

**40. PARABOEA** (C. B. Clarke) Ridley, J. Straits Branch Roy. Asiat. Soc. 43: 4, 63. 1905.

蛛毛苣苔属 *zhu mao ju tai shu*

*Didymocarpus* Wallich sect. *Paraboea* C. B. Clarke in A. & C. de Candolle, Monogr. Phan. 5: 105. 1883;  
*Buxiphyllum* W. T. Wang & C. Z. Gao; *Chlamydoboea* Stapf.

Herbs, rarely subshrubs, perennial, epipetric or terrestrial, rhizomatous, stemmed or stemless. Leaves few to many, basal, clustered at stem apex, or spread along stem and opposite, rarely spirally arranged, equal to subequal in a pair; leaf blade adaxially woolly to glabrous, abaxially woolly, pannose, or velutinous, hairs dense, interwoven, usually branched at least near base, base attenuate to cuneate, rarely rounded to peltate-auriculate. Inflorescences cymes, sometimes umbel-like, corymbiform, or paniculate, lax, rarely dense, axillary or in terminal panicles, 1- to many flowered; bracts 1–3, opposite. Calyx actinomorphic, rarely slightly zygomorphic, 5-sect from base or from near base, rarely 2-lipped; segments equal. Corolla white, blue, or purple, zygomorphic, inside glabrous to glandular puberulent; tube oblique, campanulate, not swollen, longer than to occasionally nearly equalling limb, 2–13 mm in diam.; limb ± 2-lipped; adaxial lip 2-lobed; usually slightly shorter, rarely  $1/4 \times$  length to slightly longer than abaxial lip; abaxial lip 3-lobed, lobes equal or central lobe longer, apex rounded. Stamens 2, adnate to abaxial side of corolla tube near base, included; anthers dorsifixed, coherent, thecae divaricate, confluent at apex, dehiscing longitudinally; connective not projecting; staminodes 1–3, seldom absent, adnate to adaxial side of corolla tube. Disc inconspicuous. Ovary narrowly ovoid to oblong, rarely conical, 1-loculed; placentas 2, parietal, projecting inward, 2-cleft. Stigma 1, terminal, capitate, seldom subligulate, undivided. Capsule straight in relation to pedicel, linear to narrowly oblong or lanceolate, much surpassing calyx, dehiscing loculicidally to base; valves 4, spirally twisted, seldom straight. Seeds unappendaged.

About 87 species: Bhutan, China, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam; 18 species in China.

1a. Capsule not twisted (unknown in *P. clavisekala* and *P. tribracteata*).

2a. Subshrubs; peduncle 2–2.7 cm; bracts 1 or 2, ca. 0.3 mm; calyx segments 1–1.2 mm; corolla 4–5 mm, outside sparsely glandular puberulent; leaf blade  $0.9\text{--}2.5 \times 0.4\text{--}1$  cm ..... 1. *P. velutina*

2b. Herbs, rarely subshrubs; peduncle 2.5–21 cm; bracts 2(or 3), 2–25 mm; calyx segments 2–6 mm; corolla 9–18 mm, outside glabrous; leaf blade  $1\text{--}33.5 \times 0.3\text{--}10$  cm.

3a. Stems 17–50 cm; leaves opposite, spread along stem; bracts 7–25 mm ..... 9. *P. clavisekala*

3b. Stems to 10 cm or absent; leaves spiral near stem apex or basal; bracts 1–13 mm.

4a. Leaf blade base peltate-auriculate or peltate and rounded to cuneate, rarely merely cordate to cuneate; bracts 1–3(–4) mm.

5a. Leaf blade  $6\text{--}33.5 \times 3\text{--}14.3$  cm; lateral veins 11–18 on each side of midrib; petiole 1–9 cm; calyx 2-lipped, adaxial lip 2-toothed, teeth ca. 0.7 mm, abaxial lip 3-sect from base, segments ca. 2 mm; staminodes 2, ca. 2 mm; ovary ca. 5 mm ..... 2. *P. peltifolia*

5b. Leaf blade  $1\text{--}5 \times 0.3\text{--}2.2$  cm; lateral veins 4–6 on each side of midrib; petiole 0.3–0.9 cm; calyx 5-sect from base, segments lanceolate, 2–3.5 mm; staminode 1, ca. 0.2 mm; ovary ca. 1.5 mm ..... 3. *P. filipes*

4b. Leaf blade base attenuate to broadly cuneate, sometimes ultimately rounded; bracts 5–13 mm.

6a. Leaf blade narrowly oblanceolate, 1.7–2.4 cm wide; lateral veins 3 or 4 on each side of midrib; bracts and calyx glabrous outside; corolla red; bracts 3; staminodes 2 ..... 16. *P. tribracteata*

6b. Leaf blade oblanceolate or obovate, (1.5–)2.8–8.8 cm wide; lateral veins 5–11 on each side of midrib; bracts and calyx pannose or woolly outside; corolla purplish or purple-blue; bracts 2(or 3); staminodes 3.

7a. Plants stemless; leaf blade abaxially densely brownish woolly, veins margin rust-brown woolly; peduncle 2.5–9 cm, tomentose; filaments ca. 2 mm, glandular puberulent ..... 4. *P. nutans*

7b. Plants stemless or stems to 10 cm; leaf blade abaxially pannose; peduncle 8–21 cm, pannose to sparsely pannose, glabrescent; filaments 6–7 mm, glabrous ..... 15. *P. dictyoneura*

1b. Capsule spirally twisted.

8a. Leaves opposite, spread along stem.

- 9a. Bracts early deciduous or to 10 mm; corolla tube 3–5 mm; filaments 1.5–3 mm, anthers 2–2.5 mm; ovary 2.5–3 mm.
- 10a. Cymes appearing terminal; peduncle 5–13 cm; capsule 2–2.5 cm; leaf blade 4–14 × 2–5 cm, adaxially grayish woolly, glabrescent ..... 5. *P. swinhoei*
- 10b. Cymes axillary; peduncle 4–5 cm; capsule 0.8–1.5 cm; leaf blade 2–7 × 1–3 cm, adaxially densely pubescent ..... 6. *P. changjiangensis*
- 9b. Bracts (7–)10–50 mm; corolla tube 5–13 mm; filaments 6–10 mm, anthers 3–4 mm; ovary 4–6 mm.
- 11a. Calyx segments oblong-spatulate to flabellate or obovate, 7–15 × 4–7 mm; stems to 1 m; peduncle 2.5–6(–8) cm, brown pannose ..... 7. *P. sinensis*
- 11b. Calyx segments lanceolate or narrowly oblong to narrowly triangular, 1.8–3 × 0.5–1 mm; stems to 40 cm; peduncle 5–20 cm, cobwebby-woolly, glabrescent.
- 12a. Bracts narrowly ovate to obovate, 3–5 × 1–2 cm; filaments glabrous to glandular puberulent; leaf blade apex obtuse to acute ..... 11. *P. glutinosa*
- 12b. Bracts lanceolate to ovate, 0.7–3 × 0.4–1.3 cm; filaments bearded; leaf blade apex acuminate to acute ..... 12. *P. martinii*
- 8b. Leaves basal or mostly crowded at stem apex.
- 13a. Corolla 4.5–5.2 mm; ovary and capsule mealy; capsule 0.6–1.2 cm ..... 13. *P. thirionii*
- 13b. Corolla 8–25 mm; ovary sparsely glandular puberulent or puberulent to glabrous (unknown in *P. paramartinii*); capsule glabrous, 1.5–6.5 cm (unknown in *P. clavisepala* and *P. tribracteata*).
- 14a. Stems to 50 cm; petiole (0.5–)1–10 cm; leaf blade base decurrent to subcordate, sometimes oblique; filaments glandular puberulent to bearded, rarely glabrous (unknown in *P. paramartinii*).
- 15a. Peduncle 3–4 cm; bracts 2 at apex of peduncle, another pair at first branch 10. *P. paramartinii*
- 15b. Peduncle 4–20 cm; bracts 2.
- 16a. Leaf blade adaxially densely puberulent to pubescent, not cobwebby-woolly; bracts 7–12 × 4–11 mm ..... 8. *P. rufescens*
- 16b. Leaf blade adaxially cobwebby-woolly, glabrescent, sometimes also strigose; bracts 7–50 × 2–20 mm.
- 17a. Leaf blade abaxially densely grayish woolly; calyx segments spatulate to suboblong, 3–4 mm ..... 9. *P. clavisepala*
- 17b. Leaf blade abaxially brown pannose; calyx segments lanceolate or narrowly oblong to narrowly triangular, 1.8–3 mm.
- 18a. Bracts narrowly ovate to obovate, 3–5 × 1–2 cm; filaments glabrous to glandular puberulent; leaf blade apex obtuse to acute ..... 11. *P. glutinosa*
- 18b. Bracts lanceolate to ovate, 0.7–3 × 0.4–1.3 cm; filaments bearded; leaf blade apex acuminate to acute ..... 12. *P. martinii*
- 14b. Plants stemless or stems to 15 cm; petiole absent to 4.5 cm; leaf blade base attenuate to cuneate, sometimes ultimately rounded; filaments glabrous.
- 19a. Leaf blade narrowly oblanceolate, 1.7–2.4 cm wide; lateral veins 3 or 4 on each side of midrib; bracts 3, outside glabrous; corolla red ..... 16. *P. tribracteata*
- 19b. Leaf blade oblanceolate to obovate or spatulate, rarely lanceolate or ovate, 1.2–8 cm wide; lateral veins 4–10 on each side of midrib; bracts 2(or 3), outside woolly or pannose; corolla bluish to deep purple.
- 20a. Leaf blade leathery, adaxially glabrous to glabrescent; corolla glandular puberulent outside; ovary puberulent; peduncle 12–30 cm; pedicel 1–4 cm ..... 18. *P. hainanensis*

- 20b. Leaf blade thick papery, adaxially woolly, glabrescent; corolla glabrous outside; ovary glabrous; peduncle 3–21 cm; pedicel 0.5–2 cm.  
 21a. Bracts ovate to elliptic, ca. 1.5 mm; corolla adaxial lip lobes 0.5–2 mm; capsule 1.5–2.5 cm ..... 14. *P. neurophylla*  
 21b. Bracts linear to subulate or lanceolate to narrowly oblong, 2–13 mm; corolla adaxial lip lobes 3–6 mm; capsule 1.5–6 cm.  
 22a. Leaf blade oblanceolate, rarely obovate; bracts 5–13 mm; calyx 3–6 mm, outside woolly; staminodes 3 ..... 15. *P. dictyoneura*  
 22b. Leaf blade spatulate, rarely lanceolate, obovate, or ovate, bracts 2–5 mm; calyx 2–3 mm, outside puberulent; staminodes 2 ..... 17. *P. crassifolia*

**1. *Paraboea velutina*** (W. T. Wang & C. Z. Gao) B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 41: 440. 1984.

密叶蛛毛苣苔 mi ye zhu mao ju tai

*Buxiphyllum velutinum* W. T. Wang & C. Z. Gao in W. T. Wang, Bull. Bot. Res., Harbin 1(3): 37. 1981.

Subshrubs. Stems ca. 7 cm, brown to grayish velutinous. Leaves spirally arranged, crowded near branch apex; petiole 1–2(–4) mm; leaf blade oblanceolate, seldom spatulate, 0.9–2.5 cm × 4–10 mm, papery, adaxially cobwebby-woolly, glabrescent, abaxially grayish velutinous, base attenuate, margin indistinctly repand-crenulate, apex obtuse to rounded; lateral veins 4–7 on each side of midrib. Cymes axillary in pairs; peduncle 2–2.7 cm, glandular puberulent; bracts 1 or 2, subulate, ca. 0.3 mm, outside puberulent. Pedicel 3–5 mm. Calyx 5-sect from base; segments narrowly lanceolate, 1–1.2 × ca. 0.3 mm, outside glandular puberulent. Corolla white, 4–5 mm, outside sparsely glandular puberulent; tube 3–3.5 mm; adaxial lip ca. 2 mm, lobes ca. 1.5 × 1 mm; abaxial lip ca. 1.8 mm, lobes ca. 1.5 × 2.3 mm. Filaments ca. 1.4 mm, glabrous; anthers ca. 1.1 mm; staminodes 3, ca. 0.5 mm. Pistil sparsely glandular puberulent; ovary ca. 1.2 mm. Style ca. 2.8 mm. Capsule not twisted, 7–8 mm, glabrescent. Fl. Jun.

• Limestone rocks and cliffs among caves. Guangxi (Fengshan Xian).

**2. *Paraboea peltifolia*** D. Fang & L. Zeng in D. Fang, D. H. Qin, W. Y. Rao, & L. Zeng, Acta Phytotax. Sin. 33: 606. 1995.

钝叶蛛毛苣苔 dun ye zhu mao ju tai

Herbs. Stems 2–7 cm. Leaves spirally arranged; petiole 1–9 cm; leaf blade obovate to oblanceolate, spatulate, or subpandurate, 6–33.5 × 3–14.3 cm, papery, adaxially cobwebby-woolly, abaxially densely brownish woolly, base peltate-auriculate, rarely cordate to cuneate, margin irregularly crenate-serrate, apex obtuse to rounded; lateral veins 11–18 on each side of midrib. Cymes axillary; peduncle 4–6 cm, densely brownish woolly; bracts 2, lanceolate-triangular, 2–3(–4) mm, outside densely brownish woolly. Pedicel ca. 6 mm.

Calyx ca. 3.5 mm, 2-lipped; adaxial lip 2-toothed, teeth ca. 0.7 mm, abaxial lip 3-sect from base, segments ca. 2 × 1.5 mm, outside densely woolly. Corolla white, with lavender on abaxial lateral lobes, ca. 1.4 cm, outside glabrous; tube ca. 7 mm; adaxial lip ca. 5 mm; abaxial lip ca. 7 mm, lobes ca. 7 mm wide. Filaments ca. 3 mm, glabrous; anthers ca. 3 mm; staminodes 2, ca. 2 mm. Pistil lilac puberulent, densely so near base, sparsely above; ovary ca. 5 mm. Style ca. 7 mm. Capsule not twisted, 1–3.6 cm, glabrescent.

• Limestone; 300–400 m. Guangxi (Mashan Xian).

**3. *Paraboea filipes*** (Hance) B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 41: 429. 1984.

丝梗蛛毛苣苔 si geng zhu mao ju tai

?*Oreocharis filipes* Hance, J. Bot. 21: 166. 1883.

Herbs, stemless. Leaves basal; petiole 3–9 mm; leaf blade obovate to obovate-oblong, elliptic, or spatulate, 1–5 × 0.3–2.2 cm, papery, adaxially glabrescent to sparsely grayish woolly, glabrescent, abaxially brownish pannose, base slightly peltate and rounded to cuneate, margin nearly entire, involute, apex obtuse to rounded; lateral veins 4–6 on each side of midrib.

Cymes axillary; peduncle 3–7 cm, glabrescent; bracts 2, narrowly oblong-ovate, ca. 1 mm, outside glabrous.

Pedicel 1.5–3.5 cm. Calyx 5-sect from base; segments lanceolate, 2–3.5 × ca. 0.6 mm, outside glabrescent.

Corolla purplish, ca. 1 cm, outside glabrous; tube ca. 5 mm; adaxial lip lobes ca. 3.5 mm; abaxial lip lobes 2.5–3.5 mm. Filaments ca. 2.5 mm, glabrous; anthers ca. 1.9 mm; staminode 1, ca. 0.2 mm. Pistil glabrous; ovary ca. 1.5 mm. Style ca. 4.5 mm. Capsule not twisted, 5–11 mm, glabrous. Fl. Sep–Oct, fr. Oct.

• Limestone cliffs; 100–300 m. Guangdong (Lian Xian).

**4. *Paraboea nutans*** D. Fang & D. H. Qin in D. Fang, D. H. Qin, W. Y. Rao, & L. Zeng, Acta Phytotax. Sin. 33: 604. 1995.

垂花蛛毛苣苔 chui hua zhu mao ju tai

Herbs, stemless. Leaves basal; petiole (absent or) 0.5–3 cm; leaf blade obovate, (2.7–)4–16.5 × (1.5–)2.8–8.8 cm, thin leathery, adaxially cobwebby-woolly, abaxially densely brownish woolly, margin rust-brown woolly along veins, base attenuate to broadly cuneate, margin crenate to subentire, apex rounded to obtuse;

lateral veins 7–11 on each side of midrib. Cymes axillary; peduncle 2.5–9 cm, brownish woolly; bracts 2, oblong, 5–8 mm, outside tomentose. Pedicel 6–11 mm. Calyx 5-sect from base; segments oblong or lanceolate-oblong, 5–6 × 2.5–3 mm, outside sparsely brownish woolly. Corolla purple-blue, 1–1.1 cm, outside glabrous; tube ca. 7 mm; adaxial lip ca. 3 mm; abaxial lip ca. 4 mm. Filaments ca. 2 mm, glandular puberulent; anthers ca. 3 mm; staminodes 3, 1–1.5 mm. Pistil glabrous; ovary ca. 5 mm. Style 6–7 mm. Capsule not twisted, 1–2.5 cm, glabrous.

• Limestone; 900–1200 m. Guangxi (Napo Xian).

**5. *Paraboea swinhoei*** (Hance) B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 41: 439. 1984.

锥序蛛毛苣苔 *zhui xu zhu mao ju tai*

*Boea swinhoei* Hance, Ann. Sci. Nat. Bot., sér. 5, 5: 231. 1866.

Subshrubs. Stems 30–60 cm, densely brownish woolly, glabrescent. Leaves opposite, spread along stem; petiole 1–5 cm; leaf blade narrowly elliptic to elliptic-lanceolate, narrowly ovate, or narrowly obovate, 4–14 × 2–5 cm, papery, adaxially grayish woolly, glabrescent, abaxially brownish pannose, base sometimes oblique, cuneate to subcordate, margin subentire to serrate, apex abruptly acuminate to rounded; lateral veins 5–11 on each side of midrib. Cymes appearing terminal; peduncle 5–13 cm, brownish woolly; bracts 2, ovate-oblong, 3–10 mm, outside brownish pannose. Pedicel 5–8 mm. Calyx 1.5–2.5 mm, 5-sect from near base; segments narrowly oblong, 1.2–2.3 × 0.5–1 mm, outside pannose to glabrous. Corolla white, 4–6 mm, outside glabrous; tube 3–4 mm; adaxial lip 1.5–3 mm, lobes 1–2.5 × ca. 3.5 mm; abaxial lip 3–3.5 mm, lobes 2–2.5 × 2.5–3.5 mm. Filaments 2–3 mm, glabrous; anthers ca. 2 mm; staminodes 2 or 3, ca. 1.5 mm. Pistil glabrous; ovary 2.5–3 mm. Style 3–4 mm. Capsule spirally twisted, 2–2.5 cm, glabrous. Fl. Jun–Sep, Feb, fr. Jul–Sep.

Shady and damp rocks under forests; 300–1000 m. Guangxi, S Guizhou, Taiwan [Philippines, Thailand, Vietnam].

**6. *Paraboea changjiangensis*** F. W. Xing & Z. X. Li, Acta Bot. Yunnan. 15: 121. 1993.

昌江蛛毛苣苔 *chang jiang zhu mao ju tai*

Subshrubs. Stems 9–40 cm, densely gray woolly. Leaves opposite, spread along stem; petiole 1–2.5 cm; leaf blade elliptic to oblong, 2–7 × 1–3 cm, thick papery, adaxially densely pubescent, abaxially densely gray woolly, base cuneate, margin dentate, apex obtuse; lateral veins 5–7 (or 8) on each side of midrib. Cymes axillary; peduncle 4–5 cm, densely puberulent when young, glabrescent; bracts early deciduous. Pedicel 0.5–1 cm. Calyx 5-sect from base; segments lanceolate, 1.5–2 × 0.5–1 mm, outside puberulent. Corolla pale purple; tube 3–5 mm; adaxial lip lobes 3–3.5 mm; abaxial lip central lobe ca. 5 mm, lateral lobes ca. 3 × 2.6 mm. Filaments 1.5–2 mm; anthers 2–2.5 mm;

staminodes 2. Pistil glabrous; ovary ca. 3 mm. Style ca. 6 mm. Capsule spirally twisted, 0.8–1.5 cm, glabrous. Fl. Jul, fr. Sep.

• Limestone hills; ca. 600 m. Hainan (Changjiang Xian).

**7. *Paraboea sinensis*** (Oliver) B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 38: 471. 1980.

蛛毛苣苔 *zhu mao ju tai*

*Phylloboea sinensis* Oliver, Hooker's Icon. Pl. 18: pl. 1721. 1887; *Boea chaffanjonii* H. Léveillé; *Chlamydoboea sinensis* (Oliver) Stapf; *C. sinensis* f. *macra* Stapf; *C. sinensis* f. *macrophylla* Stapf; *Paraboea sinensis* f. *macra* (Stapf) C. Y. Wu ex H. W. Li; *P. sinensis* f. *macrophylla* (Stapf) C. Y. Wu ex H. W. Li.

Subshrubs. Stems to 1 m, brown pannose, glabrescent. Leaves opposite, spread along stem; petiole 2–10 cm; leaf blade narrowly elliptic or oblong to ovate or obovate, 5.5–26 × 2–10 cm, papery, adaxially grayish to brown pannose to puberulent, subglabrescent, abaxially brownish pannose, base sometimes oblique, cuneate to subcordate, margin subentire to serrulate, apex acute to acuminate; lateral veins 10–15 on each side of midrib. Cymes axillary, near branch apices; peduncle 2.5–6(–8) cm, brown pannose; bracts 2, suborbicular to broadly ovate, 1–1.5 × 0.8–1.2 cm, outside glandular puberulent to glabrous. Pedicel 5–12 mm. Calyx 5-sect from base or near base; segments oblong-spatulate to flabellate or obovate, 7–15 × 4–7 mm, outside glandular puberulent to glabrous. Corolla blue-purple to purple-red, 1.5–2 cm, outside glabrous; tube 1–1.3 cm; lobes 4–5 × ca. 5 mm. Filaments 6–9 mm, pubescent to glabrous; anthers ca. 4 mm; staminodes 1–3, 0.5–3 mm. Pistil glabrous; ovary 5–6 mm. Style 1.5–5 mm. Capsule spirally twisted, 2.5–5.6 cm, glabrous. Fl. May–Jul, fr. May–Nov.

Crevices of rocks or on cliffs in forests; 600–2500 m. SW Guangxi, Guizhou, W Hubei, SE Sichuan, SW and SE Yunnan [Myanmar, Thailand, Vietnam].

*Paraboea sinensis* varies geographically from SW to NE: the leaves gradually diminish in size, their shape varies from elliptic or narrowly elliptic to narrowly oblong, and the number of flowers per inflorescence gradually decreases.

**8. *Paraboea rufescens*** (Franchet) B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 38: 471. 1980.

锈色蛛毛苣苔 *xiu se zhu mao ju tai*

Subshrubs or herbs. Stems to 30 cm, brown pannose, glabrescent. Leaves opposite, mostly crowded near stem apex; petiole (0.5–)1–10 cm; leaf blade elliptic to obovate, ovate, or oblong, 3–20 × 1.5–10 cm, papery, adaxially densely puberulent to pubescent, abaxially densely rust-brown to gray pannose, base broadly cuneate to cordate, margin densely crenate-serrate, apex acute to rounded; lateral veins 5–10 on each side of midrib. Cymes axillary; peduncle 4–12 cm, rust-brown

pannose; bracts 2, ovate to suborbicular, 7–12 × 4–11 mm, outside pannose. Pedicel 5–10 mm. Calyx 5-sect from base; segments narrowly oblong to lanceolate or linear, 3–4 × 0.5–1 mm, outside pannose, glabrescent. Corolla white to purplish, seldom purple-red, 1–1.3 cm, outside glabrous to sparsely glandular puberulent; tube 6–8 mm; adaxial lip ca. 3.5 mm, lobes ca. 3 × 4–5 mm; abaxial lip ca. 6.5 mm, lobes 3–4 × 4–5 mm. Filaments 3–5 mm, glandular puberulent; anthers 3–4 mm; staminodes 2, 1–1.5 mm. Pistil sparsely glandular puberulent to glabrous; ovary ca. 6 mm. Style ca. 4 mm. Capsule spirally twisted, 2.5–5 cm, glabrous. Fl. Jun–Sep, fr. Jun–Oct.

On rocks of limestone hills and valley forests; 200–1500 m. Guangdong, SW Guangxi, S Guizhou, E and S Yunnan [Thailand, N Vietnam].

- 1a. Internodes to 1.5(–6) cm; leaves usually crowded near stem apex, leaf blade 3–10 × 1.5–5.5 cm ..... 8a. var. *rufescens*
- 1b. Internodes 3–10(–13) cm; leaves spaced along stem, leaf blade 5–20 × 3–10 cm 8b. var. *umbellata*

**8a. *Paraboea rufescens* var. *rufescens***

锈色蛛毛苣苔(原变种) xiu se zhu mao ju tai (yuan bian zhong)

*Boea rufescens* Franchet, Bull. Mens. Soc. Linn. Paris 1: 449. 1885; *B. rufescens* var. *seguini* (H. Léveillé & Vaniot) H. Léveillé; *Didymocarpus seguini* H. Léveillé & Vaniot; *Dorcoceras rufescens* (Franchet) Schlechter; *Phylloboea henryi* Duthie ex Beddome.

Internodes to 1.5(–6) cm. Leaves usually crowded near stem apex; leaf blade elliptic to obovate, ovate, or oblong, 3–10 × 1.5–5.5 cm. Peduncle 3–12 cm. Fl. Jun–Sep, fr. Jul–Oct.

Crevices of rocks of limestone hills; 700–1500 m. Guangdong, SW Guangxi, S Guizhou, E and S Yunnan [Thailand, Vietnam].

**8b. *Paraboea rufescens* var. *umbellata* (Drake) K. Y. Pan, Fl. Reipubl. Popularis Sin. 69: 467. 1990.**

伞花蛛毛苣苔 san hua zhu mao ju tai

*Boea umbellata* Drake, Bull. Soc. Philom. Paris, sér. 8, 2: 129. 1890; *Paraboea umbellata* (Drake) B. L. Burtt. Internodes 3–10(–13) cm. Leaves spread along stem; leaf blade ovate to obovate or oblong, 5–20 × 3–10 cm. Peduncle 5.5–13 cm. Fl. Jun–Jul, fr. Jun–Aug.

Rocks in valley forests; 200–1200 m. SW Guangxi [Vietnam].

**9. *Paraboea clavisepala* D. Fang & D. H. Qin in D. Fang, D. H. Qin, W. Y. Rao, & L. Zeng, Acta Phytotax. Sin. 33: 602. 1995.**

棒萼蛛毛苣苔 bang e zhu mao ju tai

Herbs. Stems 17–50 cm, woolly. Leaves opposite, mostly crowded near stem apex, some basal; petiole 5–11 mm; leaf blade oblong to narrowly elliptic, rarely ovate, 4.5–29 × 2–10 cm, papery, adaxially densely strigose and cobwebby-woolly, abaxially densely grayish woolly, base broadly cuneate to rounded, margin serrate, apex acute; lateral veins 11–14 on each

side of midrib. Cymes axillary, near branch apices; peduncle (4–)6–16 cm, woolly; bracts 2, ovate, 0.7–2.5 cm × 2.5–3 mm, outside woolly. Pedicel 4–10 mm. Calyx 5-sect from base; segments spatulate to suboblong, 3–4 × ca. 2 mm, outside glabrous. Corolla white, ca. 1.8 cm, outside glabrous; tube ca. 1 cm; adaxial lip ca. 6 mm; abaxial lip ca. 8 mm, lobes 7–8 mm wide. Filaments ca. 5 mm, glandular puberulent; anthers ca. 4 mm; staminodes 2, ca. 2 mm. Pistil glabrous; ovary ca. 6 mm. Style ca. 3 mm. Fruit unknown. Fl. Jul.

• Limestone; ca. 800 m. Guangxi (Napo Xian).

**10. *Paraboea paramartini* Z. R. Xu & B. L. Burtt, Edinburgh J. Bot. 48: 10. 1991.**

思茅蛛毛苣苔 si mao zhu mao ju tai

Subshrubs or herbs. Stems to 20 cm, pannose to woolly, glabrescent. Leaves opposite, mostly crowded near stem apex, some basal; petiole 2–13 cm; leaf blade ovate to oblong or elliptic, 10–26 × 6–12 cm, papery, adaxially glabrous to pubescent, abaxially puberulent to pannose, pannose-woolly along veins, base often oblique, broadly cuneate to subcordate, margin crenate-serrate, apex obtuse; lateral veins 10–15 on each side of midrib. Cymes axillary, near branch apices, flowers unknown; fruiting peduncle 3–4 cm, glabrescent; bracts 2 at apex of peduncle, another pair at first branch, lanceolate to ovate, 1.1–3 cm × 4–8 mm, outside pannose. Pedicel 0.4–2 cm. Calyx 5-sect from base; segments narrowly oblong, 2.5–3 × 0.5–1 mm, outside sparsely glandular puberulent, glabrescent. Capsule spirally twisted, 2–3.5 cm, glabrous. Fr. Oct.

Limestone cliffs in forests; ca. 1500 m. Yunnan (Simao Xian) [Thailand].

**11. *Paraboea glutinosa* (Handel-Mazzetti) K. Y. Pan in A. L. Weitzman et al., Novon 7: 431. 1998.**

白花蛛毛苣苔 bai hua zhu mao ju tai

*Boea glutinosa* Handel-Mazzetti, Sinensia 7: 620. 1936.

Subshrubs or herbs. Stems to 40 cm, gray-brown cobwebby-woolly. Leaves opposite, mostly crowded near stem apex or spread along stem; petiole 3–7 cm; leaf blade obovate to elliptic, ovate, or oblong, 7–18 × 3–9 cm, papery, adaxially cobwebby-woolly, glabrescent, abaxially brown pannose, base sometimes oblique, decurrent to rounded, margin serrate to subentire, apex obtuse to acute; lateral veins 10–14 on each side of midrib. Cymes terminal or axillary; peduncle 7–17 cm, cobwebby-woolly, glabrescent; bracts 2, narrowly ovate to obovate, 3–5 × 1–2 cm, outside pannose. Pedicel 1–2(–3) cm. Calyx 5-sect from base; segments lanceolate to narrowly triangular, 1.8–3 × 0.5–1 mm, outside glandular puberulent to glabrous. Corolla white to pink or lilac, 1–2 cm, outside glabrous; tube 5–10 mm; adaxial lip 2–3 mm, lobes 2–3 × ca. 3 mm; abaxial lip 2.5–4.5 mm, lobes ca. 2.5 × 3.5 mm.

Filaments 7–9 mm, glabrous to glandular puberulent; anthers 3–4 mm; staminodes 2, 1.2–2 mm. Pistil glabrous; ovary 4–5 mm. Style 3–4 mm. Capsule spirally twisted, 3.5–4.5 cm, glabrous. Fl. Jun–Aug, fr. Aug.

Rocks of slopes; 400–1400 m. NW Guangxi, Guizhou (Luodian Xian), Yunnan [Myanmar].

**12. *Paraboea martinii*** (H. Léveillé & Vaniot) B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 38: 470. 1980.

髯丝蛛毛苣苔 ran si zhu mao ju tai

*Didymocarpus martinii* H. Léveillé & Vaniot in H. Léveillé, Compt. Rend. Assoc. Franç. Avancem. Sci. 34: 426. 1906; *Boea martinii* (H. Léveillé & Vaniot) H. Léveillé; *Chirita martinii* H. Léveillé & Vaniot; *Paraboea barbatipes* K. Y. Pan.

Subshrubs or herbs. Stems to 30 cm, gray-brown cobwebby-woolly to pannose. Leaves opposite, mostly crowded near stem apex or spread along stem; petiole 2–10 cm; leaf blade elliptic to ovate or oblanceolate, 6–14 × 3–7.5 cm, papery, adaxially cobwebby-woolly, glabrescent, abaxially brown pannose, base sometimes oblique, cuneate to rounded, margin serrulate to crenulate, apex acuminate to acute; lateral veins 7–11 on each side of midrib. Cymes terminal or axillary; peduncle 5–20 cm, cobwebby-woolly, glabrescent; bracts 2, lanceolate to ovate, 0.7–3 cm × 4–13 mm, outside pannose. Pedicel 0.7–1.5(–2) cm. Calyx 5-sect from base; segments narrowly oblong to narrowly triangular, 2–3 × 0.5–1 mm, outside sparsely puberulent. Corolla purplish to blue, 1.5–2.5 cm, outside glabrous to puberulent; tube 7–10 mm; adaxial lobes ca. 3 × 4 mm; abaxial lip ca. 8 mm, lobes 2.5–6 mm. Filaments ca. 1 cm, bearded; anthers ca. 4 mm; staminodes 2, ca. 3 mm. Pistil glabrous; ovary 5–6 mm. Style 4–6 mm. Capsule spirally twisted, 2.5–6.5 cm, glabrous. Fl. May, fr. Jul–Aug.

• Limestone in forests; 400–1500 m. Guangxi (Napo Xian), Guizhou (Libo Xian), Yunnan (Xichou).

**13. *Paraboea thirionii*** (H. Léveillé) B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 38: 471. 1980.

小花蛛毛苣苔 xiao hua zhu mao ju tai

*Boea thirionii* H. Léveillé, Repert. Spec. Nov. Regni Veg. 11: 301. 1912.

Herbs, rarely subshrubs. Stems to 3 cm, brown pannose. Leaves basal, rarely opposite, mostly crowded near stem apex; petiole 1–12 cm; leaf blade ovate to elliptic or obovate, 4–12 × 2.5–9 cm, papery, adaxially sparsely pubescent to glabrescent, abaxially rust-brown pannose, base often oblique, cuneate to subcordate, margin serrate or serrate-crenate to repand, apex acute to rounded; lateral veins 6–15 on each side of midrib. Cymes axillary; peduncle 3.5–26 cm, rust-brown pannose, glabrescent; bracts 2, elliptic, 1–1.5 × ca. 1

mm, outside rust-brown woolly to pannose. Pedicel 2–10 mm. Calyx 5-sect from base; segments lanceolate, 1–3 × 0.3–1 mm, outside sparsely puberulent. Corolla white, 4.5–5.2 mm, outside sparsely puberulent; tube 1–3 mm; adaxial lip lobes 1.2–2.5 × ca. 3 mm; abaxial lip lobes 2–2.8 × ca. 3 mm. Filaments 1–3 mm, glabrous; anthers 1.8–2 mm; staminodes apparently absent. Ovary 2–2.5 mm; grayish mealy. Style 3–5 mm, glabrous. Capsule spirally twisted, 0.6–1.2 cm, mealy. Fl. Jul.

• Shady and damp rocks; ca. 300 m. Guangxi (Tian'e Xian), Guizhou (Luodian Xian).

*Paraboea thirionii* is similar to and sometimes treated as a synonym of *P. multiflora* (R. Brown) B. L. Burtt.

**14. *Paraboea neurophylla*** (Collet & Hemsley) B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 41: 434. 1984.

云南蛛毛苣苔 yun nan zhu mao ju tai

*Didymocarpus neurophyllus* Collet & Hemsley, J. Linn. Soc., Bot. 28: 102. 1891.

Herbs. Stemless or stems to 10 cm, pannose, glabrescent. Leaves basal or crowded near stem apex; petiole 0.5–4.5 cm; leaf blade oblanceolate to obovate, (2.5–)6–12 × 1.5–7 cm, thick papery, adaxially woolly, glabrescent, abaxially densely woolly to pannose, base narrowly cuneate, ultimately rounded, margin crenate, involute, apex rounded to acute; lateral veins 5 or 6 on each side of midrib. Cymes axillary; peduncle 6.5–13 cm, woolly, glabrescent; bracts 2, ovate to elliptic, ca. 1.5 × 0.5 mm, outside woolly. Pedicel 5–10 mm. Calyx 5-sect from base; segments linear to lanceolate, 2–5 × 0.5–1 mm, outside sparsely woolly. Corolla bluish, 1–1.2 cm, outside glabrous; tube 5–6 mm; adaxial lip 0.5–2 mm, lobes 0.5–2 × ca. 4 mm; abaxial lip 3–5 mm, lobes 2–3 × 3–3.5 mm. Filaments ca. 3 mm, glabrous; anthers 3–3.5 mm; staminodes 1–2, ca. 2 mm. Pistil glabrous; ovary 3.5–5 mm. Style 5–6 mm. Capsule spirally twisted, 1.5–2.5 cm, glabrous. Fl. May–Aug, Jan, fr. Jun–Sep.

Limestone, shady places near roads; ca. 2100 m. C Yunnan [N Myanmar].

**15. *Paraboea dictyoneura*** (Hance) B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 41: 427. 1984.

网脉蛛毛苣苔 wang mai zhu mao ju tai

*Boea dictyoneura* Hance, J. Bot. 21: 169. 1883; *B. hancei* C. B. Clarke.

Subshrubs or herbs, stemless or with stems to 10 cm, pannose, glabrescent. Leaves basal or crowded near stem apex; petiole (absent or) 1–4 cm; leaf blade oblanceolate, rarely obovate, 7–19 × 2–8 cm, thick papery, adaxially woolly, glabrescent, abaxially pannose, base attenuate to cuneate, sometimes ultimately rounded, margin irregularly serrate to dentate or subentire, involute, apex acute to rounded; lateral veins 5–10 on each side of midrib. Cymes axillary;

peduncle 8–21 cm, pannose to sparsely pannose, glabrescent; bracts 2(or 3), lanceolate to narrowly oblong, 5–13 × 2.5–3 mm, outside pannose. Pedicel 0.5–2 cm. Calyx 5-sect from base or near base; segments linear to narrowly triangular, 3–6 × 0.3–1 mm, outside woolly. Corolla purplish, 1.2–1.5 cm, outside glabrous; tube 6–7 mm; adaxial lip lobes 4.5–6 × ca. 5 mm; abaxial lip ca. 8 mm; abaxial lip lobes 3–6 × 6–8 mm. Filaments 6–7 mm, glabrous; anthers ca. 3.5 mm; staminodes 3, 2–4.5 mm. Pistil glabrous; ovary ca. 6 mm. Style ca. 4 mm. Capsule spirally twisted to nearly straight, 1.5–6 cm, glabrous. Fl. Jan–May, fr. May–Jun.

Rocks in forests; 100–800 m. NW Guangdong, Guangxi (Lingui Xian) [Thailand, Vietnam].

**16. *Paraboea tribracteata*** D. Fang & W. Y. Rao in D. Fang, D. H. Qin, W. Y. Rao, & L. Zeng, *Acta Phytotax. Sin.* 33: 607. 1995.

三苞蛛毛苣苔 san bao zhu mao ju tai

Herbs, stemless. Leaves basal, sessile; leaf blade narrowly oblanceolate, 9–13.5 × 1.7–2.4 cm, adaxially cobwebby-woolly, glabrescent, abaxially densely grayish woolly, base attenuate, margin serrulate, apex acute; lateral veins 3–4 on each side of midrib. Cymes axillary; peduncle 12–14 cm, glabrous, rarely tomentose near base; bracts 3, ovate, 6–7 × 2.2–3 mm, outside glabrous. Pedicel 4–10 mm. Calyx 5-sect from base; segments lanceolate to oblong, 3–4 × ca. 1.2 mm, outside glabrous. Corolla red, ca. 9 mm, outside glabrous; tube ca. 5 mm; adaxial lip ca. 3.5 mm; abaxial lip ca. 4 mm, lobes ca. 4 mm wide. Filaments 5–6 mm, glabrous; anthers ca. 4 mm; staminodes 2, ca. 3 mm. Pistil glabrous; ovary ca. 5 mm. Style ca. 3 mm. Fruit unknown. Fl. Jul.

• Limestone. Guizhou (Libo Xian).

**17. *Paraboea crassifolia*** (Hemsley) B. L. Burtt, *Notes Roy. Bot. Gard. Edinburgh* 41: 427. 1984.

厚叶蛛毛苣苔 hou ye zhu mao ju tai

*Boea crassifolia* Hemsley in F. B. Forbes & Hemsley, *J. Linn. Soc., Bot.* 26: 233. 1890; *Dorcoceras crassifolium* (Hemsley) Schlechter.

Herbs, rarely subshrubs, stemless or with stems to 15 cm, pannose, glabrescent. Leaves basal or crowded near stem apex, petiole (absent or) 0.5–2 cm; leaf blade spatulate, rarely lanceolate, obovate, or ovate, 3–16 × 1.5–7 cm, thick papery, adaxially grayish woolly, glabrescent, abaxially densely cobwebby-woolly to pannose, base attenuate to cuneate, margin crenate to dentate or subentire, often undulate, sometimes involute, apex rounded to acute; lateral veins 4–9 on each side of midrib. Cymes axillary; peduncle 3–12 cm, woolly to pannose, glabrescent; bracts 2, linear to subulate, 2–5 × ca. 0.5 mm, outside woolly. Pedicel 0.5–1.5 cm. Calyx 2–3 mm, 5-sect from near base; segments narrowly

triangular to linear, 1–2.5 × ca. 0.5 mm, outside puberulent. Corolla purplish, 1–1.4 cm, outside glabrous; tube 6–7 mm; adaxial lip ca. 4 mm, lobes 3–4 × ca. 5 mm; abaxial lip ca. 6 mm, lobes 3–5 × 4–6 mm. Filaments 3–7 mm, glabrous; anthers 2.5–3 mm; staminodes 2, 2–2.5 mm. Pistil glabrous; ovary 3–4 mm. Style 5.5–6 mm. Capsule spirally twisted, 2–4.5 cm, glabrous. Fl. Mar–Jul, fr. Sep.

• Stony cliffs; 700–3200 m. Guizhou, W Hubei, SE Sichuan, Yunnan.

**18. *Paraboea hainanensis*** (W. Y. Chun) B. L. Burtt, *Notes Roy. Bot. Gard. Edinburgh* 41: 429. 1984.

海南蛛毛苣苔 hai nan zhu mao ju tai

*Boea hainanensis* W. Y. Chun, *Fl. Hainan.* 3: 588. 1974.

Herbs, stemless or with stems to 5 cm, pannose, glabrescent. Leaves basal or crowded near stem apex; petiole to 1.5 cm; leaf blade oblanceolate to obovate, 5–18 × 1.2–6 cm, leathery, adaxially glabrous to glabrescent, abaxially brown cobwebby-woolly, base attenuate to cuneate, margin crenulate to serrate, often involute, apex rounded to acute; lateral veins 5–9 on each side of midrib. Cymes axillary; peduncle 12–30 cm, brown woolly, glabrescent; bracts 2(or 3), narrowly lanceolate to lanceolate, 3–10 × 0.5–1 mm, outside brown woolly. Pedicel 1–4 cm. Calyx 5-sect from base; segments lanceolate to ovate, 1.5–2 × ca. 0.5 mm, outside glandular puberulent to pubescent. Corolla bluish to deep purple, 0.8–1.2 cm, outside glandular puberulent; tube ca. 4 mm; adaxial lip lobes ca. 6 × 5 mm; abaxial lip ca. 1 cm, abaxial lip lobes 4–6 × ca. 5 mm. Filaments 4–6 mm, glabrous; anthers 2–3 mm; staminodes apparently absent or 1, minute. Ovary ca. 4 mm, puberulent. Style ca. 5 mm, glabrous. Capsule spirally twisted, 3–4.5 cm, glabrous. Fl. and fr. Jul–Sep.

• Shady and damp rocks under mixed forest; ca. 800 m. Hainan.

