

Article



http://dx.doi.org/10.11646/phytotaxa.238.3.5

Cremanthodium wumengshanicum (Asteraceae, Senecioneae), a new species from Yunnan, China

LONG WANG 1,3, CHEN REN1 & OIN-ER YANG1,2*

- ¹Key Laboratory of Plant Resources Conservation and Sustainable Utilization, South China Botanical Garden, Chinese Academy of Sciences, Guangzhou 510650, China
- ²Key Laboratory of Plant Resources Conservation and Utilization of Hunan Province, Jishou University, Jishou 416000, Hunan, China ³University of Chinese Academy of Sciences, CN-100049, Beijing, China
- *Author for correspondence: e-mail: qeyang@scib.ac.cn

Abstract

A new species, *Cremanthodium wumengshanicum*, is described and illustrated. It is most readily distinguishable in the genus by having 10–14 bracts subtending the head. Morphological differences between *C. wumengshanicum* and its putative closest allies and a distributional map of the new species are presented.

Key words: Compositae, taxonomy

Introduction

Cremanthodium Bentham (1873: 37) (Asteraceae, Senecioneae) is a typical alpine genus distributed in the Sino-Himalayan region, with ca. 70 species being recognized (Liu & Illarionova 2011). All the species occur in China, 46 of which are endemic to the country (Liu & Illarionova 2011).

During a botanical expedition to southwestern China in 2015, we found an unusual population of *Cremanthodium* on Jiaozi Xue Shan, Luquan county, northeastern Yunnan province. In general aspect the plants are similar to *C. decaisnei* Clarke (1876: 168) and *C. reniforme* (Candolle 1838: 315) Bentham (1873: 37), but differ from them immediately by, among other characters, having 10–14 bracts subtending the head. A survey of the major Chinese herbaria resulted in the discovery of several previous collections (*E. D. Liu et al. 2215*, *H. Peng et al. 8661*, 9016, all in KUN, and *Y. S. Chen 9006*, *S. B. Lan 559*, both in PE) from northeastern Yunnan, which are identical with the abovementioned population but had been variously misidentified as *C. principis* (Franchet 1896: 412) Good (1929: 283), *C. reniforme*, or *C. thomsonii* Clarke (1876: 169). On the basis of our observations of such significant herbarium materials and living plants in the wild, we determined that the plants in question represent a hitherto undescribed species, which we describe below.

Cremanthodium wumengshanicum L. Wang, C. Ren & Q.E. Yang, sp. nov. (Figs. 1, 2 & 3)

Type:—CHINA. Yunnan, Luquan, Jiaozi Xue Shan, 26°05′01.39′′N, 102°51′48.27′′E, 4100 m, 16 July 2015, *M. Tang, L. Wang & T. J. Tong 1299* (holotype IBSC; isotypes IBSC).

Perennial herbs with very short rhizome. Roots fleshy, ca. 2 mm in diameter. Stems solitary or 2, erect, 20–40 cm tall, 3–4 mm in diameter, proximally glabrous, distally densely purplish brown pilose. Basal leaves petiolate; petiole 4–10 cm long, slender, glabrous, base sheathed; leaf blade reniform or orbicular-reniform, 2–7 cm long, 3–12 cm broad, thick, adaxially bright green and glabrous, abaxially pale green, palmate veins prominent, veins purplish brown pilose, margin angular-dentate, base cordate, apex rounded. Stem leaves 1 or 2; middle leaves smaller than basal leaves, reniform, base sheathed, shortly petiolate or sessile; distal leaves bracteal, oblong. Capitula solitary, nodding. Involucre campanulate, 1–2 cm long, 1.5–2.5 cm broad, outside brown pilose; phyllaries papery, 12–15, in 2 rows;

outer phyllaries lanceolate, apex acuminate or caudate; inner phyllaries oblong, margin membraneous, apex acuminate; bracts 10–14, oblong or narrowly ovate, 3–5 mm long, 2–3 mm broad, apex acuminate. Ray florets yellow; lamina lanceolate, 1–5 cm long, 4–7 mm broad, apex acute or acuminate, usually 3-denticulate. Tubular florets numerous, yellow, 1 cm long; tube 3 mm long; limb campanulate. Achenes brown, oblong, 3 mm long, 6–10-ribbed. Pappus white or sometimes purplish brown, 6–8 mm long, as long as or slightly shorter than tubular corolla.



FIGURE 1. Holotype sheet of Cremanthodium wumengshanicum.



FIGURE 2. Cremanthodium wumengshanicum in the wild (Jiaozi Xue Shan, Luquan, Yunnan, China). A. Habitat. B. Habit. Photos by L. Wang.

Distribution and Habitat:—Cremanthodium wumengshanicum is currently known from northeastern Yunnan (Dongchuan, Luquan), China (Fig. 4). It grows in alpine meadows or cliff crevices between 3500 and 4300 m above sea level.

Phenology:—Flowering July–August; fruiting August–September.

Etymology:—The specific epithet is derived from Wumeng Shan in southwestern China, with Jiaozi Xue Shan, the type locality of the species, being one of its highest peaks.

Additional specimens examined:—CHINA. Yunnan, Dongchuan, alpine meadow, 3900-4000 m, 18 July 2009, Y. S. Chen 9006 (PE); Yunnan, Dongchuan, alpine meadow, 4300 m, 25 August 1985, S. B. Lan 559 (PE); Yunnan, Dongchuan, alpine meadow, 4200 m, 28 July 2008, H. Peng et al. 8661 (KUN); Yunnan, Dongchuan, alpine meadow, 3500 m, 31 July 2008, H. Peng et al. 9016 (KUN); Yunnan, Luquan, cliff crevices, 3920 m, 8 August 2009, E. D. Liu et al. 2215 (KUN); Yunnan, Luquan, cliff crevices, 4050 m, 15 September 2013, M. Tang & C. Ren 781 (IBSC).

Discussion:—Cremanthodium wumengshanicum is somewhat similar to C. reniforme in the leaf shape and head size, but more or less differs in the size and indumentum of leaves, number and indumentum of phyllaries, and shape and size of the ray lamina. It also resembles C. decaisnei in leaf shape, indumentum of phyllaries, and shape of the ray lamina, but differs in size and indumentum of leaves, number of phyllaries, and shape and size of the ray lamina. In particular, C. wumengshanicum is most readily distinguishable from both C. reniforme and C. decaisnei in the presence of 10-14 bracts subtending the head. The morphological differences between the three species are detailed in Table 1. It is worth noting that the presence of numerous bracts in C. wumengshanicum is a unique character in the whole Cremanthodium. Interestingly, in Ligularia Cassini (1816: 198), a genus closest to Cremanthodium, L. pyriflolia Liu (1985: 68) also has numerous (to 15) bracts (Liu & Illarionova 2011). Ligularia pyriflolia is a very distinctive species distributed in southwestern Yunnan (Jingdong), China.

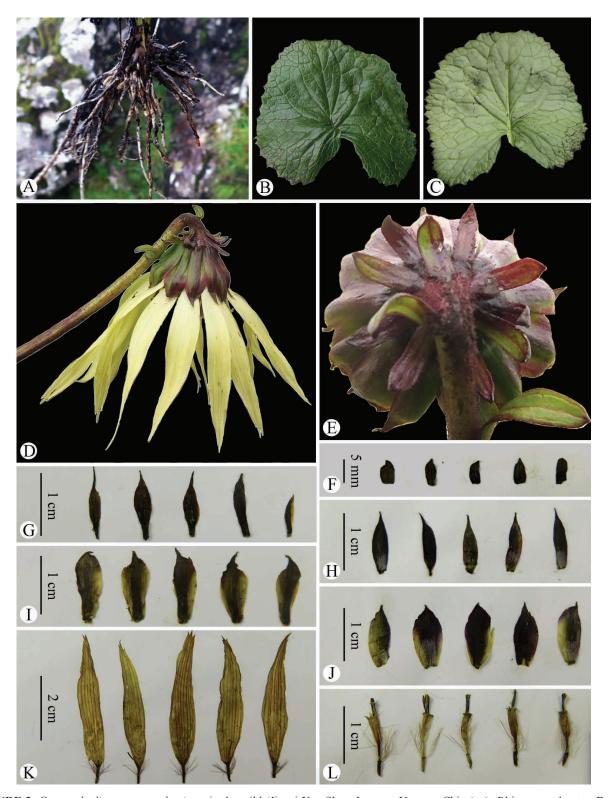


FIGURE 3. Cremanthodium wumengshanicum in the wild (Jiaozi Xue Shan, Luquan, Yunnan, China). **A.** Rhizome and roots. **B.** Leaf blade (adaxial surface). **C.** Leaf blade (abaxial surface). **D.** Capitulum (side view). **E.** Capitulum (back view). **F.** Bracts. **G.** Outer phyllaries (abaxial surface). **H.** Outer phyllaries (adaxial surface). **I.** Inner phyllaries (abaxial surface). **J.** Inner phyllaries (adaxial surface). **K.** Ray florets. **L.** Tubular florets. Photos by L. Wang.

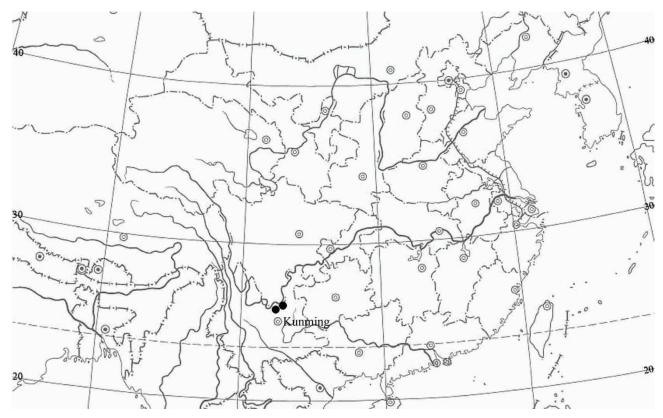


FIGURE 4. Distribution of *Cremanthodium wumengshanicum* (●).

TABLE 1. Morphological differences between Cremanthodium decaisnei, C. reniforme, and C. wumengshanicum.

	C. decaisnei	C. reniforme	C. wumengshanicum
Leaf size	$0.54.5 \times 0.95 \text{ cm}$	2-3.5 × 2.5-7 cm	2-7 × 3-12 cm
Leaf indumentum	densely brown pilose abaxially, glabrous adaxially	glabrous on both surfaces	purplish brown pilose abaxially, particularly so on veins, glabrous adaxially
Number of phyllaries	8-12	10-12	12-15
Indumentum of phyllaries	brown pilose outside	black glandular pilose outside	brown pilose outside
Bracts	absent	0-1, linear	10-14, oblong or narrowly ovate
Shape of ray lamina	narrowly elliptic or oblong	oblanceolate	lanceolate
Size of ray lamina	$1-2 \text{ cm} \times 3-6 \text{ mm}$	1.5–2 cm × 4–8 mm	$1-5 \text{ cm} \times 4-7 \text{ mm}$

On the basis of morphological characters, Liu (1982, 1989) divided the genus Cremanthodium into three sections and seven series. Regrettably this classification has not as yet been tested by any molecular phylogenetic analysis. Cremanthodium wumengshanicum can be referred to C. sect. Cremanthodium ser. Decaisneana Ling & S. W. Liu by having reniform leaves with palmate veins, phyllaries papery, apex usually acuminate, and ray lamina oblong or lanceolate, apex acute or acuminate.

Acknowledgements

We thank the curators of KUN and PE for allowing us to examine specimens. This work was supported by the National Natural Science Foundation of China (grant no. 31370232).

References

- Bentham, G. (1873) *Hooker's Icones Plantarum*, vol. 12. Longman, Rees, Orme, Brown, Green, & Longman, etc., London, pp. 36–39. http://dx.doi.org/10.5962/bhl.title.16059
- Candolle, A.P. de (1838) *Prodromus systematis naturalis regni vegetabilis*, vol. 6. Treuttel & Würtz, Paris, 687 pp. http://dx.doi.org/10.5962/bhl.title.286
- Cassini, H. (1816) Apercu des genres nouveaux formés par M. Henri Cassini, dans la famille des Synanthérées (1). *Bulletin des Sciences par la Société Philomathique de Paris* 1816: 198–200.
- Clarke, C.B. (1876) Compositae Indicae. Thacker, Spink and Co., Calcutta, 347 pp.
- Franchet, A. (1896) Compositae novae e flora sinensi. Journal de Botanique 10: 412-423.
- Good, R.D. (1929) The taxonomy and geography of the Sino-Himalayan genus *Cremanthodium* Benth. *The Journal of Linnean Society of London* 48: 259–316.
 - http://dx.doi.org/10.1111/j.1095-8339.1929.tb00589.x
- Liu, S.W. (1982) A taxonomic study on the genus Cremanthodium Benth. Acta Biologia Plateau Sinica 1: 49-59. [In Chinese]
- Liu, S.W. (1985) The taxonomic system of the genus Ligularia Cass. Bulletin of Botanical Research (Harbin) 5: 63-80. [In Chinese]
- Liu, S.W. (1989) Cremanthodium Bentham. In: Ling, Y. & Liu, S.W. (Eds.) Flora Reipublicae Popularis Sinicae, vol. 77 (2). Science Press, Beijing, pp. 115–171. [In Chinese]
- Liu, S.W. & Illarionova, I. (2011) *Cremanthodium* Bentham. *In:* Wu, Z.Y. & Raven, P.H. (Eds.) *Flora of China*, vols. 20–21. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis, pp. 415–435.