

1. ACANTHOCALYX (Candolle) Tieghem, Ann. Sci. Nat., Bot., sér. 9, 10: 199. 1909.

刺续断属 *ci xu duan shu*

Morina sect. *Acanthocalyx* Candolle, Prodr. 4: 645. 1830.

Taproots fleshy, branching. Caudexes short, woody, often covered with remnants of old leaf bases. Flowering stems emerging below rosettes, usually with 2 bilateral lines of hairs on internodes. Cauline leaves opposite; petioles joined, forming a sheath. Inflorescences subcapitate, often with 1 or more whorls of flowers below primary head; involucre bracts free, connate or sheathing at base; flowers sessile; involucels campanulate, very fragile and papery at anthesis, enlarging and becoming ± leathery in fruit, persistent, with several to numerous teeth. Calyx tubular, oblique at mouth, with a ventral fissure, often with 2 lateral and 3 posterior subspinose teeth. Corolla tubular, somewhat swollen below limb, with 2 posterior and 3 anterior spreading lobes. Stamens 4, ± equal, inserted just below swollen part of corolla tube. Style equal to or exceeding corolla tube in length; stigma disk-shaped; ovary 1-loculed; ovule pendulous. Achenes smooth or rugose, apex somewhat cup-shaped.

Two species: Himalaya and the Hengduan Mountains; two species in China.

- 1a. Corolla pink or purple; leaf blade elliptic, lanceolate, or linear-lanceolate; calyx 7–15 mm 1. *A. nepalensis*
- 1b. Corolla white or yellowish white; leaf blade linear or linear-lanceolate; calyx 4–7 mm 2. *A. alba*

1. *Acanthocalyx nepalensis* (D. Don) M. J. Cannon, Bull. Brit. Mus. (Nat. Hist.), Bot. 12(1): 12. 1984.

刺续断 *ci xu duan*

Fertile stems 1–3, 10–50 cm tall, sparsely pubescent above. Rosulate leaves lanceolate or linear-lanceolate, less frequently linear, 10–25 × 0.5–2.6 cm, both surfaces glabrous, base attenuate, sheathing, margins usually setose or spinose, apex acute to acuminate. Cauline leaves 2–4-paired, elliptic to linear-lanceolate, reduced above; lowermost pair often reduced, subovate or spatulate, spineless; uppermost pair densely spiny at base, overlapping but not sheathing. Inflorescence capitate, sometimes with 1 or 2 separate clusters of flowers below primary head; involucre bracts ovate, spinose, concave or folded; involucels sessile, tubular-campanulate, 8–10 mm, outside sparsely villous, apex truncate, villous, with 15 or more irregular spines. Calyx tubular, green below, purple above, or entirely purple, 7–15 mm; tube ca. 1/2 as long as total length of calyx; fissure large, edges villous and dentate-spiny; spines usually 5, irregularly arranged. Corolla pink or purple, slightly zygomorphic, straight or slightly curved; tube 10–25 × 1.5–3 mm, villous; lobes 5, obcordate, 3–4 mm. Stamens 4, included; filaments sparsely villous, inserted at corolla throat. Style longer than stamens. Achenes columnar, 4–6 mm, glabrous or puberulent. Fl. Jun–Aug, fr. Jul–Sep.

Grassy slopes, alpine meadows; 2800–4200 m. W Sichuan, S and SE Xizang, N Yunnan [Bhutan, N India, Nepal].

- 1a. Ovary and achene usually glabrous 1a. subsp. *nepalensis*
- 1b. Ovary and achene usually puberulent 1b. subsp. *delavayi*

1a. *Acanthocalyx nepalensis* subsp. *nepalensis*

刺续断(原亚种) *ci xu duan (yuan ya zhong)*

Morina nepalensis D. Don, Prodr. Fl. Nepal. 161. 1825; *M. betonicoides* Benthams; *M. nana* Wallich ex Benthams.

Ovary and achene usually glabrous.

Grassy slopes; 2800–4200 m. S Xizang [Bhutan, N India, Nepal].

1b. *Acanthocalyx nepalensis* subsp. *delavayi* (Franchet) D. Y. Hong, Novon 20: 418. 2010.

大花刺参 *da hua ci shen*

Morina delavayi Franchet, Bull. Soc. Bot. France 32: 8. 1885; *Acanthocalyx delavayi* (Franchet) M. J. Cannon; *Barleria crotalaria* H. Léveillé; *M. bulleyana* Forrest & Diels; *M. nepalensis* subsp. *delavayi* (Franchet) D. Y. Hong & L. M. Ma; *M. nepalensis* var. *delavayi* (Franchet) C. H. Hsing.

Ovary and achene usually puberulent.

Alpine meadows; 3000–4200 m. W Sichuan, SE Xizang, N Yunnan [India (Sikkim)].

2. *Acanthocalyx alba* (Handel-Mazzetti) M. J. Cannon, Bull. Brit. Mus. (Nat. Hist.), Bot. 12(1): 14. 1984.

白花刺续断 *bai hua ci xu duan*

Morina alba Handel-Mazzetti, Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 62: 68. 1925; *M. leucoblephara* Handel-Mazzetti; *M. nepalensis* D. Don var. *alba* (Handel-Mazzetti) Y. C. Tang ex C. H. Hsing.

Caudex covered with remnants of old leaf bases. Fertile stems 1–3, 10–40 cm tall. Rosulate leaves linear or linear-lanceolate, 10–20 × 0.5–1 cm, both surfaces glabrous, base attenuate, margins entire. Leaves on flowering stems 2–4-paired, similar to rosulate leaves but shorter; petioles folded, sheathing; lowermost pair often much smaller, subovate, usually spineless, with sheaths nearly as long as or longer than blades; uppermost pair of leaves densely spiny and much broader at base. Inflorescences capitate, sometimes with 1 or 2 separate flower clusters below primary head; involucre bracts ovate, spinose, concave or folded; involucels sessile, tubular-campanulate, 4–7 mm, apex truncate, villous, with 12–16 irregular spines. Calyx green, tubular, 5–8 mm; tube 1–2.5 mm; limb usually with 2 lateral and 3 posterior teeth, margins villous. Corolla white, yellowish, or yellowish green; tube markedly curved, 12–20 mm, densely puberulent above; limb 5-lobed; lobes obcordate, ca. 3 mm. Filaments inserted at corolla throat. Style longer than stamens. Achenes columnar, 4–6 mm, glabrous to densely puberulent. Fl. Jun–Aug, fr. Jul–Sep.

Subalpine or alpine meadows, forests; 2500–4100 m. SE Gansu (Tao He basin), S Qinghai, W Sichuan, SE Xizang, NW Yunnan [N India].

