

中国橐吾属(菊科-千里光族)的分类学研究(三): 芥形橐吾、岷县橐吾和半裂橐吾的名实订正

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摘要: 将芥形橐吾(*Ligularia brassicoides* Hand.-Mazz.), 岷县橐吾(*L. ianthochaeta* C. C. Chang)和半裂橐吾(*L. paradoxa* Hand.-Mazz. var. *palmatifida* S. W. Liu & T. N. Ho)处理为异名。

关键词: 菊科; 橐吾属; 千里光族; 分类学

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Taxonomic Studies on the Genus *Ligularia* Cass. (Asteraceae, Senecioneae) from China (III): The Identities of *L. brassicoides*, *L. ianthochaeta*, and *L. paradoxa* var. *palmatifida*

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Abstract: We synonymize three names of the genus *Ligularia* from China, including *L. brassicoides* Hand.-Mazz., *L. ianthochaeta* C. C. Chang, and *L. paradoxa* Hand.-Mazz. var. *palmatifida* S. W. Liu & T. N. Ho.

Key words: Asteraceae; *Ligularia* Cass.; Senecioneae; Taxonomy

This paper continues to report the results of our taxonomic revision of the genus *Ligularia* Cass. (Asteraceae, Senecioneae) from China. We synonymize three names of the genus herein.

1. *Ligularia melanocephala* (Franch.) Hand.-Mazz. in Bot. Jahrb. Syst. **69**: 119. 1938; S. W. Liu in Fl. Reipubl. Popularis Sin. **77**(2): 106. 1989; T. L. Min in Fl. Yunnan. **13**: 513. 2004, p.p., excl. pl. Deqen; S. W. Liu & I. D. Illar. in Fl. China **20–21**: 397. 2011. — *Senecio melanocephalus* Franch. in Bull. Soc. Bot. France **39**: 294. 1892. Type: China. Yunnan:

Eryuan, Lao-Long-tong, alt. 3500 m, Delavay 3373 (lectotype, here designated, P!).

Ligularia brassicoides Hand.-Mazz. in Bot. Jahrb. Syst. **69**: 118. 1938; S. W. Liu in Fl. Reipubl. Popularis Sin. **77**(2): 108. 1989; S. W. Liu & I. D. Illar. in Fl. China **20–21**: 397. 2011. syn. nov. Type: China. Sichuan: Muli, Mount Konka, Risonquembra, Konkaling, in fir forest, alt. 4480 m, Jun. 1928, Rock 16332 (holotype, B; isotype, US!).

For a fuller citation of literature and synonyms, see Liu^[1], and Liu & Illarionova^[2].

Notes. When Handel-Mazzetti^[3] described *Ligularia*

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brassicoides, he pointed out that it is very close to *L. melanocephala*, and stressed that he had seen only a stem of one of the syntypes of *L. melanocephala*, Delavay 3975 from Eryuan, northwestern Yunnan, and a specimen of the species from Lijiang, also northwestern Yunnan, i.e. Rock 4420. We can safely assume that at that time Handel-Mazzetti did not understand *L. melanocephala* well. He thought that the plant might occur only in northwestern Yunnan, which has led him to describe the Sichuan specimens as an independent species. Examination of the much richer material now available of *L. melanocephala* from Yunnan (Fig. 1: A–B) against the type collections of *L. brassicoides* from Sichuan (Fig. 1: C–D) shows *L. brassicoides* to be conspecific with *L. melanocephala*.

We have not as yet seen specimen of *L. melanocephala* from Deqen County, northwestern Yunnan. Two collections from Deqen, C. W. Wang 69754 (PE) and C. W. Wang 69925 (PE), which were previously identified as *L. melanocephala*, should be referred to *L. dictytoneura* (Franch.) Hand.-Mazz.

Additional specimens examined. China. Sichuan: Muli, Rock 16827 (GH, US); **Yunnan:** Eryuan, Delavay 3975 (K, P), 4492 (P); Lijiang, Q. Lin et al. 771450 (KUN), R. L. Xiong & Y. F. Qi 612752 (KUN); Zhongdian, K. M. Feng, 1495 (KUN), 1865 (KUN, PE), 23221 (KUN, PE), Qinghai-Xizang Exped. 1332 (KUN, PE), T. T. Yu 11665 (KUN, PE), 12160 (KUN), 12166 (KUN, PE), Zhongdian Exped. 63-2923 (KUN).

Distribution and habitat. *Ligularia melanocephala* is distributed in northwestern Yunnan (Eryuan, Lijiang, Zhongdian) and western Sichuan (Muli). It grows on grassy slopes or in forests at altitudes of 3400–4000 m above sea level.

2. *Ligularia macrodonta* Y. Ling in Contr. Inst. Bot. Natl. Acad. Peiping 5: 2. 1937; Hand.-Mazz. in Bot. Jahrb. Syst. 69: 114. 1938; S. W. Liu in Fl. Reipubl. Popularis Sin. 77(2): 32. 1989; S. W. Liu & I. D. Illar. in Fl. China 20–21: 390. 2011. Type: China. Qinghai: Xunhua, Dalijia Shan, near streams on high summit, alt. 3800 m, Sept. 3, 1936, T. P. Wang 6026

(holotype, PE!).

Ligularia ianthochaeta C. C. Chang in Acta Phytotax. Sin. 1: 321. 1951; S. W. Liu in Fl. Reipubl. Popularis Sin. 77(2): 69. 1989; S. W. Liu & I. D. Illar. in Fl. China 20–21: 412. 2011. syn. nov. Type: China. Gansu: Lianhua Shan, alt. 2400 m, Aug. 1950, Anonymous 383 (holotype, PE!).

For a fuller citation of literature and synonyms, see Liu^[1], and Liu & Illarionova^[2].

Notes. Since its description^[4], *Ligularia ianthochaeta* has been known only from the type specimen with an incomplete inflorescence (Fig. 2: A). The type locality, Lianhua Shan, Gansu Province, is closely adjacent to that of *L. macrodonta*, i.e. Xunhua, Qinghai. We found several herbarium specimens of *L. macrodonta* (Fig. 2: B–D) collected from the Lianhua Shan area and also discovered this species in our expedition to that area in 2011. Both our herbarium and field observations show *L. ianthochaeta* to be conspecific with *L. macrodonta*.

Additional specimens examined. China. Gansu: Lianhua Shan, X. G. Sun et al. 2075 (PE); Lintan, Y. S. Lian et al. 96766 (PE), C. Ren & L. Y. Wang 352 (IBSC); Zhuoni, W. Y. Hsia 8454 (WUK).

Distribution and habitat. *Ligularia macrodonta* is distributed in southwestern Gansu (Lianhua Shan) and eastern Qinghai (Xunhua). It grows on grassy slopes, rocky slopes, or along forest margins at altitudes of 2400–3800 m above sea level.

3. *Ligularia* × *maoniushanensis* X. Gong & Y. Z. Pan in Ann. Missouri Bot. Gard. 95: 493. 2008. Type: China. Yunnan: Ninglang, Maoniushan, in spruce-fir forest, alt. 4200 m, 16 Jul., 2001, X. Gong 22357 (holotype, KUN!).

Ligularia paradoxa Hand.-Mazz. var. *palmatifida* S. W. Liu & T. N. Ho in Acta Phytotax. Sin. 39: 559. 2001; S. W. Liu & I. D. Illar. in Fl. China 20–21: 387. 2011. syn. nov. Type: China. Yunnan: Zhongdian, Haba Xue Shan, open hillside, alt. ca. 4000 m, Aug. 23, 1939, K. M. Feng 2154 (holotype, GH!; isotype, PE!).

Notes. Pan et al.^[5] has revealed, on the basis of evidence from gross morphology, cytology, ISSR



Fig. 1 *Ligularia melanocephala* (Franch.) Hand.-Mazz. A: K. M. Feng 1495 (KUN), Shigao Xue Shan, Zhongdian, Yunnan, China; B: T. T. Yu 12160 (KUN), Xianrendong, Zhongdian, Yunnan, China; C: J. F. Rock 16332 (isotype of *L. brassicoides* Hand.-Mazz., US), Muli, Sichuan, China; D: J. F. Rock 16827 (paratype of *L. brassicoides*, US), Muli, Sichuan, China.

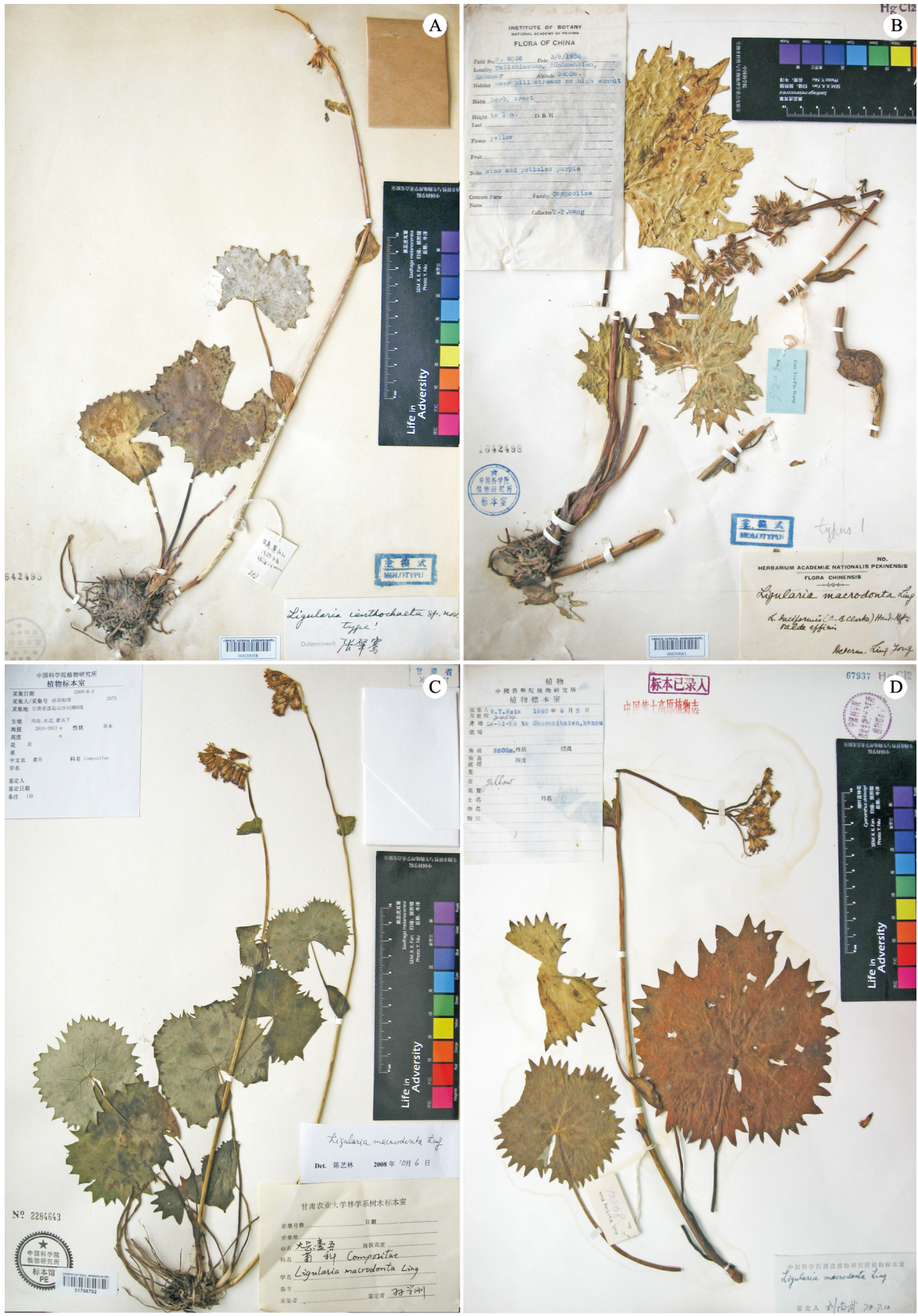


Fig. 2 *Ligularia macrodonta* Y. Ling. A: Anonymous 383 (PE, holotype of *L. ianthochaeta* C. C. Chang), Lianhua Shan, Gansu, China; B: T. P. Wang 6026 (holotype, PE), Dalijia Shan, Xunhua, Qinghai, China; C: X. G. Sun 2075 (PE), Lianhua Shan, Gansu; D: W. Y. Hsia 8454 (WUK), Zhuoni, Gansu, China.



Fig. 3 *Ligularia* × *maoniushanensis* X. Gong & Y. Z. Pan. A: X. Gong 22357 (holotype, KUN), Maoniushan, Ninglang, Yunnan, China; B: K. M. Feng 2154 (holotype of *L. paradoxa* Hand.-Mazz. var. *palmatifida* S. W. Liu & T. N. Ho, GH), Haba Xue Shan, Zhongdian, Yunnan, China.

markers and *trnL-F* sequence data, that *Ligularia* × *maoniushanensis* is a natural interspecific hybrid between *L. paradoxa* Hand.-Mazz. and *L. duciformis* (C. Winkl.) Hand.-Mazz. They stated that this hybrid species had been known only from its type locality. Obviously these authors have ignored the earlier published name *L. paradoxa* var. *palmatifida*, which was described on the basis of a collection from Zhongdian, northwestern Yunnan, i.e. K. M. Feng 2154^[6]. As shown in Figure 3, *L. paradoxa* var. *palmatifida* is morphologically not essentially different from *L. x maoniushanensis*. Their geographical ranges are also closely adjacent. We accept the taxonomic status of *L. x maoniushanensis* herein and thus have to synonymize *L. paradoxa* var. *palmatifida*.

Distribution and habitat. *Ligularia* × *maoniushanensis* is distributed in northwestern Yunnan (Ninglang, Zhongdian), China. It grows in spruce-fir forests or on open slopes at altitudes of 4000–4200 m

above sea level.

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