

5. **OREOCHARIS** Benth in Bentham & J. D. Hooker, Gen. Pl. 2: 1021. 1876.

马铃苜苔属 ma ling ju tai shu

*Dasydesmus* Craib; *Perantha* Craib.

Herbs, perennial, epipetric, rarely terrestrial, rhizomatous, stemless. Leaves many, basal; leaf blade puberulent to woolly, rarely glabrous or glabrescent, base cuneate to subcordate. Inflorescences sometimes umbel-like, lax or dense, axillary, 1- to many-flowered cymes; bracts 2, rarely apparently absent or 3, opposite, rarely whorled. Calyx actinomorphic, 5-sect from base; segments equal. Corolla purple to blue or white or yellow to red, zygomorphic, inside glabrous or puberulent; tube campanulate-cylindric to broadly tubular, sometimes ampliate basally, throat sometimes constricted, 1–4 × longer than limb, 2–8(–12) mm in diam.; limb slightly 2-lipped to 2-lipped; adaxial lip 2-lobed, slightly shorter than to nearly as long as abaxial lip; abaxial lip 3-lobed to 3-sect, lobes equal or subequal, apex rounded to acute. Stamens 4, adnate to corolla tube near base to near middle, included, rarely exserted; anthers basifixed, rarely dorsifixed, free, thecae parallel, not confluent, seldom horseshoe-shaped, then thecae divaricate and confluent at apex, dehiscing longitudinally, rarely transversely; connective not projecting; staminode 1, adnate to adaxial side of corolla tube, rarely absent. Disc ringlike. Ovary oblong, 1-loculed; placentas 2, parietal, projecting inward, 2-cleft. Stigmas 2, equal, oblate, undivided or rarely 2-lobed, or stigma 1, terminal, oblate to capitate, undivided. Capsule straight in relation to pedicel, oblanceolate-oblong to oblong, much longer than calyx, dehiscing loculicidally to base; valves 2, straight, not twisted. Seeds unappendaged.

About 28 species: southern China, Thailand, Vietnam; 27 species in China.

*Oreocharis rhytidophylla* C. Y. Wu ex H. W. Li, which is compared to and discussed under *O. benthamii* var. *reticulata* Dunn, is omitted from this treatment because it is known only from fruiting specimens and thus cannot be placed in Pan's sectional classification (Acta Phytotax. Sin. 25: 264–293. 1987). Using only vegetative or fruit characters, it cannot be placed definitively in *Oreocharis*, since other genera (e.g., *Tremacron*, *Isometrum*, and *Ancylostemon*) are virtually indistinguishable in those characters.

*Oreocharis* is related to *Ancylostemon*, *Tremacron*, and *Isometrum*. As noted above, it can be difficult to distinguish these genera, and some species, notably *O. delavayi*, are intermediate between them. *Oreocharis delavayi* has exserted stamens and adaxial corolla lobes much smaller than abaxial ones, characters which relate it to *Tremacron*. However, the stamens that exceed the mouth do not exceed the abaxial lip lobes, and the adaxial lip lobes are larger than those of species of *Tremacron*. Relationships of and limits among these genera need further examination.

1a. Anthers horseshoe-shaped, 1-loculed, transversely dehiscent; cymes umbel-like, 3–7-flowered ..... 27. *O. flavida*

1b. Anthers broadly oblong, 2-loculed, longitudinally dehiscent; cymes cymose, rarely nearly umbel-like, (1–)4- to many flowered.

2a. Leaf blade nearly as broad as long, broadly ovate to orbicular or nearly rhombic, to 4(–6) cm; cymes 1–4-flowered.

3a. Leaf blade abaxially villous to woolly, 2.5–6 × 2–4.8 cm, margin coarsely dentate to coarsely crenate or serrate, sometimes also denticulate, apex acute, rarely rounded; stamens adnate to corolla 10–12 mm above base ..... 7. *O. dentata*

3b. Leaf blade abaxially sparsely to densely pubescent, 1.2–3.2 × 1.4–2.5 cm, margin shallowly crenate to subentire, apex rounded; stamens adnate to corolla 1–3 mm above base.

4a. Leaf blade orbicular, 1.2–2.4 × 1.4–2.2 cm, base cordate; peduncle ca. 7.5 cm; corolla 2.7–3.8 cm, tube cylindric, narrowing toward throat; stamens 5–5.5 mm; pistil 2–5 mm ..... 11. *O. rotundifolia*

4b. Leaf blade broadly ovate to suborbicular, 2–3.2 × 1.8–2.5 cm, base slightly oblique, rounded to broadly cuneate; peduncle 10–15(–22) cm; corolla ca. 1.6 cm, tube campanulate-tubular; stamens 15–18 mm; pistil 2–2.5 cm ..... 17. *O. cavaleriei*

2b. Leaf blade usually at least 1.5 × longer than broad, lanceolate to elliptic, oblong, ovate, or obovate, rarely broadly ovate then (1.7–)3–17 cm and cymes 1–10-flowered.

5a. Corolla tube narrowing toward mouth, usually distinctly 2-lipped, rarely slightly 2-lipped (unknown in *O. amabilis* and *O. obliqua*).

6a. Bracts early deciduous, 0.5–2 mm; peduncle translucent to purple-red glandular pubescent, glabrescent.

7a. Leaf blade glabrous adaxially; corolla 1.3–1.6 cm, abaxial lip lobes 3–4.5 mm ..... 9. *O. minor*

7b. Leaf blade adaxially densely appressed pubescent; corolla 1.6–2.5 cm, abaxial lip lobes 6–8 mm.

8a. Pistil glabrous ..... 6. *O. aurantiaca*

- 8b. Pistil glandular pubescent ..... 8. *O. cordatula*
- 6b. Bracts persistent, 1.5–16 mm; peduncle usually brownish pubescent to woolly.
- 9a. Corolla limb slightly 2-lipped; stamens adnate to corolla 7–10 mm above base, filaments flattened, broadest near apex; indument on most of plant jointed villous ..... 14. *O. heterandra*
- 9b. Corolla limb distinctly 2-lipped; stamens adnate to corolla 0.5–6 mm above base, filaments slender or flattened; indument puberulent to woolly, not jointed.
- 10a. Petiole and leaf blade abaxially villous, at least along veins of young leaves; corolla adaxial lobes 1–4 mm.
- 11a. Calyx segments 2–5 mm; corolla adaxial lobes 1–3 mm.
- 12a. Petiole to 9 cm; leaf blade 2–9 × 0.8–3.5 cm; peduncle and bracts rust-brown villous ..... 10. *O. georgei*
- 12b. Petiole to 4 cm; leaf blade 3–15.5 × 1.5–6.5 cm; peduncle and bracts sparsely to densely rust-brown villous and pubescent ..... 16. *O. forrestii*
- 11b. Calyx segments 5–8 mm; corolla adaxial lobes 3.5–4 mm (unknown in *O. obliqua*).
- 13a. Stamens ca. 1 cm, filaments glabrous; peduncle 7.5–10 cm; leaf blade apex acute to acuminate ..... 13. *O. obliqua*
- 13b. Stamens 4–5 mm, filaments white villous or sparsely pubescent near apex; peduncle 12–40 cm; leaf blade apex acute ..... 12. *O. aurea*
- 10b. Petiole and leaf blade abaxially woolly at least along veins; corolla adaxial lobes 4–10 mm.
- 14a. Leaf blade lanceolate, 2.5–4 × longer than broad, abaxially densely rust-brown woolly ..... 5. *O. cinnamomea*
- 14b. Leaf blade lanceolate-oblong to oblong, elliptic, ovate, or obovate, less than 2.5 × longer than broad, abaxially densely pale brown woolly or glabrescent to pubescent between veins, woolly along veins.
- 15a. Leaf blade 1.5–5.5 × 1–2.5 cm.
- 16a. Leaf blade abaxially densely pale brown woolly; bracts 5–12 × 2–6 mm ..... 1. *O. amabilis*
- 16b. Leaf blade abaxially densely brown woolly along veins, pubescent between; bracts 3–4 × 0.5–1 mm ..... 3. *O. nemoralis*
- 15b. Leaf blade 2–15 × 1–7 cm.
- 17a. Corolla white to pale purple, ca. 1.2 cm, outside sparsely puberulent; bracts ovate, 1.5–3.5 mm wide; stamens 4.5–6.5 mm; staminode ca. 1.2 mm ..... 4. *O. magnidens*
- 17b. Corolla purple, 1.6–2.8 cm, outside sparsely pubescent; bracts linear to narrowly ovate, 0.8–2 mm wide; stamens 7–10 mm; staminode 3–3.5 mm ..... 2. *O. auricula*
- 5b. Corolla tube cylindric or gradually ampliate from base to mouth, usually barely to slightly 2-lipped, occasionally distinctly 2-lipped.
- 18a. Leaf blade adaxially with at least some villous indument.
- 19a. Leaf blade with only villous indument on both surfaces, apex acute to acuminate; bract margin sometimes sparsely dentate ..... 13. *O. obliqua*
- 19b. Leaf blade both villous and pubescent, at least abaxially, apex acute to rounded; bract margin entire.
- 20a. Leaf blade margin serrulate or crenate-serrate; bracts 2–3 × 0.5–1 mm; petiole to 14.5 cm; corolla orange-red, outside pubescent; stamens adnate to corolla 4–6 mm above base  
19. *O. dasyantha*
- 20b. Leaf blade margin coarsely double crenate or dentate to serrate; bracts 3–8 × 1–2 mm; petiole to 6.5 cm; corolla yellow, outside glabrous or glandular puberulent;

- stamens  
adnate to corolla 1–3 mm above base.
- 21a. Leaf blade oblanceolate to narrowly ovate, 3–15.5 × 1.5–6.5 cm, base cuneate to broadly cuneate; lateral veins 7–11 on each side of midrib; bracts 4–8 mm; corolla abaxial lip lobes 3–5 × 2–4 mm; stamens 2.5–4 mm, filaments glabrous; pistil ca. 4 mm ..... 16. *O. forrestii*
- 21b. Leaf blade elliptic to ovate, 1.4–6 × 0.6–3.5 cm, base broadly cuneate to cordate; lateral veins 4 or 5 on each side of midrib; bracts 3–4 mm; corolla abaxial lip lobes 6–9 × 5–7 mm; stamens 10–14 mm, filaments glandular pubescent; pistil ca. 1.4 cm ..... 18. *O. delavayi*
- 18b. Leaf blade adaxially pubescent to puberulent or glabrescent.
- 22a. Leaf blade lanceolate-oblong to oblong, 2.5–5.5 × 1–2.4 cm; bracts 2–6 mm wide 1. *O. amabilis*
- 22b. Leaf blade ovate to elliptic, lanceolate, oblanceolate, or ovate-orbicular, rarely narrowly oblong, (1.7–)3–17 × 0.8–8 cm; bracts 1–2 mm wide.
- 23a. Peduncle red to purple glandular pubescent to villous; leaf blade narrowly oblong to lanceolate, abaxially densely light brown pannose; lateral veins indistinct; corolla limb 2-lipped; stamens ca. 4 mm; pistil 5–8 mm ..... 15. *O. henryana*
- 23b. Peduncle brown to whitish villous or woolly to pubescent, leaf blade ovate, elliptic, lanceolate, oblanceolate, to ovate-orbicular, abaxially villous or woolly, usually also pubescent; lateral veins adaxially distinct or prominent, rarely indistinct; corolla limb slightly or barely 2-lipped; stamens 5–18 mm; pistil 9–25 mm (unknown in *O. obliqua*).
- 24a. Leaf blade adaxially sparsely villous to glabrescent ..... 13. *O. obliqua*
- 24b. Leaf blade adaxially pubescent or pubescent and villous.
- 25a. Corolla yellow; disc 2–4 mm, deeply 5-lobed to 5-sect from base; stamens 1.3–1.8 cm, filaments sparsely pubescent, villous basally, anther connective sparsely pubescent to pubescent.
- 26a. Bracts 5–10 mm; calyx segments 6–12 mm ..... 25. *O. bodinieri*
- 26b. Bracts 2–5 mm; calyx segments 4–7 mm ..... 26. *O. tubicella*
- 25b. Corolla purple to blue, pink, lavender, orange-red, or greenish; disc 0.8–1.3 mm, entire to shallowly 5-lobed; stamens 0.5–1.3 cm, filaments glabrous to pubescent, anther connective glabrous, rarely puberulent.
- 27a. Leaf blade 3–9 × 1.5–4.5 cm; lateral veins indistinct or distinct; petiole to 4.5 cm.
- 28a. Corolla tube 4–7 mm wide, adaxial lip shallowly 2-lobed, lobes 1.2–3 × 2–3 mm; bracts 1.5–5 mm; calyx segments 2–3 mm 22. *O. tubiflora*
- 28b. Corolla tube 7–10 mm wide, adaxial lip 2-lobed from near base, lobes 3–5 × 4–5 mm; bracts 4–9 mm; calyx segments 4–7 mm ..... 23. *O. maximowiczii*
- 27b. Leaf blade (1.7–)3–17 × 1.5–8 cm; lateral veins distinct to prominent; petiole to 14.5 cm.
- 29a. Bracts 2–3 mm; corolla orange-red, tube campanulate; stigmas 2, equal, suborbicular ..... 19. *O. dasyantha*
- 29b. Bracts 4–13 mm; corolla purple to blue, purple red, pinkish, or greenish, tube nearly cylindrical or broadly tubular to narrowly funnellform; stigma 1, disc-shaped.

- 30a. Leaf blade abaxially ± densely appressed pubescent, apex acute to acuminate; corolla 1.8–2.3 cm ..... 20. *O. argyreia*
- 30b. Leaf blade abaxially sparsely to densely pubescent or densely woolly, veins woolly, apex rounded to acute; corolla 0.7–1.6 cm.
- 31a. Bracts 6–12 mm; corolla tube nearly cylindrical, gradually slightly ampliate from base to mouth, adaxial lip 2-lobed from near middle ... 21. *O. xiangguiensis*
- 31b. Bracts 4–8 mm; corolla tube broadly tubular to narrowly funnelliform, gradually ampliate from base to mouth, adaxial lip 2-lobed from near base 24. *O. benthamii*

**1. *Oreocharis amabilis*** Dunn, J. Linn. Soc., Bot. 38: 362. 1908.

马铃苣苔 ma ling ju tai

Petiole to 6.5 cm, brown woolly; leaf blade lanceolate-oblong to oblong, 2.5–5.5 × 1–2.4 cm, adaxially densely appressed pubescent, abaxially densely pale brown woolly, base rounded to truncate, margin crenate, apex obtuse to rounded; lateral veins 6 or 7 on each side of midrib, obscure. Cymes 3–8-flowered; peduncle 15–17 cm, woolly, glabrescent; bracts 2, lanceolate, 5–12 × 2–6 mm, densely woolly to pubescent, margin entire. Pedicel 2–2.5 cm. Calyx segments lanceolate to narrowly ovate, 2.5–5.5 mm, margin entire. Corolla purple, drying yellow, 1.4–2.2 cm, outside glabrous; tube cylindrical, narrowed at mouth, 0.9–1.4 cm; limb 2-lipped, lobes narrowly ovate, 6–7 × 2–3 mm. Stamens adnate to corolla near base. Style slightly flattened; stigma 1, disc-shaped. Capsule 2.3–3.7 cm, glabrous. Fr. Nov.

• About 1500 m. Yunnan (Mile Xian).

**2. *Oreocharis auricula*** (S. Moore) C. B. Clarke in A. & C. de Candolle, Monogr. Phan. 5: 64. 1883.

长瓣马铃苣苔 chang ban ma ling ju tai

Petiole to 7 cm, brown woolly; leaf blade sometimes slightly falcate, narrowly to broadly elliptic to ovate or obovate, 2–12 × 1–5 cm, adaxially woolly or sericeous to glabrescent or sparsely hirsute, abaxially pale brown woolly to glabrescent, densely brown woolly along veins, base sometimes oblique, cuneate to cordate, margin serrate to subentire, serrulate to crenulate, or crenate-dentate, apex rounded to short acuminate; lateral veins 7–10 on each side of midrib, distinct. Cymes 4–11-flowered; peduncle 6–15 cm, sparsely brownish woolly or pubescent; bracts 2, linear to narrowly ovate, 3–10 × 0.8–2 mm, brown woolly or pubescent, margin entire. Pedicel 0.5–2.5 cm. Calyx segments narrowly triangular to lanceolate or narrowly ovate, 2.5–6 mm, margin entire. Corolla purple, 1.6–2.8 cm, outside sparsely pubescent; tube cylindrical, narrowed at mouth, 1–1.5 cm × 3–6 mm; limb 2-lipped; adaxial lip 2-sect from base to 2-lobed from middle, all lobes 4–10 × 1.5–4 mm. Stamens adnate to corolla 2–6 mm above base, 7–10 mm; filaments slender, glabrous;

anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, 3–3.5 mm. Disc 1.6–2 mm, subentire. Pistil 0.8–1.3 cm, glabrous. Stigma 1, disc-shaped. Capsule 2.4–4.5 cm. Fl. May–Sep, fr. Aug–Nov.

• Shady and damp rocks by streams, in valleys, or under forests on slopes; 200–1800 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan (Xiushan Xian).

- 1a. Leaf blade adaxially woolly to glabrescent, margin serrate to subentire; peduncle sparsely brownish woolly; bracts narrowly ovate to narrowly lanceolate, 3–10 × 1–2 mm, brown woolly, calyx segments narrowly triangular to lanceolate, 3–6 mm, outside densely brownish pubescent, apex acuminate ..... 2a. var. *auricula*
- 1b. Leaf blade adaxially sparsely hirsute, margin crenate-dentate; peduncle pubescent; bracts linear, 3–4 × ca. 0.8 mm, pubescent; calyx segments narrowly ovate, 2.5–3 mm, outside sparsely puberulent, apex obtuse to rounded ..... 2b. var. *denticulata*

**2a. *Oreocharis auricula* var. *auricula***

长瓣马铃苣苔(原变种) chang ban ma ling ju tai (yuan bian zhong)

*Didymocarpus auricula* S. Moore, J. Bot. 13: 229. 1875; *Chirita sericea* H. Léveillé & Vaniot (1906), not Ridley (1905); *D. sericeus* H. Léveillé (1906), not Ridley (1896); *Oreocharis esquirolii* H. Léveillé (p. 447, not p. 329); *O. leveilleana* Fedde; *O. sericea* H. Léveillé.

Leaf blade sometimes slightly falcate, narrowly to broadly elliptic to ovate or obovate, 2–12 × 1–5 cm, adaxially woolly or sericeous to glabrescent, base sometimes oblique, cuneate to cordate, margin serrate to subentire or serrulate to crenulate. Peduncle sparsely brownish woolly; bracts narrowly ovate to narrowly lanceolate, 3–10 × 1–2 mm, brown woolly. Pedicel glabrescent to sparsely woolly. Calyx segments narrowly triangular to lanceolate, 3–6 mm, outside densely brownish pubescent, apex acuminate. Fl. May–Sep, fr. Aug–Nov.

• Shady and damp rocks by streams, in valleys, or under forests on slopes; 200–1800 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, Sichuan (Xiushan Xian).

*Oreocharis sericea* has been included by most authors in *O. auricula*. Pan (Acta Phytotax. Sin. 25: 275–276. 1987) recognized *O. sericea*, citing geography as well as differences in indument on the adaxial leaf surface (densely appressed puberulent in *O. auricula* vs. sericeous-villous in *O. sericea*), the amount of lobing of the adaxial corolla lip, and size of those lobes relative to lobes of abaxial corolla lip (adaxial lip lobes divided from the base to below the middle and equalling or nearly equalling those of the abaxial lip vs. adaxial lip lobes divided only to the middle and shorter than those of the abaxial lip respectively). The distributions of these species overlap throughout most of their ranges, and the characters used form continua as well. Therefore, it is difficult, if not impossible, to distinguish these taxa. The best character for distinguishing them appears to be the corolla lobes; however, fruiting specimens cannot be determined. Because of these difficulties we recognize only one species, *O. auricula*.

*Oreocharis sericea* has frequently been cited as a combination; however, it is not a combination because both *Chirita sericea* H. Léveillé & Vaniot and *Didymocarpus sericeus* H. Léveillé are later homonyms.

**2b. *Oreocharis auricula* var. *denticulata*** K. Y. Pan, Acta Phytotax. Sin. 25: 276. 1987.

细齿马铃苳苔 xi chi ma ling ju tai

Leaf blade elliptic to obovate, 4–10 × 1.8–4 cm, adaxially sparsely hirsute, base cuneate, margin crenate-dentate. Peduncle pubescent; bracts linear, 3–4 × ca. 0.8 mm, pubescent. Pedicel pubescent. Calyx segments narrowly ovate, 2.5–3 mm, outside sparsely puberulent, apex obtuse to rounded. Fl. Jul.

• Rocks by streams on slopes. Fujian (Yong'an Xian).

**3. *Oreocharis nemoralis*** W. Y. Chun, Sunyatsenia 6: 288. 1946.

湖南马铃苳苔 hu nan ma ling ju tai

Petiole to 4 cm, densely brown woolly; leaf blade elliptic to ovate, 1.5–3.5(–4) × 1–2.5 cm, adaxially strigose, abaxially densely brown woolly along veins, pubescent between, base slightly oblique, rounded to slightly cordate, margin irregularly serrulate to crenulate-serrate, rarely denticulate, apex obtuse; lateral veins 5 or 6 on each side of midrib, distinct. Cymes 1–5-flowered; peduncle 6–10 cm, sparsely brownish woolly to glabrescent; bracts 2, linear, 3–4 × 0.5–1 mm, brown woolly, margin entire. Pedicel 5–10 mm. Calyx segments linear, 3–5 mm, margin entire. Corolla purple, 1.3–1.5 cm, outside sparsely pubescent; tube cylindrical, narrowed at mouth, ca. 10 × 3–4 mm; limb 2-lipped; adaxial lip 2-sect from near base, lobes 4–6 × 1.5–1.6 mm; abaxial lip lobes 2.5–4 × ca. 1.5 mm. Stamens adnate to corolla 4–5 mm above base, ca. 8 mm; filaments slender, glabrous; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 1.2 mm. Disc ca. 1.5 mm, entire. Pistil

ca. 1.1 cm, glabrous. Stigma 1, disc-shaped. Capsule 2–2.6 cm.

• Hunan.

**4. *Oreocharis magnidens*** W. Y. Chun ex K. Y. Pan, Acta Phytotax. Sin. 25: 276. 1987.

大齿马铃苳苔 da chi ma ling ju tai

Petiole to 9 cm, densely pale brown woolly; leaf blade obovate to elliptic, 4–15 × 3–7 cm, adaxially villous, abaxially densely pale brown woolly, glabrescent between veins, base sometimes slightly oblique, cuneate to rounded, margin dentate to crenate or serrate, apex obtuse to rounded; lateral veins 5–9 on each side of midrib, distinct. Cymes 2–12-flowered; peduncle 7–20 cm, glandular pubescent to villous; bracts 2, ovate, 5–6 × 1.5–3.5 mm, brown woolly, margin entire. Pedicel 0.7–2.5 cm. Calyx segments ovate, 2.5–3 mm, margin entire. Corolla white to pale purple, ca. 1.2 cm, outside sparsely puberulent; tube cylindrical, narrowed at mouth, 7.5–12 × 2–3.5 mm; limb 2-lipped; adaxial lip 2-sect from near base, all lobes 4–9 × 1–2 mm. Stamens adnate to 2–3 mm above corolla base, 4.5–6.5 mm; filaments slender, glabrous; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 1.2 mm. Disc ca. 1.5 mm, slightly undulate. Pistil ca. 8 mm, glabrous. Stigma 1, disc-shaped. Capsule 2.6–3.6 cm. Fl. Jul, fr. Oct.

• Cliffs in valleys of montane regions; 1100–1600 m. Guangxi.

**5. *Oreocharis cinnamomea*** J. Anthony, Notes Roy. Bot. Gard. Edinburgh 18: 200. 1934.

肉色马铃苳苔 rou se ma ling ju tai

Petiole to 11 cm, densely rust-brown woolly; leaf blade lanceolate, 3–16 × 1.2–4 cm, adaxially sparsely short strigose to rarely brown villous, abaxially densely rust-brown woolly, base narrowly cuneate to broadly cuneate, margin irregularly serrate to dentate or crenate, apex acute to acuminate; lateral veins 5–9 on each side of midrib, sometimes indistinct. Cymes 2–16-flowered; peduncle 10–20 cm, brown villous; bracts 2, linear to narrowly triangular, 1.5–5 × 0.5–1 mm, rust-brown villous to sparsely pubescent, margin entire. Pedicel 0.3–3 cm. Calyx segments narrowly oblong to narrowly triangular, 2–4 mm, margin entire. Corolla greenish yellow to deep orange, 1–1.6 cm, outside pubescent; tube cylindrical, narrowed at mouth, 7–10 × 3.2–5 mm; limb 2-lipped; adaxial lip 2-sect from near base, all lobes 4–5 × 0.2–0.4 mm. Stamens adnate to corolla 0.5–1.5 mm above base, 3.5–4 mm; filaments slender, glabrous; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 1.2 mm. Disc ca. 1.2 mm, subentire. Pistil 4.5–6 mm, glabrous. Stigma 1, disc-shaped. Capsule 2–3 cm. Fl. Jun–Aug, fr. Aug–Sep.

• Dry shaded rocks or tree branches; 2500–3400 m. SW Sichuan (Muli Xian), NW Yunnan.

**6. *Oreocharis aurantiaca*** Franchet, Bull. Mens. Soc. Linn. Paris 1: 716. 1888.

橙黄马铃苣苔 cheng huang ma ling ju tai

*Peranthe aurantiaca* (Franchet) Pellegrin; *P. forrestii* Craib.

Petiole to 5(–9.5) cm, densely pale brown woolly; leaf blade rhombic-ovate to narrowly elliptic or lanceolate, 2–5.2(–9.5) × 1–2.5(–4.5) cm, adaxially densely appressed pubescent, abaxially sparsely to densely pale brown woolly, base sometimes oblique, narrowly cuneate to subcordate, margin coarsely crenate to coarsely dentate or serrate, apex acute to rounded rarely nearly acuminate; lateral veins 3–7 on each side of midrib, frequently indistinct. Cymes 2–10-flowered; peduncle 6–16 cm, translucent to purple-red glandular pubescent, glabrescent; bracts 2, deciduous, ovate to linear, 0.5–1 × 0.2–0.5 mm, pubescent, margin entire. Pedicel 0.7–2.5 cm. Calyx segments subulate to narrowly triangular, 1.5–3.5 mm, margin entire. Corolla deep orange to orange, 1.6–2.5 cm, outside sparsely glandular pubescent; tube cylindrical, narrowed at mouth, 1.4–1.7 cm × 4–6(–8) mm; limb 2-lipped; adaxial lip shallowly 2-lobed, lobes 2.5–4 × 2–3 mm; abaxial lip lobes 7–8 × 1–2 mm. Stamens adnate to corolla 4–10 mm above base, 6–10 mm; filaments slender, glabrous; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 3 mm. Disc ca. 2 mm, slightly undulate. Pistil 1.2–1.7 cm, glabrous. Stigma 1, disc-shaped. Capsule 2–3.5 cm. Fl. Jul–Sep, fr. Aug–Oct.

• Dry limestone rocks in thickets on slopes; 1000–3400 m. NW Yunnan.

See notes under *Oreocharis cordatula* and *O. minor*.

**7. *Oreocharis dentata*** A. L. Weitzman & L. E. Skog in A. L. Weitzman et al., Novon 7: 431. 1998.

川西马铃苣苔 chuan xi ma ling ju tai

Petiole to 3.7 cm, epidermis green, densely red-brown long villous; leaf blade broadly ovate to nearly rhombic, 2.5–6 × 2–4.8 cm, adaxially densely whitish pubescent to villous, abaxially red-brown villous to woolly, hairs longer along veins, base sometimes slightly oblique, cuneate to cordate, margin coarsely dentate to coarsely crenate or serrate, sometimes also denticulate, apex acute, rarely rounded; lateral veins 5 or 6 on each side of midrib, distinct. Cymes 1–4-flowered; peduncle 4–9 cm, epidermis reddish brown, translucent to golden villous; bracts 2, narrowly triangular, 3–5 × ca. 1 mm, villous to densely pubescent, margin entire. Pedicel 1.1–2 cm. Calyx segments narrowly triangular, 4–6 mm, margin entire. Corolla (dry) orange, with red lobes, 1.9–2.4 cm, outside densely glandular pubescent, especially on lobes; tube cylindrical, narrowing slightly toward throat, 1.5–1.8 cm × 4–7 mm; limb 2-lipped; adaxial lip shallowly 2-lobed, lobes 3–4

× ca. 2 mm; abaxial lip central lobe ca. 7.5 × 2 mm, lateral lobes ca. 6 × 2.5 mm. Stamens adnate to corolla 1–1.2 cm above base, 7–8 mm; filaments slender, glabrous or pubescent; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous or pubescent; staminode 1, ca. 1.2 mm. Disc ca. 2 mm, 5-lobed, undulate. Pistil ca. 1.3 cm, glabrous. Stigma 1, disc-shaped. Capsule 2.8–4 cm. Fl. Sep.

• W Sichuan.

**8. *Oreocharis cordatula*** (Craib) Pellegrin, Bull. Soc. Bot. France 72: 873. 1925.

心叶马铃苣苔 xin ye ma ling ju tai

*Peranthe cordatula* Craib, Notes Roy. Bot. Gard. Edinburgh 10: 214. 1918.

Petiole to 8(–13) cm, densely pale brown woolly; leaf blade ovate-lanceolate to narrowly ovate, 3–7.5 × 1.2–2.5 cm, adaxially densely appressed pubescent, abaxially densely pale brown woolly, base sometimes oblique, cuneate to cordate, margin coarsely crenate to coarsely serrate, apex acute to rounded; lateral veins 5 or 6 on each side of midrib, indistinct. Cymes 1–10-flowered; peduncle 5.5–14 cm, translucent to purple-red glandular pubescent; bracts 2, deciduous, ovate to linear, 0.5–1 × 0.2–0.5 mm, pubescent, margin entire. Pedicel 0.7–2 cm. Calyx segments subulate to narrowly triangular, 1.5–3.5 mm, margin entire. Corolla deep orange to yellow, 1.9–2.4 cm, outside sparsely glandular pubescent; tube cylindrical, narrowed at mouth, 1.2–1.4 cm × 4–6(–8) mm; limb 2-lipped; adaxial lip shallowly 2-lobed, lobes 3–4 × 3–5 mm; abaxial lip lobes 6–7 × ca. 2 mm. Stamens adnate to corolla 3–6 mm above base, 8–11 mm; filaments slender, glabrous; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 0.5 mm. Disc 2–2.5 mm, subentire. Pistil 1–1.2 cm, glandular pubescent. Stigma 1, disc-shaped. Capsule 2–3 cm. Fl. Jun–Aug, fr. Jul–Sep.

• Limestone by streams in valleys and at montane summits; 1900–3200 m. SW Sichuan (Jiulong Xian, Muli Xian, Yanyuan Xian), Yunnan (Zhongdian Xian).

*Oreocharis cordatula* is very closely related to *O. aurantiaca*, from which it is separated only by the pubescent pistils. In the opinion of Weitzman and Skog, *O. cordatula* deserves, at most, recognition as a variety of *O. aurantiaca*.

**9. *Oreocharis minor*** (Craib) Pellegrin, Bull. Soc. Bot. France 72: 873. 1925.

小马铃苣苔 xiao ma ling ju tai

*Peranthe minor* Craib, Notes Roy. Bot. Gard. Edinburgh 10: 213. 1918.

Petiole to 8 cm, densely pale brown woolly; leaf blade rhombic-ovate to elliptic or lanceolate, 1.6–4.8 × 0.6–1.9 cm, adaxially glabrous, abaxially densely pale brown woolly, base cuneate to subcordate, margin coarsely crenate to coarsely dentate or serrate, apex

acute to rounded; lateral veins 4–6 on each side of midrib, indistinct. Cymes 2–8-flowered; peduncle 6–11 cm, translucent to purple-red glandular pubescent; bracts 2, deciduous, ovate to linear, 0.5–2 × 0.2–0.5 mm, pubescent, margin entire. Pedicel 0.6–1.8 cm. Calyx segments triangular to oblong, 2–2.5 mm, margin entire. Corolla yellow, 1.3–1.6 cm, outside sparsely glandular pubescent to glabrescent; tube cylindric, narrowed at mouth, 1–1.3 cm × 4–6 mm; limb 2-lipped; adaxial lip shallowly 2-lobed, lobes 3–4 × 2–3 mm; abaxial lip lobes 3–4.5 × 1.5–2 mm. Stamens adnate to corolla 1.8–4 mm above base, 3.5–7 mm; filaments slender, glabrous; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 1.5 mm. Disc ca. 2 mm, shallow denticulate. Pistil 0.8–1.2 cm, glabrous. Stigma 1, disc-shaped. Capsule 2.5–2.8 cm. Fl. May–Aug, fr. Jul–Aug.

• Dry shady rocks on cliffs in valleys; 2800–3100 m. SW Sichuan (Muli Xian), Yunnan (Lijiang Xian).

*Oreocharis minor* is very closely related to *O. aurantiaca*. Indeed, the only character which separates them is adaxial leaf surface glabrous in the former. In the opinion of Weitzman and Skog, *O. minor* deserves, at most, recognition as a variety of *O. aurantiaca*.

**10. *Oreocharis georgei*** J. Anthony, Notes Roy. Bot. Gard. Edinburgh 18: 202. 1934.

剑川马铃苣苔 *jian chuan ma ling ju tai*

Petiole to 9 cm, rust-brown villous; leaf blade narrowly ovate to elliptic or narrowly obovate, 2–9 × 0.8–3.5 cm, adaxially whitish pubescent, with a few rust-brown hairs, abaxially densely rust-brown villous, glabrescent between veins, base cuneate to nearly rounded, margin crenate to dentate or serrate, apex acute to obtuse or acuminate; lateral veins 4–6 on each side of midrib, distinct. Cymes 1–6-flowered; peduncle 3–13 cm, rust-brown villous; bracts 2, linear, 2–5 × 0.5–1 mm, rust-brown villous, margin entire. Pedicel 1–2.4 cm. Calyx segments narrowly lanceolate to ovate or triangular, 2–4 mm, margin entire. Corolla yellow to orange-yellow, 1.4–1.9 cm, outside sparsely glandular pubescent to glabrescent; tube cylindric, narrowed at mouth, ca. 1 × 0.4–0.7 mm; limb 2-lipped; adaxial lip 2-sect from near base, lobes 2–3 × 1.5–2 mm; abaxial lip lobes 5–6 × 2.5–3 mm. Stamens adnate to corolla 2–3 mm above base, 3–4 mm; filaments slender, glabrescent to glabrous; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 1 mm. Disc ca. 2 mm, 5-lobed. Pistil 5–7 mm, glabrous. Stigma 1, disc-shaped. Capsule 1.5–3 cm. Fl. Mar–Jun, fr. Jun–Jul.

• Rocks in forests, forest margins; 2300–3400 m. SW Sichuan, NW Yunnan.

**11. *Oreocharis rotundifolia*** K. Y. Pan, Acta Phytotax. Sin. 25: 280. 1987.

圆叶马铃苣苔 *yuan ye ma ling ju tai*

Petiole to 4 cm, rust-brown villous; leaf blade orbicular, 1.2–2.4 × 1.4–2.2 cm, adaxially appressed pubescent, abaxially sparsely pubescent, base cordate, margin crenulate, apex rounded; lateral veins 4 or 5 on each side of midrib, distinct. Cymes 1–3-flowered; peduncle ca. 7.5 cm, rust-brown villous; bracts 2, oblong, 2.5–4 × ca. 1.5 mm, rust-brown villous, margin entire. Pedicel ca. 2 cm. Calyx segments oblong, ca. 5 mm, margin entire. Corolla yellow, ca. 1.6 cm, outside pubescent; tube cylindric, narrowing toward throat, ca. 9 × 4 mm; limb 2-lipped; adaxial lip 2-sect from near base, lobes ca. 3.5 × 2.5 mm; abaxial lip lobes 4.5–5.5 × ca. 3 mm.

Stamens adnate to corolla 1.2–1.5 mm above base, 5–5.5 mm; filaments slender, pubescent; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 1 mm. Disc 1–1.5 mm, 5-lobed from near middle. Pistil 2–5 mm; ovary glabrous. Style pubescent; stigma 1, disc-shaped. Capsule ca. 1.5 cm. Fr. Oct.

• Rocks in forests; ca. 2100 m. Yunnan (Pingbian Xian).

**12. *Oreocharis aurea*** Dunn, Bull. Misc. Inform. Kew 1908: 19. 1908.

黄马铃苣苔 *huang ma ling ju tai*

Petiole to 12 cm, densely brownish villous; leaf blade lanceolate to ovate, 5–15.5 × 3.4–8 cm, adaxially sparsely appressed pubescent and villous or densely pubescent, abaxially appressed pubescent and villous or villous, glabrescent, especially between veins, base sometimes slightly oblique, broadly cuneate to cordate, margin serrate to crenate, often doubly so, apex acute; lateral veins 7–10 on each side of midrib, distinct.

Cymes 3–10-flowered; peduncle 12–40 cm, rust-brown villous; bracts 2, lanceolate to narrowly lanceolate, 6–16 × 1–5 mm, rust-brown villous, margin entire or sparsely dentate to serrate. Pedicel 0.5–4.5 cm. Calyx segments lanceolate to linear, 6–10 mm, margin 2- or 3-denticulate or entire. Corolla yellow, 1.2–2.2 cm, outside pubescent; tube cylindric, narrowed at mouth, 0.8–1.4 cm × 3–6 mm; limb 2-lipped; adaxial lip 2-sect from near base, lobes 3.5–4 × 1.5–2 mm; abaxial lip lobes ca. 5–6 × 2.5–3.5 mm. Stamens adnate to corolla 2–5 mm above base, 4–5 mm; filaments flattened to slender, sparsely pubescent near apex or white villous; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, 0.5–2 mm. Disc 1–2 mm, 5-lobed. Pistil 8–10 mm, glabrous to sparsely glandular puberulent. Stigma 1, disc-shaped. Capsule 2.8–3.7 cm. Fl. Aug–Sep, fr. Sep–Oct.

Shady and damp rocks under forests, near streams, or epiphytic; 1400–2400 m. Yunnan [N Vietnam].

1a. Bracts 9–16 × 1.5–5 mm; pedicel 2–4.5 cm; calyx segments margin 2- or 3-denticulate, rarely nearly entire; filaments sparsely pubescent near apex; staminode ca. 0.5 mm 12a. var. *aurea*

1b. Bracts 6–9 × 1–1.5 mm; pedicel 0.5–2 cm; calyx segments margin entire; filaments white villous; staminode ca. 2 mm

**12a. *Oreocharis aurea* var. *aurea***

黄马铃苣苔(原变种) huang ma ling ju tai (yuan bian zhong)

Bracts lanceolate, 0.9–1.6 cm × 1.5–5 mm, margin sometimes sparsely dentate to serrate. Pedicel 2–4.5 cm. Calyx segments margin 2- or 3-denticulate, rarely nearly entire. Filaments sparsely pubescent near apex; staminode ca. 0.5 mm. Disc ca. 2 mm. Fl. Aug–Sep, fr. Sep–Oct.

Shady and damp rocks under forests or epiphytic; 1400–2400 m. SE Yunnan [N Vietnam].

**12b. *Oreocharis aurea* var. *cordato-ovata*** (C. Y. Wu ex H. W. Li) K. Y. Pan, A. L. Weitzman, & L. E. Skog in A. L. Weitzman et al., *Novon* 7: 430. 1998.

卵心叶马铃苣苔 luan xin ye ma ling ju tai

*Oreocharis cordato-ovata* C. Y. Wu ex H. W. Li, *Bull. Bot. Res.*, Harbin 3(2): 7. 1983.

Bracts linear-lanceolate, 6–9 × 1–1.5 mm, margin entire. Pedicel 0.5–2 cm. Calyx segments margin entire. Filaments white villous; staminode ca. 2 mm. Disc ca. 1 mm. Fl. Aug–Sep.

• Rocks by streams in valleys; 1400–1500 m. Yunnan (Xichou Xian).

**13. *Oreocharis obliqua*** C. Y. Wu ex H. W. Li, *Bull. Bot. Res.*, Harbin 3(2): 6. 1983.

斜叶马铃苣苔 xie ye ma ling ju tai

Petiole to 8 cm, brown villous; leaf blade oblique, ovate to elliptic, (3.5–)5.5–14 × 2–5.5 cm, adaxially sparsely villous to glabrescent, abaxially villous, hairs to 3 mm, glabrescent, especially between veins, base usually oblique, cuneate to rounded, margin serrate, apex acute to acuminate; lateral veins 7–11 on each side of midrib, distinct. Cymes (2–)5–10-flowered; peduncle 7.5–10 cm, brown villous; bracts 2, linear, 5–9 × 1–1.5 mm, brownish villous, margin sometimes sparsely dentate. Fruiting pedicel 0.7–2.5 cm. Persistent fruiting calyx segments linear to narrowly lanceolate, 5–8 mm, margin entire. Corolla 1.7–2.4 cm; tube cylindric, narrowed at mouth; adaxial lip 7–9 mm; abaxial lip 2.5–3.5 mm. Stamens adnate to corolla 5–6 mm above base, ca. 1 cm; filaments flattened to slender, glabrous; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 2 mm. Persistent stigma 1, disc-shaped. Capsule 2.5–3 cm, glabrous.

• In shady and damp mixed forest; 1400–2300 m. Yunnan (Maguan Xian).

**14. *Oreocharis heterandra*** D. Fang & D. H. Qin in D. Fang, D. H. Qin, & X. H. Lu, *Acta Phytotax. Sin.* 32: 563. 1994.

异蕊马铃苣苔 yi rui ma ling ju tai

Petiole to 4 cm, jointed villous; leaf blade broadly elliptic-ovate to broadly elliptic, 7–10.5 × 4.5–6 cm, adaxially densely appressed jointed villous, abaxially

sparsely jointed villous and densely so along veins, base broadly cuneate to subrounded, margin serrate, apex obtuse to acute; lateral veins 6–8 on each side of midrib. Cymes 5–9-flowered; peduncle 6–13.5 cm, jointed villous; bracts 2, narrowly lanceolate, 5–8 mm, jointed villous. Calyx segments narrowly lanceolate, 5–7 mm, margin entire. Corolla purple-blue, ca. 2.5 cm, outside sparsely glandular puberulent; tube cylindric, narrowed slightly at mouth, ca. 1.5 × 0.5 cm; limb slightly 2-lipped, lobes 8–10 × 3–4 mm. Stamens adnate to corolla 7–10 mm above base, 8–11 mm; filaments flattened, broadest near apex, sparsely glandular puberulent; 2-loculed, dehiscing longitudinally; staminode 1, minute. Disc 4-crenulate. Pistil glabrous. Stigma 1, disc-shaped. Fruit unknown. Fl. Oct.

• Rocks; ca. 1300 m. Guangxi.

Known only from the type collection which was not seen by the authors of this treatment.

**15. *Oreocharis henryana*** Oliver, *Hooker's Icon. Pl.* 20: pl. 1944. 1890.

川滇马铃苣苔 chuan dian ma ling ju tai

*Oreocharis squamigera* H. Léveillé.

Petiole to 10 cm, densely light brown pannose; leaf blade narrowly oblong to lanceolate, 2–8.3 × 1–3.5 cm, adaxially pubescent to densely pubescent, abaxially densely light brown pannose, base cuneate to auriculate, margin irregularly crenate to serrate or dentate, apex acute to obtuse; lateral veins 5–7 on each side of midrib, indistinct. Cymes 4–10-flowered; peduncle 7–18 cm, red to purple glandular pubescent to villous; bracts 2, linear to subulate, often deciduous, 4–5 × 0.3–0.5 mm, villous, margin entire. Pedicel 0.5–4 cm. Calyx segments linear-lanceolate, 3–5 mm, margin entire. Corolla purple to deep purple, 7–11 mm, outside glabrous; tube campanulate, 5–6 × 4–6 mm; limb 2-lipped; adaxial lip 2-sect from near base, all lobes 2–4 × 1.5–3 mm. Stamens adnate to corolla 1–2 mm above base, ca. 4 mm; filaments flattened, glabrous; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 1 mm. Disc ca. 2 mm, entire. Pistil 5–8 mm, glabrous. Stigma 1, disc-shaped. Capsule 2.2–3.3 cm. Fl. Jul–Sep, fr. Oct.

• Shady and damp rocks in montane regions; 600–3000 m. S Gansu, Sichuan, N Yunnan.

**16. *Oreocharis forrestii*** (Diels) Skan, *Bot. Mag.* 143: pl. 8719. 1917.

丽江马铃苣苔 li jiang ma ling ju tai

*Roettlera forrestii* Diels, *Notes Roy. Bot. Gard. Edinburgh* 5: 224. 1912.

Petiole to 4 cm, densely rust-brown villous; leaf blade oblanceolate to narrowly ovate, 3–15.5 × 1.5–6.5 cm, adaxially sparsely rust-brown villous and white pubescent, abaxially densely rust-brown villous and white pubescent, base cuneate to broadly cuneate, margin irregularly coarsely double dentate to serrate, apex acute to obtuse; lateral veins 7–11 on each side of

midrib, distinct. Cymes 2–10-flowered; peduncle 4–14 cm, sparsely to densely rust-brown villous and pubescent; bracts 2, linear to linear-lanceolate, 4–8 × 1–2 mm, sparsely rust-brown villous or pubescent, margin entire. Pedicel 0.8–2.8 cm. Calyx segments lanceolate to narrowly lanceolate, 3–5 mm, margin entire. Corolla yellow, 1.5–1.8 cm, outside glandular puberulent; tube broadly cylindrical, sometimes narrowed at mouth, 9–11 × 5–8 mm; limb 2-lipped; adaxial lip 2-sect from near base, lobes 1–2 × 1–2 mm; abaxial lip lobes 3–5 × 2–4 mm. Stamens adnate to corolla 1–2 mm above base, 2.5–4 mm; filaments flattened, glabrous; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 1 mm. Disc ca. 1 mm, entire. Pistil ca. 4 mm, glabrous. Stigma 1, disc-shaped. Capsule 1.5–2.5 cm. Fl. Jul–Aug, fr. Sep–Oct.

• Rocks and tree branches in forests on slopes; 2300–3600 m. Sichuan (Yanyuan Xian), Yunnan (Lijiang Xian).

**17. *Oreocharis cavaleriei*** H. Léveillé, Repert. Spec. Nov. Regni Veg. 7: 258. 1909.

贵州马铃苣苔 *gui zhou ma ling ju tai*

Petiole to 6 cm, brown villous; leaf blade broadly ovate to suborbicular, 2–3.2 × 1.8–2.5 cm, pale brown pubescent, abaxially more densely so, sometimes with darker hairs along veins, base slightly oblique, rounded to broadly cuneate, margin shallowly crenate to subentire, apex rounded; lateral veins ca. 4 on each side of midrib, indistinct. Cymes 1- or 2-flowered; peduncle 10–15(–22) cm, rust-brown villous; bracts 2, lanceolate, 2–4 × ca. 0.5 mm, rust-brown villous, margin entire. Pedicel 1.4–2 cm. Calyx segments linear-lanceolate, 6–8 mm, margin entire. Corolla yellowish basally to reddish near apex (dry), 2.7–3.8 cm, outside pubescent; tube campanulate-tubular, 1.8–2.4 × 1–1.2 cm; limb strongly 2-lipped; adaxial lip 2-sect from base, lobes ca. 8 × 2 mm; abaxial lip lobes 3–4 × 3–4 mm. Stamens adnate to corolla 1–3 mm above base, 1.5–1.8 cm; filaments slender, sparsely pubescent; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode apparently absent. Disc 0.6–1 mm, entire. Pistil 2–2.5 cm, pubescent toward apex. Stigmas 2, flabellate. Capsule 3–4 cm. Fl. and fr. Sep.

• Guizhou (Longli Xian).

**18. *Oreocharis delavayi*** Franchet, Bull. Mens. Soc. Linn. Paris 1: 715. 1888.

椭圆马铃苣苔 *tuo yuan ma ling ju tai*

*Oreocharis elliptica* J. Anthony; *O. elliptica* var. *parvifolia* W. T. Wang & K. Y. Pan ex K. Y. Pan.

Petiole to 6.5 cm, rust-brown villous; leaf blade elliptic to ovate, 1.4–6 × 0.6–3.5 cm, gray pubescent and sparsely rust-brown villous, base sometimes oblique, broadly cuneate to cordate, margin coarsely double crenate to serrate, apex obtuse to acute; lateral veins 4 or 5 on each side of midrib, distinct. Cymes 1–7-flowered; peduncle 4–13 cm, sparsely brown villous; bracts 2, linear to lanceolate, 3–4 × ca. 1 mm, brown

villous, margin entire. Pedicel 0.5–1.5 cm. Calyx segments narrowly lanceolate, 3–4.5 mm, margin entire. Corolla yellow, 1.2–1.8 cm, outside glabrous; tube campanulate-tubular, 6–8 (–10) × 5–6 mm; limb slightly 2-lipped; adaxial lip shallowly 2-lobed, lobes 2–5 × 3–4 mm; abaxial lip lobes 6–9 × 5–7 mm. Stamens adnate to corolla 1–3 mm above base, 1–1.4 cm; filaments slender, glandular pubescent; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 1 mm. Disc 0.8–1.5 mm, entire. Pistil ca. 1.4 cm, glabrous. Stigma 1, disc-shaped. Capsule 1.8–3.5 cm. Fl. May–Jul, fr. Sep–Oct.

• Shady and damp rocks or tree trunks on slopes or near streams; 2100–3400 m. SW Sichuan, E Xizang, NW Yunnan.

The holotype of *Oreocharis delavayi* from Lankong (*Delavay 127*, P) is extremely similar to *O. elliptica* in both external morphology and floral structure. Leaves vary in size even on a single specimen.

**19. *Oreocharis dasyantha*** W. Y. Chun, Sunyatsenia 6: 287. 1946.

毛花马铃苣苔 *mao hua ma ling ju tai*

Petiole to 14.5 cm, densely pale brown villous or woolly; leaf blade ovate-elliptic to broadly ovate, 6–12 × 4.5–6.5 cm, adaxially gray to brown pubescent or pubescent and villous, abaxially sparsely to densely gray or gray-brown pubescent, brown villous along veins, base often oblique, cuneate to subrounded or cordate, margin serrulate or crenate-serrate, apex acute to rounded; lateral veins 5–7 on each side of midrib, distinct. Cymes 1–8-flowered; peduncle 10–17 cm, pale brown villous; bracts 2, linear to narrowly triangular, 2–3 × 0.5–1 mm, densely villous, margin entire. Pedicel 1–1.8 cm. Calyx segments narrowly lanceolate, 3–6 mm, margin entire. Corolla orange-red, 1.6–2.4 cm, outside pubescent; tube campanulate, 0.9–2 cm × 6–7 mm; limb barely 2-lipped; adaxial lip shallowly 2-lobed, lobes 3–5(–7) × 4–5(–8) mm; abaxial lip lobes 7–8 × 5–6 mm. Stamens adnate to corolla 4–6 mm above base, ca. 1.2 cm; filaments slender, pubescent; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode apparently absent. Disc ca. 1 mm, entire. Pistil 1.2–1.3 cm, glabrous. Stigmas 2, equal, suborbicular. Capsule 3.5–4 cm. Fl. Feb, Oct, fr. Oct.

• Hainan.

- 1a. Leaf blade adaxially gray pubescent, base oblique, subrounded to cordate, margin serrulate; petiole to 14.5 cm, densely pale brown villous; cymes 1–3(or 4)-flowered; corolla 1.7–2.4 cm, tube 1.1–2 cm 19a. var. *dasyantha*
- 1b. Leaf blade adaxially gray to brown pubescent and villous, base sometimes oblique, cuneate to subcordate, margin crenate-serrate; petiole to 6 cm, densely pale brown woolly; cymes 3–8-flowered;

corolla ca. 1.6 cm, tube 9–1.1 mm  
..... 19b. var. *ferruginosa*

**19a. *Oreocharis dasyantha* var. *dasyantha***

毛花马铃苣苔(原变种) mao hua ma ling ju tai (yuan bian zhong)

Petiole to 14.5 cm, densely pale brown villous; leaf blade adaxially gray pubescent, abaxially densely gray pubescent, pale brown villous along veins, base oblique, subrounded to cordate, margin serrulate. Cymes 1–3(or 4)-flowered. Corolla 1.7–2.4 cm; tube 1.1–2 cm. Fruit unknown. Fl. Feb.

• Hainan (Baisha Xian).

**19b. *Oreocharis dasyantha* var. *ferruginosa*** K. Y. Pan, Acta Phytotax. Sin. 25: 283. 1987.

锈毛马铃苣苔 xiu mao ma ling ju tai

Petiole to 6 cm, densely pale brown woolly; leaf blade adaxially gray to brown pubescent and villous, abaxially sparsely gray-brown pubescent, brown villous along veins, base sometimes oblique, cuneate to subcordate, margin crenate-serrate. Cymes 3–8-flowered. Corolla ca. 1.6 cm; tube 0.9–1.1 cm. Capsule 3.5–4 cm. Fl. and fr. Oct.

• Rocks in forests. Hainan (Ding'an Xian).

**20. *Oreocharis argyreia*** W. Y. Chun in K. Y. Pan, Acta Phytotax. Sin. 25: 283. 1987.

紫花马铃苣苔 zi hua ma ling ju tai

Petiole to 8(–13) cm, densely appressed villous; leaf blade elliptic to ovate or linear-lanceolate to oblanceolate, 3.7–16 × 0.8–6.5 cm, ± densely appressed pubescent, base cuneate to subrounded or narrowly cuneate, margin nearly entire, apex acute to acuminate; lateral veins 5–7 on each side of midrib, distinct. Cymes 2–12-flowered; peduncle 10–20 cm, light brown appressed pubescent; bracts 2, lanceolate, 0.8–1.3 cm × 1.5–2 mm, appressed pubescent or villous, margin entire. Pedicel 0.9–2.5 cm. Calyx segments narrowly lanceolate to narrowly triangular, 6–8 mm, margin entire or several denticulate. Corolla blue-purple to pinkish white or greenish, 1.8–2.3 cm, outside pubescent to glabrescent; tube nearly cylindrical, gradually slightly ampliate from base to mouth, 1.4–2 cm × 3–6 mm; limb slightly 2-lipped; adaxial lip 2-lobed from near middle, lobes 1.5–2 × 1.5–2 mm; abaxial lip lobes 3.5–5.5 × 2.5–3 mm. Stamens adnate to corolla 5–7 mm above base, 6–13 mm; filaments slender, slightly flattened, glabrous; anthers oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 1.2 mm. Disc ca. 1.2 mm, shallowly 5-lobed to subentire. Pistil 0.9–1.8 cm; ovary glabrous or pubescent toward style. Style glabrous or pubescent; stigma 1, disc-shaped. Capsule 3–4.5 cm. Fl. Jun–Oct, fr. Aug–Oct.

• Rocks; 500–700 m. Guangdong, Guangxi.

1a. Leaf blade elliptic to ovate, 5.5–16 × 2.7–6.5 cm, base cuneate to subrounded; calyx

segment margin entire; corolla blue-purple to pinkish white, tube 5–6 mm wide; ovary and style glabrous ..... 20a. var. *argyreia*

1b. Leaf blade linear-lanceolate to oblanceolate, 3.7–10.1 × 0.8–2.4 cm, base narrowly cuneate; calyx segment margin several denticulate; corolla green, tube ca. 3 mm wide; ovary distally pubescent; style pubescent ..... 20b. var. *angustifolia*

**20a. *Oreocharis argyreia* var. *argyreia***

紫花马铃苣苔(原变种) zi hua ma ling ju tai (yuan bian zhong)

Leaf blade elliptic to ovate, 5.5–16 × 2.7–6.5 cm, base cuneate to subrounded. Calyx segments margin entire. Corolla blue-purple to pinkish white; tube 5–6 mm wide. Pistil glabrous. Fl. Jun–Oct, fr. Aug–Oct.

• Rocks under forests on slopes. Guangdong, Guangxi.

**20b. *Oreocharis argyreia* var. *angustifolia*** K. Y. Pan, Acta Phytotax. Sin. 25: 285. 1987.

窄叶马铃苣苔 zhai ye ma ling ju tai

Leaf blade linear-lanceolate to oblanceolate, 3.7–10.1 × 0.8–2.4 cm, base narrowly cuneate. Calyx segments margin several denticulate. Corolla green; tube ca. 3 mm wide. Ovary distally pubescent. Style pubescent. Fl. Jun–Oct.

• Rocks; 500–700 m. Guangxi (Shangsi Xian).

**21. *Oreocharis xianguiensis*** W. T. Wang & K. Y. Pan in K. Y. Pan, Acta Phytotax. Sin. 25: 285. 1987.

湘桂马铃苣苔 xiang gui ma ling ju tai

Petiole to 14 cm, light brown pannose; leaf blade oblong elliptic to oblanceolate or narrowly ovate, 5–15.5 × 2.5–7 cm, adaxially sparsely puberulent to pubescent, abaxially sparsely pubescent, brownish woolly along veins, base oblique, rounded to cuneate, margin crenate to serrate, apex obtuse to acute; lateral veins 7–10 on each side of midrib, distinct. Cymes (3–) 5–15(–20)-flowered; peduncle 10–23 cm, densely pubescent; bracts 2, lanceolate to oblong lanceolate, 6–12 × 1–2 mm, pubescent to densely pubescent, margin entire. Pedicel 0.5–1.8 cm. Calyx segments lanceolate, 3–5 mm, margin entire. Corolla purple-red, 1.3–1.6 cm, outside puberulent; tube nearly cylindrical, gradually slightly ampliate from base to mouth, 0.9–1.3 cm × 4–5 mm; limb slightly 2-lipped; adaxial lip 2-lobed from near middle, lobes 2.2–3 × 1.5–2 mm; abaxial lip lobes 4–4.5 × 3–4 mm. Stamens adnate to corolla 1.5–5 mm above base, 5.5–7.5 mm; filaments slender, slightly flattened, glabrescent; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 0.5 mm. Disc ca. 1.2 mm, entire. Pistil ca. 1.2 cm, glabrous. Stigma 1, disc-shaped, slightly concave. Capsule ca. 3.5 cm. Fl. Aug–Sep, fr. Sep–Oct.

• Rocks on slopes, near roads or by streams in valleys; 800–1400 m. NE Guangxi, S Hunan.

*Oreocharis xianguiensis* is closely related to *O. benthamii*, from which it differs in having longer bracts (usually), less flared corolla tube, and adaxial lip lobed only from near middle instead of from base. Weitzman and Skog believe that these characters are rather variable and overlap in both taxa, and they would include *O. xianguiensis* in synonymy with *O. benthamii*.

**22. *Oreocharis tubiflora*** K. Y. Pan, Acta Phytotax. Sin. 25: 287. 1987.

筒花马铃薯苔 tong hua ma ling ju tai

Petiole to 4 cm, densely light brown woolly; leaf blade ovate to narrowly elliptic, 3.5–9 × 1.9–4 cm, adaxially densely gray pubescent, abaxially light brown woolly, densely brown woolly along veins, base slightly oblique, cuneate to rounded, margin serrulate to serrate or crenate, apex rounded to acute; lateral veins 5–7 on each side of midrib, indistinct. Cymes 3–8-flowered; peduncle 9–16 cm, sparsely glandular pubescent; bracts 2, linear to lanceolate, 1.5–5 × 1–1.5 mm, pubescent to woolly, margin entire to shallowly dentate. Pedicel 0.6–1.5 cm. Calyx segments lanceolate, 2–3 mm, margin entire. Corolla purple, 1.8–2.2 cm, outside glabrous; tube broadly tubular, gradually ampliate from base to mouth, 1.7–1.9 cm × 4–7 mm; limb barely 2-lipped; adaxial lip shallowly 2-lobed, lobes 1.2–3 × 2–3 mm; abaxial lip lobes 5–7 × 3–5 mm. Stamens adnate to corolla 5–6 mm above base, 1–1.4 cm; filaments slender, glabrous; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, ca. 0.4 mm. Disc 1–1.3 mm, nearly entire. Pistil 1.5–2 cm, glabrous. Stigma 1, disc-shaped. Capsule 2.2–3.5 cm. Fl. Apr–Sep.

• Rocks; 500–700 m. Fujian.

**23. *Oreocharis maximowiczii*** C. B. Clarke in A. & C. de Candolle, Monogr. Phan. 5: 63. 1883.

大花石上莲 da hua shi shang lian

*Oreocharis fokienensis* Franchet.

Petiole to 4.5 cm, densely brown woolly; leaf blade ovate to lanceolate or elliptic, rarely obovate, 3–9 × 1.5–4.5 cm, adaxially densely pubescent, abaxially densely pubescent, densely brown woolly along veins, base sometimes slightly oblique, cuneate to rounded, margin serrate, apex rounded to acute; lateral veins 6–9 on each side of midrib, distinct or indistinct. Cymes (1–)3–15-flowered; peduncle 4.5–24 cm, sparsely pubescent or brown woolly and glandular pubescent; bracts 2, oblong to lanceolate, 4–9 × 1–2 mm, densely brown woolly, margin entire. Pedicel 0.4–1.5(–3) cm. Calyx segments oblong to lanceolate or ovate, 4–7 mm, margin entire. Corolla pink to lavender, 1.5–2.5 cm, outside glabrous to puberulent; tube narrowly campanulate to broadly tubular, ampliate from base to mouth, 1.3–2 × 0.7–1 cm; limb barely 2-lipped; adaxial lip 2-sect from near base, all lobes 3–5 × 4–5 mm. Stamens adnate to corolla 5–10 mm above base, 8–10 mm; filaments slender, glabrous; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous; staminode 1, 0.5(–)7) mm. Disc ca. 1.2 mm, entire. Pistil often slightly

exserted, 1.6–2.5 cm, glabrous to sparsely puberulent. Stigma 1, disc-shaped. Capsule 4–5 cm. Fl. Apr–Jun, fr. Jun.

• Rocks of slopes, near road and under forests; 200–800 m. Fujian, Jiangxi.

**24. *Oreocharis benthamii*** C. B. Clarke in A. & C. de Candolle, Monogr. Phan. 5: 63. 1883.

大叶石上莲 da ye shi shang lian

Petiole to 8 cm, densely light brown woolly to pannose; leaf blade elliptic to ovate or ovate-orbicular, (1.7–)3–17 × 1.5–8 cm, adaxially densely pubescent, abaxially densely pubescent to densely woolly, densely brown woolly along veins, base oblique, cordate to cuneate, margin shallowly serrate or crenate to entire, apex rounded to acute; lateral veins 6–9 on each side of midrib, ± prominent. Cymes 8–15-flowered; peduncle 2–22 cm, densely pale brown woolly to pubescent; bracts 2, subulate to linear or narrowly lanceolate, 4–8 × ca. 1 mm, densely pale brown woolly to pubescent, margin entire. Pedicel 0.5–1.5 cm. Calyx segments elliptic-lanceolate to linear, rarely ovate, 4–7 mm, margin entire. Corolla purple to blue, 0.7–1.5 cm, outside pubescent to puberulent; tube broadly tubular to narrowly funnelform, gradually ampliate from base to mouth, 5.5–10 × 3–6 mm; limb slightly 2-lipped; adaxial lip 2-sect from near base, lobes 2.7–4(–5) × 2.4–3.8 mm. Stamens adnate to corolla 0.5–5 mm above base, 5–10 mm; filaments slender, glabrous to pubescent; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective glabrous to puberulent; staminode 1, ca. 0.2 mm. Disc ca. 0.8 mm, entire. Pistil 9–10 mm, glabrous. Stigma 1, disc-shaped. Capsule 2–3.5 cm. Fl. Apr–Oct, fr. Aug–Nov.

• Rocks in valleys and forests or cliffs; 200–1400 m. Guangdong, Guangxi, SW Hunan, SE Jiangxi.

1a. Leaf blade oblong to ovate, 5.5–14 × 3–8

cm; lateral veins less prominent 26a. var. *benthamii*

1b. Leaf blade ovate-orbicular, 3.9–8 × 2.9–5

cm; lateral veins more prominent 26b. var. *reticulata*

**24a. *Oreocharis benthamii* var. *benthamii***

大叶石上莲(原变种) da ye shi shang lian (yuan bian zhong)

*Didymocarpus oreocharis* Hance.

Leaf blade oblong to ovate, 5.5–14 × 3–8 cm; lateral veins less prominent.

• Rocks; 200–1400 m. Guangdong, Guangxi, SW Hunan, SE Jiangxi.

**24b. *Oreocharis benthamii* var. *reticulata*** Dunn, J. Linn. Soc., Bot. 38: 362. 1908.

石上莲 shi shang lian

Leaf blade ovate-orbicular, 3.9–8 × 2.9–5 cm; lateral veins more prominent.

• Rocks of hilly regions; 300–1000 m. Guangdong, Guangxi.

*Oreocharis rhytidophylla* C. Y. Wu ex H. W. Li (Bull. Bot. Res., Harbin 3(2): 9. 1983) is similar to *O. benthamii* var. *reticulata* and differs in having adaxially glabrous, dentate-crenate leaf blades.

Because only one specimen without flowers is known, it cannot be included in the key and its systematic position is uncertain.

**25. *Oreocharis bodinieri*** H. Léveillé, Bull. Acad. Int. Géogr. Bot. 25: 40. 1915.

毛药马铃薯苔 mao yao ma ling ju tai

*Dasydesmus bodinieri* (H. Léveillé) Craib.

Petiole to 5 cm, densely brown villous; leaf blade broadly ovate to narrowly ovate, often oblique, 3–9 × 2.2–6.5 cm, appressed pubescent, abaxially densely brown villous along veins, base oblique, cordate to rounded, margin double dentate to serrate, apex acute; lateral veins 5–7 on each side of midrib, distinct. Cymes 3–10-flowered; peduncle 9–15 cm, light brown villous; bracts 2, narrowly lanceolate, 5–10 × 1–1.5 mm, pubescent, margin entire. Pedicel 0.4–1.7 cm. Calyx segments narrowly triangular to narrowly lanceolate, 6–12 mm, margin entire or sparsely dentate to serrate. Corolla yellow, 1.5–2.3 cm, outside pubescent; tube nearly cylindrical, gradually slightly ampliate from base to mouth, 1.6–1.9 cm × 4–6 mm; limb slightly 2-lipped; adaxial lip 2-lobed from near middle, lobes 1.5–3 × 2–2.2 mm; abaxial lip lobes 3–5 × 3–3.5 mm. Stamens adnate to corolla 2–5.5 mm above base, sometimes slightly exserted, 1.5–1.8 cm; filaments slender, sparsely pubescent, villous basally; anthers oblong, 2-loculed, dehiscing longitudinally, connective sparsely pubescent to pubescent; staminode 1, ca. 1 cm. Disc ca. 4 mm, deeply 5-lobed to 5-sect from base. Pistil 1.6–2.3 cm, glabrous. Stigma 1, disc-shaped. Fruit unknown. Fl. Aug–Oct.

• Shady and damp rocks; 1400–3100 m. S Sichuan, NE Yunnan.

**26. *Oreocharis tubicella*** Franchet, Bull. Mus. Hist. Nat. (Paris) 5: 249. 1899.

管花马铃薯苔 guan hua ma ling ju tai

Petiole to 6.5 cm, densely brown villous; leaf blade oblique, narrowly to broadly ovate, 3.5–9(–15) × 2–5(–7.5) cm, appressed pubescent, abaxially densely brown villous along veins, base oblique, cordate to rounded, margin coarsely serrate to dentate, sometimes double, apex acute to rounded; lateral veins 4–8 on each side of midrib, distinct. Cymes 1–3(–7)-flowered; peduncle 2.5–10 cm, brown villous; bracts 2, lanceolate to linear, 2–5 × ca. 1 mm, pubescent to brown villous, margin entire. Pedicel 4–15 mm. Calyx segments lanceolate to narrowly triangular, 4–7 mm, margin entire or sparsely dentate to serrate. Corolla yellow, 1.8–2.5 cm, outside pubescent; tube nearly cylindrical, gradually slightly ampliate from base to mouth, 1.3–2.1 cm × 4–6 mm; limb 2-lipped to slightly 2-lipped; adaxial lip 2-lobed from near middle, lobes 1–2 × 1.5–2 mm; abaxial lip lobes 4–5 × 2–3 mm. Stamens adnate to corolla 4–5 mm above base, 1.3–1.5 cm; filaments slender, sparsely pubescent, villous basally; anthers broadly oblong, 2-loculed, dehiscing longitudinally, connective sparsely pubescent; staminode 1, ca. 7 mm. Disc 2–3 mm, deeply 5-lobed to 5-

sect from base. Pistil 1.6–1.9 cm, glabrous. Stigma 1, disc-shaped. Capsule 2.6–3 cm. Fl. Aug–Sep.

• Shady and damp rocks near roads; ca. 1300 m. SW Sichuan, Yunnan (Yanjin Xian).

**27. *Oreocharis flavida*** Merrill, Philipp. J. Sci. 21: 354. 1922.

黄花马铃薯苔 huang hua ma ling ju tai

Petiole to 10 cm, densely brown woolly; leaf blade ovate to broadly ovate, rarely elliptic or obovate, 4–10 × 2–7.2 cm, adaxially densely pubescent, abaxially densely brown woolly, more densely along veins, base cordate to rounded, margin nearly entire to shallowly crenate, apex rounded; lateral veins 4–7 on each side of midrib, distinct. Cymes 3–7-flowered; peduncle 6–23 cm, densely pale brown woolly, glabrescent; bracts 2(or 3), lanceolate to triangular, ca. 4–7 × 1–2 mm, sericeous to glabrescent, margin entire. Pedicel 1–2.5 cm. Calyx segments lanceolate, 4–6 mm, margin entire. Corolla pale yellow to orange-yellow, 1.5–1.7 cm, outside sparsely pubescent; tube campanulate, gradually ampliate from base to apex, 1–1.2 cm × 7–8 mm; limb slightly 2-lipped; adaxial lip 2-lobed from near middle, all lobes 3–6 × 3–5 mm. Stamens adnate to corolla 1–5 mm above base, 4–5.5 mm; filaments slender, glabrous; anthers horseshoe-shaped, 1-loculed, dehiscing transversely; staminode 1, ca. 3.2 mm. Disc ca. 2 mm, subentire. Pistil ca. 7 mm, glabrous to sparsely puberulent. Stigmas 2, lobes suborbicular. Capsule 1.5–3(–4) cm × 2–3 mm. Fl. Oct–Dec, fr. Nov–Dec.

• Under forests on slopes; 1000–1900 m. Hainan.

