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# Taxonomic Notes on the Genus *Adenophora* (Campanulaceae) in China

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**ABSTRACT.** New combinations are proposed for four names in Chinese *Adenophora* Fisch. (Campanulaceae), with three names also changing in rank: *A. capillaris* Hemsl. subsp. *paniculata* (Nannf.) D. Y. Hong & S. Ge, *A. petiolata* Pax & K. Hoffm. subsp. *huadungensis* (D. Y. Hong) D. Y. Hong & S. Ge, *A. petiolata* subsp. *hunanensis* (Nannf.) D. Y. Hong & S. Ge, and *A. stricta* Miq. subsp. *aurita* (Franch.) D. Y. Hong & S. Ge. Lectotypes are designated for the following names: *A. capillaris*, *A. capillaris* subsp. *leptosepala* (Diels) D. Y. Hong [= *A. leptosepala* Diels], *A. liliifolioides* Pax & K. Hoffm., *A. polyantha* Nakai, and *A. chanetii* (H. Lév.) D. F. Chamb. [= *Campanula chanetii* H. Lév.].

*Key words:* *Adenophora*, Campanulaceae, China.

The genus *Adenophora* Fisch. (Campanulaceae) is apparently recently derived from the genus *Campanula* L. and is still strongly differentiated (Hong, 1983). Variability in morphological characters such as leaf shape is a prominent feature of *Adenophora*, and this wide range of variation in leaf shape in this genus has been discussed several times (Hong, 1983; Qiu & Hong, 1993; Ge & Hong, 1995). However, previous authors described this variability as a large number of specific and infraspecific taxa, based on a single or occasionally few specimens and a single morphological character. Forty-eight specific and infraspecific taxa have been previously synonymized by Hong (1983), but many new names have arisen thereafter. In a forthcoming volume of *Flora of China* (Vol. 19), 38 species will be recognized; many specific and varietal names published after 1983 will be reduced to synonymy. In this paper, four new combinations are made and five lectotypes are designated.

**1. *Adenophora capillaris*** Hemsl., J. Linn. Soc., Bot. 26(173): 10. 1889. TYPE: China. Hubei: Patung Distr. [Badong Co.], s.d., *A. Henry* 954 (lectotype, designated here, K).

There are two syntypes for *Adenophora capillaris* identified among the holdings at K, both collected by A. Henry (954, 4788), and the earlier collection is selected as lectotype.

**1a. *Adenophora capillaris* subsp. *capillaris*.**

**1b. *Adenophora capillaris* subsp. *leptosepala*** (Diels) D. Y. Hong, Fl. Reipubl. Popularis Sin. 73(2): 136. 1983. Basionym: *Adenophora leptosepala* Diels, Notes Roy. Bot. Gard. Edinburgh 5(25): 175. 1912. TYPE: China. Yunnan: Dali range, E flank, Sep. 1906, *G. Forrest* 3857 (lectotype, designated here, E).

There are two syntypes, both at E, collected by G. Forrest (3857, 3858) from Yunnan, China, and the earlier collection is selected as lectotype.

**1c. *Adenophora capillaris* subsp. *paniculata*** (Nannf.) D. Y. Hong & S. Ge, comb. et stat. nov. Basionym: *Adenophora paniculata* Nannf., Acta Horti Gothob. 5: 19. 1930. TYPE: China. “Shansi austr. [S Shanxi]: Yüan-ch’ü distr. [Yuanqu], Shui-wang-ping [Shunwangping],” ca. 1800 m, 21 July 1924, *H. Smith* 6651 (holotype, GH not seen).

Subspecies *paniculata* differs from other subspecies of *Adenophora capillaris* only in having the calyx lobes generally shorter and entire, the capsule usually ovoid or ovoid-oblong, and the inflorescence branches shorter and more robust. However, a variety of gradations can be found, and there is no distinct demarcation between the subspecies.

*Adenophora capillaris* subsp. *paniculata* is known to be distributed in Hebei (northward to Longguan, Wuling Shan), Henan (Lingbao, Linxian, Lushi, Luanchuan, Songxian, Yiyang), Nei Mongol (Daqing Shan, Tumd Qi, Xinghe), Shaanxi (Qinling Range), and Shanxi (Hong, 1983).

**2. *Adenophora liliifolioides*** Pax & K. Hoffm., Repert. Spec. Nov. Regni Veg. Beih. 12: 499. 1922. TYPE: China. Sichuan: “Ost-Tibet: Dege [Dêgê],” 3900 m, *W. Limpricht* 2112 (lectotype, designated here, WU; isotype, WRS�).

Pax and Hoffmann cited two syntypes in the 1922 protologue: *Limpricht* 2112 from Dêgê in Sichuan

Province and 2807 from the Qinling Range in Shaanxi Province. The collection from Dêgê is consistent with the protologue, so it is designated as the lectotype.

**3. *Adenophora petiolata*** Pax & K. Hoffm., Repert. Spec. Nov. Regni Veg. Beih. 12: 499. 1922. TYPE: China. "Schenhsi [Shaanxi]: Tsin ling schan [Qinling Range], Paßhöhe Tsin ling südöstlich Pauki, 2000 m," s.d., W. Limpricht 2808 (holotype, WRS� not seen).

**3a. *Adenophora petiolata*** subsp. **petiolata**.

**3b. *Adenophora petiolata*** subsp. **huadungensis** (D. Y. Hong) D. Y. Hong & S. Ge, comb. nov. Basionym: *Adenophora hunanensis* Nannf. subsp. *huadungensis* D. Y. Hong, Fl. Reipubl. Popularis Sin. 73(2): 186. 1983. TYPE: China. Jiangxi: Shangrao, Wangfu Shan, 1000 m, 13 Aug. 1958, M. X. Nie 5029 (holotype, PE).

Subspecies *huadungensis* had been previously considered parapatric with the subspecies *hunanensis* (Hong, 1983). Now the latter merges into *Adenophora petiolata* as a subspecies, and thus the three parapatric subspecies form a polytypical species distinguished by the petiolate leaves, the relatively wide and entire calyx lobes, and a campanulate corolla equal to the style in length.

**3c. *Adenophora petiolata*** subsp. **hunanensis** (Nannf.) D. Y. Hong & S. Ge, comb. et stat. nov. Basionym: *Adenophora hunanensis* Nannf. in Hand.-Mazz., Symb. Sin. 7: 1070. 1936. TYPE: China. Hunan: WuKang [Wugang Co.], 1100–1400 m, 10 Aug. 1918, F. H. von Handel-Mazzetti 12424 (holotype, WU; isotype, WU).

The specimens from the Qinling Range and those from western Hunan are quite different from each other. However, if one examines specimens across a broad geographic area (i.e., from Gansu, Shaanxi, Shanxi in the north to Guangdong in the south via Henan and Hubei), the morphological gradation and differences correlate with geography. All of these collections share petiolate leaves, relatively wide calyx lobes, and the style nearly equal to the corolla in length (Hong, 1983), which are characters that characterize *Adenophora petiolata* subsp. *hunanensis*.

**4. *Adenophora polyantha*** Nakai, Bot. Mag. (Tokyo) 23(723): 188. 1909. TYPE: Korea. Phÿng-an: Phÿng-yang, s.d., T. Uchiyama s.n. (lectotype, designated here, TI).

There are two syntypes collected by T. Uchiyama, both at TI, and the one cited first is chosen as the lectotype.

**4a. *Adenophora polyantha*** subsp. **polyantha**.

**4b. *Adenophora polyantha*** subsp. **scabricalyx** (Kitag.) J. Z. Qiu & D. Y. Hong, Acta Phytotax. Sin. 31(1): 39. 1993. Basionym: *Adenophora polyantha* var. *scabricalyx* Kitag., Rep. First Sci. Exped. Manchoukou 4, 2: 112. 1935. TYPE: China. "Jê-Hê [Hebei]: Chang-shan-yü," 14 Sep. 1933, Nakai, Honda & Kitagawa s.n. (holotype, TI).

*Adenophora chanetii* (H. Lév.) D. F. Chamb., Notes Roy. Bot. Gard. Edinburgh 35: 248. 1977, syn. nov. Basionym: *Campanula chanetii* H. Lév., Repert. Spec. Nov. Regni Veg. 9: 450. 1911. TYPE: China. Hebei: Fuping, June 1909, L. Chanet 426 (lectotype, designated here, E).

*Adenophora scabridula* Nannf. var. *viscida* P. C. Tsoong, Contr. Inst. Bot. Nat. Acad. Peiping, 3(3): 80. 1935, syn. nov. TYPE: China. "Hopei [Hebei]: vic. of Peiping [Beijing]," 21 Aug. 1934, P. C. Tsoong 803 (holotype, PE).

Hector L evill e (1911) described *Campanula chanetii* on the basis of two syntypes, L. Chanet 426 and 569, and both are present at E. The earlier collection from 1909 is selected over the August 1910 Chanet 569 collection.

When first investigating the *Adenophora polyantha* group (Qiu & Hong, 1993), we were unaware of the names *A. chanetii* and *A. scabridula* var. *viscida*. Both correspond to the *A. polyantha* group, and both names synonymize to *A. polyantha* subsp. *scabricalyx*.

**5. *Adenophora stricta*** Miq., Ann. Mus. Bot. Lugduno-Batavi 2: 192. 1866.

**5a. *Adenophora stricta*** subsp. **stricta**.

*Adenophora stricta* Miq. var. *nanjingensis* P. F. Tu & G. J. Xu, J. China Pharm. Univ. 21(1): 17, fig. 1E. 1990, syn. nov. TYPE: China. Jiangsu: Nanjing, Qixia Shan, 21 Oct. 1986, P. F. Tu 86036 (holotype, CPU not seen).

*Adenophora stricta* Miq. var. *qinglongshanica* P. F. Tu & G. J. Xu, J. China Pharm. Univ. 21(1): 17, fig. 1D. 1990, syn. nov. TYPE: China. Jiangsu: Nanjing, Qixia Shan, 11 Oct. 1986, P. F. Tu 86033 (holotype, CPU not seen).

Both varieties described by Tu et al. (1990) differ just slightly from the most common form of *Adenophora stricta* subsp. *stricta*. Their distributions are sympatric with the typical subspecies, sharing similar habitats in China. Varieties *nanjingensis* and *qinglongshanica* both synonymize to the autonymic subspecies for *A. stricta*.

**5b. *Adenophora stricta*** subsp. **aurita** (Franch.) D. Y. Hong & S. Ge, comb. et stat. nov. Basionym:

*Adenophora aurita* Franch., J. Bot. (Morot) 9: 366. 1895. TYPE: China. Sichuan: Ta-tsien-lou [Kangding], 1893, *J. A. Soulie 501* (holotype, P not seen; isotype, G).

*Adenophora stricta* subsp. *aurita* is rather similar to *A. stricta* subsp. *sessilifolia* D. Y. Hong. Subspecies *aurita* differs only in having the corolla slightly longer (2–2.5 cm vs. 1.5–2.3 cm) and the floral disc relatively longer (1.8–2.5 mm vs. 1–1.8 mm). *Adenophora stricta* subsp. *aurita* is distributed in northwestern Sichuan, allopatric with the distributional area of subspecies *sessilifolia*. The taxon is maintained at subspecies rank, being geographically distinct, yet its variability falls within the range of the species *A. stricta*.

**5c. *Adenophora stricta* subsp. *confusa*** (Nannf.) D. Y. Hong, Fl. Reipubl. Popularis Sin. 73(2): 105. 1983. Basionym: *Adenophora confusa* Nannf., Symb. Sin. 7(4): 1068. 1936. TYPE: China. Yunnan: “Yülung-schan bei Lidjiang” [Lijiang, Yulong Snow Range], s.d., *G. Forrest 6282* (holotype, E).

**5d. *Adenophora stricta* subsp. *sessilifolia*** D. Y. Hong, Fl. Reipubl. Popularis Sin. 73(2): 185. 1983. TYPE: China. Hubei: Lichuan, 23 Sep.

1957, *G. X. Fu & Z. S. Zhang 1580* (holotype, PE).

*Adenophora stricta* Miq. subsp. *henanica* P. F. Tu & G. J. Xu, J. China Pharm. Univ. 21(1): 17, fig. 1C. 1990, syn. nov. TYPE: China. Henan: Songxian, 1600 m, 15 Aug. 1987, *S. Y. Liu 87050* (holotype, CPU not seen).

Tu and Xu’s (1990) *Adenophora stricta* subsp. *henanica*, described from Henan, China, appears to be exactly the same as *A. stricta* subsp. *sessilifolia* in every morphological aspect and is synonymized here.

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