corolla; calyx (1.5–)2–4 mm, 5-lobed; corolla rotate, red-purple, often with darker spots, outer surface densely scaly; stamens 10; filaments hairy towards base; ovary densely scaly; style short, sharply deflexed, glabrous. Capsule ovoid-cylindric, 5–8 mm, densely scaly. Seeds wingless, obscurely finned.

One species: Bhutan, China, Sikkim.

153. Rhododendron baileyi I. B. Balfour, Notes Roy. Bot. Gard. Edinburgh 11: 23. 1919.

辐花杜鹃 fu hua du juan

Small shrubs, evergreen, 0.5–1(–2) m tall; branchlets scaly. Petiole 3–15 mm, densely scaly; leaf blade leathery, narrowly oblong, obovate, elliptic to oblong-ovate, 2–4(–7) × 0.8–2(–3.3) cm; base cuneate to rounded; apex obtuse, mucronate; abaxial surface usually dark brown, scales overlapping and flaky, crenulate; adaxial surface green, usually shiny, densely scaly when young, soon lost. Inflorescence 5–10(–18)-flowered; rachis 5–25 mm, pubescent. Pedicel 1.2–3.5 cm, scaly; calyx reddish; lobes unequal, (1.5–)2–4 mm, ovate, oblong to deltoid, persistent in fruit, scaly, usually ciliate; corolla rotate, red-purple, often with darker spots, 0.8–1.6 cm; tube 5–9 mm, densely scaly; stamens 10, longer than tube, filaments densely hairy towards base or for 2/3 of length; ovary densely scaly; style sharply deflexed, short, glabrous. Capsule cylindric-ovate, 5–8 mm, densely scaly. Fl. May–Jun, fr. Jul–Aug.

Picea and *Tsuga* forests, hillsides, screes, mossy rocks; 3000–4000 m. S Xizang [Bhutan, Sikkim].

2. Rhododendron sect. **Pogonanthum** G. Don, Gen. Hist. 3: 845. 1834.

髯花杜鹃组 ran hua du juan zu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Small shrubs, evergreen, (0.3–)0.6–1.5(–2.8) m tall. Leaf bud scales deciduous or persistent, often fringed with branched dendroid hairs; leaves aromatic, variable, small. Leaf blade with abaxial surface scales stalked, lacerate, with or without a domed center, usually arranged in several tiers due to different lengths of stalk. Inflorescence a terminal, capitate, racemose umbel. Calyx 5-lobed; corolla salver-shaped or narrowly tubular, lobes spreading, white, pink, red, purple or yellow, always with a prominent ring of hairs inside throat; stamens 5–10, included in corolla tube; ovary (4 or)5-celled; style short, clavate, included in corolla tube. Capsule small, scaly. Seeds wingless, fins obscure.

About 22 species: Afghanistan, Bhutan, China, India, Kashmir, Mongolia, Myanmar, Nepal, Russia, Sikkim; 20 species (15 endemic) in China.

1a. Leaves setose ..... 171. *R. radendum*

1b. Leaves not setose.
2a. Calyx lobes 1–2.5 mm.
3a. Leaf blade linear, linear-lanceolate or narrowly oblanceolate; corolla tube not hairy outside ..... 172. *R. trichostomum*
3b. Leaf blade oblong or elliptic; corolla tube usually densely hairy outside.
4a. Leaf blade 0.8–2 cm; adaxial surface densely scaly; corolla narrowly tubular ..... 169. *R. nyingchiense*
4b. Leaf blade 1–1.2 cm; adaxial surface glabrous; corolla funnelform or salver-shaped.
5a. Corolla funnelform; calyx lobes 1–2 mm ..... 170. *R. tubulosum*
5b. Corolla salver-shaped; calyx lobes 2–2.5 mm ..... 159. *R. luhuoense*
2b. Calyx lobes 2–7 mm.
6a. Leaf blade smaller, 7–20 mm (some forms of *R. cephalanthum* may key out here).
7a. Adaxial leaf surface usually pale green, scaly; abaxial surface of leaves with pale yellow-brown or brown scales.
8a. Corolla rose, 5.5–7.5 mm; stems ca. 1.5 m ..... 160. *R. bellissimum*
8b. Corolla white or (rarely) rose, 9–19 mm; stems 0.3–1(–2.5) m.
9a. Corolla salver-shaped ..... 159. *R. luhuoense*
9b. Corolla narrowly tubular or narrowly funnelform.
10a. Corolla ca. 10 mm, outer surface of tube pilose ..... 158. *R. mainlingense*
10b. Corolla 12–19 mm, outer surface of tube glabrous or pilose ..... 167. *R. primuliflorum*
7b. Adaxial leaf surface dark green, with deciduous scales; abaxial surface with dark brown or ferruginous scales.
11a. Calyx lobe margins densely scaly, not ciliate; abaxial leaf surface with dark ferruginous scales ..... 157. *R. atropunicum*
11b. Calyx lobe margins long-ciliate, not scaly; abaxial leaf surface with dark brown scales.
12a. Leaf bud scales deciduous; corolla tube glabrous outside.
13a. Stamens 5; leaf blade 5–9 mm wide, abaxial surface dark chocolate-brown ..... 156. *R. rufescens*
13b. Stamens (5–)6–8(–10); leaf blade 10–16(–25) mm wide, abaxial surface dark reddish or yellow-brown ..... 164. *R. anthopogon*
12b. Leaf bud scales persistent; corolla tube pilose outside.
14a. Scales on abaxial leaf surface with lower tiers lighter than the upper tiers ..... 155. *R. sargentianum*
14b. Scales on abaxial leaf surface with lower tiers as dark as or darker than the upper tiers.
15a. Corolla tube densely pilose outside ..... 154. *R. laudandum*
15b. Corolla tube glabrous outside ..... 163. *R. hypenanthum*
6b. Leaf blade 20–50 mm.
16a. Corolla tube usually hairy or scaly outside.
17a. Corolla 8–11 mm; calyx ca. 1/2 as long as corolla tube; leaf blade shorter than 2.8 cm ..... 166. *R. kongboense*
17b. Corolla 12–19 mm; calyx ca. 1/3 as long as corolla tube; leaves up to 3.5 cm.
18a. Calyx lobes scaly outside, margins usually ciliate; corolla narrowly tubular ..... 167. *R. primuliflorum*
18b. Calyx lobes not scaly outside, margins fimbriate-lepidote; corolla hypocrateriform ..... 168. *R. heteroclitum*
16b. Corolla tube glabrous outside.
19a. Leaf apex acute ..... 173. *R. hoi*
19b. Leaf blade apex obtuse or rounded, rarely emarginate.
20a. Leaf bud scales deciduous.
21a. Stamens (5–)6–8(–10); inflorescence 5–9-flowered; calyx scaly outside ..... 164. *R. anthopogon*
21b. Stamens 5; inflorescence 10–20-flowered; calyx not scaly outside ..... 165. *R. anthopogonoides*
20b. Leaf bud scales persistent.
22a. Leaf blade 3–5 cm; leaf bud scales large, broadly ovate, obovate to rounded, leafy ..... 161. *R. platyphyllum*
22b. Leaf blade 2–3.5 cm; leaf bud scales small, linear to lanceolate.
23a. Corolla white, pink to rose; calyx 4–7 mm ..... 162. *R. cephalanthum*
23b. Corolla pale yellow to yellow-green; calyx 2–4 mm ..... 163. *R. hypenanthum*

154. Rhododendron laudandum Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 222. 1937.

毛冠杜鹃 mao guan du juan

Small shrubs, (0.15–)0.3–0.6(–1.2) m tall; bud scales deciduous or persistent. Petiole 2–4 mm; leaf blade leathery, aromatic, oblong-ovate, elliptic, ovate to orbicular, 0.9–1.8 × 0.4–1 cm; base rounded or broadly cuneate; apex rounded or obtuse, mucronate; abaxial surface scales overlapping, lacerate, dark reddish brown and dark brown, arranged in 2–3 tiers, lowermost tier usually darker than others; adaxial surface dark green or brownish, sparsely scaly when young, glabrescent. Inflores-

cence 5–10-flowered, bud scales persistent. Pedicel 0.3–0.6 cm; calyx lobes 4–6 mm, oblong to obovate, unequal, persisting to enclose mature capsule, densely scaly, margin ciliate; corolla narrowly tubular, pink, white, rarely yellow, 0.8–1.8 cm, tube 4.5–11.5 mm, outer surface not scaly, laxly to densely pilose, inner surface densely pilose; stamens 5(or 6), included in corolla tube, filaments glabrous; ovary 1–2 mm, scaly or not, sometimes densely hairy; style thick, shorter than ovary. Capsule ovoid, 2–4 mm. Fl. and fr. May–Jul.

Scrub, alpine meadows, steep alpine slopes, hillsides, moraines; 2900–5100 m. SE Xizang [Bhutan].

1a. Corolla usually pink; corolla tube densely pilose outside; leaf bud scales deciduous; ovary usually not scaly, but densely pubescent at least in lower 1/2; leaves 2 or more × longer than broad ..... 154a. var. *laudandum*

1b. Corolla usually white; corolla tube laxly pilose outside; leaf bud scales persistent; ovary densely scaly; leaves less than 2 × longer than broad ..... 154b. var. *temoense*

154a. Rhododendron laudandum var. **laudandum**

毛冠杜鹃(原变种) mao guan du juan (yuan bian zhong)

Bud scales deciduous. Leaf blade 2 or more × longer than broad. Corolla usually pink; tube outer surface densely pilose; ovary usually without scales, densely pubescent all over or in lower 1/2. Fl. and fr. May–Jul.

Scrub, alpine meadows, rocky hillsides; 4000–5100 m. SE Xizang [Bhutan].

154b. Rhododendron laudandum var. **temoense** Kingdon Ward ex Cowan & Davidian, Rhododendron Year Book 2: 73. 1947.

疏毛冠杜鹃 shu mao guan du juan

Bud scales persistent. Leaf blade less than 2 × longer than broad. Corolla usually white; tube outer surface laxly pilose; ovary densely scaly, otherwise glabrous. Fl. and fr. Jun–Jul.

● Steep alpine slopes, hillsides, moraines; 2900–4800 m. SE Xizang.

155. Rhododendron sargentianum Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 504. 1913.

水仙杜鹃 shui xian du juan

Small shrubs, usually prostrate, 0.3–0.6 m tall; branchlets short, twiggy; young shoots densely scaly; bud scales persistent. Petiole 2–4 mm; leaf blade aromatic, elliptic, broadly elliptic, or ovate, 0.8–1.6(–2) × 0.3–0.8(–1.1) cm; base rounded or broadly cuneate; apex rounded, mucronate; abaxial surface pale brown, scales overlapping, long-stalked, lacerate, arranged in 2–3 tiers, those of lowermost tier golden, paler than the rest; adaxial surface dark green, shiny, scaly when young, glabrescent. Inflorescence 5–7(–12)-flowered. Pedicel 0.2–0.8 cm; calyx lobes (2–)3–4(–6) mm, oblong to obovate, persisting to enclose mature capsule, scaly, margin strap-shaped-ciliate; corolla narrowly tubular, whitish yellow, 1–1.6 cm, tube 6–9 mm; outer surface scaly on tube and at bases of lobes, inner surface densely pilose; stamens 5, included in corolla tube, filaments glabrous; ovary 1–1.5 mm, scaly; style thick, straight, nearly as long as ovary, glabrous. Capsule ovoid, ca. 4 mm, scaly. Fl. May–Jul, fr. Oct.

● Cliffs, exposed rocks; 3000–4300 m. C and W Sichuan.

Rhododendron praeclarum I. B. Balfour & Farrer (Notes Roy. Bot. Gard. Edinburgh 9: 261. 1916), from Gansu (Min Shan), is described as having bright yellow ("flava") flowers. It differs from *R. sargentianum,* the yellow-flowered species to which it is most closely allied, as the calyx lobes are fringed with scales, not loriform ciliae. Cullen (Notes Roy. Bot. Gard. Edinburgh 38: 167. 1980) considered that *R. praeclarum* was almost indistinguishable from *R. primuliflorum,* but noted that the type locality is disjunct. If the flower color is correct then this affinity seems unlikely.

156. Rhododendron rufescens Franchet, J. Bot. (Morot) 9: 397. 1895.

红背杜鹃 hong bei du juan

Rhododendron daphniflorum Diels.

Small shrubs, (0.2–)0.3–0.5(–1) m tall; branchlets usually twiggy and intricate, scaly; bud scales deciduous. Petiole 2–5 mm; leaf blade aromatic, elliptic, ovate-oblong, rarely ovate, 1–2(–2.5) × (0.5–)0.6–0.9(–1.2) cm; base rounded or tapering; apex usually rounded, mucronate; abaxial surface scales overlapping, cinnamon or dark brown, arranged in 2–3 tiers, the lowermost tier usually darker than rest; adaxial surface dark green, shiny, glabrous. Inflorescence 5–8(–12)-flowered. Pedicel ca. 0.2 cm; calyx lobes 3–4 mm, oblong-elliptic, persisting to enclose mature capsule, scales mostly absent, margin ciliate and scaly; corolla narrowly tubular, white or pale rose, 1.2–1.4(–1.7) cm, tube 6–8(–9.5) mm, inner surface densely pilose; lobes spreading, rounded, usually sparsely scaly outside; stamens 5, included in corolla tube, filaments glabrous; ovary ca. 1 mm, scaly; style thick, straight. Capsule ovoid, ca. 3 mm, scaly. Fl. May–Jul, fr. Sep.

● Thickets, grasslands, open rocky pastures; 3800–4600 m. Qinghai, C, N, and SW Sichuan.

157. Rhododendron atropunicum H. P. Yang, Acta Bot. Yunnan. 10: 367. 1988.

暗紫杜鹃 an zi du juan

Small, erect shrubs, 1–1.8 m tall; branchlets with ferruginous, deciduous scales. Petiole 2–4 mm, scaly; leaf blade aromatic, elliptic, oblong-elliptic, 1–2 × 0.4–1 cm; base cuneate; apex rounded, mucronate; abaxial surface scales overlapping, arranged in 2–3 tiers, small, dark ferruginous; adaxial surface dark green, glabrous. Inflorescence 4–6-flowered. Pedicel 0.2–0.3 cm, scaly; calyx lobes 2.5–4 mm, oblong-elliptic, scaly, margin densely scaly; corolla salver-shaped, white, 0.9–1.1 cm, tube 7–8 mm, outer surface sparsely pilose, inner surface densely pilose; lobes rounded, 0.2–0.3 cm; stamens 5 or 6, included in corolla tube, filaments sparsely puberulous at base; ovary nearly ovoid, ca. 2 mm, densely scaly; style thick, straight, shorter than ovary. Fl. Jun.

● Wood margins; ca. 3600 m. SW Sichuan.

158. Rhododendron mainlingense S. H. Huang & R. C. Fang, Fl. Xizangica 3: 674. 1986.

米林杜鹃 mi lin du juan

Small shrubs, ca. 0.5 m tall; branchlets densely scaly, setose; bud scales deciduous. Petiole ca. 3 mm, densely scaly; leaf blade aromatic, oblong-elliptic or elliptic, 0.7–1.6 × 0.4–0.7 cm; base rounded or cuneate; apex acute, mucronate; abaxial surface scales dense, pale yellow to yellow-brown; adaxial surface dark green, densely scaly. Inflorescence several-flowered. Pedicel ca. 0.2 cm, densely scaly; calyx lobes 3–4 mm, oblong, scaly, densely so along middle, margin ciliate; corolla narrowly tubular, white, ca. 1 cm, tube densely pilose inside and out; stamens 5 or 6, included in corolla tube, filaments glabrous; ovary scaly, puberulous; style turbinate, very short, glabrous. Fl. May–Jul.

● Thickets; ca. 4000 m. SE Xizang.

159. Rhododendron luhuoense H. P. Yang, Acta Bot. Yunnan. 10: 368. 1988.

炉霍杜鹃 lu huo du juan

Small, erect shrubs, ca. 1 m tall; branchlets short, tortuous, with ferruginous, deciduous scales. Petiole 1–3 mm, densely scaly; leaf blade aromatic, oblong or oblong-elliptic, 0.8–1.2 × 0.35–0.4 cm; base broadly cuneate to rounded; apex rounded, mucronate; abaxial surface scales overlapping, arranged in 2–3 tiers, small, pale yellow-brown; adaxial surface pale green, sparsely scaly. Inflorescence 3–5-flowered. Pedicel 1–2 cm, scaly; calyx lobes 2–2.5 mm, oblong-lanceolate, scales absent, margin ciliate; corolla salver-shaped, white, 0.9–1.1 cm, tube 6–7 mm, outer surface sparsely puberulous, inner surface densely villous; lobes rounded, 0.3–0.35 cm; stamens 5, included in corolla tube, filaments glabrous; ovary ovoid, ca. 2.6 mm, densely scaly; style ca. 0.8 mm. Fl. Jun–Jul.

● *Larix potaninii* forests; ca. 4000 m. NW Sichuan.

160. Rhododendron bellissimum D. F. Chamberlain, **nom. nov.**

美鳞杜鹃 mei lin du juan

Replaced synonym: *Rhododendron bellum* H. P. Yang, Bull. Bot. Res., Harbin 9(1): 18. 1989, not *R. bellum* W. P. Fang & G. Z. Li, Bull. Bot. Res., Harbin 4(1): 3. 1984.

Small, erect shrubs, ca. 1.5 m tall; branchlets virgate, scaly. Petiole ca. 1 mm, scaly; leaf blade aromatic, elliptic-oblong or obovate-oblong, 0.8–1.2 × 0.3–0.4 cm; base broadly cuneate to rounded; apex rounded, mucronate; abaxial surface scales overlapping, arranged in 2–3 tiers, small, unequal, pale yellow-brown; adaxial surface pale green, scales pale, deciduous. Inflorescence 4–7-flowered. Pedicel ca. 0.1 cm, scaly; calyx lobes 2–3 mm, oblong, unequal, sparsely scaly, margin long-ciliate; corolla salver-shaped, rose, 5.5–7.5 cm, tube 3.5–4.5 mm, outer surface not scaly, sparsely puberulous; inner surface densely villous; lobes unequal, rounded, ca. 0.2 cm; stamens 5, included in corolla tube, filaments glabrous; ovary broadly ovoid ca. 2 mm, densely scaly; style ca. 1 mm, glabrous. Fl. May–Jun.

● Meadows at forest margins; ca. 3400 m. C Sichuan.

161. Rhododendron platyphyllum (Franchet ex Diels) I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 259. 1916.

阔叶杜鹃 kuo ye du juan

Rhododendron cephalanthum Franchet var. *platyphyllum* Franchet ex Diels, Notes Roy. Bot. Gard. Edinburgh 7: 211, 392. 1912; *R. cephalanthum* subsp. *platyphyllum* (Franchet ex Diels) Cullen.

Erect or semiprostrate shrubs, 0.15–1.5 m tall; branchlets short, scaly; bud scales persistent, large, broadly ovate or rounded. Petiole 3–6 mm, scaly; leaf blade aromatic, broadly elliptic, oblong-ovate or ovate, 0.3–0.5 × 0.2–0.3 cm; base rounded or cuneate; apex obtuse or rounded, rarely emarginate; abaxial surface scales overlapping, arranged in 2–3 tiers, unequal, brown, dark brown, or rust-colored; adaxial surface dark green, shiny, glabrous. Inflorescence 6–10-flowered. Pedicel 0.3–0.5 cm, scaly; calyx lobes (3–)5–7 mm, oblong or elliptic, persisting to enclose mature capsule, scaly, margin ciliate; corolla narrowly tubular-funnelform, white, creamy white or pink, rarely yellowish or rose, 1.8–2 cm, tube 13–14 mm, outer surface glabrous, inner surface densely pilose; stamens 5(–8), included in corolla tube, filaments slightly puberulous towards base; ovary ca. 1 mm, scaly; style as long as ovary, glabrous. Capsule ovoid, ca. 3 mm, densely scaly. Fl. May–Jun, fr. Jul–Aug.

● Bamboo brakes, among rocks in open alpine pastures, cliffs, ledges; 3000–4500 m. C and NW Yunnan.

This taxon is treated as a subspecies of *Rhododendron cephalanthum* by some authors.

162. Rhododendron cephalanthum Franchet, Bull. Soc. Bot. France 32: 9. 1885.

毛喉杜鹃 mao hou du juan

Rhododendron chamaetortum I. B. Balfour & Kingdon Ward.

Semiprostrate or semidecumbent shrubs, often contorted, rarely erect, 0.3–0.6(–1.5) m tall; branchlets short, thick, scaly; bud scales persistent, conspicuous, linear to lanceolate. Petiole ca. 3 mm, scaly; leaf blade aromatic, oblong-elliptic or oblong-ovate, 1–3.5 × 0.5–1.6 cm; base rounded; apex obtuse or rounded, mucronate; abaxial surface scales overlapping, arranged in 2–3 tiers, unequal, pale yellow-brown or reddish brown; adaxial surface dark green, shiny, glabrous. Inflorescence 5–10-flowered. Pedicel 0.2–0.5 cm, scaly; calyx lobes 4–7 mm, oblong or ovate, persisting to enclose mature capsule, scaly, margin long-ciliate; corolla narrowly tubular, with spreading lobes, white, pink, to rose, (0.8–)1.2–1.5(–2) cm, tube 6.5–13 mm, outer surface not scaly; inner surface densely pilose; stamens 5(–8), included in corolla tube, filaments puberulous towards base; ovary 1–2 mm, densely scaly; style thick, turbinate, nearly as long as ovary. Capsule ovoid, 3–4 mm, densely scaly. Fl. May–Jul, fr. Sep–Nov.

Rhododendron thickets, moorlands, rocky slopes; (3000–)3800–4400(–4600) m. S Qinghai, NW Sichuan, S Xizang, C and N Yunnan [NE India, Myanmar].

163. Rhododendron hypenanthum I. B. Balfour, Notes Roy. Bot. Gard. Edinburgh 9: 291. 1916.

毛花杜鹃 mao hua du juan

Rhododendron anthopogon D. Don subsp. *hypenanthum* (I. B. Balfour) Cullen; *R. anthopogon* var. *hypenanthum* (I. B. Balfour) H. Hara.

Small shrubs, 0.3–0.8(–0.95) m tall; branchlets short, scaly, setose; bud scales persistent. Petiole 3–7 mm, scaly; leaf blade aromatic, elliptic, oblong-elliptic or obovate-elliptic, (1.2–)2.5–3.5(–4.2) × (0.6–)1–1.6(–2) cm; base rounded, or broadly cuneate; apex obtuse or rounded, mucronate; abaxial surface scales overlapping, arranged in 2–3 tiers, dark reddish brown; adaxial surface dark green, shiny, glabrous. Inflorescence 5–7(–10)-flowered. Pedicel 0.2–0.4 cm, scaly; calyx lobes 2–4 mm, elliptic or ovate-lanceolate, persisting to enclose mature capsule, scaly, margin densely ciliate; corolla narrowly tubular-funnelform, pale yellow to yellow-green, tube nearly as long as lobes, outer surface not scaly; inner surface densely pilose; lobes spreading, 1.2–1.9 cm; stamens 5 or 6(–8), included in corolla tube, filaments glabrous; ovary ca. 1 mm, scaly; style short, thick, straight, nearly as long as ovary, glabrous. Capsule ovoid, 2–5 mm, scaly. Fl. May–Jul, fr. Aug–Sep.

Rhododendron thickets, scrub, open hillsides; 3500–4500(–5500) m. S Xizang [Bhutan, N India, Nepal, Sikkim].

This taxon is treated as a subspecies (or variety) of *Rhododendron anthopogon* by some authors.

164. Rhododendron anthopogon D. Don, Mem. Wern. Nat. Hist. Soc. 3: 409. 1821.

髯花杜鹃 ran hua du juan

Rhododendron anthopogon var. *album* Davidian.

Small shrubs, often prostrate or decumbent, (0.3–)0.5–1(–1.5) m tall; branchlets loose, intricate, scaly, sparsely setose; bud scales deciduous. Petiole 3–8 mm, scaly; leaf blade aromatic, obovate-elliptic, ovate, rarely orbicular, (1.5–)2.5–3.5(–4) × 1–1.6(–2.5) cm; base rounded; apex obtuse or rounded, mucronate; abaxial surface scales overlapping, dark reddish brown and dark yellow-brown, arranged in 2–3 tiers, often those of the lowest tier darker than rest; adaxial surface dark green, shiny, usually sparsely scaly. Inflorescence 4–6(–9)-flowered. Pedicel 0.2–0.4 cm, scaly; calyx lobes 3–5(–6) mm, elliptic or oblong, persisting to enclose mature capsule, scaly, margin densely ciliate; corolla narrowly tubular-funnelform, pink, or yellowish white, tube 6–12 mm, outer surface not scaly; inner surface densely pilose; lobes spreading, 1.2–2 cm; stamens (5–)6–8(–10), included in corolla tube, filaments glabrous; ovary ca. 1 mm, scaly; style short, thick, straight, as long as ovary, glabrous. Capsule ovoid, 3–5 mm, scaly. Fl. Apr–Jun, fr. Jul–Aug.

Thickets, open slopes, hillsides, cliff ledges; 3000–4500(–5000) m. S Xizang [Bhutan, N India, Nepal, Sikkim].

165. Rhododendron anthopogonoides Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 23: 350. 1877.
烈香杜鹃 lie xiang du juan

Small, erect shrubs, 1–1.5(–2) m tall; branchlets thick, scaly; bud scales deciduous. Petiole 2–4(–5) mm, scaly; leaf blade aromatic, ovate-elliptic, broadly elliptic or ovate, (1.5–)2–3.5(–4.7) × 1–1.8(–2.3) cm; base rounded or truncate; apex obtuse or rounded, mucronate; abaxial surface scales overlapping, arranged in several tiers, reddish brown or dark brown plastered; adaxial surface bluish green, matt, sparsely scaly or glabrous. Inflorescence 10–20-flowered. Pedicel 1–2 cm, not scaly; calyx lobes 3–4(–4.5) mm, oblong-obovate or elliptic-ovate, persisting to enclose mature capsule, scales absent, margin erose, ciliate and with a few scales; corolla narrowly tubular-funnelform, with spreading lobes, aromatic, greenish white, greenish yellow or whitish pink, 1–1.4 cm, tube 5–11 mm, outer surface not scaly; inner surface densely pilose; stamens 5, included in corolla tube, filaments glabrous; ovary 1–2 mm, scaly; style turbinate, nearly as long as ovary, glabrous. Capsule ovoid, 3–4.5 mm, scaly. Fl. Jun–Jul, fr. Aug–Sep.

● *Picea* forests, scrub, slopes; 2900–3700 m. Gansu, Qinghai, NW Sichuan.

166. Rhododendron kongboense L. Rothschild, Suppl. Rhododendron Assoc. Year Book 1933: 53. 1933.

工布杜鹃 gong bu du juan

Small, erect shrubs, 0.15–0.3(–2) m tall; branchlets often short, thin, twiggy, scaly; bud scales deciduous. Petiole 2–6 mm, scaly; leaf blade aromatic, oblong, elliptic-oblong or oblong-lanceolate, 1.3–2.8 × 0.5–1.2 cm; base rounded or obtuse; apex subacute, mucronate; abaxial surface scales overlapping, arranged in several tiers, pale yellowish brown or pale brown; adaxial surface dark green, sparsely scaly. Inflorescence 6–12-flowered. Pedicel 0.1–0.4 cm, scaly, pubescent; calyx lobes 3–5 mm, oblong or obovate, persisting to enclose mature capsule, sometimes scaly, margin long-ciliate, rarely scaly; corolla narrowly tubular, with spreading lobes, pink, or rose to reddish purple, 0.8–1.2 cm, tube 6–8 mm, outer surface not scaly, variably pilose, inner surface densely pilose; stamens 5, included in corolla tube, filaments glabrous; ovary ca. 1 mm, scaly; style turbinate, nearly as long as ovary. Capsule ovoid, ca. 3 mm, scaly. Fl. and fr. Jun–Aug.

Rhododendron thickets, moorlands, rocky slopes, limestone cliffs, among boulders; 4300–4500(–5000) m. S Xizang [Bhutan].

167. Rhododendron primuliflorum Bureau & Franchet, J. Bot. (Morot) 5: 95. 1891 [*"primulaeflorum"*].

樱草杜鹃 ying cao du juan

Small shrubs, 0.3–1(–2.5) m tall; branchlets short, thin, twiggy, densely scaly, setose; bud scales deciduous. Petiole ca. 2.4(–5) mm, scaly; leaf blade aromatic, oblong, oblong-elliptic, or ovate-oblong, (0.8–)2–2.5(–3.5) × (0.5–)0.8–1(–1.5) cm; base tapering; margin with or without strap-shaped bristles; apex obtuse, mucronate; abaxial surface scales overlapping, pale yellowish brown or brown, arranged in 2–3 tiers, the lowermost tier paler than rest; adaxial surface dark green, shiny, scales present or absent. Inflorescence 5–8-flowered. Pedicel 0.2–0.4 cm, scaly; calyx lobes 3–5(–6) mm, oblong, lanceolate or oblong-ovate, persisting to enclose mature capsule, usually scaly, margin ciliate or not; corolla narrowly tubular-funnelform, white with yellow tube, rarely rose or entirely pink, 1.2–

1.9 cm, tube 6–10(–12) mm, outer surface usually glabrous, more rarely sparsely pilose or somewhat scaly, throat densely pilose, lobes spreading; stamens 5(or 6), included in corolla tube, filaments glabrous; ovary ca. 1 mm, scaly; style turbinate, nearly as long as ovary. Capsule ovoid-cylindric, 4–5 mm, densely scaly. Fl. May–Jun, fr. Jul–Sep.

● Mixed forests, thickets, alpine moorlands, swamps, rocky pastures and slopes, cliffs, boulders; 2900–5000(–5100) m. S Gansu, W Sichuan, S Xizang, N Yunnan.

1a. Leaves and corolla glabrous ..... 167a. var. *primuliflorum*
1b. Leaves ciliate; corolla pilose or scaly.
  2a. Corolla tube usually densely puberulous outside ..... 167b. var. *cephalanthoides*
  2b. Corolla lobes densely scaly outside ..... 167c. var. *lepidanthum*

167a. Rhododendron primuliflorum var. **primuliflorum**

櫻草杜鵑(原变种) ying cao du juan (yuan bian zhong)

Rhododendron acraium I. B. Balfour & W. W. Smith; *R. clivicola* I. B. Balfour & W. W. Smith; *R. cremnophilum* I. B. Balfour & W. W. Smith; *R. gymnomiscum* I. B. Balfour & Kingdon Ward; *R. tsarongense* I. B. Balfour & Forrest.

Leaves and corolla without hairs. Corolla tube outer surface usually glabrous Fl. May–Jun, fr. Jul–Sep.

● Alpine moorlands, rocky pastures, cliffs, boulders; (2900–) 3700–4100(–5100) m. S Gansu, W Sichuan, S Xizang, NW Yunnan.

167b. Rhododendron primuliflorum var. **cephalanthoides** (I. B. Balfour & W. W. Smith) Cowan & Davidian, Rhododendron Year Book 2: 79. 1947.

微毛櫻草杜鵑 wei mao ying cao du juan

Rhododendron cephalanthoides I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 216. 1916.

Leaf blade ciliate. Corolla tube outer surface usually densely puberulous. Fl. May–Jun.

● Mixed thickets, *Rhododendron* thickets, swamps, rocky alpine pastures; (3300–)4000–5000 m. W Sichuan, SE Xizang, N Yunnan.

167c. Rhododendron primuliflorum var. **lepidanthum** (I. B. Balfour & W. W. Smith) Cowan & Davidian, Rhododendron Year Book 2: 79. 1947.

鱗花櫻草杜鵑 lin hua ying cao du juan

Rhododendron lepidanthum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 245. 1916.

Leaf blade ciliate. Corolla lobes densely scaly on outer surface. Fl. May.

● Mixed forests, thickets, rocky slopes; 2900–4300 m. SW Sichuan, NW Yunnan.

168. Rhododendron heteroclitum H. P. Yang, Bull. Bot. Res., Harbin 9(1): 17. 1989.

异常杜鵑 yi chang du juan

Small erect shrubs, ca. 0.6 m tall; branchlets virgate, scaly. Petiole 1–2 mm, scaly; leaf blade aromatic, elliptic, rounded or ovate, 1.5–3.5 × 1–2 cm; base broadly cuneate or rounded; apex rounded, mucronate; abaxial surface scales overlapping, arranged in 2–3 tiers, small, unequal, pale yellowish brown; adaxial surface pale green, sparsely scaly. Inflorescence 5–7-flowered. Pedicel ca. 0.1 cm, scaly; calyx lobes 2–3 mm, oblong-elliptic, unequal, scales absent, margin fimbriate-scaly; corolla salver-shaped, pale rose, 1.2–1.5 cm, tube 6–7 mm, outer surface not scaly, sparsely pubescent, throat densely pilose, lobes orbicular, 0.6–0.7 cm; stamens 5, included in corolla tube, filaments glabrous; ovary ovoid, ca. 2 mm, densely scaly; style ca. 0.6–0.8 cm. Fl. May–Jun.

● *Rhododendron* forest margins; 3800–3900 m. W Sichuan.

169. Rhododendron nyingchiense R. C. Fang & S. H. Huang, Fl. Xizangica 3: 674. 1986.

林芝杜鵑 lin zhi du juan

Small shrubs, 0.3–1 m tall; branchlets densely dark reddish brown scaly; bud scales deciduous. Petiole 4–5 mm, densely dark reddish brown scaly; leaf blade aromatic, oblong-elliptic or elliptic, 0.8–2 × 0.5–0.8 cm; base broadly cuneate or rounded; apex obtuse, mucronate; abaxial surface scales dense, dark reddish brown; adaxial surface dark green, densely scaly. Inflorescence 3- or 4-flowered. Pedicel 0.2–0.3 cm, densely scaly; calyx lobes 1–2 mm, densely scaly; corolla narrowly tubular, pink, or rose to white, ca. 1.2 cm, tube outer surface and throat densely pilose; stamens 5, included in corolla tube, filaments glabrous; ovary densely scaly; style shorter than or equal to ovary, glabrous. Fl. May.

● Forests, slopes; 3700–4300 m. SE Xizang.

170. Rhododendron tubulosum Ching ex W. Y. Wang, Acta Phytotax. Sin. 20: 57. 1982.

长管杜鵑 chang guan du juan

Small shrubs, up to 1 m tall; branchlets virgate, spreading, densely pubescent. Petiole 3–4 mm, scaly; leaf blade aromatic, elliptic to oblong, 1–1.2 cm; apex acute; base cuneate; abaxial surface scales dense, pale brown; adaxial surface green, shiny, glabrous. Inflorescence 5- or 6-flowered. Pedicel ca. 0.1 cm, scaly; calyx lobes 1–2 mm, unequal, margin ciliate; corolla funnelform, white or pale rose; tube ca. 8 mm, outer surface and throat densely pilose; lobes orbicular or oblong, 0.3–0.4 cm; stamens 5, included in corolla tube, filaments glabrous; ovary oblong, 1–1.3 mm, densely scaly; style 1.5–2 mm. Fl. Jun–Jul.

● Stony slopes; ca. 4000 m. SE Qinghai.

171. Rhododendron radendum W. P. Fang, Contr. Biol. Lab. Chin. Assoc. Advancem. Sci., Sect. Bot. 12: 62. 1939.

毛叶杜鵑 mao ye du juan

Small shrubs, 0.5–1 m tall; branchlets densely scaly, setose; bud scales deciduous. Petiole 2–3 mm, scaly, setose; leaf blade aromatic, oblong-lanceolate, obovate-lanceolate to ovate-lanceolate, 1–1.8 × 0.3–0.6 cm; base rounded to tapering; margin scaly and strap-shaped-setose; apex acute or obtuse; abaxial surface scales overlapping, arranged in 2–3 tiers, pale yellowish brown and dark brown; adaxial surface green, shiny, scaly, setose. Inflorescence 8–10-flowered. Pedicel 0.2–0.3 cm,

scaly, setose; calyx lobes 1–2 mm, ovate, scaly, setose, margin ciliate; corolla narrowly tubular with spreading lobes, pink to pale rose-purple, 0.8–1.2 cm, tube 6–10(–12) mm, outer surface scaly, throat densely pilose; stamens 5, included in corolla tube, filaments glabrous; ovary ca. 1 mm, scaly; style turbinate, nearly as long as ovary. Fl. May–Jun.

● Mixed thickets, *Rhododendron* thickets, boulders; 3000–4100 m. W Sichuan.

172. Rhododendron trichostomum Franchet, J. Bot. (Morot) 9: 396. 1895.

毛嘴杜鹃 mao zui du juan

Small, intricately branched shrubs, 0.3–1(–1.5) m tall; branchlets twiggy, densely scaly, setose; bud scales deciduous, rarely persistent. Petiole 2–4 mm, scaly; leaf blade aromatic, linear, linear-lanceolate, oblong or oblanceolate, 0.8–3.2 × 0.3–0.5(–0.8) cm; base rounded to tapering; margin revolute; apex acute or obtuse, mucronate or emarginate; abaxial surface scales overlapping, pale yellowish brown to brown, arranged in 2–3 tiers, the lowermost tier golden, paler than others, rarely somewhat; adaxial surface dark green, scaly or not. Inflorescence 6–10(–20)-flowered. Pedicel (0.1–)0.2–0.5 cm, scaly; calyx lobes 0.5–2(–3) mm, oblong to ovate, persistent, scaly or not, margin usually scaly, ciliate; corolla narrowly tubular, white, pink or rose, 0.8–1.6(–2) cm, tube 4.5–8(–12) mm, outer surface densely scaly or not scaly, throat densely pilose; lobes with a few scales but no hairs; stamens 5, included in corolla tube, filaments glabrous; ovary ca. 1 mm, scaly; style turbinate, shorter than or equal to ovary. Capsule ovate to cylindric, 3–5 mm, densely scaly. Fl. May–Jul, fr. Aug–Sep.

● Forests, thickets, scrub, rocky alpine meadows, open slopes, rocks; 2700–4600 m. S Qinghai, W Sichuan, SE Xizang, NW Yunnan.

Rhododendron hedyosmum I. B. Balfour (Notes Roy. Bot. Gard. Edinburgh 9: 234. 1916) was described from cultivated material derived from seed collected in Sichuan. Known only in cultivation, it is a large-flowered variant, and probably a hybrid, of *R. trichostomum*.

1a. Leaf bud scales persistent; corolla densely scaly outside; style usually shorter than ovary; adaxial surface of leaves usually densely scaly ..... 172c. var. *radinum*
1b. Leaf bud scales deciduous; corolla usually scaly outside; style often as long as ovary; adaxial surface of leaves usually not scaly.
  2a. Leaves usually oblong or oblanceolate; corolla white to rose ..... 172a. var. *trichostomum*
  2b. Leaves linear or linear-lanceolate; corolla pale rose ..... 172b. var. *ledoides*

172a. Rhododendron trichostomum var. **trichostomum**

毛嘴杜鹃(原变种) mao zui du juan (yuan bian zhong)

Rhododendron sphaeranthum I. B. Balfour & W. W. Smith.

Bud scales deciduous. Leaf blade usually oblong or oblanceolate; adaxial surface usually scaly. Corolla white to rose; outer surface usually not scaly; style nearly as long as ovary. Fl. May–Jul, fr. Aug–Sep.

● Forests, thickets, scrub, rocky alpine meadows, open slopes; 3000–4000(–4400) m. S Qinghai, W Sichuan, SE Xizang, NW Yunnan.

172b. Rhododendron trichostomum var. **ledoides** (I. B. Balfour & W. W. Smith) Cowan & Davidian, Rhododendron Year Book 2: 84. 1947.

筒花毛嘴杜鹃 tong hua mao zui du juan

Rhododendron ledoides I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 243. 1916.

Bud scales deciduous. Leaf blade linear or linear-lanceolate; adaxial surface usually scaly. Corolla pale rose; outer surface usually not scaly; style nearly as long as ovary. Fl. May–Jun.

● Forests, thickets; (3500–)3900–4600 m. SW Sichuan, NW Yunnan.

172c. Rhododendron trichostomum var. **radinum** (I. B. Balfour & W. W. Smith) Cowan & Davidian, Rhododendron Year Book 2: 84. 1947.

鳞斑毛嘴杜鹃 lin ban mao zui du juan

Rhododendron radinum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 268. 1916.

Bud scales persistent. Leaf blade with adaxial surface usually densely scaly. Corolla outer surface densely scaly; style usually shorter than ovary. Fl. May–Jun.

● Thickets, scrub, open slopes, rocks; 2700–3400(–3800) m. SW Sichuan, NW Yunnan.

173. Rhododendron hoi W. P. Fang, Acta Sci. Nat. Univ. Szechuan. 1957(2): 216. 1957 [*"hoii"*].

川北杜鹃 chuan bei du juan

Rhododendron anthopogonoides Maximowicz subsp. *hoi* (W. P. Fang) W. P. Fang & Z. X. Xiong.

Shrubs, 0.6–1 m tall; branchlets blackish scaly. Petiole ca. 2 mm, scaly; leaf blade elliptic, 1.5–2(–2.5) × 1–1.2 cm; base rounded to broadly cuneate; margin somewhat revolute; apex acute, mucronulate; abaxial surface scales dense, brown or yellowish; adaxial surface shiny, glabrous. Inflorescence 10–12-flowered. Pedicel ca. 0.2 cm, glabrous; calyx lobes ca. 5 mm persisting to enclose mature capsule, glabrous except for the ciliate margin; corolla funnelform, pinkish, 1.3–1.5 cm, tube 7–9 mm, outer surface glabrous, inner surface villous; stamens 5, included within the tube, filaments glabrous; ovary ca. 1.5 mm, scaly; style ca. 1 mm. Capsule ca. 4 mm. Fl. Jun, fr. Aug.

● Mountain summits, ridges, grassy slopes; 3500–3600 m. NC Sichuan (Lixian, Maowen, Wenchuan).

The original author suggested that this species has affinities with *Rhododendron anthopogonoides* and *R. rufescens*. From the original description, it may be close to *R. primuliflorum*.

Flora of China 14: 260–455. 2005.

3. Rhododendron sect. **Vireya** H. F. Copeland, Philipp. J. Sci. 40: 151. 1929.

越桔杜鹃组 yue ju du juan zu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); David F. Chamberlain

Vireya Blume, Bijdr. 854. 1826, not Rafinesque (1814).

Shrubs or small trees, evergreen, epiphytic or terrestrial. Leaves scattered or clustered at top of branches or nodes and thus whorled. Leaf blade with both surfaces scaly, scales entire, or lobed. Inflorescence a terminal 1- to several-flowered umbel. Calyx small, cup-shaped or plate-shaped, inconspicuously 5-lobed, or margin undulate; corolla shortly tubular, funnelform, tubular-campanulate or campanulate; tube short to long and slender, erect or slightly curved; lobes slightly longer than tube or less than 1/4 as long as tube, yellow, orange-yellow, white, or pale to deep red. Stamens 10; filaments hairy at least towards base; ovary oblong to tubular or ovate, densely scaly, often hairy; style glabrous or hairy, scaly. Capsule fusiform, cylindric or oblong, scaly, often hairy. Carpels thin, ± twisted after opening, recurved. Seed often with caudate appendages on both sides.

About 300 species: mostly in tropical SE Asia, extending northwest to the Himalayas and south to N Australia; 11 species (six endemic) in China.

1a. Calyx undeveloped, margin entire or undulate.
  2a. Inflorescence 1-flowered; leaf apex emarginate.
    3a. Leaf blade 1.5–3.5 × 1–1.5 cm; ovary without hairs ..... 174. *R. emarginatum*
    3b. Leaf blade 0.6–1 × 0.2–0.5 cm; ovary pubescent ..... 176. *R. densifolium*
  2b. Inflorescence 4–7-flowered; leaf apex obtuse or acute, not emarginate.
    4a. Corolla 8–10 mm; calyx undulate or with crenulate lobes ..... 177. *R. datiandingense*
    4b. Corolla 10–15 mm; calyx with triangular lobes, to 4 mm ..... 178. *R. rushforthii*
1b. Calyx conspicuously lobed.
  5a. Leaf blade oblong-obovate, 2–5 × 1–3 cm.
    6a. Leaf apex not emarginate; calyx 1–2 mm, lobes ovate or triangular; corolla 1–1.5 cm ..... 179. *R. kawakamii*
    6b. Leaf apex emarginate; calyx 2–4 mm, lobes ovate or oblong; corolla ca. 0.8 cm ..... 180. *R. asperulum*
  5b. Leaf blade spathulate, obovate to oblong-obovate, 1.2–2.4 × 0.5–1.2 cm.
    7a. Corolla white or pale red; calyx ca. 3 mm ..... 181. *R. vaccinioides*
    7b. Corolla yellow; calyx 1–2 mm.
      8a. Inflorescence 1-flowered; ovary pubescent.
        9a. Calyx pubescent; corolla with red spots on three lobes ..... 182. *R. rupivalleculatum*
        9b. Calyx without hairs; corolla without spots ..... 175. *R. poilanei*
      8b. Inflorescence (1- or)2-flowered; ovary without hairs.
        10a. Young shoots densely papillate-glandular; leaf blade with lateral veins conspicuously concave adaxially; pedicels 2–2.5 cm, longer than leaves ..... 183. *R. maguanense*
        10b. Young shoots sparsely glandular; leaf blade with lateral veins inconspicuous adaxially; pedicels 1.5–2 cm, shorter than leaves ..... 184. *R. leiboense*

174. Rhododendron emarginatum Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1910: 118. 1910.

缺顶杜鹃 que ding du juan

Many-branched shrubs, sometimes epiphytic, 1–1.5 m tall; internodes short; young shoots papillate, scaly; bud scales soon deciduous. Petiole 2–5 mm, scaly; leaf blade leathery, oblong-obovate, oblanceolate or spathulate, 1.5–3.5 × 0.8–1.5 cm; base cuneate; margin revolute; apex broadly rounded, emarginate, apiculate; abaxial surface pale yellowish green, scales 2–3(–5) × their own diameter apart, concave; adaxial surface deep green, glabrous; midrib and lateral veins raised abaxially, concave adaxially; lateral veins 3- or 4-paired. Inflorescence terminal, 1-flowered. Pedicel 1.4–2.3 cm, scaly; base subtended by several bracts; calyx lobes shallow and undulate, sparsely scaly; corolla campanulate, golden, 1.3–1.5 cm, outer surface scaly; stamens 10, unequal, as long as or shorter than corolla; filaments pubescent in lower 2/3; ovary 5-locular, densely scaly, glabrous; style erect or arching, shorter than corolla, longer than stamens. Capsule narrowly cylindric, 10–13 mm, glandular scaly. Fl. Oct–Jan.

● Epiphytic on trees, rocks; 1200–2000 m. Guangxi, Guizhou, SE Yunnan.

175. Rhododendron poilanei Dop in Lecomte, Fl. Indo-Chine 3: 739. 1930.

毛果缺顶杜鹃 mao guo que ding du juan

Rhododendron emarginatum Hemsley & E. H. Wilson var. *eriocarpum* K. M. Feng; ?*R. euonymifolium* H. Léveillé.

Multi-branched shrubs, sometimes epiphytic, ca. 0.5 m tall; young shoots papillate, scaly; bud scales soon deciduous. Petiole 2–6 mm, scaly; leaf blade leathery, obovate or obovate-spathulate, 1.2–2.5 × 0.8–1.3 cm; base cuneate; apex rounded, sometimes retuse; abaxial surface pale yellowish green, scales 4–6 × their own diameter apart; lateral veins inconspicuous on both surfaces. Inflorescence terminal, 1-flowered. Pedicel 0.5–1 cm, scaly; calyx lobes conspicuous, 1–2 mm, scales present,

sparse; corolla campanulate, golden, 0.8–1 cm; tube ca. 3 mm; outer surface sparsely scaly; mouth hairy; lobes 0.6–0.7 cm; stamens 10, unequal; filaments hairy around the middle, glabrous below; ovary scaly, pubescent; style straight, shorter than corolla and stamens. Capsule narrowly cylindric, ca. 10 mm. Fl. Aug–Sep.

Mountain thickets; 1200–2100 m. Guangxi, Yunnan [N Vietnam].

Rhododendron emarginatum var. *eriocarpum,* described from Guangxi and Yunnan, is synonymous with *R. poilanei,* described from N Vietnam. These two taxa share a hairy ovary with *R. euonymifolium,* which could, if also synonymous, be the earliest name for the species (H. Léveillé, Repert. Spec. Nov. Regni Veg. 12: 103. 1913). One of the syntypes of the latter species, *Esquirol 661* (E), is very poor but has ovaries, all of which are hairy. However, there is some confusion, as the other, rather more complete syntype, *J. Cavalerie 264* (E), has both hairy and hairless ovaries. This is the crucial character separating *R. poilanei* from the more or less sympatric *R. emarginatum*. It appears that designation of a lectotype is required.

176. Rhododendron densifolium K. M. Feng, Acta Bot. Yunnan. 5: 266. 1983.

密叶杜鹃 mi ye du juan

Shrubs, 0.3–1.3 m tall; young shoots slender, purplish brown, densely glandular and scaly. Petiole ca. 2 mm, scaly; leaf blade leathery, obovate or oblanceolate, 0.6–1.0 × 0.4–0.5 cm; base cuneate; margin revolute; apex emarginate, apiculate; abaxial surface pale green, scales 2–4 × their own diameter apart, concave, brown; adaxial surface green; lateral veins inconspicuous on both surfaces. Inflorescence terminal, 1-flowered. Pedicel 1.3–1.5 cm, scaly; calyx rounded or inconspicuously 5-lobed, small, scales present; corolla campanulate, 5-lobed, golden, ca. 0.8 cm, outer surface sparsely glandular-scaly; lobes oblong, ca. 0.55 cm; stamens 10; filaments sparsely pubescent in lower 1/2; ovary scaly, densely pubescent; style persistent, down-curved, 2–4 mm, glabrous; stigma capitate. Capsule cylindric-elliptic, 5-lobed, 7–11 mm, brown-scaly, densely pubescent.

Mixed forests and thickets in rocky mountains; 1000–1800 m. SE Yunnan [Vietnam].

177. Rhododendron datiandingense Z. J. Feng, J. S. China Agric. Univ. 17(1): 59. 1996.

大天顶杜鹃 da tian ding du juan

Small epiphytic shrubs, 0.3–0.5 m tall; upper shoots spreading, gray-brown. Petiole flattened, 3–5 mm; leaf blade oblong-oblanceolate to elliptic oblanceolate, 2–4 × 1–2 cm; base narrow, often decurrent; margin strongly revolute; apex obtuse or acute; abaxial surface sparsely scaly; adaxial surface blackish green, polished, midrib and lateral veins impressed when dry. Inflorescence terminal, umbellate racemose, 4–7-flowered. Pedicel 0.7–1.2 cm; calyx undulate or obtusely crenulate, small; corolla shortly campanulate, yellow, 0.8–1 cm; tube 4–5 mm, mouth hairy; stamens 10, ca. 0.6 cm, filaments white-hairy in lower half though glabrous at base; ovary ca. 3 mm; style arched, ca. 3 mm; stigma capitate. Capsule ellipsoid, 10–13 × ca. 6 mm. Fl. Jun, fr. Oct.

● Epiphytic. W Guangdong (Datian Ding).

Rhododendron datiandingense is apparently allied to *R. kawakamii,* sharing with that species a several-flowered inflorescence.

178. Rhododendron rushforthii Argent & D. F. Chamberlain, New Plantsman 3(4): 195. 1996.

滇越杜鹃 dian yue du juan

Small shrubs, perhaps epiphytic, to 1.5 m tall; older shoots ash-gray. Petiole 8–15 mm; leaf blade thick, glaucous, especially when young, elliptic, 1.8–11 × 1.7–4.2 cm; base cuneate, narrowly decurrent; margin cartilaginous; apex broadly acute, apiculate; abaxial surface scales scattered, brown; adaxial surface scaly, at first silvery, turning brown and quickly lost, midrib and lateral veins impressed. Inflorescence terminal, umbellate, 3–8-flowered. Pedicel 1–1.4 cm; calyx lobes 3–4 mm, triangular, unequal; corolla shortly campanulate, yellow, 1–1.5 cm, tube 4–7 mm, outer surface finely scaly, mouth hairy; stamens 10, 0.8–0.9 cm, filaments hairy in lower half though glabrous at base; ovary ca. 4 mm; style arched, ca. 5 mm; stigma capitate. Capsule not known. Fl. (in cultivation) Jun.

Probably epiphytic, also mossy banks. S China (see note below) [N Vietnam].

This species is closely allied to *Rhododendron datiandingense,* and may be conspecific, although the flowers are significantly larger. The glaucous leaves are a significant feature of *R. rushforthii.* It was originally described from Lao Cai Province, N Vietnam, close to the border with S Yunnan at Pingbian. It is known from cultivated material said to have come from S China.

179. Rhododendron kawakamii Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 171. 1911.

着生杜鹃 zhuo sheng du juan

Multi-branched shrubs, epiphytic, 0.3–1.5 m tall; young shoots slender, long, twisted, glandular-scaly. Petiole 2–8 mm, sparsely scaly; leaf blade leathery, oblong-obovate to obovate or oblanceolate, 2–5 × 1–3 cm; base cuneate; margin slightly revolute; apex rounded, apiculate; abaxial surface yellowish green, scales 2–3 × their own diameter apart, small, unequal, glandular, brown; adaxial surface dark or fresh green, scaly or not, midrib and lateral veins raised abaxially, concave adaxially. Inflorescence terminal, umbellate, 3–6-flowered. Pedicel 0.2–0.25 cm, sparsely glandular-scaly; calyx lobes 5, 1–2 mm, ovate or triangular, scaly abaxially and on margin; corolla campanulate, white to pale red or yellow, 1–1.5 cm, outer surface glandular-scaly; lobes broadly ovate; stamens 10, unequal, 0.6–0.7 cm, shorter than corolla; filaments densely pubescent in lower 2/3; ovary 5-locular, scaly, densely pubescent; style stout, erect or arched, shorter than corolla, as long as or slightly longer than stamens, often glabrous, sometimes with lower part pubescent. Capsule tubular or subovoid, 8–12 mm, densely pubescent or sparsely villous.

● Thickets, sometimes epiphytic on trees; 800–2600 m. Taiwan.

1a. Corolla white to red; leaf blade obovate to oblong-obovate; petiole 2–8 mm ..... 179a. var. *kawakamii*

1b. Corolla yellow; leaf blade oblanceolate; petiole short ..... 179b. var. *flaviflorum*

179a. Rhododendron kawakamii var. **kawakamii**

着生杜鹃(原变种) zhuo sheng du juan (yuan bian zhong)

Petiole 2–8 mm; leaf blade obovate to oblong-obovate. Corolla white to pale red.

● Thickets, sometimes epiphytic on trees; 1400–2600 m. Taiwan.

179b. Rhododendron kawakamii var. **flaviflorum** Liu & Chuang, Quart. J. Taiwan Mus. 13: 64. 1960.

黄色着生杜鹃 huang se zhuo sheng du juan

Rhododendron taiwanianum S. S. Ying.

Petiole short; leaf blade oblanceolate. Corolla yellow.

● Epiphytic on trees; 800–2100 m. Taiwan.

180. Rhododendron asperulum Hutchinson & Kingdon Ward in J. B. Stevenson, Sp. Rhodod. 818. 1930.

瘤枝杜鹃 liu zhi du juan

Small shrubs, sometimes epiphytic, ca. 0.6 m tall; young shoots densely papillate, scaly. Petiole 2–3 mm, scaly; leaf blade leathery, oblong-obovate, 2–3.5 × 1–2 cm; base cuneate; margin revolute; apex rounded, emarginate, apiculate; abaxial surface scales 2–3(–5) × their own diameter apart, small or mid-sized, unequal, glandular, brown; adaxial surface dark or fresh green, scaly or not; lateral veins concave. Inflorescence terminal, umbellate, 1–3-flowered. Pedicel 1.3–2.2 cm, scaly; calyx deeply 5-lobed; lobes 2–4 mm, ovate or oblong, scales sometimes present at base abaxially; corolla shortly campanulate, pale pink, 0.7–0.8 cm, outer surface scaly; stamens 10, unequal, as long as or shorter than corolla; filaments pubescent in the lower 2/3; anthers orange-yellow; ovary 5-locular, densely scaly, glabrous; style stout, erect or arched, shorter than stamens; base scaly. Capsule long and slender, dehiscing from top, 20–25 × ca. 3 mm.

Epiphytic on evergreen trees or on trees in open grassland, moss-covered rocks; 1400–2200 m. SE Xizang, W Yunnan [Myanmar].

181. Rhododendron vaccinioides J. D. Hooker, Rhododendr. Sikkim-Himalaya 2: 3. 1851.

越桔杜鹃 yue ju du juan

Rhododendron sinovaccinioides I. B. Balfour & Forrest.

Small shrubs, sometimes epiphytic, 0.3–1 m tall; branches sparse, long, often pendulous; young shoots densely papillate-glandular, rough, glandular-hairy. Petiole 1–3 mm, scaly; leaf blade thick and leathery, spathulate-oblanceolate or oblong-obovate, 1.3–2 × 0.5–0.8 cm; base cuneate, decurrent along petiole; apex rounded, emarginate, apiculate; abaxial surface scales 2–5 × their own diameter apart, glandular; concave; adaxial surface glabrous; lateral veins inconspicuous on both surfaces. Inflorescence terminal, umbellate, 1- or 2-flowered. Pedicel 0.1–0.15 cm, glandular-scaly; calyx lobes 5, ca. 3 mm, oblong or ovate; corolla campanulate, 5-lobed, creamy white or white tinged with pale red, 0.6–1.1 cm, outer surface glandular scaly; stamens 10, unequal, as long as corolla; filaments densely villous in lower 2/3; ovary 5-locular, densely scaly, glabrous; style stout, erect or arched, shorter than corolla and stamen. Capsule long-cylindric, 14–30 mm. Fl. May–Jun, fr. Jul.

Epiphytic on tree trunks in evergreen broad-leaved forests and evergreen and deciduous mixed forests, rocks; 1800–2700(–3100) m. SE Xizang, NW and SE Yunnan [Bhutan, India, N Myanmar, Nepal, Sikkim].

182. Rhododendron rupivalleculatum P. C. Tam, Guihaia 2: 69. 1982.

岩谷杜鹃 yan gu du juan

Small shrubs, epiphytic, 0.2–0.6 m tall. Stem cylindric, multi-branched; young shoots rough, densely papillate. Petiole ca. 3 mm or sessile; leaf blade leathery, spatulate-obovate, 1.4–2 × 0.8–1 cm; base cuneate; margin conspicuously revolute; apex emarginate, apiculate; abaxial surface pale green, sparsely scaly; adaxial surface olive green, shiny; midrib conspicuous, lateral veins inconspicuous. Inflorescence terminal, 1-flowered. Pedicel slender, 1–1.5 cm, scaly, pubescent; calyx 5-lobed; lobes ca. 1.2 mm, oblong, sparsely scaly, pubescent; corolla shortly campanulate, yellow, 3 lobes with red spots, 1–1.2 cm, outer surface sparsely scaly; lobes spathulate-ovate, longer than tube; stamens 10, 0.8–1 cm, filaments pubescent around the middle; ovary scaly, densely pubescent; style often arched, ca. 5 mm. Capsule cylindric, 9–12 × ca. 3.5 mm, scaly, pubescent and densely glandular. Fl. Jul–Sep, fr. Nov–Jan.

● Rocks in open valley forests, summits of open hills; 1200–1400 m. Guangdong, Guangxi.

This species is closely allied to *Rhododendron poilanei*.

183. Rhododendron maguanense K. M. Feng, Acta Bot. Yunnan. 5: 268. 1983.

马关杜鹃 ma guan du juan

Shrubs, 1–2 m tall; young shoots slender, brown, densely rough-papillate-glandular. Petiole 3–4 mm, scaly; leaf blade leathery, obovate, 1.2–2.2 × 0.8–1.1 cm; base cuneate; margin revolute; apex rounded, emarginate, apiculate; abaxial surface pale green, scales 2–3 × their own diameter apart, concave; adaxial surface green; lateral veins 3–4-paired, concave above and flat below. Inflorescence terminal, 1- or 2-flowered. Pedicel brown-purple, 2–2.5 cm; calyx lobes 5, ca. 1 mm, ovate-triangular, scaly abaxially; corolla campanulate, 5-lobed, golden yellow, 0.8–1 cm, tube ca. 4 mm, outer surface scaly; lobes oblong, 0.5–0.6 cm; stamens 10, unequal, 0.7–0.8 cm; filaments villous in lower 1/2; ovary densely scaly; style 3–4 mm, glabrous; stigma capitate. Capsule not known.

● Thickets in mountains; 2000–2600 m. SE Yunnan.

Rhododendron maguanense may be synonymous with *R. emarginatum*. According to the descriptions, the former has calyx lobes that are triangular and 1 mm, the latter has an undulate calyx. There appears to be little else to distinguish them.

184. Rhododendron leiboense Z. J. Zhao, Bull. Bot. Res., Harbin 7(3): 57. 1987.

雷波杜鹃 lei bo du juan

Shrubs, epiphytic, ca. 1 m tall; young shoots slender, sparsely glandular. Leaf blade leathery, elliptic, spathulate or ovate-spathulate, 1.6–2.4 × 0.6–1.2 cm; base narrow; apex trun-

cate and emarginate; abaxial surface pale yellowish, scales 2–3 × their own diameter apart; adaxial surface dark green, glabrous; lateral veins inconspicuous. Inflorescence terminal, umbellate, 2-flowered. Pedicel brown, slender, 0.15–0.2 cm, densely scaly; calyx lobes 5, ca. 2 mm, triangular, apex rounded, base densely scaly; corolla campanulate, yellow, ca. 1.2 cm, tube ca. 8 mm; outer surface sparsely scaly; stamens 10, unequal, 0.7–1 cm, shorter than corolla; anthers ca. 2 mm; ovary densely scaly; style stout, erect or arched, 3–4 mm; stigma capitate, truncate. Capsule not known.

● 1400–1500 m. C and S Sichuan.

2. Rhododendron subg. Pseudazalea Sleumer, Bot. Jahrb. Syst. 74: 525. 1949.

毛枝杜鹃亚属 mao zhi du juan ya shu

Yang Hanbi (杨汉碧 Yang Han-pi); David F. Chamberlain

Small to medium-sized shrubs, mostly deciduous or semievergreen, rarely evergreen; young shoots scaly, usually setose or hairy. Leaf blade with abaxial surface sparsely scaly, scales variously colored, vesicular. Inflorescence terminal, 2–6-flowered: flowers opening before leaf emergence. Calyx rimlike to clearly lobed, usually ciliate; corolla broadly campanulate or funnelform-campanulate, yellow, sometimes tinged with red, variably spotted, scaly, sometimes setose; stamens 10; filaments pubescent; ovary scaly, usually setose; style usually sharply deflexed. Capsule small, scaly. Seeds wingless, obscurely finned.

Six species: China, India, Myanmar, Nepal; six species (four endemic) in China.

1a. Leaves deciduous; flowers produced before leaves.
  2a. Branchlets, petioles, pedicels, and leaf blade margin setose; scales on abaxial leaf surface subequal, 1–7 × their own diameter apart ..... 185. *R. trichocladum*
  2b. Branchlets, petioles, pedicels, and leaf blade margin usually not setose (leaf blade adaxially densely long-setose in *R. mekongense* var. *longipilosum*); scales on abaxial leaf surface unequal, close to 4 × their own diameter apart ..... 186. *R. mekongense*
1b. Leaves evergreen or sometimes semievergreen; flowers produced after leaves.
  3a. Leaf bud scales persistent; ovary, calyx, corolla tube, capsule, and midrib on abaxial leaf surface setose ..... 187. *R. lepidostylum*
  3b. Leaf bud scales deciduous; ovary, calyx, corolla tube, capsule, and midrib on abaxial leaf surface not setose.
    4a. Abaxial leaf surface markedly glaucous, sparsely scaly, scales 2–5 × their own diameter apart; branchlets and petioles usually not long-setose ..... 188. *R. caesium*
    4b. Abaxial leaf surface usually pale green, densely scaly, scales 1–3 × their own diameter apart; branchlets and petioles usually densely long-setose.
      5a. Leaves semievergreen, not setose ..... 189. *R. viridescens*
      5b. Leaves evergreen, setose ..... 190. *R. nanjianense*

185. Rhododendron trichocladum Franchet, Bull. Soc. Bot. France 33: 234. 1886.

糙毛杜鹃 cao mao du juan

Rhododendron brachystylum I. B. Balfour & Kingdon Ward; *R. lophogynum* I. B. Balfour & Forrest ex Hutchinson; *R. oulotrichum* I. B. Balfour & Forrest; *R. xanthinum* I. B. Balfour & W. W. Smith.

Shrubs, deciduous, 0.4–1.5(–2) m tall; branchlets branchlets sparsely scaly, long-setose; bud scales deciduous. Petiole 1–4(–5) mm, scaly, long-setose; leaf blade obovate, or obovate-elliptic to oblong-lanceolate, (1.5–)2–4(–6) × (0.6–)1–2(–2.6) cm; base cuneate; margin setose; apex rounded, mucronate; abaxial surface scales 1–7 × their own diameter apart, pale or dark brown, midrib setose; adaxial surface green, usually sparsely scaly, setose. Inflorescence 1–3(–5)-flowered. Pedicel 0.6–1.2(–3.5) cm, scaly, long-setose; calyx lobes ovate to oblong, persistent in fruit, scaly, ciliate; corolla funnel-campanulate, yellow or greenish yellow, with or without green spots, 1.4–2.4 cm; tube 7–11 mm, scaly, sometimes setose; stamens 10, filaments pubescent towards base; ovary scaly, occasionally setose; style thick, sharply bent, rarely straight. Capsule cylindric-ovate, 5–8(–10) mm, scaly. Fl. May–Jul, fr. Jul–Aug.

Abies forests, thickets, scrub, open rocky slopes, cliffs; 2000–3600 m. C and W Yunnan, SE Xizang [N Myanmar].

186. Rhododendron mekongense Franchet, J. Bot. (Morot) 12: 263. 1898.

弯月杜鹃 wan yue du juan

Shrubs, deciduous, semievergreen or evergreen, (0.6–)1–1.5(–2) m tall; young growth scaly, long-setose; bud scales deciduous. Petiole 1–2(–5) mm, sparsely scaly, long-setose; leaf blade leathery, obovate or oblanceolate to obovate-elliptic, 2.5–5(–6.5) × 0.8–2(–2.7) cm; base cuneate; margin usually setose; apex rounded, mucronate; abaxial surface slightly glaucous, scales 1–4 × their own diameter apart, unequal, pale or dark brown; midrib usually sparsely setose; adaxial surface dark green, without scales, glabrous or long-setose. Inflorescence 2–4(–5)-flowered. Pedicel 1–2.5 cm, scaly, usually sparsely long-setose; calyx lobes rounded, ovate, oblong to lanceolate, persistent in fruit, scaly, long-ciliate or glabrous; corolla broadly campanulate, yellow, greenish yellow, or creamy yellow, sometimes lined and flushed rose on outside, 1.5–2(–2.3) cm; tube 7–11 mm; outer surface usually scaly; stamens 10, filaments villous or pubescent towards base; ovary scaly; style thick,

sharply bent. Capsule cylindric, 7–11 mm, densely scaly. Fl. May–Jun, fr. Jul–Sep.

Forest margins, thickets, scrub, open pastures, slopes, valleys, cliffs, rocks, rarely swamps; 3000–4300 m. S Xizang, NW Yunnan [India, NE Myanmar, Nepal].

1a. Adaxial leaf surface densely long-setose ..... 186d. var. *longipilosum*
1b. Adaxial leaf surface not long-setose.
  2a. Leaves evergreen or sometimes semievergreen; corolla creamy yellow, lined and flushed rose on outside; branchlets and pedicels not setose ..... 186c. var. *rubrolineatum*
  2b. Leaves deciduous; corolla yellow or greenish yellow; branchlets and pedicels setose.
    3a. Calyx glabrous; corolla yellow ..... 186b. var. *melinanthum*
    3b. Calyx ciliate; corolla yellow to greenish yellow ..... 186a. var. *mekongense*

186a. Rhododendron mekongense var. **mekongense**

弯月杜鹃(原变种) wan yue du juan (yuan bian zhong)

Rhododendron rubroluteum Davidian.

Shrubs deciduous; branchlets and pedicels setose. Leaf blade adaxially glabrous. Calyx ciliate; corolla yellow to greenish yellow. Fl. May–Jun, fr. Jul–Sep.

Forest margins, thickets, grassy slopes, cliffs; 3000–3800 m. S Xizang, NW Yunnan [NE Myanmar, Nepal].

186b. Rhododendron mekongense var. **melinanthum** (I. B. Balfour & Kingdon Ward) Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 115. 1978.

密花弯月杜鹃 mi hua wan yue du juan

Rhododendron melinanthum I. B. Balfour & Kingdon Ward, Trans. Bot. Soc. Edinburgh 27: 85. 1916; *R. chloranthum* I. B. Balfour & Forrest; *R. semilunatum* I. B. Balfour & Forrest.

Shrubs deciduous; branchlets and pedicels setose. Leaf blade adaxially glabrous. Calyx glabrous; corolla yellow. Fl. May–Jun, fr. Jul–Aug.

Forest margins, thickets, scrub, grassy slopes, valleys; 3300–4300 m. SE Xizang, NW Yunnan [NE Myanmar].

186c. Rhododendron mekongense var. **rubrolineatum** (I. B. Balfour & Forrest) Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 115. 1978.

红线弯月杜鹃 hong xian wan yue du juan

Rhododendron rubrolineatum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 160. 1920.

Shrubs evergreen or sometimes semievergreen; branchlets and pedicels not setose. Leaf blade adaxially glabrous; corolla creamy yellow, lined and flushed rose on outside. Fl. May–Jun.

Forest margins, open pastures, valleys, rocks, rarely swamps; 3200–4300 m. S Xizang, NW Yunnan [India].

186d. Rhododendron mekongense var. **longipilosum** (Cowan) Cullen, Notes Roy. Bot. Gard. Edinburgh 36: 115. 1978.

长毛弯月杜鹃 chang mao wan yue du juan

Rhododendron trichocladum Franchet var. *longipilosum* Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 186. 1936.

Leaf blade adaxially densely long-setose. Fl. Jun–Jul.

Thickets, scrub, slopes; 3000–4000 m. S Xizang, NW Yunnan [NE Myanmar].

It may be better to treat var. *longipilosum* as a variety or subspecies of *R. trichocladum,* as originally described. The bristles then fit. On the type, the scales are subequal on the abaxial surface of the leaf blades.

187. Rhododendron lepidostylum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 124. 1920.

常绿糙毛杜鹃 chang lü cao mao du juan

Shrubs, evergreen, 0.3–1.5 m tall; young growth scaly, densely long-setose; bud scales persistent. Petiole 4–12 mm, scaly, long-setose; leaf blade leathery, obovate, oblong-obovate to ovate, (2–)3–4(–4.5) × (1–)1.5–1.8(–2) cm; base rounded; margin revolute, long-setose; apex rounded, mucronate; abaxial surface glaucous, scales 1–4 × their own diameter apart, usually unequal, golden, midrib setose; adaxial surface bluish green, glabrous. Inflorescence 1–2(–3)-flowered. Pedicel 2–3 cm, scaly, long-setose; calyx lobes 1–7 mm, lanceolate to ovate, persistent in fruit, scaly, long-setose, margin long-setose; corolla funnelform-campanulate, yellow, sometimes with orange spots, 2–3.3 cm; tube 10–12 mm; outer surface scaly, long-setose; stamens 10, filaments pubescent towards base; ovary scaly, setose; style slender, straight, usually longer than corolla. Capsule cylindric, ca. 10 mm, scaly, long setose. Fl. May–Jun, fr. Jul–Aug.

● Cliffs, ledges, boulders; 3000–3700 m. W Yunnan.

188. Rhododendron caesium Hutchinson, Gard. Chron., ser. 3, 94: 102. 1933.

蓝灰糙毛杜鹃 lan hui cao mao du juan

Shrubs, semievergreen, 1–1.5 m tall; young growth sparsely scaly, otherwise glabrous; bud scales deciduous. Petiole 2–6 mm, scaly, setose; leaf blade leathery, oblong, oblong-lanceolate, elliptic to oblong-ovate, 2.5–4(–6) × 1.2–2(3.4) cm; base rounded; margin slightly revolute, long-setose; apex rounded, mucronate; abaxial surface glaucous, scales 2–5 × their own diameter apart, unequal, brown, midrib setose; adaxial surface pale bluish green, glabrous. Inflorescence (1–)2–3(–5)-flowered. Pedicel 1–1.5(–2) cm, scaly; calyx lobes 1–2 mm, rounded to ovate, persistent in fruit, scaly, margin sparsely setose; corolla funnelform-campanulate, yellow or yellowish green, with greenish spots, 1.5–2(–2.5) cm; tube 7–10(–12) mm; outer surface scaly, without hairs; stamens 10, filaments pubescent towards base; ovary scaly; style slender, straight, nearly as long as corolla. Capsule cylindric, ca. 10 mm, densely scaly. Fl. May, fr. Jun.

● Rocky slopes, valleys; 2400–3100 m. C and W Yunnan.

189. Rhododendron viridescens Hutchinson, Gard. Chron., ser. 3, 94: 116. 1933.

显绿杜鹃 xian lü du juan

Shrubs, semievergreen, 0.3–1(–1.5) m tall; young growth sparsely scaly, setose; bud scales deciduous. Petiole 1–2(–4) mm, scaly, setose; leaf blade leathery, elliptic, obovate, oblong-obovate to ovate, 1.5–3(–6.7) × 1–2(–3) cm; base obtuse; apex rounded, mucronate; abaxial surface pale green, scales 1–3 × their own diameter apart, unequal, brown and pale yellow, not setose; adaxial surface bright green, glabrous. Inflorescence 3- or 4(–6)-flowered. Pedicel 1.2–2.5(–3) cm, scaly, setose; calyx lobes 0.5–1(–2) mm, ovate or rounded, persistent in fruit, scaly, margin setose; corolla funnelform-campanulate, yellowish green to yellow, with greenish spots on the posterior side, margin sometimes tinged pale crimson, 1.6–2(–2.5) cm; outer surface scaly, without hairs; stamens 10, filaments villous towards base; ovary scaly; style slender, straight or sharply bent, nearly as long as corolla. Capsule cylindric, 6–8 mm, densely scaly. Fl. Jun–Aug, fr. Sep.

● Forests, thickets, boggy pastures, valleys; 3000–3400 m. SE Xizang.

190. Rhododendron nanjianense K. M. Feng & Z. H. Yang, Acta Bot. Yunnan. 9: 55. 1987.

南涧杜鹃 nan jian du juan

Small shrubs, 0.3–0.5 m tall; young growth densely setose. Petiole 4–7 mm, densely setose; leaf blade leathery, oblong-elliptic or ovate, 2–3.5 × 0.7–1.7 cm; base rounded; margin setose; apex obtuse, mucronate; abaxial surface pale green, scales sparse, unequal, brown, midrib sparsely setose; adaxial surface green, glabrous. Inflorescence 4–6-flowered. Pedicel 2–2.5 cm, scaly, setose; calyx lobes 1–2 mm, rounded, scaly, margin setose; corolla broadly funnelform-campanulate, yellow, 2–2.3 cm, lobes oblong, as long as tube; stamens 10, filaments villous towards base; ovary scaly; style 1.5–2.2 cm. Capsule ovoid, 6–8 mm, densely scaly. Fl. May–Jun.

● Thickets; 2600–2800 m. W Yunnan.

3. Rhododendron subg. Pseudorhodorastrum Sleumer, Bot. Jahrb. Syst. 74: 529. 1949.

糙叶杜鹃亚属 cao ye du juan ya shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); David F. Chamberlain

Small shrubs, evergreen, (0.1–)0.2–2.5(–3.5) m tall; new foliage shoots arising from uppermost (subterminal) buds, and from leaf axils; young shoots scaly, sometimes also pilose or strigose. Leaf blade with abaxial surface scaly and often also hairy. Inflorescences axillary, usually subterminal just below the terminal vegetative buds, umbellate, usually subtended by persistent bud scales, 1–5-flowered. Calyx usually small, to well-developed, shallowly cup-shaped to 5-lobed; corolla broadly funnelform to tubular, 5-lobed, often to below middle, 0.8–2.7 cm, pale red, white or purplish red, outside glabrous or glandular-scaly or base sometimes pubescent, rarely scaly; stamens 8–10; filaments usually partly pubescent, often with glabrous base; ovary 5-locular, scaly, often also hairy; style slender, erect. Capsule usually cylindric, 5–14 mm, scaly, sometimes pubescent. Seed wingless.

Ten species: Bhutan, China, Sikkim; ten species (nine endemic) in China.

Rhododendron subg. *Pseudorhodorastrum* was not recognized by Cullen (Notes Roy. Bot. Gard. Edinburgh 39: 1–207. 1980) and is probably not confirmed by DNA sequencing.

1a. Adaxial leaf surface pilose or with strigose hairs; abaxial surface rarely glabrous; stamens 8–10 ..... 1. *R.* sect. *Trachyrhodion*
1b. Adaxial leaf surface with no hairs, abaxial surface white; stamens 10.
  2a. Inflorescences axillary, 1- or 2-flowered, flowering shoot racemelike; outer surface of corolla with dense short pilose hairs; seeds with appendages at both ends ..... 2. *R.* sect. *Rhabdorhodion*
  2b. Inflorescences subterminal, 2–5-flowered, usually clustered; outer surface of corolla without hairs; seeds lacking appendages ..... 3. *R.* sect. *Rhodobotrys*

1. Rhododendron sect. Trachyrhodion Sleumer, Bot. Jahrb. Syst. 74: 529. 1949.

糙叶杜鹃组 cao ye du juan zu

Small shrubs; young branches scaly and pilose or strigose. Leaf blade with both surfaces, or at least the adaxial surface, scaly and usually hairy at least along veins, sometimes without hairs. Inflorescence 1–4-flowered. Calyx with obvious lobes or reduced to a rim, abaxially densely pubescent; corolla tubular-campanulate or funnelform, white or pink to deep red, outer surface scattered with glandular scales or glabrous, usually without hairs, pilose or glabrous; ovary densely scaly and hairy; style glabrous or pilose near base. Capsule scaly and pubescent. Seed wingless.

● Seven species: China.

1a. Calyx developed, with conspicuous lobes.
  2a. Leaf blade 3–7 × 1–2.5 cm; corolla 5-lobed to below the middle; shrubs 0.5–2 m tall; branches stout and straight ..... 196. *R. scabrifolium*
  2b. Leaf blade 1.2–4 × 0.4–1.2 cm; corolla 5-lobed to the middle; shrubs 0.2–0.6(–2) m tall; branches many, thin ..... 197. *R. spiciferum*

1b. Calyx shallowly cup-shaped, without conspicuous lobes.
3a. Plant pubescent, not hirsute.
4a. Abaxial leaf surface with brown scales but without hairs, grayish white; corolla 0.9–1.3 cm ..... 191. *R. hemitrichotum*
4b. Abaxial leaf surface densely pubescent; corolla 2–2.7 cm ..... 192. *R. mollicomum*
3b. Plant pubescent and hirsute.
5a. Corolla shortly funnelform; lobes obviously spreading; leaf blade ca. 2.2 × 0.6 cm, both surfaces densely pubescent and long hispid ..... 195. *R. pubescens*
5b. Corolla tubular or tubular-campanulate; lobes not or only slightly spreading; leaf blade 2.8–4.5 × 1–3.8 cm, both surfaces pubescent only.
6a. Corolla tubular, lobes shorter than tube, erect, not spreading; corolla bright red; filaments glabrous ..... 193. *R. spinuliferum*
6b. Corolla tubular-campanulate, lobes as long as tube, erect or slightly spreading; corolla pinkish red; filaments densely pubescent ..... 194. *R.* ×*duclouxii*

191. Rhododendron hemitrichotum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 115. 1920.

粉背碎米花 fen bei sui mi hua

Small multi-branched shrubs, 0.3–1(–2) m tall; old branches gray, less hairy and scaly; young shoots brown-scaly, densely white-pubescent. Petiole 1–3 mm, densely pubescent or scaly; leaf blade thinly leathery, narrowly oblong, narrowly elliptic or lanceolate, 1.5–3 × 0.5–1.2 cm; base cuneate or obtuse; margin revolute; apex obtuse or shortly acuminate, apiculate; abaxial surface gray-white, scales less than their own diameter apart, glabrous or sparsely hairy along central vein; adaxial surface deep green, densely pubescent. Inflorescence subterminal, 2- or 3-flowered; bud scales persistent. Pedicel slender, 0.2–0.6 cm, densely scaly, very sparsely or densely pubescent; calyx shallowly cup-shaped, without conspicuous lobes, or round-emarginate, small, densely scaly; corolla funnelform, pink or purplish red, 0.9–1.3 cm, outer surface often glandular-scaly; stamens 8, unequal, slightly exserted from corolla; filaments pubescent or glabrous at base; ovary 5-locular, scaly, densely pubescent; style exserted from corolla; base glabrous or pubescent. Capsule cylindric, ca. 6 mm, scaly, pubescent. Fl. May–Jul or Oct–Dec.

● *Pinus* forests, thickets; 2200–4000 m. Sichuan, NW Yunnan.

192. Rhododendron mollicomum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 249. 1916.

柔毛碎米花 rou mao sui mi hua

Rhododendron mollicomum var. *rockii* Tagg.

Multi-branched shrubs, 0.3–2 m tall; old branches gray, turning glabrous; young shoots sparsely brownish scaly, dirty white-pubescent. Petiole ca. 4 mm, densely pubescent; leaf blade thickly leathery, narrowly oblong or lanceolate, 1.6–4.5 × 0.5–1.5 cm; base cuneate; margin revolute; apex obtuse or acuminate, apiculate; abaxial surface densely scaly, densely pubescent, hairs spreading along central vein; adaxial surface densely pubescent; midrib raised abaxially, concave adaxially. Inflorescence subterminal, 1- or 2-flowered; bud scales persistent. Pedicel 0.5–0.8 cm, sparsely scaly and densely pubescent; calyx shallowly cup-shaped, without conspicuous lobes, small, abaxially scaly and densely pubescent; corolla pale to deep red, 2–2.7 cm, tube slightly curved, 10–13 mm, outer surface glabrous, lobes spreading, outer surface sparsely scaly; stamens 10, unequal, slightly exserted from corolla; filaments glabrous at base, pubescent at middle; ovary 5-locular, scaly, densely white-pubescent; style exserted from corolla, basal 1/3 pubescent. Capsule cylindric, 7–12 mm, scaly, pubescent. Fl. (Mar–) Jun–Jul.

● Coniferous and *Quercus* forests in river valleys, thickets on slopes; ca. 2300 m. SW Sichuan, NW Yunnan.

193. Rhododendron spinuliferum Franchet, J. Bot. (Morot) 9: 399. 1895.

爆杖花 bao zhang hua

Shrubs, 0.5–1(–3.5) m tall; old branches brownish red, nearly glabrous; young shoots gray-pubescent, also hispid. Petiole 3–6 mm, ± pubescent, setose or scaly; leaf blade papery, obovate, elliptic, elliptic-lanceolate, or lanceolate, 3–10.5 × 1.8–3.8 cm; base cuneate; apex acuminate, rarely acute, apiculate; abaxial surface paler, glabrous, sometimes sparsely pubescent along veins, to densely dirty white-pubescent and scaly; adaxial surface yellowish green, glabrous or pubescent; veins conspicuously raised abaxially. Inflorescence subterminal, 2–4-flowered; bud scales white-pubescent and densely scaly outside. Pedicel 2–1 cm, densely pubescent and scaly; calyx shallowly cup-shaped, without conspicuous lobes, small; corolla tubular, narrowed at both ends, bright or orange red, 1.5–2.5 cm; outer surface glabrous, rarely pubescent at lobe base; lobes 5, erect, ovate; stamens 10, unequal, slightly exserted from corolla; filaments glabrous, anthers purplish black; ovary 5-locular, scaly, densely hairy; style exserted from corolla, usually glabrous, rarely pubescent at base. Capsule cylindric, 10–14 mm, scaly, pubescent. Fl. Feb–Jun.

● *Keteleeria* and other coniferous forests, coniferous-*Quercus* mixed forests, valley thickets; 1900–2500 m. SW Sichuan, NE and W Yunnan.

1a. Leaves, pedicels, calyx and ovary pubescent ..... 193a. var. *spinuliferum*
1b. Leaves, pedicels, calyx, and ovary subglabrous or only sparsely pubescent along veins on abaxial leaf surface ..... 193b. var. *glabrescens*

193a. Rhododendron spinuliferum var. **spinuliferum**

爆杖花(原变种) bao zhang hua (yuan bian zhong)

Rhododendron fuchsiiflorum H. Léveillé [“*fuchsiaeflorum*”].

Leaf blade, pedicel, calyx, and ovary pubescent.

● *Keteleeria* and other coniferous forests, coniferous-*Quercus* mixed forests, valley thickets; 1900–2500 m. SW Sichuan, W Yunnan.

193b. Rhododendron spinuliferum var. **glabrescens** K. M. Feng ex R. C. Fang, Acta Bot. Yunnan. 4: 257. 1982.

少花爆杖花 shao hua bao zhang hua

Leaf blade glabrous or sparsely pubescent only along veins. Pedicel, calyx, and ovary almost glabrous. Fl. Mar.

● NE Yunnan (Yiliang).

194. Rhododendron ×duclouxii H. Léveillé, Bull. Soc. Agric. Sarthe, sér. 2, 31: 49. 1903, pro sp.

粉红爆杖花 fen hong bao zhang hua

Small shrubs, 0.3–1 m tall; young shoots densely gray-white-pubescent, mixed with spreading long hispid hairs. Leaf blade narrowly oblong or oblong-elliptic, 2.8–4 × 1–1.7 cm; abaxial surface pale green, sometimes gray-white-pubescent and yellowish brown-scaly along veins; adaxial surface deep green, sparsely hispid, sometimes pubescent; veins conspicuously raised abaxially. Calyx shallowly cup-shaped, without conspicuous lobes, densely scaly abaxially, pubescent; corolla tubular-campanulate, 5-lobed to below middle, base almost white, turning to peach or rosy red above, 1.4–1.8 cm, outer surface sparsely glandular scaly; lobes erect, slightly open, oblong; stamens not or only slightly exserted from corolla; filaments densely pubescent below, anthers purplish black; style exserted from corolla, longer than stamens; base densely pubescent. Fl. Feb–Apr.

● Valley forests, coniferous forest margins; ca. 2200 m. Yunnan.

This entity is a hybrid between *Rhododendron spiciferum* and *R. spinuliferum*.

195. Rhododendron pubescens I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 153. 1920.

柔毛杜鹃 rou mao du juan

Small multi-branched shrubs, ca. 1 m tall; old branches deep gray; young shoots short and slender, red or orange-red scaly, densely pubescent and hispid. Petiole ca. 3 mm, like stem, pubescent; leaf blade thickly leathery, narrowly lanceolate, oblanceolate, or lanceolate, ca. 2.2 × 0.6 cm; base cuneate; margin revolute; apex acute, apiculate; abaxial surface gray-green, scaly, densely white-pubescent and thinly hispid; adaxial surface deep green, sparsely scaly, densely white-pubescent and thinly hispid, midrib raised abaxially, concave adaxially. Inflorescence subterminal, umbellate, 3- or 4-flowered; bud scales leathery, rounded, apiculate, outside densely pubescent and densely scaly. Pedicel 0.6–0.8 cm, scaly, hispid and pubescent; calyx without conspicuous lobes, small, abaxially scaly and densely pubescent; corolla shortly tubular, with open lobes, 5-lobed to below middle, pale red, ca. 0.8 cm, outer surface scaly; stamens 8–10, unequal, long ones slightly exserted from corolla, filaments glabrous at base, pubescent above; ovary 5-locular, scaly, densely pubescent; style glabrous. Capsule cylindric, ca. 6 mm, sparsely pubescent and scaly. Fl. May–Jun.

● Thickets; 2700–3500 m. SW Sichuan, Yunnan.

196. Rhododendron scabrifolium Franchet, Bull. Soc. Bot. France 33: 236. 1886.

糙叶杜鹃 cao ye du juan

Shrubs, 0.5–2 m tall; old branches deep gray, branches stout and straight; young shoots densely gray-white-pubescent and spreading-hispid. Petiole 3–6 mm, pubescent; leaf blade tough-papery, oblong, oblong-lanceolate, or elliptic, 3–9 × 1–2.5 cm; base broadly cuneate or rounded; margin not revolute; apex acute, or acuminate, apiculate; abaxial surface scales dense, brown, densely gray-white-hispid along veins; adaxial surface densely pubescent and sparsely long hispid; midrib and lateral veins raised abaxially, concave adaxially. Inflorescence subterminal, umbellate, 2- or 3-flowered; bud scales densely scaly. Pedicel 1–1.4 cm, yellow-scaly, densely pubescent mixed with long hispid hairs; calyx lobes 5, 4–6 mm, oblong-lanceolate, scaly, densely pubescent; corolla broadly funnelform, 5-lobed to below middle, white or pink, 1.5–2.3 cm, tube shorter than lobes; outer surface sparsely glandular-scaly; lobes spreading; stamens 10, unequal, long ones nearly as long as corolla; filaments pubescent below or glabrous; ovary 5-locular, scaly, densely gray-white hirsute; style exserted from corolla, base pubescent or nearly glabrous. Capsule cylindric, 5–8 mm, scaly, pubescent. Fl. Feb–Apr.

● *Pinus yunnanensis* forests, mixed woods on slopes; 2000–2600 m. Sichuan, C and W Yunnan.

1a. Corolla 1.5–1.8 cm; leaf blade 3–7 cm ..... 196a. var. *scabrifolium*
1b. Corolla 1.6–2.3 cm; leaf blade to 9 cm ..... 196b. var. *pauciflorum*

196a. Rhododendron scabrifolium var. **scabrifolium**

糙叶杜鹃(原变种) cao ye du juan (yuan bian zhong)

Leaf blade 3–7 cm. Corolla 1.5–1.8 cm.

● *Pinus yunnanensis* forests, mixed woods on slopes; 2000–2600 m. Sichuan, C and W Yunnan.

196b. Rhododendron scabrifolium var. **pauciflorum** Franchet, J. Bot. (Morot) 12: 262. 1898.

疏花糙叶杜鹃 shu hua cao ye du juan

Leaf blade to 9 cm. Corolla 1.6–2.3 cm.

● C Yunnan (Kunming).

197. Rhododendron spiciferum Franchet, J. Bot. (Morot) 9: 400. 1895.

碎米花 sui mi hua

Small multi-branched shrubs, 0.2–0.6(–2) m tall; old branches less hairy, shoots thin; young shoots densely gray-white-pubescent and spreading-hispid. Petiole 1–3 mm, pubescent; leaf blade toughly papery, narrowly oblong or oblong-lan-

ceolate, 1.2–4 × 0.4–1.2 cm; base cuneate or obtuse; margin revolute; apex rounded or acute, apiculate; abaxial surface yellowish green, densely yellow scaly, densely gray-white-pubescent, hairs longer along veins; adaxial surface deep green, densely pubescent and long-hispid; midrib raised abaxially, concave adaxially; lateral veins slightly concave or flat above and slightly raised below. Inflorescence subterminal, shortly racemose, 1–4-flowered; bud scales several, densely gray-white-villous and densely scaly. Pedicel 0.4–0.7 cm, sparsely or densely scaly, pubescent and sometimes sparsely long-hispid; calyx lobes 5, 0.5–2 mm, ovate or oblong-ovate, sparsely abaxially scaly, sparsely or densely gray-white-pubescent, margin ciliate; corolla funnelform, 5-lobed to below middle, pink or rarely white, 1.3–1.6 cm, tube longer than lobes; outer surface glandular-scaly; stamens 10, unequal, long ones nearly as long as corolla, filaments pubescent below; ovary 5-locular, densely gray-white-pubescent and scaly; style slender, exserted from corolla, pubescent below or glabrous. Capsule cylindric, 6–10 mm, scaly, pubescent. Fl. Feb–May.

● Coniferous forests, forest margins, thickets on slopes; 800–1900 m. W Guizhou, C and SE Yunnan.

1a. Corolla pink; inflorescence 3–4-flowered; pedicel and calyx densely pubescent ..... 197a. var. *spiciferum*

1b. Corolla white; inflorescence 1–2-flowered; pedicel and calyx less pubescent ..... 197b. var. *album*

197a. Rhododendron spiciferum var. **spiciferum**

碎米花(原变种) sui mi hua (yuan bian zhong)

Rhododendron scabrifolium Franchet var. *spiciferum* (Franchet) Cullen.

Inflorescence 3- or 4-flowered. Pedicel and calyx densely pubescent; corolla pink.

● Coniferous forests, forest margins, thickets on slopes; 800–1200 m. W Guizhou, C and SE Yunnan.

197b. Rhododendron spiciferum var. **album** K. M. Feng ex R. C. Fang, Acta Bot. Yunnan. 4: 257. 1982.

白碎米花 bai sui mi hua

Inflorescence 1- or 2-flowered. Pedicel and calyx less pubescent; corolla white.

● Coniferous forests, forest margins, thickets on slopes; ca. 1900 m. C Yunnan (Kunming).

2. Rhododendron sect. **Rhabdorhodion** Sleumer, Bot. Jahrb. Syst. 74: 529. 1949.

帚枝杜鹃组 zhou zhi du juan zu

Small shrubs; young shoots scaly. Leaf blade with both surfaces scaly, without hairs. Inflorescence 1- or 2-flowered. Calyx 5-lobed; corolla funnelform or campanulate, light red, occasionally white; filaments pubescent or glabrous towards the base; ovary densely scaly; style densely scaly and often also pubescent towards base. Capsule sometimes globose, scaly. Seed wingless though with tail-like appendages at both ends.

One species: Bhutan, China, Sikkim.

198. Rhododendron virgatum J. D. Hooker, Rhododendr. Sikkim-Himalaya 3: t. 26(A). 1851.

柳条杜鹃 liu tiao du juan

Rhododendron oleifolium Franchet; *R. virgatum* var. *glabriflorum* K. M. Feng ex R. C. Fang; *R. virgatum* subsp. *oleifolium* (Franchet) Cullen; *R. virgatum* var. *oleifolium* (Franchet) Demoly.

Small shrubs, (0.1–)1–2 m tall; branches in upper part, slender, brown, densely scaly. Petiole 3–4 mm, densely brown scaly; leaf blade leathery, narrowly oblong or oblong-lanceolate, 2–5.5 × 0.9–2 cm; base cuneate to rounded; margin revolute; apex obtuse or acute, apiculate; abaxial surface gray-green, scales less than or equal to their own diameter apart, dimorphic, rimless or, more commonly, with an obvious margin; adaxial surface densely scaly, rapidly glabrescent, lateral veins more conspicuous below, inconspicuous above. Inflorescences several, axillary, arranged in a compound raceme, 1- or 2-flowered, bud scales persistent, imbricate, glabrous or slightly gray-white-pubescent. Pedicel 0.3–0.4 cm, densely scaly; calyx lobes 1–2 mm, oblong or semicircular, apex rounded, sparsely scaly; corolla funnelform to campanulate, lobed above the middle, light red, occasionally white, 1.5–2 cm, outer surface densely scaly, with gray hairs, rarely glabrous; lobes 5, spreading; stamens 10, unequal, long ones nearly equaling corolla, filaments pubescent or glabrous towards the base; ovary 5-locular, densely scaly; style exserted from corolla, basal half densely scaly, pubescent, sometimes glabrous. Capsule cylindric or globose, 7–12 mm, densely scaly. Fl. Mar–May.

Forest margins, among shrubs, wet grasslands; 1700–3000 m. SE Xizang, W Yunnan [Bhutan, Sikkim].

This species is difficult to subdivide into subspecies, as the characters that have been used to separate them in the past are very variable. These characters include the corolla length and the number of scales and amount of pubescence on the style bases and outer surface of the corolla. Cullen (Notes Roy. Bot. Gard. Edinburgh 39: 130. 1980) maintained *Rhododendron virgatum* subsp. *oleifolium* as distinct.

3. Rhododendron sect. **Rhodobotrys** Sleumer, Bot. Jahrb. Syst. 74: 529. 1949.

腋花杜鹃组 ye hua du juan zu

Shrubs; young branches scaly. Leaf blade with abaxial surface densely scaly, without hairs. Inflorescence 2–5-flowered. Calyx 5-lobed or discoid, margin sometimes ciliate; corolla broadly funnelform, pink, purple, or purplish red, outside sparsely scaly or not,

sometimes pubescent; filaments pilose at base; ovary densely scaly; style glabrous. Capsule scaly only. Seed wingless.

● Two species: China.

Cullen (Notes Roy. Bot. Gard. Edinburgh 39: 80. 1980) did not recognize *Rhododendron* sect. *Rhodobotrys*. He included it in the synonymy of *R.* subsect. *Scabrifolia* (Hutchinson) Cullen within *R.* sect. *Rhododendron*.

1a. Leaf blade oblong or oblong-elliptic, margin lacking ciliate hairs; corolla pink or light purple ..... 199. *R. racemosum*
1b. Leaf blade elliptic or narrowly elliptic, margin ciliate; corolla purple ..... 200. *R. fuyuanense*

199. Rhododendron racemosum Franchet, Bull. Soc. Bot. France 33: 235. 1886.

腋花杜鹃 ye hua du juan

Rhododendron crenatum H. Léveillé; *R. motsouense* H. Léveillé [*"motsonense"*].

Small, much-branched shrubs, 0.15–2 m tall; young branches short and slender, brown glandular scaly, otherwise glabrous or somewhat velutinous. Petiole short, 2–4 mm, scaly; leaf blade fragrant, oblong to elliptic, 1.5–4 × 0.8–1.8 cm; base cuneate or rounded; margin revolute; apex obtuse or acuminate, apiculate or not; abaxial surface usually gray-white, scales less than 1 × their own diameter apart, not contiguous, medium sized, brown; adaxial surface densely brown scaly. Inflorescence axillary or subterminal, 2- or 3-flowered; bud scales many, imbricate, persistent until flowering time. Pedicel slender, 0.5–1 cm, densely scaly; calyx discoid, slightly serrulate, minute, scaly; corolla widely funnelform, divided from below or at middle, pink or purple, 0.9–1.4 cm, outer surface sparsely scaly, lobes spreading; stamens 10, exserted, filaments pilose at base; ovary 5-locular, densely scaly; style longer than stamens, glabrous or shortly pilose at base. Capsule cylindric, 5–10 mm, scaly. Fl. Mar–May.

● *Pinus* or *Quercus* forests, *Abies* forest margins, grasslands, usually dominant; 1500–3500(–3800) m. NW Guizhou, SW Sichuan, Yunnan.

Rhododendron ×*fittianum* I. B. Balfour (Notes Roy. Bot. Gard. Edinburgh 10: 108. 1917), described from Yunnan, was considered to be an obscure hybrid of *R. racemosum* by Cullen (Notes Roy. Bot. Gard. Edinburgh 39: 113–114. 1980).

200. Rhododendron fuyuanense Z. H. Yang, Acta Phytotax. Sin. 35: 189. 1997.

富源杜鹃 fu yuan du juan

Shrubs, evergreen, 0.5–2.5 m tall; young branches with scattered black glandular scales. Petiole 2–4 mm, scaly; leaf blade elliptic or narrowly elliptic, 1.2–3.5 × 0.6–1.2 cm; base cuneate; margin strongly revolute, ciliate; apex acuminate, rarely obtuse, sometimes apiculate; abaxial surface gray-green, densely brown scaly; adaxial surface with scattered black scales, midrib conspicuous abaxially, impressed adaxially. Inflorescence axillary or terminal, 3–5-flowered; bud scales many, imbricate. Pedicel slender, 0.6–1.2 cm, densely scaly; calyx 5-lobed, lobes 1–1.5 mm, rounded, scaly, margin ciliate; corolla funnelform, divided to middle, purplish red, 1–1.5 cm, outer surface densely scaly, lobes 5, spreading, orbicular; stamens 10, exserted, filaments densely pilose at base; ovary 5-locular, densely scaly; style longer than stamens, glabrous. Capsule not known. Fl. Mar.

● About 2000 m. E Yunnan (Fuyuan).

This species differs from *Rhododendron racemosum* in having young branches with scattered, black, glandular scales; leaves elliptic to narrowly elliptic with strongly recurved, ciliate margin and acuminate apex; corolla purplish red; and calyx ciliate.

4. Rhododendron subg. Rhodorastrum (Maximowicz) C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 474. 1882.

迎红杜鹃亚属 ying hong du juan ya shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); David F. Chamberlain

Rhododendron sect. *Rhodorastrum* Maximowicz, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 16(9): 15, 43. 1870.

Small to medium shrubs, deciduous or semievergreen; new foliage shoots from axils of leaves below inflorescence buds; young shoots scaly. Leaf blade with abaxial surface scaly, scales 4 × their own diameter apart. Inflorescence axillary or subterminal, 1-flowered. Calyx poorly developed, 0.5–1 mm; corolla widely funnelform, light red to purple, seldom white, outer surface generally without scales, only rarely scaly, shortly pilose. Stamens 10; filaments pilose below; ovary 5-locular, densely scaly, otherwise glabrous; style slender, straight, glabrous. Capsule small, oblong. Seed wingless.

Two species: China, Japan, Korea, Mongolia, Russia; two species in China.

Cullen (Notes Roy. Bot. Gard. Edinburgh 39: 111. 1980) treated *Rhododendron* subg. *Rhodorastrum* as *R.* subsect. *Rhodorastrum* (Maximowicz) Cullen within *R.* sect. *Rhododendron*.

1a. Semievergreen; leaf apex rounded, adaxial surface with scales overlapping to 1.5 × their own diameter apart; corolla 1.3–2.3 cm ..... 201. *R. dauricum*
1b. Deciduous; leaf apex acute, acuminate, rarely obtuse, adaxial surface with scales 2–4 × their own diameter apart; corolla 2.3–2.8 cm ..... 202. *R. mucronulatum*

201. Rhododendron dauricum Linnaeus, Sp. Pl. 1: 392. 1753. 兴安杜鹃 xing an du juan

Multi-branched shrubs, semievergreen, 0.5–2 m tall; young branches thin and curved, scaly, hairy. Petiole 2–6 mm, pubescent; leaf blade ± leathery, elliptic or oblong, 1–5 × 1–1.5 cm; base obtuse, sometimes broadly cuneate; margin entire or denticulate; apex obtuse; abaxial surface pale green, scales dense; adaxial surface deep green, sparsely scaly. Inflorescences 4, subapical, opening before leaves, pseudoumbellate; bud scales falling off early or persistent. Pedicel 0.2–0.8 cm; calyx 5-lobed, less than 1 mm, densely scaly; corolla funnelform, pink or purplish red, 1.3–2.3 cm, outer surface often pubescent; stamens 10, shorter than corolla tube; filaments pubescent below, anthers purplish red; ovary 5-locular, densely scaly; style purplish red, longer than corolla, glabrous. Capsule cylindric, 10–15 × ca. 5 mm, apex 5-lobed. Fl. May–Jun, fr. Jul.

Betula or *Larix* forests, forest margins. Heilongjiang, Jilin, Nei Mongol [Japan, Korea, Mongolia, Russia].

202. Rhododendron mucronulatum Turczaninow, Bull. Soc. Imp. Naturalistes Moscou 10(7): 155. 1837.

迎红杜鹃 ying hong du juan

Rhododendron dauricum Linnaeus subsp. *mucronulatum* (Turczaninow) Voroschilov; *R. dauricum* var. *mucronulatum* (Turczaninow) Maximowicz.

Deciduous multi-branched shrubs, 1–2 m tall; young branches thin and long, sparsely scaly. Petiole 3–5 mm; leaf blade thin, elliptic or elliptic-lanceolate, 3–7 × 1–3.5 cm; base cuneate or obtuse, entire or denticulate; apex acute, acuminate or obtuse; abaxial surface brown, scaly; adaxial surface sparsely scaly. Inflorescences solitary or to 3, subapical, opening before leaves, pseudoumbellate, bud scales persistent. Pedicel 0.5–1 cm, sparsely scaly; calyx 5-lobed, 0.5–1 mm, scaly, glabrous or sparsely setose; corolla funnelform, pale reddish purple, 2.3–2.8 × 3–4 cm, outer surface pubescent; stamens 10, unequal, slightly shorter than corolla tube; filaments pubescent below; ovary 5-locular, densely scaly; style longer than corolla, glabrous. Capsule cylindric, 10–15 × 4–5 mm. Fl. Apr–Jun, fr. May–Jul.

Betula or *Larix* forests, forest margins. Hebei, Jiangsu, Liaoning, Nei Mongol, Shandong [Japan, Korea, Mongolia, Russia].

5. Rhododendron subg. Hymenanthes (Blume) K. Koch, Dendrologie 2(1): 170. 1872 [“*Hymenanthus*”].

常绿杜鹃亚属 chang lü du juan ya shu

Hymenanthes Blume, Bijdr. 862. 1826.

Shrubs or trees, rarely small creeping shrubs, evergreen; new leafy shoots from lateral buds, i.e., from axils of leaves of previous season; young shoots setose, glandular-hairy, or glabrous, not scaly. Leaves large; leaf blade leathery, narrowly elliptic to broadly lanceolate or suborbicular; abaxial surface glabrous or hairy, rarely glandular or waxy above, not scaly. Inflorescence terminal, umbellate-racemose, many-flowered, rarely 1- or 2-flowered. Calyx small, green or red, rim-like, rarely enlarged into a cup, 5(–8)-lobed; corolla campanulate or funnelform, rarely ± tubular, lobes 5–8, pinkish red, white or red to purplish red, rarely yellow, sometimes with darker nectar pouches at base; stamens 10(–20), usually twice as many as corolla lobes, unequal; ovary 5–18-locular, glabrous, hairy, or glandular; style slender, long, glabrous or hairy or glandular at apex. Capsule cylindric, straight to curved, glabrous or not, valves opening when mature. Seeds often with a thin membranous wing.

About 270 species: mostly in Asia, also in Europe and North America; 259 species (190 endemic) in China.

1a. Young branches and petioles generally setose or with stipitate to setose glands.
  2a. Corolla 7-lobed; stamens 14–16 ..... 2. *R.* subsect. *Auriculata*
  2b. Corolla 5–6-lobed; stamens 10–14.
    3a. Corolla tube densely hairy outside ..... 18. *R.* subsect. *Griersoniana*
    3b. Corolla tube glabrous outside.
      4a. Corolla campanulate or funnelform, yellow or white to red or purplish red, without basal nectar pouches.
        5a. Leaf apex acute; abaxial surface stipitate-glandular, lanate or strigose ..... 9. *R.* subsect. *Glischra*
        5b. Leaf apex rounded; abaxial surface glabrous.
          6a. Corolla broadly campanulate, style with glands throughout ..... 5. *R.* subsect. *Williamsiana*
          6b. Corolla funnelform, narrow; style glabrous ..... 8. *R.* subsect. *Selensia*
      4b. Corolla tubular, often deep red, with nectar pouches at base.
        7a. Peduncle to 4 cm; style glandular or stellate-hairy ..... 19. *R.* subsect. *Parishia*
        7b. Peduncle to 1 cm; style glabrous or glandular only at base.
          8a. Inflorescence 2–8(–12)-flowered; leaf apex acute or rounded ..... 21. *R.* subsect. *Neriiflora*
          8b. Inflorescence usually 7–20-flowered; leaf apex cuspidate.
            9a. Leaves lanceolate to elliptic; capsule curved ..... 10. *R.* subsect. *Irrorata*
            9b. Leaves ovate to elliptic; capsule straight.
              10a. Leaf apex cuspidate ..... 7. *R.* subsect. *Maculifera*
              10b. Leaf apex acute to rounded at apex ..... 20. *R.* subsect. *Barbata*
1b. Young branches glabrous, rarely pilose or with glands, without bristles, never setose.
  11a. Corolla campanulate or tubular-campanulate, with well-marked nectar pouches, 5-lobed; stamens 10.

12a. Corolla white or yellow to pinkish red.
13a. Leaves elliptic to obovate, abaxial surface with persistent soft or stiff hairs along central veins ..... 7. *R.* subsect. *Maculifera*
13b. Leaves elliptic to lanceolate, abaxial surface glabrous or with simple hairs ..... 10. *R.* subsect. *Irrorata*
12b. Corolla deep red.
14a. Corolla fleshy, without spots; ovary densely hairy.
15a. Small shrubs, rarely creeping; inflorescence often 1–12-flowered ..... 21. *R.* subsect. *Neriiflora*
15b. Small trees; inflorescence dense, often 20–25-flowered ..... 13. *R.* subsect. *Arborea*
14b. Corolla thin or fleshy, with or without spots; ovary often glabrous.
16a. Leaf blade orbicular to elliptic, abaxial surface glabrous or hairy; calyx 2–15 mm ..... 23. *R.* subsect. *Thomsonia*
16b. Leaf blade elliptic, abaxial surface densely pilose or lanate; calyx 0.5–1 mm ..... 22. *R.* subsect. *Fulgensia*
11b. Corolla (5–)6–10-lobed, with or without nectar pouches; stamens (10–)12–18.
17a. Corolla (5–)7–8(–10)-lobed; leaves large, elliptic.
18a. Abaxial surface of leaves conspicuously hairy when mature.
19a. Abaxial surface of leaves generally with 2 layers of hairs, outer layer cupular ..... 4. *R.* subsect. *Falconera*
19b. Abaxial surface of leaves with 1 or 2 layers of hairs, hairs never cupular.
20a. Ovary pilose, rarely glandular, or if glabrous then with abaxial surface of leaves viscid-hairy ..... 3. *R.* subsect. *Grandia*
20b. Ovary glabrous, rarely glandular or pilose, abaxial surface of leaves often pannose ..... 14. *R.* subsect. *Taliensia*
18b. Abaxial surface of mature leaves glabrous or with a thin agglutinated indumentum.
21a. Leaves (9–)20–70 cm; ovary densely tomentose, rarely glandular or glabrous ..... 3. *R.* subsect. *Grandia*
21b. Leaves less than 20 cm; ovary glabrous or glandular.
22a. Corolla broadly campanulate, without basal nectar pouches; ovary glabrous or glandular ..... 1. *R.* subsect. *Fortunea*
22b. Corolla campanulate or tubular-campanulate, with basal nectar pouches; ovary glandular, with or without a thin indumentum ..... 10. *R.* subsect. *Irrorata*
17b. Corolla 5-lobed; leaves small, ovate-elliptic or lanceolate.
23a. Abaxial leaf surface glabrous; peduncle 5–60 mm.
24a. Leaves ovate to orbicular; peduncle 2–5 mm ..... 6. *R.* subsect. *Campylocarpa*
24b. Leaves lanceolate to elliptic; peduncle 5–25(–60) mm.
25a. Peduncles 10–25 mm; corolla campanulate to funnelform ..... 11. *R.* subsect. *Pontica*
25b. Peduncles 5–10 mm; corolla broadly campanulate ..... 10. *R.* subsect. *Irrorata*
23b. Abaxial leaf surface hairy (rarely glabrous in subsect. *Taliensia*).
26a. Leaf blade ovate to obovate, sometimes narrow; corolla funnelform or campanulate, generally with deeply colored spots.
27a. Peduncle short; pedicels short; flowers densely arranged; calyx 0.5–1.5 mm ..... 14. *R.* subsect. *Taliensia*
27b. Peduncle long; pedicels slender, long; flowers loosely arranged; calyx 1–3(–5) mm.
28a. Abaxial surface of leaves with silvery white, pale yellow or yellowish-brown hairs; capsule cylindric, straight ..... 12. *R.* subsect. *Argyrophylla*
28b. Abaxial surface of leaves with gray-white to rufous-brown hairs; capsule slender, curved ..... 15. *R.* subsect. *Fulva*
26b. Leaf blade ovate to obovate or orbicular; corolla campanulate, broadly campanulate, rarely funnelform, with or without deeply colored spots.
29a. Ovary glabrous; peduncles 10–25 mm; leaves ovate to broadly elliptic ..... 17. *R.* subsect. *Campanulata*
29b. Ovary densely hairy; peduncles 2–20 mm.
30a. Ovary densely pilose to stipitate-glandular; peduncle 10–20 mm ..... 7. *R.* subsect. *Maculifera*
30b. Ovary pilose to thinly glandular; peduncle 3–10 mm.
31a. Abaxial leaf surface with one layer of hairs; ovary densely pilose or tomentose and glandular; young shoots always tomentose; calyx 1–2 mm ..... 16. *R.* subsect. *Lanata*
31b. Abaxial leaf surface with one or two layers of thin to dense hairs; ovary thinly or densely pilose and glandular; if young shoots tomentose then calyx often more than 2 mm ..... 14. *R.* subsect. *Taliensia*

1. **Rhododendron** subsect. **Fortunea** (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 546.1949.

云锦杜鹃亚组 yun jin du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron ser. *Fortunea* Tagg in J. B. Stevenson, Sp. Rhodod. 257. 1930 [*"Fortunei"*].

Shrubs or trees; bark rough; young shoots with white to grayish tomentose indumentum, soon glabrescent. Leaf blade oblong-elliptic, elliptic, oblanceolate, ovate to suborbicular; abaxial surface floccose or not on midrib, rarely with a sparse white stellate indumentum (*R. asterochnoum*); adaxial surface glabrous when mature. Inflorescence lax, 5–30-flowered, rachis 3–70 mm; calyx mi-

nute to well-developed, 1–20 mm; corolla funnel-campanulate to open-campanulate, 5–7(–8)-lobed, white or pale pink to purple, nectar pouches usually absent (apparently present in *R. praeteritum*); stamens 10–16(–22); ovary glandular or glabrous; style glabrous or glandular-hairy to tip.

Thirty-one species: Bhutan, China, India, Myanmar, Nepal, Sikkim, Vietnam; 31 species (28 endemic) in China.

Rhododendron magorianum Millais (Rhododendrons, ser. 2, 182. 1924) was described from cultivated material derived from seed (*E. H. Wilson 1539*) collected in W China. Unknown in the wild, it is presumed to be a hybrid of a species in *R.* subsect. *Fortunea*.

Rhododendron planetum I. B. Balfour (Notes Roy. Bot. Gard. Edinburgh 12: 145. 1920) is probably a hybrid of a species in *R.* subsect. *Fortunea*. It was described from a plant raised from seed that was supposed to have been collected in Sichuan, but the collector's number cited is wrong. The provenance of this seed is therefore uncertain.

1a. Calyx 7–20 mm ..... 203. *R. griffithianum*
1b. Calyx 1–7(–10) mm.
2a. Outer surface of corolla with dense long-stipitate glands.
3a. Abaxial leaf surface sparsely floccose; blade oblong-obovate, 18.5–22.5 × 8–9.5 cm; petiole 3.5–4.2 cm; young shoots eglandular; corolla funnel-campanulate, ca. 6.5 cm, lobes 7 ..... 205. *R. xiaoxidongense*
3b. Abaxial leaf surface glabrous.
4a. Young shoots glabrous ..... 233. *R. serotinum*
4b. Young shoots glandular hairy.
5a. Leaf blade 22–25 × 7.5–8.8 cm; petiole 4–4.5 cm; corolla 9.5–10 cm, lobes 5 ..... 204. *R. magniflorum*
5b. Leaf blade 10–19 × 3.2–4.5 cm; petiole 1.6–3 cm; corolla 5–6 cm; lobes 7 or 8 ..... 206. *R. glanduliferum*
2b. Outer surface of corolla eglandular, or with sparse short stipitate glands.
6a. Stigma 5–6.5 mm in diam., swollen, discoid.
7a. Corolla broadly campanulate or campanulate.
8a. Corolla broadly campanulate, lobes 5–7; stamens 15–22; leaves oblong-oblanceolate to oblong-lanceolate, abaxial surface glabrous or sparsely tomentose along midrib ..... 207. *R. calophytum*
8b. Corolla campanulate, lobes 5; stamens 18–20; leaves oblanceolate, rarely oblong-elliptic, abaxial surface with stellate hairs when mature ..... 208. *R. asterochnoum*
7b. Corolla obliquely campanulate, funnel-campanulate or widely funnel-campanulate.
9a. Corolla obliquely or ventricose-campanulate, purple, lobes 5; leaf blade abaxially densely white-floccose, later glabrescent ..... 209. *R. jingangshanicum*
9b. Corolla funnel-campanulate to tubular-campanulate, white to pale pink (not recorded for *R. miyiense* and *R. wolongense*), lobes 6–8; leaf blade abaxially glabrous.
10a. Inflorescence 5–6-flowered; pedicel 1.8–2 cm.
11a. Leaf blade 3–4.5 cm wide; pedicel glandular; corolla ca. 5 cm, outer surface glandular ..... 211. *R. wolongense*
11b. Leaf blade 5.3–6.2 cm wide; pedicel glabrous; corolla 9.5–10.5 cm, outer surface glabrous ..... 213. *R. miyiense*
10b. Inflorescence 8–12-flowered; pedicel 2.5–4 cm.
12a. Filaments glabrous, 3.7–4.9 cm; leaf apex acute, apiculate; inflorescence rachis ca. 5 cm ..... 210. *R. faithiae*
12b. Filaments puberulent at base, 2–3 cm; leaf apex obtuse, apiculate; inflorescence rachis 2–2.5 cm ..... 212. *R. decorum*
6b. Stigma to 5 mm in diam., capitate or discoid.
13a. Ovary and style glabrous.
14a. Leaf blade (8–)10–22 cm, lobes 5; stamens (12–)15–16.
15a. Leaf blade oblong-oblanceolate, abaxial surface with midrib grayish tomentose; corolla funnel-campanulate; pedicel white-puberulent ..... 214. *R. sutchuenense*
15b. Leaf blade elliptic-oblanceolate, abaxial surface entirely glabrous; corolla campanulate, white tinged with rose; pedicel 1.5–3 cm, glabrous.
16b. Corolla 5.8–6.2 cm ..... 215. *R. praevernum*
16a. Corolla 3–4.5 cm ..... 216. *R. guihainianum*
14b. Leaf blade 4.5–10 cm; lobes 5 or 7–8; stamens 10–14.
17a. Leaf blade midrib glabrous abaxially; pedicel 0.5–1.5 cm; corolla with nectar pouches absent, lobes 5–8; stamens 12–14 ..... 217. *R. oreodoxa*
17b. Leaf blade midrib with sparse loose hairs abaxially; pedicel 1.8–2 cm; corolla with 5 basal nectar pouches, lobes 5; stamens 10 ..... 218. *R. praeteritum*
13b. Ovary densely glandular; style glabrous or glandular.
18a. Ovary densely red- or rufous-glandular.
19a. Filaments glabrous; leaf blade base rounded; inflorescence 3–5-flowered, rachis 2–2.5 cm ..... 219. *R. vernicosum*
19b. Filaments pubescent at base; leaf blade base auriculate-cordate; inflorescence 6–10-flowered, rachis ca. 1 cm ..... 220. *R. nymphaeoides*

18b. Ovary densely white-glandular.
20a. Leaf blade base auriculate-cordate, rarely subcordate or rounded (*R. orbiculare* subsp. *cardiobasis*), 4–10.5 cm wide; petiole 2–7.5 cm.
21a. Corolla rose, 3.2–3.5 cm; inflorescence rachis 1.5–2.5 cm ..... 224. *R. orbiculare*
21b. Corolla white, ca. 6–6.5 cm; inflorescence rachis 3–7 cm.
22a. Petiole 5–7.5 cm; inflorescence rachis 5.5–7 cm ..... 221. *R. hemsleyanum*
22b. Petiole 2–3.5 cm; inflorescence rachis 2–3.5 cm ..... 233. *R. serotinum*
20b. Leaf blade base cuneate to rounded, rarely cordate and then blade less than 4.6 cm wide; petiole 1–2.5(–4) cm.
23a. Filaments puberulent near base.
24a. Petiole winged, up to 10 mm wide; style ca. 3.7 cm; pedicel not warty but glandular; calyx glabrous ..... 226. *R. platypodum*
24b. Petiole terete; style 1.6–1.8 cm; pedicel warty and glandular; calyx glandular ..... 227. *R. verruciferum*
23b. Filaments glabrous.
25a. Calyx 2–5(–10) mm; pedicel glabrous or sparsely glandular.
26a. Inflorescence 6–8(–10)-flowered; pedicel 2–2.5 cm; leaf apex obtuse; corolla pale pink to white ..... 229. *R. discolor*
26b. Inflorescence 10–13-flowered; pedicel 3.5–4.2 cm; leaf apex acute or cuspidate; corolla red to purple or lilac (see also 232. *R. liboense*) ..... 231. *R. huanum*
25b. Calyx to 2 mm, sometimes discoid; pedicel stipitate-glandular.
27a. Corolla white, 6–6.5 cm; leaf blade with 19–21 lateral veins each side of midrib ..... 225. *R. maoerense*
27b. Corolla white flushed pink with yellow flecks or pink to rose-purple, 3.5–6 cm; leaf blade with 14–18 lateral veins each side of midrib.
28a. Leaf blade 4.5–6.6 cm; inflorescence ca. 15-flowered; corolla white flushed pink, with yellow flecks, 3.2–3.5 cm ..... 228. *R. gonggashanense*
28b. Leaf blade 8–16 cm; inflorescence 6–12-flowered; corolla pink to rose-purple, sometimes with dark purple flecks, 3.5–6 cm.
29a. Leaf blade base rounded or truncate, rarely cordulate; apex obtuse to rounded, rarely acute; style ca. 3 cm ..... 222. *R. fortunei*
29b. Leaf blade base cuneate; apex acute to acuminate; style 4–4.5 cm.
30a. Inflorescence rachis 3–6 cm, glandular and tomentose; pedicel ca. 1 cm ..... 230. *R. davidii*
30b. Inflorescence rachis 2–2.5 cm, glabrous; pedicel 2.7–3.4 cm; corolla 3.5–4.5 cm ... 223. *R. jinchangense*

203. Rhododendron griffithianum Wight, Icon. Pl. Ind. Orient. 4: 6, t. 1203. 1848.

不丹杜鹃 bu dan du juan

Rhododendron aucklandii J. D. Hooker; *R. griffithianum* var. *aucklandii* (J. D. Hooker) Hooker; *R. oblongum* Griffith.

Shrubs or small trees, evergreen, 1.3–4(–10) m tall; shoots ca. 4 mm in diam. below inflorescence; young shoots stout, glabrous. Petiole stout, 20–35 mm, glabrous; leaf blade leathery, oblong to oblong-elliptic or oblong-ovate, 10–19(–30) × 4.5–12 cm; base rounded or subcordate; apex acute to rounded and apiculate; abaxial surface glabrous; adaxial surface green, smooth; midrib prominent abaxially, grooved adaxially; lateral veins 19–24-paired, distinct on both surfaces. Inflorescence umbellate, 4- or 5-flowered; rachis 50–70 mm. Pedicel glabrous, 3.5–4 cm; calyx cupular, 7–20 mm, glabrous or sparsely glandular-hairy; corolla campanulate, pink at first, later white, 5.5–8 cm, glabrous; lobes 5, suborbicular, ca. 2 × 3.5 cm, emarginate; stamens 12–18, filaments glabrous; ovary ovoid, ca. 7 mm, glandular; style glandular to tip; stigma swollen. Capsule cylindric, ca. 35 × 15 mm.

Broad-leaved forests, *Rhododendron* thickets; 2100–2800 m. S Xizang [Bhutan, N India, E Nepal, Sikkim].

204. Rhododendron magniflorum W. K. Hu, Bull. Bot. Res., Harbin 8(3): 51. 1988.

贵州大花杜鹃 gui zhou da hua du juan

Small trees, 4–6 m tall; shoots ca. 7 mm in diam. below inflorescence; young shoots densely pale brown glandular-hairy, glabrescent. Petiole 40–45 mm, densely glandular-hairy at first, glabrescent; leaf blade leathery, oblong, 22–25 × 7.5–8.8 cm; base broadly cuneate or rounded, unequal; apex obtuse; both surfaces glabrous; abaxial surface pale green; adaxial surface green, midrib raised abaxially, grooved adaxially, lateral veins 17–21-paired, impressed adaxially. Inflorescence 9–12-flowered; rachis ca. 45 mm, densely glandular-hairy. Pedicel 2.5–4.8 cm, with similar hairs; calyx cupular; lobes 5, ca. 4 mm, glandular; corolla tubular-funnelform, color unknown, 9.5–10 cm, outer surface with brownish glandular hairs, glabrous inside; lobes 5, ovate, ca. 2 × 1.6 cm; stamens 16, 3.6–6.1 cm, filaments glabrous; ovary conical, ca. 8 × 7 mm, densely glandular-hairy; style 7–8 cm, lower half with glandular hairs. Capsule cylindric, slightly curved, 35–42 × 11–13 mm, with persistent glandular hairs. Fl. Jul, fr. Oct.

● Forests, hill summits; 1700–1800 m. SW Guizhou.

205. Rhododendron xiaoxidongense W. K. Hu, J. Sichuan Univ., Nat. Sci. Ed. 27: 492. 1990.

小溪洞杜鹃 xiao xi dong du juan

Shrubs, ca. 1 m tall; branchlets ca. 1 cm in diam. below inflorescence. Petiole cylindric, 3.5–42 mm, densely glandular-

hairy; leaf blade leathery, oblong-obovate, 18.5–22.5 × 8–9.5 cm; base rounded or oblique; apex rounded, apiculate; abaxial surface with midrib sparsely floccose-puberulent; adaxial surface green; midrib raised abaxially, grooved adaxially; lateral veins 15–18-paired. Inflorescence racemose, 8–9-flowered; rachis ca. 50 mm, glabrous. Pedicel stout, 1.1–1.9 cm, densely shortly glandular-hairy; calyx cupular; lobes 5, ca. 5 mm, with similar glands; margin ciliate; corolla funnel-campanulate, white, ca. 6.5 cm, lobes 7, ovate, ca. 2.2 × 1.5 cm, emarginate; stamens 15, unequal, 3.1–4.7 cm, filaments glabrous; ovary ovoid, ca. 6 × 4 mm, densely shortly glandular-hairy; style ca. 3.2 cm, lower part with glandular hairs. Capsule not known. Fl. Apr–May.

● Forests, roadsides; 800–900 m. W Jiangxi.

206. Rhododendron glanduliferum Franchet, Bull. Soc. Bot. France 33: 231. 1886.

大果杜鹃 da guo du juan

Shrubs evergreen, to 4 m tall; shoots ca. 5 mm in diam. below inflorescence; young shoots glandular-setose. Petiole cylindric, 16–30 mm, densely shortly glandular-hairy when young; leaf blade leathery, oblong-lanceolate to oblanceolate, 10–19 × 3.8–4.5 cm; base cuneate; margin revolute; apex acuminate; both surfaces glabrous; abaxial surface pale green; adaxial surface green, midrib prominent abaxially, grooved adaxially; lateral veins 20–22-paired. Inflorescence umbellate, lax, 5- or 6-flowered, rachis ca. 20 mm, densely shortly glandular-hairy. Pedicel ca. 2.5 cm, glandular-hairy; calyx ca. 3 mm, glandular; corolla funnel-campanulate, white, 5–6 cm, glandular-hairy outside; lobes 7 or 8, broadly rounded, ca. 1.5 × 2 cm, emarginate; stamens 14–16, unequal, 3–4.5 cm, filaments glabrous; ovary conoid, densely glandular-hairy; style glandular. Capsule cylindric, 20–30 mm. Fr. Oct–Nov.

● Forests, hill summits; 2300–2400 m. NE Yunnan.

207. Rhododendron calophytum Franchet, Bull. Soc. Bot. France 33: 230. 1886.

美容杜鹃 mei rong du juan

Shrubs or trees, 2–12 m tall; bark grayish, falling off in flakes; young shoots stout, green, white-tomentose, glabrescent. Petiole 20–25 mm, glabrous; leaf blade leathery, oblong-oblanceolate to oblong-lanceolate, 11–30 × 4–7.8 cm; base cuneate; apex acute to acuminate; abaxial surface pale green, glabrous or sparsely tomentose; adaxial surface bright green, glabrous; midrib grooved adaxially, lateral veins 18–22-paired and impressed. Inflorescence racemose-umbellate, 15–30-flowered; rachis 15–20 mm, hairy. Pedicel stout, red, 2–6.5 cm, glabrous; calyx lobes 5, ca. 1.5 mm, glabrous; corolla widely campanulate, pinkish to white, with purple flecks and a basal blotch, or purple, 4–5 cm, lobes 5–7, deeply emarginate; stamens 15–22, unequal, 1.5–2.6 cm, filaments glabrous or puberulent at base; ovary ovoid, ca. 6 mm, glabrous; style ca. 3 cm, glabrous; stigma swollen, discoid, 5–6 mm in diam. Capsule obliquely ovoid, 20–45 mm; style persistent. Fl. Apr–May, fr. Sep–Oct.

● Forests; 1400–4000 m. Chongqing, SE Gansu, C and N Guizhou, W Hubei, S Shaanxi, Sichuan, NE Yunnan.

1a. Leaf blade 18–30 cm; pedicels 3–6.5 cm; corolla open-campanulate, 5–7-lobed.
  2a. Rachis 15–20 mm; inflorescence 15–30-flowered; corolla widely campanulate, 5–7-lobed ..... 207a. var. *calophytum*
  2b. Rachis ca. 10 mm; inflorescence 3–7-flowered; corolla campanulate, 5-lobed ..... 207b. var. *pauciflorum*
1b. Leaf blade 10–15 cm; corolla campanulate or oblique-campanulate, 5-lobed.
  3a. Pedicel 3–4.5 cm; leaf blade 2–3.5 cm wide; pedicel 3–4.5 cm; corolla obliquely campanulate, white ..... 207c. var. *openshawianum*
  3b. Pedicel 2–2.5 cm; leaf blade 3–4 cm wide; pedicel 2–2.5 cm; corolla campanulate, purple ..... 207d. var. *jinfuense*

207a. Rhododendron calophytum var. **calophytum**

美容杜鹃(原变种) mei rong du juan (yuan bian zhong)

Leaf blade oblong-oblanceolate or oblong-lanceolate, 11–30 × 4–7.5 cm; apex acuminate. Inflorescence 15–30-flowered, rachis 15–20 mm. Pedicel 3–6.5 cm; corolla widely campanulate, lobes 5–7. Fl. Apr–May, fr. Sep–Oct.

● Forests; 1800–4000 m. SE Gansu, C and N Guizhou, W Hubei, S Shaanxi, Sichuan, NE Yunnan.

207b. Rhododendron calophytum var. **pauciflorum** W. K. Hu, Acta Phytotax. Sin. 26: 304. 1988.

疏花美容杜鹃 shu hua mei rong du juan

Leaf blade broadly oblanceolate to oblong; apex acuminate. Inflorescence 3–7-flowered; rachis ca. 10 mm. Corolla campanulate, lobes 5.

● Forests; 1800–2100 m. Chongqing (Nanchuan).

207c. Rhododendron calophytum var. **openshawianum** (Rehder & E. H. Wilson) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 330. 1979.

尖叶美容杜鹃 jian ye mei rong du juan

Rhododendron openshawianum Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 543. 1913.

Leaf blade 10–15 × 2–3.5 cm; apex acuminate, cuspidate. Inflorescence 6–12-flowered. Corolla widely campanulate, lobes 5.

● Forests; 1400–2800 m. SW Sichuan, NE Yunnan.

207d. Rhododendron calophytum var. **jinfuense** Fang & W. K. Hu, Bull. Bot. Res., Harbin 8(3): 56. 1988.

金佛山美容杜鹃 jin fo shan mei rong du juan

Rhododendron calophytum subsp. *jinfuense* Fang ex M. Y. Fang.

Leaf blade 10–14 × 3–4 cm. Pedicel 2–2.5 cm; corolla purple, small, lobes 5.

● Deciduous broad-leaved forests; 2200–2300 m. Chongqing (Nanchuan).

Fang (Acta Phytotax. Sin. 26: 68. 1988) published this taxon independently, based on the same type and with the same validating diagnosis, but at the rank of subspecies.

208. Rhododendron asterochnoum Diels, Repert. Spec. Nov. Regni Veg. 17: 196. 1921.

汶川星毛杜鹃 wen chuan xing mao du juan

Small trees, 3–7(–15) m tall; bark gray; older branches brownish, glabrous; young shoots densely tomentose. Petiole winged, 15–30 mm, tomentose when young; leaf blade leathery, broadly oblanceolate, rarely oblong-elliptic, 17–26 × 3–9 cm; base cuneate; apex obtuse or rounded, apiculate; abaxial surface pale green, indumentum discontinuous, sparse and whitish, hairs stellate; adaxial surface green, glabrous, midrib grooved adaxially, lateral veins 19–23-paired. Inflorescence 11–18-flowered; rachis ca. 17 mm, with whitish stellate hairs. Pedicel 3–6 cm, glabrescent; calyx teeth 4 or 5, 1.5–2 mm, unequal; corolla campanulate, pale pink to white, 3–5 cm, lobes 5, ca. 1.8 × 2.5 cm, emarginate; stamens, 18–20, 1.2–2.6 cm, filaments pubescent at base; ovary conoid, 5–6 mm, glabrous; style ca. 3 cm, glabrous; stigma swollen, discoid, 5–5.5 mm in diam. Capsule oblique, 15–30 × 9–11 mm. Fl. May, fr. Jul–Aug.

● Forests, valleys, roadsides; 2200–3600 m. W Sichuan.

1a. Pedicel 3–6 cm; corolla 4–5 cm ..... 208a. var. *asterochnoum*
1b. Pedicel 1.3–2 cm; corolla 3–3.5 cm ..... 208b. var. *brevipedicellatum*

208a. Rhododendron asterochnoum var. **asterochnoum**

汶川星毛杜鹃(原变种) wen chuan xing mao du juan (yuan bian zhong)

Leaf blade 3–9 cm wide. Pedicel 3–6 cm; corolla 4–5 cm.

● Forests; 2400–3600 m. W Sichuan.

208b. Rhododendron asterochnoum var. **brevipedicellatum** W. K. Hu, Bull. Bot. Res., Harbin 8(3): 57. 1988.

短梗星毛杜鹃 duan geng xing mao du juan

Leaf blade 3–4.5 cm wide. Pedicel 1.3–2 cm; corolla 3–3.5 cm.

● Forests, valleys, roadsides; ca. 2200 m. NW Sichuan.

Perhaps var. *brevipedicellatum* is not worthy of recognition. Measurements from the type specimens of the two varieties indicate that the differences between them, while still diagnostic, are not as large as were quoted in FRPS (57(2): 13. 1994).

209. Rhododendron jingangshanicum P. C. Tam, Bull. Bot. Res., Harbin 2(1): 89. 1982.

井冈山杜鹃 jing gang shan du juan

Shrubs 2–4(–5) m tall; branches stout. Petiole 15–20 mm, floccose at first, glabrescent; leaf blade leathery, oblong or oblong-lanceolate, broadest above the middle, 18–33 × 6–8 cm; base cuneate; margin undulate; apex acute; abaxial surface white-floccose, glabrescent; adaxial surface bright green; midrib prominent abaxially, grooved adaxially; lateral veins 18–24-paired. Inflorescence racemose-umbellate, 7- or 8-flowered; rachis ca. 15 mm, glabrescent. Pedicel 2.5–3 cm; calyx discoid, lobes 5, ca. 8 mm, oblique, ca. 2 mm; corolla obliquely campanulate, ventricose, purple, 6–7 cm, lobes 5, emarginate; stamens 16, unequal, 2.8–3.6 cm, filaments pubescent at base; ovary ovoid, glabrous; style ca. 4.5 cm, puberulent; stigma swollen, discoid, ca. 6 mm in diam. Capsule curved, ca. 25 mm. Fl. Sep.

● Forests, valleys; 1100–1200 m. W Jiangxi (Jinggang Shan).

210. Rhododendron faithiae Chun, Sunyatsenia 2: 78. 1934 [*"faithae"*].

大云锦杜鹃 da yun jin du juan

Shrubs or small trees, 4–12 m tall, bark brown, exfoliating into thin and small irregular flakes; young shoots stout, glabrous. Petiole stout, 15–34 mm, glabrous; leaf blade thickly leathery, oblong-elliptic to oblong, 11–24 × 4.4–9 cm; base obtuse to rounded; apex acute, apiculate; both surfaces glabrous; abaxial surface glaucous; adaxial surface green; midrib prominent abaxially, 3–4 mm wide near base, grooved adaxially, lateral veins 15–22-paired. Inflorescence 8–12-flowered, rachis ca. 50 mm, sparsely glandular. Pedicel 2.5–3 cm, densely glandular; calyx discoid, small, glandular; corolla widely funnel-campanulate, white, 8–8.5 cm, glandular-hairy near base, glabrous inside; lobes 7, obovate, ca. 3 × 3.3 cm; stamens 14, unequal, 3.7–4.9 cm, filaments glabrous; ovary conical, ca. 9 mm, densely brown glandular-hairy; style ca. 5.2 cm, glandular; stigma discoid, ca. 5 mm in diam. Capsule cylindric, 25–35 mm. Fl. Jul–Aug, fr. Nov.

● Forests; 1000–1400 m. SW Guangdong, E Guangxi.

211. Rhododendron wolongense W. K. Hu, Acta Phytotax. Sin. 26: 303. 1988.

卧龙杜鹃 wo long du juan

Small trees, 4–6 m tall. Petiole 15–20 mm, glabrous; leaf blade leathery, narrowly oblong, rarely oblong-oblanceolate, 14–17.5 × 3–4.5 cm; base rounded or subcordate, unequal; margin revolute; apex obtuse; abaxial surface glaucous; adaxial surface green, glabrous, midrib raised abaxially, grooved adaxially, lateral veins 21–25-paired, flat. Inflorescence shortly racemose-umbellate, 5- or 6-flowered; rachis ca. 20 mm. Pedicel 1.8–2 cm, glandular; calyx lobes 5 or 6, 1–2 mm, sparsely glandular outside; corolla funnel-campanulate, 9.5–10.5 cm, sparsely glandular near base, inside white-pubescent; lobes 7, widely ovate, ca. 3 × 2.5 cm, emarginate; stamens 15, unequal, 5.7–7.5 cm, filaments white-pubescent in lower half; ovary conoid, ca. 7.3 × 4 mm, densely pink glandular-hairy; style ca. 8.8 cm, with similar glands throughout; stigma swollen, discoid ca. 5 mm in diam. Capsule not known. Fl. Jul.

● Broad-leaved forests; ca. 1700 m. W Sichuan.

212. Rhododendron decorum Franchet, Bull. Soc. Bot. France 33: 230. 1886.

大白杜鹃 da bai du juan

Shrubs or small trees, 1–6 m tall; young shoots greenish,

glabrous. Petiole 12–40 mm, glabrous; leaf blade thickly leathery, oblong, oblong-ovate or oblong-elliptic, 5–19(–30) × 3–11 cm; base cordate or cuneate to nearly rounded; apex obtuse, rounded, apiculate; both surfaces glabrous when mature; abaxial surface pale green; adaxial surface deep green, midrib prominent abaxially, grooved adaxially; lateral veins 18-paired. Inflorescence 8–10-flowered; rachis 20–25 mm, sparsely glandular. Pedicel stout, 2.5–4 cm, glandular-hairy; calyx lobes 5, 1.5–2.5 mm, glandular-hairy; corolla funnel-campanulate, fragrant, white to pale pink, 3–10 × 5–9 cm, outer surface sparsely glandular, inner surface puberulent at base; lobes 6–8, suborbicular, ca. 2 × 2.4 cm, emarginate or entire; stamens 13–16, unequal, 2–3 cm, filaments pubescent at base; ovary cylindric, ca. 6 mm, densely glandular-hairy; style 3.4–4 cm, with similar glands to tip; stigma 2–5(–6.5) mm in diam. Capsule oblong, usually slightly curved, 25–40 × 10–15 mm. Fl. Apr–Jun, fr. Sep–Oct.

Forests, thickets; 1000–3300 m. W Guizhou, SW Sichuan, SE Xizang, Yunnan [Myanmar].

1a. Leaf blade base cordate; petiole 1.2–1.4 cm ..... 212d. subsp. *cordatum*
1b. Leaf blade base obtuse or rounded; petiole 1.5–4 cm.
  2a. Stigma small, ca. 2 mm in diam.; corolla lobes 7, entire ..... 212c. subsp. *parvistigmatis*
  2b. Stigma swollen, 3–5(–6.5) mm in diam.; corolla lobes 6–8, emarginate.
    3a. Petiole 1.7–2.3 cm; leaf blade oblong to oblong-obovate, 5–14.5 × 3–5.7 cm; corolla 3–5 cm ..... 212a. subsp. *decorum*
    3b. Petiole 2.4–4 cm; leaf blade oblong-elliptic to oblong-oblanceolate, 12–19(–30) × 4.4–11 cm; corolla (6.5–)8–11 cm ..... 212b. subsp. *diaprepes*

212a. Rhododendron decorum subsp. **decorum**

大白杜鹃(原亚种) da bai du juan (yuan ya zhong)

Rhododendron albicaule H. Léveillé; *R. franchetianum* H. Léveillé; *R. giraudiasii* H. Léveillé; *R. spooneri* Hemsley & E. H. Wilson.

Petiole 17–23 mm; leaf blade oblong to oblong-obovate, 5–14.5 × 3–5.7 cm; base rounded. Corolla 3–5 × 5–7 cm, lobes 6–8, emarginate; stigma 3–5(–6.5) mm in diam. Fl. Apr–Jun, fr. Sep–Oct.

Forests, thickets; 1000–3300 m. W Guizhou, SW Sichuan, SE Xizang, NW Yunnan [NE Myanmar].

212b. Rhododendron decorum subsp. **diaprepes** (I. B. Balfour & W. W. Smith) T. L. Ming, Acta Bot. Yunnan. 6: 147. 1984.

高尚大白杜鹃 gao shang da bai du juan

Rhododendron diaprepes I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 100. 1917; *R. rasile* I. B. Balfour & W. W. Smith.

Petiole 24–40 mm; leaf blade oblong to oblong-obovate, 12–19(–30) × 4.4–11 cm; base rounded. Corolla (6.5–)8–10 × ca. 9 cm, lobes 6–8, emarginate; stigma 3–5(–6.5) mm in diam.

Evergreen forests, mixed forests; 1700–3300 m. SW Sichuan, W Yunnan [Myanmar].

212c. Rhododendron decorum subsp. **parvistigmatis** W. K. Hu, Bull. Bot. Res., Harbin 8(3): 57. 1988.

小柱大白杜鹃 xiao zhu da bai du juan

Petiole more than 15 mm; leaf blade base rounded; apex acute or apiculate. Corolla lobes 7, entire; stigma ca. 2 mm in diam.

● Forests; ca. 2100 m. SW Sichuan.

212d. Rhododendron decorum subsp. **cordatum** W. K. Hu, Bull. Bot. Res., Harbin 8(3): 58. 1988.

心叶大白杜鹃 xin ye da bai du juan

Petiole 12–14 mm; leaf blade base cordate.

● Yunnan.

Geng et al. (Acta Phytotax. Sin. 41: 493. 2003) considered that subsp. *cordatum* should be treated as a synonym of subsp. *decorum*.

213. Rhododendron miyiense W. K. Hu, Bull. Bot. Res., Harbin 8(3): 52. 1988.

米易杜鹃 mi yi du juan

Shrubs; branches usually stout, ca. 8 mm in diam., glabrous. Petiole stout, 20–22 mm, glabrous; leaf blade leathery, oblong-obovate, 13.8–17 × 5.3–6.2 cm; base widely cuneate to rounded, unequal; apex obtuse, apiculate; both surfaces glabrous; abaxial surface pale green; adaxial surface green, midrib prominent abaxially, grooved adaxially; lateral veins 17–19-paired. Inflorescence racemose-umbellate, 5- or 6-flowered; rachis ca. 13 mm, glabrescent. Pedicel ca. 2 cm, glabrous; calyx discoid; lobes 5, ca. 3 mm, puberulent outside; corolla tubular-campanulate, ca. 5 cm, white-pubescent inside; lobes 6 or 7, ovate, 1.5–1.8 × 1.5–2 cm; stamens ca. 17, unequal, 2.5–3.5 cm, filaments pubescent at base; ovary ovoid, ca. 8 × 6 mm; style ca. 3.3 cm, both densely brown glandular; stigma swollen, discoid, ca. 5 mm in diam. Capsule not known. Fl. May.

● Forests; ca. 1700 m. SW Sichuan.

The plate accompanying the original description of *Rhododendron miyiense* illustrates the corollas as being funnelform-campanulate, not tubular-campanulate.

214. Rhododendron sutchuenense Franchet, J. Bot. (Morot) 9: 392. 1895.

四川杜鹃 si chuan du juan

Shrubs or small trees, 1–8 m tall; young shoots usually ca. 8 mm in diam. below inflorescence, green, thinly tomentose. Petiole 20–30 mm, floccose when young, glabrescent; leaf blade leathery, oblong-lanceolate, 10–22 × 3–7 cm; base cuneate; apex obtuse or rounded; abaxial surface pale, persistently whitish floccose along midrib, otherwise glabrous; adaxial surface deep green, glabrous when mature; midrib prominent abaxially, grooved adaxially; lateral veins 17–22-paired. Inflorescence 8–10-flowered; rachis 10–15 mm, glabrous. Pedicel stout, 1–1.3 cm, white-puberulent; calyx lobes 5, ca. 2.2 mm, glabrous; corolla funnel-campanulate, rose, with deep rose flecks, ca. 5

cm, densely puberulent within; lobes 5(or 6), ca. 1.8 cm, emarginate; stamens 15–16, 2.5–3.5 cm, filaments pubescent at base; ovary conoid, ca. 7 mm, glabrous; style glabrous; stigma discoid, pink, ca. 3 mm in diam. Capsule oblong slightly curved, 18–36 mm. Fl. Apr–May, fr. Aug–Oct.

● Forests; 1600–2300 m. Chongqing, Gansu, Guangxi, Guizhou, NW Hubei, NW Hunan, S Shaanxi.

215. Rhododendron praevernum Hutchinson, Gard. Chron., ser. 3, 67: 127. 1920.

早春杜鹃 zao chun du juan

Shrubs or trees, 2–7 m tall; shoots 5–6 mm in diam. below inflorescence; young shoots gray pubescent, glabrescent. Petiole stout, 15–25 mm, pubescent when young; leaf blade leathery, elliptic-lanceolate, (9–)10–19.5 × (2–)3.3–5 cm; base cuneate; margin revolute; apex obtuse or acute; both surfaces glabrous; abaxial surface pale green; adaxial surface dark green; midrib prominent abaxially, grooved adaxially; lateral veins 14–20-paired. Inflorescence 7–10-flowered; rachis ca. 13 mm, pubescent. Pedicel 1.5–3 cm, glabrous; calyx lobes 5, 1.5–2 mm, glabrous; corolla campanulate, white to rose, with purple flecks and a blotch at base, 5.8–6.2 cm, outer surface glabrous, puberulent within towards base; stamens 15–16, unequal, 2.4–4.5 cm, filaments puberulent below; ovary conoid, ca. 8 mm, glabrous; style 4.4–4.6 cm, glabrous. Capsule cylindric, 25–30 mm. Fl. Mar–Apr, fr. Sep–Oct.

● Forests; 1500–2500 m. Guizhou, W Hubei, Shaanxi, Sichuan, NE Yunnan.

216. Rhododendron guihainianum G. Z. Li, Guihaia 15: 299. 1995.

桂海杜鹃 gui hai du juan

Trees, 7–8 m tall; young shoots ca. 4 mm in diam., tomentose, glabrescent. Petiole stout, 1–2.5 cm, glabrous; leaf blade leathery, oblong-elliptic to oblanceolate-elliptic, 8–12(–16) × 3–4.5(–5.5) cm; base broadly cuneate; apex acute, mucronate; abaxial surface green, glabrous; adaxial surface pale green, glabrous; midrib prominent abaxially, grooved adaxially; lateral veins 13–16-paired. Inflorescence 5–8-flowered; rachis 10–20 mm, glabrous. Pedicel 1–2 cm, glabrous; calyx minute, discoid, 5-lobed, glabrous; corolla broadly campanulate, white to rose, with purple flecks and a blotch at base, 3–4.5 cm, outer surface glabrous; inner surface puberulent towards base; stamens 12–16, 1.5–3 cm, filaments puberulent below; ovary conoid, ca. 5 mm, glabrous; style ca. 2.5 cm, glabrous, stigma capitate, ca. 3 mm in diam. Capsule not known. Fl. Apr–May.

● Forests; 1100–1400 m. Guangxi.

The present authors have seen no material of this species. Like *Rhododendron praevernum,* it has a purple blotch at the base of the inner surface of the corolla. However, it differs from that species in having flowers and leaves generally smaller and fewer flowers per inflorescence.

217. Rhododendron oreodoxa Franchet, Bull. Soc. Bot. France 33: 230. 1886.

山光杜鹃 shan guang du juan

Shrubs or small trees, 1–8(–12) m tall; shoots ca. 4 mm in diam. below inflorescence; young shoots gray-tomentose, glabrescent. Petiole 10–25 mm, glandular when young; leaf blade leathery, elliptic or obovate-elliptic, 4.5–10 × 2–3.5 cm; base rounded; apex obtuse or rounded, apiculate; both surfaces glabrous; abaxial surface pale green; adaxial surface dark green; midrib grooved adaxially; lateral veins 13–15-paired. Inflorescence 6–8(–12)-flowered; rachis ca. 5 mm, glandular and tomentose. Pedicel purple, 0.5–1.5 cm, sparsely glandular-hairy or sparsely wispy brown-tomentose; calyx lobes 6 or 7, 1–3 mm, glandular outside; corolla campanulate, pale pink, 3.5–4.5 cm, lobes 5–8, orbicular, ca. 1 cm; stamens 12–14, filaments glabrous or pubescent; ovary conoid, 5–8 mm, glabrous or glandular-hairy; style 2.8–3.4 cm, glabrous or densely glandular-hairy, stigma small. Capsule cylindric, slightly curved, 18–32 mm. Fl. Apr–Jun, fr. Aug–Oct.

● Forests, thickets; 1800–3900 m. S Gansu, W Hubei, S Shaanxi, Sichuan, E Xizang.

1a. Ovary glabrous; corolla 7- or 8-lobed ..... 217a. var. *oreodoxa*
1b. Ovary densely glandular; corolla 5–7-lobed.
  2a. Pedicel sparsely wispy brown-tomentose; corolla 5-lobed ..... 217b. var. *shensiense*
  2b. Pedicel with glands only; corolla 6- or 7-lobed.
    3a. Style glandular-hairy; stamens 14–15 ..... 217c. var. *adenostylosum*
    3b. Style glabrous; stamens 12–14 ..... 217d. var. *fargesii*

217a. Rhododendron oreodoxa var. **oreodoxa**

山光杜鹃(原变种) shan guang du juan (yuan bian zhong)

Rhododendron haematocheilum Craib; *R. limprichtii* Diels; *R. reginaldii* I. B. Balfour.

Pedicel glandular; corolla lobes 7 or 8; stamens 15–16; ovary and style glabrous. Fl. Apr–Jun, fr. Aug–Oct.

● Forests, thickets; 2100–3600 m. S Gansu, W Hubei, Sichuan.

217b. Rhododendron oreodoxa var. **shensiense** D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 39: 478. 1982.

陕西山光杜鹃 shan xi shan guang du juan

Pedicel with sparse wispy rufous tomentum; corolla lobes 5; stamens 10; ovary densely glandular-hairy; style glabrous.

● Forests; 2300–2500 m. SW Shaanxi (Taibai Shan).

217c. Rhododendron oreodoxa var. **adenostylosum** Fang & W. K. Hu, Acta Phytotax. Sin. 26: 304. 1988.

腺柱山光杜鹃 xian zhu shan guang du juan

Pedicel glandular; corolla lobes 6 or 7; stamens 14–15; ovary and style densely glandular-hairy.

● Forests; 3600–3900 m. W Sichuan, E Xizang.

217d. Rhododendron oreodoxa var. **fargesii** (Franchet) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 331. 1979.

粉红杜鹃 fen hong du juan

Rhododendron fargesii Franchet, J. Bot. (Morot) 9: 390. 1895; *R. erubescens* Hutchinson.

Pedicel glandular; corolla lobes 6 or 7; stamens 12–14; ovary densely glandular-hairy; style glabrous.

● Forests, thickets; 1800–3500 m. S Gansu, W Hubei, S Shaanxi, NW Sichuan.

218. Rhododendron praeteritum Hutchinson, Gard. Chron., ser. 3, 71: 149. 1922.

鄂西杜鹃 e xi du juan

Shrubs; young shoots green, sparsely tomentose. Petiole stout, 10–20 mm, floccose at first, soon glabrous; leaf blade leathery, obovate-oblong to oblong-elliptic, 6.5–8.5 × 3.1–4.5 cm; base rounded or truncate; margin revolute; apex obtuse or rounded, apiculate; abaxial surface pale green, glabrous at maturity except for sparse loose hairs on the prominent midrib; adaxial surface deep green, slightly rugose, midrib grooved adaxially, lateral veins 12–16-paired, glabrous. Inflorescence racemose-umbellate, 7–10-flowered; rachis ca. 15 mm, puberulent. Pedicel 1.8–2 cm, pubescent when young, soon glabrous; calyx 1–1.4 mm, glabrous outside; corolla open-campanulate, pale pink, with purple flecks, 2–4 cm, 5 nectar pouches at base; stamens 10, unequal, 1.2–3.5 cm, filaments pubescent at base; ovary ovoid, ca. 4 × 2.5 mm, glabrous or hirsute; style ca. 1.2 cm, glabrous; stigma capitate, small, oblong-ovoid, ca. 1.5 cm. Fl. May, fr. Sep.

● Forests, thickets; 1800–3300 m. W Gansu, W Hubei, SW Hunan, E Qinghai.

1a. Ovary glabrous; calyx ca. 1 mm ..... 218a. var. *praeteritum*
1b. Ovary hirsute; calyx 1–1.4 mm ..... 218b. var. *hirsutum*

218a. Rhododendron praeteritum var. **praeteritum**

鄂西杜鹃(原变种) e xi du juan (yuan bian zhong)

Calyx lobes ca. 1 mm, triangular; ovary glabrous.

● About 3300 m. W Gansu, W Hubei, E Qinghai.

218b. Rhododendron praeteritum var. **hirsutum** W. K. Hu, Bull. Bot. Res., Harbin 8(3): 58. 1988.

毛房杜鹃 mao fang du juan

Calyx lobes 1–1.4 mm, broadly ovate; ovary densely brown-hirsute.

● Forests, thickets; 1800–1900 m. W Hubei, SW Hunan.

219. Rhododendron vernicosum Franchet, J. Bot. (Morot) 12: 258. 1898.

亮叶杜鹃 liang ye du juan

Rhododendron lucidum Franchet, J. Bot. (Morot) 9: 390. 1895, not Nuttall (1853); *R. adoxum* I. B. Balfour & Forrest; *R. araliiforme* I. B. Balfour & Forrest; *R. euanthum* I. B. Balfour & W. W. Smith; *R. hexamerum* Handel-Mazzetti; *R. rhantum* I. B. Balfour & W. W. Smith; *R. sheltoniae* Hemsley & E. H. Wilson.

Shrubs or small trees, 1–5(–8) m tall; young shoots sparsely glandular, glabrescent. Petiole cylindric, 15–35 mm, glabrous; leaf blade leathery, oblong-ovate to oblong-elliptic, 5–12.5 × 2.3–4.8 cm; base rounded; apex obtuse or rounded; abaxial surface pale gray-green, with minute punctulate hairs; adaxial surface dark green, slightly wax-covered, glabrous; midrib prominent abaxially, grooved adaxially; lateral veins 14–16-paired. Inflorescence 6–10-flowered; rachis ca. 10 mm, sparsely glandular and puberulent. Pedicel 2–3 cm, glandular-hairy; calyx fleshy; lobes 7 or 8, ca. 1.6 mm, densely glandular-hairy, margin gland-fringed; corolla widely funnel-campanulate, somewhat fragrant, pale pink to white, 3.5–5 cm, glabrous; lobes (5–)7, suborbicular, ca. 1.8 × 2 cm; apex emarginate; stamens (11–)14, unequal, 2–3 cm, filaments glabrous; ovary conoid, ca. 5 mm, densely red-glandular; style ca. 2.6 cm, red glandular-hairy to tip. Capsule cylindric, oblique, slightly curved, 30–40 mm Fl. Apr–Jun, fr. Aug–Oct.

● Forests; 2600–4300 m. W Sichuan, SE Xizang, W Yunnan.

220. Rhododendron nymphaeoides W. K. Hu, Bull. Bot. Res., Harbin 8(3): 54. 1988.

睡莲叶杜鹃 shui lian ye du juan

Small trees; shoots ca. 3.3 mm in diam. below inflorescence; young shoots glabrous. Petiole 27–33 mm, glabrous; leaf blade leathery, ovate to widely elliptic, 4.7–6.3 × 3–3.8 cm; base auriculate to cordate; apex obtuse, apiculate; abaxial surface glaucous; adaxial surface green, glabrous; midrib prominent abaxially, grooved adaxially, lateral veins 7-paired and slightly raised, flat abaxially. Inflorescence racemose-umbellate, 3–5-flowered; rachis 20–25 mm, glabrous. Pedicel 3–3.7 cm, sparsely glandular-hairy; calyx 1–1.6 mm, red glandular-hairy outside, margin undulate, ciliate; corolla campanulate, pink, ca. 4.5 cm, glabrous; lobes 7, suborbicular, ca. 1.5 × 2.3 cm, emarginate; stamens 14, 1.5–2.7 cm, filaments pubescent at base; ovary conoid, ca. 5 × 3.5 mm, densely red glandular-hairy; style ca. 2.8 cm, similarly glandular to tip; stigma capitate, ca. 4 mm in diam. Capsule not known. Fl. Apr.

● Mountain slopes; 900–1000 m. SE Sichuan (Gulin).

221. Rhododendron hemsleyanum E. H. Wilson, Bull. Misc. Inform. Kew 1910: 109. 1910.

波叶杜鹃 bo ye du juan

Shrubs or small trees, 2–9 m tall; branchlets stout, ca. 10 mm in diam. below inflorescence, puberulent. Petiole stout, 50–75 mm, sparsely glandular-hairy or glabrous; leaf blade thickly leathery, oblong to oblong-ovate, 9–21 × 4.6–10.5 cm; base auriculate-cordate; margin undulate; apex rounded; abaxial surface pale green, minutely papillate; adaxial surface dark green, somewhat shiny, glabrous; midrib prominent abaxially, grooved adaxially; lateral veins ca. 17-paired, raised abaxially. Inflorescence 7–16-flowered; rachis 55–70 mm, sparsely glandular. Pedicel 3–4 cm, glandular-hairy or glabrous; calyx purple, ca. 1.5 mm, glandular abaxially; corolla open-campanulate, fragrant, white, without flecks, ca. 6 cm, outer surface glandular at base, sometimes puberulent at base within; lobes 7, suborbicular, ca. 2 × 2.4 cm, emarginate; stamens 14–16, unequal, 2.7–4.5 cm, filaments glabrous; ovary conoid, ca. 7 mm, green, densely glandular; style ca. 4.6 cm, glandular; stigma swollen,

capitate, ca. 4 mm in diam. Capsule cylindric, 18–38 × 10–15 mm. Fl. May–Jun, fr. Aug–Oct.

● Forests; 1200–1500(–2000) m. SC Sichuan.

1a. Leaf blade 4.6–8 cm wide; petiole and pedicels glandular-hairy ..... 221a. var. *hemsleyanum*
1b. Leaf blade 6–10.5 cm wide; petiole and pedicels glabrous ..... 221b. var. *chengianum*

221a. Rhododendron hemsleyanum var. **hemsleyanum**

波叶杜鹃(原变种) bo ye du juan (yuan bian zhong)

Petiole and pedicels glandular-hairy; leaf blade 4.6–8 cm wide.

● Forests; 1200–1500(–2000) m. SC Sichuan (Emei Shan).

221b. Rhododendron hemsleyanum var. **chengianum** (W. P. Fang) W. P. Fang ex W. K. Hu in L. C. Hu & M. Y. Fang, Fl. Reipubl. Popularis Sin. 57(2): 30. 1994.

无腺杜鹃 wu xian du juan

Rhododendron chengianum W. P. Fang, Icon. Pl. Omei. t. 31. 1942.

Petiole and pedicels glabrous, without glands; leaf blade 6–10.5 cm wide.

● Forests; ca. 1200 m. SC Sichuan (Emei Shan).

The type specimen of var. *hemsleyanum* has glabrous pedicels. This makes the distinctions between these two varieties less reliable.

222. Rhododendron fortunei Lindley, Gard. Chron. 1859: 868. 1859.

云锦杜鹃 yun jin du juan

?*Rhododendron albicaule* H. Léveillé.

Shrubs or small trees, 3–12 m tall; bark gray, falling off in flakes; young shoots green, glandular, glabrescent. Petiole cylindric, 18–40 mm, sparsely glandular-hairy when young; leaf blade thickly leathery, oblong to oblong-elliptic, 8–14.5 × 3–9.2 cm; base rounded or truncate, rarely cordulate; apex obtuse to rounded, rarely acute; abaxial surface pale green, glabrous except for persistent punctulate hair bases; adaxial surface dark green, shiny; midrib prominent abaxially, grooved adaxially; lateral veins 14–16, flat abaxially, impressed adaxially. Inflorescence lax, 6–12-flowered; rachis 30–50 mm, glandular. Pedicel 2–3 cm, glandular-hairy; calyx lobes 7, ca. 1 mm, glandular and gland-fringed; corolla funnel-campanulate, fragrant, pink, 4.5–5.2 cm, outer surface glandular; lobes 7, obovate, 1.5–1.8 cm; apex undulate; stamens 14, unequal, 1.8–3 cm, filaments glabrous; ovary conoid, ca. 5 × 4.5 mm, densely glandular; style ca. 3 cm, glandular-hairy; stigma small. Capsule oblong, rough, 25–35 × 6–10 mm. Fl. Apr–May, fr. Aug–Oct.

● Forests; 600–2000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, NE Yunnan, Zhejiang.

The type of *Rhododendron albicaule* (described from Zhejiang) is too poor to be certain of its identity, but it is probably referable to *R. fortunei*.

223. Rhododendron jinchangense Z. H. Yang, Acta Phytotax. Sin. 35: 186. 1997.

金厂杜鹃 jin chang du juan

Small trees, 2.5–5 m tall; bark gray; young shoots glabrous. Petiole 10–20 mm, glabrous; leaf blade subleathery, elliptic or narrowly elliptic, 11–16 × 3–5.4 cm; base cuneate; apex acuminate; both surfaces glabrous; abaxial surface pale green; adaxial surface green; midrib slightly raised, lateral veins 14–18, inconspicuous. Inflorescence racemose, 7–11-flowered; rachis 20–25 mm, glabrous. Pedicel 2.7–3.4 cm, glandular; calyx discoid, minute, glandular; corolla described as broadly funnelform (illustrated as broadly campanulate), rose-pink, 4.8–6 cm, lobes 7, suborbicular, ca. 1.8 × 2 cm; stamens 12–15, 2.5–3.5 cm, filaments glabrous; ovary ovoid, thick, ca. 7 mm, densely glandular-hairy; style ca. 4.2 cm, sparsely glandular; stigma discoid, ca. 4 mm in diam. Capsule not known. Fl. Apr.

● 1500–1700 m. S Yunnan.

This species is said to be allied to *Rhododendron fortunei* but to differ in the elliptic and subleathery leaves, the shorter (1–2 cm) petiole, the racemose inflorescence, and the broadly funnelform corolla. However, the plate accompanying the original description suggests that the corolla is broadly campanulate.

224. Rhododendron orbiculare Decaisne, Fl. Serres Jard. Eur. 22: 169. 1877.

团叶杜鹃 tuan ye du juan

Shrubs, rarely small trees, 1–4.5(–15) m tall; young shoots usually ca. 5 mm in diam., green, glabrous. Petiole cylindric, 30–70 mm, glabrous; leaf blade thickly leathery, oblong to orbicular, 5–12.5 × 5.5–10.5 cm; base cordate-auriculate to rounded, the lobes often overlapping; apex obtuse or rounded; both surfaces usually glabrous; abaxial surface glaucous; adaxial surface green; midrib raised abaxially, grooved adaxially; lateral veins 10–14-paired, impressed adaxially. Inflorescence 7- or 8-flowered; rachis 15–25 mm, glandular. Pedicel 2.5–3.5 cm, puberulent, glandular; calyx ca. 1.5 mm, margin undulate, glandular; corolla campanulate, rose, 3.2–3.5 cm, glabrous; lobes 6–8, ovate, 1.3–1.5 × ca. 1.8 cm, emarginate; stamens 11–14, 1–2 cm, filaments glabrous; ovary conoid, ca. 8 × 2.5 mm, densely glandular-hairy; style ca. 1.8 cm, glabrous; stigma capitate, ca. 2 mm in diam. Capsule cylindric, curved, 22–30 × 5–6 mm. Fl. May–Jun, fr. Aug–Oct.

● Forests, rocky slopes; 1400–3500(–4000) m. NE Guangxi, SW Sichuan.

Rhododendron orbiculare subsp. *maolingense* G. Z. Li (Guihaia 15: 294. 1995), described from Guangxi, is said to differ from subsp. *orbiculare* in its relatively narrow leaf blade (6–16 × 4–7 cm), longer corolla (ca. 7 cm), more numerous stamens (15–16), and more massive capsule (3–4 × ca. 1.5 cm). From the abbreviated description, it may be a species distinct from *R. orbiculare*; however, a proper comparison with other species in *R.* subsect. *Fortunea* is required.

1a. Leaf blade oblong, base cordate; corolla 6-lobed; stamens ca. 11 ..... 224c. subsp. *oblongum*
1b. Leaf blade ovate-orbicular or orbicular, base auriculate-cordate or subcordate to rounded; corolla 7-lobed; stamens 14.

2a. Leaf base auriculate-cordate, blade 5–10.5 cm ..... 224a. subsp. *orbiculare*
2b. Leaf base subcordate or rounded, blade 8–12.5 cm ..... 224b. subsp. *cardiobasis*

224a. Rhododendron orbiculare subsp. **orbiculare**

团叶杜鹃(原亚种) tuan ye du juan (yuan ya zhong)

Rhododendron rotundifolium David ex Franchet.

Leaf blade orbicular, 5.5–11.5 × 5.5–10.5 cm; base auriculate-cordate, lobes overlapping; abaxial surface glabrous. Corolla lobes 7; stamens 14.

● Forests, rocky slopes; 1400–3500(–4000) m. SW Sichuan.

224b. Rhododendron orbiculare subsp. **cardiobasis** (Sleumer) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 331. 1979.

心基杜鹃 xin ji du juan

Rhododendron cardiobasis Sleumer, Notizbl. Bot. Gart. Berlin-Dahlem 12: 484. 1935.

Leaf blade ovate-orbicular, 8–12.5 × 5.5–9 cm; base subcordate or ± rounded; abaxial surface glabrous. Corolla lobes 7; stamens 14.

● Forests; 1500–2200 m. NE Guangxi.

224c. Rhododendron orbiculare subsp. **oblongum** W. K. Hu, Bull. Bot. Res., Harbin 8(3): 58. 1988.

长圆团叶杜鹃 chang yuan tuan ye du juan

Leaf blade oblong; base cordate; abaxial surface puberulent. Corolla lobes 6; stamens 11.

● Forests. NE Guangxi.

225. Rhododendron maoerense W. P. Fang & G. Z. Li, Bull. Bot. Res., Harbin 4(1): 1. 1984.

猫儿山杜鹃 mao er shan du juan

Trees 8–12 m tall; older branches grayish; shoots ca. 12 mm in diam. below inflorescence; young shoots pale purple, glabrous. Petiole pale purple, 15–20 mm, glabrous; leaf blade thickly leathery, usually oblanceolate, rarely obovate, 14–16 × 4–5 cm; base cuneate; apex obtuse or acute; both surfaces glabrous; abaxial surface pale green, yellowish when dry; adaxial surface dark green, midrib prominent abaxially, slightly grooved adaxially; lateral veins 19–21-paired, distinct. Inflorescence 9–10-flowered; rachis 40–50 mm, sparsely glandular. Pedicel 3–4.5 cm, glandular-hairy; calyx discoid, glandular outside; corolla campanulate, white, 6–6.5 cm, lobes 7, suborbicular, ca. 2.5 cm, emarginate; stamens 14–17, 2.5–4 cm, filaments glabrous; ovary ovoid, ca. 6 mm, densely glandular-hairy; style stout, pale purple, ca. 5 cm, sparsely glandular; stigma discoid, ca. 4 mm in diam. Capsule oblong, 20–30 mm, calyx and style persistent. Fl. May, fr. Sep.

● Forests, streamsides; 1800–1900 m. NE Guangxi.

226. Rhododendron platypodum Diels, Bot. Jahrb. Syst. 29: 511. 1900.

阔柄杜鹃 kuo bing du juan

Shrubs or small trees, 2–8 m tall; bark gray; branchlets stout, 6–10 mm in diam., with slight gray waxy dust. Petiole flat, 1–2 cm, up to 10 mm wide; leaf blade thickly leathery, broadly elliptic or suborbicular, 9–13 × 5.5–7.5 cm; base obtuse to rounded, decurrent along petioles; apex rounded, sometimes apiculate; abaxial surface with minute punctulate hair-bases when mature, otherwise glabrous; adaxial surface dark green; midrib slightly raised on both surfaces; lateral veins 12–18-paired, glabrous. Inflorescence lax, 12–15-flowered; rachis 40–60 mm, slightly glandular. Pedicel 1.7–3.7 cm, glabrous or glandular; calyx rimlike, fleshy; lobes 7, ca. 2 mm, undulate, glabrous; corolla funnel-campanulate, pinkish, lacking markings; lobes 7, suborbicular, ca. 1.6 × 2–2.5 cm; stamens 12–14(–16), filaments puberulent near base; ovary ovoid, ca. 6 mm, densely glandular-hairy; style ca. 3.7 cm, glandular-hairy to tip, stigma discoid, 3–5 mm in diam. Capsule cylindric, ca. 15 × 8–9 mm, densely glandular. Fl. Apr–May, fr. Aug–Sep.

● Forests, thickets, rocky slopes; 1800–2200 m. Chongqing (Nanchuan).

The present authors have seen no material of *Rhododendron yuefengense* G. Z. Li (Guihaia 15: 293. 1995), described from Guangxi. It is very close to, and probably a synonym of, *R. platypodum,* apparently differing only in its smaller stature (0.5–1.5 m tall) and glabrous stamens. The other differences quoted in the original description do not significantly differentiate between the two species.

227. Rhododendron verruciferum W. K. Hu, Acta Phytotax. Sin. 26: 301. 1988.

疣梗杜鹃 you geng du juan

Shrubs, to 3 m tall; shoots ca. 5 mm in diam. below inflorescence; young shoots green, glabrous. Petiole cylindric, 18–22 mm, glabrescent; leaf blade leathery, elliptic, 4.5–6.6 × 2–2.8 cm; base cuneate or narrowly rounded; margin revolute; apex obtuse, apiculate; abaxial surface pale green, puberulous; adaxial surface dark green; midrib prominent abaxially, grooved adaxially; lateral veins 13–15-paired, obscure abaxially, impressed adaxially. Inflorescence 7–9-flowered; rachis ca. 6 mm, puberulent. Pedicel slender, 1.5–2.2 cm, warty and glandular; calyx lobes 7, ca. 1.5 mm, glandular; corolla open-campanulate, white, pink at base, 2.5–3 cm, glabrous; lobes 7, suborbicular, ca. 1.2 × 1.3 cm; stamens 14, unequal, 1.3–1.9 cm, filaments white-puberulent; ovary oblong, ca. 4 × 3.3 mm, densely glandular; style 1.6–1.8 cm, densely glandular-hairy; stigma small. Capsule not known. Fl. May.

● *Pinus* forests; 3300–3400 m. W Sichuan.

228. Rhododendron gonggashanense W. K. Hu, Bull. Bot. Res., Harbin 8(3): 55. 1988.

贡嘎山杜鹃 gong ga shan du juan

Shrubs to 3 m tall; shoots ca. 4 mm in diam. below inflorescence; young shoot green, glabrescent. Petiole stout, 10–20 mm, glabrous; leaf blade leathery, elliptic to widely ovate, 4.5–6.6 × 2.8–4.5 cm; base rounded or cordate; apex rounded, apiculate; both surfaces glabrous; abaxial surface pale green; adaxial surface green; midrib slightly grooved adaxially, lateral veins ca. 13-paired, obscure abaxially, appressed. Inflorescence ca. 15-flowered; rachis ca. 20 mm, glabrescent. Pedicel slender,

2–2.2 cm, glandular-hairy; calyx lobes 7, ca. 2 mm, glandular-hairy outside; corolla funnel-campanulate, white flushed pink, with yellow flecks, 3.2–3.5 cm, lobes 6 or 7, unequal, ca. 1.2 × 1.3–1.5 cm, emarginate; stamens 12–15, 1.4–1.9 cm; filaments glabrous; ovary conoid, ca. 5 mm, densely glandular-hairy; style ca. 2.5 cm, glandular-hairy, stigma small. Capsule not known. Fl. Jun.

● Thickets, mountain slopes; 3200–3300 m. W Sichuan.

229. Rhododendron discolor Franchet, J. Bot. (Morot) 9: 391. 1895.

喇叭杜鹃 la ba du juan

Rhododendron fortunei subsp. *discolor* (Franchet) D. F. Chamberlain; *R. fortunei* var. *houlstonii* (Hemsley & E. H. Wilson) Rehder & E. H. Wilson; *R. fortunei* var. *kwangfuense* (Chun & W. P. Fang) G. Z. Li; *R. houlstonii* Hemsley & E. H. Wilson; *R. kwangfuense* Chun & W. P. Fang; *R. mandarinorum* Diels.

Shrubs or small trees, 1.5–8 m tall; branchlets stout, glabrous. Petiole stout, 15–25 mm, glabrous; leaf blade leathery, oblong-elliptic or oblong-lanceolate, 9.5–18 × 2.4–5.4 cm, or broader; base cuneate, rarely cordate; apex obtuse; both surfaces glabrous; abaxial surface pale yellowish green; adaxial surface dark green; midrib raised abaxially, grooved adaxially; lateral veins ca. 21-paired, obscure abaxially, impressed adaxially. Inflorescence 6–8(–10)-flowered; rachis 15–30 mm, glandular. Pedicel 2–2.5 cm, glabrous or sparsely glandular; calyx lobes 7, 2–5 mm, ovate, glandular, margin gland-fringed; corolla funnel-campanulate, pale pink to white, ca. 5.5 cm, lobes 7, suborbicular, ca. 2 × 2.5 cm, emarginate; stamens 14–16, unequal, 3–3.8 cm, filaments glabrous; ovary conoid, ca. 7 mm, densely glandular-hairy; style glandular to tip. Capsule cylindric, 40–50 × ca. 15 mm. Fl. Jun–Jul, fr. Sep–Oct.

● Forests; 900–1900 m. Anhui, Chongqing, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang.

Rhododendron discolor intergrades with *R. fortunei,* and can reliably be separated from that species only by the proportionately narrower leaves.

230. Rhododendron davidii Franchet, Bull. Soc. Bot. France 33: 230. 1886 [*"davidi"*].

腺果杜鹃 xian guo du juan

Shrubs or small trees, 1.5–5(–8) m tall; young shoots green, glabrous. Petiole pale pink, 15–20 mm, glabrous; leaf blade thickly leathery, oblong-oblanceolate to oblanceolate, 10–16 × 2–4.5 cm; base cuneate; margin revolute; apex acute to acuminate; both surfaces glabrous; abaxial surface pale green; adaxial surface darker; midrib prominent abaxially, grooved adaxially, lateral veins 12–17-paired, veins evident abaxially, slightly impressed adaxially. Inflorescence 6–12-flowered; rachis 30–60 mm, glandular and tomentose. Pedicel ca. 1 cm, glandular-hairy; calyx lobes 6, 1–1.5 mm, glandular-hairy outside; corolla open-campanulate, pink to rose-purple, with dark purple flecks, 3.5–4.5 cm, glabrous within, sparsely glandular outside; lobes 7 or 8, ovate to orbicular, ca. 1.5 × 2 cm, crenulate, slightly emarginate; stamens 14–15, 3–4.5 cm; filaments glabrous; ovary conoid, 4–5 mm, densely glandular-hairy; style 4–4.5 cm, glabrous or with a few glands at base; stigma capitate, small. Capsule cylindric, 18–20 mm. Fl. Apr–May, fr. Jul–Aug.

● Evergreen forests; 1700–2400 m. W Sichuan, NE Yunnan.

231. Rhododendron huanum W. P. Fang, Contr. Biol. Lab. Chin. Assoc. Advancem. Sci., Sect. Bot. 12: 38. 1939 [*"huianum"*].

凉山杜鹃 liang shan du juan

Shrubs or small trees, 1.6–4.5(–12) m tall; young shoots stout, pale green, glabrous. Petiole cylindric, 13–23 mm, glabrescent; leaf blade leathery, oblong-lanceolate, 7–14 × 1.8–3.5 cm; base cuneate; apex acute or cuspidate; both surfaces glabrous; abaxial surface grayish green; adaxial surface dark green, midrib prominent abaxially, grooved adaxially, lateral veins 16–20-paired, prominent adaxially. Inflorescence racemose, 10–13-flowered; rachis greenish, 30–35 mm, glabrescent. Pedicel 3.5–4.2 cm, glabrous; calyx purple, lobes 7, 3–5(–10) mm, rounded, glabrous or gland-fringed; corolla campanulate, red to purple or lilac, ca. 3.5 cm, glabrous; lobes 6 or 7, suborbicular, ca. 1.6 × 1.8 cm; apex entire; stamens 12–14, unequal, 1.3–2 cm, filaments glabrous; ovary conoid, ca. 7 mm, densely glandular-hairy; style ca. 2.1 cm, glandular to tip; stigma capitate, ca. 2.5 mm in diam. Capsule oblong, 15–30 mm, with some glands; calyx persistent. Fl. May–Jun, fr. Sep–Oct.

● Forests, thickets; 1200–3000 m. Chongqing, NE Guizhou, Sichuan, NE Yunnan.

232. Rhododendron liboense Zheng R. Chen & K. M. Lan, Acta Phytotax. Sin. 41: 563. 2003.

荔波杜鹃 li bo du juan

Small trees, 2–5 m tall; branchlets robust, glabrous. Petiole 1.7–2 cm, glabrous; leaf blade leathery, elliptic-lanceolate, 10–15 × 1.6–2.8 cm; base cuneate; apex acute; abaxial surface pale green, glabrous; adaxial surface green, glabrous, midrib prominent abaxially, grooved adaxially; lateral veins 11–14-paired. Inflorescence a terminal corymb, 7–9-flowered; rachis 10–30 mm, glabrous. Pedicel 2.1–3.7 cm, glabrous; calyx small, glandular-hairy; corolla broadly campanulate, pink, 3.7–5.5 × ca. 8 cm, outer surface glabrous or with a few glandular hairs; stamens 15, unequal, 2–4 cm, filaments pilose at base; ovary 4–5 mm, with dense white-pilose glands; style 4–4.5 cm, glabrous or with a few long glandular hairs; stigma capitate. Capsule cylindrical-ellipsoid, 22–30 × ca. 15 mm, densely glandular. Fl. Mar–Apr, fr. Dec.

● Karstic hill summits; 600–700 m. SE Guizhou (Libo).

The present authors have seen no material of this species. It was compared by the original authors with *Rhododendron huanum,* but was distinguished by its narrower leaves, shorter calyx, and larger corolla.

233. Rhododendron serotinum Hutchinson, Bot. Mag. 146: t. 8841. 1920.

晚波杜鹃 wan bo du juan

Shrubs, with a straggling habit, to 3 m tall; branchlets glabrous. Petiole 20–35 mm, glabrous; leaf blade leathery, oblong-elliptic, 8–18.5 × (3.5–)4–9 cm; base auriculate; margin

undulate; apex mucronate; both surfaces glabrous; abaxial surface glaucous-green; lateral nerves ca. 15-paired. Inflorescence shortly racemose, 7–8-flowered; rachis ca. 30 mm, glandular-papillose. Pedicel 3–4.5 cm, minutely glandular-papillose; calyx lobes minute, undulate, margin with minute red glands; corolla funnel-campanulate, fragrant, white, flushed pink on the outer surface, with flecks and a basal blotch, 6–6.5 cm, tube outer surface glandular; lobes 7, ca. 2 × 3 cm; stamens 15–16, unequal, ca. 4.5 cm, filaments pubescent below; ovary ovoid, ca. 6 mm, covered with short white glandular hairs; style slightly longer than stamens, glandular to the tip; stigma discoid, 4–4.5 mm in diam. Capsule not known. Fl. Aug–Oct. (in cultivation).

Mixed forests; 1500–2900 m. ?S Yunnan [N Vietnam].

Rhododendron serotinum was described in 1920 from plants cultivated at Kew that had been raised from seed that had been received from Paris in 1889. This seed had originally been received from Delavay and was considered to have been collected from S of Mengzi, in S Yunnan. The plate cited above and the accompanying original description are a good match with recent material collected in S Yunnan and in N Vietnam. Field studies indicate that this material apparently flowers in the wild late in the season; this is in line with the flowering time reported in cultivation. However, no recent flowering material is known. It may be related to *R. hemsleyanum,* from Sichuan (Emei Shan), but apparently differs in the blotched corolla, hairy filaments, and in the late flowering period.

2. Rhododendron subsect. Auriculata (Tagg) Sleumer, Bot. Jahrb. Syst. 24: 543. 1949.

耳叶杜鹃亚组 er ye du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron ser. *Auriculata* Tagg in J. B. Stevenson, Sp. Rhodod. 38. 1930 [*"Auriculatum"*].

Small trees, 3–10 m tall; bark rough; young shoots densely glandular-setulose or setose; bud scales long, narrow, apex acuminate, caudate. Leaf blade oblong-elliptic or oblong-lanceolate; base obtuse or cordate; abaxial surface densely gland-tipped-setulose. Inflorescence 7–15-flowered. Calyx minute; corolla funnelform or funnel-campanulate, 7-lobed, white or cream to rose; stamens 14–16; filaments glabrous; ovary glandular-hairy or glandular-setulose; style glandular to tip.

● Two species: China.

1a. Young shoots densely long glandular-setulose; corolla 6(–10) cm ..... 234. *R. auriculatum*
1b. Young shoots tomentose and glandular-setulose; corolla ca. 4 cm ..... 235. *R. chihsinianum*

234. Rhododendron auriculatum Hemsley, J. Linn. Soc., Bot. 26: 20. 1889.

耳叶杜鹃 er ye du juan

Shrubs or small trees, 5–10 m tall; bark grayish; older branches glabrous; young shoots densely long glandular-setulose. Leaf buds long-conical, 3.5–5.5 cm; outer bud scales narrow, ca. 3.5 cm; apex acuminate, glabrous. Petiole stout, 18–30 mm, densely glandular; leaf blade leathery, oblong-elliptic, oblong-lanceolate to oblanceolate, 9–12 × 3–6.5 cm; base rounded or auriculate, unequal; margin cartilaginous, glandular-ciliate; apex obtuse, cuspidate; abaxial surface pale green, gland-tipped-villous, especially on midrib and main veins, also glandular; adaxial surface green, glabrous; midrib raised abaxially, grooved adaxially; lateral veins 20–22-paired, raised abaxially. Inflorescence large and loose, 7–15-flowered; rachis 20–30 mm, glandular. Pedicel 2–3 cm, densely glandular-hairy; calyx undulate, membranous, 2–4 mm, glandular; corolla funnelform, fragrant, white or cream to rose, 6(–10) cm, glandular-hairy inside, lobes 7; stamens 14–16, 2.5–3.4(–4) cm, filaments slender, glabrous; ovary ovoid, ca. 6 mm, 8-locular, densely glandular-hairy; style stout, ca. 3 cm, glandular to tip. Capsule terete, curved, distinctly ribbed, 30–40 mm. Fl. Jul–Aug, fr. Sep–Oct.

● Forests, valleys, mountain slopes; 600–2000 m. N Guizhou, W Hubei, S Shaanxi, E Sichuan.

235. Rhododendron chihsinianum Chun & W. P. Fang, Acta Phytotax. Sin. 6: 168. 1957.

红滩杜鹃 hong tan du juan

Small trees, evergreen, 3–4 m tall; bark brown, rough; young shoots tomentose and glandular-setulose, glabrescent. Leaf buds ovate, ca. 1.3 cm. Petiole stout, 15–40 mm, densely glandular-setulose; leaf blade leathery, oblong or oblong-oblanceolate, 10–20(–30) × 4.5–10 cm; base obtuse or slightly cordate; margin revolute; apex rounded, apiculate; abaxial surface evanescent pubescent; adaxial surface green, brown-setulose toward base of midrib, glabrescent; midrib grooved adaxially; lateral veins 17–19-paired, slightly raised on both surfaces. Inflorescence 8-flowered; rachis ca. 20 mm, rufous-villous. Pedicel ca. 1 cm, brownish pilose, eglandular; calyx saucer-shaped, ca. 2 mm; margin undulate, ciliate; corolla funnel-campanulate, pink, ca. 4 cm; lobes 7, obovate, ca. 1.5 cm; stamens 15, unequal, 3–3.5 cm, filaments glabrous; ovary ca. 6 mm, densely glandular; style glandular to tip. Capsule terete, 13–30 × 9–16 mm, rough. Fr. Sep–Nov.

● Forests, rocky slopes; 800–1800 m. N Guangxi.

3. Rhododendron subsect. Grandia (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 549. 1949.

大叶杜鹃亚组 da ye du juan ya zu

Hu Linzhen (胡琳贞 Hu Ling-cheng); David F. Chamberlain

Rhododendron ser. *Grandia* Tagg in J. B. Stevenson, Sp. Rhodod. 305. 1930 [*"Grande"*]; *Waldemaria* Klotzsch.

Trees or small trees, rarely large shrubs; young shoots stout, mostly ± tomentose. Leaf blade large, up to 70 cm, leathery or thickly leathery, oblong-elliptic to oblanceolate or obovate; abaxial surface with a 1- or 2-layered indumentum; adaxial surface gla-

brous when mature, usually plastered, compacted and agglutinated, rarely loose and felted indumentum. Inflorescence terminal, broad and large, 12–30-flowered; rachis stout, 10–60 mm. Calyx minute, 5–8-lobed; corolla broadly campanulate or ventricose-campanulate, rarely funnelform, (5–)6–8-lobed, fleshy, creamy-white, rose or deep purple-red, often with crimson basal blotch, with or without nectar pouches; stamens 10–20; ovary 6–20-locular, tomentose, glandular or glabrous. Capsule large, woody.

Twelve species: Asia; ten species (five endemic) in China.

1a. Petiole flattened and winged, 0.5–2.5 cm.
  2a. Petiole 1.5–2.5 cm; corolla obliquely campanulate, pale yellow to pink; ovary hairy ..... 244. *R. praestans*
  2b. Petiole 0.5–1 cm; corolla broadly campanulate, white to pink; ovary glabrous ..... 245. *R. watsonii*
1b. Petiole ± cylindric, 1.5–5 cm.
  3a. Abaxial leaf surface with loose, not agglutinated, indumentum.
    4a. Indumentum pale brown, tomentose, sometimes forming a marginal band ..... 242. *R. protistum*
    4b. Indumentum gray-white, 2-layered; upper layer arachnoid-tomentose, with a tendency to disappear ..... 243. *R. magnificum*
  3b. Abaxial leaf surface with thin agglutinated indumentum.
    5a. Vegetative bud scales persistent; flowers pink ..... 240. *R. pudorosum*
    5b. Vegetative bud scales deciduous; flowers crimson, pink, white, cream or yellow.
      6a. Corolla 5-lobed, crimson; stamens 10; leaf blade 12–17 cm ..... 241. *R. oreogenum*
      6b. Corolla 6- or 8-lobed, pink or cream to yellow; stamens 14–20.
        7a. Corolla pink; filaments glabrous ..... 239. *R. montroseanum*
        7b. Corolla cream to yellow; filaments hairy.
          8a. Pedicel and ovary tomentose and glandular; leaf blade 14–30 cm ..... 236. *R. grande*
          8b. Pedicel and ovary tomentose but not glandular; leaf blade 9–70 cm.
            9a. Leaf blade 20–70 cm; petiole 3–5 cm ..... 237. *R. sinogrande*
            9b. Leaf blade 9–21 cm; petiole 1.5–2.5 cm ..... 238. *R. sidereum*

236. Rhododendron grande Wight, Calcutta J. Nat. Hist. 8: 176. 1847.

大叶杜鹃 da ye du juan

Rhododendron argenteum J. D. Hooker; *R. longifolium* Nuttall; *Waldemaria argentea* (J. D. Hooker) Klotzsch.

Large trees, 8–10 m tall; branchlets stout, ca. 8 mm in diam. Petiole 35–50 mm, sparsely whitish hairy; leaf blade leathery, oblong-lanceolate to oblanceolate, 14–30 × 8–13 cm; base cuneate to broadly cuneate; apex obtuse or acuminate, cuspidate; abaxial surface silvery-white, indumentum thin, agglutinated; adaxial surface shiny, glabrous, midrib and lateral veins strongly prominent abaxially. Inflorescence a large globose corymb, 20–25-flowered; rachis 40–50 mm. Pedicel 2–3 cm, glandular, sometimes also tomentose; calyx teeth 8, 1–2 mm, undulate, glandular; corolla ventricose-campanulate, pale rose in bud, later white or creamy-white, with purple nectar pouches, 5–7 cm, lobes 8; stamens 16, 3.5–5 cm, filaments pubescent at base or glabrescent; ovary ca. 9 mm, 16-locular, densely glandular-hairy and tomentose; style stout, ca. 3.8 cm, glabrous or with a few glands at base, stigma large, discoid. Capsule oblong-cylindric, ca. 45 × 14 mm. Fl. May, fr. Aug–Sep.

Mixed mountain forests; 1600–2900 m. S Xizang [Bhutan, N India, Nepal, Sikkim].

237. Rhododendron sinogrande I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 274. 1916.

凸尖杜鹃 tu jian du juan

Rhododendron sinogrande var. *boreale* Tagg & Forrest.

Trees, 5–12 m tall; shoots stout, 1–1.5 cm in diam., thinly silvery-gray-tomentose. Petiole stout, 30–50 mm, with silvery appressed indumentum; leaf blade thickly leathery, oblong-elliptic to oblong-oblanceolate, 20–70 × 8–30 cm; base broadly cuneate or rounded; margin slightly revolute; apex rounded or obtuse and stiffly mucronate; abaxial surface silvery-gray to buff, indumentum compacted and agglutinated; adaxial surface glabrous; midrib prominent abaxially. Inflorescence racemose-umbellate, 15–20-flowered; rachis 30–60 mm. Pedicel stout, 3–5 cm, with a dense buff tomentum; calyx oblique; lobes 8(–10), ca. 2 mm, triangular, tomentose or glabrescent; corolla ventricose-campanulate, fleshy, creamy-white to pale yellow, 4.5–5.5 cm, with crimson nectar pouches at base inside; lobes 8(–10); stamens 18–20, unequal, filaments densely puberulent at base; ovary ca. 10 mm, densely pale brown-tomentose, eglandular; style glabrous, stigma large and discoid. Peduncle 6–6.5 cm. Capsule large and woody, cylindric, slightly curved, 40–70 × 14–17 mm, densely rusty-tomentose. Fl. Apr–May, fr. Aug–Oct.

Coniferous forests in alpine regions, *Rhododendron* thickets; 2100–3600 m. SE Xizang, W Yunnan [NE Myanmar].

238. Rhododendron sidereum I. B. Balfour, Notes Roy. Bot. Gard. Edinburgh 12: 162. 1920.

银灰杜鹃 yin hui du juan

Shrubs or small trees, 3–10 m tall; branchlets and petioles with gray-white agglutinated indumentum when young, glabrescent. Petiole 15–25 mm; leaf blade leathery, narrowly oblong to oblong-lanceolate, 9–21 × 3.5–6.5 cm; base broadly cuneate or rounded; margin slightly revolute; apex obtuse or acute and apiculate; abaxial surface indumentum silvery-gray, thin, agglutinated, glabrous on midrib; adaxial surface dark-

punctate, glabrous but with vestiges of juvenile hairs in midrib; midrib prominent abaxially, grooved adaxially. Inflorescence racemose-umbellate, 14–20-flowered; rachis 50–60 mm. Pedicel 1.5–3 cm, densely pale brown-tomentose; calyx oblique; teeth 8, ca. 1 mm, triangular, tomentose; corolla ventricose-campanulate, creamy-white to pale yellow, 3.5–4 cm, with crimson nectar pouches at base inside, lobes 8; stamens 16, unequal, filaments pubescent at base; ovary ca. 8 mm, densely fawn-tomentose, eglandular; style glabrous and slightly shorter than corolla but longer than stamens; stigma large and discoid. Capsule cylindric, oblique at base, 25–30 × 8–10 mm, ± fawn-tomentose. Fl. Apr–May, fr. Jul–Sep.

Mixed forests on mountain slopes; 2400–3400 m. W Yunnan [NW Myanmar].

239. Rhododendron montroseanum Davidian, Notes Roy. Bot. Gard. Edinburgh 37: 338. 1979.

墨脱杜鹃 mo tuo du juan

Rhododendron mollyanum Cowan & Davidian, Rhododendron Year Book 8: 72. 1953, not *R. mollianum* Koorders (1909).

Trees 12–15 m tall; shoots stout, ca. 12 mm in diam., thinly gray-tomentose. Petiole stout, 20–40 mm, silvery-gray arachnoid-tomentose or glabrescent; leaf blade thickly leathery, oblanceolate to oblong, 20–30 × 5.5–10 cm; base rounded or broadly cuneate; apex rounded and mucronate; abaxial surface indumentum silvery-white, thin, compacted; adaxial surface glabrous; midrib and lateral veins prominent abaxially. Inflorescence racemose-umbellate, 15–20-flowered; rachis ca. 30 mm, floccose. Pedicel 3–5 cm, densely tawny-tomentose; calyx teeth 8, ca. 1 mm, minute, tomentose; corolla ventricose-campanulate, pink with crimson blotch at base, ca. 5 cm, lobes 8, emarginate; stamens 16, unequal, filaments glabrous; ovary 8–9 mm, densely rufous-tomentose; style slightly shorter than corolla, but longer than stamens, glabrous; stigma discoid.

● Open montane forests; 2800–2900 m. S Xizang.

240. Rhododendron pudorosum Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 239. 1937.

羞怯杜鹃 xiu qie du juan

Trees 6–8 m tall; shoots stout, ca. 10 mm in diam., sparsely tomentose; bud scales persistent. Petiole stout, 25–30 mm, sparsely gray-white tomentose; leaf blade thickly leathery, oblanceolate to oblong, 14–20 × 4–7 cm; base rounded or broadly cuneate; margin slightly revolute; apex obtuse or rounded, mucronate; abaxial surface with glands; adaxial surface glabrous; midrib prominent abaxially. Inflorescence racemose-umbellate, 16–24-flowered; rachis 25–30 mm. Pedicel ca. 3.2 cm, ± yellowish floccose-tomentose; calyx lobes 8, ca. 1 mm, sparsely floccose; corolla ventricose-campanulate, rose-pink with rose basal blotch, 3.5–4 × ca. 5 cm wide, lobes 6(–8), emarginate; stamens 16, unequal, filaments glabrous; ovary ca. 7 × 3 mm in diam., densely white-tomentose, eglandular; style ca. 2.8 cm, glabrous; stigma large and discoid. Fl. May.

● *Abies* forests, *Rhododendron* thickets; 3300–3800 m. S Xizang.

241. Rhododendron oreogenum L. C. Hu, Acta Phytotax. Sin. 30: 541. 1992.

藏东杜鹃 zang dong du juan

Small trees, 4–5 m tall; young shoots ca. 6 mm in diam., sparsely grayish tomentose, soon glabrescent. Petiole terete, 15–20 mm, sparsely floccose; leaf blade leathery, oblong to ovate-oblong, 15–17 × 4–4.8 cm; base cuneate or broadly cuneate; margin slightly revolute; apex obtuse or acute and mucronate; abaxial surface silvery-white indumentum thin, compacted and agglutinated; adaxial surface glabrous, midrib markedly elevated abaxially, impressed adaxially; lateral veins 22–23-paired, conspicuous abaxially. Inflorescence racemose-umbellate, ca. 16-flowered; rachis ca. 25 mm, floccose. Pedicel 1–1.5 cm, densely pale brown-tomentose; calyx lobes 5, 1–1.5 mm, sparsely tomentose; corolla campanulate, bright crimson, purple within at base of tube, ca. 4 cm, lobes 5, suborbicular, emarginate; stamens 10, unequal, filaments glabrous; ovary 6–7 × ca. 3.5 mm, 6-locular, densely pale brown-tomentose; style slightly shorter than corolla and longer than stamens, glabrous; stigma slightly lobulate. Fl. May.

● *Abies* forests on mountain slopes; 2800–2900 m. SE Xizang (Mêdog).

The 5-lobed corolla suggests that this species is only doubtfully a member of *Rhododendron* subsect. *Grandia*. It may be related to, or a synonym of, *R. lanigerum* in *R.* subsect. *Arborea*.

242. Rhododendron protistum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 151. 1920.

翘首杜鹃 qiao shou du juan

Trees, 5–10 m tall; shoots stout, ca. 1 cm in diam., yellow-gray-tomentose. Petiole stout, terete, 25–40 mm, glabrous; leaf blade thickly leathery, oblong-lanceolate to oblong-oblanceolate, 12–45 × 5–20 cm; base cuneate; apex obtuse, mucronate; abaxial surface appressed pale brown tomentose, sometimes restricted to a marginal band at maturity; adaxial surface glabrous, sometimes with vestiges of hairs; midrib stout, conspicuously elevated abaxially. Inflorescence racemose-umbellate, 20–30-flowered; rachis ca. 60 mm. Pedicel stout, 1.5–2 cm, densely tawny-tomentose; calyx lobes 8, 2–3 mm, unequal, triangular, tomentose; corolla funnelform-campanulate, creamy-white, rose or deep purple-red, with dark basal blotch, 5–8 cm, nectar pouches present; lobes 8; stamens 16, unequal, filaments glabrous; ovary 9–11 mm, densely tawny fasciculate-tomentose; style ca. 4 cm, glabrous; stigma large and discoid-lobulate. Capsule cylindric, ca. 40 × 12 mm, tomentose. Fl. Mar–May, fr. Aug–Nov.

Mixed forests, *Abies* forests on mountain slopes; 2400–4200 m. SE Xizang, W Yunnan [NE Myanmar].

1a. Leaf blade 20–45 cm; abaxial surface with tomentum restricted to a marginal band at maturity; flowers 5–5.5 cm, creamy-white tinged rose ..... 242a. var. *protistum*

1b. Leaf blade 12–37 cm; abaxial surface with indumentum continuous and loose; flowers 7–8 cm, deep purple-red ..... 242b. var. *giganteum*

242a. Rhododendron protistum var. **protistum**

翘首杜鹃(原变种) qiao shou du juan (yuan bian zhong)

Rhododendron giganteum Forrest var. *seminudum* Tagg & Forrest.

Leaf blade 20–45 × 7–20 cm; abaxial surface with indumentum usually restricted to marginal band; corolla creamy white tinged with rose, 5–5.5 cm. Fl. May, fr. Aug.

Mixed forests, *Abies* forests on mountain slopes; 2400–4200 m. SE Xizang, W Yunnan [NE Myanmar].

242b. Rhododendron protistum var. **giganteum** (Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 331. 1979.

大树杜鹃 da shu du juan

Rhododendron giganteum Forrest, J. Roy. Hort. Soc. 49: 27. 1924.

Leaf blade 12–37 × 4–12 cm; abaxial surface indumentum continuous and loose; corolla deep purple-red, 7–8 cm. Fl. Mar–May, fr. Nov.

● Mixed forests; 2500–3300 m. W Yunnan.

243. Rhododendron magnificum Kingdon Ward, J. Bot. 73: 247. 1935.

强壮杜鹃 qiang zhuang du juan

Trees, 13–18 m tall; branchlets stout, glabrous. Petiole stout, slightly flattened, narrowly winged, 30–35 mm, sparsely gray-tomentose, glabrescent; leaf blade leathery, broadly obovate to oblong-ovate, widest above middle, 20–32 × 10–14 cm; base cuneate with broad wings decurrent down petiole; apex rounded, shortly apiculate; abaxial surface gray-white, with a thin loose 2-layered indumentum, upper layer arachnoid, tending to disappear in older leaves, lower layer compacted; adaxial surface slightly rugulose, glabrous; midrib and veins prominent abaxially. Inflorescence racemose-umbellate, ca. 30-flowered; rachis ca. 30 mm. Pedicel 1–1.5 cm, densely rufous-pubescent; calyx lobes 8, ca. 1 mm; corolla campanulate or funnelform-campanulate, rosy-purple, unspotted, 5–6 × ca. 5 cm, with darker nectar pouches, puberulent at base inside, lobes 8; stamens 16, unequal, filaments glabrous; ovary ca. 7 × 4 mm, 16–20-locular, densely rufous-tomentose; style red, longer than stamens, glabrous, stigma discoid. Fl. Feb–Mar.

Rainy forests or thickets along stream banks; 1800–2400 m. SE Xizang (Myanmar border) [NE Myanmar].

The type specimen (*Kingdon Ward 9200,* BM) was collected in the Adung Valley in NE Myanmar. As this locality is almost on the border with Xizang, this species is almost certain to occur in China too.

244. Rhododendron praestans I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 263. 1916.

优秀杜鹃 you xiu du juan

Rhododendron coryphaeum I. B. Balfour & Forrest; *R. semnum* I. B. Balfour & Forrest.

Shrubs or trees, 3–7 m tall; young shoots 8–10 mm in diam., densely gray floccose-tomentose. Petiole stout, flattened and broadly winged, 1.5–2.5 cm, sparsely gray tomentose or glabrescent; leaf blade leathery, oblong-lanceolate to oblong-ovate, broadest near apex of blade, 15–38 × 6–14 cm; base cuneate with broad wings decurrent down petiole; apex rounded, sometimes emarginate; abaxial surface silvery-gray to buff, indumentum thin, compacted and agglutinated; adaxial surface glabrous; midrib and veins prominent abaxially. Inflorescence racemose-umbellate, 12–20-flowered; rachis 25–35 mm. Pedicel ca. 3.5 cm, floccose-tomentose; calyx lobes 7(or 8), 1.5–2.5 mm, tomentose; corolla obliquely campanulate, pale yellow, white flushed pink or pink, with crimson spots and basal blotch inside, 3.5–4.5 × ca. 5 cm wide, lobes 7(–8); stamens 14–16, unequal, filaments glabrous; ovary 8–10 mm, densely buff-tomentose; style ca. 2.6 cm, glabrous, stigma discoid. Peduncle 4.5–5 cm. Capsule oblong-cylindric, base strongly oblique, 30–40 × 6–10 mm, rusty-tomentose. Fl. May–Jun, fr. Aug–Oct.

● Mixed forests, coniferous forests in alpine regions; 3100–4200 m. SE Xizang, NW Yunnan.

245. Rhododendron watsonii Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1910: 112. 1910.

无柄杜鹃 wu bing du juan

Shrubs or small trees, 1.5–6 m tall; young shoots slightly gray-brown tomentose. Leaf blade leathery, oblong-elliptic to broadly oblanceolate or obovate, 10–33 × 4–10 cm; base rounded, with broad wings decurrent into petiole; apex acute; abaxial surface silvery-white to brownish, indumentum thin, compacted and agglutinated; adaxial surface glabrous. Inflorescence a lax short racemose umbel, 12–15-flowered; rachis ca. 10 mm, gray-white pubescent. Pedicel 1.5–3 cm, sparsely floccose, glabrescent; calyx irregular; lobes 7, 1–2 mm; corolla broadly campanulate, white slightly pink tinged with crimson blotch at base, 3.5–4 cm, lobes 7; stamens 14, unequal, filaments puberulent in lower part; ovary glabrous; style ± as long as corolla, glabrous, stigma capitate. Capsule oblong-cylindric, slightly curved, 3–4 × 5–7 mm. Fl. May–Jun, fr. Jul–Sep.

● Open forests; 2500–3000 m. S Gansu, W Sichuan.

4. Rhododendron subsect. Falconera (Tagg) Sleumer, Bot. Jahrb. Syst. 74. 549. 1949.

杯毛杜鹃亚组 bei mao du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron ser. *Falconera* Tagg in J. B. Stevenson, Sp. Rhodod. 235. 1930 [*"Falconeri"*].

Shrubs or small trees, 3–10 m tall; young shoots stout, mostly ± tomentose, usually glabrescent. Leaf blade large, leathery, ovate to obovate-elliptic; abaxial surface with whitish, brownish or rufous 1- to 2-layered indumentum, the upper layer usually cup-shaped, the lower layer (when present) thin, sometimes compacted; adaxial surface glabrous. Inflorescence a racemose umbel, 12–20(–30)-

flowered. Calyx minute, 1–3 mm; corolla tubular, funnelform to ventricose or obliquely campanulate, (5–)7–8-lobed, white, pale yellow or pink, less often magenta to purple, usually with crimson basal blotch; stamens (10–)12–18; ovary tomentose, glandular or glabrous (*R. galactinum*). Capsule cylindric.

Eleven species: Bhutan, China, India, Myanmar, Nepal, Sikkim, Vietnam; ten species (four endemic) in China.

1a. Petiole flattened, winged.
  2a. Leaf base narrow, cuneate, abaxial surface with agglutinated, patchy indumentum ..... 246. *R. rothschildii*
  2b. Leaf base subcordate, abaxial surface with indumentum not agglutinated.
    3a. Inflorescence rachis stout, 3.5–5.5 cm; corolla yellow ..... 248. *R. basilicum*
    3b. Inflorescence rachis 2–3 cm; corolla pink or white ..... 247. *R. semnoides*
1b. Petiole terete, not winged.
  4a. Ovary glabrous ..... 252. *R. galactinum*
  4b. Ovary densely tomentose.
    5a. Abaxial leaf surface with thin silver-gray or brownish indumentum; corolla pink or rose-purple ..... 254. *R. hodgsonii*
    5b. Abaxial leaf surface with dense grayish or brown indumentum; corolla yellowish or white to pink.
      6a. Leaf blade obovate or obovate-elliptic, abaxial surface with rufous brown indumentum.
        7a. Leaf blade 6–13 cm wide, abaxial cup-shaped hairs wide with shallowly fimbriate margin ..... 249. *R. rex*
        7b. Leaf blade 4–8 cm wide, abaxial cup-shaped hairs narrow with deeply fimbriate margin ..... 250. *R. arizelum*
      6b. Leaf blade elliptic or oblong-elliptic, abaxial surface with whitish to mid brown indumentum.
        8a. Leaf blade 11–16 cm wide, abaxial surface with dense pale gray-brown soft and spongy indumentum ..... 255. *R. sinofalconeri*
        8b. Leaf blade 4–13 cm wide, abaxial surface with brownish indumentum; the upper layer loose.
          9a. Corolla creamy yellow, 6–7-lobed, abaxial leaf surface with cup-shaped hairs deeply fimbriate ..... 251. *R. preptum*
          9b. Corolla pink or white, 5–8-lobed; abaxial leaf surface with cup-shaped hairs entire or moderately fimbriate.
            10a. Leaf blade 6–13 cm wide, abaxial surface with thick indumentum, cup-shaped hairs fimbriate; corolla 7–8-lobed ..... 249. *R. rex*
            10b. Leaf blade 4–7 cm wide, abaxial surface with thin indumentum, cup-shaped hairs not fimbriate; corolla 5–7-lobed ..... 253. *R. coriaceum*

246. Rhododendron rothschildii Davidian, Rhododendrons (London) 1972: 50. 1972.

宽柄杜鹃 kuan bing du juan

Shrubs or small trees, 5–6 m tall, branches stout, rough, 10–15 mm in diam. below inflorescence, usually gray-brown tomentose. Petiole flattened, winged, 10–20 mm; leaf blade leathery, obovate-elliptic or obovate-lanceolate, 20–28 × 7–14 cm; base cuneate, decurrent to winged; apex obtuse, apiculate; abaxial surface with brownish, 2-layered, indumentum, upper layer agglutinated, patchy, hairs cup-shaped, lower layer grayish, thin and compacted; adaxial surface green, glabrous, midrib and lateral veins raised abaxially, flat adaxially; lateral veins 12–17-paired. Inflorescence 12–17-flowered; rachis stout, 15–20 mm, tomentose. Pedicel ca. 3 cm, brownish tomentose; calyx ca. 1 mm, tomentose; corolla obliquely campanulate, pale yellow, with a purple basal blotch, 3.5–4.5 cm; lobes 8, suborbicular, ca. 1.5 × 2 cm, emarginate; stamens 16, 1.5–2.5 cm, filaments pubescent at base; ovary ovoid, ca. 10 × 5–7 mm, densely tomentose; style ca. 3.5 cm, glabrous. Capsule curved, ca. 25 × 10 mm.

● Mixed forests; 3700–4000 m. NW Yunnan.

247. Rhododendron semnoides Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 15: 116. 1926.

圆头杜鹃 yuan tou du juan

Small trees or shrubs; branches stout, 8–10 mm in diam. below inflorescence, grayish tomentose. Petiole flattened and winged, 10–15 mm, tomentose; leaf blade leathery, obovate-elliptic or narrowly oblanceolate, broadest above middle, 17–24 × 5–9.5 cm; base cuneate, decurrent; apex rounded, apiculate; abaxial surface with whitish to buff, 2-layered indumentum, upper layer of narrowly cup-shaped hairs, lower layer compacted and thin; adaxial surface green, glabrous; midrib flat or grooved adaxially; lateral veins 13–15-paired. Inflorescence racemose-umbellate, 15–20-flowered; rachis stout, 20–30 mm, tomentose. Pedicel 3–4 cm, brown tomentose; calyx lobes 8, 1–2 mm, triangular; corolla obliquely campanulate, white to pink, with a purple basal blotch, 4.5–5 cm, lobes 8, suborbicular, ca. 1 × 1.5 cm, emarginate; stamens 16, 2–3 cm, filaments puberulous at base; ovary conoid, ca. 10 × 6 mm, densely brownish tomentose; style ca. 2.5 cm, glabrous. Capsule 25–35 × ca. 10 mm, densely tomentose. Fl. May–Jun, fr. Sep–Oct.

● *Pinus* or *Rhododendron* forests; 3500–3900 m. SE Xizang, NW Yunnan.

248. Rhododendron basilicum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 214. 1916.

粗枝杜鹃 cu zhi du juan

Rhododendron megaphyllum I. B. Balfour & Forrest; *R. regale* I. B. Balfour & Kingdon Ward.

Shrubs or small trees, 3–10 m tall; branchlets stout, usually 8–15 mm in diam., grayish or whitish tomentose, glabrescent. Petiole flattened, winged, 15–35 mm, glabrescent; leaf

blade leathery, broadly obovate to oblanceolate, broadest above middle, 10–32 × 5–17 cm; base cuneate; apex rounded, apiculate; abaxial surface with 2-layered indumentum, upper thick, grayish or rufous, hairs broadly cup-shaped, hardly fimbriate, lower layer compacted and thin; adaxial surface green, glabrous, midrib prominent abaxially, plane or impressed adaxially; lateral veins 12–15-paired, prominent abaxially. Inflorescence 15–25-flowered, rachis stout, 35–55 mm, sparsely tomentose. Pedicel 2.5–5 cm, brownish tomentose; calyx teeth 7 or 8, small, tomentose; corolla obliquely campanulate, pale yellow, with crimson basal blotch, 3.5–4.5 cm, lobes 8, suborbicular, ca. 1 × 1.2 cm, emarginate. Stamens 16, 1.5–2.5 cm; filaments glabrous; ovary ovoid, 8–10 mm, brown tomentose; style 2.5–3.5 cm, glabrous, stigma a swollen disk. Capsule cylindric, 25–40 × 8–10 mm, densely rufous-tomentose. Fl. May–Jun, fr. Oct–Nov.

Mixed or *Abies* forests; 2400–3700 m. W Yunnan [NE Myanmar].

249. Rhododendron rex H. Léveillé, Repert. Spec. Nov. Regni Veg. 13: 340. 1914.

大王杜鹃 da wang du juan

Small trees, usually 5–7 m tall, branchlets stout, 10–15 mm in diam. below inflorescence; young shoots grayish tomentose, glabrescent. Petiole terete, 25–30 mm, densely grayish tomentose; leaf blade leathery, obovate-elliptic to elliptic, 17–27 × 4–13 cm; base cuneate; apex obtuse; abaxial surface with persistent, 2-layered indumentum, upper layer fawn to rufous, hairs cup-shaped, only slightly fimbriate, lower layer thin, appressed; adaxial surface green, glabrous, midrib prominent abaxially, grooved adaxially, lateral veins 20–24-paired, regular, prominent abaxially. Inflorescence 15–20(–30)-flowered; rachis 20–25 mm. Pedicel sparsely pale brown-tomentose; calyx teeth 8, 1–2 mm; corolla obliquely campanulate, creamy-white, pale yellow to pink, with a crimson basal blotch, ca. 5 cm, lobes 8, suborbicular, ca. 1.5 cm; stamens 16, 2–3.5 cm, filaments pubescent at base; ovary conoid, ca. 12 mm, pale brown tomentose; style ca. 4 cm, glabrous, stigma swollen. Capsule curved, 25–40 × 6–10 mm, densely tomentose. Fl. May–Jun, fr. Aug–Sep.

Pinus forests, *Rhododendron* thickets; 2300–4000 m. SW Sichuan, SE Xizang, N and W Yunnan [NE Myanmar].

1a. Leaves smaller, indumentum discontinuous, sometimes quickly lost ..... 249b. subsp. *gratum*
1b. Leaves larger, indumentum persistent.
  2a. Leaf blade usually obovate, with grayish or brownish indumentum .... 249a. subsp. *rex*
  2b. Leaf blade usually elliptic, with rufous brown indumentum ..... 249c. subsp. *fictolacteum*

249a. Rhododendron rex subsp. **rex**

大王杜鹃(原亚种) da wang du juan (yuan ya zhong)

Leaf blade usually large and broad, obovate; abaxial surface indumentum persistent, pale brown or gray. Fl. May–Jun, fr. Aug–Sep.

● Forests; 2300–3300 m. SW Sichuan, N Yunnan.

249b. Rhododendron rex subsp. **gratum** (T. L. Ming) M. Y. Fang, Bull. Bot. Res., Harbin 12: 216. 1992.

可爱杜鹃 ke ai du juan

Rhododendron gratum T. L. Ming, Acta Bot. Yunnan. 3: 118. 1981.

Leaf blade usually elliptic; abaxial surface indumentum usually discontinuous, transparent or translucent, sometimes quickly lost. Corolla without color flecks. Fl. Apr–May.

● *Rhododendron* thickets; ca. 3200 m. W Yunnan.

Field observations at the type locality suggest that subsp. *gratum* is a form of *Rhododendron basilicum* with only slightly winged petioles; this fits reasonably well with the distribution of the latter species.

249c. Rhododendron rex subsp. **fictolacteum** (I. B. Balfour) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 330. 1979.

假乳黄叶杜鹃 jia ru huang ye du juan

Rhododendron fictolacteum I. B. Balfour, Gard. Chron., ser. 3, 59: 168. 1916; *R. fictolacteum* var. *miniforme* Davidian; *R. lacteum* Franchet var. *macrophyllum* Franchet.

Leaf blade narrow, elliptic or obovate-elliptic to oblanceolate, 4–8 cm wide; abaxial surface indumentum persistent, rufous to brown. Fl. Apr–Jun, fr. Sep–Oct.

Pinus forests, *Rhododendron* thickets; 2900–4000 m. SW Sichuan, SE Xizang, NW Yunnan [NE Myanmar].

250. Rhododendron arizelum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 90. 1920.

夺目杜鹃 duo mu du juan

Rhododendron rex H. Léveillé subsp. *arizelum* (I. B. Balfour & Forrest) D. F. Chamberlain.

Shrubs or small trees, 3–7 m tall; branchlets stout, rough, usually ca. 10 mm in diam.; young shoots pale brown tomentose, glabrescent. Petiole terete, 20–30 mm, tomentose, glabrescent; leaf blade leathery, obovate or obovate-elliptic, broadest above middle of blade, 9–19 × 4–8 cm; base cuneate; apex rounded, emarginate; abaxial surface with pale brown or rufous, 2-layered indumentum, upper layer brown, hairs narrowly cup-shaped, strongly fimbriate, lower layer thin, compacted, gray; adaxial surface deep green, glabrous, midrib prominent abaxially, flat or slightly impressed adaxially, lateral veins 10–13-paired, prominent abaxially. Inflorescence 15–20-flowered; rachis 15–25 mm, densely tomentose. Pedicel 1.2–2 cm, densely tomentose; calyx oblique; teeth 8, ca. 1 mm; corolla campanulate, white, pale yellow or pink, with crimson basal blotch, 3.5–4.5 cm, lobes 8, suborbicular, ca. 1 × 1.5 cm, emarginate; stamens 16, 1.5–2.5 cm, filaments glabrous or puberulent at base; ovary terete, densely tomentose; style glabrous. Capsule 30–40 × ca. 10 mm, tomentose. Fl. May–Jun, fr. Aug–Sep.

Pinus forests, *Rhododendron* thickets; 2500–4000 m. SE Xizang, W Yunnan [NE Myanmar].

Rhododendron arizelum var. *rubicosum* Cowan & Davidian (Rhododendron Year book 8: 79. 1953), described from NW Yunnan, is a rich red- to purple-flowered form, which may be intermediate between *R. arizelum* and *R. rex* subsp. *fictolacteum*.

251. Rhododendron preptum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 149. 1920.

复毛杜鹃 fu mao du juan

Shrubs or small trees, 5–7 m tall; older branches glabrous; branchlets stout, usually 8–10 mm in diam.; young shoots grayish to brownish tomentose. Petiole terete, 15–20 mm, tomentose, glabrescent; leaf blade leathery, obovate-elliptic, 11–16 × 4–7 cm; base cuneate; apex obtuse or rounded, apiculate; abaxial surface with pale brown, 2-layered indumentum, upper layer of cup-shaped slightly fimbriate hairs, lower layer thin, compacted; adaxial surface glabrous; midrib prominent abaxially, grooved adaxially; lateral veins 13–15-paired, prominent abaxially. Inflorescence ca. 20-flowered; rachis stout, ca. 20 mm, slightly tomentose. Pedicel ca. 2 cm, brown-tomentose; calyx saucer-shaped; teeth short, ca. 1 mm, with similar hairs; corolla obliquely campanulate, white (in cultivation) or perhaps creamy-white, with crimson basal blotch, ca. 3.5 cm, lobes 8, orbicular, ca. 1 × 1.5 cm; stamens 16, 1.5–2.5 cm, filaments pubescent at base; ovary conoid, ca. 7 mm, densely brown-tomentose; style ca. 2.5 cm, glabrous, stigma swollen. Capsule not known. Fl. May.

Mixed forests, *Rhododendron* thickets; 3200–3300 m. SW Yunnan [NE Myanmar].

Rhododendron preptum is a doubtful species and may be a hybrid of *R. arizelum* and/or *R. coriaceum*. It is known only from two wild-collected specimens.

252. Rhododendron galactinum I. B. Balfour ex Tagg, Notes Roy. Bot. Gard. Edinburgh 15: 103. 1926.

乳黄叶杜鹃 ru huang ye du juan

Shrubs or small trees, 5–8 m tall; older branches smooth, glabrous; young shoots grayish tomentose, glabrescent. Petiole terete, 25–30 mm, tomentose, glabrescent; leaf blade thick, leathery, oblong-elliptic, oblong-obovate or broadly lanceolate, broadest above middle of blade, 11–22 × 5–7 cm; base broadly cuneate or rounded; apex obtuse; abaxial surface with dense, brown, 2-layered, indumentum, upper layer of narrowly cup-shaped strongly fimbriate hairs, lower layer whitish and compacted; adaxial surface deep green, glabrous, midrib plane adaxially; lateral veins 18–19-paired, impressed adaxially. Inflorescence ca. 15-flowered; rachis pubescent. Pedicel 3–3.5 cm, sparsely tomentose; calyx teeth 7, ca. 1 mm; corolla campanulate, pale rose, with a crimson basal blotch, ca. 3 cm, lobes 7, suborbicular, ca. 1 cm; stamens 14, 1–2.2 cm, filaments pubescent at base; ovary conoid, 5–6 × 2–3 mm, glabrous; style slender, 3–3.5 cm, glabrous. Capsule not known. Fl. May–Jun.

● Thickets, mountain slopes, stream banks; 2900–3500 m. W Sichuan.

Rhododendron peregrinum Tagg (Notes Roy. Bot. Gard. Edinburgh 16: 202. 1931), which is unknown in the wild, is almost certainly a hybrid of *R. galactinum*.

253. Rhododendron coriaceum Franchet, J. Bot. (Morot) 12: 258. 1898.

革叶杜鹃 ge ye du juan

Rhododendron foveolatum Rehder & E. H. Wilson.

Small trees or shrubs, 3–10 m tall; older branches rough, glabrous; branchlets stout, usually ca. 10 mm in diam., grayish white tomentose. Petiole terete, 20–30 mm, sparsely tomentose; leaf blade leathery, obovate-elliptic to oblanceolate, broadest above middle of blade, 9–19 × 4–8 cm; base cuneate; apex obtuse or rounded, apiculate; abaxial surface foveolate, with dense, 2-layered, indumentum, upper layer of broadly cup-shaped non-fimbriate hairs, lower layer compacted; adaxial surface green, glabrous, midrib plane or slightly grooved adaxially; lateral veins 10–13-paired, obscure adaxially. Inflorescence racemose-umbellate, 8–16-flowered; rachis 10–15 mm, tomentose. Pedicel stout, 2–3 cm, sparsely tomentose; calyx ca. 1 mm; corolla funnel-campanulate, white or white-flushed rose, with a crimson basal blotch, 3–3.5 cm, lobes (5–)7; stamens 14, 1–2 cm, unequal, filaments pubescent at base; ovary ovoid, ca. 8 × 4 mm, densely rufous-tomentose. Capsule curved, 25–35 mm. Fl. May, fr. Jul–Sep.

● *Rhododendron* forests, thickets; 2900–3400 m. SE Xizang, NW Yunnan.

254. Rhododendron hodgsonii J. D. Hooker, Rhododendr. Sikkim-Himalaya 2: t. 15. 1851 [*"hodgsoni"*].

多裂杜鹃 duo lie du juan

Shrubs or small trees, 3–7 m tall; branchlets stout, 10–15 mm in diam. below inflorescence, grayish tomentose when young, glabrescent. Petiole terete, 40–50 mm, tomentose when young, glabrescent; leaf blade leathery, oblong-elliptic to oblanceolate, 16–30 × 5–12 cm; base broadly cuneate to rounded; apex obtuse or rounded, sometimes emarginate; abaxial surface with pale brown, 2-layered, indumentum, upper layer of broadly cup-shaped slightly fimbriate hairs, lower layer thin, compacted; adaxial surface rugose, glabrous; midrib raised abaxially, grooved adaxially; lateral nerves 14–16 on each side, raised abaxially. Inflorescence 15–20-flowered; rachis 20–50 mm, puberulent. Pedicel slender, 2–4 cm, tomentose; calyx teeth 7, minute; corolla tubular-campanulate, magenta to purple, with darker basal blotch, 3.5–4 cm, lobes 7 or 8, suborbicular, ca. 1 × 1.3–1.5 cm, emarginate; stamens 15–18, 2.5–3.5 cm, filaments glabrous; ovary conoid, ca. 10 mm, tomentose; style 2–2.5 cm, glabrous. Capsule curved, 30–40 × ca. 7 mm, tomentose. Fl. May–Jun, fr. Aug–Sep.

Abies forests, thickets; 3500–4000 m. S Xizang [Bhutan, N India, Nepal, Sikkim].

255. Rhododendron sinofalconeri I. B. Balfour, Notes Roy. Bot. Gard. Edinburgh 9: 272. 1916.

宽杯杜鹃 kuan bei du juan

Shrubs or small trees, 3–10 m tall; branchlets stout, 8–12 mm, grayish tomentose when young, glabrescent. Petiole terete, 15–25 mm, sparsely tomentose; leaf blade thick, leathery, oblong-elliptic, broadest above middle of blade, 17–32 × 11–16

cm; base wide, cuneate or rounded; apex obtuse; abaxial surface with soft and spongy, 2-layered indumentum, pale cinnamon, upper layer of broad cup-shaped fimbriate hairs, lower layer thin, compacted; adaxial surface green, glabrous; midrib prominent abaxially, flat adaxially; lateral veins 16–19-paired, prominent abaxially. Inflorescence 15–20-flowered; rachis ca. 35 mm, tomentose. Pedicel 2–3 cm, with similar hairs; calyx teeth 6–8, 1–2 mm, tomentose; corolla obliquely campanulate, pale yellow, 3.5–5 cm, lobes 8, suborbicular, ca. 1 × 1.5 cm; stamens 16, 1–3 cm, filaments pubescent at base; ovary terete, 8–10 mm, densely fulvous woolly-tomentose; style ca. 2.5 cm, glabrous. Capsule 30–40 mm, tomentose. Fl. Mar–Apr, fr. Oct.

Mixed forests, thickets; 1600–2500 m. S Yunnan [N Vietnam].

5. Rhododendron subsect. **Williamsiana** D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 39: 478. 1982.

圆叶杜鹃亚组 yuan ye du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Small shrubs, short; bark smooth; young shoots long-glandular-hairy. Leaf blade leathery, broadly ovate or suborbicular; abaxial surface sparsely setose on midrib; adaxial surface glabrous. Inflorescences short, 2–5-flowered; pedicels stout; calyx small; corolla broadly campanulate, 5–6-lobed, pinkish or purplish red; stamens 10–12(–14); filaments glabrous or hairy; ovary ovate, setose and glandular-hairy; style smooth or glandular.

● Two species: China.

1a. Young branches with a few long glandular hairs; leaf blade broadly ovate or suborbicular; petiole and pedicels sparsely long glandular-hairy; corolla pinkish, 5- or 6-lobed; ovary glandular-hairy; style glandular ..... 256. *R. williamsianum*
1b. Young branches setose; leaf blade elliptic or obovate; petiole and pedicels densely setose; corolla purplish red, 5-lobed; ovary setulose, with curved hairs; style glabrous ..... 257. *R. leishanicum*

256. Rhododendron williamsianum Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 538. 1913.

圆叶杜鹃 yuan ye du juan

Shrubs, 1–2 m tall; older shoots brownish, glabrous; branches slender, 3–5 mm in diam.; young shoots greenish or purplish, with a few glands. Petiole rounded abaxially, flat adaxially, 10–15 mm, sparsely glandular-hairy; leaf blade leathery, broadly ovate or suborbicular, 2.5–5 × 2–4 cm; base cordate or subrounded; apex rounded, with a small cusp; abaxial surface grayish white, with small projections; adaxial surface deep green, glabrous; midrib and lateral veins raised on both surfaces; lateral veins 11–12-paired, veinlets reticulate, obvious abaxially. Inflorescence racemose-umbellate, 2–6-flowered; rachis 5–8 mm, sparsely glandular. Pedicel 2–3 cm, stout, with long-glandular hairs; calyx discoid; lobes 6, 1–2 mm, broadly triangular, outer surface and margin shortly glandular-hairy; corolla broadly campanulate, reddish, 3.5–4 × 4–4.5 cm; lobes 5 or 6, suborbicular, 1–1.5 × ca. 2 cm, emarginate; stamens 10–12(–14), unequal, 1.8–3 cm, filaments glabrous, anthers ovate, deep purple-red; ovary ovate, ca. 5 mm, glandular; style ca. 3.5 cm, nearly equal to corolla, usually glandular, stigma capitate. Capsule cylindric, 15–25 × ca. 6 mm, glandular. Fl. Apr–May, fr. Aug–Sep.

● Open forests on mountain slopes, rocks; 1800–2800 m. W Guizhou, SW Sichuan, SE Xizang, NE Yunnan.

257. Rhododendron leishanicum W. P. Fang & X. S. Zhang, Acta Phytotax. Sin. 21: 468. 1983.

雷山杜鹃 lei shan du juan

Shrubs, ca. 3 m tall; bark gray, dehiscent on drying; branchlets terete, 3–4 mm in diam., setose when young, gradually glabrescent; bud scales membranous, long-ovate, 1–1.5 × 0.5–0.7 cm, apex rounded or with short cusp, with yellowish hairs on outer surface, inner surface glabrous. Petiole rounded abaxially, furrowed adaxially, 5–12 mm, densely setose; leaf blade thickly leathery, elliptic or obovate, 4–6 × 2.5–3 cm; base rounded or subcordate; apex rounded; abaxial surface deep green, with small projections, glabrous or sometimes sparsely hairy on midrib; adaxial surface flat, sparsely glandular; midrib impressed abaxially, lateral veins 11–15-paired, inconspicuous on both sides. Inflorescence racemose-umbellate, 3–5-flowered; rachis 5–7 mm, tomentose. Pedicel ca. 1 cm, densely setose-tomentose; calyx discoid; lobes 5, ca. 2 mm; corolla campanulate, purple-red, with deep purple-red spots, 3–3.5 cm, lobes 5, suborbicular, ca. 1.5 cm; apex emarginate; stamens 10, unequal, 1–2 cm, filaments broader and glabrous at base; ovary cone-shaped, ca. 5 mm, densely setose and tomentose; style 2.5–3 cm, glabrous, stigma slightly expanded. Capsule not known. Fl. Apr.

● Mixed forests, mountain slopes; 1800–1900 m. E Guizhou.

6. Rhododendron subsect. **Campylocarpa** (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 547. 1949.

弯果杜鹃亚组 wan guo du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron subser. *Campylocarpa* Tagg in J. B. Stevenson, Sp. Rhodod. 698. 1930 [*"Campylocarpum"*].

Shrubs; young shoots glabrous or glandular-hairy. Leaf blade leathery, elliptic, ovate to suborbicular; base shallowly cordate or rounded, apex obtuse, with small cusp; both surfaces glabrous. Inflorescences sparse, 5–15-flowered. Calyx large or small; corolla funnelform-campanulate, broadly campanulate, cup-shaped or saucer-shaped, 5-lobed, yellow, pinkish or white, without nectar

pouches; stamens 10; ovary densely glandular; style glandular or glabrous. Capsule slender and long, curved.

Six species: Bhutan, China, India, Myanmar, Nepal, Sikkim; six species (four endemic) in China.

1a. Corolla cup- or saucer-shaped; style glandular to tip.
  2a. Corolla cup-shaped, bright yellow or pure white, 4–5 cm wide; petiole glabrous ..... 260. *R. wardii*
  2b. Corolla bowl- or saucer-shaped, white or pinkish, 5–6 cm wide; petiole glandular when young ..... 261. *R. souliei*
1b. Corolla broadly campanulate or funnelform-campanulate; style without glands or with glands only at base.
  3a. Calyx 5–10 mm; corolla 4–4.5 cm; petiole 3–4 cm ..... 262. *R. longicalyx*
  3b. Calyx 1–3 mm; corolla 2.5–3 cm; petiole 1–2.5 cm.
    4a. Inflorescence 12–13-flowered, rachis 10–15 mm, hairy ..... 263. *R. henanense*
    4b. Inflorescence 5–7-flowered, rachis 2–7 mm, without hairs, sometimes glandular.
      5a. Leaf blade broadly ovate or suborbicular; corolla white or pink; ovary 10–15 mm ..... 258. *R. callimorphum*
      5b. Leaf blade elliptic or oblong-elliptic; corolla clear yellow; ovary 5–7 mm ..... 259. *R. campylocarpum*

258. Rhododendron callimorphum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 89. 1917.

卵叶杜鹃 luan ye du juan

Shrubs, ca. 3 m tall; older shoots grayish white, bark flaking; young shoots with short glandular hairs, smooth later. Petiole terete, 10–25 mm, sparsely glandular; leaf blade leathery to thickly leathery, broadly ovate or suborbicular, 4–7 × 3–4 cm; base truncate or subcordate; apex rounded, apiculate; abaxial surface greenish, glabrous; adaxial surface dark green, glabrous; midrib raised abaxially, impressed adaxially; lateral veins 9–14-paired, inconspicuous on both surfaces. Inflorescence racemose-umbellate, 5–7-flowered; rachis 2–5 mm, glandular. Pedicel 1–2.5 cm, densely glandular; calyx lobes 5, 1–3 mm, ovate or triangular, margin glandular; corolla funnelform-campanulate, white or pink, 3–4 cm, lobes 5, suborbicular, 1–1.5 × 1.5–2 cm, apex emarginate; stamens 10, unequal, 1.5–2.5 cm; filaments slender, glabrous; anthers ovate, ca. 2 mm; ovary cylindric, 5-lobed at maturity, 10–15 mm, glands persistent; style 1.5–2 cm. Fl. May–Jun, fr. Aug–Sep.

Thickets, mountain slopes; 3000–4000 m. W Yunnan [NE Myanmar].

1a. Leaf blade leathery; corolla pink ..... 258a. var. *callimorphum*
1b. Leaf blade thickly leathery; corolla white ..... 258b. var. *myiagrum*

258a. Rhododendron callimorphum var. **callimorphum**

卵叶杜鹃(原变种) luan ye du juan (yuan bian zhong)

Rhododendron cyclium I. B. Balfour & Forrest.

Leaf blade leathery. Corolla pink.

● Thickets, mountain slopes; 3000–4000 m. W Yunnan.

258b. Rhododendron callimorphum var. **myiagrum** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 116. 1978.

白花卵叶杜鹃 bai hua luan ye du juan

Rhododendron myiagrum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 52. 1920.

Leaf blade thickly leathery. Corolla white.

Thickets; ca. 3000 m. NW Yunnan [NE Myanmar].

259. Rhododendron campylocarpum J. D. Hooker, Rhododendr. Sikkim-Himalaya 3: t. 30. 1851.

弯果杜鹃 wan guo du juan

Shrubs 2–3 m tall; old branches grayish white, bark flaking; young shoots greenish. Petiole terete, furrowed above, 15–20 mm, sparsely long-glandular-hairy; leaf blade leathery, suborbicular or ovate-elliptic to oblong-elliptic, 4–8.5 × 2.5–4 cm; base subcordate or subrounded; margin slightly reflexed; apex rounded, apiculate; abaxial surface greenish; adaxial surface green, slightly shiny; midrib prominently raised abaxially, impressed adaxially; lateral veins 9–14-paired, inconspicuous on both surfaces. Inflorescence terminal, umbellate, 6- or 7-flowered, rachis short, conical, ca. 7 mm, glabrous. Pedicel slender, 1.5–2.5 cm, sparsely long-glandular-hairy; calyx lobes 5, 1–2 mm, outside and margin with short glandular hairs; corolla campanulate, bright yellow, 3–4 × ca. 4 cm; lobes 5, suborbicular, ca. 1.5 × 2 cm, apex emarginate; stamens 10, unequal, 1.2–2.5 cm, filaments entirely glabrous or pubescent only at base, anthers oblong, brownish yellow, ca. 3 mm; ovary columnar-conical, 5–7 mm, sparsely shortly glandular-hairy; style ca. 2 cm, base glandular, otherwise glabrous, stigma slightly expanded. Capsule slender, curved, 25–30 × ca. 4 mm, glands persistent. Fl. May–Jun, fr. Aug–Oct.

Abies forests, open forests, *Rhododendron* scrub, mountain slopes; 3000–4000 m. E and S Xizang, NW Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim].

1a. Leaf blade ovate-elliptic to oblong-elliptic, 6–8.5 × 2.5–3.5 cm; filaments pubescent at base ..... 259a. subsp. *camplyocarpum*
1b. Leaf blade suborbicular, 4–6 × 3.5–4 cm; filaments usually entirely glabrous ..... 259b. subsp. *caloxanthum*

259a. Rhododendron campylocarpum subsp. **campylocarpum**

弯果杜鹃(原亚种) wan guo du juan (yuan ya zhong)

Leaf blade ovate-elliptic to oblong-elliptic, 6–8.5 × 2.5–3.5 cm. Filaments pubescent at base. Fl. May–Jun, fr. Aug–Sep.

Abies forests, open forests; 3000–4000 m. E and S Xizang [Bhutan, NE India, Nepal, Sikkim].

259b. Rhododendron campylocarpum subsp. **caloxanthum** (I. B. Balfour & Farrer) D. F. Chamberlain, Notes Roy. Bot.

Gard. Edinburgh 36: 116. 1978.

美丽弯果杜鹃 mei li wan guo du juan

Rhododendron caloxanthum I. B. Balfour & Farrer, Notes Roy. Bot. Gard. Edinburgh 13: 238. 1922; *R. campylocarpum* var. *orbiculare* Demoly; *R. campylocarpum* subsp. *telopeum* (I. B. Balfour & Forrest) D. F. Chamberlain; *R. telopeum* I. B. Balfour & Forrest.

Leaf blade suborbicular, 4–6 × 3.5–4 cm. Filaments usually entirely glabrous. Fl. May–Jun, fr. Sep–Oct.

Rhododendron scrub, mountain slopes; 3000–3700 m. E Xizang, NW Yunnan [Myanmar].

260. Rhododendron wardii W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 205. 1914.

黄杯杜鹃 huang bei du juan

Shrubs ca. 3 m tall; old branches grayish white, bark sometimes flaking; young shoots greenish, glabrous. Petiole slender, furrowed above, 20–30 mm, glabrous; leaf blade leathery, narrowly ovate to oblong-elliptic or broadly ovate-elliptic, 5–8 × 3–4.5 cm; base subcordate; apex obtuse, apiculate; abaxial surface greenish or grayish green; adaxial surface deep green, midrib raised abaxially, flat or slightly concave adaxially; lateral veins 9–13-paired, inconspicuous on both surfaces. Inflorescence racemose-umbellate, 5–8(–14)-flowered; rachis 5–15 mm, with short glandular hairs. Pedicel 2–4 cm, usually sparsely glandular; calyx membranous, lobes 5, 5–8(–12) × 3–5 mm, unequal, ovate or ovate-elliptic, margin densely glandular; corolla cup-shaped, bright yellow or pure white, 3–4 × 4–5 cm; lobes 5, suborbicular, ca. 1.5 cm, apex emarginate; stamens 10, unequal, 1–1.8 cm, filaments glabrous; anthers ovate, yellow, ca. 2 mm; ovary cone-shaped, ca. 5 mm, densely glandular; style 1.5–2 cm, usually glandular, stigma capitate. Capsule cylindric, slightly curved, 20–25 × ca. 7 mm, glandular-hairy, calyx usually persistent, leaflike at maturity. Fl. Jun–Jul, fr. Aug–Sep.

● *Abies* forests, *Picea* forests, scrub, meadows, mountain slopes, open places; 3000–4600 m. SW Sichuan, SE Xizang, NW Yunnan.

1a. Leaf blade oblong-elliptic to broadly ovate-elliptic; corolla yellow ..... 260a. var. *wardii*
1b. Leaf blade narrowly ovate; corolla pure white ..... 260b. var. *puralbum*

260a. Rhododendron wardii var. **wardii**

黄杯杜鹃(原变种) huang bei du juan (yuan bian zhong)

Rhododendron astrocalyx I. B. Balfour & Forrest; *R. croceum* I. B. Balfour & W. W. Smith; *R. gloeoblastum* I. B. Balfour & Forrest; *R. litiense* I. B. Balfour & Forrest; *R. oresterum* I. B. Balfour & Forrest; *R. prasinocalyx* I. B. Balfour & Forrest.

Leaf blade oblong-elliptic to broadly ovate-elliptic. Corolla bright yellow.

● *Abies* forests, *Picea* forests, mountain slopes, open places; 3000–4000 m. SW Sichuan, SE Xizang, NW Yunnan.

Among the yellow-flowered forms of this species, the specimens from around "Li-ti-ping" in NW Yunnan have characteristically narrow leaves, which have a marked glaucous bloom as they flush. These forms have been referred to *Rhododendron litiense,* a taxon recognized by some as distinct. There is, however, considerable overlap between *R. wardii sensu stricto* and *R. litiense*.

260b. Rhododendron wardii var. **puralbum** (I. B. Balfour & W. W. Smith) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 116. 1978.

纯白杜鹃 chun bai du juan

Rhododendron puralbum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 266. 1916.

Leaf blade narrowly ovate. Corolla pure white. Fl. May–Jun.

● Scrub, meadows, mountain slopes; 3400–4600 m. SW Sichuan, NW Yunnan.

261. Rhododendron souliei Franchet, J. Bot. (Morot) 9: 393. 1895.

白碗杜鹃 bai wan du juan

Rhododendron cordatum H. Léveillé.

Shrubs, 1.5–2 m tall; old branches grayish white, glabrous, bark sometimes flaking; young shoots greenish, with sparse red glands. Petiole terete, deep purplish green, 10–25 mm, glandular-hairy when young, glabrescent; leaf blade leathery, ovate to oblong-elliptic, 3.5–7.5 × 2–4.5 cm; base subcordate or suborbicular; apex rounded, apiculate; abaxial surface greenish or grayish green; adaxial surface deep green; midrib raised abaxially, flat adaxially; lateral veins 10–14 pairs, inconspicuous on both surfaces. Inflorescence racemose-umbellate, 5–7-flowered; rachis 5–10 mm, shortly glandular-hairy. Pedicel 1.5–3 cm, densely glandular; calyx membranous, lobes 5, 5–8 × 2–5 mm, unequal, ovate, outside sparsely glandular, margin shortly glandular-hairy; corolla campanulate, bowl-shaped or saucer-shaped, broad in the middle part, white or pink, 2.5–3.5 × 5–6 cm; lobes 5, suborbicular, ca. 1.5 × 2 cm, apex emarginate; stamens 10, unequal, 0.8–1.5 cm, filaments white, glabrous, anthers oblong, deep purplish red, 3–4 mm; ovary cone-shaped, 4–5 mm, usually densely purplish red glandular; style 1.5–2 cm, stigma capitate. Capsule cylindric, usually curved at maturity, 20–25 × 5–7 mm, glands persistent. Fl. Jun–Jul, fr. Aug–Sep.

● *Abies* forests, scrub, mountain slopes; 3000–3800 m. SW Sichuan, E Xizang.

262. Rhododendron longicalyx M. Y. Fang, Acta Phytotax. Sin. 26: 67. 1988.

长萼杜鹃 chang e du juan

Shrubs or small trees, 2–3 m tall; old branches glabrous; branches stout, brownish; young shoots slightly pubescent. Petiole terete, 30–40 mm, glabrous; leaf blade leathery, ovate or broadly elliptic, 9–12 × 5–7 cm; base rounded, asymmetrical; apex obtuse or rounded, apiculate; both surfaces glabrous; abaxial surface slightly colored; adaxial surface deep green; midrib raised abaxially, shallowly impressed adaxially; lateral veins 13–17-paired, inconspicuous on both surfaces. Inflores-

cence racemose-umbellate, 9–13-flowered; rachis 10–15 mm, sparsely pubescent and with long glandular hairs. Pedicel stout, 2.5–4 cm, sparsely shortly glandular-hairy; calyx lobes 5, 5–10 mm, unequal, elliptic-lanceolate, abaxially densely glandular at base, sparsely so in the upper part, margin glandular; corolla campanulate, reddish, 4–4.5 cm, lobes 5, suborbicular, 1–1.5 cm, apex emarginate; stamens 10, unequal, 1.5–2.5 cm, filaments pubescent at base; anthers larger, purplish red, to 3 mm; ovary ovate, ca. 5 mm, densely shortly glandular-hairy; style ca. 3 cm, glabrous; stigma expanded. Capsule not seen. Fl. May.

● Scrub, streamsides; ca. 2900 m. W Sichuan.

263. Rhododendron henanense W. P. Fang, Acta Phytotax. Sin. 21: 457. 1983.

河南杜鹃 he nan du juan

Shrubs, 3–5 m tall; branches stout, greenish or brownish, ca. 5 mm in diam. below inflorescence, glabrous. Petiole slender, flat adaxially, rounded abaxially, 15–25 mm, glandular; leaf blade thinly leathery or leathery, elliptic to oblong-elliptic or obovate-elliptic, 5–9 × 2.5–5 cm; base subcordate or rounded; margin reflexed; apex rounded, apiculate; both surfaces glabrous; abaxial surface yellowish green; adaxial surface deep green; midrib slightly raised abaxially, slightly grooved adaxially; lateral veins 14–18-paired, inconspicuous abaxially, slightly prominent adaxially. Inflorescence racemose-umbellate, 12- or 13-flowered; rachis 15–20 mm, yellowish hairy. Pedicel ca. 2 cm, with branched setae; calyx lobes 5, ca. 1.5 mm, triangular, outer surface setose; corolla funnelform-campanulate, base narrow, white, with or without purplish red spots, 2.5–3 cm, lobes 5, suborbicular, ca. 1 × 1.5 cm, apex rounded; stamens 10, unequal, 1.5–2 cm, filaments pilose at base; ovary cone-shaped, ca. 6 mm, densely setose; style ca. 2 cm, glabrous; stigma slightly expanded. Capsule terete, usually curved, 15–20 × 5–6 mm. Fl. May-Jun.

● Mixed forests; 1800–1900 m. N and W Henan.

1a. Leaf blade elliptic to oblong-elliptic, leathery; corolla 2.5–3 cm, with purplish red spots ..... 263a. subsp. *henanense*
1b. Leaf blade elliptic or obovate-elliptic, subleathery; corolla ca. 2.5 cm, without spots ..... 263b. subsp. *lingbaoense*

263a. Rhododendron henanense subsp. **henanense**

河南杜鹃(原亚种) he nan du juan (yuan ya zhong)

Leaf blade leathery, elliptic to oblong-elliptic, 7–9 × 3–5 cm. Corolla with purplish red spots, 2.5–3 cm. Fl. May.

● Mixed forests; 1800–1900 m. N Henan.

263b. Rhododendron henanense subsp. **lingbaoense** W. P. Fang, Acta Phytotax. Sin. 21: 459. 1983.

灵宝杜鹃 ling bao du juan

Leaf blade thinly leathery, elliptic or obovate-elliptic, 5–9 × 2.5–4.5 cm. Corolla without dark spots, ca. 2.5 cm. Fl. Jun.

● W Henan.

7. Rhododendron subsect. **Maculifera** (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 544. 1949.

麻花杜鹃亚组 ma hua du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron subser. *Maculifera* Tagg in J. B. Stevenson, Sp. Rhodod. 144. 1930 [“*Maculiferum*”].

Shrubs or small trees; bark rough; young shoots tomentose, also with bristles or glandular-setae, bud scales often persistent. Leaf blade oblong-elliptic, oblong-lanceolate or oblanceolate; apex acute apiculate; abaxial surface with a persistent or evanescent stellate tomentum and bristles, more so on the midrib. Inflorescence lax, 5–20-flowered; rachis 2–20 mm. Calyx minute, 2 mm, (8–13 mm in *R. longesquamatum*); corolla widely or narrowly campanulate, funnel- or tubular-campanulate, 5-lobed, white, pink or deep red; stamens 10(12–14); ovary tomentose glandular-hairy, rarely glabrous.

● Thirteen species: China.

1a. Calyx 8–12 mm; young shoots with persistent bud scales, densely rufous-tomentose and with dendroid bristles ..... 264. *R. longesquamatum*
1b. Calyx 1–3 mm; young shoots without persistent bud scales, without dendroid bristles.
  2a. Inflorescence rachis 4–5 cm; leaf blade 12–15(–20) × 4–5(–7) cm ..... 266. *R. polytrichum*
  2b. Inflorescence rachis 0.5–2.5 cm; leaf blade 4–12(–16) × 1.2–4.2 cm.
    3a. Inflorescence 3–5-flowered; rachis 5–6 mm.
      4a. Style densely stipitate-glandular above, brown-lanate-tomentose below; corolla funnelform, ca. 4.2 cm ..... 275. *R. pilostylum*
      4b. Style glabrous; corolla campanulate, 3–3.5 cm.
        5a. Corolla purple to pink, with deep purple basal blotch, ca. 3.5 cm; leaf apex obtuse, apiculate ..... 271. *R. oligocarpum*
        5b. Corolla pale pink to white or creamy white with purple flecks, ca. 3 cm; leaf apex acute or acuminate, apiculate.
          6a. Petiole with verrucose spots; pedicel puberulent ..... 272. *R. ziyuanense*
          6b. Petiole sparsely floccose; pedicel glabrous ..... 270. *R. pachyphyllum*

3b. Inflorescence 5–20-flowered, if less than 7-flowered then rachis more than 10 mm.
7a. Rachis ca. 6 mm; corolla crimson, without markings ..... 267. *R. ochraceum*
7b. Rachis 10–20 mm; corolla white to pink, sometimes deep red, mostly with dark basal blotches and/or darker flecks.
8a. Corolla tubular-campanulate, often deep red, less often red or white; abaxial leaf surface setose, setae glandular or branched at the tip, and persistent, especially near the base, sometimes restricted to midrib ..... 265. *R. strigillosum*
8b. Corolla funnelform to campanulate or broadly campanulate, white to pink; abaxial leaf surface tomentose or floccose at least along midrib.
9a. Corolla funnelform, lobes ca. 2 × 2.3 cm; stamens 10–14, 3.7–4.8 cm ..... 276. *R. morii*
9b. Corolla campanulate or broadly campanulate, lobes 1–1.5 × 1.2–2 cm.
10a. Ovary pale brown or rufous tomentose or glabrous.
11a. Corolla campanulate; young shoots densely floccose-tomentose or setose ..... 268. *R. pachytrichum*
11b. Corolla broadly campanulate; young shoots tomentose ..... 274. *R. maculiferum*
10b. Ovary glandular.
12a. Adaxial leaf surface grayish floccose and glandular-hairy, glabrescent; inflorescence 5–10-flowered ..... 269. *R. pseudochrysanthum*
12b. Adaxial leaf surface glabrous; inflorescence 10–20-flowered ..... 273. *R. pachysanthum*

264. Rhododendron longesquamatum C. K. Schneider, Ill. Handb. Laubholzk. 2: 483. 1909.

长鳞杜鹃 chang lin du juan

Rhododendron brettii Hemsley & E. H. Wilson; *R. longesquamatum* var. *glabristylum* Y. Y. Geng & Z. L. Zhao.

Shrubs or small trees, 1–6 m tall; bark grayish; young shoots stout, with persistent perulae and densely shaggy, hairs coarse, branched. Petiole stout, 10–20 mm, tawny shaggy; leaf blade leathery, oblong-oblanceolate to narrowly obovate, 5.5–15.5 × 2–4.5 cm; base rounded to subcordate; margin revolute; apex acute; abaxial surface pale green, midrib tawny shaggy, otherwise glabrous when mature; adaxial surface dark green, glandular-hairy and rufous-tomentose, midrib prominent abaxially, grooved adaxially; lateral veins 12–14-paired. Inflorescence racemose-umbellate, 6–12-flowered; rachis 3–6 mm, rufous-tomentose. Pedicel 2–3.5 cm, glandular-hairy; calyx cupular; lobes 5, 8–13 mm, unequal, lingulate, glandular-hairy, 6–12 mm; corolla open-campanulate, rose-pink, with deep crimson basal blotches, ca. 4 cm, lobes 5, suborbicular, ca. 1.3 × 2.2 cm, emarginate; stamens 10, unequal, 2–2.5 cm, filaments pubescent at base; ovary ovate, 4–5 mm, glandular-hairy; lower half of style glandular-hairy. Capsule cylindric, curved, ca. 20 × 6 mm. Fl. Jun, fr. Sep.

● Usually in *Abies* forests; 2300–3400 m. W Sichuan.

Plants with the leaf blade midrib generally glabresent, calyx lobes tomentose, eglandular, and style glabrous have been described as var. *glabristylum* Y. Y. Geng & Z. L. Zhao (Acta Phytotax. Sin. 41: 197. 2003).

265. Rhododendron strigillosum Franchet, Bull. Soc. Bot. France 33: 232. 1886.

芒刺杜鹃 mang ci du juan

Shrubs, rarely small trees, 2–5(–10) m tall; bark grayish; young shoots densely glandular-setose. Petiole stout, 10–20 mm, glandular-setose mixed with branched hairs; leaf blade leathery, oblong-lanceolate to oblanceolate, 8–16 × 2.2–4 cm; base cuneate or subcordate; margin revolute, ciliate; apex acuminate or cuspidate; abaxial surface with setae that are glandular or branched at the tip and persistent, especially near base, sometimes restricted to midrib, midrib with stouter setae, rufous-setose near base; adaxial surface green, glabrous when mature; midrib prominent abaxially, deeply grooved adaxially; lateral veins 15–18-paired. Inflorescence 8–12-flowered; rachis ca. 15 mm, glandular. Pedicel 0.6–1.5 cm, glandular-setose; calyx ca. 2 mm, ciliate; corolla tubular-campanulate, fleshy, deep red, red, or white, with black-crimson basal blotch, 4–4.5 cm, with 5 black crimson nectar pouches at base; lobes 5, suborbicular, 1.3–1.5 × 1.8–2 cm, emarginate; stamens 10, unequal, 2–3.4 cm, filaments glabrous; ovary ovoid, ca. 5 mm, densely glandular-setose; style ca. 3.5 cm, glabrous. Capsule cylindric, 10–20 × 6–7 mm, densely setose. Fl. Apr–Jun, fr. Sep–Oct.

● Forests, *Rhododendron* thickets, rocky slopes; 1600–3800 m. Sichuan, Yunnan.

1a. Abaxial leaf surface with persistent setae that are glandular or branched at tip ..... 265a. var. *strigillosum*
1b. Abaxial leaf surface glandular-strigose along midrib, otherwise glabrous ..... 265b. var. *monosematum*

265a. Rhododendron strigillosum var. **strigillosum**

芒刺杜鹃(原变种) mang ci du juan (yuan bian zhong)

Abaxial leaf surface ± uniformly persistently setose. Corolla deep red. Fl. Apr–Jun, fr. Sep–Oct.

● *Abies* forests, rocky slopes; 1600–3600 m. SW Sichuan, NE Yunnan.

265b. Rhododendron strigillosum var. **monosematum** (Hutchinson) T. L. Ming, Acta Bot. Yunnan. 6: 155. 1984.

紫斑杜鹃 zi ban du juan

Rhododendron monosematum Hutchinson, Bot. Mag. 142: t. 8675. 1916; *R. pachytrichum* Franchet var. *monosematum* (Hutchinson) D. F. Chamberlain.

Abaxial leaf surface mostly glabrous, glandular-strigose only on prominent midrib. Corolla red or white.

● Forests, *Rhododendron* thickets; 2000–3800 m. Sichuan, Yunnan.

It is almost certain that var. *monosematum* is a hybrid between *Rhododendron strigillosum* and *R. pachytrichum*. The plate accompanying the original description illustrates a plant that is very close to *R. pachytrichum*, with pale flowers but with a long-stipitate-glandular indumentum. These features may be seen in naturally occurring populations of var. *monosematum* on Emei Shan in Sichuan. Therefore, it may be better to treat this taxon as a variety of *R. pachytrichum*. Plants resembling the photograph in Fang (Sichuan Rhododendron of China, 83. 1986) also occur there and are assumed to be back crosses with *R. strigillosum*.

266. Rhododendron polytrichum W. P. Fang, Acta Phytotax. Sin. 21: 459. 1983.

多毛杜鹃 duo mao du juan

Shrubs, usually ca. 2 m tall; bark gray, smooth; older branches glabrous; branchlets stout; young shoots densely brown glandular-setose. Petiole 15–30 mm, with scattered glandular setae; leaf blade leathery, narrowly elliptic to oblong-elliptic, 12–15(–20) × 4–5(–7) cm; base cuneate or subrounded; apex acute or acuminate; adaxial surface dark green; midrib grooved, prominent; lateral veins 16–18-paired. Inflorescence 7–9-flowered; rachis 40–50 mm, setose. Pedicel 2.5–4 cm, brown glandular-setose; calyx cupular, outer surface setose; corolla tubular-funnelform, rose, 3.5–4 cm, lobes 5, obovate, ca. 1.5 cm, emarginate; stamens 10, unequal, 2.5–3.5 cm, filaments glabrous; ovary ovoid, densely glandular and tomentose; style setose at base, stigma capitate. Capsule ovoid ca. 15 × 8 mm, persistently hairy. Fl. Apr, fr. Jul.

● Forests; ca. 1100 m. NE Guangxi, SW Hunan.

267. Rhododendron ochraceum Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 534. 1913.

峨马杜鹃 e ma du juan

Shrubs, 2–6 m tall; older branches glabrescent; young shoots glandular-setose and sparsely tomentose. Petiole 10–15 mm, glandular-hairy and pubescent; leaf blade subleathery, oblanceolate, 5–8.5 × 1.2–2.5 cm; base cuneate or rounded; apex cuspidate or acuminate, shortly cuspidate; abaxial surface indumentum 1-layered, loosely woolly or spongy, midrib glandular-hairy and floccose; adaxial surface almost glabrous, midrib glandular and with vestigial hairs; midrib prominent abaxially, grooved adaxially; lateral veins 11–13-paired. Inflorescence 8–12-flowered; rachis ca. 6 mm, pubescent. Pedicel 0.6–1.2 cm, densely glandular-hairy; calyx red, cupular; teeth 5, ca. 1.5 mm, puberulent; corolla open-campanulate, crimson, without spots, 2.7–4 cm, glabrous; lobes 5, suborbicular, ca. 1 × 1.2 cm, emarginate; stamens 10–12, unequal, 1.2–1.9 cm, filaments glabrous; ovary conoid, ca. 3.5 × 3 mm, densely glandular-setose; style glabrous. Capsule cylindric, 18–25 × 3–5 mm, persistently glandular-setose. Fl. May–Jul, fr. Aug–Sep.

● Forests, thickets; 1700–3000 m. Chongqing (Nanchuan), S Sichuan, NE Yunnan.

1a. Abaxial leaf surface with a loosely woolly tomentum; corolla 2.7–3 cm; capsule 18–25 × ca. 3 5 mm ..... 267a. var. *ochraceum*

1b. Abaxial leaf surface with a thick spongy indumentum; corolla ca. 4 cm; capsule ca. 13 × 6 mm ..... 267b. var. *brevicarpum*

267a. Rhododendron ochraceum var. **ochraceum**

峨马杜鹃(原变种) e ma du juan (yuan bian zhong)

Abaxial leaf surface loosely woolly-tomentose. Corolla open-campanulate, 2.7–3 cm. Capsule 18–25 × 3–5 mm.

● Evergreen forests, thickets; 1800–3000 m. S Sichuan, NE Yunnan.

267b. Rhododendron ochraceum var. **brevicarpum** W. K. Hu, Bull. Bot. Res., Harbin 8(3): 56. 1988.

短果杜鹃 duan guo du juan

Abaxial leaf surface indumentum thick, spongy. Corolla narrowly campanulate, ca. 4 cm. Capsule ca. 13 × 6 mm, persistently glandular-setose.

● Forests, bamboo forests; 1700–3000 m. Chongqing (Nanchuan).

268. Rhododendron pachytrichum Franchet, Bull. Soc. Bot. France 33: 231. 1886.

绒毛杜鹃 rong mao du juan

Shrubs, 1.5–5 m tall; older branches glabrous; young shoots tomentose. Petiole 15–20 mm, tomentose and glandular-hairy, rapidly glabrescent; leaf blade leathery or subleathery, oblong-elliptic or oblanceolate to obovate, 5–14 × 2–4.5 cm; base cuneate or rounded; margin ciliate when young; apex obtuse to acuminate, sometimes cuspidate; abaxial surface hairs short-branched; adaxial surface green, glabrous, midrib prominent abaxially, floccose-tomentose, grooved adaxially; lateral veins 14–19-paired. Inflorescence racemose-umbellate, 7–10-flowered; rachis 15–20 mm, pubescent. Pedicel 1–1.5 cm, tomentose; calyx teeth 5, ca. 2 mm, triangular; corolla campanulate, white to pink, with deep purple basal blotch, 3–4.5 cm, lobes 5, suborbicular, 1–1.5 × 1.3–2 cm, emarginate; stamens 10, unequal, 2–2.5 cm; filaments pubescent at base; ovary conoid, ca. 7 mm; ovary densely rufous-tomentose; style 2–4.5 cm, glabrous. Capsule 15–26 × 4–5 mm, ferruginous-tomentose or glabrescent. Fl. May–Jun, fr. Aug–Sep.

● Forests; 1700–3500 m. Chongqing, S Shaanxi, SW Sichuan, NE Yunnan.

1a. Leaf blade 7–14 × 2–4.5 cm; style 2–2.5 cm ..... 268a. var. *pachytrichum*

1b. Leaf blade 5–8.5 × 1.8–2.7 cm; style to 4.5 cm ..... 268b. var. *tenuistylosum*

268a. Rhododendron pachytrichum var. **pachytrichum**

绒毛杜鹃(原变种) rong mao du juan (yuan bian zhong)

Leaf blade leathery, narrowly oblong or oblanceolate to obovate, 7–14 × 2–4.5 cm; base cuneate or rounded. Style 2–2.5 cm. Fl. May–Jun, fr. Aug–Sep.

● Evergreen broad-leaved forests, *Abies* forests; 1700–3500 m. ?Chongqing, S Shaanxi, SW Sichuan, NE Yunnan.

268b. Rhododendron pachytrichum var. **tenuistylosum** W. K. Hu, Acta Phytotax. Sin. 26: 304. 1988.

瘦柱绒毛杜鹃 shou zhu rong mao du juan

Leaf blade subleathery, oblong-elliptic, 5–8.5 × 1.8–2.7 cm; base cuneate. Style to 4.5 cm. Capsule furrowed, densely tomentose.

● Forests; 2100–2200 m. Chongqing.

This variety was wrongly cited in FRPS (57(2): 86. 1994) as var. "*tenuistylum*." There is a case for treating it as a subspecies, rather than a variety, as it appears to have a more easterly distribution than var. *pachytrichum*.

269. Rhododendron pseudochrysanthum Hayata, J. Coll. Sci. Imp. Univ. Tokyo 25(19): 154. 1908.

阿里山杜鹃 a li shan du juan

Rhododendron nankotaisanense Hayata; *R. pseudochrysanthum* var. *nankotaisanense* (Hayata) T. Yamazaki.

Low shrubs, 0.5–3 m tall; older branches shoots pale gray-brown, glabrous; young shoots gray tomentose, mixed with glandular hairs. Petiole 10–20 mm, densely tomentose, also glandular-hairy; leaf blade rigid, oblong-lanceolate or ovate-elliptic, 4–8 × 1.5–3.5 cm; base rounded; apex acute or acuminate; abaxial surface pale green, ± persistently floccose, tomentose; adaxial surface dark green, grayish floccose and glandular-hairy, glabrescent; midrib raised abaxially, grooved adaxially; lateral veins 15-paired. Inflorescence 5–10-flowered; rachis 10–20 mm. Pedicel 2–2.5 cm, sparsely glandular-hairy; calyx teeth 5, 1–2 mm, triangular, margin glandular; corolla campanulate, pink, with deeper rose lines outside and crimson flecks within, 3–4 cm, lobes 5, obovate, ca. 1.5 cm; stamens 10, 1–2 cm, filaments pubescent at base; ovary conoid, ca. 5 mm, densely glandular; style ca. 3 cm, glabrous or glandular for 1/3 of its length; stigma swollen. Capsule ca. 20 × 5 mm with persistent glands and style. Fr. Jul.

● Forests; 3000–3200 m. Taiwan.

Authors from Taiwan include this variety within *Rhododendron morii,* with which it apparently intergrades in the wild. However, the two taxa remain distinct in cultivation.

270. Rhododendron pachyphyllum W. P. Fang, Acta Phytotax. Sin. 21: 460. 1983.

厚叶杜鹃 hou ye du juan

Rhododendron ziyuanense P. C. Tam var. *pachyphyllum* (W. P. Fang) G. Z. Li.

Small trees, ca. 8 m tall; older branches grayish, glabrous; young shoots pale purple, scattered floccose. Petiole 10–15 mm, sparsely floccose; leaf blade thick, leathery, oblong to oblong-elliptic, rarely oblong-obovate, 5.5–6.5(–8.5) × 1.6–2.5 (–3.2) cm; base rounded or cuneate; apex acute, apiculate; abaxial surface floccose near base, glabrescent; adaxial surface green, glabrous; midrib prominent abaxially, grooved adaxially; lateral veins obscure on both surfaces. Inflorescence 4- or 5-flowered; rachis ca. 5 mm, glabrous. Pedicel 1.5–2.5 cm, glabrous; calyx cupular; lobes 5, ca. 1 mm; corolla campanulate, creamy-white, with purple flecks, ca. 3 cm, lobes 5, obovate, ca. 1.5 cm, emarginate; stamens 10, unequal, 1–2 cm, filaments pubescent at base; ovary ovoid, ca. 5 mm, purple, glandular; style ca. 2 cm, glabrous; stigma swollen, disk-shaped, ca. 2.6 mm in diam. Capsule ca. 20 × 5 mm, calyx and style persistent. Fl. May.

● Forests; 1800–1900 m. NE Guangxi, SW Hunan.

271. Rhododendron oligocarpum W. P. Fang & X. S. Zhang, Acta Phytotax. Sin. 21: 466. 1983.

稀果杜鹃 xi guo du juan

Shrubs or small trees, 4–6 m tall; older branches pale gray-brown, glabrescent; young shoots white-tomentose. Petiole 8–15 mm, tomentose; leaf blade leathery, oblong, or oblong-elliptic, rarely obovate-elliptic, 4–6.3 × 2–3 cm; base rounded, rarely subcordate; margin revolute, ciliate; apex obtuse, apiculate; abaxial surface pale green, midrib brownish pubescent near base; adaxial surface green, glabrous; midrib prominent abaxially, grooved adaxially; lateral veins 13–15-paired, obscure on both surfaces. Inflorescence 3- or 4-flowered; rachis 5–6 mm, sparsely tomentose. Pedicel 1–2 cm, densely tomentose; calyx teeth 5, 1–2 mm; corolla campanulate, purple to pink, with deep purple basal blotch, ca. 3.5 cm; lobes 5, suborbicular, ca. 1.5 × 2 cm, emarginate; stamens 10, unequal, 1.3–2.6 cm, filaments pubescent at base; ovary ovoid, 4–5 × ca. 3 mm, densely woolly-tomentose; style ca. 2.5 cm, glabrous. Capsule cylindric, 20–25 × ca. 7 mm, rough. Fl. Apr–May, fr. Sep–Oct.

● Forests, thickets; 1800–2500 m. NE Guangxi, NE Guizhou.

272. Rhododendron ziyuanense P. C. Tam, Guihaia 2: 70. 1982.

资源杜鹃 zi yuan du juan

Trees or shrubs, ca. 5 m tall; branches stout, brown; branchlets pale gray-brown, glandular setose when young. Petiole stout, 7–12 mm, with verrucose spots; leaf blade leathery, rigid, oblong-lanceolate, 5–7 × 1.5–2.5 cm; base cuneate; margin revolute; apex acuminate, apiculate; abaxial surface pale green, midrib with verrucose spots; adaxial surface dull green, glabrous; midrib raised abaxially, grooved adaxially; lateral veins 14-paired. Inflorescence 3–5-flowered. Pedicel slender, ca. 1.5 cm, puberulent; calyx saucer-shaped; lobes 5, puberulent, margin undulate; corolla campanulate, pale pink to white, with purple-red flecks on lobes, ca. 3 cm; lobes 5, ± ovate, ca. 1.2 × 1.5 cm; stamens 10, unequal, 0.9–2 cm, filaments pale rufous tomentose at base; ovary cylindric, ca. 4 mm, ferruginous-glandular; style ca. 2.5 cm, glabrous. Capsule cylindric, 15–20 mm, rough, glabrescent. Fl. May, fr. Oct.

● Forests; ca. 1700 m. NE Guangxi.

273. Rhododendron pachysanthum Hayata, Icon. Pl. Formos. 3: 140. 1913.

台湾山地杜鹃 tai wan shan di du juan

Rhododendron pseudochrysanthum Hayata f. *rufovelutinum* T. Yamazaki; *R. pseudochrysanthum* var. *rufovelutinum*

(T. Yamazaki) T. Yamazaki; *R. rufum* Batalin var. *pachysanthum* (Hayata) S. S. Ying.

Shrubs; young shoots tomentose. Petiole ca. 15 mm, tomentose; leaf blade leathery, oblong-elliptic, 6–9 × 2.5–3.5 cm; base rounded; apex acute, apiculate; abaxial surface persistently pale white-brown to rufous tomentose, sometimes only on the midrib, hairs branched; adaxial surface rugose or smooth, glabrous. Inflorescence 10–20-flowered; rachis 10–20 mm. Pedicel ca. 2.5 cm, glandular-pubescent; calyx lobes ca. 1 mm, rounded, glandular especially on margin; corolla widely campanulate, white to pale pink, with or without flecks, ca. 4 cm; ovary densely glandular-hairy; style glabrous. Capsule ca. 15 × 5 mm.

● Forests. Taiwan.

Li et al. (in T. C. Huang, Fl. Taiwan, ed. 2, 4: 31. 1998) considered that *Rhododendron pachysanthum* and the synonyms cited above are synonymous with *R. hyperythrum*. See also the comment under *R. hyperythrum* below.

274. Rhododendron maculiferum Franchet, J. Bot. (Morot) 9: 393. 1895.

麻花杜鹃 ma hua du juan

Shrubs, evergreen, 1.5–5 m tall; bark gray-black, usually falling off in flakes; young shoots brown, pale white tomentose. Petiole 13–22 mm, white-tomentose when young; leaf blade leathery, oblong-elliptic, elliptic, obovate, ovate-lanceolate or ovate-elliptic, 4–11 × 2.5–4.2 cm; base rounded, rarely slightly cordate; margin ciliate; apex obtuse or rounded, apiculate; abaxial surface glabrous at maturity, midrib densely tomentose near base; adaxial surface green, glabrous; midrib raised abaxially, grooved adaxially; lateral veins 12–17-paired. Inflorescence 7–10-flowered; rachis 12–25 mm, densely tomentose. Pedicel 1.4–2.5 cm, tomentose or glabrous; calyx teeth 5, 2–3 mm, tomentose or glabrous; corolla open-campanulate, white to pale pink, with purple blotch and a few flecks, 3.7–4 cm, lobes 5, ca. 1 × 1.2–1.3 cm; stamens 10, unequal, 1.6–2.7 cm, filaments pubescent at base; ovary conoid, ca. 4.2 mm, pale brown-tomentose or glabrous; style ca. 2.6 cm, glabrous. Capsule cylindric, curved, 15–20 × 4–5 mm, rufous-tomentose or glabrous. Fl. May–Jun, fr. Sep–Oct.

● Forests, forest margins; 700–3400 m. Anhui, Chongqing, S Gansu, Guangxi, E Guizhou, W Hubei, Hunan, Jiangxi, SW Shaanxi, N Sichuan, Zhejiang.

1a. Pedicel, calyx and ovary tomentose ..... 274a. subsp. *maculiferum*
1b. Pedicel, calyx and ovary glabrous ..... 274b. subsp. *anwheiense*

274a. Rhododendron maculiferum subsp. **maculiferum**

麻花杜鹃(原亚种) ma hua du juan (yuan ya zhong)

Leaf blade oblong-elliptic, elliptic or obovate. Pedicel 1.4–2 cm, densely tomentose; calyx and ovary densely tomentose. Fl. May–Jun, fr. Sep–Oct.

● Forests; 1600–3400 m. Chongqing, S Gansu, E Guizhou, W Hubei, SW Shaanxi, N Sichuan.

274b. Rhododendron maculiferum subsp. **anwheiense** (E. H. Wilson) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 118. 1978 [*"anhweiense"*].

黄山杜鹃 huang shan du juan

Rhododendron anwheiense E. H. Wilson, J. Arnold Arbor. 6: 163. 1925.

Leaf blade ovate-lanceolate or ovate-elliptic. Pedicel 1.7–2.5 cm, glabrescent; calyx and ovary glabrous.

● Forest margins; 700–1700 m. Anhui, Guangxi, Hunan, Jiangxi, Zhejiang.

Rhododendron anwheiense may in fact be a species clearly distinct from *R. maculiferum,* as originally described.

275. Rhododendron pilostylum W. K. Hu, Bull. Bot. Res., Harbin 8(3): 49. 1988.

金平毛柱杜鹃 jin ping mao zhu du juan

Trees; shoots ca. 3.5 mm in diam. below inflorescence; young shoots sparsely glandular. Petiole cylindric, 10–12 mm, pubescent and glandular; leaf blade subleathery, oblong-elliptic to oblanceolate, 8.5–8.8 × 2.5–3.2 cm; base cuneate or rounded; margin revolute; apex acuminate, caudate; abaxial surface pale green, glabrescent, with sparse red verruculose spots, midrib tomentose near base; adaxial surface green, glabrous; midrib raised abaxially, narrow and grooved adaxially; lateral veins ca. 15-paired. Inflorescence 4- or 5-flowered; rachis ca. 6 mm, pubescent. Pedicel 1–1.5 cm, densely brown-pubescent and shortly glandular-hairy; calyx lobes 5, ca. 2 mm; outer surface pubescent; corolla funnelform, ca. 4.2 cm, with 5 basal nectar pouches; lobes 5, suborbicular, ca. 1.5 cm; stamens 10, unequal, 2–3.3 cm, filaments red, glabrous; ovary elliptic, narrow, ca. 7 × 3 mm, densely woolly-tomentose; style red, densely glandular-hairy above, brown-woolly-tomentose below; stigma small. Capsule not known. Fl. Mar.

● Evergreen forests; ca. 2500 m. SE Yunnan.

Judging from the original description, this species probably belongs to *Rhododendron* subsect. *Irrorata*. The red verruculose spots on the abaxial surface of the leaves may well equate to the punctate glands that occur in several members of that subsection but do not occur in any of the species in *R.* subsect. *Maculifera*.

276. Rhododendron morii Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 173. 1911.

玉山杜鹃 yu shan du juan

Rhododendron morii var. *taitunense* (T. Yamazaki) D. F. Chamberlain; *R. pseudochrysanthum* Hayata subsp. *morii* (Hayata) T. Yamazaki; *R. pseudochrysanthum* var. *taitunense* T. Yamazaki.

Shrubs or trees, evergreen, 4.5–7.6 m tall; bark brown, smooth; older branches glabrous; young shoots pubescent; bud scales ovate, ca. 1.5 × 0.6 cm, glabrescent. Petiole 20–30 mm, ± floccose and glandular-hairy; leaf blade leathery, oblong-elliptic to oblong-ovate, 6.5–12 × 1.8–3.3 cm; base cuneate to rounded;

apex acute or acuminate, apiculate; abaxial surface pale green, densely brownish tomentose when young, glabrescent; adaxial surface green, glabrous; midrib raised abaxially, grooved adaxially; lateral veins 14–16 on each side, obscure. Inflorescence 10–15-flowered; rachis ca. 20 mm, glandular. Pedicel 2.5–4 cm, glandular-hairy; calyx teeth 5, 1.5–3 mm; margin fringed with glands; corolla funnelform, white to pink, with crimson flecks and basal blotch, ca. 5 cm, lobes 5, suborbicular, ca. 2 × 2.3 cm, emarginate; stamens 10–14, 3.7–4.8 cm, filaments pubescent at base; ovary conoid, ca. 7 mm, glandular-hairy and tomentose; style glandular and tomentose at base, otherwise glabrous. Capsule 13–16 × 5–6 mm; style persistent. Fl. Apr, fr. Oct–Nov.

● Forests; 1830–3040 m. C Taiwan.

8. Rhododendron subsect. **Selensia** (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 547. 1949.

漏斗杜鹃亚组 lou dou du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron subser. *Selensia* Tagg in J. B. Stevenson, Sp. Rhodod. 710. 1930 [*"Selense"*].

Shrubs or small trees; young shoots glandular-hairy. Leaf blade thinly leathery or leathery, rarely papery, elliptic or long-obovate; abaxial surface glabrous or with thin indumentum. Inflorescence (1–)2–11-flowered, rachis short, less than 5 mm. Calyx small, 1–5(–10) mm, lobes unequal; corolla funnelform, base narrow, 5-lobed, white to rose-pink, often with dark spots; stamens 10; ovary glandular or setose; style smooth (glandular to apex in *R.* ×*erythrocalyx*). Capsule slender, curved.

About nine species: China, Myanmar; nine species (seven endemic) in China.

1a. Leaf blade obovate or elliptic, apex rounded, abaxial surface glabrous; ovary glandular.
  2a. Leaves 2.5–3 × 1.5–2 cm, elliptic; petiole 5–7 mm; inflorescence 2–3-flowered ..... 281. *R. martinianum*
  2b. Leaves 4–8 × 2.5–4 cm; petiole 10–20 mm; inflorescence 3–7-flowered.
    3a. Calyx 2–3 mm; corolla 2.5–3.5 cm, pinkish to rose; style glabrous; leaf blade base rounded ..... 280. *R. selense*
    3b. Calyx 4–7 mm; corolla 3.5–4 cm, milky-white to yellowish; style base glandular; leaf blade base ± cordate ..... 285. *R.* ×*erythrocalyx*
1b. Leaf blade narrowly elliptic, apex acute, abaxial surface hairy at least on midrib.
  4a. Young shoots, petioles, and pedicels with shortly stipitate or sessile glands, rarely glabrous.
    5a. Leaf blade leathery; calyx 3–7(–10) mm; ovary densely glandular ..... 282. *R. esetulosum*
    5b. Leaf blade thinly leathery; calyx 2–3 mm; ovary glandular and hairy ..... 277. *R. calvescens*
  4b. Young shoots, petioles, and pedicels glandular-setose.
    6a. Leaf blade abaxially shortly setose at least on base of midrib; calyx lobes elliptic, obovate-elliptic or ovate, apex rounded.
      7a. Leaf blade 4–5.5 cm wide; young shoots and petioles with glandular setae 3–7 mm ..... 283. *R. hirtipes*
      7b. Leaf blade 2–3.5 cm wide; young shoots and petioles with glandular setae less than 2 mm ..... 278. *R. dasycladoides*
    6b. Leaf blade abaxially with downy indumentum; calyx lobes lanceolate or ovate to oblong, apex acute.
      8a. Leaf blade base cordate, abaxial indumentum olivaceous or brownish; corolla yellow or white, with red spots ..... 279. *R. bainbridgeanum*
      8b. Leaf blade base cuneate or rounded, abaxial indumentum yellowish brown or brownish; corolla white to pinkish, with deep red lines ..... 284. *R. setiferum*

277. Rhododendron calvescens I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 29. 1919.

变光杜鹃 bian guang du juan

Shrubs, 1–2 m; old branches coarse, bark flaking, with leaf scars; branchlets stout; young shoots with a thin very short-lived indumentum. Petiole adaxially flat and shallowly grooved, abaxially rounded, 10–15 mm, sparsely pubescent; leaf blade thinly leathery, lanceolate, elliptic or oblong-elliptic, 6–13 × 1.7–4 cm; base rounded, truncate or subcordate, bilaterally asymmetrical; apex apiculate; abaxial surface brownish hairy; adaxial surface green, sometimes rugulose, glabrous, midrib prominently raised abaxially, impressed adaxially; lateral veins 12–14-paired, flat on both surfaces. Inflorescence racemose-umbellate, 3–8-flowered; rachis short, conical, 3–5 mm. Pedicel stout or slender, 1–2.5 cm, sparsely hairy and glandular; calyx cup-shaped; lobes 5, 2–3 mm, unequal, lanceolate, base glandular, margin ciliate; corolla campanulate, rose, with purple lines in the lower part, 3–3.5 cm; lobes 5, orbicular, 1.5–1.8 cm, apex emarginate; stamens 10, unequal, 1.2–2.5 cm, filaments hairy at base, anthers purplish red; ovary ovate, ca. 5 mm, glandular and pubescent or downy; style stout, glabrous. Capsule cylindric, slightly curved, ca. 20 × 5 mm. Fl. Jun–Jul, fr. Oct–Nov.

● *Abies* forests, *Picea* forests, rocky slopes; 3300–3600 m. E Xizang, NW Yunnan.

1a. Leaf blade 6–9 × 3–4 cm; pedicel stout, 1–1.3 cm, with sparse eglandular hairs; ovary glandular and pubescent ..... 277a. var. *calvescens*
1b. Leaf blade 7–13 × 1.7–3 cm; pedicel slender, 1.5–2.5 cm, without eglandular hairs; ovary downy ..... 277b. var. *duseimatum*

277a. Rhododendron calvescens var. **calvescens**

变光杜鹃(原变种) bian guang du juan (yuan bian zhong)

Leaf blade 6–9 × 3–4 cm; abaxial surface brownish hairy. Pedicel stout, 1–1.3 cm, with sparse eglandular hairs; ovary glandular and pubescent.

● *Abies* forests, *Picea* forests, rocky slopes; ca. 3300 m. E Xizang, NW Yunnan.

277b. Rhododendron calvescens var. **duseimatum** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 119. 1978.

长梗变光杜鹃 chang geng bian guang du juan

Rhododendron duseimatum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 41. 1920; *R. selense* Franchet subsp. *duseimatum* (I. B. Balfour & Forrest) Tagg; *R. selense* var. *duseimatum* (I. B. Balfour & Forrest) Cowan & Davidian.

Leaf blade 7–13 × 1.7–3 cm; abaxial surface sparsely hairy; adaxial surface rugulose. Pedicel slender, 1.5–2.5 cm, without eglandular hairs; ovary downy. Fl. Jul.

● *Abies* forests; ca. 3600 m. SE Xizang.

278. Rhododendron dasycladoides Handel-Mazzetti, Symb. Sin. 7: 781. 1936.

漏斗杜鹃 lou dou du juan

Shrubs or small trees, 2–5 m tall; old branches grayish white, glabrous; shoots stout, 3–4 mm in diam. below inflorescence; young shoots greenish, densely glandular-hairy. Petiole stout and short, 10–15 mm, densely glandular-setose; leaf blade thinly leathery, narrowly ovate-elliptic to long-elliptic, 4–10 × 2–3.5 cm; base rounded or subcordate; apex acute or acuminate, apiculate; abaxial surface greenish, sparsely glandular-hairy when young, glabrescent, midrib densely glandular-setose; adaxial surface deep green, densely rugulose, glabrous; midrib raised abaxially, impressed adaxially; lateral veins 14–16-paired, inconspicuous on both surfaces. Inflorescence racemose-umbellate, 5–8-flowered; rachis conical, 2–5 mm, densely pubescent. Pedicel stout, 1–1.2 cm, with long-glandular hairs; calyx lobes 5, large, oblong-elliptic or ovate-elliptic, apex rounded, outer surface and margin sparsely setose, 5–8 × 2–4 mm; corolla funnelform, rose-pink, throat with purple spots, 2.8–3.5 cm, lobes 5, rounded, ca. 1.2 cm, apex emarginate; stamens 10, unequal, 1.2–2.2 cm, filaments slightly hairy, anthers oblong-elliptic, ca. 3 mm; ovary ovate, 4–5 mm, densely setose; style 2.5–3 cm, slightly longer than corolla, glabrous; stigma not expanded. Capsule cylindric, curved, ca. 30 × 5 mm. Fl. May.

● Forests; 3000–4000 m. SW Sichuan, NW Yunnan.

279. Rhododendron bainbridgeanum Tagg & Forrest in J. B. Stevenson, Sp. Rhodod. 133. 1930.

毛萼杜鹃 mao e du juan

Shrubs, 1–2 m tall; old branches grayish white, glabrous; young shoots greenish, sparsely glandular-hairy. Petiole terete, adaxially flat, grooved, 10–15 mm, glabrous, abaxially conspicuously glandular hairy; leaf blade leathery, oblong-elliptic to obovate, 6–10 × 2–4.5 cm; base cordate; apex mucronate; abaxial surface indumentum persistent, thin, olivaceous or brownish yellow; adaxial surface green, densely rugulose, glabrous or hairy on midrib; midrib prominent abaxially, impressed adaxially; lateral veins 12–14-paired, slightly raised abaxially, slightly impressed adaxially. Inflorescence racemose-umbellate, 4–8-flowered; rachis ca. 5 mm, pilose. Pedicel slender, 1.5–2.5 cm, densely glandular-hairy; calyx membranous, lobes 5, 4–5(–9) mm, ovate to oblong, outer surface and margin with glandular hairs; corolla campanulate, white to cream, base with deep red spots, 2.5–3.5 cm, lobes 5, suborbicular, ca. 1.5 × 1.5–2 cm, apex emarginate; stamens 10, unequal, 1.5–2.5 cm, filaments pubescent at base; anthers ovate; ovary ovate, ca. 4 mm, glandular hairy; style ca. 2 cm, as long as corolla, base with slightly glandular hairs, stigma slightly expanded. Capsule cylindric, curved, ca. 20 × 4 mm. Fl. May–Jun, fr. Aug–Sep.

Coniferous forests, scrub, mountain slopes; 3300–3700 m. SE Xizang, NW Yunnan [Myanmar].

280. Rhododendron selense Franchet, J. Bot. (Morot) 12: 257. 1898.

多变杜鹃 duo bian du juan

Shrubs, 1–2 m tall, old branches grayish white, glabrous; shoots stout; young shoots greenish, with sessile glands or short to long glandular hairs. Petiole 10–20 mm, indument similar to young shoots; leaf blade thinly leathery or papery, oblong-elliptic or obovate to broadly elliptic, 4–8 × 2–4 cm; base rounded, asymmetrical; apex apiculate; both surfaces glabrous; midrib slightly raised abaxially, slightly impressed adaxially; lateral veins 9–13-paired, inconspicuous on both surfaces. Inflorescence racemose-umbellate, 4–7-flowered; rachis 20–40 mm, glabrous. Pedicel 1–2 cm, indument similar to young shoots; calyx usually lobes 5, 2–5 mm, rounded, outer surface and margin with glands; corolla funnelform, narrow at base, pink to rose, 2.5–3.5 cm, lobes 5, suborbicular, ca. 1 cm, apex emarginate; stamens 10, unequal, 1.5–2.5 cm, filaments slightly hairy at base, anthers oblong, ca. 2 mm; ovary cylindric, ca. 4 mm, densely glandular; style ca. 2.5 cm, glabrous and glandular. Capsule cylindric, usually curved, 12–25 × 3–4 mm. Fl. Apr–Jun, fr. Jul–Oct.

● Montane coniferous forests, *Rhododendron* thickets; 2700–4000 m. SW Sichuan, E Xizang, W Yunnan.

1a. Young shoots, petiole and pedicel with glandular hairs to 2–3 mm ..... 280b. subsp. *dasycladum*
1b. Young shoots, petiole and pedicel with short glandular hairs or sessile glands.
  2a. Abaxial leaf surface greenish; calyx less than 2 mm ..... 280a. subsp. *selense*
  2b. Abaxial leaf surface with frosting; calyx 2–5 mm ..... 280c. subsp. *jucundum*

280a. Rhododendron selense subsp. **selense**

多变杜鹃(原亚种) duo bian du juan (yuan ya zhong)

Rhododendron axium I. B. Balfour & Forrest; *R. chalarocladum* I. B. Balfour & Forrest; *R. metrium* I. B. Balfour & Forrest; *R. nanothamnum* I. B. Balfour & Forrest; *R. pagophilum* I. B. Balfour & Kingdon Ward; *R. probum* I. B. Balfour & For-

rest; *R. selense* var. *pagophilum* (I. B. Balfour & Kingdon Ward) Cowan & Davidian; *R. selense* var. *probum* (I. B. Balfour & Forrest) Cowan & Davidian.

Young shoots, petioles, and pedicels with short glandular hairs or sessile glands. Leaf blade broadly elliptic or obovate, 5–8 × 2.5–4 cm; abaxial surface greenish. Calyx less than 2 mm. Fl. May–Jun, fr. Jul–Aug.

● Montane *Abies* forests, *Rhododendron* thickets; 2800–4000 m. SW Sichuan, E Xizang, NW Yunnan.

280b. Rhododendron selense subsp. **dasycladum** (I. B. Balfour & W. W. Smith) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 118. 1978.

毛枝多变杜鹃 mao zhi duo bian du juan

Rhododendron dasycladum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 98. 1917; *R. dolerum* I. B. Balfour & Forrest; *R. rhaibocarpum* I. B. Balfour & W. W. Smith; *R. selense* var. *dasycladum* (I. B. Balfour & W. W. Smith) T. L. Ming.

Young shoots, petioles, and pedicels with glandular hairs to 2–3 mm. Leaf blade long-elliptic, 5–8 × 2–3.5 cm. Fl. Apr–Jun, fr. Jul–Oct.

● Montane coniferous forests, *Rhododendron* thickets; 2700–3600 (–4000) m. SW Sichuan, E Xizang, NW Yunnan.

280c. Rhododendron selense subsp. **jucundum** (I. B. Balfour & W. W. Smith) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 118. 1978.

粉背多变杜鹃 fen bei duo bian du juan

Rhododendron jucundum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 242. 1916; *R. blandulum* I. B. Balfour & W. W. Smith; ?*R. hedythamnum* I. B. Balfour & Forrest; *R. selense* var. *jucundum* (I. B. Balfour & W. W. Smith) T. L. Ming.

Young shoots, petioles, and pedicels with short glandular hairs or sessile glands. Leaf blade broadly elliptic, 5–7 × 3–4 cm; abaxial surface with obvious frosting. Pedicel with glandular hairs; calyx 2–5 mm. Fl. May, fr. Oct.

● *Abies* forests, *Rhododendron* thickets; 3200–3600 m. W Yunnan.

The type of *Rhododendron hedythamnum* has calyx lobes quite well-developed and the leaves shorter than is usual in *R. selense* subsp. *jucundum*.

281. Rhododendron martinianum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 96. 1919.

少花杜鹃 shao hua du juan

Shrubs, 1–2 m tall; old branches grayish white, glabrous, usually with longitudinal lines; branches slender; young branches greenish, with short-glandular hairs and setae. Petiole stout and short, adaxially flat, abaxially rounded, 3–5 mm; leaf blade leathery, elliptic or ovate-elliptic, 2–3.5 × 1.5–2 cm; base rounded; apex mucronate or rounded and apiculate; both surfaces glabrous; abaxial surface greenish; adaxial surface deep green; midrib raised abaxially, impressed adaxially; lateral veins 9–11-paired, inconspicuous on both surfaces. Inflorescence 2- or 3-flowered; rachis ca. 2 mm, glabrous. Pedicel 1.5–3 cm, sparsely shortly glandular-hairy; calyx discoid, with 5 wavy projections, small, margin with short glandular hairs; corolla funnelform, milky white, or yellowish to rose pink, 3–3.5 × 3–4 cm; lobes 5, rounded, ca. 1.5 × 1.8 cm, apex emarginate; stamens 10, unequal, 1.2–3 cm, filaments pubescent at base, anthers ovate, brown, ca. 2 mm; ovary cone-shaped, 3–4 mm, densely glandular-hairy; style 2–2.5 cm, as long as corolla, base glandular, smooth in the upper part; stigma expanded. Capsule cylindric, curved, 20–25 × 4–6 mm, glandular-hairy. Fl. Jun, fr. Aug.

Open coniferous forests; 3000–3500 m. E Xizang, NW Yunnan [Myanmar].

282. Rhododendron esetulosum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 42. 1920.

喙尖杜鹃 hui jian du juan

Rhododendron manopeplum I. B. Balfour & Forrest.

Shrubs, 1–2 m tall; old branches smooth; shoots stout, 5–7 mm in diam. below inflorescence; young branches densely glandular. Petiole stout, adaxially flat, abaxially rounded, 15–20 mm, glabrous; leaf blade leathery, long-elliptic to ovate-elliptic, 6–10 × 3–5 cm; base rounded, truncate or subcordate; apex acute, apiculate; abaxial surface yellowish green, indumentum gauzelike; adaxial surface green, glabrous; midrib obviously raised abaxially, impressed adaxially; lateral veins 14–16-paired, inconspicuous on both surfaces. Inflorescence racemose-umbellate, 7–11-flowered; rachis conical, 5–10 mm, densely glandular. Pedicel stout, 2–2.5 cm, shortly glandular-hairy, glabrous; calyx lobes 5, 3–7(–10) mm, ovate; outer surface and margin glandular; corolla funnelform, pink, throat with purple spots, ca. 4 cm, lobes 5, suborbicular, 2–2.5 × 1.5–2 cm, apex emarginate, margin slightly wavy; stamens 10, unequal, 1.5–2.5 cm, filaments pubescent at base, anthers ovate, ca. 3 mm; ovary cylindric, ca. 5 mm, densely glandular; style smooth or with a few glands at base, stigma expanded. Capsule cylindric, ca. 20 × 10 mm. Fl. Jun, fr. Aug–Oct.

● Thicket margins, gravelly mountain slopes; 3000–4200 m. SE Xizang, NW Yunnan.

283. Rhododendron hirtipes Tagg in J. B. Stevenson, Sp. Rhodod. 140. 1930.

硬毛杜鹃 ying mao du juan

Rhododendron xizangense W. P. Fang & W. K. Hu ex Q. Z. Yu.

Shrubs or small trees, 2–4 m tall; older branches grayish white, usually glabrous; young shoots green or brownish when young, ca. 3 mm in diam., densely glandular-setose, setae 3–5 (–7) mm, very short-lived. Petiole terete, shallowly impressed adaxially, 15–30 mm, densely glandular-setose; leaf blade leathery, long-elliptic to obovate-elliptic, broadest above the middle, 6–10 × 4–5.5 cm; base rounded to subcordate; apex rounded, apiculate; abaxial surface greenish, sparsely glandular, midrib glandular-setose; adaxial surface deep green, glabrous except

for glandular setae near base of midrib; midrib prominently raised abaxially, impressed adaxially; lateral veins 12–15-paired, flat and visible on both surfaces. Inflorescence racemose-umbellate, 2–5-flowered; rachis short, 1–3 mm, glandular-setose. Pedicel 1–2 cm, densely glandular-setose; calyx membranous, cup-shaped; lobes 5, 8–12 mm, unequal, elliptic or ovate, outer surface shortly glandular-hairy at base and on margin, 5–10 × 3–4 mm; corolla funnelform-campanulate, pink, throat with deep purple spots, 3.5–4 cm, lobes 5, unequal; filaments pubescent at base; anthers long-elliptic, ca. 2.5 mm; ovary cylindric-conical, ca. 5 mm, densely glandular-hairy; style 3–3.5 cm, as long as corolla, glandular-hairy towards base; stigma expanded, slightly lobed. Capsule cylindric, slightly curved, 15–22 × ca. 6 mm. Fl. May, fr. Jul.

● Wet coniferous forests, riversides; 3300–3700 m. E Xizang.

284. Rhododendron setiferum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 137. 1919.

刚刺杜鹃 gang ci du juan

Rhododendron selense Franchet subsp. *setiferum* (I. B. Balfour & Forrest) D. F. Chamberlain; *R. vestitum* Tagg & Forrest.

Shrubs, 2–3 m tall; old branches smooth, bark usually flaking when dry; branchlets stout, ca. 5 mm in diam., young branches densely glandular. Petiole terete, 10–20 mm, with glandular hairs; leaf blade leathery, oblong-elliptic or elliptic, 5.5–10 × 1.8–4 cm; base rounded; margin thin, reflexed downward; apex obtuse or acute, apiculate; abaxial surface indumentum thin, yellowish brown or brownish; adaxial surface green, glabrous; midrib prominently raised abaxially, grooved adaxially; lateral veins 12–15-paired, flat on both surfaces, inconspicuous. Inflorescence racemose-umbellate, 6–10-flowered; rachis ca. 5 mm, glandular hairy and with a discontinuous indumentum. Pedicel slender, 1.5–2 cm, glandular-hairy and pubescent; calyx membranous, lobes 5, large, lanceolate, apex acuminate, outer surface and margin sparsely glandular-hairy, 5–7 × 2–3 mm; corolla funnelform, white or pink, base with deep red lines, 3.5–4 × ca. 3.5 cm; lobes 5, rounded, ca. 1 × 1.5 cm, apex emarginate; stamens 10, unequal, 1.3–2.5 cm, filaments slightly puberulent at base; anthers oblong-elliptic, 2–3 mm; ovary ovate, 3–4 mm, densely glandular-setose; style 2.6–2.7 cm, as long as corolla, base glandular-hairy, glabrous above, stigma slightly expanded. Capsule slender, curved, 15–25 × ca. 4 mm, persistently glandular-setose. Fl. Apr–May, fr. Jul–Aug.

● *Abies* forests, *Rhododendron* thickets; 3300–3700 m. SE Xizang, NW Yunnan.

285. Rhododendron ×erythrocalyx I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 110. 1920, pro sp.

显萼杜鹃 xian e du juan

Rhododendron beimaense I. B. Balfour & Forrest; *R. cymbomorphum* I. B. Balfour & Forrest; *R. erythrocalyx* subsp. *beimaense* (I. B. Balfour & Forrest) Tagg; *R. erythrocalyx* subsp. *docimum* I. B. Balfour ex Tagg; *R. erythrocalyx* subsp. *eucallum* (I. B. Balfour & Forrest) Tagg; *R. erythrocalyx* subsp. *truncatulum* (I. B. Balfour & Forrest) Tagg; *R. eucallum* I. B. Balfour & Forrest; ?*R. panteumorphum* I. B. Balfour & W. W. Smith; *R. truncatulum* I. B. Balfour & Forrest.

Shrubs, 2–3 m tall; old branches grayish white, smooth, sometimes with bark flaking; young branches glandular-hairy. Petiole terete, 10–15 mm, glabrous; leaf blade leathery, ovate-elliptic or oblong-elliptic, 6–8 × 2.5–4 cm; base rounded or subcordate, usually asymmetrical; margin thin, usually revolute; apex mucronate; both surfaces glabrous; abaxial surface grayish white; adaxial surface deep green; midrib raised abaxially, flat adaxially; lateral veins 15–18-paired, visible adaxially, inconspicuous abaxially. Inflorescence racemose-umbellate, 3–7-flowered; rachis ca. 3 mm, glabrous. Pedicel slender, 2–3 cm, sparsely glandular, glabrous; calyx lobes 5, large, ovate, outside nearly glabrous, margin glandular, 4–7 × ca. 4 mm; corolla funnelform-campanulate, milky-white or pink, rarely yellowish, 3.5–4 × ca. 4 cm; lobes 5, suborbicular, ca. 1.5 × 2 cm, apex emarginate; stamens 10, unequal, 1.2–2.5 cm, filaments glabrous, anthers large, oblong, ca. 3 mm; ovary cylindric, ca. 5 mm, densely glandular; style ca. 2.5 cm, nearly equal to corolla, lower part glandular, stigma slightly expanded. Capsule slender, cylindric, curved, ca. 2 × 0.5 mm, with short glandular hairs. Fl. May–Jun, fr. Aug–Oct.

● Coniferous forests, *Rhododendron* thickets; 3000–3900 m. E Xizang, NW Yunnan.

Field observations on Baima Shan in NW Yunnan, the type locality of *Rhododendron ×erythrocalyx* and several of the cited synonyms, indicate that this entity is a hybrid between *R. selense* and *R. wardii*. It is intermediate between, and occurs in mixed populations with, both parents.

If *Rhododendron panteumorphum* is indeed a synonym of *R. ×erythrocalyx,* then the former name would have priority (I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 257. 1916).

9. Rhododendron subsect. Glischra (Tagg) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 116. 1978.

粘毛杜鹃亚组 nian mao du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron subser. *Glischra* Tagg in J. B. Stevenson, Sp. Rhodod. 135. 1930 [*"Glischrum"*].

Dwarf shrubs or small trees, bark rough; young shoots densely glandular-setose and long-glandular-hairy; bud scales persistent or deciduous. Leaf blade herbaceous to leathery, oblong, ovate or elliptic to lanceolate; abaxial surface with stipitate-glands or bristles; adaxial surface glabrous or with persistent bristles, even when mature. Inflorescence lax, 6–14-flowered; rachis 5–15 mm; calyx large, 5–15 mm, lobes ± rounded, lingulate; corolla campanulate to funnel-campanulate, 5-lobed, white flushed pink to pink, usually with a purple basal blotch and flecks, lacking nectar pouches; stamens 10; ovary densely glandular-hairy to glandular-setose; style glabrous or glandular or tomentose only at base.

Six species; China, India, Myanmar; six species (three endemic) in China.

1a. Branchlets with persistent bud scales; leaf blade abaxially thickly white and brown tomentose and sparsely glandular ..... 291. *R. crinigerum*
1b. Branchlets without persistent bud scales; leaf blade abaxially not thickly tomentose.
  2a. Corolla campanulate.
    3a. Corolla pink, with purple basal blotch inside, 3.5–4 cm; leaf blade 14–22 cm ..... 286. *R. glischrum*
    3b. Corolla white flushed rose, with or without purple flecks inside at base, ca. 5 cm; leaf blade 9–12 cm ..... 287. *R. habrotrichum*
  2b. Corolla funnel-campanulate.
    4a. Pedicels densely tomentose; calyx lobes unequal; leaf blade oblong to obovate, abaxial surface glabrescent ..... 290. *R.* ×*diphrocalyx*
    4b. Pedicels densely glandular-setose; calyx lobes well-developed, regular; leaf blade ovate, elliptic, lanceolate or oblong-lanceolate to oblanceolate, abaxial surface hairy at least on veins.
      5a. Leaf blade ovate, lanceolate or elliptic, abaxial surface setulose and tomentose ..... 288. *R. adenosum*
      5b. Leaf blade oblong-lanceolate to oblanceolate, abaxial surface with vesicular hairs on the veins ..... 289. *R. vesiculiferum*

286. Rhododendron glischrum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 229. 1916.

粘毛杜鹃 nian mao du juan

Shrubs or small trees, 2.4–7 m tall; older branches stout, grayish, glabrous, shoots ca. 8 mm in diam. below inflorescence; young shoots with glutinous glandular setae. Petiole stout, 18–25 mm, densely glandular-setose; leaf blade subleathery, oblong to broadly oblanceolate, 14–22 × 4.6–6.5 cm; base cuneate or narrowly rounded to subcordate; margin herbaceous, ciliate; apex obtuse or acute; abaxial surface smooth to rugose, setose, glandular-setose and tomentose; adaxial surface smooth to rugose, glabrous except for glandular-setose midrib near base, or setose; midrib raised abaxially, grooved adaxially; lateral veins 13–17 on each side. Inflorescence 10–12-flowered; rachis ca. 15 mm, densely glandular and tomentose. Pedicel 3–4.2 cm, glandular-setose; calyx lobes 5, ca. 1.3 cm, unequal, lingulate, densely glandular-setose, ciliate; corolla campanulate, pink, with purple flecks and basal blotch, 3.5–4 cm, lobes 5, emarginate; stamens 10, 1–3 cm, filaments pubescent at base; ovary conoid, ca. 5 mm, densely glandular-hairy; style 3–4 cm, glabrous or glandular at base. Capsule ca. 15 mm, base enclosed by persistent calyx. Fl. May–Jun, fr. Sep–Oct.

Forests, forest margins, thickets; 2400–3600 m. S Xizang, NW Yunnan [NE India, Myanmar].

1a. Leaf blade with both surfaces glabrous except for glandular-setose base of midrib, abaxial surface smooth to rugose ..... 286a. subsp. *glischrum*
1b. Leaf blade with both surfaces persistently setose ..... 286b. subsp. *rude*

286a. Rhododendron glischrum subsp. **glischrum**

粘毛杜鹃(原亚种) nian mao du juan (yuan ya zhong)

Leaf blade with both surfaces glabrous except for glandular-setose base of midrib; abaxial surface smooth to rugose. Fl. May–Jun, fr. Sep–Oct.

Forest margins, thickets; 2500–3300 m. S Xizang, NW Yunnan [Myanmar].

286b. Rhododendron glischrum subsp. **rude** (Tagg & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 117. 1978.

红粘毛杜鹃 hong nian mao du juan

Rhododendron rude Tagg & Forrest in J. B. Stevenson, Sp. Rhodod. 141. 1930.

Leaf blade with both surfaces persistently setose.

Forests, thickets; 2400–3600 m. SE Xizang, NW Yunnan [NE India].

287. Rhododendron habrotrichum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 232. 1916.

粗毛杜鹃 cu mao du juan

Shrubs, 1.2–3.5 m tall; older branches grayish brown, glabrous, 4–5 mm in diam. below inflorescence; young shoots glandular-setose. Petiole stout, 10–20 mm, densely brown-glandular-setose; leaf blade subleathery, oblong-elliptic to obovate, 9–12 × 4.5–6.5 cm; base rounded or slightly cordate; margin ciliate-setulose; apex acute; abaxial surface pale green, glabrous except for glandular-setose midrib and veins; adaxial surface smooth, green, glabrous; midrib raised abaxially, grooved adaxially; lateral veins 15–16-paired, impressed adaxially. Inflorescence 10-flowered; rachis ca. 10 mm. Pedicel stout, ca. 2 cm, densely glandular-setose; calyx red; lobes 5, ca. 15 mm, rounded, with similar hairs, ciliate; corolla campanulate, white flushed rose to pink, with or without purple flecks and basal blotch, ca. 5 cm, lobes 5, ca. 1.5 × 2.5 cm, emarginate; stamens 10, unequal, 2.5–3.5 cm, filaments pubescent at base; ovary cylindric, ca. 5 mm, densely glandular-setose; style ca. 3.5 cm, glandular-setose at base. Capsule cylindric, ca. 20 × 6 mm, setose, calyx persistent. Fl. Jun–Jul, fr. Aug–Oct.

Rhododendron thickets, rocky slopes; 2700–3400 m. W Yunnan [NE Myanmar].

288. Rhododendron adenosum (Cowan & Davidian) Davidian, Quart. Bull. Amer. Rhododendron Soc. 32: 81. 1978.

枯鲁杜鹃 ku lu du juan

Rhododendron glischrum I. B. Balfour & W. W. Smith

var. *adenosum* Cowan & Davidian, Notes Roy. Bot. Gard. Edinburgh 21: 147. 1953; *R. kuluense* D. F. Chamberlain, nom. illeg. superfl.

Shrubs; young shoots densely glandular-setose. Petiole densely glandular-setose; leaf blade leathery, ovate to lanceolate or elliptic, 7–10.5 × 2.4–3.4 cm; margin cartilaginous, papillate; apex acute to acuminate; abaxial surface setose and sparsely tomentose, tomentum quickly lost at least towards apex, or persistent, midrib densely glandular-setose; adaxial surface with a few setae on midrib, glabrous when mature. Inflorescence lax, 6–8-flowered; rachis ca. 5 mm. Pedicel 1.5–2.5 cm, densely glandular-setose; calyx ca. 7 mm, densely glandular-setose; corolla funnel-campanulate, pale pink with purple flecks, 3.5–5 cm; ovary densely glandular-setose; style glabrous. Capsule curved, ca. 20 × 4 mm.

● *Picea* forests; 3300–3600 m. SW Sichuan (Muli).

In the protologue of *Rhododendron adenosum* the earlier name *R. glischrum* var. *adenosum* (based on the same type: *J. F. C. Rock 18228*) was cited, but without a full bibliographic reference. *Rhododendron adenosum* was nevertheless validly published as a new combination under Art. 33.2 of the Saint Louis Code because otherwise it would be validly published as the name of a new taxon. The name *R. kuluense* was published as a *nomen novum* for *R. glischrum* var. *adenosum,* but slightly later in 1978 (18 May) than was *R. adenosum* (before 16 May); *R. kuluense* is therefore illegitimate under Art. 52.1 because it was nomenclaturally superfluous when published.

289. Rhododendron vesiculiferum Tagg in J. B. Stevenson, Sp. Rhodod. 143. 1930.

泡毛杜鹃 pao mao du juan

Shrubs or small trees, 1.5–3 m tall, older branches pale brown, glabrous; young shoots pale purple, 3–4 mm in diam., densely glandular-setose. Petiole 10–20 mm, densely glandular-setose; leaf blade leathery, oblong-lanceolate or oblanceolate, 7.8–16.5 × 3–4.5 cm; base rounded or subcordate; margin ciliate; apex acute; abaxial surface glandular-setose, hairs vesicular; adaxial surface rugose to bullate, glabrous or with a few bristles at base when mature; midrib raised abaxially; lateral veins 20–24-paired, raised abaxially, strongly impressed adaxially. Inflorescence 10–15-flowered; rachis ca. 10 mm, tomentose. Pedicel 1.5–2.5 cm, densely glandular-setose, also with short vesicular hairs; calyx lobes 5, ca. 10 mm, glandular-setose; margin ciliate; corolla funnel-campanulate, white to rose-purple, with purple flecks and a purple basal blotch, 3–3.5 cm; stamens 10, 1.5–2.5 cm, filaments pubescent at base; ovary ovoid, ca. 5 mm, densely glandular-setose, and with short vesicular hairs; style glabrous, with similar hairs at the base. Capsule cylindric, ca. 16 × 6 mm, base with persistent calyx. Fr. Aug.

Forests, rocky slopes; 2400–3300 m. SE Xizang, W Yunnan [NE Myanmar].

290. Rhododendron ×diphrocalyx I. B. Balfour, Notes Roy. Bot. Gard. Edinburgh 11: 55. 1919.

腾冲杜鹃 teng chong du juan

Rhododendron burriflorum I. B. Balfour & Forrest.

Shrubs, 1–5 m tall; older branches brownish and rough; shoots ca. 5 mm in diam. below inflorescence; young shoots with glandular and eglandular setae. Petiole 10–20 mm, glandular-setose; leaf blade subleathery, oblong-elliptic or broadly elliptic to obovate, 7–12 × 2.5–5 cm; base rounded; margin revolute; apex obtuse, cuspidate; both surfaces glabrous except for glandular-setose midrib and main veins, setae towards base; abaxial surface glaucous; adaxial surface green, glabrous when mature, midrib raised abaxially, grooved adaxially; lateral veins 12–14-paired. Inflorescence 10–20-flowered; rachis red, tomentose. Pedicel stout, 1.5–2 cm, persistently tomentose, not glandular; calyx red, large and one-sided, fleshy; lobes 5, 6–25 mm, unequal, rounded, ciliate; corolla funnel-campanulate, pale to deep crimson, with crimson spots and basal blotch; lobes 5, rounded, ca. 1.5 cm, emarginate; stamens 10, unequal, 2–3 cm, filaments pubescent at base; ovary conoid, ca. 6 mm, densely tomentose; style base densely tomentose. Capsule curved, ca. 25 × 4 mm.

● Forests, thickets; 3000–3400 m. W Yunnan.

This entity is evidently a hybrid, probably between *Rhododendron habrotrichum* and a species in *R.* subsect. *Neriiflora*.

291. Rhododendron crinigerum Franchet, J. Bot. (Morot) 12: 260. 1898.

长粗毛杜鹃 chang cu mao du juan

Shrubs 1–6 m tall; bark dark gray; young shoots with sparse short-glandular hairs; bud scales persistent for some years. Petiole 10–20 mm, densely glandular-setose; leaf blade leathery, lanceolate or oblanceolate, 9–20 × 1.5–3(–6) cm; base obtuse; margin revolute; apex acuminate; abaxial surface usually densely fawn to red-brown tomentose, interspersed with glandular hairs, midrib densely glandular and tomentose; adaxial surface glabrous when mature, rugose, midrib sparsely glandular and hairy; midrib prominent abaxially, grooved adaxially; lateral veins 15–19-paired. Inflorescence 7–16-flowered; rachis 10–15 mm, pubescent. Pedicel 2–3 cm, densely glandular-setose and sparsely tomentose; calyx cup-shaped; lobes 5, 5–10 mm, irregular, densely glandular-setose; corolla campanulate, white to pink, with purple flecks and basal blotch, 3–3.5 cm, lobes 5, rounded, ca. 1.5 cm, emarginate; stamens 10, unequal, 1.5–3 cm, filaments pubescent at base; ovary ovoid, ca. 4 mm, glandular-hairy; style glandular at base. Capsule cylindric, 15–20 × ca. 7 mm, glandular, calyx persistent. Fl. May–Jun, fr. Aug–Sep.

● Forests, valleys, rocky slopes, cliffs; 2200–4200 m. NW Sichuan, SE Xizang, NW Yunnan.

1a. Abaxial leaf surface sparsely glandular, with a dense matted indumentum .... 291a. var. *crinigerum*
1b. Abaxial leaf surface densely glandular, with a thinner indumentum ..... 291b. var. *euadenium*

291a. Rhododendron crinigerum var. **crinigerum**

长粗毛杜鹃(原变种) chang cu mao du juan (yuan bian zhong)

Rhododendron ixeuticum I. B. Balfour & W. W. Smith.

Abaxial leaf surface indumentum densely matted, interspersed with sparse glands. Fl. May–Jun, fr. Aug–Sep.

● Forests, rocky slopes; 2200–4200 m. NW Sichuan, SE Xizang, NW Yunnan.

291b. Rhododendron crinigerum var. **euadenium** Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 16: 190. 1931.

腺背长粗毛杜鹃 xian bei chang cu mao du juan

Abaxial leaf surface sparsely tomentose and densely glandular.

● Valleys, cliffs; 3600–3700 m. NW Yunnan.

10. Rhododendron subsect. Irrorata (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 548. 1949.

露珠杜鹃亚组 lu zhu du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron subser. *Irrorata* Tagg in J. B. Stevenson, Sp. Rhodod. 332. 1930 [*"Irroratum"*].

Shrubs or small trees; young shoots mostly glabrous or glabrescent, occasionally glandular or tomentose. Leaf blade leathery, lanceolate or elliptic-lanceolate; apex acute; abaxial surface usually glabrous when mature, more rarely with a veil of persistent thin indumentum at maturity (*R. agastum, R. leptopeplum,* and *R. tanastylum* var. *pennivenium*). Inflorescence 2–21-flowered; rachis 5–40 mm. Calyx usually reduced to a rim; corolla campanulate or tubular- to open-campanulate, 5-lobed, (7-lobed in *R. anthosphaerum*), pink, white, yellow or deep crimson, with darker flecks and also sometimes with nectar pouches at the base; stamens 10–14; ovary glabrous, tomentose or glandular-hairy; style glabrous or glandular to tip. Capsule oblong-cylindric, 1–2.5 cm.

About 24 species: Bhutan, China, India, Indonesia (Sumatra), Malaysia, Myanmar, Vietnam; 21 species (14 endemic) in China.

Some species are important horticultural plants in China, e.g., *Rhododendron annae* and *R. irroratum*.

1a. Abaxial leaf surface with persistent thin indumentum, or at least with hairs on midrib.
  2a. Leaf blade 13–17(–20.5) cm, adaxial surface with strongly impressed lateral veins, abaxial surface with scattered setose glands ..... 300. *R. gongshanense*
  2b. Leaf blade never exceeding 15 cm, adaxial surface with at most lightly impressed lateral veins, abaxial surface without setose glands.
    3a. Abaxial leaf surface with persistent thin indumentum; ovary tomentose and stipitate-glandular.
      4a. Leaf blade elliptic or elliptic-lanceolate; style glandular to tip ..... 299. *R. agastum*
      4b. Leaf blade lanceolate or long-elliptic; style glabrous or glandular only at base ..... 295. *R. leptopeplum*
    3b. Abaxial leaf surface with only midrib hairy, otherwise glabrous.
      5a. Leaf blade subleathery, lanceolate or oblanceolate, base cuneate; corolla rose.
        6a. Pedicels, ovary, and style glabrous; leaf blade narrowly lanceolate, abaxial surface of midrib with a thin woolly tomentum ..... 303. *R. araiophyllum*
        6b. Pedicels, ovary, and lower part of style with dense hairs; leaf blade obovate, abaxial surface of midrib with dense brown hairs ..... 307. *R. pingbianense*
      5b. Leaf blade leathery, lanceolate or long-elliptic, base rounded; corolla yellowish or deep crimson.
        7a. Pedicel and ovary glabrous; leaf blade 3–4.5 cm wide, abaxial surface of midrib with brown hairs; corolla deep crimson ..... 301. *R. ramsdenianum*
        7b. Pedicel and ovary densely hairy; leaf blade 1.5–3.5 cm wide, abaxial surface of midrib thinly rufous tomentose or stellate-tomentose; corolla yellowish or purplish.
          8a. Leaf blade 1.5–2.5 cm wide, abaxial surface of midrib thinly tomentose, base symmetrical; corolla yellowish ..... 308. *R. laojunshanense*
          8b. Leaf blade 2.5–3.5 cm wide, abaxial surface of midrib stellate-tomentose, base asymmetrical; corolla purplish with purple blotch and flecks ..... 310. *R. sikangense*
1b. Abaxial leaf surface glabrous, though sometimes with sessile punctate glands on midribs and lateral veins.
  9a. Ovary eglandular, tomentose or glabrous; style usually glabrous, rarely tomentose at base.
    10a. Calyx usually ca. 10 mm; ovary and style base tomentose ..... 312. *R. dimitrum*
    10b. Calyx 1–3 mm; ovary and style usually glabrous or puberulent.
      11a. Leaves subleathery, lanceolate or oblanceolate, apex obtuse or acute; corolla 6–7-lobed ..... 292. *R. anthosphaerum*
      11b. Leaf blade leathery; apex acute; corolla 5-lobed.
        12a. Rachis stout, 5–20 mm, glabrous; inflorescence 5–10-flowered.
          13a. Rachis 0.5–1 cm; corolla fleshy, deep crimson; leaves elliptic-lanceolate ..... 293. *R. tanastylum*
          13b. Rachis 1.5–2 cm; corolla not fleshy, purplish crimson; leaves oblanceolate ..... 297. *R. spanotrichum*
        12b. Rachis slender, 15–35 mm, tomentose; inflorescence usually 8–15-flowered.
          14a. Ovary strigose; leaves lanceolate or elliptic-lanceolate, adaxial surface not wax-coated ..... 302. *R. kendrickii*
          14b. Ovary glabrous; leaves oblanceolate, adaxial surface usually wax-coated ..... 294. *R. lukiangense*

9b. Ovary glandular, or glandular-setose and tomentose; style glandular or glabrous.
15a. Ovary glandular or glandular-setose; style glabrous or glandular only in lower half.
16a. Leaf blade long-elliptic or obovate-elliptic, 8–13 cm; apex obtuse or rounded; corolla 4.5–5 cm; pedicel and ovary with dense dendritic hairs; calyx lobes rounded, ca. 3 × 4 mm ..... 296. *R. papillatum*
16b. Leaf blade elliptic-lanceolate or ovate-lanceolate, 5–10 cm, apex cuspidate; corolla 2.5–4 cm; pedicel and ovary without dendritic hairs; calyx 1–3.5 mm.
17a. Ovary and lower part of style glandular-hairy; pedicel glandular-setose ..... 309. *R. brevinerve*
17b. Ovary glandular-setose; style glabrous; pedicel sparsely stipitate-glandular ..... 306. *R. guizhouense*
15b. Ovary glandular; style glandular to tip.
18a. Corolla tubular-campanulate, reddish purple; leaves narrowly lanceolate, 8–17 × 2–3 cm; petiole and pedicel densely glandular-setose ..... 311. *R. mengtszense*
18b. Corolla campanulate or open-campanulate; leaves lanceolate to elliptic-lanceolate, not more than 12 cm; petiole and pedicel glabrous.
19a. Corolla campanulate, 3.5–5 cm, white to yellow ..... 298. *R. irroratum*
19b. Corolla open-campanulate or cup-shaped, 2–3(–4) cm, white or rose.
20a. Leaf blade thick, leathery, 2.5–5 cm ..... 304. *R. aberconwayi*
20b. Leaf blade subleathery, 7–10 cm ..... 305. *R. annae*

292. Rhododendron anthosphaerum Diels, Notes Roy. Bot. Gard. Edinburgh 5: 215. 1912.

团花杜鹃 tuan hua du juan

Rhododendron anthosphaerum var. *eritimum* (I. B. Balfour & W. W. Smith) Davidian; *R. anthosphaerum* subsp. *hylothreptum* (I. B. Balfour & W. W. Smith) Tagg; *R. chawchiense* I. B. Balfour & Farrer; *R. eritimum* I. B. Balfour & W. W. Smith; *R. eritimum* subsp. *chawchiense* (I. B. Balfour & Farrer) Tagg; *R. eritimum* subsp. *gymnogynum* (I. B. Balfour & Forrest) Tagg; *R. eritimum* subsp. *heptamerum* (I. B. Balfour) Tagg; *R. eritimum* subsp. *persicinum* (Handel-Mazzetti) Tagg; *R. gymnogynum* I. B. Balfour & Forrest; *R. heptamerum* I. B. Balfour; *R. hylothreptum* I. B. Balfour & W. W. Smith; *R. persicinum* Handel-Mazzetti.

Shrubs or small trees, 2–7 m tall; young branches stout, glabrous. Leaf blade thinly leathery or leathery, elliptic-oblanceolate or long-elliptic, 8–14 × 2.5–3.5 cm; base cuneate; margin revolute; apex acuminate to acute, apiculate; abaxial surface pale, thinly clad with scattered hairs; midrib prominent; lateral veins 17–24-paired. Inflorescence racemose-umbellate, 8–10-flowered; rachis 5–10 mm, floccose. Pedicel 1–1.5 cm, sparsely rufous-tomentose or glabrescent; calyx cupular, lobes 6 or 7, ca. 1 mm; corolla tubular-campanulate, rose-magenta or crimson to magenta-blue, with a basal black-crimson blotch, 3–3.5 cm, nectar pouches present; lobes 6 or 7, suborbicular, ca. 1 × 1–1.5 cm, emarginate, crenate; stamens 13–14, unequal, 1.5–2.5 cm, filaments slender, glabrous or puberulent at base; ovary cylindric, ca. 5 × 2.5 mm, glabrous; style as long as corolla, glabrous, stigma small. Capsule 15–25 × 6–8 mm, glabrous, 7–8-lobed at apex when dry. Fl. Apr–May, fr. Jul–Aug.

Mixed *Pinus*-broad-leaved forests, open slopes; 2000–3500 m. SW Sichuan, SE Xizang, NW Yunnan [NE Myanmar].

293. Rhododendron tanastylum I. B. Balfour & Kingdon Ward, Trans. Bot. Soc. Edinburgh 27: 217. 1917.

光柱杜鹃 guang zhu du juan

Small trees or shrubs, 2–6 m tall; older shoots glabrous; young shoots glabrescent. Petiole stout, terete, 10–15 mm, glabrous; leaf blade leathery, sometimes thinly so, ovate-lanceolate to elliptic, 6–17 × 2.5–5.5 cm; base rounded or broadly cuneate; margin not undulate; apex acuminate or obtuse; both surfaces glabrous; abaxial surface paler; adaxial surface matt at maturity; midrib raised; lateral veins 17–20-paired. Inflorescence racemose-umbellate, 4–8-flowered; rachis 10–20 mm, glabrous. Pedicel ca. 1 cm; calyx cupular, lobes 5, 1–3 mm, ovate or triangular, glabrous; corolla tubular campanulate, fleshy, white or pink to deep crimson, with darker spots, 4–4.5 cm, 5 black nectar pouches at base; lobes 5, orbicular, 2–2.5 cm, emarginate; stamens 10, unequal, 2–3.5 cm, filaments glabrous or puberulent at base; ovary conical, 5–8 × ca. 3 mm, glabrous or slightly pubescent; style stout, 3–3.5 cm, glabrous, stigma discoid. Capsule oblong, blunt, ca. 17 × 7 mm, glabrous. Fl. Mar–May, fr. Sep–Nov.

Evergreen broad-leaved forests, *Pinus* forests, thickets, valleys; 1700–3700 m. E Xizang, W Yunnan [NE India, NE Myanmar].

1a. Leaf blade leathery, ovate-lanceolate or elliptic, 6–11 × 2.5–4 cm; corolla pink or deep crimson; ovary glabrous ..... 293a. var. *tanastylum*
1b. Leaf blade thinly leathery, oblong-elliptic, 10–17 × 3.5–5.5 cm; corolla white or pink; ovary slightly pubescent ..... 293b. var. *lingzhiense*

293a. Rhododendron tanastylum var. **tanastylum**

光柱杜鹃(原变种) guang zhu du juan (yuan bian zhong)

Rhododendron cerochitum I. B. Balfour & Forrest; *R. ombrochares* I. B. Balfour & Kingdon Ward.

Leaf blade leathery, ovate-lanceolate or elliptic, 6–11 × 2.5–4 cm. Corolla pink or deep crimson; ovary glabrous. Fl. Mar–May, fr. Sep–Nov.

Evergreen broad-leaved forests, *Pinus* forests; 1700–3300 m. W Yunnan [NE India, NE Myanmar].

293b. Rhododendron tanastylum var. **lingzhiense** M. Y. Fang, Bull. Bot. Res., Harbin 12: 221. 1992.

林芝光柱杜鹃 lin zhi guang zhu du juan

Rhododendron rubropunctatum T. L. Ming, Acta Bot. Yunnan. 6: 150. 1984 [*"rubro-punctata"*], not H. Léveillé & Vaniot (1911), nor Hayata (1913).

Leaf blade thinly leathery, oblong-elliptic, 10–17 × 3.5–5.5 cm. Corolla white or pink; ovary slightly pubescent. Fl. May.

● Thickets, valleys; ca. 3700 m. E Xizang.

294. Rhododendron lukiangense Franchet, J. Bot. (Morot) 12: 257. 1898.

蜡叶杜鹃 la ye du juan

Rhododendron admirabile I. B. Balfour & Forrest; *R. adroserum* I. B. Balfour & Forrest; *R. ceraceum* I. B. Balfour & W. W. Smith; *R. gymnanthum* Diels; *R. lukiangense* subsp. *admirabile* (I. B. Balfour & Forrest) Tagg; *R. lukiangense* subsp. *adroserum* (I. B. Balfour & Forrest) Tagg; *R. lukiangense* subsp. *ceraceum* (I. B. Balfour & W. W. Smith) Tagg; *R. lukiangense* subsp. *gymnanthum* (Diels) Tagg.

Shrubs or small trees, 2–4 m tall; older branches gray, bark exfoliating; young shoots stout, glabrous. Petiole cylindric, 10–20 mm, glabrous; leaf blade leathery, elliptic to oblanceolate, 8–14 × 2.5–4.5 cm; base cuneate; margin entire or slightly undulate; apex acuminate; both surfaces glabrous; abaxial surface pale green, glabrous; adaxial surface dark green, with thin wax-coating at maturity, somewhat shiny, glabrous; midrib prominent abaxially, grooved adaxially; lateral veins 22–24-paired, distinct abaxially, obscure adaxially. Inflorescence racemose-umbellate, 7–13-flowered; rachis 15–30 mm, pubescent. Pedicel 1–1.5 cm, usually glabrous; calyx lobes 5, 1–2 mm, ovate-triangular, glabrous; corolla tubular-campanulate, pale to deep magenta rose, with purple flecks and basal blotch, 3–4.5 cm, lobes 5, suborbicular, ca. 1.5 × 2 cm, emarginate; stamens 10, 1.5–3 cm unequal, filaments glabrous; ovary narrowly cylindric, 5–7 × ca. 2 mm, glabrous; style 3.5–4 cm, glabrous, stigma small. Capsule narrowly cylindric, ca. 30 × 5 mm, glabrous and smooth; calyx persistent, ca. 3 mm at maturity. Fl. Apr–May.

● *Pinus* forests, mixed woodlands, thickets, valleys, stream banks; 2600–3500 m. SW Sichuan, SE Xizang, NW Yunnan.

295. Rhododendron leptopeplum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 82. 1919.

腺绒杜鹃 xian rong du juan

Shrubs or small trees, 6–9 m tall; branches stout; young shoots glandular and pubescent at first, later smooth and glabrous. Petiole cylindric, 10–20 mm, glandular and floccose; leaf blade leathery, oblanceolate to oblong-elliptic, 6–12.5 × 2–3.5 cm; base rounded or broadly cuneate; apex acute to obtuse; abaxial surface pale, persistently thinly loosely whitish-tomentose; adaxial surface green, smooth, glabrous or with vestiges of juvenile hairs on the midrib; midrib prominent abaxially, grooved adaxially; lateral veins 17–19-paired, obscure. Inflorescence racemose-umbellate, 10–12-flowered; rachis 10–15 mm, pubescent. Pedicel 1–1.5 cm, glandular-hairy; calyx lobes 5, 4–6 mm, rounded, membranous, glabrous except for glandular margin; corolla campanulate, milky white to rose, with crimson flecks at base, ca. 4–4.5 cm, lobes 5, orbicular, ca. 1.5 × 2 cm, emarginate; stamens 10, unequal, 1.5–3 cm, filaments pubescent at base; ovary conoid, ca. 5 mm, densely glandular; style ca. 3 cm, glabrous; stigma slightly swollen. Capsule not known. Fl. Mar.

● *Rhododendron* thickets, slopes; 3000–4000 m. NW Yunnan.

296. Rhododendron papillatum I. B. Balfour & R. E. Cooper, Notes Roy. Bot. Gard. Edinburgh 13: 282. 1922.

乳突杜鹃 ru tu du juan

Rhododendron epapillatum I. B. Balfour & R. E. Cooper.

Shrubs or small trees, 2–5 m tall; young shoots glabrescent. Petiole cylindric, 10–25 mm, glabrous; leaf blade subleathery, oblong-elliptic or oblanceolate, broadest above middle of blade, 8–13 × 2–4 cm; base rounded to broadly cuneate; margin revolute; apex acute or obtuse; abaxial surface pale, papillate, indumentum very thin, veil-like, detersile; adaxial surface green, glabrous; midrib prominent abaxially, deeply impressed adaxially; lateral veins 14–17-paired. Inflorescence racemose-umbellate, 5–9-flowered; rachis 20–35 mm, whitish tomentose. Pedicel 1.5–2.5 cm, densely glandular and dendroid-tomentose; calyx fleshy; lobes 5, 2–3 mm, rounded or triangular, margin glandular; corolla campanulate, pale cream to pink, with purple flecks, blotched at base, 4.5–5 cm, glabrous inside; lobes 5, rounded, ca. 2 × 2.5 cm, emarginate; stamens 10, 2–4 cm, unequal, filaments pubescent at base; ovary conoid-cylindric, 5–6 mm, dendroid-tomentose and glandular-hairy; style 3.5–4 cm, glabrous except for a few glands; stigma small, lobulate. Capsule not known. Fl. Apr.

Abies forests, *Rhododendron* thickets; 2400–3000 m. SE Xizang [Bhutan, NE India].

297. Rhododendron spanotrichum I. B. Balfour & W. W. Smith, Trans. Bot. Soc. Edinburgh 27: 214. 1917.

红花杜鹃 hong hua du juan

Small trees, 6–7 m tall; branches usually stout, 3–5 mm in diam. below inflorescence. Petiole cylindric, 10–15 mm, glabrous; leaf blade leathery, obovate-elliptic to oblanceolate, 7–9 × 2–4 cm; base cuneate; margin revolute; apex acuminate; abaxial surface yellowish green, with red punctate bases of fallen glands or hairs, glabrous at maturity; adaxial surface green, glabrous; midrib prominent abaxially, grooved adaxially; lateral veins 14–20-paired, obscure. Inflorescence racemose-umbellate, 7–10-flowered; rachis 15–20 mm, glabrous. Pedicel 0.7–1 cm, puberulent or glabrous; calyx cupular; lobes 5, 1–1.5 mm, glabrous; corolla campanulate, crimson, with a dark blotch at base, 4–4.5 cm, lobes 5, suborbicular, 2–2.5 cm, emarginate, crenulate; stamens 10, unequal, 2.5–3 cm, filaments glabrous; ovary conoid-cylindric, slightly grooved, 7–8 mm, glabrous though with apex sparsely hairy; style ca. 2.5 cm, glabrous, stigma slightly swollen. Capsule not known. Fl. Mar.

● Evergreen broad-leaved forests; 1500–2300 m. SE Yunnan.

298. Rhododendron irroratum Franchet, Bull. Soc. Bot. France 34: 280. 1887.

露珠杜鹃 lu zhu du juan

Shrubs or small trees, 2–9 m tall; young shoots thinly tomentose and with glandular hairs that soon wither. Petiole cylindric, 10–20 mm, glabrescent; leaf blade leathery, oblanceolate to narrowly elliptic, 7–14 × 2–4 cm; base rounded or broadly cuneate; margin entire or undulate; apex acuminate; both surfaces glabrous when mature; midrib distinct and promi-

nent abaxially, deeply grooved adaxially; lateral veins 17–20-paired, impressed. Inflorescence laxly racemose-umbellate, 7–15-flowered; rachis 20–40 mm, pubescent and rufous glandular-hairy. Pedicel stout, 1–2 cm, densely glandular-hairy, sometimes tomentose; calyx lobes 5, ca. 2 mm, rounded or broadly triangular, margin glandular; corolla tubular-campanulate, white or creamy yellow to violet-rose, with greenish or purple flecks, 3–4 cm, 5 nectar pouches at base; lobes 5, orbicular, 2–2.5 × ca. 3 cm, emarginate; stamens 10, unequal, 2–3.5 cm, filaments pubescent at base; ovary conoid, 5–6 mm, 8–10-loculed, densely glandular-hairy; style sometimes glandular to the tip, stigma small. Capsule oblong-cylindric, 15–20 × 6–10 mm. Fl. Mar–May, fr. Sep–Oct.

Evergreen broad-leaved forests, mixed forests; 1700–3500 m. W Guizhou, SW Sichuan, N and SE Yunnan [N Vietnam].

1a. Corolla yellowish, cream or pinkish, without tomentum; calyx, ovary, and style glandular-hairy only ..... 298a. subsp. *irroratum*
1b. Corolla pink, pubescent within; calyx, ovary, and style glandular-hairy and tomentose ..... 298b. subsp. *pogonostylum*

298a. Rhododendron irroratum subsp. **irroratum**

露珠杜鹃(原亚种) lu zhu du juan (yuan ya zhong)

Rhododendron maximowiczianum H. Léveillé; *R. ningyuenense* Handel-Mazzetti.

Pedicel, calyx and ovary glandular but not tomentose; corolla usually yellow or pinkish, rarely cream, without tomentum; style glandular to tip. Fl. Mar–May, fr. Sep–Oct.

● Evergreen broad-leaved forests, mixed forests; 1800–3500 m. NW Guizhou, SW Sichuan, N Yunnan.

298b. Rhododendron irroratum subsp. **pogonostylum** (I. B. Balfour & W. W. Smith) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 117. 1978.

红花露珠杜鹃 hong hua lu zhu du juan

Rhododendron pogonostylum I. B. Balfour & W. W. Smith, Trans. Bot. Soc. Edinburgh 27: 210. 1917; *R. adenostemonum* I. B. Balfour & W. W. Smith.

Pedicel, calyx, ovary, and style tomentose and glandular-hairy; corolla usually cream to deep pink, pubescent below within. Fl. Mar–Apr.

Evergreen broad-leaved forests; 1700–3000 m. W Guizhou, SE Yunnan [N Vietnam].

299. Rhododendron agastum I. B. Balfour & W. W. Smith, Trans. Bot. Soc. Edinburgh 27: 178. 1917.

迷人杜鹃 mi ren du juan

Shrubs, 2–3 m tall, older branches glabrescent, branches stout; young shoots thinly floccose and sparsely glandular. Petiole cylindric, 10–20 mm, pubescent and glandular-hairy; leaf blade leathery, elliptic to ovate-elliptic, 7–12 × 2–5 cm; base rounded or cuneate; margin entire; apex obtuse or slightly cuspidate or acute to acuminate; abaxial surface indumentum thin, pale olive to fawn, veil-like; adaxial surface green, glabrous, midrib prominently raised abaxially; lateral veins 12–13-paired, slightly impressed. Inflorescence racemose-umbellate, 5–10-flowered; rachis 15–30 mm, pubescent and glandular. Pedicel stout, 1–1.5 cm, glandular; calyx discoid; lobes 5–7, minute, glandular and gland-fringed; corolla tubular-campanulate, pink, with crimson blotch, 3.5–5 cm, nectar pouches at base, glabrous within, lobes 5–7, suborbicular, 1.5–1.7 × 2–2.2 cm, emarginate; stamens 10–14, unequal, 2–3 cm, filaments pubescent at base; ovary cylindric-conoid, ca. 6 mm, glandular-hairy, with a few strigose hairs or tomentose; style stout, 2.5–4 cm, glandular to tip or glabrous; stigma slightly swollen, discoid. Capsule curved, ca. 30 × 10 mm. Fl. Apr–May, fr. Jul–Aug.

Mixed forests, broad-leaved forests, valleys; 1900–3300 m. ?E Guizhou, N and W Yunnan [NE Myanmar].

Rhododendron agastum is probably a hybrid between *R. decorum* and *R. delavayi,* as suggested by field observations at the type locality (Yangbi, near Dali in W Yunnan) and as mentioned by George Forrest in the field notes accompanying the type specimen. This entity would not, therefore, belong in *R.* subsect. *Irrorata,* as given in FRPS (57(2): 130. 1994) and here.

1a. Leaf apex obtuse or rounded; filaments pubescent in lower half; style glandular to tip; corolla 5-lobed ..... 299a. var. *agastum*
1b. Leaf apex acute or acuminate, filaments and style glabrous; corolla 6–7-lobed ..... 299b. var. *pennivenium*

299a. Rhododendron agastum var. **agastum**

迷人杜鹃(原变种) mi ren du juan (yuan bian zhong)

Leaf blade elliptic to elliptic-lanceolate, 2–5 cm wide; base rounded or broadly cuneate; apex obtuse, slightly cuspidate; corolla lobes 6 or 7; filaments pubescent in lower half; ovary glandular-hairy; style glandular to tip. Fl. Apr–May, fr. Jul–Aug.

● Evergreen broad-leaved forests, valleys; 1900–2500 m. ?E Guizhou, N and W Yunnan.

The occurrence of this variety in E Guizhou requires confirmation.

299b. Rhododendron agastum var. **pennivenium** (I. B. Balfour & Forrest) T. L. Ming, Acta Bot. Yunnan. 6: 152. 1984.

光柱迷人杜鹃 guang zhu mi ren du juan

Rhododendron pennivenium I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 55. 1920; *R. tanastylum* I. B. Balfour & Kingdon Ward var. *pennivenium* (I. B. Balfour & Forrest) D. F. Chamberlain.

Leaf blade narrow, oblong-elliptic to broadly lanceolate, 2.5–3.5 cm wide; base cuneate; apex acute to acuminate; corolla lobes 5; filaments glabrous; ovary densely tomentose and sparsely glandular-hairy; style glabrous. Fl. Mar–Apr.

Mixed forests, broad-leaved forests; 2400–3300 m. W Yunnan [NE Myanmar].

It is possible that var. *pennivenium* is a variety of *Rhododendron tanastylum,* not of *R. agastum* as given in FRPS (57(2): 130. 1994) and

here. The leaf indumentum does not indicate a close relationship with *R. agastum*.

300. Rhododendron gongshanense T. L. Ming, Acta Bot. Yunnan. 6: 151. 1984.

贡山杜鹃 gong shan du juan

Shrubs, 2–4 m tall; older branches glabrous; branches stout; young shoots usually ca. 5 mm in diam., glandular-hairy. Petiole 6–10 mm, glabrous; leaf blade leathery, oblanceolate or narrowly elliptic, 10–17 × 2.5–4 cm; base cuneate; apex acuminate, shortly cuspidate; abaxial surface greenish, hirsute-glandular, especially on veins; adaxial surface green, glabrous; midrib prominent abaxially, grooved adaxially; lateral veins 23–28-paired. Inflorescence racemose-umbellate, 17–21-flowered; rachis 15–20 mm, pubescent and glandular-hairy, glabrescent. Pedicel 0.5–0.7 cm, puberulent, glandular; calyx lobes 5, ca. 1.5 mm, glabrous; corolla tubular-campanulate, deep red, 3–3.5 cm, with 5 darker nectar pouches at base; lobes 5, suborbicular, ca. 1 cm, apex retuse; stamens 10, unequal, 2.5–3 cm, filaments reddish at base, glabrous; ovary cylindric, 8–11 × ca. 2.5 mm, floccose; style 2.5–3 cm, glabrous; stigma small. Capsule cylindric, ca. 20 × 4–5 mm, puberulent. Fl. Apr, fr. Oct.

● Broad-leaved forest margins, slopes; 2200–2500 m. NW Yunnan.

301. Rhododendron ramsdenianum Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 183. 1936.

长轴杜鹃 chang zhou du juan

Shrubs, 2–10 m tall; older branches smooth, glabrous; young shoots stout, floccose. Petiole 10–15 mm, floccose when young, glabrescent; leaf blade leathery, broadly lanceolate or oblong-elliptic, 8–12 × 3–4.5 cm; base rounded or broadly cuneate; apex cuspidate or acute; both surfaces glabrous except for brownish pubescent midrib abaxially; midrib prominent abaxially, grooved adaxially; lateral veins 15–22-paired, slightly raised. Inflorescence dense, 15–20-flowered; rachis 10–25 (–30) mm, glabrous. Pedicel ca. 0.5 cm, slender, glabrous; calyx lobes 5, 1–2 mm, glabrous; corolla tubular-campanulate, scarlet to deep crimson, 3.5–4 cm, with 5 prominent nectar pouches at base; lobes 5, suborbicular, ca. 1 cm, emarginate; stamens 10, unequal, 2–3.5 cm, filaments glabrous; ovary cylindric, ca. 8 × 2 mm, glabrous; style 2.5–3 cm, glabrous, stigma capitate, small. Capsule cylindric, 15–20 × ca. 5 mm, glabrous. Fl. Mar–May, fr. Aug–Oct.

● Mixed forests, forest margins; 2000–2800 m. SE Xizang.

302. Rhododendron kendrickii Nuttall, Ann. Mag. Nat. Hist., ser. 2, 12: 10. 1853.

多斑杜鹃 duo ban du juan

Rhododendron pankimense Cowan & Kingdon Ward; *R. shepherdii* Nuttall.

Small trees or shrubs, 1–3 m tall; older branches glabrous; young shoots stout, slightly floccose. Petiole cylindric, 10–15 mm, glabrescent; leaf blade subleathery, narrowly elliptic to lanceolate, 7–11 × 2–4 cm; base cuneate to rounded; margin revolute undulate; apex acuminate; abaxial surface woolly on midrib, otherwise glabrous; adaxial surface glabrous when mature; midrib prominent abaxially; lateral veins 17–24-paired, slightly raised abaxially, impressed adaxially. Inflorescence densely racemose-umbellate, 7–15-flowered; rachis 10–15 mm, densely tomentose. Pedicel 0.3–1 cm, puberulent; calyx discoid; lobes 5, minute, triangular, glabrous; corolla tubular-campanulate, fleshy, deep rose to scarlet, with dark flecks, 3–3.5 cm, with 5 nectar pouches at base, both surfaces glabrous, lobes ca. 1 cm, emarginate; stamens 10, unequal, 1.5–2.2 cm, filaments glabrous; ovary cylindric-conoid, ca. 7 mm, sparsely strigose, eglandular; style ca. 2 cm, glabrous; stigma small. Capsule slightly curved, 15–25 × ca. 4 mm. Fl. Apr–May, fr. Aug–Oct.

Thickets, mixed forests on slopes; 2600–2700 m. E Xizang [Bhutan, NE India].

303. Rhododendron araiophyllum I. B. Balfour & W. W. Smith, Trans. Bot. Soc. Edinburgh 27: 184. 1917.

窄叶杜鹃 zhai ye du juan

Shrubs, 2–7 m tall, older branches glabrous; branchlets slender; young shoots glabrescent. Petiole cylindric, ca. 10 mm, glabrescent; leaf blade subleathery, elliptic-lanceolate or narrowly lanceolate, broadest above middle of blade, 5–11 × 1.3–3 cm; base cuneate; margin undulate; apex acuminate or cuspidate; abaxial surface glabrous except sometimes for densely woolly midrib; adaxial surface glabrous, midrib conspicuously raised abaxially, grooved adaxially; lateral nerves 15–16-paired, obscure. Inflorescence racemose-umbellate, 5–10-flowered; rachis slender, 10–15 mm, woolly. Pedicel 1–1.5 cm, sparsely woolly; calyx lobes 5, 1–2 mm, rounded, glabrous to sparsely ciliate; corolla open-campanulate, fleshy, milky white to rose, with basal blotch, sometimes with purple flecks, 2.5–3.5 cm; lobes 5(or 6), suborbicular, ca. 1.3 × 1.5 cm, emarginate; stamens 10–12, 1.4–2.8 cm, filaments slender, pubescent at base; ovary conoid-cylindric, 5–6 × ca. 2.5 mm, 5- or 6-locular, pubescent at base; style glabrous, stigma slightly swollen. Capsule oblong-cylindric, 10–15 × ca. 4 mm, glabrous. Fl. Apr–May, fr. Oct–Nov.

Pinus forest margins, thickets; 1900–3400 m. NE and W Yunnan [NE Myanmar].

1a. Leaf blade elliptic-lanceolate, 5–11 × 2–3 cm; abaxial surface with woolly-tomentose midrib ..... 303a. subsp. *araiophyllum*
1b. Leaf blade narrowly lanceolate, 5.5–7.5 × 1.3–1.7 cm; abaxial surface entirely glabrous ..... 303b. subsp. *lapidosum*

303a. Rhododendron araiophyllum subsp. **araiophyllum**

窄叶杜鹃(原亚种) zhai ye du juan (yuan ya zhong)

Leaf blade elliptic-lanceolate, 5–11 × 2–3 cm; abaxial surface with densely woolly midrib. Fl. Apr–May, fr. Oct–Nov.

Pinus forest margins, thickets; 2600–3400 m. W Yunnan [NE Myanmar].

303b. Rhododendron araiophyllum subsp. **lapidosum** (T. L. Ming) M. Y. Fang, Proc. Fourth Int. Rhododendron Conf. 57. 1989.

石生杜鹃 shi sheng du juan

Rhododendron lapidosum T. L. Ming, Acta Bot. Yunnan. 3: 113. 1981.

Leaf blade narrowly elliptic-lanceolate, 5.5–7.5 × 1.3–1.7 cm; abaxial surface with glabrous midrib. Fl. Apr.

● Thickets on rocky or stony slopes; ca. 1900 m. NE Yunnan.

Rhododendron lapidosum requires further investigation and may not in fact be a subspecies of *R. araiophyllum*. The corolla shape is apparently tubular-campanulate, quite unlike that of subsp. *araiophyllum*.

304. Rhododendron aberconwayi Cowan, Roy. Hort. Soc. Rhododendron Year Book 1948: 42. 1948.

碟花杜鹃 die hua du juan

Shrubs, 1.5–2.5 m tall; older branches glabrous; branches slender; young shoots puberulent and glandular. Petiole cylindric, 5–10 mm, sparsely tomentose; leaf blade thick, leathery, ovate-elliptic or ovate-lanceolate, 2.5–5 × 1–1.8 cm; base broadly cuneate or rounded; margin strongly revolute; apex acute; abaxial surface pale, with red punctate hair bases on veins; adaxial surface smooth, glabrous, midrib slightly raised abaxially, grooved adaxially; lateral veins 8–9-paired. Inflorescence racemose-umbellate, 7–11-flowered; rachis stout, 10–25 mm, densely tomentose, eglandular. Pedicel 1.5–3.5 cm, glandular-hairy; calyx discoid; lobes 5, ca. 1 mm; sparsely hairy, glandular-ciliate; corolla open-cup- or saucer-shaped, white or pink with purple flecks, 2–3 cm, without nectar pouches; lobes 5, orbicular, ca. 1.3 × 1.5 cm, emarginate; stamens 10, unequal, 1–1.5 cm, filaments glabrous; ovary conoid, ca. 4 × 2 mm, 9- or 10-locular; style ca. 1.3 cm, glandular-hairy to tip. Capsule 18–2 × ca. 10 mm. Fl. May, fr. Oct.

● Thickets on slopes; 2200–2500 m. NC Yunnan.

The present authors have seen no material of *Rhododendron maxiongense* C. Q. Zhang & D. Paterson (Novon 13: 156. 2003), described from NE Yunnan. It is very close to *R. aberconwayi,* but the trivial nature of the cited distinguishing features (plants lower, 0.6–0.9 m; corolla without dark flecks; stamens pilose below) suggests that the two species are conspecific.

305. Rhododendron annae Franchet, J. Bot. (Morot) 12: 258. 1898.

桃叶杜鹃 tao ye du juan

Shrubs, evergreen, 1.5–2 m tall; older branches glabrous; young shoots stout, puberulent, sparsely glandular. Petiole cylindric, 10–20 mm, glabrous; leaf blade leathery, lanceolate or elliptic-lanceolate, 7–10 × 2–3.7 cm; base cuneate; margin slightly undulate; apex acuminate or obtuse; both surfaces glabrous; midrib slightly raised abaxially, deeply grooved adaxialy; lateral veins 12–16-paired, obscure. Inflorescence raceose-umbellate, 6–12-flowered, rachis usually glabrous. Pedicel 1–3 cm, densely stipitate; calyx lobes 5, 1–2 mm, suborbicular, gland-fringed; corolla open-campanulate or cup-shaped, creamy-white or pale rose, pure white or pink, with or without purple flecks, 2–3 cm, lacking nectar pouches; lobes 5, orbicular, 1.5–1.7 cm, emarginate; stamens 10, unequal, 1–2 cm, filaments glabrous; ovary conoid, 4–5 mm, densely glandular; style ca. 2 cm, glandular-hairy to tip. Capsule cylindric, 15–25 × 8–12 mm, glandular. Fl. Jun–Jul, fr. Aug–Oct.

● Evergreen broad-leaved forests, forest margins, thickets; 1200–3000 m. C and W Guizhou, W Yunnan.

1a. Corolla 2–3 cm, white to purplish, usually with deep purple flecks; leaf apex acuminate ..... 305a. subsp. *annae*
1b. Corolla 3–4.5 cm, white to pink, without colored flecks; leaf apex obtuse ..... 305b. subsp. *laxiflorum*

305a. Rhododendron annae subsp. **annae**

桃叶杜鹃(原亚种) tao ye du juan (yuan ya zhong)

Shoots stout. Leaf blade 7–10 × 2–3 cm; apex acuminate. Inflorescence 6–10-flowered. Pedicel 1–2 cm; corolla white to purple, with deep purple flecks, 2–3 cm. Fl. Jun–Jul, fr. Aug–Oct.

● Evergreen broad-leaved forests, thickets; 1200–1800 m. C and W Guizhou.

One of us (Chamberlain) has seen specimens originating from Guiyang, the type locality of subsp. *annae,* with flowers up to 4.5 cm and lacking flecks; both characters suggesting subsp. *laxiflorum*. There is also considerable overlap in the leaf dimensions. It is possible that subsp. *laxiflorum* is synonymous with subsp. *annae*.

305b. Rhododendron annae subsp. **laxiflorum** (I. B. Balfour & Forrest) T. L. Ming, Acta Bot. Yunnan. 6: 149. 1984.

滇西桃叶杜鹃 dian xi tao ye du juan

Rhododendron laxiflorum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 50. 1920; *R. hardingii* Forrest ex Tagg.

Leaf blade 8–12.5 × 2–3.7 cm; apex obtuse. Inflorescence usually lax, 8–12-flowered. Pedicel 2–3 cm; corolla pure white or pink, without color spots, 3–4.5 cm, densely glandular.

● Forest margins; 2000–3000 m. W Yunnan.

306. Rhododendron guizhouense M. Y. Fang, Proc. Fourth Int. Rhododendron Conf. 58. 1989.

贵州杜鹃 gui zhou du juan

Shrubs or small trees, 4–7 m tall; branchlets slender, glabrous. Petiole cylindric, 10–15 mm, glabrous; leaf blade leathery, elliptic-lanceolate or ovate-lanceolate, 5–10 × 1.5–3.6 cm; base broadly cuneate or rounded; margin revolute; apex acuminate, oblique; both surfaces glabrous; midrib raised abaxially, grooved adaxially; lateral veins 10–12-paired, obscure. Inflorescence racemose-umbellate, 4–6-flowered; rachis ca. 5 mm, puberulent or glabrous. Pedicel 1–2 cm, sparsely glandular-hairy; calyx lobes 5, ca. 1 mm, glabrous; corolla openly campanulate or cup-shaped, creamy, with crimson basal blotch, 2.5–3 cm, lobes 5, suborbicular, ca. 1.5 × 1.7 cm, emarginate; stamens 10, unequal, 1–2 cm, filaments pubescent at base;

ovary cylindric-conoid, 3–4 mm, densely hirsute-glandular; style ca. 2.5 cm, glabrous, stigma swollen. Capsule not known. Fl. Apr–May.

● Mixed forests; 1700–2400 m. N Guangxi, E Guizhou, W Hunan.

307. Rhododendron pingbianense M. Y. Fang, Acta Phytotax. Sin. 22: 421. 1984.

屏边杜鹃 ping bian du juan

Shrubs or small trees, ca. 6 m tall; older branches gray; branchlets slender, brown, pubescent. Petiole cylindric, 10–15 mm, hirsute; leaf blade subleathery, ovate-elliptic or obovate-lanceolate, 7.5–10 × 2.3–3.5 cm; base cuneate; margin revolute; apex acuminate; abaxial surface sparsely glandular-hairy, midrib with brown dendroid hairs; adaxial surface green, glabrous, midrib conspicuous abaxially, grooved adaxially; lateral veins 12–17-paired, obscure on both surfaces. Inflorescence racemose-umbellate, 3–5-flowered; rachis 6–10 mm, yellowish pubescent. Pedicel ca. 1.2 cm, hirsute; calyx lobes 5, ca. 1.5 mm, ovate-triangular, glabrous; corolla funnelform, pinkish, 3.5–4 cm, lobes 5, ovate, 1.8–2 × 1.5–1.8 cm; stamens 10, unequal, 1.2–1.8 cm, filaments glabrous; ovary ca. 5 mm, with dendroid hairs; style ca. 3 cm, lower part glandular with some hairs, stigma slightly swollen. Capsule not known. Fl. Apr.

● Forests; ca. 1900 m. SE Yunnan.

308. Rhododendron laojunshanense M. Y. Fang, J. Sichuan Univ., Nat. Sci. Ed. 1984(2): 111. 1984.

老君山杜鹃 lao jun shan du juan

Rhododendron laojunense T. L. Ming.

Small trees or shrubs, 2–3 m tall; older branches roughish, glabrous; branchlets stout; young shoots grayish, densely tomentose. Petiole cylindric, 10–15 mm, thinly woolly; leaf blade leathery, elliptic or elliptic-lanceolate, 6–8 × 2–2.8 cm; base rounded; margin usually revolute or undulate; apex cuspidate or obtuse; abaxial surface pale green, verruculose, base thinly woolly; adaxial surface green, glabrous; midrib raised abaxially, grooved adaxially; lateral veins 11–13-paired. Inflorescence racemose-umbellate, 2–4-flowered; rachis 8–10 mm, densely brown-floccose. Pedicel 1–2 cm, with similar hairs; calyx lobes 5, ca. 2 mm, ovate-triangular, pubescent outside, glabrous within; corolla funnelform, pale yellow, 2–2.5 cm, lobes 5, suborbicular, ca. 1 × 1.2 cm, emarginate; stamens 10, unequal, 1–1.5 cm, filaments glabrous; ovary cylindric, ca. 5 mm, densely hirsute; style ca. 1.5 cm, glabrous, stigma slightly swollen. Capsule oblong-cylindric, base oblique, 15–20 × 6–7 mm, hirsute. Fl. May–Jun, fr. Jul–Aug.

● Stony forests, bamboo forests, thickets, mountain summits; 2400–2600 m. SE Yunnan (Maguan, Malipo).

309. Rhododendron brevinerve Chun & W. P. Fang, Acta Phytotax. Sin. 6: 167. 1957.

短脉杜鹃 duan mai du juan

Small trees, 4–5 m tall; branchlets slender, usually 2–3 mm in diam.; young shoots glandular-setose. Petiole 10–25 mm, glabrous; leaf blade leathery or thinly leathery, 10–15 × 2–4.5 cm; base broadly cuneate or rounded; apex acuminate; both surfaces glabrous; midrib prominent abaxially, grooved adaxially; lateral veins 9–15-paired. Inflorescence a racemose umbel, 2–4-flowered; rachis ca. 5 mm, brownish pubescent. Pedicel stout, densely setose and glandular-hairy; calyx lobes 5, 2–3.5 mm, unequal, rounded, glandular-hairy outside, glabrous inside, margin gland-fringed; corolla broadly campanulate, purplish or pink, lacking flecks, 2.5–4 cm, lobes 5, ovate; apex obtuse or rounded, with one purple veinlet; stamens 10, unequal, 2–3.5 cm, filaments glabrous; ovary conoid, ca. 7 mm, 10-locular, densely glandular-hairy; style 2.5–3 cm, proximally glandular-hairy; stigma swollen. Capsule cylindric, 15–20 × 6–8 mm, glandular-setose; style persistent. Fl. Mar–May, fr. Jul–Sep.

● Thickets, valleys; 800–1400 m. N Guangdong, N Guangxi, SE Guizhou, SW Hunan.

310. Rhododendron sikangense W. P. Fang, Acta Phytotax. Sin. 2: 81. 1952.

川西杜鹃 chuan xi du juan

Shrubs or small trees, 3–5 m tall; young shoots densely rufous- to white-tomentose, later glabrescent. Petiole cylindric, 10–15 mm, stellate-tomentose, glabrous when mature; leaf blade leathery, oblong-elliptic or elliptic-lanceolate, 7–12 × 2.5–5.5 cm; base broadly cuneate to rounded or truncate to slightly cordate; apex acute, apiculate; abaxial surface pale green, glabrous except for midrib rufous stellate-tomentose or floccose near base; adaxial surface green, papillose, glabrous; midrib conspicuously prominent abaxially; lateral veins 12–15-paired, obscure. Inflorescence 8–12-flowered; rachis 10–20 mm, white-tomentose. Pedicel 1–2 cm, with same hairs; calyx lobes 5, ca. 2 mm, triangular, apex acute, pubescent outside; corolla campanulate, white, or purple to pink, with deep purple flecks, 3–3.5 cm, nectar pouches lacking, lobes 5, suborbicular, ca. 1.5 × 2 cm, emarginate; stamens 10, unequal, 1.5–3 cm, filaments pubescent at base; ovary oblong-ovate, ca. 5 mm, brown stellate-tomentose; style stout, glabrous, stigma slightly swollen, small. Capsule cylindric, 15–20 × 4–5 mm, clad with dense hairs. Fl. May–Jul, fr. Sep–Nov.

● Mixed forests, thickets, alpine slopes; 2800–4500 m. W Sichuan, NE Yunnan.

This species is distinctive within *Rhododendron* subsect. *Irrorata* on account of the stellate hairs at the base of the leaf blade abaxially and on the pedicels and ovary. The stellate indumentum on the petioles suggests that *R. sikangense* belongs to *R.* subsect. *Maculifera*.

1a. Leaf blade leathery, 8–12 × 2.5–3.5 cm; corolla purple or pink ..... 310a. var. *sikangense*
1b. Leaf blade thinly leathery, 7–9 × 3–5.5 cm; corolla white ..... 310b. var. *exquisitum*

310a. Rhododendron sikangense var. **sikangense**

川西杜鹃(原变种) chuan xi du juan (yuan bian zhong)

Rhododendron cookeanum Davidian.

Leaf blade leathery, oblong-elliptic or elliptic-lanceolate, 8–12 × 2.5–3.5 cm; base broadly cuneate or rounded; abaxial surface midrib rufous tomentose near base, hairs stellate. Corolla usually purple or pink. Fl. Jun–Jul, fr. Sep.

● Thickets, alpine slopes; 2800–3100 m. (?S and) W Sichuan.

In *Rhododendron cookeanum* the corolla is white, which suggests that that taxon is instead synonymous with var. *exquisitum*. Their distributions are also a better match: *R. cookeanum* was described from S Sichuan, close to the border with NE Yunnan.

310b. Rhododendron sikangense var. **exquisitum** T. L. Ming, Acta Bot. Yunnan. 6: 165. 1984.

优美杜鹃 you mei du juan

Rhododendron exquisitum T. L. Ming, Acta Bot. Yunnan. 3: 121. 1981, not Hutchinson (1932).

Leaf blade thinly leathery, broadly elliptic, 7–9 × 3–5.5 cm; base truncate or slightly cordate; abaxial surface persistently rufous floccose at base. Corolla white. Fl. May–Jul, fr. Oct–Nov.

● Mixed forests; 3300–4500 m. NE Yunnan.

311. Rhododendron mengtszense I. B. Balfour & W. W. Smith, Trans. Bot. Soc. Edinburgh 27: 206. 1917.

蒙自杜鹃 meng zi du juan

Shrubs or small trees, 3–4 m tall; young branches stout, ca. 4 mm in diam., densely glandular-setose. Petiole cylindric, 10–20 mm, glandular-setose; leaf blade leathery, narrowly lanceolate, 8–17 × 2–3 cm; base cuneate to obtuse; margin revolute; undulate and roughened; apex acuminate to cuspidate; abaxial surface paler, glabrous, midrib with minute setae and glands; adaxial surface matt, glabrous, midrib sometimes grooved towards base adaxially; lateral veins ca. 16-paired. Inflorescence racemose-umbellate, 5–10-flowered; rachis 5–10 mm, puberulent and glandular. Pedicel 2–3 cm, densely glandular-setose; calyx cupular; lobes 5, ca. 2 mm, glandular-setose; corolla campanulate or tubular, reddish purple, 3.5–4 cm, with 5 deep crimson nectar pouches at base; lobes 5, rounded, ca. 1.5 × 2 cm, emarginate; stamens 10, unequal, 2–3.5 cm, filaments glabrous; ovary cylindric, 7–8 mm, densely setose and glandular-setose; style glandular-setose throughout, stigma small. Capsule oblong, 10–12 × ca. 8 mm, setose. Fl. Mar–Apr, fr. Aug–Nov.

● Broad-leaved forests, mixed forests; 1000–2700 m. SE Yunnan.

312. Rhododendron dimitrum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 50. 1919.

苍山杜鹃 cang shan du juan

Shrubs, 2–4 m tall; branches stout; young shoots glabrescent. Petiole cylindric, ca. 10 mm, glabrescent; leaf blade leathery, oblong-elliptic to lanceolate, 4–7 × 1.5–2.5 cm; base cuneate or obtuse, narrowly decurrent; margin revolute; apex cuspidate; both surfaces glabrous; abaxial surface glaucescent; adaxial surface green; midrib prominent abaxially, lateral veins 15–17-paired, obscure. Inflorescence racemose-umbellate, 10–12-flowered; rachis 7–10 mm, pubescent. Pedicel 0.5–1 cm, densely dendroid-pubescent, eglandular; calyx pink, cupular; lobes 5, 3–5(–10) mm, oblique, oblong, triangular or ovate, fringed at margin; corolla tubular-campanulate, fleshy, deep rose, with crimson flecks, 3–4 cm, with 5 deep purple nectar pouches, outer surface glabrous, lobes 5, rounded emarginate; stamens 10, unequal, 1–2 cm, filaments pubescent at base; ovary cylindric-conoid, ca. 5 mm, densely tomentose; style 1.5–2 cm, lower 1/2 tomentose, stigma small. Capsule not known. Fl. Apr–May.

● Mixed forests, open thickets; 3000–3300 m. W Yunnan.

This species is distinctive within *Rhododendron* subsect. *Irrorata* on account of the large calyx and the densely tomentose ovary and proximal half of the style. It may have originated as a hybrid between *R. irroratum* and *R. neriiflorum*.

11. Rhododendron subsect. Pontica (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 546. 1949.

长序杜鹃亚组 chang xu du juan ya zu

Hu Linzhen (胡琳贞 Hu Ling-cheng); David F. Chamberlain

Rhododendron ser. *Pontica* Tagg in J. B. Stevenson, Sp. Rhodod. 567. 1930 [*"Ponticum"*].

Shrubs, sometimes dwarf, rarely small trees; young shoots often glabrous. Leaf blade both surfaces glabrous at maturity, sometimes with persistent hair-bases or tomentose abaxially. Inflorescence terminal, lax or dense, 5–10-flowered; rachis 3–6 cm; pedicels elongating in fruit to 6 cm; calyx 5-lobed; corolla campanulate or funnelform-campanulate, lobes as long as corolla-tube, 5(–7)-lobed, white or yellow, with darker flecks; stamens 10; filaments pubescent at base; ovary tomentose, glandular or glabrous; style glabrous or glandular in lower half.

About 12 species: Asia, Europe, North America; two species (one endemic) in China.

1a. Bud-scales deciduous; abaxial leaf surface with punctate hair-bases; corolla white; ovary glandular ..... 313. *R. hyperythrum*
1b. Bud-scales persistent; abaxial leaf surface without punctate hair-bases; corolla yellow; ovary tomentose ..... 314. *R. aureum*

313. Rhododendron hyperythrum Hayata, Icon. Pl. Formos. 3: 133. 1913.

微笑杜鹃 wei xiao du juan

Rhododendron rubropunctatum Hayata (1913), not H. Léveillé & Vaniot (1911), nor T. L. Ming (1984).

Shrubs or small trees; young shoots glabrous. Petiole 15–25 mm, glabrous; leaf blade leathery, elliptic-lanceolate to oblong-lanceolate, 7–12 × 2–3.5 cm; base cuneate; margin slightly revolute; apex acute to shortly acuminate; abaxial surface finely red-brown-punctate. Inflorescence racemose-umbellate, ca. 10-flowered; rachis 15–25 mm. Pedicel 3–4.5 cm, sparsely glandular and floccose; calyx lobes 5, ca. 2 mm; margin glandular-ciliate; corolla funnelform-campanulate, white with purple flecks, 3–5 × 3–5 cm; lobes 5, deep; stamens unequal, filaments pubes-

cent at base; ovary densely glandular, ca. 6 mm; style ca. 2.5 cm, glandular in lower half. Fl. Apr.

● Open areas. NC Taiwan.

Recent DNA evidence indicates that this species is not allied to the remaining members of *Rhododendron* subsect. *Pontica*. Further research is required to ascertain its true affinities.

There is clearly confusion in the interpretation of the type of *Rhododendron hyperythrum*. The sense in which the name is applied in this account follows that proposed by E. H. Wilson and most later authors, and refers to a plant characterized by persistent, red, punctate hair bases on the abaxial surface of the leaf blade. *Rhododendron rubropunctatum* Hayata belongs to this entity. If, as proposed by Li et al. (in T. C. Huang, Fl. Taiwan, ed. 2, 4: 31. 1998), *R. hyperythrum* is the correct name for the plant described in the present account as *R. pachysanthum* (in *R.* subsect. *Maculifera*), then a new name will be required for the illegitimate later homonym *R. rubropunctatum* Hayata.

314. Rhododendron aureum Georgi, Bemerk. Reise Russ. Reich 1: 214. 1775.

牛皮杜鹃 niu pi du juan

Rhododendron chrysanthum Pallas; *R. officinale* Salisbury.

Dwarf shrubs, 0.1–1 m tall; stems horizontal with obliquely ascending branchlets; bud scales persistent. Petiole 5–10 mm, glabrous; leaf blade leathery, oblanceolate to obovate-oblong, 2.5–8 × 1–3.5 cm; base cuneate; apex obtuse or rounded, mucronate; both surfaces glabrous when mature, sometimes with vestiges of juvenile tomentum abaxially; reticulate veins distinct. Inflorescence corymbose, 5–8-flowered; rachis ca. 10 mm. Pedicel erect, ca. 3 cm, sparsely rufescent-hairy; calyx lobes 5, ca. 2 mm, floccose; corolla campanulate, yellow, with 1 upper lobe red-spotted, 2.5–3 cm; lobes 5, unequal; stamens 10, unequal, filaments pubescent at base; ovary ca. 5 mm, densely rufous-tomentose; style ca. 2.5 cm, glabrous, stigma small, 5-lobulate. Infructescence erect; peduncle 4.5–6 cm. Capsule oblong-cylindric, 5-valved, 10–14 × 5–6 mm. Fl. May–Jun, fr. Jul–Aug.

Grasslands, among bryophytes, alpine regions; 1000–2500 m. SE Jilin, Liaoning [Japan, Korea, Mongolia, Russia].

12. Rhododendron subsect. Argyrophylla (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 548. 1949.

银叶杜鹃亚组 yin ye du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron subser. *Argyrophylla* Tagg in J. B. Stevenson, Sp. Rhodod. 20. 1930 [*"Argyrophyllum"*].

Shrubs, rarely small trees; young shoots pubescent or tomentose, often glabrescent, occasionally glandular or glabrous. Leaf blade lanceolate or elliptic-lanceolate; apex acuminate; abaxial surface with a thinly compacted silvery white or grayish 1-layered indumentum, or indumentum 2-layered, the upper layer loosely woolly-tomentose with branched hairs, fawn to yellow, the lower layer brownish or grayish and thinly tomentose. Inflorescence lax, 4–20-flowered; pedicels long and slender, rarely stout and short; calyx usually minute; corolla funnel-campanulate, base narrow, 5-lobed, white or pale pink to purple, nectar pouches usually absent (present in *R. brevipetiolatum* and *R. ririei*); stamens usually 10–14 (18–20 in *R. haofui*); ovary cylindric or conical, tomentose, glandular or glabrous; style glandular to tip or glabrous. Capsule cylindric.

● Twenty-one species: China.

1a. Leaf blade adaxially bullate, abaxially with woolly indumentum, midrib and lateral veins prominent; pedicels stout, 1–1.5 cm.
  2a. Leaf blade 7–8 cm, with dense gray-white woolly indumentum abaxially; corolla white ..... 321. *R. farinosum*
  2b. Leaf blade 10–15 cm, with loose woolly indumentum abaxially; corolla deep magenta or rose.
    3a. Leaf blade base broadly cuneate or unequally rounded, abaxial surface with yellowish indumentum; corolla rose ..... 320. *R. denudatum*
    3b. Leaf blade base cuneate, abaxial surface with gray-white indumentum; corolla magenta-rose ..... 319. *R. floribundum*
1b. Leaf blade adaxially flat, abaxially with thin indumentum, never woolly (but see *R. ebianense*); pedicels slender, (1.5–)2–4 cm (0.5–1 cm in *R. ririei*).
  4a. Leaf blade abaxially with silvery white or gray-white indumentum.
    5a. Inflorescence 12–22-flowered.
      6a. Corolla pinkish or rose, 3–3.5 cm ..... 330. *R. pingianum*
      6b. Corolla creamy-white or whitish with brownish crimson spots, 2.5–3 cm ..... 333. *R. coryanum*
    5b. Inflorescence 3–10-flowered.
      7a. Pedicel glabrous or eglandular.
        8a. Corolla purple-red, 4–6 cm ..... 322. *R. ririei*
        8b. Corolla white or pink, 2.5–3.5 cm.
          9a. Pedicel pubescent; stamens 12–15(–16) ..... 331. *R. argyrophyllum*
          9b. Pedicel glabrous; stamens 10 ..... 332. *R. hypoglaucum*
      7b. Pedicel glandular.
        10a. Style glabrous.
          11a. Inflorescence rachis 10–15 mm; pedicel 1–2.5 cm; corolla 4–4.5 cm ..... 315. *R. adenopodum*

11b. Inflorescence rachis to 10 mm; pedicel 2.5–3 cm; corolla ca. 3.5 cm ..... 325. *R. shimenense*
10b. Styles with hairs and or glands towards base.
12a. Abaxial leaf indumentum silvery white; inflorescence rachis 5–10 mm; pedicel 1–2 cm ..... 335. *R. hunnewellianum*
12b. Abaxial leaf indumentum initially white, sometimes becoming tawny or grayish with age, upper layer loosely woolly; inflorescence rachis ca. 20 mm; pedicel 2–3.5 cm ..... 316. *R. ebianense*
4b. Leaf blade lamina abaxially with fawn or brownish indumentum.
13a. Leaf blade narrowly oblanceolate, 1.5–2(–2.5) cm wide; rachis 0.2–0.4 cm (NE Guizhou: Fanjing Shan) ..... 327. *R. oblancifolium*
13b. Leaf blade elliptic or obovate-elliptic, 2–4 cm wide; rachis 1–4 cm.
14a. Corolla deep crimson, base broad, with nectar pouches; petiole stout, ca. 1 cm ..... 323. *R. brevipetiolatum*
14b. Corolla white or pink, base narrow, without nectar pouches; petiole 1.5–2.5 cm.
15a. Corolla pink; leaf blade long-elliptic or narrow-oblanceolate; apex acuminate; pedicels slender, ca. 1 mm wide.
16a. Leaf blade narrowly oblanceolate, 12–16 × 1.5–2.5 cm; bud scales persistent on the young shoots; pedicels, ovary, and style glandular ..... 334. *R. thayerianum*
16b. Leaf blade long-elliptic or elliptic-obovate, 8–10(–13) × 2.5–4 cm, bud scales not persistent on the young shoots; style eglandular.
17a. Leaf indumentum abaxially with a coppery luster; stamens 10–14, filaments pubescent at the base; ovary woolly ..... 318. *R. insigne*
17b. Leaf indumentum abaxially brownish, thin not lustrous; stamens 12, filaments glabrous; ovary tomentose ..... 329. *R. longipes*
15b. Corolla white; leaf blade elliptic-obovate or long-elliptic; apex obtuse; pedicels stout, 2–3 mm wide.
18a. Leaf blade obovate or elliptic-ovate, 7–10 cm; rachis and pedicels glabrous ..... 324. *R. simiarum*
18b. Leaf blade narrowly elliptic, 12–16 cm; rachis densely hairy.
19a. Petiole glabrous; stamens 18–20 ..... 317. *R. haofui*
19b. Petiole floccose or tomentose; stamens 10–12.
20a. Adaxial leaf surface not waxy; inflorescence 5–10-flowered; pedicel 2–3 cm ..... 326. *R. formosanum*
20b. Adaxial leaf surface with thin layer of white wax; inflorescence 10–20-flowered; pedicel 1–1.5 cm ..... 328. *R. fangchengense*

315. Rhododendron adenopodum Franchet, J. Bot. (Morot) 9: 391. 1895.

弯尖杜鹃 wan jian du juan

Rhododendron simiarum Hance subsp. *youngiae* (W. P. Fang) D. F. Chamberlain; *R. youngiae* W. P. Fang.

Shrubs, evergreen, 2–3 m tall; bark gray; young shoots with a dense grayish tomentum and a few glandular hairs. Petiole 10–15 mm; leaf blade leathery, obovate-elliptic or long-obovate, 6–13 × 2–4 cm; base cuneate; apex acuminate, shortly curved-cuspidate; abaxial surface indumentum grayish to pale fawn; adaxial surface glabrous when mature; midrib prominent abaxially, grooved adaxially; lateral veins 10–12-paired, inconspicuous. Inflorescence a lax racemose corymb, 4–8-flowered; rachis 10–15 mm, with a fawn-tomentum. Pedicel 1–2.5 cm, with glandular hairs; calyx lobes 5, 3–5 mm, membranous glandular on the back, triangular-ovate, margin glandular-ciliate; corolla funnel-campanulate, pale rose, usually crimson-spotted, 4–4.5 cm, puberulent within at the base, outside glabrous, lobes 5, orbicular, ca. 1.5 × 2 cm; stamens 10, unequal, 1.5–3 cm, filaments densely hairy in lower 1/4; ovary ovoid, ca. 5 mm, ca. 5–6-locular, densely clad with long-glandular hairs; style slender, glabrous. Capsule oblong-cylindric, ca. 15 × 7 mm, glandular. Fl. Apr–May, fr. Jul–Aug.

● Thickets, mountain slopes, roadsides; 1000–2200 m. Chongqing, W Hubei.

316. Rhododendron ebianense M. Y. Fang, Rhododendron Notes Rec. 2: 23. 1988.

峨边杜鹃 e bian du juan

Shrubs or small trees, 0.5–3 m tall; shoots stout, ca. 5 mm in diam., with gray indumentum and dark glands when young, glabrescent. Petiole 10–15 mm; leaf blade leathery, oblong-elliptic or oblanceolate, 8–12 × 2–3 cm; base cuneate; apex acuminate; abaxial surface indumentum silvery-white; adaxial surface dark green, glabrous; lateral veins obscure. Inflorescence racemose-umbellate, 7–9-flowered; rachis ca. 20 mm, densely tomentose and glandular-hairy. Pedicel 2–3.5 cm, hairy and glandular-hairy; calyx greenish or slightly tinged with pink, membranous, lobes 5, 3–4 mm, rounded; corolla funnelform, pink, with yellow spots inside, 3.3–4.5 cm, lobes 5, suborbicular, ca. 1.2 × 1 cm; stamens 10, unequal, 2.2–4 cm, filaments with scurfy hairs on lower part; ovary cylindric, 6–7 mm, glandular-hairy and tomentose; style ca. 4 cm, with some glandular-hairs, tomentose in lower part, stigma slightly dilated. Capsule not known. Fl. Apr.

● Thickets in valleys, roadsides; ca. 1600 m. SC Sichuan (Ebian).

317. Rhododendron haofui Chun & W. P. Fang, Acta Phytotax. Sin. 6: 169. 1957.

光枝杜鹃 guang zhi du juan

Shrubs, 4–6 m tall; bark gray or brownish, exfoliating into thin and small irregular flakes; branchlets cylindric; young shoots greenish then grayish, glabrous. Petiole 15–22 mm, glabrous; leaf blade leathery, lanceolate or obovate-lanceolate, 7–10 × 3–4 cm; base rounded or cuneate; apex acute or obtuse, apiculate; abaxial surface indumentum brownish, 2-layered; adaxial surface shiny, glabrous; lateral veins 14–18-paired, impressed adaxially. Inflorescence a lax racemose umbel, usually 5–9-flowered; rachis 5–10 mm, yellowish pilose. Pedicel 2–3.5 cm; calyx lobes 5, ca. 1 mm, villous; corolla broadly campanulate, white, sometimes flushed with rose, 4–4.5 cm, lobes 5, orbicular, ca. 1.5 × 2 cm; stamens 18–20, unequal, 1.5–3 cm, filaments villous below; ovary cylindric, ca. 6 mm, densely whitish woolly-tomentose; style 2.5–3 cm, glabrous, stigma swollen. Capsule cylindric, 15–25 × ca. 8 mm, brownish woolly-tomentose. Fl. May, fr. Oct.

● Thickets in valleys; 800–1900 m. N Guangxi, Guizhou, S Hunan, SW Jiangxi, E Yunnan.

318. Rhododendron insigne Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1910: 113. 1910.

不凡杜鹃 bu fan du juan

Shrubs, 1.5–6 m tall; branchlets thick, straight, 7–8 mm in diam.; young shoots thinly tomentose, glabrescent. Petiole 15–25 mm; leaf blade leathery, obovate-elliptic, obovate-lanceolate, oblong or oblong-lanceolate, 8–13 × 2.5–4.5 cm; base cuneate; apex acuminate or cuspidate; abaxial surface indumentum white or silvery-white, sometimes fawn, sometimes later developing a coppery sheen; adaxial surface glabrous, midrib prominent abaxially, deeply grooved adaxially; lateral veins usually 18–21-paired. Inflorescence lax, 8–15-flowered; rachis 10–15 mm, glabrous. Pedicel stout, 2–5 cm, sparsely tomentose; calyx lobes 5, ca. 1.5 mm, triangular, abaxially floccose; corolla broadly campanulate, pale or deeper pink, with crimson median lines on petals and spotted at base inside, 3–3.5 cm; outer surface glandular-hairy, lobes 5, rounded, emarginate; stamens 13–15, unequal, 1.5–2 cm, filaments densely floccose at base or glabrous; ovary cylindric, ca. 7 mm, 8–10-locular, white woolly-pilose; style stout, glabrous. Capsule cylindric, stout, ca. 25 × 10 mm, densely brownish woolly-pilose. Fl. May, fr. Oct.

● Woodlands, thickets, stream banks; 700–2000 m. S Sichuan.

1a. Leaf blade usually obovate-elliptic; abaxial surface indumentum with coppery sheen when dry; pedicel 3–5 cm; stamen filaments densely floccose at base ..... 318a. var. *insigne*

1b. Leaf blade usually oblong-lanceolate; abaxial surface indumentum white not developing a coppery sheen; pedicel 2–2.5 cm; stamen filaments glabrous ..... 318b. var. *hejiangense*

318a. Rhododendron insigne var. **insigne**

不凡杜鹃(原变种) bu fan du juan (yuan bian zhong)

Leaf blade obovate-elliptic or oblong-lanceolate; abaxial surface indumentum white or silvery-white, developing a coppery sheen when dry. Inflorescence 8–10-flowered. Pedicel 3–5 cm; corolla broadly campanulate, pale or deeper pink, with crimson median lines on petals and spotted at base inside; stamen filaments densely floccose at base. Fl. May, fr. Oct.

● Woodlands, thickets, stream banks; 1200–2000 m. SW Sichuan.

318b. Rhododendron insigne var. **hejiangense** (W. P. Fang) M. Y. Fang, Bull. Bot. Res., Harbin 12: 219. 1992.

合江银叶杜鹃 he jiang yin ye du juan

Rhododendron argyrophyllum Franchet subsp. *hejiangense* W. P. Fang, Acta Phytotax. Sin. 21: 457. 1983.

Branchlets purple, glabrous. Leaf blade oblong or oblong-lanceolate; abaxial surface indumentum thin, silvery-white, never developing a coppery sheen. Inflorescence ca. 15-flowered. Pedicel 2–2.5 cm; corolla pink, with purple spots at base; outer surface glandular-hairy; stamen filaments glabrous. Fl. May.

● Thickets; 700–1700 m. S Sichuan.

319. Rhododendron floribundum Franchet, Bull. Soc. Bot. France 33: 232. 1886.

繁花杜鹃 fan hua du juan

Shrubs or small trees, 2–10 m tall; branchlets stout, ca. 5 mm in diam., pubescent when young, glabrescent. Petiole cylindric, 10–15 mm; leaf blade leathery, elliptic-lanceolate or oblanceolate, 8–13 × 1.8–3.8 cm; base cuneate or rounded; apex acute; abaxial surface with indumentum 2-layered, upper layer loosely woolly, yellowish at first, becoming white or grayish, persistent, hairs stellate; lower layer appressed and pale gray-white; adaxial surface green, bullate, glabrous; midrib prominent abaxially, depressed adaxially; lateral veins 17–20-paired, prominent abaxially, depressed adaxially. Inflorescence 8–12-flowered; rachis 5–7 mm. Pedicel 1.5–2 cm, yellowish or whitish tomentose; calyx lobes 5, ca. 1.5 mm, narrowly triangular, acute, floccose; corolla broadly campanulate, at first magenta-rose, becoming paler pink, with crimson flecks and blotch at base within, 3.5–4 cm, lobes 5, orbicular, 1–1.5 × 1.5–2 cm, emarginate; stamens 10, unequal, 2–3.5 cm, filaments glabrous; ovary oblong, ca. 5 mm, silky-hairy; style 3.5–4 cm, longer than corolla, glabrous, stigma dilated. Capsule cylindric, 20–30 mm, yellowish, with gray pubescence. Fl. Apr–May, fr. Jul–Aug.

● Woodlands; 1400–2700 m. NW Guizhou, SW Sichuan, NE Yunnan.

320. Rhododendron denudatum H. Léveillé, Repert. Spec. Nov. Regni Veg. 13: 339. 1914.

皱叶杜鹃 zhou ye du juan

Rhododendron xanthoneuron H. Léveillé.

Shrubs or small trees, 3–6 m tall; branchlets stout, ca. 5 mm in diam., whitish or yellowish stellate tomentose when young, glabrescent. Petiole cylindric, 10–20 mm; leaf blade leathery, elliptic-lanceolate to ovate-lanceolate, 10–16 × 2.5–5 cm; base cuneate; apex apiculate or acuminate; abaxial surface

loosely yellowish tomentose; adaxial surface rugose, glabrous, midrib prominent abaxially, impressed adaxially; lateral veins 16–18-paired, prominent abaxially, impressed adaxially. Inflorescence 8–12-flowered; rachis ca. 5 mm, tomentose. Pedicel stout, 1–2 cm, densely yellowish tomentose; calyx lobes 5, ca. 1 mm, triangular; corolla campanulate, rose, with deep crimson flecks within, 3.5–4 cm, lobes 5, suborbicular, 1.5–2 cm; stamens 10–13, 2–3 cm, filaments glabrescent; ovary cylindric, 5–7 mm, yellowish tomentose; style 3–3.5 cm, glabrous. Capsule 15–20 × 6–8 mm, yellowish brown tomentose. Fl. Apr–May, fr. Aug–Sep.

● Thickets, mountain slopes; 2000–3300 m. NW Guizhou, SW Sichuan, E Yunnan.

321. Rhododendron farinosum H. Léveillé, Repert. Spec. Nov. Regni Veg. 13: 340. 1914.

钝头杜鹃 dun tou du juan

Shrubs, 1–2 m tall; shoots stout, 4–5 mm in diam. below inflorescence, thinly gray tomentose, later glabrescent. Petiole stout, ca. 10 mm; leaf blade leathery, obovate to oblong-elliptic, 5–8 × 2–3 cm; base cuneate; apex obtuse or blunt; abaxial surface with indumentum 2-layered, upper layer fawn woolly-tomentose; lower layer white and compacted; adaxial surface green, bullate, glabrous; midrib prominent abaxially, deeply impressed adaxially; lateral veins 12–14-paired. Inflorescence short, ca. 5- or 6-flowered; rachis ca. 5 mm, tomentose. Pedicel 1–1.5 cm, clad with whitish to tawny tomentum; calyx lobes 5, minute, triangular, rufous-tomentose; corolla campanulate, white, 3–3.5 cm, glabrous outside, puberulent on inside at base; lobes 5, orbicular, 1.5–2 cm, emarginate; stamens 1.5–2 cm, filaments pubescent at base; ovary ovoid or oblong-cylindric, 5–7 mm, densely fawn tomentose; style glabrous. Capsule not known.

● Thickets; ca. 3200 m. NE Yunnan (Qiaojia).

322. Rhododendron ririei Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1910: 111. 1910.

大钟杜鹃 da zhong du juan

Shrubs or small trees, 3–8 m tall; bark pale gray, exfoliating into thin and small irregular flakes; young shoots stout, pale green, glabrous. Petiole stout, 10–20 mm, glabrous; leaf blade oblong-elliptic to obovate-elliptic, 7.5–13 × 2.5–4 cm; base broadly cuneate or rounded; apex cuspidate and mucronate; abaxial surface indumentum silvery white, thin; adaxial surface dark green, glabrous, midrib prominent abaxially, impressed adaxially; lateral veins 13–14-paired, prominent abaxially. Inflorescence racemose-umbellate, 5–10-flowered; rachis 5–8 mm, whitish pilose. Pedicel 1–1.5 cm, with a white tomentum; calyx lobes 5, small, unequally triangular, sparsely pubescent; corolla campanulate, broad at base, purple-red, 4–6 cm, with 5 black-purple nectar pouches at the base of tube, lobes 5, orbicular, emarginate; stamens 10, subincluded in the corolla, 2.5–5.5 cm, filaments glabrous; ovary cylindric or conoid, 5–8 mm, 10-locular, densely gray felted-tomentose; style 3–3.5 cm, glabrous. Capsule oblong-cylindric, 2–3 × 9–12 mm, grayish tomentose when young, glabrescent. Fl. Mar–May, fr. Jul–Aug.

● Forests; 1700–1800 m. SW Sichuan.

Rhododendron ririei subsp. *leiboense* M. Y. Fang (Acta Phytotax. Sin. 30: 556. 1992), described from Sichuan (Leibo), is said to differ in having the leaf blade more narrowly oblanceolate to elliptic-lanceolate, less leathery, with a silvery indumentum abaxially and a cuneate base, pedicels more slender, and corolla with a narrower base. This taxon was not included in FRPS.

323. Rhododendron brevipetiolatum M. Y. Fang, Acta Phytotax. Sin. 22: 420. 1984.

短柄杜鹃 duan bing du juan

Shrubs, ca. 3 m tall; branches more than one year old grayish, glabrescent; shoots stout, ca. 5 mm in diam., branchlets of current year purplish or brownish, puberulent and glandular. Petiole stout, ca. 10 mm; leaf blade leathery, oblong or oblong-elliptic, 8–12 × 3–5 cm; base broadly cuneate or rounded; apex blunt or cuspidate; abaxial surface brownish, indumentum compact, thin, veins with thin indumentum; adaxial surface greenish, glabrous; midrib slightly raised abaxially, impressed adaxially; lateral veins 16–19-paired, slightly raised abaxially, impressed adaxially. Inflorescence usually 5–7-flowered; rachis 5–7 mm, densely gray tomentose. Pedicel stout, ca. 1 cm, whitish floccose and glandular-hairy; calyx lobes 5, 2–3 mm, ovate, puberulent outside; corolla campanulate, deep crimson, 4–4.5 cm, with 5 dark purple nectar pouches at base; lobes 5, orbicular, ca. 1.3 × 2–2.5 cm, emarginate; stamens 10, unequal, 2.5–3.5 cm; filaments slender, glabrous; ovary conical, 6–7 mm, with long-glandular hairs, also pubescent; style 3–3.5 cm, glabrous, stigma dilated. Capsule not known. Fl. Apr.

● Forests; ca. 1900 m. C Sichuan (Yingjin).

324. Rhododendron simiarum Hance, J. Bot. 19: 243. 1881.

猴头杜鹃 hou tou du juan

Shrubs, 2–5(–13) m tall; bark gray, exfoliating into thin small irregular flakes; branchlets stout, those more than one year old glabrescent, gray tomentose when young. Petiole cylindric, 15–20 mm, thinly floccose-tomentose at first, glabrescent; leaf blade leathery or thickly leathery, oblanceolate to oblong-lanceolate or long-obovate or oblanceolate, 4–13 × 2–4 cm; base cuneate; apex obtuse or rounded; abaxial surface indumentum thin, grayish to fawn; adaxial surface green, glabrous; midrib impressed adaxially; lateral veins 10–12-paired, prominent or inconspicuous abaxially, ± obscure adaxially. Inflorescence terminal, racemose-umbellate, 5–9-flowered; rachis 10–25 mm, brownish pilose. Pedicel stout, 1.5–5 cm, whitish to rusty-floccose, or glabrescent; calyx discoid; lobes 5, minute, triangular; corolla funnelform-campanulate or funnelform, pink or white, with a few interior darker flecks, 2–4 cm, lobes 5, orbicular, emarginate; stamens 10–12, unequal, 1–3 cm, filaments sparsely tomentose in lower half; ovary cylindric or conical, 5–6 mm, rufous stellate-tomentose and shortly glandular-hairy; style glabrous or with a few glands at base. Capsule cylindric, 12–20 × ca. 8 mm, often rufous-pubescent. Fl. Apr–May, fr. Jul–Aug.

● Open forests, thickets; 500–1800 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, S Hunan, Jiangxi, S Zhejiang.

The present authors have seen no material of var. *grandifolium* G. Z. Li (Guihaia 15: 295. 1995), described from Guangxi and Hainan. It is said to differ from var. *simiarum* in its larger leaf blade (12–17 × 3.5–5.5 cm), 8–12-flowered inflorescence, and 3–4 cm pedicel.

1a. Corolla 3.5–4 cm, pink; leaves 4–9 × 2–3 cm ..... 324a. var. *simiarum*
1b. Corolla 2.5–2.8 cm, white; leaves 8–13 × 3–4 cm ..... 324b. var. *versicolor*

324a. Rhododendron simiarum var. **simiarum**

猴头杜鹃(原变种) hou tou du juan (yuan bian zhong)

Rhododendron fokienense Franchet; *R. fordii* Hemsley; *R. simiarum* var. *deltoideum* P. C. Tam.

Leaf blade leathery, oblanceolate to oblong-lanceolate, 4–9 × 2–3 cm; lateral veins prominent abaxially. Pedicel 3.5–5 cm; corolla funnel-campanulate, pink, 3.5–4 cm. Fl. Apr–May, fr. Jul–Aug.

● Open forests, thickets; 500–1800 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, S Hunan, Jiangxi, S Zhejiang.

Rhododendron simiarum var. *deltoideum* P. C. Tam, described from Hainan, was reported as differing from var. *simiarum* in its deltoid, reflexed calyx lobes. This feature occurs sporadically throughout the range of var. *simiarum* and is therefore considered to be of little taxonomic significance.

324b. Rhododendron simiarum var. **versicolor** (Chun & W. P. Fang) M. Y. Fang, Bull. Bot. Res., Harbin 12: 218. 1992.

变色杜鹃 bian se du juan

Rhododendron versicolor Chun & W. P. Fang, Acta Phytotax. Sin. 6: 172. 1957.

Leaf blade thickly leathery, long-obovate or oblanceolate, 8–13 × 3–4 cm; lateral veins inconspicuous abaxially. Pedicel 1.5–2.2 cm; corolla funnelform, narrowed at base, whitish or pale pink, 2–2.8 cm. Fl. Apr.

● Thickets; 800–1800 m. NE Guangxi (Longsheng).

325. Rhododendron shimenense Q. X. Liu & C. M. Zhang, Acta Phytotax. Sin. 29: 270. 1991.

石门杜鹃 shi men du juan

Shrubs, 3–6 m tall; young branches stout, blackish green; older branches grayish. Petiole robust, 10–16 mm, glabrous; leaf blade leathery, oblong-oblanceolate, 5–9 × 2–2.8 cm; base cuneate; apex acuminate; abaxial surface white or silvery floccose; adaxial surface glabrous; midrib impressed adaxially; lateral veins 12–15-paired, inconspicuous. Inflorescence racemose-umbellate, 3–5(–8)-flowered; rachis to 10 mm. Pedicel 2.5–3 cm, glandular; calyx lobes 5, ca. 2 mm, triangular, glandular; corolla campanulate, rose-pink, with purple spots on upper lobes, ca. 3.5 cm, lobes 5; stamens 10, unequal, 2–3 cm, filaments whitish puberulent at base; ovary oblong-ovoid, 5–6 mm, densely glandular-hairy; style ca. 3.5 cm, glabrous. Capsule cylindric, 11–12 mm, densely glandular-hairy. Fl. May–Jul.

● 1500–1600 m. N Hunan (Shimen).

The original authors considered that this species was allied to *Rhododendron simiarum,* but distinguished it by the eglandular, glabrous petioles, the shorter inflorescence rachis, and the densely stipitate-glandular ovary.

326. Rhododendron formosanum Hemsley, Bull. Misc. Inform. Kew 1895: 183. 1895.

台湾杜鹃 tai wan du juan

Shrubs or small trees, 2–6 m tall; branchlets ca. 4 mm in diam. below inflorescence. Petiole 10–20 mm, with a floccose indumentum; leaf blade thickly leathery, narrowly lanceolate or oblanceolate, base cuneate; margin slightly reflexed; apex obtuse; abaxial surface indumentum brown, compact; adaxial surface glabrous, midrib impressed, prominent adaxially; lateral veins 13–17 on each side, inconspicuous on both surfaces. Inflorescence racemose-umbellate, 10–20-flowered; rachis 15–20 mm, brownish pilose. Pedicel stout, 2–3 cm, rufous-brown pubescent; calyx teeth 5, ca. 1 mm, broadly rounded or triangular, puberulent outside; corolla widely funnelform, white or pink, with purple flecks, 4–4.5 cm, glabrous; lobes 5, rounded, ca. 2 cm, emarginate; stamens 10–12, unequal, 2–3 cm, filaments pubescent at base; ovary ovoid or cylindric, ca. 14 mm, densely rufous-tomentose; style 2–3 cm, glabrous. Capsule cylindric, ca. 10 × 4 mm, brownish tomentose. Fl. Apr, fr. Jul–Aug.

● Broad-leaved forests; 800–2300 m. S Taiwan.

327. Rhododendron oblancifolium M. Y. Fang, Rhododendron Notes Rec. 2: 25. 1988.

倒矛杜鹃 dao mao du juan

Shrubs, 2.5–5 m tall; those more then one year old glabrous; branchlets slender, those of the current year brownish green and puberulent. Petiole short, 5–10 mm, usually glabrous; leaf blade thinly leathery, oblanceolate, 6–10 × 1.5–2 cm; base cuneate; apex acuminate or acute, shortly caudate; abaxial surface indumentum brownish; adaxial surface green, glabrous; midrib prominent abaxially, impressed adaxially; lateral veins inconspicuous on both surfaces. Inflorescence racemose-umbellate, 3–5-flowered; rachis 2–4 mm, brownish pilose. Pedicel 1–2 cm, tomentose and glandular-hairy; calyx teeth less than 1 mm, rounded; corolla funnel-campanulate, white to pink, with purple spots within at upper part of the tube, 3–3.5 cm, lobes 5, rounded; stamens 7–13, unequal, 1.5–3 cm, puberulent at the base; ovary ovoid, ca. 4 mm, 6- or 7-loculed, glandular-puberulent; style 2.5–3 cm, glabrous. Capsule cylindric, 8–15 × 4–5 mm, often rufous-pubescent. Fl. Apr, fr. Jul.

● Forests, open thickets, valleys; 500–1300 m. NE Guizhou (Fanjing Shan).

328. Rhododendron fangchengense P. C. Tam, Guihaia 2: 71. 1982.

防城杜鹃 fang cheng du juan

Shrubs, 4–9 m tall; older branches glabrescent, leaf traces conspicuous; branches stout, 5–6 mm in diam. below inflorescence, grayish brown tomentose when young. Petiole cylindric, 20–35 mm, pale gray or brown tomentose, glabrescent; leaf blade thickly leathery, long-lanceolate or narrowly oblanceolate, 8–15 × 1.5–3 cm; base cuneate; margin revolute; apex blunt; abaxial surface indumentum brownish; adaxial surface

yellowish, with a thin wax coating, glabrous; midrib prominent abaxially, grooved adaxially; lateral veins obscure on both surfaces. Inflorescence 5–10-flowered; rachis ca. 10 mm, yellowish tomentose. Pedicel stout, 1–1.5 cm, pubescent; calyx discoid; lobes 5, ca. 1 mm; corolla funnel-campanulate, pink or white, 4–4.5 cm, lobes 5, orbicular, 1.5–2 cm; stamens 10, unequal, 2.2–3.5 cm, filaments pubescent below the middle; ovary cylindric-ovoid, ca. 6 × 4 mm, ca. 5-locular; style ca. 3.5 cm, densely brownish tomentose below, stigma glabrous, small. Capsule oblong-cylindric, ca. 10 × 6–7 mm; style persistent. Fl. Mar–Apr, fr. Jul–Aug.

● Forests, thickets; 600–1400 m. S Guangxi.

329. Rhododendron longipes Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 528. 1913.

长柄杜鹃 chang bing du juan

Shrubs or small trees, 2–4 m tall; branches slender, at first puberulent, finally glabrous. Petiole grooved adaxially, 8–15 mm, glabrous; leaf blade leathery, elliptic or elliptic-lanceolate, 5–13 × 1.5–3.5 cm; base cuneate; margin revolute; apex acuminate; abaxial surface indumentum thinly or thickly brown-felted to compacted; adaxial surface dark green, glabrous; midrib prominent abaxially, depressed adaxially; lateral veins 9–12 on each side, obscure on both surfaces. Inflorescence 8–12-flowered; rachis 12–15 mm, glabrescent. Pedicel 2.5–3.5 cm, with sparse minute glands; calyx discoid, 5-toothed, glabrous; corolla funnel-campanulate, narrowed at base, rose, with dark red spots inside, 2.5–3.5 cm, lobes 5, unequal, ca. 1 × 1.5–2 cm, emarginate; stamens 10–12, 1–1.5 cm, filaments glabrous; ovary ovoid, ca. 5 mm, tomentose; style ca. 1.5 cm, glabrous, stigma slightly dilated. Fl. Apr-May.

● Forests, thickets; 1700–2500 m. Chongqing, E Guizhou, SW Sichuan, NE Yunnan.

1a. Petiole 1–1.5 cm; leaf blade 7–13 × 2–3.5 cm, abaxial surface with thin brown indumentum ..... 329a. var. *longipes*
1b. Petiole 0.8–1.2 cm; leaf blade 5–9 × 1.5–2 cm, abaxial surface with thicker, spongy, felted indumentum ..... 329b. var. *chienianum*

329a. Rhododendron longipes var. **longipes**

长柄杜鹃(原变种) chang bing du juan (yuan bian zhong)

Leaf blade 7–13 × 2–3.5 cm; abaxial surface indumentum thin, brown. Fl. May.

● Forests, thickets; 2000–2500 m. E Guizhou, SW Sichuan, NE Yunnan.

329b. Rhododendron longipes var. **chienianum** (W. P. Fang) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 329. 1979.

金山杜鹃 jin shan du juan

Rhododendron chienianum W. P. Fang, Contr. Biol. Lab. Chin. Assoc. Advancem. Sci., Sect. Bot. 12: 28. 1939.

Leaf blade 5–9 × 1.5–2 cm; abaxial surface indumentum thicker, spongy. Ovary densely brown-tomentose and glandular. Fl. Apr–May.

● Forests; 1700–2100 m. Chongqing (Jinfo Shan), ?NE Yunnan.

The occurrence of this variety in NE Yunnan requires confirmation; the material may in fact belong to var. *longipes*.

330. Rhododendron pingianum W. P. Fang, Contr. Biol. Lab. Chin. Assoc. Advancem. Sci., Sect. Bot. 12: 20. 1939.

海绵杜鹃 hai mian du juan

Shrubs or small trees, 4–9 m tall; bark gray or brownish gray, branchlets stout, ca. 4 mm in diam. below inflorescences. Petiole 10–20 mm, glabrescent when mature; leaf blade leathery, lanceolate or oblanceolate, 9–15 × 2.5–3.8 cm; base cuneate to subrounded; apex obtuse to acute; abaxial surface indumentum white, compacted; adaxial surface light green, glabrous; midrib prominent abaxially, impressed adaxially; lateral veins 12–16-paired, blunt on both surfaces. Inflorescence 12–22-flowered; rachis 10–20 mm, pubescent. Pedicel 2–4 cm, white-floccose; calyx lobes 5, ca. 5 mm; corolla funnel-campanulate, pinkish or rose, 3–3.5 cm, lobes 5, ca. 1 cm, emarginate; stamens 10, unequal, 0.8–1.5 cm, filaments slender, glabrous; ovary oblong-cylindric, ca. 5 mm, 8-locular, brownish tomentose; style 1–1.5 cm, glabrous. Capsule cylindric, slightly curved, 20–30 × ca. 5 mm, glabrous. Fl. May–Jun, fr. Sep–Oct.

● Forests; 2300–2700 m. SW Sichuan.

331. Rhododendron argyrophyllum Franchet, Bull. Soc. Bot. France 33: 231. 1886.

银叶杜鹃 yin ye du juan

Small trees or shrubs, 3–7 m tall; bark grayish, rough; shoots greenish, glabrous when young. Petiole slender, 15–35 mm, glabrescent; leaf blade leathery or thickly leathery, narrowly elliptic or oblong-lanceolate, 8–13 × 2–4 cm; base cuneate; margin entire and slightly reflexed; apex acute; abaxial surface indumentum thin silvery-white felty to fawn plastered; adaxial surface deep green, slightly floccose when young, glabrous when mature, midrib prominent abaxially, grooved adaxially; lateral veins 12–14-paired, obscure on both surfaces. Inflorescence lax, 6–9-flowered; rachis 10–15 mm, rufous tomentose. Pedicel 1.5–3.5 cm, pubescent; calyx lobes 5, ca. 2 mm; corolla funnel-campanulate or campanulate, narrow or broad at base, white or pink, with purple or rose spots within on upper part, 2.5–3.5 cm, lobes 5, obovate, ca. 1 × 1.5 cm, emarginate; stamens 12–15(–16), unequal, 1.2–2.5 cm, filaments tomentose at base; ovary cylindric-oblong, ca. 8 mm, with white or grayish indumentum; style ca. 1.8 cm, glabrous, stigma capitate. Capsule cylindric, usually curved, 18–25 × ca. 6 mm, pubescent when young. Fl. Apr–May, fr. Jul–Aug.

● Forests, thickets; 1600–2300 m. E and NW Guizhou, S and W Sichuan, NE Yunnan.

Three subspecies may be recognized in China. In addition, var. *glabriovarium* M. Y. He (Acta Phytotax. Sin. 35: 66. 1997), described from C Sichuan (Dayi), needs to be considered. It differs from typical *Rhododendron argyrophyllum* in having the pistil longer than the corolla and in the glabrous ovary and style.

1a. Leaf blade thickly leathery, abaxial surface with 2-layered white indumentum ..... 331c. subsp. *nankingense*
1b. Leaf blade leathery, abaxial surface with a thin 1-layered white or brown indumentum.
  2a. Abaxial leaf surface with silvery-white indumentum ..... 331a. subsp. *argyrophyllum*
  2b. Abaxial leaf surface with brownish indumentum ..... 331b. subsp. *omeiense*

331a. Rhododendron argyrophyllum subsp. **argyrophyllum**

银叶杜鹃(原亚种) yin ye du juan (yuan ya zhong)

?*Rhododendron argyrophyllum* var. *cupulare* Rehder & E. H. Wilson; *R. chionophyllum* Diels.

Leaf blade leathery, narrowly elliptic or oblong-lanceolate, 8–13 × 2–4 cm; abaxial surface indumentum 1-layered, silvery-white. Fl. May–Jun, fr. Aug–Sep.

● Thickets; 1600–2300 m. NW Guizhou, SW Sichuan, NE Yunnan.

There may be a case for transferring var. *cupulare* to *Rhododendron pingianum*.

331b. Rhododendron argyrophyllum subsp. **omeiense** (Rehder & E. H. Wilson) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 329. 1979.

峨眉银叶杜鹃 e mei yin ye du juan

Rhododendron argyrophyllum var. *omeiense* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 527. 1913.

Leaf blade leathery, smaller; abaxial surface indumentum 1-layered, fawn or deeper-colored. Fl. May, fr. Jul.

● Forests; 1800–2000 m. W Sichuan.

331c. Rhododendron argyrophyllum subsp. **nankingense** (Cowan) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 329. 1979.

黔东银叶杜鹃 qian dong yin ye du juan

Rhododendron argyrophyllum var. *nankingense* Cowan, Notes Roy. Bot. Gard. Edinburgh 21: 149. 1953; *R. argyrophyllum* var. *leiandrum* Hutchinson.

Leaf blade thickly leathery; abaxial surface indumentum 2-layered, whitish or grayish. Fl. Apr–May, fr. Jul.

● Thickets; 1800–2300 m. E Guizhou (Leishan), S Sichuan.

332. Rhododendron hypoglaucum Hemsley, J. Linn. Soc., Bot. 26: 25. 1889.

粉白杜鹃 fen bai du juan

Rhododendron argyrophyllum Franchet subsp. *hypoglaucum* (Hemsley) D. F. Chamberlain; *R. gracilipes* Franchet.

Shrubs, 3–10 m tall; bark gray; shoots smooth, greenish, glabrous. Petiole cylindric, 10–20 mm, glabrous; leaf blade leathery, lanceolate-elliptic or lanceolate-obovate, 6–10 × 2–3.5 cm; base cuneate; margin slightly revolute; apex acute or apiculate; abaxial surface indumentum thin, smooth, silvery-white; adaxial surface bright green, smooth, glabrous, midrib conspicuously prominent abaxially, grooved adaxially; lateral veins 10–14 on each side, blunt on both surfaces. Inflorescence 4–9-flowered; rachis 5–15 mm, with yellowish pubescence, glabrescent. Pedicel 2–3 cm, glabrous; calyx membranous; lobes 5, ca. 2 mm, ovate-triangular; corolla funnel-campanulate, narrowed at base, white flushed pink or pale rose, with numerous deep rose or purple spots, 2.5–3.5 cm, lobes 5, orbicular, ca. 1 × 1.5 cm, emarginate; stamens 10, unequal, 1.5–2 cm, filaments flattened towards the base, densely white-puberulent below; ovary cylindric, 4–5 mm, glabrous or rarely with glandular hairs at apex; style 2–2.5 cm, glabrous, Capsule cylindric, 6-valved at maturity, 20–25 × ca. 6 mm, glabrous. Fl. Apr–May, fr. Jul–Sep.

● Thickets; 1500–2100 m. Chongqing, W Hubei, S Shaanxi, E Sichuan.

333. Rhododendron coryanum Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 15: 99. 1926.

光蕊杜鹃 guang rui du juan

Shrubs, ca. 3–6 m tall; branchlets brownish, ca. 4 mm in diam., grayish pubescent. Petiole cylindric, grooved adaxially, 15–20 mm, thinly tomentose, with a few short glandular hairs; leaf blade leathery, long-elliptic to oblong-lanceolate, 7–14 × 2–3 cm; base tapering, cuneate; apex acute to acuminate; abaxial surface indumentum thin, silvery grayish or whitish, soft and suedelike, also with sparsely scattered very small glands; adaxial surface green, glabrous; midrib prominent abaxially, grooved adaxially, lateral veins 15–20-paired, slightly impressed adaxially. Inflorescence 15–20-flowered; rachis 20–30 mm, puberulent. Pedicel 3–4 cm, sparsely tomentose and glandular; calyx lobes 5, ca. 2 mm, ovate or triangular, sparsely tomentose; corolla funnel-campanulate, creamy-white or whitish with brownish crimson spots, 2.5–3 cm, puberulent inside; lobes 5, orbicular, ca. 1.5 cm; stamens 10, unequal, 2–2.5 cm, filaments puberulent at lower part; ovary conoid, ca. 5 mm, glabrous; style 2–2.5 cm, slender. Capsule cylindric, slightly curved, 15–25 × 4–6 mm, glabrous. Fl. Jun, fr. Aug–Oct.

● *Abies* forests, *Rhododendron* thickets; 2600–3700 m. SE Xizang, NW Yunnan.

334. Rhododendron thayerianum Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 529. 1913.

反边杜鹃 fan bian du juan

Shrubs, 3–4 m tall; branches stout, thick; bud scales persisting among the leaves for several years, membranous or thinly leathery, ovate or lanceolate, 2–3.5 cm. Petiole cylindric, stout, grooved adaxially, 10–15 mm, sparsely glandular, glabrescent; leaf blade leathery, narrowly oblanceolate, 9–17 × 1.5–2.5 cm; base cuneate; margin revolute; apex acuminate; abaxial surface, except midrib, sparsely glandular and with thinly silvery to fawn indumentum; adaxial surface glabrous; midrib prominent abaxially, deeply grooved adaxially; lateral veins 10–12-paired, impressed. Inflorescence a racemose corymb, 10–20-flowered; rachis 30–40 mm, shortly glandular-hairy. Pedicel slender, 3–5 cm, densely glandular; calyx lobes 5, unequal, ovate, densely glandular, 2–4 mm; corolla funnel-campanulate,

white, sometimes deeply flushed pink on the outside along the petal ridges, or pink, without spots, 2–3 cm, lobes 5, orbicular, ca. 1.3 × 1–1.5 cm; stamens 10, unequal, 1.5–2 cm, filaments with base widened and floccose; ovary oblong, ca. 5 mm, 6–8-locular, with translucent whitish glands; style 2–2.5 mm, glandular to tip. Capsule oblong-cylindric, ca. 25 × 6 mm. Fl. May–Jun, fr. Aug–Oct.

● Woodlands; 2600–3000 m. W Sichuan.

335. Rhododendron hunnewellianum Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 535. 1913.

岷江杜鹃 min jiang du juan

Shrubs, 2–5 m tall; branchlets stout, 4–5 mm in diam. below inflorescence, at first grayish tomentose, glabrescent. Petiole grooved adaxially, 10–15 mm, puberulent at first, glabrescent; leaf blade leathery, narrowly lanceolate, or narrowly oblanceolate, 7–13 × 1.5–2.8 cm; base cuneate; margin slightly reflexed; apex acuminate; abaxial surface with indumentum 2-layered, initially white, sometimes becoming tawny or grayish with age, upper layer forming a loose woolly surface; lower layer compacted and whitish; adaxial surface green, glabrescent, midrib conspicuous, prominent abaxially, deeply grooved adaxially; lateral veins 15–20-paired, inconspicuous. Inflorescence 3–7-flowered; rachis 5–10 mm, pubescent. Pedicel 1–2 cm, sparsely tomentose and shortly glandular-hairy; calyx discoid, small, glandular-ciliate; corolla widely campanulate, white, pale rose or purple, deeper in bud, pink-spotted within, 3–5 cm, densely puberulent below within; lobes 5, orbicular; stamens 10, unequal, 2–3.5 cm, filaments pubescent at base; ovary conoid, ca. 7 mm, densely whitish tomentose; style 4–4.2 cm, with a little tomentum and sometimes with a few glands at base, otherwise glabrous. Capsule oblong cylindric, 20–25 × ca. 6 mm, brown tomentose. Fl. Apr–May, fr. Jul–Sep.

● Woodlands, thickets, valleys along the Min Jiang, mountain slopes; 1200–2400 m. S Gansu, C and N Sichuan.

1a. Abaxial leaf surface indumentum always white; corolla 4–5 cm ..... 335a. subsp. *hunnewellianum*
1b. Abaxial leaf surface indumentum white gradually becoming tawny or grayish; corolla 3–4 cm ..... 335b. subsp. *rockii*

335a. Rhododendron hunnewellianum subsp. **hunnewellianum**

岷江杜鹃(原亚种) min jiang du juan (yuan ya zhong)

Rhododendron leucolasium Diels.

Leaf blade lanceolate, 7–13 × 1.5–2.5 cm; abaxial surface indumentum white, not changing color with age. Corolla 4–5 cm. Fl. Apr–May, fr. Jul–Sep.

● Woodlands, thickets, valleys along the Min Jiang; 1200–1900 m. C and N Sichuan.

335b. Rhododendron hunnewellianum subsp. **rockii** (E. H. Wilson) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 329. 1979.

黄毛岷江杜鹃 huang mao min jiang du juan

Rhododendron rockii E. H. Wilson, J. Arnold Arbor. 9: 103. 1928.

Leaf blade 7–10 cm; abaxial surface indumentum white, turning tawny or grayish at maturity. Corolla 3–4 cm. Fl. Apr–May.

● Thickets, mountain slopes; 1600–2400 m. S Gansu, N Sichuan.

13. Rhododendron subsect. Arborea (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 545. 1949.

树形杜鹃亚组 shu xing du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron subser. *Arborea* Tagg in J. B. Stevenson, Sp. Rhodod. 12. 1930 [*"Arboreum"*].

Trees; bark rough; young shoots tomentose or floccose, glabrescent. Leaf blade elliptic to oblanceolate; abaxial surface densely spongy to compacted, white to fawn, tomentose, hairs dendroid sometimes with a floccose rufous upper layer. Inflorescence dense, 10–30-flowered. Calyx minute, 1–2 mm; corolla campanulate or tubular-campanulate, 5-lobed, pink to deep crimson, magenta or lilac, very rarely white, with nectar pouches; stamens 10; ovary densely tomentose, rarely glandular; style glabrous.

About four species: Bhutan, China, India, Kashmir, Myanmar, Nepal, Sikkim, Sri Lanka, Thailand, Vietnam; four species in China.

This is a subsection of uncertain affinities, though probably allied to *R.* subsect. *Argyrophylla* and, in particular, to *R. denudatum*.

1a. Pedicel with some glandular hairs in among indumentum; capsule ca. 3 cm ..... 336. *R. arboreum*
1b. Pedicel without glandular hairs; capsule 1.5–2 cm.
  2a. Calyx glabrous; inflorescence 20–30-flowered; abaxial leaf surface indumentum 2-layered with dense woolly upper layer ..... 339. *R. lanigerum*
  2b. Calyx hairy; inflorescence 10–20-flowered; abaxial leaf surface indumentum 1-layered, felted or spongy.
    3a. Corolla tubular-campanulate; rachis ca. 2 cm ..... 337. *R. niveum*
    3b. Corolla campanulate; rachis ca. 1 cm ..... 338. *R. delavayi*

336. Rhododendron arboreum Smith, Exot. Bot. 1: 9. 1805.

树形杜鹃 shu xing du juan

Trees, usually evergreen, (1–)5–20(–30) m tall; trunk well-defined; bark gray-brownish, exfoliating into thin and small irregular flakes; young shoots stout, with distinct leaf traces, densely grayish tomentose, glabrescent. Winter buds ovoid, 10–12 × 5–6 mm, puberulent. Petiole 10–25 mm with dense fawn

indumentum intermixed with glands, sometimes glabrescent; leaf blade leathery, oblong-lanceolate or oblong-oblanceolate, 6–15 × 2–4.5 cm; base cuneate or ± rounded; margin revolute; apex acuminate or acute; abaxial surface with indumentum 1- or 2-layered, densely compacted, white to fawn tomentose, sometimes with loosely floccose brown upper layer, hairs dendroid, glabrescent; adaxial surface reticulate to bullate, glabrous; midrib deeply impressed adaxially; lateral veins 15–26-paired. Inflorescence dense, ca. 20-flowered, rachis 10–15 mm, tomentose. Pedicel ca. 0.9 cm, pilose, glandular; calyx lobes 5, 1–2 mm, small, triangular, sparsely glandular and hairy; corolla tubular-campanulate, pink to deeply crimson, rarely white, 3.5–4 cm, with 5 black-blotched basal nectar pouches and dark flecks; lobes 5, 1.2–1.7 cm, apex emarginate; stamens 10, unequal, 1.7–2.7 cm, filaments glabrous; ovary conoid, 4–6 mm, white-tomentose, sometimes also glandular; style ca. 3.3 cm, glabrous. Capsule cylindric, ca. 30 × 6 mm. Fl. May, fr. Aug.

Forests, thickets, slopes; 1500–3800 m. ?W Guizhou, S Xizang [Bhutan, N India, Kashmir, Nepal, Sikkim, Sri Lanka, N Thailand, N Vietnam].

Three varieties occur in China. The name used in Xizang, "da ma" (打马), refers to the medicinal use of the flowers in treating coughs.

1a. Abaxial leaf surface with 2-layered indumentum, the upper layer loosely brown-floccose ..... 336b. var. *cinnammomeum*
1b. Abaxial leaf surface with 1-layered compacted, fawn to white indumentum.
  2a. Abaxial leaf surface with white to silvery-white indumentum; corolla red to carmine, rarely pink ..... 336a. var. *arboreum*
  2b. Abaxial leaf surface usually with fawn indumentum; corolla pink to red or white ..... 336c. var. *roseum*

336a. Rhododendron arboreum var. **arboreum**

树形杜鹃(原变种) shu xing du juan (yuan bian zhong)

Rhododendron puniceum Roxburgh; *R. windsorii* Nuttall.

Leaf blade usually oblong-lanceolate, 6–15 × 2–4 cm; apex acuminate or acute; abaxial surface indumentum 1-layered, white to silvery-white. Corolla red to deeply crimson. Fl. May, fr. Aug.

Mixed forests; 1500–3600 m. ?W Guizhou, S Xizang [Bhutan, N India, Nepal, Sikkim].

The occurrence of this variety in W Guizhou requires confirmation.

336b. Rhododendron arboreum var. **cinnamomeum** (Wallich ex G. Don) Lindley, Edwards's Bot. Reg. 23: t. 1982. 1837.

棕色树形杜鹃 zong se shu xing du juan

Rhododendron cinnamomeum Wallich ex G. Don, Gen. Hist. 3: 844. 1834; *R. arboreum* subsp. *campbelliae* (J. D. Hooker) Tagg; *R. arboreum* subsp. *cinnamomeum* (Wallich ex G. Don) Tagg; *R. campbelliae* J. D. Hooker.

Leaf blade abaxial surface with indumentum 2-layered, upper layer loosely brown-floccose, lower layer compact, fawn to white. Corolla pink to carmine, occasionally white.

Forests, thickets, open slopes; 2600–3800 m. S Xizang [NE India, E Nepal].

336c. Rhododendron arboreum var. **roseum** Lindley, Edwards's Bot. Reg. 15: t. 1240. 1829.

粉红树形杜鹃 fen hong shu xing du juan

Rhododendron arboreum var. *album* Wallich; *R. album* Buchanan-Hamilton ex D. Don (1825), not Blume (1823), nor Hoffmannsegg (1826).

Leaf blade 6.5–11 × 2.2–4.5 cm; apex acute; abaxial surface with indumentum 1-layered, compact, fawn or white. Corolla pink to carmine or white.

Broad-leaved mixed forests, coniferous forests, thickets, rocky slopes; 2500–3500 m. S Xizang [Bhutan, NE India, E Nepal, Sikkim].

337. Rhododendron niveum J. D. Hooker, J. Hort. Soc. London 7: 78. 1852.

西藏毛脉杜鹃 xi zang mao mai du juan

Shrubs or trees, 2–6 m tall; bark cinereous; older branches brownish, glabrescent; branches ca. 6 mm in diam. below inflorescence; young shoots grayish green, densely tomentose. Petiole 13–15 mm; leaf blade leathery, oblanceolate to elliptic, 8.5–11 × 3.6–4.6 cm; base tapering or rounded; margin revolute; apex obtuse or rounded, apiculate; abaxial surface with 1-layered indumentum densely compacted, fawn, glabrescent, hairs dendroid; adaxial surface of unfolding leaves scattered white floccose, at maturity glabrous except for traces of tomentum chiefly in groove of midrib; midrib prominent abaxially, grooved adaxially; lateral veins 11–16 on each side. Inflorescence spherical, dense, 15–20-flowered, rachis ca. 20 mm, fulvous tomentose. Pedicel ca. 1 cm, densely white- to rufous-tomentose; calyx teeth minute, 1–2 mm, tomentose; corolla tubular-campanulate, deep magenta to deep lilac, 3–3.5 cm, with 5 deep purple basal nectar pouches; stamens 10, unequal, 1.8–2.8 cm, filaments glabrous; ovary cylindric or oblong, ca. 6 mm, densely whitish to tawny-tomentose; style glabrous, stigma capitate, small. Capsule shortly cylindric, blunt, 15–18 mm, blackish, roughened with vestiges of tomentum. Fl. Apr–May, fr. Aug–Sep.

Mixed forests, rocky valleys; 2600–3500 m. S Xizang [Bhutan, NE India, Sikkim].

338. Rhododendron delavayi Franchet, Bull. Soc. Bot. France 33: 231. 1886.

马缨杜鹃 ma ying du juan

Shrubs or trees, 1–7(–12) m tall; bark grayish, exfoliating into thin and small irregular flakes; young shoots stout, white-floccose, glabrescent. Winter buds ovoid, greenish, 6–7 mm, slightly tomentose. Petiole cylindric, 7–20 mm, glabrous; leaf blade leathery, long-lanceolate, 7–15 × 1–5 cm; base tapering; margin revolute; apex obtuse or acute; abaxial surface with indumentum 1-layered, spongy or somewhat agglutinated, whitish to fawn, glabrescent; adaxial surface light or dark green, ± rugose, glabrous at maturity, midrib very prominent abaxially,

deeply grooved adaxially; lateral veins 14–20-paired, slightly raised abaxially, impressed adaxially; reticulate veins evident. Inflorescence spherical, umbellate, 10–20-flowered; rachis ca. 10 mm, densely rufous-tomentose. Pedicel stout, 0.8–1 cm, densely fawn-tomentose; calyx lobes 5, ca. 2 mm, triangular; corolla campanulate, fleshy, deep crimson to carmine, 3–5 × 3–4 cm, with 5 basal nectar pouches; lobes 5, ca. 1 × 1.3 cm, apex emarginate; stamens 10, unequal, 1.6–4 cm, filaments glabrous, anthers oblong, 2–2.8 mm; ovary conoid, ca. 8 mm, 10-locular, densely fawn-tomentose; style ca. 2.8 cm, glabrous or floccose to tip, stigma capitate. Capsule oblong, 18–20 × ca. 8 mm, blackish and roughened with the remains of the rusty tomentum. Fl. May, fr. Dec.

Mixed forests, evergreen broad-leaved forests, forest margins, thickets, hills, rocky slopes; 1200–3200 m. NW Guangxi, W Guizhou, SW Sichuan, SE Xizang, Yunnan [Bhutan, NE India, Myanmar, Thailand, N Vietnam].

Rhododendron delavayi intergrades with *R. arboreum* in Bhutan and NE India.

1a. Style floccose to tip ..... 338c. var. *pilostylum*
1b. Style glabrous.
  2a. Leaf blade 1.5–5 cm wide; abaxial surface with whitish to fawn spongy indumentum ..... 338a. var. *delavayi*
  2b. Leaf blade 1–2 cm wide; abaxial surface with fawn somewhat agglutinated indumentum ..... 338b. var. *peramoenum*

338a. Rhododendron delavayi var. **delavayi**

马缨杜鹃(原变种) ma ying du juan (yuan bian zhong)

Rhododendron arboreum Smith subsp. *delavayi* (Franchet) D. F. Chamberlain; *R. pilovittatum* I. B. Balfour & W. W. Smith.

Leaf blade oblong-lanceolate to oblong-oblanceolate, 7–15 × 1.5–5 cm; apex obtuse or acute; abaxial surface indumentum white to fawn, spongy; adaxial surface rugose. Corolla style glabrous. Fl. May, fr. Dec.

Evergreen broad-leaved forests, thickets; 1200–3200 m. NW Guangxi, W Guizhou, SW Sichuan, Yunnan [Bhutan, NE India, Myanmar, Thailand, N Vietnam].

338b. Rhododendron delavayi var. **peramoenum** (I. B. Balfour & Forrest) T. L. Ming, Acta Bot. Yunnan. 6: 148. 1984.

狭叶马缨杜鹃 xia ye ma ying du juan

Rhododendron peramoenum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 56. 1920; *R. arboreum* var. *peramoenum* (I. B. Balfour & Forrest) D. F. Chamberlain.

Leaf blade very narrowly lanceolate, 7.5–9.5(–15) × 1–2 cm; apex acute to shortly cuspidate; abaxial surface indumentum gray to fawn, somewhat thin, compact, persistent; adaxial surface much less rugose. Corolla ca. 5 cm; style glabrous.

Mixed forests, evergreen broad-leaved forests, forest margins, thickets; 1700–3200 m. W Guizhou, SE Xizang, W Yunnan [NE India, Myanmar].

338c. Rhododendron delavayi var. **pilostylum** K. M. Feng, Acta Bot. Yunnan. 5: 265. 1983.

毛柱马缨杜鹃 mao zhu ma ying du juan

Style floccose to tip.

● Hills, rocky slopes; 1500–1600 m. SE Yunnan.

339. Rhododendron lanigerum Tagg in J. B. Stevenson, Sp. Rhodod. 248. 1930.

林生杜鹃 lin sheng du juan

Rhododendron lanigerum var. *silvaticum* (Cowan) Davidian; *R. silvaticum* Cowan.

Shrubs or trees, 2.7–6 m tall; branches stout, usually crooked and gnarled, ca. 5 mm in diam. below inflorescence, thinly grayish tomentose. Petiole rounded abaxially, grooved adaxially, 15–25 mm, glabrous above, densely gray-tomentose; leaf blade leathery, oblong-lanceolate or oblong-oblanceolate, 11.5–14.5(–22) × 2–3.3(–7) cm; base obtuse to cuneate; margin revolute; apex acuminate, cuspidate; abaxial surface with indumentum 2-layered, dense, whitish to fawn, upper layer densely woolly-tomentose, hairs dendroid, lower layer thin, compacted; adaxial surface rugulose, glabrous at maturity though often with traces of indumentum along midrib; midrib deeply grooved; primary veins 12–15-paired, impressed. Inflorescence a congested racemose truss, 20–30-flowered; rachis stout, ca. 20 mm, with dense fawn or ferruginous tomentum. Pedicel 1–1.2 cm, pubescent; calyx fleshy; lobes 5, ca. 2 mm, triangular, glabrous; corolla campanulate, fleshy, deep pink to rosy purple, ca. 3.5 cm, with 5 darker basal nectar pouches; lobes 5, suborbicular, ca. 1.5 × 2 cm, apex emarginate; stamens 10, unequal, 1.4–1.9 cm, filaments white, glabrous; ovary cylindric-conoid, ca. 8 × 2.2 mm, densely fawn or grayish tomentose; style ca. 1.9 cm, glabrous, stigma small. Capsule shortly oblong, ca. 20 × 7 mm. Fl. Apr, fr. not known.

Forests; 2700–3100 m. SE Xizang [NE India].

14. Rhododendron subsect. Taliensia (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 550. 1949.

大理杜鹃亚组 da li du juan ya zu

Hu Linzhen (胡琳贞 Hu Ling-cheng); David F. Chamberlain

Rhododendron ser. *Taliensia* Tagg in J. B. Stevenson, Sp. Rhodod. 628. 1930 [*"Taliense"*].

Shrubs or small trees; young shoots glabrous or densely tomentose, sometimes also with glandular hairs. Leaf blade leathery; abaxial surface with 1- or 2-layered indumentum composed of branched, radiate or fasciculate hairs, indumentum usually thick, woolly, felted, rust-red, tawny to yellow, rarely white, sometimes sparse or even absent; adaxial surface glabrous at maturity, usually

smooth, occasionally bullate. Inflorescence terminal, usually compact, 5–20-flowered; rachis short. Calyx cup-shaped, lobes small or large; corolla campanulate or funnel-campanulate, 5(–7)-lobed, thin in texture, white, pink, purplish, pale yellow, rarely yellow or deep red, often with conspicuous spots; stamens 10(–14); ovary glabrous to densely rufous tomentose or glandular and tomentose or glandular hairy only; style glabrous, rarely glandular-hairy.

Fifty-six species: Bhutan, China, Myanmar, Nepal, Sikkim; 56 species (54 endemic) in China.

1a. Calyx (3–)5–15 mm.
  2a. Abaxial leaf surface with discontinuous indumentum.
    3a. Abaxial leaf surface indumentum loose, woolly, patchy, ± deciduous.
      4a. Leaf blade 3–6 × 1–2 cm, indumentum red-brown; corolla yellow; style glandular to apex ..... 343. *R. codonanthum*
      4b. Leaf blade 7–10 × 2–4 cm, indumentum pale brown; corolla pink; style glandular in lower 3/4 ..... 344. *R.* ×*detonsum*
    3b. Abaxial leaf surface indumentum scattered or only along midrib.
      5a. Leaf blade with abaxial surface loosely woolly-tomentose along midrib only; petioles tomentose and glandular ..... 340. *R. pubicostatum*
      5b. Leaf blade with abaxial surface sparsely and minutely pubescent.
        6a. Leaf blade 7–9 cm, without punctate glands; petioles glabrous; calyx ca. 5 mm ..... 341. *R. montiganum*
        6b. Leaf blade 4.5–6.5 cm, punctate; petioles glabrous; calyx 4–6 mm ..... 342. *R. punctifolium*
  2b. Abaxial leaf surface with continuous indumentum.
    7a. Indumentum 2-layered, upper layer usually thick, composed of branched hairs, lower layer thin and appressed.
      8a. Petiole glabrous; pedicel 2–2.5 cm ..... 355. *R.* ×*sinosimulans*
      8b. Petiole pubescent, tomentose or floccose, sometimes glabrescent; pedicel 1–2 cm.
        9a. Leaf blade oblong, 4–7 × 1.5–2.5 cm; inflorescence bud-scales ± persistent during flowering; pedicel 1–1.5 cm ..... 393. *R.* ×*bathyphyllum*
        9b. Leaf blade elliptic to oblong-ovate, 6–17 × 2.5–7 cm; inflorescence bud-scales not persistent; pedicel 1.5–2 cm.
          10a. Young shoots and petiole densely pubescent; calyx 8–12 mm; petiole 1.5–2.5 cm ..... 354. *R. faberi*
          10b. Young shoots and petiole sparsely floccose, often glabrescent; calyx 3–6 mm; petiole 1–1.5 cm ..... 356. *R. mimetes*
    7b. Leaf indumentum 1-layered, thin or ± dense and thick.
      11a. Leaf indumentum thin.
        12a. Ovary glandular, style glandular in lower part; leaf blade 5–8 × 2.5–3.5 cm, indumentum pale brown to cinnamon, ± agglutinated; corolla pale pink to pink ..... 345. *R. balfourianum*
        12b. Ovary hairy, style glabrous, eglandular; leaf blade various; corolla white or pink.
          13a. Leaf blade 8.5–10 × 3.6–4.7 cm, indumentum pale yellow, not agglutinated; corolla pink, 3. 5 cm ..... 346. *R. pomense*
          13b. Leaf blade 7.5–9.5 × 3.2–4.5 cm, indumentum tawny, ± agglutinated; corolla white, 3–3.5 cm ..... 347. *R. trichogynum*
      11b. Leaf indumentum ± dense and thick.
        14a. Leaf indumentum spongy, cinnamon to tawny; leaf blade 6–12 × 2–4 cm; ovary densely stipitate glandular, style glandular in lower part ..... 348. *R. adenogynum*
        14b. Indumentum felted or woolly.
          15a. Indumentum felted, tawny to fawn, sparsely glandular on midrib.
            16a. Leaf blade 6.5–7.5 × 3–4 cm; corolla campanulate; ovary glandular, style glabrous ..... 349. *R. dumicola*
            16b. Leaf blade 7–10 × 2.5–3.5 cm; corolla funnel-campanulate, pale red; ovary sparsely pubescent and glandular, style glandular at base ..... 350. *R. zhongdianense*
          15b. Leaf indumentum woolly, rust-red or red-brown, eglandular.
            17a. Shoots and petioles densely hairy and glandular ..... 351. *R. bureavii*
            17b. Shoots and petioles densely tomentose, eglandular.
              18a. Leaf blade 8.5–13 × 3.5–5.5 cm; ovary densely villous, style villous, and with few dendroid branched hairs in lower half ..... 353. *R. pugeense*
              18b. Leaf blade 3–9 × 1–3 cm; ovary and style with glandular hairs.
                19a. Petiole 3–4 mm; inflorescence 4–8-flowered ..... 362. *R. detersile*
                19b. Petiole 10–15 mm; inflorescence 10–20-flowered ..... 352. *R. elegantulum*
1b. Calyx 0.5–3 mm.
  20a. Abaxial leaf surface glabrous or with discontinuous indumentum.
    21a. Leaf indumentum absent; corolla pink; ovary sparsely pubescent ..... 361. *R. purdomii*
    21b. Leaf indumentum discontinuous, scattered; ovary tomentose and sometimes glandular.
      22a. Ovary tomentose and glandular; leaf blade abaxial surface with glands; corolla rose or pale yellow, with fine spots and crimson basal blotch ..... 360. *R. dignabile*

22b. Ovary tomentose but not glandular; leaf blade not glandular; corolla white or creamy white.
23a. Abaxial leaf surface densely hairy only on lower half of midrib ..... 359. *R. potaninii*
23b. Abaxial leaf surface sparsely fawn tomentose, hairs ± peeling off.
24a. Pedicel tawny tomentose; apex obtuse, ± beaked; corolla obliquely-campanulate, white, ca. 4 cm ..... 357. *R.* ×*paradoxum*
24b. Pedicel whitish tomentose; apex acute; corolla funnel-campanulate, creamy white, ca. 2.5 cm ..... 358. *R.* ×*inopinum*
20b. Abaxial leaf surface with continuous indumentum.
25a. Adaxial leaf surface bullate.
26a. Leaf blade obovate-oblong to lanceolate; abaxial surface with 1-layered indumentum; corolla white to pink, 3–4 cm ..... 363. *R. wiltonii*
26b. Leaf blade oblanceolate; abaxial surface with 2-layered indumentum, upper-layer thick, ± peeling off; corolla pink to pale purple, 4–4.5 cm ..... 364. *R. coeloneurum*
25b. Adaxial leaf surface smooth, not bullate.
27a. Abaxial leaf surface indumentum thick, spongy or woolly, with pellicle.
28a. Corolla broadly-campanulate, 6(–7)-lobed; stamens 12(–14); abaxial leaf surface gray-white to pale cinnamon, woolly ..... 368. *R. clementinae*
28b. Corolla funnel-campanulate, 5-lobed; stamens 10; indumentum spongy; abaxial leaf surface white to yellowish or silvery-white to gray-yellow.
29a. Petiole 8–15 mm, glabrous or with a few glands; abaxial leaf surface with 1-layered indumentum; capsule straight ..... 365. *R. aganniphum*
29b. Petiole 15–20 mm, white-floccose; abaxial leaf surface with 2-layered indumentum; capsule curved ..... 366. *R. vellereum*
27b. Abaxial leaf surface without pellicle.
30a. Indumentum thin, 1-layered, agglutinated or not.
31a. Corolla yellow.
32a. Ovary glabrous; leaf blade abaxial surface densely pale brown radiate-tomentose, base cordate; corolla pale yellow with purple spots ..... 373. *R. barkamense*
32b. Ovary tomentose or glandular-hairy.
33a. Ovary densely red short glandular-hairy; corolla bright yellow, with crimson spots; calyx 2–4 mm ..... 343. *R. codonanthum*
33b. Ovary white- or brown-tomentose; corolla paler yellow, often without markings; calyx to 1.5 mm.
34a. Leaf indumentum composed of radiate hairs, leaf blade abaxial surface with dense cinnamon to fawn tomentum, base broadly cuneate; corolla spotted ..... 376. *R. wightii*
34b. Leaf indumentum composed of branched hairs, leaf blade broadly-elliptic, base auriculate-cordate or slightly cordate; corolla unspotted.
35a. Leaf blade abaxial surface densely yellowish green to pale brown tomentose, base auriculate-cordate; corolla pale yellow ..... 374. *R. heizhugouense*
35b. Leaf blade abaxial surface densely fawn to gray-tawny tomentose; base rounded, slightly cordate; corolla pure yellow ..... 375. *R. lacteum*
31b. Corolla white to pink.
36a. Indumentum not agglutinated, compacted.
37a. Leaf blade oblanceolate, 10–25 × 3–7 cm, abaxial surface fawn to cinnamon, with compacted indumentum, not powdery; corolla broadly campanulate, with few or no spots; ovary tomentose ..... 377. *R. beesianum*
37b. Leaf blade oblong-lanceolate, 6.5–10 × 2.5–3.5 cm, abaxial surface pale brown to tawny with powdery indumentum; corolla funnel-campanulate, spotted; ovary glabrous or sometimes sparsely floccose ..... 378. *R. traillianum*
36b. Indumentum ± agglutinated.
38a. Petiole 2–2.5 cm; ovary with glandular hairs ..... 372. *R. lulangense*
38b. Petiole 0.6–1.5 cm; ovary without glandular hairs, usually glabrous.
39a. Petiole flattened, 6–8 × ca. 5 mm; pedicel 2–2.5 cm; base of leaf blade cuneate, abaxial indumentum white ..... 371. *R. torquescens*
39b. Petiole 10–15 mm; pedicel 1–1.5 cm; base of leaf blade rounded or sub-cordate.
40a. Young shoots and petioles white-floccose, glabrescent; abaxial leaf surface usually with long-rayed stellate hairs (with branched hairs in subsp. *yushuense*), indumentum sometimes deciduous ..... 369. *R. przewalskii*
40b. Young shoots and petioles glabrous; abaxial leaf surface with branched hairs, indumentum persistent ..... 370. *R. phaeochrysum*

30b. Indumentum thick, loose or dense, 1- or 2-layered, woolly or felted.
41a. Abaxial leaf surface with 1-layered indumentum.
42a. Ovary hairy or glabrous.
43a. Shoots, petioles and ovaries hairy; leaf blade ovate-lanceolate, 2.5–4 cm wide, abaxial surface red-brown to rust-brown; corolla white to pink or yellow ..... 379. *R. wasonii*
43b. Shoots, petioles and ovaries glabrous; leaf blade elliptic, 4–6.5 cm wide; abaxial surface yellow initially, later deep brown; corolla pale purple ..... 380. *R. shanii*
42b. Ovary hairy and glandular.
44a. Shoots and petioles densely branched-hairy, eglandular; leaf blade oblong-elliptic, 9–12 cm; abaxial surface with dense, thick indumentum; corolla white ..... 381. *R. danbaense*
44b. Shoots and petioles densely tomentose and glandular; leaf blade lanceolate, 12–17 cm; abaxial surface with loose woolly indumentum; corolla initially deep pink, later yellowish pink ..... 382. *R. nigroglandulosum*
41b. Abaxial leaf surface with 2-layered indumentum.
45a. Dwarf shrubs; bud-scales persistent, leaves usually narrower; margin conspicuously revolute.
46a. Leaf blade oblanceolate or narrowly-oblanceolate, at least 3–4 × as long as broad.
47a. Leaf blade 6–10 cm; pedicels tomentose and glandular; corolla white tinged pink, 3–4 cm, style glabrous ..... 389. *R. roxieanum*
47b. Leaf blade 5.5–7.5 cm; pedicels tomentose, eglandular; corolla deep pink, 2.5–3.5 cm, style glandular in lower half ..... 390. *R. roxieoides*
46b. Leaf blade oblong, oblong-elliptic, oblanceolate or narrowly-elliptic, rarely as much as 3 × as long as broad.
48a. Plants procumbent, 0.1–0.5 m tall; ovary and filaments glabrous ..... 392. *R. pronum*
48b. Plants erect, 0.6–1.5 m tall; ovary and filaments hairy.
49a. Leaf blade 0.5–1 cm wide; pedicel ca. 1 cm; corolla white to pale yellow, ca. 3 cm ..... 394. *R. proteoides*
49b. Leaf blade 1–1.5 cm wide; pedicel ca. 2 cm; corolla deep rose, ca. 3.5 cm ..... 395. *R. comisteum*
45b. Erect shrubs, bud-scales deciduous (except in *R. balangense* and *R. dachengense*); leaves larger; margin flattened or inconspicuously revolute.
50a. Ovary hairy or glandular.
51a. Inflorescence 4–7-flowered; pedicel 0.5–1 cm, densely velutinous; leaf bud-scales persistent ..... 391. *R. dachengense*
51b. Inflorescence 6–15-flowered; pedicel 1–2 cm, floccose; leaf bud-scales deciduous.
52a. Abaxial leaf surface with long-rayed stellate hairs; calyx glabrous except for sparsely ciliate margin ..... 386. *R. nakotiltum*
52b. Abaxial leaf surface with branched hairs; calyx floccose or sparsely ciliate with glandular-ciliate margin.
53a. Inflorescence 6–11-flowered, rachis ca. 5 mm; corolla 2–3 cm ..... 387. *R. rufum*
53b. Inflorescence 10–15-flowered, rachis 10–18 mm; corolla 3.5–4 cm ..... 388. *R. alutaceum*
50b. Ovary glabrous.
54a. Shoots and petioles glabrous.
55a. Leaf blade obovate, 6–10 × 2. 5–5 cm, upper-layer of indumentum loose, whitish to pale yellow; corolla white; bud-scales persistent ..... 383. *R. balangense*
55b. Leaf blade oblong-ovate, 7.5–15 × 4–6.5 cm, upper-layer of indumentum dense, rust-red to cinnamon; corolla 2.5–3 cm, white to pink; bud-scales deciduous ..... 384. *R. sphaeroblastum*
54b. Shoots and petioles hairy.
56a. Leaf blade oblong-ovate; corolla 3–3.5 cm, creamy white or yellow to pale pink ..... 385. *R. taliense*
56b. Leaf blade oblong-elliptic; corolla white to pink ..... 367. *R. principis*

340. Rhododendron pubicostatum T. L. Ming, Acta Bot. Yunnan. 3: 119. 1981.

毛脉杜鹃 mao mai du juan

Shrubs ca. 3 m tall; young shoots and petioles densely tawny-tomentose. Petiole 15–20 mm; leaf blade leathery, oblong to ovate-oblong, 8.5–12 × 3.3–4.5 cm; base rounded; apex acuminate, apiculate; abaxial surface ± deciduous yellow-brown woolly-tomentose only along midrib; adaxial surface slightly rugulose, glabrous. Inflorescence racemose-umbellate, ca. 6-flowered; rachis ca. 5 mm, tomentose. Pedicel 1.5–2 cm, densely glandular-hairy and pubescent; calyx 5–7 mm, oblong, with shortly glandular hairs outside and on margin; corolla funnel-campanulate, white flushed pink, with crimson flecks, 3.5–4 cm, pubescent at base inside; lobes 5, subrounded; stamens 10, unequal, filaments pubescent at base; ovary ca. 5 mm, densely yellow-brown tomentose and short-glandular-hairy; style shorter than corolla, tomentose at base, also with a few glands. Capsule oblong-cylindric, slightly curved, 13–23 × 6–7 mm, surrounded by persistent calyx. Fl. May, fr. Nov.

● *Rhododendron* thickets; 2200–3700 m. NE Yunnan.

341. Rhododendron montiganum T. L. Ming, Acta Bot. Yunnan. 6: 164. 1984.

山地杜鹃 shan di du juan

Shrubs or small trees, 3–5 m tall; young shoots and petioles glabrous. Petiole 15–20 mm; leaf blade leathery, elliptic, 7–9 × 3–5 cm; base rounded or truncate; margin ± revolute; apex acute; abaxial surface sparsely powdery-pubescent; adaxial surface shiny, glabrous. Inflorescence racemose-umbellate, ca. 10-flowered; rachis ca. 12 mm. Pedicel 2–2.5 cm; calyx splitting to near base; lobes 5, ca. 5 mm, elliptic, ciliate-glandular; corolla broadly campanulate, white, ca. 4 cm, lobes 5, ca. 2 × 2.5 cm; stamens 10, unequal, filaments pubescent at base; ovary conical, sparsely glandular; style ca. 2.3 cm, shorter than corolla, glabrous. Fl. Jun.

● *Rhododendron* thickets; 4000–4100 m. NE Yunnan.

342. Rhododendron punctifolium L. C. Hu, Acta Phytotax. Sin. 22: 316. 1984.

斑叶杜鹃 ban ye du juan

Dwarf shrubs, ca. 0.7 m tall; young shoots 3–4 mm in diam., sparsely shortly glandular-hairy and with vestiges of juvenile hairs. Petiole 10–12 mm, sparsely glandular-hairy; leaf blade leathery, oblong to ovate-oblong, 4.5–6.5 × 2–3 cm; base subrounded or nearly truncate; margin slightly revolute; ± undulate; apex acute or short-acuminate, cuspidate; abaxial surface sparsely and minutely white-pubescent, and purple-punctulate; adaxial surface slightly rugulose, glabrous; midrib prominent abaxially; lateral veins 12–13-paired, obscure. Inflorescence racemose-umbellate, 4–6-flowered; rachis ca. 10 mm. Pedicel 2–2.5 cm, sparsely shortly glandular-hairy and pubescent; calyx lobes 5, 4–6 mm, unequal, oblong or subrounded, mostly glabrous, margin glandular-ciliate; corolla campanulate, red with crimson blotch at base inside, 3–3.5 cm, lobes 5, emarginate; stamens 10, unequal, filaments pubescent at base; ovary conical, ca. 5 mm, densely short-glandular-hairy; style ca. 2.7 cm, glabrous, eglandular; stigma capitate. Fl. May.

● Mixed forests on mountain slopes. W Yunnan.

This species was included within *Rhododendron balfourianum* in Fl. Yunnan. (4: 418. 1986), but differs from that species in having the leaf blade abaxially conspicuously punctate, in the red, smaller flowers, and in the glabrous style.

343. Rhododendron codonanthum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 249. 1922.

腺蕊杜鹃 xian rui du juan

Dwarf shrubs, 0.5–1.2 m tall; branchlets slender, sparsely easily deciduous rufous tomentose and glandular-hairy; bud scales ± persistent. Petiole 8–10 mm, floccose and glandular; leaf blade thickly leathery, oblanceolate to narrowly oblong, 3–6 × 1–2 cm; base obtuse or cuneate; margin revolute; apex acute; abaxial surface sparsely rufous-tomentose, indumentum ± detersile, midrib sparsely glandular-hairy; adaxial surface glabrous; midrib prominent abaxially; lateral veins 10–12-paired. Inflorescence umbellate, ca. 6-flowered; rachis short. Pedicel 2–2.5 cm, sparsely glandular-hairy; calyx pale yellow, lobes 5, 2–4 mm, oblong, fringed with glands; corolla campanulate, bright yellow, with crimson spots, ca. 3 cm, lobes 5, emarginate; stamens 10, unequal, filaments sparsely puberulent below middle; ovary ca. 4 mm, densely red shortly glandular-hairy; style ca. 2.1 cm, glandular to apex; stigma discoid. Fl. Jun.

● Thickets, rocky hillsides; 3600–4300 m. NW Yunnan.

344. Rhododendron ×detonsum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 48. 1919, pro sp.

落毛杜鹃 luo mao du juan

Shrubs, 2.5–4 m tall; young shoots 4–5 mm in diam., sparsely red-glandular and floccose. Petiole 20–25 mm, sparsely floccose and shortly glandular-hairy; leaf blade leathery, oblong to oblong-elliptic, 7–10 × 2–4 cm; base obtuse or rounded; apex acute and apiculate; abaxial surface indumentum brownish to cinnamon, thin, loose, somewhat caducous; adaxial surface glabrous; net veins evident abaxially. Inflorescence racemose-umbellate, 6–10-flowered; rachis and pedicels sparsely floccose and glandular. Pedicel 2.5–3 cm; calyx lobes 5, 3–5 mm, unequal, ovate to oblong-ovate, obtuse, sparsely shortly glandular-hairy outside, margin glandular-ciliate; corolla funnel-campanulate, pink, crimson spotted on upper part of corolla-tube, 4–5 cm, lobes 5(–7), emarginate; stamens 10–14, unequal, filaments densely puberulent below middle; ovary 5–6 mm, densely shortly glandular-hairy; style ca. 2.5 cm, slightly shorter than corolla, shortly glandular-hairy in lower 3/4 stigma discoid. Fl. May.

● Coniferous forests, *Rhododendron* thickets, mountain slopes; 3000–3400 m. NW Yunnan.

This entity is a natural hybrid of *Rhododendron adenogynum* (see Chamberlain, Notes Roy. Bot. Gard. Edinburgh 39: 341. 1982).

345. Rhododendron balfourianum Diels, Notes Roy. Bot. Gard. Edinburgh 5: 214. 1912.

粉钟杜鹃 fen zhong du juan

Shrubs 1–4 m tall; young shoots glabrous, sparsely shortly glandular-hairy. Petiole 15–20 mm, glabrescent; leaf blade leathery, ovate-lanceolate to oblong-elliptic, 5–12 × 2.5–4.5 cm; base rounded or slightly cordate; apex acute or acuminate; abaxial surface indumentum 1-layered, thin or thick ± agglutinated or spongy, with or without surface pellicle; adaxial surface glabrous; midrib prominent abaxially, lateral veins concealed. Inflorescence racemose-umbellate, 5–7-flowered; rachis ca. 5 mm. Pedicel 1.5–2.5 cm, tomentose and densely short-glandular-hairy; calyx lobes 5, 6–10 mm, oblong-elliptic, sparsely shortly glandular-hairy outside, and margin glandular-ciliate; corolla funnel-campanulate, pale pink to pink, with crimson markings, 3.5–4 cm, lobes 5, rounded, deeply grooved; stamens 10, unequal, filaments pubescent at base; ovary 5–6 mm, densely short-glandular-hairy; style glabrous or shortly glandular-hairy, stigma discoid. Capsule oblong-cylindric, straight, 15–20 × 6–8 mm, calyx and style persistent. Fl. May–Jul, fr. Sep–Oct.

● *Abies* forests, coniferous forest margins, thickets, rocky or gravelly slopes; 2500–4600 m. SW Sichuan, W Yunnan.

1a. Leaf blade 5–8 cm, indumentum thin, ± agglutinated, without pellicle, style glandular ..... 345a. var. *balfourianum*

1b. Leaf blade 7–12 cm, indumentum thick, spongy, with pellicle, style glabrous or with a few glands near the base ..... 345b. var. *aganniphoides*

345a. Rhododendron balfourianum var. **balfourianum**

粉钟杜鹃(原变种) fen zhong du juan (yuan bian zhong)

Leaf blade 5–8 × 2.5–3.5 cm; abaxial surface densely pale brown to pale cinnamon ± agglutinate tomentose, without surface pellicle. Style with short glandular hairs on lower third. Fl. Jun–Jul, fr. Sep.

● *Abies* forests, *Rhododendron* thickets, rocky slopes; 3300–4600 m. SW Sichuan, W Yunnan.

345b. Rhododendron balfourianum var. **aganniphoides** Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 15: 306. 1927.

白毛粉钟杜鹃 bai mao fen zhong du juan

Leaf blade 7–12 × 2.5–4.5 cm; abaxial surface densely white to yellowish white spongy tomentose, with surface pellicle. Style glabrous. Fl. May–Jun, fr. Sep–Oct.

● Coniferous forest margins, thickets, gravelly slopes; 2500–4100 m. SW Sichuan, NW Yunnan.

346. Rhododendron pomense Cowan & Davidian, Notes Roy. Bot. Gard. Edinburgh 21: 146. 1953.

波密杜鹃 bo mi du juan

Shrubs, 0.6–1.2 m tall; young shoots densely floccose and glandular. Petiole 15–20 mm, sparsely floccose; leaf blade leathery, oblong-elliptic to oblong-ovate, 8.5–10 × 3.6–4.7 cm; base rounded; apex bluntly rounded, apiculate; abaxial surface indumentum thin, 1-layered, yellowish, hairs branched. Inflorescence racemose-umbellate, 3–10-flowered; rachis ca. 5 mm. Pedicel 1.3–2.4 cm, densely tomentose; calyx pink, lobes 5, 5–12 mm, unequal, margin ciliate; corolla campanulate, pink, with purple spots inside, ca. 3.8 × 4.4 cm; lobes 5, rounded, deeply grooved; stamens 10, unequal, filaments puberulent in lower half; ovary ca. 5 mm, densely tomentose; style ca. 2.9 cm, glabrous. Fl. Jun.

● Coniferous forests, thickets, mountain slopes; 3300–3400 m. SE Xizang.

347. Rhododendron trichogynum L. C. Hu, Acta Phytotax. Sin. 30: 545. 1992.

理县杜鹃 li xian du juan

Small trees, ca. 7 m tall; branchlets and petioles glabrous. Petiole 10–15 mm; leaf blade leathery, ovate-elliptic to oblong, 7.5–9 × 3.2–4.5 cm; base broadly cuneate or subcordate; apex acute and apiculate; abaxial surface indumentum thin, tawny, ± agglutinated; adaxial surface green, slightly rugulose, glabrous. Inflorescence racemose-umbellate, 8–15-flowered; rachis ca. 10 mm. Pedicel 1–2 cm, glabrous or sparsely floccose; calyx deeply lobed; lobes 5, large, oblong, puberulent at base outside, margin glandular-ciliate, 8–10 × 3–4 mm; corolla campanulate, white, crimson dotted on upper lobes, 3–3.5 × ca. 4 cm, puberulent at base inside, lobes 5; stamens (9 or)10, filaments puberulent below middle; ovary ca. 5 mm, densely pale brown-pubescent; style ca. 2.7 cm, glabrous, stigma nearly discoid. Fl. Jun.

● Forests, mountain slopes; ca. 3100 m. NW Sichuan.

348. Rhododendron adenogynum Diels, Notes Roy. Bot. Gard. Edinburgh 5: 216. 1912.

腺房杜鹃 xian fang du juan

Rhododendron adenophorum I. B. Balfour & W. W. Smith.

Shrubs, 1–2.5 m tall; branchlets stout, with gray woolly tomentum when young, sometimes mixed with glands, occasionally glabrous. Petiole 10–15 mm, tomentose and shortly glandular-hairy, sometimes almost glabrous; leaf blade thickly leathery, lanceolate to oblong-lanceolate, 6–12 × 2–4 cm; base rounded or ± cordate; apex acute or acuminate; abaxial surface indumentum tawny to cinnamon, dense, thickly spongy, hairs sometimes mixed with glands; adaxial surface dark green, glabrous. Inflorescence racemose-umbellate, 8–12-flowered; rachis ca. 10 mm, tomentose. Pedicel 1.5–3 cm, densely tomentose and short-glandular-hairy; calyx yellow-green, deeply lobed; lobes 5, 10–15 mm, oblong, with short glandular hairs throughout on outer surface and margin; corolla campanulate, white flushed pink to pink, with crimson spots on corolla-tube and on upper lobes, 3.5–4.5 cm, inner surface puberulent, lobes 5; stamens 10, unequal, filaments densely puberulent and glandular-hairy in lower half; ovary ca. 5 mm, densely shortly glandular-hairy; style ca. 3.2 cm, shortly glandular-hairy on lower part; stigma discoid. Capsule oblong-cylindric, straight, 15–20 × 6–7 mm, calyx persistent. Fl. May–Jul, fr. Aug–Nov.

● *Abies* forests, *Rhododendron* thickets, mountain slopes; 3200–4200 m. SW Sichuan, SE Xizang, NW Yunnan.

349. Rhododendron dumicola Tagg & Forrest in J. B. Stevenson, Sp. Rhodod. 643. 1930.

灌丛杜鹃 guan cong du juan

Shrubs, 1–2.5 m tall; young shoots and petioles sparsely shortly glandular-hairy. Petiole 10–15 mm; leaf blade leathery, oblong-elliptic to obovate, 6.5–7.5 × 3–4 cm; base subrounded; apex obtuse or rounded, apiculate; abaxial surface tawny indumentum densely felted, hairs branched, midrib sparsely red-glandular; adaxial surface glabrous. Inflorescence umbellate, 5–7-flowered; rachis short, ca. 3 mm. Pedicel 1.5–2 cm, densely shortly glandular-hairy; calyx deeply lobed; lobes 5, 7–10 mm, unequal, sparsely shortly glandular-hairy near base on outer surface, margin glandular-ciliate; corolla campanulate, white to pale rose, with crimson flecks below, 3.5–4 cm, lobes 5; stamens 10, unequal, filaments pubescent at base; ovary ca. 6 mm, densely shortly glandular-hairy; style subequal to corolla, glabrous, eglandular. Fl. Jun–Jul.

● *Rhododendron* thickets, rocky slopes; ca. 4200 m. NW Yunnan.

350. Rhododendron zhongdianense L. C. Hu, Acta Phytotax. Sin. 22: 317. 1984.

中甸杜鹃 zhong dian du juan

Shrubs, 2–3 m tall; young shoots ca. 5 mm in diam.,

sparsely glandular, glabrescent. Petiole 10–15 mm, sparsely pubescent and glandular; leaf blade leathery, oblong to ovate-oblong, 7–10 × 2.5–3.5 cm; base obtuse or rounded; apex subacute, apiculate; abaxial surface indumentum fawn, thick, felted, compact, hairs stellate, midrib sparsely puberulent and red-glandular; adaxial surface glabrous; midrib prominent abaxially. Inflorescence racemose-umbellate, 6–8-flowered; rachis ca. 4 mm, floccose. Pedicel 1.5–1.8 cm, densely shortly glandular-hairy; calyx pubescent, lobes 5, 5–7 mm, unequal, obovate-oblong, densely shortly glandular-hairy on outer surface and margin; corolla funnel-campanulate, pale red, purple-spotted on upper lobes, 2.5–3.5 cm, both surfaces glabrous, lobes 5; stamens 10(–12), filaments white-puberulent at base; ovary subcylindrical, 4–5 mm, sparsely pubescent and shortly glandular-hairy; style short-glandular-hairy at base; stigma discoid. Fl. Jun.

● Forests; ca. 3700 m. NW Yunnan.

This species was included within *Rhododendron balfourianum* in Fl. Yunnan. (4: 418. 1986), but differs from that species in having the leaf blade abaxially with a thick, felted, non-agglutinated, fawn indumentum, in the smaller flowers, and in the sparsely pubescent and glandular ovary.

351. Rhododendron bureavii Franchet, Bull. Soc. Bot. France 34: 281. 1887.

锈红杜鹃 xiu hong du juan

Rhododendron bureavioides I. B. Balfour; *R. cruentum* H. Léveillé.

Shrubs, 1–4 m tall; young shoots densely rusty-red to tawny woolly-tomentose, sometimes mixed with red-glands. Petiole 10–20 mm, rust-red woolly-tomentose; leaf blade leathery, elliptic to obovate-oblong, 6–14 × 2.5–5 cm; base obtuse or subrounded; apex acute or acuminate, apiculate; abaxial surface rust-red to tawny, densely woolly, hairs branched; adaxial surface shiny, glabrous. Inflorescence racemose-umbellate, 10–20-flowered; rachis and pedicels densely rust-red woolly-tomentose, hairs branched, and with glandular hairs. Pedicel 1.5–2 cm; calyx lobes 5, 5–10 mm, oblong, pubescent and glandular on lower half outside, margin glandular-ciliate; corolla tubular-campanulate or campanulate, white flushed pink to pink, with purple dots inside, 3–4.5 cm, lobes 5; stamens 10, unequal, filaments pubescent at base; ovary ovoid, 4–5 mm, densely glandular-hairy and long-hairy, sometimes glandular only; style ca. 3 cm, similarly glandular-hairy and hairy. Capsule oblong-cylindric, 15–20 × ca. 10 mm, with vestiges of glands and hairs. Fl. May–Jun, fr. Aug–Oct.

● Coniferous forests, *Rhododendron* thickets, mountain slopes; 2800–4500 m. W Sichuan, N Yunnan.

Field observations suggest that *Rhododendron bureavioides* should be treated as a distinct species. It differs in having a bistrate indumentum.

352. Rhododendron elegantulum Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 15: 311. 1927.

金江杜鹃 jin jiang du juan

Small, usually compact shrubs, 1–1.5 m tall; young shoots densely tomentose. Petiole 10–15 mm, pale brown-tomentose; leaf blade leathery, oblong-elliptic to oblong-lanceolate, 5–9 × 1.5–3 cm; base obtuse or subrounded; apex acute; abaxial surface cinnamon to rust-red, densely woolly; adaxial surface light green, glabrous. Inflorescence umbellate, 10–20-flowered; rachis ca. 10 mm, puberulent. Pedicel ca. 2 cm, densely red-brown-floccose and short-glandular-hairy; calyx lobes 5, 7–10 mm, unequal, oblong, acute, with short-stalked glands outside, margin glandular-ciliate; corolla funnel-campanulate, pale purple, with crimson markings, 3–3.5 cm, sparsely pubescent at base inside; lobes 5; stamens 10, unequal, filaments densely puberulent at base; ovary ca. 5 × 2.2 mm, densely short-glandular-hairy; style sparsely short-glandular-hairy near base; stigma discoid. Capsule cylindric, ca. 15 × 5 mm, enclosed in persistent calyx. Fl. May–Jun, fr. Jul.

● *Abies* forests, mountain slopes; 3600–3900 m. SW Sichuan, NW Yunnan.

353. Rhododendron pugeense L. C. Hu, Acta Phytotax. Sin. 30: 543. 1992.

普格杜鹃 pu ge du juan

Shrubs, ca. 2 m tall; young shoots, petioles, and pedicels with dense yellow-ferruginous-dendroid branched long hairs. Petiole 15–20 mm; leaf blade thickly leathery, obovate-elliptic to obovate-oblong, 8.5–13 × 3.5–5.5 cm; base broadly cuneate or subrounded; apex acute, mucronate; abaxial surface rufous, indumentum thickly woolly, hairs multi-branched; adaxial surface glabrous except in grooved midrib. Inflorescence umbellate, ca. 12-flowered; rachis ca. 5 mm. Pedicel stout, ca. 1.2 cm, with dense yellow-ferruginous long dendroid branched hairs; calyx lobes 5, 7–8 mm, ovate-lanceolate, densely villous and mixed with dendroid branched hairs outside, margin ciliate; corolla campanulate, pink, with few purple spots inside, 3–3.5 × ca. 3.5 cm; lobes 5, 1.3–1.5 cm; stamens 10, unequal, filaments pubescent near base; ovary ovoid, ca. 5 × 3.5 mm, densely villous; style ca. 2.7 cm, densely villous, also with a few dendroid branched hairs in lower half, stigma ± discoid. Fl. May.

● *Rhododendron* thickets, mountain slopes; ca. 3500 m. SW Sichuan.

This species differs from the closely allied *Rhododendron bureavii* in the dendroid-villous branchlets, petioles, and pedicels, and in the densely villous and eglandular ovaries.

354. Rhododendron faberi Hemsley, J. Linn. Soc., Bot. 26: 22. 1889 [*"faberii"*].

金顶杜鹃 jin ding du juan

Shrubs, 1–2.5 m tall; young shoots densely gray-brown pubescent. Petiole 15–25 mm, densely gray-pubescent; leaf blade leathery sometimes thickly so, ovate-oblong to elliptic, 7–17 × 2.5–7 cm; base broadly cuneate or subrounded; apex acute or with small and slightly curved sharp point; abaxial surface with indumentum 2-layered, upper layer thick, rufous and ± deciduous when mature, or thin and brownish, lower layer very thin, gray-white and persistent; adaxial surface light green, slightly rugulose, glabrous. Inflorescence racemose-umbel-

late, 6–20-flowered; rachis ca. 5 mm. Pedicel 1.5–2 cm, densely grayish yellow-tomentose and glandular-hairy; calyx leaflike, 5-cleft, 8–12 mm, lobes glandular-hairy and pubescent near base outside, margin glandular-ciliate; corolla 4–5 cm; stamens 10, shorter than corolla; filaments pubescent at base; ovary ca. 7 mm, densely red-brown glandular-setose or with hairs and glandular hairs; style ca. 2.8 cm, glabrous, rarely with a few glandular hairs at base. Capsule cylindric, 10–25 × 5–8 mm, calyx and style persistent. Fl. May–Jun, fr. Aug–Oct.

● *Abies* forests, coniferous forest margins, thickets, rocky mountain slopes; 2800–4000 m. W Sichuan.

1a. Leaf blade abaxially with upper layer of indumentum thick, red-brown to tawny; inflorescence 6–10-flowered; ovary densely setose-glandular; capsule 10–15 mm ..... 354a. subsp. *faberi*

1b. Leaf blade abaxially with upper layer of indumentum thin, gray-brown to fawn; inflorescence 12–20-flowered; ovary hairy and glandular; capsule to 25 mm ..... 354b. subsp. *prattii*

354a. Rhododendron faberi subsp. **faberi**

金顶杜鹃(原亚种) jin ding du juan (yuan ya zhong)

Rhododendron faberioides I. B. Balfour; *R. wuense* I. B. Balfour.

Leaf blade ovate-oblong, 7–12 × 2.5–4.5 cm, abaxially with upper layer of indumentum thick, red-brown to tawny. Inflorescence 6–10-flowered. Corolla ca. 4 cm; ovary densely setose-glandular. Capsule 10–15 mm. Fl. May–Jun, fr. Sep–Oct.

● *Abies* forests, thickets, rocky mountain slopes; 2800–3500 m. W Sichuan.

354b. Rhododendron faberi subsp. **prattii** (Franchet) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 120. 1978.

大叶金顶杜鹃 da ye jin ding du juan

Rhododendron prattii Franchet, J. Bot. (Morot) 9: 389. 1895; *R. leei* W. P. Fang.

Leaf blade elliptic, 7–17 × 4–7 cm, abaxially with upper layer of indumentum thin, gray-brown to fawn. Inflorescence 12–20-flowered. Corolla 4–5 cm; ovary hairy and glandular. Capsule to 25 mm. Fl. May–Jun, fr. Aug–Oct.

● Coniferous forest margins, *Rhododendron* thickets; 2800–4000 m. W Sichuan.

Field observations suggest that subsp. *prattii* should be treated as a distinct species. The differences mentioned above are now considered sufficient to merit the recognition of two distinct species.

355. Rhododendron ×sinosimulans D. F. Chamberlain, **nom. nov.**

裂毛杜鹃 lie mao du juan

Replaced synonym: *Rhododendron mimetes* Tagg & Forrest var. *simulans* Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 15: 316. 1927; *R. simulans* (Tagg & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 39: 343. 1982, not *R. simulans* Sleumer, Reinwardtia 5: 168. 1960.

Shrubs, ca. 2 m tall; young shoots sparsely floccose or glabrescent. Petiole 15–20 mm, glabrous; leaf blade leathery, ovate-elliptic to ovate-oblong, 6.5–9.5 × 3–5 cm; base rounded or subcordate; apex acute, apiculate; abaxial surface with indumentum 2-layered, dense, upper layer thick, fawn, woolly-tomentose, ± splitting when mature, hairs branched, lower layer compacted; adaxial surface glabrous, sometimes with vestiges of hairs in grooved midrib. Inflorescence racemose-umbellate, 7–10-flowered; rachis 10–12 mm, glabrous. Pedicel 2–2.5 cm, sparsely tomentose; calyx lobes 5, 4–8 mm, narrowly oblong, margin ciliate; corolla funnelform-campanulate, white-pubescent, with crimson spots inside, 4–5 cm, lobes 5; stamens 10, filaments sparsely puberulent at base; ovary 7–8 × ca. 3 mm, densely brown branched-hairy, sometimes also glandular-hairy; style ca. 2.6 cm, glabrous; stigma capitate. Fl. Jun.

● *Rhododendron* thickets; 3600–4000 m. SW Sichuan.

This entity is evidently a hybrid of *Rhododendron sphaeroblastum*.

356. Rhododendron mimetes Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 15: 315. 1927.

优异杜鹃 you yi du juan

Shrubs, 1–2 m tall; young shoots sparsely floccose. Petiole 10–15 mm, initially floccose, later glabrescent; leaf blade leathery, elliptic to oblong-ovate, 6–10 × 2.5–4 cm; base subrounded; apex shortly acuminate, apiculate; abaxial surface with indumentum 2-layered, upper layer loose, fulvous woolly-tomentose, floccose, ± detersile when mature, hairs multibranched, lower layer whitish, compacted and persistent; adaxial surface glabrous. Inflorescence lax, racemose-umbellate, 6–10-flowered; rachis ca. 10 mm. Pedicel 1.8–2 cm, densely tomentose and shortly glandular-hairy; calyx lobes 5, 3–6 mm, unequal, ovate, sparsely tomentose and shortly glandular-hairy outside, margin glandular-ciliate; corolla broadly funnel-campanulate, white, faintly flushed pink, with few crimson spots inside, 4–4.5 × ca. 5 cm; lobes 5; stamens 10, unequal, filaments pubescent at base; ovary ca. 6 mm, densely brown-tomentose and short-glandular-hairy; style ca. 2.8 cm, glabrous, stigma slightly lobulate. Fl. Jun.

● Thickets, gullies, rocky mountain slopes; 3300–3600 m. SW Sichuan.

357. Rhododendron ×paradoxum I. B. Balfour, Notes Roy. Bot. Gard. Edinburgh 15: 114. 1926, pro sp.

奇异杜鹃 qi yi du juan

Small shrubs, 1–2 m tall; young shoots densely whitish tomentose, later glabrescent. Petiole 15–20 mm, whitish tomentose; leaf blade leathery, oblong-elliptic, 5–11.5 × 2.5–5 cm; base broadly obtuse or rounded; apex obtuse or subrounded, ± beaked; abaxial surface indumentum loose, pale brown, hairs branched; adaxial surface slightly rugulose, glabrous. Inflorescence racemose-umbellate, 8–10-flowered; rachis ca. 10 mm.

Pedicel 1.5–2 cm, densely tawny tomentose; calyx lobes 5, 1–2 mm, unequal, tomentose like pedicel; corolla obliquely campanulate, white, with dark crimson basal blotch and red spots spreading on upper lobes, ca. 4 cm, lobes 5; stamens 10, unequal, filaments pubescent at base; ovary cylindric, ca. 5 mm, densely brown appressed fasciculate-tomentose; style glabrous; stigma discoid.

● W Sichuan.

This entity is not actually known in the wild. The type was raised from seeds collected in the wild in W Sichuan (*Wilson 1353*) and labeled *Rhododendron wiltonii*. It differs from that species in the oblong-elliptic leaf blade, which bears loose indumentum abaxially and is not obviously bullate-rugose adaxially, and the large, white corolla ca. 4 cm.

358. Rhododendron ×inopinum I. B. Balfour, Notes Roy. Bot. Gard. Edinburgh 15: 109. 1926, pro sp.

短尖杜鹃 duan jian du juan

Dwarf shrubs, erect; young shoots ca. 3.5 mm in diam., whitish tomentose, glabrescent. Petiole 10–15 mm; leaf blade leathery, ovate-oblong, ca. 10 × 3.5 cm; base obtuse or rounded; apex acute; abaxial surface pale green, indumentum pale brown, ± detersile; adaxial surface dark green, shiny, glabrous, sometimes with vestiges of young hairs. Inflorescence racemose-umbellate, ca. 10-flowered; rachis ca. 7 mm. Pedicel ca. 1.5 cm, densely whitish tomentose; calyx lobes 5, ca. 1.5 mm, rounded, pubescent outside; corolla funnel-campanulate, creamy-white, with deep carmine basal blotch and some red spots, ca. 2.5 cm, lobes 5; stamens 10, unequal, filaments densely puberulent at base; ovary conical, ca. 6 mm, densely tomentose; style green, glabrous; stigma discoid.

● W Sichuan.

This entity is not actually known in the wild. The type was raised at Edinburgh from seeds collected in the wild in W Sichuan (*Wilson 1866*) and labeled *Rhododendron wasonii*.

359. Rhododendron potaninii Batalin, Trudy Imp. S.-Peterburgsk. Bot. Sada 11: 489. 1891 [*"potanini"*].

甘肃杜鹃 gan su du juan

Small shrubs, erect, branchlets glabrous. Petiole 20–25 mm, densely tomentose, hairs branched; leaf blade leathery, oblong to obovate, 7–9 × 2.5–4 cm; base rounded; apex obtuse, mucronate; abaxial surface pale, only lower half of midrib densely fine branched-hairy; adaxial surface glabrous. Inflorescence racemose or subumbellate, 7–8-flowered. Pedicel ca. 2 cm, densely rufous-pubescent; calyx lobes 5, ca. 1 mm, irregular, ± hairy; corolla broadly campanulate, white, unspotted, ca. 3 cm, glabrous; lobes 5, ca. 1 cm, rounded; stamens 10, included in the tube, reaching only to base of lobes, filaments sparsely puberulent in lower half; ovary conical, ca. 4 mm, densely rufous-tomentose; style glabrous.

● E Gansu.

360. Rhododendron dignabile Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 241. 1937.

疏毛杜鹃 shu mao du juan

Small trees or shrubs, 3–7 m tall; young shoots sparsely floccose, glabrescent. Petiole 12–15 mm, floccose; leaf blade leathery, oblong-elliptic to oblong-obovate, 8–15 × 3–6 cm; base broadly cuneate, rounded or subcordate; apex obtuse or acute; abaxial surface brown with glands; adaxial surface green, glabrous. Inflorescence umbellate, 12–15-flowered; rachis ca. 10 mm. Pedicel 1–2 cm, sparsely floccose; calyx pale green; lobes 5, 1–1.5 mm, broadly triangular or subrounded, floccose or glabrescent; corolla campanulate, rose or pale yellow, with fine spots and crimson basal blotch inside, 3–4 cm, lobes 5, emarginate; stamens 10, unequal, filaments densely puberulent in lower half; ovary ca. 7 × 3 mm, sparsely floccose, also with a few yellow glands; style glabrous, stigma small.

● *Abies* forests, *Rhododendron* thickets; 3100–3500 m. S Xizang.

361. Rhododendron purdomii Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 538. 1913.

太白杜鹃 tai bai du juan

Shrubs or small trees, 2–6 m tall; young shoots puberulent; bud scales ± persistent. Petiole 10–15 mm, puberulent, glabrescent; leaf blade leathery, oblong-lanceolate to oblong-elliptic, 6–9 × 2.5–3.5 cm; base cuneate; margin revolute; apex obtuse, mucronate; both surfaces glabrous; abaxial surface pale green; reticulate veins distinct. Inflorescence racemose-umbellate, 10–15-flowered; rachis ca. 10 mm, pale brown-tomentose. Pedicel 1–1.5 cm, densely whitish gray-pubescent; calyx lobes 5, 1–1.5 mm, broadly triangular, sparsely pubescent; corolla campanulate, pale pink or whitish, with purple spots on corolla tube on upper lobes, 2.5–3 cm, lobes 5; stamens 10, unequal, filaments densely puberulent in lower half; ovary conical, 4–5 mm, sparsely white-pubescent; style ca. 2.2 cm, glabrous, stigma capitate. Capsule cylindric, slightly curved, 10–30 × 4–8 mm. Fl. May–Jun, fr. Jul–Sep.

● Forests, mountain slopes; 1800–3500 m. S Gansu, W Henan, S Shaanxi.

This species almost certainly does not belong in *Rhododendron* subsect. *Taliensia*; it probably has closer affinities with species in *R.* subsect. *Selensia*. In addition, *R. purdomii* var. *villosum* L. H. Wu (J. Wuhan Bot. Res. 17(1): 21. 1999), described from W Henan (Songxian), needs to be considered. It was described as differing from var. *purdomii* in having the leaf blade larger, 4–11 × 2–5.5 cm, adaxially sparsely yellowish villous, the margin densely ciliate, with both villi and ciliae readily deciduous; the petiole longer, to 3 cm; and the inflorescence rachis longer, to 1.8 cm.

362. Rhododendron detersile Franchet, J. Bot. (Morot) 12: 260. 1898.

干净杜鹃 gan jing du juan

Small shrubs, 0.4–1 m tall; young shoots densely rufous-tomentose; bud scales persistent. Petiole short, 3–4 mm, densely rufous-tomentose; leaf blade thickly leathery, oblong to oblanceolate, 3–6 × 1–2 cm; base broadly cuneate; margin revolute; apex blunt, rounded, mucronate; abaxial surface indumentum 1-layered, red-brown woolly, detersile when mature, hairs branched; adaxial surface appearing bullate, deep green, slightly shiny, glabrous; midrib, lateral and net veins impressed adaxially. Inflorescence compact, umbellate, 4–8-flowered; ra-

chis very short. Pedicel 1–1.5 cm, densely red-brown glandular-hairy and pubescent; calyx membranous, lobes 5, 4–5 mm, ovate-lanceolate, acute, hairy and shortly glandular-hairy outside, margin ciliate-glandular; corolla campanulate, pink, with crimson spots on upper lobes inside, 2.5–3 cm, lobes 5, pubescent at base; stamens 10, unequal, filaments pubescent at base; ovary conical, ca. 5 mm, densely red-brown villous and glandular-hairy; style ca. 2 cm, shortly glandular-hairy at base; stigma discoid. Capsule cylindric, ca. 12 × 5 mm, villous, and with vestiges of glandular hairs. Fl. May–Jun, fr. Aug–Oct.

● Forests, mountain slopes; 2500–2900 m. SW Shaanxi (Taibai Shan), NE Sichuan.

363. Rhododendron wiltonii Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1910: 107. 1910.

皱皮杜鹃 zhou pi du juan

Shrubs, 1.5–3 m tall; young shoots densely yellowish gray-tomentose. Leaf blade thickly leathery, ovate-oblong to oblanceolate, 5–11 × 2–4 cm; base cuneate; margin slightly revolute; apex acute, apiculate; abaxial surface indumentum rust-red to dark brown, dense, 1-layered, hairs fasciculate to stellate; adaxial surface coarsely bullate-rugose, glabrescent; midrib, lateral and net veins deeply impressed adaxially. Inflorescence racemose-umbellate, 8–10-flowered; rachis 5–8 mm, yellowish pubescent. Pedicel 1.5–2 cm, densely floccose-tomentose with a few glandular hairs; calyx lobes 5, ca. 2 mm, triangular, densely floccose; corolla funnel-campanulate, white to pink, with red spots inside, 3–4 cm, puberulent at base inside, lobes 5; stamens 10, unequal, filaments puberulent in lower half; ovary ca. 5 mm, densely rust-red woolly-tomentose; style ca. 2.3 cm, glabrous, stigma capitate, green. Capsule cylindric, slightly curved, 15–20 × 4–5 mm, tomentose. Fl. May–Jun, fr. Aug–Oct.

● Forests, high mountains; 2200–3300 m. W Sichuan.

Rhododendron dayiense M. Y. He (Acta Phytotax. Sin. 35: 63. 1997), described from C Sichuan (Dayi), needs to be considered. It is said to be closely allied to *R. wiltonii,* but differs in the longer pedicel, 2.8–3.2 cm, in the larger calyx, 4–5 mm, in the red corolla, and in the densely reddish brown hispid ovary, with red-brown hairs at the base of the style.

364. Rhododendron coeloneurum Diels, Bot. Jahrb. Syst. 29: 513. 1900.

粗脉杜鹃 cu mai du juan

Small trees, 3–8 m tall; young shoots ca. 5 mm in diam., densely red-brown-tomentose. Petiole 10–15 mm, brown-tomentose; leaf blade leathery, oblanceolate to oblong-elliptic, 7–12 × 2.5–4 cm; base cuneate; margin slightly revolute; apex bluntly or sharply acute, apiculate; abaxial surface with indumentum 2-layered, upper layer thick, red-brown, sometimes deciduous, hairs branched, lower layer gray-white, appressed; adaxial surface appearing bullate-rugose, glabrescent; veins conspicuously and deeply impressed. Inflorescence umbellate, 6–9-flowered; rachis ca. 3 mm, densely brown-tomentose. Pedicel 1–1.5 cm, similarly hairy; calyx lobes 5, ca. 2 mm, tomentose; corolla funnel-campanulate, pink to purplish, with purple spots on corolla-tube and upper lobes, 4–5 cm, puberulent near base inside, lobes 5; stamens 10, unequal, filaments pubescent at base; ovary ca. 6 mm, densely tomentose; style ca. 4 cm, glabrous, rarely pubescent at base; stigma capitate. Capsule cylindric, green, 20–25 × 6–9 mm, hairy. Fl. Apr–Jun, fr. Jul–Oct.

● Mixed forests, mountain slopes; 1200–2300 m. N and SE Guizhou, S Sichuan, NE Yunnan.

It is probable that this species belongs to *Rhododendron* subsect. *Argyrophylla,* not to *R.* subsect. *Taliensia*; it may be closely allied to *R. denudatum*.

365. Rhododendron aganniphum I. B. Balfour & Kingdon Ward, Notes Roy. Bot. Gard. Edinburgh 10: 80. 1917.

雪山杜鹃 xue shan du juan

Shrubs, 1–4 m tall; young shoots glabrous. Petiole 8–15 mm, glabrous or with a few glands; leaf blade thickly leathery, oblong to elliptic-oblong, sometimes ovate-lanceolate or elliptic, 4.5–12 × 2–6 cm; base rounded to subcordate; margin revolute; apex acute and apiculate; abaxial surface white to yellowish or pale brown, sometimes turning deep red-brown, with indumentum 1-, rarely 2-, layered, dense, compacted to spongy tomentose, sometimes splitting, with or without pellicle, hairs branched; adaxial surface slightly rugulose, glabrous. Inflorescence racemose-umbellate, 10–20-flowered; rachis ca. 5 mm, glabrous. Pedicel 0.8–1.5 cm, glabrous; calyx lobes 5, 1–1.5 mm, rounded, glabrous, margin ± ciliate; corolla funnel-campanulate or campanulate, white or pale pink, with many purplish red spots inside, 3–3.5 cm, lobes 5, slightly unequal; stamens 10, filaments sparsely puberulent near base; ovary 4–5 mm, glabrous; style ca. 2.3 cm, glabrous. Capsule cylindric, straight, 15–25 × 5–7 mm. Fl. Jun–Jul, fr. Sep–Oct.

● Coniferous forests, forest margins, thickets, mountains, slopes; 2700–4700 m. S Qinghai, W Sichuan, SE Xizang, NW Yunnan.

This species hybridizes in the wild with both *Rhododendron phaeochrysum* and *R. proteoides*.

1a. Abaxial leaf surface with thin 2-layered ± agglutinate indumentum, upper layer pale brown, splitting to reveal white under layer, without a pellicle ..... 365c. var. *schizopeplum*

1b. Abaxial leaf surface with thick 1-layered spongy indumentum, with a pellicle.

2a. Abaxial leaf indumentum white to yellowish white, not splitting ..... 365a. var. *aganniphum*

2b. Abaxial leaf indumentum initially yellow, later becoming deep red-brown, splitting ..... 365b. var. *flavorufum*

365a. Rhododendron aganniphum var. **aganniphum**

雪山杜鹃(原变种) xue shan du juan (yuan bian zhong)

Rhododendron aganniphum var. *glaucopeplum* (I. B. Balfour & Forrest) T. L. Ming; *R. glaucopeplum* I. B. Balfour & Forrest.

Petiole ca. 10 mm, sometimes with a few glands; leaf blade 6–9 × 2–4 cm; abaxial surface indumentum 1-layered, white to yellowish white, persistent, not splitting, with pellicle. Fl. Jun–Jul, fr. Sep.

● Coniferous forests, *Rhododendron* thickets, mountains; 2700–4700 m. S Qinghai, W Sichuan, SE Xizang, NW Yunnan.

365b. Rhododendron aganniphum var. **flavorufum** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 119. 1978.

黄毛雪山杜鹃 huang mao xue shan du juan

Rhododendron flavorufum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 65. 1919.

Petiole 10–15 mm, eglandular; leaf blade 4.5–12 × 2.5–6 cm; abaxial surface indumentum 1-layered, at first yellow, becoming deep red-brown, splitting to irregularly patchy, with pellicle. Fl. Jun–Jul, fr. Oct.

● Coniferous forests, thickets, rocky slopes; 3200–4400 m. SW Sichuan, SE Xizang, NW Yunnan.

365c. Rhododendron aganniphum var. **schizopeplum** (I. B. Balfour & Forrest) T. L. Ming, Acta Bot. Yunnan. 6: 165. 1984.

裂毛雪山杜鹃 lie mao xue shan du juan

Rhododendron schizopeplum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 131. 1919; *R. doshongense* Tagg; *R. fissotectum* I. B. Balfour & Forrest.

Leaf blade 6–8 × 3–3.5 cm; abaxial surface indumentum 2-layered, upper layer pale brown, splitting into an irregular netlike pattern to reveal white compact under layer, without pellicle. Fl. Jun.

● Forest margins, thickets, mountain slopes; 3500–4500 m. SE Xizang, NW Yunnan.

366. Rhododendron vellereum Hutchinson ex Tagg in J. B. Stevenson, Sp. Rhodod. 688. 1930.

白毛杜鹃 bai mao du juan

Rhododendron principis Bureau & Franchet var. *vellereum* (Hutchinson ex Tagg) T. L. Ming.

Small trees, 2–5 m tall; shoots ca. 5 mm in diam., thinly floccose, glabrescent. Petiole 15–20 mm, white-floccose; leaf blade thickly leathery, oblong-elliptic to oblong-lanceolate, 6–12 × 2–4.5 cm; base rounded or cordate; apex obtuse or acute; abaxial surface indumentum silvery-white to gray-yellow, somewhat thick, soft and spongy, surface forming glossy pellicle; adaxial surface glabrous. Inflorescence racemose-umbellate, 10–20-flowered; rachis ca. 10 mm. Pedicel red, 1.5–2 cm, sparsely floccose or glabrescent; calyx lobes 5, ca. 1 mm, shallow, slightly floccose; corolla funnel-campanulate, white, sometimes flushed rose, with purple spots inside, 3.5–4 cm, lobes 5; stamens 10, filaments sparsely puberulent in lower half; ovary ca. 6 × 2.5 mm, 5- or 6-locular, glabrous, sometimes with a few floccose hairs at base; style ca. 2.3 cm, glabrous. Capsule narrowly long-cylindric, sulcate, strongly curved, 23–35 × 4–5 mm, glabrous. Fl. May–Jun, fr. Jul–Sep.

● Coniferous forests, *Rhododendron* thickets, mountains; 3000–4500 m. SE Qinghai, S Xizang.

The types of *Rhododendron vellereum* and *R. principis* are very similar, differing only in the indumentum on the ovary. The former taxon may not merit any more than subspecific rank.

367. Rhododendron principis Bureau & Franchet, J. Bot. (Morot) 5: 93. 1891.

藏南杜鹃 zang nan du juan

Small trees, 1–2.5 m tall; young shoots initially white to fawn tomentose. Petiole 10–15 mm, densely fulvous-tomentose; leaf blade leathery, oblong-elliptic to oblong-obovate, 5–7.5 × 2–3 cm; base obtuse or rounded; apex obtuse or acute and apiculate; abaxial surface indumentum 2-layered, upper layer thick, cinnamon, felted tomentose, pellicle absent, hairs branched, lower layer thin, appressed; adaxial surface slightly rugulose, glabrous. Inflorescence racemose-umbellate, 8–12-flowered; rachis ca. 5 mm. Pedicel 1–1.5 cm, sparsely puberulent; calyx teeth 5, 10–15 mm, glabrous, margin ciliate; corolla funnel-campanulate, white to pink, with purple spots inside, 2.5–3 cm, lobes 5; stamens 10, unequal, 1.2–2.2 cm, filaments pubescent at base; ovary ca. 6 mm, glabrous or sometimes with a few white hairs; style ca. 1.8 cm, glabrous; stigma capitate. Capsule cylindric, straight, 5-valved, 15–20 × 3–4 mm. Fl. May–Jun, fr. Aug.

● Coniferous forests, *Rhododendron* thickets; 3800–4500 m. S Xizang.

368. Rhododendron clementinae Forrest ex W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 343. 1915.

麻点杜鹃 ma dian du juan

Shrubs, 2–5 m tall; young shoots glabrous. Petiole slightly narrowly winged, 15–20 mm, glabrous; leaf blade thickly leathery, broadly elliptic to ovate-elliptic, 6–11 × 3–6 cm; base rounded or cordate; margin slightly revolute; apex rounded, mucronate; abaxial surface indumentum 2-layered, thick or thin, upper layer whitish to pale cinnamon or tawny woolly-tomentose, sometimes ± deciduous, surface with or without a pellicle, hairs branched, lower layer grayish, appressed; adaxial surface slightly rugulose, glabrous. Inflorescence racemose-umbellate, 7–15-flowered; rachis ca. 15 mm, glabrous. Pedicel 2–3 cm, glabrous; calyx lobes 6(or 7), ca. 1.5 mm, glabrous; corolla broadly campanulate or cuplike, white to bright rose, with many crimson dots, 2.5–4.5 cm, lobes 6 or 7; stamens 12(–14), filaments with scurfy hairs on lower half; ovary and style glabrous; stigma discoid. Capsule cylindric, 10–20 × 6–10 mm. Fl. May–Jun, fr. Jul–Oct.

● Forests, forest margins, thickets, mountains; 2600–4100 m. SW Shaanxi, SW Sichuan, NW Yunnan.

1a. Leaf blade 9–11 cm, upper layer of abaxial indumentum thick, whitish to pale cinnamon, with a pellicle; corolla 4–4.5 cm, 6(or 7)-lobed; capsule 1.5–2 cm ..... 368a. subsp. *clementinae*

1b. Leaf blade 6–7 cm, upper layer of abaxial indumentum thin, tawny, ± deciduous, without a pellicle; corolla 2.5–2.8 cm, 7-lobed; capsule 1–1.5 cm ..... 368b. subsp. *aureodorsale*

368a. Rhododendron clementinae subsp. **clementinae**

麻点杜鹃(原亚种) ma dian du juan (yuan ya zhong)

Leaf blade 9–11 × 4–6 cm. Corolla broadly campanulate, 4–4.5 cm, lobes 6(or 7). Capsule 15–20 × 8–10 mm. Fl. May–Jun, fr. Sep–Oct.

● Forest margins, thickets, mountain slopes; 3200–4100 m. SW Sichuan, NW Yunnan.

368b. Rhododendron clementinae subsp. **aureodorsale** W. P. Fang ex J. Q. Fu in K. T. Fu & J. Q. Fu, Fl. Tsinling. 1(4): 393. 1983.

金背杜鹃 jin bei du juan

Leaf blade 6–7 × 3–4 cm. Corolla cuplike, 2.5–2.8 cm, lobes 7. Capsule 10–15 × 6–8 mm. Fl. May–Jun, fr. Jul–Aug.

● Forests, mountains; 2600–3100 m. SW Shaanxi (Taibai Shan).

369. Rhododendron przewalskii Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 23: 350. 1877.

陇蜀杜鹃 long shu du juan

Shrubs, 1–3 m tall; young shoots, petioles, pedicels and calyces glabrous. Petiole yellowish, 10–15 mm; petioles, pedicels and calyces glabrous; leaf blade leathery, ovate-elliptic, elliptic, oblong or broadly oblong, 5–11 × 2.5–5 cm; base rounded or subcordate; apex obtuse, apiculate; abaxial surface indumentum compacted, 1-layered, gray-white, tawny to rust-yellow, cinnamon, or deep brown to ferruginous subagglutinated, hairs usually long-rayed stellate, gradually lost, sometimes persistent and branched; adaxial surface glabrous. Inflorescence corymbose-umbellate, 6–15-flowered; rachis ca. 10 mm, glabrous. Pedicel 1–1.5 cm; calyx 5-cleft, 1–1.5 mm; corolla campanulate or funnelform, white to pink, with purple-red spots inside, 2.5–3.5 cm, lobes 5; stamens 10, filaments slightly puberulent in lower half, or glabrous; ovary 4–5 mm, glabrous, sometimes sparsely pubescent; style glabrous, stigma capitate, green. Capsule oblong-cylindric, 15–20 × 4–5 mm. Fl. May–Jul, fr. Sep.

● Forests, mountain slopes, often dominant in thickets; 2700–4300 m. SW Gansu, E and S Qinghai, W Shaanxi, N and W Sichuan.

Rhododendron przewalskii hybridizes with *R. phaeochrysum* where the two species meet (as at Kangding in W Yunnan). Because of this, there are a number of forms that cannot be definitely placed in either species.

1a. Corolla campanulate; leaf blade base rounded or subcordate, abaxial surface densely gray-white, tawny to rust-yellow, sub-agglutinated, hairs long-rayed stellate, deciduous at maturity ..... 369a. subsp. *przewalskii*
1b. Corolla funnelform; leaf blade base cuneate, obtuse or subrounded; abaxial surface with indumentum persistent.
  2a. Leaf blade 5–7 × 2.5–3 cm; abaxial surface densely dark red tomentose, hairs branched; ovary sparsely pubescent or glabrescent ..... 369d. subsp. *yushuense*
  2b. Leaf blade 7–11 × 4–7 cm; abaxial surface stellate-hairy; ovary glabrous.
    3a. Leaf blade with abaxial surface densely deep brown to ferruginous-floccose hirsute ..... 369b. subsp. *chrysophyllum*
    3b. Leaf blade with abaxial surface densely gray-white to cinnamon long-tomentose ..... 369c. subsp. *huzhuense*

369a. Rhododendron przewalskii subsp. **przewalskii**

陇蜀杜鹃(原亚种) long shu du juan (yuan ya zhong)

Rhododendron dabanshanense Fang & S. X. Wang; *R. kialense* Franchet.

Leaf blade 6–10 × 3–4 cm; abaxial surface densely gray-white to tawny or rust-yellow tomentose, hairs long-rayed stellate, glabrescent. Inflorescence 10–15-flowered. Ovary glabrous. Fl. Jun–Jul, fr. Sep.

● Forests, mountain slopes, often dominant in thickets; 2600–4300 m. SW Gansu, E and S Qinghai, W Shaanxi, N and W Sichuan.

This variety is used medicinally.

369b. Rhododendron przewalskii subsp. **chrysophyllum** W. P. Fang & S. X. Wang, Acta Biol. Plateau Sin. 1: 227. 1982.

金背陇蜀杜鹃 jin bei long shu du juan

Leaf blade 7–11 × 5–7 cm; abaxial surface densely deep brown to ferruginous floccose short-hirsute, hairs long-rayed stellate, persistent. Inflorescence ca. 10-flowered. Ovary glabrous. Fl. May–Jun.

● Forests, mountain slopes; 2700–2800 m. E Qinghai.

369c. Rhododendron przewalskii subsp. **huzhuense** W. P. Fang & S. X. Wang, Acta Biol. Plateau Sin. 1: 228. 1982.

互助陇蜀杜鹃 hu zhu long shu du juan

Leaf blade 8–10 × 4–6 cm; abaxial surface densely gray-white to cinnamon long tomentose, hairs long-rayed stellate, persistent. Inflorescence 8–9-flowered. Ovary glabrous. Fl. May.

● Thickets, mountain slopes; 2700–3100 m. E Qinghai.

369d. Rhododendron przewalskii subsp. **yushuense** W. P. Fang & S. X. Wang, Acta Biol. Plateau Sin. 3: 1. 1984.

玉树陇蜀杜鹃 yu shu long shu du juan

Leaf blade 5–7 × 2.5–3 cm; abaxial surface densely dark red tomentose, hairs branched, persistent. Inflorescence 6–10-flowered. Ovary sparsely pubescent or glabrescent. Fl. Jun.

● Forests; ca. 4200 m. SW Qinghai.

370. Rhododendron phaeochrysum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 131. 1917.

栎叶杜鹃 li ye du juan

Shrubs, 1–4.5 m tall; shoots white-floccose, glabrescent. Petiole 10–15 mm, floccose, soon glabrescent; leaf blade leathery, oblong-elliptic to ovate-oblong, 5–14 × 2–5.5 cm; base subrounded or subcordate; apex acute to mucronate; abaxial surface tawny to golden-brown or cinnamon, densely tawny to golden-brown or cinnamon agglutinated or felted tomentose, hairs branched; adaxial surface glabrous. Inflorescence racemose-umbellate, 8–15-flowered; rachis 10–15 mm. Pedicel 1–1.5 cm, sparsely floccose or glabrous; calyx lobes 5, ca. 1 mm, acute, glabrous; corolla funnel-campanulate, white to pale pink,

with purplish red spots, 2–4.5 cm, lobes 5, orbicular; stamens 10, unequal, filaments pubescent in lower part; ovary ca. 7 mm, glabrous or sparsely pubescent; style ca. 2.4 cm, glabrous. Capsule oblong-cylindric, straight, slightly curved at apex, 15–30 × 4–6 mm. Fl. May–Jun, fr. Jul–Oct.

● *Abies* forests, thickets, mountain slopes; 3000–4800 m. W Sichuan, SE Xizang, NW Yunnan.

Hybrids probably account for part of the wide variation shown by *Rhododendron phaeochrysum,* which extensively hybridizes with both *R. aganniphum* and *R. przewalskii* (see above) and possibly some other species.

1a. Leaf blade 7–14 cm; abaxial surface densely tawny to golden-brown, ± agglutinated, felted-tomentose, not splitting ..... 370a. var. *phaeochrysum*
1b. Leaf blade 5–9 cm; abaxial surface densely tawny or cinnamon felted-tomentose, sometimes agglutinated or splitting.
  2a. Abaxial leaf surface with indumentum agglutinated, sometimes splitting ..... 370b. var. *agglutinatum*
  2b. Abaxial leaf surface with indumentum continuous, not agglutinated ..... 370c. var. *levistratum*

370a. Rhododendron phaeochrysum var. **phaeochrysum**

栎叶杜鹃(原变种) li ye du juan (yuan bian zhong)

Rhododendron cuprescens Nitzelius; *R. dryophyllum* I. B. Balfour & Forrest.

Leaf blade 7–14 × 2.5–5.5 cm; abaxial surface densely tawny to golden-brown ± agglutinate felted-tomentose, not splitting. Corolla 3–4.5 cm. Fl. May–Jun, fr. Jul–Oct.

● *Abies* forests, thickets, mountain slopes; 3300–4200 m. W Sichuan, SE Xizang, NW Yunnan.

370b. Rhododendron phaeochrysum var. **agglutinatum** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 120. 1978.

凝毛杜鹃 ning mao du juan

Rhododendron agglutinatum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 88. 1920; *R. dumosulum* I. B. Balfour & Forrest; *R. lophophorum* I. B. Balfour & Forrest; *R. syncollum* I. B. Balfour & Forrest.

Leaf blade 5–8 × 2.5–4 cm; abaxial surface densely compacted tawny agglutinate-tomentose, sometimes splitting into patches. Corolla 2.3–3.5 cm. Capsule straight. Fl. May–Jun, fr. Jul–Sep.

● *Abies* forests, *Rhododendron* thickets, mountain slopes; 3000–4800 m. W Sichuan, SE Xizang, NW Yunnan.

370c. Rhododendron phaeochrysum var. **levistratum** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 120. 1978.

毡毛栎叶杜鹃 zhan mao li ye du juan

Rhododendron levistratum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 88. 1919; *R. aiolopeplum* I. B. Balfour & Forrest; *R. dichropeplum* I. B. Balfour & Forrest; *R. helvolum* I. B. Balfour & Forrest; *R. intortum* I. B. Balfour & Forrest; *R. sigillatum* I. B. Balfour & Forrest; *R. theiophyllum* I. B. Balfour & Forrest; *R. vicinum* I. B. Balfour & Forrest.

Leaf blade 5–9 × 2–3.5 cm; abaxial surface densely tawny to cinnamon felted-tomentose, not agglutinated. Corolla 2–3 cm. Fl. May–Jun, fr. Sep.

● *Abies* forests, *Rhododendron* thickets, mountain slopes; 3000–4500 m. W Sichuan, NW Yunnan.

371. Rhododendron torquescens D. F. Chamberlain, **nom. nov.**

曲枝杜鹃 qu zhi du juan

Replaced synonym: *Rhododendron torquatum* L. C. Hu, Acta Phytotax. Sin. 30: 549. 1992, not *R. torquatum* I. B. Balfour & Farrer, Notes Roy. Bot. Gard. Edinburgh 13: 303. 1922.

Shrubs, caespitose, ca. 3.5 m tall; shoots twisted, sparsely whitish pilose. Petiole flattened, short and broad, 6–8 × ca. 5 mm, glabrescent; leaf blade leathery, lanceolate to obovate-lanceolate, 11–14 × 4–4.5 cm; base cuneate; margin slightly revolute; apex shortly acuminate, mucronate; abaxial surface indumentum white, 1-layered, agglutinated; adaxial surface glabrous. Inflorescence racemose-umbellate, ca. 10-flowered; rachis short, yellow-floccose. Pedicel 2–2.5 cm, sparsely white-floccose; calyx lobes 5, 1–1.5 mm, triangular, similarly floccose; corolla funnel-campanulate, white to pale pink, with purple spots inside and sparsely puberulent at base, 2.5–3 × ca. 2.5 cm; lobes 5; stamens 10, unequal, shorter than corolla, filaments puberulent at base; ovary narrowly cylindric, ca. 6 × 3 mm, glabrous; style ca. 2 cm, glabrous, stigma capitate. Fl. Jun.

● *Abies* forests, *Picea* forests, mountain slopes; ca. 3600 m. S Gansu.

The type of *Rhododendron torquatum* L. C. Hu closely resembles *R. watsonii,* sharing with that species a flattened, winged petiole, a white, compacted leaf indumentum, and a glabrous ovary. The latter species, which belongs to *R.* subsect. *Grandia,* differs in having a 6- or 7-lobed corolla. If *R. torquescens* indeed has a 5-lobed corolla, as described in the protologue of *R. torquatum,* then it is probably correctly placed in *R.* subsect. *Taliensia*.

372. Rhododendron lulangense L. C. Hu & Tateishi, Acta Phytotax. Sin. 30: 545. 1992.

鲁浪杜鹃 lu lang du juan

Shrubs or small trees, ca. 3–4 m tall; shoots 4–5 mm in diam., densely appressed cinereous tomentose, glabrescent. Petiole 20–25 mm, sparsely grayish floccose; leaf blade thickly leathery, oblong-elliptic to narrowly oblong, 8.5–15.5 × 2.5–5 cm; base broadly cuneate or subrounded; margin slightly revolute; apex acute and mucronate; abaxial surface indumentum white, thin, 1-layered, appressed, hairs short and branched; adaxial surface glossy, glabrous. Inflorescence racemose-umbellate, 6–10-flowered; rachis ca. 10 mm, pubescent. Pedicel red, 2.5–3 cm, sparsely branched-hairy and shortly glandular-hairy; calyx lobes 5, 1–2 mm, glabrous, broadly triangular;

corolla funnel-campanulate, pale pink to white, red-purple towards base, without spots, 3–4 × 3–3.5 cm, puberulent inside, lobes 5, 1.4–1.5 cm, emarginate; stamens 10, 1.5–2.4 cm, filaments white-puberulent at base; ovary ca. 7 mm, sparsely pubescent and shortly glandular-hairy; style pink, ca. 2.4 cm, glabrous; stigma subdiscoid. Fl. May.

● *Abies* forests, forest margins, mountains; 3000–3900 m. S Xizang.

373. Rhododendron barkamense D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 39: 478. 1982.

马尔康杜鹃 ma er kang du juan

Shrubs, to 4.5 m tall; young shoots 4–5 mm in diam., sparsely tomentose, glabrescent. Leaf blade leathery, ovate to ovate-oblong, 5.5–8 × 3.8–4.8 cm; base cordate; margin slightly revolute; apex acute and apiculate; abaxial surface thinly pale brown velvety tomentose, hairs radiate; adaxial surface deep green, glabrous. Inflorescence umbellate, 7–8-flowered; rachis ca. 10 mm. Pedicel 0.7–1 cm, sparsely tomentose; calyx lobes 5, ca. 1 mm, glabrous; corolla campanulate, pale yellow, with purple-red spots on upper lobe and purple basal flecks inside, 2.5–3.5 cm, lobes 5, emarginate; stamens 10, unequal, filaments glabrous; ovary and style glabrous; style shorter than corolla and slightly longer than stamens, glabrous; stigma discoid. Fl. Jun.

● Thickets on high mountains; ca. 3800 m. NW Sichuan.

374. Rhododendron heizhugouense M. Y. He & L. C. Hu, Acta Bot. Yunnan. 18: 295. 1996.

黑竹沟杜鹃 hei zhu gou du juan

Shrubs, 3–5 m tall; branchlets glabrous. Petiole 10–15 mm, densely tomentose; leaf blade thickly leathery, broadly elliptic to oblong-elliptic, 10.5–18 × 5.5–8 cm; base auriculate-cordate; apex acute and mucronate; abaxial surface yellow-green to brownish, indumentum thin, 1-layered, hairs radiate; adaxial surface deep green, glabrous. Inflorescence racemose-umbellate, 15–23-flowered; rachis ca. 15 mm, puberulent. Pedicel 2.5–3.5 cm, sparsely puberulent; calyx obsolete; corolla broadly campanulate, pale yellow, purple-flecked on one lobe at base, 4.4–5.2 × ca. 4 cm; lobes 5; stamens 10, unequal, filaments flattened, puberulent at base; ovary conical, ca. 6 mm, densely white-tomentose; style 3–3.5 cm, glabrous, stigma capitate, brown. Fl. Jun.

● *Abies* forests, mountains; ca. 3300 m. W Sichuan.

375. Rhododendron lacteum Franchet, Bull. Soc. Bot. France 33: 231. 1886.

乳黄杜鹃 ru huang du juan

Rhododendron mairei H. Léveillé.

Shrubs or small trees, 2–8 m tall; leaf scars conspicuous; branchlets stout, glabrous. Petiole 20–30 mm, floccose, glabrescent; leaf blade thickly leathery, broadly elliptic to obovate-elliptic, 8–17 × 6–8 cm; base rounded to subcordate; margin somewhat undulate; apex obtuse and apiculate; abaxial surface fawn to gray-tawny, indumentum thin, 1-layered, compacted, hairs radiate; adaxial surface green, glabrous. Inflorescence racemose-umbellate, 15–30-flowered; rachis 20–30 mm, sparsely floccose. Pedicel 2–3 cm, floccose, glabrescent; calyx lobes 5, 1–1.5 mm, triangular, sparsely puberulent outside, margin ciliate; corolla widely campanulate, pure yellow, unspotted, sometimes with purple basal blotch, 3.5–4.5 cm; lobes 5, ca. 1.5 cm; stamens 10, unequal, shorter than corolla, filaments densely puberulent at base; ovary 5–6 mm, densely pale brown-tomentose; style green, ca. 2.5 cm, glabrous. Capsule oblong-cylindric, slightly curved, 20–30 × ca. 5 mm, hairy. Fl. Apr–May, fr. Sep–Oct.

● *Abies* forests, *Rhododendron* thickets, mountains; 3000–4100 m. W Yunnan.

376. Rhododendron wightii J. D. Hooker, Rhododendr. Sikkim-Himalaya 3: t. 27. 1851.

宏钟杜鹃 hong zhong du juan

Shrubs or small trees, 2–4 m tall; older branches glabrous; young shoots sparsely gray-floccose. Petiole 15–25 mm, sparsely floccose; leaf blade leathery, oblong-elliptic to oblong-ovate, 12–18 × 5–7 cm; base broadly cuneate or subrounded; apex obtuse or short acuminate and apiculate; abaxial surface cinnamon to brownish or sometimes grayish, indumentum dense, 1-layered, compacted, hairs branched; adaxial surface bright green, glabrous. Inflorescence surrounded at base by ± persistent, stiff, viscid bud scales, laxly umbellate, 10–20-flowered, rachis ca. 10 mm. Pedicel 1.5–3 cm, gray- to yellow-floccose, with a few glandular hairs; calyx lobes 5, 0.5–1 mm, glabrous; corolla campanulate, pale yellow or lemon-yellow, blotched crimson at base within and spotted crimson on one side on upper lobes, 3.5–4.5 cm, lobes 5, ca. 1.5 cm, grooved; stamens 10, unequal, filaments pubescent at base; ovary 5–6 mm, densely brown-tomentose; style ca. 2.7 cm, glabrous, stigma discoid. Capsule oblong-cylindric, slightly curved, 20–30 × 4–5 mm with a few vestiges of hairs. Fl. Jun, fr. Sep.

Thickets, mountain slopes; 3900–4300 m. S Xizang [Bhutan, Nepal, Sikkim].

377. Rhododendron beesianum Diels, Notes Roy. Bot. Gard. Edinburgh 5: 214. 1912.

宽钟杜鹃 kuan zhong du juan

Rhododendron colletum I. B. Balfour & Forrest; *R. emaculatum* I. B. Balfour & Forrest.

Shrubs or small trees, 2–9 m tall; branchlets stout, initially floccose, later glabrescent. Petiole narrowly winged, 15–30 mm, sparsely floccose or glabrous; leaf blade leathery, oblanceolate to oblong-lanceolate, 10–25 × 3–7 cm; base attenuated, narrow to subrounded; apex acuminate; abaxial surface fawn to pale cinnamon, indumentum thin, 1-layered, compacted, hairs radiate; adaxial surface deep green, glabrous. Inflorescence racemose-umbellate, 10–25-flowered; rachis stout, ca. 25 mm, puberulent. Pedicel 1.5–2.5 cm, sparsely pubescent or glabrescent; calyx lobes 5, 1–2 mm, broadly triangular, glabrous; corolla broadly campanulate, white flushed pink to pink, inner surface with or without few crimson spots on tube on upper lobes, with basal blotch, 4–5 × 4.5–5.5 cm, lobes 5; stamens 10, unequal, filaments pubescent at base; ovary ca. 8 × 3 mm, densely pale

brown-tomentose; style slightly curved, glabrous, stigma shallowly lobed. Capsule oblong-cylindric, slightly curved, 20–40 × 4–8 mm, hairy. Fl. May–Jun, fr. Sep–Nov.

Coniferous forests, *Rhododendron* thickets, mountains; (2700–) 3200–4500 m. SW Sichuan, SE Xizang, NW Yunnan [NE Myanmar].

378. Rhododendron traillianum Forrest & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 204. 1914.

川滇杜鹃 chuan dian du juan

Shrubs or small trees, 2–8 m tall; shoots gray- to fawn-floccose when young, soon glabrescent. Petiole 10–20 mm, glabrescent; leaf blade leathery, oblong-lanceolate to elliptic, sometimes oblanceolate, 5–12 × 2.5–5 cm; base rounded; apex acute and apiculate or acuminate; abaxial surface pale brown to fawn or red-brown, indumentum dense, 1-layered, hairs radiate, arms short and pyriform or long and ribbonlike; adaxial surface glabrous. Inflorescence racemose-umbellate, 8–15-flowered; rachis ca. 10 mm, floccose. Pedicel 1.5–2 cm, sparsely brown-floccose; calyx lobes 5, ca. 1 mm, broadly triangular, margin ± ciliate; corolla funnel-campanulate or campanulate, white to pink, with crimson spots and purple-red basal flecks, 2.5–5 cm, lobes 5, deeply emarginate; stamens 10, unequal, filaments pubescent at base; ovary 5–7 mm, glabrous or sparsely to densely red-brown-floccose; style ca. 2.2 cm, glabrous. Capsule cylindric, 15–25 × 4–8 mm. Fl. May–Jun, fr. Aug–Oct.

● *Abies* forests, coniferous forest margins, *Rhododendron* thickets, mountains, rocky slopes; 3000–4300 m. SW Sichuan, SE Xizang, NW Yunnan.

1a. Leaf blade apex acute, apiculate, abaxial surface pale brown to fawn, with thin, powdery indumentum, hair arms short and pyriform; corolla 2.5–3.5 cm; ovary glabrous or sparsely floccose ..... 378a. var. *traillianum*

1b. Leaf blade apex acuminate, abaxial surface red-brown with thick, felted indumentum, hair arms long and ribbonlike; corolla 4–5 cm; ovary densely floccose ..... 378b. var. *dictyotum*

378a. Rhododendron traillianum var. **traillianum**

川滇杜鹃(原变种) chuan dian du juan (yuan bian zhong)

Rhododendron aberrans Tagg & Forrest.

Leaf blade 6.5–10 × 2.5–3.5 cm; apex acute, apiculate; abaxial surface pale brown to fawn, with thin, powdery indumentum, hair arms short and pyriform. Corolla 2.5–3.5 cm; ovary glabrous or sparsely floccose. Fl. May–Jun, fr. Sep–Oct.

● *Abies* forests, *Rhododendron* thickets, mountains; 3000–4300 m. SW Sichuan, NW Yunnan.

378b. Rhododendron traillianum var. **dictyotum** (I. B. Balfour ex Tagg) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 120. 1978.

棕背川滇杜鹃 zong bei chuan dian du juan

Rhododendron dictyotum I. B. Balfour ex Tagg, Notes Roy. Bot. Gard. Edinburgh 15: 309. 1927.

Leaf blade 5–12 × 2.5–5 cm; apex acuminate; abaxial surface red-brown with thick, felted indumentum, hair arms long and ribbonlike. Corolla 4–5 cm; ovary densely floccose. Fl. Jun, fr. Aug.

● Coniferous forest margins, *Rhododendron* thickets, rocky slopes; 3300–4200 m. SE Xizang, NW Yunnan.

379. Rhododendron wasonii Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1910: 105. 1910.

褐毛杜鹃 he mao du juan

Shrubs, 1–3 m tall; shoots pubescent and with few short stalked glands when young, later glabrescent. Petiole 5–10 mm, ± pubescent; leaf blade thickly leathery, ovate-lanceolate to ovate or ovate-elliptic, 4–8 × 2–4 cm; base broadly cuneate or subrounded; apex acute and cuspidate; abaxial surface indumentum dense, thickly felted, red-brown to rust-brown or dark brown to golden-brown, sometimes subagglutinated, hairs long-rayed, sometimes intermixed with a few glands; adaxial surface shiny, green, glabrescent. Inflorescence corymbose-racemose, 6–8-flowered; rachis 7–10 mm, sparsely pubescent. Pedicel 1.5–2.5 cm, floccose; calyx lobes 5, ca. 3 mm, broadly triangular, floccose outside; corolla broadly campanulate or funnel-campanulate, yellow or white to pink, rose-tinged on upper lobes and with copious crimson spots, 2.5–4 cm, lobes 5; stamens 10, unequal, filaments densely pubescent in lower half; ovary 4–5 mm, densely brownish or whitish villous; style glabrous or villous at base, stigma capitate, yellow-green. Capsule cylindric, ca. 15 × 4 mm, hairy. Fl. May–Jun, fr. Jul–Sep.

● Forests, *Rhododendron* thickets, mountains; 2300–4000 m. W Sichuan.

1a. Leaf blade 5.5–8 × 2.4–4 cm; abaxial surface indumentum thick, red- to rust-brown, glands also sometimes present; corolla broadly campanulate, yellow to white or pink, 3.5–4 cm; style glabrous ..... 379a. var. *wasonii*

1b. Leaf blade 4–7.5 × 2.5–3.5 cm; abaxial surface indumentum thin, dark brown to golden-brown, subagglutinated, glands absent; corolla funnel-campanulate, white to pink, 2.5–3.5 cm; style villous at base ..... 379b. var. *wenchuanense*

379a. Rhododendron wasonii var. **wasonii**

褐毛杜鹃(原变种) he mao du juan (yuan bian zhong)

Leaf blade 5.5–8 × 2.4–4 cm; abaxial surface indumentum thick, red- to rust-brown, glands also sometimes present. Corolla broadly campanulate, yellow to white or pink, 3.5–4 cm; style glabrous. Fl. May–Jun, fr. Jul–Sep.

● Coniferous forests, *Rhododendron* thickets, mountains; (2700–)3000–4000 m. W Sichuan.

379b. Rhododendron wasonii var. **wenchuanense** L. C. Hu, Bull. Bot. Res., Harbin 6(1): 156. 1986 [*"uenchuanense"*].

汶川褐毛杜鹃 wen chuan he mao du juan

Leaf blade 4–7.5 × 2.5–3.5 cm; abaxial surface indumen-

tum thin, dark brown to golden-brown, subagglutinated, glands absent. Corolla funnel-campanulate, white to pink, 2.5–3.5 cm; style villous at base. Fl. May–Jun.

● Forests, high mountains; 2300–3600 m. NW Sichuan.

380. Rhododendron shanii W. P. Fang, Bull. Bot. Res., Harbin 3(4): 38. 1983.

都支杜鹃 du zhi du juan

Trees, rarely shrubs, (2–)6–10 m tall; branchlets and petioles glabrous. Petiole 15–25 mm, glabrous; leaf blade thickly leathery, elliptic, oblong-elliptic or obovate-elliptic, 6–10 × 4–6.5 cm; base obtuse or subrounded; apex rounded; abaxial surface initially yellow, later deep brown, compacted tomentose, hairs stellate; adaxial surface glabrous. Inflorescence racemose-umbellate, 10–14-flowered; rachis ca. 20 mm, glabrous. Pedicel purplish, 1.5–2.5 cm, densely white puberulent; calyx lobes 5, ca. 2 mm, acute, puberulent; margin ciliate; corolla campanulate, outer surface slightly purplish, on drying become whitish, slightly orange and puberulent at base inside, with crimson spots on upper lobes, ca. 4 × ca. 4 cm, lobes 5; stamens 10, unequal, filaments pubescent at base; ovary and style glabrous; style shorter than corolla and longer than stamens, stigma capitate. Capsule cylindric, brown, 20–25 × ca. 6 mm. Fl. Jun, fr. Sep.

● *Pinus* forests, valleys, mountain summits; 1500–1800 m. W Anhui.

381. Rhododendron danbaense L. C. Hu, Bull. Bot. Res., Harbin 6(1): 155. 1986.

丹巴杜鹃 dan ba du juan

Shrubs, 3–4 m tall; branchlets subterete, 8–10 mm in diam., densely fawn to grayish branched-pubescent when young. Petiole stout, 10–20 mm, densely gray branched-villous; leaf blade thickly leathery, oblong-elliptic to elliptic, 9–12.5 × 3.5–4.5 cm; base cordate to rounded; margin slightly revolute; apex acuminate; abaxial surface brown to yellowish brown, indumentum thick, 1-layered, densely villous, hairs multi-branched; adaxial surface with grooved midrib tomentose, otherwise glabrous. Inflorescence umbellate, 6–8-flowered; rachis ca. 3 mm; perulae deciduous. Pedicel 1–2 cm, densely branched-villous and with long-stalked glands; calyx yellow-green, lobes 5, 2.5–3 mm, broadly triangular, sparsely villous, margin ciliate with long-glandular hairs; corolla funnelform-campanulate, white, with copious carmine spots, 4–4.5 × ca. 4.5 cm; lobes 5, ca. 1.5 × 2.3 cm, emarginate; stamens 10, unequal; filaments glabrous or puberulent at base; ovary 5–6 mm, densely long-glandular-hairy, villous towards apex; style ca. 2.8 cm, shorter than corolla and longer than stamens, densely villous and long-glandular-hairy below middle; stigma discoid. Fl. May.

● Forests; ca. 3400 m. W Sichuan (Danba).

Without seeing the type specimen of *Rhododendron danbaense,* it cannot be confirmed if the leaf indumentum is truly unistrate, and it is therefore uncertain how this species relates to *R. nigroglandulosum* and to *R. bureavioides* (with a very poorly developed, white lower layer of indumentum). *Rhododendron bureavioides* should probably be recognized as a distinct species (see under *R. bureavii* above). Its type has large calyx lobes 6–8 mm, a character that will technically distinguish it from both *R. danbaense* and *R. nigroglandulosum*. All three species are distributed in the same region, close to and N of Kangding in W Sichuan.

382. Rhododendron nigroglandulosum Nitzelius, Rhododendrons Magnolias Camellias 1975: 27. 1975.

大炮山杜鹃 da pao shan du juan

Shrubs, 3–5 m tall; young shoots densely tomentose and short-glandular-hairy. Leaf blade leathery, lanceolate to oblong, 12–17 × 4–5 cm, tapering below to rounded base; apex obtuse, apiculate; abaxial surface with tawny, loosely 1-layered, woolly indumentum; adaxial surface glabrous. Inflorescence terminal, 8–10-flowered; rachis 10–15 mm. Pedicel reddish, 2–3 cm, floccose-tomentose; calyx lobes 5, ca. 1 mm, triangular, floccose-tomentose; corolla campanulate, deep pink initially, later yellowish pink, with conspicuous purple spots, 4–5 cm; ovary tomentose and shortly glandular-hairy; style glabrous. Capsule 15–20 × ca. 8 mm. Fl. Jul.

● Mountain slopes; ca. 3500 m. W Sichuan (Kangding).

383. Rhododendron balangense W. P. Fang, Acta Phytotax. Sin. 21: 468. 1983.

巴朗杜鹃 ba lang du juan

Shrubs, 1–3 m tall; young shoots and petioles glabrous; bud scales persistent. Petiole 15–30 mm, densely glandular and floccose-tomentose; leaf blade thickly leathery, obovate to elliptic-ovate, 6–10 × 3.5–5 cm; base obtuse or subrounded; margin slightly revolute; apex acute, apiculate; abaxial surface with indumentum 2-layered, upper layer yellowish to fawn, loose, ± deciduous, hairs branched, lower layer whitish, appressed, persistent; adaxial surface glabrous. Inflorescence racemose-umbellate, 13–15-flowered; rachis 10–15 mm, densely gray-white to yellowish floccose. Pedicel 3–4 cm, indumentum as for rachis; calyx lobes 5, 1–2 mm, acute, outer surface densely floccose; corolla campanulate, white, 3.5–4 × ca. 3 cm; lobes 5, orbicular, emarginate; stamens 10, unequal, filaments densely puberulent in lower half; ovary and style glabrous; stigma capitate. Peduncle ca. 4 cm. Capsule oblong-cylindric, slightly curved, 22–28 × 4–6 mm, calyx persistent. Fl. Jun, fr. Sep.

● Thickets on mountain slopes; 2400–3400 m. W Sichuan.

Hu (Acta Phytotax. Sin. 30: 545. 1992) described fruiting material. Based on field observations, this species may have arisen as a hybrid of *Rhododendron watsonii,* which belongs to *R.* subsect. *Grandia,* in which *R. balangense* may fit better. However, the 5-lobed corolla is more in line with a placement in *R.* subsect. *Taliensia*.

384. Rhododendron sphaeroblastum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 60. 1920.

宽叶杜鹃 kuan ye du juan

Shrubs, 1–3 m tall; young shoots and petioles glabrous. Petiole 15–30 mm; leaf blade thickly leathery, ovate to oblong-ovate or ovate-elliptic, 7–15 × 4–6.5 cm; base rounded or slightly cordate; apex obtuse or subrounded, mucronate; abaxial surface with indumentum 2-layered, upper layer rust-red to cinnamon, or deep rust-red, loose, woolly, persistent or detersile,

lower layer compacted; adaxial surface glabrous. Inflorescence racemose-umbellate, 10–12-flowered; rachis 10–15 mm, glabrous. Pedicel 1–2 cm, glabrous; calyx lobes 5, 1–1.5 mm, unequal, triangular, acute, glabrous; corolla funnel-campanulate, or broadly campanulate, white, to pink or red to yellow, with carmine spots on corolla tube and upper lobes, 3.5–4.5 cm, lobes 5; stamens 10, unequal, filaments puberulent at base; ovary 5–6 mm, glabrous or sparsely floccose; style ca. 2 cm, glabrous. Capsule cylindric, slightly curved, 18–20 × 5–6 mm. Fl. May–Jun, fr. Aug–Oct.

● Mixed forests, *Abies* forests, *Rhododendron* thickets, mountain slopes; 3300–4400 m. SW Sichuan, N Yunnan.

1a. Leaf blade 7.5–15 × 4–6.5 cm; abaxial surface with upper-layer of indumentum thick, persistent; corolla white to pink, 3.5–4 cm; ovary glabrous ..... 384a. var. *sphaeroblastum*

1b. Leaf blade 7–12 × 5–6 cm; abaxial surface with upper layer of indumentum thin, ± detersile; corolla white, yellow, or red, 4–4.5 cm; ovary sparsely floccose ..... 384b. var. *wumengense*

384a. Rhododendron sphaeroblastum var. **sphaeroblastum**

宽叶杜鹃(原变种) kuan ye du juan (yuan bian zhong)

Leaf blade 7.5–15 × 4–6.5 cm; abaxial surface with upper-layer of indumentum thick, persistent. Corolla white to pink, 3.5–4 cm; ovary glabrous. Fl. May–Jun, fr. Aug–Oct.

● *Abies* forests, *Rhododendron* thickets, mountain slopes; 3300–4400 m. SW Sichuan, N Yunnan.

384b. Rhododendron sphaeroblastum var. **wumengense** K. M. Feng, Acta Bot. Yunnan. 5: 265. 1983.

乌蒙宽叶杜鹃 wu meng kuan ye du juan

Leaf blade 7–12 × 5–6 cm; abaxial surface with upper layer of indumentum thin, ± detersile. Corolla white, yellow, or red, 4–4.5 cm; ovary sparsely floccose. Fl. May.

● Mixed forests, *Rhododendron* thickets; 3600–4000 m. N Yunnan.

385. Rhododendron taliense Franchet, Bull. Soc. Bot. France 33: 232. 1886.

大理杜鹃 da li du juan

Shrubs, 1–3 m tall; branchlets densely woolly-tomentose when young, later glabrescent. Leaf blade thickly leathery, oblong-ovate to ovate-lanceolate, 4–10 × 2–3.5 cm; base rounded to cuneate; margin slightly revolute; apex acute, mucronate; abaxial surface with indumentum 2-layered, upper layer red-brown to cinnamon, loose, felted tomentose, hairs branched, lower layer compacted; adaxial surface slightly rugulose, glabrous. Inflorescence compact, umbellate, 10–15-flowered; rachis ca. 10 mm. Pedicel 1–2 cm, densely red-brown tomentose; calyx lobes 5, 2–3 mm, glabrous; corolla campanulate, creamy-white to yellow or pale pink, with copious crimson spots on corolla-tube on upper lobes, 3–3.5 cm, lobes 5, emarginate; stamens 10, unequal, filaments pubescent at base; ovary glabrous; style shorter than corolla and slightly longer than stamens, glabrous; stigma capitate. Capsule cylindric, 10–15 × 4–5 mm. Fl. May–Jun, fr. Sep–Nov.

● *Abies* forests, *Rhododendron* thickets, mountains; 3200–4100 m. W Yunnan.

386. Rhododendron nakotiltum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 143. 1920.

德钦杜鹃 de qin du juan

Shrubs, 1–3.5 m tall; old branches glabrescent; young shoots shiny, green, 5–6 mm in diam., sparsely white-floccose. Leaf blade leathery, oblong to obovate-oblong, 6–11 × 3–4.5 cm; base subrounded; apex acute and apiculate; abaxial surface with indumentum 2-layered, upper layer loose, fawn, floccose, ± detersile when mature, persistent only along midrib, hairs long-rayed, lower layer thin, appressed; adaxial surface glabrous except in groove of midrib. Inflorescence compact, umbellate, 12–15-flowered; rachis 5–10 mm, sparsely pubescent. Pedicel 1.5–2 cm, densely floccose; calyx lobes 5, 1–1.5 mm, rounded, glabrous, sparsely ciliate on margin; corolla campanulate, white flushed rose to pink, with red spots and purple basal blotch inside, ca. 3.5 × 4 cm; lobes 5, subrounded; stamens 10, unequal, filaments densely puberulent; ovary ca. 5.5 × 2.5 mm, densely rufous floccose-tomentose; style ca. 2.5 cm, glabrous, stigma discoid. Fl. Jun.

● Thickets on mountain slopes; 3300–4000 m. NW Yunnan.

387. Rhododendron rufum Batalin, Trudy Imp. S.-Peterburgsk. Bot. Sada 11: 490. 1891.

黄毛杜鹃 huang mao du juan

Rhododendron weldianum Rehder & E. H. Wilson.

Shrubs or small trees, 1.5–8 m tall; shoots densely whitish to tawny floccose when young, soon glabrescent. Petiole 15–20 mm, initially with floccose hairs, later glabrescent; leaf blade leathery, elliptic to oblong-ovate, 6.5–11 × 3–5 cm; base subrounded or broadly cuneate; apex obtuse or acute, mucronate; abaxial surface with indumentum 2-layered, upper layer thick, soft, rust-yellow to rufous, woolly-tomentose, hairs branched, lower layer compacted, gray-white; adaxial surface slightly shiny, glabrous. Inflorescence racemose-umbellate, 6–11-flowered; rachis ca. 5 mm, densely rusty brown-pubescent. Pedicel 1–1.5 cm, densely gray floccose; calyx lobes 5, ca. 1 mm, broadly triangular, floccose outside; corolla funnel-campanulate, white to pale pink, with crimson spots on upper lobes, 2–3 cm, puberulent at base inside; lobes 5, slightly unequal; stamens 10, 1.2–2 cm, filaments white-puberulent at base; ovary ca. 4 mm, densely gray-brown woolly-tomentose, sometimes with few glandular hairs at apex; style ca. 2 cm, glabrous or with few hairs at base. Capsule oblong-cylindric, slightly curved, 20–25 × 5–7 mm. Fl. May–Jun, fr. Jul–Sep.

● Forests, mountain slopes; 2300–3800 m. C and SW Gansu, E and S Qinghai, SW Shaanxi (Taibai Shan), N and W Sichuan.

Rhododendron rufum var. *glandulosum* G. H. Wang (Bull. Bot. Res., Harbin 15: 428. 1995) was described from S Gansu (Kangle). It is said to differ from the typical variety in having a densely stipitate-glandular ovary. However, no material fitting this description was seen, and it is therefore uncertain if this entity actually belongs within *R. rufum*.

388. Rhododendron alutaceum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 81. 1917.

棕背杜鹃 zong bei du juan

Shrubs, 1.5–4 m tall; young shoots and petioles densely woolly-tomentose and/or glandular; bud scales deciduous or ± persistent. Petiole 10–15 mm; leaf blade thickly leathery, oblong, broadly lanceolate to lanceolate or narrowly oblong, 5–14 × 1.5–3.5 cm; base obtuse or subrounded; margin revolute; apex acute or shortly acuminate; abaxial surface with indumentum 2-layered, upper layer thick, woolly or felted, pale brown, rufous, rust-red, sometimes ± detersile, hairs branched, lower layer gray-white and compacted; adaxial surface glabrous. Inflorescence racemose-umbellate, 10–15-flowered; rachis 10–18 mm. Pedicel 1.5–2 cm, sparsely floccose and short-glandular-hairy or eglandular; calyx lobes 5, ca. 1 mm, subrounded, sparsely ciliate outside, margin glandular-ciliate; corolla campanulate or funnel-campanulate, white to pink, with crimson spots and with purple red basal blotch, 3.5–4 cm, lobes 5; stamens 10, unequal, filaments densely white-puberulent; ovary ca. 6 mm, densely tomentose and glandular-hairy to glabrous or sparsely floccose-tomentose and eglandular; style glabrous. Capsule cylindric, 10–15 × ca. 4 mm. Fl. Jun–Jul, fr. Sep–Oct.

● Coniferous forests, thickets, mountains, rocky slopes; 3200–4300 m. W Sichuan, SE Xizang, NW Yunnan.

1a. Young shoots rusty brown-tomentose, without glands; ovary sparsely floccose-tomentose, without glands ..... 388c. var. *iodes*
1b. Young shoots densely glandular or brownish woolly-tomentose, usually mixed with red glands; ovary glandular-hairy, sometimes also densely tomentose.
  2a. Leaf bud scales deciduous; young shoots densely brownish woolly-tomentose, usually mixed with red glands; ovary densely shortly glandular-hairy ..... 388a. var. *alutaceum*
  2b. Leaf bud scales ± persistent; young shoots densely glandular; ovary densely tomentose and shortly glandular-hairy ..... 388b. var. *russotinctum*

388a. Rhododendron alutaceum var. **alutaceum**

棕背杜鹃(原变种) zong bei du juan (yuan bian zhong)

Rhododendron globigerum I. B. Balfour & Forrest; *R. roxieanum* Forrest ex W. W. Smith var. *globigerum* (I. B. Balfour & Forrest) D. F. Chamberlain.

Young shoots densely brownish woolly-tomentose, usually mixed with red glands; bud scales deciduous. Leaf blade 7–14 × 2–3.5 cm; abaxial surface pale brown, upper indumentum densely lanate-tomentose, persistent. Ovary densely shortly glandular-hairy. Fl. Jun–Jul, fr. Sep–Oct.

● Coniferous forests, thickets, mountains, rocky slopes; 3200–4300 m. W Sichuan, NW Yunnan.

388b. Rhododendron alutaceum var. **russotinctum** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 119. 1978.

腺房棕背杜鹃 xian fang zong bei du juan

Rhododendron russotinctum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 129. 1919; *R. triplonaevium* I. B. Balfour & Forrest; *R. tritifolium* I. B. Balfour & Forrest.

Young shoots densely glandular; bud scales ± persistent. Leaf blade 5–9.5 × 1.5–2.5 cm; abaxial surface rust-red, upper indumentum thick, loose, felted, ± deciduous. Ovary densely tomentose and shortly glandular-hairy. Fl. Jun–Jul, fr. Oct.

● Coniferous forests, thickets, mountains; 3300–4200 m. SE Xizang, NW Yunnan.

388c. Rhododendron alutaceum var. **iodes** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 39: 350. 1982.

毛枝棕背杜鹃 mao zhi zong bei du juan

Rhododendron iodes I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 49. 1920.

Young shoots densely rusty brown-tomentose; bud scales deciduous. Leaf blade 6–10 × 1.5–2.5 cm; abaxial surface rufous, upper indumentum densely felted-tomentose, persistent. Ovary sparsely floccose-tomentose, eglandular. Fl. Jun–Jul, fr. Sep.

● *Rhododendron* thickets, mountains; 3300–4300 m. SW Sichuan (Muli), SE Xizang, NW Yunnan.

389. Rhododendron roxieanum Forrest ex W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 344. 1915.

卷叶杜鹃 juan ye du juan

Shrubs, 1–3 m tall; branchlets short, stout and slightly flexuous, densely rufous or rust-red woolly-tomentose when young; bud scales persistent. Petiole ca. 10 mm, thickly woolly-tomentose; leaf blade thickly leathery, narrowly lanceolate to oblanceolate or linear, 3–10 × 0.5–3 cm; base cuneate, decurrent along petiole; margin strongly revolute; apex acute and with a stiff sharp point, or cucullate; abaxial surface with indumentum 2-layered, upper layer thick, rust-red to rufous, loose, woolly-tomentose, hairs branched, lower layer thin, compacted; adaxial surface shiny, slightly rugulose, glabrous except for groove of midrib. Inflorescence racemose-umbellate, 10–15-flowered; rachis ca. 10 mm, rusty red-tomentose. Pedicel 1–1.5 cm; calyx lobes 5, 0.5–1 mm, densely rust-red branched-tomentose and short-glandular-hairy; corolla campanulate to funnel-campanulate, white to white tinged pink, with copious purple-red spots on corolla-tube and on upper lobes, 2–3.5 cm, lobes 5; stamens 10, unequal, filaments densely puberulent in lower 1/2; ovary ca. 5 mm, densely rusty red-tomentose, sometimes mixed with short-stalked glands; style glabrous, stigma discoid. Capsule oblong cylindric, ca. 18 × 5 mm. Fl. Jun–Jul, fr. Aug–Oct.

● Coniferous forests, *Rhododendron* thickets, mountains, slopes; 2600–4300 m. S Gansu, SW Shaanxi, SW Sichuan, SE Xizang, NW Yunnan.

The extensive synonymy reflects the considerable variation in this species, especially with respect to the leaves. This variation may be in part due to hybridization in the field. In particular, var. *cucullatum* appears to be intermediate between the more extreme var. *oreonastes* and *Rhododendron proteoides*. However, relatively uniform populations of var. *cucullatum* occur in W Yunnan.

1a. Leaf blade linear, 0.5–1 cm wide; corolla 2–2.5 cm ..... 389c. var. *oreonastes*
1b. Leaf blade narrowly lanceolate or oblanceolate, 1.3–2 cm wide; corolla 3–3.5 cm.
  2a. Leaf blade narrowly lanceolate, 6–10 × 1.3–2 cm; apex acute with a stiff sharp point ..... 389a. var. *roxieanum*
  2b. Leaf blade oblanceolate, 3–8 × 2–3 cm; apex acute to cucullate ..... 389b. var. *cucullatum*

389a. Rhododendron roxieanum var. **roxieanum**

卷叶杜鹃(原变种) juan ye du juan (yuan bian zhong)

Rhododendron aischropeplum I. B. Balfour & Forrest; *R. poecilodermum* I. B. Balfour & Forrest; *R. recurvum* I. B. Balfour & Forrest; *R. roxieanum* var. *recurvum* (I. B. Balfour & Forrest) Davidian.

Leaf blade narrowly lanceolate, 6–10 × 1.3–2 cm; apex acute with a stiff sharp point; corolla 3–3.5 cm. Fl. Jun–Jul, fr. Oct.

● Coniferous forests, *Rhododendron* thickets, mountains; 2600–4300 m. S Gansu (Wudu), SW Shaanxi (Fengxian), SW Sichuan, SE Xizang, NW Yunnan.

389b. Rhododendron roxieanum var. **cucullatum** (Handel-Mazzetti) D. F. Chamberlain ex L. C. Hu in L. C. Hu & M. Y. Fang, Fl. Reipubl. Popularis Sin. 57(2): 238. 1994.

兜尖卷叶杜鹃 dou jian juan ye du juan

Rhododendron cucullatum Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 58: 26. 1921; *R. coccinopeplum* I. B. Balfour & Forrest; *R. porphyroblastum* I. B. Balfour & Forrest.

Leaf blade oblanceolate, 3–8 × 2–3 cm; apex acute to cucullate; corolla ca. 3 cm. Fl. Jun–Jul, fr. Oct.

● *Rhododendron* thickets, mountain slopes; 3500–4300 m. SW Sichuan, SE Xizang, NW Yunnan.

389c. Rhododendron roxieanum var. **oreonastes** (I. B. Balfour & Forrest) T. L. Ming, Acta Bot. Yunnan. 6: 166. 1984.

线形卷叶杜鹃 xian xing juan ye du juan

Rhododendron recurvum var. *oreonastes* I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 113. 1919.

Leaf blade linear, 4–7 × 0.5–1 cm. Corolla 2–2.5 cm. Fl. Jun–Jul, fr. Aug.

● *Rhododendron* thickets, mountains, stony slopes; 3700–4200 m. NW Yunnan.

390. Rhododendron roxieoides D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 39: 478. 1982.

巫山杜鹃 wu shan du juan

Shrubs, ca. 2.5 m tall; young shoots densely tawny to gray woolly-tomentose; bud scales persistent. Petiole 5–10 mm, densely woolly-tomentose; leaf blade thickly leathery, linear to narrowly oblanceolate, 5.5–7.5 × 1–1.8 cm; base cuneate; margin conspicuously revolute; apex acuminate; abaxial surface with indumentum 2-layered, upper layer chestnut, thickly woolly, hairs branched, lower layer whitish and compacted; adaxial surface green, shiny, glabrous except for tomentose groove of midrib. Inflorescence racemose-umbellate, 12–16-flowered; rachis ca. 5 mm. Pedicel 0.7–1 cm, densely tomentose; calyx lobes 5, ca. 2 mm, triangular, densely tomentose and glandular-hairy outside; corolla funnel-campanulate, deep red, with purple spots, 2.5–3 cm, lobes 5; stamens (9 or)10, unequal, filaments puberulent in lower part; ovary ca. 5 mm, with a few short glandular hairs; style exserted, subequal to corolla, glandular in lower 1/2; stigma capitate, green. Fl. May.

● Forests, valleys; 800–2200 m. Chongqing, E Sichuan.

391. Rhododendron dachengense G. Z. Li, Acta Bot. Yunnan. 23: 287. 2001.

大橙杜鹃 da cheng du juan

Shrubs, 2–3 m tall; branchlets blackish gray; young branches densely velutinous, glabrescent; bud scales persistent. Petiole 5–17 mm, felted at first, soon glabrescent; leaf blade leathery, elliptic-oblong to obovate, (3–)3.5–7(–10) × (1.2–)1.5–2.5(–3) cm; base cuneate to rounded; apex acute or mucronate; abaxial surface with indumentum 2-layered, densely felted, upper layer of indumentum detersile, lower layer stuck together; adaxial surface green, glabrous; midrib impressed adaxially. Inflorescence racemose-umbellate, 4–7-flowered. Pedicel 0.5–1 cm, densely velutinous; calyx lobes 5–7, ca. 1 mm, undulate-triangular, velutinous; corolla campanulate, white to pink, upper lobes sometimes with red spots, 2.5–3 cm, lobes 5–7, suborbicular, 1–1.2 cm; stamens 10–13, 0.4–1.8 cm, filaments glabrous or pilose in lowest third; ovary conical, densely velutinous; style ca. 2.3 cm, glabrous, stigma capitate. Capsule not known. Fl. Apr.

● 800–1700 m. EC Guangxi.

The original author placed this species in *Rhododendron* subsect. *Taliensia* but suggested that its affinities were with *R. haematodes* in *R.* subsect. *Neriiflora*. From the original description and accompanying plate, *R. dachengense* appears allied to, and is possibly conspecific with, *R. roxieoides*.

1a. Corolla with red spots on upper lobes; lobes 5–7; stamens 10–13, filaments pilose below ..... 391a. var. *dachengense*
1b. Corolla without spots on upper lobes; lobes 5; stamens 10, filaments glabrous ..... 391b. var. *scopulum*

391a. Rhododendron dachengense var. **dachengense**

大橙杜鹃(原变种) da cheng du juan (yuan bian zhong)

Leaf blade elliptic-oblong to obovate, (3–)3.5–7(–10) cm. Corolla with red spots on upper lobes; lobes 5–7; stamens 10–13, filaments pilose below.

● 800–1000 m. EC Guangxi (Jinxiu).

391b. Rhododendron dachengense var. **scopulum** G. Z. Li, Acta Bot. Yunnan. 23: 288. 2001.

圣堂杜鹃 sheng tang du juan

Leaf blade obovate to long-obovate, 4–5.5 cm. Corolla without spots on upper lobes; lobes 5; stamens 10, filaments glabrous.

● 1200–1700 m. EC Guangxi (Jinxiu).

392. Rhododendron pronum Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 15: 318. 1927.

平卧杜鹃 ping wo du juan

Prostrate shrubs, 0.1–0.5 m tall; bud scales persistent. Petiole ca. 5 mm, glabrous; leaf blade thickly leathery, oblong-elliptic to oblanceolate, 3–6.5 × 1–2 cm; base cuneate; margin strongly revolute; apex obtuse to acute with small and downward curved sharp point; abaxial surface with indumentum 2-layered, upper layer dark gray to fawn, thick and loose, woolly, hairs branched, lower layer compacted and gray-white; adaxial surface slightly rugulose, glabrous. Inflorescence racemose-umbellate, 6–12-flowered, surrounded by persistent perulae and bracts; rachis ca. 3 mm. Pedicel 1.5–2.5 cm, sparsely floccose or glabrescent; calyx lobes 5, ca. 2 mm, obtusely triangular, glabrous or sparsely floccose; corolla campanulate, pale yellow to creamy-white, with deep crimson spots on corolla tube on upper lobes, 3–3.5 × ca. 3.5 cm; lobes 5, slightly unequal, subrounded; stamens 10, filaments glabrous; ovary and style glabrous; style shorter than corolla, glabrous; stigma discoid. Capsule cylindric, blackish, ca. 10 × 4–5 mm, glabrous. Fl. Jun, fr. Sep–Oct.

● Mountains, moist rocky slopes, stony streamsides; 2600–4400 m. NW Yunnan.

393. Rhododendron ×bathyphyllum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 27. 1919, pro sp.

多叶杜鹃 duo ye du juan

Dwarf shrubs, 0.5–1.5 m tall; young shoots densely rust-red to gray-tomentose, later glabrescent. Petiole 5–25 mm, densely rusty red-tomentose; leaf blade thickly leathery, oblong, 4–7 × 1.5–2.5 cm; base obtuse to rounded; margin revolute; apex ± cucullate; abaxial surface with indumentum 2-layered, upper layer rust-red, thick, woolly, hairs branched, lower layer thin, appressed; adaxial surface slightly rugulose, glabrous except for tomentose groove of midrib. Inflorescence umbellate, 10–15-flowered; rachis ca. 5 mm, floccose-tomentose; perulae ± persistent during flowering period. Pedicel 1–1.5 cm, sparsely floccose-tomentose or glabrescent; calyx lobes 5, ca. 6 mm, slightly unequal, lanceolate, glabrous; corolla campanulate, white, with deep crimson spots on upper lobes and adjacent parts of tube, 3.5–3.8 cm, lobes 5, subrounded, deeply emarginate; stamens 10, 1.5–2 cm, filaments densely puberulent in lower half; ovary ca. 5 × 3 mm, densely rusty red-tomentose, eglandular; style shorter than corolla, glabrous; stigma capitate. Fl. Jul.

● Forest margins, thickets, rocky mountain slopes; 3300–4300 m. SE Xizang, NW Yunnan.

Field observations in NW Yunnan indicate that this entity is a hybrid between *Rhododendron aganniphum* and *R. proteoides*.

394. Rhododendron proteoides I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 264. 1916.

矮生杜鹃 ai sheng du juan

Rhododendron lampropeplum I. B. Balfour & Forrest.

Dwarf shrubs, 0.6–1.5 m tall; branchlets slender, with very short internodes, 3–4 mm in diam., densely rufous to gray-brown tomentose; bud scales persistent. Petiole 4–5 mm, densely thick rufous woolly-tomentose; leaf blade thickly leathery, oblong to oblanceolate, 2–4 × 0.5–1 cm; base attenuate-cuneate; margin strongly revolute; apex blunt-rounded with small and introrse curved sharp point; abaxial surface with indumentum 2-layered, upper layer rust-red, thick, woolly, hairs long-branched, lower layer thin, appressed; adaxial surface slightly rugulose, glabrous. Inflorescence compact, umbellate, ca. 8-flowered; rachis ca. 5 mm. Pedicel ca. 1 cm, densely rufous-tomentose; calyx lobes 5, ca. 2 mm, subtriangular, glabrous or only tomentose at base outside, margin ciliate; corolla funnel-form, white to pale yellow, with crimson spots on corolla-tube and on upper lobes, ca. 3 cm, lobes 5, slightly unequal; stamens 10, unequal, filaments white-puberulent in lower 1/2; ovary ca. 4 mm, densely rusty red-fasciculate branched-tomentose; style shorter than corolla and longer than stamens, glabrous. Capsule oblong-cylindric, ca. 10 × 5 mm, ± hairy. Fl. Jun–Jul, fr. Sep–Oct.

● Thickets, high mountains; 3600–4500 m. SW Sichuan, SE Xizang, NW Yunnan.

Field observations indicate that this species hybridizes extensively in the wild, especially with *Rhododendron aganniphum* and perhaps also with *R. roxieanum*. Indeed, *R. roxieanum* var. *parvum* Davidian (Rhododendron Spec. 2: 308. 1989), described from China, is either a synonym of *R. proteoides* or a hybrid of it.

395. Rhododendron comisteum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 42. 1919.

砾石杜鹃 li shi du juan

Dwarf shrubs, 0.6–1 m tall; branchlets densely gray to pale brown woolly-tomentose; bud scales persistent. Petiole ca. 5 mm, densely gray-brown to rust-red woolly-tomentose; leaf blade leathery, narrowly elliptic to oblanceolate, 3–5 × 1–1.5 cm; base cuneate; margin revolute; apex obtuse, mucronulate; abaxial surface with indumentum 2-layered, upper layer gray-brown to rust-red, thick, loose, woolly-tomentose, lower layer thin, appressed; adaxial surface dark green, glabrous except for tomentose groove of midrib. Inflorescence umbellate, 6–8-flowered; rachis 3–5 mm. Pedicel ca. 2 cm, densely rust-brown floccose-tomentose, eglandular; calyx lobes 5, 2–3 mm, broadly tri-

angular, sparsely floccose-tomentose, margin ciliate; corolla tubular-campanulate, deep rose, with few crimson spots on corolla-tube and on upper lobes, ca. 3.5 cm, lobes 5; stamens 10, unequal, 1.2–2.2 cm, filaments white-puberulent at base; ovary ca. 5 mm, densely rufous tomentose, eglandular; style shorter than corolla and slightly longer than stamens, glabrous; stigma discoid. Fl. Jul.

● Mountain thickets, rock walls, scree slopes; 3900–4300 m. SE Xizang, NW Yunnan.

15. Rhododendron subsect. **Fulva** (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 550. 1949.

镰果杜鹃亚组 lian guo du juan ya zu

Hu Linzhen (胡琳贞 Hu Ling-cheng); David F. Chamberlain

Rhododendron ser. *Fulva* Tagg in J. B. Stevenson, Sp. Rhodod. 287. 1930 [*"Fulvum"*].

Shrubs or small trees; young shoots brownish, whitish or gray-tomentose. Leaf blade leathery, oblanceolate, oblong-lanceolate or obovate; abaxial surface fulvous or gray-white, indumentum felted or woolly, 1- or 2-layered; adaxial surface glabrous when mature. Inflorescence terminal, 8–20-flowered; rachis 1–1.5 cm. Calyx minute; corolla campanulate or funnel-campanulate, 5-lobed, white to pale pink with crimson basal blotch and dark spots on upper lobes; stamens 10; ovary glabrous; style glabrous. Capsule narrowly elongate-cylindric, strongly curved to sickle-shaped.

Two species: China, Myanmar; two species (one endemic) in China.

1a. Abaxial leaf surface with 2-layered indumentum, upper layer fulvous, granular, hairs fasciculate ..... 396. *R. fulvum*
1b. Abaxial leaf surface with 1- or 2-layered indumentum, upper layer woolly, gray-white, smooth, not granular, hairs branched ..... 397. *R. uvariifolium*

396. Rhododendron fulvum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 110. 1917.

镰果杜鹃 lian guo du juan

Shrubs or small trees, 2–8 m tall; young shoots densely fulvous- to gray-tomentose. Petiole 10–20 mm, densely gray to fulvous fasciculate-tomentose, granular; leaf blade leathery, oblanceolate to oblong-lanceolate or obovate, 8–20 × 3–7.5 cm; base cuneate or subrounded; apex obtuse or shortly acuminate, apiculate; abaxial surface with indumentum 2-layered, upper layer fawn to fulvous or rust-red, granular, hairs fasciculate branched, lower layer gray, hairs short stellate. Inflorescence racemose-umbellate, 10–20-flowered; rachis ca. 10 mm. Pedicel 1.5–2.5 cm, glabrous; calyx lobes 5, 1–2 mm, acute or subrounded, glabrous; corolla funnel-campanulate, white to pink or rose, with crimson basal blotch and red spots on upper lobes, 3–4 cm, lobes 5; stamens 10, unequal, filaments pubescent at base; ovary and style glabrous; style slightly shorter than corolla, glabrous; stigma capitate. Capsule narrowly elongate-cylindric, curved at maturity, 25–40 × 3–4 mm. Fl. Apr–May, fr. Jul–Oct.

Abies forests, *Rhododendron* thickets, alpine slopes; 2700–4400 m. SW Sichuan, SE Xizang, W Yunnan [NE Myanmar].

Field observations indicate that the two subspecies overlap morphologically where their geographic ranges overlap, but that they are sufficiently distinct to be maintained at subspecific rank. The typical subspecies appears to be restricted to the SW part of the range of the species.

1a. Leaf blade 1.8–2.5 × as long as broad; abaxial surface indumentum rich rust-red ..... 396a. subsp. *fulvum*
1b. Leaf blade (2.5–)2.8–3 × as long as broad; abaxial surface indumentum fulvous to brown ..... 396b. subsp. *fulvoides*

396a. Rhododendron fulvum subsp. **fulvum**

镰果杜鹃(原亚种) lian guo du juan (yuan ya zhong)

Leaf blade 1.8–2.5 × as long as broad; abaxial surface indumentum rich rust-red.

Abies forests, *Rhododendron* thickets, alpine slopes; 3000–3700 m. NW Yunnan [NE Myanmar].

396b. Rhododendron fulvum subsp. **fulvoides** (I. B. Balfour & Forrest) D. F. Chamberlain in Argent et al., Rhododendron Handb. 1998: 350. 1997.

棕叶镰果杜鹃 zong ye lian guo du juan

Rhododendron fulvoides I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 112. 1920.

Leaf blade (2.5–)2.8–3 × as long as broad; abaxial surface indumentum fulvous to brown.

● 2700–4400 m. SW Sichuan, SE Xizang, W Yunnan.

397. Rhododendron uvariifolium Diels, Notes Roy. Bot. Gard. Edinburgh 5: 213. 1912 [*"uvarifolium"*].

紫玉盘杜鹃 zi yu pan du juan

Rhododendron dendritrichum I. B. Balfour & Forrest; *R. monbeigii* Rehder & E. H. Wilson; *R. niphargum* I. B. Balfour & Kingdon Ward; *R. uvariifolium* var. *griseum* Cowan.

Shrubs or trees, 2–10 m tall; young shoots whitish or gray-tomentose. Petiole 10–20 mm, gray-tomentose; leaf blade leathery, oblanceolate to oblong-oblanceolate or obovate, 11–24 × 3.5–6.5 cm; base cuneate, sometimes obtuse; apex obtuse or acute, mucronate; abaxial surface gray-white to gray-brown, smooth, indumentum dense, continuous, hairs dendroid-branched. Inflorescence racemose-umbellate, 8–18-flowered; rachis ca. 10 mm. Pedicel 1.5–2.5 cm, sparsely floccose or almost glabrous; calyx lobes 5, 0.5–1 mm; corolla campanulate, white to

pink or rose, with crimson basal blotch and purple spots on upper lobes, 3–3.5 cm, lobes 5; stamens 10, unequal, filaments pubescent at base; ovary glabrous; style pistil slightly shorter than or nearly equaling corolla, glabrous; stigma capitate. Capsule elongated, strongly curved, 3.5–5 × 3–4 mm, glabrous. Fl. Apr–Jun, fr. Aug–Oct.

● Coniferous forests, *Rhododendron* thickets, mountain slopes; 2100–4000 m. SW Sichuan, SE Xizang, NW Yunnan.

Perhaps var. *griseum* should be maintained, but at subspecific rank on account of the different leaf indumentum and the more westerly distribution than typical *Rhododendron uvariifolium*.

16. Rhododendron subsect. **Lanata** D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 337. 1979.

黄钟杜鹃亚组 huang zhong du juan ya zu

Hu Linzhen (胡琳贞 Hu Ling-cheng); David F. Chamberlain

Shrubs or small trees; young shoots densely woolly-tomentose. Leaf blade leathery, elliptic to obovate; abaxial surface with dense 1-layered woolly indumentum, hairs straight or crispate dendroid-branched. Inflorescence terminal, lax or dense, 3–15-flowered, rachis 3–10 mm. Calyx minute, 5-lobed; corolla tubular-campanulate to open-campanulate, rarely saucer-shaped, 5-lobed, yellow, white to pink; stamens 10; ovary densely tomentose, rarely glandular (in *R. circinnatum*).

Four species: Bhutan, China, India, Sikkim; four species (two endemic) in China.

1a. Corolla tubular-campanulate; ovary densely long glandular-hairy ..... 401. *R. circinnatum*
1b. Corolla broadly campanulate or campanulate; ovary tomentose, eglandular.
  2a. Corolla broadly campanulate, sulfur-yellow ..... 398. *R. lanatum*
  2b. Corolla campanulate, white to pink.
    3a. Leaf lamina 2.2–6.2 cm; inflorescence 3–5-flowered ..... 399. *R. tsariense*
    3b. Leaf lamina 9–11 cm; inflorescence 10–15-flowered ..... 400. *R. lanatoides*

398. Rhododendron lanatum J. D. Hooker, Rhododendr. Sikkim-Himalaya 2: t. 16. 1851.

黄钟杜鹃 huang zhong du juan

Rhododendron flinckii Davidian; *R. lanatum* var. *luciferum* Cowan; *R. luciferum* (Cowan) Cowan.

Shrubs or small trees, 1–3 m tall; young shoots and petioles densely whitish to tawny woolly-tomentose. Petiole 10–15 mm; leaf blade leathery, elliptic to obovate or oblong-obovate, 6–11 × 2.5–4.5 cm; base obtuse or broadly cuneate; margin revolute; apex obtuse or subrounded, apiculate; abaxial surface white, densely pale chocolate brown to rufous woolly, hairs ± crispate dendroid; adaxial surface glabrous except for groove of midrib, midrib and lateral veins prominent abaxially. Inflorescence racemose-umbellate, 5- or 10-flowered; rachis 3–10 mm, woolly-tomentose. Pedicel 1.5–2 cm, densely whitish to tawny woolly-tomentose; calyx 1–2 mm, tomentose or glabrescent; corolla broadly campanulate, sulfur-yellow, with red spots, 3.5–4.5 cm; lobes 5, rounded, emarginate; stamens 10, unequal, 1.5–2.6 cm, filaments pubescent at base; ovary 5-lobed, ca. 6 mm, densely tawny-tomentose; style ca. 2.6 cm, glabrous; stigma lobulate. Capsule elongate-cylindric, slightly curved, 15–25 × 4–8 mm, ± tomentose. Fl. May, fr. Aug.

Coniferous forests, *Rhododendron* thickets, mountain slopes; 3100–4400 m. SE Xizang [Bhutan, Sikkim].

Rhododendron luciferum may be a distinct species, differing in the shape of the leaves and their loose, very thick, rufous indumentum. Moreover, the taxon has a more easterly distribution. The largely Bhutanese *R. flinckii* may also be a distinct species, differing in the red, more velutinous leaf indumentum.

399. Rhododendron tsariense Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 232. 1937.

白钟杜鹃 bai zhong du juan

Shrubs, 1–3 m tall; young shoots densely pale yellow woolly-tomentose. Leaf blade thickly leathery, elliptic-oblong to obovate, 2.2–6.2 × 1–3 cm; base rounded or subcordate; margin slightly revolute; apex obtuse or shortly acuminate; abaxial surface densely rufous woolly, hairs branched; adaxial surface slightly rugulose, glabrous except for ± tomentose groove of midrib, midrib and lateral veins prominent abaxially. Inflorescence racemose-umbellate, 3–5-flowered; rachis 3–4 mm. Pedicel ca. 1 cm, densely tomentose; calyx 1–2 mm, tomentose; corolla campanulate, white or pink, with red spots, 3–3.5 cm, lobes 5; stamens 10, unequal, 1.5–2 cm, filaments pubescent at base; ovary ovoid, 5-lobed, 4–5 mm, densely tomentose; style longer than stamens, glabrous; stigma slightly expanded. Capsule cylindrical, 15–25 × 4–5 mm densely tomentose. Fl. Jun, fr. Aug.

Mixed forests, *Rhododendron* thickets, stony hillsides, rock ledges; 3200–4500 m. S Xizang [E Bhutan, NE India].

The following two varieties are may be distinguished by the indumentum, especially on the adaxial surface of the leaf blade. In cultivation the two varieties are clearly differentiated.

1a. Leaf blade obovate, elliptic, or oblong-elliptic, indumentum thin, felted, brown to rufous, especially on adaxial surface ..... 399a. var. *tsariense*
1b. Leaf blade ovate to orbicular, indumentum thick, woolly, fawn to whitish, especially on adaxial surface ..... 399b. var. *trimoense*

399a. Rhododendron tsariense var. **tsariense**

白钟杜鹃(原变种) bai zhong du juan (yuan bian zhong)

Leaf blade obovate, elliptic, or oblong-elliptic, indumentum thin, felted, brown to rufous, especially on adaxial surface. Fl. Jun.

Mixed forests, rock ledges; 3200–4500 m. S Xizang [E Bhutan, NE India].

399b. Rhododendron tsariense var. **trimoense** Davidian, Rhododendron Spec. 2: 308. 1989.

仿钟杜鹃 fang zhong du juan

Leaf blade ovate to orbicular, indumentum thick, woolly, fawn to whitish, especially on adaxial surface. Fl. May.

● Mixed forests, *Rhododendron* thickets, stony hillsides; 3400–4300 m. S Xizang.

400. Rhododendron lanatoides D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 39: 478. 1982.

淡钟杜鹃 dan zhong du juan

Shrubs, 2–4 m tall; young shoots densely gray-white tomentose. Petiole 10–15 mm, densely gray-white to pale brown tomentose; leaf blade leathery, lanceolate to oblong, 9–11 × 2.1–2.7 cm; base cuneate; apex acuminate; abaxial surface fawn to pale brown densely woolly, hairs ± straight, dendroid; adaxial surface glabrous except for groove of midrib towards base; midrib prominent abaxially, grooved adaxially; lateral veins concealed. Inflorescence compact, umbellate, 10–15-flowered, rachis 7–10 mm. Pedicel 0.7–1.5 cm, densely pale brown woolly-tomentose; calyx ca. 1 mm, sparsely tomentose; corolla campanulate, white flushed pink, with a few red spots on upper lobes, 3.5–4 cm, lobes 5; stamens 10, unequal, 1.5–2.5 cm, filaments white-puberulent at base; ovary ovoid, ca. 5 mm, densely brown-tomentose; style 2.2–2.5 cm, glabrous; stigma capitate, slightly lobulate. Fl. May.

● Rocky slopes; 3200–3700 m. SE Xizang.

401. Rhododendron circinnatum Cowan & Kingdon Ward, Notes Roy. Bot. Gard. Edinburgh 19: 179. 1936.

卷毛杜鹃 juan mao du juan

Shrubs or small trees, 7–8 m tall; branchlets torquate, 7–8 mm in diam.; young shoots densely pale yellow to gray-yellow tomentose. Petiole stout, 20–30 mm, densely grayish tomentose; leaf blade thickly leathery, elliptic-lanceolate to narrowly oblong, 10–14 × 3–4 cm; base obtuse or subrounded; apex obtuse or acute and apiculate; abaxial surface densely, continuously, yellowish brown woolly, hairs crispate-branched; adaxial surface glabrous except in midrib groove which retains vestiges of hairs; midrib and lateral veins prominent abaxially. Inflorescence umbellate, ca. 12-flowered; rachis ca. 10 mm. Pedicel ca. 2 cm, densely floccose and glandular; calyx ca. 1 mm, densely glandular and floccose, margin ciliate-glandular; corolla tubular-campanulate, 2.5–3 cm; lobes 5, ca. 1 × 1 cm; stamens 10, unequal, 1.5–2.5 cm, filaments pubescent at base; ovary ca. 1 × 4 mm, densely long-glandular-hairy and villous at base; style ± equal to corolla, glabrous; stigma discoid. Fl. Jun.

● *Rhododendron* thickets, mountains; 4300–4600 m. S Xizang.

17. Rhododendron subsect. Campanulata (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 550. 1949.

钟花杜鹃亚组 zhong hua du juan ya zu

Hu Linzhen (胡琳贞 Hu Ling-cheng); David F. Chamberlain

Rhododendron ser. *Campanulata* Tagg in J. B. Stevenson, Sp. Rhodod. 175. 1930 [*"Campanulatum"*].

Shrubs or small trees; young shoots hairy or glabrous. Leaf blade leathery, broadly elliptic to elliptic; abaxial surface with felt or granular indumentum; adaxial surface glabrous when mature. Inflorescence terminal, lax, 5–12-flowered, rachis 1–2.5 cm. Calyx minute, 5-lobed; corolla broadly campanulate, 5-lobed, whitish, pale rose or lilac-purple; stamens 10; ovary glabrous. Capsule cylindric, slightly curved.

Three species: Bhutan, China, India, Kashmir, Nepal, Sikkim; three species (one endemic) in China.

1a. Young shoots pilose; calyx densely glandular ..... 404. *R. gannanense*
1b. Young shoots glabrous or floccose; calyx glabrous or floccose.
  2a. Abaxial surface of leaves fulvous to rufous, with felted continuous indumentum of branched hairs ..... 402. *R. campanulatum*
  2b. Abaxial surface of leaves brown, with granular discontinuous indumentum of fasciculate hairs or ± glabrous ..... 403. *R. wallichii*

402. Rhododendron campanulatum D. Don, Mem. Wern. Nat. Hist. Soc. 3: 410. 1821.

钟花杜鹃 zhong hua du juan

Shrubs, 1–4.5 m tall; young shoots ca. 5 mm in diam., glabrous. Petiole 15–20 mm, initially tomentose, later glabrescent; leaf blade leathery, broadly elliptic to oblong-elliptic, 5–15 × 3–6 cm; base rounded, obtuse or semicordate; apex obtuse or rounded, mucronate; abaxial surface yellowish, fulvous, rust-brown or rust-yellow, indumentum thin or thickly felted; adaxial surface with or without metallic luster when young. Inflorescence racemose-umbellate, 8–12-flowered; rachis 20–30 mm. Pedicel 1.5–3.5 cm, glabrous; calyx 1–2 mm, glabrous; corolla broadly campanulate, white to pale rose or lilac to purple, upper interior ± purple-spotted, 3.5–4 cm, lobes 5; stamens 10, unequal, filaments pubescent at base; ovary ca. 7 mm, glabrous; style ca. 2.8 cm, glabrous, stigma slightly lobulate. Capsule slightly curved, 20–30 × 4–5 mm. Fl. May–Jun, fr. Jul–Sep.

Forests, thickets, mountain slopes; 3100–4300 m. S Xizang [Bhutan, N India, Kashmir, Nepal, Sikkim].

1a. Leaf blade 7–15 cm; adaxial surface without metallic luster when young; corolla whitish or pale rose or lilac ..... 402a. subsp. *campanulatum*
1b. Leaf blade 5–9 cm; adaxial surface with metallic luster when young; corolla lilac or purple ..... 402b. subsp. *aeruginosum*

402a. Rhododendron campanulatum subsp. **campanulatum**

钟花杜鹃(原亚种) zhong hua du juan (yuan ya zhong)

Leaf blade 7–15 × 3–6 cm, 1.8–2.5 × as long as broad; abaxial surface fulvous or yellowish, indumentum thin, felted; adaxial surface without metallic luster when young. Corolla whitish or pale rose or lilac. Fl. May–Jun, fr. Jul–Sep.

Rhododendron thickets, mountain slopes; 3100–4200 m. S Xizang [Bhutan, N India, Kashmir, Nepal, Sikkim].

402b. Rhododendron campanulatum subsp. **aeruginosum** (J. D. Hooker) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 329. 1979.

铜叶钟花杜鹃 tong ye zhong hua du juan

Rhododendron aeruginosum J. D. Hooker, Rhododendr. Sikkim-Himalaya 3: t. 22. 1851; *R. campanulatum* var. *aeruginosum* (J. D. Hooker) Cowan & Davidian.

Leaf blade 5–9 × 3–3.5 cm; abaxial surface rust-yellow, indumentum thick, felted; adaxial surface with metallic luster when young. Corolla lilac or purple. Fl. Jun.

Forests, thickets, alpine slopes; 3700–4300 m. S Xizang [Bhutan, Nepal, Sikkim].

It is probable that subsp. *aeruginosum* merits specific rank, as originally described. There is a form intermediate between *R. aeruginosum* and typical *R. campanulatum* in W Bhutan, E Nepal, and perhaps S Xizang that shares the glaucous leaves of *R. aeruginosum* but has pale flowers like those of *R. campanulatum*. The status of this entity requires further research.

403. Rhododendron wallichii J. D. Hooker, Rhododendr. Sikkim-Himalaya 1: t. 5. 1849.

簇毛杜鹃 cu mao du juan

Rhododendron campanulatum D. Don var. *wallichii* (J. D. Hooker) Hooker, Bot. Mag. 82: t. 4928. 1856; *R. heftii* Davidian.

Shrubs 2–4 m tall; young shoots ca. 5 mm in diam., glabrous or floccose. Petiole often reddish, 10–15 mm, glabrous or sometimes tomentose; leaf blade leathery, elliptic to oblong-obovate, 7–12 × 2.5–5 cm; base rounded or cordate; margin slightly revolute; apex obtuse or rounded, mucronate; abaxial surface glabrous or brown to ferruginous, indumentum granular, discontinuous, ± detersile, hairs fasciculate. Inflorescence racemose-umbellate, 5–8-flowered; rachis ca. 20 mm, hairy or glabrous. Pedicel 0.1–0.25 cm, glabrous or floccose; calyx lobes 0.5–2 mm, rounded or triangular, glabrous or floccose; corolla broadly campanulate, lilac-purple, purplish red or whitish, ± deeply rose-spotted, 3.5–5 cm, lobes 5; stamens 10, unequal; filaments pubescent at base; ovary 5–7 mm, 5–6-locular, glabrous, rarely with a few pubescent hairs; style glabrous; stigma lobed. Capsule slightly curved, 15–30 × 5–7 mm, glabrous. Fl. May–Jun, fr. Jul–Sep.

Mixed forests, mountain slopes; 3000–4300 m. S Xizang [Bhutan, NE India (Darjiling), E Nepal, Sikkim].

404. Rhododendron gannanense Z. C. Feng & X. G. Sun, Bull. Bot. Res., Harbin 12: 145. 1992.

甘南杜鹃 gan nan du juan

Shrubs or trees, 3–5 m tall; young shoots pilose. Petiole 1–2 cm, sparsely pilose or glabrous; leaf blade leathery, elliptic to elliptic-oblong, 6.5–12 × 2.5–4.5 cm; base rounded or truncate; margin revolute; apex obtuse, mucronate; abaxial surface densely ferruginous floccose; adaxial surface green, glabrous; midrib prominent abaxially, grooved adaxially; lateral veins 12–18-paired. Inflorescence an umbellate raceme, 6–10-flowered; rachis 5–10 mm. Pedicel 0.8–1.5 cm, glandular and pilose; calyx minute, with an undulate margin, densely glandular; corolla broadly campanulate, pink, with purple flecks within, 2–3 cm, lobes 5; stamens 10, unequal, filaments glabrous; ovary conoid, glabrous; style as long as corolla, glabrous. Capsule cylindrical, 13–15 mm, glabrous.

● *Abies* forests; 2800–3000 m. S Gansu (Zhugqu).

This species was diagnosed by the original authors as differing from *Rhododendron wallichii* in having a short inflorescence rachis, glandular pedicel and calyx, shorter, pink corolla (2–3 cm), and glabrous filaments. The present authors have seen no material and are therefore uncertain of its true affinities, although from the protologue it appears perfectly distinct from *R. wallichii*.

18. Rhododendron subsect. Griersoniana D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 337. 1979.

朱红大杜鹃亚组 zhu hong da du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Small shrubs; young shoots densely glandular-setulose and woolly-tomentose; bud scales long, linear-cuspidate. Leaf blade leathery, elliptic; abaxial surface densely white- or brown-tomentose. Inflorescence lax, 5–12-flowered; calyx minute, ca. 1 mm; corolla tubular or funnel-campanulate, deep rose to scarlet, outer surface of tube densely tomentose; stamens 10; filaments pubescent at base; ovary densely glandular and tomentose; style glabrous.

One species: China, Myanmar.

405. Rhododendron griersonianum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 69. 1919.

朱红大杜鹃 zhu hong da du juan

Shrubs, ca. 1.3 m tall; bark rough, branches straight, ca. 4 mm in diam. below inflorescence; young shoots glandular-setulose and woolly-tomentose. Petiole purple, 10–25 mm, glandular-setulose and tomentose; leaf blade leathery, narrowly elliptic, or lanceolate, 7.5–14 × 2–3.5 cm; base obtuse; margin revolute; apex acute or acuminate; abaxial surface densely whitish or pale brown woolly-tomentose, midrib glandular and tomentose; adaxial surface dull green, glabrous or glabrescent

at maturity, midrib glandular-setose towards base; midrib raised abaxially, grooved adaxially; lateral veins 12–18-paired. Inflorescence 5–12-flowered; rachis 10–30 mm, densely tomentose and glandular-setulose. Pedicel 1.5–3 cm, tomentose, glandular-setulose; calyx 2–3 mm, tomentose and glandular; corolla tubular, funnelform or funnel-campanulate, deep rose-crimson to scarlet, 5–7 cm, inner surface puberulent, outer surface densely hairy; lobes 5; stamens 10, 2.8–3.5 cm, filaments puberulent in lower two-thirds; ovary conoid, ca. 6 mm, densely dendroid-hairy, glandular; style glandular at base. Capsule cylindric, ca. 23 × 8–9 mm, persistently tomentose. Fl. May–Jun, fr. Mar of next year.

Mixed forests, thickets; 1600–2700 m. W Yunnan [Myanmar].

19. Rhododendron subsect. **Parishia** (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 548. 1949.

星毛杜鹃亚组 xing mao du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron subser. *Parishia* Tagg in J. B. Stevenson, Sp. Rhodod. 332. 1930 [*"Parishii"*].

Shrubs or small trees; young shoots stellate-tomentose, sometimes also glandular-setose. Leaf blade large, subleathery, elliptic to oblong obovate-elliptic; apex obtuse, rounded, rarely acuminate; abaxial surface glabrescent or thinly stellate-tomentose, especially on the midrib when young. Inflorescence 5–15-flowered. Calyx usually 2–5 mm (10–20 mm in *R. schistocalyx*); corolla tubular-campanulate, 5-lobed, fleshy, crimson, red or scarlet, occasionally yellow, mostly without flecks, with 5 conspicuous nectar pouches; stamens 10; ovary densely tomentose or glandular-hairy; style stellate-tomentose and glandular at base or to tip.

Eight species; China, India, Myanmar, Vietnam; seven species (five endemic) in China.

1a. Calyx 10–20 mm, irregularly lobed; inflorescence rachis 5–8 mm, stellate-tomentose ..... 410. *R. schistocalyx*
1b. Calyx not exceeding 5 mm; inflorescence rachis 5–30 mm.
  2a. Shoots and petiole glandular-setose when young.
    3a. Leaf blade obovate-elliptic or oblong-elliptic, 3.5–9(–10)cm wide, apex obtuse to rounded, abaxial surface stellate-tomentose when young; rachis ca. 30 mm ..... 406. *R. kyawii*
    3b. Leaf blade elliptic-lanceolate, 2–4 cm wide, apex acuminate or caudate, abaxial surface usually glabrous except for tomentose midrib; rachis 5–10 mm.
      4a. Leaf apex caudate; lateral veins obscure, midrib hairs stellate; inflorescence 10–12-flowered ..... 411. *R. urophyllum*
      4b. Leaf apex not caudate; lateral veins ± prominent, midrib hairs folioliferous; inflorescence 6–10-flowered ..... 412. *R. venator*
  2b. Shoots and petiole without glandular setae.
    5a. Pedicels glandular-hairy; leaves 4–11 cm; calyx ca. 1.5 mm, margin glandular-ciliate ..... 409. *R. huidongense*
    5b. Pedicels stellate-tomentose; leaves 8.5–20 cm; calyx 2–5 mm, margin glabrous.
      6a. Corolla deep rose to scarlet; calyx 4–5 mm ..... 407. *R. facetum*
      6b. Corolla yellow; calyx 2–3 mm ..... 408. *R. flavoflorum*

406. Rhododendron kyawii Lace & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 216. 1914 [*"kyawi"*].

星毛杜鹃 xing mao du juan

Rhododendron agapetum I. B. Balfour & Kingdon Ward; *R. prophantum* I. B. Balfour & Forrest.

Shrubs, 5–10 m tall; branchlets stout; young shoots stellate-tomentose and glandular-setose, glabrescent. Petiole cylindric, 15–45 mm, stellate-tomentose and glandular-hairy, finally glabrous; leaf blade thinly leathery, oblong-elliptic to obovate-elliptic, 8–22 × 3.5–9(–10) cm; base broadly cuneate to rounded; apex obtuse or cuspidate; both surfaces tomentose when young, persistent only abaxially, hairs stellate; midrib conspicuously raised abaxially, grooved adaxially; lateral veins 15–16-paired. Inflorescence racemose, 10–15-flowered; rachis 25–40 mm, stellate-tomentose. Pedicel 1.5–3 cm, densely glandular-setose and sparsely floccose; calyx red, cupular; lobes 5, 2–5 mm, irregular; corolla tubular-campanulate, fleshy, bright crimson to scarlet, without flecks, 4–5.5 cm, with 5 more deeply colored basal nectar pouches, outer surface sparsely glandular-setose; lobes 5, suborbicular, 1.5–2 × ca. 2 cm; stamens 10, unequal, 3–4 cm, filaments crimson, puberulent in lower half; ovary cylindric, 5–7 × ca. 3 mm, 6-locular, stellate-tomentose and glandular-hairy; style 3.5–4.5 cm, with same indumentum in lower half, or extending to tip, stigma capitate. Capsule cylindric, slightly curved, 20–25 × ca. 6 mm. Fl. Jun, fr. Sep–Oct.

Mixed forests; 2000–3000 m. W Yunnan [NE Myanmar].

407. Rhododendron facetum I. B. Balfour & Kingdon Ward, Notes Roy. Bot. Gard. Edinburgh 10: 104. 1917.

绵毛房杜鹃 mian mao fang du juan

Rhododendron eriogynum I. B. Balfour & W. W. Smith.

Shrubs or small trees, 3–7 m tall; branchlets stout; young shoots white to tawny stellate-tomentose, glabrescent. Petiole cylindric, grooved adaxially, 10–20 mm, stellate-tomentose, glabrescent; leaf blade thinly leathery, oblong-elliptic to obovate-elliptic, 8.5–20 × 3–6 cm; base cuneate or rounded; margin slightly recurved; apex obtuse or rounded, apiculate; both surfaces sparsely rufous stellate-hairy at first, glabrous by maturity; midrib slightly grooved adaxially; lateral veins 16–20-

paired, obscure on both surfaces. Inflorescence racemose-umbellate, 1–12-flowered; rachis 10–15 mm, stellate-tomentose, quickly glabrescent; calyx cupular; lobes 5, 4–5 mm, unequal, broadly rounded, pubescent outside; corolla tubular-campanulate, fleshy, scarlet, with deeper colored spots, 3.5–4.5 cm, with 5 nectar pouches, gibbous at the base, lobes 5, ca. 1 × 1.5–2 cm, outer surface sparingly floccose-tomentose, emarginate; stamens 10, unequal, 2–3 cm; filaments puberulent on lower half; ovary ovoid-conoidal, 5–6 × ca. 4 mm, densely stellate-tomentose; style 2.5–3 cm, stellate-hairy, glandular to the tip, stigma small. Capsule cylindric, ca. 20 × 8 mm, densely tomentose. Fl. May–Jun, fr. Oct–Nov.

Mixed forests; 2100–3600 m. W Yunnan [NE Myanmar, N Vietnam].

408. Rhododendron flavoflorum T. L. Ming, Acta Bot. Yunnan. 6: 153. 1984.

泸水杜鹃 lu shui du juan

Small trees, ca. 3 m tall; older branchlets glabrous; branchlets stout; young shoots stellate-tomentose. Petiole cylindric, slightly grooved adaxially, 10–15 mm; leaf blade leathery, obovate-elliptic to elliptic, broadest above middle of blade, 9.5–12 × 3–4 cm; base cuneate; margin recurved; apex obtuse or cuspidate; both surfaces glabrous; abaxial surface pale tawny; adaxial surface green; midrib conspicuously raised abaxially, flat adaxially; lateral veins 16–19-paired, obscure on both surfaces. Inflorescence racemose-umbellate, 10–12-flowered; rachis ca. 15 mm, pubescent. Pedicel stout, 10–12 cm, yellowish stellate-tomentose; calyx cupular; lobes 5, 2–3 cm, stellate-tomentose, glabrous inside, margin ciliate; corolla tubular-campanulate, yellow, without flecks, 3.5–4 cm, lobes 5, suborbicular, ca. 1 × 1.5 cm, emarginate; stamens 10, 2–3 cm, filaments pubescent at base; ovary ovoid, ca. 7 mm, yellowish tomentose; style 3–3.5 cm, stellate-tomentose to tip, stigma small. Capsule not known. Fl. Jul.

● Mixed forests; ca. 2700 m. W Yunnan.

This very rare species has a close affinity with *Rhododendron facetum,* but differs in the yellowish corolla. The apparent earlier homonym "*Rhododendron flaviflorum* Elmer" (Merrill, Enum. Philipp. Fl. Pl. 3: 244. 1923) was cited as a synonym of *R. leytense* Merrill and was therefore not validly published under Art. 34.1(c) of the Saint Louis Code.

409. Rhododendron huidongense T. L. Ming, Acta Bot. Yunnan. 3: 115. 1981.

会东杜鹃 hui dong du juan

Shrubs, 2–5 m tall; branches more than one year old grayish green or pale brown, glabrous; branchlets stout; young shoots ca. 4 mm in diam., yellowish green, puberulent. Petiole slender, cylindric, 8–20 mm, stellate-tomentose and glandular-hairy when young, glabrescent; leaf blade thinly leathery, ovate-lanceolate or ovate-elliptic, 4–11 × 2–3 cm; base ± rounded; margin recurved; apex acuminate or cuspidate, apiculate; abaxial surface pale green, glabrous; adaxial surface flat, deep green, glabrous; midrib conspicuously raised abaxially, flat, impressed adaxially; lateral veins 12–15-paired, obscure on both surfaces. Inflorescence racemose-umbellate, 5–7(–9)-flowered; rachis 5–11 mm, brownish puberulent. Pedicel 5–11 cm, glandular-hairy; calyx cupular; lobes 5, ca. 1.5 mm, outer surface glabrous, margin ciliolate; corolla campanulate, red, 4–4.5 cm; lobes suborbicular, ca. 1.5 × 2 cm; stamens 10, unequal, 2.5–3.5 cm, filaments glabrous; ovary ovoid, ca. 5 mm, densely brown-tomentose; style 3–3.5 cm, stellate-tomentose to tip, stigma capitate. Capsule not known. Fl. May–Jun.

● Mixed forests, evergreen broad-leaved forests, mountain slopes; 2800–3200 m. SW Sichuan.

410. Rhododendron schistocalyx I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 58. 1920.

裂萼杜鹃 lie e du juan

Shrubs, 5–7 m tall; branchlets slender, ca. 4 mm in diam. below inflorescence, stellate-tomentose, glabrescent. Petiole cylindric, 10–20 mm, stellate-tomentose, glabrescent; leaf blade thinly leathery, oblong-elliptic to oblanceolate, 10–16 × 3–5 cm; base rounded or cuneate; apex obtuse or rounded, apiculate; abaxial surface persistently tomentose towards base, especially near prominent midrib, hairs stellate; adaxial surface green, glabrous at maturity; midrib grooved adaxially; lateral veins 14–16-paired, flat on both surfaces. Inflorescence racemose-umbellate, 5- or 6-flowered; rachis conical, 5–8 mm, stellate-tomentose. Pedicel 1–1.5 cm, stellate-tomentose; calyx reddish, cupular, membranous; lobes 4 or 5, 1–2 cm, irregular, glabrous, margin ragged or fimbriate; corolla tubular-campanulate crimson, 4–5 cm, with 5 nectar pouches; lobes 5, rounded, ca. 1.2 × 1.6 cm, emarginate; stamens 10, unequal, 2–3 cm, filaments pubescent at base; ovary cylindric-conoid, ca. 5 × 3 mm, densely stellate-tomentose; style 3–3.5 cm, lower half stellate-tomentose, stigma small. Capsule cylindric, curved, ca. 15 mm, with brownish hairs. Fl. Apr.

● *Rhododendron* thickets; 2700–3300 m. SW Yunnan.

411. Rhododendron urophyllum W. P. Fang, Acta Phytotax. Sin. 21: 467. 1983.

尾叶杜鹃 wei ye du juan

Shrubs, 3–8 m tall; branchlets slender, ca. 3 mm in diam. below inflorescence, glandular-setose, glabrescent. Petiole cylindric, 10–20 mm, slightly stellate-tomentose; leaf blade thickly leathery, elliptic-lanceolate to oblanceolate, broadest above the middle, 8–11 × 1.7–3 cm; base broadly cuneate or rounded; apex acuminate, cuspidate; abaxial surface yellowish green, thinly stellate-tomentose only on veins; adaxial surface green, glabrous; midrib prominently raised abaxially, grooved adaxially; lateral veins obscure-paired. Inflorescence racemose-umbellate, 10–12-flowered; rachis ca. 10 mm, yellowish puberulent. Pedicel 0.5–1 cm, glandular-setose; calyx lobes 5, ca. 1 mm, triangular-ovate, glandular-setose; corolla campanulate, crimson, without flecks, 3.5–4 cm, with 5 deep-colored basal nectar pouches; lobes 5, suborbicular, ca. 1.2 × 1.5 cm, emarginate; stamens 10, unequal, 1–2 cm, filaments glabrous; ovary cylindric, ca. 5 mm; style ca. 2 cm, glabrous, stigma slightly swelling. Capsule not known. Fl. Mar–May.

● Evergreen broad-leaved forests; 1200–1600 m. SW Sichuan.

412. Rhododendron venator Tagg ex L. Rothschild, Suppl. Rhododendron Assoc. Year Book 1933: 102. 1933.

毛柱杜鹃 mao zhu du juan

Shrubs, 2–3 m tall; shoots 3–5 mm in diam. below inflorescence; young shoots glandular-setose and whitish floccose, soon glabrescent. Petiole 10–15 mm, glandular-setose and stellate-tomentose; leaf blade leathery, elliptic-lanceolate to oblong-lanceolate, 7–15 × 2–4 cm; base rounded; margin recurved; apex acuminate, apiculate; abaxial surface brownish, glabrous except for tomentose midrib, hairs folioliferous; adaxial surface green, glabrous; midrib conspicuously raised grooved; lateral veins 15–18-paired, slightly prominent abaxially. Inflorescence racemose-umbellate, 6–10-flowered; rachis 6–10 mm, fawn to rusty tomentose. Pedicel stout, 1–1.5 cm, stellate-tomentose and glandular-setulose; calyx lobes 5, small, broadly rounded, densely tomentose and glandular at base, margin glandular-ciliate; corolla tubular-campanulate, fleshy, crimson, 3.5–4 cm, with 5 black-crimson nectar-pouches at base; lobes 5, orbicular, 1.2–1.6 cm; stamens 10, unequal, 2–3 cm, filaments glabrous; ovary cylindric, ca. 6 mm, densely tomentose; style 2–2.5 cm, stellate-tomentose at base, stigma slightly swollen. Capsule slightly curved, 15–20 mm. Fl. Apr–May.

● Forests, rocky valley slopes; 2400–2800 m. SE Xizang.

This distinctive species differs from the remaining members of this subsection in the indumentum, which is composed of folioliferous hairs, a feature that suggests a distant affinity with *Rhododendron* subsect. *Maculifera*. In the past it has been placed in the unispecific *R.* subsect. *Venatora*.

20. Rhododendron subsect. Barbata (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 544. 1949.

硬刺杜鹃亚组 ying ci du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron subser. *Barbata* Tagg in J. B. Stevenson, Sp. Rhodod. 126. 1930 [“*Barbatum*”].

Shrubs or small trees; bark smooth, peeling; young shoots usually stoutly setose, or glandular-hairy (setae sometimes absent in *R. barbatum*). Leaf blade elliptic, oblong to broadly obovate, glabrous or with abaxial surface coarsely setose to glandular-hairy at maturity, sometimes with thin continuous or discontinuous layer of dendroid hairs. Inflorescence dense, 10–20-flowered; rachis 5–7(–10)mm. Calyx small to large, usually colored, to 15 mm, lobes rounded; corolla tubular-campanulate, 5-lobed, fleshy, deep red to rarely rose, with nectar pouches at base; stamens (8–)10; filaments glabrous; ovary glabrous to densely glandular-hairy, with or without brown branched hairs, and glands; style glabrous.

Five species: Bhutan, China, India, Nepal, Myanmar, Sikkim; four species (one endemic) in China.

1a. Leaf blade abaxially glabrous except for midrib which is setose near base; pedicel glabrous ..... 413. *R. barbatum*
1b. Leaf blade abaxially glandular-hairy or ± tomentose; pedicel glandular-hairy.
  2a. Pedicel sparsely glandular; leaf blade broadly ovate or subobovate, abaxial surface sparsely glandular-hairy ..... 414. *R. exasperatum*
  2b. Pedicel densely long glandular-hairy or glandular-setose; leaf blade elliptic to oblong-lanceolate or obovate, abaxial surface ± tomentose.
    3a. Leaf blade elliptic to oblong-lanceolate, 10.5–12.3 × 3.3–4 cm; style ca. 1.6 cm ..... 415. *R. argipeplum*
    3b. Leaf blade broadly elliptic or oblong-elliptic to obovate, 8–10.5(–16.5) × (3–)3.7–4.5(–9) cm; style ca. 2.1 cm ..... 416. *R. erosum*

413. Rhododendron barbatum Wallich ex G. Don, Gen. Hist. 3: 844. 1834.

硬刺杜鹃 ying ci du juan

Rhododendron lancifolium J. D. Hooker (1849), not Moench (1794).

Large shrubs or small trees, 1.5–8 m tall; old branches grayish brown, glabrous; young branches setose, rarely glabrous. Petiole 12–22 mm, sparsely blackish brown glandular-setose or glabrous; leaf blade leathery, oblong to obovate-oblong, 9.8–18 × 3.5–5.8 cm; base truncate to rounded; margin reflexed; apex acuminate; abaxial surface whitish green, midrib and base setose, other parts slightly hairy when young; adaxial surface green; midrib raised abaxially, impressed adaxially; lateral veins 17–21-paired. Inflorescence densely umbellate, 10–20-flowered; rachis ca. 5 mm, glabrous. Pedicel 0.5–1.3 cm, glabrous; calyx green flushed red, cupular; lobes 5, 7–15 mm, broadly ovate or obovate-oblong, glabrous or with base hairy; margin erose; corolla tubular-campanulate, fleshy, deep red to blood-red, 3.1–3.6 × 3–3.6 cm, with 5 deep blackish red nectar pouches at base, glabrous; lobes 5, ± rounded, ca. 1.8 × 1.6–1.8 cm, apex deeply emarginate; stamens 10, unequal, 1.3–2.1 cm, filaments white, glabrous, anthers subelliptic, purplish black, 1.6–2 mm; ovary cone-shaped, ca. 5 mm, densely short-glandular-hairy; style ca. 1.6 cm, glabrous; stigma small, reddish, ca. 1.8 mm wide. Capsule cylindric, ribs obvious, slightly curved, 20–24 mm, with vestigial glandular hairs; calyx persistent; style persistent. Fl. May–Jun, fr. Aug–Sep.

Abies forests, *Rhododendron* thickets; 2400–3500 m. S Xizang [Bhutan, India, Nepal, Sikkim].

414. Rhododendron exasperatum Tagg in J. B. Stevenson, Sp. Rhodod. 836. 1930.

粗糙叶杜鹃 cu cao ye du juan

Shrubs or small trees, 2–5 m tall; young shoots ca. 7 mm in diam. below inflorescence, densely glandular-setose. Petiole

short and stout, 10–15 mm, usually setose, occasionally without setae; leaf blade leathery, broadly ovate or subobovate, 10–18 × 4–10 cm; base rounded; margin with caducous setae; apex rounded, acuminate; abaxial surface greenish, sparse brownish glandular-hairy, midrib setose, mainly at base; adaxial surface deep green, nearly smooth, with scattered setae, base of midrib with or without brownish setae; midrib narrow, raised abaxially, impressed adaxially; lateral veins 12–15-paired, slightly raised abaxially, slightly impressed adaxially, net veins inconspicuous. Inflorescence densely umbellate, 10–15-flowered; rachis ca. 5 mm. Pedicel 1(–1.5) cm, slightly glandular; calyx lobes 5, 4–5 mm, subovate, glabrous; corolla tubular-campanulate, fleshy, deep red, 3.5–4.5 × ca. 3.5 cm, with small deep red nectar pouches at base, glabrous inside; lobes 5, slightly unequal, ca. 1 × 1.8 cm, apex emarginate; stamens 10, unequal, 1.3–2.2 cm, filaments glabrous; anthers oblong, brown, 1.6–2 × 1–1.2 mm; ovary broadly cone-shaped, apex truncate, ca. 6 × 3 mm, densely glandular-hairy; style slender, ca. 2.2 cm, glabrous, stigma flattened, truncate, ca. 1 mm wide. Young fruits with dense persistent hair bases; calyx persistent.

Abies forests, *Rhododendron* thickets; 3000–3600 m. SE Xizang [India, Myanmar].

415. Rhododendron argipeplum I. B. Balfour & R. E. Cooper, Notes Roy. Bot. Gard. Edinburgh 9: 213. 1916.

毛枝杜鹃 mao zhi du juan

Rhododendron macrosmithii Davidian; *R. smithii* Nuttall ex Hooker (1859), not *R.* ×*smithii* Sweet (1830).

Shrubs or small trees, 2–7.5 m tall; young shoots ca. 4.5 mm in diam. below inflorescence, long-setose. Petiole stout, 10–20 mm, densely glandular-setose; leaf blade leathery, elliptic to oblong-lanceolate, 10.5–12.3 × 3.3–4 cm; base obtuse to rounded; margin reflexed; apex acute, with a sharp point; abaxial surface indumentum continuous, thinly yellowish brown floccose turning whitish later, hairs dendroid; midrib usually with a few bristles at base; adaxial surface moderately bullate, deep green, glabrous; midrib raised abaxially, impressed adaxially; lateral veins 12–17-paired, deeply impressed adaxially. Inflorescence densely umbellate, 10–20-flowered; rachis ca. 5 mm. Pedicel stout, 0.8–1.5 cm, densely glandular-setose; calyx red, fleshy; lobes 5, 5–10 mm, oblong or suborbicular, outside with a few glandular setae; margin glandular-ciliate; corolla tubular-campanulate, fleshy, deep red, ca. 3.2 × 3.5 cm, with 5 deep red nectar pouches at base, glabrous; lobes 5, rounded, ca. 1 × 1.8 cm, apex emarginate; stamens 8–10, unequal, 1–2 cm; filaments glabrous; anthers obovate, purplish red, 1.8–2 mm; ovary cone-shaped, ca. 4 mm, densely rufous-tomentose and glandular-hairy; style ca. 1.6 cm, glabrous; stigma small, punctiform. Capsule cylindric, straight or slightly curved, ribbed, 20–25 × 4.5–5.5 mm, blackish brown, with vestigial glandular hairs; calyx and style persistent. Fl. May–Jun, fr. Jul–Aug.

Secondary forests on mountain slopes, scrub; 2700–3600 m. S Xizang [Bhutan, NE India, Sikkim].

416. Rhododendron erosum Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 225. 1937.

啮蚀杜鹃 nie shi du juan

Shrubs or small trees, 4.5–6 m tall; bark grayish brown, flaking; branchlets ca. 4 mm in diam. below inflorescence; young shoots grayish white, densely glandular-hairy. Petiole stout, 7–12(–20) mm, densely brown glandular-setose; leaf blade leathery, broadly elliptic or oblong-elliptic to obovate, 8–10.5(–16.5) × (3–)3.7–4.5(–9) cm; base rounded or shallowly cordate; margin slightly reflexed; apex obtuse or broadly rounded, with small hard point; abaxial surface greenish, yellowish brown floccose-woolly or with gray to yellowish brown wool and glands; adaxial surface markedly bullate, green, brown floccose on base of midrib; midrib raised abaxially, impressed adaxially; lateral veins (10–)15–17-paired, deeply impressed adaxially. Inflorescence umbellate, 12–15-flowered; rachis ca. 15 mm, sparsely yellowish glandular-hairy. Pedicel 0.8–0.9 cm, with long glandular hairs; calyx cup-shaped; lobes 5, 5–5.2 mm, suborbicular, margin glandular-ciliate, ca. 4 mm; corolla tubular-campanulate, deep rose-red, 2.8–3.3 × 3.2–3.8 cm, base with 5 deep red nectar pouches, inner surface of tube white-puberulent; lobes 5, suborbicular, ca. 1.2 cm, apex deeply emarginate; stamens 10, unequal, 1.4–2.3 cm; filaments white, glabrous; anthers obovate, deep brown, ca. 1.3 mm; ovary oblong, ca. 5 mm, densely glandular; style white, ca. 2.1 cm, glabrous; stigma slightly lobed, ca. 1.6 mm wide. Capsule long-cylindric, 15–20 × ca. 6 mm. Fl. Apr–May, fr. Oct.

● Coniferous forests, *Betula* and *Rhododendron* forests and thickets; 3000–3700 m. S Xizang.

21. Rhododendron subsect. Neriiflora (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 545. 1949.

火红杜鹃亚组 huo hong du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron ser. *Neriiflora* Tagg in J. B. Stevenson, Sp. Rhodod. 507. 1930 [“*Neriiflorum*”].

Shrubs, sometimes dwarf and creeping, or small trees; bark smooth; young shoots with a thin or thick woolly, whitish to rufous indumentum composed of rosulate, branched or dendroid hairs, sometimes with setae or glands. Leaf blade elliptic, lanceolate, oblong, ovate, rarely orbicular; abaxial surface glabrous or with continuous, discontinuous, compacted or woolly whitish or brown to rufous indumentum. Inflorescence 1–12(–20)-flowered; rachis 3–10 mm. Calyx minute to well-developed, often colored, 1–6(–20) mm, cupular; corolla tubular-campanulate rarely campanulate, 5-lobed, usually fleshy, white to yellow through various shades of pink to deep carmine, with basal nectar pouches; stamens 10; ovary with or without stipitate-glands or glabrous; style glabrous.

Twenty-seven species: Bhutan, China, India, Myanmar; 27 species (13 endemic) in China.

Rhododendron ×*hillieri* Davidian (Rhododendrons Magnolias Camelias 47. 1974), described from Xizang, is a hybrid between two species in *R.* subsect. *Neriiflora*.

1a. Ovary tapering into style.
  2a. Abaxial leaf surface glabrous ..... 427. *R. neriiflorum*
  2b. Abaxial leaf surface with continuous or discontinuous indumentum.
    3a. Abaxial leaf surface with 2-layered indumentum at maturity.
      4a. Young shoots, pedicels, petiole and ovary eglandular, densely floccose; upper layer of leaf indumentum lax, lanate ..... 426. *R. albertsenianum*
      4b. Young shoots, pedicels, petiole and ovary stipitate-glandular and tomentose; upper layer of leaf indumentum spongy ..... 429. *R. euchroum*
    3b. Abaxial leaf surface with 1-layered indumentum at maturity.
      5a. Young shoots, pedicels and ovary glandular-setose, tomentose; abaxial leaf surface with continuous white to cinnamon indumentum ..... 430. *R. sperabile*
      5b. Young shoots and ovary usually eglandular, abaxial leaf surface with discontinuous reddish brown indumentum.
        6a. Leaf blade narrowly elliptic to oblong or elliptic, glaucous, abaxial epidermis papillate; filaments glabrous ..... 431. *R. floccigerum*
        6b. Leaf blade oblong-elliptic to oblanceolate, 4.5–8.5 cm, abaxial epidermis epapillate; filaments pubescent at base ..... 432. *R. sperabiloides*
1b. Ovary apex truncate.
  7a. Abaxial leaf surface with a continuous, thick, 1- or 2-layered rufous or brown to cinnamon (rarely whitish) indumentum.
    8a. Adaxial leaf surface markedly rugose.
      9a. Leaf blade elliptic to oblong, abaxial surface with 2-layered appressed tomentose indumentum, upper layer fulvous ..... 419. *R. piercei*
      9b. Leaf blade broadly obovate to obovate or obovate to elliptic, abaxial surface with 1-layered rufous indumentum.
        10a. Young shoots and petiole densely tomentose; leaf blade 4–7.5 cm wide; shrubs or small trees 3–6(–8) m tall ..... 417. *R. mallotum*
        10b. Young shoots stellate-setose and glandular-hairy; leaf blade 2–4 cm wide; small, upright shrubs, 2–3 m tall ..... 418. *R. beanianum*
    8b. Adaxial leaf surface smooth.
      11a. Young shoots densely setulose-glandular; ovary densely stipitate-glandular.
        12a. Leaf blade oblong to ovate; petiole tomentose and setulose-glandular; calyx 6–10 mm ..... 420. *R. pocophorum*
        12b. Leaf blade obovate; petiole glandular; calyx 3(–7) mm ..... 421. *R. coelicum*
      11b. Young shoots eglandular; ovary tomentose, eglandular.
        13a. Young shoots glabrous; corolla yellow or orange to red ..... 424. *R. citriniflorum*
        13b. Young shoots setulose or tomentose, with or without sparse setulae; corolla white, pink, crimson or purple.
          14a. Young shoots setulose; corolla white ..... 422. *R. chionanthum*
          14b. Young shoots tomentose; corolla pink, crimson or purple.
            15a. Calyx 13–20 mm; pedicel pale brown tomentose ..... 425. *R. catacosmum*
            15b. Calyx 3–7 mm; pedicel ferruginous tomentose ..... 423. *R. haematodes*
  7b. Abaxial leaf surface glabrous or with discontinuous or continuous indumentum.
    16a. Creeping shrubs, 0.2–0.9(–1.5) m; inflorescence 1(or 2)-flowered; leaves obovate to orbicular, 1.3–2.5 × 1.2–1.7 cm ..... 436. *R. forrestii*
    16b. Upright or creeping shrubs, 0.1–2 m; inflorescence, (1–)2–6-flowered; leaf shape various.
      17a. Shrubs 1–2.5 m, abaxial leaf surface with whitish to cinnamon appressed indumentum.
        18a. Abaxial leaf surface with buff to cinnamon indumentum; ovary floccose or stipitate-glandular; filaments puberulent at base ..... 433. *R. microgynum*
        18b. Abaxial leaf surface with whitish to gray appressed thin indumentum; ovary eglandular.
          19a. Filaments pubescent at base; corolla orange to red; leaves narrowly elliptic, oblanceolate or obovate ..... 434. *R. dichroanthum*
          19b. Filaments glabrous; corolla yellow, pink, or red to deep crimson, sometimes bicolored; leaves obovate, broadly elliptic to narrowly oblong ..... 435. *R. sanguineum*
      17b. Shrubs often dwarf, 0.2–2 m tall; abaxial leaf surface glabrous or with a discontinuous indumentum.
        20a. Branchlets with persistent bud-scales; abaxial leaf surface glabrous.
          21a. Pedicels 1.3–3 cm, glandular and with dendroid hairs; leaves obovate to oblanceolate; petiole wide, eglandular ..... 437. *R. aperantum*

21b. Pedicels 0.8–1.3 cm, glandular or eglandular; leaves obovate to oblong-obovate; petiole narrow, sometimes glandular and tomentose ..... 438. *R. chamaethomsonii*
20b. Branchlets without bud-scales or, if with bud-scales, then abaxial leaf surface puberulent.
22a. Corolla pale yellow, white or pink; ovary glabrous or glandular.
23a. Leaf blade 5.2–6.4 cm; pedicel 0.6–2 cm; corolla white, rose, or pale yellow, with conspicuous flecks; ovary glandular ..... 439. *R. parmulatum*
23b. Leaf blade 1–3.2 cm; pedicel 2–3 cm; corolla pale yellow, without flecks; ovary glabrous ..... 440. *R. trilectorum*
22b. Corolla purple, crimson or pale rose; ovary glandular-hairy, often also tomentose.
24a. Leaf blade narrowly lanceolate, 7–10 cm; corolla purple ..... 428. *R. bijiangense*
24b. Leaf blade elliptic to oblong-obovate, 1.5–6 cm; corolla pink to crimson.
25a. Leaf blade oblong or oblong-elliptic, 3–6 × 1.3–2.3 cm, abaxial epidermis pale gray-green, papillate; calyx 3–4 mm ..... 441. *R. temenium*
25b. Leaf blade elliptic to oblong-obovate, 1.5–4(–6.2) × 0.5–1.4(–2) cm, abaxial epidermis green, epapillate; calyx ca. 1.5 mm.
26a. Filaments puberulent at base; creeping shrubs, 0.05–0.5 m tall; leaf blade elliptic to oblong-obovate, abaxial surface puberulent ..... 442. *R. erastum*
26b. Filaments glabrous; shrubs 0.3–1.2(–1.8) m tall; leaf blade long-elliptic or oblong-obovate, abaxial surface with discontinuous indumentum ..... 443. *R. eudoxum*

417. Rhododendron mallotum I. B. Balfour & Kingdon Ward, Notes Roy. Bot. Gard. Edinburgh 10: 118. 1917.

羊毛杜鹃 yang mao du juan

Rhododendron aemulorum I. B. Balfour.

Shrubs or small trees, evergreen, 3–6(–8) m tall; older branches glabrous; branchlets stout, usually 7–9 mm in diam.; young shoots densely ferruginous-tomentose. Petiole stout, 15–27 mm, densely tomentose; leaf blade leathery, broadly oblanceolate or obovate, 7–14 × 4–7.5 cm; base obtuse; margin revolute; apex rounded, apiculate; abaxial surface densely rufous woolly-tomentose; adaxial surface dark green, rugose, midrib tomentose, otherwise glabrous; lateral veins 10–12-paired, deeply grooved. Inflorescence 7–14-flowered; rachis 10–15 mm, densely tomentose. Pedicel 1–1.3 cm, tomentose; calyx lobes 5, 1.8–3 mm, ferruginous-tomentose; corolla tubular-campanulate, fleshy, crimson, ca. 4 cm, with 5 dark basal nectar pouches, lobes 5; stamens 10, unequal, 2.2–3.2 cm, filaments red at base, glabrous; ovary ovoid, ca. 7 mm, densely rufous-tomentose; style ca. 2.3 cm, glabrous; stigma small. Capsule cylindric, oblique, slightly curved, 10–20 × 5–6 mm, with a persistent tomentum. Fl. May–Jun, fr. Aug–Oct.

Forests, *Rhododendron* thickets, rocky gullies; 3000–3700 m. W Yunnan [NE Myanmar].

418. Rhododendron beanianum Cowan, New Fl. & Silva 10: 246. 1938.

刺枝杜鹃 ci zhi du juan

Upright small shrubs, 2–3 m tall; young shoots dendroid stellate-setose and glandular-hairy. Petiole 15–20 mm, brownish setulose-tomentose; leaf blade leathery, obovate to elliptic, 6.3–10 × 2–4 cm; base rounded; margin revolute; apex rounded, apiculate; abaxial surface indumentum 1-layered, fulvous tomentose, hairs dendroid; adaxial surface rugulose, glabrous; midrib grooved adaxially; lateral veins ca. 13-paired, impressed adaxially. Inflorescence 6–10-flowered; rachis ca. 6 mm, glabrous. Pedicel ca. 1.7 cm, densely setulose-tomentose; calyx cupular; lobes 5, 7–9 mm, puberulent outside; corolla tubular-campanulate, carmine to blood-red, ca. 3.9 cm, with 5 dark nectar pouches at base; lobes 5, suborbicular ca. 1.3 × 1.8 cm; stamens 10, unequal, 1.6–2.5 cm, filaments red at base, glabrous; ovary ovoid, ca. 5.5 × 4 mm, densely stellate-tomentose; style ca. 2.4 cm, tomentose at base; stigma capitate. Capsule not known.

Forests, forest margins, thickets, gullies, alpine slopes; 3000–3700 m. SE Xizang [NE India, NE Myanmar].

419. Rhododendron piercei Davidian, Quart. Bull. Amer. Rhododendron Soc. 30: 211. 1976.

察隅杜鹃 cha yu du juan

Rhododendron beanianum Cowan var. *compactum* Cowan.

Straggling shrubs, 1.5–2.5 m tall; young shoots tomentose. Petiole stout, 7–10 mm, tomentose; leaf blade leathery, elliptic to oblong, 4–11 × 2–5.2 cm; base rounded; apex rounded, apiculate; abaxial surface with indumentum 2-layered, upper layer thick, fulvous-tomentose, hairs dendroid, lower layer whitish, thin and appressed, midrib rufous-pubescent; adaxial surface green, rugose, glabrous when mature; midrib prominent abaxially, grooved adaxially; lateral veins 11–13-paired, impressed adaxially. Inflorescence 6–8-flowered; rachis ca. 5 mm. Pedicel 1.2–1.5 cm, tomentose; calyx 3–6 mm, irregular, glabrous; corolla tubular-campanulate fleshy crimson, 2.8–3.6 cm, with 5 darker nectar pouches at base; stamens 10, unequal; ovary densely tomentose. Capsule 14–18 × ca. 4.5 mm.

● Thickets; 3900–4200 m. SE Xizang.

420. Rhododendron pocophorum I. B. Balfour ex Tagg, Notes Roy. Bot. Gard. Edinburgh 15: 316. 1927.

杯萼杜鹃 bei e du juan

Shrubs, evergreen, 0.6–3 m tall; shoots 5–6 mm in diam. below inflorescence; young shoots glandular-setulose. Petiole stout, 10–15 mm, glandular-hairy and tomentose when young; leaf blade thickly leathery, oblong to obovate, 6.5–14 × 2.5–5.6 cm; base cuneate; apex obtuse, markedly apiculate; abaxial surface indumentum patchy or continuous, thickly rufous tomentose; adaxial surface glaucous, glabrous when mature, midrib

grooved adaxially; lateral veins 12–14-paired, impressed adaxially. Inflorescence dense, 10(–20)-flowered; rachis ca. 5 mm, tomentose. Pedicel 0.7–1.8 cm, densely glandular-hairy and tomentose; calyx cupular; lobes 5, 6–10 mm, unequal, glabrous outside, margin glandular-ciliate; corolla tubular-campanulate, fleshy, light to deep crimson, with deeply colored flecks, 4–5 cm, nectar pouches at base; lobes 5, emarginate; stamens 10, unequal, 2–3.5 cm, filaments glabrous; ovary conoid, ca. 7 mm, densely glandular-hairy; style ca. 2.6 cm, glabrous; stigma small. Capsule 20–25 × 7–9 mm. Fl. Jul, fr. Sep.

Forests, thickets, rocky slopes; 3300–4500 m. SE Xizang, NW Yunnan [NE India].

Rhododendron ×*hemigymnum* (Tagg & Forrest) D. F. Chamberlain (Notes Roy. Bot. Gard. Edinburgh 37: 333. 1979 [*"hemigynum"*]; *R. chaetomallum* I. B. Balfour & Forrest var. *hemigymnum* Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 16: 189. 1931), described from Xizang, is a hybrid between *R. pocophorum* and *R. eclecteum*. It is intermediate between the two putative parents, with the broad petiole, leaf blade shape, and setose to stipitate-glandular young shoots and petioles of *R. eclecteum,* but with a leaf indumentum more typical of *R. pocophorum*. Both parents occur at the localities from which this entity has been recorded.

1a. Abaxial leaf surface with continuous indumentum ..... 420a. var. *pocophorum*
1b. Abaxial leaf surface with a patchy discontinuous indumentum ..... 420b. var. *hemidartum*

420a. Rhododendron pocophorum var. **pocophorum**

杯萼杜鹃(原变种) bei e du juan (yuan bian zhong)

Abaxial leaf surface indumentum continuous. Pedicel 0.7–1.8 cm, densely glandular-hairy and tomentose.

Forests, thickets, rocky slopes; 3300–4500 m. SE Xizang, NW Yunnan [NE India].

420b. Rhododendron pocophorum var. **hemidartum** (I. B. Balfour ex Tagg) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 334. 1978.

腺柄杯萼杜鹃 xian bing bei e du juan

Rhododendron hemidartum I. B. Balfour ex Tagg, Notes Roy. Bot. Gard. Edinburgh 15: 314. 1927.

Abaxial leaf surface indumentum patchy, discontinuous. Pedicel glandular-hairy.

● Forests; 3900–4200 m. SE Xizang, NW Yunnan.

421. Rhododendron coelicum I. B. Balfour & Farrer, Notes Roy. Bot. Gard. Edinburgh 13: 250. 1922.

滇缅杜鹃 dian mian du juan

Small shrubs; branches usually ca. 5.5 mm in diam. below inflorescence. Petiole stout, 10–14 mm, shortly glandular-hairy; leaf blade leathery, obovate, 6–8.5 × 2.8–4.4 cm; base rounded; margin revolute; apex rounded, apiculate ca. 2 mm; abaxial surface thickly rufous tomentose, hairs dendroid; adaxial surface green, glabrous; midrib grooved adaxially, lateral veins 13–15-paired, impressed or obscure. Inflorescence umbellate, 10–12 (–15)-flowered; rachis short, ca. 7 mm, tomentose. Pedicel ca. 1.1 cm, sparsely shortly glandular-hairy, often also with the remnants of juvenile tomentum; calyx cupular, fleshy; lobes 5, 3(–7) mm, rounded, glabrous; corolla tubular-campanulate, crimson, 3.5–4.5 cm, with 5 deep crimson nectar pouches at base; lobes 5, suborbicular, ca. 1.1 × 1.5 cm, emarginate; stamens 10, 1.7–2.9 cm, filaments glabrous; ovary conoid, with truncate apex, ca. 6.5 × 3 mm, glandular-hairy and tomentose; style ca. 2.8 cm, glabrous; stigma small. Capsule not known.

Shaded creeks, cliffs; 2700–4400 m. W Yunnan [Myanmar].

422. Rhododendron chionanthum Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 15: 309. 1927.

高山白花杜鹃 gao shan bai hua du juan

Shrubs ca. 0.1 m tall; bark brown, usually falling off in flakes; branches 3–4 mm in diam. below inflorescence, setose; bud scales persistent. Petiole with decurrent wing, 4–10 mm, glabrescent; leaf blade obovate or widely oblanceolate, 4–8.5 × 1.5–3 cm; base cuneate; margin revolute; apex obtuse, apiculate; abaxial surface indumentum discontinuous, rufous; adaxial surface dark green, clearly rugose, glabrescent; midrib grooved adaxially; lateral veins 7–9-paired, impressed adaxially. Inflorescence lax, umbellate, 4–6-flowered, rachis ca. 4 mm, tomentose. Pedicel 1.5–1.8 cm, glandular-setose; calyx lobes 5, 2–3 (–8) mm, elliptic, ciliate; corolla tubular-campanulate, white, 3–3.5 cm, lobes 5, suborbicular, ca. 1.2 × 1.5 cm, emarginate; stamens 10, unequal, 1.5–2 cm, filaments glabrous; ovary ovoid, with truncate apex, ca. 5 mm, rufous-tomentose; style ca. 2 cm, glabrous; stigma capitate, small. Capsule not known. Fl. Jul.

Grasslands, rocky slopes, alpine regions; 3900–4400 m. W Yunnan [NE Myanmar].

423. Rhododendron haematodes Franchet, Bull. Soc. Bot. France 33: 232. 1886.

似血杜鹃 si xue du juan

Small shrubs, 1.5–3 m tall; bark gray; young shoots densely ferruginous-tomentose to setose; bud scales persistent. Petiole 5–12 mm, tomentose, sometimes also setose; leaf blade leathery, oblong to obovate, 2.7–7.5 × 0.7–3.2 cm; base cuneate, rarely rounded; margin revolute; apex obtuse or rounded, apiculate; abaxial surface with indumentum 2-layered, matted, upper layer fawn to red-brown, lower layer whitish, thin, compacted; adaxial surface dark green, glabrous when mature; midrib grooved adaxially; lateral veins 7–10-paired, impressed. Inflorescence umbellate, 6–8-flowered; rachis ca. 4 mm, tomentose. Pedicel pink, 2–2.5 cm, densely tomentose or setose; calyx minute or cupular; lobes 5, 3–7 mm, irregular, glabrous; corolla tubular-campanulate, fleshy scarlet to deep crimson, 3–4(–5) cm, with 5 deeply colored nectar pouches at base; lobes 5, suborbicular, emarginate; stamens 10, filaments glabrous or puberulous; stigma small. Capsule ca. 10 × 6.5 × 9 mm, densely tomentose. Fl. May–Jun, fr. Aug–Sep.

Pinus forests, alpine thickets, valleys; 3100–4000 m. SE Xizang, W Yunnan [NE Myanmar].

1a. Petioles and young shoots tomentose, setae slender or lacking ..... 423a. subsp. *haematodes*
1b. Petioles and young shoots stoutly setose ..... 423b. subsp. *chaetomallum*

423a. Rhododendron haematodes subsp. **haematodes**

似血杜鹃(原亚种) si xue du juan (yuan ya zhong)

Rhododendron haematodes var. *calycinum* Franchet; *R. haematodes* var. *hypoleucum* Franchet.

Young shoots and petioles tomentose, setae slender or absent.

● Alpine thickets, valleys; 3200–4000 m. W Yunnan.

423b. Rhododendron haematodes subsp. **chaetomallum** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 333. 1979.

绢毛杜鹃 juan mao du juan

Rhododendron chaetomallum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 95. 1920; *R. chaetomallum* var. *glaucescens* Tagg & Forrest.

Young shoots and petioles with stout setae.

Pinus forests, alpine thickets; 3100–4000 m. SE Xizang, NW Yunnan [NE Myanmar].

424. Rhododendron citriniflorum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 35. 1919.

橙黄杜鹃 cheng huang du juan

Dwarf shrubs, 0.6–1.2 m tall; bark gray-brown, smooth, usually falling off in flakes; young shoots glabrous; bud scales persistent. Petiole flat, usually winged, 5–10 mm, white-tomentose when young; leaf blade leathery, oblong-obovate, 2.5–6 × 1.5–2 cm; base cuneate; margin revolute; apex obtuse, rounded, apiculate; abaxial surface densely gray-brown tomentose, hairs dendroid; adaxial surface green, glabrous; midrib grooved adaxially; lateral veins 8-paired, impressed. Inflorescence umbellate, 2–6-flowered; rachis ca. 3 mm, tomentose and glandular. Pedicel 1–2.6 cm, eglandular to densely glandular-setose; calyx 2–12 mm, glandular or woolly, glandular-ciliate; corolla tubular-campanulate, yellow or orange to carmine, ca. 3.5 cm, glabrous; lobes 5, ovate, ca. 1.3 × 1.8 cm, emarginate; stamens 10, 2–2.7 cm, filaments pubescent at base; ovary with truncate apex, ca. 5.6 mm; woolly-tomentose and glandular-setose; style ca. 2.4 cm, glabrous; stigma capitate. Capsule 8–12 mm. Fl. Jun–Jul.

● Alpine meadows, cliffs; 3600–5400 m. SE Xizang, NW Yunnan.

Two varieties occur in China; intermediate between them is subsp. *rubens* Cowan (Notes Roy. Bot. Gard. Edinburgh 20: 76. 1940; *R. horaeum* I. B. Balfour & Forrest var. *rubens* (Cowan) Davidian), described from Xizang. *Rhododendron chaetomallum* I. B. Balfour & Forrest var. *xanthanthum* Tagg & Forrest (Notes Roy. Bot. Gard. Edinburgh 15: 308. 1927; *R. xanthanthum* (Tagg & Forrest) D. F. Chamberlain), described from Xizang, is almost certainly a hybrid of *R. citriniflorum*.

1a. Corolla yellow; calyx 2–5(–10) mm; ovary and pedicels glandular-hairy ..... 424a. var. *citriniflorum*

1b. Corolla orange to carmine; calyx (2–)7–12 mm; ovary and pedicels eglandular ..... 424b. var. *horaeum*

424a. Rhododendron citriniflorum var. **citriniflorum**

橙黄杜鹃(原变种) cheng huang du juan (yuan bian zhong)

Rhododendron chlanidotum I. B. Balfour & Forrest.

Pedicel and ovary glandular-hairy; calyx 2–5(–10) mm; corolla yellow.

● Alpine meadows, cliffs; 3900–5400 m. SE Xizang, NW Yunnan.

424b. Rhododendron citriniflorum var. **horaeum** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 332. 1979.

美艳橙黄杜鹃 mei yan cheng huang du juan

Rhododendron horaeum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 264. 1922; *R. citriniflorum* subsp. *aureolum* Cowan; *R. citriniflorum* subsp. *horaeum* (I. B. Balfour & Forrest) Cowan.

Pedicel and ovary eglandular; calyx (2–)7–12 mm; corolla orange to carmine.

● Alpine meadows, cliffs; 3600–4500 m. SE Xizang, NW Yunnan.

425. Rhododendron catacosmum I. B. Balfour ex Tagg, Notes Roy. Bot. Gard. Edinburgh 15: 307. 1927.

瓣萼杜鹃 ban e du juan

Shrubs, 1.2–3 m tall; shoots 6–7 mm in diam. below inflorescence; young shoots brown-tomentose and sparsely setose. Petiole 10–15 mm, tomentose; leaf blade leathery, obovate, 6–9 × 3–5.2 cm; base cuneate; margin revolute; apex rounded, apiculate; abaxial surface with indumentum 2-layered, pale cinnamon, upper layer loosely tomentose, hairs dendroid, lower layer whitish, compacted; adaxial surface dark green, glabrous; midrib grooved adaxially; lateral veins 9–11-paired, impressed. Inflorescence 7–9-flowered; rachis ca. 8 mm, tomentose. Pedicel 2.2–3.5 cm, with same indumentum; calyx cupular, 1.3–2 cm; lobes 5, oblong, ca. 11 × 6 mm, glabrous except for ciliate margin; corolla tubular-campanulate, fleshy, crimson, ca. 4 cm, with 5 deep crimson basal nectar pouches; lobes 5, suborbicular, ca. 1.2 × 1.8 cm, emarginate; stamens 10(–12), 1.5–2 cm, filaments glabrescent; ovary with truncate apex, ca. 5 mm, densely rufous-tomentose; style ca. 1.6 cm, glabrous; stigma small. Capsule oblong, 20–25 × 10–12 mm, rough. Fl. Jun–Jul, fr. Sep–Oct.

● Alpine thickets; 3900–4200 m. SE Xizang, NW Yunnan.

426. Rhododendron albertsenianum Forrest ex I. B. Balfour, Notes Roy. Bot. Gard. Edinburgh 11: 21. 1919.

亮红杜鹃 liang hong du juan

Shrubs 1–3 m tall; young shoots thinly whitish floccose-tomentose, eglandular. Petiole 6–10 mm, whitish tomentose; leaf blade leathery, elliptic, 4–5.5(–9) × 1–2.5 cm; base cuneate, unequal; apex rounded, apiculate; abaxial surface with indumentum 2-layered, continuous, upper layer light brown, woolly, loose; lower layer felted and compacted; adaxial surface green, glabrous; midrib grooved; lateral veins 12–15-paired, impress-

ed. Inflorescence umbellate, 5- or 6-flowered; rachis 2–3 mm, brown-floccose. Pedicel 1(–1.8) cm, with same indumentum; calyx red, cupular, fleshy, 2.5–4 mm, tomentose; corolla tubular-campanulate, bright crimson-rose, ca. 3 cm, glabrous; lobes 5, suborbicular, ca. 1.7 × 2.2 cm; stamens 10, unequal, 2–2.5 cm, filaments glabrous; ovary conoid, tapering into style ca. 5.5 mm, tomentose; style glabrous; stigma small. Capsule cylindric, 8–12 × 4–5 mm, with remnants of indumentum. Fl. Jul, fr. Oct.

● Thickets, mountain slopes; 3200–3300 m. W Yunnan.

427. Rhododendron neriiflorum Franchet, Bull. Soc. Bot. France 33: 230. 1886.

火红杜鹃 huo hong du juan

Shrubs 1–3 m tall; bark gray-brown, usually falling off in flakes; young shoots 3–4 mm in diam. below inflorescence, whitish tomentose, glabrescent. Petiole purple, 10–15 mm, glabrous when mature or glandular; leaf blade leathery, oblong to obovate, 4–11 × 1.5–3.5 cm; base obtuse; apex obtuse or rounded, apiculate; abaxial surface glaucous, glabrous, epidermis papillate, sometimes markedly so and with strong reticulations; adaxial surface green, smooth, glabrous; midrib prominent abaxially, grooved adaxially; lateral veins 15–17-paired. Inflorescence umbellate, 5–12-flowered; rachis ca. 10 mm, tomentose. Pedicel 1–1.5 cm, sparsely stellate-tomentose; calyx fleshy when well-developed; lobes 5, 4–10 mm, glabrous; corolla tubular-campanulate, fleshy, crimson or bright red, 3–4.5 cm, with 5 dark crimson basal nectar pouches; lobes 5, rounded, ca. 1.5 cm, emarginate; stamens 10, unequal, 1.8–2.9 cm, filaments purple, glabrous; ovary conoid, tapering into style ca. 7 mm, densely tomentose, glandular, rarely glabrous; style glabrous. Capsule cylindric, ca. 22 × 5 mm, with remnants of indumentum. Fl. Apr–May, fr. Sep–Oct.

Mixed forests, *Pinus* forests, *Rhododendron* forests, bamboo forests; 2100–3600 m. SE Xizang, W Yunnan [Bhutan, NE India, Myanmar].

1a. Pedicel and ovary glandular; leaf blade 8–11 cm; petiole sometimes with glands ..... 427c. var. *appropinqans*
1b. Pedicel and ovary eglandular; leaf blade 4–9 cm; petiole eglandular.
  2a. Leaf blade smooth abaxially, without marked reticulations ..... 427a. var. *neriiflorum*
  2b. Leaf blade with marked reticulations abaxially, forming alveoli, with some papillae horizontal ..... 427b. var. *agetum*

427a. Rhododendron neriiflorum var. **neriiflorum**

火红杜鹃(原变种) huo hong du juan (yuan bian zhong)

Rhododendron euchaites I. B. Balfour & Forrest; *R. neriiflorum* subsp. *euchaites* (I. B. Balfour & Forrest) Tagg; *R. neriiflorum* var. *euchaites* (I. B. Balfour & Forrest) Davidian; *R. neriiflorum* subsp. *phoenicodum* (I. B. Balfour & Farrer) Tagg; *R. phoenicodum* I. B. Balfour & Farrer.

Petioles, pedicels and ovary eglandular; leaf blade abaxial surface flat, without marked reticulations. Pedicel and calyx eglandular. Fl. Apr–May, fr. Sep–Oct.

● Mixed forests, *Pinus* forests, *Rhododendron* forests; 2500–3600 m. SE Xizang, W Yunnan.

427b. Rhododendron neriiflorum var. **agetum** (I. B. Balfour & Forrest) T. L. Ming, Acta Bot. Yunnan. 6: 169. 1984.

网眼火红杜鹃 wang yan huo hong du juan

Rhododendron agetum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 29. 1920; *R. neriiflorum* subsp. *agetum* (I. B. Balfour & Forrest) Tagg.

Petioles, pedicels and ovary eglandular; leaf blade 4–9 cm; abaxial surface with marked reticulations that form alveoli, with some papillae horizontal. Pedicel and calyx eglandular.

● *Pinus* forests, bamboo forests; 2700–2800 m. W Yunnan.

427c. Rhododendron neriiflorum var. **appropinquans** (Tagg & Forrest) W. K. Hu in L. C. Hu & M. Y. Fang, Fl. Reipubl. Popularis Sin. 57(2): 290. 1994.

腺房火红杜鹃 xian fang huo hong du juan

Rhododendron floccigerum Franchet var. *appropinquans* Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 15: 312. 1927; *R. floccigerum* subsp. *appropinquans* (Tagg & Forrest) D. F. Chamberlain; *R. neriiflorum* subsp. *phaedropum* (I. B. Balfour & Farrer) Tagg; *R. neriiflorum* var. *phaedropum* (I. B. Balfour & Farrer) T. L. Ming; *R. phaedropum* I. B. Balfour & Farrer; *R. tawangense* K. C. Sahni & H. B. Naithani.

Petiole sometimes with glands; leaf blade 8–11 cm.

Mixed forests, *Pinus* forests; 2100–3600 m. SE Xizang, W Yunnan [Bhutan, NE India, Myanmar].

As this taxon has a more westerly distribution than that of typical *Rhododendron neriiflorum*, it should probably be treated at subspecific rank, as subsp. *phaedropum*. Then, if var. *agetum* is to be recognized, it should be placed in subsp. *neriiflorum*.

428. Rhododendron bijiangense T. L. Ming, Acta Bot. Yunnan. 3: 116. 1981.

碧江杜鹃 bi jiang du juan

Shrubs ca. 1 m tall; shoots ca. 5 mm in diam. below inflorescence; young shoots densely glandular-setose, glabrescent. Petiole ca. 10 mm, densely glandular-setose; leaf blade leathery, narrowly lanceolate, 7–10 × 2–2.5 cm; base obtuse or rounded; margin revolute; apex acute, apiculate; abaxial surface whitish, prominent midrib and nerves with sparse glands, otherwise glabrous; adaxial surface dark green, glabrous; midrib grooved adaxially; lateral veins 14–15-paired, impressed. Inflorescence 10–12-flowered; rachis ca. 10 mm, densely tomentose. Pedicel 1.8–2 cm, densely glandular-setose; calyx red, fleshy; lobes 5, 5–8 mm, narrowly lanceolate, glandular-setose; margin glandular-ciliate; corolla campanulate, fleshy, crimson, ca. 3 cm, with 5 nectar pouches; lobes 5, suborbicular, ca. 1.3 cm, emarginate; stamens 10, 1.5–2 cm, filaments glabrous; ovary conoid, with ± truncate apex, ca. 5 mm, densely glandular-setose; style glabrous, stigma capitate. Capsule not known. Fl. May.

● Mixed forests; ca. 2900 m. W Yunnan.

429. Rhododendron euchroum I. B. Balfour & Kingdon Ward., Notes Roy. Bot. Gard. Edinburgh 9: 228. 1916.

滇西杜鹃 dian xi du juan

Dwarf shrubs, 0.5–0.6 m tall; young shoots floccose-tomentose and glandular-hairy. Petiole narrowly winged, ca. 10 mm, setulose-glandular, also floccose; leaf blade leathery, 4–7.5 × 1.7–3 cm; base cuneate; apex rounded, apiculate; abaxial surface with indumentum 2-layered, upper layer fulvous, spongy, lower layer appressed, whitish, epidermis epapillate; adaxial surface green, rugose, glabrous; midrib grooved adaxially; lateral veins 7–8-paired, impressed adaxially. Inflorescence an umbel, 4- or 5-flowered; rachis short. Pedicel ca. 1.5 cm, densely glandular-hairy, and floccose-tomentose; calyx lobes 5, 1–2 mm, rounded, densely tomentose and glandular-hairy; corolla tubular-campanulate, fleshy, bright red to scarlet, 2.3–3 cm, with 5 basal nectar pouches; lobes 5, suborbicular, ca. 1 cm; stamens 10, 2–4 cm, filaments pubescent at base; ovary conoid, tapering into the style, ca. 5 mm, densely glandular-hairy and stellate-tomentose; style ca. 2.2 cm, densely tomentose and glandular below; stigma small. Capsule not known. Fl. Jul.

Thickets, slopes; 3200–3300 m. W Yunnan [NE Myanmar].

430. Rhododendron sperabile I. B. Balfour & Farrer, Notes Roy. Bot. Gard. Edinburgh 13: 297. 1922.

纯红杜鹃 chun hong du juan

Shrubs, upright, 1–2 m tall, branches ca. 3.5 mm in diam. below inflorescence, with whitish stellate tomentum intermixed with setose-glands. Petiole 10–15 mm, densely whitish tomentose and setulose-glandular; leaf blade leathery, elliptic to lanceolate, or narrowly oblong, 6.7–11.5 × 1.5–3.5 cm; base obtuse to rounded; margin revolute; apex acute to rounded; abaxial surface epidermis glaucous-papillate, whitish to cinnamon continuously tomentose, hairs dendroid, glandular setae on midrib; adaxial surface green, whitish tomentose and glandular-hairy when young, glabrescent, midrib grooved adaxially, lateral veins 10–12-paired, deeply impressed adaxially. Inflorescence umbellate, 4- or 5-flowered; rachis 2–3 mm, tomentose. Pedicel 1–2 cm, whitish stellate-tomentose and setulose-glandular; calyx cupular; lobes 5, 1–3 mm, glandular-ciliate; corolla tubular-campanulate, fleshy, crimson, 3–3.7 cm, with 5 nectar pouches, glabrous; lobes 5, rounded, ca. 1.3 × 1.6 cm, emarginate; stamens 10, filaments glabrous; ovary conoid, tapering into style ca. 6 mm, densely tomentose and glandular-setulose; style glabrous. Capsule cylindric, curved, ca. 15 × 3.5 mm. Fl. Apr–May, fr. Oct–Nov.

Thickets, rocky slopes, cliffs; 2600–4200 m. NW Yunnan [NE Myanmar].

Two varieties have been recognized in China. Field observations suggest that var. *sperabile* is closely allied to, and probably a subspecies of, *R. floccigerum,* whereas var. *weihsiense* deserves specific rank.

1a. Leaf blade elliptic or lanceolate, abaxial surface with cinnamon indumentum ..... 430a. var. *sperabile*

1b. Leaf blade narrowly oblong, rarely lanceolate or elliptic, abaxial surface with whitish indumentum ..... 430b. var. *weihsiense*

430a. Rhododendron sperabile var. **sperabile**

纯红杜鹃(原变种) chun hong du juan (yuan bian zhong)

Leaf blade elliptic to lanceolate; abaxial surface indumentum cinnamon.

Thickets, cliffs; 2600–3700 m. NW Yunnan [NE Myanmar].

430b. Rhododendron sperabile var. **weihsiense** Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 15: 319. 1927.

维西纯红杜鹃 wei xi chun hong du juan

Leaf blade narrowly oblong, rarely lanceolate or elliptic; abaxial surface indumentum whitish.

● Rocky slopes, cliffs; 3900–4200. NW Yunnan.

431. Rhododendron floccigerum Franchet, J. Bot. (Morot) 12: 259. 1898.

绵毛杜鹃 mian mao du juan

Shrubs 0.6–3 m tall; young shoots slender, densely floccose-tomentose and setulose-glandular. Petiole 8–12 mm, glabrous when mature; leaf blade leathery, narrowly elliptic to oblong or elliptic, 5–7.5(–12) × (1–)1.6–2 cm; base cuneate; margin revolute; apex acuminate, apiculate; abaxial surface epidermis glaucous-papillate, usually patchily and discontinuously rufous tomentose, hairs dendroid; adaxial surface green, glabrous when mature, midrib grooved adaxially; lateral veins 10–14-paired. Inflorescence umbellate, 4–7-flowered; rachis 2–3 mm, densely rufous-tomentose. Pedicel 1–1.2 cm, sparsely tomentose; calyx lobes 5, 1–4 mm, suborbicular, sparsely tomentose or glabrous, margin ciliate; corolla tubular-campanulate, crimson to scarlet, occasionally yellow or pink, ca. 3.5 cm, with 5 basal nectar pouches; lobes 5, suborbicular, ca. 1.2 × 1.5 cm, emarginate; stamens 10, 1.5–2.8 cm, filaments purple, glabrous; ovary conoid, tapering into style ca. 5.5 mm, densely stellate-tomentose; style glabrous; stigma capitate, small. Capsule cylindric, ca. 30 × 4 mm, rufous-tomentose. Fl. May–Jun, fr. Sep–Oct.

● *Rhododendron* thickets, cliffs; 2300–4000 m. SE Xizang, NW Yunnan.

432. Rhododendron sperabiloides Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 15: 319. 1927.

糠秕杜鹃 kang bi du juan

Dwarf shrubs 0.6–2 m tall; older branches glabrous, shoots ca. 3 mm in diam. below inflorescence; young shoots with pale rufous tomentum, eglandular. Petiole 5–10 mm, tomentose; leaf blade leathery, oblong-elliptic to oblanceolate, 4.5–8.5 × 1.5–2.4 cm; base rounded; apex obtuse, apiculate; abaxial surface discontinuously rufous tomentose, hairs branched to subrosulate; adaxial surface green, slightly rugose, glabrous, midrib and lateral nerves raised abaxially, grooved adaxially, lateral veins 10–14-paired, raised abaxially, impressed adaxially. Inflorescence umbellate, 4–6-flowered; rachis 2–3 mm, floccose. Ped-

icel 1–1.3 cm, pale rufous-floccose; calyx lobes 5, small, sparsely tomentose, ciliate; corolla tubular-campanulate, fleshy, crimson to deep red, 3.5–4.5 cm, with 5 basal nectar pouches; lobes 5, ca. 1.2 × 1.5 cm, emarginate; stamens 10, 1.7–3.1 cm, filaments puberulent at base; ovary conoid, tapering into style ca. 5.3 × 3.2 mm, densely rufous-tomentose; style glabrous; stigma capitate. Capsule cylindric, slightly curved, 18–20 × 3–4 mm. Fl. May–Jun, fr. Oct–Nov.

● *Pinus* forests, alpine thickets; 2800–3700 m. SE Xizang, NW Yunnan.

433. Rhododendron microgynum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 99. 1919.

短蕊杜鹃 duan rui du juan

Rhododendron gymnocarpum I. B. Balfour ex Tagg; *R. perulatum* I. B. Balfour & Forrest.

Dwarf shrubs 0.6–1.6 m tall; young shoots stout, usually ca. 4 mm in diam., whitish tomentose. Petiole stout, 5–8(–10) mm, glabrescent; leaf blade leathery, lanceolate to oblanceolate, 4–8 × 1.5–2 cm; base cuneate to rounded; margin revolute; apex acuminate, apiculate; abaxial surface indumentum densely felted, cinnamon to buff, hairs rosulate; adaxial surface dark green, glabrous; midrib grooved adaxially; lateral veins 12–15-paired, impressed adaxially. Inflorescence 3–6-flowered; rachis ca. 5 mm, tomentose. Pedicel 1–2 cm, floccose and glandular-hairy; calyx lobes 5, ca. 2 mm, sparsely floccose; corolla open-campanulate, fleshy, rose to deep crimson, sometimes with faint flecks, 2.7–3 cm, glabrescent inside; lobes 5, suborbicular, 1.2–1.3 × 1.5–2 cm, margin crenate; stamens 10, 0.8–1.4 cm, filaments puberulent at base; ovary short, ca. 3 mm, floccose and glandular; style short, ca. 0.5 cm, glabrous. Capsule not known. Fl. Jul.

● *Pinus* forests, alpine thickets; 3300–4300 m. SE Xizang, NW Yunnan.

434. Rhododendron dichroanthum Diels, Notes Roy. Bot. Gard. Edinburgh 5: 212. 1912.

两色杜鹃 liang se du juan

Dwarf shrubs 1–2.5 m tall; older branches glabrous; young shoots white-floccose, sometimes with some setae. Petiole 5–10 mm, white floccose very quickly glabrescent; leaf blade leathery, narrowly elliptic, obovate to oblanceolate, 4–10 × 1.6–4 cm; base rounded to cuneate; margin revolute; apex obtuse, with a rigid apiculus; abaxial surface indumentum 1-layered, continuous, silvery white to fawn, compacted, hairs rosulate; adaxial surface green, rugose, glabrous when mature; midrib grooved adaxially; lateral veins 7–14-paired, impressed adaxially. Inflorescence umbellate, 2–8-flowered; rachis 5–8 mm, puberulent. Pedicel 1.3–2.5 cm, rufous-tomentose; calyx cupular, fleshy; lobes 5, 2–3.5 mm, puberulent, margin ciliate; corolla tubular-campanulate fleshy, yellow flushed red or orange-red, 3.5–4 cm, with 5 deeply colored nectar pouches at base, glabrous; lobes 5, suborbicular; stamens 10, 1.7–2.6 cm, filaments pubescent at base; ovary conoid, ca. 5.2 × 4 mm, rufous-tomentose or glandular-hairy; style ca. 2.6 cm, glabrous. Capsule cylindric, 10–15 × 4–6 mm. Fl. May.

Forests, alpine thickets, alpine meadows, rocky slopes, cliffs; 2600–4300 m. W Yunnan [Myanmar].

1a. Young shoots usually glandular-setose; ovary glandular-hairy.
  2a. Leaf blade 5.5–8 × 1.6–3 cm ..... 434d. subsp. *septentrionale*
  2b. Leaf blade 6–9.5 × 2.5–4 cm ..... 434c. subsp. *scyphocalyx*
1b. Young shoots setose, or setae absent; ovary without glandular hairs or with a few at base.
  3a. Leaf blade 4–7 × 2.5–3.5 cm, abaxial indumentum silvery to fawn ..... 434b. subsp. *apodectum*
  3b. Leaf blade 4–10 ×1.6–4 cm.
    4a. Leaf blade 4–10 × 3–4 cm, abaxial indumentum silvery, appressed .... 434a. subsp. *dichroanthum*
    4b. Leaf blade 5.5–8 × 1.6–3 cm, abaxial indumentum whitish to fawn ..... 434d. subsp. *septentrionale*

434a. Rhododendron dichroanthum subsp. **dichroanthum**

两色杜鹃(原亚种) liang se du juan (yuan ya zhong)

Young shoots with or without setae. Leaf blade 4–10 × 1.6–4 cm; abaxial indumentum silvery or whitish. Ovary without glandular hairs, or rarely with one or two towards the base.

● Forests; 2700–3100 m. W Yunnan.

434b. Rhododendron dichroanthum subsp. **apodectum** (I. B. Balfour & W. W. Smith) Cowan, Notes Roy. Bot. Gard. Edinburgh 20: 86. 1940.

可喜杜鹃 ke xi du juan

Rhododendron apodectum I. B. Balfour & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 83. 1917; *R. dichroanthum* var. *apodectum* (I. B. Balfour & W. W. Smith) T. L. Ming; *R. jangtzowense* I. B. Balfour & Forrest; *R. liratum* I. B. Balfour & Forrest.

Leaf blade 4–7 × 2.5–3.5 cm; abaxial indumentum silvery to fawn. Corolla orange-red; ovary without glandular hairs, or with a few towards the base.

Forests; 2600–3600 m. W Yunnan [Myanmar].

434c. Rhododendron dichroanthum subsp. **scyphocalyx** (I. B. Balfour & Forrest) Cowan, Notes Roy. Bot. Gard. Edinburgh 20: 88. 1940.

杯萼两色杜鹃 bei e liang se du juan

Rhododendron scyphocalyx I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 291. 1922; *R. dichroanthum* subsp. *herpesticum* (I. B. Balfour & Kingdon Ward) Cowan; *R. dichroanthum* var. *scyphocalyx* (I. B. Balfour & Forrest) T. L. Ming; *R. herpesticum* I. B. Balfour & Kingdon Ward; *R. torquatum* I. B. Balfour & Farrer (1922), not L. C. Hu (1992).

Young shoots glandular-setose. Leaf blade 6–9.5 × 2.5–4 cm. Ovary glandular-hairy.

Alpine meadows, rocky slopes; 2900–3900 m. NW Yunnan [NE Myanmar].

434d. Rhododendron dichroanthum subsp. **septentrionale** Cowan, Notes Roy. Bot. Gard. Edinburgh 20: 87. 1940.

腺梗两色杜鹃 xian geng liang se du juan

Rhododendron dichroanthum var. *septentrionale* (Cowan) T. L. Ming.

Young shoots with or without setae. Leaf blade 5.5–8 × 1.6–3 cm; abaxial indumentum whitish to fawn. Ovary with a few glandular hairs at base or glands absent.

Alpine thickets, cliffs; 3900–4300 m. W Yunnan [NE Myanmar].

435. Rhododendron sanguineum Franchet, J. Bot. (Morot) 12: 259. 1898.

血红杜鹃 xue hong du juan

Dwarf shrubs, 0.3–1.5 m tall; bark gray-brown, usually falling off in flakes; shoots 3–3.8 mm in diam. below inflorescence; young shoots green, with a thin eglandular indumentum; bud scales sometimes persistent. Petiole 5–8 mm, tomentose when young; leaf blade leathery, obovate, widely elliptic to narrowly oblong, 3.8–8 × 1.8–3 cm; base cuneate, decurrent along petioles; apex obtuse or rounded, apiculate; abaxial surface indumentum continuous, silvery to grayish, hairs rosulate; adaxial surface green, glabrous; midrib grooved adaxially; lateral veins 19–20-paired, impressed adaxially. Inflorescence umbellate, (3–)5–7-flowered; rachis ca. 5 mm. Pedicel 1.2–3 cm, densely tomentose; calyx pink, cupular; lobes 5, 2–4 mm, rounded, glandular-ciliate; corolla tubular-campanulate, fleshy, yellow to pink or crimson to blackish crimson, 3–4 cm, with 5 basal nectar pouches, glabrous; lobes 5, suborbicular, emarginate; stamens 10, filaments red, glabrous; ovary ovoid, ca. 5 × 4 mm, densely tomentose, hairs dendroid, eglandular or partly glandular; style ca. 2 cm, glabrous; stigma capitate. Capsule cylindric, 12–15 × 5–7 mm, rough. Fl. May–Jul, fr. Sep–Oct.

Rhododendron thickets, alpine meadows, rocky slopes; 2800–4300(–4500) m. SE Xizang, NW Yunnan [NE Myanmar].

1a. Ovary at least partly glandular; bud scales usually persistent.
  2a. Corolla yellow flushed pink, to pink ..... 435e. var. *didymoides*
  2b. Corolla deep blackish crimson ..... 435f. var. *didymium*
1b. Ovary eglandular; bud scales usually deciduous.
  3a. Corolla crimson.
    4a. Corolla bright crimson ..... 435a. var. *sanguineum*
    4b. Corolla deep blackish crimson ..... 435b. var. *haemaleum*
  3b. Corolla yellow to pink, rarely white.
    5a. Corolla yellow ..... 435c. var. *himertum*
    5b. Corolla white, or yellow flushed pink, to pink ..... 435d. var. *cloiophorum*

435a. Rhododendron sanguineum var. **sanguineum**

血红杜鹃(原变种) xue hong du juan (yuan bian zhong)

Rhododendron sanguineum subsp. *sanguineoides* Cowan; *R. sanguineum* var. *sanguineoides* (Cowan) Davidian.

Bud scales usually deciduous. Corolla bright crimson; ovary eglandular. Fl. May–Jul, fr. Sep–Oct.

Rhododendron thickets, alpine meadows; 2800–4300 m. SE Xizang, NW Yunnan [NE Myanmar].

435b. Rhododendron sanguineum var. **haemaleum** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 334. 1979.

紫血杜鹃 zi xue du juan

Rhododendron haemaleum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 71. 1919; *R. sanguineum* subsp. *haemaleum* (I. B. Balfour & Forrest) Cowan; *R. sanguineum* subsp. *mesaeum* I. B. Balfour ex Cowan; *R. sanguineum* var. *mesaeum* (I. B. Balfour ex Cowan) Davidian.

Bud scales usually deciduous. Corolla deep blackish crimson; ovary eglandular.

● *Rhododendron* thickets, rocky slopes; 3100–4300 m. SE Xizang, NW Yunnan.

435c. Rhododendron sanguineum var. **himertum** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 334. 1979.

蜜黄血红杜鹃 mi huang xue hong du juan

Rhododendron himertum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 48. 1920; *R. himertum* subsp. *nebrites* (I. B. Balfour & Forrest) Tagg; *R. himertum* subsp. *poliopeplum* (I. B. Balfour & Forrest) Tagg; *R. nebrites* I. B. Balfour & Forrest; *R. poliopeplum* I. B. Balfour & Forrest; *R. sanguineum* subsp. *aizoides* Cowan; *R. sanguineum* subsp. *himertum* (I. B. Balfour & Forrest) Cowan; *R. sanguineum* subsp. *melleum* Cowan.

Bud scales usually deciduous. Corolla yellow; ovary eglandular.

● *Rhododendron* thickets; 3100–4100 m. SE Xizang, NW Yunnan.

435d. Rhododendron sanguineum var. **cloiophorum** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 334. 1979.

退色血红杜鹃 tui se xue hong du juan

Rhododendron cloiophorum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 37. 1919; *R. asmenistum* I. B. Balfour & Forrest; *R. cloiophorum* subsp. *asmenistum* (I. B. Balfour & Forrest) Tagg; *R. cloiophorum* subsp. *leucopetalum* (I. B. Balfour & Forrest) Tagg; *R. cloiophorum* var. *leucopetalum* (I. B. Balfour & Forrest) Davidian; *R. leucopetalum* I. B. Balfour & Forrest; *R. sanguineum* subsp. *cloiophorum* (I. B. Balfour & Forrest) Cowan; *R. sanguineum* subsp. *leucopetalum* (I. B. Balfour & Forrest) Cowan.

Bud scales usually deciduous. Corolla white, or yellow blushed to pink, to pink; ovary eglandular.

● Alpine *Rhododendron* thickets, rocky slopes; 3800–4300 m. SE Xizang, NW Yunnan.

435e. Rhododendron sanguineum var. **didymoides** Tagg & Forrest, Notes Roy. Bot. Gard. Edinburgh 16: 208. 1931.

变色血红杜鹃 bian se xue hong du juan

Rhododendron cloiophorum subsp. *mannophorum* (I. B. Balfour & Forrest) Tagg; *R. cloiophorum* var. *mannophorum* (I. B. Balfour & Forrest) Davidian; *R. cloiophorum* subsp. *roseotinctum* (I. B. Balfour & Forrest) Tagg; *R. cloiophorum* var. *roseotinctum* (I. B. Balfour & Forrest) Davidian; *R. mannophorum* I. B. Balfour & Forrest; *R. roseotinctum* I. B. Balfour & Forrest; *R. sanguineum* subsp. *consanguineum* Cowan; *R. sanguineum* var. *consanguineum* (Cowan) Davidian; *R. sanguineum* subsp. *didymoides* (Tagg & Forrest) Cowan; *R. sanguineum* subsp. *roseotinctum* (Tagg & Forrest) Cowan.

Bud scales usually persistent. Corolla yellow flushed pink, to pink; ovary at least partly glandular-tomentose.

Rocky slopes; 3200–4300 m. SE Xizang, NW Yunnan [NE Myanmar].

435f. Rhododendron sanguineum var. **didymum** (I. B. Balfour & Forrest) T. L. Ming, Acta Bot. Yunnan. 6: 171. 1984.

黑红血红杜鹃 hei hong xue hong du juan

Rhododendron didymum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 256. 1922; *R. sanguineum* subsp. *didymum* (I. B. Balfour & Forrest) Cowan.

Bud scales usually persistent. Corolla deep blackish crimson; ovary at least partly glandular-tomentose.

● Thickets, alpine meadows, rocky slopes; 3000–3800(–4500) m. SE Xizang, NW Yunnan.

Rhododendron sanguineum subsp. *atrorubrum* Cowan (Notes Roy. Bot. Gard. Edinburgh 20: 69. 1940), described from Xizang, is intermediate between var. *didymum* and var. *sanguineum*; it is not formally treated here as its exact status is uncertain.

436. Rhododendron forrestii I. B. Balfour ex Diels, Notes Roy. Bot. Gard. Edinburgh 5: 211. 1912.

紫背杜鹃 zi bei du juan

Dwarf creeping shrubs, 20–60(–90) m tall; young shoots ca. 2 mm in diam. below inflorescence; sparsely tomentose and glandular; bud scales persistent. Petiole 4–8 mm, glandular-hairy and sparsely floccose-tomentose; leaf blade leathery, obovate to orbicular, 1.3–2.8 × 0.8–1.7 cm; base broadly cuneate, narrowly decurrent; apex rounded or retuse, sometimes mucronate; abaxial surface pale purple or green, whitish puberulent with a few glandular hairs, or glaucous and papillate when mature; adaxial surface green, glabrous; midrib grooved adaxially; lateral veins 6–7-paired, impressed adaxially. Inflorescence 1(or 2)-flowered. Pedicel 1(–2.5) cm, densely glandular-hairy and puberulent; calyx saucer-shaped, fleshy; lobes 5, 1–3 mm, margin glandular-ciliate; corolla tubular-campanulate, crimson, 2.9–3.8 cm, with 5 basal nectar pouches; lobes 5, suborbicular, 0.9–1 × ca. 1.5 cm, emarginate; stamens 10, 1.5–1.8 cm, filaments glabrous; ovary conoid, ca. 4.5 mm, densely glandular-hairy and tomentose; style glabrous; stigma small. Capsule cylindric, ca. 10 × 6–7 mm. Fl. May–Jul, fr. Oct–Nov.

Moist stony pastures, moist stony slopes, rocky slopes, cliffs; 3000–4200 m. SE Xizang, NW Yunnan [NE Myanmar].

Rhododendron forrestii var. *tumescens* Cowan & Davidian (Rhododendron Year Book 6: 69. 1951), described from Xizang, Yunnan, and Myanmar, is intermediate between subsp. *forrestii* and subsp. *papillatum* and does not merit formal recognition.

Rhododendron ×*pyrrhoanthum* I. B. Balfour (Notes Roy. Bot. Gard. Edinburgh 12: 154. 1920) was described from a rogue hybrid in a batch of *R. forrestii* raised from seed collected by George Forrest in Yunnan. It is known only in cultivation.

1a. Leaf blade 1.2–1.7 cm wide, abaxial surface purple or green, not papillate, glandular hairs few or absent ..... 436a. subsp. *forrestii*
1b. Leaf blade 0.8–1.2 cm wide, abaxial surface glaucous-papillate, glandular hairs conspicuous ..... 436b. subsp. *papillatum*

436a. Rhododendron forrestii subsp. **forrestii**

紫背杜鹃(原亚种) zi bei du juan (yuan ya zhong)

Rhododendron forrestii var. *repens* (I. B. Balfour & Forrest) Cowan & Davidian; *R. repens* I. B. Balfour & Forrest.

Leaf blade 1.3–2.5 × 1.2–1.7 cm; abaxial surface purple or green, not papillate, glandular hairs few or absent. Fl. May–Jul, fr. Oct–Nov.

Moist stony pastures, rocky slopes; 3000–4200 m. SE Xizang, NW Yunnan [NE Myanmar].

436b. Rhododendron forrestii subsp. **papillatum** D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 338. 1979.

乳突紫背杜鹃 ru tu zi bei du juan

Leaf blade 1.8–2.8 × 0.8–1.2 cm; abaxial surface glaucous-papillate, glandular hairs conspicuous.

● Moist stony slopes, cliffs; 3300–3900 m. SE Xizang.

437. Rhododendron aperantum I. B. Balfour & Kingdon Ward, Notes Roy. Bot. Gard. Edinburgh 13: 231. 1922.

宿鳞杜鹃 su lin du juan

Dwarf matted shrubs, 0.3–0.6 m tall; young shoots floccose-tomentose; bud scales persistent. Petiole broad, 3–6 mm, floccose, glabrescent; leaf blade leathery, obovate to oblanceolate, 3–6.5 × 1.4–2.4 cm; base cuneate; apex rounded, apiculate; abaxial surface glaucous, papillate, glabrous when mature, sometimes with vestiges of reddish brown or whitish indumentum persisting on main veins and midrib; adaxial surface green, rugose, glabrous. Inflorescence lax, 4–6-flowered; rachis ca. 2 mm. Pedicel 1.5–3 cm, floccose-tomentose and glandular-hairy; calyx cupular; lobes 5, 3–6 mm, glandular-ciliate, otherwise glabrous; corolla tubular-campanulate, white, yellow flushed pink to orange or rose, 3–4.5 cm, lobes 5, rounded, ca. 1.3 × 2 cm, glabrous; stamens 10, 1.3–2.5 cm, filaments glabrous; ovary conoid, ca. 5 mm, rufous-tomentose, and glandular-setose; style ca. 2.2 cm, glabrous. Capsule oblong, 12–20 × 4.2–7 mm; calyx persistent, tomentose. Fl. Jul, fr. Oct.

Rhododendron thickets, cliffs; 3600–4500 m. NW Yunnan [NE Myanmar].

438. Rhododendron chamaethomsonii (Tagg) Cowan & Davidian, Rhododendron Year Book 6: 70. 1951.

云雾杜鹃 yun wu du juan

Upright shrubs, 0.15–0.9 m tall, bark falling off in flakes; shoots 2.5–3 mm in diam. below inflorescence; young shoots glandular-hairy or tomentose; bud scales usually deciduous. Petiole 7–16 mm, glandular; leaf blade leathery, obovate or oblong-obovate, 2.5–6.5(–9) × 1.1–3.5(–4) cm; base obtuse, decurrent; margin revolute; apex rounded, apiculate; abaxial surface pale green, puberulent and glandular towards the base, or glabrous; adaxial surface green, glabrous; midrib grooved adaxially; lateral veins 8–10-paired, impressed adaxially. Inflorescence umbellate, 1–4-flowered. Pedicel 0.8–1.3(–1.6) cm, glandular; calyx 1–4 mm; corolla tubular-campanulate whitish to pale pink to deep crimson, 2.6–2.8(–4.8) cm, pubescent at base outside; lobes 5, unequal, 1.5–3.4 cm, emarginate; ovary conoid, 5–6 mm, hairy, with or without glandular hairs; style glabrous. Capsule cylindric, 15–23 mm, with vestiges of glands; calyx persistent. Fl. Jun.

● *Rhododendron* thickets, alpine thickets, stony slopes, damp rocky alpine slopes; 3300–4500 m. SE Xizang, NW Yunnan.

At least some forms of this entity may be hybrids of *Rhododendron forrestii*. One of us (Chamberlain) has seen one such hybrid between the latter species and *R. stewartianum* in the field above Gongshan in NW Yunnan. This plant was a good fit with *R. chamaethomsonii*.

1a. Corolla pale to deep pink; calyx to 1 mm; ovary densely hairy ..... 438c. var. *chamaethauma*
1b. Corolla carmine to crimson; calyx lobes 2–4 mm; ovary sparsely hairy, sometimes glandular.
  2a. Leaf blade glabrous; petiole and young shoots glandular ..... 438a. var. *chamaethomsonii*
  2b. Leaf blade with thin discontinuous indumentum when mature; petiole and young shoots eglandular ..... 438b. var. *chamaedoron*

438a. Rhododendron chamaethomsonii var. **chamaethomsonii**

云雾杜鹃(原变种) yun wu du juan (yuan bian zhong)

Rhododendron repens I. B. Balfour & Forrest var. *chamaethomsonii* Tagg in J. B. Stevenson, Sp. Rhodod. 514. 1930 [*"chamae-Thomsonii"*].

Young shoots and petioles glandular-hairy. Leaf blade with both surfaces glabrous. Calyx 2–4 mm; corolla pale pink to deep crimson; ovary sparsely hairy, sometimes glandular.

● Damp rocky alpine slopes; 4200–4500 m. SE Xizang, NW Yunnan.

438b. Rhododendron chamaethomsonii var. **chamaedoron** (Tagg) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 332. 1979.

毛背云雾杜鹃 mao bei yun wu du juan

Rhododendron repens var. *chamaedoron* Tagg in J. B. Stevenson, Sp. Rhodod. 514. 1930.

Leaf blade with both surfaces with thin discontinuous indumentum when mature. Calyx 2–4 mm; corolla pale pink to deep crimson; ovary sparsely hairy, sometimes glandular.

● Alpine thickets, stony slopes; 3300–4400 m. SE Xizang, NW Yunnan.

438c. Rhododendron chamaethomsonii var. **chamaethauma** (Tagg) Cowan & Davidian, Rhododendron Year Book 6: 71. 1951.

短萼云雾杜鹃 duan e yun wu du juan

Rhododendron repens var. *chamaethauma* Tagg in J. B. Stevenson, Sp. Rhodod. 514. 1930.

Calyx less than 1 mm; corolla whitish to deep pink; ovary densely brownish hairy.

● *Rhododendron* thickets, damp stony alpine slopes; 4200–4400 m. SE Xizang, NW Yunnan.

439. Rhododendron parmulatum Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 182. 1936.

盘萼杜鹃 pan e du juan

Small shrubs, 1–2 m tall; shoots 3–4 mm in diam. below inflorescence; young shoots glabrescent; bud scales deciduous. Petiole ca. 5 × 2.7 mm, glabrescent; leaf blade leathery, elliptic to obovate, 5.2–6.4 × 2.5–3.2 cm; base rounded; apex apiculate; abaxial surface glaucous, papillate, midrib and main veins with white hairs; adaxial surface green glabrous; midrib grooved adaxially, lateral veins 11–13-paired, impressed adaxially. Inflorescence 4–6-flowered; rachis 3–5 mm, glabrous. Pedicel 1–2 cm, puberulent; calyx disk-shaped, fleshy, 4–6 mm, glabrous; corolla tubular-campanulate, white or yellow, sometimes flushed pink, with red flecks, 4–5 cm, 5 deep purple nectar pouches at base; lobes 5, rounded to obovate, 1.2–1.4 × 1.2–1.5 cm, emarginate; stamens 10, 1.7–2.8 cm, filaments puberulent on lower half; ovary cylindric, 5–6 mm, with a few scattered hairs; style 2.7–3 cm, glabrous. Capsule not known. Fl. Jun.

● *Pinus* forests, cliffs; 3000–3700 m. S Xizang.

440. Rhododendron trilectorum Cowan, Notes Roy. Bot. Gard. Edinburgh 21: 144. 1953.

朗贡杜鹃 lang gong du juan

Dwarf shrubs, 0.15–0.3 m tall; bud scales persistent. Petiole winged, 3–5 mm, glabrescent; leaf blade leathery, obovate or obovate-spathulate, 1–3.2 × 0.6–1.8 cm; base attenuate, decurrent; margin revolute; apex rounded, apiculate; abaxial surface pale green, glabrous; adaxial surface deep green, glabrous, midrib raised abaxially, grooved adaxially; lateral veins 7–11-paired, raised abaxially, impressed adaxially. Inflorescence 2–3(–5)-flowered; rachis minute. Pedicel 2–3 cm, glabrescent; calyx green flushed pink, fleshy; lobes 5, 1–3 mm, glabrous; corolla funnel-campanulate, fleshy, pale yellow, white-puberulent near base inside, 3.3–4 cm, lobes 5, widely ovate, ca. 1.5 × 1.5–1.8 cm, emarginate; stamens 10, 2–3 cm, filaments white-pubescent at base; ovary cylindric, ca. 6 mm;

style 2.7–3 cm, glabrous; stigma capitate, small. Capsule not known. Fl. Jun.

Rocky slopes; 3600–4300 m. SE Xizang [NE India].

441. Rhododendron temenium I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 146. 1919.

滇藏杜鹃 dian zang du juan

Upright dwarf shrubs, 0.6–1 m tall; older branches with swollen verrucae; shoots 3–4 mm in diam. below inflorescence; young shoots setulose and tomentose. Petiole ca. 4 mm, glabrescent; leaf blade leathery, oblong to oblong-elliptic, 3–6 × 1.3–2.3 cm; base widely cuneate or obtuse; margin revolute; apex obtuse, apiculate; abaxial surface glaucous-papillate, glabrous or with remains of whitish floccose indumentum, especially on midrib and main veins; adaxial surface deep green, glabrous; midrib grooved adaxially; lateral veins 9–11-paired, impressed adaxially. Inflorescence lax or dense, 4–6-flowered; rachis ca. 5 mm, puberulent. Pedicel 1–2 cm, setulose, tomentose; calyx cupular; lobes 5, 3–4(–10) mm, ovate, glabrous, margin ciliate; corolla tubular-campanulate, fleshy, white to yellow, pink or crimson to deep crimson, 3–4 cm, lobes 5, suborbicular, ca. 1.1 × 1.5 cm, emarginate; stamens 10, 1.5–2 cm, filaments glabrous; ovary ovoid, ca. 4.5 mm, densely tomentose and glandular-hairy; style ca. 2 cm, glabrous. Capsule cylindric, ca. 8 mm, with remnants of indumentum. Fl. Jun–Jul, fr. Aug–Oct.

● Alpine thickets, meadows, rocky or stony slopes, cliffs; 3000–4500 m. SE Xizang, NW Yunnan.

Rhododendron ×*fulvastrum* I. B. Balfour & Forrest (Notes Roy. Bot. Gard. Edinburgh 13: 45. 1920), described from Xizang, is a hybrid between *R. temenium* and perhaps *R. sanguineum*.

1a. Young shoots and pedicels setulose; inflorescence lax; corolla white to deep rose-pink ..... 441c. var. *dealbatum*
1b. Young shoots and pedicels strongly setose; inflorescence dense; corolla yellow or crimson to carmine.
  2a. Corolla carmine to crimson ..... 441a. var. *temenium*
  2b. Corolla yellow ..... 441b. var. *gilvum*

441a. Rhododendron temenium var. **temenium**

滇藏杜鹃(原变种) dian zang du juan (yuan bian zhong)

Rhododendron eudoxum I. B. Balfour & Forrest subsp. *temenium* (I. B. Balfour & Forrest) Tagg; *R. eudoxum* subsp. *pothinum* (I. B. Balfour & Forrest) Tagg; *R. pothinum* I. B. Balfour & Forrest; *R. temenium* subsp. *pothinum* (I. B. Balfour & Forrest) Cowan.

Young shoots and pedicels strongly setose. Leaf blade glabrous. Inflorescence 4–6-flowered; corolla carmine to crimson; ovary densely tomentose. Fl. Jun–Jul, fr. Aug–Oct.

● Alpine thickets, meadows, rocky slopes; 3000–4400 m. SE Xizang, NW Yunnan.

441b. Rhododendron temenium var. **gilvum** (Cowan) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 334. 1979.

黄花滇藏杜鹃 huang hua dian zang du juan

Rhododendron temenium subsp. *gilvum* Cowan, Notes Roy. Bot. Gard. Edinburgh 20: 82. 1940; *R. fulvastrum* I. B. Balfour & Forrest var. *gilvum* (Cowan) Davidian; *R. temenium* subsp. *chrysanthemum* Cowan.

Young shoots and pedicels strongly setose. Corolla yellow.

● Alpine stony slopes, cliffs; 3600–4500 m. SE Xizang, NW Yunnan.

441c. Rhododendron temenium var. **dealbatum** (Cowan) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 334. 1979.

粉红滇藏杜鹃 fen hong dian zang du juan

Rhododendron temenium subsp. *dealbatum* Cowan, Notes Roy. Bot. Gard. Edinburgh 20: 83. 1940; *R. eudoxum* subsp. *glaphyrum* (I. B. Balfour & Forrest) Tagg; *R. glaphyrum* I. B. Balfour & Forrest; *R. glaphyrum* var. *dealbatum* (Cowan) Davidian; *R. temenium* subsp. *glaphyrum* (I. B. Balfour & Forrest) Cowan.

Young shoots weakly setose or setulose. Inflorescence lax, 2–4-flowered; corolla white to rose.

● Alpine thickets, stony slopes; 3600–4300 m. SE Xizang, NW Yunnan.

442. Rhododendron erastum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 60. 1919.

匍匐杜鹃 pu fu du juan

Rhododendron porphyrophyllum I. B. Balfour & Forrest; *R. serpens* I. B. Balfour & Forrest.

Dwarf shrubs, 0.05–0.5 m tall; branchlets 3–3.8 mm in diam. below inflorescence; young shoots densely floccose-tomentose; bud scales persistent. Petiole 5–10 mm, sparsely floccose-tomentose; leaf blade leathery, elliptic to narrowly elliptic or oblong-ovate to oblanceolate, 1.5–4(–6.2) × 0.5–1.1(–2) cm; base cuneate, decurrent along petioles; apex obtuse, apiculate; abaxial surface purple or green, whitish tomentose and with a few glandular hairs, especially on the midrib; adaxial surface green, slightly rugose, glabrous, midrib grooved adaxially; lateral veins 7–11(–12)-paired. Inflorescence umbellate, (1–)3- or 4-flowered. Pedicel ca. 1 cm, sparsely tomentose and glandular; calyx saucer-shaped, fleshy; lobes 5, ca. 2 mm, puberulent; corolla tubular-campanulate, pale rose, 2.2–3 cm, with 5 nectar pouches at base; lobes 5, rounded, emarginate; stamens 10, 1–1.3 cm, filaments pubescent at base; ovary conoid, ca. 3 mm, densely floccose-tomentose, intermixed with glandular hairs; style ca. 1.5 cm, glabrous. Capsule not known. Fl. Jul.

● Rocky alpine meadows; 3900–4300 m. SE Xizang, NW Yunnan.

443. Rhododendron eudoxum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 62. 1919.

华丽杜鹃 hua li du juan

Dwarf shrubs, 0.3–1.2(–1.8) m tall; bark gray-brown, usually falling off in flakes; shoots 2.2–2.4 mm in diam. below

inflorescence; young shoots tomentose, with a few weak setae. Petiole 5–10 mm, tomentose, intermixed with a few setulae; leaf blade leathery, long-elliptic to oblong-obovate, 2.3–3 × 0.8–1.4 cm; base cuneate; margin revolute; apex obtuse or rounded, apiculate; abaxial surface whitish to brownish, indumentum thin, discontinuous; adaxial surface green, glabrous; midrib grooved adaxially; lateral veins 7–9-paired, impressed adaxially. Inflorescence umbellate, 3–5(–10)-flowered. Pedicel 1–1.2 cm, tomentose, also glandular; calyx cupular when well-developed, undulate, 2–7 mm, sparsely tomentose, glandular; corolla tubular-campanulate to campanulate, fleshy, pink to rose-carmine, 2.5–4 cm, with 5 nectar pouches at base, lobes 5, emarginate; stamens 10, 1–1.6 cm filaments glabrescent; ovary ovoid, 3.4–4 mm, predominantly glandular to predominantly tomentose; style ca. 2.8 cm, glabrous. Capsule cylindric, ca. 12 mm, with vestigial glands. Fl. Jun, fr. Oct–Nov.

● Bamboo forests, alpine *Rhododendron* thickets, stony slopes, cliffs; 3300–4300 m. SE Xizang, NW Yunnan.

1a. Ovary predominantly glandular; leaf blade 2.3–3 cm ..... 443a. var. *eudoxum*
1b. Ovary predominantly tomentose; leaf blade 3.5–9 cm.
  2a. Leaf blade 7–9 cm, indumentum brownish; corolla ca. 4 cm .... 443b. var. *brunneifolium*
  2b. Leaf blade 3.5–7 cm, indumentum whitish; corolla 3–3.5 cm ..... 443c. var. *mesopolium*

443a. Rhododendron eudoxum var. **eudoxum**

华丽杜鹃(原变种) hua li du juan (yuan bian zhong)

Rhododendron eudoxum subsp. *trichomiscum* (I. B. Balfour & Forrest) Tagg; *R. fulvastrum* I. B. Balfour & Forrest subsp. *trichomiscum* (I. B. Balfour & Forrest) Cowan; *R. fulvastrum* subsp. *trichophlebium* (I. B. Balfour & Forrest) Cowan; *R. temenium* I. B. Balfour & Forrest subsp. *albipetalum* Cowan; *R. temenium* subsp. *rhodanthum* Cowan; *R. trichomiscum* I. B. Balfour & Forrest; *R. trichophlebium* I. B. Balfour & Forrest.

Leaf blade 2.3–3 × 0.8–1.4 cm; abaxial surface with thin, discontinuous indumentum. Ovary predominantly glandular. Fl. Jun, fr. Oct–Nov.

● Alpine *Rhododendron* thickets; 3300–4200 m. SE Xizang, NW Yunnan.

443b. Rhododendron eudoxum var. **brunneifolium** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 333. 1979.

褐叶华丽杜鹃 he ye hua li du juan

Rhododendron brunneifolium I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 33. 1920; *R. eudoxum* subsp. *brunneifolium* (I. B. Balfour & Forrest) Tagg.

Leaf blade 7–9 cm; abaxial surface with brown indumentum. Corolla rose, ca. 4 cm; ovary predominantly tomentose.

● Alpine *Rhododendron* thickets, stony slopes, cliffs; 3300–4200 m. SE Xizang, NW Yunnan.

443c. Rhododendron eudoxum var. **mesopolium** (I. B. Balfour & Forrest) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 333. 1979.

白毛华丽杜鹃 bai mao hua li du juan

Rhododendron mesopolium I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 13: 51. 1920; *R. asteium* I. B. Balfour & Forrest; *R. epipastum* I. B. Balfour & Forrest; *R. eudoxum* subsp. *asteium* (I. B. Balfour & Forrest) Tagg; *R. eudoxum* subsp. *epipastum* (I. B. Balfour & Forrest) Tagg; *R. eudoxum* subsp. *mesopolium* (I. B. Balfour & Forrest) Tagg; *R. fulvastrum* subsp. *epipastum* (I. B. Balfour & Forrest) Cowan; *R. fulvastrum* subsp. *mesopolium* (I. B. Balfour & Forrest) Cowan.

Leaf blade 3.5–7 cm; abaxial surface with whitish, discontinuous indumentum. Corolla pink, 3–3.5 cm; ovary predominantly tomentose.

● Bamboo forests, alpine *Rhododendron* thickets, stony slopes; 3800–4300 m. SE Xizang, NW Yunnan.

22. Rhododendron subsect. Fulgensia D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 37: 336. 1979.

猩红杜鹃亚组 xing hong du juan ya zu

Hu Linzhen (胡琳贞 Hu Ling-cheng); David F. Chamberlain

Shrubs or small trees; young shoots tomentose, glandular or glabrous. Leaf blade oblong-elliptic to obovate; abaxial surface densely fulvous woolly, hairs fasciculate or long-stipitate stellate. Inflorescence terminal, lax or dense, 4–14-flowered; rachis 0.2–2.5 cm. Calyx minute to well-developed and cup-shaped, 1–10 mm, 5-lobed; corolla funnel- to tubular-campanulate, 5-lobed, fleshy, blood-red, or scarlet to deep carmine, with nectar pouches; stamens 10; ovary and style glabrous. Capsule straight or slightly curved.

Three species: Bhutan, China, India, Nepal, Sikkim; three species (two endemic) in China.

The circumscription of *Rhododendron* subsect. *Fulgensia* is problematic. Whereas *R. fulgens* is perfectly distinct, both *R. miniatum* and *R. sherriffii* are closely allied to species in *R.* subsect. *Thomsonia,* though with leaves abaxially densely hairy.

1a. Young shoots glabrous; inflorescence 8–14-flowered; corolla tubular-campanulate, blood-red to scarlet, 2–3.5 cm; calyx 1–2 mm ..... 444. *R. fulgens*
1b. Young shoots ± hairy; inflorescence 4–6-flowered; corolla funnelform-campanulate, deep carmine; calyx 3–10 mm.
  2a. Young shoots glandular; abaxial leaf surface with long-stipitate stellate hairs; calyx 3–5 mm; corolla 3.5–4 cm ..... 445. *R. sherriffii*
  2b. Young shoots eglandular; abaxial leaf surface with fasciculate hairs; calyx 8–10 mm; corolla 3–3.5 cm ..... 446. *R. miniatum*

444. Rhododendron fulgens J. D. Hooker, Rhododendr. Sikkim-Himalaya 3: t. 25. 1851.

猩红杜鹃 xing hong du juan

Shrubs, 1.5–4 m tall; young shoots and petioles glabrous. Petiole 10–25 mm; leaf blade leathery, oblong-ovate to obovate, 6–11 × 4.5–7 cm; base rounded or slightly cordate; apex rounded, apiculate; abaxial surface densely fulvous woolly, hairs fasciculate; adaxial surface glossy, glabrous. Inflorescence compactly racemose-umbellate, 8–14-flowered; rachis 10–20 mm. Pedicel ca. 1 cm, glabrous; calyx red, 1–2 mm, glabrous; corolla tubular-campanulate, fleshy, scarlet to blood-red, unspotted, 2–3.5 cm, with 5 dark red nectar pouches at base inside; lobes 5; stamens unequal, 1–2.2 cm, filaments white, or tinted pink at base, glabrous; ovary conical, 4–5 mm, glabrous; style slightly curved upwards, tinted pink, 1.5–1.7 cm, glabrous. Capsule narrowly elongate-cylindric, slightly curved, 5-valved, 10–30 × 4–8 mm. Fl. Apr–May, fr. Aug.

Rhododendron thickets, mountains; 3700–4500 m. S Xizang [Bhutan, NE India, Nepal, Sikkim].

445. Rhododendron sherriffii Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 231. 1937.

红钟杜鹃 hong zhong du juan

Shrubs, 2–4 m tall; young shoots tomentose and shortly glandular-hairy. Petiole 12–15 mm, glabrous; leaf blade leathery, oblong-ovate, 4.5–6 × 2.5–4 cm; base rounded; apex obtuse or rounded, apiculate; abaxial surface with a thick fulvous indumentum, hairs long-stipitate stellate; adaxial surface glabrous. Inflorescence umbellate, 4–6-flowered; rachis ca. 4 mm. Pedicel 1–2 cm, glabrous; calyx crimson, 3–5 mm, glabrous; corolla funnelform-campanulate, fleshy, deep carmine, 3.5–4 cm, with dark red nectar pouches at base, lobes 5, slightly spreading, round; stamens unequal, 2–3 cm, filaments glabrous; ovary oblong-conical, furrowed, ca. 5 mm, ca. 5-locular, glabrous; style carmine, ca. 2.8 cm, glabrous; stigma slightly lobulate. Capsule cylindric, straight, ca. 13 × 7 mm, calyx and style persistent. Fl. Apr, fr. Oct.

● *Rhododendron* thickets on mountain slopes; 3500–4000 m. S Xizang.

446. Rhododendron miniatum Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 229. 1937.

焰红杜鹃 yan hong du juan

Shrubs, 1.5–2 m tall; young shoots sparsely black-floccose, eglandular. Petiole 6–8 mm, tomentose or glabrescent; leaf blade thickly leathery, elliptic to oblong-ovate, 3.3–5.5 × 2–2.8 cm; base rounded or cordate; apex bluntly rounded, apiculate; abaxial surface thickly fawn woolly, hairs fasciculate; adaxial surface glabrous except for ± floccose-hairy groove of midrib. Inflorescence umbellate, 4–6-flowered; rachis 3–5 mm, tomentose. Pedicel 0.5–0.6 cm, sparsely floccose or glabrescent; calyx crimson, fleshy; lobes 8–10 mm, unequal, glabrous; corolla funnelform-campanulate, vermilion, 3–3.5 cm, with black-red nectar pouches at base, lobes 5, spreading outwards, rounded; stamens unequal, 1.5–2.5 cm, filaments white, glabrous; ovary elongate-cylindric, 5–6 mm, 5-locular, glabrous; style white, 2.5–2.8 cm, glabrous; stigma capitate, red. Fl. May.

● Forests, cliffs; ca. 3700 m. S Xizang.

23. Rhododendron subsect. Thomsonia (Tagg) Sleumer, Bot. Jahrb. Syst. 74: 545. 1949.

蜜腺杜鹃亚组 mi xian du juan ya zu

Fang Mingyuan (方明渊); David F. Chamberlain

Rhododendron subser. *Thomsonia* Tagg in J. B. Stevenson, Sp. Rhodod. 735. 1930 [“*Thomsonii*”].

Shrubs or small trees. Leaf blade orbicular to oblong-elliptic, both surfaces glabrous at maturity, sometimes with scattered fasciculate hairs on abaxial surface that are restricted to the lateral veins. Inflorescence 2–15-flowered. Calyx usually well-developed and cupular, often red, 2–12 mm; corolla campanulate to tubular-campanulate, 5-lobed, fleshy, creamy white to deep crimson, rarely yellow, with 5 large nectar pouches; stamens 10(–12); ovary glabrous, rufous-tomentose or glandular-hairy; style glabrous or glandular to tip. Capsule stout and short, usually with glaucous bloom.

Fifteen species: Bhutan, China, India, Myanmar, Nepal, Sikkim; 15 species (seven endemic) in China.

1a. Leaf blade narrowly oblong-elliptic or oblanceolate, base usually not decurrent (except in *R. hookeri*).
  2a. Leaf blade 9–17 × 3–6 cm; inflorescence rachis 5–15 mm.
    3a. Petiole 0.5–1 cm, stipitate-glandular and dendroid-hairy; pedicel slender, 0.5–1 cm; calyx ca. 3 mm ..... 454. *R. faucium*
    3b. Petiole 1.5–3 cm, glabrous; pedicel stout, 1.5–2 cm; calyx 5–8 mm.
      4a. Petiole cylindric; inflorescence usually 2–3-flowered; corolla 5.5–7 cm; ovary and the base of style pubescent and glandular ..... 455. *R. megalanthum*
      4b. Petiole with adaxial surface flat; inflorescence usually 10–15-flowered; corolla 3.5–4.5 cm; ovary and style glabrous.
        5a. Lateral leaf veins 11–13 each side of midrib, abaxially with stout beadlike fasciculate hairs, corolla deep crimson or rose pink ..... 456. *R. hookeri*
        5b. Lateral leaf veins 15–18 each side of midrib, abaxially with slender fasciculate hairs; corolla pale rose or pinkish ..... 452. *R. hylaeum*
  2b. Leaf blade 3–8 × 1.5–2.5 cm; inflorescence rachis 3–5 mm.
    6a. Corolla crimson; calyx 8–12 mm, irregularly split; pedicel 5–8 mm; ovary and style glabrous ..... 449. *R. populare*

6b. Corolla white or rose to crimson; calyx 2–8 mm; pedicel 10–25 mm; ovary and style glandular.
7a. Petiole ca. 5 mm; stamen filaments tomentose at base; style glabrous towards tip ..... 461. *R. eurysiphon*
7b. Petiole 8–10 mm; stamen filaments glabrous; style glandular to tip.
8a. Leaf blade 5–8 × 2–2.5 cm; pedicel slender, 2–3 cm; corolla 3.5–4 cm ..... 448. *R. cerasinum*
8b. Leaf blade 4–5 × ca. 1.5 cm; pedicel short, ca. 1.5 cm; corolla ca. 2.5 cm ..... 447. *R. bonvalotii*
1b. Leaf blade elliptic, obovate or sub-orbicular, base sometimes decurrent, then with petiole narrowly winged.
9a. Leaf blade suborbicular, base rounded or cordate; abaxial surface sometimes glaucous, often with some red stipitate glands.
10a. Petiole slender, cylindric, 1–1.5 mm wide; calyx 4–7 mm; ovary tomentose and glandular ..... 451. *R. viscidifolium*
10b. Petiole thick or flat, 2–4 mm wide; calyx 0.5–1.2 cm, red; ovary only glandular.
11a. Petiole cylindric, ca. 2 mm wide; leaf blade 4–7 cm; corolla crimson; filaments tomentose at base ..... 450. *R. thomsonii*
11b. Petiole flat, 3–4 mm wide; leaf blade 8–13 cm; corolla white or pink; filaments glabrous ..... 458. *R. cyanocarpum*
9b. Leaf blade obovate, broadest above the middle, base cuneate, rarely rounded; abaxial surface not glaucous, glabrous or with brownish indumentum.
12a. Style glandular, with dendroid hairs along whole length ..... 453. *R. ramipilosum*
12b. Style glabrous.
13a. Abaxial leaf surface thinly persistently fawn-farinose; inflorescence 3–7-flowered, rachis conical, 1–2 mm; petiole 5–10 mm, not winged ..... 460. *R. stewartianum*
13b. Abaxial leaf surface glabrous or pubescent along midrib only; inflorescence 5–10-flowered, 2–12 mm; petiole (5–)10–30 mm, flat, often narrowly winged.
14a. Stamens 3–4 cm, filaments glabrous; abaxial leaf surface glabrous; corolla lobes 2.5–3 cm wide ..... 457. *R. meddianum*
14b. Stamens 1.8–3 cm, filaments pubescent at base; abaxial leaf surface pubescent along midrib; corolla lobes ca. 2 cm wide ..... 459. *R. eclecteum*

447. Rhododendron bonvalotii Franchet, J. Bot. (Morot) 5: 94. 1891 [*"bonvaloti"*].

折多杜鹃 zhe duo du juan

Shrubs; young shoots glabrous. Petiole cylindric, 5–8 mm, shortly glandular-hairy; leaf blade elliptic or oblong-lanceolate, 4–5 × ca. 1.5 cm; base obtuse or rounded; margin revolute; apex acute; abaxial surface greenish, glabrous; adaxial surface deep green, slightly shiny, with 2–4 longitudinal ridges towards the apex; midrib prominently raised abaxially, grooved adaxially; lateral veins 12–14-paired, obscure. Inflorescence racemose-umbellate, usually 4- or 5-flowered; rachis stout, ca. 15 mm, shortly glandular-hairy. Calyx lobes 5, ca. 4 mm, ovate or irregularly suborbicular, fringed with glands; corolla campanulate, pale pink, 2–2.5 cm, lobes 5, suborbicular, ca. 1 × 1.5 cm, emarginate; stamens 10, 1–1.5 cm, unequal, filaments glabrous; ovary ovoid, 4–6 mm, densely glandular; style glandular to tip. Capsule not known.

● W Sichuan (near Kangding).

This species has the flower characters of *Rhododendron* subsect. *Thomsonia,* but the elliptic or oblong-oblanceolate leaves resemble those of *R. selense,* suggesting that it could be hybrid of *R. selense,* possibly with *R. souliei*. It has not been seen since it was first collected over a century ago.

448. Rhododendron cerasinum Tagg in J. B. Stevenson, Sp. Rhodod. 737. 1930.

樱花杜鹃 ying hua du juan

Shrubs, 2–4 m tall; older branches grayish brown; bark exfoliating into thin and small irregular flakes; young shoots green, glabrescent. Petiole cylindric, with adaxial surface flattened, 10–15 mm, pubescent; leaf blade thinly leathery, oblong-elliptic to narrowly obovate, 5–8 × 1.5–2.5 cm; base cuneate; apex obtuse, apiculate; abaxial surface floccose, glabrescent; adaxial surface green, pubescent, especially along midrib; midrib prominent, raised abaxially; lateral veins 13–15-paired, obscure. Inflorescence 3–6-flowered; rachis conical, 2–5 mm. Pedicel 2–3 cm, glandular; calyx cupular; lobes 5, ca. 2 mm; outer surface glandular; corolla campanulate, crimson to scarlet or bicolored, creamy-white and cherry-red, 3–3.5 cm, base with darker nectar pouches; lobes 5, rounded, ca. 1.2 × 2 cm, emarginate; stamens 10, unequal, 2–3 cm, filaments slender, glabrous; ovary conoid, ca. 5 mm, densely glandular-hairy; style stout, glandular to tip; stigma lobulate. Capsule 20–25 mm, glandular, base enclosed by swollen and persistent calyx. Fl. Jun.

Abies forest margins, *Rhododendron* thickets; 3200–3800 m. SE Xizang [Myanmar].

449. Rhododendron populare Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 251. 1937.

蜜腺杜鹃 mi xian du juan

Small trees or shrubs, 2–5 m tall; older branches brown, bark exfoliating into thin and small irregular flakes; young shoots slender, pale brown-green, glabrous. Petiole stout, 5–10 mm, floccose when young, glabrescent; leaf blade leathery, obovate-elliptic or oblong-elliptic, 6–8 × 2–3 cm; base rounded or broadly cuneate; margin revolute; apex obtuse, apiculate; both surfaces glabrous; midrib prominently raised abaxially, grooved adaxially; lateral veins 13–15-paired, obscure on both surfaces. Inflorescence racemose-umbellate, usually 4–6-flowered; rachis conical, 1–2 mm, glabrous. Pedicel slender, pink, 0.5–1 cm, glabrous; calyx reddish, cupular; lobes 8–12 mm, irregular; corolla campanulate, crimson, 3–3.5 cm, with 5 deep

crimson nectar pouches at base; lobes 5, rounded, ca. 1.3 cm, emarginate; stamens 10, unequal, 1.5–3 cm, filaments white, glabrous; ovary ovoid, ca. 5 mm, glabrous; style ca. 2.5 cm, glabrous; stigma slightly swollen. Capsule not known. Fl. Apr–May.

● *Rhododendron* thickets, bamboo thickets; 3500–4000 m. S Xizang.

450. Rhododendron thomsonii J. D. Hooker, Rhododendr. Sikkim-Himalaya 2: t. 12. 1851 [*"thomsoni"*].

半圆叶杜鹃 ban yuan ye du juan

Shrubs or small trees, 2–4 m tall; older branches pale gray-brown; bark exfoliating in flakes; young shoots greenish, glabrous. Petiole slender, 10–30 × ca. 2 mm, glabrous; leaf blade leathery, oblong-elliptic to ovate or orbicular to obovate, 3–7 × 2–6 cm; base rounded to cordate; margin reflexed; apex rounded, apiculate; abaxial surface glaucous, papillate, with some red glandular hairs, sometimes sparsely hairy; adaxial surface dark green, smooth, glabrous; midrib prominent and raised abaxially, flat adaxially; lateral veins 13–14-paired, conspicuous. Inflorescence racemose-umbellate, 4–8-flowered; rachis 5–12 mm, glabrous. Pedicel 1–2 cm, usually glabrous; calyx with upper half tinged red, lower half green, cupular to irregularly split; lobes 5, 2–12 mm, rounded or truncate, glabrous; corolla campanulate, deep crimson, 4–5 cm, fleshy, lobes 5, suborbicular, ca. 1 × 1.5 cm, emarginate; stamens 10, unequal, 2–3 cm; ovary conoid-cylindric, 5–7 mm, glabrous or glandular-hairy; style 3–3.5 cm, glabrous or densely glandular-hairy; stigma slightly swollen. Capsule oblong, 12–15 × 5–8 mm, glabrous, calyx persistent. Fl. Jun.

Mixed forests, thickets, rocky slopes; 3000–4000 m. S Xizang [Bhutan, N India, Nepal, Sikkim].

1a. Leaf blade orbicular to obovate; calyx 5–12 mm; ovary glabrous ..... 450a. subsp. *thomsonii*
1b. Leaf blade oblong-elliptic to ovate; calyx 2–3 mm; ovary densely stipitate-glandular ..... 450b. subsp. *lopsangianum*

450a. Rhododendron thomsonii subsp. **thomsonii**

半圆叶杜鹃(原亚种) ban yuan ye du juan (yuan ya zhong)

Leaf blade orbicular to broadly obovate, 4–7 × 3–6 cm; apex obtuse, apiculate; both surfaces glabrous. Calyx irregularly split, 5–12 mm; ovary glabrous. Fl. May–Jun.

Mixed forests; 3000–4000 m. S Xizang [Bhutan, N India, Nepal, Sikkim].

450b. Rhododendron thomsonii subsp. **lopsangianum** (Cowan) D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 39: 420. 1982.

小半圆叶杜鹃 xiao ban yuan ye du juan

Rhododendron lopsangianum Cowan, Notes Roy. Bot. Gard. Edinburgh 19: 250. 1937; *R. thomsonii* var. *lopsangianum* (Cowan) T. L. Ming.

Leaf blade oblong-elliptic to ovate, 3–5 × 2–4 cm; abaxial surface sometimes sparsely hairy. Calyx 2–3 mm; ovary densely shortly glandular-hairy. Fl. May.

● Thickets, rocky slopes; ca. 3800 m. S Xizang.

Rhododendron thomsonii var. *pallidum* Cowan (Notes Roy. Bot. Gard. Edinburgh 19: 253. 1937), described from Xizang, is thought to be a hybrid between subsp. *lopsangianum* and *R. campylocarpum*. It differs from subsp. *lopsangianum* in its relatively short calyx (2–8 mm), pink corolla, and glandular ovary.

451. Rhododendron viscidifolium Davidian, Rhododendron Camellia Year Book 21: 104. 1966.

铜色杜鹃 tong se du juan

Shrubs, 1–2 m tall; older branches pale gray-brown; bark exfoliating into thin and small irregular flakes; young shoots slender, smooth, glabrous. Petiole 12–20 mm, glandular, later smooth; leaf blade leathery, obovate or suborbicular, 4–7 × 3–5 cm; base cordate or suborbicular; apex obtuse, apiculate; abaxial surface glaucous, with scattered viscid glands; adaxial surface deep green, glabrous; midrib prominently raised abaxially, grooved adaxially; lateral veins 12–16-paired, flat on both surfaces, obscure. Inflorescence racemose-umbellate, 1- or 2-flowered; rachis 1–3 mm, puberulent or glabrous. Pedicel ca. 1 cm, glandular-hairy; calyx pale green to pink, cupular; lobes 5, 5–7 mm, ovate or rounded, glabrous, fringed with stalked glands; corolla tubular-campanulate, fleshy, coppery-red or pink, with dark flecks, 3.5–4 cm, nectar pouches present; lobes 5, ca. 1.5 × 2.5 cm, emarginate; stamens 10, unequal, 1.5–3 cm, filaments glabrous; ovary cylindric, ca. 6 × 3 mm, densely tomentose and shortly glandular-hairy; style 2.5–3 cm, glabrous; stigma slightly swollen. Capsule cylindric, ca. 20 × 9 mm, tomentose, base enclosed by persistent calyx. Fl. May.

● Valleys, stream banks; 2700–3300 m. SE Xizang.

452. Rhododendron hylaeum I. B. Balfour & Farrer, Notes Roy. Bot. Gard. Edinburgh 13: 265. 1922.

粉果杜鹃 fen guo du juan

Shrubs or small trees, 6–12 m tall; trunk massive, bark slate gray to purplish, smooth when mature; older branches smooth and glabrous; young shoots glandular. Petiole slender, 15–20 mm, glandular-hairy when young, glabrescent; leaf blade leathery, oblong-elliptic to obovate-elliptic, 8–15 × 2.5–3.5 cm; base cuneate to broadly cuneate; apex obtuse, apiculate; abaxial surface glaucous, glabrous; adaxial surface green, glabrous; midrib flat or grooved adaxially; lateral veins 15–18-paired, not conpicuous. Inflorescence racemose-umbellate, 10–12-flowered; rachis 20(–45) mm, glabrous. Pedicel stout, ca. 1 cm, glabrous or glandular; calyx greenish, cupular, fleshy; lobes 5, 3–5 mm, undulate, often deflexed; corolla tubular-campanulate, fleshy, pale rose or pink, with dark flecks, 4–4.5 cm, basal nectar pouches 5; lobes 5, ca. 1.5 × 2.5 cm, emarginate; stamens 10, unequal, 2–3.5 cm, filaments glabrous; ovary cylindric, ca. 6 × 4 mm, glabrous; style glabrous. Capsule 15–20 × 7–8 mm, glaucous, glabrous, calyx usually persistent. Fl. May–Jun, fr. Aug.

Forests, mountain slopes; 2800–3600 m. SE Xizang, NW Yunnan [NE Myanmar].

453. Rhododendron ramipilosum T. L. Ming, Acta Bot. Yunnan. 6: 159. 1984.

线裂杜鹃 xian lie du juan

Shrubs, ca. 1.5 m tall; older branches grayish; young shoots green, glabrous. Petiole ca. 15 mm, glabrous; leaf blade leathery, elliptic, ca. 7 × 3.5 cm; base rounded; apex obtuse or rounded, apiculate; abaxial surface glabrous though with brown punctate glands; adaxial surface glabrous; midrib prominent and raised abaxially, grooved adaxially; lateral veins ca. 10-paired, flat on both surfaces. Inflorescence racemose-umbellate, 5–8-flowered; rachis ca. 6 mm, glabrous. Pedicel 2–2.6 cm, glabrous or sparsely glandular; calyx lobes 5, 5–8 × 1.5–2 mm, linear-lanceolate, outer surface sparsely glandular, margin fringed; corolla and stamens not known; ovary conoidal, ca. 7 mm, glandular and with dendroid hairs; style 2–2.5 cm, glandular, with dendroid hairs to tip. Capsule not known. Fl. Jun–Jul.

● Alpine scrub. SE Xizang.

From the incomplete description, this species is probably allied to *Rhododendron bonvalotii* and *R. cerasinum,* sharing with them a style that is glandular throughout its length. However, *R. ramipilosum* differs in the relatively broader leaf blade, ca. 2 × as long as wide.

454. Rhododendron faucium D. F. Chamberlain, Notes Roy. Bot. Gard. Edinburgh 36: 124. 1978.

猴斑杜鹃 hou ban du juan

Shrubs or small trees, 1.5–6.5 m tall; trunk smooth; young shoots glabrous. Petiole 10–15 mm, with glandular hairs or dendroid hairs; leaf blade thinly leathery, obovate-elliptic or oblanceolate, 7–9 × 1.5–3 cm; base broadly cuneate or ± rounded; margin revolute; apex rounded, apiculate; abaxial surface greenish, epidermis epapillate, with a few scattered hairs near the midrib towards the base; adaxial surface green, glabrous; lateral veins 13–14-paired, obscure. Inflorescence racemose-umbellate, 5–10-flowered; rachis 10–20 mm, glabrous or puberulent. Pedicel slender, 0.5–1 cm, glandular-hairy or glabrous; calyx usually greenish, cupular, 3–4 mm, glandular-ciliate; corolla campanulate, pink to white tinged pink, with purple flecks, 3.5–4 cm, lobes 5, 1–1.5 cm, emarginate; stamens 10, 2–3 cm, filaments glabrous; ovary cylindric, ca. 5 × 3 mm, densely glandular; style ca. 3.5 cm, glabrous; stigma slightly swollen. Capsule not known. Fl. Apr.

Forest margins; 2600–3400 m. SE Xizang [NE India].

455. Rhododendron megalanthum M. Y. Fang, Acta Phytotax. Sin. 26: 66. 1988.

西藏杜鹃 xi zang du juan

Small trees or shrubs, 2–5 m tall; branchlets stout, glabrous. Petiole cylindric, 20–30 mm, glabrous; leaf blade thickly leathery, elliptic or oblong-elliptic, 13–17 × 4–6 cm; base rounded, asymmetrical; apex obtuse or acuminate; both surfaces glabrous; abaxial surface pale green; adaxial surface deep green; midrib conspicuous, raised abaxially, flat or slightly impressed adaxially; lateral veins 16–20-paired. Inflorescence racemose-umbellate, 2- or 3-flowered; rachis 5–7 mm, glabrous. Pedicel stout, 1.5–2 cm, glabrous; calyx cupular; lobes 5, 5–7 mm, rounded, glabrous; corolla campanulate or funnel-campanulate, deep rose, 5.5–7 cm, base with 5 deep purple nectar pouches; lobes 5, orbicular, 2–2.5 cm in diam., emarginate; stamens 12, unequal, 2.5–3.5 cm, filaments glabrous or puberulent at base; ovary ovoid, 5–7 mm, glandular, densely setose; style 5–6 cm, setose and glandular at base; stigma swollen. Capsule not known. Fl. Mar–Apr.

● Mixed forests, valleys, stream banks; 1800–2200 m. SE Xizang.

456. Rhododendron hookeri Nuttall, Hooker's J. Bot. Kew Gard. Misc. 5: 359. 1853.

串珠杜鹃 chuan zhu du juan

Shrubs or small trees, 1–4 m tall; young shoots glaucous becoming green, with a waxy farina, glabrous. Petiole cylindric, 15–20 mm, glabrous; leaf blade leathery, oblong-elliptic or obovate-elliptic, 8–12.5 × 3–5 cm; base rounded; apex obtuse or apiculate; abaxial surface glaucous, glabrous except for lateral veins with well-developed fasciculate hairs; adaxial surface green, glabrous; midrib prominently raised abaxially, flat adaxially; lateral veins 11–13-paired, slightly raised abaxially. Inflorescence racemose-umbellate, 10–15-flowered; rachis 10–25 mm, glabrous. Pedicel slender, 1–1.5 cm, glabrous; calyx membranous, pink; lobes 5, 5–7 mm, unequal in size, suborbicular, glabrous; corolla campanulate or tubular-campanulate, deep rose to crimson, 3.5–4 cm, base with 5 dark nectar pouches; lobes 5, suborbicular, emarginate; stamens 9 or 10, unequal, 2.5–3.5 cm, filaments glabrous; ovary cylindric-oval, ca. 5 mm; style glabrous. Capsule 20–25 mm, base enclosed by persistent calyx. Fl. Mar, fr. Jun.

Thickets, S-facing mountain slopes; 2200–3000 m. SE Xizang [NE India].

457. Rhododendron meddianum Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 136. 1920.

红萼杜鹃 hong e du juan

Shrubs, 1–2 m tall; older branches grayish; bark falling off in small irregular flakes; young shoots stout, glabrous or glandular. Petiole flat, 10–15 × 5–6 mm, glabrous; leaf blade leathery or thinly leathery, obovate-elliptic to broadly elliptic, broadest above middle of blade, 6–10 × 3–5 cm; base rounded or cuneate; margin reflexed; apex obtuse or rounded, apiculate; abaxial surface pale green, glabrous; adaxial surface green, glabrous; midrib prominently raised abaxially, impressed adaxially; lateral veins 13–15-paired. Inflorescence racemose-umbellate, usually 5–10-flowered; rachis 2–3 mm, glabrous. Pedicel 1–1.5 cm, glabrous or glandular; calyx crimson, cupular; lobes 5, 5–8 mm, unequal; corolla tubular-campanulate, deep rose to deep crimson, 4–5 cm, base with 5 black-crimson nectar pouches; lobes 5, suborbicular, 1.5–2 × 2.5–3 cm, emarginate; stamens 10, 3–4 cm, filaments glabrous; ovary cylindric, glabrous or glandular; style glabrous. Capsule slightly curved, 15–20 × 6–7 mm, glabrous or glandular. Fl. Apr–Jun, fr. Sep.

Rhododendron thickets, bamboo brakes, stream banks, rocky slopes; 3000–3700 m. W Yunnan [NE Myanmar].

1a. Young shoots, pedicel, and (usually) ovary glabrous; leaf blade leathery ..... 457a. var. *meddianum*

1b. Young shoots glandular; pedicel and ovary densely glandular; ovary viscid; leaf blade thinly leathery ..... 457b. var. *atrokermesinum*

457a. Rhododendron meddianum var. **meddianum**

红萼杜鹃(原变种) hong e du juan (yuan bian zhong)

Young shoots stout, glabrous. Leaf blade leathery. Pedicel glabrous; ovary usually glabrous.

Rhododendron thickets, rocky slopes; 3000–3700 m. W Yunnan [NE Myanmar].

457b. Rhododendron meddianum var. **atrokermesinum** Tagg in J. B. Stevenson, Sp. Rhodod. 742. 1930.

腺房红萼杜鹃 xian fang hong e du juan

Young shoots glandular. Leaf blade thinly leathery. Pedicel densely glandular; ovary densely glandular, viscid.

Rhododendron thickets, stream banks; ca. 3200 m. W Yunnan [NE Myanmar].

458. Rhododendron cyanocarpum (Franchet) Franchet ex W. W. Smith, Trans. Bot. Soc. Edinburgh 26: 275. 1914.

蓝果杜鹃 lan guo du juan

Rhododendron thomsonii J. D. Hooker var. *cyanocarpum* Franchet, J. Bot. (Morot) 9: 389. 1895; *R. cyanocarpum* var. *eriphyllum* (I. B. Balfour & W. W. Smith) Tagg; *R. hedythamnum* I. B. Balfour & Forrest var. *eglandulosum* Handel-Mazzetti.

Shrubs or small trees 2–4 m tall; older branches grayish, bark falling off in flakes; branchlets 4–5 mm in diam. below inflorescence; young shoots greenish, glabrous. Petiole often slightly winged, 20–30 × 3–4 mm; leaf blade leathery, broadly elliptic to suborbicular, 8–13 × 5–9 cm; base rounded; margin reflexed; apex apiculate; abaxial surface glaucous, glabrous or with a few scattered hairs; adaxial surface deep green, glabrous; midrib flat adaxially; lateral veins 11–14-paired, slightly impressed on both surfaces. Inflorescence 5–9-flowered; rachis 8–15 mm, pubescent or glabrous. Pedicel 1–2 cm, glabrous; calyx pale pink, cupular, fleshy; lobes 5, 7–12 mm, glabrous; corolla campanulate or funnel-campanulate, fleshy, creamy-white to clear pink, flecks lacking, 5–6 cm, base with dark nectar pouches; lobes 5, rounded, ca. 1.5 × 2.3 cm, emarginate; stamens 10, unequal, 2–4 cm, filaments glabrous; ovary conical 6–7 mm, glabrous or with a few glands; style 2.5–3 cm, glabrous. Capsule oblong, blunt, 12–20 × 7–10 mm, glaucous, base usually enclosed by persistent calyx. Fl. Apr–May, fr. Aug–Oct.

● *Pinus* forest margins, *Rhododendron* thickets; 3000–4000 m. W Yunnan.

459. Rhododendron eclecteum I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 105. 1920.

杂色杜鹃 za se du juan

Shrubs, 2–3 m tall; older branches grayish, bark falling off in flakes; young shoots usually shortly glandular-hairy. Petiole flat, usually narrowly winged, 5–30 mm; leaf blade leathery, obovate-elliptic to elliptic, sometimes fiddle-shaped, 5–12 × 2–5 cm; base cuneate to rounded; apex obtuse, apiculate to retuse; abaxial surface pale green, glabrous except near midrib; adaxial surface deep green, glabrous; midrib raised abaxially, flat adaxially; lateral veins 9–12-paired, conspicuous abaxially. Inflorescence 5–10-flowered; rachis 5–12 mm, glabrous. Pedicel 1–2 cm, glabrous; calyx cupular; lobes 5, 7–10 mm, unequal in size; corolla tubular-campanulate, white, rose to deep crimson, or rarely yellowish, 3.5–5 cm, lobes 5, suborbicular, ca. 1.5 × 2 cm, emarginate; stamens 10, unequal, 1.8–3 cm, filaments pubescent at base; ovary cylindric-ovoid, ca. 5 mm, densely glandular-hairy; style ca. 3 cm, glabrous. Capsule ca. 12 × 6 mm, glaucous, base enclosed by persistent calyx.

Pinus forests, thickets, *Rhododendron* scrub; 2600–4000 m. SW Sichuan, SE Xizang, NW Yunnan [NE Myanmar].

1a. Leaf blade fiddle-shaped, with straight hairs near midrib abaxially; petiole 4–10 mm; corolla usually deep crimson, rarely pale yellow ..... 459a. var. *eclecteum*

1b. Leaf blade not fiddle-shaped, with curved hairs near midrib abaxially; petiole 8–30 mm; corolla white or yellowish to rose ..... 459b. var. *bellatulum*

459a. Rhododendron eclecteum var. **eclecteum**

杂色杜鹃(原变种) za se du juan (yuan bian zhong)

Rhododendron brachyandrum I. B. Balfour & Forrest; *R. eclecteum* var. *brachyandrum* (I. B. Balfour & Forrest) Cowan & Davidian.

Petiole 4–10 mm; leaf blade fiddle-shaped, 5–12 × 2.5–5 cm; abaxial surface with dense straight hairs near midrib. Corolla deep rose to crimson, rarely pale yellow. Fl. May–Jun, fr. Aug–Oct.

Pinus forests, *Rhododendron* thickets; 3000–4000 m. SW Sichuan, SE Xizang, NW Yunnan [NE Myanmar].

459b. Rhododendron eclecteum var. **bellatulum** Tagg in J. B. Stevenson, Sp. Rhodod. 739. 1930.

长柄杂色杜鹃 chang bing za se du juan

Petiole 8–30 mm; leaf blade not fiddle-shaped, 5–7.5 × 2–3.5 cm; abaxial surface puberulent with curved hairs near midrib. Corolla white or yellowish to rose, always pale.

● Thickets, *Rhododendron* scrub; 2600–3800 m. SE Xizang, NW Yunnan.

Field observations suggest that var. *bellatulum* is a hybrid between *Rhododendron eclecteum* and *R. selense*.

460. Rhododendron stewartianum Diels, Notes Roy. Bot. Gard. Edinburgh 5: 211. 1912.

多趣杜鹃 duo qu du juan

Rhododendron aiolosalpinx I. B. Balfour & Farrer; *R. niphobolum* I. B. Balfour & Farrer; *R. stewartianum* var. *aiolosalpinx* (I. B. Balfour & Farrer) Cowan & Davidian; *R. stewartianum* var. *tantulum* Cowan & Davidian.

Small shrubs, 1–2 m tall; young shoots glabrous. Petiole

5–10 mm, glabrous; leaf blade leathery, obovate to elliptic, broadest above middle of blade, 5.5–7.5 × 2.5–3.5 cm; base broadly cuneate or rounded; margin reflexed; apex obtuse, apiculate; abaxial surface with mammillate epidermis, thinly persistently fawn-farinose; adaxial surface green, glabrous; midrib prominent, raised abaxially; lateral veins 11–13-paired, obscure. Inflorescence 3–7-flowered; rachis conical, 1–2 mm, glabrous. Pedicel 1–1.5 cm, glandular at first, later smooth; calyx cupular; lobes 5, 5–10 mm, unequal, glabrous; corolla campanulate or tubular-campanulate, white or soft yellow to pale rose, variable in color, 3.5–4 cm; lobes 5, orbicular, ca. 1.5 × 2 cm, emarginate; stamens 10, unequal, 1.5–2.5 cm, filaments pubescent at base; ovary cylindric, ca. 4 mm, densely glandular; style ca. 2.5 cm, glabrous, stigma small. Capsule slightly curved, 20–25 × ca. 8 mm, base enclosed by persistent calyx. Fl. May–Jun, fr. Oct–Nov.

Rhododendron thickets, bamboo brakes; 3000–4000 m. E Xizang, NW Yunnan [NW Myanmar].

461. Rhododendron eurysiphon Tagg & Forrest in J. B. Stevenson, Sp. Rhodod. 708. 1930.

宽筒杜鹃 kuan tong du juan

Shrubs, 1–2 m tall; older branches greenish, glabrescent; branchlets slender, 2–3 mm in diam. below inflorescence, shortly glandular-hairy. Petiole 5–6 mm, glandular; leaf blade leathery, long-elliptic or oblong, 3–5.5 × 1.5–2.5 cm; base rounded; apex rounded, apiculate; both surfaces glabrous; midrib prominent and raised abaxially, flat adaxially; lateral nerves obscure on both surfaces. Inflorescence racemose-umbellate, 3–5-flowered; rachis 3–5 mm, tomentose. Pedicel 1–2 cm, sparsely glandular-hairy; calyx cupular; lobes 5, 3–4 mm; outer surface sparsely glandular-hairy; corolla campanulate, creamy white to pale rose, with crimson flecks, 3.5–4 cm, base with nectar pouches; lobes 5, suborbicular, ca. 1.5 × 2 cm, emarginate; stamens 10, unequal, 1.3–3 cm, filaments stout, pubescent at base; ovary ovoid, ca. 5 mm, densely glandular; style glabrous. Capsule oblong, slightly curved, 15–20 × ca. 6 mm, base enclosed by persistent calyx.

● *Rhododendron* thickets, scrub, stony slopes; ca. 4000 m. SE Xizang.

6. Rhododendron subg. Azaleastrum Planchon ex K. Koch, Dendrologie 2(1): 159. 1872.

马银花亚属 ma yin hua ya shu

He Mingyou (何明友); David F. Chamberlain

Shrubs or small trees, evergreen; new foliage shoots arising from subterminal buds and from axils of leaves; young shoots not scaly, glabrous or pubescent and glandular-setose. Leaf blade not scaly. Inflorescence subterminal, 1- to several-flowered. Calyx lobes large or inconspicuous; corolla rotate-funnelform to narrowly funnelform, tube usually shorter than the lobes, rarely longer; stamens 5 or 10, unequal; filaments pubescent; ovary 5–6-locular, glabrous, pubescent or shortly glandular-hairy; style glabrous or shortly setose near base. Capsule conical ovoid or cylindric, glabrous or pubescent, with glandular setae.

About 30 species: from China and Japan to peninsular Malaysia and Indonesia; 26 species (18 endemic) in China.

Recent evidence from DNA sequencing suggests that the two sections in *Rhododendron* subg. *Azaleastrum* are only distantly related; each may therefore merit subgeneric rank in its own right. For the most recent Chinese account of *R.* subg. *Azaleastrum* see Gao Lianming (Phylogeny of *Rhododendron* subg. *Azaleastrum sensu* Sleumer (Ericaceae). PhD thesis, Kunming Institute of Botany. 2002), who (pers. comm., 2004) reviewed the same subgenus in the present account.

1a. Stamens 5; calyx lobes large and broad; capsule conical-ovoid, upper valves and style not contiguous when mature; seeds without terminal appendages ..... 1. *R.* sect. *Azaleastrum*
1b. Stamens 10; calyx lobes inconspicuous or rarely narrowly lanceolate; capsule cylindric, upper valves and style contiguous when mature; seeds with short caudate appendages at both ends ..... 2. *R.* sect. *Choniastrum*

1. Rhododendron sect. Azaleastrum Planchon ex Maximowicz, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 16(9): 15, 45. 1870.

马银花组 ma yin hua zu

Shrubs or small trees, evergreen. Leaf blade ovate, broadly ovate, elliptic, elliptic-ovate or oblong-elliptic, [sometimes sparsely puberulent when young,] glabrous except on midrib. Inflorescence [subapical,] 1-flowered. Calyx lobes large and broad, glabrous or with short-glandular hairs or pubescence on the margin; corolla rotate or broadly funnelform; tube shorter than the lobes, rarely longer; lobes spreading; stamens 5, unequal; ovary 5-celled, with short glandular hairs; style glabrous, or with short glandular hairs near the base. Capsule conical, ovoid. Seeds without terminal appendages.

About nine species: China, Laos, Myanmar, Vietnam; eight species (five endemic) in China.

The present authors have seen no specimens of *Rhododendron taichungianum* S. S. Ying (Mem. Coll. Agric. Natl. Taiwan Univ. 31: 29. 1991), described from Taiwan. It is therefore not treated in this account.

1a. Style glandular-hairy for most of its length; leaf blade sublanceolate, 6–8 × 2–2.3 cm ..... 469. *R. medoense*
1b. Style glabrous; leaf blade various.
  2a. Corolla broadly tubular to tubular-funnelform, lobes shorter than tube, dark red; pedicel 4–8 mm ..... 468. *R. vialii*
  2b. Corolla rotate, lobes longer than tube, white or various shades of pink or purple (not known for *R. tianlinense*); pedicel 8–25 mm.

3a. Leaf blade lanceolate, oblong-lanceolate or elliptic-lanceolate; style 2–2.2 cm.
4a. Young shoots densely white-pubescent; calyx lobes ca. 7 mm; pedicel 15–25 mm ..... 466. *R. leptothrium*
4b. Young shoots glabrous; calyx lobes ca. 5 mm; fruiting pedicel 13–15 mm ..... 467. *R. tianlinense*
3b. Leaf blade ovate, broadly ovate, elliptic, elliptic-ovate or oblong-elliptic; style 2.4–4 cm.
5a. Calyx lobe margin glabrous, sometimes pubescent near the base on outer surface; capsule 8–9 mm.
6a. Leaf blade ovate or elliptic-ovate; corolla purplish, purple or pink, with purple flecks within; stamens 1.5–2.1 cm ..... 462. *R. ovatum*
6b. Leaf blade elliptic-oblong, rarely obovate-oblong; corolla white flushed red; stamens 2–2.5 cm ..... 463. *R. mitriforme*
5b. Calyx lobe margin densely glandular-hairy; capsule 4–7 mm.
7a. Bud-scales hairy on outer surface; corolla pink or purple; young shoots gray-brown pubescent and sparsely glandular-setose ..... 464. *R. bachii*
7b. Bud-scales glabrous on outer surface; corolla white; young shoots glabrous or with a few short glandular hairs only ..... 465. *R. hongkongense*

462. Rhododendron ovatum (Lindley) Planchon ex Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 15: 230. 1871.

马银花 ma yin hua

Azalea ovata Lindley, J. Hort. Soc. London 1: 149. 1846; *Rhododendron lamprophyllum* Hayata; *R. ovatum* var. *lamprophyllum* (Hayata) Y. C. Liu; *R. ovatum* var. *prismatum* P. C. Tam; *R. ovatum* var. *setuliferum* M. Y. He.

Shrubs, 2–4(–6) m tall; young shoots sparsely glandular-hairy and pubescent. Petiole ca. 8 mm, narrowly winged, pubescent; leaf blade ovate to oblong-elliptic, 3.5–5 × 1.9–2.5 cm; base rounded or rarely broadly cuneate; margin slightly curved; apex acute and mucronate; adaxial surface glabrous or pubescent; lateral and net veins inconspicuous abaxially. Inflorescence subapical, 1-flowered. Pedicel 0.8–1.8 cm, densely gray-brown pubescent, also with short glandular hairs; calyx deeply lobed; lobes ovate or oblong-ovate, 4–5 × 3–4 mm, densely gray-brown pubescent, also sparsely glandular hairy at base abaxially, margin glabrous; corolla rotate, purplish, purple, or pink, with purple flecks inside tube, 1.6–2.3 cm, outer surface glabrous, inner surface puberulent; lobes oblong-obovate or broadly obovate; stamens 5, unequal, 1.5–2.1 cm, slightly shorter than corolla, filaments flat, pubescent in lower half; ovary ovoid, with dense short glandular hairs; style ca. 2.4 cm, exserted, glabrous. Capsule broadly ovoid, ca. 8 × 6 mm, densely gray-brown pubescent, also sparsely glandular. Fl. Apr–May, fr. Jul–Oct.

● Thickets; 300–1600 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Zhejiang.

Gao Lianming (pers. comm.) notes that recent field studies have shown that the differences used to separate var. *setuliferum* from the type of the species, namely the narrower leaf blade and the style with dense bristles near the base, are not even borne out by the type of this variety, and in any case these features vary continuously between the two varieties.

463. Rhododendron mitriforme P. C. Tam, Bull. Bot. Res., Harbin 2(4): 91. 1982.

头巾马银花 tou jin ma yin hua

Shrubs or small trees, up to 7 m tall; young shoots purple or purplish, subglabrous. Petiole stout, 6–13 mm, gray-blue when dried, subglabrous; leaf blade elliptic-oblong, rarely obovate-oblong, 4–10 × 2–3 cm; base broadly cuneate or subrounded; margin entire; apex acuminate or obliquely caudate-acute. Inflorescence 1-flowered. Pedicel 1–1.7 cm, glabrous or with gland-tipped bristles; calyx persistent, large, enclosing capsule; lobes obovate-elliptic or ovate, ca. 10 × 8 mm or ca. 5 mm, glabrous; apex obtuse; corolla rotate, white flushed with red or purple, sometimes with dark purple flecks on lobes, 2–2.5 cm; lobes 5, ovate-elliptic or obovate, 1.3–1.7 cm wide, glabrous or pubescent near base within; stamens 5, unequal, 2–2.5 cm, shorter than to as long as corolla, filaments white-puberulent in lower half; ovary conical to conical-ovoid, ca. 3–3.5 mm, shortly glandular setose; style 3–4 cm, exserted, glabrous. Capsule ovoid, ca. 9 × 8 mm, with dark brown flecks and glandular hairs; style persistent, ca. 4 cm. Fl. Apr–May, fr. Sep–Oct.

● Dense forests, forest margins, slopes, valleys; 500–1600 m. W Guangdong, E Guangxi, SW Hunan.

1a. Pedicel glabrous ..... 463a. var. *mitriforme*
1b. Pedicel glandular-setulose ..... 463b. var. *setaceum*

463a. Rhododendron mitriforme var. **mitriforme**

头巾马银花(原变种) tou jin ma yin hua (yuan bian zhong)

Rhododendron xinganense G. Z. Li, p.p., excl. typ.

Pedicel ca. 1 cm, glabrous; calyx lobes obovate-elliptic, ca. 10 × 8 mm; corolla white flushed red; lobes ovate-elliptic, shorter than to as long as corolla, 1.3–1.6 cm wide, glabrous; ovary conical, ca. 3 mm; style ca. 3 cm. Capsule with dark brown flecks and glandular setae. Fl. Apr–May, fr. Sep–Oct.

● Dense forests, valleys; 500–800(–1300) m. W Guangdong, E Guangxi, SW Hunan.

463b. Rhododendron mitriforme var. **setaceum** P. C. Tam, Bull. Bot. Res., Harbin 2(4): 91. 1982.

腺刺马银花 xian ci ma yin hua

Rhododendron xinganense G. Z. Li, p.p.

Pedicel (0.1–)1.7 cm, glandular-setulose; calyx lobes ovate, ca. 5 mm; corolla purple, with dark purple flecks on lobes; lobes obovate, shorter than corolla, ca. 1.7 cm wide, pubescent near base within; ovary black, conical-ovoid, ca. 3.5 mm; style 3.5–4 cm. Capsule enlarged, with short glandular hairs on margin when young. Fl. Apr, fr. Sep–Oct.

● Dense forests, forest margins, slopes; 900–1600 m. NE Guangxi (Xing'an).

The amplified description given for var. *setaceum* is based on a specimen from Guangxi: Xing'an County, Miao'er Shan, *G. Z. Li 149*.

464. Rhododendron bachii H. Léveillé, Repert. Spec. Nov. Regni Veg. 12: 102. 1913.

腺萼马银花 xian e ma yin hua

Rhododendron hangzhouense W. P. Fang & M. Y. He; *R. sanidodeum* P. C. Tam.

Shrubs, 2–3(–8) m tall; young shoots gray-brown pubescent and sparsely glandular-setose. Petiole ca. 5 mm, pubescent and glandular-hairy; leaf blade subleathery, ovate or ovate-elliptic, 3–5.5 × 1.5–2.5 cm; base broadly cuneate or subrounded; margin finely undulate-crenate; both surfaces glabrous except for the pubescent midrib abaxially. Inflorescence subapical, 1-flowered. Pedicel 1.2–1.6 cm, pubescent and glandular-hairy; calyx deeply lobed; lobes ovate or obovate, 3–5 × 3–4 mm, puberulent abaxially or glandular-hairy, margin with dense short glandular hairs, apex obtuse and fluted; corolla rotate, purple or purplish, with dark red flecks on upper three lobes, 1.8–2.1 cm; lobes broadly obovate, ca. 1.4 cm wide, pubescent near the base within; stamens 5, unequal, 2–2.8 cm, as long as or slightly shorter than corolla; filaments flat, puberulent below the middle; ovary densely shortly glandular-hairy; style 2.5–3.2 cm, slightly curved, exserted, longer than stamens, glabrous. Capsule ovoid, ca. 7 × 6 mm, densely shortly glandular-hairy. Fl. Apr–May, fr. Jun–Oct.

● Open forests; 600–1600 m. Anhui, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Zhejiang.

The characters used to separate *Rhododendron bachii* from *R. ovatum* are fairly trivial, especially those relating to the calyx indumentum. Furthermore, there is continuous variation in these characters, suggesting that *R. bachii* should be treated as a synonym of *R. ovatum*.

465. Rhododendron hongkongense Hutchinson in J. B. Stevenson, Sp. Rhodod. 562. 1930.

白马银花 bai ma yin hua

Azalea myrtifolia Champion, Bot. Mag. 77: t. 4609. 1851, not *Rhododendron myrtifolium* Loddiges (1824), nor Schott & Kotschy (1851).

Shrubs, 1–2(–7) m tall; young shoots dense, fine and firm, glandular hairy, glabrescent. Petiole 4–7(–10) mm, puberulent above; leaf blade leathery, elliptic, elliptic-ovate or obovate-lanceolate, 2.5–6.5 × 1.5–2.3 cm; base ± cuneate; margin slightly revolute; apex acute and mucronate; abaxial surface obscurely glaucous; adaxial surface dark green when dried, sparsely puberulent on midrib only; midrib prominent on both surfaces; lateral veins conspicuous on abaxial surface. Inflorescences subapical, usually in clusters of 2–4, 1-flowered. Pedicel 1–1.5 cm, densely glandular-hairy and pubescent; calyx lobes papery, oblong-ovate, margin with short glandular hairs, apex fimbriate; corolla rotate, white or pale pink, with darker flecks on upper lobes, 2–3 cm, tube ca. 6 mm, ca. 5 mm wide at base; lobes obovate, 1.8–2.4 cm; stamens 5, shorter than corolla, filaments flat, with spreading white pubescence below middle; ovary ovoid, shortly glandular-hairy; style longer than stamens, exserted, glabrous. Capsule subovoid to broadly ovoid, 4–8 mm, shortly glandular-hairy or tuberculate only. Fl. Mar–Apr, fr. Jul–Dec.

● Sparse forests; 600–1600 m. Guangdong.

466. Rhododendron leptothrium I. B. Balfour & Forrest, Notes Roy. Bot. Gard. Edinburgh 11: 84. 1919.

薄叶马银花 bao ye ma yin hua

Rhododendron australe I. B. Balfour & Forrest.

Shrubs or small trees, 3–4(–6) m tall; young shoots densely white-pubescent. Petiole 10–18 mm, densely pubescent or sparsely glandular-hairy; leaf blade subleathery, lanceolate or oblong-lanceolate, 4–12 × 1.8–3.5 cm; base cuneate; margin shallowly undulate, slightly revolute, tapering toward truncate apex; adaxial surface pubescent only on midrib; midrib and lateral veins prominent on both surfaces. Inflorescences subapical, usually in clusters of 2–4, 1-flowered. Pedicel 1.5–2.5 cm, densely shortly glandular-setose; calyx lobes large, elliptic or oblong-ovate, 6–8 mm, glandular hairy at base on outer surface; margin glabrous or glandular-ciliate, apex obtuse; corolla rotate, pale rose to magenta-purple, with dark flecks on upper lobes, tube shorter than lobes; lobes obovate, 2–2.5 cm; stamens 5, unequal, shorter than corolla, filaments flat, pubescent below the middle; ovary ovoid, ca. 3 mm, apex glandular hairy; style ca. 2.2 cm, longer than stamens, exserted, glabrous. Capsule ovoid, ca. 6 mm, glandular and glandular-setose, surrounded by persistent calyx lobes. Fl. May–Jun, fr. Sep–Nov.

Thickets; 1700–3200 m. SW Sichuan, SE Xizang, W Yunnan [Myanmar].

467. Rhododendron tianlinense P. C. Tam, Surv. Gen. Rhododendron S. China, 112. 1983.

田林马银花 tian lin ma yin hua

Shrubs or small trees, ca. 4 m tall; young shoots glabrous. Petiole 10–19 mm, sulcate and puberulent adaxially; leaf blade papery, lanceolate or elliptic-lanceolate, 5.5–9.5 × 1.5–3 cm; base narrowly cuneate; margin slightly revolute; apex oblong-acuminate and mucronate; both surfaces pubescent along midrib; lateral veins 7–10-paired, conspicuous on both surfaces. Inflorescence subapical, 1-flowered. Fruiting pedicel slender, 1.3–1.5 cm, glandular-setose; calyx lobes (in fruit) 5, oblong-lanceolate or oblong-ovate, ca. 5 × 3 mm, glandular-setose at base abaxially, glabrous within, margin sparsely shortly glandular-setose; corolla not known; persistent style ca. 2 cm, glabrous. Capsule ovoid, 5–6 × ca. 5 mm, densely shortly glandular-hairy or glandular-setose.

● Dense mountain forests, usually with *Pinus* and bamboos; ca. 1200 m. NW Guangxi, ?SE Guizhou.

468. Rhododendron vialii Delavay & Franchet, J. Bot. (Morot) 9: 398. 1895 [*"viali"*].

红马银花 hong ma yin hua

Shrubs, 2–4.5 m tall; young shoots densely pubescent.

Petiole 15–22 mm, glabrous or puberulent; leaf blade subleathery, lanceolate, oblong-lanceolate or obovate-lanceolate, 4–9(–12) × 1.8–4 cm; base narrowly cuneate; margin slightly revolute; apex acuminate, cartilaginous-mucronate; lateral veins reaching margin. Inflorescence subapical, 1-flowered. Pedicel 0.4–0.8 cm, glandular-hairy; calyx deeply lobed; lobes dark red, oblong-rounded, 5–6 mm, densely glandular-setose at base abaxially, margin with dense sessile glands; corolla broadly tubular or tubular-funnelform, dark red, ca. 2.5 cm; tube broadly cylindric, ca. 15 mm, ca. 4 mm wide at base, outer surface glabrous, inner surface puberulent; lobes oblong, ca. 1 cm, glabrous, apex slightly emarginate; stamens 5, as long as or slightly shorter than corolla; filaments glabrous. Capsule ovoid, ca. 6 × 5 mm, densely glandular-setose. Fl. Feb–Apr, fr. Aug–Nov.

Thickets; 1200–1800(–2800) m. S Yunnan [Laos, Vietnam].

469. Rhododendron medoense W. P. Fang & M. Y. He, Bull. Bot. Res., Harbin 3(1): 1. 1983 var. **medoense**

墨脱马银花 mo tuo ma yin hua

Shrubs, ca. 1 m tall; young shoots cylindric, usually subglabrous. Petiole 15–25 mm, puberulent when young; leaf blade subleathery, oblong-lanceolate, rarely sublanceolate, 6–8 × 2–2.3 cm; base broadly cuneate or subrounded; apex acuminate and mucronate; both surfaces sparsely puberulent when young. Flower not seen. Fruiting pedicel ca. 1.5 cm, puberulent, also with some short glandular hairs; calyx lobes (in fruit) ovate or long-ovate, 6–8 mm, with short glandular hairs at base abaxially, margin glandular-ciliate; corolla not known; persistent style 3.5–4 cm, sparsely shortly stalked glandular hairy for ca. 4/5 its length. Capsule ovoid, ca. 6 mm, densely shortly glandular hairy. Fr. Jul–Aug.

● Forests; 1800–2000 m. SE Xizang.

Chinese plants belong to var. *medoense*; var. *adenostylum* W. P. Fang & M. Y. He (Bull. Bot. Res., Harbin 3(1): 2. 1983) was described from Myanmar.

2. Rhododendron sect. Choniastrum Franchet, Bull. Soc. Bot. France 33: 229. 1886.

长蕊杜鹃组 chang rui du juan zu

Shrubs or small trees, evergreen; branches glabrous or glandular setose. Inflorescence axillary or terminal, 1–7-flowered; corolla funnelform to campanulate; stamens 10; style as long as or longer than stamens. Capsule oblong-cylindric or cylindric, glabrous or puberulent, rarely glandular setose; style contiguous and valved on upper part when mature. Seeds with short-caudate appendages at both ends, ornamented.

Twenty species: from China and Japan to peninsular Malaysia and Indonesia; 18 species (13 endemic) in China.

1a. Pedicel and sometimes ovary densely glandular-setose.
  2a. Inflorescence usually 1-flowered; petiole 0–6 mm ..... 487. *R. subestipitatum*
  2b. Inflorescence 5–7-flowered; petiole 10–17 mm.
    3a. Young shoots, petioles, midrib and abaxial surface of leaf blade sparsely setose or glandular-setose; corolla purplish or pink, 4.5–5 cm ..... 484. *R. henryi*
    3b. Young shoots, petioles, and both surfaces of leaf blade densely setose or glandular-setose; corolla white or reddish, 5–6 cm ..... 486. *R. championiae*
1b. Pedicel glabrous or pubescent; ovary glabrous or pubescent, sometimes with a few glandular setae.
  4a. Pedicel pubescent, tomentose or setose.
    5a. Inflorescence terminal, 10–15(–17)-flowered; leaves scattered along the stems ..... 480. *R. cavaleriei*
    5b. Inflorescence subterminal, 1–8-flowered; leaves in apical clusters.
      6a. Inflorescence 1–3-flowered; pedicel 1.5–2 cm.
        7a. Pedicel yellowish brown pubescent; corolla white with yellowish flecks, 4.5–6 cm ..... 482. *R. hancockii*
        7b. Pedicel sparsely reddish setose; corolla cherry red, 3–4.5 cm ..... 483. *R. tutcherae*
      6b. Inflorescence (3–)4–8-flowered; pedicel 2–3.5 cm.
        8a. Corolla 5–5.5 cm; young shoots glandular-setose ..... 485. *R. dayaoshanense*
        8b. Corolla 3–3.5 cm; young shoots glabrous ..... 471. *R. stamineum*
  4b. Pedicel glabrous.
    9a. Inflorescence (3–)4–8-flowered.
      10a. Pedicel 1–2 cm.
        11a. Calyx lobes minute, triangular, margin usually glabrous; leaves usually in apical clusters ..... 474. *R. truncatovarium*
        11b. Calyx lobes sometimes well-developed, ± linear, margin fimbriate-ciliate or glandular pectinate; leaves often scattered along the stems.
          12a. Petiole ca. 1 cm; corolla ca. 5 cm, pink to purplish ..... 476. *R. westlandii*
          12b. Petiole 1.5–2 cm; corolla 4.5–4.8 cm, white flushed yellow ..... 477. *R. huguangense*
      10b. Pedicel 2.5–3 cm; calyx margin usually glabrous; leaves usually in apical clusters.
        13a. Calyx lobes narrowly triangular to narrowly lingulate, 5–20 mm, often ciliate; ovary truncate at insertion of style, densely yellowish tomentose ..... 481. *R. longilobum*

13b. Calyx reduced to an undulate rim or 5 minute teeth, glabrous; ovary tapering into style, glabrous or densely gray-white-tomentose.
14a. Lateral veins obsolete ..... 471. *R. stamineum*
14b. Lateral veins reticulate and conspicuous on both surfaces ..... 472. *R. feddei*
9b. Inflorescence 1–3-flowered.
15a. Petiole 2–8 mm.
16a. Calyx lobes 5–13 mm; corolla white, 4.5–6 cm ..... 482. *R. hancockii*
16b. Calyx lobes 1–2 mm; corolla pale rose or rose-violet, 2.5–4 cm.
17a. Flower bud scales uniformly gray-white pubescent on outer surface; corolla 3.2–4 cm; capsule apex acuminate ..... 470. *R. taishunense*
17b. Flower bud scales pubescent only on margin and at apex on outer surface; corolla ca. 2.5 cm; capsule apex truncate ..... 479. *R. vaniotii*
15b. Petiole 10–15 mm.
18a. Corolla cherry red, without markings ..... 483. *R. tutcherae*
18b. Corolla pink to white, with a distinct darker blotch on upper lobe.
19a. Ovary tapering into style; pedicel 1–2 cm; inflorescence 2- or 3-flowered ..... 473. *R. moulmainense*
19b. Ovary apex truncate; pedicel 2–3 cm; inflorescence often 1-flowered.
20a. Corolla 5–5.7 cm; flower bud scales gray-white pubescent on outer surface ..... 475. *R. mackenzianum*
20b. Corolla 3.5–4.8 cm; flower bud scales pubescent only on margin and at apex ..... 478. *R. latoucheae*

470. Rhododendron taishunense B. Y. Ding & Y. Y. Fang, Bull. Bot. Res., Harbin 7(2): 27. 1987.

泰顺杜鹃 tai shun du juan

Shrubs or small trees, 2–5 m tall; branches cylindric, setose above. Petiole 2–5 mm, densely setose; leaf blade elliptic-oblong or oblong-lanceolate, 3.5–9 × 1.2–3.2 cm; base cordate; margin slightly revolute, acerose-serrate or acerose-hairy; apex acuminate or caudate-acuminate; both surfaces glabrous; midrib prominent abaxially, impressed and setose adaxially; lateral veins 9–12 pairs, abaxially obscure. Inflorescence subapical, 1-flowered. Pedicel 0.8–1.5 cm, glabrous; calyx shallowly lobed, ca. 2 mm; corolla funnelform, pale rose, 3.2–4 cm; lobes obtuse, oblong, 2–2.5 cm, glabrous; stamens 10, unequal, 1.5–3 cm, filaments pubescent at base; ovary cylindric, ca. 6 mm, glabrous; style slightly exserted, glabrous. Capsule cylindric, 40–45 × ca. 4 mm. Fl. Apr, fr. Sep–Nov.

● Evergreen broad-leaved forests, mountain slopes; 400–600 m. S Zhejiang.

471. Rhododendron stamineum Franchet, Bull. Soc. Bot. France 33: 236. 1886.

长蕊杜鹃 chang rui du juan

Shrubs or small trees, 3–7 m tall; young shoots thin, glabrous. Petioles 8–20 mm, glabrous or shortly glandular-setose; leaf blade elliptic or oblong-lanceolate, 6.5–13 × 2–5.5 cm; base cuneate to subrounded; margin slightly revolute; apex acuminate or obliquely acuminate; abaxial surface rarely white-powdery when dried, glabrous or shortly setose towards base; adaxial surface glabrescent, veins obsolete. Inflorescence subapical, (3–)5–8-flowered; flower buds conical, scales ovate, imbricate, pubescent only on the margin and at the apex. Pedicel 2–2.5 cm, glabrous or grayish tomentose when young; calyx lobes minute, triangular, glabrous; corolla funnelform tapering into narrow tube, white to occasionally pink, the upper lobes with yellow flecks within, 3–3.5 cm, tube ca. 13 mm wide; stamens 10, slender, long-exserted, filaments puberulent in lower part; ovary cylindric, tapering into style, ca. 4 mm, glabrous or densely gray-white-tomentose when young; style 4–5 cm, longer than stamens. Capsule cylindric, slightly curved, apex acuminate, 25–40 mm, glabrous. Fl. Apr–May, fr. Jul–Oct.

● Mixed forests, open forests, forest margins, thickets, mountains; 400–1500 m. Anhui, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shanxi, Sichuan, Yunnan, Zhejiang.

1a. Petiole 17–20 mm, sparsely glandular-setose; leaf blade 9–13 × 3–5.5 cm ..... 471c. var. *gaozhaiense*
1b. Petiole 8–12 mm, glabrous; leaf blade 6.5–8(–10) × 2–3.5 cm.
2a. Pedicel and ovary glabrous ..... 471a. var. *stamineum*
2b. Pedicel and ovary densely gray-white-tomentose when young (mature fruit ± glabrous) ..... 471b. var. *lasiocarpum*

471a. Rhododendron stamineum var. **stamineum**

长蕊杜鹃(原变种) chang rui du juan (yuan bian zhong)

Rhododendron aucubifolium Hemsley; *R. cavaleriei* H. Léveillé var. *chaffanjonii* H. Léveillé; *R. esquirolii* H. Léveillé; *R. pittosporifolium* Hemsley.

Petiole 8–12 mm, glabrous; leaf blade 6.5–8(–10) × 2–3.5 cm; base cuneate; abaxial surface entirely glabrous. Pedicel and ovary glabrous. Fl. Apr–May, fr. Jul–Oct.

● Open forests, thickets; 500–1500 m. Anhui, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shanxi, Sichuan, Yunnan, Zhejiang.

471b. Rhododendron stamineum var. **lasiocarpum** R. C. Fang & C. H. Yang, Acta Bot. Yunnan. 4: 256. 1982.

毛果长蕊杜鹃 mao guo chang rui du juan

Petiole 8–12 mm, glabrous; leaf blade 6.5–8 × 2–3.5 cm;

base cuneate; abaxial surface entirely glabrous. Pedicel and ovary densely gray-white tomentose when young, ± glabrous at maturity. Fl. Apr–May, fr. Jul–Aug.

● Mixed forests, mountains; 400–1500 m. SW Sichuan, SE Yunnan.

471c. Rhododendron stamineum var. **gaozhaiense** L. M. Gao, Acta Bot. Yunnan. 24: 611. 2002.

高寨长蕊杜鹃 gao zhai chang rui du juan

Petiole 17–20 mm, sparsely glandular-setose; leaf blade 9–13 × 3–5.5 cm; base cuneate to subrounded; abaxial surface shortly setose on midrib towards base, otherwise glabrous.

● Mixed forests, forest margins; 600–800 m. Guangxi.

472. Rhododendron feddei H. Léveillé, Repert. Spec. Nov. Regni Veg. 12: 102. 1913.

黔中杜鹃 qian zhong du juan

Shrubs or small trees, 2–4 m; young branches glabrous. Petiole 12–15 mm, glabrous; leaf blade oblanceolate to oblong-lanceolate, 7–11 × 2–3.2 cm; base narrowly cuneate; apex subacuminate; both surfaces glabrous except for the scattered bristles on the midrib below; lateral veins reticulate and conspicuous on both surfaces. Inflorescence subapical, ca. 5-flowered. Pedicel 2.5–3 cm, glabrous; calyx reduced to an undulate rim, glabrous; corolla and stamens not known; ovary glabrous. Capsule narrowly cylindric, 25–30 mm, glabrous.

● C and SE Guizhou.

This species is apparently distinct on account of the stiff bristles on the abaxial surface of the leaf midvein. However, the only known specimen is incomplete.

473. Rhododendron moulmainense J. D. Hooker, Bot. Mag. 82: t. 4904. 1856.

毛棉杜鹃 mao mian du juan

Rhododendron klossii Ridley; *R. leucobotrys* Ridley; ?*R. nematocalyx* I. B. Balfour & W. W. Smith; *R. oxyphyllum* Franchet; *R. pectinatum* Hutchinson; *R. siamense* Diels; *R. stenaulum* I. B. Balfour & W. W. Smith.

Shrubs or small trees, 3–15 m tall; bark gray-brown, not peeling. Petioles stout, 10–15 mm, glabrous; leaf blade leathery, oblong-lanceolate or elliptic-lanceolate, 5–12 × 2.5–5 cm; base cuneate or broadly cuneate; margin revolute; apex acuminate to acute; both surfaces glabrous; lateral veins not reaching margin. Inflorescence subapical, 2- or 3-flowered. Pedicel 1–2 cm, glabrous; calyx lobes 5, shallowly undulate, small, glabrous; corolla narrowly funnelform, white, with a yellow blotch within, 4.3–5.5 cm, tube 15–20 × 3–4 mm in diam., lobes deeply divided, spreading, oblong-obovate, apex entire and rounded; stamens 10, unequal, 3.5–4 cm, slightly shorter than corolla, filaments flat, with silvery-white scurfy pubescence below middle; ovary long-cylindric, tapering into style, 5–10 mm, dark brown, glabrous; style ca. 5 cm, often shorter than corolla, slightly longer than stamens, glabrous. Capsule cylindric, apex acuminate, 35–60 × 4–6 mm; style persistent. Fl. Mar–Apr, fr. Jul–Dec.

Open forests, thickets; 700–1500 m. S Yunnan [NE India, Indonesia, Malaysia, Myanmar, Thailand].

Rhododendron nematocalyx is said to differ in its larger calyx. However, calyx size is in general extremely variable in this section; it is therefore uncertain whether this entity should be treated as a straight synonym of *R. moulmainense* or maintained as a variety of it.

474. Rhododendron truncatovarium L. M. Gao & D. Z. Li, Edinburgh J. Bot. 61: 1. 2004.

平房杜鹃 ping fang du juan

Small trees, 3–7 m; young branches gray, glabrous. Petiole 10–15 mm, glabrous; leaf blade lanceolate or elliptic-lanceolate, 8–13 × 3–5 cm; base cuneate; margin slightly revolute; apex acuminate; both surfaces glabrous; midrib grooved adaxially; lateral veins 10–15-paired, not prominent. Inflorescence umbellate, (2- or)3-flowered. Pedicel 1.3–2 cm, glabrous; calyx lobes 5, broadly triangular, minute, ca. 1 mm, glabrous; corolla broadly funnelform, tapering into well-differentiated tube, pink, 4.5–5 cm, tube 10–15 mm, glabrous; lobes 5, 2.5–3 cm; stamens 10, 2.5–3 cm, glabrous at base, pubescent above; ovary truncate at insertion of style, glabrous; style 2.5–3 cm. Capsule cylindric, 35–50 mm. Fl. Mar–Apr, fr. Sep–Oct.

● Dense or open forests, thickets; 1300–1800 m. Guangxi, SE Yunnan.

475. Rhododendron mackenzianum Forrest, Notes Roy. Bot. Gard. Edinburgh 12: 132. 1920.

长蒴杜鹃 chang shuo du juan

Shrubs or small trees, 3(–12) m tall; bark peeling with a purplish tinge; young shoots slender, glabrous or sparsely setose. Petiole ca. 10 mm, glabrous or sparsely glandular-setose; leaf blade leathery, oblong or oblong-lanceolate, 8–14 × 2.5–4 cm; base cuneate; margin slightly revolute; apex acuminate to obliquely acuminate, uncinate; both surfaces glabrous; midrib prominent abaxially, impressed adaxially; lateral veins 10–15 (–20)-paired, conspicuous on both surfaces, not reaching margin. Inflorescence subapical, mostly 1-flowered; flower bud scales oblong-ovate, gray-white pubescent adaxially. Pedicel 2–2.5 cm, glabrous; calyx undulate, ca. 1 mm, glabrous; corolla narrowly funnel-campanulate, pink or white, with yellowish orange markings on inner surface of upper lobes, 5–5.7 × ca. 5 cm, tube narrowed towards base, ca. 25 mm, both surfaces glabrous; stamens (9 or)10, unequal, included, filaments subglabrous at base; ovary cylindric, truncate at junction with style, ca. 7 mm, black when dried, glabrous; style ca. 4 cm, equaling or shorter than corolla, glabrous. Capsule cylindric, apex truncate, up to 60 × ca. 4 mm; style persistent. Fl. Apr–May, fr. Nov.

Thickets; 2000–2800 m. SE Xizang, W Yunnan [NE Myanmar].

476. Rhododendron westlandii Hemsley, J. Linn. Soc., Bot. 26: 31. 1889.

凯里杜鹃 kai li du juan

Rhododendron kaliense W. P. Fang & M. Y. He; *R. linearicupulare* P. C. Tam; *R. moulmainense* J. D. Hooker var. *calcaratum* G. Z. Li.

Erect shrubs or small trees, 3–5 m tall; branchlets stout, cylindric, pale gray-brown at maturity, red-brown when young, glabrous. Petioles stout, ca. 10 mm. Leaf blade thickly leathery,

long-elliptic or subelliptic to oblong-lanceolate, 5–12(–21) × 2.5–5(–8) cm; base cuneate to rounded; apex acute or with a sickle-shaped acumen; both surfaces glabrous; lateral veins 14–18-paired, becoming conspicuous on both surfaces on drying. Inflorescence terminal, umbellate, 5–6-flowered; peduncle short and stout, ca. 5 mm, glabrous. Pedicel 1–1.5 cm, glabrous; calyx usually obscure, sometimes developed and then lobes membranous, linear, to 17 mm, pubescent, margin sparsely fimbriate-ciliate, apex obtuse or two-forked; corolla funnel-campanulate, white or pinkish to rose, with yellow flecks on upper part of inner surface of lobes, ca. 5 cm, tube ca. 15 mm; lobes obovate or ovate, ca. 3 cm; stamens 10, 3.5–4(–4.5) cm, filaments white-pubescent below middle; ovary tapering into style, ca. 8 mm, glabrous; style stout, slightly longer than stamens, glabrous. Capsule cylindric, sometimes with base curved through almost 90 degrees, 90–100 × ca. 5 mm. Fl. Apr–May, fr. Sep–Dec.

Dense forests, thickets, open areas by rivers, near rocks; 400–1500 m. Fujian, Guangdong, Guangxi, W Guizhou, Hainan, Jiangxi [N Vietnam].

Gao Lianming (pers. comm.) notes that a wider circumscription of *Rhododendron westlandii* is used here than in FRPS (57(2): 355. 1994, where it was treated as a synonym of *R. moulmainense*). Recent herbarium studies indicate that the calyx characters that have been used to separate *R. westlandii* from *R. kaliense* and *R. linearicupulare* are very variable and cannot be reliably used to delimit species.

477. Rhododendron huguangense P. C. Tam, Bull. Bot. Res., Harbin 2(1): 98. 1982

大鳞杜鹃 da lin du juan

Rhododendron hukwangense P. C. Tam.

Shrubs, ca. 3 m tall; young shoots cylindric, gray-brown, glabrous. Petioles stout, 15–20 mm, semicircular, grooved, pubescent abaxially, sparsely glandular-setose adaxially; leaf blade leathery, oblong or oblong-lanceolate, 10–13.5 × 3–4.5 cm; base broadly cuneate or subrounded; margin entire and slightly revolute; apex acuminate; midrib impressed above, prominent abaxially; lateral veins thin, ca. 16-paired, net veins impressed adaxially, obsolete abaxially. Inflorescence terminal, umbellate, 4–5-flowered; flower buds sticky. Pedicel 1.2–1.5 cm, glabrous; calyx lobes usually triangular, 1–2 mm, occasionally linear-subulate, up to 7 mm, margin pectinate with sparse short setae; corolla funnel-campanulate, white to yellowish, 4.5–4.8 cm, tube cylindric, ca. 15 × 4.5 mm, lobes 5, spathulate, ca. 3.3 cm; stamens 10, unequal, 3–4 cm, filaments puberulent below middle; ovary ca. 7 mm, glabrous; style 4–4.2 cm, longer than stamens, glabrous. Capsule not known. Fl. May.

● Forest margins, mountain slopes; 800–1300 m. Guangdong, E Guangxi, S Hunan.

478. Rhododendron latoucheae Franchet, Bull. Soc. Bot. France 46: 210. 1899.

西施花 xi shi hua

Rhododendron amamiense Ohwi; *R. ellipticum* Maximowicz (1888), not Hoffmannsegg (1826); *R. ellipticum* Maximowicz var. *leptosanthum* (Hayata) S. S. Ying; *R. latoucheae* var. *amamiense* (Ohwi) T. Yamazaki; *R. latoucheae* var. *ionanthum* (W. P. Fang) G. Z. Li; *R. leiopodum* Hayata; *R. leptanthum* Hayata (1915), not F. Mueller (1889); *R. leptosanthum* Hayata; *R. tanakae* Hayata; *R. wilsoniae* Hemsley & E. H. Wilson; *R. wilsoniae* var. *ionanthum* W. P. Fang.

Shrubs or small trees, 2–7 m tall; shoots stout. Petioles to 15 mm, glabrous; leaf blade narrowly elliptic-lanceolate oblanceolate or ovate-elliptic, 5–11(–13) × 1.4–5.5 cm; base cuneate to broadly cuneate; margin slightly revolute; apex acuminate; both surfaces glabrous; midrib impressed adaxially, obsolete abaxially; lateral veins net-veined, slightly prominent on both surfaces. Inflorescence subapical, 1(–2)-flowered. Pedicel stout, 2–3 cm, glabrous; calyx lobes obscure or fine and triangular, rarely linear, then to 10 mm, margin and apex finely ciliate; corolla funnelform, pink to white, 3.5–4.8 cm, lobes long-ovate, glabrous, emarginate; stamens 10, included in tube or partly exserted, filaments flat, puberulent below middle; ovary cylindric, truncate below insertion of style, 3.5–8 × 0.2–0.4 mm, dark brown, glabrous; style 4–8 cm, exserted, glabrous. Capsules cylindric, ca. 40 × 4 mm; style deciduous. Fl. Mar–May, fr. Sep–Oct.

Mixed forests, rocky mountain slopes; 100–2700 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Zhejiang [Japan (including Ryukyu Islands)].

Gao Lianming (pers. comm.) notes that field observations indicate that the degree of calyx development and the size of the leaves are variable, even within a single population. There is therefore no justification for maintaining *Rhododendron ellipticum* Maximowicz as distinct from *R. latoucheae* (and anyway the former name cannot be used because it is an illegitimate later homonym).

479. Rhododendron vaniotii H. Léveillé, Repert. Spec. Nov. Regni Veg. 13: 148. 1914.

玫色杜鹃 mei se du juan

Shrubs or small trees; young branches gray, glabrous. Petiole 5–7 mm, glabrous; leaf blade elliptic to oblanceolate, 3–6 × 1–2 cm; base cuneate; margin slightly revolute; apex acuminate; both surfaces glabrous; lateral veins 12–14-paired, conspicuous adaxially, ± obscured abaxially. Inflorescence subapical, 1-flowered. Pedicel ca. 1.5 cm, glabrous; calyx lobes 5, broadly triangular, minute, ca. 1 mm, glabrous; corolla funnelform, rose-violet, ca. 2.5 cm, glabrous; lobes ca. 1.5 cm; stamens 10, ca. 2 cm, filaments pubescent at base; ovary narrowly cylindric, truncate at insertion of style, ca. 8 mm, glabrous. Capsule not known.

● Guizhou.

This species is distinctive on account of its small flowers and leaves. As it is only known from the type specimen, the range in the size of its flowers and leaves is uncertain.

480. Rhododendron cavaleriei H. Léveillé, Bull. Soc. Agric. Sarthe, sér. 2, 31: 48. 1903.

多花杜鹃 duo hua du juan

Rhododendron dentampullum Chun ex P. C. Tam; *R. henryi* Hance var. *pubescens* K. M. Feng & A. L. Chang.

Shrubs or small trees, 2–3(–8) m tall; branchlets thin.

Petiole 9–15 mm, glabrous; leaf blade lanceolate or oblanceolate, 7–10(–15) × 2.5–3 cm; base cuneate or narrowly cuneate; apex acuminate and mucronate; midrib prominent adaxially. Inflorescence terminal, umbellate, 10–15(–17)-flowered. Pedicel 2.5–4 cm, densely gray-pubescent; calyx lobes obscure, rarely linear, pubescent or glabrous; corolla narrowly funnelform, white to rose, ca. 4 cm, tube narrowly cylindric, ca. 10 mm; lobes oblong-lanceolate, 1.9–2.5 cm; stamens 10, slightly shorter than, or as long as the corolla, filaments pubescent below middle; ovary long-ovate, ca. 5 mm, densely white-pubescent; style up to 4.5 cm, longer than stamens, exserted, glabrous. Capsule cylindric, apex acuminate, 30–40(–55) × 3–5 mm, densely brown-pubescent. Fl. Apr–May, fr. Sep–Nov.

● Dense or open forests; 1000–2000 m. Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Yunnan.

481. Rhododendron longilobum L. M. Gao & D. Z. Li, Novon 13: 192. 2003.

凸纹杜鹃 tu wen du juan

Small trees, 6–8 m; young branches gray, glabrous. Petiole 8–15 mm, grooved adaxially, glabrous; leaf blade elliptic to narrowly elliptic, 7–10.5 × 1.8–2.5 cm; base cuneate; margin slightly revolute; apex long-acuminate; both surfaces glabrous; lateral veins 12–16-paired, prominent. Inflorescence subapical, umbellate, 4- or 5-flowered, rachis ca. 5 mm. Pedicel 2–2.5 cm, glabrous; calyx rim with tufts of long weak hairs; lobes narrowly triangular to narrowly lingulate, 5–20 × ca. 1 mm, sometimes minutely ciliate; corolla narrowly funnelform, pale rose, ca. 4.5 cm, tube ca. 10 mm, outer surface glabrous; lobes 3–3.5 × ca. 1 cm; stamens 10, shortly exserted, 3–3.5 cm, filaments puberulent in lower half; ovary narrowly cylindric, truncate at insertion of style, densely yellowish tomentose; style 3–3.5 cm, glabrous. Capsule not known. Fl. May.

● Evergreen broad-leaved forests; 1900–2000 m. SE Yunnan.

This species resembles *Rhododendron cavaleriei,* but differs in the prominent lateral veins of the leaf blade, the longer calyx lobes, and the ovary, which is truncate at the apex.

482. Rhododendron hancockii Hemsley, Bull. Misc. Inform. Kew 1895: 107. 1895.

滇南杜鹃 dian nan du juan

Shrubs or trees, 2–7(–13) m tall; branchlets stout, gray-brown, glabrous. Petiole 6–8 mm, glabrous or glandular-setose; leaf blade obovate or oblong-oblanceolate, 7–13 × 1.5–5 cm, tapering toward the base; margin slightly revolute; sometimes obscurely setose-ciliate; apex shortly acuminate; both surfaces glabrous; lateral veins obsolete abaxially, conspicuously impressed adaxially. Inflorescence subapical, 1(or 2)-flowered. Pedicel ca. 1.5 cm, glabrous or yellowish brown pubescent; calyx lobes polymorphic, lobes triangular or triangular-ovate to linear-lanceolate, or linear, 5–13 mm, pubescent at base on outer surface; corolla broadly funnelform, white, with yellowish flecks, 4.5–6 × ca. 8 cm; tube cylindric, ca. 15 mm, lobes broadly obovate or ovate-elliptic, glabrous or puberulent on upper part near margin within; stamens 10, unequal, shorter than corolla, filaments flat, pubescent below middle; ovary narrowly cylindric, ca. 6 mm, densely yellowish brown pubescent; style 4.5–5 cm, slightly longer than stamens, glabrous. Capsule cylindric, ribbed, apex slightly beaked and pubescent, 30–55 × ca. 7 mm. Fl. Apr–May, fr. Aug–Dec.

● Mixed forests, thickets on mountain slopes; 1100–2000 m. C, N, and W Guangxi, C and SE Yunnan.

1a. Petiole glabrous; pedicel with a yellowish brown pubescence; leaf blade 2.5–5 cm wide; calyx lobes triangular-ovate to linear-lanceolate, to 9 mm ..... 482a. var. *hancockii*
1b. Petiole glandular-setose; pedicel glabrous; leaf blade 1.5–3 cm wide; calyx lobes linear, 5–13 mm ..... 482b. var. *longisepalum*

482a. Rhododendron hancockii var. **hancockii**

滇南杜鹃(原变种) dian nan du juan (yuan bian zhong)

Petiole glabrous; leaf blade 8–13 × 2.5–5 cm. Pedicel yellowish brown pubescent; calyx lobes triangular-ovate to linear-lanceolate, to 9 mm. Fl. Apr–Jun, fr. Jul–Dec.

● Mixed forests, thickets on mountain slopes; 1100–2000 m. C, N, and W Guangxi, C and SE Yunnan.

482b. Rhododendron hancockii var. **longisepalum** R. C. Fang & C. H. Yang, Acta Bot. Yunnan. 23: 294. 2001.

长萼滇南杜鹃 chang e dian nan du juan

Petiole glandular-setose; leaf blade 7–10 × 1.5–3 cm. Pedicel glabrous; calyx lobes linear, 5–13 mm. Fl. Apr.

● Mixed forests; 1500–1600 m. SE Yunnan.

483. Rhododendron tutcherae Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1910: 116. 1910.

香缅树杜鹃 xiang mian shu du juan

Trees, up to 15 m tall; branches slender, sparsely setose and pubescent when young, shortly setose or glabrescent when mature. Petiole stout, ca. 10 mm, sparsely setose; leaf blade thickly leathery, narrowly oblanceolate or oblong-lanceolate, 8–13 × 1.8–3 cm; base cuneate or broadly cuneate; margin slightly revolute; apex shortly caudate-acuminate; abaxial surface entirely glabrous or sparsely short-setose; midrib and lateral veins impressed above, prominent below. Inflorescence subapical, 1–3-flowered, rachis ca. 4 mm, puberulent. Pedicel 1.5–2 cm, sparsely reddish setose or glabrous; calyx shallowly lobed, small; corolla narrowly funnelform, cherry-red, 3–4.5 cm, tube subcylindrical, ca. 10 mm; lobes spreading, elliptic, ca. 2.5 cm, apex obtuse or rounded; stamens 10, unequal, slightly shorter than corolla, filaments puberulent below; ovary cylindric, truncate at apex ca. 9 mm, glabrous or upper part coarsely appressed-puberulent; style glabrous. Capsule cylindric, apex truncate, 30–40 × 5–6 mm. Fl. Mar–Apr, fr. Sep–Nov.

Evergreen broad-leaved forests, subalpine forests, woods; 1200–2000 m. S Yunnan [N Vietnam].

The label of the type specimen describes the corolla as violet.

1a. Abaxial leaf surface glabrous ..... 483c. var. *glabrifolium*
1b. Abaxial leaf surface sparsely short-setose.

2a. Ovary coarsely puberulent; pedicel sparsely setose or glabrous ..... 483a. var. *tutcherae*
2b. Ovary and pedicels glabrous ..... 483b. var. *gymnocarpum*

483a. Rhododendron tutcherae var. **tutcherae**

香缅树杜鹃(原变种) xiang mian shu du juan (yuan bian zhong)

Leaf blade abaxial surface sparsely short-setose. Pedicel sparsely setose or glabrous; ovary with upper part coarsely appressed-puberulent.

● Subalpine forests; 1200–2000 m. SE Yunnan.

483b. Rhododendron tutcherae var. **gymnocarpum** A. L. Chang ex R. C. Fang, Acta Bot. Yunnan. 4: 257. 1982.

光果香缅树杜鹃 guang guo xiang mian shu du juan

Leaf blade abaxial surface sparsely short-setose. Pedicel glabrous; ovary glabrous.

● Woods; ca. 1800 m. SE Yunnan.

483c. Rhododendron tutcherae var. **glabrifolium** L. M. Gao & D. Z. Li, Acta Bot. Yunnan. 23: 293. 2001.

光叶香缅树杜鹃 guang ye xiang mian shu du juan

Leaf blade abaxial surface glabrous. Pedicel sparsely setose or glabrous; ovary with upper part coarsely appressed-puberulent.

Evergreen broad-leaved forests; 1900–2000 m. S Yunnan [N Vietnam].

484. Rhododendron henryi Hance, J. Bot. (Morot) 19: 243. 1881.

弯蒴杜鹃 wan shuo du juan

Shrubs or small trees, 3–6 m tall; branches slender, gray-brown, glabrous, setose or glandular-setose. Petioles 10–12 mm, glabrous or sparsely (sometimes glandular) setose; leaf blade elliptic-ovate or oblong-lanceolate, 5.5–11 × 1.5–3.5 cm; base cuneate or narrowly cuneate; apex shortly acuminate; abaxial surface glabrous though sometimes setose on midrib. Inflorescence terminal, umbellate, 5–6-flowered; peduncle ca. 5 mm, glabrous. Pedicel 2–2.5 cm, densely glandular setose; calyx lobes unequal, triangular, rarely linear, 3(–12) mm, pubescent near base on outer surface, margin glandular hairs, apex with toothed lobes; corolla funnel-campanulate, purplish or pink, 4.5–5 cm, tube tapering towards the base, 10–13 mm; lobes spreading, oblong-obovate, 3–3.5 cm, conspicuously veined, apex puberulent; stamens 10, shorter than corolla, filaments flat, densely pubescent below; ovary cylindric, ca. 5 mm, glabrous or densely glandular-setose; style as long as corolla or slightly exserted, glabrous. Capsule cylindric, with midrib, slightly curved, 30–50 mm. Fl. Mar–Apr, fr. Sep–Dec.

● Forests; 500–1000 m. Fujian, Guangdong, Guangxi, Jiangxi, Taiwan, Zhejiang.

1a. Young shoots and ovary setose or glandular-setose ..... 484a. var. *henryi*
1b. Young shoots and ovary glabrous ..... 484b. var. *dunnii*

484a. Rhododendron henryi var. **henryi**

弯蒴杜鹃(原变种) wan shuo du juan (yuan bian zhong)

Rhododendron ciliatopedicellatum Hayata; *R. shiwandashanense* P. C. Tam.

Young shoots, petioles, and abaxial surface of leaf midrib sparsely setose or glandular-setose. Ovary and pedicel glandular-setose.

● Forests; 500–1000 m. Fujian, Guangdong, Guangxi, Jiangxi, Taiwan, Zhejiang.

484b. Rhododendron henryi var. **dunnii** (E. H. Wilson) M. Y. He in L. C. Hu & M. Y. Fang, Fl. Reipubl. Popularis Sin. 57(2): 365. 1994.

秃房弯蒴杜鹃 tu fang wan shuo du juan

Rhododendron dunnii E. H. Wilson, J. Arnold Arbor. 6: 170. 1925.

Young shoots, petioles, and leaf midrib glabrous. Ovary and pedicel glabrous.

● Fujian, Guangdong, Guangxi, Jiangxi, Zhejiang.

485. Rhododendron dayaoshanense L. M. Gao & D. Z. Li, Novon 13: 189. 2003.

大姚山杜鹃 da yao shan du juan

Small trees, 3–4 m; young branches slender, glandular-setose. Petiole 8–15 mm, grooved adaxially, glandular-setose; leaf blade narrowly oblanceolate or oblong-lanceolate, 8–13 × 1.8–2.5 cm; base cuneate; margin slightly revolute; apex acuminate; abaxial surface mostly sparsely short-setose, denser on midrib; adaxial surface glabrous; lateral veins 14–18-paired. Inflorescence subapical, 4- or 5-flowered, rachis ca. 5 mm. Pedicel 2.5–3.5 cm, densely gray-pubescent and sparsely glandular-setose; calyx with undulate rim; lobes triangular, to 1 mm, glabrous; corolla funnelform, pale rose, with a yellow blotch on upper lobe, 5–5.5 cm, tube 15–20 mm, outer surface glabrous; lobes 5, oblong-obovate to elliptic, 3.5–4 cm; stamens 10, shortly exserted, filaments puberulent below; ovary oblong-cylindric, densely yellowish tomentose; style 4–4.5 cm, glabrous. Capsule not known. Fl. May.

● Mixed forest margins; 1100–1200 m. E Guangxi.

This species may be a hybrid between *Rhododendron cavaleriei* and *R. championiae* as it occurs with both these species and shares some characteristics with both.

486. Rhododendron championiae Hooker, Bot. Mag. 77: t. 4609. 1851 [*"championae"*].

刺毛杜鹃 ci mao du juan

Rhododendron championiae var. *ovatifolium* P. C. Tam.

Shrubs, 0.5–5 m tall; branches pubescent, also spreading glandular-setose. Petiole 12–17 mm, densely glandular-setose; leaf blade papery, elliptical, oblong-lanceolate or ovate, 7–17.5 × 2–5 cm; base cuneate, rarely subrounded; margin densely

long setose, also with a few glandular hairs; apex acuminate; abaxial surface pubescent and setose, with more setae on midrib and lateral veins; adaxial surface sometimes bullate, sparsely short setose. Inflorescence subapical, 5–7-flowered, rachis 4–7 mm, glabrous; flower buds sticky. Pedicel ca. 2 cm, to 2.5 cm in fruit, pubescent and glandular-setose; calyx lobes narrow, to 12 mm, densely ciliate; corolla narrowly funnelform, white or reddish, 5–6(–7) cm; lobes oblong or oblong-lanceolate, 2.8–3.5 cm; stamens 10, unequal, shorter than corolla, filaments slender, pubescent below middle; ovary oblong, ca. 6 mm, densely yellowish brown setose; style longer than stamens, exserted, glabrous to sparsely pubescent near the base. Capsule cylindric, 6-grooved, slightly curved, up to 55 mm, densely gland-tipped setose and pubescent. Fl. Apr–May, fr. Jul–Nov.

● Open valley forests, mountain slopes; 500–1300 m. Fujian, Guangdong, Guangxi, Hunan, Jiangxi, Zhejiang.

Rhododendron championiae var. *ovatifolium* is not now considered worthy of formal recognition.

487. Rhododendron subestipitatum Chun ex P. C. Tam, Bull. Bot. Res., Harbin 2(4): 90. 1982 [*"subespitatum"*].

单花无柄杜鹃 dan hua wu bing du juan

Small shrubs; branches gray-brown, glabrous. Petiole 0–6 mm, glandular-setose; leaf blade subleathery, oblong-lanceolate, 7.5–13.5 × 2–4.5 cm; base broadly cuneate to subcordate; margin ciliate-setose; apex shortly acuminate; both surfaces glabrous at maturity except abaxially for sparsely setose; lateral veins ca. 14-paired. Inflorescence usually 1-flowered; flower buds not sticky. Pedicel ca. 1.7 cm, with brown glandular-villose hairs; calyx obsolete; lobes undulate; corolla campanulate, pink, ca. 5.5 cm; tube ca. 25 mm; lobes ca. 3 cm; stamens 10, unequal, 4.7–5.2 cm, filaments puberulent in lower third; ovary cylindric, ca. 8 mm, fulvous-puberulent; style ca. 4.7 cm. Capsule not known. Fl. Mar.

● Cliffs. Guangdong.

This species was treated as a synonym of *Rhododendron championiae* in FRPS (57(2): 365. 1994); it may be distinguished by the usually 1-flowered inflorescence, the non-sticky buds, the shorter pedicels (ca. 5 mm), and the pink corolla. The specific epithet was misspelled *"subespitatum"* on p. 90 of the protologue, but was spelled correctly in the caption of the line drawing on p. 97.

7. Rhododendron subg. Pentanthera (G. Don) Pojarkova in Schischkin & Bobrov, Fl. URSS 18: 57. 1952.

羊踯躅亚属 yang zhi zhu ya shu

He Mingyou (何明友); David F. Chamberlain

Rhododendron sect. *Pentanthera* G. Don, Gen. Hist. 3: 846. 1834.

Shrubs, erect, rarely treelike, deciduous; new leafy shoots from axils of leaves of past season; young shoots sometimes verticillate, not scaly, setose, pubescent or glabrous. Winter buds with many imbricate scales; branches and leaves arising from lower part of buds. Leaves scattered or verticillate. Leaf blade not scaly. Inflorescence terminal, arising from an apical bud on the previous year's shoots, shortly racemose-umbellate, several- to many-flowered. Calyx usually small, rarely up to 6 mm; corolla funnel-campanulate, or rotate- to tubular-campanulate, tube ca. as long as, or markedly shorter than the lobes, sparsely pubescent on outer surface, often with glands, or glabrous, with or without flecks; stamens 5(–10), included or exserted; filaments puberulent below; ovary 5-locular, pubescent setose or glandular; style glabrous. Capsule with woody carpopodium.

About 24 species: mostly in North America, also in E and SW Asia and E and EC Europe; two species in China.

1a. Corolla with unicellular hairs on outer surface; stamens 5; leaves scattered along branches ..... 1. *R.* sect. *Pentanthera*
1b. Corolla glabrous on outer surface; stamens 10; leaves in verticels of 5–7 or more at apex of branches ... 2. *R.* sect. *Sciadorhodion*

1. Rhododendron sect. Pentanthera G. Don, Gen. Hist. 3: 846. 1834.

五花药组 wu hua yao zu

Shrubs, deciduous. Leaves sparse. Calyx usually small; corolla funnelform, tube ca. as long as or slightly longer than lobes; stamens 5, exserted; ovary strigose or setose, often with glands; style glabrous or pubescent below.

Eighteen or nineteen species: mostly in North America, one species in SW Asia and E and EC Europe, one species in China and Japan.

488. Rhododendron molle (Blume) G. Don, Gen. Hist. 3: 846. 1834 subsp. **molle**

羊踯躅 yang zhi zhu

Azalea mollis Blume, Catalogus, 44. 1823; *A. sinensis* Loddiges; *Rhododendron sinense* (Loddiges) Sweet.

Shrubs, 0.5–2 m tall; branches densely gray-white-pubescent, also sparsely setose when young. Petiole 2–6 mm, puberulent and ± setose; leaf blade papery, oblong to oblong-lanceolate, 5–11 × 1.5–3.5 cm; base cuneate; margin ciliate; apex obtuse and mucronate; abaxial surface densely gray-white-pubescent, yellow-brown setose along midrib; adaxial surface sparsely to densely puberulent when young. Inflorescence terminal, racemose-umbellate: flowers opening before or with the leaves; many-flowered. Pedicel 1–2.5 cm, pubescent and sparsely setose; calyx lobes small, rounded, pubescent and setose-ciliate; corolla broadly funnelform, yellow or golden yellow, with dark red flecks on lobes, ca. 4.5 × 5–6 cm; tube cylindric, tapering towards base, ca. 26 mm wide, outer surface puberulent; lobes 5, elliptic or ovate-oblong, ca. 2.8 cm, puberulent on outer surface; stamens 5, unequal; filaments flat, puberulent below; ovary conical, ca. 4 mm, densely gray-white-pubescent, also sparsely setose; style to 6 cm, glabrous. Capsule conical-cylindric, 5-ribbed, 25–35 mm, puberulent and sparsely

setose. Fl. Mar–May, fr. Jul–Aug.

● *Pinus* forests, thickets on mountain slopes, exposed grassy hillsides, ridges; near sea level to 2500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang.

Kron (Edinburgh J. Bot. 50: 279. 1993) treated *Rhododendron japonicum* A. Gray as *R. molle* subsp. *japonicum* (A. Gray) Kron. This taxon differs from subsp. *molle* in its more densely hairy fruit and yellow to orange-red flowers. It is restricted to Japan.

2. Rhododendron sect. **Sciadorhodion** Rehder & E. H. Wilson, Monogr. Azaleas, 79. 1921.

十花药组 shi hua yao zu

Shrubs or small trees, deciduous. Leaves in whorls of 5–7 or more at tips of branches. Calyx usually small; corolla rotate-funnelform, tube much shorter than lobes; stamens 10, included or slightly exserted; ovary and lower part of style glandular-hairy.

Three or four species: China, Japan, Korea, E Russia; one species in China.

There is good DNA evidence to suggest that *Rhododendron* sect. *Sciadorhodion* is not related to *R.* sect. *Brachycalyx,* or indeed to *R.* subg. *Tsutsusi*. The subverticillate leaves that are common to both are outweighed by a range of other morphological and anatomical differences.

489. Rhododendron schlippenbachii Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 15: 226. 1871.

大字杜鹃 da zi du juan

Azalea schlippenbachii (Maximowicz) Kuntze.

Shrubs, deciduous, 1–4.5 m tall; young shoots densely glandular-hairy. Petiole 2–4 mm, setose or glandular-hairy; leaf blade papery, obovate or broadly obovate, 4.5–7.5 × 2.5–4.5 cm; abaxial surface glandular-setose along midrib; adaxial surface sparsely glandular-hairy and puberulent. Inflorescence terminal, umbellate, 3–6-flowered: flowers appearing before or with the leaves. Pedicel ca. 1.2 cm, densely glandular-hairy; calyx lobes ovate-elliptic, 1.5–7 mm, outer surface and margin glandular hairy; corolla rotate-funnelform, white to pink or rose, the upper 3 lobes with red-brown flecks, 2.7–3.2 cm; tube ca. 9 mm, outer surface puberulent; lobes 5, broadly obovate; stamens 10, unequal, partly exserted, filaments flat, puberulent below the middle; ovary ovoid, densely glandular-hairy; style longer than stamens, shortly glandular-hairy below. Capsule long-ovoid, dark brown, to 17 mm, densely glandular-hairy. Fl. May, fr. Jun–Sep.

Broad-leaved forests, thickets; 400–1500 m. S Liaoning, Nei Mongol [Japan, Korea, E Russia].

8. Rhododendron subg. **Tsutsusi** (Sweet) Pojarkova in Schischkin & Bobrov, Fl. URSS 18: 55. 1952.

映山红亚属 ying shan hong ya shu

He Mingyou (何明友); David F. Chamberlain

Rhododendron sect. *Tsutsusi* Sweet, Brit. Fl. Gard., ser. 2, 2: t. 117. 1831.

Shrubs, sometimes dwarf, deciduous or with 2 types of leaves: deciduous summer leaves and persistent winter leaves; new foliage shoots from same terminal buds as flowers, enclosed within the same bud scales; young shoots not scaly, usually with red-brown, often strap-shaped hairs that may be spreading or appressed, gland-tipped, or setose to villous, rarely glabrous. Leaf blade not scaly, often coarsely appressed-hairy or pubescent. Inflorescence terminal, umbellate, 1- to many-flowered. Calyx usually small; corolla funnelform, rotate-campanulate, or funnelform-campanulate; tube conspicuous; lobes 5, white to rose, purple or red, often with flecks, glabrous, rarely glandular-hairy; stamens 5–10(–12), equal or unequal; ovary 5-locular, often pubescent or setose or glandular-hairy. Capsule ovoid, conical or conical-ovoid, coarsely appressed-hairy, villous or glabrescent.

About 115 species: E and SE Asia, mostly in China and Japan, extending south to Malaysia, Vietnam, and the Philippines; 81 species (75 endemic) in China.

1a. Branchlets glabrous or if hairy, then pilose or villous; leaves in verticels of 2–3 at tips of branches ..... 1. *R.* sect. *Brachycalyx*
1b. Branchlets and leaves with flat and red-brown coarse appressed hairs or setae that are sometimes gland-tipped, or spreading-hairy.
  2a. Leaves rarely ± persistent, sometimes dimorphic with deciduous summer leaves, always scattered along the stems ..... 2. *R.* sect. *Tsutsusi*
  2b. Leaves often persistent, in verticels of 2–3 at tips of branches, scattered only along unusually vigorous branches ..... 3. *R.* sect. *Tsusiopsis*

1. Rhododendron sect. **Brachycalyx** Sweet, Brit. Fl. Gard., ser. 2, 1: t. 95. 1831.

轮生叶组 lun sheng ye zu

Low shrubs, deciduous, rarely evergreen, branchlets subverticillate, glabrous or villous. Leaf blade villous or silky-pubescent, glabrescent. Inflorescence 1- to many-flowered; corolla rotate-campanulate or rotate-funnelform, pale rose to purple or red, rarely

white, often with flecks within and glabrous on outer surface; stamens 5–10, unequal; ovary villous and/or glandular. Capsules oblong-ovoid to cylindric, rarely conical-ovoid.

About 23 species: E and SE Asia, mostly in Japan; four species (all endemic) in China.

1a. Ovary and capsule glabrous; leaves abaxially with lateral veins pubescent ..... 492. *R. huadingense*
1b. Ovary and capsule densely villous and strigose; leaves abaxially with lateral veins not pubescent.
  2a. Leaf blade ovate, 2–3(–5.5) cm; petiole usually ca. 2 mm, densely ferruginous-pubescent; corolla lilac-purple; pedicel slightly curved ..... 490. *R. farrerae*
  2b. Leaf blades elliptic, ovate-lanceolate or ovate-rhomboidal, 3.5–7.5 cm; petiole 5–7 mm, glabrescent or sparsely pilose; corolla pink or purplish red; pedicel erect.
    3a. Pedicels densely softly yellow-brown-hairy; leaf margin entire or rarely serrate ..... 491. *R. mariesii*
    3b. Pedicels densely golden-strigose and stipitate-glandular; leaf margin obscurely crenulate ..... 493. *R. chilanshanense*

490. Rhododendron farrerae Sweet, Brit. Fl. Gard., ser. 2, 1: t. 95. 1831.

丁香杜鹃 ding xiang du juan

Azalea farrerae (Sweet) K. Koch; *A. squamata* Lindley; *Rhododendron cinereoserratum* P. C. Tam; *R. farrerae* var. *leucotrichum* Franchet.

Shrubs, deciduous, 1.5–3 m tall; branches short and firm, ferruginous-villous, glabrescent. Petioles ca. 2 mm, densely ferruginous-pubescent; leaf blade subleathery, ovate, 2–3(–5.5) × 1–2 cm; base rounded; margin ciliate; apex obtuse, mucronate; midrib glabrous, or coarse ferruginous-strigose on both surfaces at base. Inflorescence terminal, 1- or 2-flowered, flowers opening before leaves. Pedicel ca. 0.6 cm, to 1 cm and curved in fruit, densely red-brown-pubescent or villous; calyx inconspicuous, lobes densely ferruginous villose; corolla rotate-funnelform, lilac-purple, with purple-red flecks, 2–3 × 3.8–5 cm; tube short, narrowly cylindric; lobes spreading, margin undulate, glabrous; stamens 8–10, unequal, shorter than corolla, filaments glandular-hairy below; ovary ovoid, densely red-brown-villous; style curved, glabrous. Capsule cylindric, ca. 10 mm, densely ferruginous-pubescent. Fl. May–Jun, fr. Jul–Aug.

● Dense mountain forests; 800–2100 m. Chongqing, Fujian, Guangdong, Guangxi, Hunan, Jiangxi.

Rhododendron cinereoserratum is better treated as a synonym of *R. farrerae,* not of *R. mariesii* as was given in FRPS (57(2): 372. 1994).

491. Rhododendron mariesii Hemsley & E. H. Wilson, Bull. Misc. Inform. Kew 1907: 244. 1907.

满山红 man shan hong

Rhododendron daiyuenshanicum P. C. Tam, nom. illeg. superfl.; *R. daiyunicum* P. C. Tam; *R. farrerae* Sweet var. *mediocre* Diels; *R. gnaphalocarpum* Hayata; *R. shojoense* Hayata; *R. umbelliferum* H. Léveillé.

Shrubs, deciduous, 1–3 m tall; branches verticillate, softly yellowish-brown hairy, glabrescent. Petiole 5–7 mm, glabrescent; leaf blade papery to almost leathery, elliptic, ovate-lanceolate or triangular-ovate, 4–7.5 × 2–4 cm; base obtuse or subrounded; margin slightly revolute; apex acute and mucronate; both surfaces yellowish brown-villous, glabrescent, rarely abaxial surface thinly persistently floccose. Inflorescence usually 2-flowered: flowers appearing before the leaves. Pedicel 0.7–1 cm, densely softly yellow-brown hairy; calyx shallowly lobed, densely softly yellow-brown hairy; corolla funnelform, purplish red, with purple-red flecks on upper lobes, 3–3.5 cm; tube ca. 4 mm in diam.; lobes deeply divided, oblong, both surfaces glabrous; apex obtuse and rounded; stamens 8–10, unequal, shorter than, or as long as the corolla, filaments flat, glabrous; ovary ovoid, densely yellow-brown villous; style longer than stamens, glabrous. Capsule ellipsoid-ovoid, 6–9(–18) mm, densely shiny-brown-villous. Fl. Apr–May, fr. Jun–Nov.

● Open forests, submontane regions; 600–1500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hebei, Hubei, Hunan, Jiangsu, Jiangxi, Shanxi, Sichuan, Taiwan, Zhejiang.

Rhododendron daiyunicum is probably a distinct species. The name *R. daiyuenshanicum* was published a year later based on the same type.

Specimens collected in Hubei by Henry were referred by Diels (Bot. Jahrb. Syst. 29: 513. 1900) to *Rhododendron farrerae* var. *weyrichii* (Maximowicz) Diels. This species (*R. weyrichii* Maximowicz) is exclusively Japanese. The Chinese specimens cited by Diels were mentioned in the protologue of *R. mariesii,* and one is probably the type of the latter name.

492. Rhododendron huadingense B. Y. Ding & Y. Y. Fang, Bull. Bot. Res., Harbin 10(1): 31. 1990.

华顶杜鹃 hua ding du juan

Shrubs, 1–4 m; branches of present year glabrous. Petiole ca. 10 mm, strigose and pubescent; leaf blade papery, ovate, ovate-elliptic, or elliptic, 6–10 × 3–6 cm; base broadly cuneate to rounded; margin serrulate, stoutly ciliate; apex acute; both surfaces yellowish pubescent, glabrescent; abaxial surface with lateral veins gray-tomentose; midrib impressed adaxially; lateral veins 10–12-paired. Inflorescence 2–4-flowered. Pedicel 1–2 cm, densely glandular-hairy; calyx small, glandular-hairy; corolla funnelform, pale purple or purplish red, upper lobes with purple spots at base, 4.5–5 cm, lobes 5, elliptic, 3–3.5 cm; stamens 10, 3–4.5 cm, glabrous; ovary ovoid, glabrous; style as long as corolla. Capsule ovoid, ca. 10 × 8 mm, glabrous. Fl. Apr, fr. Sep.

● 700–1000 m. Zhejiang.

This species differs from *Rhododendron mariesii* in the gray-tomentose lateral veins on the abaxial surface of the leaves, in the stipitate-glandular pedicels, and in the glabrous ovary and capsule.

493. Rhododendron chilanshanense Kurashige, Edinburgh J. Bot. 56: 75. 1999.

棲兰山杜鹃 qi lan shan du juan

Shrubs, 1–3 m; young branches with sparse weak hairs. Petiole 8–10 mm, sparsely spreading-pilose; leaf blade papery, ovate to ovate-rhomboid, 3.5–4.5 × 1.5–2 cm; base broadly cuneate; margin undulate or minutely crenulate, pilose towards base; apex bluntly acute; abaxial surface glabrous; adaxial surface sparsely long-pilose; lateral veins 6–8-paired. Inflorescence 2- or 3-flowered, flowers appearing with leaves. Pedicel ca. 1 cm, densely golden-strigose and glandular-hairy; calyx ca. 1 mm, densely strigose; corolla open-funnelform, pink, 2–2.5 cm, lobes 5, elliptic, 1.2–1.5 cm; stamens 10, ca. 2.5 cm, exserted; ovary densely golden-strigose; style ca. 3 cm, glabrous. Capsule not known. Fl. May.

● Mixed forests; 1600–1700 m. Taiwan.

2. Rhododendron sect. **Tsutsusi** Sweet, Brit. Fl. Gard., ser. 2, 2: t. 117. 1831.

映山红组 ying shan hong zu

Much-branched shrubs or low shrubs, deciduous to semievergreen; branchlets densely coarsely red-brown strigose, hairs flat, or with sparse villi, spreading setae or glandular hairs. Leaf blade often densely red-brown coarsely strigose, rarely glabrescent. Inflorescence terminal, umbellate, 1- to many-flowered; corolla funnelform or funnel-campanulate, tube cylindric, red to purple-red, pink or white, glabrous or rarely with glandular hairs on outer surface; stamens 5 or 10(–12), equal or unequal; filaments with soft hairs below, rarely glabrous; ovary 5-celled, coarsely strigose, occasionally with glandular hairs. Capsule conical or conical-ovoid, coarsely strigose or glabrescent.

About 85 species: mostly in E Asia, from Japan and Korea through China to Vietnam and the Philippines; 76 species (71 endemic) in China.

Rhododendron pinetorum P. C. Tam (Bull. Bot. Res., Harbin 2(1): 93. 1982), described from Hunan, is distinctive. However, its affinities remain uncertain because the type specimen lacks flowers.

1a. Stamens (6–)7–10.
  2a. Style with hairs at base.
    3a. Stamens exserted from corolla.
      4a. Leaf blade broadest below middle, 0.5–1.9 cm wide; calyx lobes coarsely yellowish brown silky strigose ..... 497. *R. rubropilosum*
      4b. Leaf blade broadest above middle, 2–3 cm wide; calyx lobes sparsely pubescent ..... 499. *R. lasiostylum*
    3b. Stamens shorter than corolla.
      5a. Leaf blade linear-lanceolate or linear-oblanceolate to obovate; stamens 10; corolla crimson to dark red, 3.5–4 cm, lobes ovate or long-ovate ..... 494. *R. kanehirae*
      5b. Leaf blade oblong to oblong-obovate or elliptic to elliptic-ovate; stamens (5–)6–10; corolla pink or purplish, 1–3.2 cm.
        6a. Corolla 1–1.5(–2) cm; stamens 9 or 10 ..... 505. *R. taiwanalpinum*
        6b. Corolla 3–3.2 cm; stamens (5–)6–10.
          7a. Young shoots gray-white silky strigose; abaxial leaf surface coarsely brown-strigose; stamens 7 ..... 495. *R. tenuilaminare*
          7b. Young shoots blackish-brown-strigose; abaxial leaf surface densely ferruginous-silky-strigose; stamens (5–)6–10 ..... 496. *R. strigosum*
  2b. Style glabrous.
    8a. Leaf blade 0.7–1.8 cm; corolla ca. 1.5 cm ..... 503. *R. noriakianum*
    8b. Leaf blade 2–7(–8); corolla 2.2–5.2 cm.
      9a. Stamens shorter than or as long as the corolla.
        10a. Stamens 7–10, some as long as the corolla; corolla 1.8–2.8 cm.
          11a. Corolla ca. 2.8 cm; inflorescence 4–6-flowered; leaf blade with lateral veins 4–5-paired ..... 507. *R. subflumineum*
          11b. Corolla 1.8–2 cm; inflorescence 2–4-flowered; leaf blade with lateral veins ca. 3-paired ..... 508. *R. linguiense*
        10b. Stamens 10, shorter than corolla; corolla 3–5.2 cm.
          12a. Calyx lobes 2–2.5 mm; corolla 3–3.5 cm.
            13a. Leaf blade ovate to ovate-oblong, or oblong-lanceolate; calyx triangular-ovate, ca. 2.5 mm; corolla ca. 3 cm, lobes oblong; stamens slightly shorter than corolla ..... 501. *R. longiperulatum*
            13b. Leaf blade ovate to oblong or oblanceolate to broad-elliptic; calyx lobes broadly elliptic to ovate, ca. 2 mm; corolla ca. 3.5 cm, lobes obovate; stamens half as long as corolla ..... 502. *R. nakaharae*
          12b. Calyx lobes 3–12 mm; corolla 4–5.2 cm.
            14a. Leaf blade linear-lanceolate to narrowly lanceolate, 0.3–1.1 cm wide; pedicel densely brown strigose ..... 500. *R. hainanense*
            14b. Leaf blade ovate to oblong, ovate-oblong or oblong-lanceolate, 1–5 cm wide; pedicel yellowish brown villous or glandular setose.
              15a. Young shoots and leaves with spreading flat and red-brown glandular hairs, also pubescent;

calyx lobes triangular-ovate to ovate-lanceolate, 3–8 mm; corolla 4–4.8 cm ..... 504. *R. oldhamii*
15b. Young shoots and leaves with coarse appressed hairs; calyx lobes lanceolate, ca. 12 mm; corolla 4.8–5.2 cm ..... 506. *R.* ×*pulchrum*
9b. All stamens as long as or longer than corolla.
16a. Stamens as long as corolla.
17a. Corolla reddish, yellowish when dried, without purple flecks; stamens 8 ..... 511. *R. octandrum*
17b. Corolla red, rose or pink with dark red flecks, 2.2–4 cm; stamens 10.
18a. Corolla ca. 2.2 cm, dark purple-red to pink, lobes oblong ..... 509. *R. atrovirens*
18b. Corolla 3.5–4 cm, scarlet red, lobes obovate ..... 510. *R. simsii*
16b. Stamens longer than corolla.
19a. Corolla white, 3–4.5 cm; calyx lobes ca. 12 mm, with glandular hairs; young shoots densely villous, mixed with fewer glandular hairs ..... 512. *R. mucronatum*
19b. Corolla dark red, purple or dark blue, 2.2–3 cm; calyx lobes to 3.5 mm; young shoots variously hairy but not glandular.
20a. Corolla dark blue, 2.2–2.5 cm; young shoots with appressed hairs ..... 513. *R. longifalcatum*
20b. Corolla dark red or purple, 2.5–3 cm; young shoots with spreading or crisped hairs.
21a. Corolla dark red; young shoots densely red-brown short-setose and sparsely spreading long-hairy; stamens partly exserted ..... 514. *R. rufohirtum*
21b. Corolla purple; young shoots densely yellowish brown crisped villous; stamens conspicuously exserted ..... 515. *R. pulchroides*
1b. Stamens (4–)5(–6).
22a. Young shoots with gland-tipped hairs or setae, often also with non-glandular hairs.
23a. Style glandular.
24a. Corolla 1.2–1.9 cm, glabrous within; style 2.4–2.8 cm.
25a. Leaf blade 10–18(–20) cm; inflorescence 10–15-flowered; corolla red, 1.2–1.4 cm ..... 560. *R. yaoshanicum*
25b. Leaf blade 2.5–7(–10) cm; inflorescence 5–6-flowered; corolla purple-red, 1.7–1.9 cm ..... 564. *R. jinxiuense*
24b. Corolla 1–1.2 cm, puberulous within; style 1.2–2 cm.
26a. Inflorescence 5–12-flowered; style 1.8–2 cm, longer than stamens ..... 559. *R. jinpingense*
26b. Inflorescence 3–5-flowered; style ca. 1.2 cm, shorter than or as long as stamens.
27a. Young shoots, petiole and pedicel with long-setae and short glandular hairs; petiole 4–10 mm; pedicel 8–10 mm ..... 541. *R. rhuyuenense*
27b. Young shoots, petiole and pedicel setose-strigose; petiole ca. 3 mm; pedicel 5–7 mm ..... 545. *R. hunanense*
23b. Style glabrous.
28a. Corolla red, 1.2–1.8 cm ..... 519. *R. taipaoense*
28b. Corolla purple-red, pale purple, pink or white, 1.8–2.5 cm.
29a. Young shoots with eglandular setae to 4 mm as well as short gland-tipped hairs; calyx lobes with long ferruginous setae on the margin; inflorescence 8–9(–16)-flowered ..... 528. *R. kwangtungense*
29b. Young shoots with eglandular setae short or absent; calyx strigose or with dense short brown bristles; inflorescence 10–18-flowered.
30a. Abaxial leaf surface densely yellow-brown woolly and ferruginous strigose; corolla ca. 2.5 cm ..... 525. *R. florulentum*
30b. Abaxial leaf surface with short brown or red-brown bristles only; corolla 1.8–2.3 cm.
31a. Pedicel and calyx with both short gland-tipped hairs and coarse appressed hairs, pedicel ca. 1.5 cm; filaments puberulent at base ..... 529. *R. rivulare*
31b. Pedicel without glandular hairs; pedicel 0.8–1 cm; filaments glabrous.
32a. Leaf blade 4.5–8(–9.5) × 2.5–4.5 cm; pedicel brown silky strigose; inflorescence 10–12-flowered ..... 524. *R. jasminoides*
32b. Leaf blade 2–5(–10) × 1–2(–5) cm; pedicel with short red-brown bristles; inflorescence to 18-flowered ..... 527. *R. apricum*
22b. Young shoots with non-glandular hairs or bristles only.
33a. Style glabrous.
34a. Corolla 2.4–4 cm; style 3.5–5 cm.
35a. Corolla bright red, occasionally rose-red, 3–4 cm; pedicel and calyx hairs white ..... 530. *R. indicum*
35b. Corolla white to pale pink or purple, or purple-red, 2.4–3.1 cm; pedicel and calyx hairs yellow-brown or ferruginous.
36a. Petiole 1–2 mm; pedicel ca. 7 mm ..... 532. *R. naamkwanense*
36b. Petiole 3–5 mm; pedicel 9–18 mm.
37a. Style ca. 5 cm, longer than stamens ..... 531. *R. chrysocalyx*

37b. Style ca. 3.5 cm, as long as stamens ..... 523. *R. meridionale*
34b. Corolla 1.2–2.2(–2.5) cm; style 1–2.8 cm.
38a. Young shoots with crisped hairs; corolla white, yellowish when dried, upper lobes with rose flecks ..... 563. *R. saxatile*
38b. Young shoots with strigose indumentum only; corolla red to pink, purple-red or pale purple, or lilac (corolla color not recorded for *R. crassimedium*).
39a. Stamens 4–6; pedicel ca. 10 mm; inflorescence 2- or 3-flowered ..... 498. *R. sikayotaizanense*
39b. Stamens 5; pedicel 4–7(–10) mm; inflorescence sometimes more than 3-flowered.
40a. Style 2.4–2.8 cm.
41a. Inflorescence usually 2- or 3-flowered; petiole ca. 2 mm; leaf blade membranous ..... 536. *R. obtusum*
41b. Inflorescence 5–16-flowered; petiole 3–12 mm; leaf blade leathery.
42a. Stamens ca. 3 cm; leaf with gray-white hairs ..... 520. *R. litchiifolium*
42b. Stamens 1.7–2.7 cm; leaf with brown or reddish brown hairs.
43a. Leaf blade leathery, 3–7.8(–11) × 1.3–4 cm, elliptic-lanceolate to elliptic-obovate; corolla lilac, lobes oblong-lanceolate, apex acute ..... 533. *R. mariae*
43b. Leaf blade papery, 1.5–3.6 × 1–2 cm, lanceolate or oblong-lanceolate; corolla purple-red or purplish, lobes long-lanceolate, apex mucronate ..... 534. *R. kwangsiense*
40b. Style 1–2 cm.
44a. Pedicel 6–10 mm; calyx ca. 6 mm.
45a. Leaf blade 1.3–1.5 cm, adaxial surface with dense fine warts, sparsely pubescent; stamen filaments glabrous ..... 517. *R. crassimedium*
45b. Leaf blade 1.8–3.5 cm, adaxial surface without warts, hairs appressed; stamen filaments puberulent or pubescent below.
46a. Stamens 0.9–1.1 cm; corolla with dark spots ..... 516. *R. hypoblematosum*
46b. Stamens 2.2–2.7 cm; corolla not marked ..... 522. *R. nanpingense*
44b. Pedicel 3–4 mm.
47a. Leaf blade papery; corolla ca. 2 cm ..... 535. *R. microphyton*
47b. Leaf blade leathery; corolla 1–1.6 cm.
48a. Leaf blade apex obtuse or subrounded, often mucronate; inflorescence 3–5-flowered ..... 518. *R. tingwuense*
48b. Leaf blade apex acute or shortly acuminate; inflorescence 5–12-flowered.
49a. Corolla ca. 1 cm; stamens ca. 1 cm, filaments puberulous below ..... 543. *R. tsoi*
49b. Corolla 1.2–1.3 cm; stamens 1.3–1.7 cm, filaments glabrous ..... 526. *R. unciferum*
33b. Style strigose or less often pubescent towards base.
50a. Filaments glabrous.
51a. Corolla ca. 2.5 cm; pedicel densely long-setose ..... 552. *R. breviperulatum*
51b. Corolla 1–2.2 cm; pedicel strigose, sometimes also with crisped hairs.
52a. Young shoots with crisped hairs; corolla white, yellowish when dried ..... 563. *R. saxatile*
52b. Young shoots with strigose indumentum only; corolla white, purple or pale red.
53a. Corolla purple or purplish.
54a. Corolla purple, without markings; inflorescence 2–3-flowered ..... 546. *R. myrsinifolium*
54b. Corolla purplish, with purple flecks; inflorescence 5–10(–13)-flowered.
55a. Corolla outer surface with glandular hairs; leaf blade papery, adaxial surface without prominences ..... 558. *R. qianyangense*
55b. Corolla outer surface glabrous; leaf blade leathery, adaxial surface with mammiform prominences ..... 542. *R. crassistylum*
53b. Corolla white to pale red.
56a. Leaf blade 6–7 cm; shrubs or small trees 3–4 m tall; stamens subequal, ca. 1 cm ..... 561. *R. flosculum*
56b. Leaf blade 1–6 cm; small shub 1–2 m tall; stamens unequal, 1.2–2.3 cm.
57a. Petiole 6–13 mm; corolla ca. 2.2 cm ..... 557. *R. seniavinii*
57b. Petiole 2–4 mm; corolla 1.1–1.6 cm.
58a. Young shoots gray-white strigose, glabrescent; corolla ca. 1.6 cm; stamens 1.6–2.3 cm .... 550. *R. cretaceum*
58b. Young shoots reddish strigose; corolla ca. 1.1 cm; stamens 1.3–1.6 cm ..... 538. *R. hejiangense*
50b. Filaments partly pubescent or puberulous.
59a. Corolla 2.3–3.5 cm.
60a. Inflorescence 1- or 2-flowered; corolla ca. 2.3 cm ..... 556. *R. rhodanthum*
60b. Inflorescence 3–10-flowered; corolla 2.5–3.5 cm.
61a. Inflorescence ca. 10-flowered; young shoots sparsely spreading pubescent and coarsely strigose ..... 565. *R. spadiceum*
61b. Inflorescence 3–6-flowered; young shoots strigose.
62a. Leaf blade 2–3 cm, apex obtuse; corolla ca. 2.5 cm, rose-pink with crimson flecks on

upper lobes ..... 552. *R. breviperulatum*
62b. Leaf blade 3–5.5 cm, apex acuminate; corolla ca. 3.5 cm, reddish purple ..... 568. *R. loniceriflorum*
59b. Corolla 0.6–2 cm.
63a. Corolla 1.5–2 cm.
64a. Pedicel ca. 15 mm, setose; petiole glabrous ..... 562. *R. sparsifolium*
64b. Pedicel 5–7(–11) mm, strigose; petiole strigose.
65a. Abaxial leaf surface with hairs only on the midrib and lateral vein; inflorescence 3- or 4-flowered; pedicel ca. 5 mm ..... 549. *R. malipoense*
65b. Abaxial leaf surface more uniformly sparsely strigose; inflorescence usually 4–7-flowered; pedicel 5–10 mm.
66a. Leaf blade widest at or below middle, base subrounded; petiole 5–7(–10) mm ..... 566. *R. flumineum*
66b. Leaf blade widest above middle, rarely narrow-elliptic, base cuneate or broadly cuneate; petiole 3–5 mm ..... 567. *R. subcerinum*
63b. Corolla 0.6–1.3 cm.
67a. Style with glandular hairs.
68a. Corolla rotate-funnelform, ca. 6 mm, outside surface with red glands ..... 554. *R. minutiflorum*
68b. Corolla funnelform to funnel-campanulate, 8–13 mm, outside surface with glands not red.
69a. Stamens subequal, 8–14 mm; style 15–18 mm ..... 555. *R. chunii*
69b. Stamens unequal, 12–16 mm; style 12–15 mm.
70a. Leaf blade leathery, margin red-brown strigose, apex obtusely pointed; pedicel 6–8 mm ... 548. *R. subenerve*
70b. Leaf blade papery, margin not strigose, sometimes ciliate, apex acuminate; pedicel 4–5 mm.
71a. Petiole and pedicel strigose; style sparsely glandular hairy below ..... 539. *R. fuchsiifolium*
71b. Petiole and pedicel spreading setose, pedicel also glandular; style strigose below, shortly stipitate-glandular above ..... 547. *R. guizhongense*
67b. Style without glandular hairs.
72a. Style 1.7–2 cm.
73a. Corolla 1.2–1.4 cm, outer surface without projections ..... 521. *R. polyraphidoideum*
73b. Corolla ca. 0.9 cm, outer surface with small obtuse spines ..... 553. *R. viscigemmatum*
72b. Style 1–1.3 cm.
74a. Inflorescence 2- or 3-flowered ..... 569. *R. tenue*
74b. Inflorescence 4–8(–9)-flowered.
75a. Leaf blade papery, apex not mucronate; pedicel 3–4 mm.
76a. Corolla pink; style strigose to apex ..... 544. *R. fuscipilum*
76b. Corolla white; style glabrous towards apex ..... 537. *R. adenanthum*
75b. Leaf blade leathery, apex mucronate; pedicel 4–7 mm.
77a. Corolla without spots, both surfaces glabrous; style longer than shorter stamens ..... 540. *R. viscidum*
77b. Corolla with upper 3 lobes with dark red flecks, both surfaces hairy; style shorter than all stamens ..... 551. *R. yangmingshanense*

494. Rhododendron kanehirae E. H. Wilson in E. H. Wilson & Rehder, Monogr. Azaleas, 28. 1921 [*"kanehiraei"*].

台北杜鵑 tai bei du juan

Shrubs, deciduous, 1–3 m tall; young shoots with dense coarse brown flat appressed hairs. Summer and winter leaves different. Petiole 1–3 mm, densely coarsely castaneous strigose; leaf blade leathery, linear-lanceolate or linear-oblanceolate to obovate, 1.5–4.8 × 0.2–1.5 cm; margin coarsely strigose, entire, or with obsolete round teeth; apex obtuse to acute; both surfaces sparsely coarsely shiny brown slightly revolute strigose. Inflorescence 1–3-flowered. Pedicel 0.1–0.3 cm, erect, densely coarsely castaneous strigose, hairs flat; calyx lobes ovate to elliptic, 2–4 mm, coarsely shiny-castaneous strigose; corolla narrowly funnelform, crimson to dark red, 3.5–4 cm, tube tapering toward the base, 18–20 mm; lobes ovate or long-ovate; stamens 10, unequal, shorter than corolla; filaments linear, puberulent below; ovary ovoid, ca. 3 mm, densely coarsely castaneous setose-strigose; style longer than stamens, slightly exserted, sparsely coarsely strigose at base. Capsule long-cylindric, 6–8 mm, coarsely setose-strigose. Fl. Apr.

● Mountain forests. N Taiwan.

495. Rhododendron tenuilaminare P. C. Tam, Surv. Gen. Rhododendron S. China, 102. 1983.

薄片杜鵑 bao pian du juan

Shrubs, ca. 1 m tall; branches brown, with dense coarse gray-white silky appressed hairs. Summer and winter leaves different. Petiole 2–5 mm, coarsely brown-strigose; leaf blade papery, oblong or oblong-obovate, 2.5–5 × 1–1.8 cm; base narrowly cuneate; margin sinuate, obscurely toothed; apex obtuse to acute; both surfaces coarsely brown-strigose. Inflorescence 3-flowered. Pedicel 0.5–0.6 cm, densely coarsely silky gray-brown strigose; calyx lobes ca. 2 mm, densely coarsely silver-white strigose; corolla narrowly funnel-campanulate, pink to purplish, upper lobes with red flecks, ca. 3.2 cm; tube cylindric, ca. 10 × 3–6 mm, sparsely pubescent; lobes obovate, obtuse or

subrounded at apex, ca. 2.2 × 1 cm, outer surface sparsely pubescent; stamens 7, unequal, 2.5–2.9 cm, filaments pink, pubescent below; ovary ovoid, ca. 4 × 3 mm, densely coarsely silver-gray strigose; style ca. 3.3 cm, red, sparsely villous at base. Capsule ovoid, ca. 9 × 5 mm, coarsely strigose.

● Mountain thickets. C Guangdong (Conghua).

496. Rhododendron strigosum R. L. Liu, Acta Phytotax. Sin. 39: 272. 2001.

伏毛杜鹃 fu mao du juan

Shrubs, ca. 1.8 m tall; young shoots densely blackish-brown-strigose. Leaves monomorphic. Petiole 3–5 mm, densely ferruginous-strigose; spring leaves with blade thickly papery, elliptic to elliptic-ovate, 2.5–3.2 × 1.2–1.9 cm; base cuneate; apex shortly acute, mucronate; abaxial surface densely ferruginous-silky-strigose; adaxial surface grayish-brown-strigose, soon glabrescent; summer leaves ca. 1 × 0.5 cm, otherwise as for spring leaves. Inflorescence an umbel, 2–4-flowered. Pedicel 0.8–1 cm, densely reddish-brown silky-strigose; calyx lobes 2–3 mm, ovate, densely reddish-brown silky-strigose; corolla campanulate, rose, becoming paler, upper lobes with purple flecks, ca. 3 cm, tube ca. 10 mm; outer surface glabrous; stamens (5–)6–10, 1.7–2.6 cm, filaments puberulent in the lower half; ovary densely silky-strigose; style 2.6–3 cm, glabrous. Capsule ovoid, 9–11 × 4–5 mm, densely ferruginous silky-strigose. Fl. Apr–May.

● 900–1000 m. W Jiangxi (Jinggang Shan).

This species appears to be allied to *Rhododendron tenuilaminare*. In the protologue it was said to differ in having a larger, silvery-strigose calyx and a smaller, abaxially sparsely puberulent corolla.

497. Rhododendron rubropilosum Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 173. 1911.

台红毛杜鹃 tai hong mao du juan

Rhododendron caryophyllum Hayata.

Shrubs, up to 3 m tall; young shoots slender, densely coarsely red-brown strigose, hairs flat. Leaves all similar. Petiole 2–6 mm, indumentum as for shoots; leaf blade oblong-lanceolate, 1.5–4.5 × 0.5–1.9 cm; base cuneate; margin entire and slightly revolute; apex acute and mucronate; both surfaces densely yellowish brown silky strigose when young. Inflorescence 2–4-flowered. Pedicel ca. 0.6 cm, coarsely yellowish brown silky strigose; calyx lobes oblong, 1.5–4 mm, coarsely yellowish brown silky strigose; corolla broadly funnelform, pink, with darker pink flecks within, to 2.5 cm wide; tube ca. 10 mm; lobes spreading, oblong, ca. 1.7 × 0.7 cm; stamens 7 or 10, unequal, some longer than corolla, filaments linear, sparsely pubescent at base; ovary ovoid, densely coarsely yellowish brown strigose; style ca. 2 cm, longer than stamens, hairy near base. Capsules conical-ovoid, 5–7 × ca. 4 mm, densely coarsely brown strigose. Fl. Jul, fr. Aug–Oct.

● Mountain forests; 1000–3300 m. C Taiwan.

Rhododendron rubropilosum var. *grandiflorum* T.Yamazaki (Revis. Gen. Rhododendron Japan, Taiwan, Korea & Sakhalin, 36. 1996) is said to differ from var. *rubropilosum* in having the leaf blade 3–5 cm, corolla 3–3.5 cm wide, and stamens 5 or 6. The type is a cultivated specimen raised from material collected in Nantou County, Taiwan. The number of stamens suggests an affinity with *R. breviperulatum,* rather than with *R. rubropilosum*. Furthermore, it is not known whether any plants in the wild possess these larger flowers and leaves. Therefore, the status and affinities of var. *grandiflorum* remain uncertain.

498. Rhododendron sikayotaizanense Masamune, Trans. Nat. Hist. Soc. Taiwan 29: 27. 1939.

志佳阳杜鹃 zhi jia yang du juan

Shrubs; young shoots strigose. Leaves monomorphic. Petiole not known; leaf blade leathery, oblong to ovate-oblong, 0.4–1.4 × 0.2–0.6 cm; base cuneate; apex apiculate abaxial surface appressed-hirsute, midrib densely pilose; adaxial surface sparsely appressed-hirsute. Inflorescence 2–3-flowered. Pedicel ca. 10 mm, ± pilose; calyx lobes linear-lanceolate, ciliate; corolla campanulate, red, ca. 2 cm; stamens 4–6, unequal, sparsely hirsute below; ovary densely hirsute; style glabrous. Capsule not known.

● Taiwan.

The present authors have seen no material of this species. It apparently resembles *Rhododendron nakaharae, R. noriakianum,* and *R. rubropilosum,* but differs from all three in having fewer stamens per flower.

499. Rhododendron lasiostylum Hayata, Icon. Pl. Formos. 3: 135. 1913.

毛花柱杜鹃 mao hua zhu du juan

Rhododendron sasakii E. H. Wilson.

Small multi-branched shrubs, 1–2 m tall; young shoots densely brown or gray-brown strigose, hairs flattened. Summer and winter leaves different. Petiole 3–9 mm, densely coarsely strigose, hairs flat; leaf blade papery, oblong-oblanceolate or obovate, 3–4.5 × 2–3 cm; base cuneate; margin entire; apex obtuse to acute; both surfaces densely coarsely red-brown strigose, hairs flattened. Inflorescence 2–4-flowered. Pedicel 0.5–0.9 cm, densely coarsely brown strigose; calyx lobes elliptic-oblong, 2–3 × ca. 1 mm; outer surface sparsely pubescent; margin ciliate; corolla funnelform, pink, 1.5–2 cm; lobes unequal, oblong, ca. 1 cm, apex obtuse to rounded; stamens 10, unequal, partly exserted, filaments flat, with fine papillose hairs below; ovary ovate-conical, ca. 2 mm, densely coarsely brown strigose; style ca. 1.4 cm, with pale brown hairs at base. Capsules long-cylindric-ovoid, ca. 8 × 2.5 mm, densely strigose. Fl. Jun.

● Woods; 500–2700 m. C Taiwan.

500. Rhododendron hainanense Merrill, Philipp. J. Sci. 21: 350. 1922.

海南杜鹃 hai nan du juan

Small multi-branched shrubs, 1–3 m tall; young shoots fine and erect, densely coarsely brown strigose, hairs flattened. Leaves all similar. Petiole 3–6 mm, coarsely strigose; leaf blade subleathery, linear-lanceolate to narrowly lanceolate, 2–4 × 0.3–1.1 cm; base cuneate; margin slightly revolute and shallowly undulate; apex acute and mucronate; abaxial surface sparsely coarsely pale yellow-brown strigose. Inflorescence 1–

3-flowered. Pedicel 0.5–0.8 cm, densely brown strigose; calyx lobes unequal, long-ovate, outer surface and margin villous, apex rounded or acuminate; corolla funnelform, red, 3.5–4.5 cm; tube cylindric, ca. 1.8 cm, both surfaces glabrous; lobes spreading, obovate, apex rounded; stamens 10, unequal, partly exserted, filaments linear, pubescent below; ovary ovoid, densely coarsely yellow-brown appressed setose; style longer than stamens, glabrous. Capsules ovoid, 8–10 mm, glabrescent. Fl. Oct–Dec.

● Forest margins, riversides; 300–500(–1300) m. S Guangxi, Hainan.

501. Rhododendron longiperulatum Hayata, Icon. Pl. Formos. 3: 138. 1913.

长鳞芽杜鹃 chang lin ya du juan

Small shrubs; young shoots densely finely castaneous strigose. Summer and winter leaves different. Petiole ca. 2 mm, coarsely brown strigose; leaf blade papery, ovate to ovate-oblong or oblong-lanceolate, 1.3–2.5 × 0.5–1.5 cm; base cuneate; margin entire, revolute; apex shortly acuminate to acute; both surfaces sparsely coarsely strigose. Inflorescence 2- or 3-flowered. Pedicel ca. 1.3 cm, densely shiny red-brown appressed-setose; calyx lobes triangular-ovate, ca. 2.5 × 1.5 mm, pale red-brown strigose; corolla funnel-campanulate, scarlet-red, ca. 3 cm; lobes oblong, ca. 1 cm, apex obtuse and rounded; stamens 10, unequal, most slightly shorter than the corolla, filaments flat, puberulent on lower half; ovary cylindric-ovoid, up to 3 mm, densely pale red-brown appressed-setose; style linear, glabrous. Capsules cylindric-ovoid, 8–15 mm, coarsely strigose. Fl. Mar–Apr.

● Grasslands; 700–1000 m. N Taiwan.

502. Rhododendron nakaharae Hayata, J. Coll. Sci. Imp. Univ. Tokyo 25(19): 153. 1908 [*"nakaharai"*].

那克哈杜鹃 na ke ha du juan

Low shrubs, evergreen; young shoots densely coarsely brown strigose, hairs flat. Leaves all similar; petiole ca. 2 mm, coarse strigose, hairs flat and scurfy; leaf blade papery, ovate to oblong or oblanceolate to broad-elliptic, 0.6–1.2 × 0.5–1.2 cm, tapering towards the base; margin slightly revolute; apex obtuse and mucronate; both surfaces with dense flat and scurfy appressed setae. Inflorescence 1–3-flowered. Pedicel ca. 1 cm, coarsely strigose; calyx membranous; lobes broadly elliptic to ovate, ca. 2 mm, long-strigose; corolla funnelform-campanulate, lobed to ca. 1/2 length, dark red, ca. 3.5 × 4 cm; tube villous; lobes obovate-orbicular; inner basal part of corolla villous; stamens 10, ca. 1/2 as long as corolla, filaments villous near base; ovary conical, ca. 2 mm, densely pubescent; style glabrous. Capsule ovoid or subovoid, ca. 8 mm, puberulent. Fl. Jun.

● Grassy places; 700–1000 m. N Taiwan.

503. Rhododendron noriakianum Suzuki, Trans. Nat. Hist. Soc. Taiwan 25: 40. 1935.

细叶杜鹃 xi ye du juan

Low shrubs, deciduous; young shoots strigose, soon glabrescent. Leaves monomorphic. Petiole 1–2 mm, strigose; leaf blade stiffly papery, ovate to ovate-oblong, 0.7–1.8 × 0.4–0.6 cm; base cuneate; apex obtuse, apiculate; abaxial surface strigose along midrib and lateral veins; adaxial surface glabrescent. Inflorescence an umbel, 2–4-flowered. Pedicel 3–4 mm, densely pilose; calyx lobes densely pilose, apex acute; corolla funnelform, red to dark purple, ca. 1.5 cm; stamens 7–10, unequal, slightly exserted, filaments pubescent below; ovary pubescent; style glabrous. Capsule not known.

● Open grasslands; 1500–3000 m. Taiwan.

The present authors have seen no material of this species. It is apparently allied to *Rhododendron nakaharae* and *R. longiperulatum,* but differs from both in having a smaller corolla and exserted stamens.

504. Rhododendron oldhamii Maximowicz, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 16(9): 34. 1870 [*"oldhami"*].

砖红杜鹃 zhuan hong du juan

Azalea oldhamii (Maximowicz) Masters; *Rhododendron oldhamii* var. *glandulosum* Hayata; *R. ovatosepalum* Yamamoto.

Shrubs, semievergreen, to 3 m tall; young shoots with spreading red-brown flat glandular hairs, also pubescent. Summer and winter leaves different. Petiole 4–6 mm, with dense short brown glandular setae and flat hairs; leaf blade thinly leathery, elliptic or elliptic-lanceolate, 2–7.8 × 1.5–5 cm; base broadly cuneate; margin slightly revolute, ciliate; apex obtuse and mucronate; adaxial surface densely shortly setose, later subglabrous. Inflorescence 2–4-flowered. Pedicel 0.6–1 cm, shortly glandular setose; calyx lobes unequal, triangular-ovate or ovate-lanceolate, 3–8 mm, outer surface with long red-brown glandular hairs on margin; corolla broadly funnelform, brick-red, lacking flecks, 4–4.8 × 3–5 cm; tube tapering toward the base, 1.8–2.4 cm, glabrous; lobes ovate or elliptic-ovate; stamens 10, unequal, shorter than the corolla, filaments puberulent in the lower half; ovary ovoid, densely yellow-brown glandular-setose; style longer than stamens, exserted, glabrous. Capsules broadly ovoid, 9–15 mm, glandular-setose, calyx persistent. Fl. May–Jul(–Oct).

● Mountain thickets; ca. 2800 m. Taiwan.

505. Rhododendron taiwanalpinum Ohwi, J. Jap. Bot. 13: 339. 1937.

台湾高山杜鹃 tai wan gao shan du juan

Rhododendron rubropilosum Hayata var. *taiwanalpinum* (Ohwi) S. Y. Lu et al.

Shrubs, 1–1.5 m; young shoots brown-strigose. Leaves monomorphic. Petiole 2–3 mm, appressed-strigose; leaf blade leathery, ovate-oblong to oblong-lanceolate, 1.5–2(–3) × 0.7–1.2(–1.8) cm; base cuneate; apex acute, mucronate; abaxial surface densely strigose; adaxial surface sparsely strigose. Inflorescence (1–)2–3-flowered. Pedicel 5–7 mm, densely reddish-brown hairy; calyx lobes 1–2 mm, densely hairy, apex rounded; corolla broadly funnel-campanulate, pink, with rose flecks, 1–1.5(–2) cm, tube 4–6 mm, glabrous; stamens 9–10, unequal, filaments hairy in lower half; ovary grayish-pubescent; style pubescent in lower half. Capsule not known.

● Alpine meadows, mountain peaks; 2800–3000 m. Taiwan.

This species was originally described as being allied to *Rhododendron oldhamii,* but it lacks the glandular indumentum of that species. Although *R. taiwanalpinum* is apparently a distinct species, the present authors' knowledge of it comes from a single inadequate specimen and the type was not seen.

506. Rhododendron ×pulchrum Sweet, Brit. Fl. Gard., ser. 2, 2: t. 117. 1831.

锦绣杜鹃 jin xiu du juan

Rhododendron indicum (Linnaeus) Sweet var. *pulchrum* (Sweet) G. Don; *R. indicum* var. *smithii* Sweet; *R. phoeniceum* G. Don f. *smithii* (Sweet) E. H. Wilson.

Shrubs, semievergreen, 1.5–2.5 tall; branches coarsely pale brown strigose. Petiole 3–6 mm, densely appressed setose; leaf blade thinly leathery, elliptic-oblong to elliptic-lanceolate or oblong-oblanceolate, 2–5(–7) × 1–2.5 cm; base cuneate; margin revolute and entire; apex obtuse. Inflorescence 1–5-flowered. Pedicel 0.8–1.5 cm, densely yellowish brown villous; calyx deeply lobed; lobes lanceolate, large, ca. 1.2 cm, coarsely strigose; corolla broadly funnelform, rose-purple, with dark red flecks, 4.8–5.2 × ca. 6 cm; lobes broadly ovate, ca. 3.3 cm; stamens 10, subequal, 3.5–4 cm, filaments linear, pubescent below; ovary ovoid, ca. 3 × 2 mm, densely coarsely yellow-brown appressed setose; style ca. 5 cm, as long as or slightly longer than corolla, glabrous. Capsule oblong-ovoid, 8–10 mm, coarsely setose-strigose, calyx persistent. Fl. Apr–May, fr. Sep–Oct.

● Cultivated. Fujian, Guangdong, Guangxi, Hubei, Hunan, Jiangsu, Jiangxi, Zhejiang.

The name *Rhododendron ×pulchrum* applies to cultivated plants. It is said that the species originated in China, but it is unknown in the wild. According to Sweet, in the protologue, it is a horticultural hybrid derived from "*R. ledifolium,* of Hooker, impregnated by the pollen of the Old Red *R. indicum*."

507. Rhododendron subflumineum P. C. Tam, Bull. Bot. Res., Harbin 2(1): 94. 1982.

涧上杜鹃 jian shang du juan

Shrubs, ca. 3 m tall; young shoots densely coarsely ferruginous strigose, later subglabrous. Summer and winter leaves different. Petiole ca. 4 mm; leaf blade elliptic-oblong, lanceolate or oblong-lanceolate, 1.3–3.6(–6) × 0.5–1.3(–2) cm; abaxial surface silky reddish brown-strigose; adaxial surface brown-strigose; midrib conspicuous on both surfaces; lateral veins 4–5-paired, impressed above. Inflorescence 4–6-flowered. Pedicel 0.6–1 cm, densely coarsely ferruginous strigose; calyx lobes shallow and rounded; corolla funnelform, dark purple-red to pink, without flecks, ca. 2.8 cm; tube cylindric, ca. 15 × 3 mm in diam. at base; lobes oblong-ovate, ca. 1.3 cm; stamens 7–10, unequal, 2–2.8 cm, filaments pubescent below; ovary densely ferruginous strigose; style ca. 3.5 cm, glabrous. Capsules conical, ca. 7 mm, coarsely ferruginous strigose. Fl. May.

● Open forests by rivers. N Guangdong, S Hunan.

508. Rhododendron linguiense G. Z. Li, Guihaia 15: 295. 1995.

临桂杜鹃 lin gui du juan

Shrubs, ca. 2.5 m tall; young shoots coarsely brown-strigose. Summer and winter leaves different; petiole 3–6 mm; spring leaf blade leathery, broadly elliptic to elliptic, 3–7 × 1.3–3 cm; base cuneate; apex mucronate; abaxial surface sparsely strigose; adaxial surface densely ferruginous-strigose; midrib conspicuous on both surfaces, lateral veins ca. 3-paired, impressed above; summer leaf blade 1.5–2.5 × 0.8–1.2 cm, otherwise as for spring leaves; petioles 2–3 mm. Inflorescence 2–4-flowered. Pedicel 0.5–0.7 cm, brown-strigose; calyx ca. 1 mm; corolla tubular-funnelform, pale purple, without flecks, 1.8–2 cm, tube cylindrical, 8–10 mm, ca. 3 mm in diam. at base; lobes obovate-lanceolate, 0.8–1 cm; stamens 10, unequal, 1.2–1.5 cm, filaments glabrous; ovary densely brown appressed-strigose; style ca. 2.5 cm, glabrous. Capsule cylindrical, ca. 10 mm, densely brown-strigose. Fl. Apr, fr. Jul.

● Woods; 100–200 m. NE Guangxi (Lingui).

The present authors have seen no material of this species. It is closely allied to *Rhododendron subflumineum,* sharing with that species a narrow, funnelform corolla and 10 stamens; it differs, however, in the larger spring leaves and smaller flowers and floral parts.

509. Rhododendron atrovirens Franchet, Bull. Soc. Bot. France 33: 235. 1886.

大关杜鹃 da guan du juan

Shrubs, 1–2 m tall; young shoots slender, subverticillate, densely coarsely brown strigose. Leaves all similar. Petiole 3–8 mm, coarsely brown-strigose; leaf blade papery, lanceolate, ovate-lanceolate or elliptic-lanceolate, 2.5–8.5 × ca. 3 cm; both surfaces densely coarsely strigose. Inflorescence 2–4(–7)-flowered. Pedicel ca. 0.8 cm, densely coarsely brown strigose, hairs flat; calyx lobes triangular-ovate, very small; corolla funnelform, red, with darker flecks at base of upper lobes, ca. 2.2 cm; tube narrowly cylindric, outer surface glabrous, inner surface pubescent; lobes oblong, obtuse; stamens 10, unequal, as long as the corolla, filaments puberulent below; ovary conical-ovoid, ca. 5 mm, densely coarsely shiny brown-strigose; style longer than stamens, glabrous. Capsules long-ovoid, ca. 6 mm in diam., densely long-brown-strigose. Fl. Apr–May, fr. Jul–Nov.

● Evergreen broad-leaved forests; 1200–1800 m. Sichuan, Yunnan.

510. Rhododendron simsii Planchon, Fl. Serres Jard. Eur. 9: 78. 1853–1854.

杜鹃 du juan

Shrubs, 2(–5) m tall; branches many and fine, densely shiny brown appressed-setose, setae flat. Summer and winter leaves different. Petiole 2–6 mm. Leaf blade ovate, elliptic-ovate or obovate to oblanceolate, 1.5–5 × 0.5–3 cm; base cuneate or broadly cuneate; margin slightly revolute, finely toothed; apex shortly acuminate. Inflorescence 2–3(–6)-flowered. Pedicel ca. 0.8 cm, densely shiny brown appressed-setose; calyx deeply lobed; lobes triangular-long-ovate, ca. 5 mm, coarsely appressed-hairy, margin ciliate; corolla broadly funnelform, rose, bright to dark red, or white to rose-pink, with dark red flecks on

upper lobes, 3.5–4 × 1.5–2 cm, lobes obovate, 2.5–3 cm; stamens 10, ca. as long as corolla, filaments pubescent below; ovary ovoid, 10-locular, densely shiny brown-strigose; style exserted, glabrous. Capsule ovoid, up to 10 mm, densely strigose, calyx persistent. Fl. Apr–May, fr. Jun–Aug.

Pinus massoniana forests, forest margins, open upland thickets; 500–2700 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Laos, Myanmar, Thailand].

Rhododendron chaoanense T. C. Wu & P. C. Tam (Med. Mat. Guangdong 4: 35. 1978), described from Guangdong, is apparently close to, and possibly a hybrid of, *R. simsii,* but differs from that species it in its obscure calyx lobes, 7 stamens, and long-exserted style.

Rhododendron simsii var. *albiflorum* R. L. Liu (Acta Bot. Yunnan. 15: 190. 1993), described from Jiangxi, is probably no more than an albino form of *R. simsii*.

Rhododendron simsii var. *strigosostylum* G. Z. Li (Guihaia 15: 298. 1995 [*"strigoso-stylum"*]), was described from Guangxi and said to differ from var. *simsii* in having a corolla rose-pink to red, with minute lobes ca. 2 × 1 mm, and a style silky-strigose below. The present authors have seen no material, but, from the original description, it seems likely that this entity is a hybrid of the widely cultivated *R. simsii*.

Rhododendron simsii has been used widely in horticulture as a parent of both the "pot azalea" cultivars and a range of cultivars grown in the warmer parts of China.

1a. Corolla bright to dark red, 3.5–6 cm ..... 510a. var. *simsii*
1b. Corolla white to pink, 2.5–4 cm ..... 510b. var. *mesembrinum*

510a. Rhododendron simsii var. **simsii**

杜鹃(原变种) du juan (yuan bian zhong)

Azalea indica Linnaeus var. *simsii* (Planchon) Rehder; *Rhododendron bellum* W. P. Fang & G. Z. Li (1984), not H. P. Yang (1989); *R. bicolor* P. C. Tam (1983), not Sweet (1830); *R. calleryi* Planchon; *R. indicum* (Linnaeus) Sweet var. *formosanum* Hayata; *R. indicum* var. *ignescens* Sweet; *R. indicum* var. *puniceum* Sweet; *R. indicum* var. *simsii* (Planchon) Maximowicz; *R. petilum* P. C. Tam; *R. viburnifolium* W. P. Fang.

Corolla bright to dark red, 3.5–6 cm.

Pinus massoniana forests, open upland thickets; 500–1200 (–2600) m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan, Laos, Myanmar, Thailand].

510b. Rhododendron simsii var. **mesembrinum** Rehder, J. Arnold Arbor. 10: 183. 1929.

滇北杜鹃 dian bei du juan

Corolla white to pink, 2.5–4 cm.

Forest margins; 1800–2700 m. Yunnan [NE Myanmar].

511. Rhododendron octandrum M. Y. He, J. Sichuan Univ., Nat. Sci. Ed. 24(1): 84. 1987.

八蕊杜鹃 ba rui du juan

Shrubs, ca. 2 m tall; branches many, fine; young shoots densely brown-strigose, hairs flat. Petiole 2–4 mm, densely brown-strigose; leaf blade thinly papery, narrowly elliptic-lanceolate or oblong-lanceolate, 4–4.5(–8) × 1.5–2 cm; base cuneate or broadly cuneate; margin entire; apex long-acuminate, mucronate; both surfaces densely coarsely yellowish brown strigose when young. Inflorescence 3–5-flowered. Pedicel ca. 0.4 cm, densely yellowish brown strigose; calyx lobes lanceolate, ca. 3 mm, outer surface coarsely strigose; corolla funnelform, pale red, yellowish when dried, without purple flecks, 2.2–2.7 × ca. 2.5 cm; tube cylindric, 12–14 × 4–5 mm in diam. at base, outer surface glabrous; lobes 5, spreading, membranous, oblong or obovate, 1–1.2 × ca. 0.6 cm, pubescent within; stamens 8, unequal, 2.3–2.7 cm, filaments flat, puberulent below; ovary conical, ca. 3 mm, densely coarsely yellowish brown strigose; style ca. 2.5 cm, slightly exserted, glabrous. Capsule conical, ca. 6 mm, coarsely strigose. Fl. May, fr. Sep.

● Open valley forests; ca. 1400 m. NE Guizhou.

512. Rhododendron mucronatum (Blume) G. Don, Gen. Hist. 3: 846. 1834.

白花杜鹃 bai hua du juan

Azalea mucronata Blume, Catalogus, 44. 1823; *A. indica* Linnaeus var. *alba* Lindley; *A. rosmarinifolia* N. L. Burman; *Rhododendron argyi* H. Léveillé; *R. ledifolium* G. Don; *R. rosmarinifolium* (N. L. Burman) Dippel (1889), not Vidal (1886).

Shrubs, semievergreen, 1–2(–3) m tall; young shoots spreading; branches many, densely gray-brown villous, also with a few glandular hairs. Summer and winter leaves different. Petiole 2–4 mm, densely long-strigose, hairs flat, and shortly glandular-hairy; leaf blade papery, lanceolate to ovate-lanceolate or oblong-lanceolate, 2–6 × 0.5–1.8 cm; base cuneate; apex obtuse to rounded. Inflorescence 1–3-flowered. Pedicel to 1.5 cm, densely yellowish brown-villous, also glandular-hairy; calyx lobes 5, lanceolate, ca. 12 mm, densely glandular-pubescent; corolla broadly funnelform, deeply 5-lobed, white, occasionally pale red, without purple flecks, 3–4.5 cm, lobes elliptic-ovate, as long as tube, glabrous; stamens 10, unequal, filaments puberulent below; ovary ovoid, ca. 4 × 2 mm, 5-locular, densely coarsely appressed-glandular-setose; style very long-exserted, glabrous. Capsule conical ovoid, ca. 10 mm. Fl. Apr–May, fr. Jun–Jul.

Cultivated in many places in E and S Sichuan and in many parks in China. Fujian, Guangdong, Guangxi, Jiangsu, Jiangxi, Sichuan, Yunnan, Zhejiang [of cultivated origin].

This species was described from a cultivated plant that may represent an albino form of the Japanese *Rhododendron mucronatum* var. *ripense* (Makino) E. H. Wilson; the latter differs in having rose-pink flowers.

513. Rhododendron longifalcatum P. C. Tam, Guihaia 2: 73. 1982.

长尖杜鹃 chang jian du juan

Small erect shrubs, ca. 1 m tall; young shoots densely coarsely ferruginous-strigose. Summer and winter leaves different. Petiole 3–7 mm, densely ferruginous-strigose; leaf blade papery, oblong-lanceolate or lanceolate, 3–7(–8.5) × 0.9–2 cm; base narrowly cuneate; margin slightly revolute and entire; apex long-acuminate; abaxial surface densely tomentose and coarse-

ly strigose; adaxial surface sparsely strigose. Inflorescence ca. 5-flowered. Pedicel ca. 0.6 cm, coarsely strigose; calyx shallowly lobed; lobes finely toothed; corolla broadly funnel-campanulate, dark blue, without flecks, 2.2–2.5 cm; tube shortly cylindric, ca. 7 × 3–6 mm; lobes spreading, obovate-oblong, 1.5–1.8 × 0.7–0.8 cm, apex ± rounded; stamens 10, unequal, 2.2–2.8 cm, filaments flat, puberulent below; ovary ovoid, ca. 4 mm, densely coarsely ferruginous silky strigose; style ca. 2.6 cm, slightly longer than corolla, but shorter than some stamens, glabrous. Fl. Mar.

● Open thickets; ca. 200 m. SW Guangxi.

514. Rhododendron rufohirtum Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 58: 153. 1921.

滇红毛杜鹃 dian hong mao du juan

Shrubs, 1.5–2 m tall; branches many and slender, densely shortly red-brown setose and sparsely spreading pilose. Leaves probably of one type. Petiole ca. 5 mm, densely red-brown-villous; leaf blade papery, lanceolate or ovate-lanceolate, 2.5–6 × 1–2.5 cm; base cuneate or subrounded; apex acuminate; abaxial surface densely shortly red-brown setose with a few long flat hairs. Inflorescence 2–5-flowered. Pedicel ca. 0.4 cm, coarsely red-brown strigose; calyx lobes small, ovate, ca. 2.5 mm, outer surface coarsely red-brown appressed setose; corolla funnelform, deep rose, with purple flecks on upper 3 lobes, 2.5–3 cm; tube ca. 13 mm, outer surface glabrous, inner surface sparsely pubescent; lobes oblong-ovate, ca. 1.5 × 0.8 cm; stamens 10, unequal, 2.4–3.4 cm, exserted, filaments, sparsely pubescent at base; ovary long-ovoid, ca. 3 mm, densely long red-brown setose; style glabrous. Fl. Mar–Apr, fr. Aug–Sep.

● Thickets; 900–2300 m. SE Guizhou, S Sichuan, NE Yunnan.

515. Rhododendron pulchroides Chun & W. P. Fang, Acta Phytotax. Sin. 6: 171. 1957.

美艳杜鹃 mei yan du juan

Small shrubs, deciduous, ca. 1 m tall; young shoots yellowish brown crispate-villous. Petioles flat, ca. 2 mm, crispate-villous; leaf blade membranous, oblong or oblanceolate-elliptic, usually 1.5–2.5 × 0.5–0.9 cm; base broadly cuneate to subrounded; apex obtuse, with a fine-point; both surfaces densely yellowish brown crispate-villous. Inflorescence 1–4-flowered. Pedicel ca. 1 cm, densely crispate-villous; calyx lobes elliptic-ovate, ca. 3.5 × 2 mm, outer surface crispate-pubescent, toothed, apex obtuse; corolla funnel-campanulate, purplish red, 2.5–3 cm, glabrous; lobes obovate, ca. 1.5 cm; stamens 10, unequal, up to 3.2 cm, conspicuously exserted, filaments pubescent below; ovary elliptic to long-elliptic, densely crispate-villous; style ca. 4 cm, glabrous. Fl. Jun.

● Rocky cliffs, light shade by rivers; 900–1000 m. N Guangxi (Longsheng).

This species is a distinctive member of *Rhododendron* sect. *Tsutsusi* on account of its yellowish crispate villous indumentum, subverticillate leaves, toothed calyx lobes with a few teeth, and conspicuously exserted stamens.

516. Rhododendron hypoblematosum P. C. Tam, Bull. Bot. Res., Harbin 2(1): 90. 1982.

背绒杜鹃 bei rong du juan

Shrubs, 1–2 m tall; branches erect, coarsely strigose. Summer and winter leaves different. Petiole 3–4 mm, coarsely strigose; leaf blade thinly leathery, ovate or elliptic-ovate, usually 1.8–2 × ca. 0.8 cm; margin conspicuously revolute; apex acuminate and mucronate base broadly cuneate; abaxial surface scattered strigose, also with a layer of appressed woolly and ferruginous appressed hairs. Inflorescence terminal, 3–4-flowered. Pedicel ca. 0.6 cm, densely ferruginous strigose; calyx cuplike, broad; lobes crenate, enlarging as flowers develop, ca. 4 mm wide, densely coarsely strigose, apex subrounded; corolla funnel-campanulate, pale purple, with darker flecks on the upper lobes, ca. 1.3 cm; tube cylindric, ca. 5.5 × 3 mm, broader above; lobes oblong elliptic, ca. 0.7 × 0.35 cm, pubescent within; stamens 5, unequal, 0.9–1.1 cm, filaments flat, pubescent at base; ovary ovoid, 3–4 mm in diam., densely coarsely dark brown strigose; style glabrous. Fl. May–Jun, fr. Sep–Oct.

● Submontane thickets; 500–1700 m. Jiangxi.

517. Rhododendron crassimedium P. C. Tam, Bull. Bot. Res., Harbin 2(1): 96. 1982.

棒柱杜鹃 bang zhu du juan

Shrubs, 0.5–1 m tall; branches densely coarsely gray-brown strigose. Summer and winter leaves different. Petiole ca. 2 mm, strigose; leaf blade ovate, 1.3–1.5 × 0.7–0.8 cm; base cuneate or broadly cuneate; apex acuminate, also mucronate; abaxial surface densely tomentose, also sparsely coarsely ferruginous-strigose; adaxial surface dark green, densely covered with fine warts, sparsely pubescent. Inflorescence 3–6-flowered. Pedicel 0.6–0.7 cm, densely appressed-strigose; calyx lobes subcrenate, ca. 6 × 1 mm, densely coarsely ferruginous strigose; corolla funnelform, ca. 1.2 × 1.5 cm; tube cylindric, ca. 7 × 3.5 mm, outer surface glabrous, inner surface puberulent; lobes elliptic-oblong or oblong, ca. 0.5 × 0.3 cm, apex subrounded; stamens 5, unequal, 1.3–1.5 cm, filaments flat, glabrous; ovary ovoid, ca. 3.5 mm in diam., densely strigose; style stout, 1–1.2 cm, shorter than stamens, glabrous. Fl. Apr–May.

● Open thickets; 1000–1600 m. Jiangxi.

518. Rhododendron tingwuense P. C. Tam, Med. Mat. Guangdong 4: 36. 1978.

鼎湖杜鹃 ding hu du juan

Rhododendron huiyangense W. P. Fang & M. Y. He.

Shrubs, 1.5–2 m tall; young shoots slender, subverticillate, strigose. Leaves weakly dimorphic. Petiole 2–4 mm. Leaf blade thickly leathery, elliptic or obovate-elliptic, 1–2.5 × 0.5–1.3 cm; base broadly cuneate or rounded; margin revolute; apex shortly acuminate; both surfaces coarsely strigose. Inflorescence usually 6–10-flowered. Pedicel 0.3–0.4 cm, densely coarsely dark brown strigose; calyx lobes inconspicuous, strigose; corolla narrowly funnelform, purplish, 1–1.6 cm; tube ca. 8 mm; lobes oblong, ca. 0.8 cm; stamens 5, ca. 1.7 cm, exserted, filaments white, pubescent; ovary ovoid, ca. 3 mm, silky tomentose and coarsely strigose; style ca. 1 cm, shorter than stamens, glabrous. Capsules ovoid, ca. 5 mm, densely coarsely strigose. Fl. Mar, fr. Jul–Aug.

● Mountain ridges; 800–900 m. Guangdong.

519. Rhododendron taipaoense T. C. Wu & P. C. Tam, Med. Mat. Guangdong 4: 36. 1978.

大埔杜鹃 da pu du juan

Shrubs, 1–1.5 m tall; branchlets many, densely silky pale gray setose and glandular pubescent. Summer and winter leaves different. Petiole 5–10 mm, indumentum as for branchlets; leaf blade leathery, elliptic, oblong or rarely oblong-elliptic, 2.5–6.5 × 1–3 cm; base cuneate, rarely broadly cuneate; margin conspicuously revolute; apex obtuse or acute; adaxial surface densely coarsely yellow-brown felted strigose, later subglabrous, midrib densely short-setose and appressed-strigose. Inflorescence 7–10-flowered. Pedicel ca. 0.6 cm, densely coarsely ferruginous strigose; calyx lobes small, usually finely crenate and coarsely ferruginous strigose; corolla narrowly funnelform, red, ca. 1.8 cm; tube cylindric, ca. 10 × 2 mm in diam.; lobes oblong-linear, ca. 0.8 × 0.3 cm, apex acute; stamens 5, unequal, 2.6–2.8 cm, filaments glabrous; ovary ovoid, ca. 2 mm, densely strigose; style ca. 2.5 cm, shorter than stamens, glabrous. Capsules ovoid, 3–4 mm, coarsely dark red-brown strigose. Fl. Jun, fr. Aug–Sep.

● Open submontane forests, thickets; 700–800 m. E Guangdong.

520. Rhododendron litchiifolium T. C. Wu & P. C. Tam, Med. Mat. Guangdong 4: 35. 1979.

荔叶杜鹃 li ye du juan

Shrubs, ca. 2 m tall; branchlets slender, densely coarsely gray-white silky strigose. Petiole 7–12 mm, rarely shorter, densely gray-white strigose; leaf blade thinly leathery, oblong-elliptic or oblong-lanceolate, 2–5.3 × 0.6–2.2 cm; base cuneate; margin slightly revolute; obscurely crenate, sparsely coarsely strigose; apex acuminate; both surfaces sparsely gray-white strigose. Inflorescence 10–12-flowered. Pedicel 0.8–1.1 cm, densely coarsely ferruginous silky strigose; calyx lobes obscure, to 5 mm, densely ferruginous strigose; corolla narrowly funnelform, purple-red, lacking flecks, 2–2.2 × ca. 3 cm; tube narrowly cylindric, ca. 10 × 1–3 mm; lobes spreading, oblong, 1–1.2 × ca. 0.6 cm, apex acute; stamens 5, equal, ca. 3 cm, filaments flat, glabrous; ovary ovoid, ca. 3 mm, ferruginous strigose; style ca. 2.4 cm, shorter than stamens, glabrous. Fl. May.

● Thickets, valleys, by rivers. S Guangdong.

521. Rhododendron polyraphidoideum P. C. Tam, Bull. Bot. Res., Harbin 2(4): 84. 1982.

千针叶杜鹃 qian zhen ye du juan

Shrubs, branchlets slender, coarsely strigose. Summer and winter leaves different. Petiole usually less than 2 mm, densely ferruginous strigose; leaf blade leathery, ovate or oblong-ovate, 1.2–2 × 0.7–1 cm; base cuneate at base; margin slightly revolute and undulate; apex acute; midrib prominent on both surfaces; lateral veins hidden on both surfaces. Inflorescence 2- or 3-flowered. Pedicel ca. 0.4 cm, densely strigose; calyx cup-shaped; lobes subovate to ovate-oblong, ca. 2 × 1.5 mm, outer surface and margin coarsely strigose, glabrous within; corolla shortly funnel-campanulate, 1.2–1.4 cm; tube cylindric, ca. 7 × 4 mm; lobes unequal, 0.5–0.75 × ca. 0.3 cm; stamens 5, unequal, 1.5–2 cm, filaments sparsely glandular-hairy near the base; ovary ovoid, ca. 3.5 mm, densely strigose; style 1.7–2 cm, longer than or ± as long as stamens, glabrous or hairy at base. Capsule conical subovoid, ca. 5 mm in diam., coarsely strigose.

● Dense forests on mountain summits; 800–1500 m. N Fujian, W Guangdong, Guangxi, S Hunan.

1a. Style glabrous ..... 521a. var. *polyraphidoideum*
1b. Style coarsely dark brown strigose ... 521b. var. *montanum*

521a. Rhododendron polyraphidoideum var. **polyraphidoideum**

千针叶杜鹃(原变种) qian zhen ye du juan (yuan bian zhong)

Style glabrous. Fl. Apr.

● N Fujian, SE Hunan.

521b. Rhododendron polyraphidoideum var. **montanum** P. C. Tam, Bull. Bot. Res., Harbin 2(4): 85. 1982.

岭上杜鹃 ling shang du juan

Style coarsely dark brown strigose below and near the base. Fl. Aug, fr. Oct–Nov.

● Dense forests on mountain summits; 800–1500 m. W Guangdong, Guangxi, S Hunan.

This variety may not belong to *Rhododendron polyraphidoideum*. It was treated as a synonym of *R. chunii* by Geng (in Acta Phytotax. Sin. 42: 566. 2004).

522. Rhododendron nanpingense P. C. Tam, Bull. Bot. Res., Harbin 2(4): 82. 1982.

南平杜鹃 nan ping du juan

Shrubs; branches cylindric, glabrous; young shoots densely coarsely yellow-brown silky strigose. Possibly summer and winter leaves different. Petiole 4–10 mm, densely strigose; leaf blade elliptic or oblong-elliptic, 2–3.5 × 0.9–1.8 cm; base narrowly cuneate or subrounded; margin revolute and entire, with spine-like cilia; apex acuminate; adaxial surface coarsely white silky strigose; lateral veins conspicuous on both surfaces. Inflorescence 3- or 4-flowered. Pedicel 0.8–1 cm, densely ferruginous strigose; calyx lobes inconspicuous, obtusely triangular; corolla narrowly funnelform, without flecks, ca. 1.5 cm; tube cylindric, ca. 9 × 2.5 mm, glabrous; lobes obovate-oblong, ca. 0.7 cm, apex obtuse; stamens 5, unequal, 2.2–2.7 cm, exserted, filaments puberulent below; ovary ovoid, ca. 2 mm, densely ferruginous-strigose; style ca. 2.4 cm, shorter than some stamens, glabrous. Fl. Mar–Apr.

● C Fujian.

523. Rhododendron meridionale P. C. Tam, Guihaia 2: 71. 1982 [*"meridionalis"*].

南边杜鹃 nan bian du juan

Erect shrubs, ca. 3 m tall; branchlets slender, coarsely ferruginous strigose at first, later glabrescent. Summer and winter leaves different. Petiole 3–5 mm, densely dark brown strigose; leaf blade papery, lanceolate or narrowly lanceolate, 1.5–4

(–7.5) × 0.5–1.5 cm; base narrowly cuneate; margin revolute, undulate; apex shortly caudate-acuminate; midrib slightly impressed adaxially, lateral veins 5–6-paired, slightly impressed, not reaching the margin. Inflorescence 3–6-flowered. Pedicel 1.3–1.5 cm, densely coarsely long yellowish brown strigose; calyx lobes obscure, coarsely ferruginous setose-strigose; corolla broadly funnelform, purple or purple-red, without purple flecks, 2.8–3.1 cm; tube cylindric, 9–11 × ca. 4 mm, glabrous; lobes spreading, oblong-lanceolate, 1.6–2 × ca. 0.8 cm; stamens 5, subequal, ca. 3.5 cm, exserted, filaments glabrous; ovary ovoid, ca. 3 mm, densely coarsely yellow-brown setose-strigose; style ca. 3.5 cm, as long as stamens, glabrous. Capsules ovoid, ca. 7 mm, coarsely gray-brown-strigose. Fl. Mar–Apr, fr. Oct–Nov.

● Valley forests, open forests, ravines; 500–1300 m. N and S Guangxi.

1a. Blade of spring leaves to 2 × 0.2–0.4 cm, margin strongly revolute, lateral veins obscure abaxially; style glabrous ..... 523c. var. *minus*
1b. Blade of spring leaves 5–7.5 × 0.5–1.3 cm, margin not strongly revolute, lateral veins prominent abaxially; style glabrous or hairy at base.
  2a. Style completely glabrous ..... 523a. var. *meridionale*
  2b. Style coarsely brown setose-strigose at base ..... 523b. var. *setistylum*

523a. Rhododendron meridionale var. **meridionale**

南边杜鹃(原变种) nan bian du juan (yuan bian zhong)

Blade of spring leaves 5–7.5 × to 1.3 cm, margin not conspicuously revolute, lateral veins prominent abaxially. Style glabrous.

● Valley forests; 600–1300 m. S Guangxi.

523b. Rhododendron meridionale var. **setistylum** P. C. Tam, Guihaia 2: 72. 1982.

糙柱杜鹃 cao zhu du juan

Blade of spring leaves 5–7.5 × to 1.3 cm, margin not conspicuously revolute, lateral veins prominent abaxially. Style coarsely brown setose-strigose at base. Fl. Mar–Apr, fr. Jul–Aug.

● Open forests, ravines; 500–700 m. S Guangxi.

Judging from the types of both names, var. *setistylum* may not be distinct from var. *meridionale*.

523c. Rhododendron meridionale var. **minus** P. C. Tam, Guihaia 2: 72. 1982 [*"minor"*].

狭叶南边杜鹃 xia ye nan bian du juan

Blade of spring leaves to 2 × 0.2–0.4 cm, margin conspicuously revolute, lateral veins obscure abaxially. Style glabrous. Fr. Jun.

● Ravines; ca. 900 m. N Guangxi.

524. Rhododendron jasminoides M. Y. He, J. Sichuan Univ., Nat. Sci. Ed. 1984(1): 93. 1984.

素馨杜鹃 su xin du juan

Shrubs, to 5 m tall; young shoots shortly glandular-setose, glabrescent. Petiole 4–7 mm, densely coarsely silky brown-strigose; leaf blade thinly leathery, elliptic or elliptic-ovate, 4.5–8(–9.5) × 2.5–4.5 cm; base broadly cuneate; margin subentire; apex acuminate; abaxial surface sparsely shortly brown-setose; lateral veins 5–8-paired, not reaching margin. Inflorescence 10–12-flowered. Pedicel 0.8–1 cm, densely silky brown-strigose; calyx lobes small, triangular-ovate, densely shortly brown-setose; corolla narrowly funnelform, pink, without purple flecks, ca. 2 cm; tube cylindric, ca. 1.1 × 0.3 cm, both surfaces glabrous; lobes ovate, ca. 0.9 cm; stamens 5, unequal, 1.9–2.7 cm, exserted, filaments flat, glabrous; ovary ovoid, ca. 3 mm, densely shortly brown-setose; style purplish, 2–2.2 cm, often shorter than stamens, glabrous; stigma brown, capitate. Fl. Apr–May.

● Mountain forests. E Guangxi.

525. Rhododendron florulentum P. C. Tam, Bull. Bot. Res., Harbin 2(4): 80. 1982.

龙岩杜鹃 long yan du juan

Rhododendron hepaticum P. C. Tam; *R. piceum* P. C. Tam.

Shrubs; branchlets short, shortly ferruginous spreading setose and glandular-setose. Spring and summer leaves different. Petiole 6–10 mm, indumentum as for branchlets; spring leaf blade ovate or elliptic to elliptic-ovate, 3.5–8.5 × 1.2–4.5 cm; base broadly cuneate or subrounded; apex subacute to slightly emarginate; abaxial surface densely yellow-brown woolly and ferruginous strigose; adaxial surface with scattered soft silvery hairs; summer leaves 2.2–3.0 cm, otherwise as for spring leaves. Inflorescence 12–14-flowered. Pedicel 0.9–1.3 cm, densely pale strigose; calyx cup-shaped; lobes triangular, small, coarsely strigose, apex acute; corolla tubular-funnelform, rose-pink to reddish purple, ca. 2.5 cm; lobes narrowly oblong or lanceolate-oblong, ca. 1.2 × 0.4 cm, margin shallowly undulate, apex shortly acuminate; stamens 5, unequal, 2.5–2.8 cm, longer than style, filaments glabrous; ovary ovoid, ca. 3 mm, densely strigose; style slender, ca. 2.3 cm, glabrous. Fl. May.

● Mixed forests, thickets on mountain slopes. C and SW Fujian, NE Guangdong (Jiaoling).

Rhododendron hepaticum and *R. piceum* are better treated as synonyms of *R. florulentum,* not of *R. rufulum* (*R. apricum* in the present account) as was given in FRPS (57(2): 400. 1994).

526. Rhododendron unciferum P. C. Tam, Guihaia 2: 73. 1982.

垂钩杜鹃 chui gou du juan

Shrubs; branches cylindric, subverticillate, densely coarsely ferruginous strigose, later subglabrous. Spring and summer leaves possibly dimorphic. Petiole 2–3 mm, ferruginous strigose, hairs flat; leaf blade ovate or elliptic-ovate, usually 1.5–2.5(–3.2) × 1–1.7 cm; base broadly cuneate to subrounded; margin revolute and finely crenate; apex acute; abaxial surface sparsely strigose; adaxial surface glabrous except for midrib. Inflorescence 7–12-flowered. Pedicel 0.2–0.3 cm, densely fer-

ruginous-strigose; calyx lobes broadly oblong or oblong-triangular, small, ca. 2.5 mm, densely coarsely strigose; corolla funnelform, reddish purple, without purple flecks, 1.2–1.3 × ca. 0.8 cm; tube 6–7 × ca. 2 mm, glabrous; lobes long-ovate, glabrous; stamens 5, unequal, 1.3–1.7 cm, filaments glabrous. Fl. Apr–May.

● Rocks on hill summits; 700–800 m. S Guangxi.

527. Rhododendron apricum P. C. Tam, Bull. Bot. Res., Harbin 2(4): 79. 1982.

茶绒杜鹃 cha rong du juan

Rhododendron apricum var. *falcinellum* P. C. Tam; *R. falcinellum* (P. C. Tam) P. C. Tam; *R. rufescens* P. C. Tam (1982), not Franchet (1895); *R. rufulum* P. C. Tam.

Shrubs, deciduous, 0.5–2(–5) m tall; young shoots densely shortly glandular-setose, glabrescent. Summer and winter leaves different. Petiole 3–5(–12) mm, densely shortly red-brown-glandular-setose; leaf blade leathery, elliptic or narrow-elliptic, rarely ovate-elliptic, 2–5(–10) × 1–2(–5) cm; base broadly cuneate or subrounded; margin conspicuously revolute, shortly brown-setose; apex shortly acuminate; abaxial surface densely shortly red-brown-setose along veins; adaxial surface shortly silky setose, glabrescent. Inflorescence to 18-flowered. Pedicel ca. 1 cm, densely shortly red-brown setose; calyx lobes minute, densely strigose, apex truncate; corolla narrowly funnelform, purple-red, purplish or pink, without purple flecks, 1.8–2.3 cm; tube narrowly long-cylindric, 1–1.3 cm; lobes narrowly oblong, 0.8–1 cm, glabrous; apex mucronate; stamens 5, unequal, 2–2.5 cm, filaments glabrous; ovary ca. 3 mm, densely shortly silky setose; style ca. 2.7 cm, glabrous. Capsule ovoid, ca. 7 × 5 mm, densely shortly glandular-setose. Fl. Apr–May, fr. Aug.

● Open forests and thickets, mixed forest margins; 400–800 m. C and S Fujian.

Rhododendron rufulum may be distinct from *R. apricum,* in which case all the synonyms cited above relate to *R. rufulum*.

528. Rhododendron kwangtungense Merrill & Chun, Sunyatsenia 1: 76. 1930.

广东杜鹃 guang dong du juan

Rhododendron fongkaiense C. N. Wu & P. C. Tam.

Shrubs, deciduous, 1.5–3 m tall; young shoots densely long-setose, setae to 4 mm, and shortly glandular-setose. Summer and winter leaves different. Petiole 4–10(–18) mm, indumentum as for young shoots; leaf blade subleathery, lanceolate to oblong-lanceolate or elliptic-lanceolate, 3–8 × 2–4 cm; base cuneate; apex acuminate and mucronate; abaxial surface sparsely setose-ciliate; adaxial surface sparsely coarsely strigose along midrib and lateral veins. Inflorescence 8–9(–16)-flowered. Pedicel 0.7–1 cm, densely ferruginous setose and shortly glandular-hairy; calyx inconspicuous, lobes triangular, very small, margin long ferruginous-setose; corolla narrowly funnelform, purple-red or white, ca. 2 cm; tube narrowly oblong, ca. 10 × 1.5–2.5 mm, glabrous; lobes spreading, oblong, ca. 1 cm, apex obtuse to rounded; stamens 5, subequal, to 2.5 cm, exserted, filaments glabrous; ovary ovoid, densely long brown-setose; style to 3 cm, longer than stamens, glabrous. Capsules oblong-ovate, 5–10 mm, setose. Fl. May, fr. Jun–Dec.

● Thickets; 800–1600 m. Guangdong, NE Guangxi, Guizhou, S Hunan.

529. Rhododendron rivulare Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 58: 152. 1921.

溪畔杜鹃 xi pan du juan

Shrubs, evergreen, 1–3 m tall; young shoots densely shortly ferruginous glandular-hairy, also with coarse flat appressed hairs and long setae. Summer and winter leaves different. Petiole 5–10 mm, densely shortly ferruginous glandular-hairy; leaf blade papery, ovate-lanceolate or oblong-ovate, 5–9(–11.5) × 1–4 cm; base subrounded; margin entire, shortly setose; apex acuminate and mucronate; abaxial surface conspicuously hairy on midrib; adaxial surface sparsely villous, later with hair remnants only on midrib; lateral veins not reaching the margin. Inflorescence more than 10-flowered. Pedicel ca. 1.5 cm, densely shortly glandular-hairy and with coarse long flat appressed hairs; calyx lobes narrowly triangular, 2–5 mm, shortly pale yellow-brown glandular-hairy and coarsely long-strigose; corolla funnelform, purple-red, ca. 2.3 cm; tube narrowly cylindric, widening above, ca. 13 × 2 mm, outer surface glabrous, inner surface puberulent, lobes oblong-ovate; stamens 5, unequal, 2.5–2.8 cm, exserted, filaments puberulent below; ovary ovoid, densely red-brown-setose. Capsule oblong-ovoid, ca. 9 × 4 mm, densely long setose. Fl. Apr–Jun, fr. Jul–Nov.

● Dense valley forests; 700–1200 m. Guangdong, Guangxi, Guizhou, Hubei, Hunan, Sichuan.

530. Rhododendron indicum (Linnaeus) Sweet, Hort. Brit., ed. 2, 343. 1830.

皋月杜鹃 gao yue du juan

Azalea indica Linnaeus, Sp. Pl. 1: 150. 1753; *A. macrantha* Bunge; *Rhododendron breynii* Planchon; *R. danielsianum* Planchon; *R. decumbens* D. Don ex G. Don; *R. hannoense* Nakai; *R. lateritium* Planchon; *R. macranthum* (Bunge) G. Don (1834), not Griffith (1848).

Shrubs, semievergreen, 1–2 m tall; branches many; young shoots densely red-brown strigose, glabrescent. Summer and winter leaves different. Petiole 2–4 mm, coarsely red-brown strigose; leaf blade papery, narrowly lanceolate or oblanceolate, 1.7–3.2(–4.5) × ca. 0.6 cm; base narrowly cuneate; margin sparsely and finely crenate-serrate; apex obtusely pointed; abaxial surface sparsely red-brown strigose; adaxial surface shiny-strigose. Inflorescence 1–3-flowered. Pedicel 0.6–1.2 cm, coarsely white strigose; calyx lobes elliptic-ovate or suborbicular, pale green, 2–3 × 1.5–2 mm, softly white-hairy; corolla broadly funnelform, bright red, occasionally rose-red, with dark red flecks, 3–4 × 3.7(–6) cm; tube ca. 13 mm, lobes broadly elliptic, 1.7–2 × ca. 1.6 cm; stamens 5, unequal, 1.6–2.2 cm, shorter than corolla, filaments puberulent at base; ovary ca. 3 mm, densely shiny brown strigose; style 2.3(–4.5) cm, longer than stamens, glabrous. Capsule oblong-ovoid, 6–8 mm, densely red-brown strigose. Fl. May–Jun.

Widely cultivated in China [native to Japan].

531. Rhododendron chrysocalyx H. Léveillé & Vaniot, Repert. Spec. Nov. Regni Veg. 2: 113. 1906.

金萼杜鹃 jin e du juan

Shrubs, deciduous, 1–3 m tall; young shoots densely coarsely brown strigose. Summer and winter leaves different. Petiole 3–5 mm, densely coarsely brown strigose; leaf blade papery, linear-lanceolate to oblanceolate, 1.5–4(–6) × 0.5–1.3 cm; base narrowly cuneate; margin revolute, finely crenate towards apex; apex acuminate and mucronate; both surfaces sparsely coarsely brown-strigose, especially on the midrib. Inflorescence 4–7-flowered. Pedicel 0.9–1.8 cm, densely coarsely yellow-brown-strigose; calyx very small, yellow-brown-strigose; corolla narrowly funnelform, white to pale pink or purple, 2.4–2.9 cm; tube narrowly cylindric, widening towards base, 13–15 × 2–3 mm, lobes spreading, oblong-ovate, ca. 1 × 0.5 cm; stamens 5, ca. 3.5 cm, long-exserted, filaments flat, glabrous or pubescent below; ovary subovoid, densely coarsely long shiny yellow-brown-strigose; style ca. 5 cm, longer than stamens, glabrous. Capsules long ovoid, 8–10 mm, densely long yellow-brown strigose. Fl. Mar–Jun, fr. Jun–Oct.

● Thickets, shady slopes; 300–1000 m. N Guangxi, Guizhou, W Hubei, Sichuan.

1a. Leaves lanceolate to oblanceolate; inflorescence 4–7-flowered; corolla white to pale pink, tube ca. 3 mm in diam., filaments pubescent below ..... 531a. var. *chrysocalyx*
1b. Leaves narrowly oblong, linear-oblanceolate or linear-lanceolate; inflorescence 4- or 5-flowered; corolla purple-red, tube ca. 2 mm in diam., filaments glabrous ..... 531b. var. *xiushanense*

531a. Rhododendron chrysocalyx var. **chrysocalyx**

金萼杜鹃(原变种) jin e du juan (yuan bian zhong)

Rhododendron spinigerum H. Léveillé.

Leaf blade lanceolate to oblanceolate. Inflorescence 4–7-flowered. Corolla white to pale pink, tube ca. 3 mm in diam.; filaments pubescent below. Fl. Mar–May, fr. Jun–Oct.

● Thickets; 500–1000 m. N Guangxi, Guizhou, W Hubei.

531b. Rhododendron chrysocalyx var. **xiushanense** (W. P. Fang) M. Y. He in L. C. Hu & M. Y. Fang, Fl. Reipubl. Popularis Sin. 57(2): 407. 1994.

秀山金萼杜鹃 xiu shan jin e du juan

Rhododendron xiushanense W. P. Fang, Acta Phytotax. Sin. 21: 461. 1983.

Leaf blade narrowly oblong, linear-oblanceolate or linear-lanceolate. Inflorescence 4- or 5-flowered. Corolla purple-red, tube ca. 2 mm in diam.; filaments glabrous. Fl. May–Jun.

● Shady slopes; 300–400 m. Sichuan.

Perhaps var. *xiushanense* is not distinct from var. *chrysocalyx*.

532. Rhododendron naamkwanense Merrill, Lingnan Sci. J. 13: 42. 1934.

南昆杜鹃 nan kun du juan

Small shrubs, 1–1.5(–5) m tall; young shoots densely gray-brown strigose. Leaves all similar. Petiole 1–2 mm, coarsely gray-brown strigose; leaf blade leathery, oblong-obovate or oblong-oblanceolate, 1.5–4 × 0.5–1.2 cm; base cuneate; margin revolute, irregularly shallowly undulate-toothed; apex acute and mucronate; abaxial surface sparsely coarsely strigose especially on the midrib; adaxial surface with pale white wax when dried. Inflorescence 2–4-flowered. Pedicel ca. 0.7 cm, densely coarsely shiny-brown strigose; calyx obsolete, coarsely shiny-brown-strigose; corolla funnelform to narrowly campanulate, purple-red, the upper lobe with or without purple flecks, 2.5–2.8 cm; tube tapering toward the base, ca. 18 × 5 mm, outer surface glabrous, inner surface puberulent; lobes oblong-ovate to oblong-elliptic, ca. 1 × 0.8 cm; stamens 5, unequal, to 3.5 cm, exserted from corolla tube, filaments flat, with scurfy protrusion at base; ovary ovoid, densely shiny brown-strigose; style ca. 4 cm, longer than stamens, glabrous. Capsules long-ovoid, 5–6 mm, densely strigose. Fl. Apr–May, fr. Oct–Nov.

● Forests, shaded rocky cliffs; 300–500 m. Guangdong, S Jiangxi.

1a. Leaf blade with lateral veins abaxially conspicuous; upper lobe of corolla apparently without flecks ..... 532a. var. *naamkwanense*
1b. Leaf blade with lateral veins abaxially inconspicuous; upper lobe of corolla with dark red flecks ..... 532b. var. *cryptonerve*

532a. Rhododendron naamkwanense var. **naamkwanense**

南昆杜鹃(原变种) nan kun du juan (yuan bian zhong)

Rhododendron ripicola P. C. Tam; *R. riparium* A. Wang & P. C. Tam (1978), not Kingdon Ward (1930).

Leaf blade with lateral veins abaxially conspicuous. Upper lobe of corolla apparently without flecks.

● Shaded rocky cliffs; 300–500 m. Guangdong, S Jiangxi.

532b. Rhododendron naamkwanense var. **cryptonerve** P. C. Tam, Bull. Bot. Res., Harbin 2(1): 94. 1982.

紫薇春 zi wei chun

Leaf blade with lateral veins abaxially inconspicuous. Upper lobe of corolla with dark red flecks.

● Forests; ca. 500 m. Guangdong, S Jiangxi.

533. Rhododendron mariae Hance, J. Bot. 20: 230. 1882.

岭南杜鹃 ling nan du juan

Rhododendron bicorniculatum P. C. Tam; *R. gratiosum* P. C. Tam; *R. papyrociliare* P. C. Tam.

Shrubs, deciduous, 1–3(–7.5) m tall; old branches with hair remains; young shoots coarsely red-brown strigose. Summer and winter leaves different. Petiole 4–10 mm, densely red-coarse brown strigose; leaf blade leathery, elliptic-lanceolate to elliptic-obovate, 3–7.8(–11) × 1.3–4 cm; base cuneate; margin slightly revolute, coarsely strigose; apex acuminate and mucro-

nate; abaxial surface sparsely rufous-strigose; adaxial surface ± glabrescent; lateral veins not reaching the margin. Inflorescence 7–16-flowered. Pedicel 0.5–1.2 cm, densely softly brown-hairy; calyx very small, softly yellowish-brown-hairy; corolla narrowly funnelform, lilac, 1.5–2.2 cm; tube cylindric, ca. 13 mm, glabrous; lobes spreading, oblong-lanceolate, apex obtusely pointed; stamens 5, unequal, 1.7–2.5 cm, exserted, filaments broader and glabrous at base; ovary ovoid, ca. 2 mm, densely long silky red-brown-strigose; style longer than stamens, glabrous. Capsules long-ovoid, 9–14 × ca. 3 mm, densely coarsely red-brown-strigose. Fl. Mar–Jun, fr. Jul–Nov.

● Mountain thickets; 500–1300 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi.

Rhododendron bicorniculatum and *R. gratiosum* may in fact be distinct species.

534. Rhododendron kwangsiense Hu ex P. C. Tam, Surv. Gen. Rhododendron S. China, 105. 1983.

广西杜鹃 guang xi du juan

Shrubs, semievergreen, 1–3 m tall; young shoots slender, densely brown-strigose. Summer and winter leaves different. Petiole 3–6 mm, densely coarsely brown-strigose; leaf blade leathery, lanceolate or elliptic-lanceolate to obovate, 1.5–3.6 × 1–2 cm; base cuneate; margin slightly revolute; obscurely obtusely toothed; apex acuminate and mucronate or subrounded; both surfaces densely coarsely brown-strigose or abaxial surface coarsely brown-strigose along midrib, leaf blade otherwise glabrous. Inflorescence 5–8-flowered, rarely more. Pedicel 0.5–0.7 cm, densely red-brown-strigose; calyx obscure, densely red-brown-strigose; corolla narrowly funnelform, purple-red or pale purple, 2–2.5 × ca. 3 cm, tube narrowly cylindric, 12–15 mm; lobes long-lanceolate, ca. 1 cm, apex pointed; stamens 5, subequal, ca. 2.7 cm, exserted; filaments flat, glabrous; ovary ovoid, ca. 3 mm, dark brown, densely strigose; style ca. 2.8 cm, longer than stamens, glabrous. Capsule long-ovoid, up to 6 × ca. 4 mm, densely brown-strigose. Fl. May–Jun, fr. Jul–Nov.

● Open forests, thickets; 1000–1800 m. W Guangdong, N Guangxi, SE Guizhou, W Hunan.

Perhaps var. *obovatifolium* is not distinct from var. *kwangsiense* and *Rhododendron kwangsiense* would be better treated as a subspecies of *R. mariae*.

From the original description and accompanying plate, *Rhododendron tiantangense* G. Z. Li (Guihaia 15: 298. 1995), described from Guangxi, is closely allied to *R. kwangsiense,* differing in having stamens pilose below. The present authors hesitate to confirm its status as a distinct species as they have seen no material; however, they do not agree with the original author's suggestion of an affinity with *R. microphyton*.

1a. Leaves elliptic to elliptic-lanceolate, apex acuminate and mucronate, adaxial surface glabrous ..... 534a. var. *kwangsiense*
1b. Leaves obovate, apex subrounded, adaxial surface densely coarsely brown-strigose ..... 534b. var. *obovatifolium*

534a. Rhododendron kwangsiense var. **kwangsiense**

广西杜鹃(原变种) guang xi du juan (yuan bian zhong)

Rhododendron kwangsiense var. *salicinum* P. C. Tam; *R. kwangsiense* var. *subfalcatum* P. C. Tam; *R. mariae* Hance subsp. *kwangsiense* (Hu ex P. C. Tam) D. F. Chamberlain & Rae.

Leaf blade elliptic to elliptic-lanceolate, apex acuminate and mucronate; abaxial surface coarsely brown-strigose along midrib, otherwise glabrous; adaxial surface glabrous.

● Open forests, thickets; 1000–1800 m. W Guangdong, N Guangxi, SE Guizhou, W Hunan.

534b. Rhododendron kwangsiense var. **obovatifolium** P. C. Tam, Surv. Gen. Rhododendron S. China, 106. 1983.

钝圆杜鹃 dun yuan du juan

Leaf blade obovate, apex subrounded; both surfaces densely coarsely brown-strigose. Fl. Apr.

● SW Guangdong.

535. Rhododendron microphyton Franchet, Bull. Soc. Bot. France 33: 235. 1886.

亮毛杜鹃 liang mao du juan

Erect shrubs, evergreen, 1–2(–5) m tall; shoots densely red-brown-strigose, hairs flat. Leaves all similar. Petiole 2–5 mm, densely coarsely red-brown-strigose, hairs flat; leaf blade papery, elliptic or ovate-lanceolate, 0.5–3.2 × ca. 1.3 cm; base cuneate; margin finely crenate, with coarse appressed hairs above; both surfaces sparsely coarsely red-brown-strigose, more conspicuously so along midrib. Inflorescence 3–7-flowered, rarely with 1 or 2 lateral inflorescences. Pedicel 0.3–0.6 cm, densely coarsely shiny red-brown-strigose; calyx lobes shallowly lanceolate, small, densely long red-brown-strigose; corolla funnelform, whitish to rose or reddish, the upper 3 lobes with red or purple flecks within, to 2 cm; tube narrowly cylindric, 8–10 mm, outer surface glabrous or with long fine hairs; lobes oblong, apex rounded; stamens 5, exserted, filaments linear, puberulent at base; ovary ovoid, ca. 4 mm, 5-locular, densely coarsely long shiny red-brown-strigose; style slender, longer than stamens, glabrous. Capsule ovoid, up to 8 mm, densely shiny red-brown-strigose and puberulent. Fl. Mar–Jul(–Sep), fr. Jul–Dec.

Evergreen broad-leaved forest margins, thickets, ridges; (1300–)2000–2200(–3200) m. N Guangxi, W Guizhou, SW Sichuan, SE and W Yunnan [N Myanmar].

1a. Corolla whitish to rose, outer surface glabrous ..... 535a. var. *microphyton*
1b. Corolla reddish, outer surface finely long-pilose ..... 535b. var. *trichanthum*

535a. Rhododendron microphyton var. **microphyton**

亮毛杜鹃(原变种) liang mao du juan (yuan bian zhong)

Corolla whitish to rose, outer surface glabrous. Fl. Mar–Jun(–Sep), fr. Jul–Dec.

Thickets, ridges; (1300–)2000(–3200) m. N Guangxi, W Guizhou, SW Sichuan, SE and W Yunnan [N Myanmar].

535b. Rhododendron microphyton var. **trichanthum** A. L. Chang ex R. C. Fang, Acta Bot. Yunnan. 4: 249. 1982.

碧江亮毛杜鹃 bi jiang liang mao du juan

Corolla reddish, outer surface finely long-pilose. Fl. Jun–Jul.

● Evergreen broad-leaved forest margins, thickets; ca. 2200 m. W Yunnan.

Perhaps var. *trichanthum* does not merit recognition.

536. Rhododendron obtusum (Lindley) Planchon, Fl. Serres Jard. Eur. 9: 80. 1853–1854.

钝叶杜鹃 dun ye du juan

Azalea obtusa Lindley, J. Hort. Soc. London 1: 152. 1846.

Low shrubs, 1(–4) m tall; branchlets slender, often pseudo-verticillate, densely coarsely ferruginous-strigose. Leaves all similar. Petiole ca. 2 mm, coarsely gray-white-strigose; leaf blade membranous, elliptic to elliptic-ovate or oblong-oblanceolate to obovate, 1–2.5 × 0.4–1.2 cm; base broadly cuneate; margin ciliate; apex obtusely pointed or rounded, sometimes mucronate; both surfaces sparsely coarsely strigose, more conspicuously so along midrib. Inflorescence usually 2- or 3-flowered. Pedicel 0.4–0.8 cm, densely coarsely ferruginous-strigose, hairs flat; calyx lobes ovate, to 4 mm, coarsely strigose; corolla funnel-campanulate, red to pink or reddish, one lobe with dark flecks, ca. 1.5 × 2.5 cm; lobes oblong, ca. 1 × 0.5 cm, apex obtuse; stamens 5, ca. as long as corolla, filaments, glabrous; ovary densely coarsely brown-strigose; style ca. 2.5 cm, longer than stamens, glabrous. Capsule conical to broadly elliptic-ovoid, ca. 6 mm, densely coarsely ferruginous-strigose.

Cultivated in E and SE China [of cultivated origin].

There are many varieties and garden hybrids of this widely cultivated plant, the first form of which originated in Shanghai. It seems likely that *Rhododendron obtusum* was derived from a hybrid of the Japanese *R. kiusianum* Makino.

537. Rhododendron adenanthum M. Y. He, J. Sichuan Univ., Nat. Sci. Ed. 1984(1): 94. 1984.

腺花杜鹃 xian hua du juan

Small shrubs, ca. 1 m tall; young shoots slender, densely coarsely brown strigose. Petiole ca. 3 mm, coarsely brown strigose; leaf blade papery, elliptic or elliptic-ovate, 2.5–4 × 0.9–1.3 cm; base broadly cuneate or subrounded; apex acute; abaxial surface sparsely coarsely strigose on midrib and lateral veins only; lateral veins obscure on both surfaces. Inflorescence usually 5-flowered. Pedicel to 0.4 cm, densely coarsely brown silky strigose; calyx lobes triangular-ovate, densely brown silky strigose; corolla funnel-campanulate, white, with purple flecks on upper lobes, ca. 1.1 cm; tube cylindric, 6–7 × ca. 4 mm, sparsely coarsely silky brown-strigose, outer surface glandular-hairy, inner surface pubescent; lobes unequal in size, elliptic or long-elliptic, ca. 0.5 × 0.3–0.4 cm; stamens 5, unequal, 1.4–1.7 cm, exserted, filaments flat, pubescent below; ovary ovoid, ca. 2.5 mm, densely coarsely silky brown-strigose; style ca. 1.1 cm, shorter than the stamens, densely coarsely silky brown-strigose below. Fl. Apr–May.

● Open forests on ridges. NE Guangxi.

538. Rhododendron hejiangense M. Y. He, Bull. Bot. Res., Harbin 5(4): 118. 1985.

合江杜鹃 he jiang du juan

Small shrubs, ca. 1 m tall; young shoots slender, densely coarsely reddish strigose. Petiole ca. 3 mm, pale red-strigose; leaf blade thinly leathery, oblong or oblong-elliptic, 1–1.5(–2.6) × 0.7–1.3 cm; base subrounded; margin slightly revolute; apex acute and mucronate; abaxial surface yellowish brown strigose; adaxial surface sparsely coarsely strigose or glabrous except for hairs at base of midrib. Inflorescence terminal, usually 3–6-flowered. Pedicel ca. 0.6 cm, densely reddish strigose; calyx obscure, densely strigose; corolla funnel-campanulate, white, upper lobe with purple flecks, ca. 1.1 cm; tube cylindric, 5–6 × ca. 3 mm, outer surface sparsely strigose, inner surface puberulent; lobes unequal, oblong, ca. 0.5 × 0.3 cm; stamens 5, unequal, 1.3–1.6 cm, exserted, filaments flat, glabrous; ovary ovoid, ca. 3 mm, densely coarsely silky yellowish brown-strigose; style ca. 1 cm, shorter than stamens, sparsely coarsely strigose to middle. Fl. May–Jun.

● Thickets, sides of channels. S Sichuan.

This species is said to resemble *Rhododendron chunii,* but it differs in the white corolla, the eglandular pedicel, corolla, and style, and in the glabrous filaments that are longer than the style.

539. Rhododendron fuchsiifolium H. Léveillé, Repert. Spec. Nov. Regni Veg. 13: 148. 1914 [*"fuchsiifolia"*].

贵定杜鹃 gui ding du juan

Small shrubs, 0.5–1.2 m tall; shoot slender, densely coarsely brown strigose. Leaves probably all similar. Petiole 2–3 mm, dense brown-strigose, hairs flat; leaf blade papery, ovate or elliptic-ovate, 1.3–3 × 0.8–1.5 cm; base broadly cuneate or subrounded; margin slightly revolute; apex acuminate and mucronate; abaxial surface strigose at base on midrib, otherwise glabrous; adaxial surface sparsely coarsely brown strigose; lateral veins 4–6-paired, not reaching the margin. Inflorescence 3- or 4-flowered. Pedicel ca. 0.4 cm, densely brown-strigose, hairs flat; calyx lobes ovate, small; corolla funnelform, pale rose, ca. 1 cm; tube ca. 4 mm, outer surface glandular hairy, inner surface pubescent; lobes oblong, ca. 0.6 cm, sparsely glandular hairy from base to middle; stamens 5, subequal, exserted, filaments flat, puberulent below; style sparsely glandular hairy below. Capsule ovoid, ca. 5 × 3–4 mm, densely coarsely brown-strigose. Fl. May–Jun, fr. Aug–Sep.

● Dense forests on ridges. Guangdong, Guangxi, S Guizhou.

540. Rhododendron viscidum C. Z. Guo & Z. H. Liu, Acta Bot. Yunnan. 10: 497. 1988.

粘质杜鹃 nian zhi du juan

Small shrubs, to 1 m tall; young shoots slender, densely coarsely red-brown-strigose, hairs flat. Petiole 2–6 mm, coarsely strigose; leaf blade leathery, obovate to elliptic-obovate or elliptic, 1–2 × 0.5–1.2 cm; base narrowly cuneate; margin slightly revolute, ciliate; apex acute and mucronate; both surfaces coarse-

ly red-brown-strigose; lateral veins 3–4-paired, not reaching margin. Inflorescence 4- or 5(–9)-flowered; flower buds very sticky. Pedicel 0.5–0.7 cm, coarsely red-brown-strigose, hairs flat; calyx lobes triangular-lanceolate, 2–3 mm, margin long-ciliate; corolla funnelform, pinkish purple or pale white, with dark red flecks on upper 3 lobes, 1–1.3 cm; tube cylindric, ca. 6 mm, outer surface villous and shortly glandular, inner surface pubescent; lobes ovate, 0.6–0.7 cm, outer surface puberulent along midrib; apex obtusely pointed; stamens 5, unequal, exserted; filaments pubescent at base; style shorter than stamens, puberulent at base. Capsule ovoid, 6–7 mm, red-brown-strigose. Fl. Apr–May, fr. Oct–Nov.

● Forests; 1800–2000 m. S Hunan.

From the original description, *Rhododendron viscidum* appears closely allied to, and is probably synonymous with, *R. viscigemmatum*. The two species were described from adjacent parts of Hunan and Guangxi, respectively.

541. Rhododendron rhuyuenense Chun ex P. C. Tam, Surv. Gen. Rhododendron S. China, 96. 1983.

乳源杜鹃 ru yuan du juan

Shrubs, to 3 m tall; shoots with long bristles and short glandular hairs. Summer and winter leaves different. Petiole 4–10 mm, densely long-setose and shortly glandular-hairy; leaf blade leathery, elliptic-lanceolate, long-lanceolate or broadly ovate, 2.5–6.5 × 1.5–3(–4.5) cm; base subrounded and slightly asymmetrical; margin revolute, long-setose, rarely shortly glandular-hairy; apex acuminate and mucronate; abaxial surface sparsely setose, setae may be reduced to swollen hair bases; adaxial surface subglabrous except for persistent setae along midrib, lateral veins not reaching the margin. Inflorescence ca. 12-flowered. Pedicel 0.8–1 cm, densely long brown-setose and shortly glandular-hairy; calyx lobes shallowly divided, ovate or triangular-ovate, small, densely coarsely long-strigose; corolla rotate-campanulate, pink or pink-purplish blue, the upper lobes with red flecks, ca. 1 cm; tube short, ca. 5 × 4 mm, outer surface glandular-hairy, inner surface puberulent; lobes spreading, ovate, as long as corolla tube; stamens 5, unequal, 1.5–1.8 cm, long-exserted, filaments puberulent at base; ovary ovoid, brown-setose and glandular-hairy; style ca. 1.2 cm, shorter than stamens, long red-brown-setose and glandular-hairy. Capsule ovoid, 5–6 × ca. 4 mm, long dark-setose. Fl. May–Jun, fr. Jul–Nov.

● Open forests and thickets; 1500 m. N Guangdong, S Hunan, E Jiangxi.

This species was described (in Chinese) and illustrated under the name "*Rhododendron lingii* Chun" (Ching, Iconogr. Cormophyt. Sin. 3: 151, t. 4256. 1974), which was not validly published.

542. Rhododendron crassistylum M. Y. He, J. Sichuan Univ., Nat. Sci. Ed. 24(1): 83. 1987.

粗柱杜鹃 cu zhu du juan

Low shrubs, ca. 1 m tall; old branches with hair remains; young shoots dark gray-brown, subverticillate, sparsely coarsely strigose. Petiole ca. 3.5 mm, hairy; leaf blade leathery, elliptic or elliptic-ovate, 1.3–2.5(–3) × 0.8–1.2 cm; base broadly cuneate or subrounded; margin slightly revolute, obtusely serrate; apex acuminate and mucronate; abaxial surface sparsely coarsely strigose; adaxial surface with mammiform prominences, subglabrous; midrib prominent abaxially, conspicuously impressed adaxially; lateral veins 4–5-paired, usually not obviously reaching the margin. Inflorescence 5–8(–13)-flowered. Pedicel ca. 0.7 cm, densely coarsely ferruginous strigose; calyx small, densely ferruginous-strigose; corolla funnelform, purplish, with dark purple flecks, 1–1.5 cm; tube cylindric, 5–7 × 3–4 mm, outer surface glabrous, inner surface puberulent; lobes spreading, oblong, ca. 0.6 × 0.3–0.4 cm, glabrous; stamens 5, subequal, 1.2–1.4 cm, exserted, filaments flat, glabrous; ovary conical, long-cylindric, ca. 3 mm, 5-loculed, densely coarsely ferruginous-strigose; style stout, ca. 1 cm, shorter than stamens, densely coarsely silky ferruginous-strigose below. Capsule conical, 4–5 mm. Fl. Apr–May.

● Mountain thickets. SW Jiangxi.

543. Rhododendron tsoi Merrill, J. Lingnan Sci. 13: 42. 1934.

两广杜鹃 liang guang du juan

Rhododendron subenerve P. C. Tam var. *nudistylum* P. C. Tam.

Shrubs, 0.5–1 m tall, semievergreen; young shoots densely coarsely castaneous-brown-strigose. Summer and winter leaves different. Petiole 1–2.5 mm, coarsely castaneous-brown-strigose; leaf blade leathery, elliptic or obovate, broadly elliptic, 0.5–1.4 × 0.4–0.9 cm; base cuneate; margin slightly revolute, sparsely setose-ciliate; apex obtuse or subrounded, often mucronate; abaxial surface more densely strigose, especially on midrib; adaxial surface sparsely strigose or subglabrous. Inflorescence 3–5-flowered. Pedicel 0.3–0.4 cm, densely castaneous-brown-strigose; calyx lobes small, coarsely strigose, apex subtruncate; corolla narrowly funnelform, rose, ca. 1 cm; tube 3–4 mm, outer surface glabrous, inner surface sparsely pubescent; lobes oblong to oblong-ovate, 0.5–0.6 × 0.3–0.4 cm, apex rounded; stamens 5, ca. 0.9 cm, slightly shorter than the corolla, filaments flat, puberulent below; ovary ovoid, densely coarsely castaneous-brown-strigose; style ca. 0.7 cm, glabrous. Capsule oblong-ovoid, 4–5 mm, coarsely castaneous-brown-strigose. Fl. Apr–May, fr. Jun–Aug.

● Open forests, arid mountains, meadows; 700–1600 m. S Guangdong, C and SW Guangxi.

544. Rhododendron fuscipilum M. Y. He, J. Sichuan Univ., Nat. Sci. Ed. 1984(1): 94. 1984.

棕毛杜鹃 zong mao du juan

Shrubs; young shoots densely strigose. Petioles to 4 mm, densely coarsely ferruginous-strigose; leaf blade papery, lanceolate or elliptic-lanceolate, 1.8–4.5 × 0.7–1.8 cm; base cuneate or subrounded; margin slightly revolute, coarsely strigose; apex acute; abaxial surface at first sparsely strigose, later sometimes coarsely strigose on midrib only; adaxial surface at first sparsely strigose. Inflorescence 4–7-flowered. Pedicel ca. 0.3 cm, densely coarsely silky yellowish-brown-strigose; calyx lobes small, coarsely ferruginous-strigose; corolla funnel-campanulate, pink, with purple flecks, 1–1.2 cm; tube cylindric, ca. 5 ×

2–3 mm, outer surface brown-glandular-hairy at base, inner surface pubescent; lobes long-ovate, 0.6–0.7 × 0.2–0.3 cm, glabrous; stamens 5, unequal, 1.2–1.6 cm, exserted, filaments flat, puberulent below; ovary ovoid, ca. 3 mm, densely ferruginous-strigose; style ca. 1.3 cm, coarsely ferruginous-strigose over entire length. Fl. May.

● E Guangxi.

545. Rhododendron hunanense Chun ex P. C. Tam, Bull. Bot. Res., Harbin 2(1): 92. 1982.

湖南杜鹃 hu nan du juan

Rhododendron hunanense var. *mangshanicum* P. C. Tam.

Shrubs, 1–2 m tall; young shoots densely brown-glandular-setose, also sparsely spreading-pubescent. Summer and winter leaves different. Petiole ca. 3 mm, densely setose-strigose; leaf blade papery, elliptic or elliptic-lanceolate, rarely obovate, 2.5–4.2(–7) × 1.5–2.5 cm; base cuneate or subrounded; margin entire and slightly revolute, shortly ciliate; apex acuminate and mucronate; abaxial surface densely coarsely setose-strigose; adaxial surface sparsely coarsely silky-strigose, later subglabrous with dense wartlike protuberances. Inflorescence 5–10-flowered. Pedicel 0.5–0.7 cm, densely coarsely brown-setose-strigose; calyx lobes oblong, small, densely strigose; corolla rotate-campanulate, white, purplish or reddish, upper lobes with red flecks, ca. 1.1 cm; tube cylindric, ca. 6 × 2.5 mm, inner surface puberulent; lobes spreading, broadly elliptic or subrounded, ca. 0.5 cm; stamens 5, unequal, 1.2–1.6 cm, exserted, filaments flat, puberulent at base; ovary ovoid, ca. 3 mm, densely coarsely brown-setose-strigose; style ca. 1.2 cm, shorter than or as long as the stamens, sparsely coarsely setose-strigose. Capsule ovoid, 5–6 × ca. 4 mm, densely setose-strigose. Fl. May, fr. Jul–Nov.

● Valley thickets; 500–1700 m. S Hunan, E Jiangxi.

546. Rhododendron myrsinifolium Ching ex W. P. Fang & M. Y. He, Bull. Bot. Res., Harbin 2(2): 88. 1982.

铁仔叶杜鹃 tie zi ye du juan

Rhododendron caespitulum P. C. Tam.

Small shrubs, ca. 1.5 m tall; young shoots sparsely setose or pubescent, later subglabrous. Leaves all similar. Petiole 2–3 mm, densely coarsely ferruginous appressed setose; leaf blade thickly leathery, elliptic, rarely obovate, 0.6–0.8 × 0.3–0.5 cm; base cuneate; margin slightly revolute, with red-brown punctate glands; apex acute, obtusely pointed and hard; both surfaces subglabrous; lateral veins prominent. Inflorescence 2- or 3-flowered. Pedicel ca. 0.4 cm, densely coarsely ferruginous-setose-strigose; calyx lobes obtuse, small, outer surface coarsely setose-strigose; corolla funnel-campanulate, purple, without flecks, ca. 1 cm; tube cylindric, ca. 4 × 2 mm; lobes slightly spreading, oblong or oblong-ovate, ca. 0.6 × 0.25 cm, glabrous, apex subrounded; stamens 5, unequal, 1.2–1.4 cm, exserted, filaments linear, glabrous; ovary ovoid, 2–3 mm, densely coarsely ferruginous-setose-strigose; style 1.2–1.5 cm, slightly curved, coarsely appressed setose below. Capsule ovoid, ca. 4 × 1.5–2 mm, densely ferruginous-setose-strigose. Fl. Apr–May, fr. Jul–Aug.

● Forests, mountain ridges; ca. 1800 m. S Guangxi.

547. Rhododendron guizhongense G. Z. Li, Guihaia 15: 198. 1995.

腺柱杜鹃 xian zhu du juan

Rhododendron glandulostylum W. P. Fang & M. Y. He, Bull. Bot. Res., Harbin 2(2): 84. 1982, not Komatsu (1918).

Small shrubs, 1–2 m tall; young shoots densely long dark brown-setose, later subglabrous. Summer and winter leaves different. Petiole 2–4 mm, densely long-setose; leaf blade papery, narrowly elliptic or elliptic-oblong, 2–3.5 × 1–1.4 cm; base cuneate or broadly cuneate; margin slightly revolute, obscurely crenate, ciliate; apex acuminate or mucronate; both surfaces sparsely coarsely strigose at first; abaxial surface later with a few hooklike hairs on midrib; lateral veins prominent on both surfaces. Inflorescence 3–5-flowered. Pedicel ca. 0.5 cm, densely long brown-setose and glandular; calyx lobes trianglar, 3–5 mm, coarsely brown-strigose; corolla funnelform, red or purple-red, ca. 1.2 × 1 cm; tube cylindric, ca. 6 × 4 mm, outer surace shortly glandular-hairy, inner surface pubescent; lobes 0.6–0.8 cm; stamens 5, unequal, up to 1.3 cm, slightly exserted from corolla, filaments flat, puberulent at base; ovary ovoid, 2–3 mm, densely brown-strigose; style 1.2–1.5 cm, shorter than some of the stamens, sparsely setose-strigose below, shortly glandular-hairy above. Fl. May.

● Mountain forests; 1200–1700 m. E Guangxi.

This species may be synonymous with *Rhododendron subenerve,* but is said to differ in the indumentum on the young shoots, etc.

548. Rhododendron subenerve P. C. Tam, Surv. Gen. Rhododendron S. China, 108. 1983.

灌阳杜鹃 guan yang du juan

Shrubs; young shoots densely coarsely red-brown-strigose. Leaves with 2 forms. Summer and winter leaves probably different. Petiole to 2 mm or ± absent, densely red-brown-strigose; leaf blade leathery, ovate or oblong-ovate, 1.5–3 × 0.7–1.1 cm; base broadly cuneate or subrounded; margin slightly revolute, coarsely red-brown-strigose; apex obtusely pointed and acute; abaxial surface subglabrous though with some hairs on midrib; adaxial surface coarsely strigose, glabrescent, midrib prominent on both surfaces; lateral veins obscure. Inflorescence 4- or 5-flowered. Pedicel 0.6–0.8 cm, densely red-brown-strigose; calyx lobes crenate, ca. 1 × 2 mm; corolla shortly funnelform, flower color unknown though apparently without flecks, ca. 0.9 cm; tube cylindric, ca. 3.5 × 3 mm; lobes oblong-ovate, ca. 0.55 × 0.3 cm, apex acute; stamens 5, unequal, 1.2–1.6 cm, filaments sparsely puberulent; ovary ovoid, ca. 3 mm; style ca. 1.3 cm, coarsely strigose below, finely glandular above. Capsule ovoid or subovoid, ca. 4 mm, densely coarsely red-brown-strigose. Fr. Sep–Nov.

● Dense mountain forests, forest margins. NE Guangxi.

549. Rhododendron malipoense M. Y. He, J. Sichuan Univ., Nat. Sci. Ed. 1984(1): 95. 1984.

麻栗坡杜鹃 ma li po du juan

Shrubs, ca. 2 m tall; young shoots pale purple, densely

brown-strigose. Petiole 3–7 mm, coarsely strigose; leaf blade papery, ovate or ovate-elliptic, rarely long-ovate, 2–4(–5.5) × 1.5–3 cm; base broadly cuneate or subrounded; margin crenate, sparsely coarsely strigose; apex acuminate or acute; abaxial surface with hairs only on the midrib and lateral veins; adaxial surface sparsely brown-strigose. Inflorescence 3- or 4-flowered. Pedicel ca. 0.5 cm, densely brown-strigose; calyx lobes small, with brown hairs; corolla funnelform, pinkish, without purple flecks, 1.6–2 cm; tube cylindric, ca. 10 mm, outer surface glabrous, inner surface puberulent; lobes oblong-obovate, 0.9–1.2 × ca. 0.5 cm, both surfaces glabrous; stamens 5, subequal, 1.9–2.1 cm, exserted from corolla tube, filaments flat, puberulent; ovary conical, ca. 3 mm, densely coarsely brown-strigose below; style coarsely strigose below, not glandular above. Capsule conical, ca. 5 × 4 mm, coarsely brown-strigose.

● Broad-leaved mixed forests; 1500–1700 m. S Yunnan.

550. Rhododendron cretaceum P. C. Tam, Surv. Gen. Rhododendron S. China, 108. 1983.

白枝杜鹃 bai zhi du juan

Shrubs, ca. 1.5 m tall; young shoots subverticillate, coarsely gray-white-strigose, glabrescent. Summer and winter leaves different. Petiole 2–4 mm; leaf blade papery, ovate or elliptic-ovate, 2–4.5 × 1–2 cm; base broadly cuneate; margin sparsely strigose; apex shortly acuminate and mucronate; both surfaces coarsely strigose; lateral veins obscure. Inflorescence 5- or 6-flowered. Pedicel 0.1–0.5 cm, ferruginous-strigose; calyx lobes finely crenate, densely coarsely ferruginous-strigose; corolla funnel-campanulate, white, with red flecks, ca. 1.6 cm; tube cylindric, ca. 9 mm, outer surface sparsely coarsely strigose; lobes oblong, ca. 0.7 cm; stamens 5, unequal, 1.6–2.3 cm, exserted from corolla tube, much longer than style, filaments glabrous; ovary ovoid, ferruginous-strigose; style coarsely strigose near base. Fl. Apr.

● N Guangdong.

551. Rhododendron yangmingshanense P. C. Tam, Bull. Bot. Res., Harbin 2(1): 97. 1982.

阳明山杜鹃 yang ming shan du juan

Shrubs, ca. 1 m tall; young shoots densely coarsely silky-strigose. Summer and winter leaves different. Petiole ca. 5 mm, coarsely strigose; leaf blade leathery, oblong-lanceolate or oblong-elliptic to elliptic, 1–2.5 × 0.5–1.5 cm; base cuneate; margin slightly revolute, shallowly undulate; apex acuminate or acute, mucronate; abaxial surface densely coarsely strigose and ciliate; adaxial surface coarsely silvery-gray-strigose with small wartlike prominences. Inflorescence 5–8-flowered. Pedicel 0.4–0.5 cm, densely ferruginous silky-strigose; calyx lobes finely crenate, small; corolla funnel-campanulate, pale purple or purple-red, without purple flecks, 0.8–1.1 cm; tube shortly cylindric, 5–6 × ca. 3 mm, both surfaces glabrous; lobes slightly spreading, oblong, 0.3–0.5 × ca. 0.25 cm; stamens 5, unequal, ca. 1.2 cm, filaments puberulent at base; ovary ovoid, ca. 3 mm, densely coarsely silky ferruginous-strigose; style slender, ca. 1 cm, longer than some stamens, coarsely strigose at base. Capsule ovoid, ca. 5 × 3.5 mm, densely gray-brown-strigose. Fl. Apr.

● Open forests; 200–300 m. Hunan.

552. Rhododendron breviperulatum Hayata., Icon. Pl. Formos. 3: 129. 1913.

短鳞芽杜鹃 duan lin ya du juan

Rhododendron rubropilosum Hayata var. *breviperulatum* (Hayata) T. Yamazaki.

Small much-branched shrubs, 1–3 m tall; shoots fine, coarsely shiny-brown-strigose, hairs flat. Petiole 3–7 mm; leaf blade papery, ovate-elliptic to oblong-obovate, 2–3 × 1–1.5 cm; base narrowly cuneate; margin entire; apex obtuse and mucronate; abaxial surface midrib densely coarsely scurfy-strigose; adaxial surface strigose. Inflorescence 3–6-flowered. Pedicel 0.4–0.6 cm, densely long-setose; calyx lobes membranous, ovate or subrounded, small, ca. 1.5 mm, margin ciliate; corolla broadly funnelform, rose-pink, with crimson flecks on upper lobes, ca. 2.5 cm, lobes deeply cut, oblong, apex obtuse; stamens 5, unequal, shorter than corolla; filaments flat, glabrous or sparsely puberulent at base; conical ovary and base of style coarsely strigose. Capsule conical, ca. 11 × 5 mm, pubescent.

● Mountain forests. Taiwan (E and N coasts).

553. Rhododendron viscigemmatum P. C. Tam, Surv. Gen. Rhododendron S. China, 107. 1983.

粘芽杜鹃 nian ya du juan

Shrubs, ca. 3.5 m tall; young shoots densely coarsely ferruginous-strigose, with fine dark round flecks. Summer and winter leaves different. Petiole 4–6 mm, densely coarsely silky ferruginous-strigose; leaf blade papery, elliptic or oblong-elliptic, rarely ovate-elliptic, 0.8–2.5(–3.5) × 0.5–1.5 cm; base cuneate; margin conspicuously revolute; apex mucronate or acuminate; abaxial surface paler; adaxial surface appressed-strigose, with a felted indumentum intermixed with brown hairs (some hairs sticky). Inflorescence 3- or 4-flowered. Pedicel 0.3–0.4 cm, densely silky ferruginous-strigose; calyx lobes undulate crenate, small at anthesis, densely ferruginous-strigose, enlarging in fruit, then with lobes crenate to oblong, ca. 3 × 1.5 mm; corolla shortly funnel-campanulate, color unknown though with dark flecks, ca. 0.9 cm; tube shortly cylindric, ca. 4 × 3 mm, outer surface with small obtuse spines, inner surface glabrous; lobes spreading, obovate-oblong, ca. 0.5 cm, apex obtuse; stamens 5, unequal, 1.4–1.7 cm, exserted, filaments flat, puberulent below; ovary ovoid, ca. 3 × 2 mm, densely coarsely silky ferruginous-strigose; style ca. 2 cm, longer than stamens, densely coarsely strigose below. Capsule long-ovoid, 5–6 × ca. 4.5 mm, densely strigose.

● Open subalpine forests; ca. 1000 m. E Guangxi.

554. Rhododendron minutiflorum Hu, J. Arnold Arbor. 12: 155. 1931.

小花杜鹃 xiao hua du juan

Erect shrubs, to 3 m; branches subverticillate, densely coarsely red-brown-strigose, hairs flat. Leaves all similar. Leaf blade leathery, oblong to obovate or broadly ovate, 0.8–1.5 × 0.3–0.5 cm; base cuneate; margin finely crenate; apex acute and

mucronate; abaxial surface coarsely red-brown-setose on midrib and margin, otherwise glabrous; adaxial surface sparsely red-brown-strigose at first. Inflorescence 3-flowered. Pedicel 0.4–0.6(–0.8) cm, densely coarsely strigose, hairs flat; calyx lobes round, small, coarsely red-brown-strigose; corolla rotate-funnelform, white, pale purple or purple, ca. 0.6 × 0.7 cm; tube ca. 3 mm, outer surface reddish glandular-hairy, inner surface puberulent; lobes spreading, ovate, ca. 0.3 cm, glabrous; stamens 5, subequal, ca. 0.7 cm, slightly exserted, filaments flat and puberulent below; ovary ovoid, ca. 3 mm, densely coarsely red-brown-strigose; style ca. 0.8 cm, longer than stamens, sparsely shortly glandular-hairy below. Capsule ca. 3 mm, densely strigose. Fl. Apr–May, fr. Jun–Aug.

● Hills; 1100–1500 m. N Guangdong, Guangxi.

555. Rhododendron chunii W. P. Fang, Sunyatsenia 7: 1. 1948.

龙山杜鹃 long shan du juan

Shrubs, 1–2(–6) m tall; young shoots densely coarsely brown-strigose. Leaves all similar. Petiole 2–3 mm, densely strigose; leaf blade leathery, ovate, oblong-ovate or elliptic-ovate, 1–1.7 × 0.4–0.8 cm; base broadly cuneate; margin revolute and finely crenate; apex acuminate; both surfaces sparsely coarsely strigose. Inflorescence 3- or 4-flowered. Pedicel 0.5–0.7 cm, coarsely dark brown-strigose; calyx lobes ovate, small, ca. 1.5 mm, strigose, especially on the margin; corolla funnelform, pale purple-red, the upper lobe with dark purple flecks, 1–1.3 cm; tube to 5 mm, outer surface sparsely coarsely brown-strigose, inner surface puberulent; lobes spreading, ovate-oblong, outer surface coarsely strigose at base; apex obtuse or subrounded; stamens 5, subequal, 0.8–1.4 cm, exserted, filaments flat below, hairy; ovary ovoid, ca. 3 mm, densely coarsely shiny brown-strigose; style 1.5–1.8 cm, longer than stamens, glandular above, coarsely brown appressed setose below. Capsule ovate, coarsely strigose. Fl. Apr, fr. May–Jun.

● Open valley forests; 1100–1800 m. N Guangdong.

556. Rhododendron rhodanthum M. Y. He, Bull. Bot. Res., Harbin 5(4): 116. 1985.

淡红杜鹃 dan hong du juan

Shrubs, ca. 1 m tall; young shoots densely coarsely yellowish-brown-strigose. Petiole 2–5 mm; leaf blade papery, elliptic or elliptic-oblong, 3–4 × 1–1.5 cm; base cuneate; margin slightly revolute; apex acuminate and mucronate; both surfaces coarsely silky brown-strigose. Inflorescence 1- or 2-flowered. Pedicel ca. 0.7 cm, coarsely silky-strigose; calyx lobes ovate, outer surface densely coarsely strigose; corolla funnel-campanulate, purple-red, with purple flecks when dry, ca. 2.3 cm; tube cylindric, 12–14 × ca. 3 mm, outer surface sparsely long-strigose, inner surface glabrous; lobes membranous, narrowly elliptic, ca. 0.9 × 0.5 cm, vein lines conspicuous; stamens 5, subequal, 1.9–2.3 cm, exserted, filaments flat, puberulent below; ovary ovate, ca. 3 mm, silky-strigose; style ca. 2.9 cm, longer than the stamens, coarsely silky dark brown-strigose below. Fl. Apr.

● Open valley forests. S Hunan.

557. Rhododendron seniavinii Maximowicz, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 16(9): 33. 1870 [*"seniavini"*].

毛果杜鹃 mao guo du juan

?*Rhododendron seniavinii* var. *crassifolium* P. C. Tam.

Shrubs, up to 2 m tall; young shoots densely coarsely gray-brown-strigose. Summer and winter leaves different; petiole 6–13 mm, densely strigose; leaf blade leathery, ovate to ovate-oblong or oblong-elliptic, 1.5–6(–8) × 1–2.5(–4) cm; base broadly cuneate; margin slightly revolute; apex acuminate and mucronate; abaxial surface densely coarsely yellow-brown-strigose; adaxial surface glabrescent. Inflorescence 4–10-flowered. Pedicel ca. 0.5 cm; calyx triangular-ovate, small, densely silky red-brown-strigose; corolla funnelform, sometimes narrowly so, white, with purple flecks on lobes, ca. 2.2 × 1.5 cm; tube cylindric, ca. 12 mm, outer surface sparsely pubescent; lobes spreading, long-ovate, ca. 1 cm; stamens 5, unequal, 1.2–1.5 cm, exserted, filaments flat, broadening at base, glabrous; ovary ovoid, densely coarsely silky red-brown-strigose; style 1–1.2 cm, densely yellowish villous at base. Capsule long-ovoid, ca. 7 × 4 mm, densely coarsely brown-strigose. Fl. Apr–May, fr. Aug–Nov.

● Hills; ca. 1400 m. Fujian, Hunan, Jiangxi.

The type specimen of *R. seniavinii* var. *crassifolium* is too poor to place with certainty.

558. Rhododendron qianyangense M. Y. He, Bull. Bot. Res., Harbin 5(4): 115. 1985.

黔阳杜鹃 qian yang du juan

Small shrubs; young shoots slender, densely coarsely yellowish silky-strigose. Petiole 2–3 mm, coarsely strigose; leaf blade papery, elliptic or elliptic-oblong, 1–3(–4) × 0.7–2.3 cm; base broadly cuneate, rarely subrounded; margin slightly revolute; apex acuminate and mucronate; both surfaces coarsely yellowish silky-strigose; adaxial surface later subglabrous. Inflorescence ca. 10-flowered. Pedicel 0.3–0.5 cm; calyx lobes obsolete; corolla funnel-campanulate, purplish, with purple flecks, 1–1.3 cm; tube cylindric, ca. 7 × 3–3.5 mm, outer surface glandular-hairy, inner surface puberulent; lobes subobovate, ca. 0.6 × 0.45 cm; stamens 5, unequal, 1.2–1.5 cm, some longer than style, filaments flat, glabrous; ovary conical, ca. 3 mm, densely yellowish silky-strigose; style ca. 1.2 cm, coarsely strigose. Capsule conical, ca. 5 × 4 mm, coarsely strigose. Fl. May.

● Dense mountain forests, thickets; 1100–1200 m. W Hunan.

Based on the original description and a digital image of the type, this species appears closely allied to, and is probably synonymous with, *Rhododendron seniavinii*.

559. Rhododendron jinpingense W. P. Fang & M. Y. He, Bull. Bot. Res., Harbin 2(2): 85. 1982.

金平杜鹃 jin ping du juan

Shrubs, ca. 1 m tall; young shoots ferruginous-setose, coarsely strigose and glandular-hairy, later ± glabrous. Summer and winter leaves different. Petiole 2–3 mm, brown-setose and

coarsely strigose; leaf blade thickly leathery, elliptic or oblong-elliptic, 3–4.5(–6) × 1–2(–3) cm; base broadly cuneate or subrounded; margin revolute; apex acute or subobtuse; adaxial surface persistently coarsely strigose along midrib; lateral veins not reaching the margin. Inflorescence 3–5-flowered. Pedicel 0.8–1 cm, densely brown-setose and coarsely strigose; calyx lobes oblong, 3–4 × 1.5–2 mm, outer surface and margin glandular-hairy; corolla funnelform, red, with purple flecks on upper lobe, 1–1.2 cm; tube cylindric, ca. 5 × 3 mm, outer surface glabrous, inner surface puberulent; lobes oblong, 0.5–0.6 × ca. 0.35 cm, apex obtuse; stamens 5, unequal, 1–1.5 cm, filaments puberulent below; ovary ovoid, ca. 3 mm, densely yellow-brown-setose and coarsely strigose; style 1.8–2 cm, longer than stamens, setose and coarsely strigose below, with scattered glandular hairs. Capsule ovoid, ca. 5 × 4 mm, setose-glandular-hairy. Fl. Apr, fr. Oct–Dec.

● Open mountain forests; 1600–1900 m. S Yunnan.

560. Rhododendron yaoshanicum W. P. Fang & M. Y. He, Bull. Bot. Res., Harbin 3(1): 3. 1983.

瑶山杜鹃 yao shan du juan

Small shrubs; young shoots densely glandular-setose. Summer and winter leaves different. Petiole 7–17 mm, densely brown-setose; leaf blade thin, papery, oblong or oblong-lanceolate, 10–18(–20) × 3–6(–8) cm; base subrounded; margin entire, sparsely short-setose; apex acuminate; abaxial surface shortly setose; adaxial surface glabrescent, lateral veins 15–17-paired, not reaching margin. Inflorescence 10–15-flowered. Pedicel to 1.2 cm, densely shortly brown-setose; calyx lobes triangular-ovate, outer surface and margin setose; corolla funnel-campanulate, red, 1.2–1.4 × ca. 1 cm; tube cylindric, 6–7 × 3.5–4 mm, both surfaces glabrous; lobes spreading, elliptic or obovate, ca. 0.7 × 0.3–0.4 cm; apex obtuse; stamens 5, equal, ca. 2.2 cm, exserted, filaments flat, glabrous; ovary ovoid, ca. 2.5 mm, densely shortly setose; style ca. 2.4 cm, longer than the stamens, spreading shortly glandular-hairy. Capsule long-cylindric or oblong-ovoid, 5–7 mm, densely short-setose. Fl. May, fr. Sep.

● Dense forests. C and E Guangxi.

561. Rhododendron flosculum W. P. Fang & G. Z. Li, Bull. Bot. Res., Harbin 4(1): 4. 1984.

子花杜鹃 zi hua du juan

Shrubs or small trees, 3–4 m tall; young shoots slender, sparsely strigose. Summer and winter leaves different. Petiole 3–5 mm, sparsely strigose; leaf blade papery, narrowly elliptic or elliptic-lanceolate, 6–7 × 1.5–2.5 cm; base broadly cuneate or subrounded; margin finely serrate; apex acute; both surfaces sparsely coarsely strigose, persistent only on midrib at maturity. Inflorescence usually 2–3(–5)-flowered. Pedicel 0.3–0.4 cm, coarsely brown strigose; calyx lobes sublanceolate, small, outer surface strigose; corolla funnelform, white to pale red, with pale red flecks, ca. 1 × 1.8 cm; tube cylindric, ca. 5 × 3 mm; lobes open and flat, obovate, ca. 0.5 × 0.3 cm; stamens 5, subequal, ca. 1 cm, filaments glabrous; ovary conical, ca. 2 mm, densely strigose; style ca. 1.2 cm, coarsely strigose below. Fl. May–Jun.

● Thickets on slopes; ca. 1700 m. NE Guangxi.

562. Rhododendron sparsifolium W. P. Fang, Acta Phytotax. Sin. 21: 462. 1983.

川南杜鹃 chuan nan du juan

Shrubs, ca. 3 m tall; branchlets slender, dark purple, subglabrous. Petioles ca. 3 mm, glabrous; leaf blade papery or subleathery, oblong-elliptic or subelliptic, 2.5–3.5 × 0.8–1.2 cm; base cuneate or broadly cuneate; apex tapering or acuminate; abaxial surface sparsely setose; adaxial surface glabrous, lateral veins 5–7-paired, conspicuous only below. Inflorescence 5–7-flowered. Pedicel stout, 1–1.5 cm, densely long-setose; calyx cup-shaped, deeply lobed; lobes membranous, ovate, ca. 3 mm, outer surface long-setose, margin white-fimbriate; corolla funnelform, rose, upper 3 lobes with purple flecks, ca. 1.5 × 1 cm; tube cylindric, 6–8 mm, glabrous; lobes broadly elliptic, ca. 0.6 cm, apex acuminate; stamens 5, shorter than corolla, filaments glabrous; ovary conical, ca. 3 mm, densely long-setose; style longer than stamens, long-setose below. Fl. May–Jun.

● Forests; 800–1000 m. S Sichuan.

563. Rhododendron saxatile B. Y. Ding & Y. Y. Fang, Bull. Bot. Res., Harbin 7(2): 29. 1987.

崖壁杜鹃 ya bi du juan

Small shrubs, ca. 1 m tall; young shoots densely coarsely red-brown-strigose and with crisped hairs. Petiole 3–5 mm, coarsely strigose and with crisped hairs; leaf blade leathery, elliptic, ovate-elliptic or ovate, 2–3(–5) × 0.7–1.5 cm; base broadly cuneate or round; margin revolute; apex acute and mucronate; both surfaces densely coarsely strigose and silky pubescent when young. Inflorescence 3–5-flowered. Pedicel ca. 0.5 cm, densely coarsely strigose and with crisped hairs; calyx shallowly lobed; lobes triangular, small, densely coarsely silky strigose, hairs crisped; corolla funnelform, white, yellowish when dried, upper lobes with rose flecks, 1.5–1.8 cm; tube cylindric, widening above, 5–8 mm; lobes oblong, ca. 1 cm, the 2 lower lobes slightly spreading; apex acute; stamens 5, exserted, filaments flat, glabrous; ovary ovoid, ca. 3 mm, densely brown silky crisped-hairy; style ca. 2.7 cm, longer than stamens, glabrous or sparsely white-pubescent below. Capsule conical, ca. 5 mm, densely silky crisped-hairy. Fl. Apr–May, fr. Jul.

● Thickets on slopes, precipices, rock crevices; near sea level to 400 m. S Zhejiang.

564. Rhododendron jinxiuense W. P. Fang & M. Y. He, Bull. Bot. Res., Harbin 2(2): 89. 1982.

金秀杜鹃 jin xiu du juan

Shrubs, ca. 3 m tall; young shoots densely long and shortly setose and glandular-hairy. Petiole 5–7 mm; leaf blade thickly leathery, ovate or long-ovate, rarely elliptic, 2.5–7(–10) × 1.5–5 cm; base rounded or near rounded; apex acuminate and acute; adaxial surface sparsely setose, glabrescent; abaxial surface setose only on midrib. Inflorescence 5- or 6-flowered. Pedicel 0.4–0.6 cm, densely setose and glandular-hairy; calyx lobes triangular-ovate, outer surface setose and glandular-hairy, margin ciliate; corolla funnelform, purple-red, 1.7–1.9 cm; tube cylin-

dric, 6–7 × ca. 4 mm, both surfaces glabrous; lobes slightly spreading, oblong-obovate or elliptic, ca. 1.2 × 0.4 cm; stamens 5, subequal, exserted, filaments flat, puberulent below; ovary ovoid, ca. 3 mm, densely setose and glandular-setose; style ca. 2.8 cm, longer than stamens, sparsely glandular-setose below. Fl. May–Jun.

● Forests, open forests; ca. 1000 m. E Guangxi.

565. Rhododendron spadiceum P. C. Tam, Bull. Bot. Res., Harbin 2(4): 87. 1982.

蔗黄杜鹃 zhe huang du juan

Shrubs; young shoots sparsely coarsely strigose and spreading pubescent. Petiole 6–7 mm. Leaf blade leathery, elliptic to lanceolate-elliptic, 2–5.5 × 1–2.2 cm; base tapering or narrowly cuneate; margin revolute; apex acute and mucronate; abaxial surface densely yellow-white felted and coarsely villous-strigose; adaxial surface glabrescent and lustrous. Inflorescence ca. 10-flowered. Pedicel 0.6–0.7 cm, coarsely strigose; calyx cup-shaped; lobes rounded; corolla narrowly funnelform, purplish, 2.8–3.4 × 1.8–2 cm; tube cylindric, 1.5–1.8 cm; lobes oblong-obovate, 1.3–1.6 × ca. 0.7 cm; stamens 5, unequal, 3–3.5 cm, shorter than the style, filaments puberulent; ovary ovoid, ca. 4 × 2.5 mm, coarsely strigose; style ca. 3.7 cm, sparsely coarsely strigose below.

● Forest margins, thickets. SW Fujian.

This species is almost certainly synonymous with, or a hybrid of, *Rhododendron rufulum* (see under *R. apricum* above).

566. Rhododendron flumineum W. P. Fang & M. Y. He, Bull. Bot. Res., Harbin 2(2): 91. 1982.

河边杜鹃 he bian du juan

Shrubs, 1.5–3 m tall; young shoots coarsely strigose. Petiole 5–7(–10) mm; leaf blade long-ovate or elliptic long-ovate, 4–6(–14) × 1.5–3(–7.5) cm; base subrounded; margin revolute; apex shortly acute; abaxial surface sparsely coarsely ferruginous strigose; adaxial surface subglabrous. Inflorescence usually 4–7-flowered. Pedicel 0.5–0.8(–1.1) cm, densely coarsely ferruginous strigose; calyx lobes triangular-ovate, outer surface coarsely strigose; corolla funnelform, red or pink, with dark red flecks on upper lobes, 1.7–1.9 cm; tube cylindric, ca. 9 × 3–4 mm; lobes spreading, oblong-elliptic, 0.8–1 × 0.4–0.6 cm, glabrous; stamens 5, unequal, 1.7–2.4 cm, exserted, filaments puberulent at base; ovary ca. 3 mm, densely ferruginous strigose; style 2.4–2.9 cm, coarsely strigose for basal ca. 6 mm. Capsule ovoid, ca. 7 × 4 mm, coarsely strigose. Fl. Mar–Apr, fr. Jun–Jul.

● River banks in evergreen broad-leaved forests or in the open; 1200–2100 m. S Yunnan.

567. Rhododendron subcerinum P. C. Tam, Bull. Bot. Res., Harbin 2(4): 88. 1982.

蜡黄杜鹃 la huang du juan

Shrubs, 1–2 m tall; young shoots coarsely gray-brown strigose. Petiole 3–5 mm, sparsely coarsely strigose, glabrescent; leaf blade leathery, obovate or obovate-elliptic, rarely narrow-elliptic, 2.5–5.5 × 2–2.5 cm; base cuneate or narrowly cuneate; margin revolute; apex acute and mucronate; both surfaces sparsely coarsely strigose, hairs with swollen bases; lateral veins conspicuously impressed above, not reaching margin. Inflorescence ca. 6-flowered. Pedicel 0.6–1 cm, coarsely strigose; calyx cup-shaped; lobes triangular, coarsely strigose; corolla funnel-campanulate, red, ca. 2 cm; tube cylindric, ca. 9 × 4 mm; lobes spreading, spathulate, ca. 1.1 cm; stamens 5, unequal, exserted, filaments flat, puberulent; ovary cylindric, coarsely ferruginous strigose; style ca. 2.4 cm, coarsely strigose below. Capsule ellipsoid, ca. 10 mm, coarsely gray-brown strigose. Fl. Oct.

● S Guangdong.

568. Rhododendron loniceriflorum P. C. Tam, Bull. Bot. Res., Harbin 2(4): 81. 1982 [*"loniceraeflorum"*].

忍冬杜鹃 ren dong du juan

Shrubs; young shoots coarsely strigose. Petiole ca. 3 mm; leaf blade thinly leathery, lanceolate or long-lanceolate, usually 3–5.5 × 0.8–1.6 cm; base sometimes narrowly cuneate; margin slightly revolute; apex acuminate; abaxial surface thinly woolly and coarsely ferruginous-strigose; adaxial surface sparsely coarsely red-brown spreading villous-strigose, lateral veins ca. 6-paired, not reaching margin. Inflorescence 4–6-flowered. Pedicel 0.8–0.9 cm, densely coarsely red-brown-strigose; calyx lobes triangular, ca. 1.5 × 1 mm; corolla narrowly funnelform, reddish purple, ca. 3.5 cm; tube cylindric, 18–25 × 3–7 mm, outer surface glabrous, puberulent within; lobes elliptic-ovate, ca. 1.3 × 1 cm, apex obtuse; stamens 5, subequal, 3.3–3.5 cm, filaments puberulent below; ovary ovoid, ca. 3 × 2.5 mm, densely ferruginous-strigose; style to 4.2 cm, sparsely coarsely strigose below. Capsule ovoid, ca. 4 mm in diam., densely strigose. Fl. Apr.

● Open forests, mountain slopes. S Fujian.

569. Rhododendron tenue Ching ex W. P. Fang & M. Y. He, Bull. Bot. Res., Harbin 2(2): 87. 1982.

细瘦杜鹃 xi shou du juan

Shrubs, branchlets slender, densely coarsely strigose. Petiole 2–5(–10) mm; leaf blade thin, papery, elliptic to long-ovate, 2–5.5(–10) × 0.9–1.9(–4.8) cm; base broadly cuneate or subrounded; margin obscurely crenate; both surfaces sparsely coarsely strigose; lateral veins only conspicuous on abaxial surface, not reaching margin. Inflorescence usually 2- or 3-flowered. Pedicel 0.4–0.5 cm, densely brown strigose, hairs flat; calyx obsolete; corolla funnelform, ca. 0.8 cm; tube ca. 5 mm, inner surface puberulent; stamens 5, unequal, 3 longer up to 1.2 cm, 2 shorter slightly longer than corolla, filaments flat, pubescent; ovary ovoid, coarsely strigose; style ca. 1.2 cm, as long as some of stamens, coarsely shiny brown-strigose in the lower half. Capsule conical, 5–6 × ca. 4 mm, densely coarsely strigose. Fl. May–Jun, fr. Jul–Nov.

● Dense forests, mountain slopes; ca. 1500 m. NE Guangxi.

The original description was based on a type that originally possessed floral parts, which, however, no longer exist on the specimen.

3. Rhododendron sect. **Tsusiopsis** Sleumer, Bot. Jahrb. Syst. 74: 527. 1949.

假映山红组 jia ying shan hong zu

Shrubs, evergreen; branches with flat coarse appressed pubescence. Flowers and vegetative branches arising from the same terminal flower bud. Leaves in whorls of 2–3 at tips of branches.

One species: China (Taiwan) and Japan (including Ryukyu Islands).

DNA evidence suggests that *Rhododendron* sect. *Tsusiopsis* should be included within *R.* sect. *Tsutsusi*.

570. Rhododendron tashiroi Maximowicz, Bull. Acad. Imp. Sci. Saint-Pétersbourg 31: 64. 1887.

大武杜鹃 da wu du juan

Shrubs, 1.5–4(–6) m tall; young shoots sparsely brown pubescent, glabrescent. Petiole 3–6 mm. Leaf blade leathery, elliptic-obovate or rhombic-obovate to oblong-obovate or oblong-elliptic, 3.2–6.4 × 1–3.4 cm; base broadly cuneate; margin finely serrate; apex acute and mucronate; both surfaces with flat brown hairs; abaxial surface with hairs restricted to midrib, otherwise glabrous; adaxial surface glabrescent. Inflorescence 2–5-flowered. Pedicel 0.6–1.2 cm, densely shiny brown pubescent, hairs flat; calyx with 5 small teeth, brown pubescent; corolla funnel-campanulate, pale rose-purple, lobes with dark purple flecks, 2.5–3.5 × 2.5–3.5 cm; lobes spreading, oblong, shorter than the tube, glabrous, emarginate; stamens 10(–12), unequal, as long as the corolla, filaments glabrous; ovary ovoid, ca. 3 mm, densely shiny gray-brown appressed-pubescent; style becoming wider at apex, glabrous. Capsule narrowly ovate, 9–13 mm, densely brown-hairy, hairs flat.

Evergreen broad-leaved forest margins; ca. 1500 m. SW Taiwan [Japan (including Ryukyu Islands)].

9. Rhododendron subg. **Therorhodion** (Maximowicz) Drude in Engler & Prantl, Nat. Pflanzenfam. 4(1): 37. 1889 [*"Therorodion"*].

叶状苞亚属 ye zhuang bao ya shu

He Mingyou (何明友); David F. Chamberlain

Rhododendron sect. *Therorhodion* Maximowicz, Mém. Acad. Imp. Sci. Saint Pétersbourg, Sér. 7, 16(9): 15, 47. 1870; *Rhodothamnus* Lindley & Paxton, Paxt. Fl. Gard. 1: 113. 1850, not Reichenbach (1827); *Therorhodion* (Maximowicz) Small.

Dwarf shrubs, deciduous; young shoots not scaly, sparsely glandular-hairy. Leaf blade thin, spathulate, spathulate-oblanceolate or obovate; margin sometimes glandular-ciliate, not scaly. Inflorescence terminal, umbellate-racemose, 1–3-flowered. Pedicels with glandular hairs and leaflike bracteoles; calyx well-developed, 5-lobed; corolla rotate, tube shorter to slightly longer than lobes; outer surface glabrous or pubescent; stamens 10; ovary 5-locular, hairy; style equaling or shorter than the corolla, curved, hairy towards base.

Three species: China, Japan, Russia; North America (Alaska); one species in China.

Recent evidence from DNA sequencing suggests that this subgenus is basal to the remaining subgenera of *Rhododendron* and supports the maintenance of the genus *Therorhodion* proposed for the three species included within it. It should be noted that the presence of bracteoles on the pedicels is unique in the genus *Rhododendron*.

571. Rhododendron redowskianum Maximowicz, Mém. Acad. Imp. Sci. St.-Pétersbourg Divers Savans 9 [Prim. Fl. Amur.]: 189. 1859.

叶状苞杜鹃 ye zhuang bao du juan

Therorhodion redowskianum (Maximowicz) Hutchinson.

Low small shrubs, ca. 0.1 m tall; branching at base; old branches glabrous; young shoots glandular-hairy. Petiole short; leaf blade thin, spathulate-oblanceolate, 5–15 × 3–6 mm, tapering toward base; margin glandular-ciliate; apex obtuse, with a glandular point; both surfaces glabrous at maturity; veins conspicuous on abaxial surface. Inflorescence 1–3-flowered. Pedicel 0.5–1 cm, glandular-hairy, bearing leaflike hairy bracteoles; calyx deeply 5-lobed to base; lobes linear-oblong, ca. 5 × 2 mm, puberulent on outer surface, margin glandular-ciliate, apex obtuse; corolla rotate, purple-red, ca. 1.5 cm; tube 7–8 mm; outer surface glabrous; lobes 5, broadly oblong, ca. 0.6 × 0.5 cm, finely toothed; stamens 10, slightly shorter than corolla, pubescent below; ovary densely pubescent; style short, ca. 0.5 cm, curved, pubescent below. Capsule ovate, ca. 6 mm. Fl. Jul–Aug, fr. Sep–Oct.

Grasslands on alpine slopes, at foot of rocky cliffs; 2000–2600 m. SE Jilin [Russia (E Siberia)].

Flora of China 14: 260–455. 2005.

13. EMPETRUM Linnaeus, Sp. Pl. 2: 1022. 1753.

岩高兰属 yan gao lan shu

Min Tianlu (闵天禄 Ming Tien-lu); Arne Anderberg

Shrubs evergreen, small or creeping. Leaves densely verticillate, subverticillate, or decussate, sessile, margin entire; stipules absent. Inflorescences axillary on upper part of branchlets, 1–3-flowered; bracts (2–)4 or 5(or 6), scalelike. Flowers small, inconspicuous, unisexual (plants monoecious or dioecious). Sepals 3–6, imbricate in bud, petaloid. Petals absent. Stamens 3(–6), exserted; anthers 2-celled, longitudinally dehiscent. Ovary superior, subglobose, apically depressed, 6–9-loculed; ovules 1 per locule; style 1, short or indistinct; stigma 6–9(–12)-lobed. Fruit globose or subglobose, drupaceous; pericarp red, purple, or black when ripe, fleshy. Pyrenes 1 per locule, 1-seeded.

Two to several species: N temperate regions, South America (Andes), S Atlantic Islands (Falkland Islands, Tristan da Cunha); one species in China.

1. Empetrum nigrum Linnaeus var. **japonicum** K. Koch, Hort. Dendr. 89. 1853.

东北岩高兰 dong bei yan gao lan

Empetrum nigrum var. *asiaticum* Nakai ex H. Itô; *E. sibiricum* V. N. Vassiljev var. *japonicum* (K. Koch) Tzvelev.

Plants 20–50(–100) cm tall, much branched. Branchlets reddish brown; young branchlets puberulous. Leaves linear, 4–5 × 1–1.5 mm, glabrous, adaxially shiny and rugulose with impressed midvein, margin slightly reflexed, glandular ciliate at first, apex obtuse. Bracts ovate, ca. 1 mm, margin ciliolate. Flowers sessile. Sepals 6; outer sepals ovate-orbicular, ca. 1.5 mm; inner sepals dark red, petaloid, lanceolate, as long as outer ones, apically involute. Stamens 3; filaments linear, ca. 4 mm; anthers small. Ovary ca. 0.6 × 0.8 mm, glabrous; style very short; stigma radially 6–8-lobed. Fruit subglobose, ca. 5 mm in diam., purplish red to black when ripe.

Forests, stony hills; 700–1500 m. N Heilongjiang, E Nei Mongol (Da Hinggan Ling) [Japan, Korea, Mongolia, E Russia].

14. CASSIOPE D. Don, Edinburgh New Philos. J. 17: 157. 1834.

锦绦花属 jin tao hua shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); Peter F. Stevens

Shrubs evergreen, dwarf. Stems procumbent or ascending. Leaves decussate, sessile, appressed and crowded, imbricate, usually 4-ranked. Leaf blade small, entire or fimbriate-ciliate, veinless, 1-channeled on back, sometimes plane or convex. Flowers solitary, axillary, pendulous. Pedicel slender, base bracteate; bracteoles absent. Flowers usually 5-merous. Calyx lobes imbricate, subfree. Corolla white or pink, campanulate, lobed or cleft; lobes recurved. Stamens included; filaments straight, flattened; anthers ovate, with two long recurved awns. Ovary superior, glabrous, with many ovules per locule. Capsule depressed-globose, each valve 2-cleft at apex. Seeds many, minute, wingless.

About 17 species: circumboreal, extending south into China, the Himalayan region, Japan, Russia, and W North America; 11 species (six endemic) in China.

1a. Leaf blade not furrowed abaxially.
  2a. Leaf blade plane, margin incrassate, setulose ..... 3. *C. palpebrata*
  2b. Leaf blade abaxially convex, margin hyaline membranous.
    3a. Leaf blade elliptic, abaxially densely setulose, apex with a membranous acumen much shorter than blade ..... 1. *C. myosuroides*
    3b. Leaf blade elliptic to suborbicular, abaxially subglabrous, apex with a membranous acumen ca. as long as or longer than blade ..... 2. *C. membranifolia*
1b. Leaf blade ± deeply furrowed abaxially.
  4a. Furrow only to 1/3–1/2 blade length ..... 4. *C. abbreviata*
  4b. Furrow reaching near apex of leaf blade.
    5a. Leaf blade with membranous margin.
      6a. Leaf blade abaxially sparsely silvery pubescent, margin rust-brown colored, membranous and brown flattened-setulose; pedicels 5–25 mm ..... 7. *C. argyrotricha*
      6b. Leaf blade abaxially glabrous, margin silvery, membranous and ciliolate; pedicels 1–7 mm.
        7a. Leaf blade 4–6 mm, 0.5–1 mm apiculate ..... 5. *C. fastigiata*
        7b. Leaf blade 2.5–4 mm, apex obtuse, not apiculate ..... 6. *C. fujianensis*
    5b. Leaf blade without membranous margin.
      8a. Leaves sometimes lax; leaf blade ovate-triangular, 2–3 mm, margin fringed with woolly hairs and glabrescent ..... 8. *C. selaginoides*

8b. Leaves densely imbricate; leaf blade oblong, (2–)4–7 mm, margin barbellate or setulose.
9a. Leaf blade with densely setulose margin, hairs solitary or 2 or 3 together, to 2–3 mm, each with scattered short stiff barbules, adaxially ± plane ..... 9. *C. wardii*
9b. Leaf blade with rigidly pubescent, barbellate margin, adaxially concave.
10a. Leaf blade oblong-elliptic, 2–4 mm, base arching, abaxially with shallow subtriangular glabrous furrow ..... 10. *C. nana*
10b. Leaf blade oblong-linear, 5–7 mm, base 2-lobed, abaxially with deep narrow densely puberulous furrow ..... 11. *C. pectinata*

1. Cassiope myosuroides W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 19. 1917.

鼠尾锦绦花 shu wei jin tao hua

Shrubs 4–7 cm tall, rarely to 12 cm. Stems suberect, glabrous. Leaves assurgent; leaf blade elliptic, 2–2.5 × ca. 1.2 mm, leathery, abaxially convex, densely setulose, adaxially ?convex, glabrous, base truncate, margin 0.3–0.4 mm wide and membranous, apex acute. Flower nutant. Pedicel 0.7–2 cm, densely crisped-tomentose. Calyx dark purple; lobes oblong to elliptic, 2.5–3 mm, abaxially glabrous, margin membranous and ciliolate. Corolla white, tinged with red, campanulate, 5–8 mm, glabrous; lobes erect, broadly triangular, 1.5–2 mm. Stamens 10, ca. 2 mm; filaments pilose; awns ca. 1 mm. Ovary ca. 1.5 mm in diam. Capsule globose, ca. 3 mm in diam., ± enclosed by persistent corolla. Fl. May–Sep, fr. Jun–Oct.

Alpine meadows, open slopes, rocks and boulders; 4000–4500 m. NW Yunnan [Myanmar].

2. Cassiope membranifolia R. C. Fang, Novon 9: 162. 1999.

膜叶锦绦花 mo ye jin tao hua

Shrubs. Stems procumbent, ca. 26 cm long, slender, glabrous. Leaves assurgent; leaf blade suborbicular, rarely elliptic, 1.2–1.8 × 1–1.5 mm, leathery, abaxially convex, glabrous or sometimes pilose at base, adaxially concave, glabrous, base arched, margin distinctly membranous, apex an elongated-triangular hyaline acumen ca. as long as or longer than blade. Flower nutant. Pedicel 1–2.5 cm, densely crisped-tomentose. Calyx purple; lobes oblong, ca. 2.5 mm, glabrous, margin membranous and fimbriate. Corolla white, campanulate, 5–7 mm, abaxially glabrous; lobes erect, ovate, ca. 2 mm. Stamens ca. 1.5 mm; filaments pilose or glabrous; awns ca. 1 mm. Ovary ca. 1 mm in diam. Capsule ca. 2.5 mm in diam., enclosed by persistent corolla. Fl. Aug.

● Alpine meadows, moss-covered rocks; ca. 3600 m. NW Yunnan.

A reviewer (Gary D. Wallace) notes that this might be a minor variant of *Cassiope myosuroides*.

3. Cassiope palpebrata W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 182. 1914.

朝天锦绦花 chao tian jin tao hua

Cassiope pulvinalis T. Z. Hsu.

Shrubs 2–6(–8) cm tall. Stems suberect or decumbent, glabrous. Leaves ± spreading; leaf blade elliptic or oblong, 1.5–3.4 × 0.6–1.2 mm, leathery, both surfaces glabrous and plane, sometimes midvein inconspicuously raised abaxially, base indistinguishable, margin incrassate, scarious, with several brown setula. Flower nutant. Pedicel 1.5–2.5 cm, densely arachnoid-villous. Calyx purple; lobes elliptic or ovate, 2–3 mm, glabrous, margin membranous. Corolla white, campanulate, 5–8 mm, abaxially glabrous; lobes erect or subspreading, 1–3 mm. Stamens 8, ca. 2.5 mm; filaments pilose; awns 0.7–1.5 mm. Ovary ca. 1.5 mm in diam. Capsule ca. 3 mm in diam., enclosed by persistent corolla. Fl. May–Jul, fr. Jun–Oct.

Grassy mountain slopes, alpine moorlands, rocks, rock crevices; 3000–4300 m. NW Yunnan [Myanmar].

4. Cassiope abbreviata Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 62: 131. 1925.

短梗锦绦花 duan geng jin tao hua

Shrubs 15–20 cm tall. Stems initially decumbent or erect, slender, ultimately many branched, fastigiate, glandular. Leaves assurgent; leaf blade ovate or triangular-ovate, 2.5–3 × 1–1.2 mm, leathery, abaxially nitid, glabrous, deeply furrowed, furrow 1/3–1/2 length, subglabrous within, adaxially concave, glabrous, base lobed, margin membranous and fimbriate, apex acute, distinctly apiculate. Flower nutant. Pedicel 3–8 mm, densely crisped-tomentose. Calyx purple-red; lobes oblong or ovate, ca. 3 mm, margin membranous. Corolla white, campanulate, 5–7 mm; lobes erect, ovate-triangular, ca. 2 mm. Stamens ca. 2.5 mm; filaments pilose; awns ca. 1 mm. Ovary ca. 1 mm in diam. Capsule unknown. Fl. May–Aug.

● *Rhododendron* thicket margins, mossy and rocky places; 3800–4000 m. WC Sichuan (Baoxing).

5. Cassiope fastigiata (Wallich) D. Don, Edinburgh New Philos. J. 17: 158. 1834.

扫帚锦绦花 sao zhou jin tao hua

Andromeda fastigiata Wallich, Asiat. Res. 13: 394. 1820.

Shrubs 8–20 cm tall. Stems initially decumbent, ultimately much branched, fastigiate, stiff white pubescent. Leaves densely imbricate; leaf blade ovate-triangular, 4–6 × 1.5–2 mm, leathery, abaxially deeply furrowed, furrow reaching near apex and diverging near base, furrow rim densely pubescent, adaxially concave, subglabrous, base divergent, 2-lobed, margin silvery, membranous, densely ciliolate, apex with apicule 0.5–1 mm. Flower nutant. Pedicel 3–7 mm, densely crisped-tomentose. Calyx purple; lobes oblong-ovate, 4–5 mm, margin broadly membranous. Corolla white, broadly campanulate, 6–9 mm; lobes spreading, oblong, 2–4 mm. Stamens ca. 2.5 mm; filaments glabrous; awns ca. 1 mm. Capsule 2–3 mm in diam. Fl. May–Jul, fr. Jun–Sep.

Alpine thickets, rocky places; 3000–4500 m. S Xizang [Bhutan, ?Kashmir, Nepal, Pakistan, Sikkim].

One of us (Stevens) suggests that there exists a possible hybrid in

Xizang (see *H. Smith 3823*).

6. Cassiope fujianensis L. K. Ling & G. S. Hoo, Fl. Fujian. 4: 633. 1990.

福建锦绦花 fu jian jin tao hua

Subshrubs dwarf, 8–25 cm. Stems ascending or spreading. Leaves decussate, imbricate; leaf blade ovate or ovate-lanceolate, 2.5–4 × 1.5–2 mm, leathery, abaxially carinate, deeply furrowed, furrow reaching 3/4 leaf length, glabrous, adaxially concave, sparsely puberulous or subglabrous, base lobed, margin membranous, hyaline, 0.5–0.7 mm wide, ciliolate, apex obtuse. Flower nutant. Pedicel ca. 1 mm, densely white villous. Calyx lobes oblong, ca. 2 mm, glabrous, margin membranous. Corolla campanulate, ca. 1.5 mm; lobes oblong or obovate-oblong, ca. 1 mm. Stamens ca. 1 mm; filaments glabrous; awns ca. 0.3 mm. Ovary ca. 1 mm in diam. Capsule unknown. Fl. Sep.

● Rocky fissures; 1000–1100 m. Fujian.
This is a post-glacial relict species.

7. Cassiope argyrotricha T. Z. Hsu, Acta Bot. Yunnan. 4: 263. 1982.

银毛锦绦花 yin mao jin tao hua

Shrubs 12–15 cm tall, much branched. Stems erect or decumbent. Leaves densely imbricate; leaf blade oblong, 4–5 × ca. 1.5 mm, leathery, abaxially convex, sparsely silvery pubescent, deeply furrowed, furrow nearly reaching apex and divergent towards base, adaxially concave, glabrous, base arching, margin rust-colored-brown, membranous, brown flattened-setulose, apex obtuse. Flower erect. Pedicel 5–25 cm, densely arachnoid-tomentose. Calyx glabrous; lobes elliptic, ca. 4.5 mm. Corolla white, campanulate, ca. 9 mm; lobes spreading, broadly triangular. Stamens ca. 3 mm; filaments pilose; awns ca. 1 mm. Ovary ca. 1 mm in diam. Capsule unknown. Fl. Sep.

● Rocks in forests, *Rhododendron* thickets; 3000–4400 m. NW Yunnan (Fugong).

8. Cassiope selaginoides J. D. Hooker & Thomson, Hooker's J. Bot. Kew Gard. Misc. 7: 126. 1855.

锦绦花 jin tao hua

Cassiope mairei H. Léveillé.

Shrubs 10–20 cm tall. Stems initially decumbent, ultimately erect, glabrous or pubescent. Leaves assurgent; leaf blade ovate-triangular, 2–3 × 1–1.5 mm, cymbiform, leathery, abaxially deeply furrowed, furrow nearly reaching apex and divergent near base, furrow rim densely pubescent, adaxially concave, glabrous, margin not membranous, fringed with woolly hairs, glabrescent. Flower nutant. Pedicel 0.5–1.6 cm, densely crisped-tomentose. Calyx crimson or reddish brown; lobes oblong to elliptic, ca. 3.8 mm, glabrous or puberulous, margin membranous, inconspicuously ciliolate. Corolla pure white, reddish within at base, broadly campanulate, 6–8 mm; lobes erect, oblong, 2.5–3 mm. Stamens ca. 2.5 mm; filaments pilose; awns ca. 0.9 mm. Capsule 2–3 mm in diam. Fl. May–Jul, fr. Jun–Sep.

Rhododendron thickets, alpine grasslands, rocky slopes, cliffs; 3000–4200(–4500) m. W Sichuan, SE Xizang, NE Yunnan [Bhutan, Myanmar, Nepal, Sikkim].

9. Cassiope wardii C. Marquand, J. Linn. Soc., Bot. 48: 199. 1929.

长毛锦绦花 chang mao jin tao hua

Shrubs 10–20 cm tall. Stems initially decumbent; twigs erect, glandular and setose. Leaves assurgent; leaf blade linear-oblong, 5–7 × ca. 2 mm, cymbiform, leathery, abaxially deeply furrowed, furrow reaching near apex and divergent near base, furrow rim densely pubescent, adaxially concave, glabrous, with densely setulose margin, hairs solitary or 2 or 3 together,

to 3 mm. Flower nutant. Pedicel 0.5–1.6 cm, densely crisped-tomentose. Calyx crimson or reddish brown; lobes oblong to elliptic, ca. 3.8 mm, glabrous or puberulous, margin membranous, ciliolate. Corolla pure white, reddish within at base, broadly campanulate, 6–8 mm; lobes ± recurved, ovate, 2.5–3 mm. Stamens (8 or)10, ca. 2.5 mm; filaments pilose; awns ca. 0.9 mm. Capsule 2–3 mm in diam. Fl. May–Jul, fr. Jun–Sep.

● Open *Rhododendron* moorlands, rocky places; 3900–4200 m. SE Xizang.

10. Cassiope nana T. Z. Hsu, Acta Bot. Yunnan. 4: 265. 1982.

矮小锦绦花 ai xiao jin tao hua

Shrubs 3–10 cm tall. Stems decumbent or erect. Leaves assurgent; leaf blade oblong-elliptic, 2–4 × 0.8–1.2 mm, leathery, abaxially shallowly furrowed, furrow subtriangular, nearly reaching apex, glabrous, adaxially concave, glabrous, base arched, margin not membranous, inconspicuously denticulate, rigidly pubescent-barbellate, apex obtuse. Flower usually erect. Pedicel 1–2 cm, crisped-tomentose, base with 3 fringed bracts. Calyx lobes 5, ovate or oblong, 2–3 mm, glabrous, margin ciliolate. Corolla white, campanulate, ca. 6 mm; lobes erect, oblong, ca. 1.5 mm. Stamens 8 or 9, ca. 2 mm; filaments pilose; awns ca. 1 mm. Ovary ca. 2.5 mm in diam. Capsule ca. 3 mm in diam. Fl. Jun, fr. Aug.

● Margins of woods, mountain slopes, meadows; 2000–3800 m. NW Yunnan (Dêqên, Gongshan).

11. Cassiope pectinata Stapf, Bot. Mag. 149: t. 9003(B). 1924.

篦叶锦绦花 bi ye jin tao hua

Cassiope dendrotricha Handel-Mazzetti; *C. macrantha* Handel-Mazzetti.

Shrubs 6–18(–46) cm tall. Stems initially decumbent, ultimately much branched, fastigiate, glandular and shortly pubecent. Leaves assurgent; leaf blade linear-oblong, 5–7 × 1–1.2 mm, boat-shaped, leathery, abaxially nitid or dull, deeply furrowed, furrow nearly reaching apex and divergent near base, densely puberulous within, adaxially strongly concave, glabrous, base 2-lobed, margin not membranous, inconspicuously denticulate, rigidly pubescent-barbellate, apex obtuse, apiculate. Flower nutant. Pedicel 0.9–1.8(–2.5) cm, densely crisped-tomentose, base with 4 fringed bracts. Calyx purple-red; lobes oblong or ovate, 2–3 mm, glabrous, margin membranous. Corolla white, campanulate, 6–7 mm, glabrous; lobes erect, oblong, 2–3 mm. Stamens 2–2.5 mm; filaments pilose; awns ca. 1.2 mm. Capsule ca. 2.5 mm in diam. Fl. Jun–Aug, fr. Jul–Aug.

Rhododendron scrub, alpine moorlands, meadows, rocks, rock crevices; 3600–4100 m. SW Sichuan, E Xizang, NW Yunnan [Myanmar].

15. LEUCOTHOË D. Don, Edinburgh New Philos. J. 17: 159. 1834.

木藜芦属 mu li lu shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); Peter F. Stevens

Shrubs evergreen. Leaves petiolate, serrulate or subentire. Inflorescences axillary, racemose, glabrous. Flowers 5-merous. Calyx lobes short. Corolla white, suburceolate to tubular; lobes recurved, short. Stamens much shorter than corolla tube; filaments straight, flattened; anthers oblong, thecae separate above, each opening by a terminal pore and with a slender awn. Ovary superior, glabrous, with many ovules per locule. Stigma capitate, 5-lobed. Capsule loculicidal, depressed globose. Seeds flattened, angled; testa smooth, shiny, reticulate.

Six species: E Asia, North America (SE United States); two species in China.

1a. Leaf base broadly cuneate, margin subentire, inconspicuously denticulate near apex; inflorescences 4–6 cm ..... 1. *L. griffithiana*
1b. Leaf base obtuse-rounded, margin denticulate; inflorescences 3–5 cm ..... 2. *L. tonkinensis*

1. Leucothoë griffithiana C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 460. 1882.

尖基木藜芦 jian ji mu li lu

Pieris cavaleriei H. Léveillé & Vaniot.

Shrubs 2–3 m tall. Twigs often flexuous, glabrous. Petiole 6–12 mm, glabrous; leaf blade elliptic or elliptic-lanceolate, 9–16 × 2.6–6 cm, leathery, abaxially glabrous or scattered shortly setaceous, adaxially glabrous, base broadly cuneate, margin subentire, inconspicuously denticulate apically, apex acuminate or caudate-acuminate. Inflorescence 4–6 cm; bracts broadly ovate, ca. 2 mm, apex acuminate. Pedicel 3–6 mm. Calyx lobes triangular-ovate, ca. 1.5 mm. Corolla white, suburceolate to tubular, 6–7 mm; lobes triangular-ovate, ca. 1 mm. Filaments ca. 2 mm. Capsule 4–6 mm in diam. Seeds elliptic to suborbicular, ca. 1 mm. Fl. Apr–May, fr. Jun–Oct.

Scattered in forests; 1000–2500(–3400) m. Guizhou, SE Xizang, NW Yunnan [Bhutan, Myanmar].

2. Leucothoë tonkinensis Dop in Lecompte, Fl. Indo-Chine 3: 730. 1930.

圆基木藜芦 yuan ji mu li lu

Shrubs to 4 m tall. Twigs slender, glabrous. Petiole 0.8–1.5 cm, glabrous; leaf blade ovate-elliptic or broadly elliptic, 5–11 × 3.5–4.5 cm, leathery, abaxially scattered shortly setaceous, adaxially glabrous, base obtuse-rounded, margin denticulate, apex caudate-acuminate. Inflorescence 3–5 cm; bracts broadly ovate, ca. 2.5 mm, glabrous. Pedicel 4–7 mm. Calyx lobes ovate, ca. 3 mm. Corolla white, suburceolate, 5–6 mm; lobes shortly triangular. Filaments ca. 2 mm. Capsule 4–6 mm in diam. Seeds ellipsoid, 1.2–1.6 mm. Fl. Mar, fr. Jun–Nov.

Forests, thickets on dry slopes; 2000–2300 m. Guizhou, SE Yunnan [N Vietnam].

16. CRAIBIODENDRON W. W. Smith, Rec. Bot. Surv. India 4: 276. 1911.

Flora of China 14: 242–517. 2005. [part 3]

假木荷属 jia mu he shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); Peter F. Stevens

Shrubs or trees, evergreen. Twigs glabrous. Buds often superimposed, with 2–4 imbricate scales. Leaf petiole often reddish when young; leaf blade leathery, margin entire. Inflorescences axillary, paniculate or racemose. Pedicel short. Flowers small, 5-merous. Corolla campanulate or urceolate to tubular. Stamens much shorter than corolla; filaments geniculate, swollen near base, lacking appendages; anthers ± ovoid, dehiscing by introrse-terminal elliptic pores. Ovary superior, with many ovules per locule. Capsule depressed-globose, thick-walled, loculicidal. Seeds large; testa unilaterally winged.

Five species: Cambodia, China, India, Laos, Myanmar, Thailand, Vietnam; four species in China.

Craibiodendron forrestii W. W. Smith (Notes Roy. Bot. Gard. Edinburgh 5: 160. 1912), described from W Yunnan (Nujiang valley), is a species of *Quercus*.

1a. Corolla urceolate to tubular, abaxially glabrous; inflorescence raceme- or paniclelike, branches with up to 6 flowers.
  2a. Leaf apex abruptly acute to shortly acuminate, rarely retuse; inflorescence racemelike; capsule 1.7–2.5 cm in diam. ..... 1. *C. scleranthum*
  2b. Leaf apex long acuminate; inflorescence paniclelike; capsule 8–9 mm in diam. ..... 4. *C. yunnanense*
1b. Corolla campanulate, abaxially glabrous to densely pubescent; inflorescence usually paniclelike, branches with 6–30 flowers.
  3a. Leaf apex rounded to retuse ..... 2. *C. stellatum*
  3b. Leaf apex long acuminate to acuminate, rarely acute ..... 3. *C. henryi*

1. Craibiodendron scleranthum (Dop) Judd var. **kwangtungense** (S. Y. Hu) Judd, J. Arnold Arbor. 67: 457. 1986.

广东假木荷 guang dong jia mu he

Craibiodendron kwangtungense S. Y. Hu, J. Arnold Arbor. 35: 198. 1954; *C. kwangtungense* var. *frutescens* S. Y. Hu.

Trees or shrubs, 10–12 m tall. Petiole 8–10 mm; leaf blade elliptic or lanceolate, 6–8 × 1.8–3.7 cm, glabrous, glandular punctate, secondary veins 18–20 pairs, fine veins adaxially conspicuous and reticulate, base cuneate, apex acute to shortly acuminate. Inflorescences racemose; rachis 4–5 cm, pubescent. Pedicel 2–3 mm, pubescent. Calyx lobes suborbicular, both surfaces pubescent. Corolla urceolate to tubular, abaxially pubescent, lobes much smaller than tube. Filaments glabrous. Capsule ca. 1.4 × 1.7–2.5 cm, woody, with 12–14 seeds per locule. Seeds ca. 2 × 2 mm. Fl. May–Jun, fr. Jul–Aug.

● Mixed forests, open thickets, montane areas; above 600 m. Guangdong, S Guangxi.

Craibiodendron scleranthum var. *scleranthum* is endemic to Vietnam.

2. Craibiodendron stellatum (Pierre) W. W. Smith, Bull. Misc. Inform. Kew 1914: 129. 1914.

假木荷 jia mu he

Schima stellata Pierre, Fl. Forest. Cochinch. 1: t. 122. 1887; *Craibiodendron shanicum* W. W. Smith.

Trees or shrubs, 3–8 m tall. Petiole ca. 5 mm; leaf blade elliptic, 6–13 × 3.5–6 cm, thickly leathery, glabrous or sparsely pubescent on midvein, abaxially sparsely black-glandular punctate, secondary veins 14–18 pairs, fine veins conspicuous and reticulate, base obtuse to subrounded, margin entire and revolute, apex rounded to retuse. Inflorescences paniculate; rachis 15–20 cm, ± gray puberulous. Pedicel 2–6 mm, ± gray puberulous. Flowers fragrant. Calyx lobes broadly ovate-triangular, abaxially pubescent. Corolla white, campanulate, 3–4 mm, abaxially pubescent; lobes subequal to tube. Filaments pilose. Ovary densely pubescent. Capsule ca. 1 × 1.5 cm, ± pubescent. Seeds 5–10 mm. Fl. Jul–Oct, fr. Oct–Apr.

Forests, thickets; (200–)700–1600(–2700) m. Guangdong, Guangxi, Guizhou, Yunnan [Cambodia, Laos, Myanmar, Thailand, Vietnam].

3. Craibiodendron henryi W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 5: 158. 1912.

柳叶假木荷 liu ye jia mu he

Craibiodendron mannii W. W. Smith

Trees or shrubs, 8–15 m tall. Petiole 0.5–1.5 cm; leaf blade ± elliptic to ovate, 10–15 × 2–5 cm, glabrous, sometimes mid-

vein sparsely pubescent, abaxially sparsely black-glandular punctate, secondary veins 10–14 pairs, raised abaxially, fine veins inconspicuous and reticulate, base cuneate, apex acuminate to long acuminate. Inflorescences paniculate; rachis 15–25 cm, glabrous. Pedicel 1–7 mm, glabrous. Calyx lobes broadly ovate, abaxially subglabrous. Corolla white, campanulate, 2–3 mm, abaxially glabrous; lobes much longer than tube. Filaments glabrous. Ovary glabrous to pubescent. Capsule ca. 8 × 10 mm, glabrous. Seeds ca. 4 mm.

Forests, thickets; 1200–2800 m. SE Xizang, S and W Yunnan [India, N Myanmar, N Thailand].

4. Craibiodendron yunnanense W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 5: 159. 1912.

云南假木荷 yun nan jia mu he

Trees or shrubs, 3–6 m tall. Petiole 2–6 mm; leaf blade elliptic-lanceolate, 4–5(–8) × 1.6–2(–3) cm, glabrous, abaxially sparsely black glandular punctate, secondary veins 5–11 pairs, raised, fine veins conspicuous, base cuneate to broadly cuneate, apex acuminate with obtuse end. Inflorescences paniculate; rachis 4–20 cm, glabrous. Pedicel robust, ca. 2 mm. Calyx lobes broadly ovate, 1–2 mm, abaxially glabrous. Corolla cream-colored, urceolate, 4–6 mm, abaxially glabrous; lobes much shorter than tube. Filaments puberulous. Capsule 8–9 × ca. 6 mm, glabrous. Seeds 5–6 mm.

Forests, *Pinus* forest margins, thickets, open and dry slopes; 1200–3200 m. Xizang, Yunnan [Myanmar].

17. PIERIS D. Don, Edinburgh New Philos. J. 17: 159. 1834.

马醉木属 ma zui mu shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); Peter F. Stevens

Shrubs or trees, evergreen [or woody vines in E North America]. Leaves spirally arranged or pseudoverticillate [or in whorls of 3 in NE Asia], petiolate; leaf blade leathery, margin entire to strongly toothed. Inflorescences terminal or axillary, paniculate or racemose. Pedicels ± pubescent and with glandular hairs. Flowers 5-merous. Calyx valvate, abaxially glandular, adaxially pubescent. Corolla white, urceolate to tubular-urceolate, shortly 5-lobed. Stamens included; filaments swollen at base, straight or geniculate; anthers on back with a pair of spurs at anther-filament junction, dehiscing by introrse-terminal and elliptic pores. Ovary superior, with many ovules per locule. Stigma truncate. Capsule loculicidal, with 5 unthickened sutures. Seeds small.

Seven species: E Asia, Caribbean Region, E North America; three species (one endemic) in China.

1a. Capsule densely to moderately pubescent, placentae central to nearly basal; style sunken into apex of ovary ..... 3. *P. swinhoei*
1b. Capsule glabrous, placentae ± subapical; style only slightly sunken into apex of ovary.
  2a. Margin of leaf blade conspicuously toothed from base to apex; secondary and fine veins clearly visible, impressed adaxially ..... 1. *P. formosa*
  2b. Margin of leaf blade with a few apical teeth only to distinctly toothed except near base; secondary and fine veins ± inconspicuous, not impressed adaxially ..... 2. *P. japonica*

1. Pieris formosa (Wallich) D. Don, Edinburgh New Philos. J. 17: 159. 1834.

美丽马醉木 mei li ma zui mu

Andromeda formosa Wallich, Asiat. Res. 13: 395. 1820; *Lyonia formosa* (Wallich) Handel-Mazzetti; *Pieris bodinieri* H. Léveillé; *P. formosa* var. *forrestii* (Harrow) Airy Shaw; *P. formosa* f. *longiracemosa* Fang; *P. forrestii* Harrow; *P. huana* W. P. Fang; *P. japonica* (Thunberg) D. Don ex G. Don subsp. *formosa* (Wallich) Kitamura.

Shrubs or small trees, (2–)3–5(–10) m tall. Twigs glabrous to densely pubescent. Leaves scattered or pseudoverticillate, often reddish when young; petiole 1–1.5 cm; leaf blade lanceolate, elliptic, or oblong, rarely oblanceolate, 3–14 × ca. 1.4 cm, abaxially glabrous, adaxially puberulous to glabrescent, secondary and fine veins conspicuous on both surfaces, base cuneate to obtuse, margin conspicuously toothed from base to apex, apex acuminate or acute. Inflorescences paniculate or racemose; rachis 4–10(–20) cm. Pedicel 1–3 mm. Calyx lobes lanceolate, ca. 4 mm. Corolla tubular-urceolate or urceolate, 5–8 mm; lobes broadly triangular. Filaments straight, ca. 4 mm, pubescent. Ovary depressed-globose; style slightly sunken into apex. Capsule ovoid, ca. 4 mm in diam., glabrous. Seeds spindle-shaped, 2–3 mm. Fl. May–Jun, fr. Jul–Sep. 2*n* = 24.

Thickets, open slopes; (500–)900–2300(–3800) m. Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Xizang, Yunnan, Zhejiang [Bhutan, NE India (Assam), Myanmar, Nepal, Vietnam].

2. Pieris japonica (Thunberg) D. Don ex G. Don, Gen. Hist. 3: 832. 1834.

马醉木 ma zui mu

Andromeda japonica Thunberg in Murray, Syst. Veg., ed. 14, 407. 1784; *Lyonia polita* (W. W. Smith & Jeffrey) Chun; *L. popowii* (Palibin) Chun; *Pieris japonica* var. *taiwanensis* (Hayata) Kitamura; *P. polita* W. W. Smith & Jeffrey; *P. popowii* Palibin; *P. taiwanensis* Hayata.

Shrubs or small trees, (1–)4(–10) m tall. Twigs glabrous or puberulous. Leaves scattered or clustered towards shoot apices; petiole 3–8 mm; leaf blade oblanceolate or obovate to lanceolate-oblong, 3–10 × 1–2.5 cm, leathery, glabrous, midvein strongly raised or obscure on both surfaces, secondary and fine veins inconspicuous, base cuneate-attenuate, margin entire except for few apical teeth to 1/2 margin or crenulate except near base, apex acuminate. Inflorescences paniculate or racemose; rachis 6–15 cm, puberulous. Pedicel 1.5–6 mm. Calyx lobes tri-

angular-ovate, 3–4 mm. Corolla urceolate, ca. 8 mm; lobes suborbicular. Filaments straight, 2.5–4.5 mm, villous. Ovary subglobose, glabrous; style slightly sunken into apex. Capsule ovoid to depressed-globose, 3–5 mm in diam., glabrous. Seeds spindle-shaped, 2–3 mm. Fl. Feb–May, fr. Jul–Oct.

Thickets; 800–1200(–1900) m. Anhui, Fujian, Hubei, Jiangxi, Taiwan, Zhejiang [Japan].

3. Pieris swinhoei Hemsley, J. Linn. Soc., Bot. 26: 17. 1889.

长萼马醉木 chang e ma zui mu

Shrubs 2–3 m tall. Twigs sparsely pubescent. Leaves pseudoverticillate; petiole 2–7 mm; leaf blade narrowly lanceolate to elliptic, 4–12 × ca. 1.2 cm, both surfaces with sparse glandular hairs, midvein prominently raised abaxially and adaxially, secondary and fine veins reticulate, raised abaxially, inconspicuous and slightly raised or flat adaxially, base narrowly cuneate, margin toothed or inconspicuously so on upper half, apex acute. Inflorescences racemose, erect; rachis 15–20 cm, sometimes with basal branches. Pedicel ca. 5 mm. Calyx lobes narrowly triangular, 5–7(–13) mm. Corolla tubular-urceolate, 8–10 mm; lobes broadly triangular. Filaments geniculate, ca. 6 mm, pubescent. Ovary conical, densely fulvous hairy; style strongly sunken into apex. Capsule subglobose, ca. 5 mm in diam., pubescent. Seeds angled-ovoid, 1–1.5 mm. Fl. Apr–Jun, fr. Jul–Sep.

● Streamsides in forests, thickets, low hills; ca. 700 m. Fujian, Guangdong.

18. LYONIA Nuttall, Gen. N. Amer. Pl. 1: 266. 1818, nom. cons., not Rafinesque (1808).

珍珠花属 zhen zhu hua shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); Peter F. Stevens

Xolisma Rafinesque.

Shrubs or trees, deciduous or evergreen, often from underground woody burl or producing thickened horizontal underground rhizomes. Buds flattened, conical or ovoid, usually with 2 large imbricate glabrous scales. Leaves spirally arranged, petiolate; leaf blade entire [toothed in United States]. Inflorescences axillary, racemose. Flowers [4- or]5[–8]-merous. Calyx with variously estivated lobes, usually valvate in bud. Corolla white [to red], tubular or urceolate; lobes short. Filaments flattened, geniculate, with or without 1 pair of spurs at anther-filament junction; anthers dehiscing by introrse-terminal elliptic pores. Ovary superior, with many ovules per locule; stigma truncate. Capsule loculicidal, with pale ± thickened sutures sometimes separating from valves in dehiscence. Seeds oblong-ovoid or spindle-shaped to shortly linear, minute, ends often truncated.

Thirty-five species: E Asia, North America; five species (two endemic) in China.

1a. Capsule with slightly thickened sutures; leaves 1.5–7 × 0.6–4 cm, apex obtuse, mucronate.
  2a. Filaments with 2 spurs near apex; inflorescences 6–15 cm; rachis sparsely to densely pubescent; ovary pubescent ..... 4. *L. compta*
  2b. Filaments without spurs; inflorescences 1–4(–7) cm; rachis densely fulvous-pubescent; ovary glabrous to pubescent ..... 5. *L. villosa*
1b. Capsule with much thickened sutures; leaves 4–20 × 2.5–12 cm, apex acuminate to abruptly acuminate.
  2a. Calyx lobes 6–11 mm; filaments without spurs; inflorescences 2–7 cm; leaf blade usually leathery ..... 3. *L. macrocalyx*
  2b. Calyx lobes 2–6 mm; filaments with 2 spurs near apex; inflorescences 5–20 cm; leaf blade usually papery.
    3a. Rachis of inflorescences, pedicels, and abaxial surface of calyx pubescent; leaf blade apically usually acuminate ..... 1. *L. ovalifolia*
    3b. Rachis of inflorescences, pedicels, and abaxial surface of calyx glabrous; leaf blade apically usually abruptly acuminate ..... 2. *L. doyonensis*

1. Lyonia ovalifolia (Wallich) Drude in Engler & Prantl, Nat. Pflanzenfam. 4(1): 44. 1889.

珍珠花 zhen zhu hua

Shrubs or trees, deciduous or evergreen, 1–4 m tall. Twigs glabrous or pubescent. Buds narrowly ovoid, (1–)3–9(–11.5) mm, glabrous. Petiole 4–9 mm, glabrous or pubescent; leaf blade ovate, narrowly to broadly elliptic, lanceolate, or suborbicular, 3–20 × 2–12 cm, papery to thinly leathery, both surfaces ± with white or brown hairs, rarely abaxially densely white villous on midvein or subglabrous, veins prominently raised to slightly depressed or nearly obscure, base obtuse, cuneate, or sometimes cordate, apex acuminate. Inflorescences 5–20 cm, pubescent; lower 1–3(or 4) bracts leaflike or not. Pedicel 2–10 mm, densely pubescent. Calyx lobes oblong or triangular, 2–6 mm, densely or sometimes sparsely pubescent. Corolla tubular, 8–11 mm, abaxially densely pubescent; lobes ca. 1 mm. Filaments 5–8 mm, pilose, with 2 spurs at apex. Ovary glabrous or pubescent. Capsule globose or ovoid, 3–5 mm in diam., with thick sutures or not, glabrous to densely pubescent. Fl. May–Jun, fr. Jul–Sep. 2*n* = 24*.

Forests, forest margins, thickets, mountains, open and dry slopes, near hot springs, ravines; 200–3400 m. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [Bangladesh, Bhutan, Cambodia, India, Japan, Laos, Malaysia, Myanmar, Nepal, Pakistan, Sikkim, Thailand, Vietnam].

The leaf blade shape and indumentum are highly variable.

1a. Ovary and capsule densely pubescent.
  2a. Twigs, petioles, and leaf blades abaxially and inflorescences ± pubescent .... 1e. var. *hebecarpa*
  2b. Twigs, petioles, and leaf blades abaxially and inflorescences densely tomentose ..... 1f. var. *tomentosa*

1b. Ovary and capsule glabrous.
  3a. Leaf blade abaxially white villous, especially densely so on midvein, base rounded or cuneate to cordate ..... 1d. var. *elliptica*
  3b. Leaf blade abaxially ± sparsely white or brown pubescent, base narrowly cuneate to cordate.
    4a. Filaments with inconspicuous spurs, 0.1–0.3 mm; inflorescences usually without leaflike bracts ..... 1b. var. *rubrovenia*
    4b. Filaments with distinct spurs, ca. 0.5 mm; inflorescence with leaflike bracts.
      5a. Leaves ovate or elliptic, rarely suborbicular; calyx lobes triangular ..... 1a. var. *ovalifolia*
      5b. Leaves elliptic-lanceolate to lanceolate; calyx lobes lanceolate ..... 1c. var. *lanceolata*

1a. Lyonia ovalifolia var. **ovalifolia**

珍珠花(原变种) zhen zhu hua (yuan bian zhong)

Andromeda ovalifolia Wallich, Asiat. Res. 13: 391. 1820; *Pieris ovalifolia* (Wallich) D. Don; *Xolisma ovalifolia* (Wallich) Rehder.

Leaf blade ovate or elliptic, (4–)8–10(–21) × (2–)4–6 (–11.5) cm, abaxially white pubescent or brown strigose, base obtuse to cordate, apex acuminate. Inflorescences with leaflike bracts. Filaments with 2 distinct spurs ca. 0.5 mm. Capsule sutures often quite thick. 2*n* = 24.

Forests, forest margins, thickets, open and dry slopes; 700–3400 m. Fujian, S Gansu (Wenxian), Guangdong, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Xizang, Yunnan [Bangladesh, Bhutan, Cambodia, India, Laos, Malaysia, Myanmar, Nepal, Pakistan, Sikkim, Thailand, Vietnam].

1b. Lyonia ovalifolia var. **rubrovenia** (Merrill) Judd, J. Arnold Arbor. 60: 491. 1979.

红脉珍珠花 hong mai zhen zhu hua

Pieris rubrovenia Merrill, Philipp. J. Sci. 23: 256. 1923; *Lyonia annamensis* (Dop) Merrill; *L. rubrovenia* (Merrill) Chun; *P. annamensis* Dop.

Leaf blade elliptic, oblong, or lanceolate, 3–10 × (0.8–)1–3 cm, abaxially veins rust-colored, apex obtuse to acute. Inflorescences without leaflike bracts. Filaments with very short spurs 0.1–0.3 mm. Capsule with slightly thickened sutures.

Forests; 1000–1900 m. Guangdong, Guangxi, Hainan [Vietnam].

1c. Lyonia ovalifolia var. **lanceolata** (Wallich) Handel-Mazzetti, Symb. Sin. 7: 788. 1936.

狭叶珍珠花 xia ye zhen zhu hua

Andromeda lanceolata Wallich, Asiat. Res. 13: 390. 1820; *Lyonia compta* (W. W. Smith & Jeffrey) Handel-Mazzetti var. *stenantha* Handel-Mazzetti; *L. obliquinervis* (Merrill & Chun) Chun ex P. C. Tam; *Pieris kouyangensis* H. Léveillé; *P. lanceolata* (Wallich) D. Don; *P. obliquinervis* Merrill & Chun; *P. ovalifolia* var. *lanceolata* (Wallich) C. B. Clarke; *P. ulbrichii* H. Léveillé; *Vaccinium mairei* H. Léveillé; *Xolisma compta* (W. W. Smith & Jeffrey) Rehder; *X. ovalifolia* var. *lanceolata* (Wallich) Rehder.

Leaf blade elliptic-lanceolate to lanceolate, 5–13(–14.5) × 2–5(–7) cm, base narrowly cuneate to broadly cuneate, apex acuminate. Inflorescences with leaflike bracts. Calyx lobes lanceolate. Filaments with 2 distinct spurs ca. 0.5 mm. Capsule sutures quite thick.

Forests, forest margins, thickets, open and dry slopes; 700–2400 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hubei, Sichuan, Xizang, Yunnan [India, Myanmar].

1d. Lyonia ovalifolia var. **elliptica** (Siebold & Zuccarini) Handel-Mazzetti, Symb. Sin. 7: 788. 1936.

小果珍珠花 xiao guo zhen zhu hua

Andromeda elliptica Siebold & Zuccarini, Abh. Math.-Phys. Cl. Königl. Bayer. Akad. Wiss. 4: 126. 1846; *Lyonia ovalifolia* var. *formosana* (Komatsu) T. Yamazaki; *Pieris elliptica* (Siebold & Zuccarini) Nakai; *P. formosana* Komatsu; *P. ovalifolia* var. *elliptica* (Siebold & Zuccarini) Rehder & E. H. Wilson; *P. pilosa* Komatsu; *Xolisma elliptica* (Siebold & Zuccarini) Nakai; *X. formosana* (Komatsu) Nakai; *X. formosana* var. *pilosa* (Komatsu) Nakai; *X. ovalifolia* var. *elliptica* (Siebold & Zuccarini) Rehder.

Leaf blade elliptic or ovate, 3.5–10.5 × 1.8–6 cm, abaxially villous, especially on midvein, base rounded to cordate or broadly cuneate, apex acute to long acuminate, sometimes curved. Inflorescences with leaflike bracts. Filaments with 2 distinct spurs. Capsule sutures quite thick.

Forests, forest margins, mountains, dry slopes, near hot springs; 1000–2700 m. Taiwan [Japan].

1e. Lyonia ovalifolia var. **hebecarpa** (Franchet ex Forbes & Hemsley) Chun, Sunyatsenia 4: 253. 1940.

毛果珍珠花 mao guo zhen zhu hua

Pieris ovalifolia var. *hebecarpa* Franchet ex Forbes & Hemsley, J. Linn. Soc., Bot. 26: 17. 1889; *P. henryi* H. Léveillé; *P. mairei* H. Léveillé; *P. mairei* var. *parvifolia* H. Léveillé; *Xolisma ovalifolia* var. *hebecarpa* (Franchet ex Forbes & Hemsley) Metcalf.

Leaf blade ovate to elliptic-ovate, 5–12(–15) × (2.3–)3–6(–8) cm, abaxially sparsely or densely pubescent, base rounded to cordate, apex acuminate to long acuminate. Inflorescences usually with leaflike bracts. Filaments with 2 distinct spurs. Capsule globose, 3–4 mm in diam., with thickened sutures, densely pubescent.

● *Pinus* and *Quercus* forests, forest margins, thickets, open and dry slopes; 200–3400 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Jiangsu, Jiangxi, Shaanxi, Sichuan, Yunnan, Zhejiang.

1f. Lyonia ovalifolia var. **tomentosa** (W. P. Fang) C. Y. Wu, Index Fl. Yunnan. 2: 1082. 1984.

绒毛珍珠花 rong mao zhen zhu hua

Pieris ovalifolia var. *tomentosa* W. P. Fang, Contr. Biol.

Lab. Chin. Assoc. Advancem. Sci., Sect. Bot. 10: 241. 1938.

Twigs, petioles, leaf blades abaxially, and inflorescences densely tomentose. Leaf blade elliptic, 4–8 × 2.5–5 cm, adaxially pubescent, base obtuse to rounded, apex abruptly acuminate. Inflorescences with leaflike bracts. Filaments with 2 ?distinct spurs. Capsule unknown.

● Ravines; ca. 1700 m. NC Yunnan (Yongren).

2. Lyonia doyonensis (Handel-Mazzetti) Handel-Mazzetti, Symb. Sin. 7: 789. 1936.

圆叶珍珠花 yuan ye zhen zhu hua

Pieris doyonensis Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 60: 185. 1923; *Lyonia ovalifolia* (Wallich) Drude var. *doyonensis* (Handel-Mazzetti) Judd.

Trees or shrubs, deciduous, 2–6(–15) m tall. Twigs glabrous, rarely puberulous. Buds (1–)4–7(–11) mm, glabrous. Petiole 0.8–1.5 cm, glabrous or pubescent; leaf blade orbicular, oblong-orbicular, or oblong-elliptic, 6–15 × 4–10 cm, papery to thinly leathery, abaxially brown appressed-pubescent, especially on midvein and secondary veins, adaxially subglabrous, veins strongly raised abaxially, slightly raised adaxially, base obtuse-rounded, often shallowly cordate, apex rounded then abruptly acuminate. Inflorescences 7–17 cm, glabrous; lower 2 or 3 bracts leaflike. Pedicel 2–4 mm, glabrous. Calyx lobes triangular, 2–3 mm, glabrous. Corolla tubular, 1–1.2 cm, abaxially densely pubescent; lobes ca. 1 mm. Filaments 6–8 mm, lower part pilose, with 2 spurs at apex. Ovary glabrous. Capsule depressed-globose, 4–5 mm in diam., with thick sutures, glabrous. Fl. Jul–Aug, fr. Aug–Nov.

● Evergreen forests, ravines; 2000–3000 m. NW Yunnan.

3. Lyonia macrocalyx (J. Anthony) Airy Shaw, Bot. Mag. 160: t. 9490. 1937.

大萼珍珠花 da e zhen zhu hua

Pieris macrocalyx J. Anthony, Notes Roy. Bot. Gard. Edinburgh 15: 241. 1927.

Shrubs or small trees, semievergreen to deciduous, 1–2(–4) m tall. Twigs puberulous, glabrescent. Buds flattened-ovoid, 7–9 mm, glabrous. Petiole 2–10 mm, pubescent; leaf blade ovate or elliptic, 4–10 × 2.5–5 cm, leathery, abaxially with short dense fulvous hairs, adaxially glabrous, veins raised abaxially, impressed adaxially, base obtuse-rounded to broadly cuneate or shallowly cordate, apex acuminate or obtuse-rounded. Inflorescences 2–7 cm, glabrous; bracts leaflike. Pedicel 5–10 mm, pubescent. Calyx 5(–8)-lobed; lobes broadly ovate, 6–11 mm, leathery, abaxially with sparse or dense fulvous hairs or subglabrous. Corolla urceolate, 6–10 mm, abaxially sparsely fulvous-pubescent; lobes 1–2 mm. Filaments 5–6 mm, pilose, without spurs. Ovary glabrous. Capsule globose, 5–7 mm in diam., with thick sutures, glabrous. Fl. Jul–Aug, fr. Aug–Sep.

Abies forests, cliffs in rain forests, forest margins, thickets; 1800–3500 m. SE Xizang, NW Yunnan [Myanmar].

4. Lyonia compta (W. W. Smith & Jeffrey) Handel-Mazzetti, Symb. Sin. 7: 790. 1936.

秀丽珍珠花 xiu li zhen zhu hua

Pieris compta W. W. Smith & Jeffrey, Notes Roy. Bot. Gard. Edinburgh 9: 116. 1916; *Xolisma compta* (W. W. Smith & Jeffrey) Rehder.

Shrubs evergreen, ca. 2 m tall. Twigs pubescent, glabrescent. Buds ovate, (1–)2–3(–4) mm, pubescent. Petiole 1–2 mm, pubescent; leaf blade elliptic, 1.5–3.5 × 0.6–1.1 cm, leathery, abaxially glaucous, sparsely pubescent or subglabrous, adaxially pubescent to glabrous, midvein and secondary veins inconspicuous, base broadly cuneate to rounded, apex obtuse, mucronate. Inflorescences terminal, sometimes also axillary, 6–15 cm, pubescent; bracts leaflike near base of raceme, smaller apically. Pedicel ca. 1 cm, pubescent, also with long headed hairs. Calyx lobes ovate-lanceolate, 1–2.5 mm, abaxially pubescent. Corolla urceolate, 4–6 mm, abaxially white pubescent; lobes ca. 0.8 mm. Filaments 0.5–2(–3.5) mm, pilose, with 2 spurs at apex. Ovary pubescent. Capsule subglobose, 3–4 mm in diam., with slightly thickened sutures, moderately to densely pubescent. Fl. Jun–Jul, fr. Aug–Oct.

● Forest margins, sunny thickets, marshy places; 1000–2500 m. Guizhou, Yunnan.

5. Lyonia villosa (Wallich ex C. B. Clarke) Handel-Mazzetti, Symb. Sin. 7: 789. 1936.

毛叶珍珠花 mao ye zhen zhu hua

Shrubs or small trees, deciduous, 1–3 m tall. Twigs, pubescent, glabrescent. Buds narrowly ovoid, 1–13 mm, glabrous. Petiole 3–6 mm, pubescent; leaf blade obovate, oblong-obovate, or ovate, 1.5–7 × 1–4 cm, papery to subleathery, abaxially villous or pubescent on veins or sometimes subglabrous, adaxially sparsely pubescent on veins, otherwise glabrous, veins raised abaxially, midvein impressed adaxially, base broadly cuneate to rounded or subcordate, apex obtuse, rarely shortly acuminate, mucronate. Inflorescences (0.5–)1–4(–7) cm, densely fulvous-pubescent, rarely glabrous; bracts leaflike. Pedicel 3–5 mm, densely pubescent to glabrous. Calyx lobes oblong or narrowly lanceolate to linear, 3–4 mm, pubescent, also with glandular hairs. Corolla urceolate to tubular, 5–8 mm, abaxially pubescent; lobes ca. 0.5 mm. Filaments ca. 4 mm, pilose, without spurs. Ovary glabrous to pubescent. Capsule ovoid, with thick sutures, glabrous or rarely sparsely pubescent. Fl. May–Aug, fr. Sep–Oct.

Abies, Betula, Picea, Pinus, Rhododendron, or mixed forests, thickets; 1000–3900 m. Guizhou, Sichuan, SE Xizang, Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim].

1a. Inflorescences 1–7 cm; rachis and pedicels ± pubescent; corolla urceolate to tubular ..... 5a. var. *villosa*
1b. Inflorescences (0.5–)1–3 cm; rachis and pedicels usually glabrous or sparsely pubescent; corolla urceolate ..... 5b. var. *sphaerantha*

5a. Lyonia villosa var. **villosa**

毛叶珍珠花(原变种) mao ye zhen zhu hua (yuan bian zhong)

Pieris villosa Wallich ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 461. 1882; *Lyonia villosa* var. *pubescens* (Franchet) Judd; *Pieris ovalifolia* (Wallich) D. Don var. *pubescens* Franchet; *P. villosa* var. *pubescens* (Franchet) Rehder & E. H. Wilson; *Xolisma villosa* (Wallich ex C. B. Clarke) Rehder; *X. villosa* var. *pubescens* (Franchet) Rehder.

Inflorescences 1–7 cm; rachis and pedicels ± pubescent. Corolla urceolate to tubular.

Abies, Betula, Picea, Pinus, Rhododendron, or mixed forests, thickets; 1000–3900 m. Guizhou, Sichuan, SE Xizang, Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim].

5b. Lyonia villosa var. **sphaerantha** (Handel-Mazzetti) Handel-Mazzetti, Symb. Sin. 7: 789. 1936.

光叶珍珠花 guang ye zhen zhu hua

Xolisma sphaerantha Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 62: 131. 1925.

Inflorescences (0.5–)1–3 cm; rachis and pedicels usually glabrous or sparsely pubescent. Corolla urceolate.

Abies, Betula, Picea, Pinus, or *Rhododendron* forests, thickets; 2000–3800 m. Sichuan, SE Xizang, Yunnan [Myanmar].

19. CHAMAEDAPHNE Moench, Methodus 457. 1794, nom. cons., not Mitchell (1769).

地桂属 di gui shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); Peter F. Stevens

Cassandra D. Don.

Shrubs evergreen, lepidote. Stems arching. Leaf blade leathery, margin entire or inconspicuously denticulate. Inflorescences terminal, secund racemes; bracts leaflike. Flowers 5-merous. Corolla urceolate to tubular. Stamens included; filaments straight, subulate, lacking appendages, anthers dehiscing by terminal pores. Ovary superior, with many ovules per locule; stigma truncate. Capsule loculicidal; epicarp 5-valved, separating from 10-valved endocarp. Seeds many, small, wingless.

One species: China, N Japan, Mongolia, Russia (Siberia); NE Europe, North America.

1. Chamaedaphne calyculata (Linnaeus) Moench, Methodus 457. 1794.

地桂 di gui

Andromeda calyculata Linnaeus, Sp. Pl. 1: 394. 1753; *Cassandra calyculata* (Linnaeus) D. Don.

Shrubs erect, 0.3–1.5 m tall. Twigs fulvous, densely lepidote and pubescent. Leaf blade oblong or elliptic-oblong, 3–4 × 1–1.5 cm, both surfaces with brownish scales, especially abaxially, base cuneate to obtuse, margin entire or inconspicuously denticulate, apex obtuse, mucronulate; upper leaves gradually smaller. Racemes 4–12 cm. Pedicel ca. 2 mm, densely pubescent; bracteoles apical. Petiole 1.5–2.5 mm. Flowers pendent. Calyx lobes ovate, 1.5–3 mm, pubescent and lepidote. Corolla white, tubular-urceolate, 5–6 mm; lobes recurved, ovate. Filaments glabrous. Capsule depressed-globose, 3–4 mm in diam. Fl. Jun, fr. Jul. $2n = 22$.

Coniferous forests, mossy moors; low elevations. Heilongjiang, Jilin, Nei Mongol [N Japan, Mongolia, Russia (Siberia); NE Europe, North America].

20. GAULTHERIA Kalm ex Linnaeus, Sp. Pl. 1: 395. 1753.

白珠树属 bai zhu shu shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); Peter F. Stevens

Chiogenes Salisbury.

Shrubs evergreen. Stems erect, creeping, or procumbent. Leaves spirally arranged, petiolate; leaf blade serrate or rarely entire. Flower usually 5-merous, sometimes 4-merous, in axillary or terminal racemes or panicles, or solitary; bracteoles variable in position. Calyx deeply divided. Corolla usually white, urceolate, campanulate, or tubular, shallowly lobed. Stamens included; filaments flattened, usually dilated towards base; anthers oblong, dehiscing by terminal pores, with 2–4 awns or minute projections. Ovary superior or semi-inferior, with many ovules per locule. Stigma truncate. Calyx at fruiting accrescent, fleshy; capsule dehiscing loculicidally or sometimes irregularly [fruit a berry]. Seeds small, unwinged.

About 135 species: E and S Asia, SE Australia (including Tasmania), North and South America, Pacific Islands (New Zealand); 32 species (15 endemic) in China.

1a. Flowers solitary, axillary; plant dwarf, usually a prostrate shrub; leaf blade small, to 1.1(–1.2) cm.
  2a. Leaf blade abaxially densely or sparsely setulose.
    3a. Flower 4-merous; leaf blade 3–7 × 2–5 mm ..... 24. *G. suborbicularis*
    3b. Flower 5-merous; leaf blade 0.5–2 cm × 3–10(–16) mm.
      4a. Leaf blade broadly ovate or suborbicular, sometimes ovate or elliptic, 5–10(–18) × 3–16 mm; corolla white, pink, or crimson, ca. 5 mm, lobes ca. 1 mm ..... 25. *G. nummularioides*
      4b. Leaf blade obovate-elliptic or obovate-oblong, 1–2 × 0.5–1 cm; corolla white, 6–9 mm, lobes 3–6 mm ..... 31. *G. jingdongensis*
  2b. Leaf blade abaxially glabrous, rarely scattered hispidulous.

5a. Leaves unequal in size; larger leaf blades usually obovate or oblong, less than 2 × as long as wide, 8–14 × 6–8 mm, apex obtuse to rounded ..... 27. *G. hypochlora*
5b. Leaves equal, or slightly unequal in size; leaf blade usually elliptic, elliptic-oblong, or linear, more than 2 × as long as wide, 5–16 × 1–7 mm, apex acute, obtuse, or acuminate.
6a. Twigs and often leaves glabrous; leaf blade obtuse or acuminate at apex ..... 32. *G. taiwaniana*
6b. Twigs and leaves ± hairy; leaf blade obtuse to acute at apex.
7a. Pedicel 5–9(–19) mm; leaf blade glabrous ..... 26. *G. dolichopoda*
7b. Pedicel 1–2 mm; leaf blade usually variously pubescent or hispidulous, and/or ciliate at margins.
8a. Leaf blade long ciliate along margin ..... 27. *G. trichophylla*
8b. Leaf blade not long ciliate along margin.
9a. Fruit usually white; leaf blade linear or oblong-linear, 5–16 × 1–4 mm; calyx lobes ovate, base slightly cordate ..... 28. *G. cardiosepala*
9b. Fruit usually dark blue; leaf blade elliptic or oblong, 6–16 × 2–6 mm; calyx lobes broadly ovate or ovate-triangular, base rounded ..... 30. *G. sinensis*
1b. Inflorescence racemose or corymbose; plant usually a taller shrub; leaf blade at least 1.5 mm.
10a. Leaf blade less than 3.5 cm; plant usually to 40(–60) cm tall.
11a. Inflorescence racemose, rachis 1–4.5 cm.
12a. Leaves purple abaxially; fruit dark purple, fleshy; leaf blade less than 2 × as long as wide; rachis glabrous ..... 22. *G. purpurea*
12b. Leaves pale green abaxially; fruit whitish, succulent; leaf blade usually more than 2 × as long as wide; rachis densely puberulous.
13a. Inflorescence solitary on each twig, pseudoterminal; leaf blade 8–11(–15) × 3–7 mm, elliptic-oblong or oblanceolate ..... 6. *G. borneensis*
13b. Inflorescences usually 2 or 3, terminal and from upper leaf axils; leaf blade 1.2–3.5 × 0.4–1.2 cm, obovate or narrowly obovate ..... 9. *G. cuneata*
11b. Inflorescence shortly racemose, rachis 2–15 mm.
14a. Plant 30–40 cm tall; twigs rust-colored long setose; inflorescence 3–8-flowered, pedicels ca. 6 mm; leaf blade ovate, 2–3.5 × 1.5–2 cm ..... 3. *G. notabilis*
14b. Plant 5–20 cm tall; twigs pubescent to glabrous; inflorescence 1–5-flowered, pedicel 1–6 mm; leaf blade elliptic, obovate, or suborbicular, 0.8–5 × 0.6–2.5 cm.
15a. Calyx and corolla lobes 4; leaf blade hirtellous abaxially ..... 23. *G. heteromera*
15b. Calyx and corolla lobes 5; leaf blade punctate or hispidulous abaxially.
16a. Corolla campanulate, ca. 4 mm; inflorescence 1–3-flowered; leaf blade elliptic, 10–12 × 6–8 mm, abaxially dark punctate ..... 7. *G. prostrata*
16b. Corolla urceolate, ca. 5 mm; inflorescence 2–5-flowered; leaf blade obovate, elliptic, or suborbicular, 13–50 × 8–25 mm, abaxially hispidulous ..... 3. *G. pyrolifolia*
10b. Leaf blade more than 4 cm; plant usually more than 40 cm tall.
17a. Twigs glabrous.
18a. Leaf blade ovate or broadly ovate, base rounded to auriculate-cordate, apex acuminate to caudate-acuminate.
19a. Inflorescence corymbose or shortly racemose, axis 3–10 mm; secondary veins 1 pair arising near base of leaf blade ..... 2. *G. dumicola*
19b. Inflorescence racemose, axis at least 3 cm; secondary veins more than 3 pairs.
20a. Leaf blade auriculate-cordate at base, abaxially shortly glandular setose, secondary veins 4–7(or 8) pairs; twigs trigonous and winged; rachis and pedicels pubescent ..... 11. *G. brevistipes*
20b. Leaf blade obtuse to subcordate at base, abaxially glabrous, secondary veins 3 or 4 pairs; twigs terete; rachis and pedicels glabrous ..... 21. *G. leucocarpa*
18b. Leaf blade elliptic, oblong, or obovate to lanceolate, base cuneate, sometimes rounded-obtuse, apex acute, sometimes acuminate.
21a. Twigs distinctly trigonous or with narrow wings; inflorescence 2–3 cm; bract ovate-lanceolate, 5–6 mm, with 1 distinct main vein, distinctly carinate, secondary veins 2 pairs ..... 19. *G. trigonoclada*
21b. Twigs terete, sometimes obtusely angled; inflorescence 2–12 cm; bract ovate to orbicular-ovate, 1–4(–7) mm, main veins inconspicuous, secondary veins more than 3 pairs.
22a. Inflorescence terminal and axillary, 10–12 cm; leaf blade obovate or elliptic-obovate, 3–6.5 × 1–2.5 cm, apex acute, adaxially puberulous on midvein ..... 16. *G. longiracemosa*
22b. Inflorescence axillary, 2–9 cm; leaf blade oblong or elliptic, 5–17 × 2–6.5 cm, apex acute to caudate-acuminate, adaxially glabrous.
23a. Leaf blade usually oblong, thickly leathery, apex caudate-acuminate, abaxially densely punctate; bracteoles below middle to near base of pedicel ..... 18. *G. griffithiana*
23b. Leaf blade usually elliptic, leathery, apex acute to acuminate, abaxially scattered punctate;

bracteoles close to calyx ..... 20. *G. fragrantissima*
17b. Twigs densely hirsute, hispid, or setose.
24a. Leaf blade (4–)8–16 × 3–9 cm, base shallowly cordate to rounded; corolla broadly campanulate, 6–13 mm.
25a. Corolla red; inflorescence shortly corymbose-racemose, 2–8 mm, glabrous ..... 4. *G. pseudonotabilis*
25b. Corolla white; inflorescence racemose or corymbose, 10–60(–100) mm, densely tomentulose or glabrous.
26a. Corolla 1–1.3 cm; bracteoles basal; inflorescence densely tomentulose ..... 5. *G. codonantha*
26b. Corolla 6–7 mm; bracteoles apical; inflorescence glabrous ..... 21. *G. leucocarpa*
24b. Leaf blade 1.7–11 × 1–4 cm (not *G. dumicola*), base usually cuneate or obtuse-rounded; corolla urceolate or tubular, rarely campanulate, (2–)3–5(–6) mm.
27a. Leaf blade (4.5–)6–17 × 2.5–9 cm; inflorescence shortly racemose or corymbose, 3–10 mm ..... 2. *G. dumicola*
27b. Leaf blade 1.7–11 × 1–4 cm; inflorescence racemose, at least 10 mm.
28a. Dwarf shrub, (5–)10–25 cm tall; leaf blade elliptic or broadly ovate, 1.7–6 × 1–4 cm, base obtuse to shallowly cordate; raceme 1–2.5 cm ..... 12. *G. praticola*
28b. Shrub more than 30 cm tall; leaf blade elliptic to lanceolate, sometimes ovate, 3–11 × 1–4 cm, base attenuate to obtuse or rounded; raceme 1–5(–7) cm.
29a. Bracts orbicular-ovate or oblong, 4–7 mm; bracteoles longer than bracts or not.
30a. Bracts 5–7 mm; bracteoles smaller than bracts, subapical or at middle of pedicel; leaf blade abaxially brown, secondary veins (3 or)4(–7) pairs; twigs densely hirsute ..... 10. *G. hookeri*
30b. Bracts ca. 4 mm; bracteoles 4–5.5 mm, apical; leaf blade abaxially grayish white or pale brown, secondary veins 2 or 3 pairs; twigs densely hispid and puberulous ..... 15. *G. longibracteolata*
29b. Bracts ovate or triangular-ovate, 1–3(–4) mm; bracteoles smaller than bracts.
31a. Flowers 4-merous; leaf blade ca. 2 × as long as wide ..... 14. *G. tetramera*
31b. Flowers 5-merous; leaf blade 2.5–4 × as long as wide.
32a. Ovary half-inferior; stamens 5 ..... 17. *G. semi-infera*
32b. Ovary superior; stamens 10.
33a. Leaf blade abaxially stramineous or grayish white, appressed setulose; pedicel 1–2 mm ..... 13. *G. straminea*
33b. Leaf blade abaxially densely long setulose and puberulous; pedicel 3–6 mm ..... 1. *G. wardii*

1. Gaultheria wardii C. Marquand & Airy Shaw, J. Linn. Soc., Bot. 48: 198. 1929.

西藏白珠 xi zang bai zhu

Shrubs erect, 0.5–2(–3) m tall. Twigs terete, densely brown- or rust-colored hirsute. Leaves scattered; petiole 2–3 mm, densely hirsute; leaf blade oblong, ovate, or elliptic, 3–7 × 1.2–2.3 cm, leathery, abaxially densely puberulous, intermixed with long appressed setula, adaxially densely sericeous initially, later glabrescent and densely papillate, secondary veins (2 or)3(or 4) pairs with midvein raised abaxially, impressed adaxially, base obtuse to rounded, margin recurved, minutely denticulate, apex acuminate. Inflorescences axillary, racemose, solitary or 2 or 3 together, sometimes terminal panicles, 1–3.5 cm, many flowered, usually crowded; bracts rhombic-ovate or oblong-lanceolate, abaxially velutinous and sericeous or subglabrescent, glandular ciliate. Pedicel 3–6 mm, densely velutinous or setulose; bracteoles 2, linear-lanceolate, nearly at middle, velutinous or glabrescent. Calyx lobes ovate or narrowly triangular, 3–4 mm, abaxially densely sericeous or glabrous, margin ciliolate or glabrous. Corolla white, urceolate to tubular, 3–5 mm, abaxially glabrous; lobes minute. Filaments dilated towards base, 1–2 mm, glabrous; anthers ca. 1 mm, thecae 2-awned. Ovary puberulous. Calyx at fruiting succulent, blue-black; capsule 6–8 mm in diam., sericeous-tomentellose. Fl. Jun–Aug, fr. Aug–Mar.

Forest margins, thicket on slopes; 1000–2700(–3100) m. SE Xizang, NW Yunnan [N India, Myanmar].

The flowers of this species are at least sometimes imperfect.

1a. Inflorescence 1–3 cm; flowers or fruit crowded; calyx, bracts, and bracteoles densely sericeous or velutinous abaxially ... 1a. var. *wardii*
1b. Inflorescence 2.5–3.5 cm; flowers or fruit distant; calyx glabrous, bracts and bracteoles subglabrous abaxially ..... 1b. var. *elongata*

1a. Gaultheria wardii var. **wardii**

西藏白珠(原变种) xi zang bai zhu (yuan bian zhong)

Gaultheria trichoclada C. Y. Wu.

Inflorescence 1–3 cm. Flowers or fruit crowded. Bracts and bracteoles densely sericeous or velutinous abaxially. Calyx densely sericeous abaxially.

Alnus, *Pinus*, or *Tsuga* forest margins, thickets on slopes; 1700–2700(–3100) m. SE Xizang, NW Yunnan (Gongshan) [N India, Myanmar].

1b. Gaultheria wardii var. **elongata** R. C. Fang, Novon 9: 174. 1999.

延序西藏白珠 yan xu xi zang bai zhu

Inflorescence 2.5–3.5 cm. Flowers or fruit distant. Bracts and bracteoles subglabrous. Calyx glabrous abaxially.

● Evergreen forest margins, thickets on slopes; 1000–2000 m. NW Yunnan (Gongshan, Dulongjiang).

2. Gaultheria dumicola W. W. Smith, Notes Roy. Bot. Gard.

Edinburgh 9: 106. 1916.

丛林白珠 cong lin bai zhu

Shrubs erect, 0.6–2(–3) m tall. Twigs terete, glabrous, puberulous, or densely hirsute. Leaves scattered; petiole 3–5 mm, glabrous or hirsute; leaf blade ovate to broadly ovate, orbicular-ovate, or elliptic, (4.5–)6–17 × 2.5–9 cm, leathery, glabrous or abaxially ± brown hispid, secondary veins 1 pair, arising near leaf base, arcuate-ascendant, base cuneate to rounded, rarely cordate, margin slightly revolute or plane, shallowly serrulate, glabrous or often ciliate, apex abruptly acuminate, acuminate, or caudate. Inflorescences axillary, racemose, corymbose, or pseudoumbellate, 3–10 mm, glabrous; bracts broadly ovate, 1.5–2 mm, apex acute. Pedicel 3–10 mm, glabrous or puberulous; bracteoles 2, basal, ovate-triangular, ca. 1 mm. Calyx purple, ca. 3 mm; lobes ovate, ca. 1.8 mm, glabrous, apex abruptly acuminate. Corolla reddish or pale green, urceolate-campanulate, 3–4 mm, abaxially glabrous; lobes triangular, ca. 1 mm. Filaments fusiform, ca. 1 mm, papillose; anthers ca. 1.2 mm, thecae 2-awned. Ovary pilose. Calyx at fruiting purplish black; capsule conical, 3–6 × ca. 2.5 mm. Fl. Jul–Aug, fr. Aug–Dec.

Forests, forest margins, thickets, scrub, open slopes, streamsides, dry places, rocks, roadsides; 1400–3000(–3200) m. SE and W Yunnan [Myanmar].

1a. Twigs, leaves, and inflorescences glabrous.
  2a. Leaf blade usually ovate, base cuneate to rounded ..... 2a. var. *dumicola*
  2b. Leaf blade broadly ovate, base usually cordate or rounded-truncate, rarely broadly cuneate ..... 2b. var. *petanoneuron*
1b. Twigs, leaves, and inflorescences at least in part pubescent, hirsute or hispid.
  3a. Young twigs, pedicels, bracts, and bracteoles densely puberulous; leaf blade glabrous on both surfaces ..... 2c. var. *pubipes*
  3b. Young twigs glabrous or densely hirsute; pedicels, bracts, and bracteoles glabrous; leaf blade abaxially shortly brown hispid.
    4a. Young twigs glabrous ..... 2d. var. *aspera*
    4b. Young and mature twigs densely hirsute ..... 2e. var. *hirticaulis*

2a. Gaultheria dumicola var. **dumicola**

丛林白珠(原变种) cong lin bai zhu (yuan bian zhong)

Diplycosia alboglauca Merrill.

Twigs glabrous. Leaf blade usually ovate, base cuneate to rounded. Inflorescences glabrous.

● Forests, thickets; 1400–2800 m. W Yunnan.

2b. Gaultheria dumicola var. **petanoneuron** Airy Shaw, Hooker's Icon. Pl. 33: t. 3206. 1933.

高山丛林白珠 gao shan cong lin bai zhu

Twigs glabrous. Leaf blade broadly ovate, 11–14 × 7–9 cm, base cordate or rounded-truncate to broadly crenate. Inflorescences glabrous.

● Forests, forest margins, scrub, rocks; 2000–3000 m. W Yunnan.

2c. Gaultheria dumicola var. **pubipes** Airy Shaw, Kew Bull. 3: 110. 1948.

微毛丛林白珠 wei mao cong lin bai zhu

Twigs densely puberulous, glabrescent. Leaf blade elliptic or ovate-lanceolate, 4–13 × 2–7 cm, glabrous, base rounded to broadly cuneate. Pedicel densely puberulous. Bracts and bracteoles denticulate at margin, puberulous.

● Forests, thickets, open slopes; 2000–2500(–3200) m. W Yunnan.

2d. Gaultheria dumicola var. **aspera** Airy Shaw, Bull. Misc. Inform. Kew 1940: 312. 1941.

粗糙丛林白珠 cu cao cong lin bai zhu

Twigs glabrous. Leaf blade ovate, elliptic, or lanceolate, 4–16 × 2.5–6.5 cm, abaxially shortly brown hispid, adaxially glabrous, base rounded or broadly cuneate.

Forests, *Tsuga* forests, streamsides, roadsides; 1500–2500 m. W Yunnan [Myanmar].

2e. Gaultheria dumicola var. **hirticaulis** R. C. Fang, Novon 9: 164. 1999.

糙茎丛林白珠 cao jing cong lin bai zhu

Young and mature twigs densely brown hirsute. Leaf blade ovate, 3–8 × 2–4 cm, abaxially shortly brown hispid, adaxially glabrous, base rounded to broadly cuneate.

● Forest margins, dry places; ca. 2000 m. SE Yunnan (Malipo).

3. Gaultheria notabilis J. Anthony, Notes Roy. Bot. Gard. Edinburgh 18: 18. 1933.

短穗白珠 duan sui bai zhu

Subshrubs branched from base, erect or arcuate-ascending, 30–40 cm tall. Twigs terete, narrowly striate, with long rust-colored setose hairs. Leaves scattered; petiole 1–3 mm, setose; leaf blade usually ovate, rarely oblong- or elliptic-ovate to broadly ovate, 2–3.5 × 1.5–2 cm, papery, abaxially sparsely setulose or glabrescent, adaxially glabrous, secondary veins 2 pairs arising near or above base and arcuate, fine veins raised abaxially, base rounded or subtruncate, margin subentire or inconspicuously serrulate, long ciliate, apex shortly and abruptly callose-apiculate or -cuspidate. Inflorescences shortly corymbose-racemose, 2–10 mm, 3–8-flowered, glabrous; bracts ovate, 1–2 mm, cucullate, abaxially carinate, ciliate. Pedicel spreading, ca. 6 mm; bracteoles similar to bracts but smaller, subbasal. Calyx lobes triangular or ovate-triangular, ca. 3 mm. Corolla white, campanulate, 5–6 mm; lobes recurved, broadly triangular, 2–3 mm. Filaments subulate, ca. 1 mm, papillose; anthers ca. 1 mm, with thecae 2-awned. Ovary ca. 1 mm, glabrous. Calyx at fruiting dark purple; capsule glabrous.

● Dry thickets, scrub, dry stony slopes; ca. 2400 m. Yunnan.

Only the type specimen (*Forrest 26722*) has been seen by the present authors.

4. Gaultheria pseudonotabilis H. Li ex R. C. Fang, Novon 9:

169. 1999.

假短穗白珠 jia duan sui bai zhu

Shrubs 1–2(–3) m tall. Twigs terete, densely spreading rust-colored setose, setae 2–5 mm. Leaves scattered; petiole 3–7 mm, densely spreading rust-colored setose; leaf blade elliptic-ovate, ovate, or oblong-lanceolate, (5–)8–15 × 3–7 cm, papery-leathery, abaxially sparsely long setose on midvein and secondary veins, otherwise glabrous, adaxially bullate, glabrous, secondary veins 2 pairs arising from blade base, fine veins raised abaxially, base shallowly cordate to rounded, margin slightly revolute, sparsely dentate, densely setiform-ciliate, apex acuminate, caudate, or acute. Inflorescence axillary, shortly corymbose-racemose, 2–8 mm, 4–7-flowered, glabrous; bracts rhombic-triangular, 2–4 mm, leathery, glabrous, ciliolate. Pedicel 0.8–1.2 cm, glabrous; bracteoles 2, basal, similar to bracts but smaller. Calyx lobes triangular, 2.5–3 mm, glabrous. Corolla red, broadly campanulate, 7–9 mm, glabrous; lobes triangular-ovate, 2–3 mm. Filaments dilated at base, 1.5–2 mm, glabrous, papillose; anthers 1.5–2 mm, thecae shortly 2-awned. Ovary glabrous. Calyx at fruiting dark purple; capsule depressed-globose, ca. 5 mm in diam., glabrous. Fl. Jan–Apr, fr. Mar–May.

● Evergreen broad-leaved forests, thickets, rocks; 1000–2000 m. NW Yunnan (Dulongjiang, Gongshan).

5. Gaultheria codonantha Airy Shaw, Hooker's Icon. Pl. 33: t. 3207. 1933.

钟花白珠 zhong hua bai zhu

Shrubs 1–2(–3) m tall. Twigs terete, densely spreading rust-colored setose. Leaves scattered; petiole 3–5 mm, densely spreading rust-colored setose; leaf blade elliptic-ovate, ovate, or oblong-lanceolate, 8–16 × 4–9 cm, papery-leathery, abaxially very densely rust-colored setulose, especially on veins, adaxially bullate, densely shortly setulose, immediately glabrescent, secondary veins 2 pairs arising from base, fine veins distinctly raised abaxially, impressed adaxially, base shallowly cordate to rounded, margin slightly revolute, sparsely dentate, ± setiform-ciliate, apex acuminate, caudate, or acute. Inflorescences axillary, racemose or corymbose, 1–4 cm, ca. 10-flowered, densely tomentulose; bracts rhombic-triangular, 5–8 × 4–5 mm, leathery, densely tomentulose. Pedicel 0.8–1.3 cm, glabrous; bracteoles 2, basal, similar to bracts but smaller. Calyx lobes triangular-ovate, 3–4 mm, densely tomentulose near apex, otherwise glabrous, margin membranous. Corolla white, broadly campanulate, 1–1.3 cm, abaxially glabrous; lobes broadly triangular, 0.8–1 cm wide. Filaments strongly dilated at base, 2–3(–4) mm, glabrous, papillate; anthers ca. 4 mm, thecae shortly 2-awned. Ovary glabrous. Capsule 7–9 mm in diam., glabrous. Fl. Feb–Mar, fr. Mar–Jul.

Evergreen broad-leaved forests; 1000–1600(–2100) m. SE Xizang (Mêdog, Zayü) [NE India (Assam)].

This is the first record of this species for China.

6. Gaultheria borneensis Stapf, Trans. Linn. Soc. London 4: 190. 1894.

高山白珠 gao shan bai zhu

Gaultheria benguetensis Copeland; *G. itoana* Hayata.

Shrubs prostrate or erect, 10–15(–30) cm tall, much branched. Twigs ?terete, puberulous. Leaves scattered; petiole 0.5–1.5 mm, glabrous; leaf blade elliptic-oblong, oblanceolate, or oblong, 8–11(–15) × 3–7 mm, thickly papery or subleathery, abaxially punctate, adaxially glabrous, secondary veins 2 or 3 pairs, fine veins inconspicuous on both surfaces or slightly raised abaxially, base cuneate, margin slightly recurved, sparsely serrate, apex acute to obtuse. Inflorescences pseudoterminal, racemose, ca. 2 cm, 3–10-flowered, densely puberulous and sparsely glandular pubescent; bracts broadly ovate, ca. 1 mm, glabrous. Pedicel 2–3(–9) mm; bracteoles 2, just above middle, lanceolate, ca. 1.5 mm, glabrous. Calyx lobes ovate-triangular, ca. 2.5 mm, glabrous, apex acute. Corolla white, sometimes tinged red to pink, ovoid-tubular, 4–5 mm, abaxially glabrous; lobes minute. Filaments glabrous; anthers with thecae 1- or 2-recurved-awned. Ovary sericeous. Calyx at fruiting milky whitish, succulent; capsule ca. 6 mm in diam. Fl. May–Jun(–Nov), fr. Jul–Aug(–Nov). $2n = 22$.

High mountain peaks, open places; 1600–3000(–3600) m. Taiwan [Indonesia, Philippines].

7. Gaultheria prostrata W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 11: 210. 1920.

平卧白珠 ping wo bai zhu

Shrubs procumbent, 10–20 cm tall. Twigs ?terete, pubescent, later glabrescent and cinereous. Petiole ca. 1 mm, glabrous; leaf blade elliptic, 1–1.2 cm × 6–8 mm, papery, abaxially scattered dark punctate, glabrous, secondary veins 2 or 3 pairs, fine veins conspicuous on both surfaces, impressed adaxially, base broadly cuneate, margin crenulate(-apiculate), apex rounded or obtuse. Inflorescences terminal, usually racemose, ca. 1 cm, 1–3-flowered, pubescent; bracts green, ovate, 2–3 mm, margin rose. Pedicel ca. 1 mm; bracteoles 2. Calyx lobes ovate, ca. 2 mm, apex acute. Corolla white, broadly campanulate, ca. 4 mm, abaxially glabrous; lobes ovate-triangular, ca. 1 mm. Stamens ca. 2 mm; filaments puberulous; thecae 1-awned. Ovary depressed-globose, slightly pubescent. Fruit unknown. Fl. Jul.

● Open moist pastures, boulders; ca. 4600 m. NW Yunnan (Gongshan).

This species is known only from the type specimen.

8. Gaultheria pyrolifolia J. D. Hooker ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 457. 1882 [*"pyrolaefolia"*].

鹿蹄草叶白珠 lu ti cao ye bai zhu

Shrubs suberect or creeping, 3–15 cm tall. Twigs terete, substriate, glabrous, sometimes puberulous. Leaves near twig apices; petiole 1–3(–5) mm, glabrous or sparsely hispid; leaf blade obovate or elliptic to suborbicular, 1.3–5 × 0.8–2.5 cm, leathery, glabrous or abaxially sparsely hispidulous, secondary veins 3(or 4) pairs, fine veins distinctly raised abaxially, impressed adaxially, base cuneate to rounded, margin crenate, apex obtuse-rounded, apiculate. Inflorescences from upper foliate axils, racemose, 1–1.5 cm, 2–5-flowered, glabrous, pubescent, or sparsely hispid; bracts ovate, ca. 4 mm, glabrous. Pedi-

cel 2–5 mm, glabrous, pubescent, or sparsely hispid; bracteoles 2, above middle, ovate-lanceolate, ca. 3 mm, glabrous. Calyx lobes triangular-ovate, 2–2.5 mm, glabrous. Corolla white, pinkish at mouth, urceolate or globose-urceolate, ca. 5 mm, abaxially glabrous; lobes reflexed, short. Filaments dilated, 1–1.7 mm, papillate; anthers ca. 1.3 mm; thecae 2-awned. Ovary glabrous. Calyx at fruiting dark purple; capsule 4–6 mm in diam. Fl. Jun–Aug, fr. Aug–Sep.

Alpine windswept moorlands, thickets, grasslands; 3600–4000 m. SE Xizang, NW Yunnan [Bhutan, India, Myanmar, Nepal, Sikkim].

In FRPS (57(3): 51. 1991) this species was treated as *Gaultheria pyroloides* J. D. Hooker & Thomson ex Miquel (Ann. Mus. Bot. Lugduno-Batavi 1: 30. 1863), which was described from Japan. The name *G. miqueliana* Takeda is a synonym. Airy Shaw (Bull. Misc. Inform. Kew 1940: 318. 1941) restricted the name *G. pyroloides* to the Japanese species described by Miquel. Therefore, the Himalayan species described here must be called *G. pyrolifolia*.

9. Gaultheria cuneata (Rehder & E. H. Wilson) Bean, Bot. Mag. 145: t. 8829. 1919.

四川白珠 si chuan bai zhu

Gaultheria pyroloides J. D. Hooker & Thomson ex Miquel var. *cuneata* Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 554. 1913.

Shrubs prostrate or erect, 10–60 cm tall, many branched. Twigs terete, densely pubescent. Leaves dense; petiole 1–2 mm, pubescent; leaf blade obovate or narrowly obovate, 1.2–3.5 × 0.4–1.2 cm, leathery, glabrous, abaxially sparsely glandular punctate, secondary veins 2–4 pairs, fine veins slightly raised abaxially, slightly impressed adaxially, base narrowed, rarely obtuse, margin crenulate-mucronate, apex acute. Inflorescences terminal and from upper foliate axil, racemose, 1.5–4.5 cm, puberulous; bracts broadly ovate, 2–3 mm, glabrous. Pedicel 2–4 mm, puberulous; bracteoles 2, subapical, ovate or ovate-triangular, 1.5–2 mm. Calyx whitish, glabrous; lobes triangular-ovate, ca. 1.5 mm, margin ciliolate. Corolla white, urceolate, 4–5 mm, abaxially glabrous; lobes recurved, very small. Filaments swollen towards base, puberulous; thecae 2-awned. Ovary sericeous. Calyx at fruiting white, fleshy; capsule 4–6 mm in diam., sericeous. Fl. Jul, fr. Aug. 2*n* = 22*.

● *Rhododendron* forests, *Abies* forest margins, thickets, rocks; 2000–3900 m. NE Guizhou, W Sichuan, N Yunnan.

10. Gaultheria hookeri C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 458. 1882.

红粉白珠 hong fen bai zhu

Shrubs prostrate or erect, 30–100 cm tall; bark exfoliating. Twigs rufous, densely hirsute. Leaves scattered; petiole 4–6 mm, hirsute; leaf blade elliptic to lanceolate, 3–11 × 1–4 cm, leathery, abaxially punctate, ± hirsute, adaxially glabrous, secondary veins (3 or)4(–7) pairs, secondary and fine veins raised abaxially, slightly impressed adaxially, base obtuse-rounded or attenuate, margin serrate-mucronate, apex abruptly acute. Inflorescences terminal and axillary, racemose, 1.5–5 cm, pubescent; bracts orbicular-ovate or ovate, 5–7 mm, abaxially glabrous, ciliolate, adaxially puberulous. Pedicel 3–4 mm, glabrous; bracteoles 2, subapical to median, similar to bracts but smaller. Calyx glabrous; lobes triangular-ovate, ca. 1.5 mm, margin ciliate. Corolla pink or white, urceolate-globose, 4–5 mm, abaxially glabrous; lobes very short. Filaments dilated towards base, puberulous, ca. 1 mm; anthers ca. 1 mm; thecae 2-awned. Ovary puberulous. Calyx at fruiting blue-black, fleshy; capsule sericeous-puberulous. Fl. May–Jun, fr. Jul–Aug. 2*n* = ca. 44.

Forests, forest margins, thickets on mountain slopes, *Rhododendron* thickets, open slopes, mountain summits; 1000–3000(–3800) m. SW Guizhou, S Sichuan, SE Xizang, N and SE Yunnan [Bhutan, India, Myanmar, Sikkim].

1a. Leaves elliptic, 2–4 cm wide ..... 10a. var. *hookeri*
1b. Leaves lanceolate or linear-lanceolate, 1–1.5 cm wide ..... 10b. var. *angustifolia*

10a. Gaultheria hookeri var. **hookeri**

红粉白珠(原变种) hong fen bai zhu (yuan bian zhong)

Gaultheria stapfiana Airy Shaw; *G. veitchiana* Craib.

Leaves elliptic, 2–4 cm wide. Bracts 2–4 mm wide. Calyx lobes acute.

Rhododendron thickets, open slopes, mountain summits; 1000–3000(–3800) m. SW Guizhou (Panxian), S Sichuan, SE Xizang, N and SE Yunnan [Bhutan, India, Myanmar, Sikkim].

10b. Gaultheria hookeri var. **angustifolia** C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 458. 1882.

狭叶红粉白珠 xia ye hong fen bai zhu

Leaves lanceolate or linear-lanceolate, 1–1.5 cm wide. Bracts 1–2 mm wide. Calyx lobes acuminate.

Forests, forest margins, thickets on mountain slopes; 2000–2500(–3000) m. NW Yunnan (Gongshan) [Sikkim].

11. Gaultheria brevistipes (C. Y. Wu & T. Z. Hsu) R. C. Fang, Novon 9: 164. 1999.

短柄白珠 duan bing bai zhu

Leucothoë brevistipes C. Y. Wu & T. Z. Hsu, Acta Phytotax. Sin. 23: 315. 1985; *L. griffithiana* C. B. Clarke var. *sessilifolia* C. Y. Wu & T. Z. Hsu; *L. sessilifolia* (C. Y. Wu & T. Z. Hsu) C. Y. Wu & T. Z. Hsu.

Shrubs (0.8–)2–4 m tall. Twigs brown, trigonous, winged, glabrous. Leaves scattered; petiole 2–4 mm, glabrous; leaf blade ovate or oblong-ovate, 7–18 × 4–8 cm, leathery, abaxially shortly brown glandular setose, adaxially glabrous, secondary veins 4–8 pairs, fine veins raised abaxially, impressed adaxially, base auriculate-cordate, margin irregularly serrate, apex acuminate or slightly caudate. Inflorescences axillary and terminal, racemose, 6–10 cm, many flowered, pubescent; bracts ovate, cucullate, ca. 7 mm, abaxially glabrous, adaxially densely puberulous; fruit stalk 3–6 mm, pubescent; bracteoles 2, median, ovate-lanceolate, ca. 2 mm, ciliolate. Flowers unknown. Calyx at fruiting red to rufous; capsule globose, 5–8 mm in diam. Fr. Oct–Mar.

● Forests, mountain slopes, riversides; 1000–2800 m. SE Xizang (Mêdog).

Leucothoë brevistipes and *L. griffithiana* var. *sessilifolia* were based on the same type (*Qinghai-Xizang Exped. 74-3951,* holotype, KUN). In FRPS (57(3): 22. 1991), the name *L. sessilifolia* was used for the species, incorrectly citing as the place of publication that of *L. brevistipes,* but effectively publishing a new combination because *L. griffithiana* var. *sessilifolia* was also cited with a full and correct reference.

12. Gaultheria praticola C. Y. Wu & T. Z. Hsu, Acta Bot. Yunnan. 3: 425. 1981.

草地白珠 cao di bai zhu

Shrubs prostrate or erect, (5–)10–25 cm tall. Twigs terete, densely rust-colored hirsute. Petiole ca. 3 mm, hirsute; leaf blade elliptic or ovate, 1.7–6 × 1–4 cm, papery or leathery, abaxially ± hirsute or papillate, adaxially glabrous, secondary veins 3 pairs, secondary and fine veins raised abaxially, slightly impressed adaxially, base obtuse, rounded, or shallowly cordate, margin serrate-aristate, apex acute to rounded, distinctly mucronate. Inflorescences purple-red, from uppermost axils, racemose, 1–2.5 cm, 2–7-flowered, glabrous or puberulous; bracts broadly ovate, 2.5–4 mm, glabrous. Pedicel 2–5 mm, glabrous; bracteoles 2, submedian, ovate, ca. 2 mm. Calyx glabrous; lobes ovate-triangular, 1–1.5 mm, ciliolate. Corolla white, urceolate or campanulate, 3–4 mm, abaxially glabrous; lobes minute. Filaments conical, ca. 2 mm, papillate; thecae 2-awned. Ovary puberulous. Capsule 5–6 mm in diam. Fl. Jun–Aug, fr. Sep–Oct.

● *Abies* forests, *Rhododendron* thickets, rocks in thickets, grassy slopes; 3200–3900 m. SE Xizang, NW Yunnan.

13. Gaultheria straminea R. C. Fang, Novon 9: 171. 1999.

草黄白珠 cao huang bai zhu

Gaultheria wardii C. Marquand & Airy Shaw var. *serrulata* C. Y. Wu & T. Z. Hsu.

Shrubs 1–3(–4) m tall. Twigs angled, rather slender, densely brown hispid and puberulous. Leaves scattered; petiole 4–5 mm, hispid and puberulous or glabrous; leaf blade oblong-lanceolate or elliptic, 4–7 × 1–2.5 cm, leathery, abaxially appressed-setulose, adaxially glabrous, secondary veins 3–5 pairs, fine veins slightly raised abaxially, base cuneate or broadly cuneate, margin dentate, apex acuminate or acute, mucronulate. Infloresences axillary and terminal, racemose, 1.5–3.5 cm, densely pubescent; bracts ovate, 3–4 mm, puberulous, ciliolate. Pedicel 1–2 mm, densely pubescent; bracteoles 2, subapical, 2–3 mm, abaxially puberulous, adaxially glabrous, margin membranous, ciliolate. Calyx lobes subulate- to narrowly triangular, ca. 2 mm, puberulous, ciliolate. Corolla white, urceolate, 3–4 mm, abaxially glabrous, adaxially pilose; lobes ovate-triangular, very short. Filaments spindle-shaped, ca. 0.75 mm, papillate; anthers ca. 0.75 mm, thecae shortly 2-awned. Ovary tomentose. Calyx at fruiting white, rugose; capsule globose, 4–5 mm in diam. Fl. Aug–Oct, fr. Oct–Mar.

● *Salix* scrub forests, margins of evergreen forests, slopes, flood plains; 600–2100 m. SE Xizang (Mêdog).

14. Gaultheria tetramera W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 11: 211. 1919.

四裂白珠 si lie bai zhu

Shrubs erect, 0.8–1(–4) m tall. Twigs terete, densely brown hispid. Leaves scattered; petiole 2–3(–5) mm, hispid or subglabrous; leaf blade elliptic, obovate, or oblong, 1.5–6 × 1–3 cm, leathery, abaxially scattered hispidulous, later papillose, adaxially glabrous, secondary veins 3 or 4 pairs, secondary and fine veins raised abaxially, impressed adaxially, base cuneate to broadly cuneate, margin serrate, apex acute, distinctly mucronate. Inflorescences axillary, rarely terminal, racemose, erect, 1–3 cm, 2–10-flowered, secund, puberulous; bracts triangular-ovate, ca. 1 mm, abaxially puberulous. Pedicel 2.5–3 mm; bracteoles 2, median to subapical in fruit, similar to bracts. Flowers 4-merous. Calyx puberulous; lobes triangular-lanceolate, 1.5–2 mm, ciliolate. Corolla white, urceolate, ca. 4 mm, abaxially puberulous, adaxially pubescent; lobes very short. Filaments conical, ca. 1 mm, ciliolate; anthers ca. 1 mm, thecae 2-awned. Ovary sericeous; style villous-hairy. Calyx at fruiting blue-purple, with bloom; capsule globose, 4–6 mm in diam. Fl. May, fr. Aug–Dec.

● Evergreen forests, including those dominated by *Picea*; 1000–2600(–3200) m. SE Xizang, W Yunnan.

15. Gaultheria longibracteolata R. C. Fang, Novon 9: 166. 1999.

长苞白珠 chang bao bai zhu

Shrubs 0.7–2.4 m tall. Twigs angled, densely brown hispid and puberulous. Leaves scattered; petiole 2–5 mm, sparsely hispid or glabrous; leaf blade elliptic or oblong-elliptic, 2.5–6 × 1.4–3 cm, leathery, abaxially sparsely shortly appressed-setulose, adaxially glabrous, secondary veins 2 or 3 pairs, fine veins raised abaxially, impressed adaxially, base broadly cuneate or cuneate to obtuse, margin recurved, serrate, apex acute to obtuse, mucronulate. Inflorescences axillary and terminal, racemose, 2–3 cm, many flowered, densely pubescent; bracts broadly ovate or oblong, 4–5 mm, glabrous, margin membranous, ciliolate. Pedicel 3–4 mm, densely pubescent; bracteoles 2, apical, ca. 5 mm, concave. Calyx pink, ca. 5 mm, abaxially glabrous, adaxially pubescent; lobes oblong, 2.5–3 mm, margin ciliolate, apex apiculate. Corolla white, urceolate, 5–6 mm, abaxially glabrous, adaxially pilose in upper part; lobes ovate-triangular, ca. 0.8 mm. Filaments spindle-shaped, ca. 1.5 mm, ciliate; anthers ca. 1.5 mm; thecae shortly 2-awned. Ovary tomentose; style pilose. Calyx at fruiting crimson- purple-green or purple-black, glaucous; capsule globose, 4–6 mm in diam., pubescent. Fl. Jun–Jul, fr. Aug–Oct.

Evergreen forest margins, thickets, open slopes; 1000–2000 (–2700) m. SE and W Yunnan [Thailand].

16. Gaultheria longiracemosa Y. C. Yang, Contr. Biol. Lab. Chin. Assoc. Advancem. Sci., Sect. Bot. 12: 142. 1941.

长序白珠 chang xu bai zhu

Shrubs to 3 m tall. Twigs ?terete, glabrous. Petiole 1–2 mm, adaxially puberulous, ciliolate; leaf blade obovate or elliptic-obovate, 3–6.5 × 1–2.5 cm, abaxially sparsely punctate, glabrous, adaxially sparsely punctate, puberulous on midvein,

secondary veins 4 or 5 pairs, base cuneate, margin closely serrate, ciliolate towards base, apex acute. Inflorescences terminal and axillary, racemose, 10–12 cm, many flowered; rachis angled, puberulous; bracts broadly ovate, 3–4 mm, ciliolate. Pedicel 4–6 mm, sparsely hairy; bracteoles 2, apical, ovate-lanceolate, ca. 1.5 mm. Calyx lobes angled, ca. 1.5 mm, abaxially glabrous, ciliolate, apex acute. Corolla white, tubular-ovoid, ca. 5 mm, abaxially sparsely setulose on veins; lobes recurved, triangular. Filaments ca. 1.5 mm, glabrous; thecae 2-awned. Ovary densely puberulous. Fruit unknown.

● Woods; ca. 3000 m. WC Sichuan (Baoxing).

17. Gaultheria semi-infera (C. B. Clarke) Airy Shaw, Bull. Misc. Inform. Kew 1940: 306. 1941.

五雄白珠 wu xiong bai zhu

Diplycosia semi-infera C. B. Clarke in J. D. Hooker. Fl. Brit. India 3: 459. 1882; *Gaultheria forrestii* Diels var. *setigera* C. Y. Wu & T. Z. Hsu.

Shrubs erect, 0.5–1(–2.5) m tall. Twigs terete, scabrid, densely brown hispid. Leaves scattered; petiole 3–5 mm, glabrous or sparsely hispid; leaf blade oblong or oblong-elliptic, 4–11 × 1.2–3.5 cm, leathery, abaxially sparsely hispidulous or glabrescent, adaxially glabrous, secondary veins 3 or 4 pairs, secondary and fine veins raised abaxially, slightly impressed adaxially, base cuneate or obtuse, margin serrate, apex acute, distinctly mucronate. Inflorescences axillary, narrowly racemose, 1.5–3(–7) cm, few- to many flowered, pubescent; bracts triangular-ovate, 1–3 mm, fimbriate. Pedicel 1.5–2.5 mm; bracteoles apical, ca. 1.2 mm, margin ciliolate. Calyx lobes triangular, ca. 2.5 mm, margin ciliolate. Corolla white, tubular to urceolate, 2–3 mm, abaxially hairy; lobes very short. Filaments basally swollen, ca. 1 mm, ciliolate; thecae 2-awned. Ovary half-inferior, appressed-sericeous. Calyx at fruiting purple-blue, fleshy; capsule ellipsoidal to globose, 3–5 mm in diam. Fl. Jun, fr. Jul–Aug.

Pinus forest margins, thickets on slopes; 2000–2700(–3500) m. S Xizang, SE and W Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim].

The fruit is edible.

18. Gaultheria griffithiana Wight, Calcutta J. Nat. Hist. 8: 176. 1847.

尾叶白珠 wei ye bai zhu

Shrubs, rarely small trees, 0.5–3(–4) m tall, stout. Twigs terete or narrowly winged, ± flexuous, glabrous. Leaves scattered; petiole 5–10 mm, glabrous; leaf blade oblong, elliptic, or lanceolate-oblong, 6–17 × 2–6 cm, thickly leathery, abaxially densely punctate, adaxially glabrous, veins 3 or 4 pairs, fine veins raised on both surfaces, base broadly cuneate to subcordate, margin closely serrulate, apex caudate-acuminate. Inflorescences axillary, racemose, clustered, 2–6 cm, many flowered, pubescent or lanuginose; bracts ovate to orbicular-ovate, 2–7 mm, abaxially glabrous or densely sericeous. Pedicel 3–9 mm; bracteoles 2, usually submedian to near basal, ovate, 1.5–3 mm, abaxially glabrous, ciliolate. Calyx lobes triangular-ovate, 1.5–3 mm, ciliolate, apex obtuse to acute. Corolla white, light pink, or pale green, 5–7 mm, campanulate, abaxially glabrous; lobes recurved, very short. Filaments rhombic, 1.5–2 mm, papillate; anthers 1–1.5 mm, thecae 2-awned. Ovary sericeous. Calyx at fruiting dark purple, fleshy; capsule globose, 4–6 mm in diam. Fl. Apr–Jun, fr. May–Oct. 2*n* = ca. 44.

Abies, Pinus, Quercus, Rhododendron, and *Tsuga* forests, *Tsuga* forest margins, thickets on slopes; 2000–2800(–3600) m. SW Sichuan, SE Xizang, SE and W Yunnan [Bhutan, NE India (Darjiling), Myanmar, Nepal, Sikkim, Vietnam].

1a. Rachis and pedicels pubescent; bracts ovate, 2–4 mm, both surfaces subglabrous; calyx adaxially subglabrous; leaf base cuneate to obtuse-rounded ..... 18a. var. *griffithiana*

1b. Rachis and pedicels lanuginose or tomentose; bracts orbicular-ovate, 5–7 mm, both surfaces densely sericeous; calyx adaxially densely sericeous; leaf base subcordate ..... 18b. var. *insignis*

18a. Gaultheria griffithiana var. **griffithiana**

尾叶白珠(原变种) wei ye bai zhu (yuan bian zhong)

Gaultheria caudata Stapf; *G. lasiocarpa* T. Z. Hsu; *G. miyiensis* T. Z. Hsu.

Leaf base cuneate to obtuse-rounded. Rachis and pedicels pubescent; bracts ovate, 2–4 mm, both surfaces subglabrous. Calyx subglabrous adaxially.

Abies, Pinus, Quercus, Rhododendron, and *Tsuga* forests, thickets on slopes; 2000–2800(–3600) m. SW Sichuan, SE Xizang, SE and W Yunnan [Bhutan, NE India (Darjiling), Myanmar, Nepal, Sikkim, Vietnam].

18b. Gaultheria griffithiana var. **insignis** R. C. Fang, Novon 9: 164. 1999.

多毛尾叶白珠 duo mao wei ye bai zhu

Leaf base subcordate. Rachis and pedicels lanuginose or tomentose; bracts orbicular-ovate, 5–7 mm, abaxially densely sericeous at lower part, adaxially densely sericeous. Calyx densely sericeous adaxially.

● *Tsuga* forest margins; ca. 2800 m. SE Xizang (Zayü).

19. Gaultheria trigonoclada R. C. Fang, Novon 9: 174. 1999.

三棱枝白珠 san leng zhi bai zhu

Shrubs 1–2 m tall. Twigs distinctly trigonous or with narrow wings, glabrous. Leaves scattered; petiole 5–10 mm, glabrous; leaf blade elliptic or rhombic-elliptic, (4–)6–10 × 2.5–4 cm, thickly leathery, abaxially sparsely shortly brown glandular setose, adaxially glabrous, secondary veins 2 or 3 pairs, fine veins subparallel, raised abaxially, impressed adaxially, base cuneate, margin dentate, apex acute to acuminate. Inflorescences axillary, racemose, 2–3 cm, angled, 10-flowered, densely pubescent; bracts ovate-lanceolate, 5–6 mm, leathery, glabrous or abaxially puberulous, with 1 distinct main vein. Pedicel 2–4 mm, pubescent; bracteoles 2, apical, similar to bracts, ovate, ca. 3 mm. Calyx 2.5–3 mm, divided to near base; lobes triangular-lanceolate, glabrous. Corolla white, urceolate, ca. 5 mm, abaxially glabrous, adaxially pilose; lobes triangular-ovate, ca. 0.5 mm. Filaments ca. 0.5 mm, dilated below middle, papil-

late; anthers ca. 1.5 mm, thecae slenderly 2-awned. Ovary tomentose. Calyx at fruiting purple; capsule globose, 4–6 mm in diam. Fl. Oct, fr. Jun–Aug.

● Forests, thickets on river terraces; 2000–2300 m. SE Xizang (Mêdog).

20. Gaultheria fragrantissima Wallich, Asiat. Res. 13: 397. 1820.

芳香白珠 fang xiang bai zhu

Gaultheria forrestii Diels.

Shrubs, rarely small trees, (0.3–)1–3(–4) m tall, glabrous except on racemes. Twigs terete, sometimes obtusely angled. Leaves scattered; petiole 3–5(–10) mm; leaf blade elliptic, oblong-elliptic, ovate, obovate, or narrowly obovate-lanceolate, 5–17 × 2–6.5 cm, leathery, abaxially scattered punctate, secondary veins 4–7 pairs, secondary and fine veins distinctly raised abaxially, slightly impressed adaxially, base cuneate to broadly cuneate, sometimes obtuse-rounded, margin obtusely serrulate, apex acute, sometimes acuminate. Inflorescences axillary, racemose, 3–9 cm, strict, many flowered, densely pubescent; bracts ovate, 1–3 mm, abaxially glabrous or puberulous, margin ciliolate. Pedicel 1–7 mm, pubescent; bracteoles apical, rarely distant, broadly ovate. Calyx glabrous; lobes triangular, ca. 2 mm, margin ciliolate. Corolla white, tubular-urceolate, 4–5 mm, abaxially glabrous; lobes very short. Filaments dilated, ca. 1.25 mm, puberulous; anthers ca. 1.25 mm, thecae 2-awned. Ovary pubescent. Calyx at fruiting blue-purple, fleshy; capsule globose, 4–6 mm in diam., pubescent. Fl. Jan–May, fr. Jun–Aug. $2n = 44, 48$.

Evergreen, *Pinus,* and mixed forests, forest margins, thickets on dry slopes, sunny slopes; 1000–3200 m. SE Xizang, Yunnan [Bhutan, India, Malaysia, Myanmar, Nepal, Sri Lanka, N Vietnam].

Gaultheria fragrantissima varies much in leaf size and shape, generally because of habitat differences. In forest understories or at forest margins it is a large shrub or small tree with large leaves, whereas in thickets or on sunny slopes it is often a small shrub with narrow leaves. It is characterized by glabrous twigs, abaxially punctate leaf blades, and white waxy inflorescences with densely pubescent rachis and pedicels.

21. Gaultheria leucocarpa Blume, Bijdr. Fl. Ned. Ind. 856. 1826.

白果白珠 bai guo bai zhu

Shrubs erect, 0.5–2 m tall, glabrous. Twigs terete, often flexuous. Leaves scattered; petiole 3–8 mm; leaf blade ovate, elliptic, or oblong-lanceolate, 4–14.5 × 2–6.5 cm, papery, rarely thickly so, abaxially inconspicuously papillate, secondary veins 3 or 4 pairs, fine veins raised abaxially, slightly raised or slightly impressed adaxially, base obtuse to rounded or subcordate, margin serrate, apex acuminate to caudate-acuminate. Inflorescences axillary, racemose, 3–6(–10) cm, (1–)4–12-flowered, slender, often flexuous; bracts triangular-lanceolate, ca. 2.5 mm. Pedicel usually recurved, 3–9 mm; bracteoles apical, broadly ovate, densely ciliolate. Calyx lobes broadly triangular, ca. 1.5 mm, ciliolate. Corolla white, campanulate, 6–7 mm; lobes triangular, 1.5–2 mm. Filaments spindle-shaped, ca. 1.8 mm, papillate, glabrous; anthers 0.8–1.2 mm, thecae 2-awned. Ovary densely sericeous. Calyx at fruiting purplish black; capsule globose or depressed-globose, 4–7 mm in diam., tomentellous. Fl. May–Sep, fr. Jun–Dec.

Forests, thickets, slopes; 500–3000(–3300) m. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan [Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand, Vietnam].

Three varieties occur in China; var. *leucocarpa* occurs in Indonesia and Malaysia and var. *cumingiana* (Vidal) T. Z. Hsu is endemic to the Philippines.

1a. Ovary glabrous; filaments glabrous; twigs glabrous or puberulous, intermixed glandular pilose, or only sparsely glandular setulose ..... 21c. var. *psilocarpa*
1b. Ovary sericeous; filaments with varied hairs; twigs glabrous or glandular hirsute.
  2a. Twigs and leaves glabrous ..... 21a. var. *yunnanensis*
  2b. Twigs, petioles, inflorescence rachis, and pedicels glandular hirsute ..... 21b. var. *crenulata*

21a. Gaultheria leucocarpa var. **yunnanensis** (Franchet) T. Z. Hsu & R. C. Fang, Novon 9: 166. 1999.

滇白珠 dian bai zhu

Vaccinium yunnanense Franchet, J. Bot. (Morot) 9: 368. 1895; *Embelia vaniotii* H. Léveillé; *Gaultheria laxiflora* Diels; *G. leucocarpa* var. *pingbienensis* C. Y. Wu ex T. Z. Hsu; *G. yunnanensis* (Franchet) Rehder; *Pieris fortunatii* H. Léveillé; *P. vaccinium* H. Léveillé; *Vaccinium yunnanense* var. *franchetianum* H. Léveillé.

Twigs and leaves glabrous. Filaments with varied hairs. Ovary sericeous.

Pinus and secondary forests, thickets on open slopes; 500–3000 (–3300) m. Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan [Cambodia, Laos, Thailand, Vietnam].

This variety is widely used medicinally in Guizhou and Yunnan, as "tou gu cao," for its rich content of salicylic acid. In the past, some specimens of this variety have been misidentified as var. *cumingiana* from the Philippines.

21b. Gaultheria leucocarpa var. **crenulata** (Kurz) T. Z. Hsu, Acta Bot. Yunnan. 3: 429. 1981.

毛滇白珠 mao dian bai zhu

Gaultheria crenulata Kurz, J. Bot. 11: 195. 1873; *G. leucocarpa* var. *hirsuta* (D. Fang & N. K. Liang) T. Z. Hsu; *G. yunnanensis* var. *hirsuta* D. Fang & N. K. Liang.

Twigs, petioles, inflorescence rachis, and pedicels glandular hirsute. Leaf blade abaxially shortly hispid, sometimes adaxially glandular hirsute, margin setaceous-ciliate. Inflorescence rachis, pedicels, filaments, and capsule tomentellous. Ovary sericeous.

● Thickets on hilltops, open slopes; 2000–2800 m. EC Guangxi (Guiping), Yunnan.

Flowering specimens were not seen by the present authors.

21c. Gaultheria leucocarpa var. **psilocarpa** (Copeland) R. C.

Fang, Novon 9: 166. 1999.

秃果白珠 tu guo bai zhu

Gaultheria psilocarpa Copeland, Philipp. J. Sci. 47: 62. 1932.

Twigs glabrous or puberulous, intermixed glandular pilose, or only sparsely glandular setulose. Leaf blade glandular setulose or setulose-apiculate at margin. Inflorescence rachis and pedicels glabrous. Filaments glabrous. Ovary and capsule glabrous.

Slopes; (800–)1000–2600 m. Taiwan [Philippines].

Specimens from the Philippines have scattered, marginal hairs on the filaments, but as Copeland (in the protologue) noted, this is a poor character.

22. Gaultheria purpurea R. C. Fang, Novon 9: 171. 1999.

紫背白珠 zi bei bai zhu

Shrubs procumbent, 5–10 cm tall. Twigs terete, slender, slightly puberulous, densely brown hirsute. Leaves towards the ends of branches; petiole 1–2 mm, hirsute; leaf blade gray-green adaxially, elliptic, 1.5–3 × 1–2 cm, leathery, abaxially purple hirsute on veins, adaxially glabrous, secondary veins 2–4 pairs, with fine veins raised abaxially, impressed adaxially, base broadly cuneate to rounded, margin denticulate, denticles setose, apex obtuse to acute, mucronulate. Inflorescences terminal or axillary at apices of twigs, racemose, 5–7 cm at fruiting, 1–4-fruited, glabrous; peduncle 3.5–4.5 cm; bracts ovate, 2–3 mm, leathery, glabrous. Flowers unknown. Pedicels 4–9 mm, glabrous; bracteoles 2, median or above, ovate-triangular, ca. 2 mm, margin ciliolate. Calyx glabrous; lobes triangular-ovate, 1.5–2 mm, margin ciliolate. Corolla and stamens unknown. Ovary hispidulous. Calyx at fruiting dark purple, fleshy; capsule globose, 6–7 mm in diam. Fr. Nov–Dec.

● Dominant on rocky slopes near mountain summits; 2000–3400 m. SE Xizang (Mêdog).

23. Gaultheria heteromera R. C. Fang, Novon 9: 164. 1999.

异数白珠 yi shu bai zhu

Shrubs procumbent, 5–20 cm tall. Twigs terete, slender, densely puberulous and with long brown hairs. Leaves towards the ends of branches; petiole ca. 1 mm, glabrous or sparsely hirtellous; leaf blade drying brown on both surfaces, elliptic, 0.8–1.7(–2.3) × 0.6–1 cm, papery, glabrous or abaxially sparsely hirtellous, secondary veins 3 pairs, fine veins raised abaxially, impressed adaxially, base broadly cuneate, margin dentate, apex obtuse to acute, mucronulate. Inflorescences terminal or axillary at apices of twigs, shortly racemose, 3–6 mm, 1–4-flowered, puberulous; bracts broadly ovate, 1.5–2 mm, glabrous. Pedicel 4–6 mm, puberulous; bracteoles 1 pair, towards middle of pedicel, ovate, 1–1.5 mm, glabrous. Flowers 4-merous. Calyx glabrous; lobes triangular-ovate, 2.5–3 mm. Corolla white, globose-urceolate, ca. 4 mm, abaxially glabrous; lobes reflexed, very short. Stamens 8 or 9; filaments ca. 1 mm, swollen, glabrous, papillate; anthers ca. 1 mm, thecae 2-awned. Ovary hispidulous. Fruit unknown. Fl. Jul–Aug.

● Alpine thickets, meadows; ca. 3900 m. SE Xizang (Mêdog).

24. Gaultheria suborbicularis W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 186. 1914.

伏地白珠 fu di bai zhu

Chiogenes suborbicularis (W. W. Smith) Ching ex T. Z. Hsu; *C. suborbicularis* var. *albiflora* T. Z. Hsu.

Shrubs dwarf, prostrate. Twigs terete, wiry, shortly tawny-setose. Leaves dense; petiole very short, 0.5–1 mm; leaf blade suborbicular or elliptic, 3–7 × 2–5 mm, leathery, abaxially sparsely shortly setulose, adaxially glabrous, secondary and fine veins inconspicuous, slightly raised abaxially, impressed adaxially, both ends obtuse to rounded, margin recurved, sparsely shortly setulose. Flowers solitary, axillary. Pedicel ca. 1 mm, glabrous; bracts absent; bracteoles 2, apical, broadly ovate, ca. 2 mm, leathery, glabrous. Flowers 4-merous. Calyx tinged with red, ca. 2 mm, glabrous; lobes triangular. Corolla rosy to purplish, sometimes white, 2.5–3 mm, glabrous, lobed to middle; lobes ovate. Filaments elliptic; thecae very short, 2-apiculate. Ovary glabrous. Calyx at fruiting red, fleshy; capsule globose, glabrous. Fl. Jul–Aug, fr. Aug–Oct.

● Forest understories, thickets, grassy slopes, rocks; 3000–3900 m. NW Yunnan (Dêqên, Gongshan, Weixi).

The gathering *J. F. Rock 8734,* from NW Yunnan ("Tseku" and "Tsehching"), has flowers with four, five, or seven stamens.

25. Gaultheria nummularioides D. Don, Prodr. Fl. Nepal. 150. 1825.

铜钱叶白珠 tong qian ye bai zhu

Gaultheria nummularioides var. *elliptica* Rehder & E. H. Wilson; *G. nummularioides* var. *microphylla* C. Y. Wu & T. Z. Hsu; *G. repens* Blume.

Shrubs prostrate, small, many branched. Twigs terete, wiry, densely brown hirsute. Leaves dense; petiole ca. 1 mm; leaf blade broadly ovate or suborbicular, sometimes ovate or elliptic, 5–10(–18) × 3–9(–16) mm, papery or leathery, abaxially densely or sparsely setiferous, usually pale, sometimes red punctate, adaxially glabrous, secondary veins 2 or 3 pairs, secondary and fine veins slightly raised abaxially, inconspicuous adaxially, base obtuse, truncate, rounded, or subcordate, rarely cuneate, margin denticulate-setulose, apex acute, distinctly mucronate. Flowers solitary, axillary. Pedicel ca. 1 mm; bracts ovate-triangular, ca. 1.5 mm; bracteoles 2–4, persistent, stramineous, larger than bracts, carinate, ca. 3 mm, glabrous. Calyx glabrous; lobes ovate, ca. 3 mm, apex shortly acuminate. Corolla white, pink, or crimson, campanulate, ca. 5 mm, abaxially glabrous; lobes often erect, ca. 1 mm, triangular. Filaments spindle-shaped, ca. 1.5 mm, villous, papillate; anthers ca. 1.5 mm, thecae 2-awned. Ovary glabrous. Calyx at fruiting blue-purple or black; capsule globose, 6–7(–9) mm in diam., glabrous. Fl. Jul–Oct, fr. Mar–Dec. $2n = 44$.

Abies, Picea, Pinus, and *Tsuga* forests, often on rocks, rarely epiphytic on trees; 1000–2000(–3400) m. WC Sichuan, SE Xizang, N and SE Yunnan [Bangladesh, Bhutan, NE India (Darjiling), Indonesia (Java,

Sumatra), Myanmar, Nepal, Sikkim].

This species is variable in the shape and size of its leaves and in its indumentum.

26. Gaultheria dolichopoda Airy Shaw, Bull. Misc. Inform. Kew 1940: 321. 1941.

长梗白珠 chang geng bai zhu

Shrubs dwarf, usually prostrate, 5–20 cm tall, much branched below, glabrous. Twigs terete, densely brown hispidulous. Leaves dense; petiole less than 1 mm; leaf blade oblong-oblanceolate or oblong-elliptic, 6–13 × 3–5 mm, leathery, sometimes rigid, midvein slightly raised abaxially, inconspicuous, fine veins inconspicuous, base cuneate, margin serrulate, apex obtuse-acute. Flowers solitary, axillary. Pedicel 5–9(–19) mm; bracts absent; bracteoles 2, apical, broadly ovate, ca. 1.3 mm, leathery. Calyx lobes ovate-triangular, ca. 3 mm. Corolla white, shortly tubular, ca. 5 mm; lobes erect or recurved, oblong, ca. 2 mm. Stamens ca. 2 mm; filaments basally swollen; thecae 2-awned. Ovary glabrous. Calyx at fruiting blue; capsule pyriform, 6–8 mm in diam., glabrous. Fl. Jul, fr. Jul–Aug.

Abies forests, alpine thicket-meadows, rocky places; 3000–4400 m. SE Xizang [Myanmar].

27. Gaultheria trichophylla Royle, Ill. Bot. Himal. Mts. 260. 1835.

刺毛白珠 ci mao bai zhu

Brossea trichophylla (Royle) O. Kuntze; *Gaultheria nana* C. Y. Wu & T. Z. Hsu.

Shrubs dwarf, prostrate, much branched below. Twigs terete, wiry, brown hirsute. Leaves dense; petiole very short, ca. 0.5 mm; leaf blade elliptic or elliptic-oblong, 5–13 × 2–5 mm, leathery, glabrous, rarely abaxially scattered hispidulous on midvein, secondary and fine veins inconspicuous, both ends obtuse to acute, margin inconspicuously crenulate, usually long ciliate when mature. Flowers solitary, axillary. Pedicel 1–2 mm or flower subsessile; bracts absent; bracteoles 2, apical, broadly ovate, ca. 2 mm, leathery, glabrous. Calyx glabrous; lobes ovate-oblong, 2–2.8 mm, ciliolate. Corolla white, campanulate, ca. 6 mm, deeply 5-lobed, glabrous; lobes erect, oblong, 2–3 mm. Stamens ca. 2 mm; filaments spindle-shaped; thecae 1- or 2-awned. Ovary glabrous. Calyx at fruiting blue, fleshy; capsule 6–10 mm in diam., glabrous. Fl. Jun, fr. Jul–Sep.

Mountain slopes, alpine windswept moorlands, montane grasslands, rocky places, stony soils; 3000–4700 m. C and W Sichuan, S Xizang, NW Yunnan [Bhutan, NE India (?Assam, Darjiling), Kashmir, Myanmar, Nepal, Sikkim].

1a. Leaf blade not ciliate along margin ..... 27c. var. *eciliata*
1b. Leaf blade long ciliate along margin.
  2a. Thecae 1-awned, awn ca. 0.5 mm ..... 27a. var. *trichophylla*
  2b. Thecae 2-awned, awn ca. 1 mm .... 27b. var. *tetracme*

27a. Gaultheria trichophylla var. **trichophylla**

刺毛白珠(原变种) ci mao bai zhu (yuan bian zhong)

Leaf blade elliptic or elliptic-oblong, long ciliate along margin. Thecae 1-awned, awn ca. 0.5 mm.

Mountain slopes, montane grasslands, rocky places; 3000–4200 m. C Sichuan, S Xizang, NW Yunnan [Bhutan, NE India (?Assam, Darjiling), Kashmir, Nepal, Sikkim].

27b. Gaultheria trichophylla var. **tetracme** Airy Shaw, Bull. Misc. Inform. Kew 1940: 323. 1941.

四芒刺毛白珠 si mang ci mao bai zhu

Leaf blade ovate or ovate-oblong, long ciliate along margin. Thecae 2-awned, awn ca. 1 mm.

● Stony soils; 4200–4700 m. W Sichuan, S Xizang.

27c. Gaultheria trichophylla var. **eciliata** S. J. Rae & D. G. Long, Notes Roy. Bot. Gard. Edinburgh 45: 334. 1988.

无刺毛白珠 wu ci mao bai zhu

Leaf blade ovate, elliptic, or oblong, not ciliate along margin. Thecae 1-awned, awn ca. 0.5 mm.

Alpine windswept moorlands, rocky places; 3200–4200 m. NW Yunnan [Bhutan].

28. Gaultheria cardiosepala Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 60: 185. 1923.

苍山白珠 cang shan bai zhu

Shrubs, sometimes prostrate, 4–14(–20) cm tall, much branched below. Twigs terete, brown hispidulous. Leaves dense; petiole ca. 1 mm; leaf blade linear to oblong-linear, 0.5–1.6 cm × 1–4 mm, leathery, glabrous, rarely adaxially puberulous on midvein, secondary and fine veins inconspicuous, base cuneate, decurrent, margin serrulate, apex obtuse to acute. Flowers solitary, axillary, glabrous. Pedicel ca. 1 mm; bracts absent; bracteoles 2, apical, broadly ovate, ca. 2 mm, leathery, glabrous. Calyx lobes ovate, ca. 3 mm, base slightly cordate. Corolla white, oblong-urceolate, 4–5 mm; lobes often erect, oblong, very short. Stamens ca. 1.5 mm; filaments spindle-shaped, papillate; thecae 2-awned. Ovary glabrous. Calyx at fruiting usually white, rarely blue or pale purple; capsule globose, 7–8 mm in diam. Fl. May–Jun, fr. Jul–Oct.

Rhododendron forests, rocks in forests, thickets, thicket margins, alpine grasslands; 2000–3500(–3800) m. W Yunnan [Myanmar].

29. Gaultheria hypochlora Airy Shaw, Bull. Misc. Inform. Kew 1940: 324. 1941.

绿背白珠 lü bei bai zhu

Shrubs procumbent, 8–20 cm tall, much branched below. Twigs terete, brown hispidulous. Leaves dense; petiole ca. 1 mm; leaf blades dimorphic, smaller ones usually elliptic, 3–4 mm, larger ones obovate or oblong, 0.8–1.4 cm × 6–8 mm, usually broadest above middle, papery-leathery, glabrous, or when young abaxially scattered brown shortly hispidulous, secondary veins 2 or 3 pairs, slightly raised abaxially, impressed adaxially, fine veins inconspicuous abaxially, impressed adaxially, base cuneate, margin slightly recurved, serrulate, apex obtuse-rounded, mucronulate. Flowers solitary, axillary, glabrous. Pedicel 2–3 mm; bracts absent; bracteoles 2, apical, suborbicular, ca. 2 mm. Calyx lobes ovate-triangular, ca. 2 mm. Corolla white, broadly campanulate, 4–5 mm; lobes often erect, oblong-tri-

angular, ca. 2 mm. Stamens ca. 2 mm; filaments rhombic; thecae 2-awned. Ovary glabrous. Calyx at fruiting dark blue; capsule globose, ca. 6 mm in diam. Fl. Jun–Jul, fr. Jul–Oct.

Abies forest margins, rocky places in *Rhododendron* thickets, grassy slopes, alpine grasslands; 3000–3600 m. W Sichuan, NW and SE Yunnan [Bhutan, NE India (Assam), Myanmar].

This species has been confused with *Gaultheria sinensis*. According to Airy Shaw (in the protologue), *G. hypochlora* differs in having leaves markedly obovate, thinner, drying a very characteristic light green abaxially, with a rounded apex, and corollas broadly campanulate.

30. Gaultheria sinensis J. Anthony, Notes Roy. Bot. Gard. Edinburgh 18: 19. 1933.

华白珠 hua bai zhu

Shrubs procumbent, (2.5–)5–15 cm tall, much branched below. Twigs densely brown hispidulous, rarely white tomentulose. Leaves dense; petiole 0.5–1.5 mm; leaf blade elliptic or elliptic-oblong, 0.6–1.6 cm × 2–6 mm, leathery, glabrous, or abaxially scattered hispidulous on midvein, midvein slightly raised abaxially, other veins inconspicuous, base cuneate to broadly cuneate, margin slightly recurved, serrulate, apex acute, sometimes mucronulate. Flowers solitary, axillary. Pedicel 1–2 mm; bracts absent; bracteoles 2, apical, suborbicular, 2–2.5 mm, leathery. Calyx lobes broadly ovate or ovate-triangular, ca. 2 mm, margin densely white ciliolate. Corolla white, urceolate to shortly tubular, 4–5 mm, glabrous; lobes erect or recurved, oblong, 2–2.5 mm. Stamens ca. 2 mm; filaments dilated to orbicular at middle, papillate; thecae 2-awned. Ovary glabrous. Calyx at fruiting dark blue or white; capsule depressed-globose, 5–8(–10) mm in diam., glabrous. Fl. May–Jul, fr. Aug–Sep.

Abies forests, *Rhododendron* thickets, alpine thicket-meadows, peaty stony meadows, stony slopes, rocky places in mountains, humus-covered boulders, open ledges of cliffs; 3000–4300 m. NW Sichuan, SE Xizang, C and NW Yunnan [Bhutan, NE India (Assam), N Myanmar, Sikkim].

1a. Twigs densely brown hispidulous; calyx dark blue ..... 30a. var. *sinensis*
1b. Twigs densely white tomentellate; calyx white ..... 30b. var. *nivea*

30a. Gaultheria sinensis var. **sinensis**

华白珠(原变种) hua bai zhu (yuan bian zhong)

Gaultheria sinensis var. *crassifolia* Airy Shaw; *G. sinensis* var. *major* Airy Shaw.

Plants 5–20 cm tall. Twigs densely brown hispidulous. Leaves 5–10(–15) × 2–6 mm. Calyx dark blue.

Abies forests, *Rhododendron* thickets, alpine thicket-meadows, rocky places in mountains; 3000–4200 m. NW Sichuan, SE Xizang (Zayü), C and NW Yunnan [Bhutan, NE India (Assam), N Myanmar, Sikkim].

30b. Gaultheria sinensis var. **nivea** J. Anthony, Notes Roy. Bot. Gard. Edinburgh 18: 20. 1933.

白果华白珠 bai guo hua bai zhu

Gaultheria nivea (J. Anthony) Airy Shaw.

Plants 2.5–10 cm tall. Twigs densely white tomentellate. Calyx white.

● Peaty stony meadows, stony slopes, humus-covered boulders, open ledges of cliffs; ca. 4300 m. SE Xizang, NW Yunnan.

31. Gaultheria jingdongensis R. C. Fang, Novon 9: 166. 1999.

景东白珠 jing dong bai zhu

Shrubs subprostrate, 15–30 cm tall. Twigs terete, densely cinnamon- or brown hirsute. Petiole 1–2 mm, hirsute; leaf blade obovate-elliptic or obovate-oblong, 1–2 × 0.5–1 cm, papery to leathery, abaxially densely hispidulous, adaxially glabrous, midvein slightly raised abaxially, secondary veins 2 or 3 pairs, secondary and fine veins inconspicuous on both surfaces, base cuneate-attenuate, margin denticulate-setose, apex obtuse or rounded, mucronate. Flowers solitary, axillary. Pedicel 2–3 mm, hirtellous; bracts absent; bracteoles 2, apical, broadly ovate, ca. 3 mm, leathery, cucullate, glabrous. Calyx lobes unequal, triangular-ovate, 3–5 mm, densely white ciliolate. Corolla white, 6–9 mm; lobes erect or recurved, oblong-ovate, 3–6 mm. Filaments rhomboid, ca. 1.5 mm, glabrous, papillate; anthers ca. 1 mm, thecae 1-awned. Ovary glabrous. Fruit unknown. Fl. Mar–May.

● Shrub forests, roadsides on slopes; 2000–3000 m. WC Yunnan (Jingdong).

32. Gaultheria taiwaniana S. S. Ying, Quart. J. Chin. Forest. 9: 136. 1976.

台湾白珠 tai wan bai zhu

Shrubs 10–30 cm, branched above, glabrous. Twigs ?terete. Petiole 1–2 mm; leaf blade oblong, obovate-oblong, or oblong-lanceolate, 1–1.5 cm × 4–7 mm, leathery, secondary veins 2 or 3 pairs, base cuneate, margin crenulate above middle, apex obtuse or acuminate. Flowers solitary, from upper leaf axil. Pedicel 3–4 mm, slender; bracts ovate; bracteoles 2, ovate, 1–2 × 0.5–0.8 mm, concave, apex acute. Calyx green, obconical, minute; lobes triangular, 1–1.5 mm, apex acute. Corolla white, urceolate, 3.5–4.5 mm; lobes ovate-triangular, 0.2–0.3 mm. Filaments ca. 1.5 mm, papillate at base. Ovary globose, pubescent. Fruit unknown.

● Open fields. C Taiwan.

This is a rare species.

21. VACCINIUM Linnaeus, Sp. Pl. 1: 349. 1753.

越桔属 yue ju shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); Peter F. Stevens

Shrubs or small trees, terrestrial or epiphytic. Leaves evergreen or deciduous, rarely pseudoverticillate, petiolate, margin entire or serrate. Inflorescences terminal or axillary, racemose, fasciculate, or solitary flowers. Bracts and bracteoles persistent or caducous,

the latter small, basal, rarely apical; pedicel expanded towards apex or not, articulate, rarely continuous. Flowers 5-, rarely 4-merous. Calyx limb lobed or toothed. Corolla urceolate, campanulate, or tubular, lobed or toothed, usually to base of limb; lobes erect or recurved, mostly shorter than tube, rarely longer or petals apparently free. Stamens rarely 4, usually included; anthers with 2 spurs at anther-filament junction or not; thecae with tubules opening by a terminal pore or introrse slit. Disk annular. Ovary inferior, usually 8- or 10-pseudoloculed by false partitions; locule with many ovules; stigma inconspicuous, truncate. Fruit a several seeded globose berry. Seeds ovoid, small, testa hard or mucilaginous.

About 450 species: throughout the N hemisphere, also in the mountains of tropical Asia and Central and South America, a few species in Africa and Madagascar; 92 species (51 endemic) in China.

The limits of *Vaccinium* are very uncertain. Recent molecular work, supported by morphology and anatomy, suggests that it is likely that the majority of Chinese species, i.e., those with 10-pseudoloculed ovaries, form part of the same lineage as *Agapetes*.

Vaccinium cavaleriei H. Léveillé & Vaniot is a synonym of *Schoepfia jasminodora* Siebold & Zuccarini var. *jasminodora* in the Olacaceae (see Fl. China 5: 203. 2003).

1a. Flowers 4-merous; corolla divided nearly to base, recurved; anthers without spurs.
  2a. Flowers solitary, axillary; pedicels slender, not articulate; plant a deciduous, erect shrub ..... 92. *V. japonicum*
  2b. Flowers 1–4 together at ends of twigs; pedicels filiform, articulate; plant an evergreen, creeping, low shrub.
    3a. Leaf blade 5–11 × 2–5 mm; pedicel pubescent; berry ca. 1 cm in diam.; stems 10–15(–80) cm ..... 90. *V. oxycoccus*
    3b. Leaf blade 2–6 × 1–2(–3) mm; pedicel glabrous; berry ca. 6 mm in diam.; stems 5–10 cm ..... 91. *V. microcarpum*
1b. Flowers 5-merous, rarely 4-merous; corolla at most divided to middle; anthers usually with spurs, or spur absent or minute (flowers unknown in *V. bullatum, V. foetidissimum, V. glaucophyllum, V. guangdongense, V. lamprophyllum,* and *V. podocarpoideum*).
  4a. Leaves deciduous; pedicels articulate or not.
    5a. Pedicel articulate; anthers not spurred; berry 10-pseudoloculed.
      6a. Leaf margin denticulate, not hairy; mature berry red, 5-angled ..... 86. *V. koreanum*
      6b. Leaf margin denticulate or entire, ciliate; mature berry dark purple, smooth.
        7a. Flowers solitary, axillary; leaf margin entire, ciliate ..... 84. *V. henryi*
        7b. Raceme terminal; leaf margin denticulate, teeth apically glandular setulose ..... 85. *V. oldhamii*
    5b. Pedicel not articulate; anthers with spurs; berry 5-loculed.
      8a. Leaf margin serrulate; flowers at base of shrub, solitary, axillary; pedicels 2.5–3.5 mm ..... 89. *V. myrtillus*
      8b. Leaf margin entire; flowers in ± terminal fascicles, 1–3 together; pedicels 0.5–4.5 cm.
        9a. Flowers 1–3; pedicels 0.5–1 cm; bracteoles subbasal, less than 3 mm ..... 87. *V. uliginosum*
        9b. Flowers solitary; pedicels 2.5–4.5 cm; bracteoles near calyx, 7–12 × 4–9 mm ..... 88. *V. modestum*
  4b. Leaves evergreen; pedicels articulate.
    10a. Leaf blade with plane, serrate margins.
      11a. Leaf apex rounded, mucronulate ..... 75. *V. sikkimense*
      11b. Leaf apex acuminate ..... 32. *V. carlesii*
    10b. Leaf blade recurved, margins entire, serrulate, or with basal glands.
      12a. Flowers in terminal or pseudoterminal racemes, rarely also axillary; anthers usually with 2 spurs.
        13a. Leaf blade 2–7 × 0.9–2.7 cm; bracts (0.7–)1–2 cm; anthers with 2 erect spurs.
          14a. Leaf blade glandular denticulate at margin, 2.5–5 × 1.2–2.7 cm; inflorescence 1–2 cm ..... 75. *V. sikkimense*
          14b. Leaf blade entire at margin, elliptic or obovate, 2–2.5 × 0.9–1.4 cm; inflorescence 3–5 cm ..... 83. *V. retusum*
        13b. Leaf blade 0.4–2.6 × 0.3–1.2 cm; bracts 3–6(–9) mm; anthers without spurs or with 2 spreading spurs.
          15a. Flowers 4-merous; anthers without spurs; leaf blade with appressed glandular hairs abaxially ..... 76. *V. vitis-idaea*
          15b. Flowers 5-merous; anthers with 2 spreading spurs; leaf blade glabrous abaxially.
            16a. Twigs densely pubescent and mixed glandular setose.
              17a. Leaf blade obovate or oblong-obovate, base cuneate, apex rounded, retuse ..... 77. *V. delavayi*
              17b. Leaf blade ovate, suborbicular, or oblong, both ends rounded.
                18a. Leaf blade 1–2.3 × 0.7–1.2 cm; corolla urceolate, white tinged with pink ..... 78. *V. nummularia*
                18b. Leaf blade 4–8 × 3–7 mm; corolla tubular-urceolate, white ..... 79. *V. chaetothrix*
            16b. Twigs only pubescent.
              19a. Leaf blade obovate or spatulate, apex rounded, retuse, base cuneate; inflorescence terminal ..... 82. *V. dendrocharis*
              19b. Leaf blade elliptic or oblong-elliptic or ± obovate, apex obtuse to rounded or obtuse-acuminate; inflorescences terminal and axillary.
                20a. Leaf blade elliptic, obovate-elliptic, or obovate-oblong, 7–17 × 4–8 mm, apex obtuse to rounded, base cuneate ..... 80. *V. moupinense*
                20b. Leaf blade oblong-elliptic, 2.2–2.6 × 1–1.2 cm, apex obtuse-acuminate, base broadly

cuneate ..... 81. *V. haitangense*

12b. Flowers solitary or in axillary racemes; anthers with spurs or not.

21a. Leaf margin entire, rarely glandular serrulate; corolla broadly campanulate to urceolate-campanulate, anthers with two distinct, rarely inconspicuous, spreading or erect spurs.

22a. Flowers solitary, or racemes to 2.5 cm, 1–6-flowered; leaf blade to 4 × 2 cm, apex emarginate to obtuse, rarely acute or acuminate; usually epiphytic.

23a. Inflorescence subcapitate, with several subpersistent, basal imbricate inflorescence bracts; leaf blade 8–11 × 3–4.5 cm, apex abruptly acuminate; branch and leaf blade densely setiferous ..... 60. *V. lanigerum*

23b. Flowers solitary or in short racemes, without subpersistent basal inflorescence bracts; leaf blade to 4 × 2 cm, apex rounded, obtuse, or emarginate, rarely acute; plant not densely setiferous.

24a. Leaf apex rounded or acute.

25a. Leaf blade 2.5–3.8 × 1–2 cm, apex acute to abruptly acute; raceme pubescent and mixed glandular pilose ..... 61. *V. cuspidifolium*

25b. Leaf blade to 3 × 1.4 cm, apex acute, rounded, or obtuse-acuminate; raceme glabrous or pubescent.

26a. Inflorescence very short, 1–3-flowered; pedicels ca. 1 mm, pubescent; corolla pale green ..... 65. *V. brevipedicellatum*

26b. Inflorescence 0.6–2 cm, 3–6-flowered; pedicels 1–3 mm, glabrous; corolla white or red (unknown in *V. lamprophyllum*).

27a. Leaf blade oblong-obovate, 2–3 × 0.9–1.4 cm, apex acute; calyx lobes 2.5–3 mm, apex subulate ..... 62. *V. lamprophyllum*

27b. Leaf blade obovate or broadly obovate, 0.8–2 × 0.6–1.1 cm, apex rounded; calyx lobes 1.5–2 mm, apex obtuse to acute.

28a. Corolla red, urceolate; calyx lobes ca. 1.5 mm, apex acute ..... 63. *V. conchophyllum*

28b. Corolla white, campanulate; calyx lobes 1.5–2 mm, apex obtuse ..... 64. *V. sinicum*

24b. Leaf apex ± emarginate.

29a. Pedicel and calyx hispid; flowers solitary or 2 or 3 together in short raceme.

30a. Flowers 2 or 3; calyx lobes lanceolate-subulate, 4–5 mm ..... 66. *V. craspedotum*

30b. Flowers 1 or 2; calyx lobes triangular-ovate, ca. 2 mm ..... 67. *V. sciaphilum*

29b. Pedicel and calyx glabrous, pubescent or puberulous; flowers 1–6 in long to short racemes.

31a. Pedicels 0.5–1 cm, glabrous; inflorescences 1–2.5 cm.

32a. Leaf blade elliptic, 1.5–2.6 × 0.9–1.2 cm; filaments 0.5–1 mm, tubules ca. 3 × as long as thecae ..... 68. *V. papillatum*

32b. Leaf blade obovate-elliptic, 2.5–3(–5) × 1–2 cm; filaments ca. 2 mm, tubules ca. 2 × as long as thecae ..... 69. *V. emarginatum*

31b. Pedicels 3–5(–9) mm, pilose or glabrous; inflorescence to 5 mm.

33a. Flowers 1 or 2; calyx lobes ciliolate and usually glandular along margin ..... 73. *V. pseudotonkinense*

33b. Flowers (1 or)2 or 3(–5); calyx lobes glabrous or ciliate along margin.

34a. Leaf blade glaucous abaxially; pedicels 3–5 mm, pedicel and calyx glabrous or villous ..... 70. *V. chengiae*

34b. Leaf blade not glaucous abaxially; pedicels 6–9 mm, pedicel and calyx pubescent, pilose, or glabrous.

35a. Leaf blade oblong-obovate; inflorescence 1- or 2-flowered; pedicels thickening upwards; corolla white ..... 71. *V. saxicola*

35b. Leaf blade elliptic; inflorescence (1- or)2- or 3(–5)-flowered; pedicels hardly thickening upwards; corolla red ..... 72. *V. triflorum*

22b. Raceme usually 2.5 cm or longer, (3–)5–10(or more)-flowered, and/or leaf blade at least (1.5–)4 × (0.35–)2 cm, apex acute, acuminate, or caudate, rarely obtuse or emarginate; terrestrial.

36a. Leaf blade with ± glandular serrulate or entire margin, abaxially glaucous, sparsely glandular setose on midvein.

37a. Leaf blade 4–6 × 2–4 cm, margin densely glandular serrulate; pedicels 3–5 mm; bracts leaflike, broadly elliptic, 1–2 cm ..... 1. *V. glaucoalbum*

37b. Leaf blade 7–13 × 4–6.5 cm, margin sparsely glandular setose or entire; pedicels 4–12 mm; bracts elliptic, ca. 1.2 cm ..... 2. *V. gaultheriifolium*

36b. Leaf blade with entire margin, abaxially rarely glaucous, but glabrous or punctate or brownish appressed-headed hairy, rarely strigose on midvein.

38a. Leaf apex obtuse or emarginate.

39a. Raceme many flowered; pedicels 1–1.5 mm; calyx lobes ca. 1 mm; corolla ca. 3.5 mm; leaf apex obtuse ..... 3. *V. cavinerve*

39b. Raceme 3-flowered; pedicels 10–17 mm; calyx lobes 4–6 mm; corolla ca. 1.2 cm; leaf apex emarginate or obtuse ..... 4. *V. impressinerve*

38b. Leaf apex acute, acuminate, or caudate.

40a. Leaf blade 1.5–7 × 0.35–2 cm, apex acute or shortly acuminate; secondary veins 3–5-paired.

41a. Leaf base cuneate-attenuate; twigs glabrous or puberulous.

42a. Leaf blade linear-oblanceolate or linear-lanceolate, 3.5–8 mm wide ..... 5. *V. podocarpoideum*

42b. Leaf blade oblanceolate or oblanceolate-ovate, 10–22 mm wide ..... 6. *V. foetidissimum*

41b. Leaf base broadly cuneate to obtuse; twigs pubescent.

43a. Inflorescence from uppermost axil; leaf blade glaucous adaxially ..... 7. *V. glaucophyllum*

43b. Inflorescence from uppermost and lower axils; leaf blade not glaucous adaxially.

44a. Inflorescence 2.5–3 cm; calyx lobes ca. 1 mm; corolla urceolate, 4–5 mm ..... 8. *V. omeiense*

44b. Inflorescence 4.5–6.5 cm; calyx lobes 2.5–3 mm; corolla campanulate, 6–7 mm ..... 9. *V. pratense*

40b. Leaf blade larger, apex acuminate, caudate or abruptly acuminate; secondary veins 6–12-paired, rarely 3- or 4-paired.

45a. Inflorescence pubescent, tomentose, or shortly glandular hairy; twigs with hairs or not.

46a. Inflorescence shorter than leaves, 1.5–3 cm; leaf blade with appressed glandular hairs abaxially; pedicels 1–2(–3) mm.

47a. Rachis and pedicels densely tomentellate; berry densely hairy ..... 18. *V. arbutoides*

47b. Rachis and pedicels glandular pubescent; berry glabrous ..... 19. *V. brachyandrum*

46b. Inflorescences ca. as long as leaves, 3–8 cm; leaf blade glabrous or sparsely pubescent abaxially; pedicels 2–14 mm.

48a. Leaf blade lanceolate or oblong-lanceolate, ca. 3 × as long as broad, base cuneate-attenuate, glabrous; pedicel 10–14 mm ..... 20. *V. kachinense*

48b. Leaf blade ovate-cordate, ovate, or oblong, ca. 2.5 × as long as broad, base obtuse to shallowly cordate, abaxially subglabrous or pubescent; pedicel 2–8 mm.

49a. Leaf blade ovate-cordate, base cordate, sometimes auriculate or obtuse; inflorescence densely pubescent ..... 21. *V. pseudospadiceum*

49b. Leaf blade ovate or oblong, base rounded, rarely shallowly cordate; inflorescence glabrous or puberulous, rarely densely pubescent.

50a. Inflorescence 3–5 cm; pedicels 2–6 mm; leaf veins raised adaxially ..... 22. *V. urceolatum*

50b. Inflorescence 5–8 cm; pedicels 6–9 mm; leaf veins distinctly impressed adaxially .... 23. *V. bullatum*

45b. Inflorescence and sometimes also twig glabrous.

51a. Inflorescence longer than or subequal to leaves.

52a. Leaf blade rounded to subcordate at base, veins impressed adaxially, blade 9–19 × 2.5–5.5 cm ..... 10. *V. dunnianum*

52b. Leaf blade cuneate to broadly cuneate at base, veins distinctly raised or not distinctly raised adaxially, blade 3–12 × 2–3.2 cm.

53a. Leaf blade oblong-lanceolate, 6–12 × 2–3.2 cm; corolla white; veins raised on both surfaces ..... 11. *V. crassivenium*

53b. Leaf blade obovate to elliptic, 3–4(–7) × 1.2–2(–4) cm; corolla green, purple tinged; veins raised abaxially only ..... 12. *V. supracostatum*

51b. Inflorescence shorter than leaves.

54a. Leaf margin lacking glands at base ..... 22. *V. urceolatum*

54b. Leaf margin with gland(s) at base.

55a. Leaf blade (4–)5–8(–10) × 3–4(–5) cm, abaxially glabrous or with appressed glandular hairs.

56a. Leaf blade ovate, broadly ovate, or suborbicular, abaxially papillate, with short fulvous hairs ..... 17. *V. chunii*

56b. Leaf blade elliptic or ovate-oblong, abaxially smooth, whether or not glandular hairy.

57a. Leaf margin with two glands per side at base; petiole 2–3 mm ..... 16. *V. pseudorobustum*

57b. Leaf margin with one gland per side at base; petiole at least 5 mm ..... 15. *V. dunalianum*

55b. Leaf blade 10–21 × 4–9 cm, abaxially with appressed glandular hairs.

58a. Leaf blade elliptic or ovate, bullate, veins distinctly impressed adaxially, raised abaxially ..... 13. *V. pseudobullatum*

58b. Leaf blade oblong, oblong-lanceolate, or narrowly ovate, smooth, veins inconspicuously raised on both surfaces.

59a. Leaf base rounded to shallowly cordate; petioles 3–6 mm; inflorescence 1.5–3 cm; pedicels 9–12 mm ..... 14. *V. petelotii*

59b. Leaf base cuneate to obtuse; petioles 5–14 mm; inflorescence 3–7 cm; pedicels 5–8 mm ..... 15. *V. dunalianum*

21b. Leaf margin denticulate, crenulate, rarely entire or subentire; corolla urceolate or tubular, rarely campanulate; anthers with short spurs or not.

60a. Leaves pseudoverticillate, rarely scattered; raceme elongate; calyx tube often with fleshy protuberances; twigs often with some conspicuous and subpersistent bud scales.

61a. Leaf margin entire; twigs without conspicuous bud scales.

62a. Leaf blade ovate or elliptic, 6–15 × 2.5–7 cm; pedicels purple, slender; corolla white-green, urceolate-tubular; filaments subglabrous, anthers without spurs ..... 49. *V. ardisioides*

62b. Leaf blade oblong-lanceolate or oblong-ovate, 7.5–12 × 2–4 cm; pedicels red, clavate; corolla orange or pink, tubular; filaments pubescent, anthers with 2 short spurs ..... 50. *V. rubescens*

61b. Leaf margin serrate; twigs with some conspicuous bud scales.

63a. Leaves rather scattered.

64a. Branch glabrous; leaf blade 12–18.5 × 3.5–9 cm; inflorescence 2–3.5 cm ..... 58. *V. papulosum*

64b. Branch dark brownish hispid, sometimes glandular setose; leaf blade 2.5–6(–10) × 0.6–2(–4) cm; inflorescence 2–15 cm.

65a. Leaf blade lanceolate or oblanceolate, 2.5–4.5 × 0.6–1.7 cm; inflorescence 2–5 cm ..... 57. *V. scopulorum*

65b. Leaf blade oblong, oblong-obovate, or oblong-lanceolate, 4.5–6(–10) × 1.5–4 cm; inflorescence 5–15 cm ..... 59. *V. subdissitifolium*

63b. Leaves 4–6(–10) together.

66a. Leaves small, 3.5–5(–7) × 0.9–3 cm; inflorescence 1.5–3(–6) cm.

67a. Branch densely shortly setose; leaf blade oblong-lanceolate, base cuneate to narrowly rounded ..... 53. *V. vacciniaceum*

67b. Branch densely puberulous and mixed setulose; leaf blade oblong or oblong-ovate, base rounded to slightly cordate ..... 55. *V. leucobotrys*

66b. Leaves large, 4–11(–14) × (0.9–)2–5 cm; inflorescence (2–)3.5–6 cm.

68a. Leaves 9 or 10 together; rachis, pedicel, and calyx tube densely pubescent ..... 54. *V. tenuiflorum*

68b. Leaves 5 or 6 together; rachis, pedicel, and calyx tube glabrous.

69a. Leaf blade drying brownish below ..... 56. *V. bulleyanum*

69b. Leaf blade drying blackish below.

70a. Leaf blade leathery ..... 51. *V. venosum*

70b. Leaf blade papery ..... 52. *V. kingdon-wardii*

60b. Leaves scattered; inflorescence various; calyx tube lacking fleshy protuberances; twigs without conspicuous and subpersistent bud scales.

71a. Flowers solitary, 4-merous; leaf blade with 3–5 teeth on each side ..... 74. *V. spiculatum*

71b. Flowers in racemes, 5-merous; leaf blade serrate, rarely entire.

72a. Bracts usually persistent, rarely caducous; anthers usually without or with very small spurs; leaf blade adaxially smooth, veins not impressed.

73a. Leaf blade 4–11 × 1–2 cm, ca. 4 × as long as broad ..... 26. *V. subfalcatum*

73b. Leaf blade (1.5–)2–6(–9) × (1–)1.5–3(–4) cm, to 3 × as long as broad.

74a. Inflorescence ± hairy.

75a. Inflorescence 2–3 × as long as leaves; rachis pubescent, bracts and calyx lobes fimbrillate, otherwise glabrous ..... 31. *V. fimbribracteatum*

75b. Inflorescence shorter than or ca. as long as leaves; petiole, rachis, calyx, and corolla densely pubescent.

76a. Calyx limb not lobed, truncate; corolla purple; bract caducous ..... 29. *V. truncatocalyx*

76b. Calyx limb with lobes; corolla white; bract persistent ..... 30. *V. bracteatum*

74b. Inflorescence glabrous.

77a. Leaf blade ± lanceolate; fruit stalk ca. 2 mm (in *V. randaiense*, unknown in *V. kengii*).

78a. Corolla tubular, 5.5–7.5 mm; pedicels ca. 2 mm; tubule of thecae ca. 3 mm, without spur ..... 24. *V. randaiense*

78b. Corolla campanulate, ca. 5 mm; pedicels ca. 7 mm; tubule of thecae ca. 1 mm, with a short spur ..... 25. *V. kengii*

77b. Leaf blade ± elliptic, ovate, or oblong; fruit stalk 3–15 mm.

79a. Leaf blade obovate or oblong-elliptic, 4–6 × 2–3 cm, apex obtuse or abruptly acute, margin subentire; fruit stalk 3–5 mm ..... 27. *V. hainanense*

79b. Leaf blade ovate, oblong, or rhombic-oblong, (1.5–)2–5 × (1–)1.5–2.5 cm, apex acute to acuminate, margin dentate; fruit stalk 10–15 mm ..... 28. *V. wrightii*

72b. Bracts caducous or absent; anthers usually with short, or very short, spur, very rarely without

spur; leaf blade with veins usually impressed adaxially.
80a. Corolla campanulate; leaf blade with distant teeth or subentire.
81a. Leaf blade 2–7 × 1–2.5 cm, base rounded or broadly cuneate, sometimes cuneate, margin distantly serrate; inflorescence less than 3.5 cm ..... 32. *V. carlesii*
81b. Leaf blade 9–18 × 2–9 cm, base cuneate, margin subentire; inflorescence to 10 cm ..... 33. *V. yaoshanicum*
80b. Corolla urceolate or tubular; leaf margin distinctly serrate.
82a. Plant glabrous.
83a. Calyx lobes triangular-lanceolate, apex subulate, margin glandular fimbrillate; corolla 7–8 mm; inflorescence 4–10 cm; leaf blade 5.5–12.5 cm, apex falciform-acuminate ..... 34. *V. harmandianum*
83b. Calyx lobes triangular or orbicular, apex acute or obtuse, sometimes ciliolate; corolla 6–7(–8) mm; inflorescence 1.5–8(–10) cm; leaf blade 3–9(–13) × 1.5–3.5 cm, apex acute to acuminate.
84a. Bracteoles ovate, apical; pedicels 0.5–2.5 mm; anther tubules ca. as long as thecae ..... 35. *V. duclouxii*
84b. Bracteoles linear or lanceolate, sometimes ovate, median to basal; pedicels 1–8 mm; anther tubules longer than thecae.
85a. Bracteoles linear, ca. 1.5 mm; pedicels 1–2 mm; tubules 2–3 × as long as thecae .... 36. *V. brachybotrys*
85b. Bracteoles linear-lanceolate to ovate, 2–4 mm, pedicels 2–8 mm; tubules 1.5–2 × as long as thecae ..... 37. *V. mandarinorum*
82b. Inflorescence rachis, pedicel, and calyx, often also twig and petiole, ± hairy.
86a. Twig densely or sparsely glandular setose.
87a. Dwarf shrub, 20–50(–100) cm tall; leaf blade 1.2–3.5 × 0.7–2.5 cm; bract leaflike ..... 39. *V. fragile*
87b. Shrub or small tree, 1–8 m tall; leaf blade 3–9 × 2–3.5 cm; bract not leaflike.
88a. Leaf blade glabrous or pubescent; bracts 5–7 mm ..... 35. *V. duclouxii*
88b. Leaf blade glandular setose and hispidulous; bracts ca. 2.5 mm ..... 38. *V. trichocladum*
86b. Twig glabrous, puberulous, pubescent, or tomentose.
89a. Inflorescence distinctly shorter than leaves, pubescent or glabrous.
90a. Leaf margin entire; calyx lobes ciliolate; anthers without spurs, tubules ca. as long as thecae ..... 40. *V. fimbricalyx*
90b. Leaf margin denticulate; calyx lobes glabrous; anthers with short spurs, tubules longer than thecae.
91a. Inflorescence glabrous; leaf blade elliptic-lanceolate, apex caudate-acuminate ..... 41. *V. longicaudatum*
91b. Inflorescence usually hairy; leaf blade ovate, elliptic, or ovate-lanceolate, apex acute or caudate-acuminate.
92a. Leaf blade ovate or elliptic, 1.7–4(–6) × 1–2 cm, apex acute or obtuse to acuminate; twig densely pubescent; inflorescence subglabrous; small shrub, 0.5–2 m tall ..... 42. *V. chamaebuxus*
92b. Leaf blade ovate-lanceolate to lanceolate, 3–7 × 1.5–2.5 cm, apex acuminate or shortly caudate-acuminate; twig and inflorescence densely puberulous or pubescent; shrub or small tree, 1–6 m tall ..... 43. *V. albidens*
89b. Inflorescence ca. as long as or longer than leaves, ± pubescent, sometimes subglabrous.
93a. Anthers without spurs or spurs inconspicuous; both surfaces of leaf blade drying pale fulvous or straw-colored ..... 48. *V. exaristatum*
93b. Anthers with spurs (unknown in *V. guangdongense*); both surfaces of leaf blade drying brown or brown-green.
94a. Leaf blade 4–9 × 2–4 cm; anther tubules at least 1.5 × as long as thecae.
95a. Branch, petiole, and inflorescence axis rust-colored pubescent or tomentellate; anther tubules 4–6 × as long as thecae ..... 44. *V. iteophyllum*
95b. Branch, petiole, and inflorescence axis pubescent or glabrous; anther tubules 1.5–2 × as long as thecae ..... 37. *V. mandarinorum*
94b. Leaf blade 2–6 × 0.7–2.5 cm; anther tubules ca. as long as thecae or slightly longer (unknown in *V. guangdongense*).
96a. Leaf base rounded or broadly cuneate ..... 45. *V. serrulatum*
96b. Leaf base cuneate or broadly cuneate.
97a. Leaf blade ovate or ovate-lanceolate to lanceolate, 2–6 × 0.7–2.5 cm; pedicels 1–2 mm ..... 46. *V. pubicalyx*
97b. Leaf blade elliptic or elliptic-lanceolate, 3.5–4.2 × 1.2–1.6 cm; pedicels 3–3.5 mm ..... 47. *V. guangdongense*

1. Vaccinium glaucoalbum J. D. Hooker ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 453. 1882 [*"glauco-album"*].

粉白越桔 fen bai yue ju

Shrubs evergreen, (0.3–)1–3 m tall. Twigs subglabrous or pubescent, when older with scattered raised lenticels; bud scales inconspicuous. Leaves scattered; petiole 2–4 mm, glabrous; leaf blade yellowish green adaxially, elliptic to ovate-elliptic, 4–6 × 2–4 cm, thinly leathery, abaxially glaucous, sparsely glandular setose on midvein, secondary veins 4–8 pairs, ascending, raised on both surfaces, fine veins barely evident, base cuneate or broadly cuneate, margin plane, densely glandular serrulate, with 1 basal gland per side, apex obtuse to acute. Inflorescences racemose, 3–5.5 cm, pubescent, 5–10-flowered; bracts persistent, leaflike, broadly elliptic, 1–2 cm, glabrous, slightly glaucous, apex acute. Pedicel 3–5 mm, glabrous, glaucous; bracteoles persistent, oblong-lanceolate, 7–9 mm, glabrous, glaucous. Hypanthium ca. 1.8 mm, glabrous, glaucous; calyx limb ca. 1 mm; lobes broadly triangular, ca. 0.2 mm, apex ± rounded. Corolla white, urceolate-campanulate, ca. 6 mm; lobes reflexed, ca. 0.5 mm. Filaments 2–2.5 mm, densely pubescent; anthers ca. 3 mm, with 2 erect spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, purple, with a bloom, 6–8 mm in diam. Fl. Jun, fr. Aug–Dec.

Forest margins, thickets; 2900–3300 m. SE Xizang, W Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim].

2. Vaccinium gaultheriifolium (Griffith) J. D. Hooker ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 453. 1882.

软骨边越桔 ruan gu bian yue ju

Shrubs evergreen, 2–4 m tall, sometimes epiphytic. Twigs glabrous; bud scales caducous. Leaves scattered; petiole 4–6 mm; leaf blade elliptic, 7–13 × 4–6.5 cm, leathery, abaxially glaucous, glabrous or sparsely glandular setose on midvein, adaxially glabrous, secondary veins 5–8 pairs, fine veins raised on both surfaces, base broadly cuneate to obtuse, decurrent, margin plane, entire or sparsely glandular setose, with 1–3 basal glands per side, apex shortly acuminate. Inflorescences racemose, 2–3.5 cm, glabrous, 8–13-flowered; bracts caducous, elliptic, ca. 1.2 cm. Pedicel 4–12 mm, expanded towards apex; bracteoles caducous, linear, 5–6 mm. Hypanthium glabrous, glaucous; calyx limb 0.7–1 mm, triangular-toothed nearly to base. Corolla pink or red, urceolate, 6–11 mm; lobes ca. 1 mm. Stamens ca. as long as corolla; filaments ca. 1.5 mm, densely pubescent; anthers ca. 3 mm, with 2 erect spurs; tubules ca. as long as thecae or shorter. Style puberulous apically. Berry 10-pseudoloculed, dark purple, with a bloom, 8–9 mm in diam.

Forests, forest margins, sometimes epiphytic on trees, thickets on stony mountain slopes, slopes; 1200–2600 m. SE Xizang, NW and SE Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim].

1a. Leaf blade sparsely glandular setose on midvein abaxially, with 3 basal glands per side; pedicel 6–12 mm; corolla pink, 6–7 mm ..... 2a. var. *gaultheriifolium*

1b. Leaf blade glabrous abaxially, with 1 basal gland per side; pedicel 4–5 mm; corolla red, 8–11 mm ..... 2b. var. *glaucorubrum*

2a. Vaccinium gaultheriifolium var. **gaultheriifolium**.

软骨边越桔(原变种) ruan gu bian yue ju (yuan bian zhong)

Thibaudia gaultheriifolia Griffith, Ic. Pl. Asiat. 4: t. 512. 1854; *Vaccinium diaphanoloma* Handel-Mazzetti.

Leaf blade abaxially sparsely glandular setose on midvein, with 3 basal glands per side. Pedicel 6–12 mm, in fruit to 1–1.7 cm. Corolla pink, 6–7 mm.

Forests, forest margins, sometimes epiphytic on trees; 1200–1900 m. SE Xizang, NW Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim].

2b. Vaccinium gaultheriifolium var. **glaucorubrum** C. Y. Wu, Acta Bot. Yunnan. 9: 379. 1987.

粉花软骨边越桔 fen hua ruan gu bian yue ju

Leaf blade abaxially glabrous, with 1 basal gland per side. Pedicel 4–5 mm, in fruit to 7 mm. Corolla red, 8–11 mm.

● Thickets on stony mountain slopes, slopes; 1800–2600 m. SE Yunnan (Maguan, Malipo).

3. Vaccinium cavinerve C. Y. Wu, Acta Bot. Yunnan. 9: 379. 1987.

圆顶越桔 yuan ding yue ju

Shrubs evergreen, ca. 2 m tall, glabrous. Twigs rounded; bud scales caducous. Leaves borne towards ends of twigs; petiole 5–7 mm; leaf blade elliptic, 5–6.5 × 3–4 cm, thickly leathery, both surfaces punctate, secondary veins 6 or 7 pairs, fine veins inconspicuous abaxially, impressed adaxially, base broadly cuneate, decurrent, margin slightly revolute, entire, with 1 basal gland side, apex rounded. Inflorescences racemose, ca. 1.5 cm, many flowered; bracts oblong, ca. 3 cm, apex acute. Pedicel 1–1.5 mm. Hypanthium 1–1.5 mm; calyx lobes ovate, ca. 1 mm, apex acute. Corolla greenish purple, urceolate, ca. 3.5 mm, teeth triangular. Filaments ca. 0.6 mm, glabrous; anthers ca. 1.6 mm, with 2 erect spurs; tubules ca. as long as thecae. Immature berry globose. Fl. May.

Thickets; 1900–2600 m. SE Yunnan [N Vietnam].

4. Vaccinium impressinerve C. Y. Wu, Acta Bot. Yunnan. 9: 381. 1987.

凹脉越桔 ao mai yue ju

Shrubs evergreen, procumbent, sparsely branched. Twigs angled, pubescent; bud scales caducous. Leaves 1 or 2 at ends of twigs, subsessile; leaf blade ovate or elliptic, 4–8 × 2.5–4 cm, thickly leathery, glabrous or abaxially with sparse appressed hairs, midvein stout, secondary veins 4 pairs, subascending, secondary and fine veins raised abaxially, impressed adaxially, base cuneate to broadly cuneate, margin plane, entire, with 1 basal gland per side, apex obtuse or emarginate. Inflorescences from defoliate axils, racemose, 1–2 cm, usually 3-flowered; bracts ca. 1 cm. Pedicel 1–1.7 cm, expanded towards apex, glabrous; bracteoles similar to bracts. Hypanthium glabrous; calyx lobes oblong, 4–6 mm. Corolla pinkish, campanulate, ca. 1.2 cm, glabrous; lobes broadly triangular. Filaments

ca. 3 mm, densely ciliate; anthers ca. 1 cm, with 2 erect spurs; tubules ca. 2 × as long as thecae. Berry globose, ca. 8 mm in diam. Fl. May–Jun, fr. Jul.

● Mossy places in evergreen forests on calcareous mountains; ca. 1700 m. SE Yunnan (Malipo, Xichou).

5. Vaccinium podocarpoideum W. P. Fang & Z. H. Pan, Acta Phytotax. Sin. 19: 107. 1981.

罗汉松叶乌饭 luo han song ye wu fan

Shrubs evergreen, 40–90 cm tall. Twigs angled, puberulous, glabrescent; bud scales inconspicuous. Leaves dense; petiole ca. 1.5 mm, glabrous; leaf blade linear-oblanceolate or linear-lanceolate, 2.5–3.2 cm × 3.5–8 mm, leathery, glabrous, secondary veins 3 pairs, fine veins inconspicuous, base cuneate, decurrent, margin slightly revolute, entire, with 1 basal gland per side, apex acute. Inflorescences at upper parts of branches, racemose, 4–5 cm, angled, glabrous, 5–7-flowered; bracts unknown. Pedicel 6–8 mm, glabrous, with a bloom. Flowers unknown. Immature berry globose, 4–5 mm in diam., with a bloom; persistent calyx lobes triangular, 1.5–2 mm, glabrous, apex acuminate. Fr. Jul.

● Thickets in wooded valleys, shrubby slopes; ca. 1100 m. Guangxi, Hunan.

6. Vaccinium foetidissimum H. Léveillé & Vaniot, Repert. Spec. Nov. Regni Veg. 9: 447. 1911.

臭越桔 xiu yue ju

Anisophyllea cavaleriei H. Léveillé.

Shrubs evergreen, 0.5–2.5 m tall, much branched, glabrous. Twigs angled; bud scales inconspicuous. Leaves scattered; petiole 2–5 mm; leaf blade oblanceolate or oblanceolate-ovate, 4–7 × 1–2.2 cm, leathery, secondary veins 3(–5) pairs, strongly ascending, secondary and fine veins slightly raised abaxially, raised adaxially, base cuneate-attenuate, margin slightly revolute, entire, with 1 basal gland per side, apex acute, shortly acuminate, or obtuse. Inflorescences racemose, 2–6 cm, angled, many flowered; bracts unknown. Pedicel 5–8 mm. Flowers unknown. Berry 10-pseudoloculed, ovoid, 6–7 mm in diam., with a bloom, fetid; persistent calyx lobes ca. 2.8 mm. Fr. Aug–Oct.

● Forests; 900–1500 m. S Guizhou.

7. Vaccinium glaucophyllum C. Y. Wu & R. C. Fang, Acta Bot. Yunnan. 9: 381. 1987.
灰叶乌饭 hui ye wu fan

Shrubs evergreen, 0.5–3 m tall, much branched. Twigs angled, stout, densely pubescent. Leaves dense; petiole ca. 2 mm, ± pubescent; leaf blade brownish abaxially, oblong-elliptic or elliptic, 1.8–2.5 cm × 5–9 mm, leathery, abaxially initially only midvein pubescent, adaxially glaucous, both surfaces early glabrescent, secondary veins 3 or 4 pairs, fine veins inconspicuous, base broadly cuneate, margin revolute, entire, with 1 basal gland per side, apex acute or shortly acuminate. Inflorescences racemose, 3–4 cm, angled, glabrous; flowers many, close; bracts unknown. Pedicel 3–4 mm, glabrous. Flowers unknown. Immature berry 10-pseudoloculed, globose, glabrous; persistent calyx lobes triangular, 0.6–1 mm, glabrous. Fr. Jun.

● Dense forests; 1700–1800 m. SW Guizhou.

8. Vaccinium omeiense W. P. Fang, Icon. Pl. Omei. 1(1): t. 38. 1942.

峨眉越桔 e mei yue ju

Shrubs evergreen, occasionally epiphytic, 0.3–1(–4) m tall, much branched. Twigs angled, densely pubescent; bud scales inconspicuous. Leaves dense; petiole 1–3 mm, ± pubescent; leaf blade elliptic or elliptic-oblong, 1.4–3.5 × 0.8–1.4 cm, leathery, adaxially initially puberulent, glabrescent, secondary veins 2 or 3 pairs, ascending, slightly raised abaxially, inconspicuous adaxially, fine veins inconspicuous, base broadly cueate, margin revolute, entire, with 1 basal gland per side, apex acute. Inflorescences axillary, racemose, 2.5–3 cm, glabrous, ca. 4-flowered; bracts caducous, red or tinged with yellow, elliptic, 5–7 mm, ciliate. Pedicel 2–3 mm, glabrous. Hypanthium dark red, ca. 1 mm, glabrous; calyx limb ca. 1 mm, divided nearly to base, teeth triangular. Corolla red or purplish, urceolate, 4–5 mm, glabrous; lobes recurved, ca. 0.6 mm. Filaments 1–1.5 mm, pubescent; anthers ca. 3 mm, with 2 erect spurs; tubules 1–2 × as long as thecae. Berry 10-pseudoloculed, subglobose, 5–6 mm in diam., glabrous. Fl. Jun–Jul, fr. Aug–Oct.

● Forests, occasionally epiphytic, rocks; 1800–2100 m. NE Guangxi, W Guizhou, C Sichuan, NE Yunnan.

9. Vaccinium pratense P. C. Tam ex C. Y. Wu & R. C. Fang, Acta Bot. Yunnan. 9: 383. 1987.

草地越桔 cao di yue ju

Shrubs evergreen. Twigs angled, densely pubescent, glabrescent; bud scales caducous. Leaves scattered; petiole stout, flattened, ca. 2 mm, densely pubescent; leaf blade elliptic or ovate-elliptic, 2.4–3.6 × 1.3–2 cm, leathery, abaxially appressed-hairy, adaxially densely puberulent, secondary veins 3 or 4 pairs, base broadly cuneate to obtuse, margin slightly revolute or not, entire, with 2–5 basal glands per side, apex acute, shortly acuminate, or abruptly acuminate. Inflorescences from upper axils, racemose, 4.5–6.5 cm, with sparse claviform glandular hairs, 5–10-flowered; bracts caducous, ovate-lanceolate, 1.1–1.6 cm, glabrous. Pedicel 4–6 mm, thickened toward apex. Hypanthium glabrous; calyx lobes triangular, 2.5–3 mm. Corolla purple-red, campanulate, 6–7 mm, glabrous; lobes erect or recurved, ovate-triangular, 2–3 mm. Filaments ca. 3 mm, puberulent; anthers ca. 4 mm, with 2 spreading spurs; tubules ca. 2 × as long as thecae. Berry ca. 4 mm in diam. Fl. May, fr. Jul.

● Forests; 900–1000 m. Guangdong.

10. Vaccinium dunnianum Sleumer, Bot. Jahrb. Syst. 71: 447. 1941.

长穗越桔 chang sui yue ju

Agapetes vaccinioides Dunn, J. Linn. Soc., Bot. 35: 515. 31 Oct 1903, not *A. vaccinioidea* H. Léveillé (Apr–May 1903).

Shrubs evergreen, rarely small trees, 1–5 m tall, occasionally epiphytic, sparsely branched, glabrous. Twigs terete, slender, slightly flexuous; bud scales inconspicuous. Leaves scat-

tered; petiole 1–2 mm, stout; leaf blade ovate-lanceolate, 9–19 × 2.5–5.5 cm, leathery, secondary veins 5–9, fine veins raised abaxially, impressed adaxially, base rounded to subcordate, margin slightly revolute or not, entire, basal glands absent, apex long acuminate or caudate. Inflorescences racemose, (3–)7–15 cm, many flowered; bracts caducous, ca. 1 mm. Pedicel 0.6–1.5 cm. Hypanthium ca. 0.6 mm; calyx lobes triangular, ca. 1 mm. Corolla yellow-green, tinged with purple, campanulate, 6–7 mm; lobes reflexed, ovate-triangular, ca. 2 mm. Filaments 1.5–3 mm, densely pubescent; anthers ca. 4 mm, with 2 spreading spurs; tubules 1.5–2 × as long as thecae. Berry 10-pseudoloculed, ca. 6 mm in diam. Fl. Apr–May, fr. Jun–Nov.

● Evergreen forests, sparse forests and thickets on calcareous mountains, occasionally epiphytic on trees; 1100–1800 m. W Guangxi, SE Yunnan.

11. Vaccinium crassivenium Sleumer, Notizbl. Bot. Gart. Berlin-Dahlem 12: 482. 1935.

网脉越桔 wang mai yue ju

Shrubs evergreen, 2–3 m tall, glabrous. Twigs narrowly angled; bud scales inconspicuous. Leaves scattered; petiole 1.5–2 cm, slender, glabrous; leaf blade oblong-lanceolate, 6–12 × 2–3.2 cm, leathery, secondary veins 6 pairs, ascending, fine veins distinctly raised on both surfaces, base broadly cuneate, margin slightly revolute, entire, with 1 or 2 basal glands per side, apex acuminate. Inflorescences axillary and terminal, racemose, 6.5–12 cm, many flowered; bracts caducous, lanceolate, 3–5 mm, margin serrulate. Pedicel 4–6 mm. Hypanthium ca. 0.6 mm; calyx lobes ovate-triangular, 0.7–1 mm. Corolla white, urceolate, 4–6 mm; lobes ca. 0.5 mm. Filaments ca. 1 mm, rust-colored puberulous; anthers ca. 1.5 mm, with 2 inconspicuous spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, globose, 5–6 mm in diam. Fl. Apr–May, fr. Jul.

● Forests, cliffs; 600–1400 m. E Guangxi.

12. Vaccinium supracostatum Handel-Mazzetti, Sinensia 5: 3. 1934.

凸脉越桔 tu mai yue ju

Shrubs evergreen, 0.7–2 m tall or small trees to 7 m tall, shortly branched. Twigs distinctly angled, initially pubescent, glabrescent; bud scales inconspicuous. Leaves rather dense; petiole flattened, 1.5–2 mm, pubescent; leaf blade obovate to elliptic, 3–4(–7) × 1.2–4 cm, leathery, abaxially glabrous, adaxially pubescent on midvein and secondary veins, secondary veins 5 or 6 pairs, strongly ascending, secondary and fine veins flat and inconspicuous abaxially, distinctly raised adaxially, base cuneate-attenuate, margin slightly recurved, entire, with 1(or 2) basal glands per side, apex shortly abruptly acuminate. Inflorescences racemose, 3–4 cm, glabrous or with glandular hairs, ca. 8-flowered; bracts and bracteoles caducous. Pedicel 3–4 mm, glabrous. Hypanthium ca. 1 mm, glabrous; calyx lobes triangular to ovate, 1.5–2 mm. Corolla virescent, tinged with purple, campanulate, ca. 5 mm, glabrous; lobes reflexed at apex, triangular, ca. 2 mm. Filaments 1–1.5 mm, laxly puberulent; anthers 3–8 mm, with 2 spreading spurs; tubules ca. 1.5 × as long as thecae. Berry 10-pseudoloculed, 4–5 mm in diam. Fl. Jun, fr. Jul–Aug.

● Dense forests, thickets; 400–1700 m. N Guangxi, S Guizhou.

13. Vaccinium pseudobullatum W. P. Fang & Z. H. Pan, Acta Phytotax. Sin. 19: 108. 1981.

拟泡叶乌饭 ni pao ye wu fan

Shrubs evergreen, erect or scandent, ca. 3 m tall. Twigs subterete, lenticels many; bud scales inconspicuous. Leaves scattered; petiole 6–8 mm, glabrous; leaf blade elliptic or ovate, 11–17.5 × 5.5–9 cm, leathery, abaxially densely brownish glandular hairy, adaxially subglabrous, secondary veins 8–12 pairs, secondary and fine veins raised abaxially and strongly impressed adaxially, base rounded or broadly cuneate, margin revolute, entire, with 1 basal gland per side, apex abruptly acuminate or shortly caudate-acuminate. Inflorescence racemose, 1.5–3 cm, glabrous, 6–10-flowered; bracts caducous, obovate-spatulate, 1–1.2 cm. Pedicel 4–7 mm, glabrous. Hypanthium ca. 1.5 mm, glabrous; calyx lobes triangular-lanceolate, 4–6 mm, strongly veined. Corolla white to pink or dark red, campanulate, 8–10 mm, glabrous; lobes ovate-triangular, 2.5–4 mm. Filaments 1–1.5 mm, glabrous or pilose; anthers ca. 6 mm, with 2 spreading spurs; tubules 2–3 × as long as thecae. Immature berry 10-pseudoloculed, globose. Fl. Feb–Apr, fr. after May.

● Evergreen forests on calcareous mountains; 1000–1700 m. SE Yunnan.

14. Vaccinium petelotii Merrill, Univ. Calif. Publ. Bot. 13: 138. 1926.

大叶越桔 da ye yue ju

Agapetes parviflora Dunn.

Shrubs evergreen, erect or scandent, rarely epiphytic, 2–5 m tall, sparsely branched. Twigs angled, glabrous, when old strongly lenticellate; bud scales inconspicuous. Leaves scattered; petiole 3–6 mm, glabrous; leaf blade oblong or narrowly ovate, 14–21 × 4.5–8.5 cm, leathery, abaxially sparsely appressed-glandular pubescent, adaxially glabrous, secondary veins 9–12 pairs, ascending, raised abaxially, flat adaxially, base rounded to shallowly cordate, margin plane, entire, with 1 basal gland per side, apex acuminate or shortly caudate. Inflorescences racemose, ca. 3 cm, glabrous, 6- or 7-flowered; bracts unknown. Pedicel 0.9–1.2 cm. Hypanthium ca. 1.3 mm, glabrous; calyx limb divided nearly to base; calyx lobes triangular-ovate, ca. 3 mm, strongly veined. Corolla cream-colored, campanulate, 6–11 mm, glabrous; lobes spreading or reflexed, triangular, ca. 3 mm. Filaments ca. 0.5 mm, glabrous; anthers ca. 4 mm, with 2 spreading spurs; tubules ca. 3 × as long as thecae. Berry 10-pseudoloculed, dark red, globose, 6–9 mm in diam.; fruit stalk 1.5–2 cm. Fl. Sep–Oct, fr. after Nov–Aug of next year.

Evergreen forests often in ravines, rarely epiphytic on trees; 1100–1700 m. SE Yunnan [Vietnam].

15. Vaccinium dunalianum Wight, Calcutta J. Nat. Hist. 8: 175. 1847.

樟叶越桔 zhang ye yue ju

Shrubs evergreen, erect or occasionally scandent, 1–4 m tall or trees 3–17 m tall, sometimes epiphytic. Twigs narrowly angled, glabrous or pubescent; bud scales conspicuous, caducous. Leaves scattered; petiole 5–14 mm, glabrous to densely pubescent; leaf blade elliptic, oblong, oblong-lanceolate, or ovate, 4.5–13(–17) × 2–5.5(–8) cm, leathery to thickly leathery, abaxially sparsely appressed-glandular hairy, adaxially glabrous or pubescent on midvein, rarely densely dark punctate, secondary veins 3–9 pairs, conspicuous adaxially, sometimes conspicuous abaxially, fine veins inconspicuous or raised adaxially, base cuneate to obtuse, margin plane, entire, with 1 basal gland per side, apex caudate-acuminate. Inflorescences racemose, 3–7 cm, glabrous, 5–18-flowered; bracts caducous, ovate, 7–10 mm. Pedicel 5–8 mm. Hypanthium 1.2–1.5 mm, glabrous; calyx lobes triangular or lanceolate, 1–2.5 mm, glabrous or with hairs. Corolla virescent, purplish, or pinkish, broadly campanulate, ca. 6 mm, glabrous; lobes triangular, ca. 2 mm. Filaments ca. 1 mm, puberulous; anthers 3–3.5 mm, with 2 spreading spurs; tubules 1–2 × as long as thecae. Berry 10-pseudoloculed, dark purple with a bloom, 4–12 mm in diam. Fl. Apr–May, fr. Sep–Dec.

Forests, forest margins, sometimes epiphytic on trees, thickets, shrubby slopes, exposed rocky slopes, high mountains, calcareous mountains; (700–)1400–2700(–3100) m. Guangxi, Guizhou, Sichuan, Taiwan, Xizang, Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim, Vietnam].

1a. Twigs, petioles, both surfaces of leaves on midvein sparsely or densely pubescent ..... 15b. var. *urophyllum*
1b. Twigs, petioles, both surfaces of leaves glabrous, or sometimes leaf abaxially sparsely appressed-glandular hairy, or sometimes petioles pubescent.
  2a. Leaf blade 10–17 × 4–8 cm; a shrub or twining shrub, rarely a tree ..... 15c. var. *megaphyllum*
  2b. Leaf blade 4.5–13 × 2–5 cm; a shrub, rarely scandent.
    3a. Leaf blade 4.5–13 × 2.5–5 cm; calyx lobes ca. 1 mm, triangular ..... 15a. var. *dunalianum*
    3b. Leaf blade 5–11 × 2.5–3.5 cm; calyx lobes ca. 2.5 mm, lanceolate ..... 15d. var. *caudatifolium*

15a. Vaccinium dunalianum var. **dunalianum**

樟叶越桔(原变种) zhang ye yue ju (yuan bian zhong)

Epigynium dunalianum (Wight) Klotzsch; *Thibaudia revoluta* Griffith.

Twigs, petioles, both surfaces of leaves glabrous, sometimes abaxially sparsely appressed-glandular hairy. Leaf blade 4.5–13 × 2.5–5 cm. Calyx lobes triangular, 0.8–1 mm.

Dense or sparse forests, forests and thickets of calcareous mountains, rarely epiphytic on trees, thickets at roadsides, shrubby dry slopes; (700–)2000–2700(–3100) m. Guangxi, Guizhou, Sichuan, Xizang, Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim, Vietnam].

15b. Vaccinium dunalianum var. **urophyllum** Rehder & E. H. Wilson in Sargent, Pl. Wilson. 1: 560. 1913.

尾叶越桔 wei ye yue ju

Pieris martini H. Léveillé; *Vaccinium camphorifolium* Handel-Mazzetti; *V. dunalianum* var. *calycinum* Dop; *V. dopii* Copeland; *V. loquihense* Dop & Trochain–Marquès; *V. petelotii* Dop (1930), not Merrill (1926); *V. sangtavanense* Dop & Trochain–Marquès; *V. yersinii* A. Chevalier.

Twigs, petioles, midvein of leaves on both surfaces pubescent. Leaf blade 6–12.7 × 2–4.7 cm. Calyx lobes 1.5–2.2 mm.

Evergreen forests, mixed forests, sometimes epiphytic on trees, shrubby slopes, calcareous mountains; 1400–2700(–3100) m. Guizhou, Xizang, Yunnan [Myanmar, C and N Vietnam].

15c. Vaccinium dunalianum var. **megaphyllum** Sleumer, Bot. Jahrb. Syst. 71: 448. 1941, excl. *C. W. Wang 66945*.

大樟叶越桔 da zhang ye yue ju

Vaccinium lincangense W. P. Fang & Z. H. Pan.

Shrubs, sometimes subscandent. Twigs and petioles usually glabrous. Leaf blade 10–17 × (2.8–)4–8 cm, both surfaces usually glabrous. Calyx lobes ca. 0.9 mm.

● Mossy forests, mixed forests on calcareous mountains, sometimes epiphytic on *Quercus*; 1400–2500 m. W Guizhou, SE and W Yunnan.

15d. Vaccinium dunalianum var. **caudatifolium** (Hayata) H. L. Li, Woody Fl. Taiwan, 700. 1963.

长尾叶越桔 chang wei ye yue ju

Vaccinium caudatifolium Hayata, Icon. Pl. Formos. 3: 127. 1913.

Twigs and petioles pubescent or glabrous. Leaf blade 5–11 × 1.8–3.5 cm, glabrous. Calyx lobes lanceolate, 2.2–2.5 mm.

● Broad-leaved forest margins, sometimes epiphytic on trees, high mountains, exposed rocky slopes; 1600–2300 m. Taiwan.

16. Vaccinium pseudorobustum Sleumer, Bot. Jahrb. Syst. 71: 451. 1941.

椭圆叶越桔 tuo yuan ye yue ju

Shrubs scandent or small trees, evergreen, sparsely branched. Twigs angled, densely pubescent; bud scales inconspicuous. Leaves scattered; petiole 2–3 mm, glabrous or pubescent; leaf blade elliptic or ovate-oblong, 5–8(–10) × 3–4(–5) cm, leathery, abaxially appressed-glandular hairy or glabrous, adaxially glabrous or initially pubescent on midvein, secondary veins 3 or 4 pairs, fine veins ± raised abaxially, strongly raised adaxially, base broadly cuneate, decurrent, margin slightly recurved, entire, with 2 basal glands per side, apex shortly caudate or abruptly shortly acuminate for ca. 1 cm. Inflorescences racemose, 3–5 cm, angled, glabrous, 10- to many flowered; bracts caducous. Pedicel 4–5 mm, stout. Hypanthium ca. 1.3 mm, glabrous; calyx lobes triangular, ca. 2 mm. Corolla greenish white, campanulate, ca. 7 mm, glabrous; lobes reflexed, triangular, ca. 2.5 mm. Filaments ca. 2 mm, pubescent; an-

thers ca. 4 mm, with 2 spurs; tubules ca. 3 × as long as thecae. Berry 10-pseudoloculed, 5–6 mm in diam. Fl. Jun, fr. Jul–Oct.

● Forests, rocky mountains; 1300–1700 m. Guangdong, Guangxi.

17. Vaccinium chunii Merrill ex Sleumer, Bot. Jahrb. Syst. 71: 450. 1941.

蓝果越桔 lan guo yue ju

Shrubs evergreen, 1–2 m tall, sparsely branched. Twigs angled, glabrous; bud scales inconspicuous. Leaves scattered; petiole 0.5–1 cm; leaf blade ovate, broadly ovate, or suborbicular, 5–7 × 3–4.5 cm, thickly leathery, abaxially papillate, with short fulvous hairs, adaxially glabrous, secondary veins 6 or 7 pairs, ascending, slender, inconspicuous abaxially, raised adaxially, fine veins not evident, base broadly cuneate, truncate, or rounded, margin slightly revolute, entire, with 1 or 2 basal glands per side, apex abruptly caudate-acuminate. Inflorescences racemose, 2.5–4 cm, stout, angled, glabrous, 5–9-flowered; bracts caducous, lanceolate, ca. 9 mm. Pedicel ca. 3 mm, stout. Hypanthium ca. 1.5 mm; calyx lobes lanceolate, 2–2.5 mm, apex acuminate. Corolla greenish white, urceolate to campanulate, 3.5–6 mm, glabrous; lobes reflexed at apex, ovate, ca. 1.8 mm. Filaments ca. 1.3 mm, puberulent; anthers ca. 4 mm, with 2 spurs; tubules ca. 2 × as long as thecae. Berry 10-pseudoloculed, dark blue with a bloom, ca. 5 mm in diam.; pedicel 4–5 mm. Fl. Mar–May, fr. Sep–Dec.

Dense forests, rocks in forests; 1200–1400 m. Hainan [Vietnam].

18. Vaccinium arbutoides C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 453. 1882.

草莓树状越桔 cao mei shu zhuang yue ju

Shrubs epiphytic, 0.6–1 m tall, sparsely branched. Twigs subangled, glabrous, with scattered lenticels; bud scales inconspicuous. Leaves scattered; petiole 6–9 mm, stout, densely shortly strigose; leaf blade oblong or elliptic, 8–13 × 3–5 cm, leathery, abaxially densely glandular pubescent, adaxially glabrous, secondary veins 5 or 8 pairs, ascending, secondary and fine veins raised abaxially, flat adaxially, base broadly cuneate, margin plane, entire, with 1 basal gland per side, apex shortly caudate-acuminate. Inflorescences racemose, 1.5–3 cm, densely brownish tomentellate, many flowered; bracts caducous. Pedicel 1–3 mm, densely tomentellate. Hypanthium densely strigose; calyx lobes narrowly triangular, ca. 2.5 mm, densely ciliate. Corolla not known. Filaments ca. 1.5 mm, pilose; anthers ca. 1.5 mm, with 2 spreading spurs, tubules ca. 1/2 as long as thecae and ca. as long as spurs. Berry 10-pseudoloculed, red to dark purple, globose, 6–7 mm in diam., densely hairy. Fr. Nov.

Forests, epiphytic on old tree stumps; ca. 2500 m. S Xizang, NW Yunnan [NE India, Myanmar].

19. Vaccinium brachyandrum C. Y. Wu & R. C. Fang, Acta Bot. Yunnan 9: 383. 1987.

短蕊越桔 duan rui yue ju

Shrubs evergreen, scandent. Twigs angled, pubescent or subglabrous; bud scales caducous. Leaves scattered; petiole 0.8–1 cm, stout, pubescent or subglabrous; leaf blade ovate-elliptic, 8.5–11 × 4–6 cm, leathery, abaxially appressed-glandular pubescent, adaxially glabrous, secondary veins 6 or 7 pairs, subascending, secondary and fine veins raised abaxially, impressed adaxially, base rounded, margin plane, entire, with broad, cartilaginous edge, with 1 basal gland per side, apex shortly caudate-acuminate. Inflorescences racemose, 1.5–3.5 cm, angled, glandular pubescent, many flowered; bracts caducous, ovate, 3–4 mm. Pedicel ca. 2 mm, glandular pubescent. Hypanthium glabrous; calyx lobes ovate-triangular, ca. 2 mm, ciliate. Corolla urceolate, ca. 4 mm, glabrous; lobes triangular. Filaments ca. 0.5 mm, glabrous; anthers ca. 2 mm, with 2 erect spurs; tubules ca. as long as thecae. Ripe berry unknown. Fl. May.

● About 2700 m. W Yunnan (Tengchong).

20. Vaccinium kachinense Brandis, Ind. Trees, 406. 1921.

卡钦越桔 ka qin yue ju

Shrubs evergreen, 0.5–4 m tall, with inflated root tubers, sparsely branched. Twigs angled, glabrous, scattered; bud scales persistent, lanceolate, 1–1.4 cm. Leaves weakly pseudoverticellate; petiole 4–5 mm, stout, glabrous; leaf blade lanceolate or oblong-lanceolate, 7–15(–17) × 2–5 cm, leathery, glabrous, secondary veins 7–13 pairs, slender, strongly raised abaxially, raised adaxially, base cuneate, margin slightly recurved, entire, with 1 subbasal gland per side, apex acute-acuminate. Inflorescences racemose, 3–5 cm, densely puberulent, with persistent bud scales, many flowered; bracts unknown. Pedicel 1–1.4 cm, slender, puberulent. Hypanthium ca. 1.3 mm, densely puberulent; calyx limb triangular-lanceolate, 1–1.8 mm, divided nearly to base, densely puberulent. Corolla pinkish, urceolate, ca. 5 mm, puberulent; lobes reflexed, ca. 1 mm. Filaments 1–2 mm, densely pubescent; anthers 2.5–3.5 mm, with 2 inconspicuous spurs; tubules ca. 2 × longer than thecae. Berry 10-pseudoloculed, globose, ca. 6 mm in diam. Fl. Mar, fr. May.

Evergreen forests, *Pinus* and *Quercus* forests, rocky slopes; 2100–2600 m. W Yunnan [Myanmar].

21. Vaccinium pseudospadiceum Dop in Lecomte, Fl. Indo-Chine 3: 705. 1930.

耳叶越桔 er ye yue ju

Shrubs evergreen, ca. 2 m tall, sparsely branched. Twigs terete, spreading pubescent, glabrescent; bud scales inconspicuous. Leaves scattered; petiole ca. 1 mm, strigose; leaf blade ovate to cordate, 8–12 × 3.5–5.5 cm, thinly leathery, abaxially sparsely strigose on midvein, adaxially glabrous, secondary veins ca. 10 pairs, fine veins raised on both surfaces, base cordate or obtuse, sometimes auriculate, margin plane, entire, apex acuminate to 2.5 cm. Inflorescences racemose, 1(–3) from same axil, 3.5–8 cm, densely spreading pubescent, 3–8-flowered; bracts triangular, 1–2 mm. Pedicel 5–8 mm, indumentum as with rachis. Hypanthium ca. 1 mm, densely pubescent; calyx lobes triangular, 2–4 mm, glabrous or with hairs. Corolla greenish, broadly campanulate, ca. 5.5 mm, glabrous; lobes reflexed, triangular. Filaments ca. 2 mm, pubescent; anthers ca. 3 mm, with 2 falcate spurs; tubules ca. 2.5 × as long as thecae. Ripe

fruit unknown. Fl. May.

Evergreen valley forests. SE Yunnan [N Vietnam].

22. Vaccinium urceolatum Hemsley, J. Linn. Soc., Bot. 26: 16. 1889.

红花越桔 hong hua yue ju

Shrubs or small trees, evergreen, (0.4–)1–5 m tall, occasionally epiphytic, sparsely branched. Twigs angled, pubescent; bud scales inconspicuous. Leaves scattered; petiole 2–3 mm, pubescent; leaf blade ovate to oblong, 6–13 × 2.5–5.5 cm, leathery, both surfaces initially pubescent or glabrescent, abaxially persistently pubescent, adaxially subglabrescent, secondary veins 2–5 pairs, strongly ascending, evident on both surfaces, fine veins inconspicuous or evident on both surfaces, base rounded to slightly cordate, margin slightly revolute, entire, apex ± abruptly acuminate to 2 cm. Inflorescences racemose, 3–5(–9) cm, glabrous or pubescent, many flowered; bracts caducous, broadly ovate, 6–8 mm, ciliate. Pedicel 2–6 mm, glabrous or pubescent. Calyx ca. 1 mm, glabrous; lobes triangular, 1–1.5 mm. Corolla pinkish or yellow-green, tinged with pink, urceolate or campanulate, 4–5 mm; lobes recurved, ca. 2 mm. Filaments ca. 1 mm, with sparse hairs; anthers 3–4 mm, with 2 erect spurs; tubules 1.5–2 × as long as thecae. Berry 10-pseudoloculed, dark purple, 4–6 mm in diam. Fl. May–Jul, fr. Jun–Sep.

● Forests, rocks in forests, occasionally epiphytic on trees, thickets; 700–2000 m. SE Guizhou, C and S Sichuan, NE Yunnan.

1a. Inflorescence axis 3–5 cm, inflorescence axis, pedicels, and berry glabrous ..... 22a. var. *urceolatum*
1b. Inflorescence axis 5–9 cm, inflorescence axis, pedicels, and berry densely pubescent ..... 22b. var. *pubescens*

22a. Vaccinium urceolatum var. **urceolatum**

红花越桔(原变种) hong hua yue ju (yuan bian zhong)

Inflorescence axis 3–5 cm, inflorescence axis, pedicels, and berry glabrous.

● *Quercus* forests, thickets; 700–2000 m. C and S Sichuan, NE Yunnan.

22b. Vaccinium urceolatum var. **pubescens** C. Y. Wu & R. C. Fang, Acta Bot. Yunnan. 9: 384. 1987.

毛序红花越桔 mao xu hong hua yue ju

Inflorescence axis 5–9 cm, inflorescence axis, pedicels, and berry densely pubescent.

● Forests, rocks in forests, occasionally epiphytic on trees; 1600–1800 m. NE Yunnan (Daguan).

23. Vaccinium bullatum (Dop) Sleumer, Bot. Jahrb. Syst. 71: 446. 1941.

泡泡叶越桔 pao pao ye yue ju

Agapetes bullata Dop in Lecompte, Fl. Indo-Chine 3: 700. 1930.

Shrubs evergreen, ca. 2 m tall, sparsely branched. Twigs angled, slender, densely puberulous, with many brownish lenticels; bud scales inconspicuous. Leaves scattered; petiole 1–2 mm, puberulous; leaf blade ovate or narrowly ovate, 9–16 × 5–8 cm, leathery, subglabrous, secondary veins 7 or 8 pairs, ± ascending, secondary and fine veins distinctly raised abaxially, distinctly impressed adaxially, base rounded, margin slightly revolute, entire, with 1 basal gland per side, apex acute to acuminate. Inflorescences racemose, 5–8 cm, puberulous; bracts triangular, ca. 2 mm. Pedicel 6–9 mm, puberulous, expanded towards apex. Flowers unknown. Immature berry 10-pseudoloculed, ca. 7 mm in diam.; persistent calyx lobes lanceolate, 2–3 mm, puberulous. Fr. Sep.

Forests on calcareous mountains. W Guangxi [Vietnam].

24. Vaccinium randaiense Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 168. 1911.

峦大越桔 luan da yue ju

Vaccinium bracteatum Thunberg var. *lanceolatum* Nakai; *V. hancockiae* Merrill.

Shrubs evergreen, 3–6 m tall, much branched, glabrous. Twigs subrounded; bud scales inconspicuous. Leaves scattered; petiole 4–8 mm; leaf blade lanceolate-rhombic, lanceolate-oblong, or lanceolate, 3–7 × 1.5–2 cm, leathery, glabrous, secondary veins 5 or 6 pairs, not ascending, fine veins raised abaxially, less obvious adaxially, base broadly cuneate, margin plane, conspicuously to inconspicuously toothed or subentire, apex acuminate for ca. 1 cm. Inflorescences pseudoterminal, racemose, (1–)3–4.5 cm, angled, glabrous, ca. 10-flowered; bracts lanceolate, 4–5 mm, glabrous; bracteoles unknown. Pedicel 1–2 mm, glabrous. Hypanthium ca. 0.7 mm, glabrous; calyx lobes triangular, 0.8–1 mm, glabrous. Corolla white, tubular, 5.5–7.5 mm, glabrous; lobes triangular, ca. 0.5 mm. Filaments ca. 2 mm, villous; anthers 2.5–3 mm, without spurs, tubules ca. 2 × as long as thecae. Berry 10-pseudoloculed, dark purple, 5–6 mm in diam.; fruit stalk ca. 2 mm, glabrous. Fl. Jul–Aug, fr. Aug–Oct.

Mountain forests, forest margins; 400–900(–2500) m. N Guangdong, Guangxi, C Guizhou, Hunan, Taiwan [Japan].

25. Vaccinium kengii C. E. Chang, Bull. Taiwan Inst. Agric. 10: 54. 1969.

鞍马山越桔 an ma shan yue ju

Trees small. Twigs slender. Leaves scattered; petiole ca. 8 mm, pilose; leaf blade ovate-lanceolate, 6.5–7 × 1.8–2.2 cm, leathery, both surfaces glabrous, secondary veins 7 pairs, inconspicuous adaxially, base obtuse or acute, margin crenulate-serrate, apex long acuminate or cuspidate-acuminate. Inflorescences racemose, terminal or pseudoterminal, 5–6 cm, glabrous; bracts lanceolate, margin crenulate, ca. 6 mm. Pedicel ca. 7 mm, glabrous. Hypanthium cup-shaped; calyx lobes triangular, slightly ciliate, apex acute. Corolla campanulate, ca. 5 × 6 mm, glabrous; lobes obtuse, ca. 3 mm. Filaments ca. 0.8 mm, villous; anthers ca. 1.2 mm, with 2 very short spurs; tubules 0.8–1 mm. Immature berry 10-pseudoloculed. Fl. Aug.

● Forests; 1600–2300 m. C and N Taiwan (Taizhong, Taoyuan, Yilan).

The above description follows that in the protologue.

26. Vaccinium subfalcatum Merrill ex Sleumer, Bot. Jahrb. Syst. 71: 475. 1941.

镰叶越桔 lian ye yue ju

Shrubs or small trees, evergreen, 2–5(–7) m tall, glabrous. Twigs subangled; bud scales inconspicuous. Leaves scattered; petiole 2–3 mm; leaf blade narrowly lanceolate or elliptic-lanceolate, 4–11 × 1–2(–3) cm, thinly leathery, secondary veins 7 or 8 pairs, ascending, secondary and fine veins raised abaxially, flat to impressed or inconspicuous adaxially, base cuneate-attenuate, margin plane, serrate, apex long acuminate or subfalcate. Inflorescences axillary and terminal, racemose, 4–6 cm, slender, angled, ca. 10-flowered; bracts ovate-lanceolate or oblong-lanceolate, 0.8–1.5 cm × ca. 2.5 mm, margin shortly glandular hairy. Pedicel 4–6 mm. Flowers fragrant. Hypanthium ca. 1.3 mm, densely pubescent; calyx lobes narrowly triangular, 2–2.5 mm, glabrous. Corolla white, tubular, ca. 8 mm, puberulous; lobes reflexed, ca. 0.6 mm. Stamens ca. 6 mm, densely hairy; anthers ca. 1 mm with 2 short spurs; tubules ca. as long as thecae, 1.5–2 mm. Berry 10-pseudoloculed, dark purple, pubescent, 5–6 mm in diam. Fl. May, fr. Oct.

Forests, thickets, rocky slopes; (100–)300–900 m. SW Guangdong, S Guangxi [N Vietnam].

27. Vaccinium hainanense Sleumer, Bot. Jahrb. Syst. 71: 469. 1941.

海南越桔 hai nan yue ju

Shrubs evergreen, glabrous. Twigs terete, slightly angled; bud scales inconspicuous. Leaves scattered; petiole 6–8 mm; leaf blade oblong-elliptic or obovate, 4–6 × 2–3 cm, leathery, secondary veins 5 or 6 pairs, secondary and fine veins abaxially raised, adaxially flat, base cuneate-attenuate, slightly decurrent, margin plane, entire, without basal glands, apex obtuse or abruptly obtuse-acute. Inflorescences racemose, 4–6 cm, angled, many flowered; bracts unknown. Pedicel 2.5–5 mm. Flower unknown. Berry 10-pseudoloculed, red, globose, ca. 5 mm in diam. Fr. Jun–Oct.

● Forests on mountain summits. NE Hainan (Ding'an).

28. Vaccinium wrightii Gray, Mem. Amer. Acad. Arts Sci., n.s., 6: 398. 1858–1859.

海岛越桔 hai dao yue ju

Shrubs or small trees, evergreen, 4–5 m tall. Twigs subterete, glabrous or sparsely pubescent; bud scales inconspicuous. Leaves scattered; petiole 1–2 mm, puberulous or glabrous; leaf blade ovate, elliptic, elliptic-lanceolate, oblong, or rhombic-oblong, (1.5–)2–5 × (1–)1.5–2.5 cm, thickly leathery, glabrous, secondary veins 3 or 4 pairs, base cuneate to broadly cuneate to suborbicular, margin serrate, apex acute to acuminate. Inflorescences pseudoterminal, racemose, ca. 7 cm, glabrous; bracts persistent, leaflike, 2–5 mm. Pedicel 5–10 mm. Calyx glabrous; lobes triangular. Corolla urceolate to campanulate-tubular, 5–7 mm, glabrous. Filaments pilose at base; anthers with 2 spurs on back. Berry ca. 6 mm in diam.; fruit stalk 1–1.5 cm. $2n = 24$*.

Forests, near coasts; 600–1600 m. Taiwan [Japan (including Ryukyu Islands)].

1a. Leaves elliptic or elliptic-lanceolate, 3–5 × 1.5–2.5 cm; a small tree ..... 28a. var. *wrightii*
1b. Leaves elliptic, 1.5–2 × 1–1.3 cm; a shrub ..... 28b. var. *formosanum*

28a. Vaccinium wrightii var. **wrightii**

海岛越桔(原变种) hai dao yue ju (yuan bian zhong)

Vaccinium bracteatum Thunberg var. *wrightii* (Gray) Rehder & E. H. Wilson.

Trees small. Leaves elliptic or elliptic-lanceolate, 3–5 × 1.5–2.5 cm.

Near coasts; 600–1600 m. Taiwan [Japan (including Ryukyu Islands)].

28b. Vaccinium wrightii var. **formosanum** (Hayata) H. L. Li, Woody Fl. Taiwan, 704. 1963.

长柄海岛越桔 chang bing hai dao yue ju

Vaccinium formosanum Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 167. 1911; *V. bracteatum* Thunberg var. *formosanum* (Hayata) S. S. Ying.

Shrubs small. Leaves elliptic, 1.5–2 × 1–1.5 cm.

● Forests; ca. 1600 m. E Taiwan.

29. Vaccinium truncatocalyx Chun ex W. P. Fang & Z. H. Pan, Acta Phytotax. Sin. 19: 112. 1981.

平萼乌饭 ping e wu fan

Shrubs or small trees, evergreen, 2.6–8 m tall. Twigs narrowly angled, glabrous; bud scales inconspicuous. Leaves scattered; petiole 3–4 mm, glabrous; leaf blade elliptic or oblong-elliptic, 3–5 × 1.2–1.5 cm, thinly leathery, glabrous, secondary veins 5 or 6 pairs, base broadly cuneate, margin plane, inconspicuously dentate, apex acuminate. Inflorescences pseudoterminal, racemose, 1.5–2 cm, densely pubescent; bracts caducous. Pedicel 1.5–2 mm, densely pubescent. Hypanthium ca. 1.4 mm, densely pubescent; calyx lobes obsolete. Corolla purple, tubular-urceolate, 4.5–5 mm, densely pubescent; lobes reflexed, triangular. Filaments ca. 2 mm, slender, densely pubescent; anthers ca. 0.5 mm, without spurs; tubules ca. 3 × as long as thecae. Berry unknown. Fl. Jul.

● Forests. W Guangdong (Xinyi).

30. Vaccinium bracteatum Thunberg in Murray, Syst. Veg., ed. 14, 363. 1784.

南烛 nan zhu

Shrubs or small trees, evergreen, 2–6(–9) m tall, much branched. Twigs inconspicuously angled, pubescent or glabrous; bud scales inconspicuous. Leaves scattered; petiole 2–8 mm, puberulous or glabrous; leaf blade elliptic, rhombic- or lanceolate-elliptic, or lanceolate, rarely obovate, (1.1–)4–9 × (0.7–)2–4 cm, thinly leathery, glabrous, secondary veins 5–7 pairs, barely raised, fine veins conspicuous or not, base cuneate, broadly cuneate, or obtuse, margin plane, denticulate, apex

acute, acuminate, rarely rounded or long acuminate. Inflorescences pseudoterminal, racemose, 4–10 cm, densely pubescent, rarely glabrous, many flowered; bracts persistent or caducous, leaflike, lanceolate, 0.5–2 cm. Pedicel ca. 4 mm, densely pubescent or subglabrous. Hypanthium densely pubescent or tomentellate, rarely subglabrous; calyx limb ca. 1 mm, triangular-toothed. Corolla white, rarely reddish, tubular or slightly urceolate, 5–7 mm, densely pubescent; lobes reflexed, triangular. Filaments 2–2.5 mm, densely pilose; anthers 2–2.5 mm, without spurs; tubules 2–2.5 × as long as thecae. Berry 10-pseudoloculed, dark purple, pubescent. Fl. Jun–Jul, fr. Aug–Oct.

Forests, thickets, grassy places at roadsides; 400–1500(–1900) m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Cambodia, Indonesia, S Japan, Korea, Laos, Malaysia, Thailand, Vietnam].

This species is used medicinally and to stain cooked rice.

1a. Corolla reddish, corolla tube 2–3 mm in diam. ..... 30d. var. *rubellum*
1b. Corolla white, corolla tube 3–4 mm in diam.
  2a. Leaf blade 4–9 × 2–4 cm ..... 30a. var. *bracteatum*
  2b. Leaf blade 1–4 × 0.7–1.4 cm.
    3a. Leaf blade rhombic-elliptic or lanceolate-elliptic, apex acuminate, 1.1–4 × 0.7–1.4 cm ..... 30b. var. *chinense*
    3b. Leaf blade obovate, apex rounded, 1.2–1.4 × ca. 0.9 cm ..... 30c. var. *obovatum*

30a. Vaccinium bracteatum var. **bracteatum**

南烛(原变种) nan zhu (yuan bian zhong)

Acosta spicata Loureiro; *Pieris divaricata* H. Léveillé; *P. lucida* H. Léveillé; *P. ovalifolia* (Wallich) D. Don var. *denticulata* H. Léveillé; *Vaccinium bracteatum* var. *longitubum* Hayata; *V. malaccense* Wight; *V. spicatum* (Loureiro) Poiret.

Plants glabrous or hairy. Leaf blade 4–9 × 2–4 cm, apex acute to acuminate. Corolla white; tube 3–4 mm in diam.

Forests, thickets; 400–1400(–1900) m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Cambodia, Indonesia, S Japan, Korea, Laos, Malaysia, Thailand, Vietnam].

30b. Vaccinium bracteatum var. **chinense** (Loddiges) Chun ex Sleumer, Bot. Jahrb. Syst. 71: 474. 1941.

小叶南烛 xiao ye nan zhu

Andromeda chinensis Loddiges, Bot. Cab. 17: t. 1648. 1831; *Vaccinium chinense* (Loddiges) Champion.

Plants subglabrous. Leaf blade rhombic-elliptic or lanceolate-elliptic, 1.1–4 × 0.7–1.4 cm, apex acuminate or acute. Corolla white; tube 3–4 mm in diam.

● Forests, thickets; 800–1500 m. Fujian, Guangdong, S Guangxi.

30c. Vaccinium bracteatum var. **obovatum** C. Y. Wu & R. C. Fang, Acta Bot. Yunnan. 9: 385. 1987.

倒卵叶南烛 dao luan ye nan zhu

Plants glabrous or subglabrous. Leaf blade obovate, 1.2–1.4 × ca. 0.9 cm, apex rounded. Corolla white; tube 3–4 mm in diam.

● Grassy places at roadsides. SE Guangdong (Haifeng).

30d. Vaccinium bracteatum var. **rubellum** P. S. Hsu et al., Acta Bot. Yunnan. 11: 319. 1989.

淡红南烛 dan hong nan zhu

Leaf blade elliptic, rhombic-elliptic, or obovate. Corolla reddish; tube 2–3 mm in diam.

● Thickets. Jiangxi, Zhejiang.

31. Vaccinium fimbribracteatum C. Y. Wu, Acta Bot. Yunnan. 9: 385. 1987.

齿苞越桔 chi bao yue ju

Shrubs evergreen, 1–1.5(–4) m tall, much branched. Twigs terete, densely pubescent; bud scales inconspicuous. Leaves scattered; petiole 2–3 mm, densely fulvous pubescent; leaf blade elliptic-lanceolate, 3.5–5 × 1.3–1.8 cm, leathery, pubescent only on midvein, or abaxially glabrous, secondary veins ca. 7 pairs, fine veins slightly raised abaxially, inconspicuous adaxially, base broadly cuneate to rounded, margin plane, serrate, apex acuminate. Inflorescences racemose, 7–12 cm, pubescent, many flowered; bracts persistent, ovate to lanceolate, 6–10 mm, margin persistently glandular fimbriate, apex subulate. Pedicel reddish, 2–5 mm, glabrous. Hypanthium glabrous; calyx lobes triangular, 1–1.5 mm, fimbriate. Corolla white or pinkish, tubular, 7–8 mm, glabrous; lobes reflexed, triangular. Filaments ca. 2.5 mm, pilose; anthers ca. 1.5 mm with 2 erect spurs; tubules ca. 2 × as long as thecae. Fruit unknown. Fl. Apr–May.

● Forests on slopes; 900–1200 m. N Guizhou, E Sichuan.

32. Vaccinium carlesii Dunn, J. Linn. Soc., Bot. 38: 361. 1908.

短尾越桔 duan wei yue ju

Shrubs or small trees, evergreen, 1–3(–6) m tall, much branched. Twigs slightly angled, pubescent, glabrescent; bud scales inconspicuous. Leaves dense; petiole 1–5 mm, puberulous or subglabrous; leaf blade ovate-lanceolate or narrowly ovate, 2–7 × 1–2.5 cm, leathery, abaxially glabrous, adaxially densely puberulous on midvein, otherwise glabrous, secondary veins ca. 6 pairs and fine veins inconspicuous on both surfaces, base rounded or broadly cuneate, rarely cuneate, margin plane, serrate, apex acuminate. Inflorescences racemose, 2–3.5 cm, slender, pubescent or glabrous, 6–15-flowered; bracts persistent or sometimes caducous, lanceolate, 2–5(–13) mm. Pedicel ca. 2 mm, glabrous. Hypanthium ca. 0.7 mm, glabrous; calyx lobes triangular, 0.8–1.3 mm. Corolla white, broadly campanulate, 3–5 mm; lobes reflexed, ovate-triangular, 0.7–1.5 mm. Filaments 1–1.5 mm, pilose; anthers 1.5–2 mm, with 2 inconspicuous spurs; tubules 1/2–2/3 as long as thecae. Berry 10-pseudoloculed, dark purple, globose, glabrous, with a bloom. Fl. May–Jun, fr. Aug–Oct.

● Evergreen forests, sparse forests, thickets; 300–800(–1200) m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hunan, Jiangxi, Zhejiang.

33. Vaccinium yaoshanicum Sleumer, Notizbl. Bot. Gart. Ber-

lin-Dahlem 12: 483. 1935.

瑶山越桔 yao shan yue ju

Vaccinium yaoshanicum var. *megaphyllum* C. Y. Wu & R. C. Fang.

Shrubs or small trees, evergreen, to 13 m tall, glabrous. Twigs terete; bud scales inconspicuous. Leaves scattered; petiole 1–2 cm; leaf blade ovate-elliptic or oblong-lanceolate, 9–18 × 2.2–9 cm, thinly leathery, secondary veins ca. 7 pairs, fine veins raised abaxially or inconspicuous, base broadly cuneate, margin plane, entire, sparsely glandular dentate, apex acuminate or long acuminate to 4 cm. Inflorescences racemose, (2–)4–8 (–10) cm, many flowered; bracts ca. 3 mm. Pedicel 3–6 mm. Hypanthium ca. 1 mm; calyx lobes ca. 1 mm, sparsely ciliate. Corolla white, campanulate, 3.4–4 mm; lobes reflexed, ovate-triangular, ca. 2 mm. Filaments ca. 1 mm, puberulous; anthers 2–2.5 mm, with 2 short spurs; tubules ca. as long as thecae. Berry 5-loculed, dark purple, globose, ca. 5 mm in diam. Fl. May–Jun, fr. Jul–Sep.

● Forests, thickets; 900–1000 m. W Guangdong, E Guangxi.

34. Vaccinium harmandianum Dop in Lecompte, Fl. Indo-Chine 3: 709. 1930.

长冠越桔 chang guan yue ju

Shrubs or small trees, evergreen, 2–10 m tall, glabrous, rarely twigs and petioles pubescent. Twigs angled; bud scales inconspicuous. Leaves scattered; petiole 3–7 mm; leaf blade ovate or ovate-lanceolate, 5.5–12.5 × 2–5 cm, secondary veins 6 or 7 pairs, ascending, fine veins slightly raised abaxially, ± flat adaxially, base cuneate or broadly cuneate, margin plane, shallowly serrate, apex falciform-acuminate. Inflorescences racemose, 4–10 cm, 10–15-flowered; bracts caducous, lanceolate, 5–6 mm. Pedicel 4–5 mm. Hypanthium ca. 1 mm, glabrous; calyx lobes triangular-lanceolate, ca. 1.2 mm, margin glandular fimbriate. Corolla white or tinged with pink, tubular, 7–8 mm; lobes erect or reflexed, ca. 0.7 mm. Filaments ca. 1.8 mm, hairy; anthers ca. 2.5 mm, with 2 inconspicuous spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, purple, globose, 6–7 mm in diam. Fl. Apr–May, fr. Jun–Sep.

Evergreen forests; (800–)1000–1600 m. S Yunnan [Cambodia, Laos].

This species differs from *Vaccinium mandarinorum* by having the leaf blade falciform-acuminate at the apex, calyx lobes triangular-lanceolate with a glandular fimbrillate margin, and corolla tubular, 7–8 mm.

One of us (Stevens) questions whether *Vaccinium harmandianum* is the same as *V. sprengelii* (G. Don) Sleumer.

35. Vaccinium duclouxii (H. Léveillé) Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 62: 146. 1925.

云南越桔 yun nan yue ju

Shrubs or small trees, evergreen, 1–5(–10) m tall, much branched. Twigs angled, glabrous, pubescent, or glandular setose; bud scales inconspicuous. Leaves scattered; petiole 3–6 mm, glabrous, pubescent, or glandular setose; leaf blade ovate-lanceolate, oblong-lanceolate, or ovate, 3–7(–13) × 1.7–3.5 cm, leathery, glabrous or abaxially pubescent on midvein at base, secondary veins 3 pairs, secondary and fine veins raised abaxially, inconspicuous and impressed adaxially, base broadly cuneate or rounded, rarely cuneate, margin plane, slightly recurved, denticulate, apex acuminate or acute. Inflorescences racemose, 1.5–8 cm, glabrous, densely tomentellate, or hirtellous, 9–18-flowered; bracts caducous, ovate or broadly ovate, 5–7 mm, apex caudate. Pedicel 0.5–2.5 mm, glabrous; bracteoles 2, subapical, ovate, ca. 1.5 mm. Hypanthium globose, 1.5–1.7 mm, glabrous or hirtellous; calyx lobes 1–1.3 mm, ciliate or glandular fimbriate. Corolla white or pink, tubular-urceolate, 6–8 mm, glabrous; lobes usually reflexed, triangular. Filaments 2.5–3 mm, pilose; anthers 2.7–3 mm, with 2 inconspicuous spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, dark purple, globose, 6–7 mm in diam. Fl. Feb–May, fr. Jul–Nov.

● Forests, thickets, grassy or rocky slopes; 1500–3100(–3200) m. Sichuan, Xizang, Yunnan.

1a. Plant glabrous ..... 35a. var. *duclouxii*
1b. Plant with glandular setose and/or pubescent indumentum.
  2a. Twigs and petioles pubescent; inflorescence axis tomentellate ..... 35c. var. *pubipes*
  2b. Twigs and petioles glandular setose; inflorescence axis glandular setose or hirtellous.
    3a. Indumentum glandular setose ..... 35b. var. *hirticaule*
    3b. Rachis, hypanthium, and calyx lobes hirtellous, twigs pubescent and glandular setose ..... 35d. var. *hirtellum*

35a. Vaccinium duclouxii var. **duclouxii**

云南越桔(原变种) yun nan yue ju (yuan bian zhong)

Pieris duclouxii H. Léveillé, Bull. Acad. Int. Géogr. Bot. 12: 253. 1903; *V. forrestii* Diels.

Twigs, petioles, leaf blade abaxially on midvein, and rachis of inflorescences glabrous.

● Evergreen forests, *Pinus-Quercus* forests, thickets; 1500–3100 m. Sichuan, Yunnan.

35b. Vaccinium duclouxii var. **hirticaule** C. Y. Wu, Acta Bot. Yunnan. 9: 386. 1987.

刚毛云南越桔 gang mao yun nan yue ju

Twigs, petioles, hypanthium, and calyx lobes ± glandular setose alone.

● Open forests, thickets, grassy or rocky slopes; 1500–2000 (–2200) m. SE Yunnan.

35c. Vaccinium duclouxii var. **pubipes** C. Y. Wu, Acta Bot. Yunnan. 9: 387. 1987.

柔毛云南越桔 rou mao yun nan yue ju

Twigs, petioles, and leaf blade abaxially pubescent at base;

rachis of inflorescences tomentellate.

● Mixed forests, *Pinus* forests, thickets, (1700–)2300–2700 (–3200) m. Xizang, NW Yunnan.

35d. Vaccinium duclouxii var. **hirtellum** C. Y. Wu & R. C. Fang, Acta Bot. Yunnan. 9: 387. 1987.

毛果云南越桔 mao guo yun nan yue ju

Twigs pubescent and glandular setose intermixed. Inflorescence axis, hypanthium, and calyx lobes hirtellous.

● Thickets. C Yunnan.

36. Vaccinium brachybotrys (Franchet) Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 62: 146. 1925.

短序越桔 duan xu yue ju

Vaccinium donianum Wight var. *brachybotrys* Franchet, J. Bot. (Morot) 9: 369. 1895; ?*V. brachybotrys* var. *glaucocarpum* C. Y. Wu.

Shrubs, occasionally small trees, evergreen, (0.5–)1–5 m tall, glabrous. Twigs terete, glaucous when young; bud scales inconspicuous. Leaves scattered; petiole 1–3 mm, sometimes glaucous; leaf blade ovate or ovate-lanceolate, 3–8 × 1.5–3 cm, leathery, glaucous when young, secondary veins 7 or 8 pairs, slightly raised on both surfaces, fine veins raised abaxially, inconspicuous adaxially, base cuneate or rounded, margin denticulate, apex acute or acuminate. Inflorescences racemose, 3–6 cm, many flowered; bracts caducous, ovate, 1.5–3 mm. Pedicel 1–4 mm. Hypanthium usually glaucous; calyx lobes ca. 1 mm. Corolla purple or pink, urceolate or tubular, 6–7 mm; lobes erect or reflexed. Filaments ca. 2 mm, pubescent; anthers ca. 1 mm, with at most 2 inconspicuous spurs; tubules 2–3 × as long as thecae. Berry ca. 5 mm in diam. Fl. Mar–Apr, fr. Apr–May.

● Secondary forests, thickets; 1400–2400 m. W Sichuan, Yunnan.

37. Vaccinium mandarinorum Diels, Bot. Jahrb. Syst. 29: 516. 1901.

江南越桔 jiang nan yue ju

Lyonia bracteata (W. W. Smith) Chun; *Pieris bracteata* W. W. Smith; *P. esquirolii* H. Léveillé & Vaniot; *P. esquirolii* var. *discolor* H. Léveillé & Vaniot; *P. longicornuta* H. Léveillé & Vaniot; *Vaccinium donianum* Wight var. *austrosinense* Handel-Mazzetti; *V. donianum* var. *hangchouense* Matsuda; *V. donianum* var. *laetum* (Diels) Rehder & E. H. Wilson; *V. hangchouense* (Matsuda) Komatsu; *V. laetum* Diels; *V. laetum* var. *undulatum* Y. C. Yang; *V. mandarinorum* var. *austrosinense* (Handel-Mazzetti) Metcalf; *V. mandarinorum* var. *laetum* (Diels) Metcalf; *V. parvibracteatum* Hayata.

Shrubs or small trees, evergreen, 1–4(–7) m tall. Twigs terete, glabrous or pubescent, sometimes densely puberulous; bud scales inconspicuous. Leaves scattered; petiole 3–8 mm, glabrous or pubescent; leaf blade ovate or oblong-lanceolate to lanceolate, 3–9 × 1.5–3.5 cm, leathery to thinly leathery, both surfaces usually glabrous, sometimes puberulous on midvein, secondary veins 5–9 pairs, ± ascending, thin, fine veins raised abaxially, flat to inconspicuous adaxially, base cuneate to rounded, margin dentate, apex acute to abruptly acuminate for ca. 1.5 cm. Inflorescences racemose, 2.5–10 cm, pubescent or glabrous, many flowered; bracts caducous or persistent, lanceolate, ovate, or ovate-lanceolate, (2–)4–15 mm. Pedicel 2–8 mm, slender, glabrous or puberulous. Hypanthium 1–1.5 mm, glabrous; calyx lobes ± recurved, 0.5–1.5 mm. Corolla white or pinkish, tubular or urceolate, 5–7 mm, glabrous; lobes ca. 1.5 mm. Filaments ca. 1.5 mm, ± pubescent; anthers ca. 3.5 mm, with 2 short spurs; tubules ca. 1.5 × as long as thecae or longer. Berry 10-pseudoloculed, dark purple, glabrous, 4–7 mm in diam. Fl. Apr–Jun, fr. Jun–Oct.

● *Pinus-Quercus* forests, secondary forests, forest margins, thickets; 100–1600 m (or mostly 1800–2900 m on Yunnan plateau). Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Yunnan, Zhejiang.

38. Vaccinium trichocladum Merrill & Metcalf, Lingnan Sci. J. 16: 174. 1937.

刺毛越桔 ci mao yue ju

Shrubs, occasionally small trees, evergreen, 3–8 m tall. Twigs rounded, densely or sparsely glandular setose and hispidulous, glabrescent; bud scales inconspicuous. Leaves scattered; petiole 2–4 mm, indumentum same as twigs; leaf blade ovate-lanceolate, 4–9 × 2–3 cm, thinly leathery, abaxially hispidulous, intermixed glandular setose on midvein, adaxially densely hispidulous on midvein, otherwise glabrous, secondary veins 8–10 pairs, raised abaxially, flat adaxially, fine veins raised abaxially, inconspicuous adaxially, base rounded or slightly cordate, margin plane, spiniform-dentate or subentire, apex acuminate. Inflorescences pseudoterminal, racemose, 4–8 cm, densely hispidulous, pubescent, or glabrous, many flowered; bracts oblong or oblong-lanceolate, ca. 2.5 mm, margin glandular fimbriate. Pedicel 3–4 mm, indumentum as on rachis. Hypanthium ca. 1 mm, hairy or glabrous; calyx limb divided to near base; calyx lobes triangular-ovate, ca. 1 mm, glabrous. Corolla white, tubular-urceolate, 5–6 mm, glabrous; lobes reflexed, ca. 1 mm. Filaments ca. 1 mm, densely hairy; anthers ca. 3 mm, with 2 spurs; tubules 1.5–2 × as long as thecae. Berry 10-pseudoloculed, red, globose, 5–6 mm in diam., hispidulous. Fl. Apr, fr. May–Sep.

● Forests, open mountain slopes; 200–700 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Jiangxi, Zhejiang.

1a. Twigs densely glandular setose and hispidulous; inflorescence axis, pedicels, and hypanthium densely hispidulous and pubescent ..... 38a. var. *trichocladum*
1b. Twigs sparsely glandular setose; inflorescence axis, pedicels, and hypanthium glabrous ..... 38b. var. *glabriracemosum*

38a. Vaccinium trichocladum var. **trichocladum**

刺毛越桔(原变种) ci mao yue ju (yuan bian zhong)

Vaccinium iteophyllum Hance var. *hispidum* Handel-Mazzetti.

Twigs densely glandular setose and hispidulous. Leaf margin distinctly dentate. Inflorescence axis, pedicels, and hypanthium densely hispidulous and pubescent.

● Forests; 500–700 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Jiangxi, Zhejiang.

38b. Vaccinium trichocladum var. **glabriracemosum** C. Y. Wu, Acta Bot. Yunnan. 9: 387. 1987.

光序刺毛越桔 guang xu ci mao yue ju

Twigs sparsely glandular setose. Leaf margin inconspicuously dentate or subentire. Inflorescence axis, pedicels, and hypanthium glabrous.

● Open mountain slopes; 200–300 m. Fujian, Jiangxi, Zhejiang.

39. Vaccinium fragile Franchet, J. Bot. (Morot) 9: 366. 1895.

乌鸦果 wu ya guo

Shrubs dwarf, evergreen, 20–50(–100) cm tall. Stem base a burl. Twigs angled, sparsely or densely glandular setose and pubescent; bud scales inconspicuous. Leaves rather dense; petiole 1–1.5 mm; leaf blade oblong or elliptic, 1.2–4.5 × 0.7–2.5 cm, leathery, both surfaces setose and pubescent, or sparsely shortly hispid, or subglabrous, secondary veins 2–5 pairs, inconspicuous, base rounded or cuneate, margin plane, serrulate, apex acute, acuminate, or obtuse. Inflorescences racemose, 1.5–6 cm, glandular setose and pubescent, many flowered; bracts usually reddish, leaflike, 4–9 mm, both surfaces strigose, margin denticulate or setose. Pedicel 1–2 mm, hairy. Hypanthium green, tinged with dark red, ca. 1.2 mm, hairy or not; calyx lobes 1–1.2 mm. Corolla white, tinged with pink, with 5 red veins, urceolate, 5–6 mm, glabrous or pubescent; lobes 0.6–1 mm. Filaments ca. 1.5 mm, pubescent; anthers ca. 3 mm, with 2 erect spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, red, turning dark purple, 4–5 mm in diam., hairy or not.

● *Pinus* and *Quercus* forests, thickets, open grassy slopes; 1100–3400 m. Guizhou, Sichuan, SE Xizang, Yunnan.

This is an indicator plant of acid soils.

1a. Leaf blade 1.2–3.5 × 1.2–2.2 cm, both surfaces ± setose and pubescent, rarely subglabrous ..... 39a. var. *fragile*
1b. Leaf blade 3–4.5 × 1.2–2.2 cm, both surfaces subglabrous or abaxially sparsely shortly hispid on midvein ..... 39b. var. *mekongense*

39a. Vaccinium fragile var. **fragile**

乌鸦果(原变种) wu ya guo (yuan bian zhong)

Pieris gagnepainiana H. Léveillé; *P. repens* H. Léveillé; *Vaccinium anthonyi* Merrill; *V. fragile* var. *crinitum* Franchet; *V. fragile* var. *myrtifolium* Franchet; *V. repens* (H. Léveillé) Rehder; *V. setosum* C. H. Wright; *V. wardii* Adams.

Leaf blade 1.2–3.5 × 0.7–2.5 cm, with 2 or 3 pairs of inconspicuous veins, both surfaces ± setose and pubescent, rarely subglabrous; other parts of plant usually with dense hairs.

● *Pinus* forests, thickets, open grassy slopes; 1100–3400 m. Guizhou, Sichuan, SE Xizang (Zayü), Yunnan.

39b. Vaccinium fragile var. **mekongense** (W. W. Smith) Sleumer, Bot. Jahrb. Syst. 71: 456. 1941.

大叶乌鸦果 da ye wu ya guo

Vaccinium mekongense W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 133. 1916; *V. salweenense* W. W. Smith; *V. taliense* W. W. Smith.

Leaf blade 3–4.5 × 1.2–2.2 cm, with 3–5 pairs of veins raised on both surfaces, fine venation ± evident, both surfaces subglabrous or abaxially sparsely shortly hispid on midvein; other parts of plant with fewer hairs.

● *Pinus* and *Quercus* forests, thickets; 1700–2000 m. SW Sichuan, C and W Yunnan.

40. Vaccinium fimbricalyx Chun & W. P. Fang, Acta Phytotax. Sin. 6: 165. 1957.

流苏萼越桔 liu su e yue ju

Shrubs evergreen. Twigs terete, glabrous. Leaves scattered; petiole 4–6 mm, pubescent; leaf blade elliptic-lanceolate or ovate-lanceolate to lanceolate, 3–6.5 × 1.5–2.2 cm, leathery, abaxially glabrous, adaxially initially densely puberulous on midvein, glabrescent, fine veins inconspicuous, base cuneate to broadly cuneate, margin entire, apex caudate-acuminate. Inflorescences racemose, 1–2 cm, thin, angled, glabrous, 6–12-flowered. Pedicel 1.5–2 mm. Hypanthium glabrous; calyx lobes triangular, ca. 0.8 mm, margin densely white fimbriate, apex acute. Corolla white, tubular-campanulate, 4–4.2 mm, glabrous; lobes reflexed, ovate-triangular, ca. 1.5 mm. Anthers without spurs. Berry dark purple, with a bloom, 8–10 mm in diam.

● Forest margins on mountain summits; ca. 1400 m. Guangdong, Guangxi.

41. Vaccinium longicaudatum Chun ex W. P. Fang & Z. H. Pan, Acta Phytotax. Sin. 19: 110. 1981.

长尾乌饭 chang wei wu fan

Vaccinium carlesii Dunn var. *longicaudatum* (Chun ex W. P. Fang & Z. H. Pan) P. C. Tam.

Shrubs evergreen, 1.5–4 m tall. Twigs slightly angled, initially puberulous, glabrescent; bud scales inconspicuous. Leaves scattered; petiole 6–7 mm, puberulous; leaf blade elliptic-lanceolate, 4.5–7 × 1.8–2.5 cm, leathery, secondary veins 6 pairs, ascending, barely evident, base cuneate or broadly cuneate, margin plane, sparsely serrulate, apex caudate-acuminate. Inflorescences racemose, 1.5–2 cm, glabrous, 10–15-flowered; bracts broadly elliptic. Pedicel 1–1.5 mm; bracteoles lanceolate, ca. 1.5 mm. Calyx lobes triangular, ca. 1 mm, margin sparsely ciliate. Corolla white, tubular, 4–4.5 mm, glabrous; lobes triangular-ovate, ca. 1.5 mm. Filaments ca. 0.6 mm, subglabrous; anthers 1–1.2 mm, with 2 small spurs, tubules shorter than thecae, ca. 0.8 mm. Berry red, ca. 5 mm in diam. Fl. Jun, fr. Nov.

● Open montane forests; 700–1600 m. Guangdong, Guangxi, Guizhou, Hunan.

42. Vaccinium chamaebuxus C. Y. Wu, Acta Bot. Yunnan. 9: 388. 1987.

矮越桔 ai yue ju

Shrubs evergreen, 0.5–2 m tall, much branched. Twigs terete, densely pubescent, glabrescent; bud scales inconspicuous. Leaves scattered; petiole 2–5 mm, adaxially densely pubescent; leaf blade ovate or elliptic, 1.7–4(–6) × 1–2 cm, leathery, adaxially nigrescent-punctate, puberulous on midvein, otherwise glabrous, secondary veins 6 or 7 pairs, fine veins raised abaxially, inconspicuous adaxially, base broadly cuneate, sometimes cuneate or rounded, margin plane, densely serrate, apex acute or obtuse to acuminate. Inflorescences racemose, 1.5–2 cm, pubescent or glabrous, ca. 8-flowered; bracts broadly ovate, 3–5 mm, glabrous. Pedicel 0.5–2 mm, glabrous; bracteoles ca. 2.5 mm, median. Hypanthium glabrous; calyx lobes ovate-triangular or suborbicular, 0.5–1 mm. Corolla white or pink, urceolate, ca. 7 mm, glabrous; lobes triangular or narrowly triangular. Filaments 1–1.2 mm, hairy; anthers 0.8–1 mm, with 2 spurs; tubules ca. 1.2 × as long as thecae. Berry purple, 5–6 mm in diam. Fl. Apr–May, fr. Jun–Nov.

● *Rhododendron* forests on mountain summits, thickets on open slopes; 2500–3100 m. WC Yunnan (Jingdong).

43. Vaccinium albidens H. Léveillé & Vaniot, Repert. Spec. Nov. Regni Veg. 9: 447. 1911.

白花越桔 bai hua yue ju

Shrubs or small trees, evergreen, 1–6 m tall, much branched. Twigs terete, densely puberulous, glabrescent; bud scales inconspicuous. Leaves scattered; petiole 2–3 mm, densely puberulous or subglabrous; leaf blade ovate-lanceolate, rarely lanceolate, 3–7 × 1.5–2.5 cm, thinly leathery, adaxially puberulous on midvein, otherwise glabrous, secondary veins 5 pairs, fine veins raised abaxially, flat adaxially, base rounded to cuneate, margin plane, denticulate, apex acuminate or caudate-acuminate. Inflorescences racemose, 1.5–4 cm, densely puberulous, 8–16-flowered; bracts caducous, broadly ovate, ca. 3 mm, margin fimbriate. Pedicel 1–1.5 mm, densely puberulous. Hypanthium pubescent; calyx lobes ovate-triangular or suborbicular, 0.5–1 mm, glandular fimbriate. Corolla white, tubular, ca. 6 mm, glabrous; lobes reflexed. Filaments ca. 1.5 mm, pilose; anthers ca. 1.5 mm with 2 inconspicuous spurs; tubules 1–1.5 × as long as thecae. Berry 10-pseudoloculed, ca. 4 mm in diam., pubescent, glabrous when mature. Fl. Feb–Apr, fr. May–Oct.

● Valley forests, thickets, ridges; 1000–2300 m. Guizhou, SE Yunnan.

44. Vaccinium iteophyllum Hance, Ann. Sci. Nat., Bot., sér. 4, 18: 223. 1862.

黄背越桔 huang bei yue ju

Shrubs or small trees, evergreen, 1–7 m tall. Twigs terete, brownish pubescent or tomentellate, rarely glandular setose, glabrescent; bud scales inconspicuous. Leaves scattered; petiole 2–5 mm, densely brownish pubescent or puberulous, rarely glandular setose; leaf blade ovate or ovate-lanceolate to lanceolate, 4–13 × 2–4 cm, leathery, abaxially pubescent on midvein, rarely glandular setose, adaxially puberulous on midvein, otherwise glabrous, rarely pubescent, secondary veins 6–9 pairs, ± ascending, fine veins raised abaxially, flat adaxially, base cuneate to rounded, margin plane, sparsely dentate or subentire, apex acuminate. Inflorescence racemose, 4–6 cm, densely pubescent or tomentellate, many flowered; bracts lanceolate, 3–7 mm, puberulous. Pedicel 2–4 mm, densely pubescent or tomentellate. Hypanthium ca. 1.2 mm, hairy; calyx lobes triangular, 1–1.5 mm. Corolla white or pinkish, tubular to urceolate, 5–7 mm, puberulous or not; lobes erect or reflexed, ca. 1 mm. Filaments 1.5–2 mm, densely pubescent; anthers ca. 3 mm, with 2 slender spurs; tubules ca. 3 × as long as thecae. Berry 10-pseudoloculed, globose, 4–5 mm in diam., ± pubescent. Fl. Apr–May, fr. after Jun.

● Forests, montane thickets; 400–1400(–2400) m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Xizang, Yunnan, Zhejiang.

1a. Twigs, petioles, and abaxial midvein pubescent or tomentellate ..... 44a. var. *iteophyllum*
1b. Twigs, petioles, and abaxial midvein glandular setose ..... 44b. var. *glandulosum*

44a. Vaccinium iteophyllum var. **iteophyllum**

黄背越桔(原变种) huang bei yue ju (yuan bian zhong)

Vaccinium iteophyllum var. *fragrans* Rehder & E. H. Wilson.

Twigs, petioles, and abaxial midvein pubescent or tomentellate.

● Forests, montane thickets; 400–1400(–2400) m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Xizang, Yunnan, Zhejiang.

44b. Vaccinium iteophyllum var. **glandulosum** C. Y. Wu & R. C. Fang in C. Y. Wu, Fl. Xizang. 3: 729. 1986.

腺毛米饭树 xian mao mi fan shu

Twigs, petioles, and abaxial midvein glandular setose.

● Evergreen forests; ca. 2300 m. SE Xizang (Zayü).

45. Vaccinium serrulatum W. P. Fang & Z. H. Pan, Acta Phytotax. Sin. 19: 111. 1981.

细齿乌饭 xi chi wu fan

Shrubs evergreen. Twigs slightly angled, puberulous; bud scales inconspicuous. Leaves scattered; petiole ca. 4 mm, glabrous; leaf blade elliptic to broadly elliptic, 3–4.5 × 1.3–2.5 cm, leathery, subglabrous or adaxial midvein puberulous, secondary veins 6–8 pairs, fine veins slightly raised abaxially, inconspicuous adaxially, base rounded or broadly cuneate, margin plane, serrulate, apex acuminate, mucronulate. Inflorescences racemose, 1.5–3 cm, pubescent, 8–12-flowered; bracts oblong, ca. 3 mm. Pedicel ca. 1 mm, pubescent. Hypanthium sparsely pubescent; calyx lobes broadly ovate-triangular. Corolla white or pink, urceolate, 5–6 mm, abaxially pilose; lobes ovate-triangular, ca. 1.2 mm. Filaments 1.2–2 mm, pubescent; anthers ca. 2 mm, with 2 slender spurs; tubules ca. as long as thecae or longer. Immature berry 3–4 mm in diam., glabrous. Fl. Dec to beginning of next year, fr. Aug.

● About 1500 m. SW Sichuan (Huili), SE Yunnan (Qiubei).

46. Vaccinium pubicalyx Franchet, J. Bot. (Morot) 9: 369.

1895.

毛萼越桔 mao e yue ju

Shrubs or small trees, evergreen, 1–4 m tall. Twigs brownish tomentose, glabrescent; bud scales inconspicuous. Leaves scattered; petiole 2–4 mm, brownish tomentose; leaf blade ovate or ovate-lanceolate to lanceolate, 2–6 × 0.7–2.5 cm, thinly leathery, both surfaces ± pubescent on midvein, otherwise glabrous, rarely both surfaces tomentose or villous, abaxially with glands or glandular hairs or not, secondary veins 4–7 pairs, secondary and fine veins ± raised abaxially, flat adaxially, base cuneate or broadly cuneate, rarely rounded, margin plane, serrulate, apex acuminate to caudate, rarely acute. Inflorescences racemose, 1–4 cm, densely pubescent; flowers ca. 10, dense, secund; bracts caducous, pinkish, ovate, 5–8 mm, abaxially and marginally pubescent. Pedicel 1–2 mm, densely pubescent. Hypanthium ca. 0.8 mm, densely pubescent or tomentose, rarely glabrous; calyx lobes triangular, 0.8–1.2 mm, densely pubescent or only margin densely ciliate. Corolla white or pinkish, tubular or tubular-urceolate, ca. 5 mm, glabrous; lobes triangular. Filaments ca. 1.5 mm, pilose; anthers ca. 2.5 mm, with 2 short spurs; tubules ca. as long as thecae or longer. Berry 10-pseudoloculed, dark purple, 5–6 mm, pilose or glabrous. Fl. Apr–May, fr. Sep–Oct.

Pinus forests, open valley forests, secondary forests, montane thickets; 600–3600 m. S and W Guizhou, SW Sichuan, Yunnan [Myanmar].

1a. Calyx glabrous, lobes densely ciliate ..... 46b. var. *anomalum*
1b. Calyx densely pubescent or tomentose.
  2a. Calyx densely pubescent; leaves ± pubescent on midvein on both surfaces, otherwise glabrous ..... 46a. var. *pubicalyx*
  2b. Calyx densely tomentose; leaves abaxially tomentose or villous .... 46c. var. *leucocalyx*

46a. Vaccinium pubicalyx var. **pubicalyx**

毛萼越桔(原变种) mao e yue ju (yuan bian zhong)

Myrica mairei H. Léveillé; *Vaccinium spicigerum* W. W. Smith.

Leaves ± pubescent on midvein on both surfaces, otherwise glabrous. Calyx densely pubescent, abaxially with glands or glandular hairs.

Pinus forests, secondary forests, montane thickets; 1300–2700 m. W Guizhou, SW Sichuan, Yunnan [Myanmar].

46b. Vaccinium pubicalyx var. **anomalum** J. Anthony, Notes Roy. Bot. Gard. Edinburgh 18: 34. 1933.

少毛毛萼越桔 shao mao mao e yue ju

Leaves punctate abaxially, puberulous along midvein or glabrous on both surfaces. Calyx glabrous; lobes densely ciliate.

● Montane thickets; 2000–3600 m. N Yunnan (Eryuan, Luquan).

46c. Vaccinium pubicalyx var. **leucocalyx** (H. Léveillé) Rehder, J. Arnold Arbor. 15: 285. 1934.

多毛毛萼越桔 duo mao mao e yue ju

Pieris esquirolii H. Léveillé & Vaniot var. *leucocalyx* H. Léveillé, Bull. Soc. Bot. France 53: 206. 1906.

Leaves abaxially tomentose or villous. Calyx densely tomentose.

● Open valley forests, montane thickets; 600–1000 m. S Guizhou.

47. Vaccinium guangdongense W. P. Fang & Z. H. Pan, Acta Phytotax. Sin. 19: 112. 1981.

广东乌饭 guang dong wu fan

Trees evergreen, ca. 6 m tall. Twigs slightly angled, glabrous; bud scales inconspicuous. Leaves scattered; petiole 2.5–3 mm, subglabrous; leaf blade elliptic or elliptic-lanceolate, 3.5–4.2 × 1.2–1.6 cm, leathery, glabrous, secondary veins 4–6 pairs, base cuneate, margin plane, obtusely dentate, apex acuminate or acute. Inflorescences racemose, 3.5–4.5 cm, angled, puberulous, many flowered; bracts unknown. Pedicel 3–3.5 mm, puberulous. Flowers unknown. Immature berry red, globose, ca. 2.5 mm in diam., densely pubescent; persistent calyx lobes triangular, densely pubescent. Fr. after Jun.

● Dense montane forests; ca. 900 m. SW Guangdong (Yangjiang).

48. Vaccinium exaristatum Kurz, J. Asiat. Soc. Bengal 42(2): 86. 1873.

隐距越桔 yin ju yue ju

Vaccinium exaristatum var. *pubescens* Kurz; *V. longitubulosum* J. J. Smith.

Shrubs or small trees, evergreen, (1–)3–5(–14) m tall. Twigs obscurely lenticellate, densely pubescent, glabrescent; bud scales inconspicuous. Leaves scattered; petiole 2–3 mm, densely pubescent; leaf blade drying pale brown or straw-colored on both surfaces, elliptic, oblong-ovate, or oblong-lanceolate, 3–7.5 × 1.1–3 cm, leathery, both surfaces pubescent on midvein, otherwise glabrous or adaxially pubescent, secondary veins 4 or 5 pairs, fine veins raised abaxially, ± flat adaxially, base cuneate to rounded, margin plane, dentate, apex acute or acuminate. Inflorescences racemose, 3–10 cm, usually pubescent, many flowered; bracts caducous, ovate or broadly ovate, 2.5–3 mm. Pedicel 1–3.5 mm, pubescent or glabrous. Hypanthium 0.8–1 mm, pubescent or glabrous; calyx lobes triangular or suborbicular, 0.8–1.2 mm, sometimes densely ciliate. Corolla pink, tubular, 6–8 mm, glabrous; lobes erect or reflexed, triangular or oblong. Filaments ca. 1.8 mm, pilose; anthers ca. 3.5 mm, without or with inconspicuous spurs; tubules 2–3 × as long as thecae. Berry 10-pseudoloculed, red to dark purple, 4–5 mm in diam. Fl. Mar–Apr, fr. May–Jun.

Sparse forests, shrubby slopes; 500–1500(–2000) m. W Guangxi, S Guizhou, S Yunnan [Laos, Myanmar, Thailand, Vietnam].

49. Vaccinium ardisioides J. D. Hooker ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 452. 1882.

紫梗越桔 zi geng yue ju

Shrubs evergreen, usually epiphytic, 0.5–1.2 m tall, glabrous. Twigs terete; bud scales inconspicuous. Leaves 3–5-pseudoverticillate, sessile; leaf blade ovate or elliptic, 6–15 × 2.5–7 cm, papery to leathery, secondary veins 8–12(–14) pairs, spreading, fine veins raised abaxially, slightly raised adaxially, base broadly obtuse-rounded to narrowly cordate, margin plane, entire, without basal glands, apex acuminate. Inflorescences racemose, 2–4- in whorl of leaves, 7–10 cm, slender, sometimes glaucous, many secund flowered; bracts caducous. Pedicel purple, 0.5–1.5 cm, slender, thickened upwards. Hypanthium subglobose, ca. 2.3 mm; calyx limb ca. 2.2 mm, divided 1/3–2/5; calyx lobes triangular, ca. 1 mm. Corolla white-green, urceolate-tubular, 6–7 mm; lobes less than 1 mm. Filaments ca. 2.5 mm, subglabrous; anthers ca. 4.5 mm, papillate, without or with 2 small spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, purple-green, ca. 4 mm in diam.; fruit stalk purple-green. Fl. Mar, fr. May.

Below evergreen trees, usually epiphytic, riversides; 1000–1400 m. NW Yunnan (Dulongjiang) [Myanmar].

50. Vaccinium rubescens R. C. Fang, Novon 9: 174. 1999.

红梗越桔 hong geng yue ju

Shrubs evergreen, terrestrial or epiphytic, 1–2 m tall, glabrous. Twigs terete; bud scales caducous. Leaves 3–8-pseudoverticillate, sessile; leaf blade oblong-lanceolate or oblong-ovate, 7.5–12 × 2–4 cm, papery, secondary veins more than 15 pairs, midvein raised on both surfaces, fine veins raised on both surfaces, base narrowly obtuse-rounded, subcordate, margin plane, entire, basal glands inconspicuous, apex acuminate. Inflorescences racemose, red, 7–12 cm, angled-winged, many flowered; bracts unknown. Pedicel red, ca. 1.5 cm, thickened upwards. Hypanthium terete, ca. 4 mm, upper parts free, not adnate to ovary; calyx lobes triangular, ca. 1 mm. Corolla orange or pink, tubular, 7–8 mm; lobes less than 1 mm. Filaments 2–4 mm, pubescent, especially at apex; anthers ca. 3 mm, papillate, with 2 short spurs; tubules ca. as long as thecae. Berry scarlet, ca. 5 mm in diam.; fruit stalk scarlet, ca. 2 cm. Fl. Mar, fr. May.

● Dense forests, sometimes epiphytic, moist places, roadsides; 2000–2200 m. SW Yunnan.

51. Vaccinium venosum Wight, Icon. Pl. Ind. Orient. 4. t. 1185. 1848.

轮生叶越桔 lun sheng ye yue ju

Epigynium venosum (Wight) Klotzsch.

Shrubs evergreen, often epiphytic, ca. 60 cm tall. Twigs angled, pubescent or glabrous, when older lenticellate; persistent bud scales few, oblong-lanceolate, ca. 3 mm. Leaves 5- or 6-pseudoverticillate, subsessile or shortly petiolate; leaf blade oblong or oblong-lanceolate, 6–10 × 2–3.5 cm, leathery, glabrous, secondary veins (4–)6–10 pairs, ± ascending, fine veins raised abaxially, ± impressed adaxially, base broadly cuneate, slightly obtuse, margin ?plane, undulate-crenate, apex acuminate. Inflorescences racemose, 3.5–4 cm, glabrous; bud scales persistent, many flowered; bracts caducous, ca. 7 mm. Pedicel 2–2.5 mm, glabrous, thickened upwards. Hypanthium ca. 1 mm, glabrous, with several small, rounded verrucae; calyx lobes triangular, ca. 1 mm. Corolla tubular-urceolate, 4–5 mm, glabrous; lobes ca. 0.5 mm. Filaments ca. 1 mm, glabrous; anthers ca. 3.5 mm, without spurs; tubules rather longer than thecae. Berry 10-pseudoloculed (from ovary). Fl. Dec to beginning of next year.

Epiphytic or on rocks on riverbanks; ca. 1400 m. SE Xizang (Mêdog) [?Bhutan, NE India].

52. Vaccinium kingdon-wardii Sleumer, Bot. Jahrb. Syst. 71: 477. 1941.

纸叶越桔 zhi ye yue ju

Shrubs evergreen, terrestrial or epiphytic, 2–3 m tall, glabrous. Twigs angled, with few persistent bud scales. Leaves 5- or 6-pseudoverticillate; petiole ca. 2 mm; leaf blade elliptic or oblong-lanceolate, 4–8(–14) × 2–5 cm, papery, secondary veins more than 10 pairs, fine veins raised abaxially, impressed adaxially, base cuneate or broadly cuneate, margin obtusely dentate, apex acute to acuminate. Inflorescences racemose, to 5 cm, with persistent bud scales, many flowered; bracts caducous, oblong-ovate, fimbrillate. Pedicel 2–3 mm, thickened upwards. Hypanthium with several small, rounded verrucae; calyx lobes triangular, ca. 1.5 mm. Corolla cream-colored or greenish, tubular, ca. 5 mm; lobes ca. 0.5 mm. Filaments ca. 1.5 mm, glabrous; anthers ca. 2.5 mm, without spurs; tubules ca. as long as thecae. Immature berry 10-pseudoloculed, purple, glabrous. Fl. Nov–Dec, fr. Apr–May of next year.

● *Pinus* forests, sometimes epiphytic; 1800–3300 m. SE Xizang (Bomi, Mêdog).

53. Vaccinium vacciniaceum (Roxburgh) Sleumer, Bot. Jahrb. Syst. 71: 479. 1941.

小轮叶越桔 xiao lun ye yue ju

Shrubs evergreen, terrestrial or epiphytic, ca. 0.5 m tall. Twigs rounded, densely shortly setose, glabrescent; persistent bud scales few, oblong-lanceolate. Leaves 5–8-pseudoverticillate; petiole 1–4 mm; leaf blade oblong-lanceolate, 3.5–5 × 0.9–1.4 cm, papery, glabrous, secondary veins 7–11 pairs, spreading, secondary and fine veins raised on both surfaces, base cuneate or obtuse to narrowly rounded, margin plane, sparsely serrate, apex narrowly acute to acuminate to 1 cm. Inflorescences racemose or corymbose-racemose, 1.5–6 cm, glabrous or sparsely glandular hairy, with persistent bud scales, many flowered; bracts caducous, narrowly triangular, ca. 3 mm. Pedicel 5–9 mm, glabrous, thickened upwards. Hypanthium 1–1.5 mm, glabrous; calyx lobes triangular, ca. 1 mm. Corolla greenish yellow, urceolate, 4–6 mm, glabrous; lobes ca. 0.6 mm. Filaments 1–2 mm, glabrous; anthers ca. 4 mm, without spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed (from ovary). Fl. Apr.

Evergreen forests, sometimes epiphytic on trees, mountain valleys; 1200–2400(–2700 m) m. SE Xizang [Bhutan, NE India, Myanmar, Nepal, Sikkim].

1a. Corolla tube pubescent adaxially especially towards mouth; petiole 2–4 mm; leaf blade cuneate at base ..... 53a. subsp. *vacciniaceum*

1b. Corolla tube glabrous adaxially; petiole 1–2 mm; leaf blade narrowly rounded at base ..... 53b. subsp. *glabritubum*

53a. Vaccinium vacciniaceum subsp. **vacciniaceum**

小轮叶越桔(原亚种) xiao lun ye yue ju (yuan ya zhong)

Ceratostema vacciniaceum Roxburgh, Fl. Ind., ed. 1832, 2: 412. 1832; *Agapetes serrata* G. Don; *A. vacciniacea* (Roxburgh) Dunal; *Epigynium serratum* (G. Don) Klotzsch; *Gaylussacia serrata* (G. Don) Lindley; *Vaccinium serratum* (G. Don) Wight.

Petiole 2–4 mm; leaf blade cuneate at base. Corolla tube pubescent adaxially especially towards mouth. 2*n* = 24.

Evergreen forests, sometimes epiphytic on trees; 2300–2400 m. SE Xizang (Mêdog) [NE India, Myanmar, Nepal].

53b. Vaccinium vacciniaceum subsp. **glabritubum** P. F. Stevens, J. Arnold Arbor. 66: 487. 1985.

秃冠小轮叶越桔 tu guan xiao lun ye yue ju

Petiole 1–2 mm; leaf blade narrowly rounded at base. Corolla tube glabrous adaxially.

Mountain valleys; 1200–1800(–2700 m). SE Xizang (Cona) [Bhutan, NE India, Nepal, Sikkim].

54. Vaccinium tenuiflorum R. C. Fang, Novon 9: 178. 1999.

狭花越桔 xia hua yue ju

Shrubs or climbers, evergreen. Twigs angled, pubescent and shortly glandular setose, becoming scabrous; persistent bud scales scattered, lanceolate. Leaves 9- or 10-pseudoverticillate; petiole 1–2 mm, pubescent; leaf blade olivaceous abaxially, drying dull green adaxially, lanceolate to oblong-lanceolate, 4–11 × 0.9–2 cm, leathery, when young puberulous on midvein, secondary veins 12 or 13 pairs, fine veins raised abaxially, base narrowly cuneate, ± rounded, margin recurved, sparsely serrate, apex acuminate. Inflorescences racemose, 5–6 cm, densely pubescent, with persistent bud scales, many flowered; bracts lanceolate, 2–3 mm, puberulous, ciliolate. Pedicel 5–6 mm, slender, densely pubescent, slightly thickened upwards. Hypanthium densely pubescent; calyx lobes triangular, ± pubescent. Corolla white, narrowly tubular, 4–5 mm, glabrous except for 5 pubescent ridges; lobes triangular, ca. 0.6 mm. Filaments ca. 2 mm, glabrous; anthers ca. 4 mm, papillate, without spurs; tubules longer than thecae. Berry subglobose, ca. 3 mm in diam. Fl. Dec, fr. Apr.

● Forests; ca. 1800 m. SE Xizang (Mêdog).

55. Vaccinium leucobotrys (Nuttall) G. Nicholson, Ill. Dict. Gard. 4: 130. 1886.

白果越桔 bai guo yue ju

Epigynium leucobotrys Nuttall, Bot. Mag. 85: t. 5103. 1859; *Vaccinium serratum* (G. Don) Wight var. *leucobotrys* (Nuttall) C. B. Clarke.

Shrubs evergreen, terrestrial or epiphytic, 0.5–1 m tall, with inflated root tubers. Twigs rounded, densely puberulous and brown setulose, scabrous, glabrescent; persistent bud scales lanceolate. Leaves 4–6-pseudoverticillate; petiole very short or leaves subsessile; leaf blade oblong or oblong-ovate, 3–5(–7) × 1.8–3 cm, papery, glabrous, secondary veins spreading, 7–9, secondary and fine veins raised abaxially, slightly raised adaxially, base rounded to slightly cordate, margin slightly recurved, denticulate, apex acute to acuminate. Inflorescences racemose, 2–3 cm, glabrous, with persistent bud scales, many flowered; bracts caducous, to 6 mm. Pedicel 2–3 mm. Hypanthium 0.8–1.2 mm, glabrous; calyx lobes triangular, 1–1.3 mm. Corolla white to greenish white, urceolate, ca. 5 mm, glabrous; lobes ca. 0.5 mm. Filaments ca. 0.5 mm, glabrous; anthers ca. 3 mm, without spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, white, slightly depressed, 5–7 mm in diam.; pedicel red, clavate, (0.7–)1–1.2 cm, thickened upwards. Fl. Mar–Apr, fr. May–Aug.

Evergreen forests, sometimes epiphytic on trees, rocks; 2100–2800 m. SE Xizang, NW Yunnan [NE India (Assam), Myanmar].

56. Vaccinium bulleyanum (Diels) Sleumer, Bot. Jahrb. Syst. 71: 478. 1941.

灯台越桔 deng tai yue ju

Agapetes bulleyana Diels, Notes Roy. Bot. Gard. Edinburgh 5: 294. 1912; *A. bulleyana* var. *tenuifolia* J. Anthony.

Shrubs evergreen, 1.2–2.5 m tall. Twigs rounded, pubescent, glabrescent, with scattered rounded lenticels; persistent bud scales scattered. Leaves 4–6-pseudoverticillate; petiole very short or leaves subsessile; leaf blade oblong or oblanceolate-oblong, 7–11 × 1.5–3.2 cm, leathery, glabrous, secondary veins 9–11 pairs, strongly raised abaxially, secondary and fine veins inconspicuous adaxially, base narrowly rounded, margin plane, cartilaginous, sparsely callous-serrate, apex acute. Inflorescences from defoliate axils, corymbose-racemose, 2–6 cm, glabrous, many flowered in upper half; bracts lanceolate-subulate, ca. 3 mm. Pedicel 1–1.5 cm. Calyx ca. 2 mm, glabrous; lobes 2.5–3.5 mm. Corolla greenish yellow, tubular-urceolate, 5–9 mm, glabrous; lobes ca. 1 mm. Filaments ca. 1 mm, glabrous; anthers ca. 4.5 mm, without spurs; tubules ca. 1.5 × as long as thecae. Berry 10-pseudoloculed (from ovary). Fl. Mar, fr. after Apr.

● Shaded situations in mountain valleys; 2000–2400 m. W Yunnan.

57. Vaccinium scopulorum W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 135. 1916.

岩生越桔 yan sheng yue ju

Shrubs evergreen, terrestrial or epiphytic, 1.2–2(–5) m tall, with inflated root tubers. Twigs rounded to angled, densely brown setose-hispid or glandular setose, glabrescent, scabrous, densely punctiform-lenticellate; persistent bud scales scattered, lanceolate. Leaves quite dense; petiole very short or leaves subsessile; leaf blade lanceolate or oblanceolate, 2.5–4.5 × 0.6–1.7 cm, papery, glabrous or adaxially puberulous at base of midvein, secondary veins 5–7 pairs, secondary and fine veins raised on both surfaces, base cuneate, margin plane, sparsely serrulate,

apex acute or slightly obtuse, mucronulate. Inflorescences from defoliate to upper foliate axils, racemose, 2–5 cm, slender, glabrous, with persistent bud scales, ca. 5-flowered; bracts caducous, ovate-lanceolate, 1.5–2 mm, glandular ciliate. Pedicel 0.8–1.2 cm, glabrous. Hypanthium 0.8–1.3 mm, glabrous; calyx lobes ovate-triangular, 0.8–1 mm. Corolla greenish white or greenish yellow, urceolate, ca. 5 mm, glabrous; lobes reflexed, ca. 0.5 mm. Filaments ca. 1 mm, glabrous; anthers ca. 4 mm, without spurs; tubules ca. 2 × as long as thecae. Berry 10-pseudoloculed, 4–5 mm in diam. Fl. Mar–Apr, fr. May–Aug.

Montane forests, sometimes epiphytic on trunks of old trees, rocks; 1500–3300 m. W Yunnan [Bhutan, Myanmar].

58. Vaccinium papulosum C. Y. Wu & R. C. Fang, Acta Bot. Yunnan. 9: 388. 1987.

瘤果越桔 liu guo yue ju

Shrubs evergreen, ca. 1 m tall, few branched, glabrous. Twigs rounded, when older strongly white lenticellate; persistent bud scales few. Leaves scattered; petiole 2–6 mm; leaf blade rhombic-elliptic or oblong-lanceolate, 12–18.5 × 3.5–9 cm, thinly leathery, glabrous, secondary veins 8–14 pairs, fine veins slightly raised on both surfaces, base cuneate, margin sparsely obtusely dentate, with 1 basal gland per side, apex acute or acuminate. Inflorescences from foliate or defoliate axils, racemose, 2–3.5 cm, slender, many secund flowered; bracts unknown. Pedicel 6–7 mm. Hypanthium with several small, rounded verrucae; calyx lobes triangular, ca. 0.5 mm. Corolla yellow, urceolate, ca. 5 mm; lobes small. Filaments ca. 0.7 mm; anthers ca. 4.5 mm, without spurs; tubules ca. 2 × as long as thecae. Immature berry verruculose. Fl. Apr–May.

● Evergreen forests; 700–1900 m. SE Xizang (Mêdog).

59. Vaccinium subdissitifolium P. F. Stevens, J. Arnold Arbor. 66: 484. 1985.

梯脉越桔 ti mai yue ju

Vaccinium scalarinervium C. Y. Wu & R. C. Fang; *V. vacciniaceum* (Roxburgh) Sleumer var. *hispidum* (C. B. Clarke) Sleumer; *V. venosum* Wight var. *hispidum* C. B. Clarke.

Shrubs evergreen, usually epiphytic, 0.4–2 m tall. Twigs angled, scabrous, dark brownish hispid; persistent bud scales few. Leaves ± scattered; petiole ca. 2 mm; leaf blade oblong, oblong-obovate, or oblong-lanceolate, 4.5–6(–10) × 1.5–2(–4) cm, papery or leathery, secondary veins 6–10 pairs, fine veins raised abaxially, flat adaxially, base broadly cuneate to narrowly rounded, margin plane, obtusely dentate, apex acute or shortly acuminate. Infloresences racemose, 5–15 cm, with persistent bud scales, many flowered; bracts ovate-lanceolate, ca. 3.5 mm. Pedicel 1–1.5 cm. Hypanthium ca. 1 mm, glabrous, with several small, rounded verrucae; calyx lobes triangular, less than 1 mm. Corolla greenish yellow, urceolate, ca. 6 mm, 5-angled, glabrous; lobes ca. 0.5 mm. Filaments 0.8–1 mm, glabrous; anthers ca. 3 mm, without spurs; tubules to 1.5 × as long as thecae. Berry 10-pseudoloculed, greenish white, globose, ca. 3 mm in diam. Fl. Aug, fr. Mar–Apr of next year.

Evergreen forests, usually epiphytic on trees; 1500–1800 m. SE Xizang (Mêdog) [Bhutan, NE India (Assam), Sikkim].

60. Vaccinium lanigerum Sleumer, Bot. Jahrb. Syst. 71: 443. 1941.

羽毛越桔 yu mao yue ju

Shrubs evergreen, usually epiphytic, ca. 2 m tall, sparsely branched. Twigs terete, densely brown feathery-setiferous, glabrescent; bud scales inconspicuous. Leaves scattered; petiole 2–3 mm, indumentum same as stem; leaf blade oblong-ovate to broadly ovate, 8.5–11 × 3–4.5 cm, somewhat papery, abaxially densely brown feathery-setiferous, adaxially pubescent to glabrescent, secondary veins 2–4 pairs, strongly ascending, slightly raised (obscured by hairs) on both surfaces, base rounded or broadly cuneate, margin slightly recurved, entire, apex abruptly acuminate to 1.5–3 cm. Inflorescences fasciculate, 2- or 3-flowered; bracts persistent, many, imbricate, brown-yellow or brown-red, oblong, 7–10 × 5–7 mm, leathery, densely appressed pubescent. Pedicel ca. 1 mm or flowers subsessile. Hypanthium ca. 1.5 mm, glabrous; calyx lobes narrowly triangular, 2–3 mm, abaxially hispid and densely ciliate. Corolla greenish brown, subcampanulate, ca. 7 mm, glabrous; lobes reflexed, ca. 1/2 as long as tube, lanceolate, abaxially ?glabrous, adaxially ?hispid. Filaments ca. 1.5 mm, puberulous; anthers ca. 5 mm, with 2 spreading spurs; tubules 1.5–2 × as long as thecae. Berry 10-pseudoloculed, dark purple or red, included in bracts.

Evergreen forests, usually epiphytic on trees, rocks; 1200–1400 m. SE Xizang (Mêdog), NW Yunnan (Dulongjiang, Gongshan) [Myanmar].

61. Vaccinium cuspidifolium C. Y. Wu & R. C. Fang, Acta Bot. Yunnan. 9: 390. 1987.

凸尖越桔 tu jian yue ju

Shrubs evergreen. Twigs ?angled, densely pubescent; bud scales inconspicuous. Leaves rather dense; petiole ca. 2 mm, pubescent to glabrous; leaf blade elliptic, 2.5–3.8 × 1.2–1.8 cm, leathery, abaxially glabrous, adaxially densely pubescent on midvein, glabrescent, secondary veins 6 or 7 pairs, fine veins ± inconspicuous abaxially, subprominent adaxially, base broadly cuneate, margin revolute, entire, with 1 basal gland per side, apex abruptly acute. Inflorescences racemose, 2–3 mm, pubescent and glandular pilose, 2- or 3-flowered; bracts caducous. Pedicel 3–4 mm, pubescent and glandular pilose. Perianth unknown. Stamens persistent; filaments ca. 1 mm, subglabrous; anthers ca. 2.5 mm, with 2 spreading spurs; tubules 1.5–2 × as long as thecae. Immature berry glabrous; persistent calyx lobes triangular-lanceolate, ca. 2 mm. Fr. Jul.

● Montane forests. NW Guangxi.

62. Vaccinium lamprophyllum C. Y. Wu & R. C. Fang, Acta Bot. Yunnan. 9: 390. 1987.

亮叶越桔 liang ye yue ju

Shrubs evergreen, many branched. Twigs ?terete, densely pubescent, glabrescent; bud scales inconspicuous. Leaves dense; petiole ca. 2 mm, initially pubescent, glabrescent; leaf blade oblong-obovate, 2–3 × 0.9–1.4 cm, leathery, abaxially sparsely

appressed-setose, adaxially nitid, puberulous only on midvein, secondary veins ca. 3 pairs, these and fine veins inconspicuous abaxially, hardly raised adaxially, base broadly cuneate, margin plane, entire, with 1 basal gland per side, cartilaginous, apex acute. Inflorescences racemose, 1.2–2 cm, glabrous, few flowered; bracts unknown. Pedicel ca. 7 mm, glabrous. Flowers unknown. Immature berry glabrous; persistent calyx lobes triangular-lanceolate, 2.5–3 mm. Fl. and fr. Jun.

● Montane dwarf forests; ca. 1200 m. W Guangdong (Fengkai).

63. Vaccinium conchophyllum Rehder, J. Arnold Arbor. 11: 167. 1930.

贝叶越桔 bei ye yue ju

Shrubs evergreen, sometimes epiphytic, 0.2–0.3 m tall. Twigs terete, spreading pilose, glabrescent; bud scales inconspicuous. Leaves dense; petiole 1–2 mm; leaf blade broadly ovate or obovate, 8–14 × 6–9 mm, thickly leathery, abaxially glabrous, adaxially pilose or only on midvein, secondary veins 3 or 4 pairs, ascending, inconspicuous abaxially, inconspicuous or impressed adaxially, base broadly cuneate to rounded, margin revolute, entire, with 1 basal gland per side, initially ciliate, glabrescent, apex rounded. Inflorescences racemose, ca. 1 cm, glabrous, 4–6-flowered; bracts caducous, oblong, ca. 5 mm, glabrous. Pedicel 1–2 mm. Hypanthium ca. 0.6 mm, glabrous; calyx lobes triangular-ovate, 1–1.5 mm. Corolla red, urceolate, 4–5 mm, glabrous; lobes reflexed, triangular, ca. 0.5 mm. Filaments ca. 1 mm, pilose; anthers ca. 2.5 mm, with 2 spurs, tubules slightly longer than thecae. Immature berry 10-pseudoloculed, greenish, with a slight bloom. Fl. Apr–May, fr. Aug–Sep.

● Rocks in forests, sometimes epiphytic on trees; 1300–2800 m. C and SE Sichuan.

64. Vaccinium sinicum Sleumer, Bot. Jahrb. Syst. 71: 440. 1941.

广西越桔 guang xi yue ju

Shrubs evergreen, sometimes epiphytic, 0.4–2 m tall, many branched. Twigs angled, densely spreading pubescent, glabrescent; bud scales inconspicuous. Leaves dense; petiole ca. 2 mm; leaf blade obovate or oblong-obovate, 0.9–2 × 0.8–1.1 cm, leathery, abaxially glabrous, adaxially puberulous on midvein, otherwise glabrous, secondary veins ca. 3 pairs, inconspicuous abaxially, ± curved adaxially, base cuneate, margin revolute, entire, with 1 basal gland per side, apex rounded, mucronate. Inflorescences racemose, 0.6–1.2 cm, with hairs or not, 3–7-flowered; bracts caducous, oblong, 6–7 mm. Pedicel 2–3 mm, glabrous. Hypanthium ca. 1 mm, glabrous; calyx lobes triangular, 1.5–2 mm, glabrous, apex obtuse. Corolla white, campanulate, ca. 5 mm, abaxially glabrous; lobes very short. Filaments ca. 1 mm, pilosulose or subglabrous; anthers ca. 2.8 mm, with 2 spreading spurs; tubules ca. 1.5 × as long as thecae. Berry 10-pseudoloculed, dark purple, subglobose, 3–6 mm in diam. Fl. Jun, fr. Jul–Nov.

● Forests, sometimes epiphytic on *Quercus,* rocks; 1200–1700 m. Fujian, Guangdong, Guangxi, Hunan.

65. Vaccinium brevipedicellatum C. Y. Wu ex W. P. Fang & Z. H. Pan, Acta Phytotax. Sin. 19: 107. 1981.

短梗乌饭 duan geng wu fan

Shrubs or small trees, evergreen, 1–3(–8) m tall, many branched. Twigs angled, densely pubescent, glabrescent. Leaves dense; petiole 1.5–2 mm, pubescent; leaf blade elliptic, 1.5–2 (–3) × 0.8–1.2 cm, leathery, glabrous or adaxially pubescent on midvein, secondary veins 1 or 2 pairs, ascending, inconspicuous abaxially, slightly raised adaxially, base cuneate or broadly cuneate, margin revolute, entire, with 1 basal gland per side, apex obtuse-acuminate. Inflorescences racemose, ca. 2 cm, pubescent, 1- or 2(or 3)-flowered; bracts caducous. Pedicel ca. 1 mm, pubescent. Hypanthium glabrous; calyx lobes triangular-lanceolate, ca. 1.5 mm. Corolla pale green, campanulate, 3–4 mm; lobes reflexed. Filaments ca. 0.5 mm, pubescent; anthers ca. 2.3 mm, with 2 short spurs; tubules ca. 2 × as long as thecae. Berry 10-pseudoloculed, red to purple-black, 4–5 mm in diam. Fl. May, fr. Jun–Nov.

● Forests on calcareous mountains; 1000–1600 m. SE Yunnan.

66. Vaccinium craspedotum Sleumer, Bot. Jahrb. Syst. 71: 439. 1941.

长萼越桔 chang e yue ju

Vaccinium craspedotum var. *brevipes* C. Y. Wu.

Shrubs evergreen, usually epiphytic, 0.5–1.2 m tall. Twigs rounded, densely hispid, glabrescent, rough; bud scales inconspicuous. Leaves dense; petiole ca. 1 mm, indumentum same as stem; leaf blade ovate, 1.3–2.4 × 0.8–1.4 cm, leathery, subglabrous, secondary veins ca. 3 pairs, ascending, inconspicuous on both surfaces, fine veins inconspicuous, base rounded or broadly cuneate, margin plane, entire, with 1 basal gland per side, apex obtuse, emarginate. Inflorescences racemose, ca. 1 cm, with several ovate scales at base, 1–3-flowered; bracts ca. 3 mm. Pedicel 5–6 mm or flowers subsessile, densely hispid. Hypanthium ?ca. 7 mm, densely hispid; calyx lobes lanceolate-subulate, 4–5 mm, pilose. Corolla white, campanulate, ca. 4 mm, sparsely puberulous or subglabrous; lobes erect. Filaments ca. 2 mm, pubescent; anthers ca. 2 mm with 2 distinct spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, globose, 5–6 mm in diam., with hairs. Fl. Apr–May, fr. Aug–Nov.

● Dense forests, usually epiphytic on trees, rocky hills; 1200–1900 m. SE Yunnan (Pingbian).

67. Vaccinium sciaphilum C. Y. Wu, Acta Bot. Yunnan. 9: 392. 1987.

林生越桔 lin sheng yue ju

Shrubs evergreen, usually epiphytic, 0.5–0.6 cm tall. Roots with beadlike swellings. Twigs terete, densely pubescent, glabrescent; bud scales caducous. Leaves dense; petiole ca. 2 mm, pubescent; leaf blade obovate, elliptic, or broadly ovate, 1.3–2 × 0.6–1(–1.4) cm, leathery, abaxially sparsely brown glandular hispid, adaxially glabrous, secondary veins 2 or 3 pairs from basal half, fine veins inconspicuous, base cuneate to broadly cuneate, margin revolute, entire, with 1 basal gland per side, apex rounded, emarginate. Flowers solitary or sometimes 2 together; bracts unknown. Pedicel ca. 3 mm, densely pubescent. Hypanthium densely hispid; calyx lobes triangular-ovate, ca. 2 mm,

densely pubescent. Corolla greenish purple, broadly campanulate, ca. 5 mm, glabrous, lobed to middle; lobes reflexed at apex, oblong. Filaments ca. 1 mm, glabrous; anthers ca. 1.5 mm, with 2 subspreading spurs; tubules ca. as long as thecae. Berry 5–6 mm in diam., pubescent. Fl. May, fr. Sep–Nov.

● Evergreen forests, usually epiphytic on trees; 1700–2200 (–2800) m. SC and SE Yunnan.

68. Vaccinium papillatum P. F. Stevens, J. Arnold Arbor. 66: 479. 1985.

粉果越桔 fen guo yue ju

Agapetes poilanei Dop.

Shrubs evergreen, usually epiphytic, 1–2 m tall. Roots with swellings. Twigs terete, pubescent to glabrous; bud scales inconspicuous. Leaves dense; petiole ca. 2 mm; leaf blade elliptic, 1.5–2.6 × 0.9–1.2 cm, thickly leathery, glabrous, adaxially drying rugose, secondary veins 1 or 2 pairs near base, ascending, raised abaxially, impressed adaxially, base broadly cuneate, margin revolute, entire, with 2 basal glands per side, apex rounded or obtuse, emarginate. Inflorescences racemose, 1.5–2.5 cm, glabrous, 3–6-flowered; bracts ovate, ca. 2 mm. Pedicel 0.5–1 cm, slender, glabrous. Hypanthium 1–1.2 mm, pubescent; calyx lobes triangular, 1.5–2.1 mm. Corolla purplish red or pink, campanulate, 4.5–6 mm, glabrous; lobes reflexed, ca. 1.5 mm. Filaments 0.5–1 mm, pilose; anthers ca. 4 mm, with 2 short spurs; tubules ca. 1.5 × as long as thecae. Berry 10-pseudoloculed, ca. 5 mm in diam., with a bloom; fruit stalk ca. 1.3 cm, stout. Fl. Apr–May, fr. Sep–Nov.

Evergreen forests, forests or thickets on calcareous mountains, usually epiphytic on trees; (1000–)1400–2000 m. SE Yunnan [W Vietnam].

69. Vaccinium emarginatum Hayata, J. Coll. Sci. Imp. Univ. Tokyo 25(19): 149. 1908.

凹顶越桔 ao ding yue ju

Agapetes emarginata (Hayata) Nakai.

Shrubs evergreen, epiphytic. Twigs inconspicuously angled; bud scales inconspicuous. Leaves scattered; petiole 2–3 mm; leaf blade obovate-elliptic, 2.5–3(–5) × 0.9–2 cm, thickly leathery, abaxially brownish, adaxially usually glaucous, midvein prominent abaxially, raised adaxially, secondary veins ca. 2 pairs, barely evident, base cuneate, margin revolute, entire, with 1 basal gland per side, apex rounded-emarginate. Inflorescences racemose, 0.2–1(–1.5) cm, glabrous, 2–5-flowered; bracts ca. 1.5 mm. Pedicel angled-winged, 5–10 mm, pubescent. Hypanthium ca. 1 mm, glabrous or pubescent; calyx lobes lanceolate, 2–2.2 mm, ciliolate or pubescent. Corolla white, campanulate, 5–6 mm, glabrous; lobes reflexed, ca. 1.4 mm. Filaments ca. 1 mm, puberulous; anthers ca. 4 mm, with 2 spreading spurs; tubules ca. 2 × as long as thecae. Berry 10-pseudoloculed, ca. 5 mm in diam. Fl. Apr–May.

● Evergreen forests, epiphytic on trees; 1200–2000(–3500) m. Taiwan.

70. Vaccinium chengiae W. P. Fang, Icon. Pl. Omei. 1(1): t. 39. 1942 [*"chengae"*].

四川越桔 si chuan yue ju

Shrubs evergreen, sometimes epiphytic, 0.5–1.5 m tall. Twigs angled, pilose, glabrescent; bud scales inconspicuous. Leaves dense; petiole 1–2 mm, pilose to glabrescent; leaf blade elliptic or elliptic-oblong, 1.7–2.2 × 1–1.4 cm, leathery, glabrous, abaxially glaucous, adaxially drying rugose, secondary veins inconspicuous, base broadly cuneate to rounded, margin revolute, entire, with 1 basal gland per side, apex obtuse to rounded, retuse. Inflorescences racemose, to 5 mm, subglabrous, 2–4-flowered; bracts ca. 1 mm, ovate or ovate-triangular, sparsely ciliate. Pedicel 3–5 mm, subglabrous or villous. Hypanthium glabrous or villous; calyx lobes triangular-ovate, 1.5–2 mm, ciliate. Corolla white or yellowish white, with pinkish stripes, campanulate, 5–6 mm, glabrous. Filaments ca. 1 mm, sparsely pubescent; anthers ca. 2 mm, with 2 spreading spurs; tubules ca. 2 × as long as thecae. Berry purplish, ca. 6 mm in diam. Fl. May, fr. Nov.

● Thickets, rocky places on slopes, sometimes epiphytic on trees; 1000–1600 m. S and SC Sichuan.

1a. Pedicel and calyx subglabrous ..... 70a. var. *chengiae*
1b. Pedicel and calyx villous ..... 70b. var. *pilosum*

70a. Vaccinium chengiae var. **chengiae**

四川越桔(原变种) si chuan yue ju (yuan bian zhong)

Pedicel and calyx subglabrous.

● Thickets; ca. 1200 m. SC Sichuan (Emei Shan).

70b. Vaccinium chengiae var. **pilosum** C. Y. Wu, Acta Bot. Yunnan. 9: 393. 1987.

毛萼四川越桔 mao e si chuan yue ju

Pedicel and calyx villous.

● Rocky places on slopes, sometimes epiphytic on trees; 1000–1600 m. S and SC Sichuan (Emei Shan, Hongya, Leibo).

71. Vaccinium saxicola Chun ex Sleumer, Bot. Jahrb. Syst. 71: 439. 1941.

石生越桔 shi sheng yue ju

Shrubs evergreen, 13–17 cm. Lower stem procumbent. Twigs terete, pubescent, glabrescent; bud scales inconspicuous. Leaves dense; petiole 1–2 mm, glabrous; leaf blade oblong-obovate, 1.9–2.4 × 1–1.3 cm, thickly leathery, glabrous, secondary veins slightly raised abaxially, fine veins impressed, base cuneate or broadly cuneate, margin revolute, entire, basal glands inconspicuous, apex rounded to obtuse, retuse. Inflorescences racemose, 4–5 mm, glabrous, 1- or 2-flowered; bracts ovate, 1–1.2 mm, glabrous, apex acute. Pedicel ca. 5 mm, subglabrous. Hypanthium sparsely pubescent; calyx limb divided to 1/2; calyx lobes triangular, ca. 2 mm. Corolla white, campanulate, 6–7 mm, glabrous, shortly 5-lobed. Filaments ca. 1.5 mm, puberulous; anthers ca. 6.5 mm, with 2 distinct spurs; tubules ca. 2 × as long as thecae. Immature berry 10-pseudoloculed; pedicel 8–9 mm. Fl. Mar–Apr, fr. May–Nov.

● Rocks. W Guangdong (Xinyi).

72. Vaccinium triflorum Rehder, J. Arnold Arbor. 15: 287.

1934.

三花越桔 san hua yue ju

Pieris buxifolia H. Léveillé & Vaniot, Bull. Soc. Bot. France 53: 203. 1906; *Vaccinium buxifolium* (H. Léveillé & Vaniot) H. Léveillé (1913), not Gilibert (1782), nor Salisbury (1805–1806), nor J. D. Hooker (1852).

Shrubs evergreen, 0.6–1 m tall. Twigs terete, pubescent, glabrescent; bud scales inconspicuous. Leaves dense; petiole 1–2 mm, pubescent; leaf blade elliptic, 1.4–2.3 × 0.7–1.4 cm, leathery, abaxially glabrous or pilose on midvein, adaxially glabrous, drying convex and rugose, secondary veins 1 pair, fine veins inconspicuous, base cuneate to broadly cuneate or sometimes rounded, margin revolute, entire, with 1(or 2) small basal glands per side, apex rounded, often retuse. Inflorescences from older axils, racemose, 3–4 mm, pubescent, with persistent bud scales, (1- or)2- or 3(–5)-flowered; bracts caducous, ca. 1.5 mm. Pedicel 6–9 mm, pilose. Hypanthium ca. 1 mm, pubescent or glabrous; calyx lobes triangular-lanceolate, 1.5–2 mm. Corolla dark red, campanulate, ca. 5 mm, 5-veined, puberulous on veins; lobes ca. 2 mm. Filaments 1–1.5 mm, pilose; anthers ca. 4.5 mm, with 2 short erect spurs; tubules ca. 2 × as long as thecae. Berry 10-pseudoloculed (from flower). Fl. Apr–Jun.

Forests on calcareous mountains; 1700–1800 m. S Guizhou, SE Yunnan [N Vietnam].

73. Vaccinium pseudotonkinense Sleumer, Bot. Jahrb. Syst. 71: 440. 1941.

腺萼越桔 xian e yue ju

Shrubs evergreen, sometimes epiphytic, 0.6–1 m tall. Twigs terete, pubescent, glabrescent; bud scales inconspicuous. Leaves dense; petiole 1–2 mm; leaf blade elliptic or obovate, 1.5–2 × 0.8–1.1 cm, leathery, both surfaces initially pubescent, adaxially drying rugose, secondary veins 2 or 3 pairs, inconspicuous, base cuneate, margin revolute, entire, basal glands 1 or 2, apex rounded. Inflorescences from older axils, racemose, ca. 3 mm, 1- or 2-flowered; bracts ovate, ca. 2 mm, ciliate. Pedicel ca. 4 mm, glabrous. Hypanthium glabrous, rarely pubescent; calyx lobes triangular-lanceolate, ca. 2 mm, glabrous or pubescent, ciliate and glandular at margin. Corolla greenish brown, 5–7 mm. Filaments 1–1.5 mm, pilose; anthers ca. 4.5 mm, with 2 erect spurs; tubules 1.5–2 × as long as thecae. Berry 10-pseudoloculed, yellowish green to pink, subglobose, ca. 7 mm in diam. Fl. Jul–Aug, fr. Nov.

Evergreen forests, sometimes epiphytic on trees; 1800–2200 m. E Yunnan [N Vietnam].

74. Vaccinium spiculatum C. Y. Wu & R. C. Fang, Acta Bot. Yunnan. 9: 393. 1987.

小尖叶越桔 xiao jian ye yue ju

Shrubs evergreen, epiphytic, much branched. Twigs angled, densely dark brown hirsute, glabrescent; bud scales caducous. Leaves dense; petiole 0.5–1 mm; leaf blade elliptic or ovate-elliptic, 7–10 × 4–6 mm, papery or leathery, glabrous, secondary veins 1–3 pairs, from basal half, base broadly cuneate, margin slightly revolute, with 3–5 teeth at upper part of each side, apex acute, apiculate. Flowers solitary, axillary; bracts unknown. Pedicel ca. 0.5 mm. Flowers 4-merous. Hypanthium white pubescent; calyx lobes triangular-lanceolate, ca. 1 mm. Corolla white, tubular-urceolate, ca. 5.5 mm, densely pubescent; lobes minute. Stamens 4; filaments 1–1.5 mm, glabrous; anthers 2–2.5 mm, without spurs; tubules ca. 1/2 as long as thecae. Berry bluntly ellipsoid, 2–3 mm in diam. Fl. Nov–Jan of next year, fr. Feb.

● Evergreen forests, epiphytic on trees; 600–2000 m. SE Xizang (Mêdog).

75. Vaccinium sikkimense C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 451. 1882.

荚蒾叶越桔 jia mi ye yue ju

Vaccinium oreotrephes W. W. Smith; *V. viburnoides* Rehder & E. H. Wilson.

Shrubs evergreen, 30–70 cm tall, many branched. Twigs angled, densely grayish brown pubescent, glabrescent, with scattered lenticels; bud scales inconspicuous. Leaves rather dense; petiole ca. 3 mm, pubescent; leaf blade oblong or obovate, 2–5 × 0.9–2.7 cm, leathery, adaxially densely pubescent on midvein, otherwise subglabrous on both surfaces, secondary veins 4 or 5 pairs, ascending, with fine veins inconspicuously raised abaxially, impressed adaxially, base cuneate or broadly cuneate, margin plane, with glandular teeth, apex rounded, mucronulate. Inflorescences axillary or terminal, racemose, 1–2 cm, pubescent, ca. 6-flowered; bracts caducous, ovate-orbicular, sometimes leaflike, 0.7–2 cm × 5–8 mm. Pedicel ca. 6 mm, glabrous. Hypanthium ca. 1.5 mm, glabrous; calyx limb divided to 1/2; calyx lobes broadly triangular or undulate, 0.3–0.6 mm. Corolla pinkish, with red limbs, urceolate, ca. 6 mm, glabrous; lobes recurved, ca. 0.8 mm. Filaments 1.3–2 mm, densely spreading pubescent; anthers ca. 2.3 mm, with 2 erect spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, dark blue, 5–9 mm in diam. Fl. Jul, fr. Aug–Nov.

● Mixed forests, forest margins, alpine thickets; 3000–3400 (–4300) m. W Sichuan, SE Xizang, W Yunnan.

76. Vaccinium vitis-idaea Linnaeus, Sp. Pl. 1: 351. 1753.

越桔 yue ju

Vaccinium jesoense Miquel.

Shrubs dwarf, evergreen, 10–30 cm tall, erect or prostrate basally, rhizomatous. Twigs ?terete, pubescent; bud scales inconspicuous. Leaves dense; petiole ca. 1 mm, puberulous; leaf blade elliptic or obovate, 0.7–2 cm × 4–8 mm, leathery, abaxially with appressed glandular hairs, adaxially glabrous or puberulous on midvein, secondary veins 5 or 6 pairs, fine veins inconspicuous on both surfaces, base broadly cuneate, margin revolute, undulate-crenate, apex rounded, mucronulate, or retuse. Inflorescences terminal, racemose, 1–1.5 cm, puberulous, 2–8-flowered; bracts caducous, broadly ovate, ca. 3 mm. Pedicel ca. 1 mm, puberulous; bracteoles ± median. Flowers 4-merous. Hypanthium glabrous; calyx lobes broadly triangular, ca. 1 mm. Corolla white or pink, campanulate, ca. 5 mm; lobes

erect, triangular-ovate, 2–2.5 mm. Filaments ca. 0.5 mm, puberulous; anthers ca. 1.5 mm, without spurs; tubules ca. as long as thecae. Berry 4-loculed, purplish red, 5–10 mm in diam., acidic or slightly bitter. Fl. Jun–Jul, fr. Aug–Sep. 2*n* = 24*.

Betula and *Larix* forest, meadows, alpine grasslands; 900–3200 m. Heilongjiang, Jilin, Nei Mongol, Shanxi, Xinjiang [Japan, Korea, Mongolia, Russia; Europe, North America].

The berries are nutritious, and are especially tasty after overwintering.

77. Vaccinium delavayi Franchet, J. Bot. (Morot) 9: 367. 1895.

苍山越桔 cang shan yue ju

Shrubs evergreen, terrestrial or epiphytic, prostrate, or 0.5–1 m tall, many branched; rootstock swollen. Twigs angled, grayish brown pubescent and brown glandular setose; bud scales inconspicuous. Leaves dense; leaf blade obovate, 0.7–1.5 cm × 4–9 mm, leathery, glabrous, secondary veins ca. 3 pairs, inconspicuous abaxially, impressed adaxially, base cuneate, margin plane, cartilaginous, with 1 basal gland per side, sparsely denticulate or subentire, usually sparsely deciduously glandular ciliate, apex rounded, retuse. Inflorescences pseudoterminal, racemose, 1–3 cm, pubescent and glandular setose, 4–8-flowered; bracts caducous, ovate, 5–6 mm. Pedicel 2–4 mm, pubescent and glandular setose. Hypanthium ca. 1 mm, glabrous; calyx limb divided to 1/2; calyx lobes broadly triangular, ca. 0.8 mm, ciliate. Corolla white or pinkish, urceolate, 3–5 mm, glabrous; lobes erect, ca. 0.7 mm. Filaments ca. 1 mm, subglabrous or retrorse-pilose; anthers ca. 2.3 mm, thecae with 2 spreading spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, dark purple, 4–8 mm in diam. Fl. Mar–May.

Forests, *Tsuga-Rhododendron* forests, sometimes epiphytic on trees, alpine *Rhododendron* thickets, ridges, dry slopes, rocks; 2000–3700(–3800) m. SW Sichuan, Taiwan, SE Xizang, Yunnan [Myanmar].

1a. Filaments subglabrous ..... 77a. subsp. *delavayi*
1b. Filaments retrorse-pilose ..... 77b. subsp. *merrillianum*

77a. Vaccinium delavayi subsp. **delavayi**

苍山越桔(原亚种) cang shan yue ju (yuan ya zhong)

Filaments subglabrous.

Forests, *Tsuga-Rhododendron* forests, sometimes epiphytic on trees, alpine *Rhododendron* thickets, dry slopes, rocks; 2400–3200 (–3800) m. SW Sichuan, SE Xizang, Yunnan [Myanmar].

77b. Vaccinium delavayi subsp. **merrillianum** (Hayata) R. C. Fang, Acta Bot. Yunnan. 9: 394. 1987.

台湾越桔 tai wan yue ju

Vaccinium merrillianum Hayata, J. Coll. Sci. Imp. Univ. Tokyo 25(19): 149. 1908; *Agapetes merrilliana* (Hayata) Nakai; *Vaccinium vitis-idaea* Linnaeus var. *merrillianum* (Hayata) S. S. Ying.

Filaments retrorse-pilose.

● Forests, sometimes epiphytic on trees in high mountains, ridges, sometimes prostrate on rocks; 2000–3700 m. Taiwan.

78. Vaccinium nummularia J. D. Hooker & Thomson ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 451. 1882.

抱石越桔 bao shi yue ju

Vaccinium nummularia var. *oblongifolium* C. Y. Wu & R. C. Fang.

Shrubs evergreen, sometimes epiphytic, 0.5–0.7 m tall, much and diffusely branched. Twigs rounded, pubescent and densely brownish glandular setulose, glabrescent, scabrous; bud scales inconspicuous. Leaves dense; petiole ca. 1 mm, pubescent; leaf blade ovate, ovate-orbicular, or oblong, 1–2.3 × 0.7–1.2 cm, leathery or thinly so, adaxially puberulous on midvein, otherwise glabrous on both surfaces, secondary veins 3 or 4 pairs, veins and fine veins inconspicuous and raised abaxially, impressed adaxially, base rounded, margin revolute, cartilaginous, with 1 or 2 basal glands per side, sparsely denticulate. Inflorescences pseudoterminal, racemose, densely pubescent, 0.6–1.5 cm; bracts caducous, broadly ovate, ca. 4 mm. Pedicel 6–7 mm, glabrous. Hypanthium ca. 0.7 mm, glabrous; calyx lobes broadly triangular or undulate, ca. 0.8 mm, ciliate. Corolla white, pinkish above, urceolate, 5–6 mm; lobes erect or reflexed, 0.5–0.8 mm. Filaments 1.5–2 mm, densely pilose; anthers ca. 2.5 mm, thecae with 2 spreading spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, dark purple. Fl. May, fr. Jul–Aug.

Rocky places in montane forests, sometimes epiphytic, thickets on mountain slopes; 2000–3500 m. SE Xizang, NW Yunnan (Gongshan) [Bhutan, NE India, Myanmar, Nepal, Sikkim].

79. Vaccinium chaetothrix Sleumer, Bot. Jahrb. Syst. 71: 432. 1941.

团叶越桔 tuan ye yue ju

Shrubs evergreen, epiphytic, many diffuse or pendulous branched. Twigs rounded, pubescent and brownish glandular setulose, glabrescent; bud scales inconspicuous. Leaves dense; petiole ca. 1 mm; leaf blade ovate to suborbicular, 4–8 × 3–7 mm, leathery, glabrous, abaxially brown or pale brown, adaxially drying grayish green and rugose, secondary veins 2 or 3 pairs, barely conspicuous, raised abaxially, impressed adaxially, fine veins inconspicuous, base rounded, margin revolute, cartilaginous, sparsely denticulate, apex rounded. Inflorescences pseudoterminal, racemose, setose below, 6–8-flowered; bracts caducous, to 3 mm. Pedicel 6–8 mm, pubescent or glabrous. Hypanthium glabrous; calyx lobes broadly triangular, slightly ciliate. Corolla white, tubular-urceolate, ca. 6.5 mm, glabrous; lobes ca. 0.8 mm. Filaments ca. 1.5 mm, hairy; anthers ca. 3 mm, thecae with 2 spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, dark purple, 6–8 mm in diam. Fl. Jun, fr. Jul–Oct.

Broad-leaved forests, *Abies* or *Tsuga* forests, epiphytic on trees; 2500–3200 m. SE Xizang (Mêdog), NW Yunnan (Gongshan) [NE India (Assam), Myanmar].

80. Vaccinium moupinense Franchet, Nouv. Arch. Mus. Hist. Nat., sér. 2, 10: 43. 1888.

宝兴越桔 bao xing yue ju

Vaccinium sikangense Y. C. Yang.

Shrubs evergreen, epiphytic, 0.5–1.2 m tall, many branched. Twigs rounded, densely grayish pubescent, glabrescent; bud

scales inconspicuous. Leaves dense; petiole 1–2 mm, pubescent; leaf blade elliptic, obovate-elliptic, or obovate-oblong, 0.7–1.7 cm × 4–8 mm, leathery, abaxially glabrous, adaxially drying rugose, sparsely pubescent or only puberulous on midvein, secondary veins ca. 3 pairs, ± ascending, secondary and fine veins conspicuous abaxially only, base cuneate, margin revolute, with inconspicuous obtuse teeth in upper part, apex obtuse to rounded. Inflorescences often pseudoterminal, racemose, 1.5–3 cm, glabrous, 6–15-flowered; bracts caducous, broadly ovate, 5–6 mm. Pedicel 3–4 mm, glabrous. Hypanthium ca. 1.5 mm, glabrous; calyx limb divided to 2/3; calyx lobes broadly triangular, ca. 1 mm. Corolla light purple to rose-pink, urceolate, ca. 4 mm, glabrous; lobes erect or reflexed, ca. 0.8 mm. Filaments ca. 1 mm, hairy; anthers ca. 3 mm, thecae with 2 spreading spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, black or black-purple, ca. 6 mm in diam. Fl. May–Jun, fr. Jul–Oct.

● Epiphytic on *Quercus* or *Tsuga*; (900–)1800–2400 m. Guizhou, WC Sichuan (Baoxing), NE Yunnan.

81. Vaccinium haitangense Sleumer, Bot. Jahrb. Syst. 71: 434. 1941.

海棠越桔 hai tang yue ju

Shrubs dwarf, evergreen. Twigs terete, pubescent or subglabrous; bud scales inconspicuous. Petiole 1–2 mm; leaf blade oblong-elliptic, 2.2–2.6 × 1–1.2 cm, leathery, glabrous, secondary veins 3 pairs, ascending, slightly raised abaxially, impressed adaxially, base broadly cuneate, margin entire, apex gradually attenuate. Inflorescences at branch apices, racemose, 2–3 cm, glabrous, few flowered; bracts caducous, oblong, ciliate. Pedicel ca. 4 mm, glabrous. Hypanthium glabrous; calyx lobes triangular. Corolla pinkish, urceolate, 4–5 mm, glabrous. Filaments 1–1.5 mm, pilose; anthers ca. 3.5 mm, with 2 spurs; tubules slightly longer than thecae. Berry unknown.

● SC Sichuan (Ganluo).

The above description follows that in the protologue.

82. Vaccinium dendrocharis Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 62: 132. 1925.

树生越桔 shu sheng yue ju

Shrubs evergreen, usually epiphytic, 0.3–1(–2.6) m tall, many branched. Twigs angled, densely grayish brown pubescent, glabrescent. Leaves dense; petiole 1–2 mm, pubescent; leaf blade obovate or spatulate, 1–2.2 cm × 4–9 mm, leathery, glabrous or pubescent, secondary veins 2–4 pairs, ascending, raised abaxially, slightly impressed adaxially, or inconspicuous, base cuneate, margin cartilaginous, slightly revolute, entire, with 1 basal gland per side, apex rounded, retuse. Inflorescences terminal, racemose, pubescent or subglabrous, 1–3 cm; bracts caducous or persistent, obovate-elliptic, 6–9 mm, to 1.1–1.6 cm and leaflike at fruiting. Pedicel ca. 3 mm, glabrous; bracteoles lanceolate, 4–5 mm, caducous or persistent and enlarged in fruit. Hypanthium 0.8–1 mm, glabrous; calyx lobes broadly triangular, 0.5–1 mm, densely ciliate or glabrous. Corolla white or pinkish, urceolate, ca. 4.5 mm, glabrous; lobes erect, ca. 0.5 mm. Filaments ca. 1 mm; anthers ca. 2.5 mm, with 2 erect spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, dark purple, 5–8 mm in diam. Fl. May–Jul, fr. Jul–Oct.

Evergreen forests, *Abies* or *Tsuga* forests, mossy *Rhododendron* forests, usually epiphytic on trees, rocks; 2300–3500(–3800) m. SE Xizang, W Yunnan [Myanmar].

83. Vaccinium retusum (Griffith) J. D. Hooker ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 451. 1882.

西藏越桔 xi zang yue ju

Thibaudia retusa Griffith, Not. Pl. Asiat. 4: 300. 1854.

Shrubs dwarf, evergreen, often epiphytic, ca. 30 cm tall. Twigs diffuse, angled, densely pubescent when young, glabrescent. Leaves dense; petiole 2–3 mm, pubescent; leaf blade elliptic or obovate, 2–2.5 × 0.9–1.4 cm, leathery, adaxially puberulous on midvein, otherwise glabrous on both surfaces, secondary veins 2 or 3 pairs, ascending, slightly raised abaxially, inconspicuous adaxially, base cuneate, margin cartilaginous, revolute, entire, with 1 basal gland per side, apex rounded, retuse. Inflorescences pseudoterminal, racemose, 3–5 cm, ca. 12-flowered; rachis densely pubescent to glabrous; bracts ovate-orbicular, ca. 1.1 cm. Pedicel ca. 3 mm, glabrous. Hypanthium ca. 1.3 mm, glabrous; calyx lobes 0.8–1 mm, with marginal hairs. Corolla white, with 5 red stripes abaxially, urceolate, ca. 0.5 mm; lobes small. Stamens shorter than corolla, pilose; filaments ca. 0.5 mm; anthers ca. 3 mm, with 2 erect spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, black-purple, ca. 5 mm in diam. Fr. Jun.

Epiphytic or on rocks; ca. 2500 m. S Xizang, Yunnan [Bhutan, NE India, Myanmar, Nepal, Sikkim].

The above description of the flower follows that in the protologue and that by Clarke in Fl. Brit. India.

84. Vaccinium henryi Hemsley, J. Linn. Soc., Bot. 26: 15. 1889.

无梗越桔 wu geng yue ju

Shrubs deciduous, (0.5–)1–3 m tall, much branched. Twigs rounded, densely pubescent when young, lenticellate; bud scales inconspicuous. Leaves scattered; petiole 1–2 mm, densely pubescent; leaf blade ovate, ovate-oblong, or oblong, (1.5–)3–8 × (0.7–)1.5–4 cm, papery, both surfaces densely pubescent on midvein and secondary veins, secondary veins 4–6 pairs, slightly raised abaxially, flat adaxially, base cuneate or broadly cuneate to rounded, margin plane, entire, ciliate, apex acute or abruptly acuminate, mucronulate. Inflorescences terminal on short vegetative shoots, racemose; bracts persistent, leaflike, ca. 2 mm. Pedicel to 3 mm, densely pubescent or glabrous; bracteoles broadly triangular, less than 1 mm at anthesis, enlarged to 2–3 mm and 1-veined at fruiting, sometimes caducous. Hypanthium 0.5–1 mm, glabrous; calyx lobes broadly triangular, 0.5–1 mm, abaxially pubescent or glabrous. Corolla yellowish green, campanulate, 3–4.5 mm, glabrous; lobes reflexed, triangular, ca. 0.5 mm. Stamens 3–3.5 mm; filaments ca. 1.5 mm, pilose; anthers 1.5–2 mm, without spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, dark purple, 7–9 mm in diam. Fl. Jun–Jul, fr. Sep–Oct.

● Forests, thickets on mountain slopes; 700–2100 m. Anhui, Fujian, Gansu, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Zhe-

jiang.

1a. Twigs densely pubescent; both surfaces of leaf blade densely pubescent on midvein and secondary veins; pedicel to 1 mm; calyx lobes usually with hairs ..... 84a. var. *henryi*

1b. Twigs densely or sparsely pubescent; both surfaces of leaf blade sparsely pubescent on veins or subglabrous; pedicel 1–3 mm; calyx lobes glabrous ..... 84b. var. *chingii*

84a. Vaccinium henryi var. **henryi**

无梗越桔(原变种) wu geng yue ju (yuan bian zhong)

Twigs densely pubescent. Leaf blade with both surfaces densely pubescent on veins. Pedicel to 1 mm. Calyx lobes usually with hairs.

● Thickets on mountain slopes; 700–2100 m. Anhui, Fujian, Gansu, Guizhou, Hubei, Hunan, Jiangxi, Shaanxi, Sichuan, Zhejiang.

84b. Vaccinium henryi var. **chingii** (Sleumer) C. Y. Wu & R. C. Fang, Acta Bot. Yunnan. 9: 395. 1987.

有梗越桔 you geng yue ju

Vaccinium chingii Sleumer, Bot. Jahrb. Syst. 71: 482. 1941.

Twigs densely or sparsely pubescent. Leaf blade with both surfaces sparsely pubescent on veins. Pedicel 1–3 mm. Calyx lobes glabrous.

● Forests; 1500–1600 m. Anhui, Fujian, Jiangxi, Zhejiang.

85. Vaccinium oldhamii Miquel, Ann. Mus. Bot. Lugduno-Batavi 2: 161. 1866 [*"oldhami"*].

腺齿越桔 xian chi yue ju

Shrubs deciduous, 1–3 m tall. Twigs terete, angled, densely pubescent and with scattered glandular hairs, glabrescent; bud scales inconspicuous. Leaves scattered; petiole 1–3 mm, pubescent, with intermixed glandular hairs; leaf blade ovate, elliptic, or oblong, 2.5–8 × 1.2–4.5 cm, papery, abaxially setose or glandular setose on veins, otherwise appressed-setose or glabrous, adaxially pubescent on veins, otherwise appressed-setose or glabrous, secondary veins (5–)7 or 8 pairs, secondary and fine veins raised abaxially, slightly raised or flat adaxially, base cuneate, broadly cuneate, or rounded, margin plane, denticulate, glandular setulose at tips of teeth, apex acute. Inflorescences terminal, racemose, 3–6 cm, pubescent, with intermixed glandular hairs, (1–)9–17-flowered; bracts ovate-lanceolate to linear, 2.5–7 mm. Pedicel ca. 1.5 mm, glandular pubescent. Hypanthium glandular pubescent; calyx lobes triangular, ca. 1.5 mm, ciliate. Corolla pinkish, campanulate, 3–5 mm, glabrous; lobes ca. 0.5 mm. Filaments ca. 1.5 mm, pilose in upper part; anthers ca. 1.7 mm, thecae without spurs; tubules ca. 1/2 as long as thecae. Berry 10-pseudoloculed, dark purple, subglobose, 0.7–1 cm in diam. Fl. May–Jun, fr. Jul–Oct.

Thickets on mountain slopes; 200–700(–1300) m. N Jiangsu, Shandong [Japan, Korea].

86. Vaccinium koreanum Nakai, Trees Shrubs Japan 1: 191. 1922.

红果越桔 hong guo yue ju

Shrubs deciduous. Twigs angled, pubescent, glabrescent; bud scales inconspicuous. Leaves scattered; petiole 1–2 mm, pilose; leaf blade elliptic or ovate, 3–6.5 × 1.3–3 cm, papery, both surfaces white pilose, secondary veins ± ascending, raised abaxially, flat adaxially, base cuneate or broadly cuneate to slightly obtuse, margin plane, denticulate, apex acute or acuminate. Inflorescence pseudoterminal, shortly racemose, axis to 6 mm, ?glabrous, 1–3(–5)-flowered; bracts caducous. Pedicel 4–6 mm, glabrous. Hypanthium ca. 0.8 mm, glabrous; calyx limb ca. 1 mm, divided 1/2–3/4; calyx lobes triangular. Corolla whitish, campanulate, 7–8 mm, glabrous; lobes recurved, broadly ovate, 1–1.5 mm. Filaments ca. 2.5 mm, puberulous; anthers 2.5–3.5 mm, thecae with 2 very short spurs, tubules ca. as long as thecae. Berry 5-loculed, red, ellipsoid, 8–9 × 6–7 mm, 5-angled, glabrous; persistent calyx lobes triangular or suborbicular, 2–3 mm, glabrous. Fl. May, fr. Sep.

Rocky places on mountain summits; 600–1000 m. E Liaoning (Kuandian) [Korea].

The above description of the flower is based on herbarium specimens.

87. Vaccinium uliginosum Linnaeus, Sp. Pl. 1: 350. 1753.

笃斯越桔 du si yue ju

Vaccinium uliginosum var. *album* J. Y. Ma & Yue Zhang.

Shrubs deciduous, 0.5–1 m tall, alpine populations usually 10–15 cm tall, much branched, rhizomatous. Twigs terete, puberulous to glabrous. Leaves scattered; petiole ca. 2 mm, puberulous; leaf blade obovate or elliptic to oblong, 1–3 × 0.6–1.5 cm, papery, abaxially glaucous, puberulous, adaxially subglabrous, secondary veins 3–5 pairs, fine veins evident especially abaxially, base cuneate or broadly cuneate, margin plane, entire, with 1 basal gland per side, apex rounded, sometimes retuse. Inflorescences fasciculate, at end of shoot, 1–3-flowered; bracts caducous, 1.5–2.5 mm. Pedicel ca. 5 mm, glabrous. Flowers 4- or 5-merous. Hypanthium ca. 0.8 mm, glabrous; calyx lobes 4 or 5, triangular-ovate, ca. 1 mm. Corolla greenish white, broadly urceolate, ca. 5 mm, glabrous; lobes triangular, ca. 1 mm. Filaments ca. 1 mm, glabrous; anthers ca. 1.5 mm, thecae with 2 spurs, tubules slightly shorter than thecae. Berry 4- or 5-loculed, bluish purple, subglobose or ellipsoidal, with a bloom, ca. 1 cm in diam. Fl. Jun, fr. Jul–Aug. $2n = 24, 48$.

Larix forests, forest margins, meadow-moors, alpine steppes; 900–2300 m. N Heilongjiang (Da Hinggan Ling), S Jilin (Changbai Shan), NE Nei Mongol (Da Hinggan Ling) [Japan, Korea, Mongolia, Russia; Europe, North America].

The berry is nutritious and has a sweetish taste.

88. Vaccinium modestum W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 210. 1914.

大苞越桔 da bao yue ju

Shrubs deciduous, dwarf, 5–10 cm tall, erect or procumbent at base, rhizomatous, glabrous. Twigs terete; bud scales inconspicuous. Leaves scattered; petiole to 2 mm; leaf blade ovate, obovate, elliptic, or ovate-orbicular, 1.3–4 cm × 4–9 mm, secondary veins 2–5 pairs, ascending, secondary and fine veins

raised on both surfaces, base cuneate or acute to subrounded, margin plane, entire, apex rounded, sometimes cuneate, mucronate. Flowers solitary, axillary, 1–3 on current shoot. Pedicel 2–4 cm; bracteoles subapical, leaflike, 3–4.5 mm. Hypanthium purplish red, ca. 2 mm, glabrous; calyx lobes broadly triangular or suborbicular, 1–1.5 mm. Corolla pinkish or brownish red, globose-campanulate, 4–6 mm; lobes ovate, ca. 1 mm. Filaments ca. 1.5 mm, glabrous; anthers 3–3.5 mm, thecae with 2 erect spurs; tubules ca. as long as thecae. Berry 5-loculed, dark purple, with a bloom, ca. 1 cm in diam. Fl. Jun–Sep, fr. Aug–Sep.

Abies forests, thickets, alpine meadows, cliffs; (2500–)3100–4000(–4300) m. SE Xizang, NW Yunnan [NE India (Assam), Myanmar].

89. Vaccinium myrtillus Linnaeus, Sp. Pl. 1: 349. 1753.

黑果越桔 hei guo yue ju

Shrubs deciduous, dwarf, 15–30(–60) cm tall, much branched, rhizomatous. Twigs acutely angled; bud scales inconspicuous. Leaves scattered; petiole ca. 1 mm; leaf blade ovate or elliptic, 1–3 × 0.6–1.6 cm, papery, secondary veins 6 or 7 pairs, fine veins raised abaxially, inconspicuous adaxially, base broadly cuneate to rounded, margin plane, serrulate, apex acute to obtuse. Flowers solitary, axillary, pendulous, 1–3 at base of shoot. Pedicel 2.5–3.5 mm; bracteoles absent. Flowers 4- or 5-merous. Hypanthium ca. 4 mm, scarcely lobed. Corolla pale green, tinged with pink, globose-urceolate, 4–6 mm; lobes reflexed. Filaments ca. 1.5 mm, glabrous; anthers 2.2–2.5 mm, thecae with 2 subulate spurs, tubules shorter than thecae. Berry 4- or 5-loculed, bluish black, with a bloom, 6–10 mm in diam. Fl. Jun, fr. Sep. 2*n* = 24.

Larix, Picea, Pinus, or mixed forests, on acidic and wet soils; 2200–2500 m. Xinjiang [Mongolia, Russia; Europe].

The berries are edible.

90. Vaccinium oxycoccus Linnaeus, Sp. Pl. 1: 351. 1753.

红莓苔子 hong mei tai zi

Oxycoccus palustris Persoon; *O. quadripetalus* Gilibert; *O. vulgaris* Hill.

Shrubs evergreen, 10–15 cm tall, sparsely branched, ± procumbent; rhizomes to 80 cm. Twigs terete, slender, puberulous, glabrescent; bud scales inconspicuous. Leaves quite dense; petiole ca. 1 mm; leaf blade dark green adaxially, oblong or ovate, 5–11 × 2–5 mm, leathery, glabrous, abaxially glaucous, secondary veins inconspicuous on both surfaces, base rounded, margin strongly revolute, entire, without basal glands, apex acute to apiculate. Inflorescences terminal umbellate racemes, axis to 7 mm, flowers sometimes axillary at base of innovation, (1- or)2–4-flowered; bracts persistent, ovate, ca. 2 mm, glabrous. Pedicel recurved at apex, filiform, 1–2(–3) cm, pubescent; bracteoles at middle. Flowers 4-merous. Hypanthium glabrous; calyx lobes suborbicular, ca. 0.5 mm. Corolla pinkish, glabrous, lobed nearly to base; lobes reflexed, oblong, 4–6 mm. Filaments ca. 1.5 mm, ciliolate; anthers ca. 3 mm, thecae without spurs; tubules shorter than thecae. Berry 4-loculed, red, ca. 1 cm in diam. Fl. Jun–Jul, fr. Jul–Aug. 2*n* = 48, (46, 52, 68, 70), 72.

Moors, marshy places; 500–900 m. Heilongjiang, S Jilin (Changbai Shan) [Japan, SE Russia; Europe, North America].

91. Vaccinium microcarpum (Turczaninow ex Ruprecht) Schmalhausen, Trudy Imp. S.-Peterburgsk. Obshch. Estestvoisp. 2: 149. 1871.

小果红莓苔子 xiao guo hong mei tai zi

Oxycoccus microcarpus Turczaninow ex Ruprecht, Beitr. Pfl.-K. Russ. Reiches 4: 56. 1845; *O. palustris* Persoon var. *pusillus* Dunal; *O. pusillus* (Dunal) Nakai.

Shrubs low, evergreen, 5–10 cm tall, ± procumbent, rhizomatous. Twigs terete, slender, puberulous, glabrescent; bud scales inconspicuous. Leaves quite dense; petiole less than 1 mm, puberulous; leaf blade ovate or elliptic, broader near base, 2–6 × 1–2(–3) mm, leathery, glabrous, secondary veins inconspicuous on both surfaces, base rounded, margin revolute, entire, without basal glands, apex acute. Flowers 1 or 2, terminal; bracts persistent, ovate, ca. 1 mm, glabrous. Pedicel recurved at apex, filiform, 1.5–2.5 cm, glabrous; bracteoles at middle. Flowers 4-merous. Hypanthium glabrous; calyx lobes suborbicular, ca. 0.5 mm. Corolla pinkish, glabrous, lobed nearly to base; lobes reflexed, oblong, ca. 5 mm. Filaments ca. 2 mm, glabrous; anthers ca. 2 mm; thecae without spurs, tubules ca. as long as thecae. Berry 4-loculed, red, ca. 6 mm in diam. Fl. Jun–Jul, fr. Jul–Aug. 2*n* = 24.

Larix forests, moors, marshy places; ca. 900 m. N Heilongjiang (Da Hinggan Ling), S Jilin (Changbai Shan), NE Nei Mongol (Da Hinggan Ling) [Japan, Korea, Mongolia, E Russia; Europe, North America].

92. Vaccinium japonicum Miquel, Ann. Mus. Bot. Lugduno-Batavi 1: 28. 1863.

日本扁枝越桔 ri ben bian zhi yue ju

Shrubs deciduous, 0.4–2 m tall, many branched. Twigs flattened-angular, glabrous; bud scales inconspicuous. Leaves scattered; petiole 1–2 mm, glabrous or abaxially pubescent; leaf blade sometimes reddish when young, ovate or ovate-lanceolate, (1.5–)2–6 × 0.7–2 cm, papery, abaxially subglabrous or pubescent towards base of midvein, adaxially glabrous or rarely pubescent, secondary veins 2–4 pairs, ± ascending, raised abaxially, inconspicuous and impressed adaxially, fine veins raised abaxially, impressed adaxially, base broadly cuneate to subtruncate, margin plane, setose-serrulate, apex acute or acuminate for ca. 0.5 cm. Flowers solitary, axillary, pendulous, at base of young shoot. Pedicel 5–8 mm, slender, glabrous. Flowers 4-merous. Hypanthium glabrous; calyx limb divided nearly to base; calyx lobes triangular, 1–1.8 mm, apex abruptly acuminate. Corolla white or pinkish, glabrous, lobed nearly to base; lobes linear-lanceolate, 0.8–1 cm, margin revolute. Filaments 1–2 mm, often densely villous; anthers 6–7 mm, thecae without spurs; tubules ca. as long as thecae. Berry 4-loculed, red, ca. 5 mm in diam. Fl. Jun–Jul, fr. Aug–Oct.

Forests, thickets, alpine areas; 1000–2600(–3000) m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan].

Two varieties occur in China; var. *japonicum* is endemic to Japan.

1a. Leaf blade ovate or ovate-lanceolate, (1.5–)2–6 × 0.7–2 cm, abaxially subglabrous or pubescent towards base of midvein, base broadly cuneate to subtruncate ..... 92a. var. *sinicum*
1b. Leaf blade lanceolate or ovate-lanceolate, 1.2–4.2 × 0.5–1.5 cm, abaxially glabrous, base obtuse to cuneate ..... 92b. var. *lasiostemon*

92a. Vaccinium japonicum var. **sinicum** (Nakai) Rehder, J. Arnold Arbor. 5: 56. 1924.

扁枝越桔 bian zhi yue ju

Oxycoccoides japonicus (Miquel) Nakai var. *sinicus* Nakai, Trees Shrubs Japan 1: 168. 1922; *Agapetes vaccinioidea* H. Léveillé (Apr–May 1903), not *A. vaccinioides* Dunn (31 Oct 1903); *Hugeria japonica* (Miquel) Nakai var. *sinica* (Nakai) Handel-Mazzetti; *H. sinica* (Nakai) Maekawa; *H. vaccinioidea* (H. Léveillé) H. Hara; *Vaccinium siccum* H. Léveillé & Vaniot.

Leaf blade ovate or ovate-lanceolate, (1.5–)2–6 × 0.7–2 cm, abaxially subglabrous or pubescent towards base of midvein, base broadly cuneate to subtruncate.

● Forests, thickets; 1000–1600(–1900) m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan, Yunnan, Zhejiang.

92b. Vaccinium japonicum var. **lasiostemon** Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 499. 1911.

台湾扁枝越桔 tai wan bian zhi yue ju

Hugeria japonica var. *lasiostemon* (Hayata) Sasaki; *H. lasiostemon* (Hayata) Maekawa; *H. randaiensis* Masamune; *H. vaccinioidea* var. *lasiostemon* (Hayata) H. Hara; *Oxycoccus japonicus* (Miquel) Makino var. *lasiostemon* (Hayata) Makino & Nemoto.

Leaf blade lanceolate or ovate-lanceolate, 1.2–4.2 × 0.5–1.5 cm, abaxially glabrous, base obtuse to cuneate.

● Alpine areas; 2300–2600(–3000) m. Taiwan.

22. AGAPETES D. Don ex G. Don, Gen. Hist. 3: 862. 1834.

树萝卜属 shu luo bo shu

Fang Ruizheng (方瑞征 Fang Rhui-cheng); Peter F. Stevens

Caligula Klotzsch; *Corallobotrys* J. D. Hooker; *Desmogyne* King & Prain; *Pentapterygium* Klotzsch.

Shrubs evergreen, epiphytic, rarely terrestrial trees, usually with a swollen rootstock. Leaves spirally arranged, subopposite, or pseudoverticillate, subsessile or shortly petiolate, margin entire or serrate. Flowers axillary, in racemes, corymbs, or fascicles, or solitary. Pedicel articulate, sometimes expanded and forming a cup apically; bracteoles basal, small. Flowers 5-merous. Calyx sometimes 5-winged or -angled; limb 5-fid or deeply -lobed. Corolla red, rarely white or yellow, ± plain colored or with dark colored zigzag horizontal bands, tubular, rarely globose, urceolate, or campanulate, often more than 1 cm, usually shortly 5-lobed. Stamens 10, ± as long as corolla; filaments short or long; anthers dorsally spurred or not, with 2 long tubules opening by apical pores or slits. Disk annular. Ovary inferior, many ovules per carpel, 10-pseudoloculed by false partitions; stigma small, truncate or capitate. Berry globose, succulent or nearly dry; calyx persistent. Seeds several; testa hard or mucilaginous.

About 80 species: from the E Himalayas through SW China and Indochina to SE Asia; 53 species (17 endemic) in China.

The majority of species of *Agapetes* is part of the same lineage as many SE Asian-Malesian species of *Vaccinium*. Species of *Agapetes* from New Guinea and the SW Pacific are now placed in *Paphia* Seemann.

There was no satisfactory way to include three of the Chinese species in the following key: for *Agapetes camelliifolia* (species no. 33) and *A. leiocarpa* (no. 29) no flowering material was seen, and in *A. malipoensis* (no. 44) the leaves are sometimes subopposite.

1a. Leaves pseudoverticillate.
  2a. Inflorescence with glandular hairs.
    3a. Leaves densely glandular hirsute; inflorescence corymbose ..... 13. *A. ciliata*
    3b. Leaves glabrous; inflorescence shortly racemose or fasciculate.
      4a. Leaf blade obovate or oblong-lanceolate, 20–24 × 8–11 cm, with a distinct intramarginal vein; calyx lobes ca. 1 cm ..... 2. *A. marginata*
      4b. Leaf blade narrowly elliptic, oblong-lanceolate, or oblanceolate, 8–11 × 3–6 cm, rigidly leathery, with an inconspicuous marginal vein; calyx lobes 3–5 mm ..... 4. *A. aborensis*
  2b. Inflorescence glabrous.
    5a. Leaf blade ca. 10 × 0.8–2 cm; corolla 1.5–1.6 cm, lobes ca. 2.5 mm ..... 12. *A. salicifolia*
    5b. Leaf blade to 25 cm; corolla 3–6 cm, lobes 4–11 mm.
      6a. Leaf blade oblong-lanceolate, 10–25 × 2–4.5 cm; corolla 4–6 cm, pinkish or rose, with dark purple transverse zig-zag bands, lobes ca. 1.1 cm ..... 6. *A. burmanica*
      6b. Leaf blade elliptic-lanceolate, 12–18 × 4.5–8 cm; corolla ca. 3 cm, vermilion or crimson, lobes ca. 4 mm ..... 10. *A. miniata*
1b. Leaves scattered.
  7a. Filaments longer than thecae; flowers solitary or 2–4(–6) in a fascicle, sometimes a corymb or raceme.
    8a. Leaf blade (3–)5–17 cm.

9a. Inflorescences glabrous.
10a. Leaf blade 10–17 cm; pedicel ca. 2.6 cm ..... 9. *A. brandisiana*
10b. Leaf blade 5–8 cm; pedicel 5–8 mm ..... 11. *A. graciliflora*
9b. Inflorescences variously pubescent and/or glandular hairy.
11a. Inflorescence racemose, 5- or 6-flowered; pedicels 4–7 mm ..... 42. *A. inopinata*
11a. Inflorescence fasciculate, 1–4-flowered; pedicels 0.6–2 cm.
12a. Branches pubescent and glandular setose; corolla crimson or carmine, tubular, 1.3–1.9 cm ..... 43. *A. oblonga*
12b. Branches glabrous; corolla green, shortly campanulate, 5–7 mm ..... 41. *A. pilifera*
8b. Leaf blade less than 2.5 cm.
13a. Leaf margin crenulate or serrate.
14a. Leaf blade ovate or elliptic, base obtuse or rounded.
15a. Flowers solitary or 2 together from axils along branch; twigs rust-colored pilose; leaf margin crenulate-serrate ..... 50. *A. anonyma*
15b. Flowers 2–5 from subterminal leaf axils; twigs densely dark brown glandular setose; leaf margin serrate ..... 52. *A. guangxiensis*
14b. Leaf blade obovate or subelliptic, base cuneate.
16a. Inflorescence shortly racemose; bract leaflike, 1.3–1.5 × ca. 1.1 cm, bracteoles oblong, 4–6 × ca. 2 mm ..... 51. *A. rubrobracteata*
16b. Flowers solitary, axillary; bracts and bracteoles less than 3 mm ..... 53. *A. spissa*
13b. Leaf blade entire, recurved.
17a. Calyx densely puberulous or glabrous outside; pedicels 4–10 mm, glabrous.
18a. Corolla tubular, 1.1–1.5 cm, white or greenish white; stem densely puberulous ..... 45. *A. mannii*
18b. Corolla campanulate, 6–7 mm, deep red; stem glabrous or hispid ..... 46. *A. obovata*
17b. Calyx densely glandular villous or glandular setose and pubescent outside; pedicels 1–5 mm, glandular villous or glandular pubescent.
19a. Leaf blade hirsute abaxially ..... 47. *A. pensilis*
19b. Leaf blade glabrous abaxially.
20a. Leaf apex abruptly narrowed into a long pungent mucro ..... 48. *A. epacridea*
20b. Leaf apex rounded, apiculus minute ..... 49. *A. brachypoda*
7b. Filaments shorter than thecae; inflorescence corymbose, rarely racemose or flowers fasciculate or solitary.
21a. Calyx tube 5-winged, lobes obvious; corolla usually 5-angled; peduncle to 10 mm.
22a. Corolla yellow.
23a. Leaf base rounded; pedicels and calyx pubescent; calyx lobes triangular-ovate, ca. 8 mm; anthers with 2 spurs ..... 14. *A. flava*
23b. Leaf base shallowly cordate or obtuse; pedicel and calyx glabrous; calyx lobes suborbicular, ca. 3 mm; anthers without spurs ..... 16. *A. listeri*
22b. Corolla reddish brown, purple, or white.
24a. Corolla 1.5–2 cm; inflorescence corymbose.
25a. Calyx lobes ca. 5 mm; corolla ca. 1.9 cm; leaf blade with serrate margin, adaxially very rugose ..... 15. *A. incurvata*
25b. Calyx lobes ca. 10 mm; corolla ca. 1.5 cm; leaf blade with subentire margin, adaxially distinctly reticulate ..... 17. *A. medogensis*
24b. Corolla 2–3.4 cm; inflorescence shortly racemose.
26a. Leaf blade oblanceolate to obovate, apex acuminate to acute; calyx lobes 9–13 mm; stem puberulous ..... 18. *A. pyrolifolia*
26b. Leaf blade elliptic, apex acute or apiculate; calyx lobes 6–9(–10) mm; stem hirtellous or glandular setose ..... 19. *A. interdicta*
21b. Calyx and corolla not winged or angled; peduncle usually elongate.
27a. Leaf blade more than (4–)6 cm.
28a. Leaf blade less than 1.5 cm wide, linear or linear-lanceolate.
29a. Leaf margin shallowly and remotely undulate-denticulate towards apex; corolla ca. 2.2 cm, crimson or carmine; pedicel enlarged into a disk apically ..... 26. *A. nutans*
29b. Leaf margin entire; corolla 1.3–1.4 cm, green, glaucescent; pedicel enlarged into a cup apically ..... 27. *A. linearifolia*
28b. Leaf blade more than 1.5 cm wide, oblong or ovate-lanceolate.
30a. Corolla lobed nearly to middle ..... 1. *A. lobbii*
30b. Corolla lobed less than 1/4 its length.
31a. Leaf blade 28–34 × 7–13.5 cm ..... 8. *A. macrophylla*
31b. Leaf blade to 17(–22) × (1–)2–10 cm.
32a. Pedicel at most clavate towards apex; leaf margin usually at least inconspicuously toothed, except *A. megacarpa*.

33a. Pedicel and calyx pubescent; leaf blade 3–10 cm wide, with very distinct intramarginal veins .... 3. *A. pubiflora*
33b. Pedicel and calyx glabrous; leaf blade less than 4 cm wide, lacking distinct intramarginal vein.
34a. Calyx lobes less than 3 mm; twigs strongly angled ..... 7. *A. angulata*
34b. Calyx lobes 4–8 mm; twigs terete or weakly angled.
35a. Corolla creamy yellow; anthers with spurs ..... 5. *A. megacarpa*
35b. Corolla red or purple; anthers lacking spurs.
36a. Leaf blade oblong-lanceolate, 10–21 × 2–4.5 cm; petiole ca. 1 cm; corolla ca. 1.7 cm, bluish purple ..... 24. *A. xizangensis*
36b. Leaf blade ovate-oblong or broadly elliptic, 7.5–14 × 3–5.5 cm, subsessile; corolla ca. 2.5 cm, red ..... 25. *A. subsessilifolia*
32b. Pedicel enlarged into a cup apically; leaf margin entire.
37a. Calyx limb entire, expanded; corolla ca. 4.5 cm or more ..... 20. *A. neriifolia*
37b. Calyx limb 5-lobed; corolla 2–3 cm.
38a. Calyx limb divided to 2/3 length ..... 21. *A. pseudogriffithii*
38b. Calyx limb divided to base.
39a. Leaf blade oblong, 8–15 × 2–5 cm, base cuneate; calyx lobes ovate; corolla ± tubular, strongly 5-angled ..... 22. *A. griffithii*
39b. Leaf blade ovate-lanceolate, 7–12.5 × 1.5–3.2 cm, base rounded; calyx lobes narrowly triangular; corolla narrowly funnelform, ca. 2 cm, not angled ..... 23. *A. hyalocheilos*
27b. Leaf blade less than 6 cm.
40a. Inflorescence corymbose; leaf apex acuminate or caudate; twigs glabrous or pubescent, rarely setose.
41a. Leaf margin entire; inflorescence 2- or 3-flowered; calyx lobes ca. 3 mm ..... 31. *A. leucocarpa*
41b. Leaf margin serrate; inflorescence 4–8-flowered; calyx lobes ca. 1.5 mm or more than 5 mm.
42a. Pedicel clavate towards apex; calyx lobes ca. 1.5 mm; twigs densely setose ..... 30. *A. forrestii*
42b. Pedicel forming a cup apically; calyx lobes 5–6 mm; twigs glabrous or pubescent..... 28. *A. discolor*
40b. Flowers solitary, or 2 or 3, rarely 3–8, subfasciculate; leaf apex acute, obtuse, or apiculate; twigs setose or hispidulous.
43a. Corolla urceolate, 5–8 mm, 5-winged or 5-angled.
44a. Flowers 1 or 2; corolla with ca. 2 mm wide wings, lemon-yellow ..... 39. *A. miranda*
44b. Flowers 3–8, subfasciculate; corolla strongly 5-angled, cherry-red ..... 40. *A. praestigiosa*
43b. Corolla tubular or cylindric, (1.2–)2–3 cm, not angled or winged.
45a. Calyx tube 5-winged; pedicel along with calyx wings glandular setose; leaves often appearing to be in two ranks ..... 37. *A. serpens*
45b. Calyx tube at most angled; pedicel and calyx glabrous to pubescent, rarely with glandular hairs; leaves not 2-ranked.
46a. Inflorescence with peduncle ca. 1.5 cm; corolla puberulous along angles, lobes 4–6 mm ..... 34. *A. mitrarioides*
46b. Inflorescence fasciculate or flowers solitary; corolla glabrous outside, lobes at least 4–6 mm.
47a. Pedicels and calyx densely pubescent or glandular pubescent or villous.
48a. Leaf blade elliptic to obovate, 1.5–2.8 cm; corolla lobes 4–6 mm ..... 32. *A. buxifolia*
48b. Leaf blade elliptic, 0.7–2 cm; corolla lobes ca. 3 mm ..... 36. *A. lacei*
47b. Pedicels and calyx tube glabrous.
49a. Pedicels ca. 1 cm ..... 38. *A. praeclara*
49b. Pedicels 1.5–2.5 cm; corolla lobes 7–8.5 mm.
50a. Leaf blade ovate; corolla 1.6–1.8 cm ..... 35. *A. refracta*
50b. Leaf blade elliptic; corolla 2–3 cm ..... 36. *A. lacei*

1. Agapetes lobbii C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 448. 1881.

深裂树萝卜 shen lie shu luo bo

Agapetes corallina Cowan; *A. stenantha* Rehder.

Shrubs 1–2 m tall, glabrous. Twigs terete, 1.2–2.5 mm in diam. Leaves scattered; petiole 3–5 mm; leaf blade ovate-lanceolate or lanceolate, 4–11 × 2–3.5 cm, leathery, secondary veins 5–7 pairs, barely evident, base cuneate or broadly cuneate, margin plane, entire, with 1 basal gland per side, apex caudate-acuminate. Inflorescences racemose, 3–8 cm, many flowered; peduncle 0.6–1.3 cm. Pedicel 0.5–1.5 cm, somewhat expanded apically. Calyx tube subglobose, ca. 2 mm; limb divided to base; lobes triangular-lanceolate, 3–4 mm. Corolla crimson, narrowly campanulate, 2–2.5 cm; lobes erect or recurved, lorate, ca. 1.2 cm. Filaments 3–4(–8) mm, papillate; anthers ca. 2(–2.4) cm, thecae papillate, with minute spurs or not; tubules ca. (1–)2 × as long as thecae. Berry unknown. Fl. Dec–Jun of next year.

Forests, epiphytic on trees, rocks; 1300–1400 m. S Yunnan [NE India (Assam), Myanmar, Thailand].

2. Agapetes marginata Dunn, Bull. Misc. Inform. Kew 1920: 133. 1920.

边脉树萝卜 bian mai shu luo bo

Shrubs. Root tubers spindle-shaped, ca. 30 × 18 cm. Twigs

terete. Leaves pseudoverticillate; petiole very short or leaves subsessile; leaf blade obovate or oblong-lanceolate, 20–24 × 8–11 cm, leathery, glabrous, secondary veins 20–22 pairs, marginal vein distinct, drying prominently abaxially, base gradually narrowed to rounded, margin plane or slightly revolute, with 2 or 3 basal glands per side, subentire, apex shortly acuminate. Inflorescences corymbose-racemose, ramiflorous, ca. 9 cm, 5–7-flowered; peduncle 1.5–2 cm. Pedicel 2.5–3 cm, densely glandular setose, slightly expanded towards apex. Calyx tube ca. 2 mm, densely glandular setose; limb divided to base; lobes lanceolate, ca. 1 cm. Corolla red, tubular, slightly expanded at middle, 3.2–3.8 cm, setulose, especially towards apex; lobes lanceolate-triangular, ca. 6 mm. Filaments ca. 2 mm, glabrous; anthers ca. 2.9 cm, thecae papillate, tubules ca. 3.5 × as long as thecae. Berry unknown. Fl. Mar–Jun.

● Rain forests, *Quercus* forests, epiphytic on trees; 800–1700 m. S Xizang.

3. Agapetes pubiflora Airy Shaw, Bull. Misc. Inform. Kew 1935: 27. 1935.

毛花树萝卜 mao hua shu luo bo

Shrubs 1.5–3 m tall. Twigs angled, ca. 5 mm in diam., glabrous. Leaves scattered; petiole dark red, 5–10 mm; leaf blade oblong-elliptic, elliptic, or elliptic-lanceolate, 9–22 × 3–10 cm, thickly leathery, glabrous, secondary veins 15–18 pairs, raised abaxially, flat adaxially, marginal vein distinct, base cuneate or broadly cuneate, margin plane, sparsely dentate, with 1 large basal gland per side, apex acute or shortly acuminate. Inflorescence corymbose-racemose, cauliflorous, ca. 1.3 cm, ca. 9-flowered; peduncle 5–7 mm, pubescent. Pedicel red, 1–2.5 cm, puberulous, slightly expanded at apex. Calyx tube 1.5–2 mm, puberulous; limb divided to 3/4; lobes pink, triangular-lanceolate, 2.5–3.5 mm. Corolla pink, with dark red zig-zag bands, tubular, 2.5–3 cm, densely puberulous, 5-angled; lobes recurved, green, triangular-lanceolate, 4–5 mm. Filaments 1.5–2 mm, pubescent; anthers ca. 2.5 cm; thecae densely papillate, base puberulous, tubules ca. 4 × as long as thecae, with 2 reflexed spurs ca. 1.5 mm. Berry unknown. Fl. Jun–Nov.

Rain forests, evergreen forests, epiphytic on large trees; (900–) 1200–1600 m. SE Xizang, NW Yunnan [Myanmar].

4. Agapetes aborensis Airy Shaw, Kew Bull. 14: 111. 1960.

阿波树萝卜 a bo shu luo bo

Shrubs 0.3–0.4 m tall. Twigs angled, 3–5 mm in diam., glabrous. Leaves pseudoverticillate; petiole very short or leaves subsessile; leaf blade narrowly elliptic or oblanceolate, 8–11 × 2–3.6 cm, rigidly leathery, glabrous, marginal vein distinct, fine veins raised on both surfaces, base cuneate, margin entire, apex acute. Inflorescences racemose, ca. 1 cm, 2–8-flowered; peduncle densely brown glandular hispidulous. Pedicel 5–6 mm, glandular hispidulous. Calyx tube 1–1.5 mm, glandular hispidulous; limb divided to base; lobes lanceolate-subulate, 3–5 mm. Corolla dark red, tubular, 1.6–1.8 cm, 5-angled, glabrous or sparsely setulose on angle; lobes ovate, ca. 1 mm. Filaments ca. 2 mm, glabrous; anthers ca. 1.4 cm, thecae papillate, base shortly caudate, tubules nearly 2 × as long as thecae, with 2 minute spurs towards apex. Berry unknown. Fl. Jan–Feb.

● Forests, epiphytic on trees; 400–700 m. SE Xizang.

5. Agapetes megacarpa W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 11: 194. 1919.

大果树萝卜 da guo shu luo bo

Shrubs to 6 m tall, glabrous. Leaves scattered; petiole very short or leaves subsessile; leaf blade lanceolate or oblong-lanceolate, 10–17 × 2–4 cm, papery, base cuneate to obtuse, margin entire, apex acute or shortly acuminate. Inflorescence axillary or terminal, corymbose-racemose, 7–8 cm, few flowered; peduncle ca. 1 cm, stout. Pedicel 2.2–2.3 cm, slightly expanded upwards. Calyx tube turbinate, ca. 3 mm; limb divided to base; lobes subulate, 7–8 mm. Corolla creamy yellow, with dark bands, infundibular, ca. 4.5 cm; lobes narrowly triangular, 9–10 mm. Filaments ca. 3 mm, shortly pilose basally; anthers 4–7.5 cm, thecae densely papillate, base with incurved incrassate appendage; tubules ca. 5 × as long as thecae, with 2 spreading ca. 1 mm spurs at middle. Berry globose, ca. 1 cm in diam.; persistent calyx lobes 9–10 mm. Fl. Apr.

Forests, open thickets, epiphytic on trees; ca. 2100 m. S Yunnan [Thailand].

6. Agapetes burmanica W. E. Evans, Notes Roy. Bot. Gard. Edinburgh 15: 199. 1927.

缅甸树萝卜 mian dian shu luo bo

Shrubs 1.5–3(–4) m tall, glabrous. Root tubers conoid or spherical. Twigs not angled, 4–10 mm in diam. Leaves pseudoverticillate; petiole 2–3 mm or leaves subsessile; leaf blade oblong-lanceolate, 10–25 × 2–4.5 cm, leathery, secondary veins 14–16 pairs, evident, marginal vein distinct, base obtuse to rounded, margin plane, inconspicuously and distantly sinuous. Inflorescences racemose, on old stem, few flowered; peduncle 0.5–1.5 cm. Pedicel 2.5–3 cm, expanded upwards, clavate. Calyx tube inconspicuously angled, 3–5 mm; limb divided ca. 9/10; lobes narrowly triangular, ca. 1 cm. Corolla pinkish or rose, with dark purple transverse zig-zag bands, tubular, 4.5–6 cm; lobes spreading, greenish, narrowly triangular, ca. 1.1 mm. Filaments ca. 2 mm, pubescent; anthers 4.5–4.8 cm, thecae densely papillate and puberulous, tubules 4–5 × as long as thecae, with 2 spreading ca. 1 mm spurs at middle. Berry large. Fl. Sep–Dec, fr. Nov–Jan of next year.

Sparse forests or thickets on calcareous mountains, epiphytic on trees; 700–1500 m. SE Xizang, S Yunnan [Myanmar].

7. Agapetes angulata (Griffith) J. D. Hooker in Bentham & J. D. Hooker, Gen. Pl. 2: 571. 1876.

棱枝树萝卜 leng zhi shu luo bo

Ceratostema angulatum Griffith, Not. Pl. Asiat. 4: 302. 1854.

Shrubs 0.8–1.3 m tall, glabrous. Twigs angled, 4–5 mm in diam., becoming lenticellate. Leaves scattered; petiole 0.5–1 cm; leaf blade lanceolate or elliptic-lanceolate, 12–14 × 3.5–4 cm, thinly papery, secondary veins 8 or 9 pairs, raised abaxially, base cuneate, margin sparsely serrulate, apex acuminate. Inflorescences corymbose to subumbellate, 2.5–4 cm, 5–15-flowered; rachis 0.4–1.5 cm. Pedicel 0.9–2.2 cm, slender, ex-

panded at apex. Calyx tube obpyramidal, 1.5–1.7 mm, slightly 5-angled; limb 1.6–2.5 mm, divided ca. 4/5; lobes triangular, 1.2–2.3 mm. Corolla red to reddish yellow, with deep colored zig-zag bands, 1.5–2.7 cm, rather thinly fleshy; lobes green, triangular, 3.5–6 mm. Filaments 1–2 mm, with sparse hairs; anthers ca. 2.6 cm, thecae rounded to acute, somewhat downward-pointing at base, papillate, tubules ca. 4 × as long as thecae, spurs absent. Fl. Feb–Mar, fr. May.

Forests, epiphytic on trees; (700–)1200–1500 m. SE Xizang, NW Yunnan (Dulongjiang) [NE India (Assam), Myanmar].

8. Agapetes macrophylla C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 445. 1881.

大叶树萝卜 da ye shu luo bo

Shrubs glabrous. Twigs terete, 4–8 mm in diam. Leaves scattered; petiole ca. 1.3 cm; leaf blade ovate or oblong-lanceolate, 28–34 × 7–13.5 cm, secondary veins 16–18 pairs, midvein and fine veins raised on both surfaces, base broadly cuneate or rounded, margin plane, sparsely inconspicuously dentate, apex acuminate. Inflorescences corymbose, 8–9 cm, 8–10-flowered; peduncle 1–5 cm; bracts linear-lanceolate, ca. 6 mm. Pedicel 1.3–3.8 cm, swollen towards apex. Calyx tube turbinate, ca. 2 cm; limb divided ca. 2/3; lobes lanceolate, ca. 8 mm. Corolla red, with zig-zag bands, tubular, ca. 2.5 cm, 5-angled; lobes triangular, 3–4 mm. Filaments ca. 3 mm, pubescent; anthers ca. 2.2 cm, thecae with a basal beak, tubules ca. 2 × as long as thecae, spurs minute or absent. Berry unknown. Fl. Apr.

Rain forests, epiphytic on trees; ca. 1800 m. SE Xizang [Bangladesh].

9. Agapetes brandisiana W. E. Evans, Notes Roy. Bot. Gard. Edinburgh 15: 201. 1927.

环萼树萝卜 huan e shu luo bo

Shrubs glabrous. Roots spindle-shaped. Twigs angled, 5–8 mm in diam. Leaves scattered, subsessile; leaf blade narrowly oblong, 10–17 × 2.5–3.8 cm, leathery, secondary veins ca. 12 pairs, raised, base narrowly rounded, margin plane, entire, with 1 basal gland per side, apex acuminate. Inflorescences corymbose, inserted on mature stem, 3–4 cm, 3–5-flowered; peduncle ca. 1 cm. Pedicel 1–1.5 cm, conspicuously cupular at apex. Calyx tube shortly tubular, ca. 5 mm, swollen at middle; limb divided ca. 1/2; lobes triangular-lanceolate, ca. 3 mm. Corolla red, with zig-zag bands, tubular, 2.2–2.6 cm, not angled; lobes recurved, triangular, 5–6 mm; filaments 6–7 mm, base adnate to corolla tube, apex pubescent; anthers 2.2–2.6 cm, thecae papillate, tubules ca. 3.5 × as long as thecae, without spurs. Berry globose, ca. 4 mm in diam. Fr. Feb–Apr.

Rain forests, epiphytic on old trees; 1500–1800 m. SW Yunnan [N Myanmar (Kachin)].

10. Agapetes miniata (Griffith) J. D. Hooker in Bentham & J. D. Hooker, Gen. Pl. 2: 571. 1876.

朱红树萝卜 zhu hong shu luo bo

Ceratostema miniatum Griffith, Not. Pl. Asiat. 4: 302. 1854; *Vaccinium miniatum* (Griffith) Kurz.

Shrubs glabrous. Twigs terete, 2.5–4 mm in diam. Leaves ca. 4-pseudoverticillate, subsessile or petiole ca. 4 mm; leaf blade elliptic-lanceolate, 12–18 × 4.5–8 cm, leathery, secondary veins 11–13 pairs, raised abaxially, flat adaxially, base cuneate to obtuse, margin plane, sparsely serrulate, apex acute. Inflorescences corymbose, 0.7–1 cm, ca. 7-flowered; peduncle 3–5 mm. Pedicel 0.6–2.5 cm. Calyx obconical, 2.5–3 mm; lobes triangular-lanceolate, 4–5 mm. Corolla vermilion or crimson, tubular, ca. 3 mm; lobes triangular, ca. 1.5 mm. Filaments 2–2.5 mm, glabrous; anthers ca. 1.6 cm, thecae densely papillate, tubules slightly longer than thecae, without spurs. Berry unknown. Fl. Mar–Apr.

Forests, epiphytic on trees; 1000–1800 m. SE Xizang [NE India (Assam)].

11. Agapetes graciliflora R. C. Fang, **nom. nov.**

细花树萝卜 xi hua shu luo bo

Replaced synonym: *Agapetes leptantha* Airy Shaw, Kew Bull. 13: 483. 1959, not *A. leptantha* (Miquel) Niedenzu, Bot. Jahrb. Syst. 11: 201. 1890.

Shrubs glabrous. Twigs elongate, flexuous, terete, ca. 3 mm in diam. Leaves scattered; petiole ca. 1 cm, slender, narrowly alate on both sides; leaf blade greenish or inconspicuously brown and opaque abaxially, drying blackish and nitid adaxially, oblong-elliptic or oblong-lanceolate, 5–8 × ca. 2 cm, papery, base attenuate, decurrent, margin plane, remotely serrulate, apex acuminate. Inflorescences racemose, 1–4 cm, slender, 15–20-flowered; peduncle 7–10 mm. Pedicel 5–8 mm, slender, shallowly cup-shaped apically. Calyx tube subglobose, ca. 1 mm; limb divided to base; lobes spreading, triangular, minute, ca. 1 mm. Corolla greenish, tinged with red, narrowly tubular, 1.1–1.3 cm; lobes recurved, ovate-triangular, 1–1.5 mm. Filaments 6–7 mm, slender, puberulous; anthers 5–6 mm, thecae papillate, base shortly caudate, tubules ca. 2.5 × as long as thecae, without spurs. Berry unknown. Fl. Nov.

Forests, epiphytic on trees; ca. 900 m. SE Xizang [Myanmar].

12. Agapetes salicifolia C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 445. 1881.

柳叶树萝卜 liu ye shu luo bo

Shrubs glabrous. Twigs scarcely angled, ca. 3 mm in diam. Leaves pseudoverticillate, sessile; leaf blade narrowly lanceolate or very narrowly oblong-oblanceolate, 9.5–10 × 1–2 cm, leathery, base attenuate, margin with a basal gland, entire or inconspicuously dentate-crenate, apex subacuminate. Inflorescence vermilion, corymbose, on old wood, ca. 3 cm, ca. 12-flowered; peduncle ?ca. 6 mm. Pedicel 3–6 mm, not expanded. Calyx tube vermilion; limb divided to base; lobes triangular, 2.5–3 mm, apex acute. Corolla crimson, tubular, ca. 1.6 cm; lobes green, triangular, ca. 2.5 mm. Berry unknown.

● Forests, epiphytic on trees; ca. 1500 m. SE Xizang.

13. Agapetes ciliata S. H. Huang, Acta Phytotax. Sin. 25: 314. 1987.

纤毛叶树萝卜 xian mao ye shu luo bo

Shrubs 0.5–1.5 m tall. Twigs terete, 0.9–1 cm in diam.,

densely dark or yellow-brown glandular hirsute. Leaves borne towards ends of innovations; petiole ca. 3 mm, glandular hirsute or leaves subsessile; leaf blade oblong-elliptic, 15–27 × 5.5–14 cm, leathery, abaxially densely hirsute or on veins glandular hirsute, adaxially glabrous, secondary veins 6–8 pairs, secondary and fine veins raised abaxially, impressed and subbullate adaxially, base attenuate to cuneate or subauriculate, margin plane, subentire, with 1 basal gland per side, densely glandular hirsute, apex acute. Inflorescences ± fasciculate, cauliflorous, 6–9-flowered; rachis ca. 0.5 cm. Pedicel 1.7–2.5 cm, clavate, densely glandular pubescent. Calyx densely reddish applanate glandular pilose; tube ca. 3.5 mm; limb divided ca. 2/3; lobes red, lanceolate, ca. 4 mm, glandular. Corolla red, with dark purple zig-zag bands, tubular, 2–2.5 cm, glandular pubescent; lobes greenish, triangular, ca. 2 mm. Filaments ca. 2.5 mm, pilose on the edges; anthers ca. 2.1 cm, thecae densely papillate, tubules ca. 3 × as long as thecae, without spurs. Berry reddish, ellipsoidal, ca. 6.5 × 5 mm, densely brown glandular hirsute. Fl. Apr–Dec.

● Evergreen forests, epiphytic on trees; 1600–2200 m. SE Xizang (Mêdog).

14. Agapetes flava (J. D. Hooker) Sleumer, Bot. Jahrb. Syst. 70: 105. 1939.

黄花树萝卜 huang hua shu luo bo

Pentapterygium flavum J. D. Hooker, Bot. Mag. 82: t. 4910. 1856.

Shrubs. Twigs terete, glabrous or pubescent towards apices. Leaves scattered; petiole 3–4 mm; leaf blade ovate or elliptic, 5–9 × ca. 3.4 cm, leathery, abaxially silky-hairy on midvein, adaxially rugose with fine veins, glabrous, base rounded, margin serrate, apex acute. Inflorescences corymbose, pendulous or nodding. Pedicel red, ca. 2 cm, pubescent, expanded upwards. Calyx tube yellowish, rounded, 5-winged; lobes triangular-ovate, ca. 8 mm, striate, pubescent. Corolla yellow, tubular, ca. 1.7 cm, inflated at middle, angled, puberulous; lobes recurved, small. Filaments pubescent; anthers with tubules ca. 3.5 × as long as thecae, with 2 spurs. Berry ca. 8 mm in diam.

Forests, epiphytic on trees; 1200–1500 m. SE Xizang [NE India].

The above description follows that in the protologue.

15. Agapetes incurvata (Griffith) Sleumer, Bot. Jahrb. Syst. 70: 105. 1939.

皱叶树萝卜 zhou ye shu luo bo

Gaylussacia incurvata Griffith, Ic. Pl. Asiat. 4: t. 506. 1854; *Pentapterygium rugosum* (J. D. Hooker & Thomson ex Hooker) J. D. Hooker; *Vaccinium rugosum* J. D. Hooker & Thomson ex Hooker.

Shrubs. Twigs rounded, 2–3 mm in diam., hirsute towards apices, lenticellate. Leaves scattered, but towards end of insertion subsessile; leaf blade ovate-lanceolate or oblong, 5–10 × 2–3 cm, leathery, abaxially glabrous or pubescent, adaxially very rugose with impressed veins, pubescent, secondary veins 10–15 pairs, strongly raised abaxially, impressed adaxially, base obtuse or rounded, margin revolute, serrate, apex acuminate. Inflorescences corymbose, pendulous, 2- or 3-flowered; peduncle 3–10 mm. Pedicel deep red basally, ca. 3 mm, barely expanded. Calyx tube 1.8–3.8 mm, 5-angled, sparsely pubescent; limb divided ca. 2/3; lobes ovate-triangular, 5–6 mm. Corolla white, green, or deep red to purple, with purple or blood-red zig-zag bands, tubular, ca. 1.9 cm, strongly 5-angled, glabrous or pubescent on wings; lobes triangular. Filaments ca. 3 mm, puberulous; anthers ca. 1.6 cm, thecae papillate, tubules ca. 3 × as long as thecae, with minute spurs. Berry broadly hemispheric, ca. 8 mm or more, 5-ribbed; persistent calyx lobes to 1.2 cm. Fl. May–Jun.

Tsuga-Rhododendron forests, epiphytic on large trees; 1200–2400 m. SE Xizang (Dirangzong) [Bangladesh, Bhutan, NE India (Assam, Khasi hills), E Nepal, Sikkim].

16. Agapetes listeri (King ex C. B. Clarke) Sleumer, Bot. Jahrb. Syst. 70: 105. 1939.

短锥花树萝卜 duan zhui hua shu luo bo

Pentapterygium listeri King ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 450. 1882.

Shrubs. Twigs angled towards apices, glabrous or minutely puberulous. Leaves scattered, subsessile; leaf blade oblong-elliptic, 4–8 × 2–3 cm, leathery, glabrous, secondary veins slightly raised adaxially, base obtuse or shallowly cordate, margin subentire, apex acute. Inflorescences corymbose, 2- or 3-flowered; peduncle 3–4 mm. Pedicel ca. 6 mm, glabrous, ?expanded. Calyx tube conical, ca. 3 mm, 5-winged, glabrous; lobes suborbicular, ca. 3 mm, sometimes minutely apiculate. Corolla yellow, urceolate-cylindric, 1.4–1.5 cm, glabrous; lobes erect, ovate-triangular, ca. 2 mm. Filaments ca. 1 mm, glabrous; anthers ca. 1.2 cm, thecae papillate, shortly caudate at base; tubules ca. 2 × as long as thecae, without spurs. Berry unknown. Fl. May–Oct.

Upper temperate rain forests, epiphytic on trees; (2100–)2400–2700 m. SE Xizang [?Bhutan, NE India (Assam)].

17. Agapetes medogensis S. H. Huang, Acta Phytotax. Sin. 25: 315. 1987.

墨脱树萝卜 mo tuo shu luo bo

Shrubs 30–40 cm tall. Twigs terete, angled, 2–3 mm in diam., glabrous, becoming lenticellate. Leaves scattered; petiole 1–2 mm, glabrous; leaf blade oblong-elliptic, 3.5–7.5 × 1.2–3.2 cm, leathery, glabrous, secondary veins 8–11 pairs, conspicuously raised adaxially, base cuneate to obtuse, margin plane, subentire, with 1 basal gland per side, apex acute. Inflorescences corymbose, from defoliate axils, 1–3-flowered; peduncle 4–5 mm, subglabrous. Pedicel ca. 8 mm, densely pubescent and with sparse glandular hairs, slightly expanded at apex. Calyx tube brownish red, 4–5 mm, broadly 5-winged, sparsely puberulous; limb red, divided ca. 2/3; lobes ovate-triangular, ca. 10 mm, sparsely puberulous. Corolla reddish brown, with dark red zig-zag bands, tubular, ca. 1.5 cm, glabrous; lobes linear-lanceolate, ca. 4 mm. Filaments ca. 1 mm, glabrous; anthers ca. 1.2 cm, thecae papillate, shortly caudate at base; tubules ca. 3 ×

as long as thecae, without spurs. Berry ellipsoidal, ca. 1 × 0.8 cm, with 5 broad wings. Fl. Jan–Apr.

● Evergreen forests, epiphytic on trees; 1700–2200 m. SE Xizang (Mêdog).

18. Agapetes pyrolifolia Airy Shaw, Kew Bull. 13: 487. 1959.

鹿蹄草叶树萝卜 lu ti cao ye shu luo bo

Shrubs 60–80 cm tall. Twigs terete or inconspicuously bluntly angled, 1.5–3 mm in diam., puberulous when young. Leaves scattered; petiole 1–2 mm, glabrous; leaf blade oblanceolate to obovate, 1.5–3.5(–5) × 0.8–2(–2.5) cm, leathery, glabrous, secondary veins 8 or 9 pairs, base cuneate, margin plane, entire or sparsely serrate near apex, apex acute to rounded, mucronate or apiculate. Inflorescences shortly racemose, 1–3-flowered; peduncle 2–6 mm. Pedicel 7–11 mm, densely puberulous, rarely glabrous, slightly expanded at apex. Calyx glabrous or sparsely pubescent; tube ca. 4 mm, conspicuously 5-winged; limb divided ca. 3/4; lobes ovate-triangular, 9–13 mm, submembranous, apex acuminate-acute. Corolla with carmine zigzag bands, tubular, 2–3 cm, 5-angled, glabrous; lobes recurved at apex, greenish, narrowly triangular, 6–8 mm, apex greenish, acuminate. Filaments 3–4 mm, puberulous; anthers 2.4–2.7 cm, thecae papillate, caudate at base, tubules ca. 4 × as long as thecae, without spurs. Immature berry ca. 9 mm in diam. Fl. Mar–May, fr. Sep–Oct.

Evergreen forests, epiphytic on trees, rarely in *Rhododendron* forests or alpine thickets; 1800–2700(–3200) m. SE Xizang, NW Yunnan (Dulongjiang) [Myanmar].

19. Agapetes interdicta (Handel-Mazzetti) Sleumer, Bot. Jahrb. Syst. 70: 106. 1939.

中型树萝卜 zhong xing shu luo bo

Pentapterygium interdictum Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 60: 186. 1923; *Agapetes interdicta* var. *stenoloba* (W. E. Evans) Sleumer; *P. interdictum* var. *stenolobum* W. E. Evans.

Shrubs 30–60 cm tall. Twigs sharply angled, 1–3 mm in diam., hirtellous or glandular setose. Leaves scattered; petiole 1–2 mm, glabrous; leaf blade elliptic, 2–4.5 × 0.8–2.3 cm, leathery, glabrous, secondary veins 8 or 9 pairs, base cuneate, margin slightly revolute, entire or only sparsely serrate near apex, apex acute or apiculate. Inflorescences racemose, 1–3(–7)-flowered; peduncle 4–7 mm. Pedicel 4–10(–13) mm, densely puberulous, sometimes intermixed scattered shortly glandular setose, apex slightly expanded. Calyx glabrous or sparsely pubescent; tube 3–4 mm, conspicuously 5-winged, sparsely pubescent; limb divided ca. 2/3; lobes narrowly ovate-triangular, 6–9(–10) mm, submembranous, apex acuminate. Corolla red, tubular, 2.2–3(–3.4) cm, 5-angled; lobes recurved, greenish, triangular-subulate, 6–9 mm. Filaments 4–5 mm, glabrous; anthers 2.2–2.6(–3.2) cm, thecae caudate at base, tubules (2–)4 × as long as thecae, without spurs. Berry unknown. Fl. Mar, fr. Aug.

Evergreen forests, epiphytic on trees; 2300–2700(–2900) m. SE Xizang, NW Yunnan (Dulongjiang) [Myanmar].

20. Agapetes neriifolia (King & Prain) Airy Shaw, Bull. Misc. Inform. Kew 1935: 39. 1935.

夹竹桃叶树萝卜 jia zhu tao ye shu luo bo

Desmogyne neriifolia King & Prain, J. Asiat. Soc. Bengal 67(2): 297. 1898.

Shrubs glabrous. Twigs inconspicuously angled, 1.5–5 mm in diam. Leaves scattered; petiole 1–2 mm; leaf blade drying grayish on both surfaces, oblong-lanceolate, 5–10(–15) × 1.5–2 cm, leathery, secondary veins inconspicuous on both surfaces, base rounded, margin revolute, entire, with 1 ± conspicuous basal gland per side, apex long acuminate. Inflorescences corymbose, 1.5–2.5 cm, 5–10-flowered. Pedicel 1.5–3 cm, enlarged into a cup apically. Calyx crimson, broadly campanulate; tube obconical, ca. 2 mm; limb inflated, ca. 1.5 cm wide, undivided. Corolla dull crimson with a bluish bloom, with dark zig-zag bands, tubular, ca. 4 cm; lobes triangular, ca. 2 mm. Filaments ca. 3 mm, glabrous; anthers ca. 3.3 cm, thecae papillate, tubules ca. 4.5 × as long as thecae, without spurs. Fl. Mar–Sep.

Forests, epiphytic on trees; ca. 1200 m. SW Yunnan [Myanmar].

21. Agapetes pseudogriffithii Airy Shaw, Bull. Misc. Inform. Kew 1935: 40. 1935.

杯梗树萝卜 bei geng shu luo bo

Shrubs 0.4–1(–2) m tall, glabrous. Root tuber spindle-shaped. Twigs terete, 1–2.5 mm in diam. Leaves scattered; petiole 3–7 mm; leaf blade oblong-lanceolate or ovate-lanceolate, 6–14 × 1.5–3.5 cm, leathery, secondary veins inconspicuous on both surfaces, base rounded or broadly cuneate, margin plane or slightly revolute, entire, basal glands inconspicuous, apex long acuminate. Inflorescences red, corymbose, 1.5–5 cm, slender, 3–7-flowered. Pedicel red, 1–2 cm, stout, fleshy, cup-shaped apically. Calyx ca. 1 cm, glabrous; limb divided ca. 2/3; lobes ovate-triangular, ca. 6 mm. Corolla pinkish, crimson, carmine, or orange, tubular, 2–3 cm; lobes erect, green, triangular, ca. 2 mm. Filaments 3–4 mm, subglabrous; anthers ca. 2.1 cm, thecae papillate, tubules ca. 3 × as long as thecae, without spurs. Berry shortly cylindric, 7–12 × 5–9 mm. Fl. Nov–Jan of next year, fr. Mar–May.

Evergreen forests, epiphytic on trees; 1300–1500 m. NW Yunnan (Dulongjiang) [Myanmar].

22. Agapetes griffithii C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 449. 1882.

尾叶树萝卜 wei ye shu luo bo

Shrubs climbing, glabrous. Twigs ?terete. Leaves scattered; petiole ca. 5 mm; leaf blade oblong, 8–15 × 2–5 cm, papery to thinly leathery, base cuneate, margin entire, apex acuminate to abruptly and shortly caudate. Inflorescences corymbose, 3–4 cm, 2–4-flowered. Pedicel 1.5–2.5 cm, enlarged apically. Calyx tube ca. 2.5 × 3 mm, not angled; limb divided to base; lobes ovate, 3–5 mm, apex acute. Corolla reddish, with dark violet zig-zag bands, ± tubular, ca. 2.5 cm; lobes green, ca. 4 mm. Filaments ca. 8 mm, hairy in upper part; anthers ca. 2.2 cm, tubules ca. 2 × as long as thecae, without spurs. Berry unknown. Fl. Nov.

Forests; 1000–2100 m. SE Xizang [India].

23. Agapetes hyalocheilos Airy Shaw, Bull. Misc. Inform. Kew 1935: 42. 1935.

透明边树萝卜 tou ming bian shu luo bo

Agapetes saligna J. D. Hooker var. *cordifolia* C. B. Clarke.

Shrubs glabrous. Twigs terete, ca. 1 mm in diam., with sparse orbicular lenticels. Leaves scattered; petiole ca. 2 mm; leaf blade ovate-lanceolate, 7–12.5 × 1.5–3.2 cm, thickly papery, glabrous, secondary veins ca. 8 pairs, inconspicuous, base rounded, margin very narrowly hyalocartilaginous, entire, without basal glands, apex acuminate or subcaudate. Inflorescences corymbose, ca. 1.5 cm. Pedicel ca. 2 cm, expanded apically. Calyx tube 6–7 mm; limb divided ca. 1/2; lobes narrowly triangular, ca. 3 mm, carinate on back, apex acute. Corolla bright red, with darker bands, narrowly funnelform, ca. 2 cm; lobes recurved, broadly triangular, 1–2 mm. Filaments 2–3 mm, slightly papillose-ciliolate; anthers ca. 1.5 cm, thecae ca. 4 mm, papillate, tubules free, ca. 3 × as long as thecae, without spurs. Berry unknown.

Forests, epiphytic on trees; ca. 1000 m. S Xizang [N Myanmar].

24. Agapetes xizangensis S. H. Huang, Acta Phytotax. Sin. 25: 315. 1987.

西藏树萝卜 xi zang shu luo bo

Shrubs 1–2 m tall, or trees to 15 m tall, glabrous. Twigs terete, ca. 8 mm in diam. Leaves scattered; petiole 1–2 cm; leaf blade oblong-lanceolate, 10–21 × 2–4.5 cm, thickly leathery, secondary veins 4–6 pairs, inconspicuous, base broadly cuneate to rounded, margin slightly revolute, sparsely inconspicuously denticulate, apex acuminate. Inflorescences corymbose, 1.5–2.2 cm, 6–13-flowered. Pedicel red, 2–3 cm, fleshy, expanded upwards. Calyx tube rounded, ca. 2.5 mm, glaucous; limb red, ca. 1 cm, divided ca. 2/3; lobes ovate-lanceolate, ca. 6 × 4 mm, angled, distinctly veined. Corolla bluish purple with dark purple zig-zag bands, glaucous, tubular, ca. 1.7 cm, fleshy, with 5 raised veins; lobes triangular, ca. 1 mm. Filaments ca. 3 mm, pilose apically; anthers ca. 1.1 cm, thecae papillate; tubules nearly 3 × as long as thecae, without spurs. Berry unknown. Fl. Mar–May.

● Evergreen forests, epiphytic on tall trees; 1500–2000 m. SE Xizang (Mêdog).

25. Agapetes subsessilifolia S. H. Huang, H. Sun & Z. K. Zhou, Novon 8: 378. 1998.

近无柄树萝卜 jin wu bing shu luo bo

Shrubs glabrous. Twigs slightly angled, ca. 2 mm in diam. Leaves scattered, sometimes subopposite, subsessile or petioles 2–3 mm; leaf blade ovate-oblong to broadly elliptic, 7.5–14 × 3–5.5 cm, leathery, secondary veins 4–6 pairs, base rounded, margin plane, subentire, basal glands inconspicuous, apex acuminate. Inflorescences corymbose, 3–5-flowered; peduncle 2.5–3.5 cm. Pedicel ca. 3 cm, slender, clavate apically. Calyx tube ca. 4 mm; limb divided ca. 2/3; lobes narrowly triangular, ca. 5 mm. Corolla red, with purplish zig-zag bands, tubular, ca. 2.5 cm; lobes triangular, short. Filaments ca. 1 mm, puberulous; anthers ca. 2.2 cm, tubules ca. 3 × as long as thecae, without spurs. Berry unknown. Fl. Oct.

● Forests, epiphytic on trees; ca. 1600 m. SE Xizang (Mêdog).

26. Agapetes nutans Dunn, Bull. Misc. Inform. Kew 1920: 134. 1920.

垂花树萝卜 chui hua shu luo bo

Shrubs. Roots thick. Twigs slightly angled, ca. 1.5 mm in diam., glabrous. Leaves scattered; petiole ca. 4 mm; leaf blade linear, 12–17 × 0.6–1.1 cm, papery, glabrous, secondary veins inconspicuous on both surfaces, base attenuate, margin slightly revolute, shallow and remotely undulate-denticulate towards apex, without basal glands, apex caudate. Inflorescences corymbose-racemose, 5- or 6-flowered; peduncle 6–7 cm, nutant, pubescent. Pedicel ca. 1.2 cm, glabrous, not expanded. Calyx tube ca. 3 mm; limb divided ca. 1/2; lobes triangular, 3–4 mm. Corolla crimson or carmine, tubular, ca. 2.2 cm; lobes green-tipped, ca. 3 mm, apex acute. ?Anthers with thecae ca. 6 mm, papillate; tubules without spurs. Fl. Jan–Feb.

High forests, epiphytic on trees; 1000–1700 m. SE Xizang [NE India (Assam)].

27. Agapetes linearifolia C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 449. 1882.

线叶树萝卜 xian ye shu luo bo

Shrubs 30–40 cm tall, slightly branched, glabrous. Root tubers pointed-ovoid. Twigs terete, 1–2 mm in diam. Leaves scattered; petiole robust, 2–4 mm; leaf blade linear-lanceolate, 10–15 × 0.7–1.3 cm, leathery, glabrous, secondary veins ca. 10 pairs, inconspicuous abaxially, base obtuse, margin strongly revolute, entire, without basal glands, apex acuminate. Inflorescences corymbose, pendent, 8-flowered; peduncle rose, 0.7–2 (–4.2) cm. Pedicel scarlet, ca. 2.2 cm, fleshy, cup-shaped apically. Calyx tube scarlet, 2–3 mm; limb 5-veined, divided ca. 1/2 or more; lobes triangular, 3–4 mm. Corolla green, glaucous, tubular-conical, 1.3–1.5 cm; lobes erect, triangular, ca. 1.3 mm. Filaments ca. 5 mm, glabrous; anthers 0.8–1 cm, thecae scabrous-papillate, tubules to 1.5 × as long as thecae, without spurs. Berry unknown. Fl. Apr.

● Temperate rain forests, epiphytic on trees; ca. 1800 m. SE Xizang.

The above description follows that of Airy Shaw (Bull. Misc. Inform. Kew 1935: 41–42. 1935).

28. Agapetes discolor C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 448. 1881.

异色树萝卜 yi se shu luo bo

Shrubs. Twigs terete, ca. 2.5 mm in diam., glabrous or pubescent. Leaves scattered; petiole 1–3 mm; leaf blade green adaxially, elliptic or oblong, ca. 4.5 × 1.2–1.6 cm, leathery, glabrous, abaxially glaucescent, base cuneate, margin plane, remotely shallowly dentate, apex acuminate. Inflorescences corymbose, glabrous, to 8-flowered; peduncle 6–8 mm. Pedicels ca. 2 cm, cup-shaped apically. Calyx tube obconical, ca. 3 mm; limb campanulate, divided ca. 3/4; lobes ovate-triangular,

4–5 mm. Corolla much narrowed upwards in bud, 1.2–3.2 cm, lobed nearly to base, glabrous; lobes linear, margin strongly revolute at anthesis. Filaments ca. 1 mm, glabrous; anthers ca. 1 cm; thecae papillate, tubules ca. 3 × as long as thecae, without spurs. Berry globose, narrower upwards; persistent calyx lobes erect, long, ca. 5 mm in diam. Fl. Oct–Dec, fr. Mar.

Forests, epiphytic on trees; 1200–1500 m. S Xizang [?Bhutan, NE India (Assam, Khasi hills), ?Sikkim].

29. Agapetes leiocarpa S. H. Huang, Acta Phytotax. Sin. 25: 317. 1987.

光果树萝卜 guang guo shu luo bo

Shrubs to 80 cm. Twigs terete, 1.5–2 mm in diam., densely pubescent, glabrescent. Leaves scattered; petiole 1–2 mm, glabrous; leaf blade lanceolate, 3.5–6 × 0.7–1 cm, leathery, glabrous, secondary veins 3 or 4 pairs, inconspicuous, base cuneate, margin plane, remotely dentate, apex acuminate. Flowers unknown. Infructescences corymbose, 4–6-fruited; peduncle ca. 8 mm, glabrous. Pedicel ca. 2 cm, shallowly cup-shaped apically, glabrous. Berry globose, 4.5–5 mm, glabrous; persistent calyx lobes narrowly triangular, 5–6 mm, leathery, glabrous. Fr. Apr.

● Rocky valleys, epiphytic on tall trees; ca. 1600 m. SE Xizang (Mêdog).

30. Agapetes forrestii W. E. Evans, Notes Roy. Bot. Gard. Edinburgh 15: 202. 1927.

伞花树萝卜 san hua shu luo bo

Shrubs or trees, 1–10 m tall. Twigs slightly angled, 1–1.5 mm in diam., densely setose, hairs simple or forked. Leaves scattered; petiole very short; leaf blade green adaxially, ovate-lanceolate, 2.5–4 × 0.8–1.2 cm, leathery, glabrous, both surfaces glaucous, secondary veins ca. 2 pairs, slightly raised abaxially, impressed adaxially, base rounded, margin revolute, remotely dentate, apex acuminate. Inflorescences corymbose, 4–6-flowered; peduncle ca. 2 cm, glabrous. Pedicel ca. 1.5 cm, setose, pubescent, or glabrous, expanded apically. Calyx tube sparsely setose; limb divided to base; lobes triangular, ca. 2 mm, apex acute. Corolla crimson, with dark red zig-zag bands, tubular, ca. 2 cm; lobes greenish, triangular, ca. 2 mm. Filaments ca. 1 mm, pilose; anthers ca. 1.3 cm, tubules ca. 3 × as long as thecae, without spurs. Berry globose, ca. 5 mm in diam. Fl. Dec–May of next year.

Forests, epiphytic on trees, cliffs; 1800–2700 m. SE Xizang, W Yunnan [N Myanmar].

31. Agapetes leucocarpa S. H. Huang, Acta Phytotax. Sin. 25: 317. 1987.

白果树萝卜 bai guo shu luo bo

Shrubs pendulous, glabrous. Twigs terete, 1.5–2 mm in diam. Leaves scattered; petiole 4–5 mm; leaf blade elliptic, 3–5 × 1–2 cm, thickly leathery, secondary veins inconspicuous with fine veins inconspicuous abaxially, impressed adaxially, base broadly cuneate or obtuse, margin cartilaginous, plane, entire, with 1 basal gland per side, apex acuminate or caudate. Inflorescences corymbose, 2- or 3-flowered; peduncle red, ca. 1 cm. Pedicel 7–8 mm, clavate apically. Flowers unknown. Berry white, globose, ca. 5 mm in diam.; persistent calyx lobes ca. 3 mm. Fr. Jun.

● Evergreen forests, epiphytic on trees; 2300–2400 m. SE Xizang (Mêdog).

32. Agapetes buxifolia Nuttall ex J. D. Hooker, Bot. Mag. 83: t. 5012. 1857.

黄杨叶树萝卜 huang yang ye shu luo bo

Shrubs 1.2–1.5 m tall. Twigs angled, 2–3 mm in diam., densely glandular hispid. Leaves crowded; petiole ca. 2 mm; leaf blade pale green abaxially, bright green adaxially, obovate or elliptic, 1.5–2.8 × 1–1.2 cm, leathery, glabrous, secondary veins ca. 3 pairs, inconspicuous, base cuneate, margin plane, crenate above middle, apex acute. Inflorescences axillary, 1- or 2-flowered. Pedicel ca. 8 mm, slender, densely villous, slightly expanded towards apex. Calyx tube green, narrowly obconic-campanulate, ca. 3 mm, villous; limb divided to base; lobes tri–angular-lanceolate, 3–4 mm. Corolla bright red, tubular, ca. 2.5 cm, glabrous; lobes spreading, pale or greenish, ovate-lanceo–late, 4–6 mm. Filaments ca. 4 mm, glabrous; anthers ca. 1.8 cm, thecae shortly caudate at base, tubules ca. 4 × as long as thecae, without spurs. Berry unknown. Fl. Apr–May.

Damp forests, epiphytic on trees; 600–900 m. S Xizang [NE India (Assam)].

33. Agapetes camelliifolia S. H. Huang, Acta Phytotax. Sin. 25: 318. 1987.

茶叶树萝卜 cha ye shu luo bo

Shrubs to 30 cm tall. Twigs terete, 1–2 mm in diam., densely dark brown setose. Leaves scattered; petiole 2–3 mm, glabrous; leaf blade pale abaxially, green adaxially, elliptic, 3.5–5 × 1.5–2.3 cm, leathery, glabrous, secondary veins 4 or 5 pairs with fine veins slightly raised abaxially, impressed adaxially, base broadly cuneate or obtuse, margin slightly revolute, remotely inconspicuously serrate, apex shortly acuminate. Flowers unknown. Fruit solitary, axillary. Pedicel ca. 1.3 cm, glabrous, expanded apically. Immature berry shortly cylindric, ca. 3 mm in diam.; persistent calyx lobes triangular, ca. 2.5 mm, glabrous. Fr. Apr.

● Forests, epiphytic on trees; ca. 2200 m. SE Xizang (Mêdog).

34. Agapetes mitrarioides J. D. Hooker ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 447. 1881.

亮红树萝卜 liang hong shu luo bo

Shrubs small, much branched. Twigs terete, ca. 1 mm in diam., densely brown hispidulous. Leaves scattered; petiole ca. 1 mm; leaf blade elliptic or ovate, 1.2–1.8 × 0.6–1.2 cm, rigidly leathery, secondary veins inconspicuous on both surfaces, base broadly cuneate, margin plane, remotely shallowly rigidly serrate, apex acute. Inflorescences corymbose, 1- or 2-flowered; peduncle 1.5–1.7 cm, very slender, puberulous. Pedicel 1.6–2 cm, slender, puberulous, expanded apically. Calyx tube ca. 6 mm, puberulous; limb divided ca. 1/2; lobes triangular-lanceolate, 2.5–3 mm. Corolla bright red, tubular, 2–2.5 cm, puberulous on angles; lobes triangular, 2–3 mm. Berry unknown.

● Forests, epiphytic on trees, rocks. SE Xizang.

One of us (Stevens) questions whether this is a good species.

35. Agapetes refracta Airy Shaw, Kew Bull. 13: 496. 1959.

折瓣树萝卜 zhe ban shu luo bo

Shrubs. Twigs terete, 1–2 mm in diam., densely long fuscous-setose. Leaves scattered; petiole ca. 1 mm; leaf blade ovate, 1.7–2.8 × 0.9–1.7 cm, thinly papery, glabrous, base rounded, margin plane, remotely crenulate, apex acute or subacute. Flowers solitary, axillary. Pedicel 1.5–2.5 cm, slender, nutant, glabrous, not expanded. Calyx tube elliptic-obovate, glabrous; limb divided nearly to base; lobes triangular, 1.5–2 mm. Corolla rose, ellipsoidal-tubular, 1.6–1.8 cm, glabrous; lobes reflexed, linear-subulate, 7–8.5 mm, margin not revolute. Filaments 4–5 mm, glabrous; anthers 1.2–1.4 cm; thecae papillate, base shortly caudate; tubules ca. 2 × as long as thecae, without spurs. Berry unknown. Fl. Oct.

● Forests, epiphytic on trees; 1200–1500 m. SE Xizang.

36. Agapetes lacei Craib, Bull. Misc. Inform. Kew 1913: 43. 1913.

灯笼花 deng long hua

Shrubs 30–90 cm tall, pendulous. Rootstock tuberous. Twigs 1–2 mm in diam., rounded, densely spreading to ascending brown setose. Leaves crowded; petiole ca. 1 mm, puberulous; leaf blade elliptic, 0.7–2 × 0.5–1 cm, leathery, glabrous, secondary veins 1 or 2 pairs, inconspicuous, base cuneate or rounded, margin recurved, remotely serrulate, apex obtuse or acute. Flowers solitary, axillary. Pedicel 1.5–1.8 cm, densely pubescent, glandular pubescent, tomentellate, or glabrous. Calyx tube ca. 4 mm, pubescent, tomentellate, intermixed glandular setose, or glabrous; limb divided 1/2–3/4; lobes triangular, 1.5–3 mm. Corolla light crimson, tubular, 2–3 cm, glabrous; lobes spreading, dark green, triangular, 7–8 mm. Filaments 0.8–1.5 mm, glabrous; anthers 1.3–1.7 cm, thecae apiculate at base, tubules ca. 1.5 × as long as thecae, without spurs. Berry red, 5–8 mm in diam. Fl. Jan–Jun, fr. May.

Evergreen or shaded forests, epiphytic on trees, hills, cliffs, ledges, boulders, rocks; 1500–3000 m. SE Xizang, W Yunnan [N Myanmar (Kachin)].

1a. Pedicel and calyx tube glabrous ..... 36b. var. *glaberrima*
1b. Pedicel and calyx tube with hairs.
  2a. Pedicel and calyx tube pubescent, calyx tube also glandular setose ..... 36a. var. *lacei*
  2b. Pedicel and calyx tube densely grayish tomentellate ..... 36c. var. *tomentella*

36a. Agapetes lacei var. **lacei**

灯笼花(原变种) deng long hua (yuan bian zhong)

Pedicel and calyx tube pubescent, calyx tube also glandular setose.

Evergreen forests, epiphytic on trees; 1500–1800 m. SE Xizang, W Yunnan [N Myanmar (Kachin)].

36b. Agapetes lacei var. **glaberrima** Airy Shaw, Kew Bull. 13: 498. 1959.

无毛灯笼花 wu mao deng long hua

Pedicel and calyx tube glabrous.

● Shaded forests, epiphytic on trees, cliffs, boulders, rocks; 2100–3000 m. SE Xizang, NW Yunnan.

36c. Agapetes lacei var. **tomentella** Airy Shaw, Kew Bull. 13: 498. 1959.

绒毛灯笼花 rong mao deng long hua

Pedicel and calyx tube densely grayish tomentellate.

● Shaded forests, epiphytic on trees, hills, cliff ledges in valleys; 2100–3000 m SE Xizang, NW Yunnan.

37. Agapetes serpens (Wight) Sleumer, Bot. Jahrb. Syst. 70: 105. 1939.

五翅莓 wu chi mei

Vaccinium serpens Wight, Calcutta J. Nat. Hist. 8: 171. 1847; *Pentapterygium serpens* (Wight) Klotzsch; *Thibaudia myrtifolia* Griffith.

Shrubs 40–60 cm tall. Rootstock tuberous. Twigs terete, 1–2 mm in diam., densely spreading glandular setose. Leaves crowded; petiole ca. 1 mm, glabrous; leaf blade pale green abaxially, deep green adaxially, narrowly ovate or ovate-oblong, 1.2–2 cm × 5–8 mm, leathery, abaxially smooth, adaxially drying transversely rugose, glabrous, secondary veins ca. 3 pairs, usually inconspicuous, base rounded, margin slightly recurved, serrate above middle, apex acute or obtuse, distinctly mucronulate. Inflorescences fasciculate, 1–3-flowered. Pedicel erect or pendulous, 0.7–2.5 cm, densely spreading glandular setose, slightly thicker at apex. Calyx tube 3.5–4 mm, 5-winged, along wings sparsely glandular setose; limb divided nearly to base; lobes ovate-triangular, 3.5–4.5 mm, glandular ciliate, apex acute or subobtuse. Corolla bright red, orange, or pinkish white, with dark red zig-zag bands, tubular, 1.2–2.8 cm, 5-angled, sparsely glandular; lobes recurved, triangular, 2–3(–6) mm. Filaments ca. 3 mm, glabrous; anthers ca. 1.9 cm, thecae papillate, base apiculate, tubules to 2 × as long as thecae, without spurs. Berry obovoid, 5-winged, ca. 6 mm in diam.; persistent calyx lobes enlarged. Fl. May–Jun, fr. May–Nov.

Evergreen forests, epiphytic on mossy tree trunks, rocks; 1200–2400 m. S Xizang (Dinggyê, Nyalam) [Bhutan, NE India (Darjiling), E Nepal, Sikkim].

38. Agapetes praeclara C. Marquand, J. Linn. Soc., Bot. 48: 197. 1929.

藏布江树萝卜 zang bu jiang shu luo bo

Shrubs pendulous. Twigs terete, 1–1.5 mm in diam., densely spreading rubiginous setose. Leaves scattered; petiole ca. 1 mm; leaf blade ovate-elliptic, ca. 1.5 × 1 cm, leathery, glabrous, adaxially transversely bullate, veins impressed, secondary veins ca. 3 pairs, inconspicuous abaxially, barely evident adaxially, base rounded, margin recurved, remotely 2- or 3-serrate, apex acute to subobtuse. Inflorescences fasciculate, 1- or 2-flowered. Pedicel tinged with red, ca. 1 cm, glabrous, not swollen. Calyx tube ca. 2 mm, glabrous; limb divided nearly to base; lobes triangular, 1.5–2 mm. Corolla crimson or deep red, tubular,

1.5–2 cm, glabrous; lobes green, apex acute. Filaments ca. 0.5 mm, glabrous; anthers 9–12 mm, tubules 2–3 × as long as thecae, without spurs. Berry unknown. Fl. Nov–Feb of next year.

● Evergreen forests, epiphytic on trees, cliffs; ca. 2100 m. SE Xizang (Mêdog: Zangbo gorge).

39. Agapetes miranda Airy Shaw, Kew Bull. 3: 102. 1948.

坛花树萝卜 tan hua shu luo bo

Shrubs; branches ca. 60 cm, pendulous. Rootstock tuberous. Twigs terete, ca. 1 mm in diam., densely setose. Leaves crowded; petiole 0.5–1 mm, slender; leaf blade broadly elliptic or suborbicular, 5–9 × 4–6 mm, rigidly leathery, abaxially glaucous, drying rugose, glabrous, secondary veins inconspicuous on both surfaces, base rounded or obtuse, margin recurved, inconspicuously crenate or subentire, apex rounded or obtuse. Inflorescences fasciculate, 1- or 2-flowered. Pedicel 1–1.4 cm, slender, sparsely setose, not expanded. Calyx tube obovoid, setose at base; limb divided to base; lobes spreading, ovate-triangular, ca. 2 mm, sparsely ciliate. Corolla lemon yellow, urceolate, 7–8 mm, with 5 wings ca. 2 mm wide, shortly glandular hairy on wings only; lobes spreading, green, ovate-triangular. Filaments 2–2.5 mm, glabrous; thecae papillate, tubules ca. as long as thecae, without spurs. Berry unknown. Fl. May.

Evergreen forests, epiphytic on trees; ca. 2400 m. SE Xizang [NE India (Assam)].

40. Agapetes praestigiosa Airy Shaw, Kew Bull. 13: 495. 1959.

听邦树萝卜 ting bang shu luo bo

Shrubs pendulous. Twigs terete, 1–2 mm in diam., densely fuscous-setose. Leaves crowded; petiole ca. 1 mm; leaf blade drying grayish green adaxially, ovate or elliptic, 1.5–2.2 × 0.6–1.1 cm, rigidly leathery, glabrous, adaxially bullate, base broadly cuneate to rounded, margin very recurved, serrulate-denticulate, apex abruptly acuminate, nearly apiculate. Inflorescences subfasciculate, sometimes on older wood, 3–8-flowered. Pedicel 6–10 mm, glabrous, not expanded. Calyx tube obovoid, ca. 2 mm in diam., glabrous; limb divided ca. 1/2; lobes triangular, 1.5–2 mm, glabrous. Corolla cherry-red, globose-urceolate, 5–7 mm, strongly 5-angled, glabrous; lobes erect, triangular, ca. 0.5 mm. Filaments ca. 0.5 mm, glabrous; anthers 4–5 mm, thecae caudate at base, tubules ca. as long as thecae, without spurs. Berry globose, 3–5 mm in diam., glabrous. Fl. May.

Forests, epiphytic on trees; 2100–2400 m. SE Xizang (near Dirangzong) [NE India (Assam)].

41. Agapetes pilifera J. D. Hooker ex C. B. Clarke in J. D. Hooker, Fl. Brit. India 3: 448. 1881.

钟花树萝卜 zhong hua shu luo bo

Vaccinium piliferum (J. D. Hooker) Sleumer.

Trees to 5 m tall or large, epiphytic shrubs. Twigs barely angled, 1–1.5 mm in diam., glabrous. Leaves scattered; petiole 4–6 mm, glabrous or glandular pilose; leaf blade drying blackish, elliptic, 4.5–6.5 × 1.5–2.8 cm, thinly leathery, glabrous, secondary veins 3–5 pairs, barely evident, base rounded, margin plane, entire, without basal glands, apex slenderly caudate-acuminate. Flowers axillary, fasciculate, 1–4-flowered. Pedicel filiform, 1.5–2 cm, densely spreading glandular pilose, slightly thickened upwards. Calyx tube green, ca. 1 mm; limb ± divided; lobes triangular, ca. 0.5 mm. Corolla green, shortly campanulate, 5–7 mm, glabrous; lobes oblong, apex acute. Filaments ca. 0.5 mm, glabrous; anthers ca. 3 mm, tubules ca. 1.5 × as long as thecae, with spreading spurs. Berry reddish to blackish, globose, 3–4 mm in diam., glabrous. Fr. Nov.

Open forests, river banks in forests, sometimes epiphytic; 1200–1500 m. SE Xizang, NW Yunnan (Dulongjiang) [NE India (Khasi hills), Myanmar].

42. Agapetes inopinata Airy Shaw, Kew Bull. 14: 229. 1960.

沧源树萝卜 cang yuan shu luo bo

Agapetes glandulosissima (C. Y. Wu ex W. P. Fang & Z. H. Pan) S. H. Huang; *Vaccinium glandulosissimum* C. Y. Wu ex W. P. Fang & Z. H. Pan.

Shrubs. Twigs terete, ca. 1.5 mm in diam., densely spreading brown glandular setose or setose. Leaves scattered; petiole ca. 1 mm, glabrous; leaf blade ovate or ovate-oblong, 3–5.5 × 1.4–2 cm, leathery, glabrous, secondary veins 6–8 pairs, obsolete abaxially, evident adaxially, fine veins barely evident, base rounded, margin plane, entire, without basal glands, apex acuminate or shortly caudate-acuminate. Inflorescences axillary, racemose, 4–10 mm, with dense glandular hairs, 4–6-flowered. Pedicel 4–7 mm, with dense glandular hairs, not expanded. Calyx tube rounded, ca. 1 mm, usually densely glandular hairy; limb divided to base; lobes triangular, ca. 1 mm. Corolla red, tubular, ca. 8 mm, with dense glandular hairs; lobes erect or recurved, triangular, ca. 1 mm. Filaments ca. 3 mm, puberulous; anthers ca. 4 mm, thecae papillate, tubules ca. as long as thecae, with 2 short spreading spurs. Berry unknown. Fl. Apr.

Forests, epiphytic on *Quercus*; ca. 1600 m. SW Yunnan [Myanmar].

The illustration of *Agapetes glandulosissima* in Acta Bot. Yunnan. 5: 147. 1983 shows the filaments longer than the anthers; the original description mentions the inflorescence ca. 2.5 cm and pedicels 2–3 mm.

43. Agapetes oblonga Craib, Bull. Misc. Inform. Kew 1913: 43. 1913.

长圆叶树萝卜 chang yuan ye shu luo bo

Agapetes oblonga var. *longipes* Airy Shaw.

Shrubs 0.5–3 m tall, occasionally small trees to 4 m tall. Rootstock tuberous. Twigs rounded, 1.3–2 mm in diam., densely white pubescent and densely brown spreading glandular setose. Leaves scattered; petiole 1–1.5 mm; leaf blade oblong, ovate, or oblong-lanceolate, 3–10 × 1.2–4 cm, leathery or papery, abaxially glabrous or sparsely setose on veins, adaxially smooth or ± bullate, glabrous, secondary veins 5–7 pairs, slightly raised abaxially, flat to slightly impressed adaxially, base broadly cuneate, rounded, shallowly cordate, or obtuse, margin plane, entire or inconspicuously serrate beyond middle or sparsely denticulate at apex, apex acute, acuminate, or caudate. Inflorescences fasciculate, sometimes on older wood, 1–4-flowered. Pedicel 0.6–1.8(–2.5) cm, densely pubescent, sometimes intermixed glandular setose, or glabrous, not expanded. Calyx

tube red or reddish green, ca. 2 mm, densely spreading hirsute; limb sparsely hirsute or glabrous, divided ca. 1/2; lobes ovate-triangular, 1.5–2 mm. Corolla crimson or carmine, tubular, 1.3–1.9 mm, 5-angled, glabrous or sparsely hirsute along angles; lobes green or yellow, triangular, ca. 1.5 mm. Filaments 4–9 mm, glabrous; anthers ca. 6 mm, tubules ± as long as thecae, with 2 short spurs. Berry globose, 4–5 mm in diam. Fl. Oct–Apr of next year, fr. Mar–May.

Evergreen forests, epiphytic on trees, rocks; 1300–1700(–2700) m. SE Xizang, W Yunnan [Myanmar].

44. Agapetes malipoensis S. H. Huang, Acta Bot. Yunnan. 5: 148. 1983.

麻栗坡树萝卜 ma li po shu luo bo

Shrubs. Rootstock spindle-shaped. Twigs terete, to 7 mm in diam., densely brown spreading glandular setose. Leaves scattered and sometimes subopposite; petiole 1–3 mm and glabrous or leaves subsessile; leaf blade elliptic or oblong-lanceolate, 5–12.5 × to 5.5 cm, leathery, glabrous, adaxially slightly bullate, secondary veins 5–7 pairs, secondary and fine veins raised on both surfaces, base attenuate, obtuse, or auriculate, margin recurved, entire, with 1 or 2(–4) subbasal glands per side, apex acute or acuminate. Inflorescences fasciculate, sometimes below leaves, 3- or 4-flowered. Pedicel 3–6 mm, slightly thickened towards apex, densely glandular setose or glabrous. Calyx 4–5 mm, densely spreading glandular setose; limb divided ca. 1/3; lobes triangular, ca. 1.5 mm. Corolla white, tubular, ca. 2 cm, with glandular hairs; lobes triangular, ca. 1 mm. Filaments ca. 1.4 cm, upwards densely pubescent; anthers ca. 6 mm, thecae papillate, tubules to 2 × as long as thecae, with 2 erect spurs. Berry globose, 4–6 mm in diam., setose. Fl. Oct–Dec, fr. Oct–Jan.

Dense forests, sometimes epiphytic on trees, thickets at bases of hills, rock crevices; 1100–2000 m. SE Yunnan [N Vietnam].

45. Agapetes mannii Hemsley, Gard. Chron., ser. 3, 12: 364. 1892.

白花树萝卜 bai hua shu luo bo

Agapetes yunnanensis Franchet.

Shrubs 0.3–0.6(–1) m tall. Rootstock tuberous. Twigs terete, 1–1.8 mm in diam., densely puberulous when young, hairs in small groups. Leaves crowded; petiole ca. 2 mm, densely puberulous; leaf blade obovate, elliptic, or spatulate, 1.1–2.5 × 0.5–1.1 cm, leathery, abaxially glabrous, adaxially puberulous on midvein, otherwise glabrous, sometimes slightly transversely bullate, secondary veins 3 or 4 pairs, barely conspicuous, base cuneate, margin recurved, entire, with 1, rarely 2 subbasal glands per side, apex rounded, emarginate. Flowers solitary or 2 together. Pedicel 4–8 mm, glabrous, not swollen. Calyx tube 1.5–2 mm, densely puberulous or glabrous; limb divided ca. 1/2; lobes subtriangular, ca. 1 mm. Corolla white or greenish white, tubular, 1.1–1.5 cm, glabrous; lobes erect or ?recurved, triangular, ca. 2 mm. Filaments ca. 8 mm, densely woolly; anthers ca. 6 mm, tubules ca. as long as thecae, with 2 erect spurs. Berry greenish white, when mature bright red to purple, globose, 0.5–1.1 cm in diam. Fl. (May–)Jun–Sep, fr. (Aug–)Oct–Nov.

Evergreen forests, sometimes epiphytic on *Quercus,* dry slopes, dry cliff ledges, humus-covered boulders, rocks; 1400–3100(–3600) m. Yunnan [NE India (Khasi hills), Myanmar, Thailand].

46. Agapetes obovata (Wight) J. D. Hooker in Bentham & J. D. Hooker, Gen. Pl. 2. 572. 1876.

倒卵叶树萝卜 dao luan ye shu luo bo

Vaccinium obovatum Wight, Icon. Pl. Ind. Orient. 4: t. 1193. 1848; *Thibaudia obovata* (Wight) Griffith.

Shrubs much branched. Twigs terete, ca. 1 mm in diam., glabrous or spreading hispid. Leaves crowded; petiole ca. 2.5 mm; leaf blade obovate-spatulate, 0.8–2.2 cm × 5–9 mm, leathery, glabrous, adaxially slightly rugose, secondary veins inconspicuous, base cuneate, margin recurved, entire, with 1 subbasal gland per side, apex obtuse or emarginate. Flowers solitary, pendulous. Pedicel 0.8–1 cm, glabrous, not swollen. Calyx tube 1–2 mm, glabrous; limb divided 2/3 to base; lobes triangular-lanceolate, ca. 1 mm. Corolla deep red, campanulate, 6–7 mm; lobes triangular, 1.5–2.5 mm, margin ?revolute. Filaments ca. 1.5 mm, pilose; anthers ca. 4.5 mm, thecae papillate, base apiculate, tubules ca. 2 × as long as thecae, with 2 erect spurs. Berry white, globose, 4–5 mm in diam. Fl. Mar.

Evergreen forests, epiphytic on trees; ca. 2100 m. SE Yunnan [NE India (Khasi hills)].

In overall appearance this species is much like a small-leaved *Vaccinium,* but the corolla is pointed in bud.

47. Agapetes pensilis Airy Shaw, Bull. Misc. Inform. Kew 1935. 52. 1935.

倒挂树萝卜 dao gua shu luo bo

Agapetes dulongensis S. H. Huang.

Shrubs pendulous. Rootstock spindle-shaped, ca. 3.5 cm in diam. Twigs terete, 1–2 mm in diam., densely rust- or brown hirsute. Leaves dense; petiole ca. 1 mm or leaves subsessile; leaf blade ovate, elliptic, or suborbicular, 7–10 × 5–8 mm, leathery, abaxially densely or sparsely hirsute, adaxially rugose, sparsely puberulous, venation inconspicuous, base rounded to broadly cuneate, margin recurved, entire, without basal glands, sparsely setose, apex acute or rounded, mucronulate. Inflorescences fasciculate, 1–3-flowered. Pedicel 1–3 mm, densely glandular villous, not swollen. Calyx tube ca. 2 mm, densely glandular villous; limb divided to base; lobes triangular-lanceolate, ca. 2 mm, glandular villous. Corolla white, pink in bud, cylin–dric, ca. 1.6 cm, densely glandular villous; lobes erect or re–curved, triangular, 1–2 mm. Filaments ca. 1.1 cm, densely pubescent; anthers ca. 6.5 mm, tubules ca. as long as thecae, with 2 erect spurs ca. 1 mm. Berry unknown. Fl. Aug.

Forests, epiphytic on trees; 2300–2700(–3500) m. SE Xizang, NW Yunnan (Dulongjiang) [N Myanmar].

48. Agapetes epacridea Airy Shaw, Kew Bull. 3: 94. 1948.

尖叶树萝卜 jian ye shu luo bo

Shrubs many branched. Twigs densely spreading setose, rust-colored initially. Leaves crowded; petiole less than 1 mm; leaf blade ovate to suborbicular, 8–15 × 4–7 mm, leathery,

transversely wrinkled, glabrous, base broadly cuneate or rounded, margin recurved, entire, towards apex ciliate or glandular ciliate, apex abruptly narrowed into a long pungent mucro. Inflorescences fasciculate, 1–3-flowered. Pedicel 4–5 mm, densely spreading glandular setose and shortly white pubescent. Calyx tube obovate, 2–2.5 mm in diam., densely spreading glandular setose and white pubescent; lobes ovate-triangular, apex acute. Flowers unknown. Berry immature, ca. 7 mm in diam., densely glandular setose, apex truncate; style persistent. Fr. Dec.

Evergreen forests, epiphytic on trees, rocks; 1800–2100 m. SE Xizang (Mêdog) [N Myanmar].

49. Agapetes brachypoda Airy Shaw var. **gracilis** Airy Shaw, Kew Bull. 3: 94. 1948.

纤细短柄树萝卜 xian xi duan bing shu luo bo

Shrubs. Twigs rounded, 1–1.5 mm in diam., densely rust-colored setose when young. Leaves scattered; petiole 1–2 mm; leaf blade elliptic, obovate, or oblong-elliptic, 1.4–1.9 × 0.7–1 cm, thickly leathery, glabrous, abaxially smooth, adaxially rugose, secondary veins ca. 4 pairs, raised abaxially, base cuneate, margin revolute, undulate or remote denticulate, apex rounded. Inflorescences fasciculate, 1- or 2-flowered, pendulous. Pedicel 2–4 mm, setose, not expanded. Calyx densely rust-colored glandular setose; tube obconical, ca. 4 mm; limb divided to base; lobes ovate-lanceolate, 2.5–4(–6) mm. Corolla dull red, tubular; tube 1.6–1.7 cm, pubescent; lobes triangular, 1–2 mm, margin revolute. Filaments ca. 1.3 cm, densely pubescent; anthers ca. 6 mm, thecae papillate, tubules slightly shorter than thecae, with 2 spurs. Berry unknown. Fl. May.

● Forests, epiphytic on lower side of mossy boughs; ca. 2400 m. W Yunnan (Lushui).

This variety is distinguished from var. *brachypoda* (which occurs in Myanmar) by its elongate, slender twigs, narrower and smaller leaves, pedicels and calyx tube without white pubescence, and dull red (not white) corolla.

50. Agapetes anonyma Airy Shaw, Kew Bull. 3: 95. 1948.

锈毛树萝卜 xiu mao shu luo bo

Shrubs ± scandent. Twigs terete, 1–2 mm in diam., rust-colored pilose. Leaves scattered; petiole ca. 1 mm; leaf blade ovate, rarely broadly ovate, or elliptic-ovate to oblong-ovate, 1.5–2.5 × 0.9–1.8 cm, thinly papery, glabrous, secondary veins 6–8 pairs, base broadly cuneate to rounded, margin slightly revolute or plane, conspicuously crenulate-serrate, apex acute or subobtuse. Inflorescences fasciculate, 1- or 2-flowered. Pedicel 3–4 mm, densely setose, not expanded. Flowers unknown. Berry globose, 4–5 mm in diam., densely rust-colored setose; persistent calyx with limb divided to base, lobes ca. 2 mm. Fr. Aug.

● Forests, epiphytic on trees; 2100–2700 m. SE Xizang.

51. Agapetes rubrobracteata R. C. Fang & S. H. Huang, Acta Bot. Yunnan. 5: 151. 1983.

红苞树萝卜 hong bao shu luo bo

Vaccinium chapaense Merrill, J. Arnold Arbor. 19: 60. 1938, not *Agapetes chapaensis* Dop (1930).

Shrubs dwarf, 1–2 m tall. Twigs angled, 0.8–1.5 mm in diam., initially puberulous, rarely scattered setose. Leaves dense; petiole ca. 2 mm, glabrous or puberulous; leaf blade obovate, 0.8–1.6 × 0.5–1.2 cm, leathery, glabrous, secondary veins ca. 3 pairs, raised abaxially, impressed adaxially, base attenuate, cuneate, margin plane, crenulate above middle, apex obtuse or rounded. Inflorescences shortly racemose, from upper axils, ca. 2.5 cm, 1–5-flowered; bracts caducous, leaflike, greenish red, 1.3–1.5 × ca. 1.1 cm, glabrous. Pedicel 1–3.5 mm, glabrous, not expanded towards apex; bracteoles leaflike, 4–6 × ca. 2 mm. Calyx tube obconical, ca. 2.5 mm, glabrous; limb divided to base; lobes ovate-triangular, ca. 1.5 mm. Corolla white, greenish white, or pinkish, tubular, 0.7–1.7 cm, glabrous but tube hairy inside; lobes ca. 1 mm. Filaments 4–14 mm, woolly; anthers 2.5–4.5 mm, thecae papillate, tubules slightly longer than thecae, with 2 erect spurs. Berry green to purplish black, with a bloom, globose or ellipsoidal, 4–7(–10) mm in diam.; pedicel ca. 5 mm. Fl. Mar–Jun, fr. Oct–Dec.

Mossy forests, forest margins, bamboo thickets, open thickets, thickets on calcareous mountain summits, epiphytic on trees; 1000–2400(–3100) m. S Guangxi, SW Guizhou, SC Sichuan (Emei Shan), SE and WC Yunnan [Vietnam].

52. Agapetes guangxiensis D. Fang, Acta Phytotax. Sin. 36: 276. 1998.

广西树萝卜 guang xi shu luo bo

Shrubs pendulous. Root tubers 0.7–1.7 cm in diam. Twigs terete, ca. 1.5 mm in diam., densely dark brown spreading glandular setose, glabrescent. Leaves dense; petiole ca. 1 mm; leaf blade ovate, 7–14 × 4–9 mm, leathery, glabrous, secondary veins ca. 3 pairs, these and midvein raised abaxially, impressed adaxially, fine veins inconspicuous, base obtuse, margin slightly revolute, upper parts glandular spiny, apex cuneate, setose. Inflorescences fasciculate, from upper axils, (1- or)2–5-flowered. Pedicel ca. 5 mm, expanded apically, hirsute. Calyx tube turbinate, ca. 1 mm in diam., densely hirsute; limb lobed to base; lobes triangular, ca. 1.5 mm, hirsute. Corolla white, tinged with pale green, subtubular, 9.5–10 mm, slightly 5-angled, angles pubescent; lobes triangular, ca. 1 mm, pubescent. Filaments ca. 4 mm, pubescent; anthers ca. 4.5 mm, tubules ca. 2 × as long as thecae, without spurs. Berry unknown. Fl. Sep.

● Forests, limestone hills, epiphytic on trees; ca. 900 m. W Guangxi (Napo).

53. Agapetes spissa Airy Shaw, Bull. Misc. Inform. Kew 1935: 49. 1935.

丛生树萝卜 cong sheng shu luo bo

Shrubs small. Twigs terete, 2–5 mm in diam., densely long rust-colored glandular-setose, linear-lanceolate, 5–10 mm, brown membranous. Leaves dense; petiole very short; leaf blade obovate or subelliptic, 2–2.5 × 1–1.6 cm, glabrous, secondary veins 4 or 5 pairs, base cuneate, margin subrecurved, crenulate-denticulate, teeth apiculate, apex subacute or subobtuse. Flowers solitary, pendulous. Pedicel ca. 2 mm, glandular setose, not expanded. Calyx tube obconical, 2–3 mm in diam., densely

pubescent; limb divided ca. 4/5; lobes ovate-triangular, 2–3 mm, pubescent. Corolla white, subtubular; tube 8–10 mm, 5-angled, densely puberulous, glandular hairs along angles; lobes triangular, ca. 1 mm, glabrescent. Filaments 3–4 mm, pubescent; anthers ca. 5 mm, thecae rounded and shortly cornute at base, tubules ca. 1.5 × as long as thecae, with 2 erect spurs. Berry unknown. Fl. Jul.

● Forests, epiphytic on trees; 1500–1800 m. SE Xizang.