



Cremanthodium botryocephalum and *C. spathulifolium* are both merged with *Ligularia lagotis* (Asteraceae, Senecioneae)

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Abstract

Our examination of herbarium specimens and observations on living plants demonstrated that *Cremanthodium botryocephalum* and *C. spathulifolium* are both conspecific with *Ligularia lagotis* (Asteraceae, Senecioneae), and thus are synonymized herein.

Key words: Compositae, new synonymy, taxonomy, Xizang

Introduction

Cremanthodium botryocephalum Liu (1984: 55; “*botryocephalum*”) was described on the basis of a single collection, *K.X. Fu 946* (PE; Fig. 1A, B), from Yadong, southern Xizang, China. In the protologue the author stated that it was most closely similar to *C. helianthus* (Franchet 1892: 286) W.W. Smith in Staff of the Royal Botanic Garden Edinburgh (1924: 289), but differed by the capitula 5–6 in a lax and short raceme, bracteoles linear, ray lamina broadly elliptic, and pappus 2–3 mm long. This species is recognized by Liu (1985, 1989) and Liu & Illarionova (2011).

Cremanthodium spathulifolium Liu (1984: 56) was described on the basis of a single collection, *Qinghai-Xizang Exped. 74-2204* (PE; Fig. 1C, D), also from Yadong, southern Xizang, China. In the protologue the author stated that it was similar to *C. botryocephalum*, but differed by the basal leaves oblong-spatulate, apex rotund, base cuneate-attenuate, and the petioles broadly winged. It is to be noted that the same collection was described as new again in 1985, i.e. as *C. hirtiflorum* Liu (1985: 850), which is obviously a nomenclatural synonym of *C. spathulifolium*. *Cremanthodium spathulifolium* is recognized by Liu (1989) and Liu & Illarionova (2011).

A critical examination of the type material of *Cremanthodium botryocephalum* and *C. spathulifolium*, together with our observations on living plants (Fig. 2) in Yadong in southern Xizang, the type locality of the two names, however, convinced us that they both are conspecific with *Ligularia lagotis* (Smith 1911: 70) Handel-Mazzetti (1938: 122). This species, as pointed out by Illarionova (2013), was treated for a long time as being synonymous with *L. virgaurea* (Maximowicz 1881: 484) Mattfeld ex Rehder & Kobuski (1933: 40). Illarionova (2013) clearly demonstrated that *L. lagotis* is a distinctive species, differing from *L. virgaurea* in an array of characters of the pappus and capitula. We agree to the reinstatement of the independent specific status of *L. lagotis*. According to Illarionova (2013), *L. lagotis* is distributed in Bhutan, India (Sikkim), and Nepal. Yadong in southern Xizang, the type locality of both *Cremanthodium botryocephalum* and *C. spathulifolium*, is closely contiguous with Bhutan and Sikkim. As shown in Figs. 3–5, *L. lagotis* is somewhat variable in morphology of the basal leaves, with the blade oblanceolate, elliptic or oblong-lanceolate, 8–15 cm long, 2–7.5 cm broad, and the petiole more or less winged or winged only in the upper; *C. botryocephalum* and *C. spathulifolium* are not essentially different from each other in any character, and both lie within the range of the variation of *L. lagotis*. Foreseeing our taxonomic decision, in the *Flora of Bhutan*, Grierson & Springate (2001) also pointed out that the Himalayan material, which they referred to *L. virgaurea* according to the synonymy provided by Liu (1989), differed considerably from the type but matched the description of *C. botryocephalum* and *C. spathulifolium*, and might therefore need removing from *L. virgaurea* sensu Liu.



FIGURE 1. Specimens of *Ligularia lagotis*. **A.** China, Xizang, Yadong, K.X. Fu 946 (PE, holotype of *Cremanthodium botryocephalum*). **B.** K.X. Fu 946 (PE, isotype of *C. botryocephalum*). **C.** Same locality, Qinghai-Xizang Exped. 74-2204 (PE, holotype of *C. spathulifolium*). **D.** Qinghai-Xizang Exped. 74-2204 (PE, isotype of *C. spathulifolium*).

Taxonomic treatment

Ligularia lagotis (Smith 1911: 70) Handel-Mazzetti (1938: 122). *Senecio lagotis* Smith (1911: 70). Figs. 1–5.

Type:—INDIA. Sikkim: Too-ku-la, 14 July 1877, *G. King 4324* (lectotype CAL!, designated by Illarionova (2013); isoelectotypes BM!, E!).

= *Cremanthodium botryocephalum* Liu (1984: 55; “*botrycephalum*”), **syn. nov.**

Type:—CHINA. Xizang: Yadong, mountain slope, 3100 m a.s.l., 23 July 1960, *K.X. Fu 946* (holotype PE!, isotype PE!).

= *Cremanthodium spathulifolium* Liu (1984: 56), **syn. nov.** *C. hirtiflorum* Liu (1985: 850), nom. illeg. superfl.

Type:—CHINA. Xizang: Yadong, scrub, 2900 m a.s.l., 1 July 1974, *Qinghai-Xizang Exped. 74-2204* (holotype PE!, isotypes KUN!, PE!).

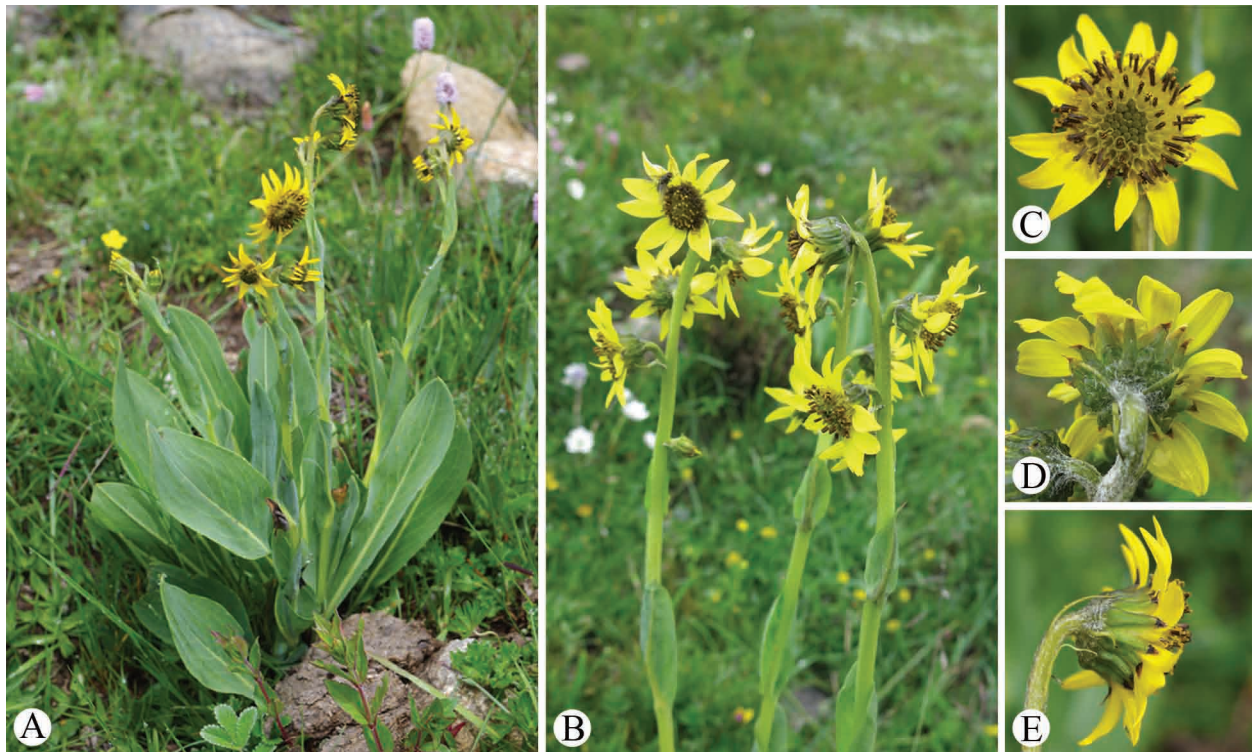


FIGURE 2. *Ligularia lagotis* in the wild (Yadong, Xizang, China). **A.** Habit. **B.** Synflorescences. **C.** Capitulum (top view). **D.** Capitulum (back view). **E.** Capitulum (side view). Photos by M. Tang, C. Ren and G.J. Zhang.

For full description see Illarionova (2013).

Distribution:—Bhutan, China (Xizang; Fig. 6), India (Sikkim), and Nepal.

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

Additional specimens examined:—CHINA. Xizang: Yadong, *Y.S. Chen et al. 13-1813* (PE), *13-1909* (PE), *PE-Xizang Exped. 2626* (PE), *2703* (PE), *M. Tang & C. Ren 608* (IBSC), *630* (IBSC), *881* (IBSC), *885* (IBSC). INDIA. Sikkim: Kho-la, *G. King s.n.* (P); Sibpur, *K.K. Meysner s.n.* (LE).

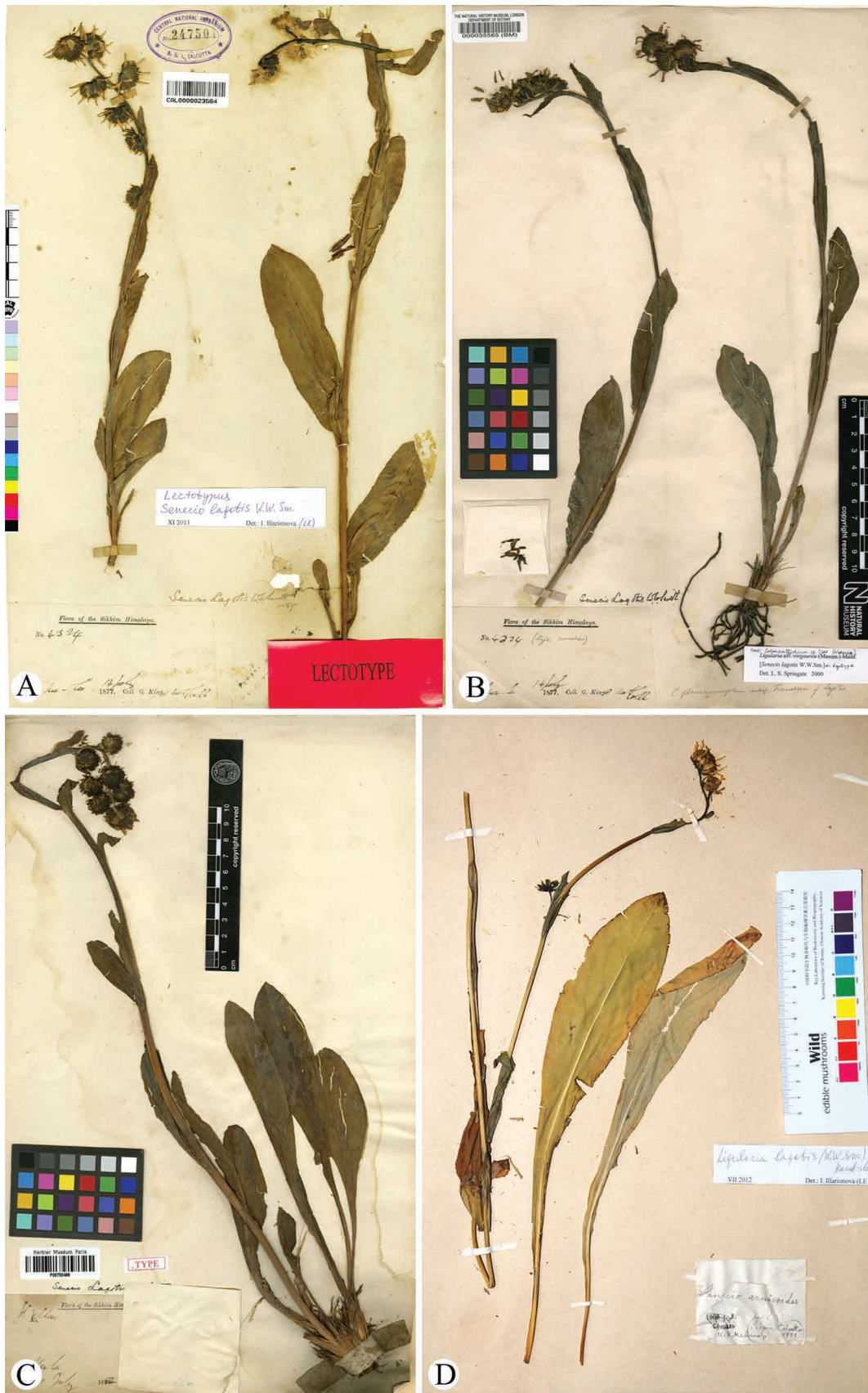


FIGURE 3. Specimens of *Ligularia lagotis*. **A.** India, Sikkim, Too-ku-la, *G. King* 4324 (CAL, lectotype). **B.** *G. King* 4324 (BM, isotype). **C.** India, Sikkim, Pet-za-la, *G. King* s.n. (P). **D.** India, Sikkim, Sibpur, *K.K. Meysner* s.n. (LE).



FIGURE 4. Specimens of *Ligularia lagotis*. **A.** China, Xizang, Yadong, *PE-Xizang Exped. 2703* (PE). **B.** Same locality, *Y.S. Chen et al. 13-1813* (PE). **C.** Same locality, *M. Tang & C. Ren 630* (IBSC). **D.** Same locality, *Y.S. Chen et al. 13-1909* (PE).

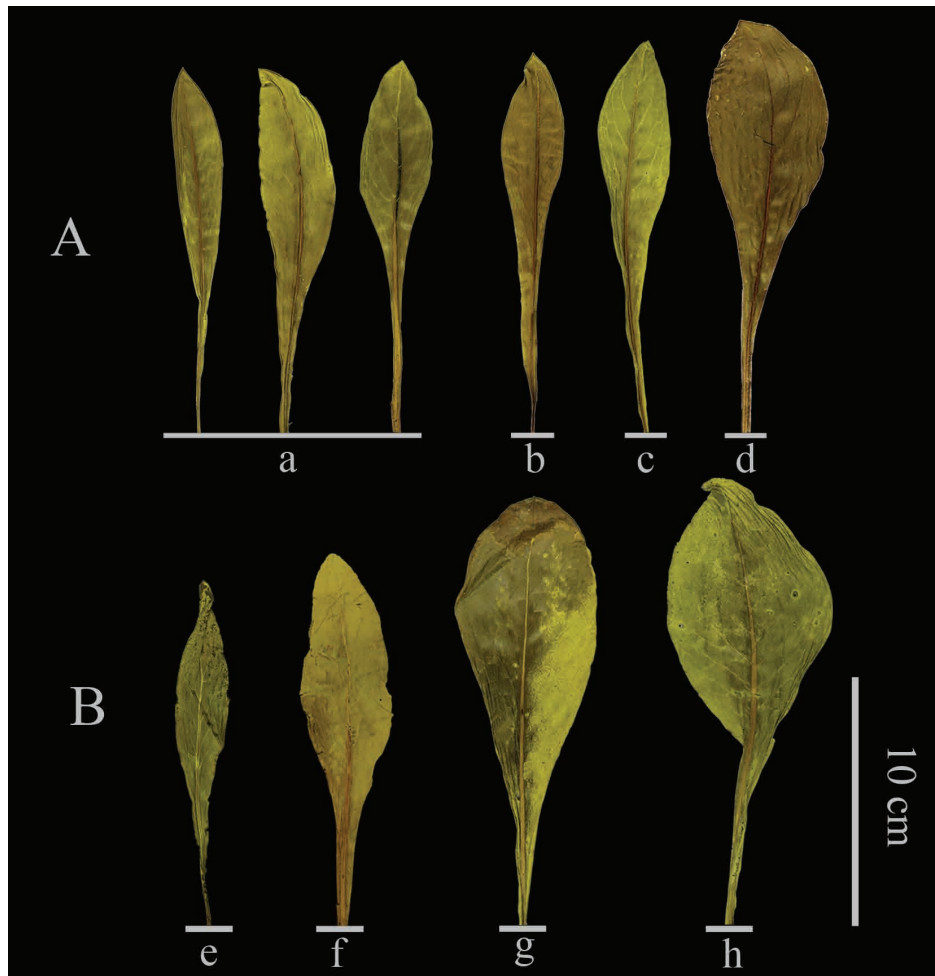


FIGURE 5. Variation of basal leaves in two populations of *Ligularia lagotis*; each letter under the line represents a plant individual. **A.** China, Xizang, Yadong, *M. Tang & C. Ren 881* (IBSC). **B.** Same locality, *M. Tang & C. Ren 630* (IBSC).

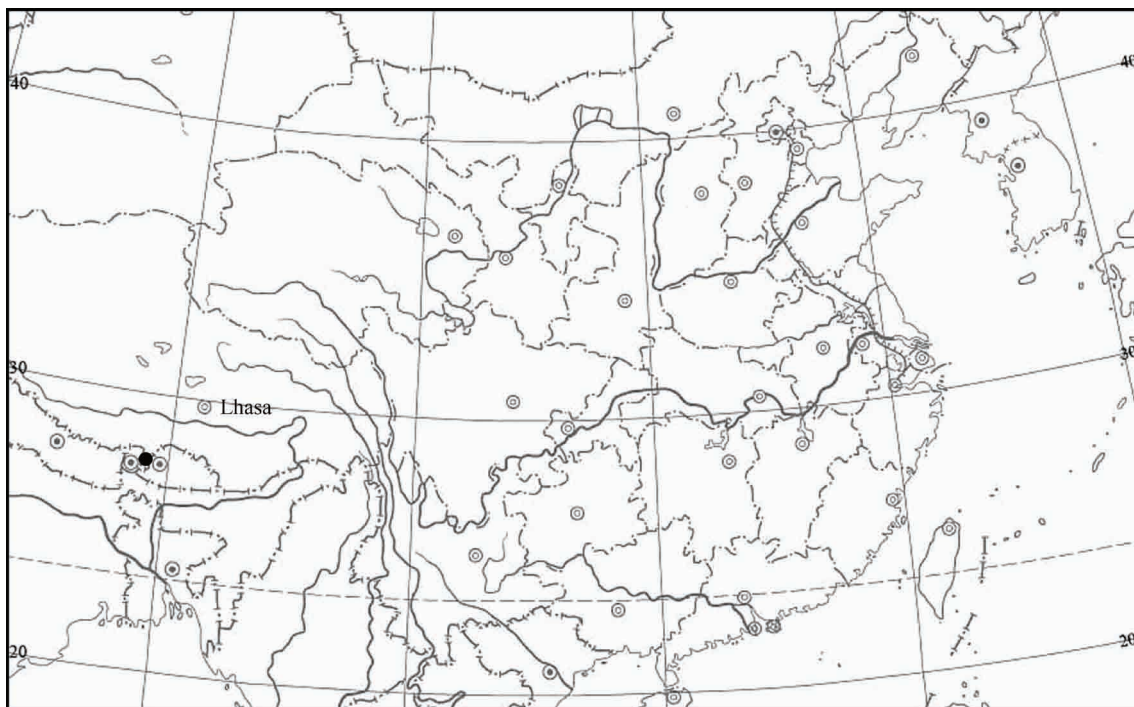


FIGURE 6. Distribution of *Ligularia lagotis* in China (●).

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