

## *Ligularia qiaojiaensis* sp. nov. (Asteraceae) from Yunnan, China

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*Ligularia qiaojiaensis* Y. S. Chen & H. J. Dong sp. nov., known from two localities in northeastern Yunnan province of China, is described, illustrated and compared with similar species.

*Ligularia* Cassini (Asteraceae) is a genus with more than 125 species distributed in Asia and Europe (Nordenstam 2007). Liu (1989) recorded 111 species of *Ligularia* in China.

In 2007, during an examination of Asteraceae specimens collected by H. Wang from Yaoshan mountain, Qiaojia county, Yunnan province, China, the second author found a strange *Ligularia* specimen with pinnately dissected leaves, resembling *L. przewalskii* Maxim. but differing by much shorter inflorescence and larger capitula. In July 2009, the second author made an expedition to Yaoshan mountain and collected the same kind of specimens, confirming that it is really a new species. Roughly at the same time, in 2008, the same kind of specimens were collected by Dr H. Peng from Jiaozi mountain, Dongchuan county, Yunnan province, about 117 km directly south of the Yaoshan mountain.

### *Ligularia qiaojiaensis* Y. S. Chen & H. J. Dong sp. nov. (Fig. 1)

Species *L. przewalskii* affinis, sed capitulis majoribus, phyllariis 8–9, radiis 4–5 differt.

**Type:** China. Yunnan province, Qiaojia county, Yaoshan, Qiaoshan, wet grassy slopes along forest margin, 2734 m a.s.l., 27°13'41"N, 103°5'25"E, 21 Jul 2009, Y. S. Chen and Z. H. Wang 9033 (holotype: PE, isotype: KUN).

Perennial herb. Roots numerous, stout and fleshy, ca 1.5 mm in diameter. Stems erect, to 70 cm tall, ca 3 mm in diameter, longitudinally angulate, base surrounded by withered petiole fibres. Basal leaves petiolate; petiole 12–20 cm, glabrous, base sheathed; leaf blade chartaceous, cordate-orbicular, pinnately dissected, 7–24 cm long, 8–25 cm wide, adaxially green, covered with sparse white glandular hairs, abaxially pale green, glabrous; cauline leaves

3–4, petioles 5–23 cm long, base enlarged sheathing, upper leaves with smaller blade and shorter petioles. Inflorescence racemose, to 25 cm long, densely covered with rust-colored glandular hairs; peduncles 0.3–1.2 (–8) cm long. Capitula 8–15, supplementary bracts subulate. Involucre green, turbinate, 8–10 mm in diameter, ca 1 cm high; phyllaries in 2 series, 8–9, equal in length, broadly oblong, ca 1 cm long, 2–3 mm wide, apex acute. Ray florets yellow, 4–5, ligules lanceolate, apex acute and denate, ca 16–18 mm long and ca 3 mm wide, tube ca 4 mm long; disc florets 16–18, tube ca 5 mm long, limb ca 5 mm long, campanulate, 5-lobed, lobes lanceolate, ca 2 mm long and ca 0.3 mm wide. Style ca 12 mm long, stigma brownish yellow, 2-branched, branches reflexed, ca 2 mm long; anther tube brown, ca 5 mm long. Pappus brown, 4–5 mm long. Achenes cylindroid, ca 5 mm long, ca 0.6 mm wide, apex truncate, longitudinally ribbed. Flowering in Jul–early Aug.

### **Distribution, habitat and conservation status**

*Ligularia qiaojiaensis* is known only from two nearby localities in northeastern Yunnan province, China, where it was first collected in 2004. It grows in wet grassy slopes along forest margin at an altitude of 2700–3350 m a.s.l.

The population size is very small (less than 50) in both two localities. According to IUCN (2001), it should be categorized as 'Endangered' (EN).

### **Similar species**

*Ligularia qiaojiaensis* is most similar to *L. przewalskii* in its dissected leaves and racemose inflorescence, but differs by pinnately dissected leaves, much larger heads, 8–9 phyllaries and 4–5 ray florets. It is somewhat similar to *L. paradoxa* Hand.-Mazz. With respect to leaf shape, but differs by racemose inflorescence and ray florets. The main morphological differences between the new species and *L. przewalskii* are given in Table 1.

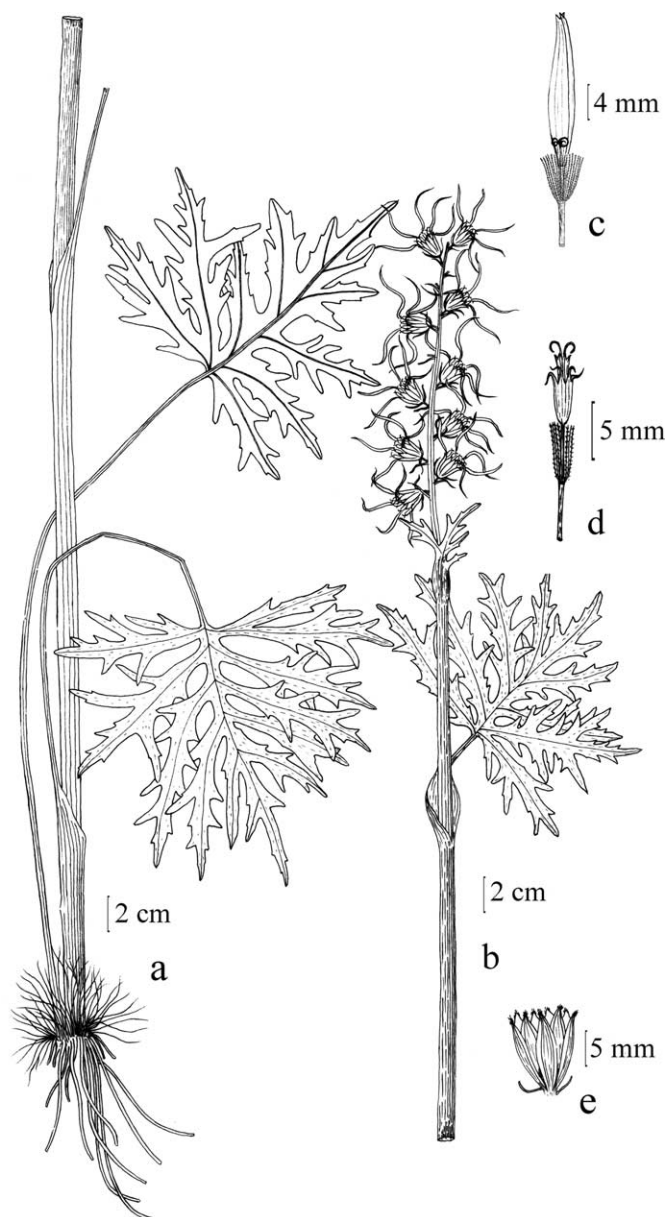


Figure 1. *Ligularia qiaojiaensis* Y. S. Chen & H. J. Dong sp. nov. (a) habit (lower part), (b) habit (upper part), (c) ray florets, (d) disc florets, (e) phyllaries.

We found other *Ligularia* species in a nearby locality, including *L. fischeri* (Ledeb.) Turcz., *L. nelumbifolia* (Bureau et Franch.) Hand.-Mazz. and *L. lamarum* (Diels) Chang. However, none of these species has dissected leaves and similar heads, so *L. qiaojiaensis* can not be a hybrid between these species.

Table 1. Morphological differences between *Ligularia qiaojiaensis* sp. nov. and *L. przewalskii*.

Features	<i>L. qiaojiaensis</i>	<i>L. przewalskii</i>
Leaf blade	pinnately dissected	palmately dissected
Inflorescence length (cm)	10–25	30–60
Capitula	7–15	40–100
Involucre diameter (mm)	8–10	2–3
Phyllaries	8–9	4–6
Ray florets	4–5	2–3

#### Additional specimens examined (paratypes)

China. Yunnan province, Qiaojia county, Yaoshan, Qiaoshan, 2700–2900 m a.s.l., 5 Jul 2004, H. Wang et al. 03-1233 (KUN); Dongchuan county, Tangdan, Jiaozi mountain, alpine meadow along streams, 26°10'46"N, 102°57'36"E, 3350 m a.s.l., 26 Jul 2008, H. Peng et al. HP8738 (KUN).

#### References

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