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## Two New Combinations in *Syringa* (Oleaceae) and Lectotypification of *S. sweginzowii*

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**ABSTRACT.** Two new combinations are proposed in *Syringa* L. (Oleaceae) based on examination of specimens, population sampling, and character analysis: *S. tomentella* Bureau & Franchet subsp. *yunnanensis* (Franchet) Jin Y. Chen & D. Y. Hong, and *S. tomentella* subsp. *sweginzowii* (Koehne & Lingelsheim) Jin Y. Chen & D. Y. Hong. *Syringa wilsonii* C. K. Schneider is treated as a synonym of *S. tomentella* subsp. *sweginzowii*. The lectotype of *S. sweginzowii* Koehne & Lingelsheim is designated.

*Key words:* China, Oleaceae, *Syringa*.

*Syringa tomentella* Bureau & Franchet was described as new by Bureau and Franchet (1891) based on a specimen from Kangding, Sichuan Province, China. Meanwhile, Franchet (1891) described *S. yunnanensis* Franchet as new, based on Delavay's collection from Dali, Yunnan Province, China. Koehne and Lingelsheim (1910) described *S. sweginzowii* Koehne & Lingelsheim as new, based on a plant cultivated in the arboretum of Max von Silbers near Riga, and they believed that it came from East Asia. C. K. Schneider (1913) described *S. tetanoloba* C. K. Schneider, *S. rehderiana* C. K. Schneider, and *S. wilsonii* C. K. Schneider as new based on Wilson's specimens from Sichuan Province, but he later (Schneider, 1917) stated that *S. tetanoloba* was identical to *S. sweginzowii*, that *S. wilsonii* was scarcely different from *S. tomentella*, and that *S. rehderiana* might be only a variety of *S. tomentella*. *Syringa alborosea* N. E. Brown, *S. adamiana* Balfour f. & W. W. Smith, and *S. tigerstedtii* Harry Smith were

described as new based on specimens also from Sichuan Province (Brown, 1914; W. W. Smith, 1916; H. Smith, 1948). All of these taxa are closely related. Chang (1992) and Chang et al. (1996) recognized three species in the complex—*S. yunnanensis*, *S. tomentella*, and *S. sweginzowii*—with *S. adamiana*, *S. alborosea*, *S. rehderiana*, and *S. wilsonii* treated as synonyms of *S. tomentella*, and with *S. tetanoloba* and *S. tigerstedtii* as synonyms of *S. sweginzowii*. They stated that the three species differed from each other in indumentum and size of the leaves, the shape of the corolla tube, and the position of the anthers relative to the corolla tube.

To reveal the morphological variation of these species, we examined more than 200 specimens (including all type specimens of the above taxa) and undertook population sampling in Sichuan and Yunnan provinces. The results show that the morphological characters employed by the above authors for taxa delimitation vary continuously. Leaves of *Syringa tomentella* are pubescent, those of *S. yunnanensis* are usually glabrous, and only occasionally pubescent, while those of *S. sweginzowii* are adaxially glabrous and abaxially glabrous to pubescent, showing continuous variation in leaf indumentum. Length of leaf blades varies continuously (1.8–12.2 cm) among the populations, indicating little significance for taxonomy of the complex. To effectively compare the shape of corolla tubes (CTS), we used the formula  $CTS = (\text{diameter of corolla throat} - \text{diameter of corolla base}) / \text{length of corolla tube}$ . The results show that CTS varies continuously among the populations, and that

the corolla tube of *S. yunnanensis* is slightly funnellform, that of *S. sweginzowii* is generally cylindrical, and that of *S. tomentella* is usually subcylindrical. There are no distinct differences among the three taxa in anther insertion at the corolla tube: varying from near the corolla throat in *S. tomentella*, usually below the corolla throat in *S. sweginzowii*, and below the corolla throat to slightly protruded in *S. yunnanensis*. Our morphological analysis and multivariate analysis show no clear discrimination among the three taxa. *Syringa yunnanensis* and *S. sweginzowii* overlap in their distribution along the border of Sichuan (Muli, Daocheng) and Xizang (Bomi, Zayu), and *S. tomentella* and *S. sweginzowii* are sympatric in Sichuan (Kangding). Rather than the independent recognition of these three species, only one species with three subspecies is therefore recognized according to their morphology and distribution.

**1. *Syringa tomentella* Bureau & Franchet, J. Bot. (Morot) 5: 103. 1891. TYPE:** China. Sichuan: Kangding, July 1890, *M. Bonvalot & H. Orleans s.n.* (holotype, P).

Deciduous shrubs to 6 m. Leaves lanceolate, elliptic, ovate to obovate, (1.8–)2.5–9(–10) × (0.7–)1.3–4.1(–5.3) cm, glabrous to densely pubescent, lateral veins in 4 to 8 pairs; petioles 0.3–2 cm. Inflorescences terminal, with leaves at the base, 6–30 × (2–)2.6–14(–22) cm; rachises quadrangular, lenticellate, glabrous to pubescent. Calyx truncate to toothed, glabrous to pubescent, 1–3 × 1–2.5 mm; corolla tube cylindrical to funnellform, pink to pinkish white, (3.5–)4.6–10.3(–13) mm, corolla base 0.6–1.5 mm diam., corolla throat (1–)1.3–2.8(–3) mm diam.; corolla lobes elliptic, triangular to ovate, (1.5–)2.1–4.6(–5) × (0.8–)1–1.9(–3) mm; anthers yellow, 0–2(–3) mm below corolla throat to 0.3–1 mm above corolla throat. Capsule oblong to conical, 10–20 × 3–7 mm, smooth to lenticellate.

*Distribution, habitat, and phenology.* *Syringa tomentella* is distributed in Sichuan and Yunnan provinces and Xizang Autonomous Region in China, growing in open thickets, forests, or forest margins, at altitudes from 2400–4200 m. Flowering was observed in June. Three subspecies are presented in the key below:

KEY TO THE SUBSPECIES OF *SYRINGA TOMENTELLA*

1a. Leaves usually pubescent adaxially and densely pubescent abaxially; anthers inserted 0–0.1(–0.5) mm below corolla throat. . . . .  
 . . . . .subsp. *tomentella* Bureau & Franchet

1b. Leaves usually glabrous adaxially, glabrous to sparsely pubescent abaxially; anthers inserted 0.5–2(–3) mm below corolla throat, rarely protruded to 1 mm . . . . . 2  
 2a. Corolla tube usually funnellform, 4.6–8.5 mm, corolla throat 1.6–2.8 mm diam.; leaf blades usually glabrous, only occasionally pubescent. . . . .  
 . . . . .subsp. *yunnanensis* (Franchet) Jin Y. Chen & D. Y. Hong  
 2b. Corolla tube usually cylindrical, 5.1–10.3 mm, corolla throat 1.3–2.4 mm diam.; leaf blades usually sparsely pubescent abaxially, rarely glabrous . . . . .  
 . . . . .subsp. *sweginzowii* (Koehe & Lingelsheim) Jin Y. Chen & D. Y. Hong

**1a. *Syringa tomentella* subsp. *tomentella* Bureau & Franchet.**

*Syringa rehderiana* C. K. Schneider, Pl. Wilson. (Sargent) 1: 299. 1912. TYPE: China. Sichuan: Kangding, 3600–4000 m, July 1908, *E. H. Wilson 1273a* (holotype, A).

*Syringa alborosea* N. E. Brown, Bull. Misc. Inform. Kew 1914: 187. 1914. TYPE: China. Sichuan: Kangding, 2 June 1914, *E. H. Wilson 1739* (holotype, K).

*Syringa adamiana* Balfour f. & W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 9: 131. 1916. TYPE: China. Sichuan: Kangding, June 1915, *C. M. Watson s.n.* (holotype, E; isotype, K).

Leaves lanceolate, elliptic to ovate, (3.2–)4.4–7.4(–9.5) × (1.6–)2.1–3.8(–5.3) cm, pubescent adaxially and densely pubescent abaxially. Inflorescences 8–30 × (3–)4.8–9.4(–12) cm; rachises pubescent and lenticellate. Calyx 1.5–2.5 × 1–2.5 mm; corolla tube subcylindrical, (5–)6.6–9.9(–13) mm, corolla base 1–1.5 mm diam., corolla throat (1.2–)1.8–2.5(–3) mm diam.; corolla lobes elliptic to triangular, (1.5–)2.1–3.6(–5) × (1–)1.5–2.2(–3) mm; anthers 0–0.1(–0.5) mm below corolla throat. Capsule oblong to conical, 10–18 × 3–7 mm, smooth to lenticellate.

*Distribution, habitat, and phenology.* *Syringa tomentella* subsp. *tomentella* is chiefly distributed in Kangding, Sichuan Province, China, growing in open thickets at altitudes between 2400 and 3400 m. Observed as flowering in June.

*Representative specimens examined.* CHINA. Sichuan: Panlanshan, *E. H. Wilson 2584* (K); Kangding, *J. Y. Chen 04174, 04188* (PE), *X. L. Jiang 36042, 36790* (PE), *A. E. Pratt 185* (P), *Z. J. Zhao 114054, 115749* (PE).

**1b. *Syringa tomentella* subsp. *yunnanensis* (Franchet) Jin Y. Chen & D. Y. Hong, comb. et stat. nov.** Basionym: *Syringa yunnanensis* Franchet, Rev. Hort. (Paris) 308. 1891. TYPE: China. Yunnan: Dali, 3000 m, 17 June 1887, *J. M. Delavay 2619* (holotype, P).

*Syringa yunnanensis* var. *pubicalyx* Z. P. Jien ex P. Y. Bai in Acta Bot. Yunnan. 5: 179. 1983. *Syringa yunnanensis* f. *pubicalyx* (Z. P. Jien ex P. Y. Bai) M. C. Chang, Invest. Stud. Nat. 10: 35. 1990. TYPE: China. Yunnan:

Shangri-La (Zhongdian), Haba, 3200 m, 1 June 1937, T. T. Yu 11483 (holotype, KUN).

Leaves elliptic, ovate to obovate, (1.8–)2.8–9(–10) × (0.7–)1.3–4.1(–4.9) cm, usually glabrous, rarely pubescent. Inflorescences 7–26 × (2–)2.6–14(–22) cm; rachises lenticellate. Calyx usually glabrous, rarely pubescent, 1–3 × 1–2 mm; corolla tube usually funnellform, (3.5–)4.6–8.5(–10) mm, corolla base 0.6–1.5 mm diam., corolla throat (1–)1.6–2.8(–3) mm diam.; corolla lobes 2–3.6(–4.5) × 1–2(–2.5) mm; anthers 0–1(–2) mm below corolla throat, rarely 0.3–1 mm above throat. Capsule usually oblong, 12–20 × 3–7 mm, smooth to lenticellate.

*Distribution, habitat, and phenology.* *Syringa tomentella* subsp. *yunnanensis* is distributed in western Sichuan, northwestern Yunnan, and southeastern Xizang in China, growing in forests, forest margins, or open thickets, at altitudes from 2600–3700 m. Observed as flowering in June.

*Representative specimens examined.* CHINA. **Sichuan:** Daocheng, Z. G. Liu 625 (CDBI); Derong, *Qinghai-Tibet Exped.* 3185 (PE); Muli, *Fliegner et al.* 1155 (K), J. F. Rock 18058 (K), J. F. Rock 23767 (E), *Qinghai-Tibet Exped.* 14204 (PE), Q. S. Zhao et al. 4561 (CDBI); Yanyuan, H. F. Handel-Mazzetti 559 (E), *Qinghai-Tibet Exped.* 12482 (PE). **Yunnan:** Dali, H. C. Wang 4750, 4780 (PE); Deqen, T. T. Yu 8545 (PE); Heqing, R. C. Ching 23916 (KUN, PE); Lijiang, D. Chamberlain et al. 138 (E), R. C. Ching 30209, 30850 (KUN), A. L. Zhang 100316 (KUN), S. Zhou 1048 (KUN); Shangri-La, J. Y. Chen 04189, 04204 (PE), T. T. Yu 11463, 11986 (PE); Weixi, Q. W. Wang 63752, 63935 (PE); Yangbi, *Jinshajiang Exped.* 4345 (PE). **Xizang:** Bomi, *Tibet Exped.* 0562 (HNWP); Tsarung, J. F. Rock 23180 (E); Zayu, *Qinghai-Tibet Exped.* 73376 (PE).

**1c. *Syringa tomentella* subsp. *sweginzowii*** (Koehne & Lingelsheim) Jin Y. Chen & D. Y. Hong, comb. et stat. nov. Basionym: *Syringa sweginzowii* Koehne & Lingelsheim, *Repert. Spec. Nov. Regni Veg.* 8: 9. 1910. TYPE: Fig. 8A in Koehne, *Mitt. Deutsch. Dendrol. Ges.* 19: 112. 1910 (lectotype, designated here, Koehne, 1910: fig. 8A).

*Syringa tetanoloba* C. K. Schneider, *Pl. Wilson.* (Sargent) 1: 299. 1912. TYPE: China. Sichuan: Songpan, 3600–4000 m, Aug. 1910, E. H. Wilson 4569 (holotype, A).

*Syringa tigerstedtii* Harry Smith, *Lustgården* 28–29: 107. 1948. TYPE: China. Sichuan: Danba, Maoniui, 3000 m, 1 Oct. 1934, H. Smith 12649 (holotype, UPS; isotypes, A, E).

*Syringa wilsonii* C. K. Schneider, *Pl. Wilson.* (Sargent) 1: 300. 1912. Syn. nov. TYPE: China. Sichuan: Kangding [Tachien-lu], 2500–3300 m, June & Oct. 1908, E. H. Wilson 1273 (holotype, A not seen; isotypes, E, K, PE).

Leaves elliptic, lanceolate to ovate, (2.2–)2.5–7.5(–8.5) × (1.4–)1.7–3.9(–4.4) cm, usually glabrous adaxially and glabrous to pubescent abaxially. Inflorescences 6–30 × (2.5–)2.7–11.2(–12) cm; rachises lenticellate, pubescent to glabrous. Calyx usually glabrous, 1–3 × 1–2 mm; corolla tube usually cylindrical, (4–)5.1–10.3(–11) mm, corolla base 0.6–1.5 mm diam., corolla throat (1–)1.3–2.4(–3) mm diam.; corolla lobes elliptic to triangular, (2–)2.6–4.6(–5) × (0.8–)1–1.9(–2) mm; anthers 0.5–2(–3) mm below corolla throat. Capsule oblong to conical, 10–20 × 3–5 mm, smooth to lenticellate.

*Distribution, habitat, and phenology.* *Syringa tomentella* subsp. *sweginzowii* is distributed in Sichuan and Xizang provinces in China, growing in forests, forest margins, valleys, or on open slopes, at altitudes from 2400–4200 m. Observed as flowering in June.

*Discussion.* Since Koehne and Lingelsheim (1910) described *Syringa sweginzowii* from a cultivated plant and did not designate any type specimen for it, we designate here Koehne's (1910: fig. 8A) figure as the lectotype of *S. sweginzowii* in accordance with the *International Code of Botanical Nomenclature* (Greuter et al., 2000: Art. 9.2, 9.13).

*Syringa wilsonii* resembles *S. sweginzowii* with respect to the indumentum on leaves, inflorescences, and calyces. In contrast, *S. wilsonii* is closely related to *S. tomentella* in the shape of the corolla tube and the position of anthers inserted at the corolla tube. It represents a morphological transition from *S. tomentella* to *S. sweginzowii*. Chang (1992) and Chang et al. (1996) treated *S. wilsonii* as a synonym of *S. tomentella*, but our multivariate analysis (Chen, unpublished data) suggests that *S. wilsonii* more closely resembles *S. sweginzowii* and is better treated as a synonym of *S. tomentella* subsp. *sweginzowii*.

*Representative specimens examined.* CHINA. **Sichuan:** Barkam, X. Li 71160, 71231 (PE), W. L. Chen 7564 (PE); Dajin, X. Li 76293, 77310 (PE); Daocheng, Z. G. Liu 0025 (CDBI); Dege, Y. W. Tsui 5130 (PE); Garze, W. L. Chen 6775, 7231 (PE); Heishui, X. Li 73125, 73995 (PE); Jiulong, *Anonymous* 20080 (CDBI); Kangding, J. A. Soulie 563 (P), M. D. Liu & Z. G. Liu 4771 (CDBI, PE), Q. S. Zhao et al. 112917 (SZ); Lixian, J. Y. Chen 04153, 04162 (PE), W. G. Hu 53415, 53650 (PE), D. P. He 44228, 44306 (PE); Liuba, C. R. Lancaster 934 (K); Luhuo, Q. S. Zhao et al. 111253 (PE, SZ); Muli, Y. B. Yang 7138 (CDBI, PE), Q. S. Zhao et al. 6811 (CDBI); Serta, S. Jiang 9095 (PE); Songpan, *Berezovskii s.n.* (LE), K. T. Fu 1772, 2003 (PE); Xiangcheng, J. Dong 28856 (CDBI); Xiaojin, X. S. Zhang & Y. X. Ren 5847 (CDBI, PE), 7129 (PE); Yajiang, W. L. Chen 6590 (PE), S. Jiang 5122 (PE). **Xizang:** Bomi, B. S. Li & S. Z. Cheng 529 (PE), R. F. Huang 717, 1029 (HNWP); Jamda, *Qinghai-Tibet Exped.* 9915 (PE), *Xizang Exped.* 2266 (HNWP); Qamdo, *Qinghai-*

*Tibet Exped. 7325* (PE); Zayu, *Qinghai-Tibet Exped. 10346* (PE).

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