

35. HERMINIUM Linnaeus, Opera Var. 251. 1758.

角盘兰属 jiao pan lan shu

Chen Xinqi (陈心启 Chen Sing-chi); Stephan W. Gale, Phillip J. Cribb

Aopla Lindley; *Monorchis* Séguier.

Herbs, terrestrial, slender. Tubers globose to oblong-ellipsoid, undivided, fleshy, neck with several slender roots. Stem erect, with tubular sheaths at base, 1- to several leaved, glabrous. Leaves basal, green, elliptic to lanceolate, base contracted into amplexicaul sheath. Inflorescence erect, terminal, racemose, glabrous; peduncle often with 1 or more foliaceous sterile bracts; rachis laxly to densely many flowered; floral bracts lanceolate. Flowers erect, horizontal, or nodding, small, often spidery, resupinate or rarely not, usually yellowish green; ovary and pedicel straight, arcuate or sometimes distinctly hooked toward apex, twisted or rarely not, cylindric-fusiform, glabrous. Sepals subequal; dorsal sepal free or loosely connivent with petals and forming a hood; lateral sepals spreading. Petals smaller and narrower than sepals, usually thickened and fleshy; lip adnate to base of column, base shallowly concave or shortly spurred, margin entire, 3- or rarely 5-lobed. Column very short; anther adnate to apex of column, 2-locular, locules parallel; pollinia 2, oblong to ellipsoid, granular-farinaceous, sectile, each attached to a viscidium via a short caudicle; viscidia often involute and hornlike, naked; rostellum small, 3-lobed; stigma lobes 2, raised, clavate; auricles 2, usually prominent, placed laterally at base of anther. Capsule usually erect, oblong.

About 25 species: Europe, parts of SW and C Asia, extending to E and SE Asia and the Himalayas; 18 species (ten endemic) in China.

Herminium kamengense A. N. Rao (J. Econ. Taxon. Bot. 25: 287. 2001) was described from the region of the border of NE India and SE Xizang.

- 1a. Lip entire.
 - 2a. Plants 1-leaved.
 - 3a. Floral bracts exceeding flowers; petals forming a hood to weakly spreading, linear-oblong, ca. 2.8 × 0.5 mm; lip spurless 13. *H. angustilabre*
 - 3b. Floral bracts much shorter than to slightly exceeding ovary; petals erect, ovate, ca. 1.8 × 1–1.5 mm; lip shortly spurred; spur cylindric-obovoid, ca. 1.5 × 0.75 mm 16. *H. singulum*
 - 2b. Plants 2-leaved.
 - 4a. Flowers not secund; lip spurless, base dilated and shallowly concave.
 - 5a. Peduncle with several triangular-lanceolate sterile bracts, lower one often foliaceous; flowers white 14. *H. tangianum*
 - 5b. Peduncle ebracteate; flowers green to yellowish green 15. *H. josephii*
 - 4b. Flowers usually secund; lip shortly spurred; spur conic, 0.7–0.8 mm.
 - 6a. Leaves uniformly green; lip ovate-lanceolate, ca. 2 × 1 mm 17. *H. carnosilabre*
 - 6b. Leaves green with white reticulate markings; lip orbicular-ovate, ca. 1.5 × 1.2 mm 18. *H. orbiculare*
- 1b. Lip 3- or 5-lobed (though sometimes only obscurely so).
 - 7a. Plants 1-leaved.
 - 8a. Flowers not resupinate; ovary not twisted 1. *H. glossophyllum*
 - 8b. Flowers resupinate; ovary twisted.
 - 9a. Peduncle ebracteate or with 1 sterile bract; ovary distinctly hooked toward apex; dorsal sepal 3.5–5 mm; lip furcately 3-lobed below middle, 6–7 mm 2. *H. ophioglossoides*
 - 9b. Peduncle with 2–7 sterile bracts; ovary straight; dorsal sepal 1.5–2 mm; lip apex 3-toothed to shallowly 3-lobed, 1.8–2.5 mm.
 - 10a. Rachis sublaxly several to subdensely many flowered; lip 0.8–1 mm wide; lateral lobes triangular-falcate 3. *H. coiloglossum*
 - 10b. Rachis densely many flowered; lip ca. 1.8 mm wide; lateral lobes triangular 4. *H. yunnanense*
 - 7b. Plants 2–4-leaved (though *H. chloranthum* rarely 1-leaved).
 - 11a. Peduncle narrowly winged; lip 5-lobed 5. *H. quinquelobum*
 - 11b. Peduncle cylindric; lip 3-lobed (though sometimes only obscurely so).
 - 12a. Lip obscurely to shallowly 3-lobed; lateral lobes of lip ovate-triangular to triangular.
 - 13a. Dorsal sepal ca. 3.2 mm; petals rhombic to narrowly elliptic, ca. 4 × 1.8 mm; lip ca. 3.2 × 2.8 mm 6. *H. chloranthum*
 - 13b. Dorsal sepal 0.8–1.5 mm; petals ovate or ovate-lanceolate, 1.2–2 × 0.8–1.2 mm; lip 1.8–2.2 × 0.8–1.2 mm.
 - 14a. Leaves basal, clustered, 3–10 cm; peduncle ebracteate or sometimes with 1 sterile bract; flowers yellowish green; lip shortly saccate-spurred 7. *H. macrophyllum*
 - 14b. Leaves cauline, widely spaced, alternate, 10–12 cm; peduncle with 1–4 sterile bracts; flowers white; lip spurless 8. *H. ecalcaratum*

- 12b. Lip furcately 3-lobed; lateral lobes of lip linear, linear-triangular, or linear-falcate.
 15a. Petals rhombic; mid-lobe of lip 1.5–3.2 mm, longer than lateral lobes 9. *H. monorchis*
 15b. Petals ovate-lanceolate or linear; mid-lobe of lip 0.5–1.5 mm, shorter than lateral lobes.
 16a. Petals ovate-lanceolate, abruptly narrowed above middle, apex cuspidate;
 lip shortly spurred 10. *H. alaschanicum*
 16b. Petals linear, apex obtuse to subacute; lip spurless.
 17a. Lip 4–10 mm; lateral lobes 2–7 mm 11. *H. lanceum*
 17b. Lip 3.2–4.5 mm; lateral lobes 1–2 mm 12. *H. souliei*

1. *Herminium glossophyllum* Tang & F. T. Wang, Bull. Fan Mem. Inst. Biol. Bot. 7: 127. 1936.

雅致角盘兰 ya zhi jiao pan lan

Herminium ophioglossoides Schlechter var. *minus* Handel-Mazzetti.

Plants 8–12 cm tall. Tubers oblong-ellipsoid, 10–15 × 5–8 mm. Stem with 1 or 2 tubular sheaths at base, 1-leaved. Leaf basal, arising from within basal sheaths, oblong-elliptic or oblong-ovate, 2.5–5 × 0.7–1.6 cm, apex subacute. Inflorescence 7–10 cm; peduncle cylindric, ebracteate; rachis 2–4 cm, laxly to subdensely many flowered; floral bracts lanceolate to ovate-lanceolate, ca. 3 mm, shorter than ovary, apex acuminate. Flowers not resupinate, nodding, yellowish green; ovary distinctly hooked toward apex, not twisted, 3.5–5 mm including pedicel. Dorsal sepal erect, oblong-ovate, 2.5–3.5 × 1–1.6 mm, 1-veined, apex obtuse; lateral sepals spreading, oblong-elliptic, oblique, 3–4 × 1.2–1.8 mm, 1-veined, apex acute. Petals spreading, narrowly ovate-lanceolate, oblique-falcate, 3.5–5 × 0.8–1 mm, somewhat fleshy, 1-veined, apex acute; lip spreading, oblong-ovate, 3-lobed above middle, 3–3.5 × 2–2.2 mm, base dilated and concave, somewhat fleshy; lateral lobes linear, ca. 0.8 mm; mid-lobe narrowly triangular-lanceolate, 1–1.2 mm, slightly broader than lateral lobes, apex acute. Column ca. 1 mm; pollinia globose; viscidia involute, hornlike. Fl. Jun–Aug.

- Grassy slopes; 3100–3600 m. SW Sichuan, NW Yunnan.

2. *Herminium ophioglossoides* Schlechter, Notes Roy. Bot. Gard. Edinburgh 5: 96. 1912.

长瓣角盘兰 chang ban jiao pan lan

Monorchis ophioglossoides (Schlechter) O. Schwarz.

Plants 6–26 cm tall. Tubers ellipsoid or ovoid, 10–20 × 5–12 mm. Stem with 2 or 3 tubular sheaths at base, 1-leaved. Leaf basal, arising from within basal sheaths, elliptic-ligulate, 2–9 × 0.5–2.5 cm, apex acute or obtuse. Inflorescence 5–20 cm; peduncle cylindric, ebracteate or with 1 occasionally foliaceous sterile bract 0.5–3 cm; rachis 1–12.5 cm, laxly to subdensely many flowered; floral bracts lanceolate, 2.5–5 mm, much shorter than to almost as long as ovary, apex acuminate. Flowers nodding, yellowish green; ovary distinctly hooked toward apex, 4–7 mm including pedicel. Dorsal sepal erect, suberect, oblong-lanceolate, 3.5–5 × ca. 2 mm, 1-veined, apex obtuse; lateral sepals oblong-lanceolate, 3.5–5 × ca. 2 mm, 1-veined, apex obtuse. Petals narrowly ovate, 5–7 × 0.6–1.4 mm, somewhat fleshy, 2-veined, apex obtuse; lip decurved or spreading, oblong-ovate, 6–7 × 1.5–2.4 mm, base concave, furcately 3-lobed below middle; lateral lobes linear, 3–4 mm; mid-lobe

linear, 4–5 mm, slightly broader than lateral lobes, apex acute. Column ca. 1 mm; pollinia globose; viscidia involute, hornlike. Fl. Jun–Jul.

- Grassy slopes; 2100–3500 m. SW and W Sichuan, C and NW Yunnan.

3. *Herminium coiloglossum* Schlechter, Repert. Spec. Nov. Regni Veg. 3: 15. 1906.

条叶角盘兰 tiao ye jiao pan lan

Monorchis coiloglossa (Schlechter) O. Schwarz.

Plants 8–30 cm tall. Tubers ovoid to ovoid-oblong, 5–20 × 3–10 mm. Stem with 2 tubular sheaths at base, 1-leaved. Leaf basal, arising from within basal sheaths, linear to linear-oblong, 4–12 × 0.4–0.8 cm, apex acute. Inflorescence 7–27 cm; peduncle cylindric, with 2–7 lanceolate sterile bracts 0.2–0.8 cm; rachis 2–11 cm, ± laxly several to subdensely many flowered; floral bracts ovate, 1.5–3 mm, much shorter than ovary, apex acute to acuminate. Flowers erect, yellowish green; ovary straight, 3–5 mm including pedicel. Dorsal sepal erect, ovate, concave, ca. 1.5 × 1–1.2 mm, 1-veined, apex obtuse; lateral sepals spreading, oblong-ovate, slightly oblique, 1.8–2 × 1–1.2 mm, 1-veined, apex obtuse. Petals forming a loose hood with dorsal sepal to spreading, oblong, slightly oblique, concave, ca. 1.2 × 0.8 mm, 1-veined, apex obtuse; lip horizontal to slightly pendulous, oblong, 1.8–2.4 × 0.8–1 mm, concave, contracted at middle, somewhat fleshy, base shallowly concave, apex shallowly 3-lobed; lateral lobes triangular-falcate, to ca. 0.3 mm, apex subacute; mid-lobe triangular, ca. 0.3 mm, slightly wider than lateral lobes, apex acute. Column ca. 1 mm; pollinia globose; viscidia ovoid. Fl. Aug–Sep.

- Forests, grassy slopes; 1600–2800 m. C, S, and W Yunnan.

4. *Herminium yunnanense* Rolfe, Notes Roy. Bot. Gard. Edinburgh 8: 24. 1913.

云南角盘兰 yun nan jiao pan lan

Monorchis yunnanensis (Rolfe) O. Schwarz.

Plants 15–26 cm tall. Tubers ovoid to ovoid-oblong, 5–15 × 5–10 mm. Stem with 2 tubular sheaths at base, 1-leaved. Leaf basal, linear to linear-oblong, 4.5–13 × 0.4–1 cm, apex acute. Inflorescence 12–22 cm; peduncle cylindric, with a few ovate-lanceolate sterile bracts; rachis 4–6.5 cm, densely many flowered; floral bracts ovate, 3–4 mm, shorter than ovary, apex acuminate. Flowers erect, yellowish green; ovary straight, ca. 5 mm including pedicel. Dorsal sepal suberect, ovate, concave, ca. 2 × 1.2 mm, 1-veined, apex obtuse; lateral sepals spreading, subovate, ca. 2.5 × 1.2–1.5 mm, 1-veined, apex obtuse. Petals forming a loose hood with dorsal sepal, ovate, ca. 1.5 × 1.2

mm, 1-veined, apex subacute; lip horizontal to slightly pendulous, oblong, 2.2–2.5 × ca. 1.8 mm, somewhat fleshy, base concave, apex 3-toothed to shallowly 3-lobed; lateral lobes triangular, small, apex acute; mid-lobe triangular, broader than lateral lobes, apex acute. Column ca. 1 mm; pollinia globose; viscidia ovoid; rostellum clavate-oblong, 2-lobed. Fl. Aug–Sep.

- Grassy slopes; 2200–3300 m. C and W Yunnan.

This species seems very close to Schlechter's *Herminium coiloglossum*. More material on which to base a critical comparison is needed.

5. *Herminium quinquelobum* King & Pantling, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 65: 130. 1896.

秀丽角盘兰 xiu li jiao pan lan

Monorchis quinqueloba (King & Pantling) O. Schwarz.

Plants 25–29 cm tall. Tubers oblong to subglobose, 15–20 × 5–15 mm. Stem with 2 tubular sheaths at base, 2-leaved. Leaves basal, subopposite, arising from within basal sheaths, linear-lanceolate to linear-oblong, 13–18 × 1.5–2 cm, apex acute or acuminate. Inflorescence 13–20 cm; peduncle narrowly winged, with 1 linear-lanceolate sterile bract to 7 cm; rachis ca. 13 cm, subdensely many flowered; floral bracts lanceolate, 3–8 mm, exceeding ovary, apex acuminate. Flowers erect or horizontal, green; ovary straight, 2–4 mm including pedicel. Dorsal sepal erect, oblong to oblong-elliptic, 1.8–2 × 0.5–0.8 mm, 1-veined, apex obtuse; lateral sepals spreading, oblong, 1.8–2 × 0.8–1 mm, 1-veined, apex subacute. Petals spreading, linear, 1.6–1.8 × ca. 0.3 mm, 1-veined, apex acute or acuminate; lip pendulous, oblong, 5-lobed, ca. 2.2 × 0.6 mm, usually slightly longer than sepals, base shallowly concave; basal lobes triangular, small; lateral lobes triangular, small, apex obtuse; mid-lobe triangular-lanceolate, ca. 0.6 mm, apex acuminate. Column ca. 0.5 mm; anther ca. 0.3 mm; pollinia obovoid; viscidia small, disklike; auricles oblong. Fl. Aug–Sep. $2n = 38$.

Evergreen broad-leaved forests; ca. 2200 m. NW Yunnan [Bhutan, India, Nepal].

6. *Herminium chloranthum* Tang & F. T. Wang, Bull. Fan Mem. Inst. Biol. Bot. 10: 34. 1940.

矮角盘兰 ai jiao pan lan

Plants 4–15 cm tall. Tubers ellipsoid to subglobose, 7–20 × 4–12 mm. Stem with 2 or 3 tubular sheaths at base, usually (1 or)2(or 3)-leaved. Leaves basal, subopposite, arising from within basal sheaths, oblong, elliptic, or spatulate, 3–7 × 0.4–2 cm, apex obtuse or acute. Inflorescence 3.5–13 cm; peduncle cylindrical, ebracteate; rachis 1–6 cm, laxly few to subdensely many flowered; floral bracts ovate, smaller than ovary, apex obtuse. Flowers nodding, pale green; ovary distinctly hooked toward apex, 3–5 mm including pedicel. Dorsal sepal erect, broadly ovate, concave, ca. 3.2 × 2.5 mm, 3-veined, apex obtuse; lateral sepals spreading, elliptic, oblique, ca. 3 × 1.2 mm, 1- or 2-veined, apex obtuse. Petals spreading, narrowly rhombic to narrowly elliptic, ca. 4 × 1.8 mm, somewhat fleshy, 2-veined, apex obtuse; lip spreading, pandurate, ca. 3.2 × 2.8 mm, somewhat fleshy, base attenuate and shallowly concave, shallowly 3-lobed above middle; lateral lobes triangular, small, apex obtuse; mid-

lobe triangular, slightly longer than lateral lobes. Column short; pollinia globose; viscidia involute, hornlike. Fl. Jul–Aug.

- Alpine grasslands; 2500–4100 m. W Sichuan, S and SE Xizang, NW Yunnan.

7. *Herminium macrophyllum* (D. Don) Dandy, J. Bot. 70: 328. 1932.

耳片角盘兰 er pian jiao pan lan

Neottia macrophylla D. Don, Prodr. Fl. Nepal. 27. 1825; *Herminium congestum* Lindley; *Spiranthes macrophylla* (D. Don) Sprengel.

Plants 6–22 cm tall. Tubers ovoid or ellipsoid, 6–15 × 5–10 mm. Stem with 2 or 3 tubular sheaths at base, 2- or 3-leaved. Leaves basal, clustered, arising from within basal sheaths, narrowly oblong-elliptic to oblanceolate, 3–10 × 0.6–2 cm, apex subacute to obtuse. Inflorescence 5–19 cm; peduncle cylindrical, ebracteate or sometimes with 1 foliaceous sterile bract; rachis 1.5–8 cm, subdensely several to many flowered; floral bracts ovate-lanceolate, 1–3 mm, much shorter than ovary, apex acute to acuminate. Flowers horizontal or nodding, yellowish green; ovary distinctly hooked toward apex, 3–6 mm including pedicel. Dorsal sepal erect, ovate, 0.8–1.5 × 0.8–1 mm, 1-veined, apex obtuse; lateral sepals spreading, oblong-lanceolate, 1.5–2 × 0.5–1 mm, 1-veined, apex acute to acuminate. Petals spreading, ovate-lanceolate, oblique, 1.2–2 × 0.8–1.2 mm, somewhat fleshy, 1-veined, apex acuminate; lip slightly decurved, ovate-lanceolate, 1.8–2.2 × 0.8–1 mm, fleshy, shortly saccate-spurred, base dilated and concave, gradually attenuate, obscurely 3-lobed; disk slightly warty; lateral lobes obscure, ovate-triangular, margin crenulate, apex obtuse; mid-lobe ovate-triangular, ca. 0.5 mm, apex acute or obtuse; spur globose, ca. 0.5 mm. Column ca. 1 mm; pollinia subglobose; viscidia involute, hornlike. Fl. Jun–Aug. $2n = 40$.

Alpine *Quercus-Abies* mixed forests, open places in forests, scrub, grassy slopes; 2400–4100 m. S Xizang [Bhutan, India, Kashmir, Nepal, Pakistan].

8. *Herminium ecalcaratum* (Finet) Schlechter, Repert. Spec. Nov. Regni Veg. Beih. 4: 101. 1919.

无距角盘兰 wu ju jiao pan lan

Peristylus ecalcaratus Finet, Rev. Gén. Bot. 13: 520. 1901; *Monorchis ecalcarata* (Finet) O. Schwarz.

Plants 10–20 cm tall. Tubers oblong-ovoid, 10–15 × ca. 5 mm. Stem with 2 tubular sheaths at base, 2-leaved. Leaves cauline, widely spaced, alternate, oblong, 10–12 × 0.8–1 cm, apex obtuse. Inflorescence 7–14 cm; peduncle cylindrical, with 1–4 ovate-lanceolate sterile bracts 0.2–0.4 cm; rachis 3–8 cm, densely many flowered; floral bracts ovate-lanceolate to lanceolate, ca. 2 mm, shorter than ovary, apex acuminate or acute. Flowers erect or horizontal, white; ovary straight to slightly arcuate, 3–4 mm including pedicel. Dorsal sepal erect, ovate, concave, ca. 1.5 × 1.2 mm, 1-veined, apex obtuse; lateral sepals spreading, ovate, slightly oblique, ca. 1.6 × 1 mm, 1-veined, apex obtuse to subacute. Petals forming a hood to spreading, ovate, slightly oblique, ca. 1.5 × 0.8 mm, 1-veined, apex obtuse; lip obovate, 1.8–2.2 × ca. 1.2 mm, base shallowly concave, apex

shallowly 3-lobed; lateral lobes incurved to erect, subtriangular, small, apex obtuse; mid-lobe spreading, broadly ovate, slightly longer and wider than lateral lobes. Column ca. 0.8 mm; anther ca. 0.6 mm; pollinia globose; viscidia elliptic. Fl. Sep.

- Alpine grasslands; 2500–3200 m. W Sichuan, NW Yunnan.

9. *Herminium monorchis* (Linnaeus) R. Brown in W. T. Aiton, Hortus Kew., ed. 2, 5: 191. 1813.

角盘兰 jiao pan lan

Ophrys monorchis Linnaeus, Sp. Pl. 2: 947. 1753; *Arachnites monorchis* (Linnaeus) Hoffmann; *Epipactis monorchis* (Linnaeus) F. W. Schmidt; *Herminium alaschanicum* Maximowicz var. *tanguticum* Maximowicz; *H. tanguticum* (Maximowicz) Rolfe; *Monorchis herminium* O. Schwarz; *Orchis monorchis* (Linnaeus) Allioni; *Satyrium monorchis* (Linnaeus) Persoon.

Plants 5.5–35 cm tall. Tubers globose to ellipsoid, 6–10 × 5–10 mm. Stem with 1 or 2 tubular sheaths at base, 2-leaved. Leaves basal and subopposite to cauline, widely spaced and alternate, elliptic to elliptic-lanceolate, 1.5–10 × 0.5–2.5 cm, apex acute. Inflorescence 3.5–24 cm; peduncle cylindrical, with 1 or 2 ovate-lanceolate sterile bracts 0.5–5.5 cm, lower one occasionally foliaceous; rachis 1–11 cm, densely or occasionally ± laxly many flowered; floral bracts linear-lanceolate, 2–3 mm, shorter than ovary, apex acuminate-cuspidate. Flowers fragrant, nodding, yellowish green; ovary distinctly hooked toward apex, 3–5 mm including pedicel. Dorsal sepal suberect, oblong-ovate, ca. 2.2 × 1.2 mm, 1-veined, apex obtuse; lateral sepals weakly spreading, oblong-ovate, ca. 2 × 1 mm, 1-veined, apex subacute. Petals forming a hood, rhombic, ca. 2.5 × 1 mm, somewhat fleshy, 1-veined, sometimes obscurely 3-lobed near middle, apex acute; lip spreading to decurved, oblong-obovate, 2.2–5 × 1.2–1.5 mm, slightly fleshy, base attenuate and shallowly concave, furcately 3-lobed near middle; lateral lobes linear-triangular, 0.8–1.5 mm, apex acute; mid-lobe linear-triangular, 1.5–3.2 mm, longer and broader than lateral lobes, apex acute. Column to 1 mm; pollinia subglobose; viscidia large, involute, hornlike. Fl. Jul–Aug. $2n = 38, 40, 42$.

Broad-leaved forests, coniferous forests, thickets, grasslands, grassy swamps, flood lands; 600–4500 m. Anhui, Gansu, Hebei, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Xizang, N and NW Yunnan [India (Sikkim), Japan, Kashmir, Korea, Mongolia, Nepal, Pakistan, Russia; C and W Asia, Europe].

10. *Herminium alaschanicum* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 31: 105. 1887.

裂瓣角盘兰 lie ban jiao pan lan

Herminium altigenum Schlechter; *Monorchis alaschanica* (Maximowicz) O. Schwarz; *Peristylus alaschanicus* (Maximowicz) N. Pearce & P. J. Cribb.

Plants 13–30 cm tall. Tubers oblong, 1–1.5 × ca. 0.8 cm. Stem with 2 or 3 tubular sheaths at base, 2–4-leaved. Leaves clustered toward base of stem, narrowly elliptic-lanceolate, 4–15 × 0.4–1 cm, apex acute or acuminate. Inflorescence 14–27

cm; peduncle cylindrical, with 3–5 lanceolate sterile bracts 5–15 mm; rachis 4–8 cm, subdensely many flowered; floral bracts ovate-lanceolate, 5–9 mm, exceeding ovary, apex cuspidate. Flowers nodding, green; ovary distinctly hooked toward apex, 5–6 mm including pedicel. Dorsal sepal ovate, 3–4 × 2–3 mm, 3-veined, apex obtuse; lateral sepals weakly spreading, ovate-lanceolate to lanceolate, 3–4 × 1.5–2 mm, 1-veined, apex subacute. Petals connivent with dorsal sepal and forming a hood, ovate-lanceolate, 3.2–4.5 × ca. 1.5 mm, abruptly narrowed above middle, fleshy, 3-veined, apex cuspidate; lip decurved, suboblong, 4–5.5 × ca. 1.5 mm, slightly fleshy, base concave, shortly saccate-spurred, furcately 3-lobed near middle; lateral lobes linear, 1.5–2.5 mm; mid-lobe narrowly linear-triangular, 1–1.5 mm, slightly broader than lateral lobes, apex acute; spur pendulous, slightly incurved, oblong, 0.8–1 mm, apex obtuse. Column ca. 1 mm; pollinia obovoid; viscidia involute, hornlike. Fl. Jun–Sep.

Alpine *Quercus* forests or scrubby grasslands along valleys; 1800–4500 m. Gansu, Hebei, Nei Mongol, Ningxia, Qinghai, Shaanxi, Shanxi, W Sichuan, Xizang, NW Yunnan [Mongolia].

11. *Herminium lanceum* (Thunberg ex Swartz) Vujik, Blumea 11: 228. 1961.

叉唇角盘兰 cha chun jiao pan lan

Ophrys lancea Thunberg ex Swartz, Kongl. Vetensk. Acad. Nya Handl. 21: 223. 1800; *Aceras angustifolium* Lindley; *A. angustifolium* var. *longicrura* (C. Wright ex A. Gray) Miquel; *A. lanceum* (Thunberg ex Swartz) Steudel; *A. longicrura* C. Wright ex A. Gray; *Herminium altigenum* Schlechter; *H. angustifolium* (Lindley) Ridley; *H. angustifolium* var. *brevilabre* Tang & F. T. Wang; *H. angustifolium* var. *longicrura* (C. Wright ex A. Gray) Makino; *H. angustifolium* var. *nematolobum* Handel-Mazzetti; *H. lanceum* var. *longicrura* (C. Wright ex A. Gray) H. Hara; *H. longicrura* (C. Wright ex A. Gray) Tang & F. T. Wang (1951), not Bentham & Hooker (1883); *H. minutiflorum* Schlechter; *H. stenostachyum* Tang & F. T. Wang; *Monorchis angustifolia* (Lindley) O. Schwarz; *M. minutiflora* (Schlechter) O. Schwarz; *Platanthera angustifolia* (Lindley) H. G. Reichenbach; *Satyrium lanceum* (Thunberg ex Swartz) Persoon; *Spiranthes lancea* (Thunberg ex Swartz) R. C. Bakhuizen & Steenis.

Plants 14–83 cm tall. Tubers subglobose to ellipsoid, 10–15 × 5–12 mm. Stem with 2 tubular sheaths at base, 2–4-leaved. Leaves cauline, often widely spaced, alternate, linear to linear-lanceolate, 6–20 × 0.5–1.4 cm, apex acute or acuminate. Inflorescence 12–43 cm; peduncle cylindrical, with 1 to a few linear-lanceolate sterile bracts 1–6 cm; rachis 6–31 cm, laxly to subdensely many flowered; floral bracts lanceolate, 2–8 mm, shorter than or occasionally exceeding ovary, apex acuminate. Flowers erect or horizontal, pale yellowish green to green; ovary straight to slightly arcuate, 5–7 mm including pedicel. Dorsal sepal suberect, ovate to oblong, concave, 2–4 × 1–1.5 mm, 1-veined, apex obtuse; lateral sepals spreading, oblong to ovate-oblong, oblique, 2.2–4 × 1–2 mm, 1-veined, apex subobtuse or acute. Petals forming a hood, linear, 2–4 × 0.2–1 mm, 1-veined, apex obtuse to subacute; lip often pendulous, oblong,

4–10 × 1–2 mm, base dilated and concave, furcately 3-lobed near middle; disk ridged; lateral lobes linear, 2–7 mm; mid-lobe oblong to triangular, to ca. 1 mm, apex acute to obtuse. Column ca. 0.8 mm; pollinia globose; viscidia orbicular. Fl. Jun–Aug. $2n = 38, 40, 42, 76$.

Mixed forests, coniferous forests, bamboo forests, thickets, grasslands; 700–3600 m. Anhui, N Fujian, SE Gansu, Guangdong, Guangxi, Guizhou, S Henan, Hubei, Hunan, Jiangxi, S Shaanxi, Sichuan, Taiwan, Yunnan, Zhejiang [India, Indonesia, Japan, Kashmir, Korea, Malaysia, Myanmar, Nepal, Philippines, Thailand, Vietnam].

12. *Herminium souliei* (Finet) Rolfe, J. Linn. Soc., Bot. 36: 51. 1903.

宽萼角盘兰 kuan e jiao pan lan

Herminium angustifolium (Lindley) Ridley var. *souliei* Finet, Rev. Gén. Bot. 13: 518. 1901; *H. limprichtii* Schlechter; *H. souliei* var. *lichiangense* W. W. Smith; *Monorchis limprichtii* (Schlechter) O. Schwarz; *M. souliei* (Finet) O. Schwarz.

Plants 12–40 cm tall. Tubers oblong-ellipsoid, 10–20 × 6–10 mm. Stem with 2 or 3 tubular sheaths at base, 2–4-leaved. Leaves basal and subopposite or cauline, widely spaced and alternate, narrowly oblong, 4.5–20 × 0.5–2 cm, apex acute. Inflorescence 8–25 cm; peduncle cylindrical, with 1 or 2 lanceolate sterile bracts 0.5–2.4 cm; rachis 4–12 cm, subdensely many flowered; floral bracts ovate-lanceolate, 2–5 mm, shorter than ovary, apex acuminate. Flowers erect or horizontal, pale green; ovary straight to slightly arcuate, 4–5 mm including pedicel. Dorsal sepal erect, ovate, concave, 2.5–3 × ca. 2 mm, 3-veined, apex obtuse; lateral sepals spreading, ovate, oblique, ca. 3.5 × 2.5 mm, 1-veined, apex obtuse. Petals erect, linear, 2.5–3 × ca. 0.6 mm, 1-veined, apex obtuse; lip pendulous, narrowly oblong, 3.2–4.5 × 0.8–1.2 mm, slightly contracted at middle, base slightly dilated and shallowly concave, furcately 3-lobed toward apex; lateral lobes linear-falcate, incurved, 1–2 mm; mid-lobe oblong-lanceolate to obtusely triangular, ca. 0.5 mm, apex obtuse. Column ca. 1 mm; pollinia ovoid; viscidia ovoid. Fl. Jul–Aug.

• Broad-leaved forests, coniferous forests, grassy slopes; 1400–4200 m. W Sichuan, SE Xizang, NE and W Yunnan.

This species is clearly closely allied to *Herminium lanceum*, though the typically longer lateral lobes of the lip in the latter give its flowers a more spidery appearance.

13. *Herminium angustilabre* King & Pantling, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 65: 131. 1896.

狭唇角盘兰 xia chun jiao pan lan

Monorchis angustilabris (King & Pantling) O. Schwarz.

Plants 7–18 cm tall. Tubers oblong-ellipsoid, 6–15 × 3–7 mm. Stem with 1 or 2 tubular sheaths at base, 1-leaved. Leaf basal or cauline, usually distant from basal sheath, oblong-elliptic, 1.8–2.5 × 0.4–1 cm, apex obtuse. Inflorescence 4–14 cm; peduncle somewhat angled, with 1–5 linear to oblong-lanceolate sterile bracts 0.5–1.5 cm; rachis 3–5 cm, laxly 8–12-flowered; floral bracts lanceolate, 4–6 mm, exceeding flowers, apex acuminate. Flowers horizontal to slightly nodding, green to yellowish green; ovary arcuate, ca. 3.5 mm including pedicel. Dorsal sepal suberect, broadly ovate, concave, 2–2.6 × 1.2–

mm, 1-veined, apex acute; lateral sepals reflexed, narrowly oblong, slightly oblique, 2.8–3 × ca. 0.7 mm, 1-veined, apex acute. Petals forming a hood to weakly spreading, linear-oblong, slightly oblique, ca. 2.8 × 0.5 mm, 1-veined, apex acute; lip pendulous, linear-oblong, 3–3.5 × ca. 0.7 mm, base slightly dilated and shallowly concave, margin entire, apex acute and reflexed. Column ca. 0.5 mm; pollinia globose; viscidia elliptic; auricles oblong, narrow. Fl. Jul.

Scrub, grassy slopes; ca. 3500 m. NW Yunnan [India (Sikkim)].

14. *Herminium tangianum* (S. Y. Hu) K. Y. Lang, Acta Phytotax. Sin. 25: 458. 1987.

宽叶角盘兰 kuan ye jiao pan lan

Peristylus tangianus S. Y. Hu, Quart. J. Taiwan Mus. 27: 461. 1974, based on *P. ecalcaratus* Tang & F. T. Wang, Acta Phytotax. Sin. 1: 64. 1951, not Finet (1901), based on *Herminium latifolium* Gagnepain, Bull. Mus. Natl. Hist. Nat., sér. 2, 3: 325. 1931, not (A. Richard) Lindley (1832).

Plants 20–30 cm tall. Tubers subglobose to oblong-ellipsoid, 10–20 mm. Stem with 2 or 3 tubular sheaths at base, 2-leaved. Leaves basal, orbicular or elliptic, 2.5–5 × 2–2.5 cm, apex subacuminate. Peduncle cylindrical, with several triangular-lanceolate sterile bracts, lower one often foliaceous; rachis 4–10 cm, many flowered; floral bracts lanceolate, 6–7 mm, slightly shorter than ovary, apex acuminate. Flowers white; ovary ca. 8 mm including pedicel. Dorsal sepal ovate, ca. 2.5 × 1.6 mm, 1-veined, apex obtuse; lateral sepals oblanceolate, ca. 2.6 × 1 mm, 1-veined, apex obtuse. Petals ovate, oblique, 1.2–2.4 × ca. 1.2 mm, 1-veined, apex obtuse; lip decurved, ovate-pandurate, ca. 2.5 × 1.4 mm, somewhat fleshy, base dilated and shallowly concave, contracted near middle, margin entire, apex dilated and obtuse. Column short; viscidia elliptic, ca. 0.8 mm. Fl. unknown.

• Moist grasslands. C Yunnan.

15. *Herminium josephii* H. G. Reichenbach, Flora 55: 276. 1872 [“*josephi*”].

宽卵角盘兰 kuan luan jiao pan lan

Herminium forrestii Schlechter; *Monorchis forrestii* (Schlechter) O. Schwarz; *M. josephii* (H. G. Reichenbach) O. Schwarz.

Plants 11–27 cm tall. Tubers ovoid or ellipsoid, 10–20 × 7–10 mm. Stem with 2 or 3 tubular sheaths at base, 2-leaved. Leaves basal, subopposite, linear-oblong to oblong-elliptic, 3.5–10 × 0.5–1.5 cm, apex acute. Inflorescence 9–24 cm; peduncle cylindrical, ebracteate; rachis 3.5–8.5 cm, subdensely several to many flowered; floral bracts ovate-lanceolate to lanceolate, ca. 3 mm, shorter than ovary, apex acute. Flowers fragrant, erect or horizontal, green to yellowish green; ovary straight, 7–8 mm including pedicel. Dorsal sepal suberect, broadly ovate, ca. 3 × 2 mm, 1-veined, apex obtuse; lateral sepals weakly spreading, ovate-lanceolate, slightly oblique, 3–4.5 × ca. 1.5 mm, 1-veined, apex obtuse. Petals ovate-lanceolate, oblique, 3–3.5 × ca. 1.2 mm, somewhat fleshy, 1-veined, apex subobtuse; lip pendulous, broadly ovate, 4–5 × 3–3.5 mm, somewhat fleshy, base shallowly concave, entire; disk with 2 short ridges below mid-

dle. Column ca. 1.5 mm; pollinia obovoid; viscidia involute, hornlike. Fl. Jul–Aug. $2n = 38$.

Abies forests, forest margins, scrub, alpine meadows; 1900–4000 m. W Sichuan, S and SE Xizang, NE and NW Yunnan [Bhutan, India (Sikkim), Nepal].

16. *Herminium singulum* Tang & F. T. Wang, Bull. Fan Mem. Inst. Biol. Bot. 10: 35. 1940.

披针唇角盘兰 pi zhen chun jiao pan lan

Plants 8–30 cm tall. Tubers subglobose, ca. 10 mm. Stem with 1 or 2 tubular sheaths at base, 1-leaved. Leaf basal, elliptic, 2–4 × 1–2.5 cm, apex obtuse or acute. Inflorescence 6.5–27 cm; peduncle cylindrical, with 2 lanceolate sterile bracts 1–1.5 cm; rachis 2.5–10 cm, subaxly 4- to many flowered; floral bracts lanceolate, much shorter than to slightly exceeding ovary, apex acuminate. Flowers erect, held close to rachis, color not recorded; ovary straight, 4–7 mm including pedicel. Dorsal sepal erect, ovate, ca. 1.5 × 1 mm, 1-veined, concave at base, apex acute or obtuse; lateral sepals reflexed, oblong-ovate, oblique, ca. 1.5 × 0.8 mm, 1-veined, apex obtuse. Petals erect, ovate, oblique, ca. 1.8 × 1–1.5 mm, somewhat fleshy, 1-veined, apex obtuse or acute; lip lanceolate, ca. 2.5 × 1 mm, base dilated, gradually attenuate from middle toward apex, somewhat fleshy, shortly spurred, margin entire, apex obtuse or acute; spur cylindrical-obovoid, ca. 1.5 × 0.75 mm, slightly dilated toward apex, apex obtuse. Column short; anther relatively small. Fl. Aug–Sep.

• Forests; 2600–2800 m. SW Sichuan, NW Yunnan.

17. *Herminium carnosilabre* Tang & F. T. Wang, Bull. Fan Mem. Inst. Biol. Bot. 10: 32. 1940.

厚唇角盘兰 hou chun jiao pan lan

Plants 10–22 cm tall. Tubers ovoid, ca. 10 mm. Stem with 1 or 2 tubular sheaths at base, 2-leaved. Leaves basal, subopposite to somewhat spaced and alternate, elliptic to oblong-lanceolate, 1.5–3 × 0.5–1.5 cm, apex obtuse. Peduncle cylindrical,

with 2 or 3 lanceolate sterile bracts; rachis 1.5–3.5 cm, subdensely many flowered; floral bracts ovate, shorter than ovary, apex acute. Flowers usually secund, erect, pale green; ovary ca. 3.2 mm including pedicel. Dorsal sepal erect, oblong, concave, ca. 1.6 × 0.8 mm, 1-veined, apex obtuse; lateral sepals oblong-ovate, oblique, ca. 1.5 × 0.8 mm, 1-veined, apex obtuse. Petals erect-ascending, oblong, falcate, ca. 1.2 × 0.5 mm, 1-veined, apex obtuse; lip ovate-lanceolate, ca. 2 × 1 mm, somewhat fleshy, base dilated, shortly spurred, margin entire, apex obtuse; spur conic, ca. 0.8 mm. Column short. Fl. Aug–Sep.

• Bamboo forests; 3200–3600 m. NW Yunnan.

18. *Herminium orbiculare* J. D. Hooker, Fl. Brit. India 6: 130. 1890.

西藏角盘兰 xi zang jiao pan lan

Monorchis orbicularis (J. D. Hooker) O. Schwarz.

Plants 6–15 cm tall. Tubers subglobose to ovoid, 4–8 × 4–6 mm. Stem with 1 tubular sheath at base, 2-leaved. Leaves basal and subopposite, or cauline, somewhat spaced and alternate, oblanceolate to elliptic-oblong, 1.2–3 × 0.3–1.5 cm, adaxially with white reticulate markings, apex obtuse or acute. Inflorescence 4–14 cm; peduncle cylindrical, with 1 to several lanceolate sterile bracts 2–6 mm; rachis 1–4 cm, laxly few to subdensely many flowered; floral bracts ovate-lanceolate, 1–2.5 mm, shorter than ovary, apex acute. Flowers usually secund, erect or horizontal, green; ovary straight to slightly arcuate, 2–4 mm. Dorsal sepal suberect, broadly ovate, ca. 0.8 × 0.5 mm, 1-veined, apex obtuse; lateral sepals weakly spreading, broadly orbicular-ovate, ca. 1.2 × 0.8 mm, 1-veined, apex obtuse. Petals forming a hood to weakly spreading, oblong-ovate, ca. 0.8 × 0.5 mm, 1-veined, apex obtuse; lip slightly decurved, orbicular-ovate, ca. 1.5 × 1.2 mm, fleshy, shortly spurred, entire, apex obtuse; disk slightly warty; spur conic, ca. 0.7 mm. Column ca. 0.4 mm; pollinia clavate; viscidia orbicular. Fl. Jul–Sep.

Valleys; ca. 3700 m. Xizang [Bhutan, India (Sikkim)].

