2. Subfam. CYPRIPEDIOIDEAE

Chen Xinqi (陈心启 Chen Sing-chi), Liu Zhongjian (刘仲健), Phillip J. Cribb

Small to large terrestrial, lithophytic, or rarely epiphytic herbs. Roots elongate, fibrous; rhizome short to elongate. Stems unbranched, obscure to long, erect, leafy. Leaves distichous, 1 to many, plicate or conduplicate, spreading or suberect, green, rarely checkered or tessellated with dark and lighter green or spotted with blackish maroon adaxially, thinly textured, fleshy, or leathery, glabrous or variously pubescent, entire. Inflorescence terminal, 1- to several flowered; rachis hairy, glandular, or glabrous; bracts conduplicate. Flowers usually showy; pedicel obscure to short; ovary 1-locular or 3-locular, glabrous or hairy, lacking an abscission layer. Dorsal sepal erect or hooded over lip, ovate, obovate, or elliptic, obtuse, acute, or acuminate, glabrous or pubescent on outer surface, sometimes pubescent within at base; lateral sepals usually fused to form a concave synsepal ± similar to dorsal sepal, rarely free to base (in *Cypripedium plectrochilum*). Petals free, spreading or pendulous, spiraling or not, elliptic, ovate, linear, or oblanceolate, glabrous or rarely pubescent on outer surface, usually ciliate on margins, sometimes warty on margins; lip deeply pouches, slipper-shaped or urn-shaped, with or more rarely without ± pronounced incurved side lobes sometimes reduced to auricles, hairy within especially on lower surface, sometimes spotted within, glabrous or hairy on outer surface; front margin incurved or not, sometimes with short marginal horns; side lobes sometimes warty. Column short, stalked, porrect; anthers 2, 2-locular, borne on short obtuse to acute filaments; pollen powdery or viscid; staminode terminal, sessile or shortly stalked, often shield-shaped, transversely reniform, oblong, ovate, obcordate, or linear, flat, convex or longitudinally conduplicate, glabrous to papillose or finely pubescent; stigma stalked or subsessile, dependent, convex, 3-partite, ± papillose. Capsule erect to pendulous, 3-ribbed, cylindric to almost ellipsoidal, sometimes beaked at apex. Seeds ellipsoidal with a thin testa.

Five genera and ca. 180 species: widespread in the temperate regions of Eurasia and North America, the tropical Americas south to Brazil and Bolivia, and tropical SE Asia to the Philippines, New Guinea, and the Solomon Islands; two genera and 63 species (27 endemic) in China.

China is a center of diversity for the genera *Cypripedium* and *Paphiopedilum*.


Chen Xinqi (陈心启 Chen Sing-chi), Phillip J. Cribb

*Calceolus* Miller; *Criosanthes* Rafinesque; *Fissipes* Small; *Hypodema* Reichenbach; *Sacodon* Rafinesque.

*Herbs*, with short or long rhizomes and many thickened fibrous roots. Stem erect, elongate or short, clustered or well spaced, often with several sheaths at base. Leaves 1 to several, alternate to opposite, sometimes prostrate on substrate, sheathing and amplexicaul at base; blade adaxially green or sometimes marked with black-purple spots, often elliptic to ovate, rarely cordate or flabellate, with parallel, radiating, or 3-5 prominent veins. Inflorescence terminal, with a solitary flower or rarely many flowers; floral bracts often leaflike, sometimes smaller than leaves, rarely absent; ovary 1-locular. Flowers usually large and showy. Dorsal sepal erect or hooded over lip; lateral sepals usually united to form a synsepal, but free in *Cypripedium plectrochilum*. Petals spreading horizontally, at an angle below horizontal, or enfolding sides of lip, sometimes spirally twisted; lip deeply pouches and inflated, subglobose or ellipsoid, with incurved lateral lobes and usually also apical margin, hairy within on bottom. Column short, with 2 lateral fertile stamens, a terminal staminode above, and a stigma below; anthers 2-locular, with very short filaments; pollen powdery or glutinous; staminodes often elliptic to ovate, very rarely ligulate or linear, base stalked or not; stigma ± papillose, inconspicuously subglobose or ellipsoid, with incurved lateral lobes and usually also apical margin, hairy within especially on lower surface, sometimes spotted within, glabrous or hairy on outer surface; front margin incurved or not, sometimes with short marginal horns; side lobes sometimes warty. Column short, stalked, porrect; anthers 2, 2-locular, borne on short obtuse to acute filaments; pollen powdery or viscid; staminode terminal, sessile or shortly stalked, often shield-shaped, transversely reniform, oblong, ovate, obcordate, or linear, flat, convex or longitudinally conduplicate, glabrous to papillose or finely pubescent; stigma stalked or subsessile, dependent, convex, 3-partite, ± papillose. Capsule erect to pendulous, 3-ribbed, cylindric to almost ellipsoidal, sometimes beaked at apex. Seeds ellipsoidal with a thin testa.

About 50 species: N temperate zone, mainly in temperate Asia and North America, extending south to the Himalayan regions and Central America; 36 species (25 endemic) in China.

1a. Leaves 3 or more, glabrous or hairy.

2a. Staminodes subligulate to linear-oblong, conspicuously narrower than stigma.

3a. Plants more than 100 cm tall, with 9 or 10 leaves; inflorescence with many flowers; flowers yellow with purple spots on lip ................................................................. 1. *C. subtropicum*

3b. Plants 10–20 cm tall, with 2 or 3 leaves; inflorescence reduced to 1 or 2 flowers; flowers white with purple spots on lip ................................................................. 2. *C. wardii*

2b. Staminodes usually elliptic to ovate, ca. as wide as or wider than stigma.

4a. Flowers with 2 lateral sepals completely separate; lip obconic, pointed at apex, pubescent around mouth ........................................................................................................................................ 19. *C. plectrochilum*

4b. Flowers with 2 lateral sepals connate to different degrees into 1 synsepal; lip never obconic, glabrous around mouth.

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19. C. plectrochilum

22
5a. Petals shorter than dorsal sepal, suboblong, apex obtuse; flowers yellow, sometimes with red spots ... 3. *C. flavum*
5b. Petals usually longer than dorsal sepal, attenuate toward apex, apex acute or acuminate; flowers variously colored.

6a. Ovary pubescent or glabrous, never glandular hairy; flowers pink, red, purple, or dark purple, rarely white.
6b. Ovary glandular pubescent, flowers yellow, green, or white, sometimes with maroon sepals and petals or purple-veined sepals and petals.

7a. Ovary densely hairy or villous.
7b. Ovary glabrous, sparsely hairy or hairy only along ribs.

8a. Stem densely villous, especially in upper part; dorsal sepal 4–5.5 cm; lip with a smooth rim ........................................................................................................................................ 17. *C. franchetii*
8b. Stem sparsely pubescent; dorsal sepal 2.4–2.7 cm; lip with a toothed rim ....................... 18. *C. himalaicum*

9a. Lip 2.2–3.2 cm; petals 2.2–3.2 cm.
9b. Lip 3.5–6 cm; petals 3.5–6.5 cm.

10a. Ovary glabrous or slightly pubescent in upper half; syn sepal much narrower than dorsal sepal; flowers usually pink to purplish red ............................................ 12. *C. yunnanense*
10b. Ovary pubescent at least along ribs; synsepal slightly narrower than dorsal sepal; flowers purple-red ............................................................. 13. *C. taibaiense*

11a. Flowers red, pink, or occasionally white, not becoming dark purple when dried; petals with inconspicuous veins; staminodes not carinate abaxially ...... 11. *C. macranthos*
11b. Flowers dark purple to deep purple when dried; petals with very conspicuous veins; staminodes carinate abaxially.

12a. Lip with a white-margined rim to its mouth, lacking translucent “windows” on back ........................................................................................................................................ 15. *C. tibeticum*
12b. Lip without a white-margined rim to its mouth, with translucent “windows” on back ........................................................................................................................................ 16. *C. calcicola*

13a. Staminodes not stalked at base; petals usually nearly as long as lip, mostly not twisted; flower usually solitary.
13b. Staminodes stalked at base; petals longer than lip, often twisted; flowers 1–3.

14a. Flowers greenish yellow; sepals and petals without maroon stripes or spots, glabrous abaxially; mouth of lip not grooved-toothed along margin ......................... 14. *C. ludlowii*
14b. Flowers greenish yellow to yellow, marked with maroon stripes or spots on sepals and petals; mouth of lip slightly edged by teeth or grooved-toothed along margin.

15a. Lip 5–7 cm; staminode 1.5–2 cm ...................................................................................... 9. *C. fasciolatum*
15b. Lip 1.6–4 cm; staminode 6–10 mm ............................................................................... 10. *C. farreri*

16a. Lip pure white; sepals green .......................................................................................... 8. *C. cordigerum*
16b. Lip not pure white; sepals maroon, yellow, or green, sometimes veined with purple.

17a. Sepals and petals maroon, quite different in color from yellow lip ................................ 4. *C. calceolus*
17b. Sepals and petals similar in color to lip.

18a. Flowers bronze-brown to purplish brown .................................................................. 7. *C. shanxianense*
18b. Flowers green or yellow.

19a. Flowers often 2 or 3, greenish to green; petals nearly 2 × as long as lip ........................................................................................................................................ 5. *C. henryi*
19b. Flowers often solitary, yellowish to yellow; petals not 2 × as long as lip; lip sometimes red spotted ................................................................. 6. *C. segawae*

1b. Leaves 1 or 2, in former case, bract subtending flower leaflike.
20a. Leaves 2, subopposite, quite distinct in size from bract subtending flower; leaves never spotted with blackish purple; pedicel not elongating after fertilization of flower.
21a. Leaves fan-shaped, with many radiating veins ending at margin of apical half.
22a. Stem below leaves brown tomentose; sepals and petals greenish yellow; lip strongly grooved-margined around mouth ........................................................................................................ 20. *C. japonicum*
22b. Stem below leaves glabrous or puberulent; sepals and petals whitish or pinkish; lip slightly grooved-margined around mouth ........................................................................................................ 21. *C. formosanum*

21b. Leaves cordate to elliptic, with subparallel, arcuate, or 3–5 prominent veins ending at their apex.
23a. Leaves alternate; rhizome slender, elongate; petals usually subspatulate or pandurate, rounded at apex; lip pitcher-shaped, without an incurved apical margin ........................................... 22. *C. guttatum*
23b. Leaves ± opposite; stems clustered; lip with incurved margin.

24a. Peduncle (above leaves) and ovary glabrous .................................................................. 23. *C. debile*
24b. Peduncle (above leaves) and ovary hairy.

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**Cypripedioideae**

- *C. formosanum*
- *C. macranthos*
- *C. yunnanense*
- *C. himalaicum*
- *C. fasciolatum*
- *C. cordigerum*
- *C. shanxiense*
- *C. japonicum*
- *C. taibaiense*
- *C. franchetii*
- *C. calcicola*
- *C. calceolus*
- *C. farreri*
- *C. guttatum*
- *C. tibeticum*
- *C. calcicola*
- *C. tibeticum*
- *C. calcicola*
- *C. tibeticum*
- *C. calcicola*
- *C. tibeticum*
24. *Cypripedium palangshanense*  
Flowers green, sometimes marked with purple; stem below leaves densely villous; leaves ciliate; dorsal sepals elliptic-ovate, 6–10 mm wide.  

25. *C. elegans*  
Flowers plum-purple; stem below leaves glabrous; leaves not ciliate; dorsal sepals lanceolate, 3–4 mm wide.  

26. **Leaf solitary, often prostrate on ground; bract leaflike and also often prostrate; both sometimes spotted with blackish purple; pedicel elongating after fertilization of flower.**  

27. Plants to 1.5 m tall, with a stout, rather short rhizome 2–3 cm in diam.  

28. Leaf blade 2.5–6 cm wide; plants with slender rhizomes underground.  

29. Leaf blade 6.5–16 cm wide; plants with stout and short rhizomes underground.  

30. Petals glabrous ............................................................................................................. 25. *C. forrestii*  

31. Petals nearly 2 × as long as lip ............................................................................... 26. *C. bardolphianum*  

32. Petals ± hairy abaxially.  

33. Sepals glabrous ............................................................................................................. 29. *C. marginatum*  

34. Sepals densely villous abaxially ....................................................................................... 27. *C. micranthum*  

35. Leaf blade not similar in color to petals and lip; dorsal sepal 3.8–6 cm wide.  

36. Leaf blade often similar in color to petals and lip; dorsal sepal 2.5–2.8 cm wide.  

1. *Cypripedium subtropicum*  

暖地杓兰 nuan di shao lan  

Plants to 1.5 m tall, with a stout, rather short rhizome 2–3 mm in diam. Stem erect, ca. 1 cm in diam., pubescent, with several sheaths at base and 9 or 10 leaves above; sheaths 2.5–9.5 cm, pubescent. Leaf blade elliptic-oblanceolate to elliptic-lanceolate, 21–33 × 7.7–10.5 cm, abaxially pubescent, base contracted into petiole, margin ± ciliate, apex acuminate; petiole 1–2 cm. Inflorescence terminal, racemose, 7-flowered; peduncle ca. 21 cm; rachis ca. 15 cm, with reddish hairs; floral bracts ± reflexed, linear-lanceolate, 1–2.8 × 0.2–0.3 cm, with reddish hairs; pedicel and ovary ca. 4.5 cm, densely glandular hairy and brownish pilose. Flowers yellow, with purple spots on lip. Dorsal sepal ovate-elliptic, 3.5–3.9 × 2.2–2.5 cm, abaxially with reddish hairs, apex cuspitate-acuminate; synsepal broadly ovate-elliptic, slightly wider than dorsal sepal, abaxially also hairy, apex shallowly 2-lobed. Petals suboblong-ovate, 3–3.6 × 9–11 mm, reddish hairy on adaxial veins and abaxial surface; lip deeply pouchled, obovoid-ellipsoidal, 4–4.6 cm, ca. 3 cm in diam., glabrous on outer surface, hairy toward inner base. Staminode subligulate, ca. 5 × 1.5 mm, base stalked, apex obtuse, slightly upcurved. Fl. Jul.

- *Alnus* forests; ca. 1400 m. SE Xizang (Mêdog).


宽口杓兰 kuan kou shao lan  

*Cypripedium guttatum* Swartz var. *wardii* (Rolfe) P. Taylor.  

Plants 10–20 cm tall. Rhizome 3–6 cm × 2–5 mm. Stem erect, rather slender, pubescent, with several sheaths at base and 2 or 3(or 4) leaves above. Leaf blade elliptic to elliptic-lanceolate, 4.5–10 × 2.5–3.5 cm, both surfaces pubescent especially on veins, ciliate, base contracted and sheathing, apex acute or subacuminate. Inflorescence terminal, 1- or 2-flowered; peduncle slender, pubescent; floral bracts foliaceous, ovate-lanceolate, 1.5–2.7 cm, pubescent and ciliate; pedicel and ovary 1–1.2 cm, densely pubescent. Flowers small, white or creamy white with purple spots on inside of lip and around its mouth. Dorsal sepal elliptic or ovate-elliptic, 14–17 × 8–10 mm, abaxially sparsely pubescent, apex obtuse or subacute; synsepal broadly elliptic, slightly shorter than dorsal sepal, abaxially pubescent, apex shallowly 2-lobed. Petals subobovate-ovate or ovate-oblong, 9–12 × ca. 6 mm, apex obtuse; lip deeply pouchled, subobvoid-globose, 1.2–1.6 cm, with a broad mouth. Staminode
narrowly ligulate to linear-oblong, 1–3 × 1–2.5 mm, narrower than stigma. Fl. Jun–Jul.

- Dense forests, limestone cliffs, rocks by streams; 2500–3500 m. W Sichuan (Dadu He valley), SE Xizang (Zayü), NW Yunnan (Déqên).


**Cypripedium flavum** Franchet.

Plants often 30–50 cm tall, with a stout, usually rather short rhizome. Stem erect, densely pubescent, especially near upper nodes, with several sheaths at base and 3–6 leaves above. Leaves well spaced; blade elliptic to elliptic-lanceolate, 10–16 × 4–8 cm, both surfaces pubescent, shortly ciliate, apex acute or acuminate. Inflorescence terminal, 1- or rarely 2-flowered; peduncle pubescent; floral bracts foliaceous, elliptic-lanceolate, 4–8 × 1.8–2.3 cm, pubescent; pedicel and ovary 2.5–4 cm, densely rusty hairy. Flowers yellow, sometimes tinged or flushed with red, occasionally with maroon spots on lip. Dorsal sepal elliptic to broadly elliptic, 3–3.5 × 1.5–3 cm, abaxially carinate, base with a stalk 2–3 mm. Capsule narrowly obovoid, 3.5–4.5 cm, hairy. Fl. and fr. Jun–Sep. 2n = 20*.

- Forests, forest margins, thickets, stony places on grasslands; 1800–3500 m. S Gansu, W Hubei, S Shaanxi, S Shanxi, Sichuan, SE Xizang, NW Yunnan.


**Cypripedium calceolus** Franchet.

Plants 20–45 cm tall, with a somewhat stout rhizome. Stem erect, with glandular hairs, with several sheaths at base and 3 or 4 leaves above middle. Leaf blade elliptic or ovate-elliptic, rarely ovate-lanceolate, 7–16 × 4–7 cm, abaxially sparsely pubescent especially on veins and toward base, minutely ciliate, apex acute or shortly acuminate. Inflorescence terminal, usually 1- or 2-flowered; floral bracts foliaceous, elliptic-lanceolate or ovate-lanceolate, 4–6(–10) × 1.5–4 cm; pedicel and ovary ca. 3 cm, with short glandular hairs. Flowers with maroon sepals and petals and yellow lip. Dorsal sepal ovate or ovate-lanceolate, 2.5–5 × 0.8–1.5 cm, abaxial midvein sparsely pubescent, apex acuminate or cuspidate-acuminate; synsepal similar to dorsal sepal, apex shallowly 2-lobed. Petals twisted, linear or linear-lanceolate, 3–5 × 0.4–0.6 cm, pubescent toward adaxial base and on abaxial veins; lip deeply pouch, ellipsoid, 3–4 × 2–3 cm, outside glabrous, inner bottom hairy; incurved lateral lobes 3–4 mm wide. Staminode suboblong-elliptic, 7–10 × 5–7 mm, abaxially carinate, base with a stalk ca. 1 mm, apex obtuse. Fl. Jun–Jul. 2n = 20.

Rocky places in forests, forest margins, grasslands; 500–1000 m. Heilongjiang, E Jilin, Liaoning, NE Nei Mongol [Japan, Korea, Russia; Europe].


**Cypripedium henryi** Franchet.

Plants 30–60 cm tall, with a rather stout rhizome. Stem erect, pubescent, with several sheaths at base and 4 or 5 leaves above. Leaf blade elliptic to ovate-lanceolate, 10–18 × 6–8 cm, glabrous or pubescent near abaxial base, apex acuminate. Inflorescence terminal, usually 2- or 3-flowered; floral bracts foliaceous, ovate-lanceolate or lanceolate, 4–10 × 1–3 cm, glabrous or occasionally pubescent on abaxial veins, apex cuspidate-acuminate; pedicel and ovary 2.5–4 cm, densely white glabular hairy. Flowers green to greenish. Dorsal sepal ovate-lanceolate, 3.5–4.5 × 1–1.5 cm, slightly pubescent on abaxial veins especially toward base, apex acuminate; synsepal similar to dorsal sepal, apex shallowly 2-lobed. Petals usually slightly twisted, linear-lanceolate, 4.5–0.5–0.7 cm, pubescent toward adaxial base and on abaxial veins, apex acuminate; lip deeply pouch, ellipsoid, ca. 2 cm, ca. 1.5 cm in diam., outside glabrous, inner bottom hairy. Staminode elliptic or ovate-elliptic, 6–7 × 3–4 mm, abaxially carinate, with a stalk 2–3 mm. Capsule sub-ellipsoid or narrowly ellipsoid, to 3.5 × 1.2 cm, hairy. Fl. Apr–May, fr. Jul–Sep. 2n = 22*.

- Humus-rich places in open forests, at forest margins, or on scrubby slopes; 800–2800 m. S Gansu, Guizhou, W Hubei, S Shaanxi, S Shanxi, Sichuan, NW to SE Yunnan.


**Cypripedium segawae** Swartz var. segawai (Masamune) S. S. Ying; C. reginae T. Walter var. segawai (Masamune) S. S. Ying.

Plants with a short, creeping rhizome. Stem erect, with glandular hairs, with 1 or 2 sheaths at base and 3 or 4 leaves above. Leaf blade elliptic to elliptic-lanceolate, 5–10 × 1.5–3 cm, both surfaces pubescent, apex subacute. Inflorescence terminal, with 1 flower; peduncle slender, with glandular hairs; floral bracts foliaceous, lanceolate, 2.5–3.5 cm. Flower yellowish to yellow, rarely with small red spots on lip, 5–6 cm in diam. Dorsal sepal ovate-lanceolate, 2–4 × 0.8–1.4 cm, glabrous, apex acuminate; synsepal ovate, 2–3.5 × 1–1.5 cm, glabrous, apex shallowly 2-lobed. Petals not twisted, linear-lanceolate, 2.3–4 × 0.6–0.8 cm, densely pubescent at adaxial base, apex acuminate; lip deeply pouch, subglobose, 2.2–5 × ca. 1.7 cm, with a small mouth often toothed margined. Staminode oblong, 6–7 mm, base with a stalk 1–2 mm. Fl. Mar–Apr. 2n = 20*.

- Forests, alpine grassy slopes; 1300–3000 m. NE Taiwan.


**Cypripedium shanxiense** C. Chen

Plants with a short, creeping rhizome. Stem erect, with glandular hairs, with 1 or 2 sheaths at base and 3 or 4 leaves above. Leaf blade elliptic to elliptic-lanceolate, 5–10 × 1.5–3 cm, both surfaces pubescent, apex subacute. Inflorescence terminal, with 1 flower; peduncle slender, with glandular hairs; floral bracts foliaceous, lanceolate, 2.5–3.5 cm. Flower yellowish to yellow, rarely with small red spots on lip, 5–6 cm in diam. Dorsal sepal ovate-lanceolate, 2–4 × 0.8–1.4 cm, glabrous, apex acuminate; synsepal ovate, 2–3.5 × 1–1.5 cm, glabrous, apex shallowly 2-lobed. Petals not twisted, linear-lanceolate, 2.3–4 × 0.6–0.8 cm, densely pubescent at adaxial base, apex acuminate; lip deeply pouch, subglobose, 2.2–5 × ca. 1.7 cm, with a small mouth often toothed margined. Staminode oblong, 6–7 mm, base with a stalk 1–2 mm. Fl. Mar–Apr. 2n = 20*.

- Forests, alpine grassy slopes; 1300–3000 m. NE Taiwan.
Plants 40–55 cm tall, with a rather stout, creeping rhizome. Stem erect, pubescent and glandular hairy, with several sheaths at base and 3 or 4 leaves above. Leaf blade elliptic to ovate-lanceolate, 7–15 × 4–8 cm, sometimes hairy toward abaxial base and on veins both surfaces, ciliate, apex acuminate. Inflorescence terminal, 2-flowered, rarely 1- or 3-flowered; peduncle and rachis pubescent and glandular hairy; floral bracts foliaceous, elliptic or ovate, 7–10 × 3–6.5 cm, both surfaces glabrous, ciliate, apex shortly acuminate. Inflorescence terminal, 1- or rarely 2-flowered; peduncle pubescent in upper part; floral bracts foliaceous, elliptic or ovate, 7–10 × 3–6.5 cm, abaxial veins occasionally pubescent toward base, apex acuminate; pedicel and ovary 1.5–3 cm, with dense reddish brown glandular hairs. Flowers fragrant, large, to 12 cm in diam., pale to lemon-yellow, with maroon longitudinal stripes on sepals and petals. Dorsal sepal ovate-elliptic or ovate, 5–6 × 2.8–3.5 cm, abaxial veins slightly puberulent, margin sometimes slightly undulate, apex acuminate; synsepals similar to dorsal sepal, 5–6 × 2.5–3 cm, apex shallowly 2-lobed. Petals linear-lanceolate or broadly linear, 5.5–8 × 0.8–1.5 cm, pubescent toward adaxial base and on abaxial veins, apex acuminate; lip often ± ascending, deeply pouched, subglobose, 5–7 cm, mouth often slightly edged by teeth, outer surface glabrous, inner bottom hairy. Staminode ovate-elliptic, 1.5–2 × ca. 1 cm, abaxially carinate, base slightly auriculate, margin slightly incurved. Fl. Apr–Jun.

● Open forests, scrubby slopes, grasslands; 1600–2900 m. Chongqing, W Hubei, SW Sichuan.


华西杓兰 hua xi shao lan

*Cypripedium cheniae* Torelli.

Plants 20–30 cm tall, with a stout, short rhizome. Stem erect, nearly glabrous, with several sheaths at base and often 2 leaves above. Leaf blade elliptic or ovate-elliptic, 6–9 × 2.5–3.5 cm, glabrous, minutely ciliate, apex acute or shortly acuminate. Inflorescence terminal, with 1 flower; peduncle pubescent toward apex; floral bracts foliaceous, narrowly ovate-elliptic or ovate, 3.5–5 × 1–1.5 cm, glabrous, apex acuminate; pedicel and ovary ca. 2.5 cm, slightly glandular hairy. Flower fragrant; sepals and petals greenish yellow, marked with maroon longitudinal stripes or also spots; lip waxy yellow, with maroon spots inside. Dorsal sepal ovate or ovate-elliptic, 3–3.5 × ca. 1.5 cm, abaxially sparsely shortly hairy on veins, apex acuminate; synsepal ovate-lanceolate, ca. as long as dorsal sepal, ca. 1.1 cm wide, abaxially shortly puberulent, apex shallowly 2-lobed. Petals lanceolate, 3–4 × 0.6–0.7 cm, pubescent toward adaxial base and on abaxial midvein, apex acuminate; lip deeply pouched, urceolate, 2.5–3.3 × 1.5–2 cm, with a dilated mouth grooved-toothed along margin. Staminode suboblong-ovate, ca. 10 × 5 mm, base subsessile. Fl. Jun.

● Stony grasslands, shaded cliffs in open forests; 2600–3400 m. S Gansu, Guizhou, NW and W Sichuan, NW Yunnan.

“*Cypripedium zhongdianense*” (Z. D. Fang, Wild Fl. Hengduan Mts. 209. 1993) belongs here but was not validly published because no Latin description or diagnosis was provided (*Vienna Code*, Art. 36.1).

*Cypripedium ×wenqingiae* Perner (Orchidee (Hamburg) 49: 201. 1998), described from Wenqian, Sichuan, is a natural hybrid between *C. farreri* and *C. tibeticum*.


大花杓兰 da hua shao lan

Plants 30–45 cm tall, with a stout, short rhizome. Stem erect, glabrous or pubescent near upper nodes, with several sheaths at base and 3 or 4 leaves above. Leaf blade elliptic or broadly elliptic, 15–20 × 6–12 cm, both surfaces glabrous, ciliate, apex shortly acuminate. Inflorescence terminal, 1- or rarely 2-flowered; peduncle pubescent in upper part; floral bracts foliaceous, elliptic or ovate, 7–10 × 3–6.5 cm, abaxial veins occasionally pubescent toward base, apex acuminate; pedicel and ovary 1.5–3 cm, with dense reddish brown glandular hairs. Flowers fragrant, large, to 12 cm in diam., pale to lemon-yellow, with maroon longitudinal stripes on sepals and petals. Dorsal sepal ovate-elliptic or ovate, 5–6 × 2.8–3.5 cm, abaxial veins slightly puberulent, margin sometimes slightly undulate, apex acuminate; synsepals similar to dorsal sepal, 5–6 × 2.5–3 cm, apex shallowly 2-lobed. Petals linear-lanceolate or broadly linear, 5.5–8 × 0.8–1.5 cm, pubescent toward adaxial base and on abaxial veins, apex acuminate; lip often ± ascending, deeply pouched, subglobose, 5–7 cm, mouth often slightly edged by teeth, outer surface glabrous, inner bottom hairy. Staminode ovate-elliptic, 1.5–2 × ca. 1 cm, abaxially carinate, base slightly auriculate, margin slightly incurved. Fl. Apr–Jun.

C. macranthos"*
Cypripedium macranthos f. albiflorum (Makino) Ohwi; C. macranthos var. albiflorum Makino; C. macranthos var. taiwanianum F. Maekawa; C. speciosum Rolfe; C. taiwanianum Masamune; Saccomon macranthos (Swartz) Rafinesque.

Plants 25–50 cm tall, with a stout, short rhizome. Stem erect, slightly pubescent or glabrescent, with several sheaths at base and 3 or 4 leaves above. Leaf blade elliptic or elliptic-ovate, 10–15 × 6–8 cm, slightly pubescent or glabrescent on veins both surfaces, minutely ciliate, apex acuminate or subacute. Inflorescence terminal, 1- or rarely 2-flowered; peduncle pubescent or glabrous; floral bracts foliaceous, ovate-elliptic or ovate-lanceolate, 4.5–6 × 1.5–2.5 cm, villous toward adaxial face, apex acuminate or sub-ovate, 10–15 × 6–8 cm, slightly pubescent or glabrescent on base and 3 or 4 leaves above. Leaf blade elliptic or elliptic-lanceolate, 6–9 × 4–6 cm, both surfaces often puberulent on veins, apex shortly acuminate; pedicel and ovary 1–3.5 cm, glabrous. Flowers large, red or pink, usually with darker stripes, very rarely white. Dorsal sepal broadly ovate-elliptic or ovate-lanceolate, 4.5–5 × 2.5–3 cm, glabrous, apex acuminate; synsepal ovate, 3–4 × 1.5–2 cm, apex shallowly 2-lobed. Petals not twisted, lanceolate, 4.5–6 × 1.5–2.5 cm, villous toward adaxial base, apex acuminate; lip deeply pouched, subglobose or ellipsoid, 4.5–5.5 cm, with a small mouth ca. 1.5 cm in diam., inner bottom hairy. Staminode oblong-oblong, 10–14 × 7–8 mm, abaxially not carinate, base sessile. Capsule narrowly ellipsoid, ca. 4 cm, glabrous. Fl. Jun–Jul, fr. Aug–Sep. 2n = 20, 21, 30.

Humus-rich soils and well-drained places in forests, forest margins, grassy slopes; 400–2400 m. Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Shandong, Taiwan [Japan, Korea, Russia].


云南杓兰 yun nan shao lan

Cypripedium amesianum Schlechter.

Plants 20–37 cm tall, with a stout, short rhizome. Stem erect, glabrous or sparsely pubescent in upper part especially near nodes, with several sheaths at base and 3 or 4 leaves above. Leaf blade elliptic or elliptic-lanceolate, 6–14 × 1–3.5 cm, abaxially puberulent especially on veins, adaxially glabrous or sparsely puberulent, apex acuminate. Inflorescence terminal, with 1 flower; peduncle sparsely pubescent in upper part; floral bracts foliaceous, ovate-elliptic or ovate-lanceolate, 4–6 × ca. 1.5 cm, both surfaces sparsely pubescent, apex acute or acuminate; pedicel and ovary 2–3.5 cm, glabrous or upper part slightly hairy. Flower 4–6 cm in diam., pink, purplish red, or occasionally off-white, with darker veins; staminode white with a purple stripe centrally. Dorsal sepal ovate-elliptic, 2.2–3 × 1.2–1.6 cm, apex acuminate; synsepal elliptic-lanceolate, 2.2–3.2 × 0.8–1 cm, apex shallowly 2-lobed. Petals slightly twisted or not, lanceolate, 2.2–3.2 × 0.7–0.8 cm, adaxial base hairy, apex acuminate; lip deeply pouched, ellipsoid, 2.2–3.2 × 1.5–1.8 cm, with a paler rim to its mouth, outer surface glabrous, inner bottom hairy. Staminode elliptic or ovate, 6–7 × 3–4 mm, base subsessile. Fl. May.

● Pinus forests, thickets, grassy slopes; 2700–3800 m. SW and W Sichuan, SE Xizang, NW Yunnan.


太白杓兰 tai bai shao lan

Plants 13–15(–24) cm tall. Rhizome 4–5 cm, stout, 4–5 mm in diam. Stem erect, glabrous, with 2 or 3 sheaths at base and 3 or 4 leaves above. Leaf blade elliptic or elliptic-lanceolate, 4.5–11 × 2.8–3.5 cm, abaxially minutely pubescent or glabrescent, adaxially glabrous, ciliate, apex acuminate or subacute. Inflorescence terminal, 1-flowered; peduncle minutely pubescent; floral bracts narrowly elliptic or ovate-lanceolate, 6–6.5 cm, both surfaces minutely pubescent or adaxially glabrescent; pedicel and ovary 1.7–2 cm, pubescent at least along ribs. Flower purple-red, 4–4.5 cm in diam. Dorsal sepal elliptic-ovate, 2.2–3 × 1.3–1.5 cm, glabrous, apex acuminate; synsepal ovate-elliptic to narrowly ovate-lanceolate, 2.2–2.8 × 1–1.2 cm, glabrous, bifid at apex. Petals lanceolate, 2.6–3 × 0.7–0.9 cm, villous in basal half adaxially; lip deeply pouched, obovoid-subglobose, 2.5–3 × 1.5–2 cm, outer surface glabrous, inner bottom hairy. Staminode oblong, 10–11 × 5–6 mm, with a longitudinal groove centrally, carinate abaxially, mucronate at apex. Fl. Jun–Jul.

● Grassy slopes; 2600–3300 m. S Shaanxi (Taibai Shan).


波密杓兰 bo mi shao lan

Plants 25–38 cm tall. Stem erect, glabrous, with several sheaths at base and 3 leaves above. Leaf blade elliptic-ovate or elliptic-lanceolate, 6–13 × 3.6–7.5 cm, both surfaces sparsely pubescent on veins, occasionally with glandular hairs toward apex and base, apex acuminate or acute. Inflorescence terminal, with 1 flower; floral bracts ovate or ovate-elliptic, 6–8 × 3–4 cm, sparsely pubescent, apex acuminate or acute; pedicel and ovary 3.5–4.1 cm, occasionally with glandular hairs toward apex. Flower greenish yellow. Dorsal sepal ovate-elliptic, 3.3–3.8 × 1.5–1.7 cm, apex acuminate; synsepal ovate to lanceolate, 3.3–3.8 × 1.2–1.5 cm, apex shallowly 2-lobed. Petals not twisted, obliquely lanceolate, 3.4 × 0.9–1.2 cm, adaxial base pubescent, margin slightly undulate, apex acuminate; lip pouched, sub-ellipsoid, 3–3.6 cm, inner bottom hairy; incurved lateral lobes to 1 cm wide. Staminode subovate-oblong, ca. 1 cm, with a longitudinal groove centrally, glabrous. Fl. unknown.

● Moist places in forests; ca. 4300 m. SE Xizang (Bomi).


西藏杓兰 xi zang shao lan

Cypripedium compactum Schlechter; C. corrugatum Franchet; C. corrugatum var. obesum Franchet; C. lanuginosum Schlechter; C. macranthos Swartz var. tibeticum (King ex Rolfe) Kraenzlin.

Plants 15–35 cm tall, with a stout, rather short rhizome. Stem erect, glabrous or pubescent near upper nodes, with several sheaths at base and 3 or rarely 2 or 4 leaves above. Leaf blade elliptic, ovate-elliptic, or broadly elliptic, 8–16 × 3–9 cm,
glabrous or sparsely puberulent, minutely ciliolate, apex acute, acuminate, or obtuse. Inflorescence terminal, with 1 flower, usually appearing before full development of leaves; floral bracts foliaceous, elliptic to ovate-lanceolate, 6–11 × 2–5 cm, apex acute or acuminate; pedicel and ovary 2–3 cm, glabrous or occasionally slightly pubescent toward apex. Flower large, nodding; sepals and petals white or yellow, boldly striped with occasionaly slightly pubescent toward apex. Flower large, densely pubescent toward adaxial base, sparsely minutely ciliolate; synsepal similar to dorsal sepal, but slightly shorter and narrower, apex shallowly 2-lobed. Petals lanceolate or oblong-lanceolate, 1.5–2 × 0.8–1.2 cm, abaxially ± keeled, base subsessile. Fl. May–Aug.

Cypripedium frischii Perner (Orchidaceae, Orchidaceae Ges. 6: 10. 1999), collected from Lijiang, Yunnan, appears to be a natural hybrid between C. tibeticum and C. yunnanense, both of which are native to Lijiang. Its flower is similar to that of C. yunnanense but much larger.


褐花杓兰 he hua shao lan

Cypripedium smithii Schl.

Plants 15–45 cm tall, with a stout, rather short rhizome. Stem erect, usually glabrous, with several sheaths at base and 3 or 4 leaves above. Leaf blade elliptic, 5–16.5 × 4–5.5 cm, subglabrous, minutely ciliate, apex acuminate or acute. Inflorescence terminal, with 1 flower; peduncle pubescent; floral bracts foliaceous, ovate-lanceolate, to 9.5 × 2–2.5 cm; pedicel and ovary 3–3.5 cm, sparsely hairy. Flower deep purple; lip with translucent "windows" on back, without a white-margined rim to its mouth. Dorsal sepal elliptic-ovate, 3.5–5 × 1.9–2.2 cm, apex acuminate; synsepal elliptic-lanceolate, 3.2–4.2 × 1.5–2 cm, apex shallowly 2-lobed. Petals ovate-lanceolate, 4.4–5.2 × 0.8–0.9 cm, with very conspicuous veins, adaxial base pubescent, apex acuminate; lip deeply pouched, elliptisoid, 3.5–4.2 × 2.5–2.8 cm, inner bottom hairy. Staminoide ovate-oblong, 1.5–2 × 0.8–1.2 cm, abaxially ± keeled, base subsessile. Fl. May–Aug. 2n = 20.

- Humus-rich and well-drained places in open forests, scrubby or wet grassy slopes; 1500–3700 m. Chongqing, S Gansu, W Henan, W Hubei, S Shanxi, S Shaanxi, NW Sichuan.


高山杓兰 gao shan shao lan

Cypripedium macranthos Swartz var. himalayicum (Rolfe) Kraenzlin.

Plants 25–28 cm tall, with a relatively slender rhizome. Stem erect, sparsely pubescent, with several sheaths at base and 3 leaves above. Leaf blade oblong-elliptic to broadly elliptic, 5–10 × 2.5–4 cm, both surfaces glabrous or slightly hairy, ciliate, apex acute. Inflorescence terminal, with 1 flower; peduncle ± pubescent, especially in upper part; floral bracts foliaceous, narrowly elliptic to narrowly elliptic-lanceolate, 3.5–4 × 0.6–1.2 cm, abaxial veins ± hairy, apex acuminate; pedicel and ovary 1.8–2.2 cm, densely pubescent. Flowers fragrant, whitish or greenish yellow, densely marked with purplish brown longitudinal stripes. Dorsal sepal broadly elliptic or broadly ovate, 2.4–2.7 × 1.8–2.1 cm, slightly concave, apex acute; synsepal narrowly oblong or oblong-lanceolate, 1.8–2.2 × 1.1–1.2 cm, concave, apex shallowly 2-lobed. Petals narrowly oblong or linear-lanceolate, 2.3–3.4 × 0.6–0.7 cm, villous toward adaxial base, apex acute; lip deeply pouched, slightly bilaterally compressed, subellipsoid, 2.3–2.8 cm, with a small mouth and a toothed margin around it, inner bottom hairy. Staminoide broadly ovate-lanceolate, ca. 7 × 5–6 mm, base with a very short stalk. Fl. June–Jul. 2n = 20.

- Grasslands in forests, forest margins, open rocky slopes; 3600–4000 m. S and SE Xizang [Bhutan, N India, Nepal].


离萼杓兰 li e shao lan

Cypripedium arietinum (Franchet) E. H. Wilson, Horticulture 16: 145. 1912.

毛杓兰 mao shao lan

Cypripedium macranthos Swartz var. villosum Handel-Mazzetti; C. pulchrum Ames & Schlechter; C. rubronerve Cavestro.

Plants 20–35 cm tall, with a stout, rather short rhizome. Stem erect, densely pubescent especially toward upper part, with several sheaths at base and 3–5 leaves above. Leaf blade elliptic or ovate-lanceolate, 10–16 × 4–6.5 cm, both surfaces sparsely pubescent on veins, minutely ciliate, apex acute or shortly acuminate. Inflorescence terminal, with 1 flower; peduncle densely villous; floral bracts foliaceous, elliptic or elliptic-lanceolate, 6–8(–12) × 2–3.5 cm, both surfaces sparsely hairy, minutely ciliate, apex acuminate or shortly acuminate; pedicel and ovary 4–4.5 cm, densely villous. Flower purplish red to pink, with darker veins. Dorsal sepal elliptic-ovate or ovate, 4.5–5 × 2.5–3 cm, abaxially sparsely pubescent on veins, minutely ciliate, apex acuminate or shortly acuminate; synsepal elliptic-lanceolate, 3.5–4 × 1.5–2.5 cm, abaxially pubescent on veins, minutely ciliate, apex shallowly 2-lobed. Petals lanceolate, 5–6 × 1–1.5 cm, villous toward adaxial base, apex acuminate; lip deeply pouched, elipsoid or subglobose, 4.5–5 × 3–4 cm. Staminoide ovate-sagittate to ovate, 10–15 × 7–9 mm, abaxially slightly carinate, base auriculate, subsessile or with a very short stalk at base. Fl. May–Jul.
Plants 12–30 cm tall, with a stout, rather short rhizome. Stem erect, pubescent, with several sheaths at base and 3 or rarely 2 or 4 leaves above. Leaf blade elliptic to narrowly elliptic-lanceolate, 4.5–6 × 1–3.5 cm, abaxial veins occasionally puberulent, adaxially subglabrous, apex acute or shortly acuminate. Inflorescence terminal, with 1 flower; peduncle slender, pubescent; floral bracts foliaceous, elliptic-lanceolate or lanceolate, 2–3 × 0.7–0.8 cm, slightly ciliate, apex acuminate or acute; pedicel and ovary 1.5–2.5 cm, densely pubescent. Flowers relatively small; sepal and petals chocolate-brown or greenish brown, petals usually with a white margin; lip and staminode white, tinged with pink. Dorsal sepal ovate-lanceolate, 1.6–1.8 × 0.7–0.8 cm, slightly hairy at base, minutely ciliate, apex acuminate or acute; lateral sepals free, linear-lanceolate, 1.6–1.8 × 0.2–0.3 cm, slightly hairy at base, apex acuminate or acute. Petals linear-acute; synsepal similar to dorsal sepal, 4.5–5 × 1.2–1.8 cm, slightly pubescent toward base, apex acuminate or pinkish; sepals and petals spotted with purplish red at base; lip ± with purplish red short stripes and spots. Dorsal sepal often curving forward over lip, narrowly ovate or ovate-lanceolate, 4.5–5 × 1.6–2 cm, slightly pubescent toward base, apex acute or shortly acuminate; synsepal elliptic-ovate, 4.5–5 × 2.5–3 cm, slightly hairy toward base, apex shallowly 2-lobed. Petals oblong-lanceolate, 4.5–5 × 1.2–1.8 cm, adaxial base villous, apex acuminate or acute; lip pendulous, pouch, obovoid or ellipsoid, 4–6 × 3.5–4 cm, slightly grooved-margined around mouth, inner bottom hairy. Staminode ovate-triangular or ovate-sagittate, ca. 10 × 6–7 mm. Fl. Apr–May, fr. Jun–Aug.


紫点杓兰 zhi dian shao lan

Cypripedium cathayanum S. S. Chien.

Plants 35–55 cm tall, with a relatively slender, creeping rhizome 3–4 mm in diam. Stem erect, brown tomentose, with several sheaths in lower part and 2 subopposite or rarely 3 nearly alternate leaves near middle. Leaf blade flabellate, 10–16 × 10–21 cm, both surfaces hairy toward base, with many radiating veins reaching margin of apical half, base subuneate, margin undulate, minutely ciliate. Inflorescence terminal, with 1 flower; peduncle brown tomentose; floral bracts foliaceous, rhombic or ovate-lanceolate, 2.5–5 × 1–2(–3) cm, glabrous, minutely ciliate; pedicel and ovary 2–3 cm, densely hairy. Flowers pendulous; sepals and petals greenish yellow, base ± spotted with purple; lip yellowish pink to whitish, ± marked with purplish red spots and stripes. Dorsal sepal narrowly elliptic or narrowly elliptic-lanceolate, 4.5–5.5 × 1.5–2 cm, glabrous, apex acuminate; synsepal similar to dorsal sepal, 4.5–5 × 1.5–2.5 cm, apex shallowly 2-lobed. Petals obliquely lanceolate, 4.5–5 × 1–1.2 cm, villous toward adaxial base, apex acuminate; lip pendulous, pouched, subellipsoid or obovoid, 4.5–5 × 3–3.5 cm, strongly grooved-margined around mouth. Staminode elliptic, ca. 10 × 6–7 mm, base shortly auriculate. Capsule sub fusiform, 4.5–5 × ca. 1.2 cm, sparsely puberulent. Fl. Apr–May, fr. Jun–Oct. 2n = 20.

Moist and humus-rich soils in forests, thickets, forest margins, shaded slopes; 1000–2000 m. Anhui, S Gansu, Guizhou, Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Zhejiang [Japan].


台湾杓兰 tai wan shao lan

Cypripedium japonicum Thunberg var. formosanum (Hayata) S. S. Ying.

Plants 30–40 cm tall, with a relatively slender, creeping, often branched rhizome. Stem erect, glabrous or puberulent, with several sheaths in lower part and 2 subopposite leaves above. Leaf blade flabellate, 10–13 × 8–11 cm, both surfaces sparsely puberulent or adaxial surface glabrous, with many radiating veins reaching margin of apical half, base cuneate, margin undulate, minutely ciliate, apex mucronate. Inflorescence terminal, with 1 flower; peduncle nearly glabrous or sparsely pubescent; floral bracts foliaceous, ovate-lanceolate, 2.2–3 × 1–1.2 cm, sparsely puberulent, apex acute; pedicel and ovary 1.8–2 cm, densely pubescent. Flowers pendulous, white or pinkish; sepals and petals spotted with purplish red at base; lip ± with purplish red short stripes and spots. Dorsal sepal often curving forward over lip, narrowly ovate or ovate-lanceolate, 4.5–5 × 1.6–2 cm, slightly pubescent toward base, apex acute or shortly acuminate; synsepal elliptic-ovate, 4.5–5 × 2.5–3 cm, slightly hairy toward base, apex shallowly 2-lobed. Petals oblong-lanceolate, 4.5–5 × 1.2–1.8 cm, adaxial base villous, apex acuminate or acute; lip pendulous, pouched, obovoid or ellipsoid, 4–6 × 3.5–4 cm, slightly grooved-margined around mouth, inner bottom hairy. Staminode ovate-triangular or ovate-sagittate, ca. 10 × 6–7 mm. Fl. Apr–May, fr. Jun–Aug. 2n = 20, 30.
Forests, thickets, grasslands; 500–4000 m. Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Ningxia, Shaanxi, Shandong, Shandong, Shanxi, Sichuan, Xizang, NW Yunnan [Bhutan, Korea, Russia (Far East, Siberia); Europe, North America].

Cypripedium bouffordianum is evidently an albino form of C. guttatum. It is very similar in habit and flower structure to C. guttatum but lacks any purple-red or brown-red markings on the flower.

Cypripedium yatabeanum Makino (Bot. Mag. (Tokyo) 13: 91. 1899; C. guttatum subsp. yatabeanum (Makino) Hultén) was described from Japan and later reported from Heilongjiang and Jilin by P. Y. Fu and S. Z. Liu (in P. Y. Fu, Clavis Pl. Chinae Bor.-Orient., ed. 2, 895. 1995). It differs from C. guttatum by having dark brown spots on sepal, petals, and lip, and a larger lip more than 2 cm. However, the present authors are unaware of any Chinese specimens.


對叶杓兰 dui ye shao lan

Cypripedium cardyi Oliv. & Micheli (J. Linn. Soc. Bot. 17: 1. 1884; 1899; C. debile subsp. cardyi (Oliv. & Micheli) Schlechter) was described from Japan and later from China by P. Y. Fu and S. Z. Liu (in P. Y. Fu, Clavis Pl. Chinae Bor.-Orient., ed. 2, 895. 1995). It differs from C. debile by having more purple-red markings on the flower, but lacks any purple-red or brown-red markings on the flower.


巴郎山杓兰 ba lang shan shao lan

Plants 8–13 cm tall, with a slender, creeping rhizome. Stem erect, slender, glabrous, with 2 or 3 tubular sheaths at base and 2 leaves at apex. Leaves spreading horizontally, opposite or subopposite; blade broadly ovate, triangular-ovate, or cordate, 2.5–7 × 2.5–7 cm, herbaceous, glabrous, minutely ciliate, with 3–5 palmate veins and inconspicuous reticulate veinlets, base subcordate or broadly cuneate, apex acute or shortly acuminate. Inflorescence terminal, pendulous, with 1 flower; peduncle arching, usually 2–5 cm, slender, glabrous; floral bracts linear, 1.5–3 cm, glabrous; pedicel and ovary 8–14 mm, glabrous. Flower small, often hidden under leaves; sepal and petals pale green or yellowish green, with maroon spots or markings at base; lip white with maroon spots inside and sometimes stripes toward its mouth. Dorsal sepal narrowly ovate-lanceolate, 1–2 × 0.5–0.7 cm, glabrous, apex acuminate; synsepal similar to dorsal sepal, 1.4–1.8 × 0.5–0.6 cm, glabrous, apex obtuse. Capsule narrowly ellipsoid, 1.2–1.5 cm, tuberculate on surface, brown-purple to purplish red. Dorsal sepal lanceolate, 1.3–1.5 × 0.5–0.6 cm, apex shallowly 2-lobed. Petals oblong-lanceolate, 1.2–1.6 × 0.3–0.4 cm, glabrous, apex acute; pedicel and ovary 4–8 mm, with dense, short glandular hairs. Flower pendulous, brown-purple to purplish red. Dorsal sepal lanceolate, 1.4–1.8 × 0.3–0.4 cm, glabrous or pubescent at abaxial base; synsepals ovate-lanceolate, 1.5–1.7 × 0.5–0.6 cm, apex shallowly 2-lobed. Pedals obliquely lanceolate, 1.2–1.6 × 0.4–0.5 cm, slightly hairy toward abaxial base, apex acuminate; lip potted, subglobose, ca. 1 cm, with a rather broad, rounded mouth. Staminode ovate-lanceolate, ca. 3 mm. Fl. Jun.

- Forests, thickets; 2200–2700 m. Chongqing, C and SW Sichuan.


雅致杓兰 ya zhi shao lan

Plants 10–15 cm tall, with a slender, creeping rhizome. Stem erect, densely villous, with 2 tubular sheaths at base and 2 leaves at apex. Leaves spreading horizontally, opposite or subopposite; blade ovate or broadly ovate, 4–5 × 3–3.5 cm, herbaceous, both surfaces sparsely pubescent or rarely glabrous, long ciliate, with 3(–5) prominent veins raised abaxially, apex obtuse. Inflorescence terminal, suberect, with 1 flower; peduncle 2–4 cm, villous; floral bracts ovate, 1.5–2 × 0.6–0.8 cm, slightly hairy; pedicel and ovary 4.5–5 mm, hairy along longitudinal ridges. Flower small; sepal and petals yellowish green, adaxially with purplish red stripes; lip yellowish green to nearly white, with 3 purplish red warty stripes at front. Dorsal sepal elliptic-ovate, 1.5–2 × 0.6–1 cm, glabrous, apex acute; synsepals similar to dorsal sepal, apex shallowly 2-lobed. Pedals lanceolate, 1.5–2 × 0.4–0.5 cm, glabrous, apex subacute; lip potted, subglobose, ca. 1 cm, often upturned at apex with its mouth hidden. Staminode transversely elliptic, small, ca. 1.5 × 2 mm, base with a short stalk. Fl. May–Jul.

Humus-rich soils in forests, forest margins, thickets; 3600–3700 m. S and SE Xizang, NW Yunnan [Bhutan, N India, Nepal].

无苞杓兰 wu bao shao lan

Cypripedium nutans Schlechter.

Plants 8–12 cm tall, with a slender, creeping rhizome. Stem erect, relatively short, 2–3 cm, glabrous, covered by 2 sheaths, with a subopposite leaf and bract at apex. Leaf and bract spreading horizontally or ascending; blade elliptic, 6–7 × 2.5–3 cm, subglabrous, apex obtuse or subacute. Inflorescence terminal, erect, 7–9 cm, with 1 flower, ebracteate; pedicel glabrous, continuously elongating at fruiting; ovary ca. 1 cm, with 3 longitudinal ridges often sparsely pubescent. Flower small; sepal and petals pale green or reddish with brown stripes; lip golden yellow ± with brown markings. Dorsal sepal elliptic or ovate-elliptic, 1.5–2 × 0.7–0.9 cm, glabrous, apex acute; synsepals similar to dorsal sepal, 1.4–1.8 × 0.7–0.9 cm, apex shallowly 2-lobed. Pedals oblong-lanceolate, oblique, 1.5–1.8 × 0.5–0.6 cm, glabrous, apex acute, often ± enfolding lip; lip potted, slightly dorsiventrally compressed, 1.2–1.5 cm, tuberculate on front surface toward mouth. Staminode broadly elliptic-oblong, ca. 6 × 4 mm, minutely papillate. Capsule ellipsoid-oblong, 1.5–1.7 × ca. 1 cm, glabrous. Fl. Jun.–Jul., fr. Aug.

- Humus-rich and rocky or moist and mossy places on woody and scrubby slopes, at forest margins, or in open forests, often forming large colonies; 2300–3900 m. S Gansu, W Sichuan, SE Xizang.

小花杓兰 xiao hua shao lan

Plants 8–10 cm tall, with a slender, creeping rhizome. Stem erect, 2–6 cm, glabrous, with 2 or 3 sheaths at base and a subopposite leaf and bract. Leaf and bract spreading horizontally or nearly prostrate on substrate; blade elliptic or ovate-elliptic, 7–9 × 3.5–6 cm, glabrous, apex mucronate. Inflorescence terminal, erect, with 1 flower, ebracteate; pedicel 2–5 cm, continuously elongating at fruiting, densely reddish villous; ovary 5–6 mm, densely reddish villous. Flower small, with blackish purple spots and short stripes on sepals and petals and red spots and stripes on lip and tinged with white around its mouth. Dorsal sepal ovate, 1.2–1.7 × 0.8–1 cm, concave, abaxially densely purple villous, apex acute or mucronate; synsepal elliptic, 1–1.3 × 0.8–0.9 cm, abaxially villous, apex shortly 2-lobed. Petals ovate-elliptic, 1.3–1.4 × 0.5–0.8 cm, glabrous, apex acute; lip pouch, conspicuously dorsiventrally compressed, subellipsoid, ca. 1 cm, papillate on front surface. Staminode broadly orbicular or suborbicular, ca. 3 mm, base slightly auriculate. Fl. May–Jun.

- Grassy slopes, open forests; 2500–3600 m. SW Sichuan, NW Yunnan.


玉龙杓兰 yu long shao lan


Plants 3–5 cm tall, with a slender, creeping rhizome. Stem erect, 1.5–3 cm, covered by 2 conic sheaths, with a subopposite leaf and bract. Leaf and bract spreading horizontally or nearly prostrate on substrate; blade adaxially green, usually heavily marked with dark purple or black spots, rarely unspotted, elliptic or elliptic-ovate, 5–6.5 × 2.5–3.6 cm, apex mucronate. Inflorescence terminal, with 1 flower, ebracteate; pedicel 1.7–2.5 cm, villous; ovary 0.8–1 cm, villous. Flower small, dull yellow, finely spotted with maroon. Dorsal sepal ovate, 2.2–2.4 × 1.4–1.5 cm, abaxial midvein hairy, apex mucronate; synsepal ovate-elliptic, 1.8–1.9 × 0.8–1 cm, abaxial veins slightly hairy, apex shallowly 2-lobed and slightly recurved. Petals obliquely ovate, ± enfolding lip, 1.5–1.8 × 0.5–0.6 cm, apex acute; lip pouch, dorsiventrally compressed, subglobose, ca. 1 cm, outer surface papillose. Staminode oblong, ca. 3.5 × 3 mm, adaxially papillate, apex obtuse. Fl. Jun.

- *Pinus* forests, scrubby slopes, open forests; ca. 3500 m. NW Yunnan.


四川杓兰 si chuan shao lan


Plants 10–15 cm tall, with a stout rhizome. Stem 3–3.6 cm, glabrous, covered by a sheath, apex with a subopposite leaf and bract prostrate on substrate. Leaf blade green spotted with dark red-brown, broadly elliptic to suborbicular, 11.5–13.5 × 9.5–12 cm. Inflorescence terminal, 1-flowered, ebracteate; pedicel ca. 5.5 cm, glabrous; ovary ca. 1.7 cm, glabrous. Flower yellow to greenish yellow, ca. 4.5 cm in diam.; dorsal sepal spotted with maroon on adaxial veins and whole abaxial surface; synsepal with fewer maroon spots; petals and lip marked with maroon spots and stripes; staminode dark maroon. Dorsal sepal ovate-lanceolate, ca. 3.7 × 2.8 cm, both surfaces glabrous, ciliate, apex acute; synsepal similar to dorsal sepal, bidentate at apex. Petals curled forward, enfolding lip, oblong-lanceolate, ca. 4.3 × 1.6 cm, glabrous, apex acuminate; lip pouch, dorsiventrally flattened, ca. 2.6 × 1.6 cm, maroon spots at front usually wartlike. Staminode shortly trullate, ca. 10 × 9 mm, distinctly auriculate at base, obtuse. Fl. Jun–Jul.

- Humus-rich soils in bamboo and deciduous thickets. NC Sichuan (Wenchuan).


大围山杓兰 da wei shan shao lan


Plants 10–15 cm tall, with a stout rhizome. Stem 5–8 cm, glabrous, covered by a sheath with a subopposite leaf and bract prostrate on substrate. Leaf blade dark green with blackish purple spots, broadly ovate to orbicular,
4.2–4.7 × 2.4–2.8(–3.4) cm, abaxially pubescent on upper side, 1.8 cm. Petals curved forward, enfolding lip, elliptic-oblong, 4.2–4.7 × 2.4–2.8(–3.4) cm, abaxially pubescent on upper side, ciliate along apical margin; lip pouched, slightly dorsiventrally flattened, 3.8–4.5 × 3–3.5 cm, ± papillate on front surface. Staminode tongue-shaped, 17–20 × ca. 5 mm, adaxially puberulent. Fl. May–Jun.

- Wet but well-drained and humus-rich soils in thickets; ca. 2300 m. SE Yunnan (Pingbian).


丽江杓兰 li jiang shao lan

Plants 7–14 cm tall, with a stout, rather short rhizome. Stem erect, 3–7 cm, covered by 2 tubular sheaths, apex with a subopposite leaf and bract prostrate on substrate. Leaf blade dark green, marked with purplish black spots, ovate or obovate to orbicular, 8.5–19 × 7–16 cm, margin sometimes purplish, ovate obtuse or mucronate. Inflorescence terminal, with 1 flower, ebracteate; pedicel 4–7 cm, glabrous; ovary 1.2–1.8 cm, glabrous. Flower rather large; sepals and staminode liver-colored; petals and lip yellow spotted with maroon. Dorsal sepal ovate or broadly ovate, 4.2–7 × 3.8–6 cm, both surfaces glabrous, ciliate, apex acute; synsepal elliptic, 3.5–5.6 × 2–3.6 cm, ciliate, with 2 teeth at apex. Petals incurred forward, enfolding lip, obliquely oblong, 4.6–5 × 1.4–2.1 cm, abaxially pubescent on upper side, ciliate, apex acute; lip pouch, subellipsoid, dorsiventrally flattened, 3.3–4 cm, papillate on front surface. Staminode suboblong, 1.3–1.5 cm, adaxially papillate. Fl. May–Jun.

- Grassy and humus-rich places in forests or thickets; 2200–2300 m. SE Yunnan (Malipo).

One of us (Cribb) believes that Cypripedium malipoense may be a chlorotic plant of C. lentiginosum, but further investigation is needed.


毛瓣杓兰 mao ban shao lan

Cypripedium ebracteatum Rolfe; C. margaritaceum Franch var. fargesii (Franchet) Pfitzer.

Plants 8–14 cm tall, with a stout, rather short rhizome. Stem erect, 3.5–7 cm, covered by 2 or 3 nearly tubular sheaths, apex with a subopposite leaf and bract prostrate on substrate. Leaf blade dark green, marked with blackish brown spots, broadly elliptic to orbicular, 10–15 × 8–14 cm, glabrous, apex obtuse. Inflorescence terminal, with 1 flower, ebracteate; pedicel 2.5–7 cm, glabrous; ovary 1.2–1.5 cm, 3-ribbed; ribs sparsely pubescent. Sepals yellowish green, with dense maroon spots toward base of dorsal sepal; petals yellowish, marked with purplish red stripes and spots; lip yellow, marked with purplish red fine spots; staminode maroon. Dorsal sepal ovate to broadly ovate, 3–4.5 × 2.5–5 cm, puberulent on abaxial veins; synsepal elliptic-ovate, 3–5 × 2.5–3 cm, apex subacute, inconspicuously bidentate. Petals incurved forward, enfolding lip, oblong, 3.5–5.5 × ca. 1.5 cm, densely white villous on upper side of abaxial surface, apex acute; lip deeply pouch, subglobose, slightly dorsiventrally flattened, ca. 2.5 cm, minutely papillate on front surface. Staminode ovate or oblong, ca. 1 cm. Fl. May–Jul.

- Humus-rich soils in thickets, sparse woods, grassy slopes; 1900–3200 m. N Chongqing, S Gansu, W Hubei, W Sichuan.


乌蒙杓兰 wu meng shao lan

Plants 6–9 cm tall, with a stout rhizome. Stem short, covered by 2 sheaths, apex with 2 subopposite leaves prostrate on substrate. Leaf blade yellowish, spotted with maroon, very similar in color to petals and lip, broadly ovate to suborbicular, 12–14 × 12–14 cm, apex acute. Inflorescence terminal, 1-flowered, ebracteate; pedicel 2–3 cm, glabrous; ovary 1–2 cm, glabrous. Flower 4–5 cm in diam.; dorsal sepal and synsepal liver-colored; petals and lip yellowish, spotted with maroon; staminode liver-colored, with a yellow longitudinal stripe centrally and a narrow yellow margin. Dorsal sepal broadly ovate, 3–3.5 × 2.5–2.8 cm, both surfaces glabrous, minutely ciliate, apex acute; synsepal elliptic-ovate, slightly shorter and much narrower than dorsal sepal. Petals curved forward, enfolding lip, oblong; ovary 1.2–1.5 cm, ± papillose on front surface. Staminode ovate-trullate, 12–13 mm, adaxially minutely papillate. Fl. Jun.

- Humus-rich soils in thickets; ca. 2600–3500 m. SW Sichuan, NW Yunnan.
Plants ca. 22 cm tall. Stem ca. 10 cm, covered by 3 subtubular sheaths, apex with an ascending subopposite leaf and bract. Leaf blade green, spotted with purple, ovate-elliptic, 11–13 × 6.5–7 cm, glabrous, apex mucronate. Inflorescence terminal, with a solitary flower, ebracteate; pedicel 10–12 cm, glabrous; ovary ca. 9 mm, glabrous. Flower with purple spots and stripes, 6–7 cm in diam. Dorsal sepal broadly ovate, ca. 3.5 × 2.8 cm, both surfaces glabrous, ciliate, apex mucronate; synsepals, 6–7 cm in diam. Dorsal sepal broadly ovate, ca. 3.5 × 2.8 cm, both surfaces glabrous, ciliate, apex mucronate; synsepal, ca. 4.1 × 2 cm, both surfaces glabrous, ciliate, apex bidentate. Petals obliquely ovate-oblong, ca. 3.8 × 1.5 cm, both surfaces glabrous, ciliate, apex slightly mucronate; lip deeply pouched, subglobose, ca. 1.6 × 1.6 cm, minutely papillate on front surface. Staminate broadly ovate, ca. 5 × 7.5 mm. Fl. May.

- Bamboo thickets on limestone cliffs; ca. 2900 m. NE Yunnan (Luquan).


Cordula Rafinesque; Stimegas Rafinesque.

Plants terrestrial, lithophytic, or epiphytic. Rhizome inconspicuous or short, rarely stoloniferous, with glabrous or hairy roots. Stem short, enclosed in distichous leaf bases, rarely elongated. Leaves usually basal, 3–7, distichous, conduplicate toward base; blade abaxially pale green or sometimes spotted or flushed with purple at base or throughout, adaxially uniformly green or tessellated with dark and light green, narrowly elliptic to suborbicular; lip usually hairy; floral bracts conduplicate; ovary 1-locular. Flowers large, showy, variable in color. Dorsal sepal often large, margin sometimes recurved; lateral sepals usually fused to form a synsepal. Petals various in shape, suborbicular to spatulate; lip deeply pouched and inflated, globose, ellipsoid, or ovoid, basal portion narrowed and with incurved lateral lobes, hairy at inner bottom. Column short, with 2 lateral fertile stamens, a terminal staminode above, and a stigma below; anthers 2-locular, with very short filament; pollen powdery or glutinous; staminode varying in shape; stigma papillate and inconspicuously 3-lobed. Fruit a capsule.

About 80–85 species: tropical Asia to the Pacific islands, with some species extending to subtropical areas; 27 species (two endemic) in China.

1a. Lip subglobose, ellipsoid, or ovoid, apical margin involute, usually with a rather short basal claw.

2a. Lip usually ellipsoid or ovoid, longer than broad; dorsal sepal broader than petals.

3a. Dorsal sepal and petals with a central longitudinal stripe composed of brown-red spots; staminode with caudate apex 1.5–2 mm ........................................................................................................................................ 9. P. wenshanense

3b. Dorsal sepal and petals without a central stripe as above; staminode lacking a caudate apex as above.

4a. Flower yellowish to yellow; dorsal sepal and petals with maroon speckles 0.5–1 mm in diam. ............... 7. P. concolor

4b. Flower white or ivory, sometimes yellowish; dorsal sepal and petals with maroon spots 1.5–2 mm in diam. ........................................................................................................................................ 8. P. bellatulum

2b. Lip usually subglobose, nearly as long as broad; dorsal sepal narrower than or ca. as broad as petals.

5a. Leaves uniformly green, very rarely obscurely tessellated with dark and light green adaxially.

6a. Flower white with a yellowish lip; staminode trullate, with a deep longitudinal groove centrally, 9–10 mm wide, yellow, strongly veined with red ........................................................................................................ 5. P. emersonii

6b. Flowers dull cream-colored, sometimes flushed at base with purple; staminode broadly obovate-triangular, nearly flat, 18–22 mm wide, cream-colored, heavily veined with red, and with a yellow tip ........................................................................................................................................ 6. P. hanguianum

5b. Leaves distinctly tessellated with dark and light green adaxially.

7a. Dorsal sepal apple-green or rarely yellowish green or greenish; scape usually 30–50(–65) cm ........... 1. P. malipoense

7b. Dorsal sepal not apple-green or yellowish green; scape usually 15–25(–30) cm.

8a. Plants not stoloniferous; dorsal sepal and petals white, scarcely or obscurely spotted and veined with pale pink, particularly on dorsal surface ................................................................. 4. P. delenatii

8b. Plants stoloniferous; dorsal sepal and petals yellow or whitish and conspicuously veined with red-purple.

9a. Sepals, petals, and lip yellow, lip not much larger than synsepal .......................................................... 2. P. armeniacum

9b. Sepals and petals white, strongly marked with purple on veins, lip much larger than synsepal, pink or rarely white ........................................................................................................ 3. P. micranthum

1b. Lip helmet-shaped or slipper-shaped, lacking an involute apical margin and with a long basal claw.

10a. Leaves tessellated with dark and light green adaxially; lip tuberculate on incurved lateral lobes.

11a. Petals heavily spotted with blackish maroon over whole adaxial surface ............................................. 26. P. wardi

11b. Petals without or sometimes with blackish maroon speckles in basal half or a few blackish warts scattered.

12a. Leaves densely spotted with purple abaxially; lip and staminode distinctly green veined ........ 27. P. venustum
12b. Leaves pale green abaxially or sometimes marked with purple at abaxial base; lip and staminode not green veined.

13a. Leaves usually obscurely tessellated with dark and light green adaxially, and marked with purple at abaxial base; petals spatulate, with a few warts along upper margin of basal half ................................................................. 24. *P. appletonianum*

13b. Leaves usually distinctly tessellated with green and whitish green adaxially, not marked with purple abaxially; petals suboblong or oblong-elliptic, usually with blackish maroon speckles in basal half ................................................................. 25. *P. purpuratum*

10b. Leaves uniformly green adaxially; lip not tuberculate on incurved lateral lobes.

14a. Inflorescence 2–6-flowered; petals more than 2 × as long as lip.

15a. Ovary glabrous; perianth persistent until fruiting ......................................................... 10. *P. dianthum*

15b. Ovary densely pubescent; perianth deciduous after pollination ....................................... 11. *P. parishii*

14b. Inflorescence 1- or very rarely 2-flowered; petals less than 2 × as long as lip.

16a. Leaves rigid, leathery-succulent, usually 7–10(–12.5) cm; synsepal suborbicular; flowers yellow or ochre-yellow, dorsal sepal with a white margin ......................................................... 18. *P. helenae*

16b. Leaves neither rigid nor leathery-succulent, usually (8–)10–40 cm; synsepal ovate to elliptic; flowers not as above.

17a. Flower with 3 irregular longitudinal maroon bars on dorsal sepal and 2 similar bars on petals ................................................................. 22. *P. tigrinum*

17b. Flower without maroon bars as above.

18a. Dorsal sepal white with a maroon midvein; staminode convolute on basal margin and appearing like a pair of eyes ......................................................... 23. *P. spicerianum*

18b. Dorsal sepal not colored as above; staminode without convolute basal margin as above.

19a. Plants with a long and stout rhizome more than 8 × 1 cm ........................................ 16. *P. areeanum*

19b. Plants lacking a long rhizome as above.

20a. Staminode subsquare, with a glossy convex center, lacking a distinct umbo; petals with dense blackish maroon speckles in basal half; lip ± puberulent on outer surface ........................................ 12. *P. hirsutissimum*

20b. Staminode obovate, with a distinct umbo centrally; petals without spots or with purple to dark maroon spots in basal half; lip glabrous on outer surface.

21a. Dorsal sepal very broad, 4.6–6.7 cm wide, pinkish to white, usually with reddish veins; staminode white ......................................................... 13. *P. charlesworthii*

21b. Dorsal sepal less than 4.5 cm wide, not colored as above; staminode not white.

22a. Leaves 8–19 × 0.7–1.8 cm; petals 3–4 cm.

23a. Dorsal sepal and petals with large maroon spots; petals 14–18 mm wide ........................................ 19. *P. henryanum*

23b. Dorsal sepal and petals without large maroon spots; petals 7–10 mm wide.

24a. Petals undulate at margin; staminode with a yellow umbo in central or upper part ........ 15. *P. barbigerum*

24b. Petals strongly undulate at margin; staminode with a green umbo in lower part ........ 17. *P. tranlianianum*

22b. Leaves (15–)20–40 × 2–4 cm; petals 5–6 cm.

25a. Petals 1.5–2 cm wide, with same color on both sides of midvein, apical half slightly broader than or nearly as broad as basal half; dorsal sepal finely spotted with black ......................................................... 14. *P. insigne*

25b. Petals 2–4.5 cm wide, with different color on each side of midvein, apical half more than 2 × as broad as basal half; dorsal sepal unspotted or somewhat confluent-spotted with blackish maroon.

26a. Peduncle shortly hairy; dorsal sepal white, often tinged with pale green or pale yellow toward its base; petals 2–2.5 cm wide .................. 20. *P. gratrixianum*

26b. Peduncle long hairy; dorsal sepal pale green to pale yellow, central area deep maroon and deeper striped; petals 2.2–4.5 cm wide .............. 21. *P. villosum*

麻栗坡兜兰 ma li po dou lan

Plants terrestrial or lithophytic, with a short rhizome. Leaves 4–7, distichous; blade abaxially pale green, often spotted or marked in varying degrees with purple, adaxially tessellated with dark and light green, oblong or elliptic, 7–18 (–23) × 2.5–6 (–8) cm, leathery, ciliate near base, margin slightly denticulate, apex acute or oblique-acute. Scape initially hooked-recurved and then suberect, terminating in 1 or rarely 2 flowers; peduncle greenish, marked with purple or purple-brown, 25–40 (–60) cm, white villous; floral bract greenish, marked with purple, ovate or ovate-lanceolate, conduplicate, 1.5–2.5 cm, abaxially white villous; pedicel and ovary 4–6.5 cm, white villous. Flower slightly scented, 5–10 cm in diam.; dorsal sepal, synsepal, and petals apple-green or very rarely yellowish green, villous. Staminode white, veined with pale purple in apical half. Fl. Jan–Apr. 2n = 26.

Grassy slopes or humus-rich soil in forests and thickets in limestone areas; 800–1600 m. SW Guangxi, SW Guizhou, SE Yunnan [N Vietnam].


浅斑兜 兰 qian ban dou lan

*Paphiopedilum jackii* H. S. Hua, Orchidee (Hamburg) 46: 114. 1996.

Leaf blade light green, sparsely spotted with purple abaxially. Petals 2.5–4 cm wide; lip subglobose, 3–4 cm in diam. Staminode white, veined with pale purple in apical half. Fl. Feb–Mar.

Rocky and well-drained places in forests in limestone areas; 600–2000 m. SE Yunnan [N Vietnam].


钩唇兜兰 gou chun dou lan


Roots densely pubescent. Leaf blade light green, slightly marked with purple abaxially. Petals 1.5–2.5 cm wide; lip narrowly globose, 1–2.5 cm in diam., hooked at apex. Staminode white, slightly veined with pale purple, 1–1.3 cm wide. Fl. Mar–Apr.

Rocky places in forests or thickets in limestone areas; 500–1500 m. SE Yunnan [N Vietnam].


窄瓣兜兰 zhai ban dou lan


Roots densely pubescent or glabrescent. Leaf blade light green, slightly marked with purple abaxially. Petals 0.6–0.7 cm wide; lip narrowly globose, ca. 1 cm in diam., suberect at apex. Staminode white, slightly veined with pale purple in apical half, 0.4–0.5 cm wide. Fl. Feb–Mar.

- Forests on limestone slopes. SE Yunnan.


杏黄兜兰 xing huang dou lan

*Paphiopedilum armeniacum* var. *mark-fun* Fowlie; *P. armeniacum f. markii* (O. Gruss) Braem; *P. armeniacum var. markii* O. Gruss; *P. armeniacum var. parviflorum* Z. J. Liu & J. Yong Zhang; *P. armeniacum var. undulatum* Z. J. Liu & J. Yong Zhang.

Plants terrestrial or lithophytic, with 1 to several creeping
stolons more than 10 cm × 1.5–2.5 mm. Leaves 5–7, distichous; blade abaxially densely purple spotted and carinate, adaxially tessellated with dark and light green, oblong or linear-oblong, 6–12 × 1.8–2.3 cm, thickly leathery, margin serrulate, apex acute or sometimes tridenticulate. Scape erect, terminating in 1 or rarely 2 flowers; peduncle yellowish green, densely marked with purple, 13–28 cm, with white short hairs; floral bract yellowish green, marked with purple, ovate, conduplicate, 1.4–1.8 cm, abaxially puberulent toward base; pedicel and ovary (2–)3–4.5 cm, shortly hairy. Flower (3–)7–9 cm in diam., pale yellow to golden yellow, sometimes slightly flushed with pale green, with pale maroon veins on staminode, usually with many rows of maroon speckles on inner bottom of lip. Dorsal sepal pale yellow to golden yellow, sometimes slightly flushed with pale purple, ovate, (1.8–)4.8 × (0.8–)1.4–2.2 cm, adaxially pubescent many rows of maroon speckles on inner bottom; staminode white with purplish red speckles on both surfaces, subacute at apex; synsepals similar to dorsal sepal, slightly smaller, obtusely biconcave abaxially. Petals broadly ovate-elliptic to suborbicular, (1.5–)2.8–5.3 × 0.9–4.8 cm, adaxially white villous toward base, ciliate, slightly undulate at margin, rounded at apex; lip subglobose or somewhat flattened globose, (1–)4–6 × (0.5–)3.5–4 cm, apical margin involute. Staminode broadly ovate or ovate-elliptical, (5–)1.2–20 × (5–)12–20 mm, margin recurved, apex acute. Fl. Feb–Apr.

● Rocky and well-drained places or in crevices of rocks on woody or bushy slopes in limestone areas; 1400–2100 m. W Yunnan (along Nu Jiang).


硬叶兜兰 ying ye dou lan


Plants terrestrial or lithophytic, with 1 to several creeping stolons more than 10 cm × 1.5–2.5 mm in diam. Leaves 3–5, distichous; blade abaxially densely purple spotted and carinate, adaxially tessellated with dark and light green, oblong to narrowly elliptic, 6–12 × 1.5–3.4 cm, thickly leathery, apex acute or slightly bilobulate. Scape erect, terminating in 1 or rarely 2 flowers; peduncle red-brown or yellowish green, heavily purple spotted and carinate, (5–)10–23 cm, white villous; floral bract yellowish green, marked with purple or nearly purple-brown, ovate, conduplicate, 1.1–1.4 cm, abaxially sparsely villous; pedicel and ovary 3.5–5 cm, white villous. Flower showy, 3.5–7 cm in diam.; dorsal sepal, synsepal, and petals yellowish to whitish, sometimes flushed with rose-pink, veined with red-purple; lip rose-pink, pale pink, or white, with purple spots at inner bottom; staminode white with purplish red speckles throughout and a yellow flush in apical half. Dorsal sepal ovate or broadly ovate, 1.5–2.5(–3.2) × 1.3–2.5 cm, abaxially white villous, minutely ciliate, acute at apex; synsepals similar to dorsal sepal, sometimes slightly smaller, obtusely biconcave abaxially. Petals broadly ovate to suborbicular, (2–)2.5–3.2 × (1.5–)2.6–3.5 cm, abaxially slightly puberulent, adaxially white villous toward base, minutely ciliate, rounded at apex; lip ovoid-globose or ellipsoid-globose, (2.2–)5–10 × (1–)4–5.5 cm, apical margin involute. Staminode elliptic, longitudinally conduplicate, 10–15 × 7–8 mm, apex acute and slightly mucronate. Fl. Mar–May. 2n = 26.

Rocky and bushy places or crevices of rocks in forests in limestone areas; 1000–1700 m. SW Guangxi, S and SW Guizhou, SE Yunnan [N Vietnam].

Paphiopedilum ×fanaticum Koopowitz & Hasegawa, a hybrid of this species and P. malipoense, has been reported (Orchid Advocate 18(2): 50. 1992), and many infraspecific taxa have been proposed based on color variation. However, most were not validly published.


德氏兜兰 de shi dou lan

Cypripedilum delenatii (Guillamin) C. H. Curtis; Paphiopedilum xichouense Z. J. Liu & S. C. Chen.

Plants terrestrial. Leaves 4–6, distichous; blade abaxially heavily purple spotted and carinate, adaxially tessellated with dark and light green and marked with golden pedate stripes toward apex, oblong, 8–12 × 3.5–4.2 cm, base ciliate, apex obtuse. Scape suberect, terminating in 1 or 2 flowers; peduncle purple-brown, 14–22 cm, densely white hirsute; floral bracts pale green spotted with purple-brown, ovate, conduplicate, ca. 1.5 cm, abaxially hairy; pedicel and ovary 4–5 cm, white hirsute. Flowers 6–8 cm wide; dorsal sepal, synsepal, and petals white, obscurely spotted and veined with pale pink particularly on abaxial surface; lip pink to pale purple-red; staminode whitish marked with purple-red in apical half and pale yellow centrally. Dorsal sepal ovate, 2.7–3.3 × 1.7–2.5 cm, pubescent on both surfaces, subacute at apex; synsepals similar to dorsal sepal, slightly shorter. Petals broadly elliptic, 3.5–4.4 × 2.7–3.7 cm, rounded at apex; lip subglobose, 3–3.8 × 2.2–2.8 cm, puberulent outside, apical margin involute. Staminode rhombic-ovate, 1.6–2 × 1.6–1.8 cm, ciliate. Fl. Mar–Apr. 2n = 26.

Shrubby and grassy places in limestone areas; 1000–1300 m. N Guangxi (N of Liuzhou), SE Yunnan (Funing, Malipo, Xichou) [Vietnam].


白花兜兰 bai hua dou lan

Paphiopedilum emersonii f. album O. Gruss & Petch-leung.

Plants lithophytic. Leaves 5–7, distichous; blade abaxially pale green and with purple-red spots toward base, adaxially uniformly green or sometimes very obscurely tessellated with deep and light green, narrowly elliptic, 8–23 × 2.5–(4–5) cm, leathery, ciliate along basal margin. Scape erect, terminating in a solitary flower; peduncle green or yellowish green, 8–15 cm, white pubescent, usually with a greenish sheath at base; floral bract whitish, usually flushed with brown, elliptic, conduplicate, 2.8–3.8 cm, pubescent, ciliate; pedicel and ovary 2.5–3.5 cm, greenish white, white pubescent. Flower slightly fragrant, 8–9(–10) cm in diam.; dorsal sepal, synsepal, and petals white, sometimes flushed with pale purple-red toward adaxial base of
pets; lip yellowish to whitish, with deep purple spots inside; staminode yellow or whitish, with pale red-brown markings. Dorsal sepal elliptic-ovate, 3.5–5 × 2.2–3.5 cm, both surfaces puberulent, margin recurved, apex obtuse; synsepal broadly elliptic or suborbicular, 3.4–4 × 3.4–4.8 cm, both surfaces puberulent, apex obtuse. Petals obovate-elliptic to suborbicular, 3.5–6 × 2.5–5 cm, both surfaces sparsely puberulent, adaxially villous toward base, apex obtuse or rounded; lip subglobose or obovoid-globose, 3.5–4.5 × 2–3 cm, apical margin involute and slightly grooved along veins. Staminode trullate, appearing like a crocodile head, 15–20 × 9–10 mm, with a deep longitudinal groove centrally, obtuse at apex. Fl. Apr–May.

Shaded cliffs or crevices of steep rocks in evergreen broad-leaved forests or thickets in limestone areas; 300–800 m. Guangxi, S Guizhou [N Vietnam].

Paphiopedilum ×glanzii O. Gruss & Perner (Orchidaceae (Hamburg) 57(3): 315. 2006), a natural hybrid between this species and P. micranthum, was described recently from China (without precise locality).


绿叶兜兰 lü ye dou lan


Plants lithophytic. Leaves 4–6, distichous, spreading horizontally; blade abaxially pale green and carinate, adaxially uniformly deep green and glossy, narrowly oblong, 12–28 × 3.5–5.9 cm, leathery, basal margin purple ciliate, apex obtuse. Scape suberect or slightly arching, terminating in a solitary flower; peduncle yellowish green with purple speckles, 8–20 cm, densely white pubescent; floral bract yellowish green with purplish speckles, ovate-elliptic, conduplicate, 4.5–6 cm, abaxially puberulent, ciliate; pedicel and ovary 3.5–4.5 cm, densely white pubescent. Flowers slightly scented, 5–7 cm in diam., usually yellowish to ivory-white or finely spotted with purple or brown-purple throughout. Dorsal sepal broadly ovate, 2.5–4.2 × 2.4–4.4 cm, abaxially slightly puberulent on midvein, ciliate, apex obtuse to retuse; synsepal similar to dorsal sepal, slightly smaller. Petals obliquely elliptic to rhombic-elliptic, 3.5–1.8–3.1 cm, both surfaces very minutely puberulent, ciliate, rounded at apex; lip ellipsoid to ovoid, 3.5–4.5 cm; pouch 2.2–3 × 1.4–1.7 cm, outside very minutely puberulent, apical margin incurved. Staminode ovate to ovate-triangular, 10–12 × 8–11 mm, basal margin sometimes minutely ciliate. Fl. May–Aug. 2n = 26.

Crevices of shaded cliffs or rocky and well-drained places in limestone areas; 300–1400 m. W Guangxi, S Guizhou, S Yunnan [Cambodia, Laos, Myanmar, Thailand, Vietnam].

Paphiopedilum concolor is a widespread species very variable in leaf markings and floral morphology and coloring. Based on these variations, many varieties were described recently, including P. concolor var. dahuaense and P. concolor var. immaculatum from Guangxi (Acta Bot. Yunnan. 22: 393. 2000). Paphiopedilum wenshanense f. album (Orchidace (Hamburg) 53: 383. 2002) seems to be the same taxon as P. concolor var. dahuaense.


巨瓣兜兰 ju ban dou lan


Plants lithophytic or terrestrial. Leaves 4 or 5, distichous; blade abaxially heavily purple spotted and carinate, adaxially tessellated with dark and pale green or green and whitish green, sometimes dark green and slightly mottled with whitish green, oblong-elliptic or narrowly elliptic, 11–18 × 2.9–4.2–6 cm, apex acute or obtuse and unequally bilobulate. Scape arching, terminating in 1 or rarely 2 flowers; peduncle deep purple or green spotted with purple, 2.5–5 cm, white pubescent; floral bract green, spotted with purple, ovate or elliptic, conduplicate, 2–2.6 × 1.5–2 cm, abaxially ± hairy on midvein, minutely ciliate; pedicel and ovary 3–3.5 cm, white pubescent. Flower white
or rarely yellowish white, 6–8 cm in diam.; dorsal sepal and petals usually with large maroon spots 1.5–2 mm in diam.; synsepal, lip, and staminode with smaller spots. Dorsal sepal broadly ovate, 2.6–3.5 × 3.5–5 cm, slightly concave, minutely ciliate, rounded, slightly mucronate or retuse at apex; synsepal ovate-elliptic, 2–3 × 2–3 cm, concave, minutely ciliate. Petals broadly elliptic or broadly ovate-elliptic, 4.5–6 × 3–5 cm, adaxially hairy toward base, minutely ciliate, rounded at apex; lip ellipsoid-ovoid, usually 3–3.5 × 1.5–2 cm, apical margin incurved. Staminode suborbicular or subsquare, 8–10 × 8–10 mm, usually slightly tridenticulate at apex. Fl. Apr–Aug. 2n = 26.

Shaded cliffs or rocky and well-drained places in forests in limestone areas; 1000–1800 m. W Guangxi, SW Guizhou, S Yunnan [Myanmar, Thailand].


文山兜兰 wen shan dou lan

Paphiopedilum concobellatulum Hort.

Plants terrestrial. Leaves 4 or 5, distichous; blade abaxially purple except for green and purple-spotted base, adaxially tessellated with dark and pale green and somewhat mottled with dull whitish, subelliptic, 5–10 × 3.5–4.5 cm, obtuse-rounded and unequally bilobed at apex. Scape suberect, terminating in 1–3 flowers; peduncle green spotted with purple-brown, 2.5–3.5 cm, pubescent; floral bracts ovate-elliptic, duplicate, 1.6–2 × 1.5–2 cm, adaxially hairy on midvein, minutely ciliate; pedicel and ovary 4–4.5 cm, hairy. Flowers whitish or yellow-white, 5–7 cm in diam.; dorsal sepal and petals with brown-red spots 2–2.5 mm in diam., and each with a central longitudinal stripe composed of brown-red spots; synsepal, lip, and staminode with smaller brown-red spots. Dorsal sepal broadly ovate to suborbicular, 2.5–3.5 × 2.5–3.5 cm, obtuse-rounded at apex; synsepal ovate, 2–2.5 × ca. 2 cm. Petals broadly elliptic or oblong-elliptic, 3.5–4 × 2.5–3 cm, adaxially hairy toward base; lip ellipsoid, 3.5–4 × 2.25 cm, white puberulent outside, apical margin narrowly incurved. Staminode broadly elliptic, 8–9 × 8–9 mm, with a caudate apex 1.5–2 mm. Fl. May.

● Densely shrubby and grassy slopes in limestone areas. SE Yunnan.


长瓣兜兰 chang ban dou lan


Plants lithophytic. Leaves 4–6, distichous; blade abaxially pale green and carinate, adaxially uniformly dark green, usually 15–30 × 2.7–5 cm, thickly leathery, obtuse-rounded and slightly unequally bilobulate at apex. Scape arching to suberect, 30–80 cm; peduncle green, glabrous or very sparsely pubescent; raceme (1 or)2–5-flowered; floral bracts greenish or yellowish green, broadly ovate, conduplicate, 1.3–2.9 cm, glabrous; pedicel and ovary green, 4–5 cm, glabrous. Flowers 8–10 cm in diam., persistent until fruiting; dorsal sepal white tinged and veined with green toward base; synsepal pale green-yellow or greenish white with darker veins; petals whitish green or brownish green, with darker stripes; lip yellowish brownish with darker veins; staminode white with a dark green center. Dorsal sepal subelliptic or ovate-elliptic, 3.5–5.5 × 1.8–2.5 cm, adaxially shortly hirsute toward base, sometimes very slightly puberulent on both surfaces, basal margin recurved, apex shortly acuminate; synsepal similar to dorsal sepal, slightly shorter and broader. Petals pendulous, strongly twisted, linear-lanceolate or linear-tapering, 7–10(–12) × 0.7–1 cm, often with a few blackish warts along lower margin or toward adaxial base, minutely papilllose-puberulent toward adaxial base and apex; warts often with a cluster of long hairs, sometimes becoming very small or disappearing, replaced by a few clusters of long hairs; lip helmet-shaped, 4–5 cm; pouch 2–3 × 2–2.5 cm, pointed at apex. Staminode obcordate or obovate, 10–12 × 7–9 mm, carinate abaxially, slightly puberulent toward adaxial base, with a small umbo near base, minutely ciliate, with a deep sinus or 3-lobed at apex. Fl. Jul–Oct. 2n = 26.

Steep rocks in evergreen broad-leaved forests or shaded limestone cliffs; 1000–2300 m. SW Guangxi, SW Guizhou, SE Yunnan [N Vietnam].

11. Paphiopedilum parishii (H. G. Reichenbach) Stein, Orchideenbuch, 479. 1892.

飘带兜兰 piao dai dou lan


Plants epiphytic. Leaves 5–7, distichous; blade pale green or yellowish green abaxially, uniformly dark green adaxially, narrowly elliptic, (8–)20–40 × 2.7–3.5 cm, thickly leathery, rounded and slightly unequally bilobulate at apex. Scape arching or suberect, 28–35 cm; peduncle green, densely white pubescent; raceme 3–5-flowered; floral bracts green, broadly ovate-elliptic, conduplicate, 2.5–3 cm, glabrous; pedicel and ovary 3–4 cm, densely white pubescent. Flowers 8–10 cm in diam., deciduous after pollination; dorsal sepal and synsepal yellowish green to greenish with darker veins; petals pale yellow-green and spotted with blackish maroon in basal half, dark maroon along margin and in apical half; lip yellowish green or green, sometimes flushed purplish, with darker veins; staminode whitish with a dark green center. Dorsal sepal elliptic, 3–5 × 2–3 cm, adaxially puberulent toward base and apex, basal margin recurved, acute at apex; synsepal similar to dorsal sepal, slightly smaller, obtuse at apex. Petals decurved-pendulous, twisted particularly in apical half; linear-lanceolate or linear-tapering, 7–9.5 × 0.6–0.8(–1) cm, margin undulate in basal half, apex rounded, both surfaces ± puberulent, abaxially with several maroon spots or warts near or along lower or rarely also upper margin in basal half; warts usually with a cluster of hairs; lip helmet-shaped, 3–4 cm; pouch 1.5–2.5 × 1.5–2 cm. Staminode obcordate or obovate, 10–13 × 7–8 mm, with a deep sinus at apex and a small umbo near base, slightly puberulent at adaxial base. Fl. Jun–Jul. 2n = 26.

Tree trunks or forks in broad-leaved forests; 1000–1100 m. S and SW Yunnan (Mengla, Gengma) [Laos, Myanmar, Thailand].

**带叶兜兰 dai ye dou lan**


Plants lithophytic or terrestrial. Leaves 5 or 6, distichous; blade abaxially usually without purple marks at base, adaxially uniformly dark green, lorate or linear, 23–44 × 1.4–2.2 cm, leathery, usually acuminate and tridenticulate at apex. Scape suberect or arching, usually terminating in a solitary flower; peduncle brown-purple, 13–24(–30) cm, densely long hairy; floral bract ovate, 8–15 mm, abaxially densely hairy, ciliate; pedicel and ovary 6–8.5 cm, pubescent. Flower 8–16 cm in diam., initially dorsal sepal curving forward and petals not undulate at margins and then dorsal sepal erect and petals elongating and undulate along basal margin; dorsal sepal and syn-sepal dark brown, with yellowish or greenish margin; petals yellowish, with dense purple-brown speckles in basal half and purplish rose in apical half; lip yellowish to greenish, with dense brown reticulate venation; staminode yellowish. Dorsal sepal broadly ovate or ovate-elliptic, 3.7–4.4 × 2.6–3.5 cm, abaxially sparsely pubescent mainly on veins, ciliate, undulate at margin, obtuse or emarginate at apex; synsepal similar to dorsal sepal, slightly narrower. Petals often slightly twisted toward apex, spatulate, (4–)6–8 × 1.5–2.5 cm, both surfaces slightly or scarcely puberulent, basal half undulate at margin, ciliate, rounded or subtruncate at apex; lip helmet-shaped, 3–5 cm; pouch 2.5–3(–3.5) × 1.5–2.5 cm, slightly puberulent outside particularly along margin and veins. Staminode subsquare, 8–10 × 8–10 mm, adaxially convex, apex obtuse. Fl. Apr–May. 2n = 26.

Crevices on shaded cliffs or rocky and well-drained places in forests or thickets in limestone areas; 700–1500 m. N and W Guangxi, SW Guizhou, SE Yunnan [NE India, Laos, Thailand, N Vietnam].

*Paphiopedilum × grussianum* H. S. Hua (Orchidee (Hamburg) 49: 180. 1998), described from Guangxi, may be a hybrid of this species and *P. villosum*.
Plants lithophytic or terrestrial. Leaves 4–6, distichous; blade slightly paler and carinate abaxially, uniformly green or sometimes very obscurely tessellated dark and light green adaxially, linear, 12–19 × 0.7–1.3 cm, acute and usually minutely tridenticulate at apex. Scape suberect or arching, terminating in a solitary flower; peduncle brownish green, 10–14 cm, with dense purple-brown hairs; floral bract suboblong, 1.4–3.2–(3.6) cm, pubescent toward abaxial base; pedicel and ovary 3–4.2 cm, densely pubescent. Flower 6–7(–8) cm in diam.; dorsal sepal white, with a green, red-brown, or blackish brown central area in basal half; synsepal usually whitish green; petals brownish with paler margin; lip brownish with yellowish margin; staminode yellowish with orange umbo. Dorsal sepal subbrownish with paler margin; lip brownish with yellowish area in basal half; synsepal usually whitish green; petals yellowish green with purple-brown veins; staminode pale yellow-green with a central green umbo. Dorsal sepal suborbicular, 2.8–3.4(–4.5) × 2.6–3(–4) cm, puberulent abaxially, basal margin usually recurved, apical margin recurved or strongly undulate, obtuse or retuse at apex; synsepal elliptic, 2.5–3.3(–4) × 1.4–1.8 cm, puberulent abaxially. Petals spatulate or narrowly oblong, 3(–4) × 1.1–1.3 cm, adaxially pilose toward base, sparsely ciliate, undulate at margin, obtuse at apex; lip helmet-shaped, 3.5–4 cm; pouch 2–2.5 × 1.5–2 cm, outside glabrous. Staminode obovate-obcordate, 6–10 × 7–10 mm, umbonate centrally. Fl. Sep.–Oct.

Crevices of limestone cliffs, rocks or tree trunks in open forests; 800–1500 m. N and W Guangxi, S Guizhou, SE Yunnan [N Vietnam].


根茎兜兰 gen jing dou lan


Plants terrestrial, with a straight rhizome 8–10 cm × 8–12 mm. Rhizomes sterile, linking up with each other, with nodes 5–20 mm apart, usually with several tufts of leaves at summit. Leaf blade abaxially pale green and marked with purple toward base, adaxially uniformly dark green, narrowly oblong, 15–35 × 2.5–3.5 cm, usually slightly bilobulate at apex. Scape suberect, terminating in a solitary flower; peduncle greenish brown, 15–25 cm, pubescent; floral bract greenish, ovate, conduplicate, 3.7–4.2 × 2–2.2 cm, subglabrous; pedicel and ovary 5.5–6 cm, with dense purple-brown hairs. Flower 8–9 cm in diam.; dorsal sepal brownish green with broad white margin and brown stripes in basal half; synsepal pale yellow-green, obscurely with deeper veins; petals yellowish green with purple-brown veins; lip pale green-brown with darker veins; staminode yellowish. Dorsal sepal broadly elliptic, 4.9–5.5 × 3.5–3.7 cm, densely puberulent abaxially, purplish villous toward adaxial base, basal margin recurved, apex emarginate; synsepal ovate-oblong, 4.5–4.8 × 2.2–2.4 cm, pubescent puberulent abaxially. Petals narrowly oblong-spatulate, 4.5–5.5 × 1.4–1.6 cm, ciliate, slightly undulate at margin, obtuse-acute at apex; lip helmet-shaped, 4–4.5 cm; pouch 2.4–2.8 × 1.8–2.1 cm. Staminode subovate, 13–14 × 11–12 mm, with a raised umbo centrally. Fl. Oct.–Nov.

Forests. W Yunnan (Gaoligong Shan) [Myanmar].

This species was described as a hybrid between _Paphiopedilum villosum_ and _P. barbigerum_.


巧花兜兰 qiao hua dou lan


Plants lithophytic. Leaves 2–4, distichous; blade abaxially light green and with purple speckles toward base, adaxially uniformly dark green, linear-oblong to linear-oblancoedate, 8–12.5 cm × 8–16 mm, leathery or leathery-fleshy, acute or unequally bilobulate at apex. Scape arching or spreading horizontally, terminating in a solitary flower; peduncle green, purple spotted, 5–7 cm, with black-purple or white hairs; floral bract green, purple spotted, broadly ovate, conduplicate, 10–13 × 7–10 mm, purple hairy toward adaxial base; pedicel and ovary 2.9–3.1 cm, with black-purple or white hairs. Flower 4.5–5 cm in diam.; dorsal sepal yellowish or somewhat golden yellow, whitish margined; synsepal yellowish white; petals pale yellow-green or pale brown-yellow, upper side of midvein usually flushed with pale purple-red; lip pale yellow-green, tinged with purple-red; staminode yellow-green with a central green umbo. Dorsal sepal broadly elliptic, 4.2–5 × 2.8–2.2 cm, abaxially with black-purple hairs toward base, minutely ciliate, slightly undulate at margin, obtuse-rounded at apex; synsepal suborbicular or broadly elliptic, 2.2–2.4 × 2.2–2.2 cm, abaxially with black-purple hairs toward base, obtuse at apex. Petals linear-spataulate or linear-oblong, 2.5–3.2 × 0.4–0.8 cm, adaxially with black-purple hairs toward base, minutely ciliate along apical margin, obtuse or subtruncate at apex; lip helmet-shaped, 2.5–2.8 cm; pouch 1.5–1.8 cm in diam., usually convex-inflated on front surface. Staminode broadly obovate to obovate-orbic-
ular, 6–7 × 6–7 mm, adaxially with small bubble-shaped papil-
lae and a central umbo. Fl. Sep–Nov.

Crevices of bushy cliffs; 700–1100 m. SW Guangxi (Napo) [N
Vietnam].

19. Paphiopedilum henryanum Braem, Schlechteriana 1: [4].
1987.

 Henri兜兰 heng li dou lan

Paphiopedilum chaoi S. H. Hu; P. doliii Lückel.

Plants lithophytic or terrestrial. Leaves 3–6, distichous;
blade abaxially carinate and pale green with purple-brown
spackles at very base, adaxially uniformly deep green or rarely
obscurely tessellated with deep and pale green, narrowly ob-
long, 12–23 × 1.1–1.8(–2.4) cm, leathery, unequally bilobulate
or minutely tridenticulate at apex. Scape arching, terminating in
a solitary flower; peduncle green to brownish green, 12–17 cm,
brown-purple pubescent; floral bract brownish or brownish
green, narrowly ovate, conduplicate, 2.2–6 × 0.6–1.8 cm, cili-
ate; pedicel and ovary 3.5–5 cm, purple-pubescent. Flower 6–8 cm in diam.; dorsal sepal yellow with few
large yellow with purple-brown spots; petals pink-violet to light
purple-red, with dark purple or blackish purple large spots in
basal half or throughout; lip pink-violet or light purple-red,
with a yellowish rim; staminode yellowish, slightly flushed with pur-
plush or brownish, with a green or brown-yellow umbo. Dorsal
sepal usually erect, broadly ovate to suborbicular-ovate, 3–3.5 ×
3.2–3.8 cm, abaxially puberulent, minutely ciliolate, recurved at
basal margin, margin undulate, apex obtuse; synsepal elliptic-
ovate, 2.7–3.2 × 1.4–1.8 cm, slightly concave, abaxially puber-
ulent, minutely ciliolate. Petals spreading horizontally, spatulate,
3.2–3.9 × 1.4–1.8 cm, purple hirsute at adaxial base, minutely
ciliolate, obtuse or obscurely tridenticulate at apex; lip helmet-
shaped, 3.7–4.3 cm; pouch ellipsoid, 2.3–2.8 × 2.2–2.5 cm.
Staminode obcordate or broadly obovate, 6–8 × 7–8 mm, with
bubbelike papillae and a small umbo adaxially, apex emargi-
nate. Fl. Sep–Nov.

Crevices of shaded cliffs or rocky and well-drained places in
evergreen broad-leaved forests or in thickets in limestone areas; 900–
1300 m. SW Guangxi, SE Yunnan [N
Vietnam].

This species is variable in floral coloring and petal shape. Paphio-
pedilum henryanum var. christae Braem (Schlechteriana 2: 157.
1991) was described as lacking the heavy spotting on the dorsa
sepal and petals. In 1999, the variety was reduced to a form (f.
christae) by the same author (in G. J. Braem, C. O. Baker & M.

Paphiopedilum tigrinum f. huberae Koopowitz (Orchidee (Ham-
burg) 53: 518, 2001) may be of Chinese origin. It seems to be a variant
of this species rather than of P. tigrinum.

1905.

格力兜兰 ge li dou lan

Cyprpidium gratrixianum Masters, Gard. Chron., ser. 3,
37: 76. 1905, not B. S. Williams (1897); Cordula gratrixiana
(Rolfe) Rolfe; Paphiopedilum affine De Wildeman; P. villosum
(Lindley) Stein f. affine (De Wildeman) O. Gruss & Roellke; P.
villosum var. affine (De Wildeman) Braem; P. villosum var.
gratrixianum (Rolfe) Braem.

Plants terrestrial or lithophytic. Leaves 4–8, distichous;
blade abaxially green and toward base spotted with purple,
adaxially deep green, oblong-oblong to narrowly oblong,
28–40 × 2.6–3.4 cm, unequally bilobulate or tridenticulate at
apex. Scape suberect, terminating in a solitary flower; peduncle
green, 13–28 cm, purple pubescent; floral bract green, sub-
orbicular-ovate, 3.5–4.7 × 2.5–2.5 cm; pedicel and ovary 5–6.5 cm,
purple pubescent. Flower 7–8 cm in diam.; dorsal sepal white,
often pale green or brown-green toward its base, spotted with
deep purple in basal 2/3; synsepal white, often with 2 rows of
purple spots centrally; petals yellow-brown, with deeper color
on upper side of midvein than on lower side; lip pale yellow-
brown; staminode pale yellow, slightly flushed with brown.
Dorsal sepal broadly elliptic or suborbicular, 5–5.5 × 3.8–4.6
cm, ± puberulent abaxially, ciliate, basal margin recurved, apex
acute; synsepal elliptic or ovate-elliptic, 4.2–5 × 2.2–2.7 cm.
Petals spatulate, 5.2–5.5 × 2–2.5 cm, margin often undulate and
recurved, apex retuse to 3-dentate; lip helmet-shaped; pouch
ovoid, 2.8–3.1 × 2.4–2.7 cm. Staminode obcordate, 10–11 ×
10–11 mm, adaxially with bubblelike papillae and a central umbo,

Rocky places in forests; 1800–1900 m. SE Yunnan (Malipo)
[Laos, N
Vietnam].

Paphiopedilum vietryanum O. Gruss & Petchleung (Orchidee
(Hamburg) 53: 221. 2002), a natural hybrid between this species and P.
henryanum, was described recently from SE Yunnan.

21. Paphiopedilum villosum (Lindley) Stein, Orchideenbuch,
490. 1892.

紫毛兜兰 zi mao dou lan

Plants epiphytic or sometimes lithophytic. Leaves 4–7,
distichous; blade abaxially green and with purple speckles
toward base, adaxially uniformly dark green, linear-oblong or
lorate, 20–32–(40) × 2.2–3.5(–4) cm, leathery, acute to obtuse
and bilobulate at apex. Scape suberect to arching, terminating in
a solitary flower; peduncle green, 10–18–(24) cm, with purple
or rarely whitish hairs; floral bract green, elliptic, conduplicate,
4–5 × 2–3 cm, abaxially purple spotted and hairy toward base;
pedicel and ovary 4–5 cm, with purple or rarely whitish hairs.
Flower 8–13 cm in diam.; dorsal sepal greenish or yellowish to
whitish, centrally blackish maroon spotted or with a deep
maroon or blackish maroon area; synsepal greenish to yel-
owish white; petals with a deep maroon central stripe, on upper
side of midvein than on lower side; lip pale yellow-
brown; staminode yellowish, slightly flushed with purple
or rarely whitish hairs. Flower 8–13 cm in diam.; dorsal sepal
and petals spotted with purple toward base, adaxially
uniformly dark green, linear-oblong or lorate, 20–32(–40) ×
2.2–3.5 cm, leathery, acute to obtuse and bilobulate at apex. Scape
suberect to arching, terminating in a solitary flower; peduncle
green, 10–18(–24) cm, with purple or rarely whitish hairs; floral
bract green, elliptic, conduplicate, 4–5 × 2–3 cm, abaxially purple
spotted and hairy toward base; pedicel and ovary 4–5 cm, with
purple or rarely whitish hairs. Flower 8–13 cm in diam.;
dorsal sepal greenish or yellowish to whitish, centrally blackish
maroon spotted or with a deep maroon or blackish maroon
area; synsepal greenish to yellowish white; petals with a deep
maroon central stripe, on upper side of central stripe pale maroon
with deep maroon veins, on lower side paler in color; lip pale
maroon obscurely with darker veins; staminode yellowish, flushed
with pale maroon, centrally with a yellow or green umbo. Dorsal
sepal broadly elliptic to obovate, 4–6.5 × 2.2–4.5 cm, abaxially ±
minutely hairy throughout and with rather long hairs on midvein
and toward base and apex, ciliate, recurved on basal margin, apex
obtuse; synsepal elliptic-ovate to narrowly ovate, usually 4–5 ×
1.7–2.8 cm. Petals spatulate-obovate, 5–6.5 × 2.2–4.5 cm, adaxially
purple villous at base, ciliate, obtuse to retuse at apex; lip helmet-
shaped, 5–6.5 cm; pouch 2.5–4 × 2.5–3.5 cm. Staminode obcor-
date-ovate, 10–15 × 8–11 mm, adaxially with bubblelike papillae and a central umbo, subtruncate at apex.

Tree trunks or branches in open forests, sunny cliffs, crevices of rocks, rocky places; 1100–1800(–2000) m. Yunnan [NE India, Laos, Myanmar, Thailand, Vietnam].

Paphiopedilum ×sinovillosum Z. J. Liu & S. C. Chen (J. S. China Agric. Univ. 25: 123. 2004), a natural hybrid between *P. villosum* and *P. henryanum*, was described recently from Malipo of SE Yunnan.

1a. Dorsal sepal heavily spotted with large blackish maroon marks ............................................ 21d. var. boxallii
1b. Dorsal sepal not spotted with large blackish maroon marks.

2a. Dorsal sepal with a broad white margin particularly in apical half .................................................................................................................. 21b. var. annamense
2b. Dorsal sepal with a yellowish to greenish margin.

3a. Pedicel and ovary with purple or sometimes whitish hairs; dorsal sepal 3.5–4.5 cm wide; floral bract slightly longer than pedicel and ovary ............................................. 21a. var. villosum
3b. Pedicel and ovary with very dense long white hairs; dorsal sepal 2.2–2.9 cm wide; floral bract much longer than pedicel and ovary ............. 21c. var. densissimum

21a. Paphiopedilum villosum var. villosum

紫毛兜兰 (原变种)  zi mao dou lan (yuan bian zhong)


Peduncle, pedicel, and ovary with purple or sometimes whitish hairs. Dorsal sepal 3.5–4.5 cm wide, greenish to yellowish, centrally with a deep maroon or blackish maroon and darker-veined area. Floral bract slightly longer than pedicel and ovary, Fl. Nov.–Mar. 2n = 26.

Tree trunks or branches in open forests, sunny cliffs; 1200–1800 m. SE Yunnan (Malipo) [NE India, Myanmar, Thailand, Vietnam].

Paphiopedilum ×petechleungianum O. Gruss (Orchidee (Hamburg) 52: 611. 2001), a natural hybrid between this taxon and *P. henryanum*, was described recently from Wenshan of SE Yunnan. Its flower is similar to that of this taxon, but its petals are narrower and longer and its staminode particularly in apical part.


密毛兜兰  mi mao dou lan


Peduncle, pedicel, and ovary with very dense long white hairs. Dorsal sepal 2.2–2.9 cm wide, pale green-yellow, centrally with a deep maroon and darker-veined area. Floral bract much longer than pedicel and ovary, Fl. Sep.–Nov.

- Crevices of rocks or shaded cliffs; 1200–1500 m. C and W Yunnan (Fugong, Mojiang).


包氏兜兰  bao shi dou lan


Peduncle, pedicel, and ovary with dense purple hairs. Dorsal sepal 2.3–2.6 cm wide, heavily spotted with large blackish maroon marks centrally and with narrow white margin particularly in apical part. Fl. Nov.

Rocks or rocky places in forests; 1200–1300(–2000) m. SW Yunnan (Yingjiang) [Myanmar, N Vietnam].

虎斑兜兰  hu ban dou lan

*Paphiopedilum markianum* Fowlie.

Plants terrestrial, epiphytic, or lithophytic. Leaves 2–5, distichous; blade abaxially pale green and carinate, adaxially green or sometimes very obscurely tessellated with deep and light green, linear-ligulate, 13–27 × 2.1–2.7(–3.5) cm, leathery, rounded and tridenticulate at apex. Scape erect or suberect, terminating in a solitary flower; peduncle green, 20–25 cm, densely purple pubescent; floral bract green spotted or flushed with purple toward base and apex, elliptic-oblong, 3.5–6 cm, purple pubescent toward abaxial base; pedicel and ovary green, 3.5–5.5 cm, densely purple pubescent. Flower 9–12 cm in diam.; dorsal sepal yellowish green, marked with 3 longitudinal maroon bars; synsepal yellowish green with maroon stripes or spots toward base; petals yellowish green in basal half and purplish in apical half, with 2 longitudinal maroon bars in basal 2/5; lip pale yellow-green flushed with brownish or pale purple-brown; staminode whitish yellow, with a purple-brown center. Dorsal sepal broadly obovate or broadly ovate, 4.4–5 × 2.8–4 cm, puberulent abaxially and toward adaxial apex, basal margin recurved, minutely ciliate, acute-obtuse at apex; synsepal elliptic, 3.4–5 × 1.9–2.5 cm, puberulent abaxially and toward adaxial apex, obtuse to bilobulate at apex. Petals half-twisted, spatulate, 5.5–7 × 2.3–4 cm, adaxially purple pubescent at base, minutely ciliate, undulate at margin, rounded and obtusely tri-
denticulate at apex; lip helmet-shaped, 3.5–4.5 cm; pouch 2.5–3 × 2–2.5 cm, tapering toward apex. Staminode obovate-elliptic, 12–14 × 8–9 mm, obscurely tridenticate or slightly mucronate at apex, with a central umbo. Fl. Jun.–Aug. 2n = 26.

Shaded and rocky places in forests or thicket margins along valleys; 1400–2200 m. SE and W Yunnan (Lushui, Malipo) [NE Myanmar].

A closely related species, Paphiopedilum smaragdimum Z. J. Liu & S. C. Chen (J. Wuhan Bot. Res. 21: 489. 2003; P. tigrinum f. smaragdium (Z. J. Liu & S. C. Chen) O. Gruss), was described recently from Lushui of W Yunnan. It is similar in floral appearance to, but different in color from, P. tigrinum. Its flower is pale yellow-green, lacking any deep-colored spotting or spotting on the sepal and petals. It is probably best regarded as a variety of P. tigrinum.


白旗兜兰 bai qi dou lan


Plants terrestrial or lithophytic. Leaves 4–6, distichous; blade abaxially pale green and spotted with purple toward base, adaxially uniformly dark green, narrowly oblong-elliptic, usually 14–27 × 1.8–2.5(–6) cm, leathery, slightly undulate along basal margin, acute and slightly bilobulate at apex. Scape suberect, terminating in 1 or rarely 2 flowers; peduncle purple, 9–22 cm, sparsely pubescent above; floral bract greenish yellow, with a maroon midvein abaxially, elliptic–1.7–2.9 cm; pedicel and ovary purplish to brownish, 2.5–4.3 cm, glabrous. Flower 5–7.5 cm in diam.; dorsal sepal white with a maroon midvein and greenish base; synsepall yellowish green or whitish green; petals greenish yellow with a brown-purple midvein and many marks on blade; lip green and often marked with purple toward base.

Plants terrestrial or lithophytic. Leaves 4–6, distichous; blade abaxially pale green and spotted with purple toward base, adaxially uniformly dark green, narrowly oblong-elliptic, usually 14–27 × 1.8–2.5(–6) cm, leathery, slightly undulate along basal margin, acute and slightly bilobulate at apex. Scape suberect, terminating in 1 or rarely 2 flowers; peduncle purple, 9–22 cm, sparsely pubescent above; floral bract greenish yellow, with a maroon midvein abaxially, elliptic, 1.7–2.9 cm; pedicel and ovary purplish to brownish, 2.5–4.3 cm, glabrous. Flower 5–7.5 cm in diam.; dorsal sepal white with a maroon midvein and greenish base; synsepall yellowish green or whitish green; petals yellowish green with a brown-purple midvein and many marks on blade; lip green and often marked with purple toward base.

Plants terrestrial. Leaves 4–6, distichous; blade pale green and carinate abaxially, distinctly or obscurely tessellated with dark and light green adaxially, narrowly elliptic or suboblong, 9.5–15(–17) × 2.3–4.2 cm, acute and slightly tridenticate at apex. Scape erect or suberect, terminating in a solitary flower; peduncle purple–violet, 9–19 cm, white pubescent; floral bract narrowly ovate-elliptic, 1.7–2.5 × 0.7–0.9 cm, ciliate, abaxially white pubescent particularly on midvein; pedicel and ovary 4–6 cm, pubescent. Flower 8–10 cm in diam.; dorsal sepal white, with broad maroon veins, greenish toward base; synsepall white with green veins; petals glossy purple-maron, veined with dark purple, tinged with greenish or yellowish toward base and apex, and spotted with blackish maroon in basal half; lip purple-maron, greenish on back of pouch; staminode pale yellow-purple, with 2 green-veined blotches on both sides of whistish

25. Paphiopedilum purpuratum (Lindley) Stein, Orchideenbuch, 481. 1892.

紫纹兜兰 zi wen dou lan


Plants terrestrial. Leaves 4–6, distichous; blade pale green and carinate abaxially, distinctly or obscurely tessellated with dark and light green adaxially, narrowly elliptic or suboblong, 9.5–15(–17) × 2.3–4.2 cm, acute and slightly tridenticate at apex. Scape erect or suberect, terminating in a solitary flower; peduncle purple–violet, 9–19 cm, white pubescent; floral bract narrowly ovate-elliptic, 1.7–2.5 × 0.7–0.9 cm, ciliate, abaxially white pubescent particularly on midvein; pedicel and ovary 4–6 cm, pubescent. Flower 8–10 cm in diam.; dorsal sepal white, with broad maroon veins, greenish toward base; synsepall white with green veins; petals glossy purple-maron, veined with dark purple, tinged with greenish or yellowish toward base and apex, and spotted with blackish maroon in basal half; lip purple-maron, greenish on back of pouch; staminode pale yellow-purple, with 2 green-veined blotches on both sides of whistish
center. Dorsal sepal broadly ovate, 3–4 × 3–4.2 cm, abaxially puberulent, minutely ciliate, acuminate at apex; synsepal ovate to ovate-lanceolate, 2–3.5 × 0.9–1.6 cm, abaxially puberulent, minutely ciliate, acuminate at apex. Petals suboblong, 3.5–5 × 1–1.4 cm, blackish ciliate, with blackish maroon spots somewhat wartlike, acute or unequally bilobulate at apex; lip helmet-shaped, 3.5–4.5 cm, verrucose on incurved lateral lobes; pouch 2–3 × 2.2–2.8 cm, outside minutely warty. Staminode lunate, 7–8 × 10–11 mm, puberulent adaxially, with inwardly pointed lateral lobes and an acute tooth at apex. Fl. Jun–Dec. 2n = 40.

Rocky places in forests or thickets along valleys; 100–1200 m. S Guangdong, S Guangxi, Hainan, SE Yunnan [N Vietnam].

彩云兜兰 cai yun dou lan

*Cypripedium wardii* (Summerhayes) C. Curtis (1933), not Rolfe (1913); *Paphiopedilum brevilabium* Z. J. Liu & J. Yong Zhang; *P. microchilum* Z. J. Liu & S. C. Chen; *P. multifolium* Z. J. Liu & J. Yong Zhang.

Plants terrestrial. Leaves 2–5, distichous; blade abaxially rather densely mottled with purple, adaxially tessellated with light or bluish and dark green, oblong or elliptic, 8–23 × 2.5–4.1 cm, sparsely ciliate toward basal margin, slightly bilobulate or tridenticulate at acute apex. Scape erect, terminating in a solitary flower; peduncle purple-red, 15–40 cm, pubescent; floral bract ovate-lanceolate, conduplicate, 1.8–2.3 cm, abaxially pubescent, ciliate; pedicel and ovary 4–5.5 cm, pubescent. Flower 7–10 cm in diam.; dorsal sepal and synsepal white or whitish green, veined with deep green; petals greenish white, flushed with purplish brown and spotted throughout with blackish brown; lip greenish to pale yellow-brown, veined and finely spotted with brown; staminode greenish marbled, deep green centrally. Dorsal sepal ovate, 3–4.5 × 2.3–3.5 cm, both surfaces puberulent particularly on veins, ciliate, acuminate at apex; synsepal ovate-lanceolate or lanceolate, 3.5–4.5 × 1.4–2.5 cm, both surfaces puberulent, ciliate, acute or acuminate at apex. Petals usually spreading horizontally, suboblong or oblong-lanceolate, 4.5–6 × 1.5–2 cm, adaxially minutely puberulent particularly in basal half, long ciliate, shortly acuminate at apex; lip helmet-shaped, 3.4–4.6 cm, warty on incurved lateral lobes; pouch 2.2–2.5 × 2–2.4 cm, outside slightly puberulent. Staminode obcordate-lunate, 9–10 × 13–15 mm, puberulent adaxially, apical sinus with a small central tooth and 2 incurved lateral teeth. Fl. Dec–Mar. 2n = 41, 44.

Shaded and steep rocks or near roots of large trees at forest margins or in forests along streams (1–3 m from water); ca. 2000 m. SW Yunnan (Lushui) [Myanmar].

*Paphiopedilum xyingjiangense* Z. J. Liu & S. C. Chen (Acta Bot. Yunnan. 29: 289. 2007) was recently described as a natural hybrid from W Yunnan (Yingjiang). In the protologue, *P. villosum* and *P. wardii* were suggested as the putative parents. However, a more likely parentage is *P. spicerianum* and *P. wardii*.

秀丽兜兰 xiou li dou lan

*Cypripedium venustum* Wallich ex Sims, Bot. Mag. 47: ad t. 2129. 1820; *Cordula venusta* (Wallich ex Sims) Rolfe; *Stimegas venustum* (Wallich ex Sims) Rafinesque.

Plants terrestrial. Leaves 4 or 5, distichous; blade abaxially densely purple spotted, adaxially tessellated with dark green and gray- or yellow-brownish green, oblong-elliptic or narrowly oblong, 10–21.5 × 2.5–5.7 cm, acute and bilobulate or tricuspitate at apex. Scape erect, terminating in 1 or rarely 2 flowers; peduncle purple-brown, 12–19 cm, densely hirsute; floral bract ovate, 1.7–2.5 cm, conduplicate, abaxially sparsely pubescent, ciliate; pedicel and ovary 4.2–5.3 cm, pubescent. Flower 7–8 cm in diam.; dorsal sepal and synsepal white with green veins; petals yellow-whitish with green veins, flushed with purple in apical half, with a few large maroon warts mainly in basal half; lip and staminode yellowish, slightly tinged with purple-red and distinctly veined with green. Dorsal sepal broadly ovate or ovate-cordate, 2.7–3 × 2.1–2.3 cm, abaxially pubescent particularly on midvein, ciliate, acuminate at apex; synsepal ovate, 2.3–3.6 × 1.4–1.6 cm, abaxially pubescent, ciliate, acute at apex. Petals suboblong-oblancoate, 3.5–4 × 1.2–1.4 cm, margin undulate in apical half, long ciliate, acute or obtuse at apex; lip helmet-shaped, 3.3–4.2 cm, verrucose on lateral lobes; pouch 2.2–2.4 × 2–2.8 cm, outside usually minutely papillate-puberulent. Staminode reniform-obcordate, 6–7 × 9–13 mm, puberulent, with a broad sinus and a broad micro at apex. Fl. Jan–Mar. 2n = 38, 40, 40 + 2B, 41, 42.

Humus-rich and rocky places in thickets or at forest margins; 1100–1600 m. S and SE Xizang (Dinggyê, Mêdog) [Bhutan, NE India, Nepal].