

32. CHIRITA Buchanan-Hamilton ex D. Don, *Edinburgh Philos. J.* 7: 83. 1822.

唇柱苣苔属 *chun zhu ju tai shu*

Babactes A. P. de Candolle ex Meisner; *Ceratoscypus* W. Y. Chun; *Deltocheilos* W. T. Wang.

Herbs, perennial or rarely annual, terrestrial or epipetric, often rhizomatous, stemless or with simple or branched stems. Leaves few to many, basal or along stem and opposite, seldom in whorls of 3 or alternate, unequal to equal in a pair; leaf blade puberulent to villous or velutinous, rarely glabrous, base cuneate to cordate, rarely attenuate. Inflorescences umbel-like, lax or dense, axillary, 1- to many-flowered cymes; bracts 2, opposite, rarely to 7 and whorled, 1, or absent. Calyx actinomorphic or slightly zygomorphic, 5-sect from base or (3–)5-lobed; segments equal to subequal. Corolla purple to blue or white to yellow, pink or purple-red, rarely flesh colored, zygomorphic, inside puberulent, glandular puberulent, or glabrous; tube funnellform-tubular to campanulate or cylindric, not swollen or gibbous abaxially, longer than limb, 0.2–2 cm in diam.; limb 2-lipped; adaxial lip 2-lobed, slightly to 2–3.5 × shorter than abaxial lip; abaxial lip 3-lobed, lobes equal or central lobe longer, apex rounded, rarely to obtuse. Stamens 2, adnate to abaxial side of corolla tube near or above middle, included; anthers dorsifixed, coherent, thecae divaricate, confluent at apex, dehiscing longitudinally; connective not projecting; staminodes (absent or 1–)3, adnate to adaxial or adaxial and abaxial sides of corolla tube. Disc ringlike. Ovary linear, 1-loculed; placentas 2, parietal, projecting inward, seldom 2-loculed, abaxial locule sterile, or placenta 1, axile, projecting inward, 2-cleft. Stigma 1, abaxial, obtriangular to oblong, flabellate, obtrapeziform, or lamelliform, 2-lobed to undivided. Capsule straight, rarely oblique in relation to pedicel, linear to very narrowly ovoid, much surpassing calyx, dehiscing loculicidally to base, rarely only adaxial locule dehiscing; valves 2 or 4, straight, not twisted. Seeds unappendaged.

About 140 species: Bhutan, Borneo, China, India, Indonesia, Laos, Malaysia, Myanmar, Nepal, Thailand, Vietnam; 99 species in China.

Chirita is divided into three sections: *Chirita* sect. *Gibbosaccus* C. B. Clarke (approximately 91 species in China and Vietnam; spp. 1–81 in China), *Chirita* sect. *Chirita* (about 39 species in Bhutan, China, India, Laos, Myanmar, Nepal, Thailand, Vietnam; spp. 82–98 in China), and *Chirita* sect. *Microchirita* C. B. Clarke (about 18 species in Borneo, China, Indonesia, Malaysia, Thailand, Vietnam; sp. 99 in China). The last section consists of annuals (rarely perennials) with peduncles ± fused to the petiole and anthers fused only by projections on their connectives. The first two sections are usually perennials (rarely annuals) with peduncles free from petioles and anthers fused by their entire adaxial surfaces. Section *Gibbosaccus* has calyces 5-sect from base or rarely 5-lobed and stigmas 0.5–3 mm wide, while sect. *Chirita* has 5-lobed calyces and stigmas 2.4–5.8 mm wide.

Chirita umbrophila C. Y. Wu ex H. W. Li (*Bull. Bot. Res.*, Harbin 3(2): 38. 1983), which is known only from a fruiting specimen without persistent stigma, is impossible to determine whether it belongs in *Chirita*.

Observations of several cultivated species of *Chirita* show that the basal leaves may be ternate as well as opposite, and this may be true of others. The margin of calyx lobes, which is of diagnostic significance in several species, varies from entire to denticulate on a single cultivated plant of *C. fimbrisepala*. Therefore, variation in these characters needs further study to determine their taxonomic value.

1a. Peduncle often fused with petiole; anthers fused by projections on connectives; plants annual 99. *C. hamosa*

1b. Peduncle never fused with petiole; anthers fused along entire adaxial surface (anthers unknown in some species); plants perennial, rarely annual.

2a. Calyx with a tube, 5-lobed, rarely 5-sect from near base.

3a. Plants stemless, or stems prostrate and rooting at nodes.

4a. Calyx ca. 1.5 mm; corolla 0.9–1.5 cm 64. *C. hedyotidea*

4b. Calyx 7–35 mm; corolla 1.7–7 cm.

5a. Petiole to 1.5 cm wide; apical internodes of rhizome to 2.2 cm 36. *C. heterotricha*

5b. Petiole to 0.4 cm wide; apical internodes of rhizome inconspicuous, or plants not rhizomatous.

6a. Leaf blade lateral veins 4 or 5 on each side of midrib.

7a. Calyx tube 5–10 mm; ovary sparsely glandular puberulent; leaf blade adaxially with hairs to 1.2 mm 83. *C. monantha*

7b. Calyx tube 1–3 mm; ovary glabrous; leaf blade adaxially with hairs 1–6.5 mm.

8a. Peduncle ca. 4 cm; calyx ca. 2.3 cm, 5-lobed, lobes equal; leaf blade adaxially with hairs

1–3 mm, apex acute to obtuse; style sparsely glandular puberulent; flowers always solitary 82. *C. briggsioides*

8b. Peduncle 3–8(–11) cm; calyx 1–1.7 cm, 2-lipped, adaxial lip 4-lobed, abaxial lip entire; leaf blade adaxially with hairs 3–6.5 mm, apex obtuse to rounded; style glabrous; flowers solitary or sometimes paired 84. *C. dielsii*

6b. Leaf blade lateral veins 6–12 on each side of midrib.

9a. Calyx segments hollow and hornlike apically; petiole 4–5 cm; leaf blade base cuneate on 1 side,

- broadly cuneate to rounded on other; lateral veins 7–12 on each side of midrib; peduncle 3–5 cm 86. *C. corniculata*
- 9b. Calyx segments not hollow and hornlike apically; petiole 1.8–40 cm; leaf blade base rounded to cordate or oblique, cuneate to cordate on 1 side, rounded to cordate on other; lateral veins 6–9 on each side of midrib; peduncle 3.5–25 cm.
- 10a. Calyx 0.9–1.5 cm, tube 1–7 mm; corolla 1.7–4.5 cm; bract 1 87. *C. lachenensis*
- 10b. Calyx 1.1–3 cm, tube 5–11 mm; corolla 4.4–7 cm; bracts 2 or rarely 1.
- 11a. Flowers always solitary; bract margins entire; calyx lobes slightly unequal 85. *C. fruticola*
- 11b. Cymes 1–6-flowered; bract margins entire to dentate or serrulate; calyx lobes unequal.
- 12a. Petiole 1.8–17(–24) cm; peduncle rust-colored pubescent and villous; bracts narrowly ovate or oblong, 1–4 mm wide, rust-colored villous; corolla sparsely puberulent to sparsely pilose outside, tube narrowly funnelform; anthers densely puberulent; staminode 1 89. *C. speciosa*
- 12b. Petiole 13–40 cm; peduncle sparsely pubescent; bracts ovate or elliptic to suborbicular, 1–10 mm wide, sparsely pubescent; corolla glabrous outside, tube tubular; anthers glabrous; staminodes 3 90. *C. macrophylla*
- 3b. Plants stemmed, stems ± erect.
- 13a. Petiole to 1.5 cm wide; apical internodes of rhizome to 2.2 cm 36. *C. heterotricha*
- 13b. Petiole to 0.4 cm wide; rhizome usually without conspicuous internodes, or plants not rhizomatous (rarely rhizomes unknown).
- 14a. At least upper 2 pairs of stem leaves crowded at stem apex.
- 15a. Stem leaves alternate, abaxially often purplish, especially along veins; stems rust-colored pilose 89. *C. speciosa*
- 15b. Stem leaves opposite, abaxially green; stems white villous or glabrescent to glabrous.
- 16a. Flowers 1–10 in umbel-like fascicles in leaf axils, peduncle absent; bracts ca. 7, 6–15 mm; pedicel to 2.5 cm; calyx 1–1.4 cm, tube ca. 3 mm; anthers ca. 2 mm; ovary puberulent; stigma undivided 95. *C. fasciculiflora*
- 16b. Flowers 1 or 2 per inflorescence, peduncle 1–6 cm; bracts 2, 0.5–1.7 mm; pedicel 3–5(–8.5) cm; calyx 2.4–3 cm, tube 13–19 mm; anthers ca. 4.5 mm; ovary glabrous; stigma 2-lobed 96. *C. shuii*
- 14b. Stem leaves ± widely spaced.
- 17a. Bracts connate, forming a funnelform involucre 94. *C. infundibuliformis*
- 17b. Bracts free.
- 18a. Stem leaves alternate 97. *C. pycnantha*
- 18b. Stem leaves opposite.
- 19a. Bracts ovate-orbicular to subreniform, at least slightly wider than long; calyx 2-lipped, adaxial lip 4-lobed, abaxial lip entire 98. *C. puerensis*
- 19b. Bracts lanceolate to ovate or obovate or elliptic to suborbicular, longer than wide; calyx 5-lobed, lobes equal or unequal, but not 2-lipped.
- 20a. Petiole 13–40 cm; leaves basal and on stem 90. *C. macrophylla*
- 20b. Petiole 0.2–7 cm; leaves all on stem.
- 21a. Leaf blade abaxially densely yellow glandular; lateral veins 8–13 on each side of midrib; anthers ca. 1.5 mm 88. *C. oblongifolia*
- 21b. Leaf blade eglandular; lateral veins 5–10 on each side of midrib; anthers 2–4 mm.
- 22a. Plants perennial; calyx 2.5–3.5 cm, tube 1–1.5 cm, lobes 1–2 cm; capsule often at under 90° to peduncle 91. *C. urticifolia*
- 22b. Plants annual; calyx 0.6–1.8 cm, tube 0.3–1.2 cm, lobes 0.4–1 cm; capsule always erect.
- 23a. Leaf blade not purple spotted; calyx lobes not hornlike, not spreading outward at apex; petiole 0.2–4(–7) cm 92. *C. anachoreta*

- 23b. Leaf blade purple spotted abaxially; calyx lobes hornlike at apex, spreading;
 petiole
 0.4–1.2(–2.8) cm 93. *C. pumila*
- 2b. Calyx without a tube, 5-sect from near base.
- 24a. Leaf blade margin shallowly to deeply pinnately lobed.
- 25a. Leaf blade margin deeply dentate or pinnately compound, lateral lobe margin deeply crenate or serrate to entire; lateral veins 3–10 on each side of midrib; pedicel spreading and appressed villous; calyx margin denticulate; stigma emarginate 58. *C. pinnata*
- 25b. Leaf blade margin simple, irregularly pinnately lobed or dentate to pinnately lobed basally or crenate; lateral veins 3–5 on each side of midrib; pedicel pubescent to pilose, sometimes glandular puberulent; calyx margin entire or 1- or 2(or 3)-denticulate; stigma 2-lobed.
- 26a. Leaf blade margin irregularly pinnately lobed; cymes 1–4-flowered; bracts oblong or ovate to obovate, 1.5–8(–10) mm wide; calyx segments 3–7 mm, margin 1- or 2(or 3)-denticulate; ovary ca. 1.4 cm; capsule at ca. 90° to peduncle, ca. 3–4 cm 57. *C. pinnatifida*
- 26b. Leaf blade margin dentate to lobed basally or crenate; cymes 2–12-flowered; bracts lanceolate-linear, 0.6–1.2 mm wide; calyx segments 4–13 mm, margin entire; ovary 4–8 mm; capsule erect, 0.9–1.3 cm 41. *C. juliae*
- 24b. Leaf blade margin not lobed.
- 27a. Leaf blade glabrous, margin finely spiny denticulate, lanceolate-linear, seldom falcate.
- 28a. Cyme 2- or 3-flowered; bracts 3.0–3.5 cm; calyx 10–12 mm, segment apex attenuate; corolla 4.5–5 cm; staminodes 3 65. *C. wentsaii*
- 28b. Cyme 5–9-flowered; bracts 0.2–1.2 cm; calyx 1.5–5 mm, segment apex acute; corolla 1.3–2 cm; staminodes 2.
- 29a. Bracts linear to lanceolate-linear, 9–12 mm; peduncle ca. 6 cm; pedicel 2–2.5 cm; calyx segments lanceolate-linear, 4–5 mm; corolla ca. 2 cm 66. *C. ophiopogoides*
- 29b. Bracts narrowly triangular, 2–2.5 mm; peduncle ca. 20 cm; pedicel 0.15–0.6 cm; calyx segments triangular, ca. 1.5 mm; corolla ca. 1.3 cm 67. *C. spinulosa*
- 27b. Leaf blade sparsely puberulent or strigose to densely pubescent, pilose, or villous, sometimes only along veins, margin entire to crenate, dentate, repand, serrate, undulate, denticulate, or rarely lobed, but not spiny denticulate; ovate, elliptic, reniform, narrowly elliptic, obovate, or oblong, seldom linear.
- 30a. Plants with a stem.
- 31a. Leaves alternate; anthers densely puberulent or woolly.
- 32a. Capsule erect, 3–3.6 cm; cymes 1- or 2-flowered; corolla glabrous inside, adaxial lip exceeding abaxial lip; ovary ca. 18 mm; stigma emarginate; leaf blade 1.5–8.5 cm, base oblique, cuneate to cordate, not peltate 70. *C. minutihamata*
- 32b. Capsule at ca. 90° to peduncle, 1.5–2 cm; cymes 2–11-flowered; corolla glandular puberulent basally inside adaxial lip, abaxial lip exceeding adaxial lip; ovary 7–9 mm; stigma 2-lobed; leaf blade 3–15 cm, base oblique, rounded to cordate on 1 side, cuneate on other, often slightly peltate 71. *C. cyrtocarpa*
- 31b. Leaves opposite; anthers glabrous.
- 33a. Corolla glandular, puberulent, or glandular puberulent on yellow spot or on adaxial lip inside; petiole 0.5–11 cm; leaf blade 3–26 × 1.5–14 cm; cymes 2–28-flowered; peduncle 4.4–35 cm; bracts 0.9–25 mm; pedicel (0.3–)1.2–6 cm.
- 34a. Ovary 2–2.3 cm; rhizome internodes inconspicuous; peduncle 20–35 cm 10. *C. flavimaculata*
- 34b. Ovary ca. 1.2 cm; rhizome internodes to 2.2 cm toward apex; peduncle 4.4–21 cm 36. *C. heterotricha*
- 33b. Corolla glabrous inside; petiole 0.2–3 cm; leaf blade 1–15 × 0.7–8.5 cm; cymes 1–5-flowered; peduncle 2.4–7 cm; bracts 2.6–7 mm; pedicel 0.7–1.8 cm.
- 35a. Corolla white; leaf blade 1–6.6 × 0.9–3.5 cm, margin entire to repand or shallowly crenate; filaments glandular puberulent near apex; staminodes 2 68. *C. tibetica*
- 35b. Corolla purple to blue with yellow throat; leaf blade 1–15 × 0.7–8.5 cm, margin dentate; filaments glabrous; staminode 1 69. *C. forrestii*
- 30b. Plants stemless.
- 36a. Calyx segment margin denticulate or serrate, at least once near apex.
- 37a. Leaves leathery.

- 38a. Cymes 7–11-flowered; peduncle ca. 12 cm; bracts 1.3–2 cm; corolla ca. 2.7 cm; leaf blade to 10 cm 46. *C. liboensis*
- 38b. Cymes 1–3-flowered; peduncle 5.5–8 cm; bracts 0.4–0.6 cm; corolla ca. 4.5 cm; leaf blade to 7 cm 48. *C. subrhomboidea*
- 37b. Leaves herbaceous or papery.
- 39a. Corolla tube cylindric, 2–5 mm in diam. at mouth; filaments 1.6–5.5 mm.
- 40a. Bract 1; calyx ca. 2 mm; corolla ca. 1.2 cm; staminode 1; stigma not divided; petiole to 1 cm; leaf blade 1–2.2 × 0.5–0.9 cm, margin entire 63. *C. speluncae*
- 40b. Bracts 2; calyx 4–6 mm; corolla 2.2–3.4 cm; staminodes 3; stigma 2-lobed or 2-parted; petiole to 3.4 cm; leaf blade 1.4–5.4 × 0.6–3 cm, margin repand to indistinctly denticulate.
- 41a. Flowers always solitary; peduncle ca. 1.2 cm; corolla 2.5–3.4 cm, inside glabrous; filaments ca. 5.5 mm 60. *C. vestita*
- 41b. Flowers 1–6 per cyme; peduncle 2.4–4.5 cm; corolla ca. 2.2 cm, inside puberulent on limb; filaments ca. 3 mm 61. *C. secundiflora*
- 39b. Corolla tube thin funnellform to nearly tubular, 6–14 mm in diam. at mouth; filaments 8–14 mm.
- 42a. Leaf blade 1.5–3.3 cm wide; cymes 1–3-flowered; corolla 2.3–2.7 cm; adaxial lip 3–3.5 mm.
- 43a. Corolla purplish blue, inside with longitudinal lines of very short hairs on adaxial lip; petiole 0.7–1.1 cm; leaf blade 3–4.8 cm; calyx segments ca. 5 mm; filaments glandular puberulent; anthers purple strigose at apex 23. *C. jiuwanshanica*
- 43b. Corolla flesh colored, inside pilose basally; petiole 2.5–3 cm; leaf blade 3–9 cm; calyx segments 7–7.5 mm; filaments glabrous; anthers glabrous 74. *C. skogiana*
- 42b. Leaf blade 1.9–16.5 cm wide; cymes (1–)4–15-flowered; corolla 2.5–6.4 cm; adaxial lip 6–12 mm.
- 44a. Corolla 2.5–3.4 cm; pistil ca. 2.1 cm; petiole 5–25 cm 77. *C. macrodonta*
- 44b. Corolla 3.5–6.4 cm; pistil 2.7–3.2 cm; petiole 0.8–10 cm.
- 45a. Calyx 4–7 mm; corolla ca. 3.5 cm, inside sparsely pubescent basally; leaf blade 1.9–7 cm wide; cymes with up to 12 flowers 22. *C. obtusidentata*
- 45b. Calyx 7–17 mm; corolla (3.5–)4–6.4 cm, inside puberulent just below adaxial lip on lines or spots; leaf blade 3.5–11 cm wide; cymes with up to 5 flowers.
- 46a. Peduncle to 28 cm; bract margin entire; pedicel 0.5–3.8 cm; calyx segments 0.7–1.1(–1.5) cm, apex acute to acuminate 29. *C. fimbrisepala*
- 46b. Peduncle to 10 cm; bract margin crenulate; pedicel 0.1–0.5(–2) cm; calyx segments 1.2–1.7 cm, apex attenuate 30. *C. verecunda*
- 36b. Calyx segment margin entire.
- 47a. Bracts 3.
- 48a. Corolla 4.5–6 cm, abaxial lip 2–3 cm; peduncle 8–31.5 cm 78. *C. macrorhiza*
- 48b. Corolla 3–4 cm, abaxial lip 0.9–1.5 cm; peduncle 4–13.5 cm.
- 49a. Leaf blade lateral veins 2 or 3 on each side of midrib; cymes (3–)10–14-flowered; calyx 4–5 mm; corolla white, ca. 3 cm, abaxial lip ca. 0.9 cm 28. *C. xinningensis*
- 49b. Leaf blade lateral veins 4 or 5 on each side of midrib; cymes up to 7-flowered; calyx 5–10 mm; corolla blue or purple, 3.5–4 cm, abaxial lip 1.4–1.5 cm.
- 50a. Petiole 2–4.5 cm; leaf blade elliptic to broadly obovate; cymes ca. 7-flowered; peduncle 8.5–9.8 cm; bracts 3–7.5 mm wide; calyx 7–10 mm; filaments ca. 13 mm, glandular puberulent near apex; staminodes 3 27. *C. tribracteata*
- 50b. Petiole to 1 cm; leaf blade ovate to orbicular-ovate; cymes ca. 2-flowered; peduncle 4–6 cm; bracts 1–2 mm wide; calyx 5–7 mm; filaments ca. 8 mm, glabrous; staminode 1 42. *C. cruciformis*
- 47b. Bracts 1 or 2.
- 51a. Bract 1.

- 52a. Leaf blade margin entire; peduncle 1.1–2.2 cm, densely spreading villous; calyx ca. 2 mm; corolla ca. 1.2 cm, tube cylindric, mouth ca. 2 mm in diam.; filaments ca. 1.6 mm; staminode 1 63. *C. speluncae*
- 52b. Leaf blade margin repand-crenate, remotely denticulate or undulate-crenate; peduncle 5–7 cm, densely or spreading puberulent; calyx 4.8–5 mm; corolla 2.8–3 cm, tube narrowly funnellform or nearly campanulate, mouth 9–15 mm in diam.; filaments 9–10 mm; staminodes 2.
- 53a. Leaf blade membranous; petiole 0.3–2 cm; bract subulate, ca. 1.2 mm, apex acute; corolla tube narrowly funnellform; stigma undivided 7. *C. tenuifolia*
- 53b. Leaf blade papery; petiole 1–9 cm; bract narrowly spathe-like, navicular-ovate, 15–20 mm, apex long acuminate; corolla tube nearly campanulate; stigma 2-lobed 35. *C. spadiciformis*
- 51b. Bracts 2.
- 54a. Leaf blade leathery.
- 55a. Leaf blade margin crenate or repand, rarely subentire.
- 56a. Leaf blade to 3.2 cm; cymes 2–4-flowered 51. *C. yungfuensis*
- 56b. Leaf blade 4–10 cm; cymes 5–11-flowered.
- 57a. Corolla 3.7–4.6 cm; peduncle villous; bracts linear-lanceolate, ca. 1 mm wide, apex acute to acuminate; calyx segments apex acuminate 44. *C. sclerophylla*
- 57b. Corolla ca. 2.7 cm; peduncle puberulent; bracts narrowly ovate, 3.5–5 mm wide, apex obtuse; calyx segments apex obtuse 46. *C. liboensis*
- 55b. Leaf blade margin entire.
- 58a. Leaf blade to 4 cm, apex obtuse to rounded; cymes 1- or 2-flowered.
- 59a. Leaf base rounded; peduncle 5.3–5.6 cm; bracts 8–11 × ca. 4 mm; corolla ca. 2.7 cm, glabrous inside; anthers glabrous; stigma 2-lobed 50. *C. parvifolia*
- 59b. Leaf base broadly cuneate; peduncle 9–12.5 cm; bracts 4–5 × 1.6–2 mm; corolla 3.4–4 cm, puberulent at least basally inside; anthers pubescent or villous; stigma undivided.
- 60a. Petiole 1–5 mm; calyx segments narrowly lanceolate-linear, 6.5–7 × 1–1.2(–1.5) mm; stigma ovate, ca. 0.8 mm 3. *C. brachystigma*
- 60b. Petiole 6–14 mm; calyx segments lanceolate, ca. 5 × 1.5–2 mm; stigma ligulate-linear, ca. 6 mm 5. *C. atropurpurea*
- 58b. Leaf blade 2.5–16 cm, apex acute to acuminate or attenuate, rarely rounded; cymes (1 or)2–15-flowered.
- 61a. Petiole absent to 1 cm; leaf blade base attenuate; stigma obtrapeziform.
- 62a. Leaf blade 1–2.9 cm wide; bracts 4–20 mm; pedicel 0.7–4 cm; calyx 5–8 mm; corolla 3.4–4 cm 54. *C. longgangensis*
- 62b. Leaf blade 0.4–0.8 cm wide; bracts 4–10 mm; pedicel 0.5–1.2 cm; calyx 3.2–4 mm; corolla ca. 2.4 cm 55. *C. linearifolia*
- 61b. Petiole 1–5 cm; leaf blade base cuneate, rarely broadly cuneate; stigma cuneate or oblong (unknown in *C. minutimaculata*).
- 63a. Cymes 7–11-flowered; bract and calyx segment apex obtuse; leaf blade apex acute to rounded 46. *C. liboensis*
- 63b. Cymes ca. 5-flowered; bract apex acute, calyx segment apex attenuate; leaf blade apex acute.
- 64a. Leaf blade not spotted; bracts 5–7 mm wide; calyx segments ca. 11 mm 20. *C. pseudoeburnea*
- 64b. Leaf blade adaxially densely and minutely purple spotted; bracts 8–12 mm wide; calyx segments ca. 5.5 mm 21. *C. minutimaculata*
- 54b. Leaf blade herbaceous or papery.
- 65a. Bracts 3 mm or more wide.

- 66a. Leaf blade with 3–6 palmate basal veins and 1–3 pinnate veins on each side of midrib distally.
- 67a. Leaf blade adaxially with dense, long and short hairs, abaxially puberulent, base cuneate; petiole to 9 cm; bracts 2–2.5 mm; corolla ca. 4.4 cm 31. *C. langshanica*
- 67b. Leaf blade villous on both surfaces, base cordate; petiole to 25 cm; bracts 4–10 mm; corolla 2.5–3.4 cm 77. *C. macrodonta*
- 66b. Leaf blade with 3–7 pinnate lateral veins on each side of midrib.
- 68a. Leaf blade 0.8–3.2 cm 17. *C. lienxienensis*
- 68b. Leaf blade (2–)3–26 cm.
- 69a. Calyx at least 10 mm.
- 70a. Adaxial corolla lip 10–15 mm; leaf blade 2.2–9.5 × 1.4–6.5 cm; cymes 1–6-flowered.
- 71a. Petiole 0.2–2.8 cm; leaf surfaces appressed puberulent; peduncle 3–9 cm; corolla ca. 4 cm, abaxial lip ca. 1.3 cm; anthers glabrous; staminodes 2; stigma undivided 2. *C. subulatisepala*
- 71b. Petiole 2.5–7.5 cm; leaf surfaces sparsely strigose; peduncle 8–31.5 cm; corolla 4.5–6 cm, abaxial lip 2–3 cm; anthers densely bearded abaxially; staminodes 3; stigma 2-lobed 78. *C. macrorhiza*
- 70b. Adaxial corolla lip 3–7 mm; leaf blade (3–)6–26 × (1.5–)4–16 cm; cymes 2–28-flowered.
- 72a. Anthers villous abaxially; leaf blade 3–12 cm; lateral veins 3 or 4 on each side of midrib; peduncle 4–12 cm; staminodes 2 24. *C. polycephala*
- 72b. Anthers glabrous; leaf blade 3–26 cm; lateral veins 4–7 on each side of midrib; peduncle 4.4–35 cm; staminodes (2 or)3.
- 73a. Pistil 2.9–3.2 cm, ovary 2–2.3 cm; leaf blade abaxially pubescent with veins pilose, base cuneate to broadly so 10. *C. flavimaculata*
- 73b. Pistil 2–2.6 cm, ovary 1.2–1.6 cm; leaf blade abaxially sparsely pubescent or puberulent, base cuneate or broadly cuneate to attenuate and decurrent into petiole wings, seldom truncate-cordate.
- 74a. Leaf blade lateral veins inconspicuous; peduncle 4.4–21 cm; bracts 0.9–25 mm; pedicel puberulent to spreading pilose 36. *C. heterotricha*
- 74b. Leaf blade lateral veins conspicuous; peduncle 15–30 cm; bracts 10–13 mm; pedicel glandular puberulent 40. *C. pteropoda*
- 69b. Calyx less than 10 mm.
- 75a. Petiole (0.2–)7–18 mm wide.
- 76a. Corolla tube ca. 3 cm; bracts (8–)12–28 mm wide.
- 77a. Leaf blade margin entire; bract margin entire; pedicel to 2.3 cm; staminodes 2 16. *C. eburnea*
- 77b. Leaf blade margin dentate or denticulate to serrate; bract margin denticulate; pedicel to 1.1 cm; staminodes 3 19. *C. lungzhouensis*
- 76b. Corolla tube 1.3–2.8 cm; bracts less than 10 mm wide.
- 78a. Apical internodes of rhizome to 2.2 cm; calyx 7–17 mm; leaf blade 3–23 cm, margin entire to indistinctly denticulate; pedicel to 6 cm 36. *C. heterotricha*
- 78b. Apical internodes of rhizome inconspicuous; calyx 4–7 mm; leaf blade 2–15 cm, margin undulate-dentate, crenulate, crenate, dentate, or repand; pedicel to 2.5 cm.

- 79a. Peduncle ca. 18 cm; bracts ca. 22 mm; corolla ca. 2.1 cm; anthers glabrous; pistil ca. 1 cm; stigma obovoid 13. *C. latinervis*
- 79b. Peduncle 7–13 cm; bracts 4–13(–18) mm; corolla 3.2–4 cm; anthers sparsely puberulent or bearded; pistil 2.6–2.8 cm; stigma cuneate.
- 80a. Leaf blade surfaces sparsely strigose; peduncle 9–13 cm; calyx segments 0.8–1 mm wide, apex acute 39. *C. roseoalba*
- 80b. Leaf blade surfaces sparsely puberulent; peduncle 7–9 cm; calyx segments 1.5–2.5 mm wide, apex obtuse 45. *C. brachytricha*
- 75b. Petiole to 6 mm wide.
- 81a. Leaves sessile or petiole to 1.4 cm.
- 82a. Rhizome internodes conspicuous, 0.4–2 cm; leaf blade base attenuate; anthers bearded; cymes 2–15-flowered 54. *C. longgangensis*
- 82b. Rhizome internodes inconspicuous; leaf blade base cuneate; anthers glabrous; cymes 4- or 5-flowered.
- 83a. Leaf blade margin shallowly crenate, apex obtuse to rounded; filaments glabrous; staminodes 3; stigma 2-lobed 26. *C. depressa*
- 83b. Leaf blade margin subentire to repand, apex acute; filaments glandular puberulent above middle; staminodes 2; stigma emarginate . 80. *C. atroglandulosa*
- 81b. Petiole (0.2–)1–9(–19) cm.
- 84a. Bracts to 3 mm wide.
- 85a. Corolla 4.5–6 cm, adaxial lip 10–15 mm, abaxial lip 20–30 mm; peduncle 8–31.5 cm; calyx 6–11 mm; petiole 2.5–7.5 cm; leaf blade sparsely strigose 78. *C. macrorhiza*
- 85b. Corolla 2.2–3.5 cm, adaxial lip 3–3.5 mm, abaxial lip 5–11 mm; peduncle 7–8 cm; calyx 3–6 mm; petiole 1–3.5 cm; leaf blade sparsely to densely puberulent.
- 86a. Bracts ca. 5 mm, margin remotely crenulate, apex obtuse; calyx 3–3.5 mm; corolla glabrous outside, abaxial lip ca. 5 mm; anthers glabrous; staminodes 2 14. *C. orthandra*
- 86b. Bracts 8–9 mm, margin entire, apex acute; calyx ca. 6 mm; corolla puberulent outside, abaxial lip ca. 11 mm; anthers bearded; staminodes 3 25. *C. leiophylla*
- 84b. Bracts (4–)5–28 mm wide.
- 87a. Adaxial corolla lip ca. 11 mm; stigma ligulate, undivided; leaf blade 2.2–6.5 cm; bracts strigose 2. *C. subulatisepala*
- 87b. Adaxial corolla lip 4–7 mm; stigma cuneate or obtrapeziform to oblong, 2-lobed; leaf blade 2.6–20 cm; bracts puberulent to villous.
- 88a. Staminodes 3; calyx densely puberulent and glandular puberulent inside 19. *C. lungzhouensis*
- 88b. Staminodes 2; calyx glabrous inside.
- 89a. Leaf blade adaxially puberulent only near margin, abaxial surface sparsely appressed puberulent, margin repand to entire; bracts 0.9–1.8 × 0.4–0.9 cm 47. *C. glabrescens*
- 89b. Leaf blade both surfaces puberulent, pubescent, and/or pilose, margin repand to crenate or denticulate, rarely dentate or serrate; bracts 0.6–4 × 0.4–2.7 cm.
- 90a. Leaf blade adaxially puberulent; staminodes ca. 0.8 mm; cymes 1–4-flowered; peduncle 4–8 cm; bracts 0.9–2.1 cm 15. *C. sichuanensis*

- 90b. Leaf blade adaxially appressed pubescent and pilose; staminodes 3–7 mm; cymes 1–12-flowered; peduncle 5–32 cm; bracts 0.6–4 cm.
- 91a. Leaf blade 2.6–10(–12) cm, abaxially appressed pilose; corolla tube narrowly funnellform; peduncle 5–20 cm; bracts elliptic to broadly ovate, 0.4–2.7 cm wide; pedicel 0.6–1 cm 18. *C. lunglinensis*
- 91b. Leaf blade 4–20 cm, abaxially appressed pubescent and pilose; corolla tube tubular to broadly funnellform, often gibbous abaxially; peduncle 12–32 cm; bracts ovate to lanceolate, 0.4–1.6 cm wide; pedicel 0.8–2.5 cm 56. *C. sinensis*
- 65b. Bracts less than 3 mm wide.
 - 92a. Leaf blade base cordate, rarely truncate-cordate on both sides.
 - 93a. Filaments sparsely puberulent; anthers glabrous; rhizome apical internodes to 2.2 cm; leaf blade sometimes oblique, narrowly elliptic to oblong, obovate or ovate, apex acute to obtuse; adaxial corolla lip 3–5 mm 36. *C. heterotricha*
 - 93b. Filaments glabrous or sparsely glandular near apex; anthers glandular, villous, or densely bearded abaxially; rhizome internodes inconspicuous; leaf blade ovate to orbicular, obovate, or reniform, apex acute to rounded; adaxial corolla lip 5–7 mm.
 - 94a. Leaf blade basally with 3–6 palmate veins, apically with 2 or 3 pinnate veins on each side of midrib, blade 4.5–15 × 5–16.5 cm; peduncle 8–23 cm; bract margin 3–5-glandular denticulate 77. *C. macrodonta*
 - 94b. Leaf blade veins all pinnate, 3–5 on each side of midrib, blade 1.6–6.8 × 1.6–6.8 cm; peduncle 3.5–13 cm; bract margin entire.
 - 95a. Cymes 2–7-flowered; peduncle 4.5–13 cm; pedicel 1.7–7 cm; calyx 4–5 mm; corolla 2.3–2.7 cm; leaf blade adaxially appressed pilose (hairs to 5 mm); petiole 1–4.5 cm 49. *C. rotundifolia*
 - 95b. Flowers solitary; peduncle ca. 3.5 cm; pedicel ca. 1 cm; calyx ca. 13 mm; corolla 4–4.5 cm; leaf blade adaxially puberulent; petiole 3–17.5 cm .. 52. *C. cordifolia*
- 92b. Leaf blade base decurrent, attenuate, cuneate to broadly cuneate to rounded, rarely truncate, if cordate on 1 side then other side merely cuneate or rounded.
 - 96a. Calyx to 4 mm.
 - 97a. Cymes 2–11-flowered; peduncle 3.5–20 cm; leaf blade 3.5–20 cm.
 - 98a. Leaf blade 2–3.5 cm wide, abaxially velutinous, base cuneate; petiole 0.5–2.5 cm 12. *C. medica*
 - 98b. Leaf blade 2.5–10 cm wide, abaxially appressed puberulent or densely puberulent and appressed pilose, base cuneate to rounded or cordate; petiole 0.5–11 cm.
 - 99a. Pedicel 2.5–4 cm; stigma undivided; pistil ca. 1.1 cm; bracts ca. 3.5 mm 8. *C. liguliformis*
 - 99b. Pedicel 0.3–1.6 cm; stigma 2-lobed; pistil 1.2–3.7 cm; bracts 3–9 mm 37. *C. fordii*
 - 97b. Cymes 1–3-flowered; peduncle 2.5–7 cm; leaf blade 1.5–4.2(–4.7) cm.
 - 100a. Calyx pilose inside; corolla ca. 1.4 cm, mouth ca. 4 mm in diam., adaxial lip ca. 2 mm, abaxial lip ca. 5.5 mm; anthers glabrous 75. *C. napoensis*
 - 100b. Calyx glabrous inside; corolla 3–3.5 cm, mouth ca. 1 cm in diam., adaxial lip 5–6 mm, abaxial lip ca. 1 cm; anthers puberulent or villous.
 - 101a. Leaves ca. 8; bracts 1.2–2.2 mm; staminodes 3 33. *C. villosissima*
 - 101b. Leaves to 24; bracts 3–4 mm; staminodes 2 72. *C. wangiana*
- 96b. Calyx at least 4 mm.
 - 102a. Leaf blade (2–)6–24 cm.

- 103a. Leaf blade to 3 cm wide, margin entire.
104a. Petiole 1.5–4 cm; leaf blade apex acute to obtuse; staminodes absent;
rhizome internodes inconspicuous 53. *C. bicolor*
104b. Leaves sessile or petiole to 1 cm; leaf blade apex acute to acuminate;
staminodes
3; rhizome internodes conspicuous, 0.4–2 cm 54. *C. longgangensis*
- 103b. Leaf blade (1.5–)3.5–17 cm wide, margin crenate, crenulate, dentate,
denticulate, or serrate, often repand, seldom subentire to entire.
- 105a. Bracts over 9 mm.
106a. Petiole to 3 cm; bract and calyx segment apex obtuse 45. *C. brachytricha*
106b. Petiole (0.5–)2–17 cm; bract apex acute to acuminate (unknown in *C.*
depressa, sometimes obtuse in *C. macrorhiza*), calyx segment apex acute
to acuminate or attenuate.
- 107a. Pistil ca. 1.4 cm; stigma ligulate, undivided; corolla tube ca. 1.7 cm 6. *C. brassicoides*
107b. Pistil 2–3.3 cm; stigma cuneate, oblong, trapezoid, obtrapeziform, or
obovoid,
2-lobed or rarely undivided; corolla tube 2.2–3.3 cm.
- 108a. Leaf blade adaxially sparsely to densely strigose; anthers sparsely
puberulent to densely bearded.
- 109a. Bract strigose; peduncle 9–13 cm, puberulent; leaf blade base
broadly
cuneate, margin crenulate or remotely dentate 39. *C. roseoalba*
109b. Bract puberulent or pubescent; peduncle 8–31.5 cm, villous or
pubescent;
leaf blade base cuneate to rounded, margin crenate to subentire or
repand.
- 110a. Corolla tube mouth 0.9–1.3 cm in diam., abaxial lip 1.2–2 cm;
staminodes
2; stigma ca. 1.2 mm; cymes 5–10-flowered 44. *C. sclerophylla*
110b. Corolla tube mouth 1.5–2 cm in diam., abaxial lip 2–3 cm;
staminodes
3; stigma ca. 3.5 mm; cymes 1–6-flowered 78. *C. macrorhiza*
- 108b. Leaf blade adaxially sparsely to densely puberulent, sometimes also
pilose;
anthers glabrous.
- 111a. Leaf blade 3–24 cm; lateral veins 4 or 7 on each side of midrib;
peduncle
4.4–30 cm.
- 112a. Peduncle 4.4–21 cm; apical rhizome internodes to 2.2 cm; petiole
to
1.5 cm wide; bracts 0.9–25 mm 36. *C. heterotricha*
112b. Peduncle 15–30 cm; rhizome internodes inconspicuous; petiole to
3 cm wide; bracts 10–13 mm 40. *C. pteropoda*
- 111b. Leaf blade 6–15 cm; lateral veins 4 or 5 on each side of midrib;
peduncle
4–11 cm.
- 113a. Petiole ca. 8 mm; leaf blade abaxially velutinous; corolla ca. 3 cm;
staminodes 3 26. *C. depressa*
113b. Petiole 3–17 cm; leaf blade abaxially appressed puberulent; corolla
3.5–4.5 cm; staminodes 2 41. *C. juliae*
- 105b. Bracts to 9 mm.
114a. Petiole to 3 cm.
115a. Leaf blade narrowly elliptic to oblong, densely appressed puberulent 38. *C. carnosifolia*
115b. Leaf blade broadly ovate to ovate, sparsely puberulent 45. *C. brachytricha*
114b. Petiole (0.5–)2–17 cm.
116a. Leaf blade sparsely strigose to strigose on both surfaces; abaxial corolla
lip 1–3 cm.

- 117a. Corolla 2.4–4.2 cm, abaxial lip 1–2.2 cm; staminodes 2; pistil 1.5–1.7 cm; stigma undivided; bracts 2–6 mm 1. *C. swinglei*
- 117b. Corolla 4.5–6 cm, abaxial lip 2–3 cm; staminodes 3; pistil ca. 3.3 cm; stigma 2-lobed; bracts 5–16 mm 78. *C. macrorhiza*
- 116b. Leaf blade adaxially sparsely to densely puberulent and sometimes pilose, abaxially sparsely to densely puberulent and sometimes pilose, pubescent, or velutinous; abaxial corolla lip 0.6–1.5 cm.
- 118a. Staminode 1; anthers pilose; cymes ca. 2-flowered 42. *C. cruciformis*
- 118b. Staminodes 2 or 3; anthers glabrous or seldom puberulent; cymes 2–15-flowered.
- 119a. Petiole (0.5–)4–17 cm; bracts to 25 mm; calyx segments to 17 mm; corolla tube mouth 0.8–1.5 cm in diam.
- 120a. Adaxial corolla lip 3–5 mm; anthers 2.2–3 mm; pistil 2–2.6 cm; petiole to 11 cm; leaf blade to 23 cm; bracts to 25 mm; pedicel (0.3–)1.5–6 cm; calyx 7–17 mm 36. *C. heterotricha*
- 120b. Adaxial corolla lip 7–8 mm; anthers 3.2–3.5 mm; pistil 3–3.2 cm; petiole to 17 cm; leaf blade to 15 cm; bracts to 13 mm; pedicel 0.1–1.5 cm; calyx 4–13 mm 41. *C. juliae*
- 119b. Petiole to 5.2 cm; bracts and calyx segments to 9 mm (bracts unknown in *C. depressa*); corolla tube mouth 0.4–0.8 cm in diam.
- 121a. Staminodes 3; petiole ca. 0.8 cm; leaf blade abaxially velutinous 26. *C. depressa*
- 121b. Staminodes 2; petiole (0.5–)2–5.2 cm; leaf blade abaxially densely puberulent and sometimes appressed pilose.
- 122a. Stigma 2-lobed; corolla tube 1.5–2.6 cm; leaf blade lateral veins ca. 4 on each side of midrib; calyx 3.5–9 mm; peduncle spreading pubescent to pilose 37. *C. fordii*
- 122b. Stigma undivided; corolla tube ca. 1.2 cm; leaf blade lateral veins 5–7 on each side of midrib; calyx 4.5–4.8 mm; peduncle puberulent or glandular puberulent.
- 123a. Bracts 3–4 mm; pistil ca. 9.5 mm; calyx segment apex obtuse; cymes 3–7-flowered; leaf blade 6–9.6 cm 9. *C. laxiflora*
- 123b. Bracts 6–8 mm; pistil ca. 12.5 mm; calyx segment apex acute; cymes 8–15-flowered; leaf blade 8.5–14 cm 11. *C. floribunda*
- 102b. Leaf blade 0.8–8(–11) cm.
- 124a. Leaf blade margin shallowly crenate to crenate to serrate, dentate, denticulate, or undulate, indistinctly undulate-denticulate.
- 125a. Stigma undivided; pistil ca. 1 cm; corolla ca. 1.7 cm, glabrous inside .. 9. *C. laxiflora*
- 125b. Stigma 2-lobed, 2-parted, or emarginate; pistil (1.2–)1.5–3.7 cm; corolla 2.1–6 cm, puberulent inside basally, on adaxial lip, below stamens, near mouth, or on lobes.
- 126a. Leaf blade apex acute or acuminate, seldom obtuse.
- 127a. Stigma emarginate; filaments glabrous; leaf blade 2.8–4 × 1.6–2.4 cm; cymes 1- or 2-flowered; bract 2–5 mm 59. *C. fangii*
- 127b. Stigma 2-lobed; filaments sparsely puberulent or glandular puberulent at base and apex; leaf blade 2.5–11 × 1.5–7 cm; cymes 1–8-flowered; bract 3–16 mm.
- 128a. Corolla 2.1–3.9 cm, mouth 0.6–0.8 cm in diam., abaxial lip 7–9 mm; leaf blade puberulent and villous or pilose; peduncle 3.5–13 cm; staminodes 2 37. *C. fordii*

- 128b. Corolla 4.5–6 cm, mouth 1.5–2 cm in diam., abaxial lip 20–30 mm;
leaf
blade sparsely strigose; peduncle 8–31.5 cm; staminodes 3 ... 78. *C. macrorhiza*
- 126b. Leaf blade apex obtuse to rounded.
- 129a. Leaf blade abaxially velutinous; petiole ca. 0.8 cm 26. *C. depressa*
- 129b. Leaf blade abaxially puberulent, pubescent, pilose, or villous; petiole
(0.5–)1–5(–6) cm.
- 130a. Staminodes 3; stigma 2-parted; abaxial corolla lip ca. 1.6 cm; petiole
to 2.5 cm.
- 131a. Bracts lanceolate-linear, ca. 7 × 1–1.2 mm, apex attenuate;
staminodes
ca. 5 mm 32. *C. linglingensis*
- 131b. Bracts ovate-triangular, ca. 4 × 1.6–1.8 mm, apex obtuse; staminodes
7–14 mm 43. *C. crassituba*
- 130b. Staminodes 2; stigma 2-lobed; abaxial corolla lip 0.7–1.5 cm; petiole
(0.5–)1–5(–6) cm.
- 132a. Leaf blade 0.8–3.2 × 0.8–2.8 cm; corolla ca. 2.7 cm 17. *C. lienxiensis*
- 132b. Leaf blade 2–11 × 1–7 cm; corolla (2.1–)3–6 cm.
- 133a. Filaments glabrous; corolla 4–6 cm, mouth 1.2–2 cm in diam.,
adaxial
lip 9–12 mm; bracts 2–14 mm; peduncle 1.5–6 cm 34. *C. gueilinensis*
- 133b. Filaments sparsely puberulent at least near apex; corolla 2.1–3.9
cm,
mouth 0.6–1 cm in diam., adaxial lip 3–7 mm; bracts 3–9 mm;
peduncle
3–14 cm.
- 134a. Peduncle spreading pubescent to pilose; bracts and calyx
pubescent to pilose outside; corolla tube nearly tubular, mouth 6–
8 mm in diam., abaxial lip 7–9 mm; cymes 2–8-flowered 37. *C. fordii*
- 134b. Peduncle villous and glandular pubescent; bracts and calyx
villous
outside; corolla tube funnelform, mouth ca. 1 cm in diam.,
abaxial
lip ca. 12 mm; cymes 2- or 3-flowered 79. *C. liujiangensis*
- 124b. Leaf blade margin entire, subentire, repand, repand-crenate, or repand-
denticulate.
- 135a. Peduncle 0.6–1.4 cm.
- 136a. Calyx 10–12 mm; bracts 4–6 mm; pedicel 7–11 mm; corolla ca. 4.5 cm,
mouth ca. 1.4 cm in diam.; filaments ca. 11 mm; anthers woolly; pistil
ca. 3.4 cm; stigma 2-lobed, adaxial lobe 2-lobed 73. *C. shouchengensis*
- 136b. Calyx 4–6 mm; bracts 0.8–3 mm; pedicel 2–5.5 mm; corolla 2–3.4 cm,
mouth 2–5 mm in diam.; filaments 4.5–5.5 mm; anthers glabrous; pistil
1.9–2.2 cm; stigma merely 2-lobed or 2-parted.
- 137a. Corolla 2.5–3.4 cm, abaxial lip ca. 13 mm; staminodes 3; stigma 2-lobed;
flowers solitary; petiole 2–30 mm; leaf blade to 5.4 cm 60. *C. vestita*
- 137b. Corolla 2–2.5 cm, abaxial lip 5–7.5 mm; staminodes 2; stigma 2-parted;
cymes
1–3-flowered; petiole 3–9 mm; leaf blade to 3.2 cm 62. *C. tenuituba*
- 135b. Peduncle 3–31.5 cm.
- 138a. Leaf blade sparsely strigose; corolla 4.5–6 cm, mouth 1.5–2 cm in diam.,
adaxial lip 10–15 mm, abaxial lip 20–30 mm; petiole to 7.5 cm; peduncle
to 31.5 cm 78. *C. macrorhiza*
- 138b. Leaf blade puberulent, pubescent, pilose, villous, and/or velutinous;
corolla
2–4 cm, mouth 0.5–1 cm in diam., adaxial lip 3–8 mm, abaxial lip 4–15

- mm;
 petiole to 5 cm; peduncle to 14 cm.
- 139a. Bracts 1.2–2.2 mm; staminodes absent or 3.
 140a. Pedicel ca. 5 mm; bract apex obtuse; corolla mouth ca. 5 mm in diam.; filaments pilose basally, pubescent above; staminodes absent; stigma undivided 4. *C. demissa*
- 140b. Pedicel 9–14 mm; bract apex acute; corolla mouth ca. 1 cm in diam.; filaments glabrous; staminodes 3; stigma 2-lobed 33. *C. villosissima*
- 139b. Bracts 3–13 mm; staminodes (1 or) 2.
 141a. Staminode 1; anthers pilose; corolla abaxial lip ca. 15 mm; peduncle 4–6 cm 42. *C. cruciformis*
- 141b. Staminodes 2; anthers glabrous to puberulent or villous; corolla abaxial lip 4–12 mm; peduncle 3–14 cm.
- 142a. Filaments 5–6 mm, glandular pilose; anthers villous; abaxial corolla lip 4–7 mm; leaf blade 2–5.5 cm 76. *C. hochiensis*
- 142b. Filaments 7–13 mm, glabrous, sparsely puberulent at least near apex, or glandular puberulent above middle; anthers glabrous or puberulent; abaxial corolla lip 7–12 mm; leaf blade 2–11 cm.
- 143a. Leaf blade ovate, elliptic, or obovate, 1–7 cm wide.
 144a. Corolla tube nearly tubular, mouth 6–8 mm in diam., adaxial lip 3–5.5 mm, abaxial lip ca. 7–9 mm; peduncle spreading pubescent to pilose; bracts and calyx pubescent to pilose outside 37. *C. fordii*
- 144b. Corolla tube funnellform, mouth ca. 1 cm in diam., adaxial lip ca. 7 mm, abaxial lip ca. 12 mm; peduncle villous and glandular pubescent; bracts and calyx villous outside 79. *C. liujiangensis*
- 143b. Leaf blade narrowly elliptic to narrowly ovate, 0.8–2.8 cm wide.
 145a. Peduncle 12–13 cm; leaf blade base cuneate, margin subentire to repand; bracts ovate to narrowly ovate, 6.5–7 × 2.5–3 mm; pedicel 0.3–1.8 cm; calyx segments appressed puberulent inside; stigma emarginate 80. *C. atroglandulosa*
- 145b. Peduncle 5–7.8 cm; leaf blade base attenuate, margin entire; bracts triangular-linear, 5–13 × ca. 1.5 mm; pedicel 2.7–5 cm; calyx segments glabrous inside; stigma 2-lobed 81. *C. pungentisepala*

1. *Chirita swinglei* (Merrill) W. T. Wang, Bull. Bot. Res., Harbin 1(4): 62. 1981.

钟冠唇柱苣苔 zhong guan chun zhu ju tai

Didymocarpus swinglei Merrill, Philipp. J. Sci. 13: 156. 1918; *Chirita pellegriniana* B. L. Burtt; *Didymocarpus balansae* Pellegrin (1926), not *C. balansae* Drake (1890).

Perennial, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.8–7.5 cm × 2–11 mm; leaf blade elliptic to ovate, obovate, or orbicular, 6–19 × 4–17 cm, herbaceous, strigose, eglandular, base often oblique, broadly cuneate to rounded or truncate, margin denticulate or dentate to crenate, apex acute to rounded; lateral veins 3–7 on each side of midrib, slightly conspicuous. Cymes (1–)3–8-flowered; peduncle 2.8–19 cm, pubescent; bracts 2, free, linear to linear-lanceolate, 2–6 × 0.8–1 mm, puberulent, margin entire, apex acute. Pedicel 2–4(–8) cm, spreading puberulent. Calyx 5-sect from base; segments equal, lanceolate-

linear, 6–10 × 1–1.5 mm, outside densely puberulent, inside apically sparsely puberulent, margin entire, apex acute. Corolla bluish to purple, 2.4–4.2 cm, outside sparsely puberulent, inside glabrous or glandular puberulent on adaxial lip; tube campanulate to funnellform, 1.2–2.2 × 0.7–1.2 cm; adaxial lip 7–11 mm; abaxial lip 1–2.2 cm. Filaments ca. 9 mm, sparsely puberulent; anthers fused by entire adaxial surfaces, 2.5–3 mm, glabrous; staminodes 2, 1.2–2 mm. Pistil 1.5–1.7 cm, puberulent; ovary ca. 9 mm. Stigma spatulate to narrowly ovoid, 1–2 mm, undivided. Capsule erect, 2–3.5 cm. Fl. May–Sep, fr. Jul–Oct.

Forests, cliffs in valleys; 600–900 m. Guangdong (Luofushan, Zengcheng Xian), S Guangxi [N Vietnam].

2. *Chirita subulatisepala* W. T. Wang, Bull. Bot. Res., Harbin 4(1): 18. 1984.

钻萼唇柱苣苔 zuan e chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite;

petiole 0.2–2.8 cm × 2–3 mm; leaf blade narrowly ovate to ovate, 2.2–6.5 × 1.4–5 cm, papery, appressed puberulent, eglandular, base oblique, broadly cuneate to truncate, margin obtusely dentate to crenate, apex acute to rounded; lateral veins ca. 3 on each side of midrib, inconspicuous. Cymes (1–)4–6-flowered; peduncle 3–9 cm, sparsely puberulent; bracts 2, free, elliptic to elliptic-ovate, leaflike, 1.7–2.3 × 0.8–1.1 cm, strigose, margin remotely denticulate, apex acute. Pedicel 0.5–1.5 cm, puberulent and glandular puberulent. Calyx 5-sect from base; segments equal, narrowly lanceolate-linear, 9–15 × 1.1–1.8 mm, outside densely puberulent, inside apically puberulent, margin entire, apex subulate-acuminate. Corolla purple, ca. 4 cm, outside puberulent, inside puberulent basally; tube funnellform-tubular, ca. 2.7 × 1 cm; adaxial lip ca. 1.1 cm; abaxial lip ca. 1.3 cm. Filaments ca. 1.2 cm, apically sparsely glandular puberulent; anthers fused by entire adaxial surfaces, ca. 3.5 mm, glabrous; staminodes 2, ca. 5 mm. Pistil ca. 3 cm, puberulent; ovary ca. 1 cm. Stigma ligulate, ca. 2 mm, undivided. Fruit and seeds unknown. Fl. Jun.

• Shaded rocky cliffs; ca. 800 m. SW Hubei (Xianfeng Xian), SE Sichuan (Qianjiang Xian).

3. *Chirita brachystigma* W. T. Wang, Bull. Bot. Res., Harbin 4(1): 22. 1984.

短头唇柱苣苔 duan tou chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1–5 × 2.5–4 mm; leaf blade oblique, orbicular-ovate to ovate, 1.2–3 × 0.9–1.8 cm, leathery, appressed puberulent, eglandular, base broadly cuneate, margin entire, apex obtuse; lateral veins 3 or 4 on each side of midrib, inconspicuous. Cymes 1- or 2-flowered; peduncle 9–11.5 cm, spreading purple puberulent; bracts 2, free, lanceolate, ca. 5 × 1.6 mm, puberulent, margin entire, apex obtuse. Pedicel ca. 1.2 cm, puberulent. Calyx 5-sect from base; segments equal, narrowly lanceolate-linear, 6.5–7 × 1–1.2(–1.5) mm, outside purple puberulent, inside glabrous, margin entire, apex obtuse. Corolla ca. 3.4 cm, outside sparsely puberulent, inside densely puberulent; tube narrowly funnellform, ca. 2.2 × 0.8 cm; adaxial lip ca. 6 mm; abaxial lip ca. 1.2 cm. Filaments ca. 8 mm, sparsely glandular puberulent near apex; anthers fused by entire adaxial surfaces, ca. 3 mm, pubescent; staminodes 2, ca. 4.5 mm. Pistil ca. 2.2 mm, puberulent; ovary ca. 1.4 cm. Stigma ovate, ca. 0.8 mm, undivided. Immature capsule erect, ca. 6 cm. Fl. Apr–May, fr. May.

• Shaded areas in valleys. Guangxi (Hechi Xian).

4. *Chirita demissa* (Hance) W. T. Wang in A. L. Weitzman et al., Novon 7: 424. 1998.

巨柱唇柱苣苔 ju zhu chun zhu ju tai

Didymocarpus demissus Hance, J. Bot. 21: 166. 1883;
Roettlera demissa (Hance) Kuntze.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.5–3 cm × 1–3 mm; leaf blade elliptic to narrowly ovate or narrowly obovate, 2.5–5(–7) × 1–2 cm, papery, adaxially densely puberulent and villous, eglandular, abaxially grayish velutinous to densely pubescent, base cuneate to broadly cuneate, margin entire, apex acute to rounded; lateral veins ca. 3 on each side of midrib, inconspicuous. Cymes 1–3-flowered; peduncle ca. 6 cm, densely pubescent to villous; bracts 2, free, triangular-linear, ca. 2 × 0.3 mm, pilose, margin entire, apex obtuse. Pedicel ca. 5 mm, densely spreading pilose. Calyx 5-sect from base; segments equal, lanceolate-linear, 4–5 × 0.8–1 mm, outside densely pilose, inside above sparsely pubescent, margin entire, apex acute. Corolla white, ca. 2.3 cm, outside sparsely puberulent, inside glandular puberulent near mouth; tube narrowly funnellform, 1.5–1.8 × ca. 0.5 cm; adaxial lip ca. 4 mm; abaxial lip 8–9 mm. Filaments ca. 6.5 mm, pilose basally, pubescent above; anthers fused by entire adaxial surfaces, ca. 3.2 mm, abaxially pilose; staminodes absent. Pistil ca. 1.5 cm, puberulent; ovary ca. 5.5 mm. Stigma narrowly oblong, ca. 1 mm, undivided. Capsule erect, ca. 5 cm. Fl. Oct.

• Rocks in shaded hilly regions. N Guangdong (Lian Xian).

This species was previously placed in *Didymocarpus*. It is currently included in *Chirita* because its stigma is abaxial and oblong. In *Didymocarpus*, the stigma is terminal and capitate or discoid in shape, probably formed by fusion of the adaxial and abaxial stigmas.

5. *Chirita atropurpurea* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 60. 1981.

紫萼唇柱苣苔 zi e chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 6–14 × ca. 4 mm; leaf blade narrowly ovate to ovate, 2.2–4 × 1.3–2 cm, leathery, adaxially sparsely appressed puberulent, eglandular, abaxially densely appressed puberulent, base broadly cuneate, margin entire, apex obtuse to rounded; lateral veins invisible. Cymes ca. 2-flowered; peduncle 9.5–12.5 cm, dark purple pubescent; bracts 2, free, narrowly ovate, 4–5 × ca. 2 mm, densely purple villous, margin entire, apex obtuse. Pedicel 0.7–1.5 cm, puberulent. Calyx 5-sect from base; segments equal, lanceolate, ca. 5 × 1.5–2 mm, outside densely purple puberulent, inside glabrous, margin entire, apex obtuse. Corolla purple, ca. 4 cm, outside puberulent, inside puberulent basally; tube nearly tubular, ca. 3 × 1.2 cm; adaxial lip ca. 6 mm; abaxial lip ca. 1 cm. Filaments ca. 1.4 cm, glabrous; anthers fused by entire adaxial surfaces, ca. 4.5 mm, villous; staminodes 3,

central 1 ca. 0.5 mm, laterals ca. 1 mm. Pistil ca. 3.2 cm, puberulent; ovary ca. 1.6 cm. Stigma ligulate-linear, ca. 6 mm, undivided. Fruit and seeds unknown. Fl. Feb.

• Limestone hills. Guangxi (Guilin Xian).

6. *Chirita brassicoides* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 63. 1981.

芥状唇柱苣苔 *jie zhuang chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1.5–6 cm × 3–5 mm; leaf blade broadly elliptic to elliptic-ovate, 7–15.5 × 5–14 cm, herbaceous, densely appressed puberulent, eglandular, base oblique, cordate to broadly cuneate on 1 side and cordate on other, margin irregularly crenate-dentate, apex acute to obtuse; lateral veins 6 or 7 on each side of midrib, conspicuous. Cymes ca. 6-flowered; peduncle ca. 17 cm, puberulent; bracts 2, free, linear to lanceolate-linear, 1–1.5 cm × ca. 2 mm, puberulent, margin entire, apex acute. Pedicel to 3 cm, densely spreading puberulent. Calyx 5-sect from base; segments equal, linear-lanceolate, ca. 10 × 1.2 mm, puberulent, margin entire, apex acute. Corolla purplish, ca. 2.8 cm, outside puberulent, inside sparsely puberulent below stamens; tube nearly tubular, ca. 1.7 × 0.8 cm; adaxial lip ca. 5 mm; abaxial lip ca. 1 cm. Filaments ca. 9 mm, glabrous; anthers fused by entire adaxial surfaces, ca. 2.8 mm, glabrous; staminodes 2, ca. 2.6 mm. Pistil ca. 1.4 cm, puberulent; ovary ca. 7 mm. Stigma ligulate, ca. 1.5 mm, undivided. Fruit and seeds unknown. Fl. Jun.

• Rocks on limestone hills. SW Guangxi (Longzhou Xian).

7. *Chirita tenuifolia* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 61. 1981.

薄叶唇柱苣苔 *bo ye chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 3–20 × 0.6–1 mm; leaf blade elliptic, 2.2–5 × 1.1–3 cm, membranous, sparsely appressed puberulent, eglandular, base oblique, broadly cuneate, margin remotely denticulate to undulate-crenate, apex obtuse to rounded; lateral veins ca. 4 on each side of midrib, inconspicuous. Cymes 1-flowered; peduncle ca. 5 cm, densely puberulent; bract 1, subulate, ca. 1.2 × 0.3 mm, puberulent, margin entire, apex acute. Pedicel ca. 3.3 cm, puberulent. Calyx 5-sect from base; segments equal, linear-lanceolate, ca. 4.8 × 0.8 mm, outside densely puberulent, inside apically sparsely puberulent, margin entire, apex acute. Corolla purplish, ca. 2.8 cm, outside sparsely puberulent, inside glabrous; tube narrowly funnelform, ca. 1.5 × 0.9 cm; adaxial lip ca. 6 mm; abaxial lip ca. 8 mm. Filaments ca. 9 mm, sparsely puberulent; anthers fused by entire adaxial surfaces, ca.

2.2 mm, glabrous; staminodes 2, ca. 1.2 mm. Pistil ca. 1.8 cm, puberulent; ovary ca. 1 cm. Stigma ligulate, ca. 1.8 mm, undivided. Fruit and seeds unknown. Fl. Aug.

• Limestone hills. Guangxi (Donglan Xian).

8. *Chirita liguliformis* W. T. Wang, Bull. Bot. Res., Harbin 4(1): 20. 1984.

舌柱唇柱苣苔 *she zhu chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1.5–11 cm × 4–9 mm; leaf blade elliptic to broadly ovate, 4–20 × 2.5–10 cm, papery, adaxially appressed pilose, eglandular, abaxially appressed puberulent, base sometimes oblique, broadly cuneate to cordate on 1 side and cuneate to rounded on other, margin undulate-crenate to dentate, apex obtuse to acute; lateral veins 4 or 5 on each side of midrib, inconspicuous. Cymes 7–11-flowered; peduncle 6–20 cm, spreading puberulent; bracts 2, free, narrowly triangular, ca. 3.5 × 1.1 mm, puberulent, margin entire, apex acute. Pedicel 2.5–4 cm, puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, 3–3.5 × ca. 1 mm, outside puberulent, inside glabrous, margin entire, apex acute. Corolla purplish, ca. 2.2 cm, outside sparsely puberulent, inside below adaxial lip puberulent; tube funnelform-tubular, ca. 1.5 cm × 6 mm; adaxial lip ca. 3 mm; abaxial lip ca. 7 mm. Filaments ca. 1 cm, sparsely puberulent basally, black glandular near apex; anthers fused by entire adaxial surfaces, ca. 3 mm, glabrous; staminodes 2, ca. 2 mm. Pistil ca. 1.1 cm, puberulent; ovary ca. 7 mm. Stigma ligulate, ca. 2 mm, undivided. Capsule erect, 2–3 cm. Fl. Jun–Jul, fr. Jul.

• Wet valley forests; ca. 800 m. SW Guizhou (Anlong Xian, Ceheng Xian).

9. *Chirita laxiflora* W. T. Wang, Bull. Bot. Res., Harbin 4(1): 21. 1984.

疏花唇柱苣苔 *shu hua chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 2–5 cm × 3–8 mm; leaf blade ovate to elliptic, 6–9.6 × 4–6.5 cm, herbaceous, densely puberulent, eglandular, base sometimes oblique, cuneate to nearly rounded on 1 side and cuneate on other, margin crenate to serrate or dentate, apex acute to rounded; lateral veins 5–7 on each side of midrib, conspicuous. Cymes 3–7-flowered; peduncle 8.5–15 cm, puberulent; bracts 2, free, linear, 3–4 × 0.6–0.8 mm, puberulent, margin entire, apex obtuse. Pedicel 0.3–3 cm, puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, ca. 4.5 × 1 mm, outside puberulent, inside apically sparsely puberulent, margin entire, apex obtuse. Corolla purple, ca. 1.7 cm, outside puberulent, inside glabrous; tube nearly tubular, ca. 1.2 × 0.6 cm; adaxial lip ca. 3 mm; abaxial lip ca. 6 mm. Filaments ca. 8.5 mm, sparsely puberulent; anthers fused by entire

adaxial surfaces, ca. 3 mm, glabrous; staminodes 2, ca. 1.5 mm. Pistil ca. 1 cm, puberulent; ovary ca. 5.5 mm. Stigma ligulate-oblong, ca. 1.5 mm, undivided. Capsule erect, ca. 2.8 cm. Fl. Jun.

• Rocks in limestone hills. NW Guangxi (Lingyun Xian).

10. *Chirita flavimaculata* W. T. Wang, Bull. Bot. Res., Harbin 5(3): 40. 1985.

黄斑唇柱苣苔 huang ban chun zhu ju tai

Perennial, stemless or pilose stemmed. Rhizome internodes inconspicuous. Leaves basal or along stem, opposite; petiole 2–9 × 0.4–1 cm; leaf blade oblong ovate to ovate, obovate, or narrowly elliptic, 8–26 × 4.5–14 cm, papery, adaxially pilose, eglandular, abaxially pubescent, pilose along veins, base cuneate to broadly cuneate, margin nearly entire to shallowly crenate, apex acute; lateral veins 4–6 on each side of midrib, conspicuous to inconspicuous. Cymes 7–28-flowered; peduncle 20–35 cm, puberulent; bracts 2, free, narrowly triangular to navicular-triangular, 1–1.6 cm × 3–4 mm, puberulent to pilose, margin entire, apex attenuate. Pedicel 1.2–3 cm, glandular puberulent. Calyx 5-sect from base; segments equal, narrowly triangular to lanceolate-linear, 1–1.5 cm × ca. 2 mm, puberulent, margin entire, apex attenuate. Corolla blue-purple, with 1 yellow spot below adaxial lip, 3.2–4.5 cm, outside sparsely glandular puberulent, inside glandular puberulent on yellow spot; tube nearly tubular, 2.4–3.5 × ca. 1 cm; adaxial lip 3.5–4 mm; abaxial lip 8–10 mm. Filaments ca. 1 cm, puberulent near apex; anthers fused by entire adaxial surfaces, ca. 2.2 mm, glabrous; staminodes 3, central 1 ca. 0.8 mm, laterals 5–6 mm. Pistil 2.9–3.2 cm, densely glandular puberulent; ovary 2–2.3 cm. Stigma narrowly elliptic, 2.2–3 mm, undivided. Immature capsule ca. 3 cm. Fl. Nov.

• Known only from cultivation. First cultivated at the South China Institute of Botany in Guangzhou, Guangdong; possibly introduced from Guangxi.

11. *Chirita floribunda* W. T. Wang, Bull. Bot. Res., Harbin 4(1): 23. 1984.

多花唇柱苣苔 duo hua chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1.2–5.2 × 0.5–1 cm; leaf blade narrowly elliptic to narrowly ovate, 8.5–14 × 3.8–7 cm, papery, densely appressed puberulent, eglandular, base cuneate, margin crenate, apex acute to obtuse; lateral veins 6 or 7 on each side of midrib, slightly conspicuous. Cymes 8–15-flowered; peduncle 10–12 cm, densely spreading glandular puberulent; bracts 2, free, lanceolate-linear, 6–8 × ca. 1 mm, puberulent, margin entire, apex acute. Pedicel 1.5–20 mm, densely glandular puberulent. Calyx 5-sect from base; segments equal, narrowly triangular to narrowly lanceolate-linear, ca. 4.8 × 0.6–0.9 mm, outside puberulent, inside apically sparsely puberulent,

margin entire, apex acute. Corolla purple, ca. 2.1 cm, outside sparsely puberulent, inside adaxial lip puberulent basally; tube funnelform-tubular, ca. 1.2 cm × 4–6 mm; adaxial lip ca. 2.5 mm; abaxial lip ca. 8.5 mm. Filaments ca. 7 mm, sparsely glandular; anthers fused by entire adaxial surfaces, ca. 2 mm, glabrous; staminodes 2, ca. 3 mm. Pistil ca. 1.2 cm, densely puberulent and glandular puberulent; ovary ca. 7.5 mm. Stigma obtrapezoid, ca. 1.5 mm, undivided. Fruit and seeds unknown. Fl. Jun.

• Known only from cultivation. Cultivated in the Medicinal Botanic Garden of Nanning, Guangxi; possibly introduced from Jinxiou Xian, Guangxi.

12. *Chirita medica* D. Fang ex W. T. Wang, Bull. Bot. Res., Harbin 1(4): 64. 1981.

药用唇柱苣苔 yao yong chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 5–25 × 5–8 mm; leaf blade narrowly ovate to elliptic, 3.5–7 × 2–3.5 cm, papery to herbaceous, adaxially with dense, short and long hairs, eglandular, abaxially velutinous, base oblique, cuneate, margin entire to repand, apex acute; lateral veins ca. 5 on each side of midrib, inconspicuous. Cymes 3–7-flowered; peduncle 8.5–11 cm, villous and glandular puberulent; bracts 2, free, lanceolate-linear, 4–7 × 1–1.2 mm, villous, margin entire, apex acute. Pedicel 3–15 mm, villous and glandular puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, 3.5–4 × 0.8–1 mm, outside puberulent, inside glabrous, margin entire, apex acute. Corolla white, tinged pink, 1.7–2.1 cm, outside sparsely puberulent, inside basally sparsely puberulent; tube nearly tubular, 1.3–1.5 cm × 5–6 mm; adaxial lip ca. 3 mm; abaxial lip ca. 6 mm. Filaments ca. 9 mm, glabrous; anthers fused by entire adaxial surfaces, ca. 2.2 mm, pubescent; staminodes 2, 1.5–2.5 mm. Pistil 1.3–1.8 cm, densely puberulent; ovary ca. 7 mm. Stigma obdeltoid, ca. 1 mm, 2-lobed. Capsule erect, ca. 1.5 mm. Fl. Apr.

• Rocky crevices of limestone hills. Guangxi (Pingle Xian).

13. *Chirita latinervis* W. T. Wang, Bull. Bot. Res., Harbin 9(4): 21. 1989.

宽脉唇柱苣苔 kuan mai chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.8–3.5 × 0.5–1.8 cm; leaf blade broadly ovate to orbicular-ovate, 6–12 × 5–12 cm, papery, sparsely appressed puberulent, eglandular, base nearly truncate to truncate on 1 side and broadly cuneate on other, margin undulate-dentate to repand, apex acute to rounded; lateral veins 3 or 4 on each side of midrib, inconspicuous. Cymes ca. 10-flowered; peduncle ca. 18 cm, spreading pubescent; bracts 2, free, lanceolate, ca. 2.2 cm × 5–7 mm, appressed puberulent, margin entire, apex obtuse. Pedicel to 1.6 cm, puberulent. Calyx 5-sect from base; segments equal, narrowly triangular to lan-

ceolate-linear, ca. 6×1.1 mm, outside puberulent, inside apically puberulent with very short hairs, margin entire, apex acute. Corolla blue-purple, ca. 2.1 cm, sparsely puberulent; tube nearly tubular, ca. 1.3 cm \times 7 mm; adaxial lip ca. 5 mm; abaxial lip ca. 8 mm. Filaments ca. 8 mm, sparsely glandular puberulent near apex; anthers fused by entire adaxial surfaces, ca. 4 mm, glabrous; staminodes 2, ca. 2.2 mm. Pistil ca. 1 cm, puberulent; ovary ca. 6 mm. Stigma obovoid, ca. 1.2 mm, 2-lobed. Fruit and seeds unknown. Fl. Aug.

• Damp rocks at cave entrances; ca. 300 m. S Hunan (Xinning Xian).
14. *Chirita orthandra* W. T. Wang, Bull. Bot. Res., Harbin 5(3): 42. 1985.

直蕊唇柱苣苔 zhi rui chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1–3.5 cm \times 3–6 mm; leaf blade narrowly ovate to narrowly elliptic, 7–11 \times 3–4.2 cm, herbaceous, densely puberulent, eglandular, base oblique, cuneate, margin densely crenulate to dentate or serrulate, apex acute to rounded; lateral veins 5 or 6 on each side of midrib, slightly conspicuous. Cymes 2–8-flowered; peduncle 7–8 cm, spreading puberulent; bracts 2, free, ovate, ca. 5 \times 3 mm, puberulent, margin remotely crenulate, apex obtuse. Pedicel 4–13 mm, puberulent and glandular puberulent. Calyx 5-sect from base; segments equal, narrowly triangular, 3–3.5 \times ca. 1.2 mm, outside puberulent, inside glabrous, margin entire, apex acute. Corolla purple-blue, 2.2–2.7 cm, glabrous; tube nearly tubular, ca. 1.7 \times 0.7 cm; adaxial lip ca. 3.5 mm; abaxial lip ca. 5 mm. Filaments ca. 9 mm, sparsely puberulent and glandular above; anthers fused by entire adaxial surfaces, ca. 2.5 mm, glabrous; staminodes 2, ca. 1.5 mm. Pistil ca. 2.1 cm, puberulent; ovary ca. 1 cm. Stigma oblong, ca. 2 mm, 2-lobed. Capsule erect, 2.5–3 cm. Fl. May.

• Rocks in hilly regions. N Guangdong (Liannan Xian).

15. *Chirita sichuanensis* W. T. Wang, Bull. Bot. Res., Harbin 4(1): 16. 1984.

四川唇柱苣苔 si chuan chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.5–5 cm \times 2–4 mm; leaf blade ovate to elliptic, 2.9–11.5 \times 1.5–6.5 cm, papery, puberulent, eglandular, base often oblique, cuneate on 1 side and broadly cuneate on other, margin repand-crenate to denticulate, apex acute to obtuse; lateral veins 3 or 4 on each side of midrib, inconspicuous. Cymes 1–4-flowered; peduncle 4–8 cm, spreading puberulent; bracts 2, free, ovate to nearly elliptic, 0.9–2.1 \times 0.5–1.2 cm, puberulent, margin crenulate to entire, apex acute to obtuse. Pedicel 6–12 mm, puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, 7–10 \times 1.5–2 mm, outside puberulent, inside glabrous, margin entire, apex acute. Corolla purple, ca. 4 cm, outside puberulent, inside puberulent below adaxial lip; tube funnellform-tubular,

ca. 2.8 \times 0.9 cm; adaxial lip ca. 6.5 mm; abaxial lip ca. 1.1 cm. Filaments ca. 9 mm, glandular puberulent above; anthers fused by entire adaxial surfaces, ca. 3 mm, apically with a few short hairs; staminodes 2, ca. 0.8 mm. Pistil ca. 2.6 cm, puberulent; ovary ca. 1.1 cm. Stigma cuneate, ca. 3 mm, 2-lobed. Capsule erect, ca. 4 cm. Fl. May–Jun.

• Shaded damp areas of montane forests; 700–1200 m. SE Sichuan (Pengshui Xian, Xiushan Xian).

16. *Chirita eburnea* Hance, J. Bot. 21: 168. 1883.

牛耳朵 niu er duo

Chirita fauriei Franchet; *Didymocarpus eburneus* (Hance) H. Léveillé; *D. fauriei* (Franchet) H. Léveillé; *Roettlera eburnea* (Hance) Kuntze.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1–8 \times 0.5–1 cm; leaf blade ovate to elliptic or obovate, 3.5–17 \times 2–9.5 cm, papery, appressed puberulent to pilose, eglandular, base attenuate to broadly cuneate, margin entire, apex acute; lateral veins 4 or 5 on each side of midrib, inconspicuous. Cymes (1 or) 2–13(–17)-flowered; peduncle 4–30 cm, puberulent; bracts 2, free, ovate to orbicular-ovate, 1–4.5 \times 0.8–2.8 cm, densely puberulent, margin entire, apex acute to obtuse. Pedicel to 2.3 cm, puberulent and glandular puberulent. Calyx 5-sect from base; segments equal, narrowly lanceolate, (3–) 7–10 \times (1–) 2–2.5 mm, outside puberulent and glandular puberulent, inside sparsely puberulent, margin entire, apex acute. Corolla purple to white or yellow, 3–4.5 cm, sparsely puberulent; tube nearly tubular, ca. 3 \times 1–1.4 cm; adaxial lip 5–9 mm; abaxial lip 1.2–1.8 cm. Filaments 9–10 mm, sparsely puberulent basally; anthers fused by entire adaxial surfaces, 3–5 mm, nearly glabrous; staminodes 2, 4–6 mm. Pistil 2.2–3 cm, densely puberulent; ovary ca. 2 cm. Stigma cuneate, ca. 3 mm, 2-lobed. Capsule erect, 4–8 cm. Fl. Apr–Sep, fr. May–Oct.

• Rocks in forests or along streamsides in forests on limestone hills; near sea level to 1900 m. N Guangdong, N Guangxi, Guizhou, W Hubei, SE and W Hunan, E and S Sichuan.

17. *Chirita lienxienensis* W. T. Wang, Bull. Bot. Res., Harbin 2(4): 48. 1982.

连县唇柱苣苔 lian xian chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1.5–3.5(–6) cm \times 1.5–3 mm; leaf blade broadly ovate to ovate, seldom nearly orbicular, 0.8–3.2 \times 0.8–2.8 cm, papery, puberulent to pilose, eglandular, base sometimes oblique, cuneate to nearly truncate, margin indistinctly undulate-denticulate, apex obtuse to rounded; lateral veins ca. 3 on each side of midrib, inconspicuous. Cymes 1- or 2-flowered; peduncle 1.5–6 cm, spreading puberulent; bracts 2, free, ovate to lanceolate or oblanceolate-linear, 5–12 \times 2.2–5 mm,

puberulent, margin entire, apex acute. Pedicel 4–13 mm, spreading puberulent. Calyx 5-sect from base; segments equal, narrowly lanceolate-linear, 3–7 × 0.8–1 mm, puberulent, margin entire, apex acute. Corolla purple, ca. 2.7 cm, outside sparsely puberulent, inside puberulent on and below adaxial lip; tube nearly tubular, ca. 1.8 × 0.9 cm; adaxial lip ca. 4 mm; abaxial lip ca. 8 mm. Filaments ca. 1 cm, sparsely glandular; anthers fused by entire adaxial surfaces, ca. 3.2 mm, sparsely puberulent; staminodes 2, ca. 4.5 mm. Pistil ca. 2.1 cm, puberulent; ovary ca. 9 mm. Stigma cuneate, ca. 3 mm, 2-lobed. Capsule erect, 2.2–3.2 cm. Fl. Sept–Oct, fr. Oct.

•Rocks in montane thickets. N Guangdong (Lian Xian).

18. *Chirita lunglinensis* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 53. 1981.

隆林唇柱苣苔 *long lin chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.6–8 cm × 1–5 mm; leaf blade elliptic to ovate, seldom broadly ovate, 2.6–10(–12) × 1.6–5.7 (–11.5) cm, papery, adaxially appressed pubescent and pilose, eglandular, abaxially appressed pilose, base oblique, broadly cuneate to cuneate on 1 side, cuneate to nearly cordate on other, margin crenate to denticulate, apex acute to obtuse; lateral veins 3 or 4 on each side of midrib, inconspicuous. Cymes 2–8-flowered; peduncle 5–20 cm, spreading pilose; bracts 2, free, elliptic to broadly ovate, 0.6–3.8 × 0.4–2.7 cm, puberulent, margin entire or denticulate, apex acute to obtuse. Pedicel 6–10 mm, glandular puberulent. Calyx 5-sect from base; segments equal, narrowly lanceolate to narrowly triangular, 3–9 × 1.1–1.9 mm, outside puberulent, inside glabrous, margin entire, apex attenuate to acute. Corolla white to purple-blue, 3–3.8 cm, outside puberulent, inside puberulent below abaxial lip and stamens; tube narrowly funnellform, ca. 2.8 × 1–1.2 cm; adaxial lip ca. 6 mm; abaxial lip ca. 1.1 cm. Filaments ca. 1.3 cm, sparsely glandular puberulent; anthers fused by entire adaxial surfaces, ca. 4.5 mm, bearded; staminodes 2, 6–7 mm. Pistil ca. 2.7 cm, puberulent; ovary ca. 1.7 cm. Stigma cuneate, ca. 3 mm, 2-lobed. Fruit and seeds unknown. Fl. Jun.

•Streamside cliffs in valleys or on rocks on forest margin in limestone hills; 300–800 m. Guangxi, S Guizhou.

1a. Bracts 1–3.8 × 0.9–2.7 cm, margin denticulate; calyx segments 1–1.5 mm, apex attenuate

..... 18a. var. *lunglinensis*

1b. Bracts 0.6–0.9 × 0.4–0.45 cm, margin entire; calyx segments 2–3 mm, apex acute

18a. *Chirita lunglinensis* var. *lunglinensis*

隆林唇柱苣苔(原变种) *long lin chun zhu ju tai* (yuan bian zhong)

Bracts 1–3.8 × 0.9–2.7 cm, margin denticulate. Calyx segments 1–1.5 mm, apex attenuate.

•Valleys, on rocks of forest margin on limestone hills; 300–500 m. NW Guangxi (Longlin Xian), S Guizhou (Luodian Xian).

18b. *Chirita lunglinensis* var. *amblyosepala* W. T. Wang, Bull. Bot. Res., Harbin 2(4): 48. 1982.

钝萼唇柱苣苔 *dun e chun zhu ju tai*

Bracts 6–9 × 4–4.5 mm, margin entire. Calyx segments 2–3 mm, apex acute. Fl. Jun.

•Streamside cliffs in valleys; 700–800 m. Guangxi (Luocheng Xian).

19. *Chirita lungzhouensis* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 56. 1981.

龙州唇柱苣苔 *long zhou chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 4–6 cm × 5–8 mm; leaf blade elliptic to ovate, 8–18 × 4.5–10 cm, herbaceous, sparsely appressed puberulent, more densely so on margin and veins, eglandular, base oblique, broadly cuneate to rounded, margin dentate or denticulate to serrate, apex acute; lateral veins 4 or 5 on each side of midrib, inconspicuous. Cymes 5–7-flowered; peduncle 14–19 cm, puberulent; bracts 2, free, ovate, 2.5–3.8 × 2.2–2.8 cm, puberulent, margin denticulate, apex acute. Pedicel 6–11 mm, densely glandular puberulent. Calyx 5-sect from base; segments equal, lanceolate, 7–8.5 × 1.2–2 mm, outside puberulent apically, inside densely puberulent and glandular puberulent, margin entire, apex acute. Corolla ca. 4.8 cm [color unknown, probably purple], outside sparsely puberulent and glandular puberulent, inside puberulent below adaxial lip and stamens; tube funnellform, ca. 3 × 1.4 cm; adaxial lip ca. 7 mm; abaxial lip ca. 1.6 cm. Filaments ca. 1.1 cm, sparsely glandular puberulent; anthers fused by entire adaxial surfaces, ca. 4.5 mm, puberulent; staminodes 3, central ca. 1 mm, laterals 4–9 mm. Pistil ca. 3 cm, densely puberulent; ovary ca. 1.4 cm. Stigma cuneate, ca. 3.5 mm, 2-lobed. Immature capsule, ca. 3 cm. Fl. Apr–May.

•Rocks in forested valleys among limestone hills. SW Guangxi (Longzhou Xian).

20. *Chirita pseudoeburnea* D. Fang & W. T. Wang in W. T. Wang, Bull. Bot. Res., Harbin 1(4): 54. 1981.

紫纹唇柱苣苔 *zi wen chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1.5–4.5 cm × 3–7 mm; leaf blade narrowly ovate to elliptic, 2.5–11 × 1.2–4.4 cm, leathery, appressed puberulent, eglandular, base cuneate, margin entire, apex acute;

lateral veins ca. 3 on each side of midrib, inconspicuous. Cymes ca. 5-flowered; peduncle 10–19 cm, densely appressed puberulent; bracts 2, free, lanceolate, 1.5–1.8 cm × 5–7 mm, pubescent, margin entire, apex acute. Pedicel 1–5 cm, densely glandular puberulent. Calyx 5-sect from base; segments equal, lanceolate, ca. 11 × 1.2 mm, outside densely glandular puberulent, inside densely puberulent, margin entire, apex attenuate. Corolla purple, ca. 3 cm, outside sparsely puberulent, inside with short, yellow hairs below stamens and in 4 longitudinal lines; tube narrowly funnellform, ca. 2 × 0.8 cm; adaxial lip ca. 6 mm; abaxial lip ca. 1 cm. Filaments ca. 6 mm, puberulent; anthers fused by entire adaxial surfaces, ca. 1.5 mm, glabrous; staminodes 2, ca. 3 mm. Pistil ca. 9 mm, glandular puberulent; ovary ca. 1.5 cm. Stigma cuneate, ca. 2.5 mm, 2-lobed. Fruit and seeds unknown. Fl. May–Jun.

• Limestone hills. W Guangxi (Tiandong Xian).

21. *Chirita minutimaculata* D. Fang & W. T. Wang in W. T. Wang, Bull. Bot. Res., Harbin 1(4): 55. 1981.

微斑唇柱苣苔 *wei ban chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1.5–5 cm × 3–6 mm; leaf blade narrowly elliptic to oblanceolate, 6–13 × 2–5.4 cm, leathery, sparsely appressed puberulent, adaxially densely minutely purple spotted, base cuneate, margin entire, apex acute; lateral veins ca. 4 on each side of midrib, inconspicuous. Cymes 5-flowered; fruiting peduncle 15–28 cm, strigose; bracts 2, free, ovate, 1.5–2.5 × 0.8–1.2 cm, strigose, margin entire, apex acute. Pedicel ca. 2.2 cm, spreading glandular puberulent. Persistent calyx 5-sect from base; segments equal, linear-lanceolate, ca. 5.5 × 0.8 mm, outside densely glandular puberulent, inside glabrous, margin entire, apex attenuate. Corolla, stamens, and pistil unknown. Capsule erect, 4–6 cm. Fr. Jun.

• Rocks in forests on limestone hills. SW Guangxi (Longzhou Xian, Tiandong Xian).

22. *Chirita obtusidentata* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 57. 1981.

钝齿唇柱苣苔 *dun chi chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.8–8 cm × 2–6 mm; leaf blade elliptic to broadly ovate or obovate, 2.7–13 × 1.9–7 cm, papery, puberulent, eglandular, base broadly cuneate to truncate, margin obtusely dentate to crenate or denticulate, apex acute to rounded; lateral veins 3–5 on each side of midrib, inconspicuous. Cymes 1–12-flowered; peduncle 0.1–13 cm, pubescent to densely pilose; bracts 2, free, ovate to oblong or nearly orbicular, 4–11 × 2.7–7 mm, sparsely puberulent, margin denticulate to entire, apex acute to obtuse. Pedicel 3–11 mm, densely glandular puberulent. Calyx 5-sect from base; segments equal, linear to

lanceolate, 4–7 × 1.2–2 mm, outside densely glandular puberulent, inside sparsely puberulent apically, margin 1- or 2-denticulate apically, apex acute. Corolla purple, ca. 3.5 cm, outside puberulent, inside sparsely pubescent basally; tube nearly tubular, 2.5–2.7 cm × 8–9 mm; adaxial lip 6–7 mm; abaxial lip 1.1–1.2 cm. Filaments 1.1–1.4 cm, sparsely glandular puberulent; anthers fused by entire adaxial surfaces, 2.5–4 mm, abaxially bearded; staminodes 2, 4–7 mm. Pistil ca. 2.9 cm, puberulent; ovary 1.1–1.5 cm. Stigma linear, 2–3 mm, 2-lobed. Fruit and seeds unknown. Fl. Jun–Jul.

• Rocks in evergreen broad-leaved forests in valleys; 200–1200 m. NE Guizhou (Fanjingshan, Jiangkou Xian, Yinjiang Xian), SW Hubei (Laifeng Xian), Hunan.

1a. Peduncle 4–13 cm, pubescent 22a. var. *obtusidentata*

1b. Peduncle 0.1–0.4 cm, densely villous 22b. var. *mollipes*

22a. *Chirita obtusidentata* var. *obtusidentata*

钝齿唇柱苣苔(原变种) *dun chi chun zhu ju tai* (yuan bian zhong)

Chirita laifengensis W. T. Wang.

Peduncle 4–13 cm, pubescent. Fl. Jun–Jul.

• Rocks in evergreen broad-leaved forests in valleys; 900–1200 m. NE Guizhou (Fanjingshan, Jiangkou Xian, Yinjiang Xian), SW Hubei (Laifeng Xian), NW Hunan (Sangzhi Xian).

22b. *Chirita obtusidentata* var. *mollipes* W. T. Wang in W. T. Wang & Z. Y. Li, Keys Vasc. Pl. Wuling Mts. 581. 1995.

毛序唇柱苣苔 *mao xu chun zhu ju tai*

Peduncle 0.1–0.4 cm, densely villous. Fl. Jun.

• Rocks; 200–300 m. Hunan (Yongshun Xian).

23. *Chirita jiuwanshanica* W. T. Wang, Guihaia 12: 294. 1992.

九万山唇柱苣苔 *jiu wan shan chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 7–11 × 2.2–2.6 mm; leaf blade elliptic to ovate, 3–4.8 × 1.5–3 cm, papery, adaxially with short and long hairs, whitish along midrib and lateral veins, eglandular, abaxially puberulent, base oblique, cuneate to rounded, margin crenate to dentate, apex rounded to acute; lateral veins 4 or 5 on each side of midrib, conspicuous. Cymes 2- or 3-flowered; peduncle ca. 6 cm, densely puberulent; bracts 2, free, ovate to narrowly elliptic, ca. 9 × 4.5 mm, puberulent, margin 1-denticulate to subentire, apex acute to obtuse. Pedicel to 1.2 cm, puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear to narrowly triangular, ca. 5 × 0.9–1.2 mm, outside densely puberulent, inside puberulent apically, margin 1- or 2-denticulate, apex attenuate. Corolla purple-blue, ca. 2.7 cm, outside puberulent, inside in longitudinal lines with very short hairs on adaxial lip; tube funnellform-tubular, ca. 2 × 0.9 cm; adaxial lip ca.

3.5 mm; abaxial lip ca. 7 mm. Filaments ca. 9 mm, glandular puberulent; anthers fused by entire adaxial surfaces, 2.8–3 mm, purple strigose at apex; staminodes 2, ca. 3 mm. Pistil ca. 2.8 cm, puberulent; ovary ca. 1 cm. Stigma ligulate-linear, ca. 2 mm, apex nearly truncate and emarginate. Capsule erect, ca. 2.5 cm. Fl. Jun, fr. Aug.

• Rocks under shrubs in valleys; ca. 700 m. N Guangxi (Rongshui Xian).

24. *Chirita polycephala* (W. Y. Chun) W. T. Wang, Bull. Bot. Res., Harbin 1(4): 58. 1981.

多葶唇柱苣苔 duo ting chun zhu ju tai

Didymocarpus polycephalus W. Y. Chun, Sunyatsenia 6: 299. 1946.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.7–10 cm × 3–7 mm; leaf blade ovate to nearly orbicular, seldom elliptic, 3–12 × 2.8–11 cm, thin papery, sparsely appressed pilose and appressed pubescent, eglandular, base broadly cuneate, truncate, to nearly cordate, margin entire or repand to irregularly shallowly crenate, apex obtuse to rounded; lateral veins 3 or 4 on each side of midrib, inconspicuous. Cymes 2–7(–15)-flowered; peduncle 4–12 cm, villous; bracts 2, free, ovate to lanceolate or elliptic, 2–3.2 × (0.3–)1–1.8 cm, pubescent, margin entire, apex acute to attenuate. Pedicel 0.5–2 cm, puberulent and glandular villous. Calyx 5-sect from base; segments equal, linear-lanceolate, 1–1.5 cm × 1–2 mm, outside puberulent and glandular villous, inside puberulent, margin entire, apex attenuate. Corolla purplish, 3–4.5 cm, outside sparsely puberulent, inside puberulent in longitudinal lines near base of tube; tube nearly tubular, 2–2.5 × to 1.2 cm; adaxial lip ca. 7 mm; abaxial lip ca. 1.1 cm. Filaments 8–10 mm, sparsely puberulent and glandular puberulent; anthers fused by entire adaxial surfaces, 3–3.5 mm, abaxially villous; staminodes 2, 3.5–6 mm. Pistil ca. 3 cm, densely puberulent; ovary ca. 1.1 cm. Stigma cuneate, 2–4 mm, 2-lobed. Capsule erect, 4–5 cm. Fl. Jun, fr. Oct.

• Rocks in forested valleys; 600–800 m. N Guangdong (Ruyuan Xian, Yangshan Xian).

25. *Chirita leiophylla* W. T. Wang, Guihaia 6: 159. 1986.

光叶唇柱苣苔 guang ye chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1–2.5 cm × ca. 6 mm; leaf blade elliptic to oblong, ca. 12 × 4.7–7.2 cm, thin papery, sparsely puberulent, eglandular, base oblique, cuneate to broadly cuneate on 1 side, broadly cuneate to rounded on other, margin indistinctly denticulate to crenulate or entire on 1 side, apex acute to obtuse; lateral veins ca. 6 on each side of midrib, inconspicuous. Cymes 2–4-flowered; peduncle ca. 7.2 cm, puberulent; bracts 2, free, elliptic, 8–9 × ca. 3 mm, puberulent, margin entire, apex acute. Pedicel 5–

12 mm, puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, ca. 6 × 1–1.2 mm, outside purplish puberulent, inside glabrous, margin entire, apex acute. Corolla purple-white, ca. 3.5 cm, outside puberulent, inside sparsely puberulent on adaxial lip; tube funnellform-tubular, ca. 2.4 × 1.3 cm; adaxial lip ca. 3 mm; abaxial lip ca. 1.1 cm. Filaments ca. 8.5 mm, glandular puberulent above; anthers fused by entire adaxial surfaces, ca. 2.1 mm, bearded; staminodes 3, central ca. 0.8 mm, laterals ca. 6 mm. Pistil ca. 2.5 cm, puberulent and purplish glandular puberulent; ovary ca. 1.7 cm. Stigma trapezoid, ca. 2 mm, 2-lobed. Fruit and seeds unknown. Fl. Jun.

• Mixed forests on limestone hills. SW Guangxi (Longzhou Xian).

26. *Chirita depressa* J. D. Hooker, Bot. Mag. 118: pl. 7213. 1892.

短序唇柱苣苔 duan xu chun zhu ju tai

Didymocarpus depressus (J. D. Hooker) W. Y. Chun, Sunyatsenia 6: 298. 1946.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole ca. 8 × 6 mm; leaf blade broadly ovate or elliptic to obovate, ca. 10 × 6 cm, papery, adaxially densely puberulent, eglandular, abaxially velutinous, base cuneate, margin shallowly crenate, apex obtuse to rounded; lateral veins ca. 4 on each side of midrib, conspicuous. Cymes ca. 4-flowered; peduncle shorter than leaves; bracts 2. Calyx 5-sect from base; segments slightly unequal, narrowly linear, ca. 7 × 1 mm, outside puberulent and glandular puberulent, margin entire, apex attenuate. Corolla purple, ca. 3 cm, outside sparsely pubescent, inside glandular puberulent below stamens; tube funnellform-tubular, ca. 2.3 × 0.8 cm; adaxial lip ca. 6 mm; abaxial lip ca. 7 mm. Filaments ca. 1.3 cm, glabrous; anthers fused by entire adaxial surfaces, ca. 2.5 mm, glabrous; staminodes 3, central ca. 2 mm, laterals ca. 6 mm. Pistil nearly as long as corolla tube; ovary puberulent and sparsely glandular puberulent. Stigma obovoid, 2-lobed. Fruit and seeds unknown.

• N Guangdong.

This species is known only from the type specimen, which has only two detached leaves and a corolla (without stamens). The plate in the protologue is excellent, but does not show inflorescence characters.

27. *Chirita tribracteata* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 58. 1981.

三苞唇柱苣苔 san bao chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 2–4.5 cm × 3–5 mm; leaf blade elliptic to broadly obovate, (1.8–)8–10 × (1.4–)5–7.4 cm, papery, adaxially puberulent near margin, eglandular, abaxially sparsely puberulent, base oblique, broadly cuneate, margin crenate to repand, apex obtuse to rounded; lateral veins 4 or 5 on each side of midrib, inconspicuous. Cymes ca. 7-flowered; peduncle 8.5–9.8 cm, villous and glandular

puberulent; bracts 3, free, lanceolate to narrowly elliptic, 0.9–1.3 cm × 3–7.5 mm, ciliate, margin entire, apex acute. Pedicel 0.8–1.6 cm, glandular puberulent. Calyx 5-sect from base; segments equal, linear-lanceolate, 7–10 × 1–1.5 mm, outside puberulent, inside glabrous, margin entire, apex attenuate. Corolla blue, 3.6–4 cm, outside sparsely puberulent, inside puberulent on adaxial lip; tube narrowly funnellform, ca. 2.5 × 0.9–1.1 cm; adaxial lip ca. 7 mm; abaxial lip ca. 1.4 cm. Filaments ca. 1.3 cm, glandular puberulent near apex; anthers fused by entire adaxial surfaces, ca. 3.2 mm, glabrous; staminodes 3, central ca. 0.5 mm, laterals ca. 3.2 mm. Pistil ca. 2.5 cm, densely puberulent; ovary ca. 1.5 cm. Stigma cuneate, ca. 2 mm, 2-lobed. Fruit and seeds unknown. Fl. Jun.

• Near caves in limestone hills. NW Guangxi (Fengshan Xian).
28. *Chirita xinningensis* W. T. Wang, Bull. Bot. Res., Harbin 9(4): 22. 1989.

新宁唇柱苣苔 *xin ning chun zhu ju tai*
 Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.3–2 × 0.4–1.4 cm; leaf blade orbicular to broadly ovate, 3–8 × 2.5–8 cm, papery, adaxially puberulent, eglandular, abaxially puberulent, base broadly cuneate to subcordate, margin irregularly dentate or undulate and obtusely dentate, apex rounded to obtuse; lateral veins 2 or 3 on each side of midrib, inconspicuous. Cymes (3–)10–14-flowered; peduncle 4.5–13.5 cm, spreading puberulent; bracts 3, free, unequal, linear-lanceolate, 6–13 × 1–3 mm, densely puberulent, margin entire, apex acute. Pedicel 4–12 mm, puberulent and glandular puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, 4–5 × 0.8–1 mm, outside puberulent, inside glabrous, margin entire, apex acute. Corolla white, ca. 3 cm, outside sparsely glandular puberulent, inside puberulent only below adaxial lip; tube nearly tubular, ca. 2.1 × 1 cm; adaxial lip ca. 7 mm; abaxial lip ca. 9 mm. Filaments ca. 8 mm, sparsely glandular puberulent near apex; anthers fused by entire adaxial surfaces, ca. 3 mm, glabrous; staminodes 3, central ca. 3 mm, laterals ca. 1 cm. Pistil ca. 2.5 cm, puberulent; ovary ca. 1.2 cm. Stigma obtrapezoid, ca. 1 mm, 2-lobed. Fruit and seeds unknown. Fl. Jul.

• Limestone hills; ca. 400 m. S Hunan (Xinning Xian).

29. *Chirita fimbriseopala* Handel-Mazzetti, Kaiserl. Akad. Wiss. Wien, Math.-Naturwiss. Kl., Anz. 62: 65. 1925.
 蚂蝗七 *ma huang qi*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 2–8.5 cm × 3–7 mm; leaf blade oblique, ovate to orbicular, rarely obovate, lanceolate, or oblanceolate, 4–10 × 3.5–11 cm, herbaceous, adaxially puberulent and appressed pilose, eglandular, abaxially sparsely puberulent to velutinous, base oblique, broadly cuneate to cordate, margin denticulate to dentate, crenate, or serrate, apex

acute to rounded; lateral veins 3–5 on each side of midrib, inconspicuous. Cymes (1 or)2–5-flowered; peduncle 6–28 cm, pubescent to appressed pilose; bracts 2, free, narrowly elliptic to lanceolate, ovate, or narrowly triangular, 5–11 × 1–3(–7) mm, pubescent, margin entire, apex acute. Pedicel 0.5–3.8 cm, pubescent. Calyx 5-sect from base; segments equal, lanceolate-linear to narrowly ovate, 7–11(–15) × 1.5–3 mm, puberulent, margin often denticulate to serrate apically, apex acute to acuminate. Corolla blue, purple, to pinkish green, (3.5–)4.2–6.4 cm, outside basally sparsely puberulent, inside puberulent below adaxial lip on 2 purple lines; tube narrowly funnellform, 2.5–3.8 × 0.8–1.4 cm; adaxial lip 0.7–1.2 cm; abaxial lip 1.5–2.4 cm. Filaments ca. 1.3 cm, apex sparsely puberulent to glabrous; anthers fused by entire adaxial surfaces, ca. 4 mm, sparsely bearded; staminodes 2 or 3, ca. 4 mm. Pistil ca. 2.7–3.2 cm, densely puberulent; ovary 2–2.6 cm. Stigma obtrapezoid, 2–3 mm, 2-lobed. Capsule erect, 4–8 cm. Fl. Mar–Apr, fr. Apr–Jun.

• Rocks or cliffs in forests or montane streamside; 400–1000 m. Fujian, N Guangdong, N and S Guangxi, S Guizhou, Hunan, Jiangxi.

- 1a. Leaf blade abaxially sparsely puberulent to pubescent 29a. var. *fimbriseopala*
 1b. Leaf blade abaxially densely puberulent to velutinous 29b. var. *mollis*

29a. *Chirita fimbriseopala* var. *fimbriseopala*

蚂蝗七(原变种) *ma huang qi* (*yuan bian zhong*)

Didymocarpus fimbriseopalus (Handel-Mazzetti) Handel-Mazzetti.

Leaf blade abaxially sparsely puberulent to pubescent.

• Rocks or cliffs in forests or montane streamside; 400–1000 m. Fujian, N Guangdong, N Guangxi, S Guizhou, Hunan, Jiangxi.

The rhizome of *Chirita fimbriseopala* var. *fimbriseopala* is used medicinally by local people for injuries from fractures and contusions.

29b. *Chirita fimbriseopala* var. *mollis* W. T. Wang, Bull. Bot. Res., Harbin 2(4): 50. 1982.

密毛蚂蝗七 *mi mao ma huang qi*

Leaf blade abaxially densely puberulent to velutinous.

• Rocks in forested valleys; 800–1000 m. S Guangxi (Fangcheng Xian, Shangsi Xian).

30. *Chirita verecunda* (W. Y. Chun) W. T. Wang, Bull. Bot. Res., Harbin 1(4): 50. 1981.

齿萼唇柱苣苔 *chi e chun zhu ju tai*

Didymocarpus verecundus W. Y. Chun, Sunyatsenia 6: 297. 1946.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1–10 cm × 4–10 mm; leaf blade oblique, rhombic-elliptic, 8–15 × 5–11 cm, papery, sparsely puberulent, eglandular,

base oblique, cuneate to rounded on 1 side and rounded to cordate on other, margin irregularly dentate to denticulate, apex acute to rounded; lateral veins 4 or 5 on each side of midrib, inconspicuous. Cymes ca. 5-flowered; peduncle to 10 cm, villous; bracts 2, free, narrowly ovate to oblong, 1–1.2 cm × 3–6 mm, puberulent, margin crenulate, apex acute. Pedicel 1–5(–20) mm, puberulent. Calyx 5-sect from base; segments equal, linear-lanceolate, 1.2–1.7 cm × 2–4 mm, outside puberulent, inside appressed puberulent, margin denticulate, apex attenuate. Corolla blue, 4–4.5 cm, outside sparsely puberulent, inside puberulent on purple spots below adaxial lip; tube nearly tubular, ca. 3 × 0.9 cm; adaxial lip ca. 8 mm; abaxial lip ca. 1.8 cm. Filaments ca. 1.2 cm, apex puberulent; anthers fused by entire adaxial surfaces, ca. 6 mm, abaxially puberulent; staminodes 2, ca. 3 mm. Pistil ca. 3 cm, puberulent; ovary ca. 2 cm. Stigma cuneate, ca. 5 mm, 2-lobed. Capsule erect, 4–5 cm. Fl. Dec.

• Forests, rocky stream-sides in valleys; 1000–1100 m. NE Guangxi (Mengshan Xian, Lipu Xian).

31. *Chirita langshanica* W. T. Wang, Guihaia 12: 293. 1992.

葭山唇柱苣苔 lang shan chun zhu ju tai
Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole (1–)8–9 cm × 7–9 mm; leaf blade rhombic-ovate to nearly rhombic, 4.8–10 × 3.8–7 cm, papery, adaxially with dense, short and long hairs, eglandular, abaxially puberulent, base cuneate, margin coarsely dentate, apex rounded to acute, basal veins 5; lateral veins 1 or 2 on each side of midrib, conspicuous. Cymes 10–16-flowered; peduncle 16.5–17.5 cm, puberulent; bracts 2, free, lanceolate-linear, 2–2.5 cm × 3–3.5 mm, puberulent, margin entire, apex attenuate. Pedicel 1.6–5 cm, glandular puberulent. Calyx 5-sect from base; segments equal, narrowly lanceolate-linear, 1.2–1.4 cm × 1–2 mm, appressed puberulent, margin entire, apex subulate-acuminate. Corolla purplish, ca. 4.4 cm, outside sparsely puberulent, inside sparsely puberulent on spots below adaxial lip; tube funnellform-tubular, ca. 3 × 1 cm; adaxial lip ca. 9 mm; abaxial lip ca. 1.4 cm. Filaments ca. 1 cm, glandular puberulent apically; anthers fused by entire adaxial surfaces, ca. 3 mm, puberulent; staminodes 2, ca. 5 mm. Pistil ca. 2.9 cm, puberulent; ovary ca. 1.7 cm. Stigma linear, ca. 3 mm, 2-lobed. Fruit and seeds unknown. Fl. Sep.

• Shaded rocky cliffs; ca. 500 m. S Hunan (Xinning Xian).

32. *Chirita linglingensis* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 42. 1981.

零陵唇柱苣苔 ling ling chun zhu ju tai
Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.5–2 × 0.4–1.2 cm; leaf blade oblique, ovate to nearly orbicular, 2.5–6 × 2.5–6.4 cm, papery, puberulent, eglandular, base oblique, broadly cuneate to rounded,

margin dentate to obtusely dentate, apex rounded to obtuse; lateral veins ca. 4 on each side of midrib, inconspicuous. Cymes 1–4-flowered; peduncle 3–7 cm, villous; bracts 2, free, lanceolate-linear, ca. 7 × 1–1.2 mm, villous, margin entire, apex attenuate. Pedicel 1.2–2.2 cm, pubescent and glandular puberulent. Calyx 5-sect from base; segments equal, linear-lanceolate, 7–9 × 1.2–2 mm, outside puberulent, inside glabrous, margin entire, apex attenuate. Corolla purple-red, 3.5–5 cm, outside sparsely puberulent, inside puberulent toward mouth; tube broadly funnellform to tubular-funnelform, 2.3–3 × 1.4–1.8 cm; adaxial lip ca. 8 mm; abaxial lip ca. 1.6 cm. Filaments ca. 1.1 cm, sparsely puberulent apically; anthers fused by entire adaxial surfaces, ca. 3.2 mm, abaxially puberulent; staminodes 3, ca. 5 mm. Pistil ca. 3 cm, densely puberulent; ovary ca. 1.4 cm. Stigma suboblong, ca. 3 mm, 2-parted. Capsule erect, 3–4 cm. Fl. Mar–Apr.

• Shaded rocks in valleys; ca. 300 m. S Hunan (Lingling Xian).

33. *Chirita villosissima* W. T. Wang, Guihaia 6: 161. 1986.

长毛唇柱苣苔 chang mao chun zhu ju tai
Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.4–2.2 cm × ca. 3 mm; leaf blade narrowly to broadly elliptic or ovate, 1.5–3.6(–4.7) × 1–1.9(–2.4) cm, papery, adaxially densely villous (hairs to 8.2 mm) and puberulent, eglandular, abaxially densely pubescent, base cuneate to broadly cuneate, margin repand to entire, apex acute to rounded; lateral veins ca. 3 on each side of midrib, inconspicuous. Cymes 1- or 2-flowered; peduncle ca. 7 cm, spreading pubescent; bracts 2, free, triangular to narrowly triangular, 1.2–2.2 × 0.6–1.2 mm, pubescent, margin entire, apex acute. Pedicel 0.9–1.4 cm, spreading pubescent. Calyx 5-sect from base; segments equal, linear-triangular, ca. 4 × 1.5–1.8 mm, outside puberulent, inside glabrous, margin entire, apex attenuate. Corolla pale purple, ca. 3 cm, outside puberulent, inside puberulent basally; tube tubular-funnelform, ca. 2 × 1 cm; adaxial lip ca. 6 mm; abaxial lip ca. 1 cm. Filaments ca. 1 cm, glabrous; anthers fused by entire adaxial surfaces, ca. 3.5 mm, villous; staminodes 3, central ca. 2 mm, laterals ca. 5 mm. Pistil ca. 1.8 cm, puberulent; ovary ca. 1.1 cm. Stigma sub-oblong, ca. 2 mm, 2-lobed. Fruit and seeds unknown. Fl. May.

• Forests on limestone hills; ca. 100 m. S Guangdong (Zhaoqing Xian).

34. *Chirita guelinensis* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 43. 1981.

桂林唇柱苣苔 gui lin chun zhu ju tai
Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.5–4 cm × 4–8 mm; leaf blade narrowly elliptic to rhombic-elliptic or ovate, 2.5–7.5 × 1.4–4 cm, papery, densely puberulent, eglandular, base oblique, cuneate, margin

shallowly crenate, apex obtuse to rounded; lateral veins 4–6 on each side of midrib, inconspicuous. Cymes 1–5-flowered; peduncle 1.5–6 cm, densely spreading puberulent; bracts 2, free, linear to narrowly elliptic or narrowly triangular, 2–14 × 0.3–1.5 mm, puberulent, margin entire, apex acute. Pedicel 2.5–10 mm, densely spreading puberulent. Calyx 5-sect from base; segments equal, narrowly lanceolate, 5–7 × 1.2–2 mm, outside puberulent, inside glabrous, margin entire, apex acute. Corolla purple, 4–6 cm, outside puberulent, inside puberulent only on adaxial lip; tube tubular to narrowly funnelform, 2.5–3.8 × 1.2–2 cm; adaxial lip 0.9–1.2 cm; abaxial lip 1.1–1.5 cm. Filaments 1.1–1.2 cm, glabrous; anthers fused by entire adaxial surfaces, 4.5–5 mm, pubescent; staminodes 2, 5.5–7 mm. Pistil 2–3 cm, puberulent; ovary (0.4–)1.5–2.6 cm. Stigma obtrapezoid, 2.5–4 mm, 2-lobed. Capsule erect, 2.5–3.6 cm. Fl. Mar–Apr.

• Shaded forest areas in limestone hills; to 800 m. W Guangdong (Yunfu Xian), E and NE Guangxi.

35. *Chirita spadiciformis* W. T. Wang, Bull. Bot. Res., Harbin 5(3): 49. 1985.

焰苞唇柱苣苔 *yan bao chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite or ternate; petiole 1–9 cm × 1.5–3.5 mm; leaf blade slightly oblique, elliptic, 1.5–8.2 × 1–4.4 cm, papery, densely puberulent, eglandular, base oblique, cuneate to cuneate on 1 side and rounded on other, margin repand-crenate, apex obtuse; lateral veins ca. 4 on each side of midrib, inconspicuous. Cymes ca. 2-flowered; peduncle 6–7 cm, densely spreading puberulent; bract 1, spathe-like, navicular-ovate, 1.5–2 cm × 4–6 mm, densely puberulent, margin entire, apex long acuminate. Pedicel 1–16 mm, puberulent. Calyx 5-sect from base; segments equal, linear-lanceolate, ca. 5 × 1–1.2 mm, outside puberulent, inside glabrous, margin entire, apex attenuate. Corolla bluish to pale purple with 1 yellow spot below adaxial lip, ca. 3 cm, outside puberulent, inside glandular puberulent only on yellow spot; tube nearly campanulate, ca. 2.1 × 1.5 cm; adaxial lip ca. 6 mm; abaxial lip ca. 9 mm. Filaments ca. 1 cm, sparsely puberulent near apex; anthers fused by entire adaxial surfaces, ca. 2.5 mm, glabrous; staminodes 2, ca. 4 mm. Pistil ca. 2.2 cm, puberulent; ovary ca. 1.1 cm. Stigma obtrapezoid, ca. 1.5 mm, 2-lobed. Capsule erect, ca. 3 cm. Fl. and fr. Aug.

• Known only from cultivation. Cultivated in the Medicinal Botanic Garden in Nanning, Guangxi; possibly introduced from Mt. Damingshan, Wuming Xian, Guangxi.

36. *Chirita heterotricha* Merrill, Lingnan Sci. J. 13: 71. 1934.

烟叶唇柱苣苔 *yan ye chun zhu ju tai*

Perennials. Rhizome apical internodes to 2.2 cm. Stem absent, or decumbent, to 25 × 3 cm, puberulent. Leaves basal or crowded at apex of stem, opposite; petiole 0.5–11 × 0.2–1.5 cm; leaf blade sometimes oblique,

narrowly elliptic to oblong, obovate, or ovate, 3–23 × 1.5–13 cm, herbaceous to papery, adaxially sparsely puberulent and sparsely pilose, eglandular, abaxially sparsely pubescent, base sometimes oblique, cuneate to attenuate and decurrent, seldom truncate-cordate, margin entire to indistinctly denticulate, apex acute to obtuse; lateral veins 4–7 on each side of midrib, inconspicuous. Cymes 2–15-flowered; peduncle 4.4–21 cm, puberulent to spreading pilose and glandular puberulent; bracts 2, free, elliptic to ovate or narrowly triangular, 0.9–25 × 0.2–9 mm, pubescent, margin entire, apex acute to acuminate. Pedicel (0.3–)1.5–6 cm, puberulent to spreading pilose. Calyx 5-sect from or near base; segments equal, linear-lanceolate to narrowly triangular, 0.7–1.7 cm × 0.5–1.2 mm, outside sparsely to densely puberulent and glandular puberulent, inside puberulent, margin entire, apex acute to attenuate. Corolla purplish to white with a purple spot below adaxial lip, 3–4 cm, outside sparsely puberulent to puberulent, inside glandular or puberulent on adaxial lip; tube nearly tubular, 2.4–2.8 × 0.8–1.2 cm; adaxial lip 3–5 mm; abaxial lip 7–12 mm.

Filaments ca. 1 cm, sparsely puberulent; anthers fused by entire adaxial surfaces, 2.2–3 mm, glabrous; staminodes 2 or 3, 3–4 mm. Pistil 2–2.6 cm, puberulent and glandular puberulent; ovary ca. 1.2 cm. Stigma cuneate to narrowly oblong, 2–4 mm, 2-lobed or undivided. Capsule erect, 4.5–9 cm. Fl. Apr–Oct, fr. May–Oct.

• Rocky stream-sides in forested valleys; 400–600 m. Hainan.

37. *Chirita fordii* (Hemsley) D. Wood, Notes Roy. Bot. Gard. Edinburgh 31: 371. 1972.

桂粤唇柱苣苔 *gui yue chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.5–5 cm × 2–5 mm; leaf blade ovate to elliptic or obovate, 5.5–11 × 2.5–7 cm, herbaceous, adaxially appressed puberulent (hairs 0.2–0.9 mm) and sparsely villous (hairs 2–5 mm), eglandular, abaxially densely puberulent and appressed pilose, base slightly oblique, cuneate to nearly rounded, margin entire to shallowly crenate or denticulate, apex obtuse to abruptly acuminate; lateral veins ca. 4 on each side of midrib, inconspicuous. Cymes 2–8-flowered; peduncle 3.5–13 cm, spreading pubescent to pilose; bracts 2, free, linear-lanceolate to narrowly triangular, 3–9 × 0.5–2 mm, pubescent to pilose, margin entire, apex obtuse to acute. Pedicel 3–16 mm, pubescent to spreading pilose. Calyx 5-sect from base; segments equal, lanceolate-linear to narrowly triangular, 3.5–9 × 0.8–1.5 mm, outside pubescent to pilose, inside glabrous to puberulent, margin entire, apex obtuse to acute. Corolla pink to purple with a purple spot on adaxial lip, 2.1–3.9 cm, outside sparsely puberulent,

inside sparsely pubescent on purple spot and lines; tube nearly tubular, 1.5–2.6 cm × 6–8 mm; adaxial lip 3–5.5 mm; abaxial lip 7–9 mm. Filaments 7–11 mm, sparsely puberulent; anthers fused by entire adaxial surfaces, 2.5–3.5 mm, glabrous to sparsely puberulent; staminodes 2, ca. 5 mm. Pistil 1.2–3.7 cm, puberulent; ovary 0.6–1.7 cm. Stigma cuneate to linear, 1–3.5 mm, 2-lobed. Capsule erect, 1.4–3 cm. Fl. Apr, Jul, Aug, fr. Aug–Oct.

• Rocky streamsides in forested valleys; 400–1100 m. N and S Guangdong, E Guangxi, Guizhou, NW Hunan, E and SE Sichuan.

- 1a. Leaf blade adaxially with shorter (0.3–0.9 mm) and longer (2–4 mm) hairs; calyx segments 0.8–1 mm wide; anthers glabrous ... 37a. var. *fordii*
1b. Leaf blade adaxially with shorter (0.8–1.5 mm) and longer (4–5 mm) hairs; calyx segments 1–1.5 mm wide; anthers sparsely puberulent 37b. var. *dolichotricha*

37a. *Chirita fordii* var. *fordii*

桂粤唇柱苣苔(原变种) *gui yue chun zhu ju tai* (yuan bian zhong)

Didymocarpus fordii Hemsley in F. B. Forbes & Hemsley, J. Linn. Soc., Bot. 26: 229. 1890; *Chirita longistyla* W. T. Wang.

Leaf blade adaxially with shorter (0.3–0.9 mm) and longer (2–4 mm) hairs. Calyx segments 0.8–1 mm wide. Anthers glabrous.

• Rocky streamsides in valleys; ca. 400 m. N Guangdong, E Guangxi (Cangwu Xian), Guizhou, NW Hunan, E and SE Sichuan.

37b. *Chirita fordii* var. *dolichotricha* (W. T. Wang) W. T. Wang, *Guihaia* 12: 296. 1992.

鼎湖唇柱苣苔 *ding hu chun zhu ju tai*

Chirita gueilinensis W. T. Wang var. *dolichotricha* W. T. Wang, Bull. Bot. Res., Harbin 2(4): 50. 1982.

Leaf blade adaxially with shorter (0.8–1.5 mm) and longer (4–5 mm) hairs. Calyx segments 1–1.5 mm wide. Anthers sparsely puberulent.

• Rocks along streamsides in forested valleys. S Guangdong (Zhaoqing Xian).

38. *Chirita carnosifolia* C. Y. Wu ex H. W. Li, Bull. Bot. Res., Harbin 3(2): 36. 1983.

肉叶唇柱苣苔 *rou ye chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1–3 cm × 4–5 mm; leaf blade narrowly elliptic to oblong, 9–12 × 3–6 cm, papery, densely appressed puberulent, eglandular, base attenuate, margin entire to repand, apex obtuse; lateral veins 4–7 on each side of midrib, inconspicuous. Cymes ca. 10-flowered; peduncle 4.5–11 cm, spreading pubescent; bracts 2, free, linear-lanceolate, 4–9 × ca. 1.5 mm, pubescent, margin entire, apex obtuse. Pedicel to 1 cm in fruit, spreading

pubescent. Persistent calyx 5-sect from base; segments equal, linear, 5–8 × ca. 1 mm, outside densely puberulent, inside pubescent only near apex, margin entire, apex acute. Corolla, stamens, and pistil unknown. Capsule erect, 2.5–3.5 cm; persistent stigma 2-lobed. Fr. Jun.

• Rocks in rainforest valleys; 300–1100 m. SE Yunnan (Malipo Xian).

39. *Chirita roseoalba* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 44. 1981.

粉花唇柱苣苔 *fen hua chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 2.5–5 × 0.7–1.5 cm; leaf blade slightly oblique, ovate, 6.8–12.5 × 4–8 cm, herbaceous, sparsely strigose, eglandular, base oblique, broadly cuneate, margin crenulate to remotely dentate, apex obtuse; lateral veins 3 or 4 on each side of midrib, inconspicuous. Cymes 3–6-flowered; peduncle 9–13 cm, puberulent; bracts 2, free, linear-lanceolate, 1.1–1.3 cm × 2.2–3 mm, strigose, margin entire, apex acute. Pedicel 1–2.5 cm, puberulent and glandular puberulent. Calyx 5-sect from base; segments equal, linear-lanceolate, 4–6 × 0.8–1 mm, outside puberulent and glandular puberulent, inside glabrous, margin entire, apex acute. Corolla white to pinkish, ca. 4 cm, outside sparsely puberulent, inside puberulent on adaxial lip; tube funnelform-tubular, ca. 2.4 × 1.2 cm; adaxial lip ca. 7 mm; abaxial lip ca. 1.5 cm. Filaments ca. 1.1 cm, base sparsely pubescent, apex sparsely glandular puberulent; anthers fused by entire adaxial surfaces, ca. 3 mm, sparsely puberulent; staminodes 2, ca. 6 mm. Pistil ca. 2.8 cm; ovary ca. 1.5 cm, puberulent. Style glandular puberulent; stigma cuneate, ca. 2 mm, 2-lobed. Fruit and seeds unknown. Fl. Jul.

• Streamside thickets in valleys. NW Hunan (Dayong Xian).

40. *Chirita pteropoda* W. T. Wang, Bull. Bot. Res., Harbin 5(3): 51. 1985.

翅柄唇柱苣苔 *chi bing chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1.4–8 × 0.8–3 cm; leaf blade elliptic-ovate to elliptic, 6–24 × 4.4–16 cm, papery, sparsely puberulent, eglandular, base broadly cuneate and decurrent into broad wings of petiole, margin repand-denticulate to shallowly crenate, apex acute to rounded; lateral veins ca. 6 on each side of midrib, conspicuous. Cymes 5–19-flowered; peduncle 15–30 cm, glandular puberulent and sparsely puberulent; bracts 2, free, lanceolate to narrowly triangular, 1–1.3 cm × 2.5–4 mm, pubescent, margin entire, apex acute. Pedicel 1–3.8 cm, glandular puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, 1–1.2 cm × ca. 2 mm, outside puberulent and glandular puberulent, inside puberulent, margin entire, apex acute. Corolla white to purplish with 1 purple spot below adaxial lip, 3.6–4 cm, outside

glandular puberulent, inside puberulent only on purple spot; tube nearly tubular, 2.5–2.8 × ca. 1 cm; adaxial lip 4.5–6 mm; abaxial lip 1.1–1.2 cm. Filaments ca. 1.2 cm, glandular puberulent only near apex; anthers fused by entire adaxial surfaces, ca. 2 mm, glabrous; staminodes 3, central ca. 0.5 mm, laterals 4.5–5 mm. Pistil 2.2–2.5 cm, densely glandular puberulent; ovary 1.3–1.6 cm. Stigma oblong, ca. 2 mm, 2-lobed. Fruit and seeds unknown. Fl. Nov.

• Known only from cultivation. Cultivated at the South China Institute of Botany in Guangzhou, Guangdong; possibly introduced from Guangxi.

41. *Chirita juliae* Hance, J. Bot. 21: 168. 1883.

大齿唇柱苣苔 da chi chun zhu ju tai

Chirita gueilinensis W. T. Wang var. *brachycarpa* W.

T. Wang; *C. mangshanensis* W. T. Wang; *C.*

mangshanensis var. *lasiandra* W. T. Wang;

Didymocarpus juliae (Hance) H. Léveillé; *Roettlera*

juliae (Hance) Kuntze.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 3–17 × 0.4–1.3 cm; leaf blade ovate to elliptic, 6–15 × 4.4–9 cm, herbaceous, appressed puberulent, eglandular, base narrowly cuneate to subtruncate, margin dentate to pinnately lobed basally or crenate, apex acute to rounded; lateral veins 4 or 5 on each side of midrib, inconspicuous. Cymes 2–12-flowered; peduncle 4–11 cm, spreading puberulent; bracts 2, free, lanceolate-linear, 5–13 × 0.6–1.2 mm, puberulent, margin entire, apex acute. Pedicel 1–15 mm, pubescent. Calyx 5-sect from base; segments equal, subulate to lanceolate, 4–13 × 0.6–1.5 mm, puberulent, margin entire, apex acute. Corolla blue to purple, 3.5–4.5 cm, outside sparsely puberulent, inside nearly glabrous; tube nearly tubular to funnellform-tubular, 2.2–3.3 × 0.8–1.5 cm; adaxial lip 7–8 mm; abaxial lip 1–1.2 cm. Filaments 1–1.3 cm, glabrous to glandular puberulent near apex; anthers fused by entire adaxial surfaces, 3.2–3.5 mm, glabrous; staminodes 2, 4–5.5 mm. Pistil 3–3.2 cm, puberulent; ovary 4–8 mm. Stigma narrowly oblong, ca. 5 mm, 2-lobed. Capsule erect, 0.9–1.3 cm. Fl. Jul–Oct, fr. Oct.

• Shaded streamside rocks in hilly regions; 300–600 m. W Fujian (Ninghua Xian), N Guangdong, SE Hunan, NE Jiangxi (Guangfeng Xian).

42. *Chirita cruciformis* (W. Y. Chun) W. T. Wang, Bull. Bot. Res., Harbin 1(4): 45. 1981.

十字唇柱苣苔 shi zi chun zhu ju tai

Didymocarpus cruciformis W. Y. Chun, Sunyatsenia 6: 296. 1946.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 5–10 × 4–10 mm; leaf blade ovate to orbicular-ovate, 5–8 × 4–7 cm, papery, densely appressed puberulent and appressed pilose (hairs to 1 mm and to 3 mm),

eglandular, base broadly cuneate, margin subentire to repand-crenate, apex acute to rounded; lateral veins ca. 4 on each side of midrib, inconspicuous. Cymes ca. 2-flowered; peduncle 4–6 cm, spreading pilose; bracts 2, seldom 3, free, linear-lanceolate to narrowly triangular, 4–9 × 1–2 mm, densely puberulent and pilose, margin entire, apex acute. Pedicel 1–2.3 cm, densely glandular puberulent and pilose. Calyx 5-sect from base; segments equal, linear-lanceolate, 5–7 × 0.8–1 mm, outside puberulent, inside glabrous, margin entire, apex subulate-acuminate. Corolla purple, 3.5–4 cm, outside sparsely pubescent, inside puberulent on 2 longitudinal lines; tube narrowly funnellform, ca. 2.2 × 1 cm; adaxial lip ca. 8 mm; abaxial lip ca. 1.5 cm. Filaments ca. 8 mm, glabrous; anthers fused by entire adaxial surfaces, 3–4 mm, pilose; staminode 1, ca. 4 mm. Pistil ca. 2.5 cm, puberulent; ovary ca. 2 cm. Stigma cuneate, ca. 2 mm, 2-lobed. Fruit and seeds unknown.

• Hunan (Hengyang Xian).

Only known from the type specimen.

43. *Chirita crassituba* W. T. Wang, Bull. Bot. Res., Harbin 9(4): 24. 1989.

粗筒唇柱苣苔 cu tong chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole to 2.5 cm × 7 mm; leaf blade orbicular-ovate to nearly orbicular, to 4.8 × 5.8 cm, thin papery, puberulent, eglandular, base broadly cuneate, margin obtusely dentate to undulate, apex rounded to obtuse; lateral veins ca. 3 on each side of midrib, inconspicuous. Cymes 1–3-flowered; peduncle ca. 4.5 cm, puberulent; bracts 2, free, ovate-triangular, ca. 4 × 1.6–1.8 mm, puberulent, margin entire, apex obtuse. Pedicel ca. 2 cm, villous. Calyx 5-sect from base; segments equal, lanceolate-linear, ca. 7 × 1.3 mm, outside puberulent, inside glabrous, margin entire, apex acute to obtuse. Corolla red, ca. 4.5 cm, outside sparsely puberulent, inside puberulent below adaxial lip; tube broadly tubular, ca. 3 × 1.8 cm; adaxial lip ca. 1 cm; abaxial lip ca. 1.6 cm. Filaments ca. 8.5 mm, glandular puberulent above; anthers fused by entire adaxial surfaces, ca. 4 mm, puberulent; staminodes 3, central ca. 7 mm, laterals ca. 1.4 cm. Pistil ca. 2.7 cm, puberulent; ovary ca. 1.4 cm. Stigma obtriangular, ca. 3 mm, 2-parted. Capsule erect, ca. 6 cm. Fl. Apr, fr. Jun.

• Dense slope forests; ca. 900 m. S Hunan (Shuangpai Xian).

44. *Chirita sclerophylla* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 46. 1981.

硬叶唇柱苣苔 ying ye chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1.2–5.5 cm × 5–8 mm; leaf blade slightly oblique, elliptic to ovate, 7.5–10 × 4.2–5.2 cm, leathery to papery, adaxially densely strigose (hairs mixed 0.15–1.2 mm), eglandular, abaxially appressed puberulent, base cuneate to rounded, margin crenate to subentire, apex

acute to obtuse; lateral veins 4 or 5 on each side of midrib, inconspicuous. Cymes 5–10-flowered; peduncle 8–26 cm, villous; bracts 2, free, linear-lanceolate, ca. 1.4 cm × 1 mm, puberulent, margin entire, apex acute to acuminate. Pedicel 0.7–2 cm, puberulent and glandular puberulent. Calyx 5-sect from base; segments equal, lanceolate to narrowly triangular, 4–8 × 1–2 mm, outside puberulent to pilose, inside glabrous, margin entire, apex acuminate. Corolla pink to purplish with a purple spot, 3.7–4.6 cm, outside sparsely glandular puberulent, inside sparsely pubescent basally and on purple spot; tube nearly tubular, 2.2–2.5 × 0.9–1.3 cm; adaxial lip 0.8–1 cm; abaxial lip 1.2–2 cm. Filaments ca. 1.3 cm, glandular puberulent; anthers fused by entire adaxial surfaces, ca. 3.8 mm, pubescent; staminodes 2, ca. 4 mm. Pistil ca. 2.5 cm, puberulent and glandular puberulent; ovary ca. 1.8 cm. Stigma trapezoid, ca. 1.2 mm, 2-lobed. Fruit and seeds unknown. Fl. Apr–May.

• Shaded, stony cliffs of limestone hills; ca. 200 m. Guangxi (Du'an Xian, Yishan Xian).

45. *Chirita brachytricha* W. T. Wang & D. Y. Chen in W. T. Wang, Bull. Bot. Res., Harbin 5(3): 54. 1985.
短毛唇柱苣苔 *duan mao chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.4–3 × 0.9–1.3 cm; leaf blade slightly oblique, broadly ovate to ovate, 2–15 × 2–12 cm, papery, sparsely puberulent (hairs 0.15–0.25 and 0.8–1 mm), eglandular, base oblique, truncate-rounded to broadly cuneate, margin crenate to dentate to repand, apex rounded to acute; lateral veins 4–6 on each side of midrib, inconspicuous. Cymes 3–6-flowered; peduncle 7–9 cm, densely purple puberulent; bracts 2, free, linear to ovate, 4–8(–18) × 2.8–3.5(–6) mm, pubescent to ciliate, margin entire, apex obtuse. Pedicel 3.5–12 mm, purple puberulent and glandular puberulent. Calyx 5-sect from base; segments equal, triangular-linear, ca. 7 × 1.5–2.5 mm, outside puberulent, inside glabrous, margin entire, apex obtuse. Corolla purple, ca. 3.2 cm, outside puberulent, inside puberulent in lines; tube funnelform-tubular, ca. 2 × 1 cm; adaxial lip ca. 7 mm; abaxial lip ca. 1.1 cm. Filaments ca. 1.2 cm, glandular puberulent above; anthers fused by entire adaxial surfaces, ca. 3.5 mm, bearded; staminodes 2, ca. 6 mm. Pistil ca. 2.6 cm, pubescent; ovary ca. 1.6 cm. Stigma cuneate, ca. 3 mm, 2-lobed. Fruit and seeds unknown. Fl. Apr–May.

• Damp rocky crevices in forests of hilly regions, rocks in forested valleys; 400–1000 m. SE Guizhou (Libo Xian).

- 1a. Leaf blade 2–8.5 × 2–6.6 cm, apex rounded; bracts 4–8 × 2.8–3.5 mm; calyx segments purple puberulent outside ... 45a. var. *brachytricha*
1b. Leaf blade to 15 × 12 cm, apex obtuse; bracts to 18 × 6 mm; calyx segments white puberulent outside 45b. var. *magnibracteata*

45a. *Chirita brachytricha* var. *brachytricha*

短毛唇柱苣苔(原变种) *duan mao chun zhu ju tai*
(yuan bian zhong)

Leaf blade 2–8.5 × 2–6.6 cm, apex rounded. Bracts 4–8 × 2.8–3.5 mm. Calyx segments outside purple puberulent.

• Damp rocky crevices in forests of hilly regions; 400–1000 m. SE Guizhou (Libo Xian).

45b. *Chirita brachytricha* var. *magnibracteata* W. T. Wang & D. Y. Chen ex W. T. Wang, Bull. Bot. Res., Harbin 5(3): 55. 1985.

大苞短毛唇柱苣苔 *da bao duan mao chun zhu ju tai*
Leaf blade to 15 × 12 cm, apex obtuse. Bracts to 18 × 6 mm. Calyx segments outside white puberulent.

• Rocks in forested valleys; ca. 700 m. SE Guizhou (Libo Xian).

46. *Chirita liboensis* W. T. Wang & D. Y. Chen in W. T. Wang, Bull. Bot. Res., Harbin 5(3): 56. 1985.

荔波唇柱苣苔 *li bo chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1–4.5 cm × 1.5–5 mm; leaf blade oblique, elliptic to ovate, 4–10 × 2–4.5 cm, leathery, sparsely puberulent, eglandular, base oblique, cuneate to broadly cuneate, margin entire to repand, apex acute to rounded; lateral veins 3 or 4 on each side of midrib, inconspicuous. Cymes 7–11-flowered; peduncle ca. 12 cm, purple puberulent; bracts 2, free, narrowly ovate, 1.3–2 cm × 3.5–5 mm, sparsely puberulent, margin entire, apex obtuse. Pedicel 1.5–15 mm, purple puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, ca. 7 × 1.2–1.5 mm, purplish puberulent, margin indistinctly denticulate, apex obtuse. Corolla blue-purple, ca. 2.7 cm, outside puberulent, inside puberulent on limb; tube funnelform-tubular, ca. 1.7 × 0.8 cm; adaxial lip ca. 4 mm; abaxial lip ca. 1 cm. Filaments ca. 1 cm, glandular puberulent apically; anthers fused by entire adaxial surfaces, ca. 3.8 mm, bearded; staminodes 2, ca. 3 mm. Pistil ca. 1.9 cm, puberulent; ovary ca. 1.3 cm. Stigma oblong, ca. 1.5 mm, 2-lobed. Fruit and seeds unknown. Fl. May.

• Rocks in forests of hilly regions; ca. 400 m. SE Guizhou (Libo Xian).

47. *Chirita glabrescens* W. T. Wang & D. Y. Chen in W. T. Wang, Bull. Bot. Res., Harbin 5(3): 57. 1985.

少毛唇柱苣苔 *shao mao chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.5–5 cm × 3.5–4.5 mm; leaf blade oblique, oblong to narrowly oblong, 4–12 × 1.9–3.5 cm, papery, adaxially puberulent near margin, eglandular, abaxially sparsely appressed puberulent, base oblique, cuneate, margin repand to entire, apex acute to rounded; lateral veins 3–5 on each side of midrib, inconspicuous. Cymes 3–11-flowered; peduncle 9–13 cm, sparsely purple puberulent; bracts 2, free, ovate, 0.9–1.8 cm × 4–9 mm, sparsely puberulent, margin entire, apex obtuse. Pedicel

0.15–12 mm, spreading purple puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, ca. 6×0.8 mm, outside puberulent, inside glabrous, margin entire, apex acute to acuminate. Corolla purple, ca. 2.8 cm, sparsely puberulent; tube funnelform-tubular, ca. 1.9×0.7 cm; adaxial lip ca. 4 mm; abaxial lip ca. 8 mm. Filaments ca. 1.1 cm, margin sparsely puberulent; anthers fused by entire adaxial surfaces, ca. 2.8 mm, bearded; staminodes 2, ca. 6 mm. Pistil ca. 2.3 cm, puberulent; ovary ca. 1.5 cm. Stigma cuneate, ca. 3 mm, 2-lobed. Fruit and seeds unknown. Fl. May.

• Rocks in forested valleys; ca. 900 m. SE Guizhou (Libo Xian).

48. *Chirita subrhomboidea* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 47. 1981.

菱叶唇柱苣苔 *ling ye chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.4–2.5 cm \times 2–4.5 mm; leaf blade rhomboid-ovate to elliptic, broadly ovate, or spatulate, 3–7 \times 1.5–3.7 cm, leathery, adaxially sparsely strigose, eglandular, abaxially sparsely pubescent, base cuneate to broadly cuneate, margin repand to subentire, apex rounded to acute; lateral veins ca. 3 on each side of midrib, inconspicuous. Cymes 1–3-flowered; peduncle 5.5–8 cm, densely purple puberulent and pilose; bracts 2, free, narrowly ovate to triangular, 4–6 \times 2–3 mm, puberulent and pilose, margin entire, apex acute to obtuse. Pedicel 0.8–1.4 cm, densely pubescent and pilose. Calyx 5-sect from base; segments equal, narrowly lanceolate, 6–7 \times 1–1.2 mm, outside puberulent and pilose, inside nearly glabrous, margin 1- or 2-denticulate apically, apex acute to obtuse. Corolla purple, ca. 4.5 cm, outside puberulent, inside puberulent below adaxial lip; tube broadly funnelform, ca. 3×1.4 cm; adaxial lip ca. 9 mm; abaxial lip ca. 1.5 cm. Filaments ca. 1.2 cm, apically sparsely puberulent; anthers fused by entire adaxial surfaces, ca. 3.5 mm, villous; staminodes 2, ca. 7 mm. Pistil ca. 3.3 cm, densely puberulent; ovary ca. 1.5 cm. Stigma obtrapeziform, ca. 4 mm, 2-parted. Fruit and seeds unknown.

• N Guangxi (Guilin Xian).

49. *Chirita rotundifolia* (Hemsley) D. Wood, Notes Roy. Bot. Gard. Edinburgh 31: 371. 1972.

卵圆唇柱苣苔 *luan yuan chun zhu ju tai*

Didymocarpus rotundifolius Hemsley in F. B. Forbes & Hemsley, J. Linn. Soc., Bot. 26: 230. 1890.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1–4.5 cm \times ca. 2 mm; leaf blade orbicular-ovate to orbicular-reniform, 1.6–4.9 \times 1.6–5.3 cm, herbaceous, adaxially appressed pilose (hairs to 5 mm), eglandular, base cordate, margin entire to shallowly crenate, apex rounded; lateral veins 3 or 4 on each side of midrib, inconspicuous. Cymes 2–7-flowered; peduncle 4.5–13 cm, pilose; bracts 2, free, narrowly triangular, 4–6 \times 0.8–1

mm, puberulent, margin entire, apex acute. Pedicel 1.7–7 cm, glandular puberulent, puberulent, and spreading pilose. Calyx 5-sect from base; segments equal, narrowly triangular to lanceolate-linear, 4–5 \times ca. 1 mm, outside pilose, inside pubescent, margin entire, apex attenuate. Corolla purple, 2.3–2.7 cm, outside sparsely puberulent, inside apically pubescent; tube nearly tubular, 1.2–1.7 cm \times ca. 8 mm; adaxial lip ca. 5 mm; abaxial lip 7–10 mm. Filaments ca. 7 mm, glandular apically; anthers fused by entire adaxial surfaces, ca. 2 mm, glandular; staminodes 2, ca. 3 mm. Pistil 1.2–1.6 cm, densely glandular puberulent; ovary ca. 7 mm. Stigma obtrapeziform, ca. 1 mm, 2-lobed. Capsule erect, 3–3.5 cm. Fl. and fr. Nov.

• N Guangdong.

50. *Chirita parvifolia* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 50. 1981.

小叶唇柱苣苔 *xiao ye chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1–1.4 cm \times ca. 1.2 mm; leaf blade broadly elliptic to ovate, 1.7–3 \times 1.3–1.9 cm, leathery, densely brownish appressed puberulent, eglandular, base rounded, margin entire, apex rounded; lateral veins invisible. Cymes 1-flowered; peduncle 5.3–5.6 cm, densely appressed puberulent; bracts 2, free, obovate to elliptic, 8–11 \times ca. 4 mm, appressed puberulent, margin entire, apex obtuse. Pedicel ca. 8 mm, densely spreading glandular puberulent. Calyx 5-sect from base; segments equal, linear-lanceolate to lanceolate, 5–6 \times 0.8–2.2 mm, outside puberulent, inside glabrous, margin entire, apex acute. Corolla purple-red, ca. 2.7 cm, outside sparsely puberulent basally, inside glabrous; tube narrowly funnelform, ca. 1.7×1.1 cm; adaxial lip ca. 6 mm; abaxial lip ca. 9 mm. Filaments ca. 1.1 cm, puberulent; anthers fused by entire adaxial surfaces, ca. 2 mm, glabrous; staminodes 2, ca. 5 mm. Pistil ca. 2.4 cm, puberulent; ovary ca. 1.5 cm. Stigma obdeltooid, ca. 1.5 mm, 2-lobed. Fruit and seeds unknown. Fl. Oct.

• Limestone hills. Guangxi (Gui Xian).

51. *Chirita yungfuensis* W. T. Wang, Guihaia 7: 125. 1987.

永福唇柱苣苔 *yong fu chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole (0.5–)1–3 cm \times ca. 3 mm; leaf blade elliptic to ovate, (1.4–)2.3–3.2 \times (1.1–)1.7–2.4 cm, leathery, purple puberulent to pilose (hairs 0.3–4 mm adaxially, 0.5–2 mm abaxially), eglandular, base broadly cuneate, margin crenate to repand, apex acute to rounded; lateral veins ca. 3 on each side of midrib, inconspicuous. Cymes 2–4-flowered; peduncle 4.5–9 cm, purple villous; bracts 2, free, narrowly ovate to elliptic, 7–12 \times 5–7 mm, purple pubescent, margin entire, apex obtuse. Pedicel 1–1.8 cm, densely puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear to nar-

rowly triangular, 5.5–7 × 1.2–2.2 mm, puberulent, margin entire, apex acute. Corolla purplish, 3.8–4.6 cm, outside puberulent, inside basally puberulent with very short hairs; tube tubular, 2.5–3 × 1–1.3 cm; adaxial lip ca. 7 mm; abaxial lip 1.2–1.7 cm. Filaments ca. 1.1 cm, glabrous; anthers fused by entire adaxial surfaces, 4–5 mm, bearded; staminodes 2, ca. 7.5 mm. Pistil ca. 3.2 cm, densely puberulent; ovary ca. 1.4 cm. Stigma linear, ca. 3 mm, 2-lobed. Fruit and seeds unknown. Fl. May.

• Shaded areas on limestone hills. Guangxi (Yongfu Xian).

52. *Chirita cordifolia* W. T. Wang, Bull. Bot. Res., Harbin 1(4): 51. 1981.

心叶唇柱苣苔 *xin ye chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 3–17.5 cm × ca. 2 mm; leaf blade ovate to obovate or reniform, 2–6.8 × 2–6.8 cm, herbaceous, puberulent, eglandular, base cordate, margin irregularly repand-crenate to dentate to serrate, apex acute to rounded; lateral veins 3–5 on each side of midrib, slightly conspicuous. Cymes 1-flowered; peduncle ca. 3.5 cm, white villous; bracts 2, free, linear-lanceolate, 6–9 × 1–1.2 mm, puberulent and glandular puberulent, margin entire, apex acute. Pedicel ca. 1 cm, densely puberulent. Calyx 5-sect from base; segments equal, linear-lanceolate, ca. 1.3 cm × 1.2–1.5 mm, outside puberulent and glandular, inside strigose, margin entire, apex attenuate. Corolla pink, 4–4.5 cm, outside puberulent, inside puberulent basally and on limb; tube narrowly funnellform, ca. 2.8 × 1.1 cm; adaxial lip ca. 7 mm; abaxial lip ca. 1.4 cm. Filaments ca. 1.4 cm, glabrous; anthers fused by entire adaxial surfaces, ca. 5 mm, villous; staminodes 2, ca. 8.5 mm. Pistil ca. 2.7 cm, puberulent; ovary ca. 2 cm. Stigma cuneate, ca. 2 mm, 2-lobed. Fruit and seeds unknown. Fl. Jul.

• Among shaded rocks on limestone hills; ca. 200 m. Guangxi (Yangshuo Xian).

53. *Chirita bicolor* W. T. Wang, Bull. Bot. Res., Harbin 5(3): 59. 1985.

二色唇柱苣苔 *er se chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1.5–4 cm × 3–5 mm; leaf blade oblique, narrowly oblong to narrowly elliptic, often falcate, 4–13 × 1.3–3 cm, papery, adaxially densely appressed puberulent, eglandular, abaxially white velutinous, base attenuate, margin entire, apex acute to obtuse; lateral veins 5 or 6 on each side of midrib, inconspicuous. Cymes 2-flowered; peduncle 8–13 cm, puberulent to velutinous; bracts 2, free, linear to triangular or ovate, 5–12 × 1.5–2.5 mm, densely puberulent to velutinous, margin entire, apex acute. Pedicel 6–12 (–18) mm, pilose and sparsely glandular puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear to narrowly triangular, 4–7 × 1.2–

mm, outside densely pubescent to pilose, inside puberulent near apex, margin entire, apex acute. Corolla purplish, ca. 3.6 cm, outside sparsely pilose, inside puberulent below stamens; tube narrowly funnellform, ca. 2.2 × 1 cm; adaxial lip ca. 6 mm; abaxial lip ca. 1.3 cm. Filaments ca. 1 cm, glabrous; anthers fused by entire adaxial surfaces, 3–5 mm, bearded; staminodes absent. Pistil ca. 2.5 cm, puberulent; ovary ca. 1.5 cm. Stigma cuneate, ca. 3 mm, 2-lobed. Capsule erect, 5–6 cm. Fl. Apr, fr. May.

• Rocks in hilly regions. Guangdong (Yunfu Xian).

54. *Chirita longgangensis* W. T. Wang in W. T. Wang & S. Z. Huang, Guihaia 2: 171. 1982.

岗唇柱苣苔 *gang chun zhu ju tai*

Perennial, stemless. Rhizome with conspicuous internodes, 0.4–2 cm. Leaves basal, opposite or ternate, sessile or petiole to 10 × 5 mm; leaf blade narrowly elliptic or narrowly oblanceolate to oblong linear, 5–16 × 1–2.9 cm, papery to leathery, densely appressed puberulent and pilose, eglandular, base attenuate, margin entire, revolute, apex acute to acuminate; lateral veins 3–6 on each side of midrib, abaxially prominent. Cymes 2–15-flowered; peduncle 3–15 cm, glandular pilose to puberulent; bracts 2, free, linear to lanceolate or obovate, 4–20 × 0.5–6 mm, abaxially pilose to puberulent, margin entire, involute, apex acute. Pedicel 0.7–4 cm, glandular puberulent and pilose. Calyx 5-sect from base; segments equal, lanceolate-linear, 5–8 × 0.9–1.5 mm, outside minutely appressed puberulent and glandular puberulent, inside puberulent near apex, margin entire, apex attenuate. Corolla white to red-purple, 3.4–4 cm, outside glabrous to puberulent, inside puberulent or glabrous below stamens; tube narrowly funnellform, ca. 2 × 1 cm; adaxial lip ca. 8 mm; abaxial lip ca. 1.2 cm. Filaments ca. 1.4 cm, basally puberulent; anthers fused by entire adaxial surfaces, 3–4 mm, bearded; staminodes 3, central ca. 0.5 mm, laterals 5–7 mm. Pistil ca. 2.8 cm, densely pubescent to glandular puberulent; ovary ca. 1.7 cm. Stigma obtrapeziform, ca. 2 mm, 2-lobed. Capsule erect, 1.6–2.5 cm. Fl. Sep–Dec.

• Rocks of forest margin on limestone hills; 200–300 m. SW Guangxi.

- 1a. Bracts lanceolate to ovate, 7–20 × 3–6 mm; corolla white, outside glabrous, inside puberulent below stamens 54a. var. *longgangensis*
- 1b. Bracts linear, 4–15 × 0.5–1.5 mm; corolla purple-red, puberulent outside, glabrous inside..... 54b. var. *hongyao*

54a. *Chirita longgangensis* var. *longgangensis*

岗唇柱苣苔(原变种) *gang chun zhu ju tai*
(yuan bian zhong)

Bracts lanceolate to obovate, 7–20 × 3–6 mm. Corolla white, outside glabrous, inside puberulent below stamens.

•Rocks on forest margin on limestone hills; 200–300 m. SW Guangxi (Longzhou Xian).

54b. *Chirita longgangensis* var. *hongyao* S. Z. Huang in W. T. Wang & S. Z. Huang, *Guihaia* 2: 173. 1982.

红药唇柱苣苔 *hong yao chun zhu ju tai*

Bracts linear, 4–15 × 0.5–1.5 mm. Corolla purple-red, outside puberulent, inside glabrous.

•Shaded rocky crevices on limestone hills. SW Guangxi (Tiandeng Xian).

The entire plant is used medicinally as a hematic tonic and is one of the raw materials of the medicine “*guihuagao*” made in Tiandeng Xian, Guangxi. The name “*hong yao*” means “red medicine.”

55. *Chirita linearifolia* W. T. Wang in W. T. Wang & K. Y. Pan, *Bull. Bot. Res.*, Harbin 2(2): 136. 1982.

线叶唇柱苣苔 *xian ye chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite, sessile; leaf blade linear to narrowly elliptic or narrowly oblanceolate, 3–8.3 cm × 4–8 mm, leathery, appressed pubescent, eglandular, base attenuate, margin entire, apex attenuate to acute; lateral veins 4 or 5 on each side of midrib, inconspicuous. Cymes 1–7-flowered; peduncle 5.5–15 cm, densely glandular puberulent and villous; bracts 2, free, lanceolate to ovate, 4–10 × 1.6–5 mm, puberulent to glabrous, margin entire, apex acute. Pedicel 5–12 mm, glandular puberulent. Calyx 5-sect from base; segments equal, linear-lanceolate, 3.2–4 × 0.6–1.1 mm, outside puberulent, inside glabrous, margin entire, apex attenuate. Corolla white to pale bluish, ca. 2.4 cm, outside puberulent, inside basally sparsely puberulent; tube narrowly funnelform, ca. 1.4 cm × 6–7 mm; adaxial lip ca. 4 mm; abaxial lip ca. 9 mm. Filaments ca. 1 cm, puberulent basally; anthers fused by entire adaxial surfaces, ca. 2.5 mm, bearded; staminodes 2, 7–8 mm. Pistil ca. 1.6 cm, glandular puberulent; ovary ca. 1 cm. Stigma obtrapeziform, ca. 0.5 mm, 2-parted. Capsule erect, 2.2–3.6 cm. Fl. Apr, fr. Jun.

•Rocks on limestone hills; 100–300 m. S Guangxi (Long'an Xian).
56. *Chirita sinensis* Lindley, *Edward's Bot. Reg.* 30: pl. 59. 1844.

唇柱苣苔 *chun zhu ju tai*

Chirita dryas Dunn; *C. sinensis* var. *angustifolia* Dunn; *C. sinensis* var. *bodinieri* H. Léveillé; *Didymocarpus sinensis* (Lindley) H. Léveillé; *Roettlera sinensis* (Lindley) Kuntze.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite or ternate; petiole 2–8(–19) cm × 2–5 mm; leaf blade ovate to elliptic, lanceolate, oblong, or suborbicular, sometimes falcate, 4–20 × 3.5–6.5(–9) cm, papery, appressed pubescent and pilose, eglandular, base attenuate to cordate, margin repand to crenate, rarely dentate to serrate, apex acuminate to rounded; lateral veins 3–5 on each side of midrib, inconspicuous. Cymes 1–12-flowered; peduncle 12–32 cm, spreading villous to

pubescent; bracts 2, free, ovate to lanceolate, 1–4 × 0.4–1.6 cm, pubescent to villous, margin entire or crenulate to serrulate, apex acute. Pedicel 0.8–2.5 cm, pubescent to pilose and glandular puberulent. Calyx 5-sect from base; segments equal, lanceolate to narrowly ovate, 3–6 × 1–2.5 mm, outside puberulent to pilose, inside glabrous, margin entire, apex acute to rounded. Corolla purple to white, inside tinged purple with 2 yellow longitudinal lines adaxially of tube, (2–)2.7–4.6 cm, outside sparsely pubescent to pilose, inside puberulent only on purple spot of adaxial lip; tube tubular to broadly funnelform, often gibbous abaxially, (1.5–)2–3.5 × 1.1–1.5 cm; adaxial lip 4–6 mm; abaxial lip 0.7–1.5 cm. Filaments 0.7–1.4 mm, puberulent; anthers fused by entire adaxial surfaces, ca. 3 mm, glabrous to pubescent; staminodes 2, 3–6 mm. Pistil 1.8–2.5 cm, puberulent to pilose and glandular pubescent; ovary 1–1.8 cm. Stigma obtrapeziform to oblong, 2–3 mm, 2-lobed. Capsule at ca. 90° to peduncle, 4–7.5 cm. Fl. May–Feb, fr. Aug–Feb.

•Wet shady places by streams or on rocks in valleys; 100–500 m. W Guangdong.

57. *Chirita pinnatifida* (Handel-Mazzetti) B. L. Burtt, *Notes Roy. Bot. Gard. Edinburgh* 23: 99. 1960.

羽叶唇柱苣苔 *yu ye chun zhu ju tai*

Didymocarpus pinnatifidus Handel-Mazzetti, *Sinensia* 5: 8. 1934; *Chirita quercifolia* D. Wood.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1.5–10 cm × 1–3 mm; leaf blade oblong to lanceolate or narrowly ovate, 3–20 × 1.5–7.8 cm, herbaceous, appressed puberulent to pilose, eglandular, base cuneate to broadly cuneate, margin irregularly pinnately lobed, apex acute to rounded; lateral veins 3–5 on each side of midrib, inconspicuous. Cymes 1–4-flowered; peduncle 4.5–20 cm, spreading villous to pilose; bracts 2, free, oblong to ovate or obovate, 5–14(–25) × 1.5–8(–10) mm, pubescent to appressed pilose, margin denticulate to entire, apex acute. Pedicel 0.5–2 cm, pubescent to pilose and glandular puberulent. Calyx 5-sect from base; segments equal, linear-lanceolate to narrowly ovate or oblong, 3–7 × 1–3 mm, puberulent, margin 1- or 2(or 3)-denticulate, apex acute to rounded. Corolla purple to white, tinged purple, 3.2–4.5 cm, outside sparsely puberulent, inside puberulent below adaxial lip; tube tubular-funnelform, sometimes gibbous abaxially, 1.8–2.8 × 0.9–1.3 cm; adaxial lip 6–10 mm; abaxial lip 1–1.5 cm. Filaments 1–1.1 cm, sparsely glandular puberulent; anthers fused by entire adaxial surfaces, 1.5–3.8 mm, glabrous to sparsely pubescent; staminodes 2, 2–4 mm. Pistil 2.4–3 cm, densely puberulent to nearly glabrous; ovary ca. 1.4 cm. Stigma oblong to obtrapeziform, 1–4 mm, 2-lobed.

Capsule at ca. 90° to peduncle, 3–4 cm. Fl. May–Sep, fr. Aug–Nov.

•Rocks, streamsides in forested valleys; 600–2100 m. W Fujian, N Guangdong, Guangxi, S Hunan, Jiangxi, S and W Zhejiang.

58. *Chirita pinnata* W. T. Wang, Bull. Bot. Res., Harbin 4(1): 25. 1984.

复叶唇柱苣苔 fu ye chun zhu ju tai

Perennials, stemless. Rhizome internodes

inconspicuous. Leaves basal, opposite; petiole 1.5–5 cm × 1–2 mm; leaf blade deeply pinnately lobed, nearly compound, elliptic to narrowly ovate or oblanceolate, 3–15 × 2–6 cm, papery, sparsely appressed puberulent to pilose, eglandular, base cuneate, margin deeply dentate to pinnately lobed, lateral lobes 3–7 on each side of midrib, 0.4–4 cm, margin deeply crenate or serrate to entire, apex acuminate to rounded; lateral veins 3–10 on each side of midrib, inconspicuous.

Cymes 1–3-flowered; peduncle 4–11 cm, spreading and appressed villous; bracts 2, free, oblong to elliptic or oblanceolate, 5–14 × 1.8–5 mm, sparsely pubescent, margin denticulate to entire, apex acute. Pedicel 4–10(–15) mm, spreading and appressed villous. Calyx 5-sect from base; segments equal, linear to narrowly oblong, 5–9 × 2–2.5 mm, outside puberulent to pilose, inside puberulent near apex, margin denticulate, apex acute to obtuse. Corolla purple, 4–4.5 cm, outside puberulent to sparsely pilose, inside basally puberulent; tube narrowly to broadly funnelform, often gibbous abaxially, ca. 2.7 × 1.2–1.5 cm; adaxial lip ca. 7 mm; abaxial lip ca. 1.5 cm. Filaments ca. 1 cm, sparsely glandular; anthers fused by entire adaxial surfaces, 3.8–4 mm, glabrous; staminodes 2, ca. 2 mm. Pistil ca. 3 cm, glandular puberulent to pilose; ovary ca. 9 mm. Stigma oblong, ca. 3 mm, emarginate. Capsule forming at angle of ca. 90° to peduncle, ca. 3–3.5 cm. Fl. and fr. May–Sep.

•Shaded rocks in montane regions; 700–1300 m. N Guangxi (Rongshui Xian).

59. *Chirita fangii* W. T. Wang, Bull. Bot. Res., Harbin 2(4): 51. 1982.

方氏唇柱苣苔 fang shi chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1.2–3.8 cm × 1–1.5 mm; leaf blade elliptic to ovate, 2.8–4 × 1.6–2.4 cm, thin papery, puberulent, eglandular, base cuneate to rounded, margin denticulate, apex acute; lateral veins ca. 3 on each side of midrib, inconspicuous. Cymes 1- or 2-flowered; peduncle 3–5 cm, puberulent; bracts 2, free, linear to lanceolate, 2–5 × 0.5–1 mm, puberulent, margin entire, apex acute. Pedicel 4–9 mm, puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, 6–7 × ca. 1.4 mm, outside puberulent, inside sparsely puberulent near apex, margin entire, apex attenuate. Corolla purple, ca. 2.8 cm, outside puberulent, inside puberulent on limb and below stamens; tube cylindrical, ca. 2.3 cm × 7 mm; adaxial lip

ca. 3.5 mm; abaxial lip ca. 7 mm. Filaments ca. 1.3 cm, glabrous; anthers fused by entire adaxial surfaces, ca. 3 mm, puberulent; staminodes 3, central ca. 0.2 mm, laterals 0.3–0.4 mm. Pistil ca. 2 cm, puberulent; ovary ca. 7 mm. Stigma narrowly oblong, ca. 2.5 mm, emarginate. Fruit and seeds unknown. Fl. Jun.

•Rocks in montane regions. E Sichuan (Kai Xian).

60. *Chirita vestita* D. Wood, Notes Roy. Bot. Gard. Edinburgh 31: 369. 1972.

细筒唇柱苣苔 xi tong chun zhu ju tai

Perennials, stemless. Rhizome internodes

inconspicuous. Leaves basal, opposite; petiole 0.2–3 cm × ca. 1.2 mm; leaf blade narrowly elliptic to narrowly obovate, 1.4–5.4 × 0.6–2.4 cm, thin papery, densely pubescent to appressed pilose, eglandular, base cuneate, margin repand-denticulate, apex acute; lateral veins ca. 3 on each side of midrib, inconspicuous. Cymes 1-flowered; peduncle ca. 1.2 cm, puberulent; bracts 2, free, linear, (1–)2.5–3 × ca. 0.3 mm, puberulent, margin entire, apex acute. Pedicel 3–5 mm, puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, 4–6 × 0.5–1 mm, outside puberulent to pilose, inside glabrous to pubescent, margin 2–4-denticulate to entire, apex acute to attenuate. Corolla purple, 2.5–3.4 cm, outside puberulent to sparsely puberulent, inside glabrous; tube cylindrical, ca. 2.1 cm × 3–5 mm; adaxial lip ca. 6 mm; abaxial lip ca. 1.3 cm. Filaments ca. 5.5 mm, sparsely glandular puberulent; anthers fused by entire adaxial surfaces, ca. 3 mm, glabrous; staminodes 3, central ca. 0.4 mm, laterals 0.6–1 mm. Pistil ca. 2.2 cm, puberulent to pilose; ovary ca. 3.5 mm. Stigma cuneate, ca. 2.5 mm, 2-lobed. Fruit and seeds unknown. Fl. Jun.

•Rocks in shaded areas. Guizhou (Qingzhen Xian).

61. *Chirita secundiflora* (W. Y. Chun) W. T. Wang, Bull. Bot. Res., Harbin 2(4): 52. 1982.

清镇唇柱苣苔 qing zhen chun zhu ju tai

Didymocarpus secundiflorus W. Y. Chun, Sunyatsenia 6: 293. 1946.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1.2–3.4 cm × 1.5–2.5 mm; leaf blade broadly ovate to narrowly elliptic, 2.2–4 × 1.1–3 cm, papery, adaxially densely appressed villous and puberulent, eglandular, abaxially puberulent, base cuneate to nearly truncate, margin repand to indistinctly denticulate, apex acute to obtuse; lateral veins ca. 3 on each side of midrib, inconspicuous. Cymes 1–6-flowered; peduncle 2.4–4.5 cm, spreading pubescent; bracts 2, free, linear, 2.5–6.5 × ca. 1 mm, pubescent, margin entire, apex acute. Pedicel 3–7 mm, densely puberulent. Calyx 5-sect from base; segments equal, narrowly triangular to linear-lanceolate, ca. 4 × 0.8–1 mm, outside densely villous, inside puberulent, margin 1- or 2-denticulate, apex acute. Corolla purplish, ca. 2.2 cm, outside puberulent,

inside puberulent on the limb; tube cylindrical, ca. 9×3.5 mm; adaxial lip ca. 3 mm; abaxial lip ca. 7 mm.

Filaments ca. 3 mm, glabrous; anthers fused by entire adaxial surfaces, ca. 1.6 mm, glabrous; staminodes 3, central ca. 0.3 mm, laterals 0.6–0.8 mm. Pistil ca. 1 cm, puberulent; ovary ca. 3 mm. Stigma obdeltoid, ca. 2 mm, 2-parted. Capsule erect, 7–9 mm. Fl. May.

• Rocks in shaded areas. Guizhou (Qingzhen Xian).

62. *Chirita tenuituba* (W. T. Wang) W. T. Wang, Fl. Reipubl. Popularis Sin. 69: 388. 1990.

神农架唇柱苣苔 shen nong jia chun zhu ju tai

Deltocheilos tenuitubum W. T. Wang, Bull. Bot. Res., Harbin 1(3): 40. 1981; *Chirita shennungjiaensis* W. T. Wang.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 3–9 \times 1–1.2 mm; leaf blade ovate to suborbicular, 1–3.2 \times 0.8–2.5 cm, papery, appressed pubescent to appressed pilose, eglandular, base broadly cuneate to nearly truncate, margin entire to repand-crenate, apex acute to rounded; lateral veins ca. 3 on each side of midrib, inconspicuous. Cymes 1–3-flowered; peduncle 0.6–1.4 cm, densely spreading pilose; bracts 2, free, narrowly triangular to lanceolate, 0.8–3 \times 0.3–1 mm, puberulent to pilose, margin entire, apex acute. Pedicel 2–5.5 mm, densely spreading puberulent to pilose. Calyx 5-sect from base; segments equal, linear to narrowly triangular, 4.5–5.5 \times 0.8–1.2 mm, outside puberulent to pilose, inside glabrous, margin entire, apex acute to obtuse. Corolla purple, 2–2.5 cm, outside sparsely puberulent, inside puberulent below abaxial lip; tube cylindrical, 1.3–1.8 cm \times 2–5 mm; adaxial lip ca. 4 mm; abaxial lip 5–7.5 mm. Filaments 4.5–5.5 mm, glabrous; anthers fused by entire adaxial surfaces, 1.5–2 mm, glabrous; staminodes 2, 0.5–0.8 mm. Pistil 1.9–2.2 cm, puberulent; ovary 3.2–6 mm. Stigma obdeltoid, 1.5–3.5 mm, 2-parted. Capsule erect, 2–2.8 mm. Fl. Mar–May.

• Rocky crevices, cliffs in forests; 300–1000 m. Guizhou, W Hubei, W Hunan, SE Sichuan.

63. *Chirita speluncae* (Handel-Mazzetti) D. Wood, Notes Roy. Bot. Gard. Edinburgh 31: 370. 1972.

小唇柱苣苔 xiao chun zhu ju tai

Didymocarpus speluncae Handel-Mazzetti, Symb. Sin. 7: 1377. 1936; *D. minutus* Handel-Mazzetti (1936), not Kraenzlin (1927).

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 2–10 \times 1–2 mm; leaf blade narrowly elliptic to elliptic, 1–2.2 cm \times 5–9 mm, papery, densely pubescent, eglandular, base cuneate, margin entire, apex acute to rounded; lateral veins 2 or 3 on each side of midrib, inconspicuous. Cymes 1-flowered; peduncle 1.1–2.2 cm, densely spreading villous; bract 1, narrowly linear, ca. 1

\times 0.3 mm, pubescent, margin entire, apex acute. Pedicel ca. 4 mm, puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, ca. 2 \times 0.5 mm, outside densely villous, inside puberulent near apex, margin often 1-denticulate apically, apex acute. Corolla purple, ca. 1.2 cm, outside sparsely pubescent, inside nearly glabrous; tube cylindrical, ca. 6 \times 2 mm; adaxial lip ca. 4 mm; abaxial lip ca. 6 mm. Filaments ca. 1.6 mm, glabrous; anthers fused by entire adaxial surfaces, ca. 1.2 mm, glabrous; staminode 1, ca. 0.3 mm. Pistil ca. 3.8 mm, puberulent; ovary ca. 1.7 mm. Stigma oblate, ca. 0.4 mm, undivided. Capsule erect, ca. 7 mm. Fl. Apr.

• Hilly regions; ca. 800 m. NE Yunnan.

64. *Chirita hedyotideae* (W. Y. Chun) W. T. Wang, Bull. Bot. Res., Harbin 1(4): 65. 1981.

肥牛草 fei niu cao

Didymocarpus hedyotideus W. Y. Chun, Sunyatsenia 6: 291. 1946.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole nearly absent to 2 cm \times 1.5–3 mm; leaf blade elliptic to lanceolate, often falcate, 6.5–12 \times 0.9–2.4 cm, leathery, appressed pilose, eglandular, base attenuate, margin entire, revolute, apex attenuate; lateral veins 3 or 4 on each side of midrib, conspicuous abaxially. Cymes 12–20-flowered; peduncle 5.5–21 cm, densely puberulent; bracts 2, free, narrowly elliptic to lanceolate, 3–5 \times 1.5–2 mm, puberulent, margin entire, apex acute. Pedicel 2–5 mm, puberulent. Calyx ca. 1.5 mm, 5-lobed from middle; tube ca. 0.5 mm; lobes equal, broadly triangular, ca. 1 \times 1 mm, outside puberulent, inside glabrous, margin entire, apex acute. Corolla purple, 0.9–1.5 cm, outside puberulent, inside glabrous; tube cylindrical, 7–10 \times ca. 3 mm; adaxial lip ca. 2.5 mm; abaxial lip ca. 6 mm. Filaments ca. 6 mm, sparsely puberulent; anthers fused by entire adaxial surfaces, ca. 2 mm, glabrous; staminodes 2, ca. 4 mm. Pistil ca. 1 cm, puberulent; ovary ca. 6 mm. Stigma obtrapeziform, ca. 1 mm, 2-lobed. Capsule erect, 2–3 cm. Fl. Aug–Oct, fr. Sep–Oct.

• Shaded rocks or cliffs in limestone hills; ca. 200 m. SW Guangxi (Longzhou Xian, Ningming Xian).

65. *Chirita wentsaii* D. Fang & L. Zeng, Acta Phytotax. Sin. 31: 466. 1993.

文采唇柱苣苔 wen cai chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, crowded, sessile; leaf blade lanceolate-linear, seldom falcate, 4.5–9 \times 0.4–1.5 cm, leathery, glabrous, eglandular, base cuneate, margin finely spiny denticulate, apex acute to obtuse; lateral veins invisible. Cymes 2- or 3-flowered; peduncle 6–10 cm, spreading pubescent and glandular pubescent; bracts 2, free, narrowly linear, 3–3.5 cm \times 2–2.4 mm, pubescent and glandular pubescent, margin entire, apex attenuate. Pedicel 1–2 cm, spreading

pubescent and glandular pubescent. Calyx 5-sect from base; segments equal, linear-lanceolate, 1–1.2 cm × ca. 2 mm, outside pubescent and glandular pubescent, inside nearly glabrous, margin entire, apex attenuate. Corolla blue-purple, 4.5–5 cm, outside sparsely glandular puberulent and puberulent, inside glabrous; tube nearly tubular, 3–3.5 × ca. 1.2 cm; adaxial lip ca. 1 cm; abaxial lip ca. 1.5 cm. Filaments ca. 1.5 cm, glandular puberulent; anthers fused by entire adaxial surfaces, ca. 3.5 mm, glandular puberulent; staminodes 3, central ca. 0.8 mm, laterals ca. 1.2 cm. Pistil ca. 2.6 cm, densely glandular pubescent; ovary ca. 1.8 cm. Stigma obtrapeziform, ca. 2 mm, 2-lobed. Fruit and seeds unknown. Fl. May.

• Limestone hills; ca. 400 m. SW Guangxi (Longzhou Xian).

66. *Chirita ophiopogoides* D. Fang & W. T. Wang in W. T. Wang, Bull. Bot. Res., Harbin 1(4): 68. 1981.

条叶唇柱苣苔 *tiao ye chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, crowded, sessile; leaf blade lanceolate-linear, 4.5–11 cm × 4–8 mm, leathery, glabrous, eglandular, base cuneate, margin finely spiny denticulate, apex acute to obtuse; lateral veins invisible. Cymes 5–7-flowered; peduncle ca. 6 cm, puberulent and glandular puberulent; bracts 2, free, narrowly linear to lanceolate-linear, 0.9–1.2 cm × 0.6–1.5 mm, puberulent, margin entire, apex acute. Pedicel 2–2.5 cm, densely glandular puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, 4–5 × ca. 0.8 mm, outside glandular puberulent, inside glabrous, margin entire, apex acute. Corolla purplish, ca. 2 cm, outside puberulent, inside glabrous; tube narrowly funnelform, ca. 10 × 6 mm; adaxial lip ca. 5.5 mm; abaxial lip ca. 1 cm. Filaments ca. 9 mm, glandular puberulent; anthers fused by entire adaxial surfaces, ca. 2.5 mm, glandular puberulent; staminodes 2, ca. 3 mm. Pistil ca. 1 cm, glandular puberulent; ovary ca. 8 mm. Stigma obtrapeziform, ca. 1 mm, 2-lobed. Capsule erect, ca. 3 cm. Fl. Mar–Apr, fr. Apr.

• Cliffs in forests among limestone hills; 200–600 m. SW Guangxi (Fusui Xian, Longzhou Xian).

67. *Chirita spinulosa* D. Fang & W. T. Wang in W. T. Wang, Bull. Bot. Res., Harbin 1(4): 67. 1981.

刺齿唇柱苣苔 *ci chi chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite, sessile; leaf blade lanceolate-linear, 6–11 × 0.8–1.2 cm, leathery, glabrous, eglandular, base cuneate, margin finely spiny denticulate, apex acute to obtuse; lateral veins invisible. Cymes ca. 9-flowered; peduncle ca. 20 cm, mostly sparsely puberulent; bracts 2, free, narrowly triangular, 2–2.5 × ca. 1 mm, sparsely dark purple puberulent, margin entire, apex acute. Pedicel 1.5–6 mm, sparsely puberulent. Calyx 5-sect from base; segments equal, triangular, ca. 1.5 × 0.8–1 mm, outside sparsely puberulent, inside glabrous, margin entire, apex acute.

Corolla blue-purple, ca. 1.3 cm, outside apically puberulent, inside glabrous; tube nearly tubular, ca. 10 × 2 mm; adaxial lip ca. 2.5 mm; abaxial lip ca. 3.5 mm. Filaments ca. 6.5 mm, glabrous; anthers fused by entire adaxial surfaces, ca. 2 mm, basally sparsely puberulent; staminodes 2, ca. 1.5 mm. Pistil ca. 1.4 cm; ovary ca. 7 mm, glabrous. Style sparsely puberulent; stigma obtrapeziform, ca. 0.8 mm, 2-lobed. Fruit and seeds unknown. Fl. Nov.

• Shaded areas on limestone hills; ca. 100 m. SW Guangxi (Fusui Xian).

68. *Chirita tibetica* (Franchet) B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 23: 99. 1960.

康定唇柱苣苔 *kang ding chun zhu ju tai*

Roettlera tibetica Franchet, Bull. Mus. Hist. Nat. (Paris) 5: 251. 1899; *Didymocarpus tibeticus* (Franchet) Handel-Mazzetti.

Perennials. Rhizome tuberlike, internodes conspicuous. Stems erect, 3.5–14(–25) cm, sparsely puberulent to pilose. Stem leaves 4–10, opposite, ± spaced along stem or crowded near apex; petiole 2–10(–30) × ca. 1 mm; leaf blade elliptic to ovate or obovate, 1–6.6 × 0.9–3.5 cm, thin papery, sparsely puberulent to pilose, eglandular, base cuneate to rounded, margin entire to repand or shallowly crenate, apex acute to rounded; lateral veins 5–7 on each side of midrib, inconspicuous. Cymes 1–4-flowered; peduncle 2.4–5.5 cm, sparsely puberulent to pilose; bracts 2, free, narrowly elliptic to lanceolate, 3–7 × 1–2 mm, pilose, margin entire, apex acute. Pedicel 0.7–1.5 cm, glandular puberulent to pilose. Calyx 5-sect from base; segments equal, linear-triangular, 6–9 × 1–1.5 mm, outside puberulent to pilose, inside glabrous, margin entire, apex acute. Corolla white, 3.2–3.6 cm, outside sparsely puberulent to pilose, inside glabrous; tube nearly tubular, ca. 2.5 × 1 cm; adaxial lip ca. 5 mm; abaxial lip ca. 1 cm. Filaments ca. 9 mm, glandular puberulent above; anthers fused by entire adaxial surfaces, ca. 2 mm, glabrous; staminodes 2, ca. 4 mm. Pistil ca. 2 cm, puberulent; ovary ca. 1 cm. Stigma obtrapeziform, ca. 2 mm, 2-lobed. Fruit and seeds unknown. Fl. Jul–Sep.

• Forests, cliffs, on rocks; 1400–3200 m. SW Sichuan, NE Yunnan.

69. *Chirita forrestii* J. Anthony, Notes Roy. Bot. Gard. Edinburgh 18: 192. 1934.

滇川唇柱苣苔 *dian chuan chun zhu ju tai*

Chirita forrestii var. *acutidentata* W. T. Wang; *Didymocarpus forrestii* (Anthony) Handel-Mazzetti. Probably perennial. Rhizome internodes inconspicuous. Stems erect, 1.2–12(–19) cm, sparsely pilose to pubescent. Stem leaves 4 or 6, opposite, 4 crowded near apex; petiole 0.3–3 cm × 0.5–2 mm; leaf blade elliptic to ovate or obovate, 1–15 × 0.7–8.5 cm, membranous, sparsely pubescent to appressed pilose, eglandular, base broadly cuneate to subcordate, margin dentate to serrate,

apex acute to rounded; lateral veins 4–6 on each side of midrib, slightly conspicuous. Cymes 1–5-flowered; peduncle 1.7–7 cm, pilose to glandular puberulent; bracts 2, free, lanceolate-linear, 2.6–7 × 0.8–1 mm, pubescent to pilose, margin entire, apex attenuate. Pedicel 0.7–1.8 cm, pilose to glandular pubescent. Calyx 5-sect from base; segments equal, narrowly lanceolate, 7–11 × 1–1.5 mm, outside pubescent to pilose, inside nearly glabrous, margin entire, apex acuminate. Corolla purple to blue with yellow throat, 3.2–4 cm, outside basally sparsely puberulent to pilose, inside glabrous; tube funnellform, ca. 2.5 × 1.2 cm; adaxial lip ca. 1.1 cm; abaxial lip ca. 1.6 cm. Filaments ca. 1.1 cm, glabrous; anthers fused by entire adaxial surfaces, ca. 1.5 mm, glabrous; staminode 1, ca. 2 mm. Pistil ca. 2 cm, densely pubescent to puberulent; ovary ca. 1.4 cm. Stigma obtrapeziform, ca. 2.5 mm, 2-lobed. Capsule erect, 7–10 cm. Fl. Jul–Sep, fr. Jul–Oct.

• Streamside rocks in forested valleys; 2000–3100 m. SW Sichuan, NW Yunnan (Zhongdian Xian).

70. *Chirita minutihamata* D. Wood, Notes Roy. Bot. Gard. Edinburgh 31: 370. 1972.

多痕唇柱苣苔 duo hen chun zhu ju tai
Chirita cicatricosa W. T. Wang.

Perennials. Rhizome internodes conspicuous. Stems decumbent, 4–20 cm, densely brownish glandular pubescent and villous. Stem leaves 4–10, alternate; petiole 0.5–5.5 cm × ca. 2 mm; leaf blade ovate to elliptic, 1.5–8.5 × 1.4–4.2 cm, herbaceous, sparsely puberulent to pilose, eglandular, base oblique, cuneate to cordate, margin denticulate to crenate or serrate, apex acute; lateral veins 5 or 6 on each side of midrib, slightly conspicuous. Cymes 1- or 2-flowered; peduncle 1.5–8 cm, pubescent to pilose; bracts 2, free, broadly lanceolate, 5–11 × 2.4–3.5 mm, pubescent to pilose, margin entire, apex acuminate. Pedicel 0.6–1.4 cm, pubescent to glandular pilose. Calyx 5-sect from base; segments equal, lanceolate, 8–10 × 1.8–2.5 mm, outside pilose, inside sparsely puberulent, margin entire, apex acuminate. Corolla blue-purple, ca. 4.5 cm, outside sparsely puberulent, inside glabrous; tube narrowly funnellform, ca. 2.8 cm × 8 mm; adaxial lip ca. 1.2 cm; abaxial lip ca. 7 mm. Filaments ca. 1 cm, puberulent near apex; anthers fused by entire adaxial surfaces, ca. 3 mm, densely puberulent; staminodes 2, 2–7 mm. Pistil ca. 3 cm, puberulent; ovary ca. 1.8 cm. Stigma obtrapeziform, ca. 2.5 mm, emarginate. Capsule erect, 3–4.5 cm. Fl. Oct, fr. Nov.

Montane forests. S Guangxi (Dongxing Xian, Fangcheng Xian) [Vietnam].

71. *Chirita cyrtocarpa* D. Fang & L. Zeng, Acta Phytotax. Sin. 31: 468. 1993.

弯果唇柱苣苔 wan guo chun zhu ju tai

Perennials. Rhizome internodes conspicuous. Stems decumbent, 32–61 cm, spreading glandular villous and puberulent. Stem leaves 6–17, alternate; petiole 1–11

cm × ca. 1 mm; leaf blade oblique, narrowly to broadly ovate or elliptic, 3–15 × 1.5–6.5 cm, herbaceous, villous and puberulent, eglandular, base oblique rounded to cordate on 1 side, cuneate on other, often slightly peltate, margin serrate, apex acute to acuminate; lateral veins (4 or) 5–7 on each side of midrib, inconspicuous. Cymes 2–11-flowered; peduncle 5.5–11 cm, spreading glandular villous and puberulent; bracts 2, free, ovate to lanceolate or narrowly elliptic, 6–14 × 1–4 mm, adaxially nearly glabrous, margin entire, apex acute. Pedicel 1.5–8 mm, spreading glandular villous and puberulent. Calyx 5-sect from base; segments equal, oblong lanceolate, 5–8 × 1–2 mm, outside spreading glandular villous and puberulent, inside nearly glabrous, margin entire, apex acute. Corolla dark purple, 3.3–5.5 cm, outside glandular pubescent and sparsely pubescent, inside glandular puberulent on base of adaxial lip; tube funnellform, ca. 3 × 0.9 cm; adaxial lip 4–6 mm; abaxial lip 1–1.5 cm. Filaments ca. 1 cm, glandular puberulent, densely bearded apically; anthers fused by entire adaxial surfaces, ca. 3.5 mm, woolly; staminodes 2, 7–10 mm. Pistil 3–4 cm, glandular puberulent; ovary 7–9 mm. Stigma obtrapeziform, ca. 4.5 mm, 2-lobed. Capsule at ca. 90° to peduncle, 1.5–2 cm. Fl. Jun, fr. Jul–Aug.

• Hilly regions; 100–200 m. NE Guangxi (He Xian).

72. *Chirita wangiana* Z. Y. Li in A. L. Weitzman et al., Novon 7: 428. 1998.

王氏唇柱苣苔 wang shi chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 4–12 × 3–4 mm; leaf blade ovate to orbicular, 2–4 × 1.4–3.5 cm, thick papery, adaxially sparsely appressed puberulent, eglandular, abaxially sparsely appressed puberulent, base broadly cuneate to rounded, margin remotely repand-crenate, apex obtuse to rounded; lateral veins 3 or 4 on each side of midrib, inconspicuous. Cymes 1–3-flowered; peduncle 4–4.5 cm, densely purple puberulent and glandular puberulent; bracts 2, free, linear, 3–4 × ca. 0.4 mm, puberulent, margin entire, purple ciliate, apex obtuse to rounded. Pedicel ca. 3 mm, purple puberulent and glandular puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, ca. 3 × 0.8 mm, outside puberulent, inside glabrous, margin entire, apex subulate-acuminate. Corolla white, inside limb purplish, ca. 3.5 cm, outside sparsely puberulent and glandular puberulent, inside glabrous; tube funnellform-tubular, ca. 2.5 × 1 cm; adaxial lip ca. 5 mm; abaxial lip ca. 1 cm. Filaments ca. 1.4 cm, glabrous; anthers fused by entire adaxial surfaces, ca. 3 mm, glabrous; staminodes 2, ca. 4 mm. Pistil ca. 2.7 cm, densely puberulent and glandular puberulent; ovary ca. 1.7 cm. Stigma obtrapeziform, ca. 3 mm, 2-lobed. Fruit and seeds unknown. Fl. Jul.

• Known only from cultivation. Cultivated in the conservatory of Longtan Park; introduced from Guangxi (Rong'an Xian).

73. *Chirita shouchengensis* Z. Y. Li in A. L. Weitzman et al., *Novon* 7: 426. 1998.

寿城唇柱苣苔 shou cheng chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves crowded at rhizome apex, opposite; petiole ca. 10 × 1–2 mm; leaf blade oblanceolate, 2–3 × 0.5–1 cm, papery, adaxially greenish white puberulent, eglandular, abaxially appressed white velutinous, base decurrent, margin entire, apex acute; lateral veins 2 or 3 on each side of midrib, inconspicuous. Cymes 1-flowered; peduncle nodding, 0.9–1.1 cm, densely puberulent; bracts 2, free, oblong linear, 4–6 × ca. 1 mm, densely puberulent, margin entire, apex obtuse to rounded. Pedicel 7–11 mm, densely puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear, 1–1.2 cm × 1.6–1.8 mm, outside puberulent, inside glabrous, margin entire, apex acuminate. Corolla purplish, ca. 4.5 cm, outside sparsely puberulent, inside glabrous; tube funnellform, ca. 3.3 × 1.4 cm; adaxial lip ca. 8 mm; abaxial lip ca. 1.2 cm. Filaments ca. 1.1 cm, glabrous; anthers fused by entire adaxial surfaces, ca. 4 mm, woolly; staminodes 2, 3–4 mm. Pistil ca. 3.4 cm, densely puberulent; ovary ca. 1.2 cm. Stigma obtuse, ca. 4.2 mm, 2-lobed. Fruit and seeds unknown. Fl. Apr–Jun.

• Limestone hills, also cultivated; ca. 300 m. Cultivated in Longtan Park; introduced from Guangxi (Yongfu Xian).

74. *Chirita skogiana* Z. Y. Li in A. L. Weitzman et al., *Novon* 7: 427. 1998.

斯氏唇柱苣苔 si shi chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal; petiole 2.5–3 cm; leaf blade strongly oblique, ovate to ovate-elliptic, 3–9 × 2–3.3 cm, herbaceous, appressed pilose and puberulent, eglandular, base broadly rounded to narrowly cuneate, margin repand-denticulate, apex minutely acute; lateral veins 3 or 4 on each side of midrib, conspicuous. Cymes 1- or 2-flowered; peduncle ca. 4.5 cm, pubescent; bracts 2, free, oblong-lanceolate, 8–9 × ca. 2 mm, appressed puberulent, margin few-denticulate, apex minutely acute. Pedicel 7–10 mm, pilose. Calyx 5-sect from base; segments slightly unequal, elliptic-lanceolate, 7–7.5 × 1.8–2.1 mm, outside brown pilose, inside glabrous, margin 4–6-denticulate, apex acute to obtuse. Corolla flesh colored, ca. 2.3 cm, outside glandular puberulent, inside pilose basally; tube subtubular, ca. 12 × 6 mm; adaxial lip ca. 3 mm; abaxial lip ca. 1.1 cm. Filaments ca. 8 mm, glabrous; anthers fused by entire adaxial surfaces, ca. 3.5 mm, glabrous; staminodes 2, ca. 1.5 mm. Pistil ca. 1.1 cm; ovary ca. 6 mm, puberulent and glandular puberulent. Style base puberulent and glandular puberulent; stigma linear, ca. 1.8 × 1 mm, 2-lobed. Immature capsule erect, ca. 1.1 cm. Fl. Apr.

• Rocks in valleys; ca. 900 m. Gansu (Wen Xian).

75. *Chirita napoensis* Z. Y. Li in A. L. Weitzman et al., *Novon* 7: 424. 1998.

那坡唇柱苣苔 na po chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal; petiole 1–1.7 cm × 1–3.5 mm; leaf blade broadly elliptic to oblong, 2.5–4.2 × ca. 1.3 cm, papery, densely appressed white pilose, eglandular, base oblique, cuneate, decurrent, margin crenate to repand-crenate, apex minutely obtuse; lateral veins 3 or 4 on each side of midrib, inconspicuous. Cymes 1- or 2-flowered; peduncle 2.5–6.5 cm, densely puberulent; bracts 2, free, narrowly oblong, 1.5–3.5 × ca. 0.3 mm, puberulent, margin entire, apex obtuse. Calyx 5-sect from base; segments equal, lanceolate-linear, 2.5–3 × 0.7–0.9 mm, outside puberulent, inside pilose, margin entire, apex obtuse. Corolla blue-purple, ca. 1.4 cm, outside puberulent and glandular puberulent, inside glabrous; tube subcampanulate, ca. 8.5 × 4 mm; adaxial lip ca. 2 mm; abaxial lip ca. 5.5 mm. Filaments ca. 4 mm, glabrous; anthers fused by entire adaxial surfaces, ca. 3 mm, glabrous; staminodes 2, ca. 0.7 mm. Pistil ca. 1.3 cm, puberulent; ovary ca. 3 mm. Stigma narrowly oblong, ca. 1.2 mm, undivided. Immature capsule erect, ca. 1.5 cm. Fl. May.

• Rocks in valleys; ca. 600 m. Guangxi (Napo Xian).

76. *Chirita hochiensis* C. C. Huang & X. X. Chen, *Bot. J. South China* 1: 14. 1992.

河池唇柱苣苔 he chi chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal; petiole 1–3.5 cm × ca. 3 mm; leaf blade ovate to ovate-elliptic, 2–5.5 × 1.3–3.5 cm, papery, densely appressed puberulent, eglandular, base cuneate to rounded, margin nearly entire, apex rounded to obtuse; lateral veins 3 or 4 on each side of midrib, conspicuous. Cymes 1–4-flowered; peduncle 4–7 cm, glandular puberulent; bracts 2, free, linear-lanceolate, 3–4 × ca. 1.2 mm, glandular puberulent, margin entire, apex acute. Pedicel 0.7–2.3 cm, glandular puberulent. Calyx 5-sect from base; segments equal, lanceolate-linear to subulate, 4–7 × 0.5–0.8 mm, outside densely pubescent, margin entire, apex acute. Corolla purple, 2–3 cm, outside glandular puberulent, inside glabrous; tube funnellform, 1.3–1.8 cm × ca. 6 mm; adaxial lip 3–5 mm; abaxial lip 4–7 mm. Filaments 5–6 mm, glandular pilose; anthers fused by entire adaxial surfaces, ca. 3 mm, abaxially villous; staminodes 2, ca. 1.5 mm. Pistil 1.5–2 cm; ovary 5–9 mm, densely puberulent and glandular puberulent or glandular pilose. Stigma ligulate, ca. 1 mm, emarginate at apex. Capsule erect, 1.5–2 cm. Fl. and fr. Oct.

• Limestone hills; ca. 600 m. Guangxi (Hechi Xian).

77. *Chirita macrodonta* D. Fang & D. H. Qin in D. Fang, D. H. Qin, & X. H. Lu, *Acta Phytotax. Sin.* 32: 566. 1994.

粗齿唇柱苣苔 cu chi chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal; petiole 5–25 cm × 2–4 mm; leaf blade orbicular to ovate, 4.5–15 × 5–16.5 cm, papery, villous, eglandular, base cordate, margin double dentate, occasionally lobed, apex acute to rounded, basal veins 3–6; lateral veins 2 or 3 on each side of midrib, adaxially inconspicuous, abaxially slightly conspicuous. Cymes 4–15-flowered; peduncle 8–23 cm, densely spreading villous and glandular pubescent; bracts 2, free, lanceolate to oblong, 4–10 × 1–2.5 mm, densely villous and glandular pubescent, margin 3–5-glandular denticulate, apex acute. Pedicel 2–5 cm. Calyx 5-sect from base; segments equal, lanceolate, 0.8–1.2 cm × ca. 1.5 mm, densely villous and glandular pubescent, margin entire or 1- or 2-denticulate, apex acute. Corolla white to purplish, 2.5–3.4 cm, outside glandular pubescent, inside pubescent at lobe base; tube subtubular, 1.7–2.5 × ca. 1 cm; adaxial lip ca. 6 mm; abaxial lip 1–1.2 cm. Filaments ca. 1 cm, glabrous; anthers fused by entire adaxial surfaces, ca. 4 mm, abaxially densely bearded; staminodes 2, ca. 5.5 mm. Pistil ca. 2.1 cm; ovary ca. 6 mm, densely glandular villous or densely glandular pubescent. Stigma obtrapeziform, ca. 2 mm, 2-lobed. Fruit and seeds unknown. Fl. Jul.

• Forests on limestone hills; ca. 200 m. Guangxi (Lingchuan Xian).

78. *Chirita macrorhiza* D. Fang & D. H. Qin in D. Fang, D. H. Qin, & X. H. Lu, Acta Phytotax. Sin. 32: 568. 1994.

大根唇柱苣苔 da gen chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal; petiole 2.5–7.5 cm × 1–3 mm; leaf blade ovate, seldom elliptic to broadly ovate, 2.5–9.5 × 1.5–6.5 cm, papery, sparsely strigose, eglandular, base broadly cuneate to rounded, margin crenate, seldom repand, apex acute; lateral veins 3–5 on each side of midrib, inconspicuous. Cymes 1–6-flowered; peduncle 8–31.5 cm, pubescent; bracts 2 (or 3), free, nearly oblong to lanceolate-triangular, 0.5–1.6 cm × 1–2 mm, pubescent, margin entire, apex acute to obtuse. Pedicel 0.7–2.6 cm, puberulent. Calyx 5-sect from base; segments equal, lanceolate, 6–11 × ca. 1.5 mm, pubescent, margin entire, apex acute. Corolla white, limb purplish, inside with 2 purple spots on adaxial lip and 2 yellow spots on abaxial lip, 4.5–6 cm, outside sparsely pubescent, inside sparsely pubescent, densely glandular pubescent on spots of adaxial lip, glandular puberulent on spots of abaxial lip; tube funnellform, 2.5–3 × 1.5–2 cm; adaxial lip 1–1.5 cm; abaxial lip 2–3 cm. Filaments ca. 1.5 cm, glandular puberulent at base and apex; anthers fused by entire adaxial surfaces, ca. 4 mm, abaxially densely bearded; staminodes 3, 1–12 mm. Pistil ca. 3.3 cm; ovary ca. 2.2 cm, densely glandular puberulent. Stigma obtrapeziform, ca. 3.5 mm, 2-lobed. Fruit and seeds unknown. Fl. Apr.

• Forests on limestone hills; ca. 200 m. S Guangxi (Wuming Xian).

79. *Chirita lijiangensis* D. Fang & D. H. Qin in D. Fang, D. H. Qin, & X. H. Lu, Acta Phytotax. Sin. 32: 569. 1994.

柳江唇柱苣苔 liu jiang chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal; petiole 0.5–4 cm × 2–4 mm; leaf blade ovate, seldom elliptic, 2–8 × 1–6 cm, papery, pubescent (hairs 1–7 mm), eglandular, base cuneate or oblique and broadly cuneate, margin crenate to slightly repand, apex obtuse; lateral veins 3–5 on each side of midrib, inconspicuous. Cymes 2- or 3-flowered; peduncle 3–14 cm, villous and glandular pubescent; bracts 2, free, linear, 3–6 × 0.5–1.5 mm, villous, margin entire, apex obtuse. Pedicel 3–15 mm, villous and glandular puberulent. Calyx 5-sect from base; segments equal, narrowly lanceolate, 4–6 × ca. 1 mm, outside villous, inside sparsely puberulent, margin entire, apex acute. Corolla purple red, 3–3.8 cm, outside sparsely pubescent and glandular pubescent, inside glandular puberulent on lobes; tube funnellform, ca. 2.4 × 1 cm; adaxial lip ca. 7 mm; abaxial lip ca. 1.2 cm. Filaments ca. 1 cm, sparsely puberulent near apex; anthers fused by entire adaxial surfaces, ca. 3 mm, abaxially puberulent; staminodes 2, ca. 4 mm. Pistil ca. 2.4 cm; ovary ca. 1.8 cm, densely puberulent and glandular puberulent. Stigma obtrapeziform, ca. 1 mm, 2-lobed. Fruit and seeds unknown. Fl. Jun.

• Forests on limestone hills. Guangxi (Liujiang Xian).

80. *Chirita atroglandulosa* W. T. Wang in A. L. Weitzman et al., Novon 7: 423. 1998.

黑腺唇柱苣苔 hei xian chun zhu ju tai

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 2–14 × 2–4 mm; leaf blade narrowly elliptic to narrowly ovate, 2–7.5 × 0.8–2.8 cm, papery, densely appressed puberulent, adaxially with hairs 0.8–1.1 and 0.15–0.5 mm, eglandular, base cuneate, margin subentire to repand, apex acute; lateral veins ca. 3 on each side of midrib, inconspicuous. Cymes ca. 5-flowered; peduncle 12–13 cm, spreading puberulent; bracts 2, free, ovate to narrowly ovate, 6.5–7 × 2.5–3 mm, densely appressed puberulent, margin entire, apex acute. Pedicel 0.3–1.8 cm, densely puberulent and glandular puberulent. Calyx 5-sect from base; segments nearly equal, narrowly triangular-lanceolate, 4–5 × 1–1.1 mm, appressed puberulent, margin entire, apex acute. Corolla ca. 3 cm, outside sparsely puberulent, inside puberulent near base of adaxial lip and below filaments; tube funnellform-tubular, ca. 2 × 1 cm; adaxial lip ca. 4 mm; abaxial lip ca. 1 cm. Filaments ca. 9 mm, glandular puberulent above middle; anthers fused by entire adaxial surfaces, ca. 3 mm, glabrous; staminodes 2, ca. 3 mm. Pistil ca. 1.5 cm; ovary ca. 9 mm, densely appressed puberulent. Style glabrous; stigma narrowly oblong, ca. 2 mm, emarginate. Fruit and seeds unknown.

• Cliffs. Guangxi (Longzhou Xian).

81. *Chirita pungentisepala* W. T. Wang in A. L. Weitzman et al., *Novon* 7: 425. 1998.

尖萼唇柱苣苔 *jian e chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 0.8–2.8 cm × 3–5 mm; leaf blade narrowly elliptic, 3.5–8.5 × 1–2.5 cm, papery, adaxially densely appressed pilose with hairs 1–1.8 and 0.3–0.5 mm, eglandular, abaxially densely puberulent, base attenuate, margin entire, apex acute; lateral veins ca. 5 on each side of midrib, inconspicuous. Cymes 2–4-flowered; peduncle 5–7.8 cm, spreading puberulent and glandular puberulent; bracts 2, free, triangular-linear, 5–13 × ca. 1.5 mm, pubescent, margin entire, apex acute. Pedicel 2.7–5 cm, glandular puberulent and pilose. Calyx 5-sect from base; segments equal, narrowly triangular-linear, ca. 6 × 1.2 mm, outside pubescent, inside glabrous, margin entire, apex subulate-acuminate. Corolla ca. 3.5 cm, outside sparsely appressed puberulent, inside pilose below filaments; tube funnellform-tubular, ca. 2.5 × 1 cm; adaxial lip ca. 5 mm; abaxial lip ca. 1 cm. Filaments ca. 1.3 cm, glabrous; anthers fused by entire adaxial surfaces, ca. 3 mm, glabrous; staminodes 2, 7–8 mm. Pistil ca. 2.2 cm; ovary ca. 1.4 cm, densely glandular puberulent. Style sparsely glandular puberulent; stigma suboblong, ca. 1.5 mm, 2-lobed. Fruit and seeds unknown.

• Guangxi (Longzhou Xian).

82. *Chirita briggsioides* W. T. Wang in W. T. Wang & K. Y. Pan, *Bull. Bot. Res.*, Harbin 2(2): 138. 1982.

鹤峰唇柱苣苔 *he feng chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1.5–4.5 cm × ca. 1.5 mm; leaf blade broadly ovate to ovate, 2.8–8 × 2.2–7.4 cm, herbaceous, puberulent, hairs 1–3 mm, eglandular, abaxially brownish villous along veins, base cordate, margin crenulate, apex acute to obtuse; lateral veins 4 or 5 on each side of midrib, slightly conspicuous. Cymes 1-flowered; peduncle ca. 4 cm, sparsely pubescent; bracts 2, free, linear, ca. 9 × 2.2 mm, puberulent, margin entire, apex acute. Pedicel ca. 2 cm, sparsely pubescent. Calyx ca. 2.3 cm, shallowly 5-lobed; tube 1.3–1.8 mm; lobes equal, triangular, 5–10 mm, outside puberulent, inside glabrous, margin entire, apex acute. Corolla pink, ca. 4.7 cm, outside glabrous, inside glandular puberulent above middle of tube; tube funnellform, ca. 3.6 × 1.4 cm; adaxial lip ca. 7 mm; abaxial lip ca. 9 mm. Filaments ca. 1.2 cm, glandular puberulent near apex; anthers fused by entire adaxial surfaces, ca. 4.5 mm, puberulent; staminodes 2, 6–8 mm. Pistil ca. 3.5 cm; ovary ca. 1.7 cm, glabrous. Style sparsely glandular puberulent; stigma nearly flabellate, ca. 3 mm, 2-lobed. Fruit and seeds unknown. Fl. May.

• Shaded rocky cliffs in montane regions. SW Hubei (Hefeng Xian).

83. *Chirita monantha* W. T. Wang, *Bull. Bot. Res.*, Harbin 2(4): 53. 1982.

单花唇柱苣苔 *dan hua chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 2–7.5 cm × 0.6–2 mm; leaf blade elliptic to elliptic-ovate or elliptic-obovate, 4.5–13 × 2.3–6.5 cm, herbaceous, sparsely puberulent (hairs to 1.2 mm), eglandular, base oblique, rounded to subcordate, margin dentate to serrate, apex obtuse; lateral veins ca. 5 on each side of midrib, conspicuous. Cymes 1-flowered; peduncle 2–4 cm, sparsely pubescent; bracts absent or 2, free, narrowly linear, 2.5–3 × 0.3–0.5 mm, puberulent, margin entire, apex acute. Pedicel 1.3–3 cm, pubescent. Calyx 1.7–1.9 cm, 5-lobed; tube 5–10 mm; lobes equal, triangular-lanceolate, ca. 7 mm, outside sparsely puberulent, inside glabrous, margin entire, apex subulate-acuminate. Corolla purplish, 4.5–5.6 cm, glabrous; tube narrowly funnellform, 3–4 × 1–1.5 cm; adaxial lip ca. 1 cm; abaxial lip ca. 1.6 cm. Filaments ca. 9 mm, glandular puberulent near apex; anthers fused by entire adaxial surfaces, ca. 3 mm, glabrous; staminodes 2, ca. 6 mm. Pistil ca. 3.1 cm, sparsely glandular puberulent; ovary ca. 1.5 cm. Stigma flabellate, ca. 3 mm, 2-lobed. Fruit and seeds unknown. Fl. Jun–Jul.

• Forests, valley streamsides; 400–1600 m. NW Hunan (Sangzhi Xian, Yongshun Xian).

84. *Chirita dielsii* (Borza) B. L. Burtt, *Notes Roy. Bot. Gard. Edinburgh* 23: 97. 1960.

圆叶唇柱苣苔 *yuan ye chun zhu ju tai*

Didymocarpus dielsii Borza, *Repert. Spec. Nov. Regni Veg.* 13: 390. 1914; *Chirita orbicularis* W. W. Smith; *Didymocarpus uniflorus* (Franchet) Borza; *Roettlera uniflora* Franchet (1899), not *C. uniflora* Ridley (1912).

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 1–5(–8) cm × 1.5–3 mm; leaf blade broadly ovate to broadly obovate or orbicular to reniform, 2–11 × 2–8 cm, herbaceous, adaxially between lateral veins with long white hairs 3–6.5 mm, eglandular, abaxially puberulent, white to brownish pubescent to pilose along veins, base rounded to cordate, margin dentate to crenate or serrate, apex obtuse to rounded; lateral veins 4 or 5 on each side of midrib, conspicuous. Cymes 1(or 2)-flowered; peduncle 3–8(–11) cm, pubescent to sparsely pilose; bracts 2 or absent, free, lanceolate to oblanceolate, 0.8–1.2 cm × 1–2.5 mm, pubescent, margin entire to sparsely denticulate, apex acute. Pedicel 3–4 cm, pubescent to sparsely pilose. Calyx 1–1.7 cm, 2-lipped; adaxial lip 4-lobed from above middle; tube 1–3 mm; lobes triangular, 4–5 × 2–2.5 mm; abaxial lip entire, linear to lanceolate, 1–1.5 cm × 3–4 mm, outside sparsely pubescent to pilose or glabrous, inside glabrous, margin entire, apex acuminate. Corolla purple to purple-blue, 4–7 cm, glabrous; tube funnellform-tubular, 2.8–5 × 1.2–2 cm; adaxial lip 1–1.2 cm; abaxial lip 1.2–2 cm. Filaments ca. 1 cm,

glabrous; anthers fused by entire adaxial surfaces, ca. 3 mm, glabrous; staminodes 2, ca. 5.5 mm. Pistil ca. 3 cm, glabrous; ovary ca. 1.8 cm. Stigma flabellate, ca. 5 mm, 2-lobed. Capsule erect, 6–12 cm. Fl. Jun–Sep, fr. Aug–Sep.

• Shaded rocks in montane regions; 1900–3400 m. Yunnan (Fengqing Xian, Lufeng Xian, Yongsheng Xian).

85. *Chirita fruticola* H. W. Li, Bull. Bot. Res., Harbin 3(2): 37. 1983.

灌丛唇柱苣苔 *guan cong chun zhu ju tai*

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 12.5–21 cm × ca. 3 mm; leaf blade broadly ovate, ca. 8.3 × 8.3 cm, papery, adaxially brownish pubescent, eglandular, abaxially yellowish pubescent along veins, base cordate, margin denticulate to serrate, apex acute; lateral veins ca. 9 on each side of midrib, inconspicuous. Cymes 1-flowered; peduncle to 10 cm, appressed pubescent; bracts 2, free, ovate-triangular, ca. 5 × 3 mm, pubescent, margin entire, apex acute. Pedicel to 2.3 cm, pubescent. Calyx ca. 3 cm, 5-lobed from near middle; tube ca. 1.5 cm; lobes slightly unequal, narrowly linear-triangular, ca. 1.5 cm, outside sparsely pubescent, inside glabrous, margin entire, apex subulate-acuminate. Corolla purple to purple-blue, ca. 7 cm, outside puberulent, inside with 2 longitudinal lines of puberulent hairs below adaxial lip; tube funnellform-tubular, 5.5–6.5 × ca. 2 cm; adaxial lip ca. 1.5 cm; abaxial lip ca. 2 cm. Filaments ca. 1.1 cm, glandular puberulent apically, glandular below; anthers fused by entire adaxial surfaces, ca. 4 mm, glabrous; staminodes 3, central ca. 0.8 mm, laterals ca. 3 mm. Pistil ca. 3 cm, glandular puberulent; ovary ca. 1 cm. Stigma oblate, ca. 3 × 5 mm, 2-lobed. Fruit and seeds unknown. Fl. May. Montane thickets; ca. 1300 m. SE Yunnan (Jinping Xian) [Vietnam]. Mature flowers are known only from Vietnam.

86. *Chirita corniculata* Pellegrin, Bull. Soc. Bot. France 73: 420. 1926.

角萼唇柱苣苔 *jiao e chun zhu ju tai*

Ceratocyphus caeruleus W. Y. Chun (1946), not *Chirita caerulea* R. Brown (1840); *Chirita ceratocyphus* B. L. Burtt.

Perennials, stemless. Rhizome internodes inconspicuous. Leaves basal, opposite; petiole 4–5 cm × ca. 2 mm; leaf blade narrowly to broadly elliptic, 3–18 × 1.5–5.5 cm, herbaceous to papery, adaxially densely puberulent, eglandular, abaxially puberulent and densely so along veins, base oblique, cuneate on 1 side, broadly cuneate to rounded on other, margin serrate, apex acute; lateral veins 7–12 on each side of midrib, conspicuous. Cymes 1–3-flowered; peduncle 3–5 cm, puberulent; bracts 2, free, narrowly ovate to oblong, 0.8–3.5 × 0.3–1.6 cm, puberulent, margin dentate to serrulate, apex acute. Pedicel 1.2–2 cm, puberulent. Calyx 1.1–2 cm, 5-lobed from middle to

above middle; tube 4–10 mm; lobes equal, lanceolate-linear with protruberance near middle, 5–10 mm, outside puberulent, inside glabrous, margin entire, apex attenuate, hollow, hornlike. Corolla purple to blue, ca. 4.5 cm, outside sparsely puberulent, inside glabrous; tube funnellform, ca. 3.2 × 1.4 cm; adaxial lip ca. 8 mm; abaxial lip ca. 1.2 cm. Filaments ca. 1.1 cm, glandular puberulent apically; anthers fused by entire adaxial surfaces, 2–4 mm, puberulent; staminodes 3, central ca. 1.5 mm, laterals ca. 6 mm. Pistil ca. 2.8 cm, puberulent; ovary ca. 1.5 cm. Stigma flabellate, ca. 6 mm, 2-lobed. Old capsule erect, ca. 5.5 cm. Fl. Apr–Jun.

Shaded valleys along streamsides; ca. 600 m. S Guangxi (Ningming Xian, Shangsi Xian) [Vietnam].

Based on observation of the types of *Chirita ceratocyphus* and *C. corniculata*, Burtt (pers. comm.) concluded that they are the same.

87. *Chirita lachenensis* C. B. Clarke in A. & C. de Candolle, Monogr. Phan. 5: 118. 1883.

卧茎唇柱苣苔 *wo jing chun zhu ju tai*

Chirita clarkei J. D. Hooker.

Perennials. Rhizome internodes inconspicuous. Stems absent or prostrate and rooting at nodes, puberulent. Leaves 2–8, basal, sometimes on stem and alternate or opposite, ± widely spaced; petiole 2–18 cm × 1–2 mm; leaf blade ovate to narrowly ovate or rarely oblong, 5–14 × 3.4–9 cm, herbaceous, adaxially puberulent, eglandular, abaxially pubescent only along veins, base oblique, cuneate to cordate on 1 side, rounded to cordate on other, margin dentate to serrate, apex acute to obtuse or abruptly acuminate; lateral veins 6–8 on each side of midrib, conspicuous. Cymes 1–4-flowered; peduncle 4.5–17(–21) cm, puberulent to villous; bract 1, narrowly ovate or oblong to spatulate, 1.8–7 × 1–3 mm, sparsely puberulent to villous, margin sparsely denticulate to subentire, apex acute. Pedicel 2–4 cm, sparsely puberulent to villous. Calyx 0.9–1.2 cm, 5-sect from near base to 5-lobed from near middle; tube 1.6–7 mm; lobes equal, lanceolate-linear to ovate, 3–10 mm, outside puberulent to sparsely villous, inside glabrous, margin entire, apex subulate-acuminate to acute. Corolla white or tinged pink to blue, 3–4.5 cm, outside puberulent and sometimes villous, inside apically sparsely puberulent; tube funnellform-tubular, 2–3 × 0.8–1.2 cm; adaxial lip 6–10 mm; abaxial lip 1.2–1.5 cm. Filaments ca. 8 mm, puberulent; anthers fused by entire adaxial surfaces, ca. 3 mm, glabrous; staminodes 2, ca. 2 mm. Pistil 1.6–2.5 cm, puberulent; ovary 1–1.8 cm. Stigma suboblate, ca. 3 mm, undivided or 2-lobed. Capsule often at 90° to peduncle, 6–12 cm. Fl. Jun–Aug, fr. Oct–Dec.

Montane broad-leaved forests; 2300–3100 m. SE Xizang (Medog Xian), W Yunnan (Tengchong Xian) [Bhutan, NE India, N Myanmar, Sikkim].

88. *Chirita oblongifolia* (Roxburgh) Sinclair, Bull. Bot. Soc. Bengal 9: 102. 1957.

长圆叶唇柱苣苔 *chang yuan ye chun zhu ju tai*

Incarvillea oblongifolia Roxburgh, Fl. Ind., ed. 2, 3: 113. 1832; *Aeschynanthus oblongifolius* (Roxburgh) G. Don; *Babactes oblongifolia* (Roxburgh) A.P. de Candolle ex Meisner; *Chirita acuminata* R. Brown; *Roettlera oblongifolia* (Roxburgh) Kuntze.

Perennials. Rhizomes unknown. Stems erect, 45–90 cm, rust-brown puberulent apically. Leaves to 8 or more, along stem, opposite, ± widely spaced; petiole 1.6–4.5 cm × 1.5–2 mm; leaf blade oblique, ovate to elliptic or oblong, 8–18 × 5–10 cm, papery, densely puberulent, densely yellow glandular, base oblique, cuneate to cordate, margin denticulate, apex acuminate; lateral veins 8–13 on each side of midrib, conspicuous. Cymes 5–7-flowered; peduncle 1.8–3.8 cm, densely rust-brown puberulent; bracts 2, free, narrowly ovate, ca. 6 × 2–3 mm, densely puberulent, margin denticulate, apex acute. Pedicel 0.5–1.5 cm, densely rust-brown puberulent. Calyx 1.1–1.4 cm, 5-lobed from above middle; tube 7–9 mm; lobes equal, triangular, 3–5 mm, outside densely puberulent and glandular, inside glabrous with very short hairs near apex, margin entire, apex acute to acuminate. Corolla white with yellow at throat, 4–4.3 cm, outside sparsely puberulent, inside glabrous; tube funnelform, 2.7–3 × ca. 1.2 cm; adaxial lip ca. 7 mm; abaxial lip ca. 1.2 cm. Filaments ca. 1.3 cm, glabrous; anthers fused by entire adaxial surfaces, ca. 1.5 mm, glabrous; staminodes 3, central ca. 0.6 mm, laterals ca. 6 mm. Pistil ca. 2.5 cm, puberulent; ovary ca. 2 cm. Stigma obtrapeziform to obdeltoid, ca. 2–5 mm, emarginate or 2-lobed. Capsule erect, 5–7 cm. Fl. Aug–Sep, fr. Sep–Oct.

Montane evergreen broad-leaved forests; 800–1200 m. SE Xizang (Medog Xian), NW Yunnan (Gongshan Xian) [NE India, N Myanmar].

89. *Chirita speciosa* Kurz, J. Bot. 11: 195. 1873.

美丽唇柱苣苔 *mei li chun zhu ju tai*

Chirita brevipes C. B. Clarke; *C. trailliana* Forrest & W. W. Smith; *Didymocarpus brevipes* (C. B. Clarke) Handel-Mazzetti; *D. speciosus* (Kurz) Handel-Mazzetti; *D. traillianus* (Forrest & W. W. Smith) Handel-Mazzetti; *Roettlera brevipes* (C. B. Clarke) Kuntze; *R. speciosa* (Kurz) Kuntze.

Perennials. Rhizome internodes inconspicuous. Stems absent or to 5 cm, rust-brown pilose. Leaves 4–6, basal or along stem, crowded at apex, alternate; petiole 1.8–17(–24) cm × 1–3 mm; leaf blade oblique, ovate to suborbicular, 5–19 × 3.7–13 cm, herbaceous, adaxially sparsely white pubescent, eglandular, abaxially leaves often purplish, especially along veins, rust-colored pilose, especially along veins, base oblique, cordate to rounded, margin dentate to serrate or crenate, apex acuminate to rounded; lateral veins 6–9 on each side of midrib, conspicuous. Cymes 1–6-flowered; peduncle 3.5–16.5 cm, rust-brown pubescent and villous; bracts 1

or 2, free, narrowly ovate to oblong, 6–14 × 1–4 mm, rust-brown villous, margin entire to serrulate, apex acute. Pedicel 0.8–2 cm, rust-brown pubescent. Calyx 1.1–2.5 cm, 5-lobed from above to near middle; tube 5–10 mm; lobes unequal, narrowly triangular, 0.7–1.5 cm × 3–4 mm, outside rust-brown pubescent to villous, inside glabrous, margin entire, apex subulate-acuminate. Corolla blue-purple with yellow in tube, 4.8–6.5 cm, outside sparsely puberulent to sparsely pilose, inside puberulent below stamens and near mouth of tube; tube narrowly funnelform, 3.5–4.6 × 1.3–1.8 cm; adaxial lip 1–1.2 cm; abaxial lip 1.6–1.8 cm. Filaments ca. 1.1 cm, glabrous to sparsely pubescent; anthers fused by entire adaxial surfaces, 4–6.5 mm, densely puberulent; staminode 1, ca. 3 mm. Pistil ca. 3.4 cm, puberulent; ovary ca. 2.2 cm. Stigma flabellate, ca. 4 mm, 2-lobed. Capsule at 90° to peduncle, 7–9 cm. Fl. Mar–Sep, fr. May–Jul.

Rocks in wet valleys; 700–3100 m. S and W Yunnan [NE India, Myanmar, Thailand, N Vietnam].

90. *Chirita macrophylla* Wallich, Pl. Asiat. Rar. 1: 56. 1830. 大叶唇柱苣苔 *da ye chun zhu ju tai*

Didymocarpus grandifolius (A. Dietrich) F. G. Dietrich; *Henckelia grandifolia* A. Dietrich (1831), not *H. macrophylla* (Wallich ex D. Don) Sprengel (1817).

Perennials. Rhizome internodes inconspicuous. Stems absent or erect to prostrate, to 15(–37) cm, sparsely appressed puberulent. Basal leaves ca. 2, stem leaves 1–3 pairs, opposite, ± widely spaced, strongly unequal in each pair, larger ones similar to basal leaves, but smaller; petiole 1.3–4 cm × 1–4 mm; leaf blade ovate to elliptic, 9.5–19 × 6–14 cm, herbaceous, adaxially appressed puberulent, eglandular, abaxially sparsely pubescent, base oblique, cordate to rounded, margin dentate to serrate, apex abruptly acuminate to rounded; lateral veins 6–9 on each side of midrib, conspicuous. Cymes (1 or) 2–6-flowered; peduncle 6.5–15(–25) cm, sparsely pubescent; bracts 2, free, ovate or elliptic to suborbicular, 0.4–2 cm × 1–10 mm, sparsely pubescent, margin entire to dentate, apex acute to rounded. Pedicel 0.7–2.3 cm, pubescent to glabrous. Calyx 1.5–2.2 cm, 5-lobed from above to near middle; tube 7–11 mm; lobes unequal, narrowly triangular, 5–8 × 3–4 mm, glabrous or outside sparsely puberulent, margin entire, apex acute to attenuate. Corolla white to yellow, sometimes purplish to bluish, 4.4–5.5 cm, glabrous; tube tubular, 3–4 × ca. 1 cm; adaxial lip ca. 9 mm; abaxial lip ca. 1.1 cm. Filaments ca. 1 cm, glabrous; anthers fused by entire adaxial surfaces, 3–4 mm, glabrous; staminodes 3, central ca. 2 mm, laterals 3.5–5.5 mm. Pistil ca. 2.3 cm, puberulent; ovary ca. 1.5 cm. Stigma flabellate, ca. 3 mm, 2-lobed. Capsule often at to 90° to peduncle, 8–13 cm. Fl. May–Sep, fr. Aug–Dec. Rocks in forests; 1300–3100 m. SW Guizhou (Zhenfeng Xian), S Yunnan [Bhutan, NE India, N Myanmar, Nepal, Thailand].

91. *Chirita urticifolia* Buchanan-Hamilton ex D. Don, Prodr. Fl. Nepal. 90. 1825.

麻叶唇柱苣苔 *ma ye chun zhu ju tai*

Chirita grandiflora Wallich; *Didymocarpus urticifolius* (Buchanan-Hamilton ex D. Don) Wonisch; *Gonatostemon boucheanum* Regel; *Henckelia urticifolia* (Buchanan-Hamilton ex D. Don) A. Dietrich; *H. wallichiana* A. Dietrich; *Roettlera urticifolia* (Buchanan-Hamilton ex D. Don) Kuntze.

Perennials. Rhizome unknown. Stems erect, 30–80 cm, sparsely puberulent. Stem leaves to 8 or more, ± widely spaced, unequal in a pair; petiole 0.7–6.5 cm × 1–2 mm; leaf blade elliptic to broadly elliptic, rarely ovate or obovate, 4–11(–17) × 2.2–6(–10) cm, papery, puberulent, eglandular, abaxially mostly along veins, base oblique, broadly cuneate to rounded, margin dentate to serrate, apex acute to abruptly acuminate; lateral veins 5–10 on each side of midrib, conspicuous. Cymes 1- or 2-flowered; peduncle 1.5–5.5 cm, puberulent to sparsely puberulent; bracts 2, free, lanceolate to ovate, 6–16 × 3–9 mm, nearly glabrous to pubescent, margin subentire to denticulate, apex acute. Pedicel 0.8–2.2 cm, puberulent or pilose to glabrous. Calyx 2.5–3.5 cm, 5-lobed; tube 1–1.5 cm; lobes slightly unequal, narrowly triangular to lanceolate, 1–2 cm, outside sparsely puberulent to villous near base, inside glabrous, margin entire, apex attenuate. Corolla purple to pink, 5.5–6 cm, outside sparsely puberulent to sparsely pilose, inside glabrous; tube narrowly funnellform, 3.5–4 × 1.5–2 cm; adaxial lip ca. 1.5 cm; abaxial lip ca. 2.2 cm. Filaments ca. 1.5 cm, glabrous; anthers fused by entire adaxial surfaces, ca. 3 mm, glabrous; staminodes 2, 6–7 mm. Pistil 3.2–3.6 cm, puberulent to sparsely pubescent; ovary ca. 2 cm. Stigma narrowly obtrapeziform, ca. 7 mm, deeply 2-lobed. Capsule often at under 90° to peduncle, 8–15 cm. Fl. Jul–Sep, fr. Sep–Oct.

Forests, valley streamsides; 1300–1700 m. SE Yunnan (Luchun Xian, Pingbian Xian) [Bhutan, NE India, N Myanmar, Nepal, Sikkim].

92. *Chirita anachoreta* Hance, Ann. Sci. Nat. Bot., sér. 5: 231. 1866.

光萼唇柱苣苔 *guang e chun zhu ju tai*

Chirita dimidiata R. Brown ex C. B. Clarke; *C. minutiserrulata* Hayata; *Didymocarpus anachoretus* (Hance) H. Léveillé; *D. minutiserrulatus* (Hayata) Yamamoto; *Roettlera anachoreta* (Hance) Kuntze; *R. dimidiata* (Wallich ex C. B. Clarke) Kuntze.

Annuals, not rhizomatous. Stems erect, 6–35(–55) cm, glabrous to sparsely pubescent or pilose apically. Stem leaves 4–10, opposite, ± widely spaced; petiole 0.2–4(–7) cm × 1–2.5 mm; leaf blade oblique, lanceolate to ovate or elliptic, 3–14 × 1.5–7.5 cm, thin herbaceous, sparsely puberulent to sparsely pilose or nearly glabrous, eglandular, base oblique, broadly cuneate to cordate, margin denticulate to serrulate or crenulate, apex acute to acuminate; lateral veins 6–10 on each side of midrib, conspicuous. Cymes 1–3(–9)-flowered; peduncle 2.5–5(–8.5) cm, glabrous to sparsely

pubescent; bracts 2, free, lanceolate to ovate, 5–8(–15) × 2–4(–7) mm, ciliate to puberulent, margin entire to remotely denticulate, apex acute. Pedicel 0.5–1.8 cm, glabrous to sparsely pubescent or glandular puberulent. Calyx (0.6–)1.1–1.7 cm, 5-lobed from near middle; tube 3–12 mm; lobes slightly unequal, narrowly triangular to triangular, 5–7.5 × 3–4 mm, outside sparsely puberulent to pilose or glabrous, sometimes glandular, inside glabrous, margin entire, apex acuminate. Corolla white to yellow with yellow or purple markings or blue-purple, (2.3–)3.4–5.8 cm, outside glabrous to sparsely puberulent, inside glabrous; tube nearly tubular, 2.5–4 × 1–1.6 cm; adaxial lip 7–10 mm; abaxial lip 1.2–1.5 cm. Filaments 1–1.2 cm, glabrous to sparsely puberulent; anthers fused by entire adaxial surfaces, 2–3 mm, glabrous (rarely pubescent); staminodes 2 or 3, (0.2–)3–5 mm. Pistil 2.4–3 cm, glabrous or with a few hairs (rarely pubescent); ovary 1.5–2.5 cm. Stigma obtrapeziform, 3.5–4.5 mm, 2-lobed to deeply 2-lobed. Capsule erect, 7.5–12 cm. Fl. Jul–Sep, fr. Aug–Nov.

Rocks in forests, valley streamsides; 200–2300 m. Guangdong, Guangxi, S Hunan, Taiwan, SE Xizang (Medog Xian), S Yunnan [Laos, N Myanmar, Sikkim, N Thailand, N Vietnam].

93. *Chirita pumila* D. Don, Prodr. Fl. Nepal. 90. 1825.

斑叶唇柱苣苔 *ban ye chun zhu ju tai*

Bonnaya pumila (D. Don) Sprengel; *Chirita flava* R. Brown; *C. sphagnicola* H. Léveillé & Vaniot; *Didymocarpus anthonyanus* Handel-Mazzetti; *Henckelia pumila* (D. Don) A. Dietrich; *Roettlera pumila* (D. Don) Kuntze.

Annuals, not rhizomatous. Stems erect, 6–46 cm, pubescent to sparsely pilose. Stem leaves 4–8, opposite, ± widely spaced; petiole 4–12(–28) × 1–2 mm; leaf blade oblique, lanceolate to ovate or elliptic, 2–17 × 1.2–5.5(–8) cm, herbaceous, puberulent to pilose, eglandular, abaxially purple spotted, base oblique, cuneate to cordate, margin denticulate to serrulate, apex acute to acuminate; lateral veins 6–9 on each side of midrib, conspicuous. Cymes (1 or) 2–7-flowered; peduncle 2.8–10 cm, puberulent to sparsely pilose or glabrescent; bracts 2, free, ovate to lanceolate or obovate, 5–18 × 1–4 cm, pubescent, margin entire to shallowly denticulate, apex acute. Pedicel 3–20 mm, glabrous to puberulent or pilose. Calyx 0.9–1.8 cm, 5-lobed from below to above middle; tube 4–10 mm; lobes slightly unequal, narrowly triangular to ovate, 4–10 × ca. 2 mm, outside pubescent to sparsely pilose, inside glabrous, margin entire, apex subulate-acuminate, hornlike, spreading. Corolla white to purple with yellow or purple markings, 3.2–5.7 cm, outside puberulent to pilose, inside glabrous to sparsely pubescent adaxially; tube narrowly funnellform, 2.5–4.5 × 0.8–1.5 cm; adaxial lip 4–10 mm; abaxial lip 0.6–1.5 cm. Filaments 0.8–1.3 cm, sparsely puberulent to

glabrous; anthers fused by entire adaxial surfaces, 3–4 mm, glabrous; staminodes 2, 2.5–4(–10) mm. Pistil 2.5–3.8 cm, glabrous to puberulent; ovary 1.4–2.8 cm. Stigma flabellate, ca. 3 mm, 2-lobed. Capsule erect, 6–12 cm. Fl. Jul–Sep, fr. Jul–Oct.

Forests, streamsides, rocks, cliffs, or among grassy clumps; 800–2800 m. NW Guangxi, SW Guizhou, SE Xizang, NW and S Yunnan [Bhutan, N and NE India, Myanmar, Nepal, Sikkim, Thailand, N Vietnam].

94. *Chirita infundibuliformis* W. T. Wang, Acta Phytotax. Sin. 17: 111. 1979.

合苞唇柱苣苔 he bao chun zhu ju tai

Perennials. Rhizome internodes inconspicuous. Stems erect, 12–40 cm, densely brown pubescent. Stem leaves 4–8, opposite, ± widely spaced; petiole 1–5.5 cm × 1–2 mm; leaf blade oblique, elliptic to ovate, 3.5–12.5 × 2–8 cm, papery, adaxially densely puberulent, eglandular, abaxially pubescent along veins, base oblique, broadly cuneate on 1 side, cordate on other, margin irregularly denticulate, apex acuminate; lateral veins ca. 7 on each side of midrib, slightly conspicuous. Cymes 1- or 2-flowered; peduncle 3.4–6 cm, densely brown pubescent; bracts 2, connate into an involucre, broadly funnellform, ca. 1.5 cm, ca. 2.3 cm in diam., puberulent, margin denticulate, apex acute. Pedicel 2–4 mm, sparsely puberulent. Calyx ca. 2.5 cm, 5-lobed from middle; tube ca. 1 cm; lobes equal, triangular, 1.1–1.5 cm, outside puberulent, inside glabrous, margin entire, apex acute. Corolla purple-red, ca. 4.8 cm, outside sparsely puberulent, inside glabrous; tube nearly tubular, ca. 4 × 1 cm; adaxial lip ca. 6 mm; abaxial lip ca. 8 mm. Filaments ca. 1.1 cm, glanduliferous apically; anthers fused by entire adaxial surfaces, ca. 6 mm, glabrous; staminodes 2, ca. 6 mm. Pistil ca. 6.8 cm; ovary ca. 1.1 cm, glabrous. Style puberulent; stigma obtuse-trapeziform, ca. 6 mm, 2-lobed. Fruit and seeds unknown. Fl. Aug.

• Broad-leaved forest margins, montane streamsides; 900–1700 m. SE Xizang (Medog Xian).

95. *Chirita fasciculiflora* W. T. Wang in W. T. Wang & K. Y. Pan, Bull. Bot. Res., Harbin 2(2): 139. 1982.

簇花唇柱苣苔 cu hua chun zhu ju tai

Perennials. Rhizome internodes inconspicuous. Stems erect, 5.5–20 cm, white villous. Stem leaves 2–6, opposite, crowded at stem apex; petiole 1–12 × 1–2 mm; leaf blade elliptic to obovate or ovate, 2.5–17.5 × 2–9.5 cm, herbaceous, puberulent to pilose, eglandular, base oblique, cuneate to truncate, margin denticulate to serrulate, apex acute to rounded; lateral veins 5 or 6 on each side of midrib, slightly conspicuous. Cymes 1–10-flowered; peduncle absent; bracts ca. 7, free, spatulate to linear, 0.6–1.5 cm × 0.3–2 mm, pubescent, margin entire, apex attenuate. Pedicel to 2.5 cm, puberulent. Calyx 1–1.4 cm, deeply 5-lobed; tube ca. 3 mm; lobes slightly unequal, triangular, 3–10 mm, outside with 5 longitudinal bands of pilose hairs between lobes, inside

glabrous, margin entire, apex acute. Corolla blue, 5–6.5 cm, outside puberulent, inside glabrous; tube narrowly funnellform, 4–5.5 × ca. 1.3 cm; adaxial lip ca. 7 mm; abaxial lip ca. 1.2 cm. Filaments ca. 1.2 cm, glabrous; anthers fused by entire adaxial surfaces, ca. 2 mm, glabrous; staminodes 2, ca. 9 mm. Pistil 4–5.2 cm, puberulent; ovary ca. 3 cm. Stigma ligulate-spatulate, ca. 5 mm, undivided. Fruit and seeds unknown. Fl. Jun.

• Valley forests; ca. 1500 m. S Yunnan (Menghai Xian).

96. *Chirita shuii* Z. Y. Li in A. L. Weitzman et al., Novon 7: 427. 1998.

税氏唇柱苣苔 shui shi chun zhu ju tai

Perennials. Rhizome internodes conspicuous. Stems erect, 18–34 cm, glabrous or glabrescent. Stem leaves 2–4 pairs, opposite, all or at least upper 2 pairs crowded near stem apex; petiole 1.2–9.5 cm × 2–2.5 mm; leaf blade elliptic to broadly ovate or suborbicular, 2.5–21.4 × 2.5–11.2 cm, herbaceous, adaxially appressed white puberulent, eglandular, abaxially glabrous to puberulent near veins, base oblique, 1 side cuneate to auriculate, other narrowly cuneate to cuneate, rarely rounded, margin dentate to repand-crenate, apex acute to rounded; lateral veins 4–9 on each side of midrib, conspicuous. Cymes 1- or 2-flowered; peduncle 1–6 cm, glabrous; bracts 2, free, ovate to lanceolate, 0.5–1.7 × 2–8 mm, ciliate, margin denticulate, apex acuminate. Pedicel 3–5(–8.5) cm, glabrous. Calyx 2.4–3 cm, 5-lobed from middle; tube 1.3–1.9 cm; lobes unequal, ovate to ovate-lanceolate, adaxial lobes 1.1–1.2 cm × 4–6 mm, abaxial lobes ca. 8 × 2–5 mm, outside pilose, inside glabrous, margin entire, apex cuspidate. Corolla pale yellow with pale brown stripes in the throat, 5.9–6.1 cm, outside sparsely puberulent, inside glabrous; tube funnellform, 4.2–4.5 × ca. 1.1 cm; adaxial lip ca. 1.1 cm; abaxial lip 1.6–1.7 cm. Filaments ca. 8 mm, glabrous; anthers fused by entire adaxial surfaces, ca. 4.5 mm, glabrous; staminodes 2, ca. 2.5 mm. Pistil ca. 3.8 cm, glabrous; ovary ca. 2.4 cm. Stigma deltoid, ca. 3.5 mm, 2-lobed. Capsule erect, 14–18.5 cm. Fl. Jul–Sep, fr. Sep–Oct.

• Under dense forests near mountain streams; 2600–2900 m. Yunnan (Wenshan Xian).

97. *Chirita pycnantha* W. T. Wang in A. L. Weitzman et al., Novon 7: 425. 1998.

密花唇柱苣苔 mi hua chun zhu ju tai

Perennials (probably). Rhizomes unknown. Stems 2.2–9 cm, glabrous. Stem leaves 1–3, alternate, ± widely spaced; petiole 1.8–9 cm × 1–2 mm; leaf blade oblique, ovate, 4–9 × 2.1–5.4 cm, papery, adaxially sparsely puberulent, eglandular, abaxially sparsely puberulent along veins, base often oblique, cuneate to truncate-rounded, margin crenate, apex acute; lateral veins 7 or 8 on each side of midrib, conspicuous. Cymes 2–6-flowered; peduncle 0.5–6 cm, glabrous; bracts free,

depressed semiorbicular, 5–7 mm × 1–2 cm, glabrous, margin subentire, apex truncate-rounded. Pedicel ca. 1.8 mm, glabrous. Calyx ca. 1.3 cm, 5-lobed from above middle; tube ca. 9 mm; lobes equal, deltoid, ca. 4 × 4.8 mm, glabrous, margin entire, apex acute. Corolla ca. 3.2 cm, glabrous; tube funnelform, ca. 3 × 1.8 cm; adaxial lip ca. 2 mm; abaxial lip ca. 4 mm. Filaments ca. 9 mm, minutely glandular; anthers fused by entire adaxial surfaces, ca. 3 mm, glabrous; staminodes 2, 4–5.5 mm. Pistil ca. 2.9 cm, sparsely appressed puberulent; ovary ca. 1.7 cm. Stigma flabellate, ca. 3 mm, deeply 2-lobed. Fruit and seeds unknown. Fl. Oct.

• Yunnan (Simao Xian).

98. *Chirita puerensis* Y. Y. Qian, Acta Phytotax. Sin. 34: 216. 1996.

普洱唇柱苣苔 pu er chun zhu ju tai

Annuals, not rhizomatous. Stems 10–30 cm, glabrous to sparsely puberulent. Basal leaves 1–2, stem leaves usually 2 pairs, opposite; petiole 1.5–9.5 cm × 2–2.5 mm; leaf blade ovate to elliptic, 1.7–14.5 × 1.2–7.5 cm, herbaceous, adaxially densely to sparsely puberulent, sparsely puberulent along veins, eglandular, abaxially puberulent to glabrescent, densely to sparsely puberulent along veins, base oblique, broadly cuneate to subcordate, margin serrate to double serrate, apex obtuse, rarely acute to shortly acuminate; lateral veins 4–8 on each side of midrib, conspicuous. Cymes (2 or) 3–7-flowered; peduncle 3–8 cm, glabrous to sparsely puberulent; bracts 2, free, ovate-orbicular to subreniform, 1–1.8 × 1.2–2.7 cm, sparsely ciliate, margin entire, apex rounded. Pedicel 4–10 mm, glabrous to sparsely puberulent. Calyx 1.5–2 cm, 2-lipped; tube 1.1–1.5 mm; adaxial lip shallowly 4-lobed, lobes triangular, 4–7 mm; abaxial lip entire, oblanceolate, 1.4–1.9 cm × 5–6 mm, outside sparsely pilose near apex, inside glabrous, margin entire, apex apiculate. Corolla white, 3.5–5 cm, glabrous; tube funnelform, 2–3.3 × 1–1.3 cm; adaxial lip 5–9 mm; abaxial lip 1–1.4 cm. Filaments 1–1.2 cm, sparsely glandular puberulent near apex; anthers fused by entire adaxial surfaces, 2.9–3.2 mm, glabrous; staminodes 3, central ca. 1 mm, laterals 3.5–4.5 mm. Pistil 2.5–3.5 cm; ovary 1.5–2 cm, puberulent near apex. Style puberulent and glandular puberulent; stigma obdeltoid, 3.5–3.7 mm, deeply 2-lobed. Capsule erect, 8–12 cm. Fl. and fr. Aug.

• Rocks in shrubby area; 1200–1400 m. Yunnan (Puer Xian).

99. *Chirita hamosa* R. Brown, On Cyrtandreae 117. 1839.

钩序唇柱苣苔 gou xu chun zhu ju tai
Roettlera hamosa (R. Brown) Kuntze.

Annuals, not rhizomatous. Stems erect, 5–25(–36) cm, sparsely puberulent to glabrous. Stem leaves 1–3(–7), lowermost solitary, leaves toward apex opposite;

petiole 2–4(–10) × 1–3 mm; leaf blade narrowly to broadly ovate, 1.5–13 × 1–11 cm, herbaceous, adaxially puberulent, eglandular, abaxially sparsely puberulent to glabrescent, base rounded to cordate, margin entire, apex acute to obtuse; lateral veins 6–16 on each side of midrib, slightly conspicuous. Cymes scorpioid, 1–5(–10)-flowered; peduncle adnate to petiole, puberulent; bracts absent. Pedicel 3–14 mm, spreading pubescent. Calyx 5–11 mm, 5-lobed to 5-sect from near base; tube 0.5–4 mm; segments unequal, linear to narrowly triangular, 4.5–7 × 1–1.5 mm, outside puberulent, inside glabrous, margin entire, apex attenuate. Corolla white, yellow at throat, often flushed lavender, 1–1.9 cm, outside sparsely puberulent adaxially, inside glabrous; tube nearly tubular, 7–15 × 3–5 mm; adaxial lip 1.2–2 mm; abaxial lip ca. 2.3 mm. Filaments 2–4 mm, glabrous; anthers fused by projections on connectives, 1–1.8 mm, bearded; staminodes 2, 0.8–1.5 mm. Pistil 1.1–1.4 cm, puberulent; ovary 3–6 mm. Stigma narrowly obtrapeziform, ca. 1 mm, deeply 2-lobed. Capsule erect, 1.4–4 cm. Fl. Jul–Oct, fr. Jul–Nov.

Shaded rocks in forests, cliffs, or streamside valleys; 300–1500 m. S and W Guangxi, S and SE Yunnan [India, Laos, Malaysia, Myanmar, Thailand, N Vietnam].

