

# 心叶合耳菊(菊科-千里光族)的名实订正

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**摘要:** 发现心叶合耳菊(*Synotis cordifolia* Y. L. Chen)(菊科-千里光族)的模式标本与早已处理为红缨合耳菊 [*S. erythropappa* (Bureau & Franch.) C. Jeffrey & Y. L. Chen](该种形态极为多变)的异名的 *Vernonia mairei* H. Lév. 的模式标本都采自云南东川, 在形态上没有本质区别, 故将心叶合耳菊也处理为红缨合耳菊的异名。

**关键词:** 菊科; 千里光族; 合耳菊属; 分类学

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## The Identity of *Synotis cordifolia* (Asteraceae-Senecioneae)

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**Abstract:** The type material of *Synotis cordifolia* Y. L. Chen (Asteraceae-Senecioneae) is found to match perfectly with that of *Vernonia mairei* H. Lév., which has long been treated as a synonym of the very variable *S. erythropappa* (Bureau & Franch.) C. Jeffrey & Y. L. Chen. *Synotis cordifolia* is therefore also reduced to the synonymy of *S. erythropappa*.

**Key words:** Asteraceae; Senecioneae; *Synotis*; Taxonomy

*Synotis* (C. B. Clarke) C. Jeffrey & Y. L. Chen (Asteraceae-Senecioneae) is a genus segregated from the quite heterogeneous *Senecio* L. and includes about 54 species<sup>[1]</sup>. All the species are endemic to the Sino-Himalayan region except for the single species *S. atractylidifolia* (Ling) C. Jeffrey & Y. L. Chen, which occurs in Helan Shan, northern China<sup>[2]</sup>. About 43 species are currently recognized from China for the genus<sup>[1,3]</sup>.

*Synotis cordifolia* Y. L. Chen was described based on a collection, Shun-bin Lan 307 (PE) (Fig. 1: A, B) from Dongchuan, northeastern Yunnan, China<sup>[4]</sup>. In the protologue, the author stated that this

species is very similar to *S. erythropappa* (Bureau & Franch.) C. Jeffrey & Y. L. Chen, but differs in the leaves subleathery, cordate, margin irregularly coarsely dentate, and abaxially yellow pubescent. *Synotis cordifolia* has been recognized by Chen<sup>[3]</sup>, Liu<sup>[5]</sup>, and Chen et al.<sup>[1]</sup> It is noteworthy that Liu<sup>[5]</sup> largely extended its geographical distribution by referring some northwestern and southern Yunnan collections to the species, although he felt somewhat puzzled as to why these specimens did not match well with the original description of *S. cordifolia* in some important morphological characters, such as the number of phyllaries and florets, and the pubescence

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of phyllaries: these specimens often have 5 phyllaries and also 5 florets, and the phyllaries are glandular hairy outside, whereas *S. cordifolia*, according to Chen<sup>[4]</sup>, should have only 3 phyllaries and 3 florets, and the phyllaries are glabrous outside.

*Synotis erythropappa* is widely distributed in China and has been documented to occur in northern Guizhou (Yinjiang), western Hubei (Zigui), western Sichuan, southeastern Xizang, and northeastern and northwestern Yunnan, with the main distribution area in Sichuan and Yunnan<sup>[1-3,5-6]</sup>. As noted by Jeffery and Chen<sup>[2]</sup> and Chen<sup>[3]</sup>, it is a very variable species, particularly in leaf shape. Several species with various leaf shapes described from Yunnan and Sichuan, including *Senecio dianthus* Franch., *S. glumaceus* Dunn, *S. paucinervis* Dunn, *S. talongensis* Franch., *S. viridiflavus* Hand.-Mazz., and *Vernonia mairei* H. Lév., all have been placed in synonymy under *Synotis erythropappa* by Jeffery and Chen<sup>[2]</sup>. This treatment has been widely accepted<sup>[1,3,5-6]</sup>. Of these synonyms, *V. mairei* is worthy of special attention because its type collection, Maire s.n. (E) (Fig. 1: C), was made from Tong-Tchouan (= Dongchuan), northeastern Yunnan, which is also the type locality of *Synotis cordifolia*. The type specimen of *V. mairei* was first determined by Gagnepain<sup>[7]</sup> as *Senecio dianthus* and later as *S. glumaceus* by Lauener<sup>[8]</sup>, both of which are synonyms of *Synotis erythropappa* as just mentioned above.

Our careful examination of the type material of *Synotis cordifolia* and *Vernonia mairei* has shown that all the specimens match perfectly with each other and definitely belong to the same entity. The leaves are long petiolate, ovate-cordate or cordate, margin irregularly coarsely dentate, abaxially yellow pubescent on veins; the phyllaries are 3 in number, glabrous outside; the florets are 3 in number, glabrous; the pappus is pale reddish. We have also checked the type material of all the other above-mentioned synonyms of *S. erythropappa* (Figs. 1: D, 2: A–D) and a large number of other specimens of the species (see below), and found that the variation of leaf shape in this species is remarkably intergrading and is not closely correlated with geographical distribution.

Plants with cordate or subcordate leaves have been discovered from various localities in western Sichuan (Luding, Maoxian) and northeastern Yunnan (Dongchuan). We therefore agree with Jeffery and Chen<sup>[2]</sup> to treat *S. erythropappa* as a polymorphic species. Clearly, *S. cordifolia* is within the variation range of *S. erythropappa* and should be synonymized.

Those above-mentioned specimens (Fig. 3) from northwestern and southern Yunnan, which have cordate leaves and thus have been previously referred to as *Synotis cordifolia* by Liu<sup>[5]</sup>, actually belong to *S. alata* (Wall. ex DC.) C. Jeffrey & Y. L. Chen, a species within *Synotis* ser. *Synotis*. *Synotis alata* may be only distantly related to *S. erythropappa* which belongs to *Synotis* ser. *Oliganthae* C. Jeffrey & Y. L. Chen. *Synotis alata* has 4–5 phyllaries usually densely setulose outside while *S. erythropappa* has 2–3(–4) phyllaries sometimes white-tomentose or pubescent, especially at the base, or glabrous (Fig. 4; also see Jeffery and Chen<sup>[2]</sup>). Undoubtedly the resemblance in their leaf shape is superficial. It is not surprising that Liu<sup>[5]</sup> observed some obvious discrepancies between the specimens he examined and the original description of *S. cordifolia*.

***Synotis erythropappa*** (Bureau & Franch.) C. Jeffrey & Y. L. Chen in Kew Bull. **39**: 324. 1984; Y. L. Chen & D. J. Liu in Fl. Guizhou. **9**: 269. 1989; Y. L. Chen in Fl. Reipubl. Popularis Sin. **77(1)**: 202. 1999; S. W. Liu in Fl. Yunnan. **13**: 396. 2004; Y. L. Chen et al. in Fl. China **20–21**: 501. 2011. — *Senecio erythropappus* Bureau & Franch. in J. Bot. (Morot) **5**: 73. 1891. Type: China. Sichuan: Ta-tsien-lou (= Kangding), Bonvalot and d'Orléans s.n. (holotype: P!).

*Synotis cordifolia* Y. L. Chen in Acta Phytotax. Sin. **33**: 79. 1995; Y. L. Chen in Fl. Reipubl. Popularis Sin. **77(1)**: 202. 1999; S. W. Liu in Fl. Yunnan **13**: 393. 2004, p.p.; Y. L. Chen et al. in Fl. China **20–21**: 500. 2011. syn. nov. Type: China. Yunnan: Dongchuan, Mozi Shan, 3000 m a.s.l., in mixed forests, 28 Oct 1984, Shun-bin Lan 307 (holotype: PE!; isotype: PE!).

For a fuller citation of synonyms see Jeffery and

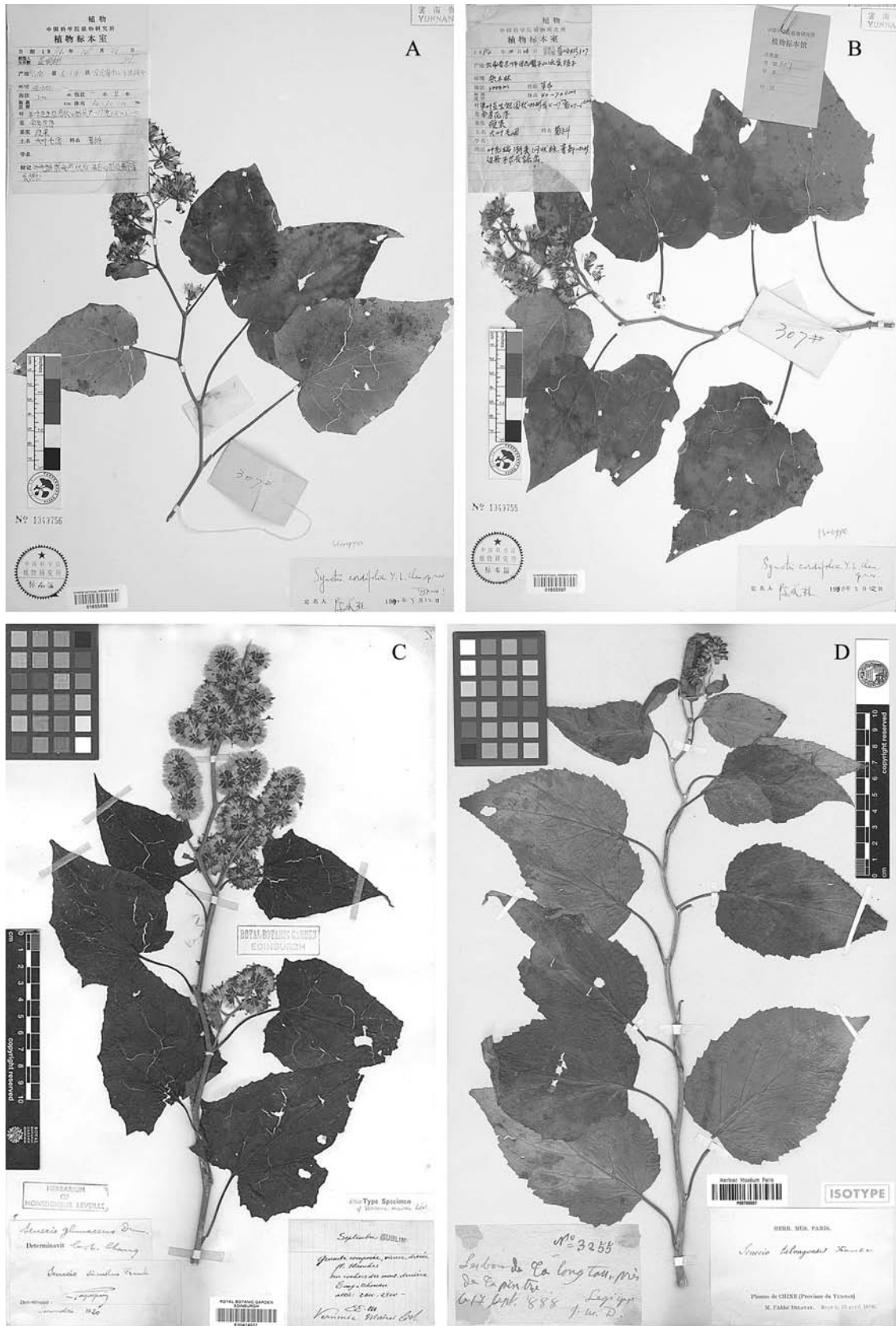


Fig. 1 Specimens of *Synotis erythropappa*. A. China, Yunnan, Dongchuan, Shun-bin Lan 307 (PE, holotype of *S. cordifolia*); B. Same locality, Shun-bin Lan 307 (PE, isotype of *S. cordifolia*); C. China, Yunnan, Tong-Tchouan (= Dongchuan), Maire s.n. (E, holotype of *Vernonia mairei*); D. China, Yunnan, Heqing, Delavay 3255 (P, isotype of *Senecio talongensis*).



Fig. 2 Specimens of *Synotis erythropappa*. A. China, Sichuan, Tachienlu (= Kangding), Henry 8921 (K, syntype of *Senecio glumaceus*); B. China, Yunnan, Eryuan, Delavay 2944 (P, holotype of *S. dianthus*); C. China, Yunnan, Deqen, Handel-Mazzetti 9602 (GH, isotype of *S. viridiflavus*); D. China, Sichuan, Kangding, Soulié 439 (K, syntype of *S. paucinervis*).

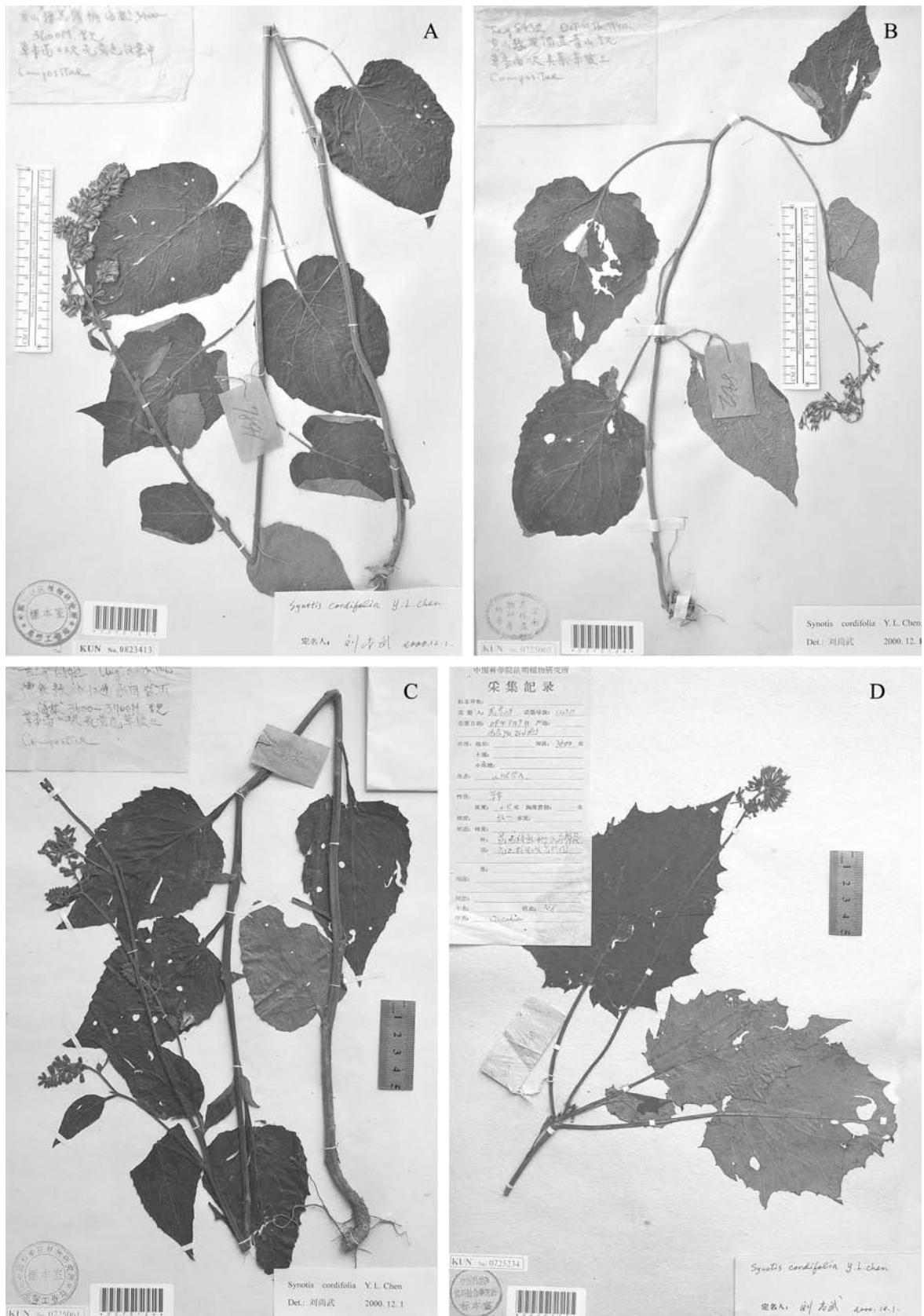


Fig. 3 Specimens of *Synotis alata* which were previously misidentified as *S. cordifolia* by Liu<sup>[5]</sup>. A. China, Yunnan, Gongshan, K. M. Feng 7841 (KUN); B. China, Yunnan, Gongshan, K. M. Feng 8432 (KUN); C. China, Yunnan, Deqen, K. M. Feng 6842 (KUN); D. China, Yunnan, Lushui, S. K. Wu 5438 (KUN).

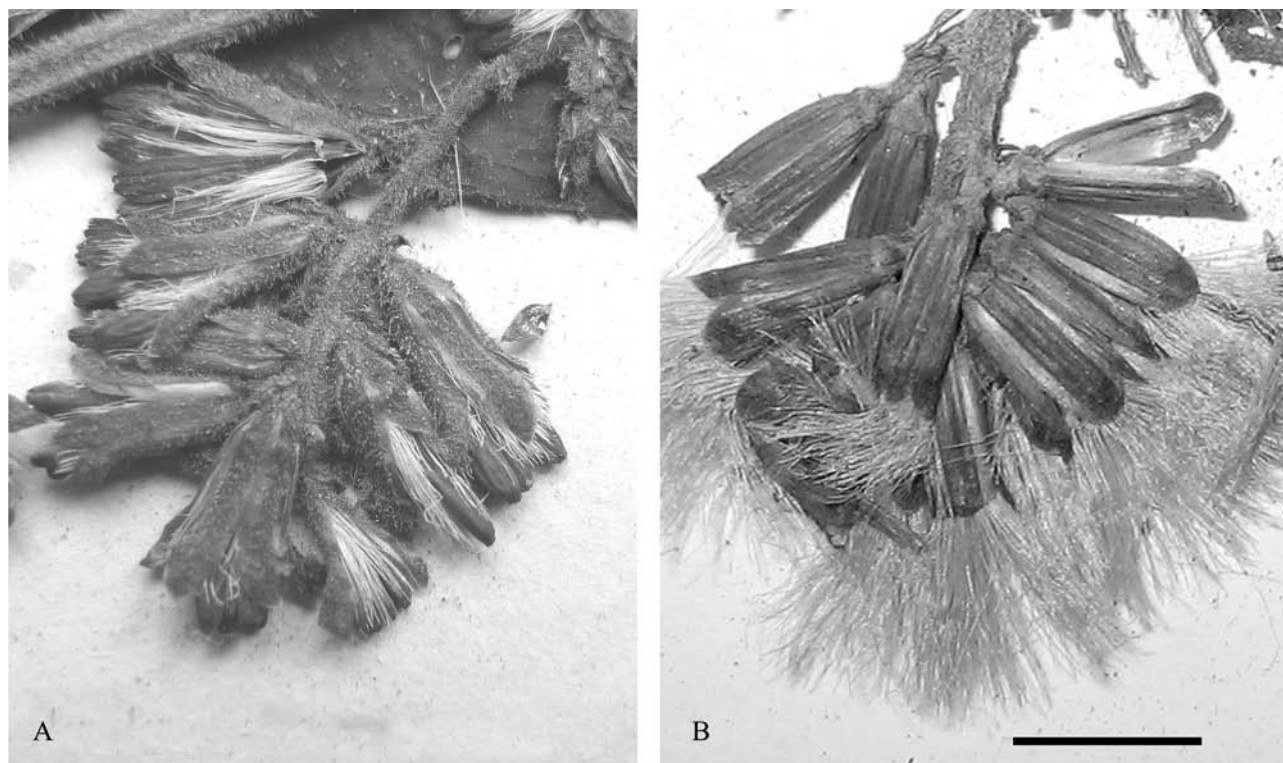


Fig. 4 Capitula in *Synotis alata* (A) and *S. erythropappa* (B), showing the number and pubescence of phyllaries. A. China, Yunnan, Gongshan, K. M. Feng 7481 (KUN, a specimen previously misidentified as *S. alata*), with the phyllaries being 5 in number, densely setulose outside; B. China, Yunnan, Dongchuan, Shun-bin Lan 307 (PE, holotype of *S. cordifolia*), with the phyllaries being 3 in number, glabrous outside. Scale bar = 5 mm.

Chen<sup>[2]</sup>, Chen<sup>[3]</sup>, and Chen et al.<sup>[1]</sup>

**Distribution and habitat.** *Synotis erythropappa* is endemic to China, being documented to be widely distributed in northern Guizhou, western Hubei, western Sichuan, southeastern Xizang (Tibet), and northeastern and northwestern Yunnan (Fig. 5). It grows in forest and thicket margins, and open grassy places, at altitudes between 1500 m and 3900 m above sea level. Its occurrence in northern Guizhou (Yinjiang) reported by Chen and Liu<sup>[6]</sup>, however, needs further confirmation, because afterwards Chen<sup>[3]</sup> and Chen et al.<sup>[1]</sup> did not mention again any Guizhou locality for *S. erythropappa*, and we were not able to find any specimen of this species from Guizhou in the major Chinese herbaria. The only Hubei locality, Zigui, is some 800 km apart from the main distribution area, and is vouchered only by a single collection (T. P. Wang 12048, PE) with only one specimen sheet, and thus also needs further confirmation by field work.

**Additional specimens examined. China:**

**Hubei:** Zigui, T. P. Wang 12048 (PE). **Sichuan:** Baoxing, Anonymous 7344 (CDBI), K. L. Chu 3732 (BM, IBSC), K. C. Kuan and W. T. Wang 2978 (PE), Z. P. Song 39357 (WUK); Barkam, H. F. Chow et al. 23404 (IBSC, PE), H. Li 71764 (IBSC), 71946 (IBSC), 72282 (IBSC), 72561 (IBSC, KUN), S. Y. Zhao 1686 (IBSC); Danba, F. T. Pu et al. 8100 (CDBI); Daocheng, Qinghai-Xizang Exped. 4335 (PE), Sichuan Veget. Exped. 2612 (CDBI); E'mei, J. H. Xiong et al. 31827 (IBSC, LBG), K. H. Yang 56517 (IBSC), Y. L. Chen 8514 (CDBI, PE); Ganluo, Anonymous 3986 (PE), 3986 (PE), 4269 (PE); Heishui, H. Li 73486 (IBSC, KUN), 73990 (IBSC, KUN); Hongya, W. K. Bao et al. 3111 (CDBI), 3170 (CDBI); Jinchuan, H. Li 72282 (PE), 76225 (IBSC), 76326 (IBSC), 76655 (IBSC), 76778 (KUN, IBSC), 76836 (IBSC), 76881 (IBSC), 78223 (IBSC), 78318 (PE), 78491 (PE), 78610 (IBSC), Sichuan Veget. Exped. 9965 (CDBI); Jinyang, Anonymous 14788 (CDBI, PE), T. P. Zhu 240 (CDBI); Jiulong, C. Ren

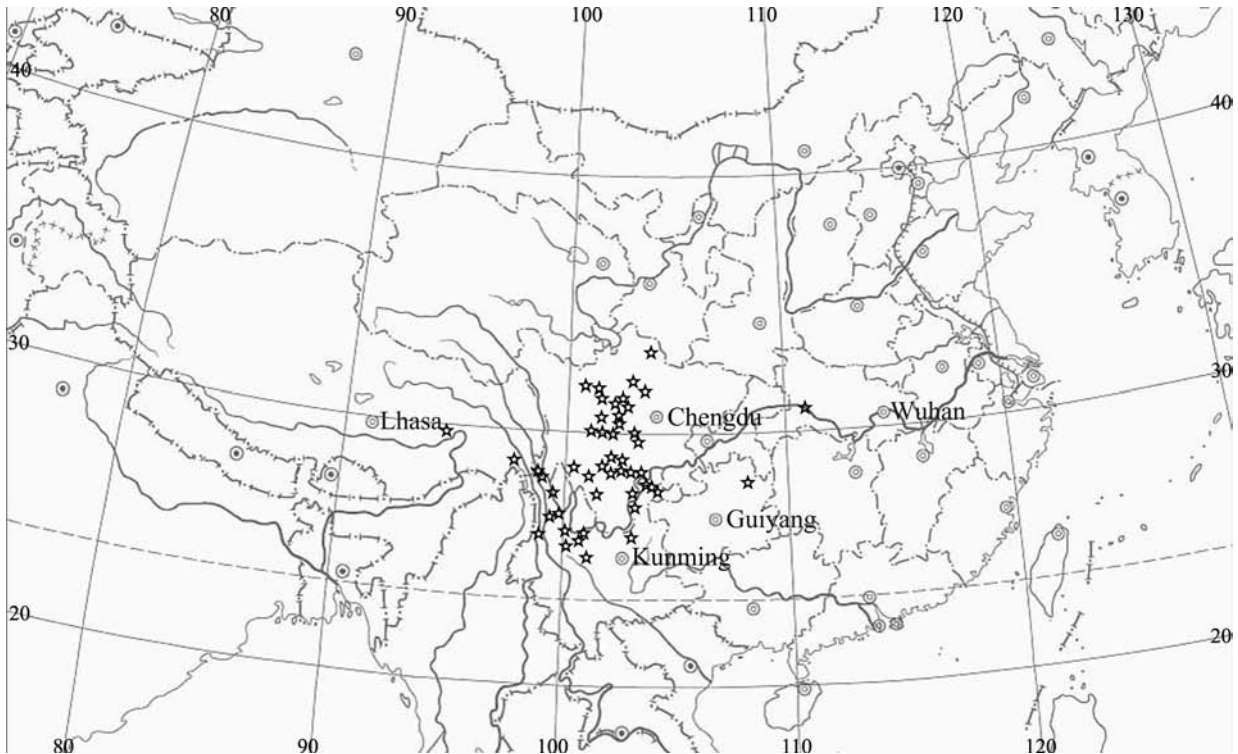


Fig. 5 Distribution of *Synotis erythropappa*.

and L. Y. Wang 150 (IBSC), Z. A. Liu 22872 (IBSC); Kangding, Handel-Mazzetti 12896 (BM), Henry 8919 (K), 8921 (K), K. C. Kuan and W. T. Wang 1489 (PE), Pratt 434 (BM, K), Soulié 439 (K), 474 (K), 693 (K); Leibo, M. Y. He 18873 (CDBI), Q. S. Zhao et al. 118673 (CDBI), 118867 (CDBI), 119063 (CDBI); Lixian, C. Ho 13781 (IBSC), 14211 (IBSC), 14323 (IBSC), D. P. Ho 45777 (IBSC); Luding, T. P. Wang 9809 (WUK), Y. Tang et al. 498 (CDBI), 1376 (CDBI); Maoxian, F. T. Wang 21942 (WUK), W. R. Xu 23297 (IBSC), 23298 (WUK); Meigu, C. T. Kuan 6996 (IBSC), 7453 (IBSC); Mianning, S. F. Zhu 20382 (IBSC); Muli, Qinghai-Xizang Exped. 14302 (PE), Q. S. Zhao et al. 6696 (CDBI), 8285 (CDBI), 8286 (CDBI), 8550 (CDBI), Sichuan Veget. Exped. 457 (CDBI), S. K. Wu 2469 (KUN), 3245 (KUN); Nanping, Nanping Exped. 4108 (CDBI); Shimian, C. C. Hsieh 253075 (IBSC); Tianquan, D. Y. Peng 46262 (CDBI, IBSC); Wenchuan, Sichuan Veget. Exped. 8281 (CDBI); Xiaojin, Anonymous 6480 (CDBI), 6947 (CDBI), 7103 (CDBI); Yanyuan, K. M. Feng 2832 (KUN), Qinghai-Xizang Exped.

12878 (PE); Yuexi, Sichuan Veget. Exped. 14058 (CDBI); Zamgtang, Sichuan Veget. Exped. 9420 (CDBI). **Xizang (Tibet):** Nyingchi, Q. E. Yang 2007-07 (IBSC), C. M. Hu 20200 (IBSC); Zayu, Z. C. Ni 804 (PE). **Yunnan:** Binchuan, Anonymous 2448 (LBG), T. N. Liou 21986 (IBSC, PE); Dagan, Northeast Yunnan Exped. 126 (KUN); Deqen, C. W. Wang 70264 (IBSC, KUN), Handel-Mazzetti 9602 (GH), T. T. Yu 10041 (KUN); Dongchuan, H. Peng et al. 8516 (KUN), Maire s.n. (E); Eryuan, Delavay 2944 (P); Heqing, R. C. Ching 23917 (KUN), Delavay 3255 (P); Lanping, H. T. Tsai 56242 (IBSC); Lijiang, Anonymous 22395 (KUN), 22434 (KUN), H. C. He 21821 (KUN), R. C. Ching 30624 (KUN), 30982 (KUN), W. T. Wang 84 (KUN); Lushui, S. K. Wu 5438 (KUN); Qiaojia, C. Ren and L. Y. Wang 373 (IBSC); Without precise locality, Forest 4042 (BM), 28899 (BM), Maire 554 (BM, IBSC), 858 (BM, IBSC), 881 (BM), 2585 (IBSC), T. T. Yu 7725 (PE); Yiliang, Northeast Yunnan Exped. 770 (KUN); Yongshan, Northeast Yunnan Exped. 626 (KUN); Zhongdian, Q. E. Yang and H. H. Kong 3080 (IBSC),

3128 (IBSC).

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