

101. CALANTHE R. Brown, Bot. Reg. 7: ad t. 573 [“578”]. 1821, nom. cons.

虾脊兰属 xia ji lan shu

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

Alismorkis Thouars.

Herbs, terrestrial, small to large. Rhizome present or not. Pseudobulbs usually small, conic, ovoid, or subglobose, rarely inconspicuous or cylindric, with roots at base and a few leaves at apex; roots long, stout, pubescent. Leaves sometimes not well developed or not completely spreading at anthesis; blade rarely narrowly ensiform or lorate, ± plicate, but often convolute when young, base contracted into a petiole-like stalk or subsessile, sheathing, articulate or not. Scape arising from leaf axil or from base of pseudobulb, rarely from apex of leafless pseudobulb, erect, usually densely puberulent; inflorescence a terminal raceme, few to many flowered; floral bracts persistent or caducous. Flowers resupinate, small to medium-sized, often opening widely. Sepals similar, free. Petals often smaller than sepals; lip adnate to base of column wings and forming a tube, or adnate only to base of column, or to column foot and free from column itself, lobed or unlobed, base spurred or not; disk often lamellate or ridged, sometimes with callose appendages at base. Column often short and thick, without or with a short foot at base, winged, rostellum lobed or unlobed; stigma lateral; pollinia waxy, 8, in 2 groups, nearly equal or unequal in size; caudicle conspicuous or inconspicuous, commonly adherent to a sticky viscidium.

About 150 species: tropical and subtropical Asia, Australia, New Guinea, and the SW Pacific islands, as well as tropical Africa and Central and NW South America; 51 species (21 endemic) in China.

- 1a. Leaves deciduous in dry season; inflorescence (including rachis, bracts, and flowers) densely villous; column with a distinct column foot; lip adnate to column foot 51. *C. labrosa*
- 1b. Leaves not deciduous; inflorescence glabrous or puberulent; column without a column foot; lip adnate to column wings or adnate to base of column.
 - 2a. Floral bracts caducous; rostellum unlobed.
 - 3a. Lip similar to petals, spurless 1. *C. actinomorpha*
 - 3b. Lip different from petals, spurred at base.
 - 4a. Flowers white 2. *C. angustifolia*
 - 4b. Flowers yellow.
 - 5a. Lip obscurely 3-lobed; lateral lobes very small, to 1 mm, sometimes inconspicuous 3. *C. lyroglossa*
 - 5b. Lip distinctly 3-lobed; lateral lobes relatively large, 2–5 mm.
 - 6a. Spur cylindric; lip adnate to base of column wings; column slender, ca. 12 mm 4. *C. densiflora*
 - 6b. Spur clavate; lip adnate to entire length of column wings; column thick, 5–7 mm.
 - 7a. Leaves narrowly elliptic; lip with 2 triangular lamellae at base of disk 5. *C. clavata*
 - 7b. Leaves oblong-elliptic to oblanceolate; lip with 2 lunar calli between lateral lobes of disk 6. *C. speciosa*
 - 2b. Floral bracts persistent; rostellum 2- or 3-lobed.
 - 8a. Lip spurless.
 - 9a. Flowers small; sepals to 7 mm 7. *C. tsoongiana*
 - 9b. Flowers large; sepals 10–20 mm.
 - 10a. Lip clawed at base, claw forming a shallow sac at base 8. *C. sacculata*
 - 10b. Lip not clawed.
 - 11a. Lip with 3–5 crested lamellae on disk 9. *C. tricarinata*
 - 11b. Lip without lamellae or calli on disk.
 - 12a. Flowers pale yellow 10. *C. ecarinata*
 - 12b. Flowers pink or pale purplish pink.
 - 13a. Sepals and petals not reflexed 11. *C. puberula*
 - 13b. Sepals and petals strongly reflexed 12. *C. reflexa*
 - 8b. Lip spurred.
 - 14a. Lip unlobed.
 - 15a. Lip margin fimbriate 13. *C. alpina*
 - 15b. Lip margin entire, undulate, erose, or emarginate, but not fimbriate.
 - 16a. Floral bracts and sepals reflexed 14. *C. whiteana*
 - 16b. Floral bracts and sepals not reflexed.
 - 17a. Leaves 4 or 5, narrowly oblong, 1.5–2.6 cm wide 15. *C. fargesii*
 - 17b. Leaves 2 or 3, oblong or oblanceolate, 4–8 cm wide.
 - 18a. Flowers yellowish green; lip reniform; spur 11–14 mm 16. *C. simplex*

- 18b. Flowers white, tinged purple; lip elliptic; spur ca. 28 mm 17. *C. petelotiana*
- 14b. Lip 2- or 3-lobed.
- 19a. Lip 2-lobed 18. *C. biloba*
- 19b. Lip 3-lobed.
- 20a. Lip adorned with wartlike calli on disk.
- 21a. Mid-lobe of lip entire or shallowly emarginate, mucronate at apex or not.
- 22a. Flowers yellow-green; spur ca. 5.5 mm 19. *C. dulongensis*
- 22b. Flowers pinkish purple or purple-red; spur 25–50 mm.
- 23a. Leaves densely pubescent on both surfaces; pedicel and ovary ca. 20 mm; lip 8–9 mm 20. *C. sinica*
- 23b. Leaves sparsely pubescent abaxially; pedicel and ovary ca. 35 mm; lip 11–17 mm 21. *C. sylvatica*
- 21b. Mid-lobe of lip divided by a deep sinus into 2 lobules.
- 24a. Scape arising from previous year's leafless pseudobulb 23. *C. odora*
- 24b. Scape arising from leaf axil of current year's growth.
- 25a. Spur 2–3 mm 22. *C. ×dominyi*
- 25b. Spur 5–30 mm.
- 26a. Leaves ensiform or lorate, 0.8–2(–5) cm wide; floral bracts reflexed; dorsal sepal to 9 mm 24. *C. davidii*
- 26b. Leaves elliptic, elliptic-lanceolate, ovate-elliptic, or ovate-lanceolate, 4–12 cm wide; floral bracts not reflexed; dorsal sepal 10–15 mm.
- 27a. Flowers yellowish green; lateral lobes of lip ovate or flabellate, 5–7 mm wide.
- 28a. Leaves uniformly green, without silver-gray bands on adaxial surface; spur longer than 20 mm 25. *C. herbacea*
- 28b. Leaves with several silver-gray bands on adaxial surface; spur less than 20 mm 26. *C. argenteostriata*
- 27b. Flowers white, sometimes tinged purplish violet, or occasionally purplish red; lateral lobes of lip linear, oblong, or narrowly obovate-cuneate, 2–3 mm wide.
- 29a. Pedicel and ovary 10–20 mm; lobules of lip mid-lobe subrhombic, 5–6 mm wide 27. *C. alismatifolia*
- 29b. Pedicel and ovary 30–40 mm; lobules of lip mid-lobe linear-oblong, ca. 3 mm wide 28. *C. triplicata*
- 20b. Lip adorned with ridges or lamellae, or without any appendages on disk.
- 30a. Lip without any appendages on disk.
- 31a. Mid-lobe of lip obovate, ca. 8 mm wide 29. *C. yuana*
- 31b. Mid-lobe of lip oblong-ligulate, ca. 2 mm wide 30. *C. limprichtii*
- 30b. Lip adorned with ridges or lamellae on disk (sometimes inconspicuous in *C. arisanensis* and *C. plantaginea*).
- 32a. Ovary and capsule with 6 longitudinal winglike ridges 46. *C. arisanensis*
- 32b. Ovary and capsule without longitudinal ridges.
- 33a. Ridges on lip connecting to column wings.
- 34a. Lip with 3–5(–7) ridges on disk; spur 20–32 mm 45. *C. aristulifera*
- 34b. Lip with 3 ridges on disk; spur 5–20 mm.
- 35a. Lip with 4 brown marks on disk; sepals 12–13 mm 43. *C. graciliflora*
- 35b. Lip lacking brown marks on disk; sepals 15–17 mm.
- 36a. Ridges on disk of lip inconspicuous; lip mid-lobe as broad as or broader than long 42. *C. plantaginea*
- 36b. Ridges on disk of lip tall and conspicuous, running onto mid-lobe; lip mid-lobe much longer than broad 44. *C. henryi*
- 33b. Ridges and lamellae on lip free from column wings.
- 37a. Lateral lobes of lip distinctly broader than mid-lobe.
- 38a. Petiole-like leaf base 30–37 cm; lip ca. 5.5 mm 39. *C. trifida*
- 38b. Petiole-like leaf base 3–9 cm; lip 10–13 mm.
- 39a. Spur much shorter than pedicel and ovary, 5–10 mm; lip mid-lobe emarginate 40. *C. discolor*
- 39b. Spur longer than pedicel and ovary, 20 mm or more; lip mid-lobe shortly apiculate 41. *C. alleizettei*
- 37b. Lateral lobes of lip narrower than mid-lobe.
- 40a. Spur 8–15 mm.
- 41a. Flowers bright yellow; lip with 5 ridges on disk 50. *C. sieboldii*
- 41b. Flowers white, pink, or pale red; lip with 3 lamellae or ridges on disk.
- 42a. Margins of lip mid-lobe fimbriate 47. *C. metoensis*
- 42b. Margins of lip mid-lobe slightly erose or emarginate, but not fimbriate.
- 43a. Leaf solitary; flowers pale red; lip mid-lobe broadly ovate-cuneate,

- ca. 10 × 10 mm 48. *C. lechangensis*
 43b. Leaves 2; flowers white; lip mid-lobe obovate, ca. 7 × 8 mm 49. *C. nankunensis*
 40b. Spur to 6 mm.
 44a. Dorsal sepal 7–9 mm 31. *C. mannii*
 44b. Dorsal sepal 12–35 mm.
 45a. Leaves 0.7–3.5 cm wide.
 46a. Flowers with purplish red striations; lip with 7 crested lamellae on disk 36. *C. emeishanica*
 46b. Flowers without striations; lip with 3–5 ridges or lamellae.
 47a. Mid-lobe of lip elliptic-rhombic, 8–10 × 6–7 mm, apex aristate 37. *C. arcuata*
 47b. Mid-lobe of lip suboblong, ca. 6 × 4.5 mm, apex acute 38. *C. nipponica*
 45b. Leaves 5–12 cm wide.
 48a. Lip with a single lamella on mid-lobe 35. *C. griffithii*
 48b. Lip with 3 lamellae on mid-lobe.
 49a. Lateral lobes of lip broader than long; spur adnate to ovary, 4.5–6 mm; lip disk lamellae taller than long 34. *C. fugongensis*
 49b. Lateral lobes of lip longer than broad; spur free from ovary, 2–3 mm; lip disk lamellae longer than tall.
 50a. Sepals and petals buff colored, with pinkish red striations; lip 6–10 mm wide 32. *C. brevicornu*
 50b. Sepals and petals yellow; lip 14–15 mm wide 33. *C. hancockii*

1. *Calanthe actinomorpha* Fukuyama, Bot. Mag. (Tokyo) 49: 668. 1935.

辐射虾脊兰 fu she xia ji lan

Phaius actinomorphus (Fukuyama) T. P. Lin.

Plants 40–60 cm tall, without a distinct rhizome. Pseudobulbs very small, enclosed in sheaths. Leaves 3 or 4, basal, well developed at anthesis, not deciduous; blade oblanceolate, 20–55 × 3–8 cm, glabrous, 5-veined, apex acuminate; petiole-like base 10–20 cm, not articulate. Scape arising from leaf axil, erect, 40–50 cm, glabrous, with several scattered tubular sheaths; rachis ca. 10 cm, densely many flowered; floral bracts caducous, whitish, lanceolate, 30–40 mm, membranous, glabrous, apex acuminate. Flowers lemon-yellow, not opening widely; pedicel and ovary ca. 10 mm, glabrous. Sepals similar, oblong-ligulate, 8–9 × 3.5–4 mm, membranous, 3–5-veined, apex acute or mucronate. Petals elliptic, concave, 8–9 × 3.5–4.5 mm, membranous, 3-veined, margin slightly undulate, apex acute; lip similar to petals, ca. 8 × 4.7 mm, glabrous, 3-veined, apex mucronate, base spurless and slightly contracted and adnate to base of column, free from column wings, unlobed, slightly undulate at margin, embracing column on both sides. Column subcylindric, ca. 4 mm, slightly contracted near middle, glabrous; rostellum absent; anther terminal; pollinia clavate, equal in size, ca. 1.5 mm. Fl. Dec. $2n = 38^*$, 40^* .

• Damp places in forests; 800–1000 m. Taiwan.

2. *Calanthe angustifolia* (Blume) Lindley, Gen. Sp. Orchid. Pl. 251. 1833.

狭叶虾脊兰 xia ye xia ji lan

Amblyglottis angustifolia Blume, Bijdr. 369. 1825; *Alismorkis angustifolia* (Blume) Kuntze; *Calanthe phajoides* H. G. Reichenbach; *C. pumila* Fukuyama; *C. striata* (Swartz) R. Brown var. *pumila* (Fukuyama) S. S. Ying.

Plants 30–40 cm tall, with small cylindrical pseudobulbs and a creeping rhizome. Leaves 4–10, subbasal, usually well developed at anthesis, not deciduous; blade linear-lanceolate to

narrowly elliptic, ca. 30 × 2–3.5 cm, glabrous, with 5 or 6 main veins, apex acuminate; petiole-like base 4–16 cm, conduplicate, articulate. Scapes 1 or 2, arising from axil of outer sheaths, erect, ca. 35 cm, with 3 or 4 widely spaced tubular sheaths; rachis 3–7 cm, laxly 10–15-flowered; floral bracts caducous, narrowly lanceolate, 20–40 mm, glabrous, apex acuminate. Flowers white; pedicel and ovary 12–20 mm, glabrous. Sepals similar, oblong-elliptic, 10–13 × 4–5 mm, 3–5-veined, apex acute. Petals ovate-elliptic, 8–11 × 4–6 mm, 3–5-veined, apex obtuse-rounded and apiculate; lip adnate to base of column wings, ca. 10 × 6 mm, deeply 3-lobed; lateral lobes subovate, ca. 6 mm across their apices; mid-lobe obcordate, ca. 5 × 6 mm, apex retuse; disk with 2 triangular ridges at base; spur slightly curved, somewhat clavate, 6–9 × 2–3 mm, slightly contracted at middle. Column ca. 5 mm; rostellum triangular, unlobed. Fl. Sep.

Evergreen broad-leaved forests or mossy forests; 1000–1500 m. Guangdong, Hainan, S Taiwan [Indonesia, Malaysia, Philippines].

3. *Calanthe lyroglossa* H. G. Reichenbach, Otia Bot. Hamburg. 1: 53. 1878.

南方虾脊兰 nan fang xia ji lan

Alismorkis foerstermannii (H. G. Reichenbach) Kuntze; *A. lyroglossa* (H. G. Reichenbach) Kuntze; *Calanthe foerstermannii* H. G. Reichenbach; *C. forsythiiflora* Hayata; *C. liukiensis* Schlechter; *C. lyroglossa* var. *forsythiiflora* (Hayata) S. S. Ying.

Plants 30–50 cm tall. Rhizome short, stout. Pseudobulbs clavate-cylindric, 2–3 cm. Leaves 3–5, basal, well developed at anthesis, not deciduous; blade oblanceolate, plicate, 30–60(–100) × 3–8.5 cm, glabrous, apex acuminate; petiole-like base 5–8 cm, sheathing, articulate. Scape arising from base of pseudobulb, erect, 30–50 cm, stout, lower part with 3 or 4 tubular sheaths; rachis 8–14 cm, densely many flowered; floral bracts caducous, lanceolate, to 40 mm, membranous, glabrous. Flowers small, yellow, turning black when dried; ovary and pedicel ca. 10 mm, glabrous. Sepals similar, elliptic or elliptic-

lanceolate, 6–9 × ca. 3 mm, 3-veined, apex acuminate. Petals elliptic, ca. 6 × 3 mm, 3-veined, apex acute or apiculate; lip adnate to base of column wings, ca. 5 × 5 mm, obscurely 3-lobed; lateral lobes suborbicular, small, to 1 mm, sometimes inconspicuous; mid-lobe reniform or nearly transversely oblong, ca. 3 × 5 mm, apex emarginate; disk with 2 triangular lamellae at base; spur clavate, ca. 5 mm, apex slightly 2-lobed. Column 3–4 mm, thick, dilated at apex; rostellum ovate-triangular, large, unlobed; anther cap beaked; pollinia obovoid or clavate, subequal in size, ca. 1.2 mm, with a conspicuous caudicle; viscidium peltate. Capsule ± pendulous, ellipsoid-globose, ca. 1 × 0.7 cm. Fl. Dec–Feb. $2n = 40$.

Forests, along streamsides and valleys; below 1500 m. C and S Hainan, Taiwan [Cambodia, NE India, Japan (Ryukyu Islands), Laos, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

4. *Calanthe densiflora* Lindley, Gen. Sp. Orchid. Pl. 250. 1833.

密花虾脊兰 mi hua xia ji lan

Alismorkis densiflora (Lindley) Kuntze; *Calanthe kazuoii* Yamamoto.

Plants 50–60 cm tall, with long creeping rhizome 3–4 mm in diam. Shoots spaced 5–6 cm apart along rhizome. Pseudobulbs small or inconspicuous, enclosed in basal sheaths of leaves. Leaves usually 3, basal, well developed at anthesis, not deciduous; blade lanceolate or narrowly elliptic, 35–40 × 2.3–6.5 cm, glabrous, apex acute; petiole-like base ca. 10 cm, articulate, enclosed by tubular sheaths and forming a slender pseudostem 10–16 cm. Scapes 1 or 2, arising from rhizome, erect, ca. 20 cm, 3–4 mm in diam., with 3–5 tubular sheaths toward base; rachis short, densely many flowered; floral bracts caducous, narrowly lanceolate, 1.5–3 cm, glabrous. Flowers arranged in a dense head, pale yellow, turning black when dried; pedicel and ovary ca. 20 mm, glabrous. Sepals similar, oblong, 13–14 × ca. 5 mm, 3–5-veined, apex aristate. Petals subspatulate, 13–14 × ca. 4 mm, 3-veined, apex acute; lip adnate to base of column wings, ovate-orbicular, 7–11 × 5–11 mm, 3-lobed above middle; lateral lobes ovate-triangular, ca. 5 × 3 mm, ca. 10 mm across their apices, apex obtuse; mid-lobe subsquare, ca. 5 × 4 mm, apex emarginate; disk with 2 lamellae; lamellae deltoid, ca. 2 × 3 mm; spur straight, cylindric, 12–16 × ca. 3 mm, apex obtuse. Column ± arcuate, ca. 12 mm, slender, base dilated; rostellum broadly ovate-triangular, ca. 1.2 mm, unlobed; anther cap beaked; pollinia obovoid, subequal in size, ca. 1.2 mm, with short caudicles. Capsule nearly pendulous, ellipsoid-globose, ca. 1.3 × 0.8 cm. Fl. Aug–Sep, fr. Oct. $2n = 40$.

Broad-leaved and mixed forests, along streamsides and valleys; 1000–3000 m. Guangdong, Guangxi, Hainan, Sichuan, Taiwan, S and SE Xizang, NW and SE Yunnan [Bhutan, NE India, Vietnam].

5. *Calanthe clavata* Lindley, Gen. Sp. Orchid. Pl. 251. 1833.

棒距虾脊兰 bang ju xia ji lan

Alismorkis clavata (Lindley) Kuntze; *Calanthe clavata* var. *malipoensis* Z. H. Tsi.

Plants ca. 40 cm tall. Rhizome stout, ca. 1 cm in diam.,

with scalelike sheaths and thick roots on nodes. Pseudobulbs very small, completely enclosed in sheaths. Leaves 2 or 3, basal, well developed at anthesis, not deciduous; blade narrowly elliptic, 50–65 × 4–10 cm, apex acute; petiole-like base 8–12 cm, articulate, conduplicate, enclosed by tubular sheaths and forming a pseudostem ca. 13 cm. Scapes 1 or 2, arising from base of pseudobulb, erect, to 40 cm, 7–13 mm in diam., with several scattered tubular sheaths; rachis 6–8 cm, densely many flowered; floral bracts caducous, lanceolate, 1–3.5 cm, membranous, glabrous. Flowers yellow; pedicel and ovary ca. 15 mm, glabrous. Dorsal sepal elliptic, ca. 12 × 5–6 mm, 5-veined, apex acute; lateral sepals suboblong, ca. 12 × 4–5 mm, 5-veined, apex aristate. Petals obovate-elliptic to elliptic, ca. 10 × 5 mm, 5-veined, apex acute; lip adnate to entire length of column wings, 6–8 × 4–5 mm, 3-lobed; lateral lobes erect, auriculate or subovate-triangular, 2–3 mm, ca. 7 mm across their apices; mid-lobe orbicular, ca. 4 × 5–5.5 mm, apex truncate and emarginate; disk with 2 triangular lamellae at base; spur straight, clavate, ca. 9 × 3.5 mm. Column ca. 7 mm, thick, dilated at apex; rostellum triangular, ca. 0.8 mm, unlobed; pollinia subclavate or narrowly obovoid, subequal in size, ca. 1.2 mm, with short caudicles; viscidium subcordate, thick. Fl. Nov–Dec. $2n = 40$.

Dense forests, rocky places along valleys; 800–1300 m. Fujian, S Guangdong, S Guangxi, Hainan, Taiwan, SE Xizang, S and SE Yunnan [NE India, Myanmar, N Thailand, N Vietnam].

6. *Calanthe speciosa* (Blume) Lindley, Gen. Sp. Orchid. Pl. 250. 1833.

二列叶虾脊兰 er lie ye xia ji lan

Amblyglottis speciosa Blume, Bijdr. 371. 1825; *Alismorkis speciosa* (Blume) Kuntze; *Calanthe disticha* Tang & F. T. Wang; *C. formosana* Rolfe; *C. patsinensis* S. Y. Hu; *C. pulchra* (Blume) Lindley var. *formosana* (Rolfe) S. S. Ying; *C. yushunii* K. Mori & Yamamoto.

Plants 50–70(–120) cm tall. Rhizome ca. 1 cm in diam., fleshy. Pseudobulbs cylindric-ovoid to clavate, 4–5 × 1–3 cm, several noded, usually enclosed by leaf sheaths. Leaves 5–10, nearly distichous, well developed at anthesis, not deciduous; blade oblong-elliptic to oblanceolate, 40–95 × 4–9 cm, glabrous, apex acuminate; petiole-like base to 20 cm, ca. 1 cm in diam., articulate. Scape arising from base of pseudobulb, 30–45 cm, with several tubular sheaths below middle; rachis 10–15 cm, densely many flowered; floral bracts caducous, narrowly lanceolate, 2.5–3.5 cm, membranous, glabrous. Flowers yellow; pedicel and ovary 15–20 mm, glabrous. Sepals similar, ovate-lanceolate, 9–12 × 4–5 mm, 5-veined, apex acuminate. Petals ovate-elliptic, 9–12 × 4–6 mm, 7-veined, apex subacute; lip adnate to entire length of column wings, 8–9 × 5–6 mm, 3-lobed above base; lateral lobes subsquare to ovate-triangular, ca. 2.5 × 2.5 mm, ca. 5 mm across their apices; mid-lobe flabellate or sometimes subobovate-cuneate, ca. 5 × 5–6 mm, margin undulate, apex truncate and mucronate; disk with 2 linear calli between lateral lobes, though sometimes inconspicuous; spur slightly arcuate, clavate, 7–9 mm. Column ca. 5 mm, thick, dilated toward apex; rostellum triangular, ca. 3 mm, unlobed; pollinia clavate, subequal in size, ca. 2.1 mm, with conspicuous caudicles; viscidium sublinear, ca. 2.2 mm. Fl. (Apr–)Jul–Oct.

2n = 20*, 40*.

• Damp places in forests along valleys; 500–1500 m. S Hainan, Hong Kong, Taiwan.

7. *Calanthe tsoongiana* Tang & F. T. Wang, Acta Phytotax. Sin. 1: 88. 1951.

无距虾脊兰 wu ju xia ji lan

Plants ca. 32 cm tall. Rhizome short. Pseudobulbs subconic, ca. 1 cm in diam., with 3 or 4 sheaths. Leaves 2 or 3, well developed at anthesis, not deciduous; blade obovate-lanceolate or oblong, (13–)27–37 × (2–)5.5–6 cm, abaxially puberulent, apex acuminate; petiole-like base 8–19 cm, usually forming a pseudostem, though sometimes short and pseudostem inconspicuous. Scape arising from axil of current year's leaves, erect, 33–55 cm, densely hairy, with a scalelike sheath near middle; rachis 14–16 cm, laxly many flowered; floral bracts persistent, ovate-lanceolate, 3–4 × 1.5–2 mm, membranous, glabrous, apex acute. Flowers pale purple, small; pedicel and ovary 10–15 mm, puberulent. Sepals similar, oblong, 6–7 × 3–4 mm, abaxially puberulent below middle, 5- or 6-veined, apex acute or subobtusate. Petals subspatulate, 5–6 × ca. 1.7 mm, 3-veined, apex acute or obtuse; lip adnate to base of column wings, ca. 3.2 × 3 mm, spurless, deeply 3-lobed; lateral lobes suboblong or axe-shaped, 2–2.5 × 1.3–2.5 mm, apex rounded; mid-lobe oblong or ovate, 2–2.5 × 1–2 mm, apex slightly dilated, truncate or retuse and apiculate; disk without lamellae or calli. Column ca. 3 mm, thick, dilated at apex, adaxially with short hairs; rostellum small, 2-lobed; pollinia obovoid or pear-shaped, equal in size, ca. 1 mm, with caudicles.

• Forests, damp rocks; 400–1500 m. Fujian, Guizhou, Jiangxi, Zhejiang.

- 1a. Lateral lobes of lip suboblong, ca. 2 × 1.3 mm; mid-lobe oblong, ca. 2 × 1 mm 7a. var. *tsoongiana*
- 1b. Lateral lobes of lip nearly axe-shaped, ca. 2.5 × 2.5 mm; mid-lobe ovate, ca. 2.5 × 2 mm 7b. var. *guizhouensis*

7a. *Calanthe tsoongiana* var. *tsoongiana*

无距虾脊兰(原变种) wu ju xia ji lan (yuan bian zhong)

Lateral lobes of lip suboblong, ca. 2 × 1.3 mm; mid-lobe oblong, ca. 2 × 1 mm. Fl. Apr–May.

• Forests, damp rocks; 400–1500 m. Fujian, Guizhou, Jiangxi, Zhejiang.

7b. *Calanthe tsoongiana* var. *guizhouensis* Z. H. Tsi, Acta Phytotax. Sin. 23: 386. 1985.

贵州虾脊兰 gui zhou xia ji lan

Lateral lobes of lip nearly axe-shaped, ca. 2.5 × 2.5 mm; mid-lobe ovate, ca. 2.5 × 2 mm. Fl. Apr.

• Dense forests; ca. 800 m. NE Guizhou.

8. *Calanthe sacculata* Schlechter, Repert. Spec. Nov. Regni Veg. Beih. 4: 67. 1919.

囊爪虾脊兰 nang zhao xia ji lan

Calanthe sacculata var. *tchenkeoutinensis* Tang & F. T. Wang.

Plants 25–30 cm tall. Leaves 3, basal, not deciduous; blade elliptic, 14–17 × 3–4.5 cm, glabrous, base petiole-like, apex subacute or acute. Scape arising from leaf axil, erect, to ca. 27 cm, with 1 or 2 bractlike sheaths, puberulent; rachis laxly 4–6-flowered; floral bracts persistent, ovate, apex acuminate. Flowers medium-sized; pedicel and ovary ca. 10 mm, puberulent. Sepals oblong, ca. 15 mm, base contracted, apex subacute; lateral sepals oblique. Petals lanceolate-ligulate, oblique, slightly shorter than sepals, apex acuminate; lip adnate to base of column wings, 3-lobed, spurless, clawed at base, claw concave and forming a shallow sac at base; lateral lobes spreading horizontally, ovate, oblique, ca. 11 mm across their apices, apex obtuse; mid-lobe orbicular, ca. 7 mm wide, apex emarginate and mucronate; disk with 1–3 lamellae; lamellae subovoid, ca. 9 mm. Column short, glabrous. Fl. unknown.

• About 1800 m. Chongqing, Guizhou.

9. *Calanthe tricarinata* Lindley, Gen. Sp. Orchid. Pl. 252. 1833.

三棱虾脊兰 san leng xia ji lan

Alismorkis tricarinata (Lindley) Kuntze; *Calanthe lamellata* Hayata; *C. megalopha* Franchet; *C. undulata* Schlechter; *Paracalanthe lamellata* (Hayata) Kudô; *P. megalopha* (Franchet) Miyabe & Kudô; *P. tricarinata* (Lindley) Kudô.

Plants 35–50 cm tall. Rhizome inconspicuous. Pseudobulbs globose, ca. 2 cm in diam., with 3 sheaths. Leaves 3 or 4, basal, not well developed at anthesis, not deciduous; blade elliptic or obovate-lanceolate, 20–30 × 5–11 cm, abaxially densely puberulent, margin undulate, apex acute or acuminate; petiole-like base sheathing, forming a stout pseudostem 4–15 cm long and 1–2.5 cm in diam.; sheaths large, apex obtuse, lowest one ca. 2 cm, upper sheaths longer. Scape arising from leaf axil, erect, to 60 cm, to 1.5 cm in diam., stout, puberulent, with several to many ovate-lanceolate sterile bracts; rachis 3–20 cm, laxly few to many flowered; floral bracts persistent, ovate-lanceolate, 5–10 mm, membranous, glabrous. Flowers pale yellow, with reddish brown lip; pedicel and ovary 10–20 mm, puberulent. Sepals similar, oblong-lanceolate, 16–18 × 5–8 mm, abaxially sparsely puberulent at base, 5–8-veined, apex acuminate. Petals obovate-lanceolate, 11–15 × 3–5 mm, 3-veined, apex acute or subobtusate; lip adnate to base of column wings, reddish brown, 10–16 × 7–15 mm, spurless, 3-lobed; lateral lobes auriculate or nearly suborbicular, small, ca. 4 × 4–5 mm; mid-lobe reniform, 8–10 × 10–15 mm, margin strongly undulate, apex emarginate and mucronate in sinus; disk with 3–5 crested lamellae. Column ca. 6 mm, thick, ventrally sparsely puberulent; rostellum 2-lobed; anther cap beaked; pollinia narrowly obovoid-globose, ca. 2 mm, with conspicuous caudicles; viscidium elliptic, small, ca. 1 mm. Fl. May–Jun. 2n = 40, 42, 60.

Grassy slopes, forests; 1300–3500 m. S Gansu, Guizhou, Hubei, S Shaanxi, Sichuan, Taiwan, SE Xizang, Yunnan [Bhutan, NE India, Japan, Kashmir, Nepal].

10. *Calanthe ecarinata* Rolfe, J. Linn. Soc., Bot. 29: 318. 1892.

天全虾脊兰 tian quan xia ji lan

Plants to 30 cm tall, without distinct rhizome. Pseudobulbs conic, small, ca. 1 cm in diam., with 3 sheaths. Leaves usually 3, not well developed at anthesis, not deciduous; blade obovate-oblong, 14–15 × 4.5–5 cm, margin slightly undulate, apex acute or obtuse; petiole-like base sheathing, usually forming a pseudostem to ca. 9 cm. Scape arising from leaf axil, erect, densely puberulent; rachis ca. 4 cm, usually ca. 10-flowered; floral bracts persistent, ovate-lanceolate, 4–5 mm, membranous, glabrous, apex acuminate. Flowers pale yellow; pedicel and ovary ca. 10 mm, puberulent. Dorsal sepal elliptic, 10–11 × 5–5.5 mm, abaxially densely puberulent, 5-veined, apex acute; lateral sepals oblong-lanceolate, 10–11 × 4.5–5 mm, abaxially densely puberulent, 5-veined, apex acute. Petals oblong, ca. 4.5 × 3 mm, abaxially often sparsely puberulent at base, apex obtuse; lip adnate to base of column wings, 5.5–7 × 5.5–7 mm, spurless, 3-lobed at base; lateral lobes subsquare, 3–4 × 2.5–3 mm; mid-lobe flabellate, ca. 5 × 6 mm, margin ± undulate, apex emarginate and mucronate in sinus; disk without lamellae or calli. Column ca. 7 mm, dilated at apex, wings not decurrent to base of lip, ventrally puberulent at base; rostellum 2-lobed; lobes ca. 0.8 mm; anther cap ovate, ± beaked; pollinia slightly compressed obovoid, equal in size, ca. 1 mm, with short caudicles; viscidium peltate, small. Fl. Jun.

- Forests; 2400–2500 m. W Sichuan.

11. *Calanthe puberula* Lindley, Gen. Sp. Orchid. Pl. 252. 1833.

镰萼虾脊兰 lian e xia ji lan

Alismorkis puberula (Lindley) Kuntze; *Calanthe amoena* W. W. Smith; *C. lepida* W. W. Smith; *Paracalanthe reflexa* (Maximowicz) Kudô var. *puberula* (Lindley) Kudô.

Plants 25–60 cm tall. Rhizome usually inconspicuous. Pseudobulbs narrowly cylindrical, ca. 2 × 1.5 cm, enclosed in leaf sheaths. Leaves 4 or 5, basal, well developed at anthesis, not deciduous; blade elliptic or elliptic-oblong, 12–22 × 5–7 cm, glabrous or sparsely puberulent along veins abaxially, with 5 main veins, apex acute or acuminate; petiole-like base to 13 cm. Scapes 1 or 2, arising from near apex of pseudobulb, erect, 23–40 cm, slender, with several lanceolate sterile bracts; rachis 6–14 cm, laxly 4–10-flowered; floral bracts persistent, lanceolate, 13–20 mm, abaxially puberulent, apex long acuminate. Flowers pink; pedicel and ovary 15–20 mm, densely puberulent. Sepals similar, ovate-lanceolate, 11–16(–20) × ca. 5 mm, abaxially puberulent, 5-veined, apex cuspidate; lateral sepals oblique. Petals linear, 11–13 × 1–2(–3) mm, 1–3-veined, apex acuminate; lip adnate to base of column wings, 11–13 × 6–11 mm, spurless, 3-lobed; lateral lobes oblong-falcate, 7–9 mm across their apices, margin entire, apex obtuse; mid-lobe rhombic-elliptic to obovate-cuneate, apical margin irregularly dentate or fringed, apex acute; disk without lamellae or calli. Column ca. 6 mm, glabrous; rostellum 3-lobed; anther cap narrowly ovate-cordate, ca. 4 mm; pollinia clavate, ca. 2 mm, with conspicuous caudicles; viscidium linear, ca. 1 mm. Fl. Jun–Aug. $2n = 40, 40 + 1B, 42$.

Evergreen broad-leaved forests; 1200–3000 m. SE Xizang, SE and W Yunnan [Bhutan, NE India, Japan, Nepal, N Vietnam].

12. *Calanthe reflexa* Maximowicz, Bull. Acad. Imp. Sci. Saint-Petersbourg 18: 68. 1873.

反瓣虾脊兰 fan ban xia ji lan

Alismorkis reflexa (Maximowicz) Kuntze; *Calanthe puberula* Lindley var. *reflexa* (Maximowicz) M. Hiroe; *C. similis* Schlechter; *Paracalanthe reflexa* (Maximowicz) Kudô.

Plants 20–45 cm tall. Rhizome inconspicuous. Pseudobulbs short, ca. 1 cm in diam., sometimes inconspicuous. Leaves 4 or 5, basal, well developed at anthesis, not deciduous; blade elliptic, 15–20 × 3–6.5 cm, apex acute; petiole-like base 2–4 cm. Scapes 1 or 2, erect, 20–40 cm, puberulent; rachis 5–20 cm, laxly 10–18-flowered; floral bracts persistent, narrowly lanceolate, 18–24 mm, glabrous, apex acuminate. Flowers pale purplish pink; pedicel and ovary ca. 20 mm, glabrous. Sepals similar, strongly reflexed, ovate-lanceolate, 15–20 × ca. 5 mm, abaxially puberulent, 5-veined, apex cuspidate-acute; lateral sepals oblique. Petals reflexed, linear, 15–18 × 1–3 mm, 1–3-veined, apex acuminate; lip adnate to base of column wings, 9–11 × 7–10 mm, spurless, 3-lobed; lateral lobes oblong-falcate, ca. 8 mm across their apices, margin entire, apex obtuse; mid-lobe subelliptic or obovate-cuneate, ca. 8 × 8 mm, apical margin irregularly dentate, apex acute; disk without lamellae or calli. Column ca. 6 mm, glabrous; rostellum 3-lobed; lobes narrowly falcate, mid-lobe shorter and sharply tooth-shaped. Fl. May–Jun. $2n = 40, 42$.

Evergreen broad-leaved forests, mossy rocks on streamsides or along valleys; 600–2500 m. Anhui, N Guangdong, N Guangxi, Guizhou, Hubei, Hunan, Jiangxi, W Sichuan, Taiwan, NE and SW Yunnan, Zhejiang [Japan, Korea].

13. *Calanthe alpina* J. D. Hooker ex Lindley, Fol. Orchid. 6–7(Calanthe): 4. 1855.

流苏虾脊兰 liu su xia ji lan

Alismorkis alpina (J. D. Hooker ex Lindley) Kuntze; *Calanthe buccinifera* Rolfe; *C. fimbriata* Franchet; *C. fimbriatomarginata* Fukuyama; *C. schlechteri* H. Hara.

Plants 25–50 cm tall. Rhizome inconspicuous. Pseudobulbs narrowly conic, small, ca. 7 mm in diam. Leaves 3, well developed at anthesis, not deciduous; blade elliptic or obovate-elliptic, 11–26 × 3–6(–9) cm, apex obtuse-rounded and mucronate or acute; petiole-like base sheathing, sometimes forming a pseudostem to ca. 7 cm. Scape 1 or rarely 2, arising from leaf axils, erect, 30–50 cm, sparsely puberulent; rachis 3–12 cm, laxly to densely 3- to more than 10-flowered; floral bracts persistent, narrowly lanceolate, ca. 1.5 cm, glabrous, apex acuminate. Flowers pale yellow-green, with pink-purple blotches and striations; pedicel and ovary ca. 20 mm, sparsely puberulent. Dorsal sepal subelliptic, 15–20 × 5–6 mm, 5-veined, apex aristate; lateral sepals ovate-lanceolate, 15–20 × 6–7 mm, 5-veined, apex aristate. Petals narrowly oblong to ovate-lanceolate, 12–13 × 4–4.5 mm, 3-veined, apex acute to acuminate; lip basally adnate to base of column wings, pale greenish white, basal half yellow, apical half with purplish red stria-

tions, suborbicular-flabellate, ca. 8 × 15 mm, base broadly truncate, unlobed, apical margin fimbriate, apex emarginate; spur straight, yellow or pale violet, cylindrical, 15–35 × 3–5 mm, apex obtuse. Column white, ca. 8 mm, dilated at apex, glabrous; rostellum 2-lobed; lobes ca. 1 mm; pollinia obovoid, ca. 1.3 mm, with short caudicles; viscidium suboblong, small. Capsule obovoid-elliptic, ca. 2 × 1.5 cm. Fl. Nov. $2n = 40, 42$.

Forests, grassy slopes; 1500–3500 m. S Gansu, Shaanxi, Sichuan, Taiwan, S and SE Xizang, W Yunnan [Bhutan, NE India, Japan, Nepal].

14. *Calanthe whiteana* King & Pantling, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 65: 121. 1896.

四川虾脊兰 si chuan xia ji lan

Calanthe wardii W. W. Smith.

Plants ca. 80 cm tall. Rhizome inconspicuous. Pseudobulbs conic, ca. 1 cm in diam., enclosed in leaf sheaths. Leaves usually 3, not well developed at anthesis, suberect, not deciduous; blade ensiform or narrowly oblong-ob lanceolate, ca. 32 × 2.5–4.5 cm, apex acute; petiole-like base usually forming a pseudostem to ca. 7 cm long and ca. 1.5 cm in diam. Scape arising from leaf axil, erect, to 70 cm, stout, puberulent, with 1 or 2 tubular sheaths; rachis 9–20 cm, laxly 10–20-flowered; floral bracts persistent, reflexed, narrowly lanceolate, 10–30 mm, sparsely puberulent. Flowers pale yellow to yellowish green, turning black when dried; pedicel and ovary ca. 10 mm, puberulent. Dorsal sepal reflexed, ovate-lanceolate, 9–10 × 3.5–4 mm, abaxially slightly puberulent, apex obtuse; lateral sepals reflexed, ovate, oblique, 9–10 × 4.5–5 mm, abaxially slightly puberulent, apex obtuse. Petals narrowly elliptic or ovate-lanceolate, 8–9 × 2.5–3 mm, midvein conspicuous, apex obtuse; lip yellowish white, reniform, ca. 5 × 13 mm, base adnate to column wings, unlobed, entire or slightly erose at margin, apex emarginate and mucronate in sinus; disk with 3 crested, papillose lamellae; spur cylindrical, 8–10 × ca. 1.3 mm, outside and inside puberulent, ± attenuate toward apex. Column white, ca. 3 mm, thick, dilated toward apex, puberulent, wings decurrent to base of lip; rostellum 2-lobed; lobes ca. 1 mm; anther small; pollinia unequal in size, 4 subovoid and others subclavate; viscidium suborbicular. Fl. May–Jun.

Forests, shrubby slopes; 1000–1800 m. N and SW Sichuan [Bhutan, NE India, N Myanmar].

15. *Calanthe fargesii* Finet, Bull. Soc. Bot. France 46: 434. 1900.

天府虾脊兰 tian fu xia ji lan

Plants 30–45 cm tall. Pseudobulbs short, partially covered with sheaths. Leaves 4 or 5, not deciduous; blade narrowly oblong, 30–40 × 1.5–2.6 cm, apex acute; petiole-like base sheathing, ca. 15 cm, usually forming a pseudostem 3–4 cm. Scape arising from leaf axil, to 65 cm, densely puberulent, with a sheath near middle; rachis ca. 20 cm, laxly many flowered; floral bracts persistent, narrowly lanceolate, 15–20 mm, glabrous, apex acute. Flowers yellowish green, tinged with brown, opening widely; pedicel and ovary ca. 20 mm, densely puberulent. Sepals similar, narrowly ovate-lanceolate, 16–25 × 4.2–6 mm, abaxially sparsely puberulent, 5-veined, apex acute; lateral

sepals somewhat oblique, abaxially sparsely puberulent only at base. Petals linear, 12–24 × 2–2.4 mm, glabrous, 1–3-veined, apex acute; lip adnate to entire length of column wings, 8–12 × 6–11 mm, 3-lobed; lateral lobes ovate-triangular, small, apex acute; mid-lobe purplish red, rhombic-obovate, 6–11 × 6–11 mm, margin undulate and slightly erose, apex acute; disk glabrous or sparsely puberulent; spur slightly curved, cylindrical, ca. 6 × 1 mm, outside puberulent. Column ca. 5 mm, dilated toward apex, sparsely puberulent; anther cap beaked; pollinia narrowly ovoid, unequal in size; rostellum 2-lobed; lobes ca. 1.7 mm. Fl. Jul–Aug.

• Damp places in dense forests; 1300–1700 m. Chongqing, S Gansu, W Guizhou, NE and S Sichuan.

16. *Calanthe simplex* Seidenfaden, Dansk Bot. Ark. 29(2): 42. 1975.

匙瓣虾脊兰 chi ban xia ji lan

Plants 30–60 cm tall. Rhizome inconspicuous. Pseudobulbs conic, ca. 2 cm in diam., enclosed in leaf sheaths. Leaves 3, well developed and spreading at anthesis, not deciduous; blade oblong, ca. 30 × 4–7 cm, apex acute; petiole-like base sheathing, ca. 10 cm. Scape arising from leaf axil, erect, to 70 cm, stout, densely puberulent, with 2 tubular sheaths above middle; rachis 20–32 cm, laxly ca. 20-flowered; floral bracts persistent, lanceolate, 10–25 mm, abaxially densely puberulent. Flowers yellowish green; pedicel and ovary ca. 15 mm, densely puberulent. Dorsal sepal elliptic, 9–11 × 5–5.5 mm, abaxially densely villous, 5-veined, apex acute; lateral sepals oblong, slightly oblique, 11–13 × ca. 6 mm, abaxially densely villous, 5-veined, apex acute. Petals obovate-lanceolate or spatulate, ca. 10 × 4–4.5 mm, abaxially densely villous, 3-veined, apex acute; lip adnate to entire length of column wings, reniform, ca. 6 × 12 mm, ± fleshy, unlobed, undulate at margin, apex slightly emarginate and with a recurved mucro in sinus; disk with 3 slightly fleshy ridges at base, irregularly papillose; spur cylindrical, 11–14 mm, slightly dilated toward apex. Column 7–8 mm, thick, dilated toward apex, densely villous, wings decurrent to base of lip; rostellum 2-lobed; lobes ca. 1 mm; pollinia narrowly ovoid, equal in size, ca. 1 mm. Fl. Oct–Dec.

Mixed forests; 2400–2600 m. SW Yunnan [N Thailand].

17. *Calanthe petelotiana* Gagnepain, Bull. Soc. Bot. France 79: 163. 1932.

圆唇虾脊兰 yuan chun xia ji lan

Plants ca. 30 cm tall. Rhizome inconspicuous. Pseudobulbs very small, enclosed in leaf sheaths. Leaves 2 or 3, not deciduous; blade oblanceolate, ca. 30 × 5.5–8 cm, abaxially puberulent, apex subacute; petiole-like base 14–22 cm, usually forming a pseudostem 15–17 × ca. 1 cm. Scape arising from leaf axil, erect, 20–22 cm, puberulent; rachis 6–12 cm, ca. 10-flowered; floral bracts persistent, lanceolate, 5–7 mm, puberulent. Flowers white, tinged with pale purple, thinly textured; pedicel and ovary ca. 18 mm, puberulent. Dorsal sepal ovate-lanceolate, ca. 16 × 7 mm, abaxially puberulent, 5-veined, apex acute; lateral sepals ovate, slightly oblique, ca. 18 × 9 mm, abaxially puberulent, 5-veined, apex acute. Petals oblong, ca.

15 × 4–5 mm, glabrous, 3-veined, apex acute; lip adnate to entire length of column wings, elliptic, ca. 8 × 14 mm, base subtruncate, margin unlobed, apical margin undulate, apex emarginate and mucronate in sinus; disk with 3 or 5 fleshy lamellae; lamellae thickened toward apex, sometimes minutely crested; spur straight, cylindrical, ca. 28 mm, attenuate toward apex, outside puberulent, densely villous around mouth. Column ca. 5 mm, thick, dilated toward apex, puberulent, wings slightly decurrent to lip and connecting to lamellae on disk; rostellum 2-lobed; lobes ca. 2.1 mm; anther cap beaked; clinandrium densely puberulent; pollinia obovoid, ca. 2 mm; viscidium suboblong, small. Fl. Mar.

Damp places in forests; ca. 1700 m. NW Guizhou, SE Yunnan [N Vietnam].

18. *Calanthe biloba* Lindley, *Fol. Orchid.* 6–7(*Calanthe*): 3. 1855.

二裂虾脊兰 *er lie xia ji lan*

Alismorkis biloba (Lindley) Kuntze.

Plants to 60 cm tall. Pseudobulbs cylindrical, ca. 10 × 0.8 cm, 4- or 5-noded, internodes ca. 2 cm. Leaves 2 or 3, well developed at anthesis, not deciduous; blade broadly elliptic, 12–17 × 7–8 cm, papery, apex mucronate; petiole-like base sheathing, ca. 8 cm. Scape arising from leaf axil, erect, ca. 50 cm, densely puberulent, with 2 tubular sheaths below middle; rachis ca. 11 cm, laxly more than 10-flowered; floral bracts persistent, narrowly lanceolate, 10–17 mm, glabrous, apex acuminate. Flowers large, purplish with a yellowish lip; pedicel and ovary 20–25 mm, densely puberulent. Dorsal sepal broadly ovate, ca. 15 × 6–7 mm, abaxially puberulent, 5-veined, apex aristate; lateral sepals ovate, oblique, ca. 15 × 7–8 mm, abaxially densely puberulent, 5-veined, apex aristate. Petals oblong, ca. 15 × 4.5 mm, glabrous, 3-veined, apex aristate; lip adnate to base of column wings, subreniform, ca. 15 × 20 mm, clawed, deeply 2-lobed, apiculate in sinus; lobes subrhombic, margin erose, apex obtuse; disk without lamellae and other appendages; spur narrowly conic, ca. 2 mm, apex slightly obtuse. Column ca. 5 mm, thick, slightly dilated toward apex, glabrous; rostellum 2-lobed; pollinia slightly narrowly ovoid, similar in size; viscidium narrowly oblong, ca. 1 mm. Fl. Oct. $2n = 38, 48, 80$.

Thickets on streamsides; ca. 1800 m. SW and W Yunnan [Bhutan, NE India, Myanmar, Nepal].

19. *Calanthe dulongensis* H. Li, R. Li & Z. L. Dao, *Acta Phytotax. Sin.* 41: 267. 2003.

独龙虾脊兰 *du long xia ji lan*

Plants ca. 50 cm tall. Rhizome ca. 6.5 cm, ca. 1 cm in diam. Pseudobulbs subovoid, ca. 1.5 × 2 cm, enclosed in sheaths. Leaves 3, subbasal, well developed at anthesis, not deciduous; blade elliptic or obovate-elliptic, 16–22 × 4.5–7.5 cm, glabrous, apex acute or acuminate; petiole-like base sheathing, 14–18 cm, usually forming a pseudostem. Scape axillary, to 38 cm, densely puberulent, with 2 or 3 sheaths; rachis ca. 16 cm, laxly 20–25-flowered; floral bracts persistent, white, lanceolate, 9–11 mm, abaxially puberulent. Flowers yellow-green, lip yellow and flushed white; pedicel and ovary 18–25 mm, densely

puberulent. Dorsal sepal oblong-elliptic, ca. 18 × 6 mm, apex acute; lateral sepals elliptic, ca. 15 × 4 mm, apex mucronate. Petals obovate-lanceolate, ca. 15 × 5 mm; lip adnate to column wing, base clawed, deeply 3-lobed; lateral lobes narrowly oblong, ca. 6 × 2 mm; mid-lobe reniform, ca. 5 × 7.5 mm, apex broadly emarginate and mucronate in sinus; disk with 3 golden yellow, globose, wartlike calli near base; spur straight, yellow, cylindrical, ca. 5.5 mm, outside sparsely puberulent. Column ca. 8 mm, glabrous; rostellum 2-lobed. Fl. Apr.

• Mixed forests; 1900–2300 m. SW Yunnan.

20. *Calanthe sinica* Z. H. Tsi, *Bull. Bot. Res.*, Harbin 15: 419. 1995.

中华虾脊兰 *zhong hua xia ji lan*

Plants 25–34 cm tall. Rhizome short or inconspicuous. Pseudobulbs ovoid-conic, 1–2 × ca. 1 cm. Leaves 4, well developed and spreading at anthesis, not deciduous; blade elliptic, 12–22 × 4–7.5 cm, both surfaces densely pubescent, apex acute; petiole-like base 3–7 cm. Scape arising from leaf axil, erect, to 34 cm, densely puberulent; rachis 2–3 cm, laxly ca. 10-flowered; floral bracts persistent, green, ovate-lanceolate, ca. 15 mm, abaxially densely puberulent. Flowers purplish red; pedicel with ovary ca. 20 mm, densely puberulent. Sepals similar, elliptic, ca. 18 × 8 mm, abaxially densely puberulent, 3- or 4-veined, apex acute. Petals elliptic, ca. 13 × 7 mm, abaxially sparsely puberulent near apex, 3- or 4-veined, apex acute; lip adnate to entire length of column wings, 8–9 mm, 3-lobed; lateral lobes suborbicular or square, ca. 2.2 × 2.1 mm; mid-lobe flabellate, ca. 9 mm wide, base cuneate, apex slightly emarginate; disk with 4 brown spots, base with 3 yellow wartlike calli; spur narrowly clavate, ca. 25 mm, outside sparsely puberulent. Column thick, ca. 5 × 4 mm, wings sparsely puberulent; rostellum 2-lobed; anther cap narrow, beaked. Fl. Jul–Aug.

• Evergreen broad-leaved forests; ca. 1100 m. SE Yunnan.

21. *Calanthe sylvatica* (Thouars) Lindley, *Gen. Sp. Orchid. Pl.* 250. 1833.

长距虾脊兰 *chang ju xia ji lan*

Centrosia sylvatica Thouars, *Hist. Orchid. ad t.* 35, 36. 1822; *Alismorkis masuca* (D. Don) Kuntze; *A. textorii* (Miquel) Kuntze; *Bletia masuca* D. Don; *B. sylvatica* (Thouars) Bojer; *Calanthe furcata* Bateman ex Lindley f. *masuca* (D. Don) M. Hiroe; *C. furcata* f. *textorii* (Miquel) M. Hiroe; *C. kintaroi* Yamamoto; *C. longicalcarata* Hayata ex Yamamoto; *C. masuca* (D. Don) Lindley; *C. masuca* var. *sinensis* Rendle; *C. seikooensis* Yamamoto; *C. textorii* Miquel; *C. textorii* var. *longicalcarata* (Hayata ex Yamamoto) Garay & H. R. Sweet; *Zoduba masuca* (D. Don) Buchanan-Hamilton.

Plants to 80 cm tall, without distinct rhizome. Pseudobulbs conic, 1–2 × ca. 1 cm. Leaves 3–6, well developed and spreading at anthesis, not deciduous; blade elliptic to obovate, 20–40 × ca. 10.5 cm, abaxially sparsely pubescent, apex acute or acuminate; petiole-like base 11–23 cm. Scape arising from leaf axil, erect, 45–75 cm, stout, with 2 tubular sheaths below middle; rachis laxly to subdensely many flowered; floral bracts persistent, lanceolate, 10–18 mm, densely puberulent. Flowers

pale pinkish purple with purple lip sometimes flushed orange; pedicel and ovary ca. 35 mm, densely puberulent. Dorsal sepal elliptic, 18–23 × 6–10 mm, abaxially sparsely puberulent, 5–7-veined, apex acute; lateral sepals oblong, 20–28 × 6–9 mm, abaxially sparsely puberulent, 5–7-veined, apex acute and shortly caudate. Petals obovate or broadly oblong, 15–20 × 9–12 mm, 5-veined, apex obtuse or subacute; lip adnate to entire length of column wings, 11–17 × 6–14 mm, 3-lobed; lateral lobes falcate-lanceolate, ca. 5 × 1.5–2 mm, attenuate toward apex; mid-lobe flabellate or reniform, 10–14 mm wide, base shortly clawed, apex emarginate or shallowly 2-lobed; disk with 3 rows of small, yellow, crested warts at base; spur cylindrical, 25–50 mm, outside sparsely puberulent, apex obtuse. Column ca. 5 mm, dilated at apex, nearly glabrous; rostellum 2-lobed; lobes ca. 0.7 mm; pollinia narrowly obovoid, equal in size, ca. 2 mm; viscidium suboblong, small. Fl. Apr–Sep. $2n = 20, 40, 42, 52$.

Forests, damp places on riversides, along valleys; 800–2000 m. Guangdong, N and SE Guangxi, Hunan, Taiwan, SE Xizang, S and SE Yunnan [Bhutan, India, Indonesia, Japan, Malaysia, Myanmar, Nepal, Sri Lanka, Thailand, Vietnam; Africa, Madagascar].

22. *Calanthe ×dominyi* Lindley, Gard. Chron. 1858: 4. 1858 [*“dominii”*].

白花长距虾脊兰 bai hua chang ju xia ji lan

Calanthe albolongicalcarata S. S. Ying; *C. matsumurana* Schlechter.

Plants ca. 50 cm tall. Pseudobulbs very small, completely enclosed in leaf sheaths. Leaves 5–8, well developed and spreading at anthesis, not deciduous; blade 15–25 × 5–8 cm, glabrous or sometimes with hairs on veins, apex acute or acuminate; petiole-like base 3–9 cm. Scape arising from leaf axil, 35–45 cm, 3–4 mm in diam., puberulent, with 2 sterile bracts; rachis 5–10 cm, subdensely 10–20-flowered; floral bracts persistent, lanceolate, 12–18 mm, glabrous, apex acuminate. Flowers white, flushed purple on outer surfaces, with pinkish purple lip; pedicel and ovary 20–25 mm, puberulent. Sepals similar, elliptic, 10–15 × 7–8 mm, abaxially sparsely puberulent, apex acute and shortly caudate. Petals obovate or obovate-lanceolate, 10–13 × 4–6 mm, glabrous, apex acute; lip adnate to entire length of column wings, ca. 15 × 12–18 mm, 3-lobed; lateral lobes narrowly elliptic, 4–7 × 4–5 mm, apex obtuse; mid-lobe broadly orbicular, 8–10 × 7–9 mm, apex divided by a deep sinus into 2 lobules, apiculate in sinus; lobules divergent, narrowly elliptic, ca. 10 × 5 mm, margin undulate, apex obtuse; disk with a cluster of wartlike yellow calli at base; spur 2–3 × 1–1.5 mm. Column ca. 2 mm; rostellum 2-lobed. Fl. Jun.

• Forests; 500–1300 m. Taiwan.

Calanthe ×dominyi was first named from an artificial hybrid between *C. masuca* (a synonym of *C. sylvatica* in the present treatment) and *C. triplicata* but subsequently has been found as a naturally occurring hybrid.

23. *Calanthe odora* Griffith, Not. Pl. Asiat. 3: 365. 1851.

香花虾脊兰 xiang hua xia ji lan

Alismorkis angusta (Lindley) Kuntze; *A. odora* (Griffith) Kuntze; *Calanthe angusta* Lindley; *C. angusta* var. *laeta* Han-

del-Mazzetti; *C. shweliensis* W. W. Smith.

Plants 25–50 cm tall. Pseudobulbs subconic, ca. 5 mm in diam., with 2 or 3 sheaths. Leaves 2 or 3, not well developed at anthesis, not deciduous; blade elliptic or elliptic-lanceolate, (9–)12–14(–22) × (2.5–)3–4(–5) cm, apex acuminate; petiole-like base short, often forming a pseudostem ca. 5 cm. Scape arising from previous year’s leafless pseudobulb, erect, puberulent; rachis 2–5 cm, densely few to many flowered; floral bracts persistent, ovate-lanceolate, ca. 8 mm, abaxially puberulent. Flowers white; pedicel and ovary 10–14 mm, puberulent. Sepals similar, ovate-elliptic, 9–11 × 4–5(–7) mm, abaxially puberulent, 5-veined, apex acute. Petals subspatulate, 9–11 × 3–5 mm, glabrous, 3-veined, apex truncate and slightly mucronate; lip adnate to entire length of column wings, 8–10 × 6–8 mm, deeply 3-lobed; lateral lobes suboblong or obliquely ovate; mid-lobe subreniform, divided by a deep triangular sinus into 2 lobules, apiculate in sinus; lobules divergent, subobovate; disk with a semicircular cluster of many tuberous, wartlike calli at base; spur straight, cylindrical, 7–8 mm, outside sparsely puberulent. Column ca. 3 mm, dilated toward apex, sparsely puberulent; rostellum 2-lobed, lobes ca. 1.2 mm; pollinia subclavate, ca. 1.5 mm; viscidium suborbicular, small. Fl. May–Jul.

Broad-leaved forests, shaded and damp places on grassy slopes; 700–1300 m. NW and W Guangxi, Guizhou, Yunnan [Bangladesh, Bhutan, Cambodia, NE India, Laos, N Thailand, Vietnam].

24. *Calanthe davidii* Franchet, Nouv. Arch. Mus. Hist. Nat., sér. 2, 10: 85. 1888 [*“davidii”*].

剑叶虾脊兰 jian ye xia ji lan

Alismorkis pachystalix (H. G. Reichenbach ex J. D. Hooker) Kuntze; *Calanthe bungenana* Ohwi; *C. davidii* var. *bungenana* (Ohwi) T. Hashimoto; *C. ensifolia* Rolfe; *C. furcata* Bateman ex Lindley f. *matsudae* (Hayata) M. Hiroe; *C. matsudae* Hayata; *C. pachystalix* H. G. Reichenbach ex J. D. Hooker.

Plants usually clustered, 32–70 cm tall, without distinct rhizome. Pseudobulbs often enclosed in leaf sheaths. Leaves 3 or 4, well developed and spreading at anthesis, not deciduous; blade ensiform or lorate, 18–65 × 0.8–2(–5) cm, glabrous, with 3 main veins, apex acute; petiole-like base inconspicuous or sometimes forming a pseudostem 4–10 cm. Scape arising from leaf axil, erect, 30–120 cm, stout, densely puberulent; rachis 8–20(–30) cm, subdensely many flowered; floral bracts persistent, reflexed, narrowly lanceolate, 10–15 mm, abaxially puberulent. Flowers yellowish green or white, sometimes tinged purple. Sepals similar, reflexed, subelliptic, 6–9 × ca. 4 mm, abaxially nearly glabrous or densely puberulent, 5-veined, apex acute or obtuse. Petals reflexed, narrowly oblong-ob lanceolate, 6–9 × 1.8–2.2 mm, glabrous, 3-veined, base clawed, apex obtuse or acute; lip adnate to entire length of column wings, broadly triangular, 6–9 × 4–9 mm, 3-lobed; lateral lobes oblong, falcate-oblong, or ovate-triangular, ca. 9 mm across their apices, apex obliquely truncate and obtuse; mid-lobe divided by a deep sinus into 2 lobules; lobules divergent, suboblong, narrower than lateral lobes; disk with 3 clusters of wartlike calli extending almost to sinus of mid-lobe; spur curved, cylindrical, 5–12 mm, outside sparsely puberulent, inside densely puberulent. Column

ca. 3 mm, thick, dilated toward apex, nearly glabrous or sparsely puberulent; rostellum 2-lobed; lobes ca. 1 mm; pollinia nearly pear-shaped or obovoid, equal in size, ca. 1 mm, with short caudicles; viscidium small. Capsule ovoid, ca. 13 × 7 mm. Fl. Jun–Jul, fr. Sep–Oct. $2n = 40, 44$.

Forests, shaded places along valleys; 500–3300 m. S Gansu, Guizhou, Hubei, NW Hunan, S Shaanxi, Sichuan, Taiwan, SE Xizang, SE and W Yunnan [N India, Japan, Nepal, Vietnam].

25. *Calanthe herbacea* Lindley, Fol. Orchid. 6–7(Calanthe): 10. 1855.

西南虾脊兰 xi nan xia ji lan

Alismorkis herbacea (Lindley) Kuntze; *Calanthe brevicolumna* Hayata.

Plants 30–70 cm tall. Rhizome inconspicuous. Pseudobulbs nearly narrowly ovoid or cylindrical, very small, 1–2.5 cm × 5–15 mm, with 2 sheaths. Leaves 3 or 4, well developed and spreading at anthesis, not deciduous; blade elliptic or elliptic-lanceolate, 15–30 × ca. 9 cm, abaxially puberulent, 3- or 4-veined, apex acute or acuminate; petiole-like base 10–20 cm, slender. Scape arising from leaf axil, erect, to 70 cm, puberulent; rachis 8–15 cm, laxly ca. 10-flowered; floral bracts persistent, lanceolate, ca. 10 mm, abaxially puberulent. Flowers yellowish green; pedicel and ovary ca. 30 mm, puberulent. Dorsal sepal reflexed, obovate-lanceolate, ca. 15 × 7 mm, abaxially puberulent, 5-veined, apex obtuse and mucronate; lateral sepals reflexed, elliptic, oblique, ca. 15 × 6 mm, abaxially puberulent, 5-veined, base clawed, apex acute. Petals reflexed, subspatulate, ca. 12 × 2–2.5 mm, glabrous, apex obtuse; lip adnate to entire length of column wings, deeply 3-lobed; lateral lobes ovate, 6–7 × ca. 5 mm, apex obliquely truncate; mid-lobe divided by a deep sinus into 2 lobules, apiculate in sinus; lobules divergent, ca. as large as lateral lobes; disk with a cluster of yellow wartlike calli at base; spur slightly arcuate, yellowish green, 20–30 mm, slender, outside puberulent, apex obtuse. Column white, ca. 7 mm, dilated at apex, subglabrous; rostellum 2-lobed; anther cap white; pollinia clavate, subequal in size, ca. 2 mm; viscidium subsquare, ca. 1 mm. Fl. Jun–Aug. $2n = 40, 40 + 2B, 42$.

Humid places in dense forests, along valleys; 1500–2100 m. S Guangxi, SE Xizang, S and SE Yunnan [India (Sikkim), Vietnam].

26. *Calanthe argenteostriata* C. Z. Tang & S. J. Cheng, Orchid Rev. 89: 144. 1981 [*“argenteo-striata”*].

银带虾脊兰 yin dai xia ji lan

Plants to ca. 65 cm tall, without conspicuous rhizome. Pseudobulbs subconic, small, ca. 1.5 cm in diam., with 2 or 3 sheaths. Leaves 3–7, well developed at anthesis, not deciduous; blade deep green, with 5 or 6 silver-gray bands adaxially, elliptic or ovate-lanceolate, 18–27 × 5–11 cm, glabrous or abaxially slightly puberulent, apex acute; petiole-like base 3–4 cm. Scape arising from leaf axil, to 60 cm, densely puberulent, with 3 or 4 tubular sheaths; rachis 7–11 cm, subdensely more than 10-flowered; floral bracts persistent, broadly ovate, ca. 15 mm, abaxially puberulent. Flowers yellowish green; pedicel and ovary 25–30 mm, puberulent. Sepals and petals ± yellowish

green; dorsal sepal reflexed, elliptic, ca. 10 × 4.5 mm, abaxially puberulent, 5-veined, apex obtuse and shortly aristate; lateral sepals reflexed, broadly ovate-elliptic, ca. 10 × 5.5 mm, abaxially puberulent, 5-veined, apex obtuse and shortly aristate. Petals ± reflexed, subspatulate or obovate, slightly smaller than sepals, glabrous, 3-veined, apex subtruncate and mucronate; lip adnate to entire length of column wings at base, white, ca. 16 × 16 mm, 3-lobed; lateral lobes flabellate, ca. 7 × 7 mm, apex rounded; mid-lobe divided by a deep sinus into 2 lobules, apiculate in sinus; lobules obovate, ca. as large as lateral lobes, margin slightly erose, apex truncate; disk with 3 rows of small, golden yellow, wartlike calli at base; spur yellowish green, cylindrical, 15–19 mm, outside sparsely puberulent, attenuate toward apex. Column white, ca. 5 mm; rostellum horn-shaped, 2-lobed; anther cap white, beaked; pollinia narrowly obovoid or narrowly clavate, subequal in size, ca. 2 mm, with short caudicles; viscidium subsquare. Capsule ca. 30 mm. Fl. Apr–May. $2n = 45^*$.

Forests; 500–1200 m. N Guangdong, SW Guangxi, SW Guizhou, SE Yunnan [Vietnam].

27. *Calanthe alismatifolia* Lindley, Fol. Orchid. 6–7(Calanthe): 8. 1855 [*“alismifolia”*].

泽泻虾脊兰 ze xie xia ji lan

Alismorkis alismatifolia (Lindley) Kuntze; *A. japonica* (Blume ex Miquel) Kuntze; *Calanthe austrokiusiuensis* Ohwi; *C. fauriei* Schlechter; *C. furcata* Bateman ex Lindley var. *alismatifolia* (Lindley) M. Hiroe; *C. furcata* f. *fauriei* (Schlechter) M. Hiroe; *C. japonica* Blume ex Miquel; *C. nigropuncticulata* Fukuyama.

Plants 20–45 cm tall. Rhizome inconspicuous. Pseudobulbs cylindrical, 1–3 cm × 3–5 mm. Leaves 3–6, basal, well developed and spreading at anthesis, not deciduous; blade elliptic to ovate-elliptic, 10–23 × 4–12 cm, glabrous or abaxially sometimes with short hairs, apex acute; petiole-like base 6–20 cm, slender. Scapes 1 or 2, arising from leaf axils, erect, 10–28 cm, slender, densely puberulent; rachis 3–4 cm, subdensely to densely 3- to more than 10-flowered; floral bracts persistent, slightly recurved, broadly ovate-lanceolate, 5–10 mm, abaxially sparsely puberulent. Flowers white, sometimes tinged purplish violet; pedicel and ovary 10–20 mm, puberulent. Sepals similar, subobovate, ca. 10 × 6 mm, abaxially pilose, 5-veined. Petals subrhombic, ca. 8 × 4 mm, glabrous, 3-veined, apex obtuse; lip adnate to entire length of column wings, spreading, deeply 3-lobed; lateral lobes linear or narrowly oblong, ca. 8 × 2 mm, apex rounded; mid-lobe flabellate, ca. 17 × 12 mm, base clawed, apex subtruncate, divided by a deep sinus into 2 lobules; lobules subrhombic, much larger than lateral lobes, 5–6 mm wide, margin entire or erose, apex truncate-obtuse; disk with several yellow, wartlike calli at base; spur straight, cylindrical, ca. 10 mm, slender, glabrous. Column ca. 3 mm, slightly dilated at apex, glabrous; rostellum 2-lobed; lobes ca. 1.2 mm; pollinia ovoid, subequal in size, ca. 2 mm. Capsule ca. 20 × 6 mm. Fl. Jun–Jul. $2n = 40, 44$.

Evergreen broad-leaved forests; 700–2100 m. Guangxi, Guizhou, Hubei, Hunan, Sichuan, Taiwan, SE Xizang, SE and W Yunnan, Zhejiang [Bhutan, NE India, Japan, Vietnam].

28. *Calanthe triplicata* (Willemet) Ames, Philipp. J. Sci., C, 2: 326. 1907 [*"triplicatis"*].

三褶虾脊兰 san zhe xia ji lan

Orchis triplicata Willemet, Ann. Bot. (Usteri) 18: 52. 1796; *Alismorkis furcata* (Bateman ex Lindley) Kuntze; *A. veratrifolia* Kuntze, nom. illeg. superfl.; *Amblyglottis veratrifolia* Blume, nom. illeg. superfl.; *Calanthe furcata* Bateman ex Lindley; *C. rubicallosa* Masamune; *C. triplicata* f. *purpureo-flora* S. S. Ying; *C. veratrifolia* Ker Gawler, nom. illeg. superfl.; *Limodorum veratrifolium* Willdenow, nom. illeg. superfl.

Plants 40–100 cm tall. Rhizome inconspicuous. Pseudobulbs ovoid-cylindric, 1–3 × 1–2 cm, with 2 or 3 sheaths. Leaves 3 or 4, well developed and spreading at anthesis, not deciduous; blade elliptic or elliptic-lanceolate, 20–60 × 5–12 cm, glabrous or sometimes puberulent abaxially, apex acute; petiole-like base 10–18 cm. Scape arising from leaf axil, erect, 30–70 cm, puberulent; rachis 5–20 cm, densely many flowered; floral bracts persistent, ovate-lanceolate, 10–20 mm, puberulent or sometimes nearly glabrous. Flowers white, occasionally purplish red, later turning orange, turning black when dried; pedicel and ovary 30–40 mm, puberulent. Dorsal sepal recurved, subelliptic, 10–12 × 4.5–5.5 mm, abaxially puberulent, 5-veined, apex acute or apiculate; lateral sepals recurved, obovate-lanceolate, slightly oblique, 10–13 × 5–6 mm, abaxially puberulent, 5-veined. Petals recurved, obovate-lanceolate, 8–10 × 3–4.5 mm, abaxially puberulent, 3-veined, base clawed; lip adnate to entire length of column wings, 12–18 × ca. 14 mm, deeply 3-lobed; lateral lobes oblong to narrowly obovate-cuneate, ca. 7 × 3 mm, apex obtuse; mid-lobe divided by a deep sinus into 2 lobules, shortly apiculate in sinus; lobules divergent, linear-oblong, ca. as large as lateral lobes, ca. 3 mm wide; disk with 3 or 4 rows of small, golden or orange-red, wartlike calli at base; spur straight, white, cylindric, (6–)12–15 mm, slender, outside sparsely puberulent, apex obtuse. Column ca. 5 mm, dilated at apex, sparsely puberulent; rostellum 2-lobed; lobes suboblong, ca. 2 mm, apex subtruncate; pollinia clavate, unequal in size, 2–4 mm, with conspicuous caudicles; viscidium subelliptic, small. Fl. Apr–May. $2n = 18, 20, 40, 42$.

Evergreen broad-leaved forests; 700–2400 m. S Fujian, Guangdong, Guangxi, Hainan, Taiwan, N and SE Yunnan [Bhutan, Cambodia, India, Indonesia, Japan, Laos, Malaysia, Philippines, Sri Lanka, Vietnam; Australia, Madagascar, SW Pacific islands].

29. *Calanthe yuana* Tang & F. T. Wang, Bull. Fan Mem. Inst. Biol. Bot. 7: 7. 1936.

峨边虾脊兰 e bian xia ji lan

Plants to 70 cm tall, without distinct rhizome. Pseudobulbs conic, small, ca. 1 cm in diam., with 3 sheaths. Leaves 4, well developed and spreading at anthesis, not deciduous; blade elliptic, 18–21 × 4–6.5 cm, abaxially puberulent, apex shortly acuminate; petiole-like base sheathing, 7–10 cm, usually forming a pseudostem ca. 10 cm. Scape arising from leaf axil, erect, densely puberulent; rachis ca. 29 cm, laxly 14-flowered; floral bracts persistent, lanceolate, 4–6.5 mm, glabrous, apex acuminate. Flowers yellowish, with a white lip; pedicel and ovary 16–20 mm, densely puberulent. Dorsal sepal elliptic, ca.

15 × 7 mm, glabrous, 5-veined, apex acute; lateral sepals oblong-elliptic, ca. 17 × 5 mm, glabrous, 5-veined, apex mucronate. Petals ligulate, oblique, ca. 15 × 5.5 mm, 3-veined, apex obtuse and slightly mucronate; lip adnate to entire length of column wings at base, orbicular-rhombic, ca. 18 × 8 mm, 3-lobed; lateral lobes falcate-oblong, ca. 6 × 4.5 mm, apex obtuse; mid-lobe obovate, ca. 8.5 × 8 mm, base cuneate, apex rounded and emarginate; disk without lamellae or other appendages; spur straight or slightly arcuate, cylindric, ca. 8 mm, glabrous, apex obtuse. Column ca. 6 mm, dilated at apex, glabrous; rostellum 2-lobed; lobes ca. 1.2 mm; pollinia obovoid, equal in size, ca. 2 mm; viscidium suboblong, small. Fl. May.

• Evergreen broad-leaved forests; ca. 1800 m. W Hubei, SW Sichuan.

30. *Calanthe limprichtii* Schlechter, Repert. Spec. Nov. Regni Veg. Beih. 12: 349. 1922.

开唇虾脊兰 kai chun xia ji lan

Plants to 80 cm tall. Rhizome inconspicuous. Pseudobulbs subconic, very small, ca. 0.8 cm in diam., with 2 or 3 sheaths. Leaves 2 or 3, well developed and spreading at anthesis, not deciduous; blade elliptic, 30–35 × ca. 11 cm, glabrous, apex acuminate; petiole-like base ca. 15 cm. Scape erect, arising from leaf axil, puberulent; rachis laxly many flowered; floral bracts persistent, lanceolate or elliptic-lanceolate, shorter than ovary, puberulent, apex acuminate. Flowers white, with green lip; pedicel and ovary 15–17 mm, puberulent. Sepals similar, narrowly elliptic-oblong, ca. 20 × 6 mm, abaxially sparsely puberulent, 7-veined, apex acuminate; lateral sepals slightly narrower than dorsal sepal. Petals narrowly elliptic, ca. 20 × 4 mm, glabrous, 3-veined, apex acuminate; lip adnate to entire length of column wings at base, ca. 12 mm, 3-lobed; lateral lobes oblong, ca. 6 × 3 mm, apex obliquely truncate; mid-lobe oblong-ligulate, ca. 6 × 2 mm, apex acute; disk without lamellae or other appendages; spur arcuate, ca. 10 mm, slender, puberulent. Column ca. 7 mm, dilated toward apex, glabrous; rostellum 2-lobed; pollinia obovoid, equal in size.

• Forests; ca. 1500 m. C Sichuan.

31. *Calanthe mannii* J. D. Hooker, Fl. Brit. India 5: 850. 1890.

细花虾脊兰 xi hua xia ji lan

Alismorkis mannii (J. D. Hooker) Kuntze; *Calanthe brachychila* Gagnepain; *C. pusilla* Finet.

Plants 30–45 cm tall. Rhizome inconspicuous. Pseudobulbs conic, ca. 1 cm in diam., with 2 or 3 sheaths. Leaves 3–5, not well developed at anthesis, not deciduous; blade oblanceolate or oblong, 18–35 × 3–4.5 cm, plicate, abaxially puberulent, base sessile or attenuate into a petiole-like stalk, apex acute; petiole-like base 5–10 cm, usually forming a pseudostem 5–7 cm. Scape arising from leaf axil, erect, to 51 cm, densely puberulent; rachis 4–10 cm, 10- or more flowered; floral bracts persistent, lanceolate, 2–4 mm, glabrous. Flowers small, dark brown, with golden yellow lip; pedicel and ovary 5–7 mm, densely puberulent. Sepals similar, ovate-lanceolate or oblong, concave, 7–9 × 2.5–4.5 mm, abaxially densely puberulent, 3–5-veined, apex acute; lateral sepals ± oblique. Petals obovate-lan-

ceolate or oblong, 6–7 × 1.2–2 mm, glabrous, 1–3-veined, apex acute; lip adnate to entire length of column wings, 3–4.5 × 2.5–3 mm, 3-lobed; lateral lobes ovate, oblique, 1.5–2 × 1–1.5 mm, apex obtuse-rounded; mid-lobe transversely oblong or nearly reniform, 1.5–2 × 2.5–3 mm, margin slightly undulate, apex emarginate and mucronate in sinus; disk with 3 lamellae or ridges; lamellae extending from base of lip to apex of mid-lobe, expanding to semilunate swellings on mid-lobe; spur straight, 1–3 × ca. 1 mm, outside puberulent. Column white, ca. 3 mm, dilated at apex, ventrally puberulent; rostellum small, 2-lobed; pollinia narrowly ovoid, subequal in size, ca. 0.8 mm; viscidium suborbicular, small. Fl. May. $2n = 40$.

Forests; 1300–2400 m. E Guangdong, NE Guangxi, SW Guizhou, SW Hubei, N Jiangxi, Sichuan, S and SE Xizang, NE Yunnan [Bhutan, India, Myanmar, Nepal, Vietnam].

32. *Calanthe brevicornu* Lindley, Gen. Sp. Orchid. Pl. 251. 1833.

肾唇虾脊兰 shen chun xia ji lan

Alismorkis brevicornu (Lindley) Kuntze; *Calanthe lamellosa* Rolfe; *C. scaposa* Z. H. Tsi & K. Y. Lang; *C. yunnanensis* Rolfe.

Plants 30–45 cm tall. Rhizome usually inconspicuous. Pseudobulbs conic, short, ca. 2 cm in diam., with 3 or 4 sheaths. Leaves 3 or 4, not well developed at anthesis, not deciduous; blade elliptic or obovate-lanceolate, 18–30 × 5–11.5 cm, apex acute; petiole-like base sheathing, 3–10 cm, usually forming a stout pseudostem 5–8 cm long and 1–2 cm in diam. Scape arising from leaf axil, 25–40 cm, densely puberulent; rachis to 30 cm, laxly 5–13-flowered; floral bracts persistent, lanceolate, 5–13 mm, nearly glabrous. Flowers yellowish green, with pinkish red striations; pedicel and ovary 16–23 mm, puberulent. Sepals similar, oblong, 12–23 × (3–)4–6(–8) mm, abaxially puberulent, 5-veined, apex acute. Petals oblong-lanceolate, 11–20 × 4–5 mm, glabrous, 3-veined, apex acute; lip adnate to base of column wings, 11–20 × 6–10 mm, base shortly clawed, 3-lobed; lateral lobes falcate-oblong, ca. 15 × 12.5 mm, apex obliquely truncate; mid-lobe nearly reniform or orbicular, ca. 6 × 8 mm, base clawed, apex usually emarginate and mucronate in sinus; disk pinkish red, with 3 tall yellow lamellae; spur very short, ca. 2 mm, outside puberulent, attenuate toward apex. Column ca. 4 mm, slightly dilated toward apex, ventrally villous; rostellum 2-lobed; lobes ca. 1 mm; anther cap beaked; pollinia narrowly obovoid, subequal in size, ca. 1.5 mm. Fl. May–Jun. $2n = 38, 40, 48$.

Dense forests; 1600–3100 m. N Guangxi, Hubei, Sichuan, SE Xizang, SE and W Yunnan [Bhutan, N India, Myanmar, Nepal].

33. *Calanthe hancockii* Rolfe, Bull. Misc. Inform. Kew 1896: 197. 1896.

叉唇虾脊兰 cha chun xia ji lan

Plants 32–85 cm tall. Rhizome inconspicuous. Pseudobulbs conic, ca. 15 mm in diam., with 3 or 4 sheaths. Leaves 3, not well developed at anthesis, not deciduous; blade elliptic or elliptic-lanceolate, 20–40 × 5–12 cm, abaxially puberulent, margin undulate, apex acute; petiole-like base 5–20 cm, usually

forming a stout pseudostem to ca. 25 cm long and 1–2 cm in diam. Scape arising from leaf axil, 22–80 cm, densely puberulent; rachis to 30 cm, laxly 7–20-flowered; floral bracts persistent, narrowly lanceolate, 7–10 mm, glabrous. Flowers with unpleasant smell, slightly nodding, yellowish brown, large; pedicel and ovary 15–20 mm, puberulent. Sepals similar, oblong-lanceolate, 25–35 × 6–10 mm, abaxially puberulent, 5–7-veined, apex acute or acuminate; lateral sepals slightly narrower than dorsal sepal. Petals subelliptic, ca. 23 × 6 mm, 3-veined, apex acuminate; lip adnate to entire length of column wings, lemon-yellow, 18–24 × 14–15 mm, base shortly clawed, 3-lobed; lateral lobes falcate-oblong, ca. 8 × 4 mm, apex obliquely truncate; mid-lobe narrowly obovate-oblong, ca. 10 × 5 mm, apex acute or rounded and mucronate; disk with 3 undulate lamellae, central one almost reaching apex of mid-lobe; spur yellowish, 2–3 mm, slender, outside puberulent, white pilose around mouth. Column ca. 5 mm, dilated toward apex, sparsely puberulent; rostellum 2-lobed; lobes ca. 1.7 mm; anther cap beaked; pollinia narrowly ovoid, ca. 2 mm; viscidium suborbicular. Fl. Apr–May. $2n = 40^*$.

• Evergreen broad-leaved forests, shaded places along valleys; 1000–3600 m. N Guangxi, SW Sichuan, NW and SE Yunnan.

34. *Calanthe fugongensis* X. H. Jin & S. C. Chen, Nordic J. Bot. 25: 20. 2008.

福贡虾脊兰 fu gong xia ji lan

Plants 50–60 cm tall. Rhizome inconspicuous. Pseudobulbs conic, ca. 4 × 2 cm. Leaves 3 or 4, not well developed at anthesis, not deciduous; blade elliptic-lanceolate to oblong-lanceolate, 20–30 × 5–10 cm, glabrous, margin slightly undulate, apex acuminate; petiole-like base 3–10 cm, slender, usually involute and forming a pseudostem 9–20 cm. Scape terminal, erect, to 50 cm, finely puberulent; rachis to 30 cm, laxly to 20-flowered; floral bracts persistent, lanceolate, 9–10 mm, membranous, glabrous, apex acute. Flowers yellow; pedicel and ovary 20–26 mm, finely puberulent. Dorsal sepal narrowly elliptic, ca. 20 × 10 mm, 7-veined, apex acuminate; lateral sepals lanceolate, slightly oblique, ca. 20 × 8 mm, 5-veined, apex acute. Petals oblanceolate, 15–16 × ca. 6 mm, 3-veined, apex acuminate; lip attached to length of column, 13–14 × 13–14 mm, base shortly clawed, 3-lobed; lateral lobes narrowly oblong-hamate, oblique, ca. 5 × 8 mm, apex obtuse; mid-lobe spatulate, ca. 10 × 10 mm, base clawed, apical margin ± undulate-dentate, apex emarginate and mucronate in sinus; disk with 3 erect, fleshy, subquadrate lamellae on mid-lobe; spur adnate to ovary, cylindrical, 4.5–6 mm, outside and inside puberulent, apex obtuse. Column ca. 10 mm, dilated toward apex, glabrous, with triangular wings; rostellum 2-lobed; lobes ca. 1 mm; anther cap ca. 4 mm, beaked; pollinia clavate, subequal in size, ca. 2 mm; viscidium suboblong, ca. 0.8 mm. Fl. May–Jun.

• Montane evergreen forests; 2400–3000 m. W Yunnan.

35. *Calanthe griffithii* Lindley in Lindley & Paxton, Paxt. Orch. Gard. 3: 37. 1852.

通麦虾脊兰 tong mai xia ji lan

Calanthe anjanii Lucksom; *C. tangmaiensis* K. Y. Lang & Y. Tateishi.

Plants 30–60 cm tall. Pseudobulbs subconic, small, ca. 2 cm in diam., with 2–4 sheaths. Leaves 3 or 4, well developed and spreading at anthesis, not deciduous; blade oblong or oblong-lanceolate, 29–34 × 5–7 cm, apex acute; base contracted and cuneate, forming a pseudostem to 16 cm. Scape arising from leaf axil, erect, to 75 cm, densely puberulent; rachis ca. 19 cm, laxly many flowered; floral bracts persistent, ovate-lanceolate, 4–5 mm, abaxially sparsely puberulent, apex acuminate. Flowers greenish brown to yellowish green with brownish lip; pedicel and ovary ca. 25 mm, densely puberulent. Sepals similar, oblong, ca. 20 × 10 mm, abaxially puberulent, 5- or 6-veined, apex acute; lateral sepals slightly narrower than dorsal sepal. Petals suboblanceolate, ca. 17 × 6 mm, glabrous, 3-veined, apex acute; lip adnate to base of column wings, shorter than sepals, 3-lobed; lateral lobes oblong, ca. 8 × 4 mm, apex obliquely truncate; mid-lobe brown, subcordate or flabellate-elliptic, ca. 9 × 12 mm, margin undulate, apex emarginate and apiculate in sinus; disk with a single subtriangular lamella centrally; spur straight, cylindric, ca. 6 mm, outside sparsely puberulent, apex obtuse. Column brown, ca. 8 mm, nearly glabrous; rostellum 2-lobed; pollinia obovoid, ca. 1.5 mm. Fl. May.

Evergreen broad-leaved forests; ca. 2000 m. SE Xizang [Bhutan, NE India, Myanmar].

36. *Calanthe emeishanica* K. Y. Lang & Z. H. Tsi, Acta Phytotax. Sin. 20: 186. 1982.

峨眉虾脊兰 e mei xia ji lan

Plants ca. 25 cm tall. Pseudobulbs very small, ca. 7 mm in diam., with 2 sheaths. Leaves 3 or 4, basal, well developed at anthesis, not deciduous; blade elliptic or oblong, 8–11 × 2.5–3.5 cm, apex shortly acuminate; petiole-like base ca. 1 cm, usually forming a pseudostem ca. 3 cm. Scape arising from leaf axil, ca. 24 cm, puberulent, usually with 2 tubular sheaths; rachis ca. 4 cm, laxly few flowered; floral bracts persistent, ovate-lanceolate, ca. 10 mm, apex acuminate. Flowers yellowish, with purplish red striations; pedicel and ovary ca. 20 mm. Sepals similar, ovate-lanceolate, ca. 17 × 5 mm, 5-veined, apex acuminate; lateral sepals oblique, 3–5-veined. Petals linear, slightly oblique, ca. 13 × 2 mm, 2- or 3-veined, apex acuminate; lip adnate to entire length of column wings, white, ca. 10 × 9 mm, 3-lobed near base; lateral lobes elliptic, slightly oblique, margin slightly dentate, apex obtuse; mid-lobe nearly reniform or transversely oblong, margin undulate, apex subtruncate and emarginate; disk with 7 crested lamellae, central 3 extending to apex of mid-lobe; spur straight, 2–3 mm, outside puberulent, apex obtuse. Column ca. 3 mm; anther cap ± beaked; pollinia obovoid, with very short caudicles; rostellum 2-lobed. Fl. Jul.

• Broad-leaved forests; ca. 2000 m. SC Sichuan (Emei Shan).

37. *Calanthe arcuata* Rolfe, Bull. Misc. Inform. Kew 1896: 196. 1896.

弧距虾脊兰 hu ju xia ji lan

Calanthe arcuata var. *brevifolia* Z. H. Tsi; *C. caudatilabella* Hayata; *C. caudatilabella* var. *latiloba* F. Maekawa ex Yamamoto.

Plants 18–45 cm tall. Rhizome inconspicuous. Pseudobulbs conic, small, ca. 1 cm in diam., with 2 or 3 sheaths. Leaves 3 or 4, basal, well developed at anthesis, not deciduous; blade narrowly elliptic-lanceolate or narrowly lanceolate, 15–28 × 0.7–3 cm, apex acute or acuminate; petiole-like base sheathing, often forming a pseudostem 2–3 cm. Scapes 1 or 2, arising from leaf axil, erect, 30–50 cm, densely puberulent or glabrous; rachis 10–25 cm, laxly ca. 10-flowered; floral bracts persistent, herbaceous, narrowly lanceolate, 10–18 mm, glabrous. Flowers white to yellowish green, flushed reddish brown on outer surfaces; pedicel and ovary arcuate, 14–20 mm, densely puberulent. Sepals similar, narrowly lanceolate, 17–22 × ca. 4 mm, glabrous, 5-veined, apex acuminate. Petals linear, 17–22 × 2–3 mm, 3-veined, apex acuminate; lip adnate to entire length of column wings, white, tinged purple at apex, usually turning yellow later, 11–18 × 4–6 mm, 3-lobed or rarely almost unlobed; lateral lobes ovate-triangular or suboblong, oblique, ca. 7 mm across their apices, apical margin sometimes toothed, apex acute; mid-lobe elliptic-rhombic, 8–10 × 6–7 mm, base usually clawed, margin undulate and irregularly toothed, apex aristate; disk with 3–5 ridges; spur cylindric, slender, ca. 5 mm, glabrous or sparsely puberulent, apex obtuse. Column 4–5 mm, thick, dilated toward apex, glabrous or sometimes sparsely puberulent; column wings triangular, dilated at apex and embracing stigma; rostellum furcately 2-lobed; lobes ca. 1.2 mm; anther relatively small; pollinia narrowly ovoid, equal in size, ca. 1.2 mm; viscidium suboblong, small. Capsule subellipsoid, ca. 20 × 8 mm. Fl. May–Sep. $2n = 38^*$, 40^* .

• Forests, soil-covered rocks along valleys; 1400–3100 m. S Gansu, Guizhou, W Hubei, Hunan, S Shaanxi, W Sichuan, Taiwan, NW and W Yunnan.

38. *Calanthe nipponica* Makino, Bot. Mag. (Tokyo) 13: 128. 1899.

戟形虾脊兰 ji xing xia ji lan

Calanthe trulliformis King & Pantling var. *hastata* Finet.

Plants 25–38 cm tall. Rhizome inconspicuous. Pseudobulbs very small, with 3 or 4 sheaths. Leaves 4, well developed and spreading at anthesis, not deciduous, subsessile; blade narrowly lanceolate or narrowly elliptic, 12–16 × 1.5–2 cm, apex acuminate. Scape arising from leaf axil, erect, 24–34 cm, puberulent; rachis 6–12 cm, laxly 3–7-flowered; floral bracts persistent, ovate-lanceolate, 13–15 mm, abaxially slightly puberulent. Flowers nodding, pale yellow and green; pedicel and ovary 15–20 mm, densely puberulent. Dorsal sepal elliptic-lanceolate, ca. 14 × 5 mm, abaxially puberulent, 5-veined, apex acuminate; lateral sepals ovate-lanceolate, oblique, ca. 14 × 4.5 mm, abaxially puberulent, 5-veined, apex acuminate. Petals linear, ca. 12 × 2 mm, glabrous, 3-veined, apex acuminate; lip adnate to entire length of column wings, yellow, orange-brown at base, subovate-triangular, 3-lobed; lateral lobes ovate, ca. 5.5 × 4 mm, ca. 8 mm across their apices, apex obtuse; mid-lobe suboblong, ca. 6 × 4.5 mm, apex acute; disk with 3 lamellae, central one extending almost to apex of mid-lobe; spur cylindric, 4–5 mm, outside puberulent, apex obtuse. Column ca. 5 mm, thick, dilated toward apex; rostellum 2-lobed; lobes ca. 1.2 mm; pollinia

narrowly obovoid, ca. 14 mm; viscidium suborbicular. Fl. Jun. $2n = 38, 40$.

Forests; ca. 2600 m. SE Xizang [Japan].

39. *Calanthe trifida* Tang & F. T. Wang, Acta Phytotax. Sin. 1: 87. 1951.

裂距虾脊兰 lie ju xia ji lan

Plants ca. 75 cm tall, without distinct rhizome. Pseudobulbs subconic, short, 1–2 cm in diam., with 2 or 3 sheaths. Leaves 3, well developed and spreading at anthesis, not deciduous; blade elliptic, ca. 22×10 cm, papery, 5-veined, apex acuminate; petiole-like base 30–37 cm, usually forming a pseudostem to 23 cm. Scape arising from leaf axil, upper part densely puberulent; rachis ca. 30 cm, laxly many flowered; floral bracts persistent, lanceolate, ca. 5 mm, apex acute. Flowers pink; pedicel and ovary ca. 20 mm, puberulent. Sepals similar, elliptic, ca. 10×4 mm, abaxially puberulent, 5-veined, apex shortly acuminate; lateral sepals oblique, usually slightly shorter than dorsal sepal. Petals narrowly elliptic, ca. 7×2.2 mm, abaxially puberulent, 3-veined, apex obtuse; lip adnate to entire length of column wings, flabellate, ca. 5.5 mm, 3-lobed; lateral lobes broadly oblong, shorter and broader than mid-lobe, ca. 7 mm across their apices, apex subtruncate and \pm incurved; mid-lobe suboblong, ca. 3.5×2 mm, apex acute; disk with 3 ridges, central one thicker and extending to apex of mid-lobe; spur cylindrical, ca. 6 mm, outside puberulent, apex obtuse and slightly 2-lobed. Column ca. 4 mm, ventrally sparsely puberulent, wings decurrent to lip; rostellum 2-lobed; lobes ca. 1 mm; anther cap beaked; pollinia narrowly ovoid, equal in size, ca. 1.5 mm. Fl. Feb–Mar.

Evergreen broad-leaved forests; ca. 1700 m. SW Yunnan [Myanmar].

40. *Calanthe discolor* Lindley, Sert. Orchid. ad t. 9. 1838.

虾脊兰 xia ji lan

Alismorkis discolor (Lindley) Kuntze; *Calanthe cheniana* Handel-Mazzetti; *C. esquirolei* Schlechter.

Plants 40–65 cm tall. Rhizome inconspicuous. Pseudobulbs subconic, small, ca. 1 cm in diam., with 3 or 4 sheaths. Leaves 3, not well developed at anthesis, not deciduous; blade obovate-oblong to elliptic-oblong, $13\text{--}25 \times 3\text{--}9$ cm, abaxially densely puberulent, apex acute; petiole-like base 3–9 cm, usually forming a pseudostem 6–10 cm long and ca. 2 cm in diam. Scapes 1 or 2, arising from leaf axil, 18–30 cm, densely puberulent; rachis 6–8 cm, laxly 6–10-flowered; floral bracts persistent, ovate-lanceolate, 4–7 mm, nearly glabrous. Flowers brownish purple, with white lip; pedicel and ovary 6–13 mm, densely puberulent. Sepals similar, elliptic, slightly oblique, $11\text{--}13 \times 6\text{--}7$ mm, abaxially puberulent below middle, 5-veined, apex acute. Petals suboblong or oblanceolate, $11\text{--}12 \times 3.5\text{--}5$ mm, glabrous, 3-veined, apex slightly obtuse; lip adnate to entire length of column wings, flabellate in outline, $10\text{--}13 \times$ ca. 18 mm, deeply 3-lobed; lateral lobes falcate-obovate or cuneate-obovate, $9\text{--}10 \times 6\text{--}9$ mm, larger than mid-lobe, apex truncate-obtuse and incurved toward mid-lobe; mid-lobe obovate-

cuneate, $7\text{--}8 \times$ ca. 6 mm, apical margin sometimes irregularly dentate, apex emarginate; disk with 3 membranous, triangular lamellae extending to middle of mid-lobe; spur cylindrical, 5–10 mm, outside sparsely puberulent, attenuate toward apex. Column ca. 4 mm, dilated at apex, wings decurrent to base of lip; rostellum 2-lobed; lobes ca. 0.6 mm; pollinia clavate, ca. 1.8 mm. Fl. Apr–May. $2n = 40$.

Evergreen broad-leaved forests; 800–1500 m. Anhui, N Fujian, Guangdong, S Guizhou, Hubei, Hunan, Jiangsu, Jiangxi, Zhejiang [Japan, Korea].

41. *Calanthe alleizettei* Gagnepain, Bull. Mus. Natl. Hist. Nat., sér. 2, 22: 508. 1950.

长柄虾脊兰 chang bing xia ji lan

Plants to 100 cm tall, with many long roots at base; sheaths at base becoming fibrous. Pseudobulbs obscure, conic, ca. 1×1 cm. Leaves 2–4, fully developed at anthesis; blade oblanceolate to lanceolate, $15\text{--}35 \times 4\text{--}6.5$ cm, apex acute to acuminate; petiole-like base 10–25 cm, 5-veined. Scape arising from within clasping base of leaves, generally longer than leaves; peduncle 20–30 cm; rachis to 11 cm, ca. 10-flowered; floral bracts persistent, narrowly lanceolate, $5\text{--}7 \times$ ca. 1.5 mm, apex acuminate. Flowers showy, pale violet to white with a lilac lip, ca. 3 cm wide across lateral sepals when flattened. Dorsal sepal ovate-oblong, ca. 12×5 mm, 5-veined, apex \pm acute; lateral sepals ovate-oblong, ca. 14×6.5 mm, 5-veined, apex \pm acuminate. Petals ovate-oblong, ca. 10×3.5 mm, 5-veined, apex \pm acute; lip adnate to column, 3-lobed; lateral lobes reniform, ca. 3×8.5 mm, margin a little uneven, apex rounded; mid-lobe much smaller, ca. 3.5×3.5 mm, margin very uneven, apex apiculate; disk with 3 keels running along lip and terminating on mid-lobe, middle keel longer; spur terete, curved, slightly more than 2 cm, pubescent. Column short and thick, ca. 7 mm.

Terrestrial in montane forests in limestone areas; 1600–1700 m. SE Yunnan (Malipo) [Vietnam].

This species was first recorded from China by X. H. Jin and S. C. Chen (Acta Bot. Yunnan. 29: 169–170. 2007).

42. *Calanthe plantaginea* Lindley, Gen. Sp. Orchid. Pl. 252. 1833.

车前虾脊兰 che qian xia ji lan

Plants 40–65 cm tall. Rhizome inconspicuous. Pseudobulbs broadly conic, 1.5–2 cm in diam., with 4 sheaths. Leaves 2–4, basal, not well developed at anthesis, not deciduous; blade elliptic, $25\text{--}28 \times 8\text{--}12$ cm, apex acute; petiole-like base ca. 20 cm, usually forming a pseudostem ca. 16 cm. Scape arising from leaf axil, 30–40 cm, puberulent; rachis 13–22 cm, laxly to subdensely 12- to more than 20-flowered; floral bracts persistent, lanceolate, 5–10 mm, glabrous. Flowers scented, pendulous, pinkish, white, or yellow; pedicel and ovary 14–24 cm, puberulent. Sepals similar, ovate-lanceolate, $15\text{--}17 \times 6\text{--}7$ mm, abaxially sparsely puberulent, 5-veined, apex acuminate; lateral sepals slightly smaller than dorsal sepal. Petals oblong or elliptic, $14\text{--}15 \times 4\text{--}7$ mm, glabrous, 3-veined, apex acute; lip adnate to entire length of column wings, subflabellate, $10\text{--}12 \times 8\text{--}13$

mm, 3-lobed; lateral lobes ovate-cuneate, oblique, ca. 4 × 5–7 mm, apex obtuse and incurved; mid-lobe transversely dilated, suboblong to orbicular, ca. 5 × 7 mm, apex apiculate; disk with 3 inconspicuous ridges, central one often lamellate; spur slightly arcuate, cylindrical, 5–20 mm, slender, outside puberulent. Column ca. 7 mm, dilated at apex, nearly glabrous, wings decurrent to lip and connecting to ridges on disk; rostellum 2-lobed; lobes ca. 1 mm; pollinia narrowly ovoid, ca. 1.7 mm. Fl. Mar–Apr. 2n = 40.

Evergreen broad-leaved forests; 1800–2500 m. S and SE Xizang, SW and W Yunnan [Bhutan, India, Kashmir, Nepal].

- 1a. Flowers pinkish or white; petals oblong, narrower than lateral sepals; spur 17–20 mm 42a. var. *plantaginea*
- 1b. Flowers yellow; petals elliptic, broader than lateral sepals; spur ca. 5 mm 42b. var. *lushuiensis*

42a. *Calanthe plantaginea* var. *plantaginea*

车前虾脊兰(原变种) *che qian xia ji lan* (yuan bian zhong)

Alismorkis plantaginea (Lindley) Kuntze.

Flowers pinkish or white. Petals oblong, 4–5 mm wide, narrower than lateral sepals; spur 17–20 mm.

Evergreen broad-leaved forests; 1800–2200 m. S and SE Xizang, SW Yunnan [Bhutan, India, Kashmir, Nepal].

42b. *Calanthe plantaginea* var. *lushuiensis* K. Y. Lang & Z. H. Tsi, *Acta Phytotax. Sin.* 25: 404. 1987.

泸水车前虾脊兰 *lu shui che qian xia ji lan*

Flowers yellow. Petals elliptic, 5–7 mm wide, wider than lateral sepals; spur short, ca. 5 mm.

- Evergreen broad-leaved forests; ca. 2500 m. W Yunnan.

43. *Calanthe graciliflora* Hayata, *J. Coll. Sci. Imp. Univ. Tokyo* 30(1): 329. 1911.

钩距虾脊兰 *gou ju xia ji lan*

Plants to 70 cm tall. Rhizome inconspicuous. Pseudobulbs subovoid, short, ca. 2 cm in diam., with 3 or 4 sheaths. Leaves 3 or 4, well developed and spreading completely at anthesis, not deciduous; blade elliptic or elliptic-lanceolate, ca. 33 × 5.5–10 cm, apex acute; petiole-like base ca. 10 cm, usually forming a pseudostem 5–18 cm long and ca. 1.5 cm in diam. Scape arising from leaf axil, to 70 cm, densely puberulent; rachis to 32 cm, laxly many flowered; floral bracts persistent, lanceolate, 7–10 mm, glabrous. Flowers yellowish brown, with white lip; pedicel and ovary 15–20 mm, densely puberulent. Sepals reflexed, similar, subelliptic, 12–13 × 5–6 mm, glabrous, (3 or)4- or 5-veined, apex acute; lateral sepals slightly narrower than dorsal sepal. Petals obovate-lanceolate, 9–13 × 3–4 mm, glabrous, 3- or 4-veined, base shortly clawed, apex acute; lip adnate to entire length of column wings, ca. 10 × 10 mm, 3-lobed; lateral lobes obovate-cuneate, slightly oblique, ca. 4 mm, apex obtuse-rounded or obliquely truncate; mid-lobe subsquare, obovate, or transversely oblong, ca. 4 × 3 mm, apex dilated, emar-

ginate and mucronate in sinus; disk with 4 brown spots and 3 parallel ridges; ridges fleshy, extending to middle of mid-lobe, triangular, becoming taller toward their apices; spur curved or straight, cylindrical, 10–18 mm, outside sparsely puberulent, inside densely puberulent, apex attenuate. Column ca. 4 mm, glabrous, wings decurrent to lip and connecting to ridges on disk; rostellum 2-lobed, lobes ca. 1 mm; anther cap beaked; pollinia clavate, equal in size, ca. 2 mm, with conspicuous caudicles; viscidium suboblong, ca. 1 mm. 2n = 40*.

- Shaded and damp places in forests, streamsides, along valleys; 600–2400 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, SW Sichuan, Taiwan, SE Yunnan, Zhejiang.

- 1a. Mid-lobe of lip subsquare or obovate; spur 10–13 mm, curved 43a. var. *graciliflora*
- 1b. Mid-lobe of lip transversely oblong; spur ca. 18 mm, straight 43b. var. *xuefengensis*

43a. *Calanthe graciliflora* var. *graciliflora*

钩距虾脊兰(原变种) *gou ju xia ji lan* (yuan bian zhong)

Calanthe hamata Handel-Mazzetti.

Lip with subsquare or obovate mid-lobe; spur curved, 10–13 mm, much shorter than pedicel and ovary. Fl. Mar–May.

- Shaded and damp places in forests, streamsides, along valleys; 600–2400 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, SW Sichuan, Taiwan, SE Yunnan, Zhejiang.

43b. *Calanthe graciliflora* var. *xuefengensis* Z. H. Tsi, *Acta Phytotax. Sin.* 19: 510. 1981.

雪峰虾脊兰 *xue feng xia ji lan*

Mid-lobe of lip dilated at apex and transversely oblong; spur straight, ca. 18 mm, subequal in length to pedicel and ovary.

- W Hunan.

44. *Calanthe henryi* Rolfe, *Bull. Misc. Inform. Kew* 1896: 197. 1896.

疏花虾脊兰 *shu hua xia ji lan*

Plants 35–70 cm tall. Rhizome inconspicuous. Pseudobulbs conic, ca. 1 cm in diam., with 2 or 3 sheaths. Leaves 2 or 3, basal, not well developed at anthesis, not deciduous; blade elliptic or obovate-lanceolate, 18–24 × ca. 8.5 cm, abaxially densely puberulent, 3-veined, apex acute; petiole-like base usually forming a pseudostem ca. 6 cm. Scape arising from leaf axil, erect, to 55 cm, densely puberulent; rachis to 28 cm, laxly 9–18-flowered; floral bracts persistent, lanceolate, 4–7 mm, glabrous, apex acuminate. Flowers yellow or yellowish green; pedicel and ovary ca. 20 mm, densely puberulent. Dorsal sepal oblong, 15–17 × 5–6 mm, abaxially puberulent, 4–6-veined, apex acute; lateral sepals oblong, slightly oblique, 15–17 × 4–5 mm, abaxially puberulent, 4- or 5-veined, apex acute. Petals subelliptic, 13–14 × ca. 4 mm, abaxially often puberulent at base, 3–5-veined, apex acute; lip adnate to entire length of column wings, ca. 10 × 12 mm, 3-lobed; lateral lobes oblong, ca. 6 × 3–6 mm, apex obliquely truncate; mid-lobe ca. 6 × 3 mm,

base clawed, apex dilated, emarginate and mucronate in sinus; disk with 2 tall conspicuous ridges, central one thickened, lamellate and usually extending almost to apex of mid-lobe; spur straight or slightly arcuate, cylindric, 11–15 mm, slender, outside sparsely puberulent. Column wings decurrent to lip and connecting to ridges on disk; rostellum 2-lobed; lobes ca. 1 mm; pollinia nearly ovoid, nearly equal in size, ca. 1 mm. Fl. May.

• Evergreen broad-leaved forests; 1600–2100 m. W Hubei, Sichuan.

45. *Calanthe aristulifera* H. G. Reichenbach, Bot. Zeitung (Berlin) 36: 74. 1878.

翘距虾脊兰 qiao ju xia ji lan

Alismorkis aristulifera (H. G. Reichenbach) Kuntze; *Calanthe amamiana* Fukuyama; *C. aristulifera* var. *amamiana* (Fukuyama) Hatusima; *C. elliptica* Hayata; *C. furcata* Bateman ex Lindley f. *raishaensis* (Hayata) M. Hiroe; *C. kirishimensis* Yatabe; *C. raishaensis* Hayata; *C. tokumoshimensis* Hatusima & Ida.

Plants 28–55 cm tall. Rhizome elongate, thick. Pseudobulbs subglobose, ca. 1 cm in diam., with 3 sheaths. Leaves 2–4, basal, not well developed at anthesis, not deciduous; blade obovate-elliptic or elliptic, 15–30 × 4–8 cm, papery, abaxially densely puberulent, apex acute; petiole-like base (6–)27–30 cm, usually forming a pseudostem 13–20 cm. Scapes 1 or 2, arising from leaf axils, 25–60 cm, densely puberulent; rachis 6–25 cm, laxly to subdensely 8–20-flowered; floral bracts persistent, narrowly lanceolate, ca. 5 mm, glabrous, apex acute. Flowers white or pink, occasionally flushed purple; pedicel and ovary 15–20 mm, puberulent. Dorsal sepal oblong-lanceolate, 12–17 × 5–8 mm, abaxially puberulent, 5-veined, apex acuminate; lateral sepals oblong, oblique, 12–17 × 4–7 mm, abaxially puberulent, 5-veined, apex acute. Petals narrowly obovate or elliptic, 11–15 × 2.5–4.5 mm, glabrous, 3-veined, apex subacute; lip adnate to entire length of column wings, flabellate, 8–16 × 8–12 mm, 3-lobed above middle; lateral lobes subsquare to suborbicular, falcate, 5–6 × 4–6 mm, apex obtuse-rounded; mid-lobe subsquare to obovate, 3–4 × 4–5 mm, margin slightly undulate, apex emarginate and apiculate in sinus; disk with 3–5(–7) ridges; ridges fleshy, extending almost to apex of mid-lobe, apices raised and triangular; spur cylindric, 20–32 mm, outside puberulent, inside villous. Column ca. 6 mm, dilated at apex, ventrally puberulent, wings decurrent to lip and connecting to ridges on disk; rostellum 2-lobed; anther cap beaked; pollinia clavate, unequal in size, 1.5–2 mm, with short caudicles; viscidium subelliptic, ca. 0.5 mm. Fl. Feb–May. $2n = 40$.

Damp places along valleys, dense forests; 1500–2500 m. N Fujian, Guangdong, N Guangxi, E and N Taiwan [Japan].

46. *Calanthe arisanensis* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30(1): 327. 1911.

台湾虾脊兰 tai wan xia ji lan

Calanthe sasakii Hayata.

Plants 30–50 cm tall. Rhizome thick. Pseudobulbs subovoid, 1–1.5 cm, with 3 or 4 sheaths. Leaves 2 or 3, well developed and spreading at anthesis, not deciduous; blade elliptic-oblong, 30–50 × 4–7 cm, papery, base cuneate, apex acute; petiole-like base 5–10 cm, usually forming a pseudostem more than 10 cm. Scape arising from leaf axil, 40–50 cm, puberulent; rachis 5–10 cm, laxly 5–10-flowered; floral bracts persistent, lanceolate, 10–18 mm, glabrous, apex acuminate. Flowers white, sometimes tinged pinkish purple; pedicel and ovary 20–40 mm, glabrous; ovary with 6 longitudinal winglike ridges. Dorsal sepal ovate-lanceolate, 20–25 × 9–11 mm, base slightly contracted, apex acuminate; lateral sepals ovate-lanceolate, oblique, 25–27 × ca. 10 mm, base contracted, apex acute. Petals narrowly lanceolate, 18–20 × ca. 4 mm, apex acute; lip adnate to entire length of column wings, broadly ovate or orbicular in outline, 13–20 × 18–25 mm, 3-lobed; lateral lobes subfalcate-ovate, 7–11 × 9–12 mm, apex rounded-obtuse; mid-lobe orbicular, ca. 9 × 11 mm, margin erose, apex aristate; disk with 3 shallow and inconspicuous ridges extending midway along mid-lobe; spur curved, cylindric, 10–15 mm, inside densely puberulent. Column 7–9 mm, ventrally puberulent; rostellum 2-lobed; anther cap beaked; pollinia clavate, with caudicles; viscidium subelliptic. Capsule 30–50 × ca. 15 mm, with 6 winglike ridges. Fl. Dec–Mar. $2n = 40^*$.

• Forests; 1000–2000 m. Taiwan.

47. *Calanthe metoensis* Z. H. Tsi & K. Y. Lang, Acta Phytotax. Sin. 16(4): 129. 1978.

墨脱虾脊兰 mo tuo xia ji lan

Plants 30–50 cm tall. Rhizome inconspicuous. Pseudobulbs conic, small, ca. 1.5 cm in diam., enclosed in leaf sheaths. Leaves 3, well developed and spreading at anthesis, not deciduous; blade narrowly elliptic, 25–30 × 3.5–9.5 cm, with 5 main veins, apex acute; petiole-like base sheathing, usually forming a pseudostem to ca. 9 cm long and ca. 1 cm in diam. Scapes 1 or 2, arising from leaf axils, erect, 30–50 cm, densely puberulent; rachis to 12 cm, laxly 2–10-flowered; floral bracts persistent, lanceolate, 7–20 mm, glabrous. Flowers pink; pedicel and ovary 15–30 mm, puberulent. Dorsal sepal elliptic, ca. 15 × 7 mm, sparsely puberulent, 5-veined, apex apiculate; lateral sepals ovate, oblique, ca. 15 × 6–8 mm, sparsely puberulent, 5-veined, apex apiculate. Petals linear, ca. 14 × 2 mm, glabrous, 3-veined, apex acute; lip adnate to entire length of column wings, ca. 12 × 10 mm, 3-lobed; lateral lobes ovate-triangular, ca. 8 mm across their apices, margin sometimes sparsely toothed, apex subacute; mid-lobe obovate-cuneate, ca. 6 × 6 mm, margin fimbriate, apex rounded and apiculate; disk with 3 ridges; spur cylindric, ca. 15 × 2 mm, outside sparsely puberulent, attenuate toward apex, apex obtuse. Column ca. 5 mm, thick, wings dilated and triangular, embracing stigma; rostellum 2-lobed; lobes falcate-triangular, ca. 1.2 mm; pollinia clavate, unequal in size, larger ones ca. 2 mm, ± arcuate, smaller ones straight. Fl. Apr–Aug.

• Forests; 2200–2300 m. SE Xizang, W Yunnan.

48. *Calanthe lechangensis* Z. H. Tsi & Tang, Acta Phytotax. Sin. 19: 506. 1981.

乐昌虾脊兰 le chang xia ji lan

Plants to ca. 40 cm tall. Rhizome inconspicuous. Pseudobulbs conic, small, ca. 1 cm in diam., often with 3 sheaths. Leaf solitary, not well developed at anthesis, not deciduous; blade broadly elliptic, 20–30 × 8–11 cm, glabrous, margin slightly undulate, apex acute; petiole-like base 14–32 cm, slender, usually involute and forming a pseudostem 9–20 cm. Scape arising from leaf axil, erect, to 35 cm, puberulent; rachis 3–4 cm, laxly 4- or 5-flowered; floral bracts persistent, ovate-lanceolate, 4–5 mm, membranous, glabrous, apex aristate. Flowers pale red; pedicel and ovary ca. 12 mm, densely puberulent. Dorsal sepal ovate-lanceolate, 17–18 × 6–7 mm, abaxially densely puberulent, 5-veined, apex acute; lateral sepals oblong, slightly oblique, 17–18 × 5–6 mm, abaxially densely puberulent, 5-veined, apex ± hooked and aristate. Petals oblong-lanceolate, 15–16 × 4.5–5 mm, abaxially puberulent, 3-veined; lip adnate to entire length of column wings, obovate-orbicular, base clawed, 3-lobed; lateral lobes tooth-shaped, very small, 1–3 × 0.8–1.2 mm, apex obtuse; mid-lobe broadly ovate-cuneate, ca. 10 × 10 mm, base clawed, margin slightly erose, apex emarginate and mucronate in sinus; disk with 3 lamellae; spur straight, cylindrical, ca. 9 × 1.5 mm, outside and inside puberulent, apex obtuse. Column ca. 6 mm, dilated toward apex, glabrous, with triangular wings; rostellum 2-lobed; lobes ca. 1 mm; anther cap ca. 4 mm, beaked; pollinia clavate, subequal in size, ca. 2 mm; viscidium suboblong, ca. 0.8 mm. Fl. Mar–Apr.

• N Guangdong.

49. *Calanthe nankunensis* Z. H. Tsi, Acta Phytotax. Sin. 19: 507. 1981.

南昆虾脊兰 nan kun xia ji lan

Plants ca. 50 cm tall. Pseudobulbs subglobose, small, ca. 1 cm in diam., with 3 sheaths. Leaves 2, not well developed at anthesis, not deciduous; blade elliptic, 21–25 × ca. 10 cm, abaxially densely puberulent, apex acuminate or acute; petiole-like base ca. 20 cm, usually forming a pseudostem ca. 10 cm. Scape arising from leaf axil, to 55 cm, densely puberulent; rachis ca. 10 cm, laxly 6- or 7-flowered; floral bracts persistent, narrowly lanceolate, 4–5 mm, sparsely puberulent. Flowers white; pedicel and ovary ca. 16 mm, puberulent. Dorsal sepal oblong, 15–18 × ca. 6 mm, abaxially puberulent, 5-veined, apex aristate; lateral sepals oblong, slightly oblique, 15–18 × ca. 6 mm, abaxially puberulent, 5-veined, apex acuminate and aristate. Petals narrowly oblong, 14–16 × 3.2–4 mm, glabrous, 3-veined, apex acuminate and aristate; lip adnate to entire length of column wings, ca. 11 × 9 mm, 3-lobed; lateral lobes subfalcate-oblong, ca. 3.5 × 2 mm, 6–7 mm across their apices, apex obliquely truncate; mid-lobe obovate, ca. 7 × 8 mm, base clawed, margin slightly erose, apex emarginate and apiculate in sinus; disk with 3 ridges and with a fleshy triangular appendage near mouth of spur; central ridge extending to apex of mid-lobe; spur strongly curved near apex, 8–9 mm, outside sparsely puberulent. Column ca. 5 mm, dilated at apex, puberulent, wings decurrent to lip; rostellum 2-lobed; lobes ca. 1 mm; anther cap beaked; pollinia narrowly ovoid, ca. 1.5 mm; viscidium narrowly oblong, ca. 1 mm. Fl. Apr.

• Shaded places along valleys. S Guangdong.

50. *Calanthe sieboldii* Decaisne ex Regel, Index Seminum [St. Petersburg] 1868: 80. 1868.

大黄花虾脊兰 da huang hua xia ji lan

Calanthe discolor Lindley f. *sieboldii* (Decaisne ex Regel) Ohwi; *C. discolor* var. *sieboldii* (Decaisne ex Regel) Maximowicz; *C. kawakamii* Hayata; *C. striata* (Swartz) R. Brown f. *sieboldii* (Decaisne ex Regel) Ohwi; *C. striata* var. *sieboldii* (Decaisne ex Regel) Maximowicz; *C. takeoi* Hayata.

Plants 30–55 cm tall. Rhizome elongate, thick. Pseudobulbs small, with 5–7 sheaths. Leaves 2 or 3, well developed at anthesis, not deciduous; blade broadly elliptic, 20–60 × 7.5–15 cm, apex acute or mucronate; petiole-like base 6–18 cm, usually forming a pseudostem 4–14 cm long and ca. 1.5 cm in diam. Scape 40–50 cm, sparsely puberulent; rachis 6–15 cm, laxly to subdensely 6–13-flowered; floral bracts persistent, lanceolate, ca. 10 mm, glabrous, apex acuminate. Flowers bright yellow, large, slightly fleshy; pedicel and ovary 10–15 mm, sparsely puberulent. Dorsal sepal elliptic, 22–30 × 10–15 mm, apex acute; lateral sepals ovate-oblong, oblique, 18–28 × 8–14 mm, apex acute. Petals narrowly elliptic, 19–24 × 7–9.5 mm, base narrowed, apex acute; lip adnate to entire length of column

wings, spreading horizontally, yellow, mottled red at base, deeply 3-lobed; lateral lobes ovate or falcate-obovate, oblique, 10–15 × 5–8 mm, apex obtuse-rounded; mid-lobe nearly elliptic, 9–13 × 5–9 mm, apex mucronate; disk with 5 ridges and 2 rows of white short hairs at base; lateral 2 ridges fleshy, central 3 extending almost to apex of mid-lobe; spur ca. 8 mm, inside puberulent. Column ca. 5 mm, thick; rostellum 2-lobed; pollinia with short caudicles, attached to an elliptic viscidium. Fl. Feb–Mar. $2n = 40$.

Forests; 1200–1500 m. Hunan, SW Taiwan [Japan (Ryukyu Islands), Korea].

51. *Calanthe labrosa* (H. G. Reichenbach) H. G. Reichenbach, Gard. Chron., n.s., 19: 44. 1883.

葫芦茎虾脊兰 hu lu jing xia ji lan

Limatodis labrosa H. G. Reichenbach, Gard. Chron., n.s., 11: 202. 1879; *Alismorkis labrosa* (H. G. Reichenbach) Kuntze; *Calantheidium labrosum* (H. G. Reichenbach) Pfitzer.

Plants ca. 30 cm tall, without a distinct rhizome. Pseudobulbs ± clustered, stemlike, ovoid or ovoid-conic, often contracted at middle, 3–8 × ca. 4 cm, with 2 or 3 sheaths. Leaves 2 or 3, fully spreading at anthesis, deciduous in dry season; blade elliptic, ca. 30 × 9 cm, base contracted and articulate, apex acuminate. Scape arising from base of pseudobulb, erect, to 28 cm, densely villous, with 2 brownish tubular sheaths below middle; rachis 8–10 cm, laxly 3–10-flowered; floral bracts persistent, ovate, ca. 20 mm, abaxially villous, apex acuminate. Flowers white, flushed pink, opening fully; pedicel and ovary ca. 35 mm, densely villous. Dorsal sepal ± reflexed, ovate, ca. 12 × 5 mm, abaxially densely villous, 3-veined, apex acute; lateral sepals ± reflexed, ovate, oblique, ca. 14 × 14 mm, abaxially densely villous, apex acute. Petals ± reflexed, ovate-oblong, ca. 15 × 5.5 mm, apex acute; lip adnate to column foot, broadly ovate, ca. 14 × 20 mm, ± 3-lobed; lateral lobes embracing column, white, with many purplish red spots and pale pink stripes, margin ± crisped; mid-lobe suborbicular, margin crisped; disk white, with 3 ridges at base; central ridge extending to apex of mid-lobe; spur yellowish, slender, ca. 25 × 1.5 mm, outside densely villous. Column purplish red, ca. 5 mm, thick, with a whitish column foot ca. 3 mm; rostellum 2-lobed; pollinia obovoid, equal in size, ca. 1 mm, with short caudicles; viscidium narrowly triangular. Fl. Nov–Dec.

Evergreen broad-leaved forests; 800–1200 m. S Yunnan [Myanmar, Thailand].

