
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), exerted; 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.


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].


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*


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 and membranous and ciliolate. Corolla white, tinged with red, campanulate, 5–8 mm, abaxially glabrous; lobes erect, broadly triangular, 1.5–2 mm. Stamens 10, ca. 2 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].


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 glbose, 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].


扫帚锦绦花 sao zhou 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].


扫帚锦绦花 sao zhou jin tao hua


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


扫帚锦绦花 sao zhou jin tao hua


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.

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, ciliate, 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.


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).


锦绦花  jin tao hua

*Cassiope mairei* H. Léveillé.

Shrubs 10–20 cm tall. Stems initially decumbent; twigs erect, glandular and setose. Leaves assurgent; leaf blade linear-oblong, 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 elliptic, ca. 3.8 mm, glabrous or puberulous, margin membranous, inconspicuously ciliate. 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].


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,
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


尖基木藜芦  jian ji mu li lu

Leucothoe griffithiana 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, subulate to tubular, 6–7 mm; lobes triangular-ovate, ca. 1 mm. Filaments ca. 2 mm. Capsule 4–6 mm in diam. Seeds ellipsoid to suborbicular, ca. 1 mm. Fl. Apr–May, fr. Jun–Oct.


圆基木藜芦  yuan ji mu li lu

Leucothoe tonkinensis Dop

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 denticate, 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, subulate, 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].


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, subulate 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 capitulate, 5-lobed. Capsule loculicidal, depressed globose. Seeds flattened, angled; testa smooth, shiny, reticulate.

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


圆基木藜芦  yuan ji mu li lu

Leucothoe tonkinensis Dop

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 denticate, 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, subulate, 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].


● Margins of woods, mountain slopes, meadows; 2000–3800 m. NW Yunnan (Dêqên, Gongshan).


篦叶锦绦花  bi ye jin tao hua

Cassiope pectinata Handel-Mazzetti; C. macrantha Handel-Mazzetti.

Shrubs 6–18(–46) cm tall. Stems initially decumbent, ultimately much branched, fastigiate, glandular and shortly pubescent. 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 denticate, 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].
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 campylanthrotic 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 to acuminate, rarely acute ................................................................................................ 3. *C. henryi*

1b. Corolla campylanthrotic, abaxially glabrous to densely pubescent; inflorescence usually panicelliform, branches with 6–30 flowers.

3a. Leaf apex rounded to retuse .................................................................................................................................... 2. *C. stellatum*

3b. Leaf apex long acuminate to retuse ........................................................................................................................................ 3. *C. henryi*


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 racemelike; 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.


假木荷  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].


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, thicket, open and dry slopes; 1200–3200 m. Xizang, Yunnan [Myanmar].

Seven species: E Asia, Caribbean Region, E North America; three species (one endemic) in China.

1a. Capsule densely to moderately pubescent, placenta central to nearly basal; style sunken into apex of ovary ........ 3. P. swinhoei
1b. Capsule glabrous, placenta ± 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


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 oblanceolate, 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. 2n = 24.


马醉木 ma zui mu


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].

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-
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-rayed. Calyx with variously estimated lobes, usually valvate in bud. Corolla white [to red], tubular or urceolate; lobes short. Filaments flattened, geniculate, with or without 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 acuminated.

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 papyry.

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*


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, lancelate, 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 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. 2n = 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, Shanxi, Sichuan, Taiwan, Yunnan. Zhejiang [Bangladesh, Bhutan, Cambodia, China, 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 .... 1c. 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


Leaf blade ovate or elliptic, (4–)8–10(–21) × (2–)4–6(–11.5) cm, abaxially white villous, especially on midvein, base rounded to cordate, apex acuminate. Inflorescences with leaflike bracts. Filaments with 2 distinct spurs ca. 0.5 mm. Capsule sutures quite thick.

Forests; 1000–1900 m. Guangdong, Guangxi, Hainan [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].


狭叶珍珠花 xia ye zhen zhu hua


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, Hainan, Hubei, Sichuan, Xizang, Yunnan [India, Myanmar].


小果珍珠花 xiao guo zhen zhu hua


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 & Hemsl) Chun, Sunyatsenia 4: 253. 1940.

毛果珍珠花 mao guo zhen zhu hua


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.


绒毛珍珠花 rong mao zhen zhu hua

Pieris ovalifolia var. tomentosa W. P. Fang, Contr. Biol.

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.

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Large pearl flower

Lyonia macrocalyx

Shrubs or small trees, deciduous, 1–3 m tall. Twigs, pubescent. Buds narrowly ovoid, ca. 1–13 mm, glabrous. Petiole 3–6 mm, pubescent, leaf blade obovate, obl-long-obl-ovate, 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, 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 forests, cliffs in rain forests, forest margins, 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

* * *

Mao ye zhen zhua


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.
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].


光叶珍珠花 guang ye zhen zhu hua


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].


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, second 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.


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 pendant. 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].


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 oblanceolate, 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 oblanceolate, 6–16 × 2–6 mm; calyx lobes broadly ovate or obovate-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.

10b. Leaf blade more than 4 cm; plant usually more than 40 cm tall.

11a. Inflorescence racemose, rachis 1–4.5 cm.

11b. Inflorescence shortly racemose, rachis 2–15 mm.

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

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 ciliate-acuminate.

19a. Inflorescence corymbose or shortly racemose, axis 3–10 mm; secondary veins 1 pair arising near base of leaf blade ................................................................................................. 2. G. duminicola

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, oblanceolate, 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 obtussen-trigonal; inflorescence 2–12 cm; bract ovate or 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 oblanceolate, 5–17 × 2–6.5 cm, apex acute to ciliate-acuminate, adaxially glabrous.

23a. Leaf blade usually oblanceolate, thickly leathery, apex ciliate-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;

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. damicola

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. pratolina

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


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, thickets on slopes; 1000–2700(–3100) m. SE Xizang, NW Yunnan [N India, Myanmar].
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 cuate. 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 dark purple; capsule conical, 3–6 × ca. 2.5 mm. Fl. Jul–Aug, fr. Aug–Dec.

Edinburgh 9: 106. 1916.


1a. Twigs, leaves, and inflorescences glabrous.

2a. Gaultheria dumicola var. dunicola

丛林白珠(原变种) cong lin bai zhu (yuian bian zhu)

Diplycosia alboglauca Merrill.

Twigs glabrous. Leaf blade usually ovate, base cuneate to rounded. Inflorescences glabrous.

- Forests, forest margins, scrub, rocks; 2000–3000 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, thickets, open slopes; 1400–2500(–3200) m. W Yunnan [Myanmar].


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, thicketes, open slopes; 2000–3200 m. W Yunnan.

3. Gaultheria notabilis


短穗白珠 duan sui bai zhu

Subshrubs branched from base, erect or arcuate-ascending, 30–40 cm tall. Twigs terete, narrowly strigate, 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 bulate, 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 densely spreading rust-colored setose, setae 2–5 mm. Leaves scattered; petiole 3–7 mm, densely spreading rust-colored setose; 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-recurred-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].


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.


鹿蹄草叶白珠 lu ti cao ye bai zhu

Shrubs suberect or creeping, 3–15 cm tall. Twigs terete, substrate, 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, papillose; anthers ca. 1.3 mm; thecae 2awned. Ovary glabrous. Calyx at fruiting dark purple; capsule 4–6 mm in diam. Fl. Jun–Aug, fr. Jul–Aug. 2n = 22*.


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, white, urceolate-globose, ca. 5 mm, abaxially glabrous; lobes recurved, very short. Filaments dilated towards base, puberulous, ca. 1 mm; anthers ca. 1 mm; thecae 2-awned. Ovary glabrous. Corolla white, urceolate-triangular, 1.5–2 mm, abaxially glabrous; lobes reflexed, short. Filaments dilated, 1–1.7 mm, papillose; anthers ca. 1 mm; thecae 2-awned. Ovary puberulous. Corolla at fruiting blue-black, fleshy; capsule sericeous-puberulous. Fl. May–Jun, fr. Jul–Aug. 2n = ca. 44.

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. pyroloides*.

10. **Gaultheria hookeri** var. *hookeri*


Leaves elliptic, 2–4 cm wide. Bracts 2–4 mm wide. Calyx lobes acute.

10a. 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, S Sichuan, SE Xizang, N and SE Yunnan [Bhutan, India, Myanmar, Sikkim].


Alpine windswept moorlands, thickets, grasslands; 3600–4000 m. SE Xizang, NW Yunnan [Bhutan, India, Myanmar, Sikkim].


**Gaultheria staphylea** Airy Shaw; **G. veitchiana** Craib.

Leaves elliptic, 2–4 cm wide. Bracts 1–2 mm wide. Calyx lobes acuminate.

11a. Leaves elliptic, 2–4 cm wide. Bracts 1–2 mm wide. Calyx lobes acuminate. Rhododendron thickets, open slopes, mountain summits, 1000–2500(–3000) m. NW Yunnan (Gongshan) [Sikkim].


Forests, forest margins, thickets on mountain slopes; 2000–2500(–3000) m. NW Yunnan [Bhutan, India, Myanmar, Sikkim].

12a. Leaves elliptic, 2–4 cm wide. Bracts 1–2 mm wide. Calyx lobes acuminate. Rhododendron thickets, open slopes, mountain summits, 1000–2500(–3000) m. NW Yunnan [Bhutan, India, Myanmar, Sikkim].

Forests, forest margins, thickets on mountain slopes; 2000–2500(–3000) m. NW Yunnan [Bhutan, India, Myanmar, Sikkim].


Forests, forest margins, thickets on mountain slopes, riversides; 1000–2800 m. SE Xizang (Mêdog).
Leucothoe brevistipites 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. brevistipites, but effectively publishing a new combination because L. griffithiana var. sessilifolia was also cited with a full and correct reference.


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 abaxially, 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 oval, 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.


草地白珠 cao di bai zhu

Gaultheria wardii C. Marquand & Airy Shaw var. serrulata C. Y. Wu & T. Z. Hsu.

Shrubs 1–3(–4) m tall. Twigs terete, 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 × 1.25–2 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. Inflorescences 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).


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 slightly hispidulous, later pilosulous, 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, second, 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 m. SE Xizang, W Yunnan.


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, puberulous, 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 m. SE and W Yunnan [Thailand].


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-ovobate, 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, axially glabrous, ciliolate, apex acute. Corolla white, tubular-ovoid, ca. 5 mm, axially sparsely setulose on veins; lobes recurved, triangular. Filaments ca. 1.5 mm, glabrous; thecae 2-awned. Ovary densely puberulous. Fruit unknown.

C. Y. Wu & T. Z. Hsu.


五雄白珠 wu xiong bai zhu


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, distinctively mucronate. Inflorescences axillary, narrowly race-mose, 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 ciliate. 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 (Darjiling), Myanmar, Nepal, Sikkim, Vietnam].

The fruit is edible.


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 oblanceolate, 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. 2n = 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. mi-yiensis 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].


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.


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–)5–10 × 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-

- Forests, thickets on river terraces; 2000–2300 m. SE Xizang (Médog).

### 20. Gaultheria fragrantissima

**Wallich, Asiat. Res. 13: 397. 1820.**

**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, obl- long-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, race-mose, 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 distantly, 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, 4–7 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 densly pubescent rachis and pedicels.

### 21. Gaultheria leucocarpa

**Blume, Bijdr. Fl. Ned. Ind. 856. 1826.**

**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, obl-long-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, 3–6(–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 ciliate. 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., tomentel-lous. 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. *francheti* (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*


**滇白珠** dian bai zhu

**Vaccinium yunnanense** Franchet, J. Bot. (Morot) 9: 368. 1895; *Emblema vaniotti* H. Léveillé; *Gaultheria laxiflora* Diels; *G. leucocarpa* var. *pingbienensis* C. Y. Wu ex T. Z. Hsu; *G. yunnanensis* (Franchet) Rehder; *Pieris fortunei* 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.


**毛滇白珠** mao dian bai zhu


Twigs, petioles, inflorescence rachis, and pedicels glandular hirsute. Leaf blade abaxially shortly hirsip, 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  朱果白珠  


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.


紫背白珠  zí bái zhuī  

Shrubs procumbent, 5–10 cm tall. Twigs terete, slender, slightly puberulous, densely brown hisrate. Leaves towards the ends of branches; petiole 1–2 mm, hisrate; leaf blade gray-green adaxially, elliptic, 1.5–3 × 1–2 cm, leathery, abaxially purple hisrate 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 flowering, 1–4-flowered. 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).


异数白珠  yì shù bái zhuī  

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, glabrous-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).


伏地白珠  fú dì bái zhuī  

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 ("Tsehching"); has flowers with four, five, or seven stamens.


铜钱叶白珠  tóng qián yè bái zhuī  

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 hisrate. 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,
27a. Gaultheria trichophylla

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-oblong-elliptic to 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].

27b. Gaultheria trichophylla var. tetracme

Shrubs dwarf, prostrate, much branched below. Twigs terete, wiry, brown hispidulous. 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, margin slightly recurved, serrulate, usually long ciliate along margin. Flowers solitary, axillary, glabrous. Pedicel ca. 1 mm; bracts absent; bracteoles 2, apical, suborbicular, ca. 2 mm. Calyx white, oblong-urceolate, 4–5 mm; lobes often erect, oblong, very short. Stamens ca. 1.5 mm; filaments spine-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 [Bhutan].

27c. Gaultheria trichophylla var. eciliata

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 spine-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.

28. Gaultheria cardiosepala

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 young abaxially scattered brown shortly hispidulous, secondary veins 2 or 3 pairs, slightly raised abaxially, 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 obovate-triangular, ca. 2 mm. Corolla white, narrowly campanulate, 4–5 mm; lobes often erect, oblong-tri-

*Abies* forests, *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.


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, 3.5–4.5 mm; lobes ovate-triangular, 0.2–0.3 mm. Filaments ca. 2 mm; filaments dilated 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. *G. sinensis* var. *sinensis*

1b. Twigs densely white tomentellate; calyx white ........................................................... 30b. *G. sinensis* var. *nivea*


白果华白珠 bai guo hua bai zhu

Since this is a rare species. Fl. May–Oct. Fr. Oct–Nov.
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 *Aegoetes*.

*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*

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-loched.

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. *V. flavum* 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. sikkimensis*

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. sikkimensis*

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. munnularia*

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; inflorescence 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
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. Leaf blade very short, 1–3-flowered; pedicels ca. 1 mm, pubescent; corolla pale green ................................................................. 65. *V. brevipedicellatum*

26b. Leaf blade 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 1.5 mm, apex acute .................................................. 63. *V. conchophyllum*

28b. Corolla white, campanulate; calyx lobes 1.5–2 mm, apex obtuse .................................. 64. *V. sinicum*

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 glaucescent abaxially; pedicels 3–5 mm, pedicel and calyx glabrous or villous ................................................................. 70. *V. chengiae*

34b. Leaf blade not glaucescent 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. sasicolae*

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 glaucescent, 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. gaultieriifolium*

36b. Leaf blade with entire margin, abaxially rarely glaucescent, 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-oblancoate or linear-lanceolate, 3.5–8 mm wide ....................... 5. V. podocarpoidium

42b. Leaf blade oblancoate or oblancoate-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 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 glabrous; 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. arceolatum

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 subequa to leaves.

52a. Leaf blade rounded to subacute at base, veins impressed adaxially, blade 9–19 × 2.5–5.5 cm .......................................................... 10. V. dannianum

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. arceolatum

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; pedioles 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-ovate, or oblong-lanceolate, 4.5–6(–10) × 1.5–4 cm; inflorescence 5–15 cm ................................................................. 59. *V. subdissectifolium*

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 fimbriate, 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; tube of thecae ca. 3 mm, without spur ........................................................................................................ 24. *V. randaiense*

78b. Corolla campanulate, ca. 3 mm; pedicels ca. 7 mm; tube of thecae ca. 1 mm, with a short spur ......................................................................................... 25. *V. kengii*

77b. Leaf blade ± elliptic, ovate, or oblone; 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 filibrillate;
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 oval, 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 theca ......................................................... 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, 1–6 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

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

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; tubes 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].


軟骨边越桔  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 glaucous, glabrous; 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; tubes ca. as long as thecae or shorter. Style puberulous apically. Berry 10-pseudoloculed, dark purple, with a bloom, 8–9 mm in diam.


1a. Leaf blade abaxially glabrous on midvein abaxially, with 3 basal glands per side; pedicel 6–12 mm; corolla pink, 6–7 mm ......... 1b. 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. *glaucorubrum*

软骨边越桔(原变种)  ruan gu bian yue ju (yuan bian zhong)


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].


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).


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 per side, apex rounded. Inflorescences racemose, ca. 1.5 cm, many flowered; bracts oblong, ca. 3 cm, apex acute. Pedicel 1–1.5 cm. 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; tubes ca. as long as thecae. Immature berry globose. Fl. May.

Thickets; 1900–2600 m. SE Yunnan [N Vietnam].


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, sessile; 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, subsiding, 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 axes, 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

- Thickets on stony mountain slopes, slopes; 1200–2600 m. SE Yunnan (Maguan, Malipo).
ca. 3 mm, densely ciliate; anthers ca. 1 cm, with 2 erect spurs; tubes 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).


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.


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.


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 acuminate. Inflorescences racemose, 3–4 cm, globose 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.


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-spulate, 1–1.2 mm. 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.


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].


樟叶越桔 zhang ye yue ju

尾叶越桔  大樟叶越桔  ta zheng ye ye ju


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 ye ju


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.


橪圆叶越桔  tuo yuan ye ye 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, axially 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. Hypantherium 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; anthers 3–3.5 mm, with 2 spreading spurs; ovary obliquely ovoid, 3–4 mm, glabrous or pubescent; style 2.5–4 mm, pubescent; ovary obliquely ovoid, 3–4 mm, glabrous or pubescent; style 2.5–4 mm, pubescent; ovary obliquely ovoid, 3–4 mm, glabrous or pubescent; style 2.5–4 mm, pubescent.


莓果越桔 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 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. 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; tubes 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].


草莓树状越桔 cao mei shu zhuang yue ju

Shrubs epiphytic, 0.6–1 m tall, sparsely branched. Twigs angled, 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, tubes 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].


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; tubes ca. as long as thecae. Ripe berry unknown. Fl. May.

About 2700 m. W Yunnan [Tengchong].


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 pseudoverticillate; 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; tubes 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].


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; tubes ca. 2.5 × as long as thecae. Ripe

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.

22a. *Vaccinium urceolatum* var. *urceolatum*

红花越桔 hong hua yue ju (yuan bian zhong)

Inflorescence axis 3–5 cm, inflorescence axis, pedicels, and berry glabrous ...

22b. *Vaccinium urceolatum* var. *pubescens*

毛序红花越桔 mao xu hong hua yue ju

Inflorescence axis 5–9 cm, inflorescence axis, pedicels, and berry densely pubescent ...


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 pseudodeterminate, 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.

- *Forests, forest margins; 400–900(–2500) m. N Guangdong, Guangxi, C Guizhou, Hunan, Taiwan [Japan].


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 pseudodeterminate, 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.

**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 subacute. 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; tubes 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].


**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. Fl. Jun–Oct.

- Forests on mountain summits. NE Hainan (Ding’an).

28. **Vaccinium wrightii** var. **wrightii**

**海岛越桔** hai dao yue ju (yu'an 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

- Shrubs small. Leaves elliptic, 1.5–2 × 1–1.5 cm.

- Forests; ca. 1600 m. E Taiwan.


**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; tubes ca. 3 × as long as thecae. Berry unknown. Fl. Jul.

- Forests. W Guangdong (Xinyi).


**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...
30a. Vaccinium bracteatum

Acosta spicata Loureiro; Pieris divaricata H. Léveillé; P. lucida H. Léveillé; P. ovalifolia (Wallich) D. Don var. denticula 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 or pinkish, 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-pseudo-loculed, dark purple, globose, glabrous, with a bloom. Fl. May–Jun, fr. Aug–Oct.

30b. Vaccinium bracteatum var. chinense (Loddiges) Chun

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.


South China (Yanbian)

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 or pinkish, 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-pseudo-loculed, dark purple, globose, glabrous, with a bloom. Fl. May–Jun, fr. Aug–Oct.


South China (Yanbian)

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 or pinkish, 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-pseudo-loculed, dark purple, globose, glabrous, with a bloom. Fl. May–Jun, fr. Aug–Oct.
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. or long acuminate to 4 cm. Inflorescences racemose, (2–)4–8 cm, 10–15-flowered; bracts caducous, lanceo-}

34. Vaccinium harmandianum Dop in Lecompte, Fl. Indo-
Chine 3: 709. 1930.

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 3 pairs, secondary and 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, lanceo-


This species differs from Vaccinium mandarinorum by having the leaf blade falciform-acuminata at the apex, calyx lobes triangular-lanceolate with a glandular fimbriate margin, and corolla tubular, 7–8 mm.

One of us (Stevens) questions whether Vaccinium harmandianum is the same as V. sprengelii (G. Don) Sleumer.


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-

35a. Vaccinium duclouxii var. duclouxii


35b. Vaccinium duclouxii var. hirticaule

Shrubs or small trees, evergreen, to 13 m tall, glabrous. Twigs terete; bud scales inconspicuous. Leaves scattered; peti-
ole 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. or long acuminate to 4 cm. Inflorescences racemose, (2–)4–8 cm, 10–15-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

云南越桔 (原变种) yun nan yue ju (yuan bian zhong)

Vaccinium harmandianum

Pinus-Quercus forests, thickets; 1500–3100 m. Sichuan, Yunnan.


刚毛云南越桔 gang mao yun nan yue ju

Twigs, petioles, leaf blade abaxially on midvein, and nachis of inflorescences glabrous.

- Open forests, thickets, grassy or rocky slopes; 1500–2000 (–2200) m. SE Yunnan.


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.


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.


短序越桔 duan xu yue ju


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 dentate, 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 reflexed or erected. Filaments ca. 2 mm, pubescent; anthers ca. 1 mm, with at most 2 inconspicuous spurs; tubes 2–3 × as long as theca. Berry ca. 5 mm in diam. Fl. Mar–Apr, fr. May–Jun.

- Secondary forests, thickets; 1400–2400 m. W Sichuan, Yunnan.


江南越桔 jiang nan yue ju

Lyonia *bracteata* (W. W. Smith) Chun; Pieris *bracteata* W. W. Smith; *P. esquirioli* H. Léveillé & Vaniot; *P. esquirioli* var. *discolor* H. Léveillé & Vaniot; *P. longicorona* H. Léveillé & Vaniot; Vaccinium *donianum* Wight var. *austrinense* Handel-Mazzetti; *V. donianum* var. *hongchouense* Matsuda; *V. donianum* var. *laetum* (Diels) Rehder & E. H. Wilson; *V. hongchouense* (Matsuda) Komatsu; *V. laetum* Diels; *V. laetum* var. *undulatum* Y. C. Yang; *V. mandarinorum* var. *austrinense* (Handel-Mazzetti) Metcalf; *V. mandarinorum* var. *laetum* (Diels) Metcalf; *P. parvibracteata* 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 puberulous; 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; tubes ca. 1.5 × as long as theca 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.


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; tubes 1.5–2 × as long as theca. 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.

**38a. Vaccinium trichocladum** var. *trichocladum*

刺毛越桔(原变种) ci mao yue ju (yuan bian zhong)

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.


光序刺毛越桔

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

乌鸦果

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 mm, pubescent; anthers ca. 3 mm, with 2 erect spurs; tubules ca. as long as thecae. Berry dark purple, with a bloom, 8–10 mm in diam.

- *Pinus* and *Quercus* forests, thicket, open grassy slopes; 1100–3400 m. Guizhou, Sichuan, SE Zizang, 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. fragilis* var. crinitum Franchet; *V. fragilis* var. myrtifolium Franchet; *V. repens* (H. Léveillé) Rehd.; *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, thicket, open grassy slopes; 1100–3400 m. Guizhou, Sichuan, SE Zizang (Zayü), Yunnan.


大叶乌鸦果 da ye wu ya guo


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, thicket; 1700–2000 m. SW Sichuan, C and W Yunnan.

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 ciliate-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, 4.4–4.5 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

长尾乌饭 chang wei wu fan


42. Vaccinium chamaebuxus


白花越橘  bai hua yue ju

Shrubs or small trees, evergreen, 1–6 m tall, much branched. Twigs terete, densely pubescent, glabrescent; bud scales inconspicuous. Leaves scattered; petiole 2–3 mm, densely pubescent; leaf blade ovate or suborbicular, 3.7–4.5 × 1.3–2.5 cm, leathery, subglabrous or adaxial midvein puberulous, secondary veins 5 pairs, fine veins raised abaxially, inconspicuous axially, base broadly cuneate, sometimes cuneate or rounded, margin plane, densely serrate, apex acute or obtuse to acuminate. Inflorescences racemose, 1.5–4 cm, densely pubescent or glabrescent. Fl. Dec to beginning of next year, fr. after Jun.


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 Rehd. & E. H. Wilson

Twigs, petioles, and abaxial midvein glandular setose.

- Evergreen forests; ca. 2300 m. SE Xizang (Zayü).


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, 3.4–5.5 × 1.3–2.5 cm, leathery, subglabrous or adaxial midvein puberulous, secondary veins 6–8 pairs, fine veins slightly raised abaxially, inconspicuous axially, 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. 3 × as long as thecae. Berry 3–4 mm in diam., glabrous. Fl. Dec to beginning of next year, fr. Aug.

- About 1500 m. SW Sichuan (Huli), SE Yunnan (Qiubei).
1895.

46a. Vaccinium pubicalyx (H. Léveillé)

Leaves punctate abaxially, puberulous along midvein or glabrous on both surfaces. Calyx glabrous; lobes densely ciliate.

46b. var. anomalum

Leaves ± pubescent on midvein on both surfaces, otherwise glabrous. Calyx densely pubescent, abaxially with glands or glandular hairs.


46c. Vaccinium pubicalyx var. leucocalyx (H. Léveillé)


46c. Vaccinium pubicalyx var. leucocalyx (H. Léveillé)


46b. var. anomalum

Leaves ± pubescent on midvein on both surfaces, otherwise glabrous. Calyx densely pubescent, abaxially with glands or glandular hairs.


46c. Vaccinium pubicalyx var. leucocalyx (H. Léveillé)


46c. Vaccinium pubicalyx var. leucocalyx (H. Léveillé)


46b. var. anomalum

Leaves ± pubescent on midvein on both surfaces, otherwise glabrous. Calyx densely pubescent, abaxially with glands or glandular hairs.


46c. Vaccinium pubicalyx var. leucocalyx (H. Léveillé)

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 \times 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 second 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].


红梗越橘 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 \times 2–4 cm, papery, secondary veins more than 15 pairs, midvein raised on both surfaces, fine veins raised on both surfaces, base narrowly oblong-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 5–6-pseudoverticillate, subsessile or shortly petiolate; leaf blade oblong or oblong-lanceolate, 6–10 \times 2–3.5 cm, leathery, glabrous, secondary veins (4–)6–10 pairs, \( \pm \) ascending, fine veins raised abaxially, \( \pm \) 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].


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) \times 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, fimbriate. 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).


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 \times 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. 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


瘤果越桔 liu guo yue ju

Shrubs evergreen, ca. 1 m tall, few branched, glabrous. Twigs rounded, when older strongly white lenticilicate; 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 second 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. 1.5 mm, puberulous; anthers ca. 5 mm, without spurs; tubules 1 × 2 as long as thecae. Berry 10-pseudoloculed, 4–5 mm in diam. Fl. Apr–May.}


棉脉越桔 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, 0.4–0.7 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 abaxially, base broadly cuneate to narrowly rounded, margin plane, obtusely dentate, apex acute or shortly acuminate. Inflorescences 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]...


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 × 3.45 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, 2–3-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 theca. 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]...


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, 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 theca. Immature berry glabrous; persistent calyx lobes triangular-lanceolate, ca. 2 mm. Fr. Jul.

Montane forests. NW Guangxi.


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-ovate, 2–3 × 0.9–1.4 cm, leathery, abaxially sparsely

Evergreen forests, usually epiphytic on trees; 1500–1800 m. SE Xizang (Mêdog) [Bhutan, NE India (Assam), Sikkim].


Vaccinium brevipedicellatum

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 mm, 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.

66. 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.


Vaccinium scaphilum

Shrubs evergreen, usually epiphytic on trees, rocky hills; 1200–1900 m. SE Yunnan (Pingbian).


Shrubs evergreen, sometimes epiphytic on trees, 0.2–0.3 m tall. Twigs terete, spreading pubescent, 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 puberulous, sometimes sparsely puberulous, central half, fine veins inconspicuous, base cuneate to broadly cuneate, margin plane, entire, with 1 basal gland per side, initially ciliate, glabrescent, apex rounded. Inflorescences racemose, ca. 1 cm, with several ovate scales at base, 1–3-flowered; bracts caducous, oblong, 8–14 × 6–9 mm, thickly leathery, abaxially puberulous, adaxially puberulous, base cuneate to rounded, margin revolute, entire, with 1 basal gland per side, apex obtuse-emarginate. Inflorescences racemose, ca. 2 mm, 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.

69. Vaccinium scaphilum var. brevipes C. Y. Wu.

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 ovate, 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,
dorsally 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 subsplaying 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.


粉果越桔 fen guo yue ju

Agapetes poiilanei 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 to ovate, 1.5–2.6 × 0.9–1.2 cm, thickly leathery, glabrous, axially drying rugose, secondary veins 1 or 2 pairs near base, ascending, raised axially, impressed axially, 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-ovate, 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].


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, axially usually glaucous, mid-vein prominent abaxially, raised axially, 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, ciliate 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.


四丿越桔 si chuan yue ju

Pedicel and calyx vilous.

- Thickets, ca. 1200 m. SC Yunnan (Emei Shan).


四丿越桔 var. chengiae

毛萼四川越桔 mao e si chuan yue ju

Pedicel and calyx villos.

- Rocky places on slopes, sometimes epiphytic on trees; 1000–1600 m. S and SC Sichuan (Emei Shan).


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 obl-long-ovate, 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).


Shrubs evergreen, sometimes epiphytic, 0.6–1 m tall. Twigs terete, pubescent, glabrescent; bud scales inconspicuous. Leaves dense; petiole 1–2 mm, pubescent; leaf blade elliptic or obovate, 1.5–2 × 0.8–1.1 cm, leathery, adaxially drying rugose, secondary veins 2 or 3 pairs, inconspicuous, base cuneate, 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].


Shrubs evergreen, epiphytic, much branched. Twigs angled, densely dark brown hisulate, 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 cus

neate, 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).


Vaccinium jesoense W. W. Smith; V. viburnoides H. E. 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 m. W Sichuan, SE Xizang, W Yunnan.

77. Vaccinium sikkimense 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 × 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 retruse. 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., acrid or slightly bitter. Fl. Jun–Jul, fr. Aug–Sep. 2n = 24*.

Betula and Larix forest, meadows, alpine grasslands; 900–3200 m. Heilongjiang, Jilin, Nei Mongol, Shanxi, Xinjiang [Japan, Korea, S. S. Ying.

The berries are nutritious, and are especially tasty after overwin-
tering.


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. Fl. May, fr. Jul–Aug.

Shrubs evergreen, 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.

Shrubs evergreen, sometimes epiphytic on trees, alpine Rhododendron thickets, dry slopes, rocks; 2400–3200(–3800) m. SW Sichuan, SE Xizang, Yunnan [Myanmar].


台湾越桔 tai wan yue ju


Filaments retrorse-pilose.

● Forests, sometimes epiphytic on trees in high mountains, ridges, sometimes prostrate on rocks; 2000–3700 m. Taiwan.


抱着石越桔 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 setose, 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].


团叶越桔 tuan ye yue ju

Shrubs evergreen, epiphytic, many diffuse or pendulous branched. Twigs rounded, pubescent and brownish glandular setose, 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, pressed 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 spreading spurs; tubules ca. as long as thecae. Berry 10-pseudoloculed, dark purple. 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].


宝兴越桔 bao xing yue ju

Vaccinium sikangense Y. C. Yang.

Shrubs evergreen, epiphytic, 0.5–1.2 m tall, many branch-
ed. 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; tubes ca. as long as theca. 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.


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 theca. Berry unknown.

● SC Sichuan (Ganluo).

The above description follows that in the protologue.


樹生越桔 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; tubes 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].


西藏越桔 xi zang yue ju

Thibaudia retusa Griffith, Not. Pl. Asiât. 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, glabrous; calyx lobes broadly triangular, 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; tubes ca. as long as thecae. Berry 10-pseudoloculed, black-purple, ca. 5 mm in diam. Fl. 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.


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 theca. 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-
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. chinensis

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.


有梗越桔 you geng yue ju


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.


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 serosae or glandular serosae on veins, otherwise appressed-setosae or glabros, adaxially abaxially pubescent on veins, otherwise appressed-setosae or glabros, secondary veins 2–5 pairs, secondary and fine veins raised abaxially, slightly raised or flat abaxially, 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 theca. Berry 10-pseudoloculo, dark purple, subglobose, 0.7–1 cm in diam. Fl. May–Jun, fr. Jul–Aug.

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 pseudodeterminer, 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 white, 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-loculoed, 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 (Kuangian) [Korea].

The above description of the flower is based on herbarium specimens.


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-loculoed, 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.


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...
shorter than thecae. Berry 4-loculed, red, ca. 1 cm in diam. Fl. 4–4.5 mm, ciliolate; anthers ca. 3 mm, thecae without spurs; tubules suborbicular, ca. 0.5 mm. Corolla pinkish, glabrous, lobed near-recurved at apex, filiform, 1–2 cm, pubescent; bracteoles at 2 erect spurs; tubules ca. as long as theca. Berry 5-loculed, dark purple, with a bloom, ca. 1 cm in diam. Fl. Jun–Sep, fr. Aug–Sep.


黑果越桔  hei guo yue ju

Shrubs deciduous, dwarf, 15–30 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, 6–10 mm in diam. Fl. Jun, fr. Jul–Aug. 2n = 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].

Vaccinium oxyccocus Persson var. pusillus Dunal; O. pusillus (Dunal) Nakai.

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-elliptic, (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 0.5 cm. Flowers solitary, axillary, pendulous, at base of young shoot. Pedicel 5–8 mm, slender, glabrous. Flowers 4-merous. Hypanthium glabrous; calyx lobes triangular, 1–1.8 mm, apex abruptly acuminate. Corolla white or 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 theca. Berry 4-loculed, red, ca. 6 mm in diam. Fl. Jun–Jul, fr. Jul–Aug. 2n = 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].


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 ca. 1 mm; leaf blade 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 theca. Berry 4-loculed, red, ca. 1 cm in diam. Fl. Jun–Aug, fr. Jul–Aug. 2n = 48, (46, 52, 68, 70), 72.

Moors, marshy places; 500–900 m. Heilongjiang, S Jilin (Changbai Shan) [Japan, SE Russia; Europe, North America].


小红莓苔子  xiao guo hong mei tai zi


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 theca. Berry 4-loculed, red, ca. 6 mm in diam. Fl. Jun–Jul, fr. Jul–Aug. 2n = 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].
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 truncate. 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. lasiostemum

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 92a. var. sinicum


台湾扁枝越桔 tai wan bian zhi yue ju

Hugeria japonica var. lasiostemum (Hayata) Sasaki; H. lasiostemum (Hayata) Maekawa; H. randaiensis Masamune; H. vaccinioidea var. lasiostemum (Hayata) H. Hara; Oxycoccus japonicus (Miquel) Makino var. lasiostemum (Hayata) Makino & Nemoto.

Leaf blade lanceolate or ovate-lanceolate, 1.2–4.2 × 0.5–1.5 cm, abaxially glabrous, base obtuse to cuneate.

2b. Inflorescence glabrous.

7a. Filaments longer than thecae; flowers solitary or 2–4(–6) in a fascicle, sometimes a corymb or raceme.

22. AGAPETES D. Don ex G. Don, Gen. Hist. 3: 862. 1834.

3. Species of

Caligula Klotzsch; Corallobrutys 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 zig-zag 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-Malayan 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. leioarpa (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. Corolla 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; pedicule 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; pedicule 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.

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) mm, thecae papillate, with minute spurs or not; tubes ca. (1–)2 × as long as thecae. Berry unknown. Fl. Dec–Jun of next year.


Shrubs. Root tubers spindle-shaped, ca. 30 × 18 cm. Twigs

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. nerifolia
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 sessile; 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. mirtarioides
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; pedicel and calyx 2–3 cm ....................................................................... 36. A. lacei
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, ramiflorus, 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 mm, 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.


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, 4–5.5 cm. Filaments 1.5–2 mm, pubescent; anthers ca. 2.5 mm; 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].


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 elllipsopic or oblong-lanceolate, 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-flowered, glabrous or sparsely setulose on angle; lobes ovate, ca. 1 mm. Filaments ca. 2 mm, glabrous; anthers ca. 1.4 mm, 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.


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 mm, 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].


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, fl. Nov–Jan of next year.

Sparse forests or thickets on calcareous mountains, epiphytic on trees; 700–1500 m. SE Xizang, S Yunnan [Myanmar].


棱枝树萝卜 leng zhi shu luo bo


Shrubs 0.8–1.3 m tall, glabrous. Twigs angled, 4–5 mm in diam., becoming lenticillate. 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-
2.2 cm, thecae with a basal beak, tubules ca. 2 × as long as the- 
triangular, 3–4 mm. Filaments ca. 3 mm, pubescent; anthers ca. 
red, with zig-zag bands, tubular, ca. 2.5 cm, 5-angled; lobes 
cm; limb divided ca. 2/3; lobes lanceolate, ca. 8 mm . Corolla 
1.3–3.8 cm, swollen towards apex. Calyx tube turbinate, ca. 2 
peduncle 1–5 cm; bracts linear-lanceolate, ca. 6 mm. Pedicel 
acuminate. Inflorescences corymbose, 8–9 cm, 8–10-flowered; 
rounded, margin plane, sparsely inconspicuously dentate, apex 
and fine veins raised on both surfaces, base broadly cuneate or 
scattered; petiole ca. 1.3 cm; leaf blade ovate or oblong-lanceo-

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].

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 miniatum (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. Asiatic. 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 abaxially, base cuneate to obtuse, margin plane, sparsely serrulate, apex acute. Inflores-
cences 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 trian-
gular-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

Shrubs glabrous. Twigs elongate, flexuose, terete, ca. 3 mm in diam. Leaves scattered; petiole ca. 1 cm, slender, narrowly alete 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 cuate, tubules ca. 2.5 × as long as thecae, without spurs. Berry unknown. Fl. Nov.

Forests, epiphytic on trees; ca. 900 m. SE Xizang [Myanmar].

柳叶树萝卜 liu ye shu luo bo
Shrubs glabrous. Twigs scarcely angled, ca. 3 mm in diam. Leaves scattered; petiole ca. 1 cm, slender, narrowly alete on both sides; leaf blade narrowly lanceolate or very narrowly oblong-oblancoate, 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 mm, 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.

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, caulisflowerous, 6–9-flowered; rachis ca. 0.5 cm. Pedicel 1.7–2.5 cm, clavate, densely glandular pubescent. Calyx densely reddish planulate glandular pilose; tube ca. 3.5 mm; limb divided ca. 2/3; lobes greenish, triangular, ca. 2 mm. Filaments ca. 2.5 mm, pilose on the edges; anthers ca. 2.1 cm, thecae densely papillate, tubes ca. 3 × as long as the theca, 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 (Médog).


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; 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; tubes ca. 2 × as long as the theca, without spurs. Berry unknown. Fl. May–Oct.

- Upper temperate rain forests, epiphytic on trees; (2100–)2400–2700 m. SE Xizang [?Bhutan, NE India (Assam)].


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 lenticeellate. 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; tubes 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 (Médog).


鹿蹄草叶树萝卜 伊图赛窝赛

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 oblong-lanceolate to obovate, 1.5–3.5 × 0.8–2(–2.5) cm, leathery, glabrous, secondary veins 8 or 9 pairs, base cuneate, margin plane or slightly revolute 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. Filaments 3–4 mm, puberulous; anthers 2.4–2.7 cm, thecae papillate, c Mutual with 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].


中型树萝卜 阮锡患 workbook


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].


夹竹桃叶树萝卜 jia zhu tao ye shu luo bo


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].


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].


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, 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.

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 1–2 cm; leaf blade ovate-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. 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 mm, thecae papillate; tubules nearly 3 × as long as thecae, without spurs. Berry unknown. Fl. Oct.

Forests, epiphytic on trees; 1000–2100 m. SE Xizang [Mêdog].


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 1–2 cm; 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. 4 mm, papillate, tubules free, ca. 3 × as long as thecae, without spurs. Berry unknown. Fl. Oct.

Forests, epiphytic on trees; 1000 m. S Xizang [N Myanmar].


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 1–2 cm; 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. 4 mm, papillate, tubules free, ca. 3 × as long as thecae, without spurs. Berry unknown. Fl. Oct.

Forests, epiphytic on trees; 1000 m. S Xizang [N Myanmar].


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 1–2 cm; 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. 4 mm, papillate, tubules free, ca. 3 × as long as thecae, without spurs. Berry unknown. Fl. Oct.

Forests, epiphytic on trees; 1000 m. S Xizang [N Myanmar].


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, tubes 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].


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. Inflorescences corymbose, 4–6-flowered; 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).


伞树萝卜 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; leaf blade lanceolate, ca. 3 mm, puberulous. Filaments ca. 1 mm, pilose; anthers ca. 1.3 cm, tubes 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].


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).


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 obconical-campanulate, ca. 3 mm, villous; limb divided to base; lobes triangular-lanceolate, 3–4 mm. Corolla bright red, tubular, ca. 2.5 cm, glabrous; lobes spreading, pale or greenish, ovate-lanceolate, 4–6 mm. Filaments ca. 4 mm, glabrous; anthers ca. 1.8 cm, thecae shortly caduque at base, tubes 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)].


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 crowded; petiole 2–3 mm, glabrous; leaf blade pale abaxially, bright 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 cylindrical, 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).


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.

**折瓣树萝卜** zhe han 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-obovoid, 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 ciliate; tubules ca. 2 × as long as thecae, without spurs. Berry unknown. Fl. Oct.


**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, puberulent; 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 theca, 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)].


无毛灯笼花 wu mao deng long hua

Pedicel and calyx tube glabrous.


绒毛灯笼花 rong mao deng long hua

Pedicel and calyx tube densely grayish tomentellate.


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].


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.

*Agapetes miranda* has a description that closely matches the specimen in 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.

### 40. Agapetes praestigiosa

*Agapetes praestigiosa* has a description that closely matches the specimen in 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.

### 41. Agapetes pilifera

*Agapetes pilifera* has a description that closely matches the specimen in 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.

### 42. Agapetes inopinata

*Agapetes inopinata* has a description that closely matches the specimen in 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

*Agapetes oblonga* var. *longipes* has a description that closely matches the specimen in 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.
tube red or reddish green, ca. 2 mm, densely spreading hisurile; limb sparsely hisurate 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 hisurate 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 Yunan [Myanmar].


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].


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 ovate, elliptic, or spatulate, 1.1–2.5 × 0.5–1.1 cm, leathery, abaxially glabrous, adaxially puberulous on midvein, otherwise glabrous, sometimes slightly transverse-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. Yunan [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 ovate-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.


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 hisurate. 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 hisurate, 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, cylindric, ca. 1.6 cm, densely glandular villous; lobes erect or recurved, 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 Yunan (Dulongjiang) [N Myanmar].


尖叶树萝卜 jian ye shu luo bo

Agapetes epacridea Airy Shaw.

Shrubs much 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 lungu 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 Xi-zang (Mêdog) [N Myanmar].


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.


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.


红包树萝卜 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 on calcareous mountain summits, epiphytic on trees; 1000–2400(–3100) m. S Guangxi, SW Guizhou, SC Sichuan (Emei Shan), SE and WC Yunnan [Vietnam].


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, hisurate. Calyx tube turbinate, ca. 1 mm in diam., densely hisurate; limb lobed to base; lobes triangular, ca. 1.5 mm, hisurate. 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).


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, 2.2–3.5 × 1.0–1.6 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.