

Lectotypification of the names *Scrophularia alata* and *S. kakudensis* (Scrophulariaceae)

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According to Article 9.3 of the International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code), a lectotype may be selected as the nomenclatural type from the original material, if the name was published without a holotype. While reviewing the genus *Scrophularia* collected in Northeast Asia, we found that two species, *S. alata* A. Gray and *S. kakudensis* Franch., were still untypified. *S. alata* has three specimens considered as syntypes in two herbaria, Harvard University and the Smithsonian Institution. For *S. kakudensis*, two specimens considered as syntypes at the Muséum National d'Histoire Naturelle, Paris were classified as normal specimens, not type specimens. Therefore, two species of *Scrophularia* L. namely, *S. alata* A. Gray and *S. kakudensis* Franch., are lectotypified. The lectotypes are kept in the Harvard University and the Muséum National d'Histoire Naturelle, Paris, respectively. Furthermore, some nomenclatural issues related to these names are discussed, and the photographs of the selected lectotypes are provided.

Keywords: lectotypification, Scrophulariaceae, *Scrophularia alata*, *Scrophularia grayana*, *Scrophularia kakudensis*

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INTRODUCTION

Comprising approximately 270 recognized species, the genus *Scrophularia* L. is one of the largest genera in the family Scrophulariaceae. These taxa are distributed broadly throughout temperate regions of the Northern Hemisphere and sporadically in some regions of the Southern Hemisphere (Stiefelhagen, 1910; Hong, 1983). Several morphological characteristics of *Scrophularia* L. distinguish this genus from others, such as its opposite leaves, symmetrical and pot-like labiate corollas, five corolla lobes, four stamens with staminodes, and two divided capsules (Gorshkova, 1955; Yamazaki, 1993; Hong *et al.*, 1998). Twelve species are recognized in Northeast Asia, including Northeast China, Japan, Korea, and the Russian Far East (Jang, 2016).

Scrophularia alata A. Gray grows on the seashores of Japan, Korea, and the Russian Far East. It has simple and stout roots, winged stems, rounded calyces, and a nectary

disk complete with ovaries. Another species, *S. kakudensis* Franch., thrives in the mountainous areas of northeastern China, Japan, and Korea. It has fusiform roots, pubescent stems, acute-shaped calyces, and a nectary disk deeply lobed with ovaries (Jang and Oh, 2013; Jang, 2016). The taxonomy of both species has been widely described in the literature (Yamazaki, 1993; Choi, 2007; Kamada *et al.*, 2007; Han *et al.*, 2009). While we were identifying the genus *Scrophularia* L. collected in Northeast Asia, we found that these two species described by Gray (1858) and Franchet (1879) were still untypified. According to Article 9.3 of the International Code of Nomenclature for algae, fungi, and plants (ICN) (Shenzhen Code, Turland *et al.*, 2018), a lectotype may be selected as the nomenclatural type from the original material, if the name was published without a holotype. Therefore, here we designate two specimens as the lectotypes of *S. alata* A. Gray and *S. kakudensis* Franch.



Fig. 1. Lectotype of *Scrophularia alata* A. Gray (C. Wright *s.n.*, GH00091682).

TYPE DESIGNATION

1. *Scrophularia alata* A. Gray, Mem. Amer. Acad. Arts ser. 2, 6: 401, 1858.

Type. JAPAN. Hakodadi, 1853–1856, C. Wright *s.n.* (lectotype, designated here: GH00091682!, Fig. 1)

The name *S. alata* was first published by Gilibert (1781–1782). Gray (1858) subsequently published the same name based on the collections in Hakodadi and the straits of Sangar, Japan. Komarov (1907) later regarded the homonym *S. alata* A. Gray (1858) as *S. alata* Gilibert (1782) and republished the replacement name *S. grayana* Maxim. ex Kom. Since then, *S. grayana* has been the recognized name in the major references in Northeast Asia (Gorsh-

kova, 1955; Yamazaki, 1993; Lee, 1996). However, Appendix I of the ICN (Turland *et al.*, 2018) stipulates that all the scientific names in the Flora Lituania Inchoata of Gilibert (1781–1782) be considered invalidly published because both binomials and polynomials were used in the nomenclature. Consequently, *S. alata* Gilibert became unacceptable, and *S. grayana* Maxim. ex Kom. has been treated as a superfluous name of *S. alata* A. Gray. Regarding the typification of *S. alata*, Gray (1858) wrote in the protologue that the two collection sites were “Hakodadi; Straits of Sangar” and the collector, “C. Wright”. We found three specimens considered as syntypes of *S. alata* A. Gray at Harvard University (GH) and the Smithsonian Institution (US). Two specimens (GH00091681, US00122180) were collected from “Straits of Sangar, Japan”, and the other one (GH00091682) was collected



Fig. 2. Lectotype of *Scrophularia kakudensis* Franch. (R.P. Faurie 391, P03553921).

from “Hakodadi, Japan” by C. Wright. We designated the specimen that was collected in Hakodadi (GH00091682) as the lectotype of *S. alata* A. Gray. The selected lectotype reflects the overall main characters of many flowers and fruits with well-developed inflorescences and winged stems. We treated the other two specimens as syntypes (GH00091681, US00122180).

2. *Scrophularia kakudensis* Franch., Bull. Soc. Bot. Fr. 26: 87, 1879.

Type. JAPAN. Mt. Kakudayama, without date, R.P. Faurie 391 (lectotype, designated here: P03553921!, Fig. 2; isolectotype, P03412148!)

While describing *S. kakudensis*, Franchet (1879) recorded the collection site and collector without collection number in the protologue. We found two specimens (*Faurie 391*) that correspond with information of the protologue at the Muséum National d'Histoire Naturelle, Paris (P). These duplicates are considered as syntypes of *S. kakudensis* under Article 9.6 of the ICN (Turland *et al.*, 2018). We assign specimen P03553921 as the lectotype of *S. kakudensis* Franch. The selected lectotype sheet is a well-preserved specimen that displays its diagnostic morphological features needed for the identification of the species, such as ovate-lanceolate leaves, panicle-shaped inflorescences, and ovate-shaped calyces with acute apex (Jang, 2016).

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