

Elatostema scaposum sp. nov. (Urticaceae) from Guizhou, China

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Elatostema scaposum Q. Lin & L. D. Duan (Urticaceae: *Elatostema* sect. *Pellionioides* W. T. Wang), a new species from Libo County, Guizhou Province, China, is described and illustrated. This species was found growing at the base of a large limestone chamber at an altitude of ca 800 m a.s.l., and differs from all other species in *Elatostema* sect. *Pellionioides* W. T. Wang by scapiform male inflorescences (axillary in other species of *Elatostema* sect. *Pellionioides*).

The genus *Elatostema* J. R. Forster & G. Forster belongs to the family Urticaceae, and consists of ca 300 species from tropical, subtropical Africa, Asia and Oceania. 148 species occur in China and 31 species in Guizhou Province (Lin et al. 2003, Lin and Duan 2008). *Elatostema* is characterized and distinguished from other genera of Urticaceae by its inflorescences of determinate capitula with receptacles and involucre.

A recent molecular phylogenetic study of Urticaceae revealed that *Elatostema* as circumscribed by W. T. Wang (Wang and Chen 1979, Wang 1980) is not monophyletic (Hadijah et al. 2008). However, it is necessary to analyse more samples and sequences to evaluate the phylogeny of the genus.

The most recent infrageneric classification of Chinese *Elatostema* was proposed by W. T. Wang (Wang and Chen 1979, Wang 1980), who divided the genus into five sections (viz. *Pellionioides* W. T. Wang, *Weddelia* (H. Schroeter) W. T. Wang, *Laevisperma* (Hatusima) Yamazaki, *Elatostema* and *Androsyce* Weddell), mainly based on a series of characters, such as nerve type, pattern of male inflorescence, presence/absence of male receptacle, presence/absence of involucre, pauciflorous/multiflorous female inflorescence, conspicuous/obscure female receptacle, ribbed/smooth achene, etc. (Table 1). In Wang's revision, *Elatostema* sect. *Pellionioides* W. T. Wang comprised 10 species (Wang 1980, 1990). We have examined many non-Chinese *Elatostema* specimens and conclude that Wang's sectional classification is applicable worldwide.

During an expedition in Libo County, south Guizhou Province, southwest China in Oct–Nov 2003, a previously unknown species, belonging to *Elatostema* sect. *Pellionioides* W. T. Wang (Wang and Chen 1979), was collected at the base of a large limestone chamber at an altitude of ca 800 m

a.s.l., between 25°7'–25°9'N, 107°37'–108°18'E. This species was found to be very distinct as compared with the other species in this section, by its scapiform male inflorescence (axillary in the other species of *Elatostema* sect. *Pellionioides* W. T. Wang). It is described and illustrated herein as a new species.

Material and methods

Our morphological studies are based on about 6000 specimens from the herbaria AU, BM, CCNU, CDBI, CSFI, E, FNU, FJSI, GFS, GXMI, GZAC, GZTM, HAST, HIB, HGAS, HHBG, HITBC, HNNU, IBK, IBSC, K, KUN, L, LBG, NAS, P, PE, SZ, TUS, YUKU, WH, WU and ZJFC, including the types of 10 species of *Elatostema* sect. *Pellionioides* W. T. Wang. In addition, field studies were carried out in Oct–Nov 2003 as well as Nov 2009 in Guizhou Province, China. Morphological features of the new species have been compared with those of closely related species.

Elatostema scaposum Q. Lin & L. D. Duan sp. nov. (Fig. 1–2)

Habitu Elatostemati oblongifolio Fu ex W. T. Wang valde simile, sed caulibus 50–90 cm altis (non 20–50 cm), inflorescentiae masculinae scapiformes (non axillaris), pedunculis inflorescentiarum 5–15 mm longis (non 0.5–3.0 mm), scapula 15–60 cm altis (non absent) differt.

Type: China. Guizhou Province: Libo County, Jialiang, Baibidong, 800 m a.s.l., 26 Oct 2003, Q. Lin and L. D. Duan 1023 (holotype: PE!, isotypes: E!, GH!, KI!, LI!, NY!,

Table 1. Comparison of morphological characteristics among five sections in *Elatostema*

Section	Leaf blade	Male inflorescence	Female inflorescence	Achene
Sect. <i>Pellioniooides</i> W. T. Wang	major basal lateral veins asymmetric, 1 basal, the other arising above base, or major basal lateral veins absent and venation pinnate.	cymose, branched; receptacle absent; involucre absent; bracts alternate.	small, multiflorous; receptacle flat.	small, ribbed.
Sect. <i>Weddellia</i> (H. Schroeter) W. T. Wang	both major lateral veins inserted at base, or major basal lateral veins asymmetric, 1 basal, the other arising above base, or major basal lateral veins absent and venation pinnate.	simple, involucred; receptacle small, obscure.	multiflorous; receptacle conspicuous or obscure.	small, ribbed.
Sect. <i>Laevisperma</i> (Hatusima) Yamazaki	both major lateral veins inserted at base.	simple, pedunculate, pauciflorous; receptacle obscure.	sessile, with 1–10 flowers, involucred; receptacle obscure.	smooth.
Sect. <i>Elatostema</i>	both major lateral veins inserted at base, or major basal lateral veins asymmetric, 1 basal, the other arising above base, or major basal lateral veins absent and venation pinnate.	simple, involucred; receptacle conspicuous, discoid.	multiflorous, involucred; receptacle conspicuous, flat.	small, ribbed.
Sect. <i>Androsyce</i> Wedd.	major basal lateral veins absent and venation pinnate.	simple; receptacle conspicuous, pyriform when young, papilionaceous when mature; involucre obscure.	small, involucred, multiflorous; receptacle conspicuous, flat.	small, ribbed.

PE!, TUS!, US!, WU!); the same locality, 26 Nov 2003, L. D. Duan and Q. Lin 2003001 (paratypes: PE!); the same locality, 28 Nov 2009, Q. Lin and L. D. Duan 1040 (paratypes: PE!).

Herbs perennial, tufted, monoecious, 50–90 cm tall, glabrous. Stems erect, longitudinally angled, simple or branched, with dense cystoliths. Leaves alternate; nanophylls absent; stipules narrowly lanceolate, 5–12 mm long, 0.7–1.5 mm wide, with cystoliths; petiole 0.5–5.0 mm long; leaf blade oblong to obliquely elliptic, 7.5–19.5 cm long, 2.5–8.0 cm wide, papyraceous or papery, venation pinnate, major basal lateral (secondary) veins absent, adaxial surface with conspicuous linear, dense, random cystoliths, base with broader half cuneate or nearly rounded, margin dentate, apex acuminate or long acuminate. Male inflorescences scapiform; scapes 15–60 cm long, with 6–10 cymes; cymes opposite, branched, 1.8–2.8 cm in diameter; peduncle 0.5–1.5 cm; receptacle absent; bracts alternate, lanceolate or linear, 5–12 mm long. Male flower 5-merous; perianth lobes white, narrowly elliptic, 2 mm long; stamens 5; pistil rudimentary, very small. Female inflorescences in pairs, axillary, 4–6 mm in diameter; peduncle 0–1 mm long; receptacle 2–4 mm in diameter; bracts lanceolate or linear; bracteoles linear-lanceolate. Female flower 5-merous. Achenes ovoid, 6- or 8-ribbed.

Distribution, habitat and phenology

Elatostema scaposum is only known from its type locality, Baibidong, Jialiang, libo County, south Guizhou Province, southwest China. Here it grows only at the base of a large limestone chamber at an altitudes of 750–800 m a.s.l., between 25°7'–25°9'N, 107°37'–108°18'E and there are only 12 clumps in this chamber. *Elatostema scaposum* flowers during Oct–Nov and fruits in Nov–Dec.

Similar species

Elatostema scaposum is a member of *Elatostema* sect. *Pellioniooides* as evident by the leaf venation being pinnate and lacking major basal lateral (secondary) veins, the male inflorescences cymose, branched and lacking involucre with alternate bracts and lacking receptacle, female inflorescences small, multiflorous, with flat receptacle, and achenes small and ribbed. It appears to be closely related to *E. oblongifolium* Fu ex W. T. Wang (Wang 1980) in the same section, but differs with regard to the following features: stems 50–90 cm tall (vs 20–50 cm tall); male inflorescences scapiform (vs axillary); male peduncle 5–15 mm long (vs 0.5–3.0 mm long); male scapes 15–60 cm tall (vs scapes absent).

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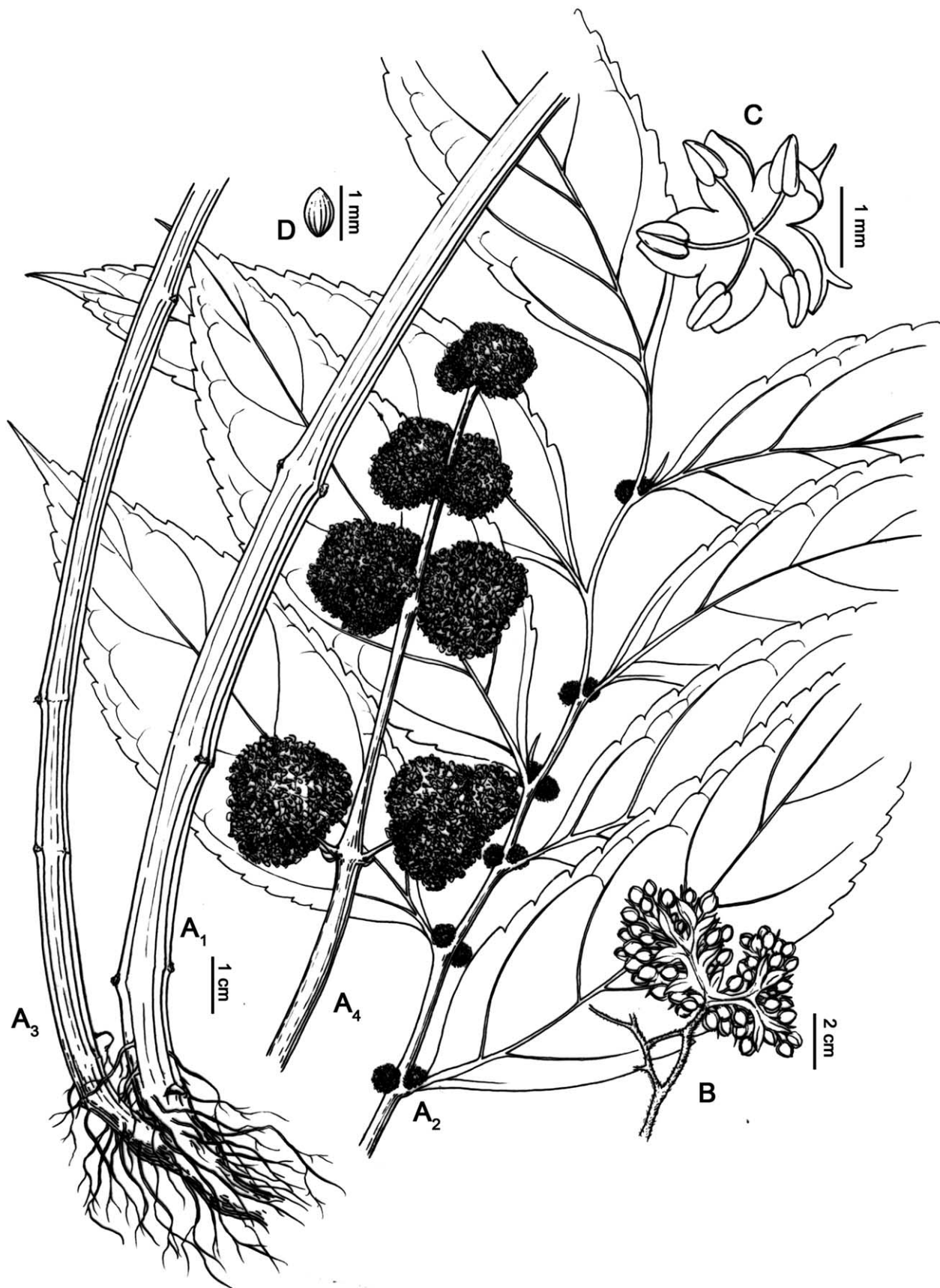


Figure 1. *Elatostema scaposum* Q. Lin & L. D. Duan sp. nov. (Q. Lin and L. D. Duan 1023, PE). (A₁₋₄) habit, (A₁₋₂) female branch, (A₃₋₄) male scape, (B) portion of male inflorescence, (C) male flower. (L. D. Duan and Q. Lin 2003001, PE), (D) achene. Drawn by Ai-Li Li.



Figure 2. *Elatostema scaposum* Q. Lin & L. D. Duan sp. nov. Habitat of the type locality at the base of a large limestone chamber. Photographed by Q. Lin.

permission to examine specimens, and we also thank Mrs Ai-Li Li for the drawing.

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