

9. CAMPANULA Linnaeus, Sp. Pl. 1: 163. 1753.

风铃草属 feng ling cao shu

Hong Deyuan (洪德元); Thomas G. Lammers, Laura L. Klein

Neocodon Kolakovsky & Serdyukova.

Herbs, perennial, with long horizontal rhizomes or with short caudexes and thickened ± fleshy roots; less often annual. Basal leaves sometimes rosulate; cauline leaves all alternate. Flowers solitary and terminal, or in cymes; cymes paniculate or capitellate, later subtended by an involucre. Calyx adnate to ovary; lobes 5, sometimes with an appendage between lobes. Corolla campanulate, tubular-campanulate, or funnellform, sometimes subrotate, 5-lobed. Filaments dilated; anthers coherent or rarely connate. Disk absent. Ovary inferior, 3–5-locular. Capsules dehiscent by lateral, upper or lower pores, crowned by persistent calyx lobes. Seeds numerous, ellipsoid, smooth.

About 420 species: throughout the Arctic and N temperate regions, most abundant from the Mediterranean to the Caucasus; 22 species (11 endemic) in China.

- 1a. Capsule poricidal above middle; flowers solitary, terminal, or several terminal on main stems and branches; cauline leaves mostly toward base, upper cauline leaves sessile or nearly so, usually linear if present; basal leaves persistent at anthesis (2. *C.* subg. *Rapunculus*).
- 2a. Plants with horizontal rhizomes; stems simple; stems and leaves glabrous.
- 3a. Hypanthium narrowly cylindrical; calyx lobes filiform, longer than corolla 21. *C. aristata*
- 3b. Hypanthium obovoid or obconic; calyx lobes subulate or narrowly triangular, shorter than corolla.
- 4a. Plants 20–50 cm tall; middle cauline leaves longer than 2 cm; calyx lobes 5–9 mm; corolla 15–20 mm, cleft for ca. 1/2 its length 16. *C. stevenii*
- 4b. Plants 7–22 cm tall; middle cauline leaves shorter than 2 cm; calyx lobes 1.8–5 mm; corolla 4–11 mm, cleft for ca. 1/3 its length 22. *C. immodesta*
- 2b. Plants without horizontal rhizomes; stems simple or branched; stems and leaves variously pubescent.
- 5a. Flowers pendent.
- 6a. Plants 20–50 cm tall; calyx lobes 1–5.5 mm; corolla lobes as long as tube 17. *C. delavayi*
- 6b. Plants 6–33 cm tall; calyx lobes 3–12 mm; corolla lobes ca. 1/2 as long as tube 18. *C. crenulata*
- 5b. Flowers erect.
- 7a. Basal leaves cordate-reniform; stems slender but not filiform, hairy, lower half with cordate to ovate-lanceolate leaves; capsule 4–8 mm 19. *C. calcicola*
- 7b. Basal leaves cordate; stems filiform, glabrous or subglabrous, with mostly linear leaves; capsule 9–19 mm 20. *C. chrysosplenifolia*
- 1b. Capsule poricidal toward base; stems with numerous flowers, solitary or in various types of inflorescences; leaves many and evenly distributed on stems; basal leaves usually wilted at anthesis (1. *C.* subg. *Campanula*).
- 8a. Appendages between calyx lobes present, reflexed, setose on margins.
- 9a. Annuals, ca. 6 cm tall; corolla 6–8 mm, green 3. *C. gansuensis*
- 9b. Perennials, over 25 cm tall; corolla 9–65 mm, white, purple, or yellow.
- 10a. Corolla large, 3–6.5 cm, punctate 1. *C. punctata*
- 10b. Corolla smaller, narrowly campanulate, less than 1.5 cm, not punctate 2. *C. sibirica*
- 8b. Appendages between calyx lobes absent.
- 11a. Flowers in a head of 2 to several in axils of involucre bracts, several heads aggregated into a large compound head; leaf blades more than 4 cm, often up to 17 cm.
- 12a. Corolla lobes linear-lanceolate, longer than tube; plants ca. 10 cm tall 6. *C. austroxinjiangensis*
- 12b. Corolla lobes ovate, shorter than tube; plants 14–130 cm tall.
- 13a. Lower cauline leaves long petiolate; calyx lobes subulate 4. *C. glomerata*
- 13b. Lower cauline leaves shortly winged-petiolate; calyx lobes ligulate, rounded at apex ... 5. *C. glomeratoides*
- 11b. Flowers solitary or in a lax inflorescence; leaves usually much smaller, up to 6 cm.
- 14a. Leaves glabrous on both surfaces or hairy only on margins; corolla glabrous outside; calyx lobes linear or subulate, glabrous on both surfaces or sparsely ciliate.
- 15a. Leaves and calyx lobes hispidulous on margins; blades of cauline leaves obovate-elliptic or elliptic 7. *C. nakaoui*
- 15b. Leaves and calyx lobes glabrous throughout; blades of cauline leaves linear 8. *C. langsdorffiana*
- 14b. Leaves hairy on both surfaces; corolla ± hairy outside; calyx lobes hairy, narrowly triangular to subtriangular, rarely subulate-triangular (subulate only in *C. mekongensis*).
- 16a. Annual herbs; rosulate basal leaves sometimes present at anthesis; each branch with compound cymes 14. *C. dimorphantha*

- 16b. Perennial herbs; basal leaves often absent at anthesis; branches with a single cyme or solitary flower.
- 17a. Cauline leaves, at least lower ones, long petiolate; petiole 5–12 cm 9. *C. omeiensis*
- 17b. Cauline leaves sessile or shortly winged-petiolate.
- 18a. Calyx tube hairy only along veins; lateral branches with several flowers; calyx lobes subulate, sinus between lobes truncate-obtuse 15. *C. mekongensis*
- 18b. Calyx tube densely hairy; lateral branches with a solitary flower or single simple inflorescence; calyx lobes subulate-triangular to deltoid, overlapping, or sinus acute.
- 19a. Calyx lobes deltoid, with a pair of large teeth; stems long and prostrate; cauline leaves of lower half of stem wilted at anthesis, rest of leaves pannose abaxially, sessile, suborbicular 13. *C. yunnanensis*
- 19b. Calyx lobes subulate-triangular, rarely subdeltoid, with or without teeth; stems erect or diffuse; lower cauline leaves often present at anthesis; leaves sparsely hispid or densely pannose abaxially, elliptic, rhombic, or linear-elliptic.
- 20a. Style strongly exerted; anthers completely or partially connivent; corolla cleft more than halfway 12. *C. chinensis*
- 20b. Style included; anthers completely free; corolla cleft down to middle.
- 21a. Calyx lobes narrowly triangular to subdeltoid, toothed or not; leaves often hispid, less frequently pannose abaxially; stems single or several from one caudex, erect or ascending 10. *C. pallida*
- 21b. Calyx lobes subulate-triangular to narrowly triangular, rarely toothed; leaves densely pannose abaxially; stems usually numerous from one caudex, often diffuse, less often ascending 11. *C. cana*

1. Campanula subg. Campanula

风铃草亚属 feng ling cao ya shu

Basal leaves absent or wilted at anthesis; cauline leaves evenly distributed on stems, upper ones sessile or not, often relatively broad. Flowers numerous, in cymes aggregated into raceme-, spike-, or headlike inflorescences. Capsule poricidal toward base.

About 275 species: throughout the Arctic and N temperate regions of the Old World, extending south into Macronesia, tropical E Africa, the Arabian Peninsula, India, Indochina, and east into the Aleutian Islands; 15 species (seven endemic) in China.

1. Campanula punctata Lamarck, Encycl. 1: 586. 1785.

紫斑风铃草 zi ban feng ling cao

Campanula nobilis Lindley.

Plants perennial, setose throughout or rarely subglabrous. Rhizomes long, horizontal. Stems erect, robust, 20–100 cm tall, usually branched above. Basal leaves long petiolate; blade cordate or ovate; cauline leaves ovate, lanceolate, or triangular, base rounded or truncate, margin irregularly dentate, apex acute or acuminate; lower leaves winged-petiolate, upper ones sessile. Flowers terminal on top of main stems and branches, pendent. Calyx lobes narrowly triangular; reflexed appendages elliptic, triangular, ovate, or lanceolate. Corolla white, yellow, or pink, commonly purple- or red punctate, tubular-campanulate, 3–6.5 cm. Capsule broadly campanulate or obconic. Seeds gray-brown, oblong or elliptic, slightly compressed, ca. 1 mm, smooth. Fl. Jun–Sep, fr. Sep–Oct. $2n = 34$.

Forests, thickets, meadows; below 2300 m. E Gansu, Hebei, Heilongjiang, W Henan, W Hubei, Jilin, Liaoning, Nei Mongol, Shaanxi, Shanxi, NE Sichuan [Japan, Korea, Russia (Far East, Siberia); widely cultivated].

2. Campanula sibirica Linnaeus, Sp. Pl. 1: 236. 1753.

刺毛风铃草 ci mao feng ling cao

Plants perennial. Roots thickened, carrot-shaped, sometimes lignified. Stems erect, purplish, cylindrical, 20–70 cm tall, multi-branched; branches upright, slender, white hirsute. Basal and lower cauline leaves 5–8 × 1–3 cm, white hirsute, with long winged petiole; blade oblong or elliptic, sparsely crenate; upper cauline leaves sessile, ± amplexicaul, linear-lanceolate, entire. Flowers pendent in narrow terminal panicles on main stems and branches; pedicels 2–8 mm, longer than linear bracts. Hypanthium glabrous, obconic; calyx lobes linear-subulate, 3–4 mm, nearly 1 mm wide at base, margin setose; reflexed appendages ovate-oblong or ovate-lanceolate, slightly shorter than hypanthium, margin setose. Corolla pale blue-purple, sometimes nearly white, narrowly campanulate, 9–12 mm, inside sparsely pubescent; lobes ovate-deltoid, 1/3–1/2 as long as tube. Style equal to or slightly shorter than corolla; stigma 3-fid. Capsule obconic, ca. 4 × 3 mm. Seeds elliptic, ca. 1 mm. Fl. May–Jul. $2n = 34$.

Dry forests or meadows. Xinjiang (Altay Shan, Tian Shan) [Kazakhstan, Russia (European part, W Siberia); SW Asia (Turkey), Europe].

Campanula sibirica is divided into ten subspecies; the Chinese

plants are *C. sibirica* subsp. *sibirica*, which is also found in Kazakhstan, Russia, and Europe.

3. *Campanula gansuensis* L. Z. Wang & D. Y. Hong, Bot. Bull. Acad. Sin. 41: 159. 2000.

甘肃风铃草 gan su feng ling cao

Plants annual. Roots slender. Stems slender, 5–6 cm tall, simple, ± hairy. Leaves 2 or 3, alternate; blade triangular-ovate or rhombic-ovate, ca. 10 × 5–6 mm, base attenuate, margin sparsely and irregularly serrate, apex obtuse; petiole winged, ca. 0.5 cm. Flowers solitary, terminal on branches, pendent. Calyx lobes narrowly triangular or linear-triangular; reflexed appendages ovate. Corolla green, tubular-campanulate, 6–8 mm; lobes ca. 1/2 as long as tube. Filaments free, dilated at base, hairy; anthers ca. 3 mm. Ovary hemispherical; style up to 4 mm. Fl. Jul.

- Thickets by streams; ca. 1100 m. Gansu (Huixian).

4. *Campanula glomerata* Linnaeus, Sp. Pl. 1: 235. 1753.

北疆风铃草 bei jiang feng ling cao

Plants perennial. Stems erect, 0.2–1.3 m tall. Basal leaves long petiolate; blade ovate-lanceolate or ovate, 6–15 × 2–7 cm, base cordate, margin serrulate, apex acute; cauline leaf blade elliptic, narrowly ovate, or ovate-lanceolate, 4–10 × 0.7–4 cm, base truncate, rounded, or cuneate, margin serrulate, apex acute or acuminate; lower ones long petiolate, upper ones sessile. Flowers sessile, aggregated into a terminal compound involucrate capitulum, sometimes with additional simple capitula sessile in upper and median leaf axils; involucral bracts ovate-deltoid, that of first-blooming central flower smallest. Hypanthium glabrous or puberulent; calyx lobes subulate or linear-triangular, 7–13 × 2–3 mm. Corolla purple, blue-purple, or blue (rarely white), tubular-campanulate, 1.5–2.5 cm; lobes equaling tube. Capsule subglobose or obovoid-conical, ca. 4.5 mm. Seeds oblong, compressed, 1–1.5 mm. Fl. Jul–Sep, fr. Sep–Oct. 2n = 30, 34, 90.

Meadows, subalpine meadows, thickets, grassy slopes; below 2600 m. Heilongjiang, Jilin, Liaoning, Nei Mongol, Xinjiang [Japan (Kyushu), Kazakhstan, Korea, Mongolia, Russia (European part, Far East, Siberia); SW Asia (Turkey), Europe; widely cultivated; naturalized in North America].

Fifteen subspecies are recognized, three of which occur in China.

- 1a. Simple capitula present in leaf axils in addition to terminal compound capitulum; leaf blade 1.7–7 cm wide 4b. subsp. *speciosa*
- 1b. Simple capitula rarely present in leaf axils, most flowers in terminal compound capitulum; leaf blade 1–3.5 cm wide.
 - 2a. Plants 20–85 cm tall; leaves 4–13 cm; stems and leaves subglabrous to sparsely white hirsute 4a. subsp. *glomerata*
 - 2b. Plants 14–50 cm tall; leaves 5–8(–11) cm; stems and leaves glabrous or hirsute along main veins 4c. subsp. *daqingshanica*

4a. *Campanula glomerata* subsp. *glomerata*

北疆风铃草(原亚种) bei jiang feng ling cao (yuan ya zhong)

Plants 20–85 cm tall. Stems simple, stems and leaves subglabrous to sparsely white hirsute. Leaves 4–13 × 1.5–3.5 cm.

Meadows, subalpine meadows; 1300–2600 m. Xinjiang (Tian Shan and northward) [Kazakhstan, Russia (European part, Siberia); Europe; widely cultivated; naturalized in North America].

4b. *Campanula glomerata* subsp. *speciosa* (Sprengel) Domin, Preslia 13: 222. 1936.

聚花风铃草 ju hua feng ling cao

Campanula glomerata var. *speciosa* Sprengel, Syst. Veg. 1: 731. 1824, based on *C. speciosa* Hornemann, Hort. Bot. Hafn. 2: 957. 1815, not Gilibert (1782), nor Pourret (1788); *C. cephalotes* Fischer ex Schrank; *C. glomerata* subsp. *cephalotes* (Fischer ex Schrank) D. Y. Hong; *C. glomerata* var. *dahurica* Fischer ex Ker Gawler; *C. glomerata* var. *grandiflora* Herder (1872), nom. illeg. superfl., not Kuntze (1867); *C. glomerata* var. *salviifolia* Komarov; *C. glomerata* f. *speciosa* (Sprengel) Voss.

Plants 40–130 cm tall. Stems sometimes branched above; stems and leaves subglabrous or sparsely white hirsute, or densely white villous. Capitula numerous, many simple capitula present besides terminal compound capitula.

Meadows, thickets. Heilongjiang, Jilin, E Liaoning, NE Nei Mongol (Dong Ujimqin) [Japan (Kyushu), Korea, Mongolia, Russia (Far East, SE Siberia); widely cultivated].

4c. *Campanula glomerata* subsp. *daqingshanica* D. Y. Hong & Y. Z. Zhao, Fl. Reipubl. Popularis Sin. 73(2): 184. 1983.

大青山风铃草 da qing shan feng ling cao

Plants 14–50 cm tall. Stems subglabrous or sparsely hirsute only along ribs, rarely entirely sparsely hirsute. Leaves 5–8(–11) × 1–2.8 cm, hirsute only along main veins. Capitula several, often aggregated into terminal compound capitula, simple capitula rarely present.

- Grassy slopes; 1400–2000 m. SE Nei Mongol (Daqing Shan, Manhan Shan).

5. *Campanula glomeratoides* D. Y. Hong, Acta Phytotax. Sin. 18: 247. 1980.

头花风铃草 tou hua feng ling cao

Plants ?annual, white hispid throughout. Rhizomes unknown. Stems erect, robust, ca. 60 cm tall. Basal leaves shortly petiolate, caducous, blade lanceolate; lower cauline leaves winged-petiolate, blade oblanceolate or linear-oblong; middle and upper cauline leaves sessile, blade lanceolate or ovate-lanceolate, up to 9 × 1 cm, margin dentate. Flowers sessile, 2 to several in sessile capitula aggregated into a terminal involucrate compound capitulum; involucral bracts ovate-lanceolate to orbicular, forming a series continuous with upper cauline leaves, 1 or 2 in capitula with several flowers, but absent in capitula with only 2 flowers. Hypanthium obovoid or obconic; lobes ligulate, ca. 4 mm, apex obtuse. Corolla blue,

tubular-campanulate, ca. 1.5 cm. Filaments ca. 3 mm; anthers ca. 4 mm. Style slightly longer than corolla. Fruit unknown. Fl. Jul.

- Meadows; ca. 2700 m. Xizang (Bomi).

6. *Campanula austroxinjiangensis* Y. K. Yang, J. K. Wu & J. Z. Li, *Acta Phytotax. Sin.* 30: 92. 1992.

新疆风铃草 nan jiang feng ling cao

Plants perennial, ca. 10 cm tall. Roots carrot-shaped. Stems single, simple, sparsely puberulent. Basal leaves rosulate, blade elliptic, petiole 1–1.2 cm, winged; cauline leaves shortly petiolate, blade ovate or elliptic, 1–2.2 × 1.1–1.5 cm, both surfaces ± puberulent, base slightly ovate or subrounded, margin obtusely serrate, apex obtuse or acute. Flowers sessile in terminal and axillary capitula of 3–5 (rarely 1 or 2), terminal ones sessile, axillary ones ± pedunculate, both bractless. Calyx lobes linear-lanceolate, 7–9 × 1–1.2 mm, with hooked hairs along midvein and margin. Corolla blue, tubular-campanulate, ca. 2.7 × 7 mm; lobes linear-lanceolate, 12–14 × 4–5 mm, equaling tube, acuminate at apex. Stamens 5 or rarely 4; filaments dilated at base, 1–1.5 × 1–1.5 mm; anthers 10–13 × 1–1.2 mm. Ovary ovoid, 1.5–2 mm in diam.; style ca. 1.5 cm, included. Fl. Jul.

- Grassy slopes; ca. 2300 m. Xinjiang (Hejing).

7. *Campanula nakaoui* Kitamura, *Acta Phytotax. Geobot.* 15: 108. 1954.

藏南风铃草 zang nan feng ling cao

Plants perennial. Rhizome slender and long. Stems ascending or erect, usually dark purple, less frequently straw-colored, up to 35 cm, angular when dry, subglabrous or sparsely retrorsely hispid, sometimes branched. Middle cauline leaves largest, obovate-elliptic or elliptic, 12–35 × 4–12 mm, apex obtuse; lower cauline leaves gradually attenuate into short petiole; upper cauline leaves sessile; all leaves sparsely serrate, hispidulous near margins or along veins. Flowers solitary, terminal, pendulous. Hypanthium obconic, densely hirsute or granulate-glandular; calyx lobes subulate, 5–7 × ca. 1.5 mm, both sides glabrous, margin serrate and hispidulous-ciliate. Corolla blue or blue-purple, broadly campanulate, 14–20 mm, glabrous; lobes equaling or slightly longer than tube. Style ca. 1 cm; stigma 3-lobed. Fl. Jul.

Margins of *Pinus griffithii* forests; 2800–3400 m. Xizang (Gyirong) [Nepal].

8. *Campanula langsdorffiana* (A. Candolle) Fischer ex Trautvetter & C. A. Meyer in Middendorff, *Reise Sibir.* 1 (2, Lfg. 3): 60. 1856.

石生风铃草 shi sheng feng ling cao

Campanula linifolia Linnaeus var. *langsdorffiana* A. Candolle, *Monogr. Campan.* 279. 1830; *C. chinganensis* A. I. Baranov; *C. rotundifolia* Linnaeus subsp. *langsdorffiana* (A. Candolle) Vodopianova; *C. rotundifolia* var. *langsdorffiana* (A. Candolle) Britton.

Plants perennial, 10–40 cm tall. Roots carrot-shaped or cylindrical, up to 2 cm in diam. Stems several to many from a

caudex, slender, branched or simple, glabrous or sometimes hirsutulous at base. Basal leaves (if present) ovate or elliptic, base cordate, petiolate; cauline leaves sessile, filiform or linear, 45–70 × 1–3 mm. Flowers solitary or several, terminal, ± pendent. Hypanthium glabrous (rarely hirsutulous), obconic, ribbed; calyx lobes linear or subulate, 4–10 mm, sometimes almost equal to corolla in length, reflexed after anthesis. Corolla pale blue, campanulate, 10–20 mm, glabrous; lobes ca. 1/2 as long to ± as long as tube. Style included. Capsule obconic or campanulate, 5–8 mm. Seeds brown, oblong or elliptic, slightly compressed, ca. 1 mm, smooth. Fl. Jun–Aug. $2n = 34$.

Usually on rocks in forests, also in alpine belts. Heilongjiang, Jilin, Liaoning [Russia (Far East, S Siberia)].

This species is vicarious with *Campanula rotundifolia* Linnaeus of Europe, from which it differs in having fewer flowers and longer reflexed calyx lobes.

9. *Campanula omeiensis* (Z. Y. Zhu) D. Y. Hong & Z. Yu Li in Z. Yu Li, *Pl. Mt. Emei*, 484. 2007.

峨眉风铃草 e mei feng ling cao

Adenophora omeiensis Z. Y. Zhu, *Bull. Sichuan School Medic. Mater.* 22(2): 29. 1990.

Plants perennial, 50–65 cm tall. Roots carrot-shaped, 5–15 mm in diam. Stems simple, sparsely hirsute. Basal and lower cauline leaves with petiole 5–12 cm; upper cauline leaves shortly petiolate to sessile, blade adaxially green, ovate-triangular or ovate-lanceolate, 2.5–3.5 × 1.2–1.8 cm, abaxially sparsely strigose or hispidulous, base subtruncate or cuneate, margin irregularly serrate, apex acuminate or acute. Panicles terminal, narrow, inflorescence branches reduced and sometimes with solitary flowers; bracts linear, strigose; pedicels slender, 5–15 mm, sparsely strigose. Hypanthium obovoid or obconic, sparsely strigose; calyx lobes lanceolate or linear-lanceolate, 5–8 × 1–1.8 mm, outside strigose, apex acuminate or acute. Corolla blue-purple or pale blue, campanulate, 1.5–2.3 cm, outside glabrous, inside white villous; lobes ovate-triangular, 6–8 × ca. 5 mm. Filaments white, base dilated; anthers linear. Style included; stigma 2- or 3-fid. Capsule subglobose, 3–5 mm. Seeds oblong or ovate-oblong, slightly compressed, ca. 1 mm. Fl. Jun–Jul, fr. Jul–Sep.

- About 600 m. Sichuan (Emei Shan).

10. *Campanula pallida* Wallich, *Asiat. Res.* 13: 375. 1820.

西南风铃草 xi nan feng ling cao

Campanula colorata Wallich; *C. colorata* var. *tibetica* J. D. Hooker & Thomson; *C. microcarpa* C. Y. Wu; *C. pallida* var. *tibetica* (J. D. Hooker & Thomson) H. Hara.

Plants perennial. Roots carrot-shaped, sometimes slightly thicker than stems. Stems single, sometimes 2 or rarely several from a single caudex, ascending or erect, up to 60 cm tall, hirsute. Lower leaves winged-petiolate, upper leaves sessile; blade elliptic, rhombic-elliptic, or oblong, 1–4 × 0.3–1.5 cm, abaxially densely hirsute or hispid only along veins, adaxially appressed hispid, margin denticulate or almost entire, apex acuminate, acute, or obtuse. Flowers pendent, terminal, sometimes

in cymes. Hypanthium obconic or campanulate, hispid; calyx lobes deltoid, narrowly triangular, or subulate, 2–8 mm, abaxially hispid (sometimes only along veins), margin entire or rarely serrulate. Corolla purple, blue-purple, or blue, tubular-campanulate, 4–15 mm; lobes ca. 1/2 as long to ± as long as tube. Style less than 2/3 as long as corolla, included. Capsule obconic, obovoid, or globose. Seeds golden brown, oblong or elliptic, compressed. Fl. May–Sep. $2n = 24, 28$.

Grassy slopes, open woods; 1000–1400 m. W Guizhou, W Sichuan, S Xizang, Yunnan [Afghanistan, Bhutan, India, Laos, Myanmar, Nepal, Pakistan, Thailand].

Both chasmogamous and cleistogamous flowers are found in this species. In the latter, development of the corolla is arrested at an early stage; as a result, the calyx lobes are deltoid (vs. narrowly triangular or subulate) and much shorter than in the former. The capsules produced by cleistogamous flowers are globose (vs. obconic or obovoid) and much smaller than those from chasmogamous flowers. Individual plants may bear both types of flowers or, less commonly, only cleistogamous flowers; the type of *C. microcarpa* is a specimen of the latter.

11. *Campanula cana* Wallich in Roxburgh, Fl. Ind. 2: 101. 1824.

灰毛风铃草 hui mao feng ling cao

Campanula aprica Nannfeldt; *C. pasumensis* C. Marquand; *C. tortuosa* C. Y. Wu; *C. xylopoda* Jeffrey.

Plants perennial, densely white villous on all parts except corolla. Taproot thickened, ± carrot-shaped, up to 8 mm in diam. Caudexes branched. Stems caespitose, usually diffuse, 15–30 cm. Leaves alternate, sessile or lower ones with petiole up to 5 mm; blade ovate, elliptic, oblanceolate, or linear-lanceolate, 4–25 × 2–10 mm, base cuneate, margin subentire, crenulate, or serrate, apex obtuse or acute. Flowers several, in a terminal cyme; pedicels 0.5–3 cm, ebracteolate. Hypanthium obdeltoid to broadly obconical, 2–3 × 2–3 mm at anthesis; calyx lobes subulate or narrowly triangular, 3–5 × 1–2 mm, margin entire. Corolla blue, blue-purple, or violet, tubular-campanulate, 10–15 mm, outside villous; lobes 1/2–2/3 as long as tube. Stamens included. Style slightly exerted; stigma 3-fid. Capsule globose or obovoid-globose, 3–5 × 3–4 mm, 10-ribbed, 3-poricidal at base. Seeds brownish yellow, shiny, elliptic, 0.5–0.6 mm, smooth. Fl. and fr. May–Nov.

Open rocky slopes, grassy slopes, thickets; 1000–3200 m. NW Guizhou (Xifeng), SW Sichuan, S Xizang, N Yunnan [Bhutan, N India, N Myanmar, Nepal].

12. *Campanula chinensis* D. Y. Hong, Acta Phytotax. Sin. 18: 247. 1980.

长柱风铃草 chang zhu feng ling cao

Plants perennial. Roots carrotlike. Stems caespitose, ascending, up to 35 cm, branched, hispid. Leaves winged-petiolate; blade elliptic or lanceolate, 1–3.5 × 0.4–1.2 cm, abaxially densely villous, adaxially appressed hispid, base cuneate, margin entire or denticulate, apex obtuse, acute, or acuminate. Flowers terminal on main stems and branches, solitary or several in a cyme. Hypanthium obconic, densely villous; calyx lobes triangular, margin entire. Corolla blue or blue-purple, campanulate, 8–10 mm; lobes linear-oblong, slightly longer than

tube. Stamens exerted; anthers all connivent into a tube, or 2 and 3 respectively connivent into 2 groups. Style 13–15 mm, much exerted. Capsule globose, obovoid, or obconic. Seeds yellowish brown, oblong, ca. 0.5 mm. Fl. Jul–Sep, fr. Aug–Oct.

• Rocks, coniferous forests with dry and poor soil; 2400–3800 m. S Qinghai (Nangqên), SE Xizang (Markam), NW Yunnan (Dêqên, Gongshan).

13. *Campanula yunnanensis* D. Y. Hong, Fl. Reipubl. Popularis Sin. 73(2): 184. 1983.

云南风铃草 yun nan feng ling cao

Plants perennial. Roots ± thickened, carrot-shaped, sometimes branched. Stems several from one caudex, almost entirely prostrate, 30–45 cm. Leaves withered during anthesis except uppermost, sessile; blade ovate to ovate-orbicular, 7–11 mm, abaxially densely tomentose, adaxially densely appressed hispid, margin crenate. Flowers terminal, erect or declined somewhat. Hypanthium gyroidal, densely hirsute; calyx lobes triangular, densely tomentose, margin with a pair of teeth. Corolla purple or blue-purple, tubular-campanulate, ca. 8 mm; lobes equaling tube. Style ca. 5 mm. Capsule obovoid-conical, 4–5 × 3–4 mm. Seeds yellow-brown, elliptic, slightly compressed, ca. 0.5 mm, smooth. Fl. Oct–Dec.

• Rocks; 1900–2200 m. Yunnan.

14. *Campanula dimorphantha* Schweinfurth, Beitr. Fl. Aethiop. 140. 1867.

一年生风铃草 yi nian sheng feng ling cao

Campanula benthamii Wallich ex Kitamura; *C. canescens* Wallich ex A. Candolle (1830), not Roth (1827); *C. veronicifolia* Hance; *C. wallichii* Babu, nom. illeg. superfl.; *Cephalostigma spathulatum* Thwaites.

Plants annual. Stems erect, up to 45 cm tall, simple, or branched from base and thus caespitose, hispid. Basal leaves sometimes rosulate, shortly petiolate; blade spatulate or elliptic, withering early, base cuneate or attenuate, margin serrulate, apex acute. Cauline leaves winged-petiolate, 2–7 cm; blade spatulate, elliptic, or linear, base attenuate, margin serrulate or subentire, apex acute or acuminate. Cymes multiple, aggregated into a terminal panicle; pedicels unequal in length, those of upper flowers in a cyme longer. Hypanthium semiglobose to obconic, base acute; calyx lobes narrowly triangular, 3–5 mm. Corolla purple or blue-purple, campanulate, outside hispid, inside glabrous; lobes equaling tube. Style included. Capsules globose. Seeds yellow-brown, oblong or elliptic, compressed, ca. 0.3 mm, smooth. Fl. and fr. Mar–Apr.

Grassy slopes, roadsides; below 2000 m. Chongqing (Wushan), N Guangdong, Guizhou (Luodian), Shaanxi (Mianxian), Sichuan (Chengdu, Dujiangyan, Emei), Taiwan, Yunnan (Weishan) [Afghanistan, India, Laos, Myanmar, Nepal, Pakistan, Sri Lanka, Vietnam; Africa].

Cleistogamy may be the predominant reproductive strategy of this species, at least in China, as most specimens we examined had only cleistogamous flowers. The capsules produced by such flowers are of unequal size, with the apical flowers within a cyme producing larger capsules than the basal ones.

15. *Campanula mekongensis* Diels ex C. Y. Wu, Rep. Yunnan Trop. Subtrop. Fl. Res. Rep. 1: 58. 1965.

澜沧风铃草 lan cang feng ling cao

Plants perennial. Roots thickened, woody. Stems several from one caudex, ascending or erect, 20–30 cm tall, white villous. Leaves sessile; blade elliptic or spatulate, 1–3 × 0.5–1.2 cm, abaxially hirsute (sometimes only along veins), adaxially sparsely hirsute, base attenuate, margin entire, crenulate, or serrulate, apex obtuse. Flowers terminal, solitary or in cymes;

pedicels slender. Hypanthium obconic or campanulate, base cuneate, setose along veins; calyx lobes subulate, 2–4 mm, setose along veins, hirsute on margin; sinuses obtuse. Corolla blue or white, campanulate, ca. 8 mm; lobes somewhat longer than tube, outside sparsely villous. Style slightly shorter than corolla. Capsule obovoid or obovoid-obconic, 3–4 mm in diam. Seeds yellow, oblong, ca. 0.5 mm. Fl. Jan–Mar.

• Sandy herb communities, thickets by rivers, shaded rocks by streams; lower elevations. Guangxi (Tian'e), S Yunnan (Xishuangbanna).

2. *Campanula* subg. *Rapunculus* (Dumortier) Kharadze, Zаметki Sist. Geogr. Rast. 32: 54. 1976.

基生叶风铃草亚属 ji sheng ye feng ling cao ya shu

Campanula sect. *Rapunculus* Dumortier, Fl. Belg. 58. 1827.

Basal leaves rosulate, persistent at anthesis; cauline leaves mostly toward base, upper ones sessile or nearly so, usually linear if present. Flowers solitary and terminal, or several terminal on main stems and branches. Capsule poricidal above middle.

About 140 species: throughout Arctic and N temperate regions, extending south into N Africa, Iran, India, China, N Mexico, and SE United States (Florida); seven species (four endemic) in China.

16. *Campanula stevenii* M. Bieberstein, Fl. Taur.-Caucas. 3: 138. 1819 [“*Steueni*”].

新疆风铃草 xin jiang feng ling cao

Campanula simplex Steven, Mém. Soc. Imp. Naturalistes Moscou 3: 255. 1812, not Lamarck ex Candolle (1805); *C. steveniana* Schultes; *Neocodon stevenii* (M. Bieberstein) Kolkovskiy & Serdyukova.

Plants perennial, glabrous throughout. Rhizomes elongated, exposed. Caudexes erect, often enveloped by remains of old leaves. Stems caespitose, erect, 20–50 cm tall. Basal leaves basally attenuate into a long petiole; blade spatulate or elliptic, margin sparsely denticulate; cauline leaves sessile, broadly linear, 2–6 cm. Flowers terminal, solitary or several. Calyx tube obconic, 3–7 mm; lobes subulate, 5–9 mm. Corolla purple, funnel-shaped, cleft to middle, 1.5–2 cm. Capsules narrowly obovoid, 12–16 × 6–10 mm. Seeds brown-yellow, elliptic, nearly 1 mm. Fl. Jun–Jul.

Shaded slopes, glades, dry grasslands; 1100–2500 m. N Xinjiang [Kyrgyzstan, Russia (European part, Far East, Siberia); SW Asia (Turkey), Europe].

Six subspecies are recognized; our plants are *Campanula stevenii* subsp. *albertii* (Trautvetter) Viktorov (Novosti Sist. Vyssh. Rast. 34: 231. 2002, “*albertii*”; *C. albertii* Trautvetter, Trudy Imp. S.-Peterburgsk. Bot. Sada 6: 83. 1879, “*albertii*”), endemic to N Xinjiang and Kyrgyzstan.

17. *Campanula delavayi* Franchet, J. Bot. (Morot) 9: 364. 1895.

丽江风铃草 li jiang feng ling cao

Plants perennial. Roots thickened, carrot-shaped, up to 1.8 cm in diam. Stems ascending, 20–50 cm tall, several from base, 2- to several branched, densely villous toward base. Basal leaves rosulate, long petiole; blade ovate to orbicular, 1–4.8 × 0.6–3.8 cm, adaxially villous, base cordate, margin callose-

crenulate. Lower cauline leaves similar to basal. Middle and upper cauline leaves very small, often with a branch at axil; blade subulate. Flowers pendulous, terminal on main stems and branches, solitary or 2 or 3 in a cyme, glabrous. Hypanthium semi-ellipsoid or ovoid, base obtuse; calyx lobes subulate to narrowly triangular, 1–5.5 × ca. 1 mm, margin entire. Corolla blue or purple, broadly campanulate, 10–21 mm; lobes equaling tube. Style included. Capsule narrowly ovoid or ellipsoid, ca. 1 cm. Fl. Jul–Sep.

• Rocky slopes, *Pinus* forests; 3000–4000 m. NW Yunnan (Eryuan, Heqing, Lijiang).

18. *Campanula crenulata* Franchet, J. Bot. (Morot) 9: 365. 1895.

流石风铃草 liu shi feng ling cao

Campanula nephrophylla C. Y. Wu.

Plants perennial. Roots thickened, often carrotlike, ca. 5 mm in diam. Caudex enveloped by remains of old petioles. Stems 2–7, caespitose, ascending, 6–33 cm tall, simple or rarely branched, glabrous. Basal leaves several, often rosulate, long petiole; blade orbicular, cordate, or ovate, 7–35 × 6–20 mm, usually glabrous, sometimes adaxially sparsely hispid, margin crenulate. Lower cauline leaves petiolate; blade spatulate, elliptic, or ovate, 1–3 cm, margin crenulate. Upper cauline leaves subsessile; blade linear, margin entire or callose-denticulate. Flowers solitary, terminal, pendent or horizontal, glabrous throughout. Hypanthium obconic or campanulate; calyx lobes subulate or narrowly triangular, 3–12 × 1–2 mm, margin callose-denticulate. Corolla blue, blue-purple, or dark purple-red, campanulate, 12–26 mm; lobes ca. 1/2 as long as tube. Style included. Capsule oblong to narrowly obovoid, 10–18 mm, ca. 5 mm in diam. Seeds yellowish brown, oblong to elliptic, slightly compressed. Fl. Jul–Sep.

• Rocks, grassy slopes; 2600–4200 m. SW Sichuan (Muli), NW Yunnan.

19. *Campanula calcicola* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 12: 196. 1920.

灰岩风铃草 hui yan feng ling cao

Plants perennial. Roots thickened, carrot-shaped. Stems several, caespitose, ascending, 6–23 cm tall, villous, usually branched. Basal leaves long petiolate; blade ovate or orbicular, 5–24 × 6–27 mm, adaxially villous, base cordate or truncate, margin crenate or callose-denticulate, apex obtuse or rounded. Lower cauline leaves long petiolate; blade ovate or orbicular, 5–7 × 4–6 mm, base cordate or truncate, apex obtuse or rounded. Middle and upper cauline leaves petiolate or sessile; blade lanceolate or narrowly oblong, margin callose-dentate. Flowers terminal, often upright. Hypanthium obovoid or obconic, sparsely villous or sometimes glabrous, base rounded; lobes narrowly oblong to subulate-triangular, 2–6 mm, margin with 1–3 pairs of teeth. Corolla purple or blue-purple, broadly campanulate, 9–20 mm; lobes ca. 1/2 as long as tube. Capsule obovoid, ellipsoid, or subglobose, 4–8 mm. Seeds brown-yellow, oblong-elliptic, ca. 0.5 mm, 1-ribbed, smooth. Fl. and fr. Aug–Oct.

• Moist rocks; 2300–3900 m. SW Sichuan (Daocheng, Muli, Xiangcheng), NW Yunnan.

20. *Campanula chrysosplenifolia* Franchet, J. Bot. (Morot) 9: 364. 1895.

丝茎风铃草 si jing feng ling cao

Campanula leucotricha C. Y. Wu.

Plants perennial. Roots thickened, carrot-shaped. Stems caespitose, filiform but erect, 7–22 cm tall, often branched, glabrous. Basal leaves rosulate, long petiolate; blade ovate or orbicular, 6–17 × 5–15 mm, adaxially villous, base cordate, margin crenulate. Cauline leaves sessile or very shortly petiolate; blade ovate to linear, 5–15 × 0.2–1.5 mm, base cordate or truncate, margin crenate to serrate, sometimes callose-denticulate, apex acute or obtuse. Flowers mostly solitary (sometimes 2 or 3) and terminal, glabrous throughout. Hypanthium obovoid or narrowly obconic, base acute or obtuse; calyx lobes subulate or narrowly triangular, 4–9 × 0.5–1.5 mm, margin with 1–3 pairs of verrucose teeth or entire. Corolla blue, campanulate, 8–17 mm; lobes ovate, equaling to 1/2 as long as tube, apex acute to obtuse. Style included. Capsule narrowly obovoid, 9–19 mm. Seeds yellowish brown to brown, oblong, slightly compressed, ca. 1 mm, 1-ribbed. Fl. Sep.

• Rocks; 3000–4000 m. SW Sichuan (Muli, Yanyuan), NW Yunnan (Binchuan, Heqing).

21. *Campanula aristata* Wallich in Roxburgh, Fl. Ind. 2: 98. 1824.

钻裂风铃草 zuan lie feng ling cao

Campanula aristata var. *longisepala* C. Marquand; *C. cylindrica* (Pax & K. Hoffmann) Nannfeldt; *Wahlenbergia cylindrica* Pax & K. Hoffmann.

Plants perennial. Roots thickened, carrot-shaped. Stems usually caespitose, erect, 10–50 cm tall. Basal leaves long petiolate, glabrous; blade ovate or broadly elliptic. Lower and middle cauline leaves long petiolate, glabrous; blade lanceolate,

elliptic, or linear. Middle and upper cauline leaves sessile, glabrous; blade linear, 1.5–7 cm, glabrous, margin entire or sparsely denticulate. Hypanthium very narrowly oblong, 0.5–1.5 cm; calyx lobes filiform, (3–)7–18(–25) mm, usually longer than corolla. Corolla blue or blue-purple, 7–15 mm; lobes ca. 1/2 as long as tube. Capsule clavate, attenuate at base, 20–40 mm. Seeds brown-yellow, elliptic, slightly compressed, ca. 0.7 mm, smooth. Fl. Jun–Aug, fr. Aug–Sep.

Alpine meadows or thickets; 3500–5000 m. S Gansu (Xiahe), E and S Qinghai, Shaanxi (Taibai Shan), NW and W Sichuan, Xizang (except NW), NW Yunnan (Dêqên) [Afghanistan, Bhutan, India, Nepal, Pakistan].

22. *Campanula immodesta* Lammers, Novon 8: 34. 1998.

藏滇风铃草 zang dian feng ling cao

Campanula modesta J. D. Hooker & Thomson, J. Proc. Linn. Soc., Bot. 2: 24. 1857, not Schott, Nyman & Kotschy (1854).

Plants perennial. Roots thickened, up to 7 mm in diam. Stems single or 2 to several and caespitose, erect or ascending, 7–22 cm. Basal leaves rosulate, long petiolate; blade orbicular or ovate, 5–15 × 4–8 mm, margin crenate or entire; petiole 5–45 mm. Lower cauline leaves long petiolate; blade linear or lanceolate. Middle and upper cauline leaves 1–3, sessile; blade linear or narrowly lanceolate, 5–20 mm, margin crenate. Flowers solitary, terminal, ± pendulous. Hypanthium obovoid, 2–10 mm, glabrous; calyx lobes subulate to narrowly triangular, 1.8–8 × 0.5–1 mm, usually shorter than corolla, entire. Corolla blue or purple-blue, campanulate, 4–11 mm; lobes deltoid, ca. 1/2 as long as tube. Capsule obovoid, 5.5–20 × 2.5–6 mm. Fl. Jul–Aug, fr. Aug–Sep.

Alpine meadows; 3400–4500 m. SW Sichuan (Muli), S Xizang, NW Yunnan (Dêqên, Weixi, Zhongdian) [Bhutan, N India, Nepal].

Fl. China 19: 530–536. 2011.