

183. LUISIA Gaudichaud, Voy. Uranie, Bot. 426. 1829.

钗子股属 *chai zi gu shu*

Chen Xinqi (陈心启 *Chen Sing-chi*); Jeffrey J. Wood

Mesoclastes Lindley.

Herbs, epiphytic or lithophytic, monopodial. Stems erect or climbing, often branched at base and tufted, some with a single shoot, terete, slender, usually stiff, enclosed in leaf bases. Leaves many, well spaced, linear, terete, distichous, facing all directions or secund, fleshy, jointed and sheathing at base. Inflorescence axillary, racemose, dense, subsessile, fewer than 10-flowered; peduncle and rachis attenuate. Flowers usually small, fleshy. Sepals and petals free, similar or petals longer and narrower, spreading; lateral sepals often dorsally carinate or narrowly winged toward apex. Lip pendulous, fleshy, fixed immovably to base of column, often distinctly divided by a groove into basal hypochile and apical epichile; hypochile often concave, base sometimes with lateral lobes embracing column; epichile often extending forward, adaxially often longitudinally wrinkled or grooved. Column subcylindric, short, stout, foot absent; rostellum short, wide, apex subtruncate; pollinia 2, waxy, globose, porate, attached by a short and broad stipe to a solitary, short, broad viscidium.

About 40 species: Bhutan, China, India, Indochina, Indonesia, Japan, Malaysia, New Guinea, Pacific islands, Philippines, Sri Lanka, and Thailand; 11 species (five endemic) in China.

Luisia macrotis H. G. Reichenbach (Gard. Chron. 1869: 1110. 1869) was recently recorded from W Yunnan (Lushui: Gaoligong Shan, 2500 m) by X. H. Jin, H. Li, and D. Z. Li (Acta Phytotax. Sin. 45: 805. 2007). The species otherwise occurs in India (Assam), Laos, Thailand, and Vietnam.

Reviewer L. Averyanov notes that *Luisia appressifolia* Averyanov (Lindleyana 15(2): 79. 2000), described from N Vietnam, should also occur in S China. However, the present authors could not substantiate this assertion because they found no relevant specimens.

- 1a. Petals linear, 1.5–2 mm wide.
 - 2a. Sepals and petals whitish; epichile of lip broadly ovate-triangular 9. *L. filiformis*
 - 2b. Sepals and petals green; epichile of lip cordate 11. *L. cordata*
- 1b. Petals oblong or elliptic, 4–9 mm wide.
 - 3a. Carinate midvein on abaxial surface of lateral sepals protruding from apex forming a tooth or a fine sharp point.
 - 4a. Lip without a distinct boundary between epichile and hypochile 1. *L. longispica*
 - 4b. Lip with a distinct boundary between epichile and hypochile.
 - 5a. Sepals and petals yellowish green; epichile of lip emarginate at apex, margin ± erose 2. *L. morsei*
 - 5b. Sepals and petals purple-red; epichile of lip obtuse at apex, margin entire 10. *L. ramosii*
 - 3b. Carinate midvein on abaxial surface of lateral sepals becoming winged at apex or sometimes protruding from apex forming a keeled or winged mucro.
 - 6a. Lip with a distinct boundary between epichile and hypochile 3. *L. magniflora*
 - 6b. Lip without a distinct boundary between epichile and hypochile.
 - 7a. Lip unlobed at apex.
 - 8a. Petals yellowish green, narrowly oblong, 1.6–1.8 mm wide; hypochile narrower than epichile 7. *L. brachystachys*
 - 8b. Petals pink, obovate-elliptic, 3–3.2 mm wide; hypochile wider than epichile 8. *L. zollingeri*
 - 7b. Lip bilobed at apex.
 - 9a. Dorsal sepal 13–17 mm; epichile of lip distinctly adaxially reticulate-sulcate 6. *L. megasepala*
 - 9b. Dorsal sepal 6–11 mm; epichile of lip not adaxially reticulate-sulcate.
 - 10a. Petals ca. 6 mm; epichile of lip with 3 or 4 papillate longitudinal adaxial ridges 4. *L. hancockii*
 - 10b. Petals 7–13 mm; epichile of lip with a fleshy longitudinal adaxial ridge 5. *L. teres*

1. *Luisia longispica* Z. H. Tsi & S. C. Chen, Acta Phytotax. Sin. 32: 556. 1994.

长穗钗子股 *chang sui chai zi gu*

Stems to 20 cm, ca. 5 mm in diam., internodes ca. 2 cm. Leaves 9–11 cm × ca. 3 mm, obtuse. Inflorescences 1 or 2, ca. 2 cm, 4–8-flowered; floral bracts ovate-triangular, ca. 1 mm, fleshy. Flowers yellowish green, tinged with purplish red, lip purple-red; pedicel and ovary ca. 4 mm. Dorsal sepal ovate elliptic, ca. 3.2 × 2 mm, slightly concave, obtuse; lateral sepals

spreading, sub lanceolate, ca. 4 × 1.8 mm, dorsally carinate, midvein protruding from apex forming a subulate point ca. 1.5 mm, apex obtuse. Petals subovate, ca. 3 × 2.8 mm, obtuse; lip subovate-triangular, ca. 4 mm, without distinct boundary between epichile and hypochile; hypochile ca. 4 mm wide, concave, base with a pair of longitudinal ridges running to base of column; epichile nearly suborbicular, ca. 1.2 × 2.8 mm. Column ca. 1.5 mm, apex with 2 short teeth on both front sides; anther cap subglobose; stipe subobovate, ca. 1.2 mm; viscidium elliptic, ca. 0.8 mm wide. Fl. May.

• Epiphytic on tree trunks in forests along valleys; ca. 800 m. S and SE Yunnan.

2. *Luisia morsei* Rolfe, J. Linn. Soc., Bot. 36: 33. 1903.

钗子股 *chai zi gu*

Luisia tonkinensis Schlechter.

Stems ascending, to 30 cm, 4–5 mm in diam., rigid, with many distichous leaves. Leaves 9–13 cm × ca. 3 mm, obtuse. Inflorescences 1–3, 5–10 mm, usually 4–6-flowered; floral bracts broadly ovate-triangular, ca. 4 mm, fleshy. Flowers small, opening widely, sepals and petals yellowish green, tinged with purplish brown abaxially and purplish or purplish brown on lip, column purple, anther cap yellow; pedicel and ovary ca. 1 cm, yellowish green. Dorsal sepal elliptic, ca. 5.5 × 3.5 mm, slightly concave, obtuse; lateral sepals obliquely ovate, ca. 7 × 3.5 mm, dorsally carinate-winged toward apex and then becoming a tooth protruding from apex, apex obtuse. Petals subovate, ca. 5 × 3 mm, obtuse; lip 8–9 mm, with a distinct boundary between epichile and hypochile; hypochile embracing column, broader than epichile, slightly concave; epichile nearly reniform-triangular, abaxially with a conic wart, margin ± erose, apex emarginate. Column ca. 3 mm. Fl. Apr–May.

Epiphytic on tree trunks in forests; 300–1200 m. SW Guangxi, SW Guizhou, Hainan, S Yunnan [Laos, Thailand, Vietnam].

3. *Luisia magniflora* Z. H. Tsi & S. C. Chen, Acta Phytotax. Sin. 32: 558. 1994.

大花钗子股 *da hua chai zi gu*

Stems ascending, to 30 cm, 5–8 mm in diam., rigid, internodes 2–2.5 cm. Leaves 9–18 cm × 2–3 mm, obtuse. Inflorescence ca. 1 cm, often 2- or 3-flowered; rachis stout; floral bracts broadly ovate, ca. 3 mm, fleshy, obtuse. Flowers fleshy, yellowish to yellowish green, tinged or spotted with purplish red or brownish abaxially on sepals and petals, lip epichile brown or dark purple, column yellowish green; pedicel and ovary ca. 9 mm. Dorsal sepal ovate-oblong, 9–12 × 5–6 mm, concave, obtuse; lateral sepals suboblong, 10–12 × 4–5 mm, margin incurved, ± embracing epichile, abaxially carinate-winged and becoming a long winged tail at apex. Petals subelliptic, 10–11 × 5–5.5 mm, obtuse; lip 1–1.3 cm, with a distinct boundary between epichile and hypochile; hypochile smaller than epichile, with lateral lobes on both sides embracing column; epichile cordate, ca. 1 cm wide, adaxially papillate, margin recurved, apex emarginate. Column ca. 5 mm, thick. Fl. Apr–Jul.

• Epiphytic on tree trunks in open forests; 600–1900 m. S Yunnan.

4. *Luisia hancockii* Rolfe, Bull. Misc. Inform. Kew 1896: 199. 1896.

纤叶钗子股 *xian ye chai zi gu*

Stems tufted, ascending, to 20 cm, 3–4 mm in diam., rigid, internodes 1.5–2 cm. Leaves facing all directions, 5–9 cm × 2–2.5 mm, obtuse. Inflorescence 1–1.5 cm, usually 2- or 3-flowered; floral bracts broadly ovate, 1.5–2 cm, fleshy, obtuse. Flowers fleshy, opening widely, yellowish green, lip hypochile purple-red; pedicel and ovary 1–1.2 cm. Dorsal sepal obovate-oblong, ca. 6 × 3 mm, obtuse; lateral sepals oblong, conduplicate, ca. 7 × 3 mm, dorsally carinate and becoming winged

at apex, margin incurved, apex obtuse. Petals slightly oblique, oblong, ca. 6 × 3 mm, obtuse; lip nearly ovate-oblong, ca. 7 mm, base ca. 4 mm wide, without a distinct boundary between epichile and hypochile; hypochile slightly concave, base with lateral lobes ca. 0.5 mm; epichile bilobed, emarginate at apex, margin crenate or undulate, adaxially with 3 or 4 papillate longitudinal ridges. Column ca. 2 mm; stipe obovate, ca. 1 mm; viscidium transversely oblong, ca. 1.6 mm, thick. Capsule ellipsoid-cylindric, 1.5–2 cm. Fl. May–Jul, fr. Aug.

• Lithophytic on cliffs along valleys, epiphytic on tree trunks in open forests; 200–300 m. Fujian, Hubei, Zhejiang.

5. *Luisia teres* (Thunberg) Blume, Rumphia 4: 50. 1849.

叉唇钗子股 *cha chun chai zi gu*

Epidendrum teres Thunberg in Murray, Syst. Veg., ed. 14, 818. 1784; *Luisia botanensis* Fukuyama; *L. teres* var. *botanensis* (Fukuyama) T. P. Lin.

Stems ascending or pendulous, to 55 cm, 3–5 mm in diam., usually unbranched, internodes 2.5–2.8 cm. Leaves facing all directions, 7–13(–20) cm × 2–2.5 mm, obtuse. Inflorescences borne from upper part of stem, ca. 1 cm, 1–7-flowered; floral bracts broadly ovate, ca. 2 mm. Flowers fleshy, greenish yellow or whitish, sometimes tinged with purple on abaxial surface and apex of sepals and petals, lip marked with purple or purplish brown, anther cap pale yellow; pedicel and ovary ca. 8 mm. Dorsal sepal ovate-oblong, 7.5–11 × 3–6 mm, obtuse; lateral sepals similar to but slightly longer than dorsal sepal, acute, dorsally carinate-winged and becoming winged at apex. Petals slightly falcate-elliptic, 7–13 × 2–4 mm, obtuse; lip 10–16 mm, thickly fleshy, without a distinct boundary between epichile and hypochile; hypochile slightly concave, base with subquadrate lateral lobes ca. 1 mm; epichile spreading, subovate, large, adaxially with a fleshy longitudinal ridge near apex, furcately bilobed; lobules subtriangular, entire, with finely papillate hairs. Column 3.5–4 mm; rostellum large, bilobed; stipe obovate, ca. 1.8 × 1.2 mm; viscidium transversely oblong, large, ca. 2.2 mm wide. Fl. Mar–May. $2n = 38$.

Epiphytic on tree trunks in forests; 1200–1600 m. W Guangxi, SW Guizhou, W Sichuan, Taiwan, SE Yunnan [Japan, Korea].

6. *Luisia megasepala* Hayata, Icon. Pl. Formosan. 4: 85. 1914.

台湾钗子股 *tai wan chai zi gu*

Stems often pendulous or arching, to 50 cm, ca. 5 mm in diam., laxly many leaved. Leaves 5–10 cm × 2.5–4 mm, rigid. Inflorescences short, 1–3-flowered; floral bracts ovate-triangular, ca. 3 mm. Flowers 2.5–3 cm in diam., sepals and petals yellowish green, spotted with purple, lip with green and purple-spotted lateral lobes and a dark purple epichile; pedicel and ovary spotted with purple, 12–18 mm. Sepals elliptic, 12.5–17 × 6–7 mm; lateral sepals dorsally carinate, keel becoming winged at apex. Petals obovate to spatulate, 17–20 × 7–9 mm; lip 13–18 mm; hypochile short, lateral lobes ovate-triangular, ca. 3 × 2 mm; epichile nearly broadly oblong, 11–15 × 7–9 mm, adaxially distinctly reticulate-sulcate, bilobed; apical lobules triangular, ca. 4 mm. Column 5–6 mm, stout. Fl. Mar–May.

• Epiphytic on tree trunks in open forests; 700–2000 m. C and S

Taiwan.

7. *Luisia brachystachys* (Lindley) Blume, Rumphia 4: 50. 1849.

小花钗子股 xiao hua chai zi gu

Mesoclastes brachystachys Lindley, Gen. Sp. Orchid. Pl. 45. 1830; *Luisia siamensis* Rolfe ex Downie.

Stems suberect, to 18 cm, stout, ca. 7 mm in diam., internodes 1–1.5 cm. Leaves 9–11 cm × 3–4 mm, obtuse. Inflorescences 2 or 3, ca. 1 cm, 3–6-flowered; rachis 3–4 mm in diam.; floral bracts ovate-triangular, ca. 2 mm, fleshy. Flowers opening widely, sepals and petals yellowish green, abaxial midvein purplish brown, lip pale yellow, column green, purple margined, anther cap yellow spotted with purple; pedicel and ovary pale yellow, tinged with purplish brown, ca. 6 mm. Dorsal sepal ovate, ca. 4 × 2.3 mm, obtuse; lateral sepals ovate-oblong, 4–4.5 × ca. 2.5 mm, dorsally slightly carinate and keel becoming winged at apex, apex obtuse. Petals narrowly oblong, 5–6 × 1.6–1.8 mm, obtuse; lip ca. 5 mm, glabrous, without a distinct boundary between epichile and hypochile; hypochile concave, narrower than epichile, base without distinct lateral lobes; epichile nearly suborbicular or triangular-rhombic, ca. 3 × 4.5 mm, obtuse. Column ca. 2.5 mm, stout. Fl. Apr. $2n = 40$.

Epiphytic on tree trunks in forests along valleys; 600–1300 m. S Yunnan [Bhutan, India, Laos, Myanmar, Vietnam].

8. *Luisia zollingeri* H. G. Reichenbach, Ann. Bot. Syst. 6: 622. 1863.

长叶钗子股 chang ye chai zi gu

Stems erect or arching, to 30 cm, 5–7 mm in diam., sometimes branched, internodes 1.5–2 cm. Leaves usually borne from upper part of stem, 12–17 cm × 3–4 mm, obtuse. Inflorescences opposite to leaves, ca. 1 cm, 3–6-flowered; rachis ca. 7 mm, thick; floral bracts broadly ovate-triangular, ca. 2 mm, fleshy. Flowers opening widely, sepals and petals pale pink, abaxially lateral sepals yellowish green in basal half, lip purple-red, apical margin green, abaxially yellowish green, column purplish red, anther cap yellow; pedicel and ovary green, ca. 6 mm. Dorsal sepal ovate, ca. 4 × 3 mm, obtuse; lateral sepals subovate, ca. 6 × 2.8 mm, dorsally slightly carinate, but winged toward apex and forming a narrowly winged mucro protruding from apex. Petals obovate-elliptic, ca. 5 × 3.2 mm, obtuse; lip ca. 5 × 4.5 mm, without a distinct boundary between epichile and hypochile; hypochile broader than epichile, concave, with 2 small lateral lobes, and a pair of calli at base bordering base of column; epichile suborbicular, glabrous, entire. Column ca. 2.5 mm, thick. Fl. May.

Epiphytic on tree trunks in forests along valleys; 500–1000 m. S Yunnan [India (Andaman Islands), Indonesia, Malaysia, Thailand, Vietnam].

9. *Luisia filiformis* J. D. Hooker, Fl. Brit. India 6: 23. 1890.

长瓣钗子股 chang ban chai zi gu

Stems often pendulous, 34–90 cm, 4–5 mm in diam., internodes 3–4 cm. Leaves secund, 14–26 cm × ca. 3 mm. Inflorescences erect, arising from lower part or near base of stem, 1–2

cm, few flowered; floral bracts broadly ovate-triangular, ca. 2 mm, fleshy. Flowers slightly fleshy, whitish, lip dark purple; pedicel and ovary ca. 8 mm. Dorsal sepal ovate, ca. 7 × 3 mm, concave, obtuse; lateral sepals similar to dorsal sepal, ca. 8 × 3 mm, dorsally carinate and becoming winged at apex. Petals linear, 8–11 × 1.5–1.7 mm, obtuse; lip ca. 7 mm, with a distinct boundary between epichile and hypochile; hypochile lateral lobes ca. 4 × 4 mm; epichile broadly ovate-triangular, ca. 4 × 5 mm, adaxially with several papillate longitudinal ridges, apex obtuse. Column ca. 4 mm. Fl. Apr–Jun.

Epiphytic on tree trunks in dense forests; 300–1100 m. S and SE Yunnan [Bhutan, India (NE and Orissa), Laos, Thailand, Vietnam].

10. *Luisia ramosii* Ames, Philipp. J. Sci., C, 6: 55. 1911.

宽瓣钗子股 kuan ban chai zi gu

Stems often arching, ca. 28 cm, 4–5 mm in diam., internodes ca. 1.5 cm. Leaves mostly on upper part of stem, 8–11 cm × 3.5–4 mm, obtuse. Inflorescences opposite to leaves, ca. 1 cm, 3–6-flowered; floral bracts broadly ovate-triangular, ca. 2 mm, thickly leathery. Flowers opening widely, purplish red, thinly textured; pedicel and ovary ca. 8 mm. Dorsal sepal elliptic, ca. 5 × 3 mm, concave, obtuse; lateral sepals slightly oblique, oblong, ca. 6 × 3 mm, dorsally carinate and winged toward apex; wing abruptly contracted and protruding from apex forming an awn. Petals ovate, ca. 6.2 × 3.2 mm, obtuse; lip 6–6.5 mm, strongly contracted near middle, with a distinct boundary between epichile and hypochile; hypochile 5.5–7 mm wide, broader than epichile, concave; epichile somewhat reniform-triangular, 5–6.2 mm wide, entire, obtuse. Column ca. 3 mm; stipe ovate, ca. 0.8 mm; viscidium suborbicular, large, ca. 1.3 mm wide. Fl. May–Jun. $2n = 38, 40$.

Epiphytic on tree trunks in open forests along valleys; 100–500 m. Guangxi, Hainan [Philippines, Vietnam].

Luisia trichorrhiza (Hooker) Blume was reported from Hainan (Merrill & Metcalf, Lingnan Sci. J. 21: 12. 1945) and Xizang (K. Y. Lang in C. Y. Wu, Fl. Xizang, 5: 776. 1987). The specimens reported from Hainan were identified by us as *Luisia ramosii*, and those of Xizang (*Qinghai-Xiang Exp. Team 74–4223*) remain doubtful, as they only bear young fruit.

11. *Luisia cordata* Fukuyama, Bot. Mag. (Tokyo) 48: 306. 1934.

心唇钗子股 xin chun chai zi gu

Stems erect or pendulous, 30–60 mm, ca. 5 mm in diam., usually unbranched. Leaves ca. 20 cm × 3 mm, acute at apex. Inflorescences 2- or 3-flowered; floral bracts distichous, broadly ovate, ca. 3 mm, acute. Flowers often nodding, ca. 1 cm in diam., sepals and petals green, lip deep purple-red; pedicel and ovary green, ca. 1 cm. Dorsal sepal ligulate, ca. 5 × 3 mm, 5-veined, obtuse; lateral sepals ovate-lanceolate, cymbiform, ca. 6 × 4 mm, dorsally carinate, 7-veined, apex acute. Petals linear, ca. 7.5 × 2 mm, acute; lip ca. 7 mm, fleshy, glabrous, without a distinct boundary between hypochile and epichile; hypochile ca. 3 × 4.5 mm, concave, lateral lobes very short; epichile cordate, large, ca. 4 × 5 mm, with a swelling near apex. Column ca. 3.5 mm. Fl. Jan.

• Epiphytic on tree trunks in thickets along the seashore. S Taiwan.

