
Validation of *Orobanche filicicola* (Orobanchaceae) from Korea

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ABSTRACT. *Orobanche filicicola*, invalidly named by Nakai, is nomenclaturally validated. It is related to *O. pycnostachya* and *O. amurensis* but differs markedly from them by its corolla color, style pubescence, and overall small size.

Key words: Korea, Orobanchaceae, *Orobanche*, validation.

The scientific name *Orobanche filicicola* first appeared in Nakai (1952) as a nomen nudum for an endemic Korean species; it was omitted from *The Bibliography of Eastern Asiatic Botany* (Merrill & Walker, 1938; Walker, 1960) and was not mentioned in the *Festschrift* in memory of Professor Nakai (Nakai, 1943) and his posthumous manuscripts (e.g., Nakai, 1953). Recently, W. T. Lee (1996) reported a Nakai specimen at TI that was collected at Mt. Baikyung, Changsung Gun, Korea, in 1928 and labeled as "*O. filicicola* Nakai." Except for this specimen, no other collections were found in major herbaria in Korea and Japan, including MAK, SKK, SNU, and TI. Other Korean botanists, including Chung (1957), T. B. Lee (1993), and Y. N. Lee (1997), have not considered the taxonomic identity of *O. filicicola*. Plants corresponding to *O. filicicola* Nakai were re-collected at the above locality, and its distinctiveness confirmed. Its nomenclatural validation is therefore necessary before the revision of the genus *Orobanche* L. in Korea.

Orobanche filicicola Nakai ex Hyun, Lim & Shin, sp. nov. TYPE: Korea. Chunnam: ca. 1 km N of the Office of National Parks Authority at Mt. Baikyung, along roadside, running parallel with the Hwangryong River, Changsung Gun, 4 June 1999. *J-O Hyun 1999* (holotype, SNU; isotypes, AJOU, SNU). Figure 1.

Haec species *O. pycnostachyae* et *O. amurensis* similis, sed corollis inferne albis, superne purpureis, stylo parce et breviter glanduloso piloso differt.

Parasitic perennial herb, light brown to pale yellow, dark yellow-brown when dry; plants 10–30 cm tall, 4–6 mm wide. Underground stems slightly swollen at base, 10–30 mm long, 6–10 mm wide, densely squamous; scales ovate, 10 to 20 per stem,

1–10 mm, 1–3 mm at base. Aboveground part of stems erect, densely glandular pubescent; trichomes 0.1–1 mm long. Leaves scale-like, loosely spiral, 5–7 per stem, 7–14 mm, 2–4 mm at base, chartaceous, ovate to lanceolate, apex acute, densely glandular pubescent on abaxial surfaces, trichomes 0.3–0.5 mm long, short glandular pubescent at margin, trichomes ca. 0.1 mm long. Inflorescence a terminal spike, 6–17 × 2–3 cm, densely glandular pubescent (trichomes 0.1–0.8 mm long) at rachis, flowers and bracts; spike 10- to 30-flowered, flowers subsessile or sessile; bract 1, scale-like, linear-lanceolate, apex acute, 10–16 mm long × 2–4 mm at base, usually shorter than flowers, densely glandular pubescent on abaxial surfaces (0.1–0.6 mm long) and short glandular pubescent at margin (ca. 0.2 mm long); bracteoles absent. Calyx divided into 2 lateral segments, segments free or slightly connate at base, 8–11 mm long × 2–4 mm wide at base, densely glandular pubescent at outer surface and margin (0.1–0.6 mm); segments bidentate, acute, 1.4–3.0 mm wide; teeth 4, 0.7 mm at base. Corolla bilabiate, blue violet at upper lip and white at lower lip, 1.3–2.2 cm long; tube slightly curved at 6–9 mm from base, corolla tube straight in the upper part, 2.5–3.5 mm wide at lower part, 3.2–5.0 mm wide at upper part, densely glandular pubescent on outer surface (trichomes ca. 0.1 mm), villous at the base of inner surface (trichomes 0.2–0.7 mm); upper lip emarginate, ca. 2.5 × 3–5 mm; lower lip 3-lobed, all lobes orbiculate to subrounded, ca. 3.6 × 2.5 mm, margin sinuate to irregularly dentate; upper and lower lobes densely glandular pubescent (ca. 0.1 mm) when young, sparsely so when old. Stamens 4, didynamous, included, 10–12 mm long; filaments inserted 4–6 mm from the base of corolla, sparsely glandular pubescent (ca. 0.1 mm), white villous at the base (ca. 0.5 mm); anthers ovoid to ellipsoid, ca. 1.8 × 0.9 mm, 2-locular, villous (ca. 0.9 mm). Ovary 1-locular, placentas 4, parietal, 5.8–7.5 mm long, ca. 2.1 mm wide; ovules numerous; styles elongate, ca. 12 × 0.4 mm, dilated, glandular pubescent ca. 3.5 mm from base; trichomes ca. 0.2 mm long; stigma 2-lobed, ca. 1.5 mm wide. Capsule and seeds not seen.

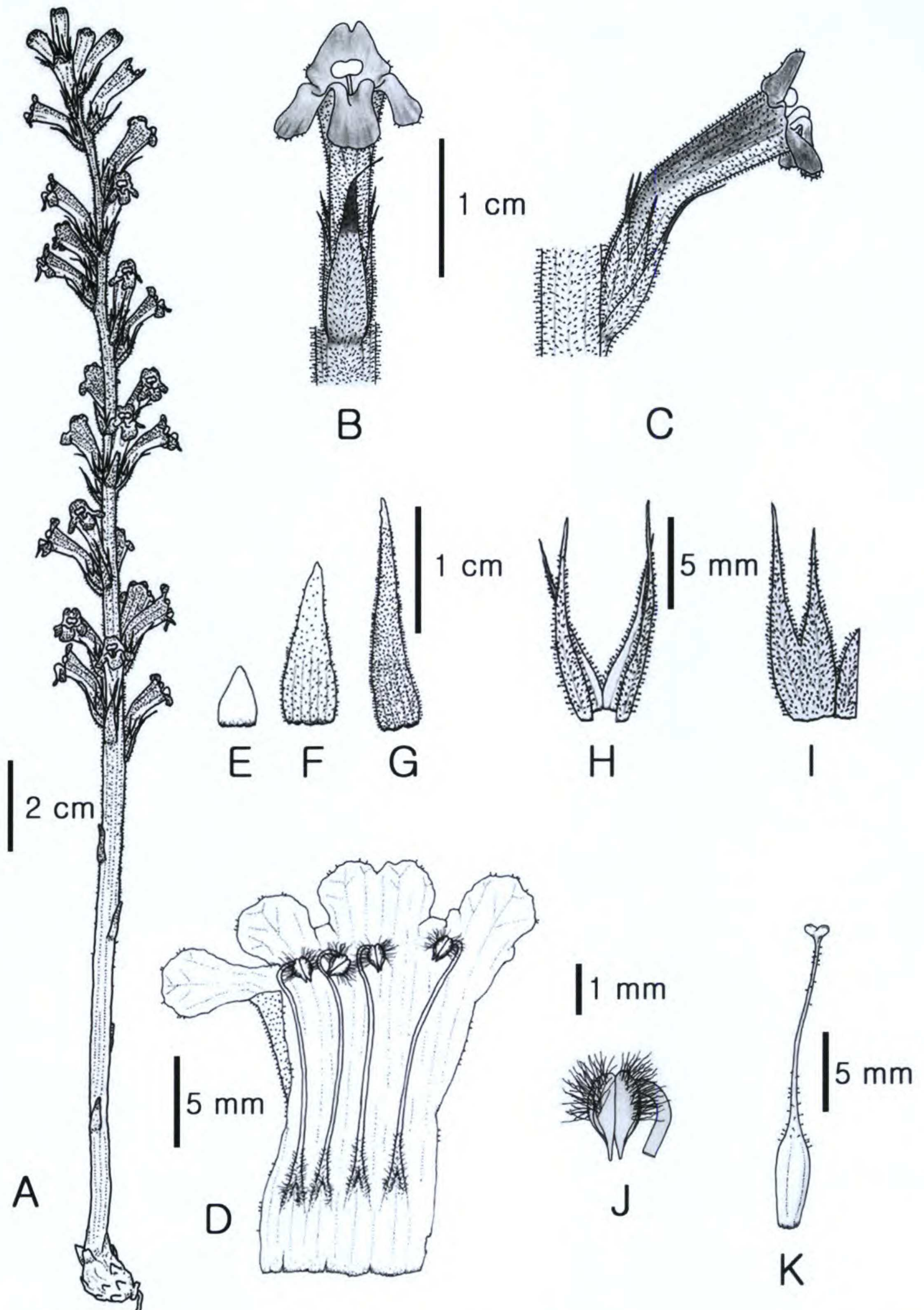


Figure 1. *Orobanche filicicola* Hyun et al. —A. Habit. —B. Flower, frontal view. —C. Flower, side view. —D. Opened flower showing the stamens. —E. Rhizome scale. —F. Leaf-like scale from aerial stem. —G. Bract. —H. Calyx, internal view. —I. Calyx, external view. —J. Anther. —K. Pistil. Drawn from *J-O Hyun 1999* (holotype, SNU).

Table 1. Morphological comparison of *Orobanche filicicola*, *O. pycnostachya*, and *O. amurensis*.

Characters	<i>O. filicicola</i> ¹	<i>O. pycnostachya</i> ²	<i>O. amurensis</i> ³
Plant height (cm)	13–30	10–45	10–45
Flowers in inflorescence	lax, sometimes dense	dense	lax, less commonly dense
Inflorescence length	longer than the rest of the stem	shorter than the rest of the stem	somewhat shorter than the rest of the stem
Bract length (mm)	10–16	12–22	15–20
Bract shape	linear-lanceolate	ovate to broadly lanceolate	broadly lanceolate
Bract apex	acute	acuminate	acute
Calyx length (mm)	8–11	10–15	8–18
Corolla length (mm)	13–22	15–30	18–25
Corolla color	blue-violet	yellow	dark purple
Style pubescence	sparsely glandular	sparsely glandular	subglabrous

¹ Based on the type specimen.

² Based on the description of Komarov (1907), Novopokrovskij and Tzvelev (1958), Zhang and Tzvelev (1998), and specimens deposited at MAK and TI.

³ Based on the description of Komarov (1907), Novopokrovskij and Tzvelev (1958), and specimens deposited at TI.

Etymology. The species epithet “filicicola” consists of two Latin words, *filici-* (= relating to ferns) and *-cola* (= confined to), and was made by Nakai, who had annotated his specimen label in Japanese as “parasitize on inuwarabi,” the Japanese name of *Athyrium niponicum* (Mettenius) Hance (Aspleniaceae).

Habitat and host. Fifteen plants inhabited a gravelly place between the river and the forest margin along a roadside. Plants of *Artemisia* species surrounded this species, and *Miscanthus* species occurred nearby. However, no plants of *Athyrium niponicum* were found. Concerning the host plants of Orobanchaceae, Theiret (1971) stated emphatically, “Reports of Orobanchaceae on ferns require verification.” Therefore, the host plant may be *Artemisia* species rather than *Athyrium niponicum*.

This species was named by Nakai (1952). The name was effectively, but invalidly published (nom. inval., nom. nud.) because of the lack of a diagnosis and type. Following the taxonomic arrangement of *Orobanche* L. proposed by Beck-Mannagetta ([1930] 1991), *O. filicicola* belongs to section *Osproleon* Wallroth, subsection *Inflatae* Beck, which consists of six species. Among them, *Orobanche filicicola* is characterized by glandular stems and flowers, densely villous anthers along the sutures, blue violet corolla with white lower part, and deeply 2-parted calyx.

Orobanche pycnostachya Hance and *O. amurensis* (G. Beck) Komarov (= *O. pycnostachya* var. *amurensis* G. Beck) resemble *O. filicicola* in having glandular trichomes on the stems and flowers, and the deeply 2-parted calyx, characteristics of sub-

section *Inflatae* (Beck-Mannagetta, [1930] 1991) including Chinese and Russian species (Novopokrovskij & Tzvelev, 1958; Zhang & Tzvelev, 1998). *Orobanche pycnostachya* differs by having a yellow corolla and a more broad and acuminate floral bract; *O. amurensis* differs in its subglabrous style base and abruptly narrowed floral bract (Table 1). In addition, the plants of *O. filicicola* are smaller in size compared to both species (Table 1), including plant height, and bract, calyx, and corolla length.

Paratype. KOREA. **Chunnam:** Mt. Baikyung, Changsung Gun, 4 June 1928, T. Nakai 12147 (TI).

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Literature Cited.

- Beck-Mannagetta, G. [1930] 1991. Orobanchaceae. In A. Engler, Das Pflanzenreich 96 (IV 261). Reprint. Bishen Singh Mahendra Pal Singh, Dehra.
- Chung, T. H. 1957. Korean Plants, Part II. Sinji-sa, Seoul.
- Komarov, V. L. 1907. Genus Orobanchaceae. Pp. 467–470 in Flora Manshuriae. Vol. 3. Petropoli. [Japanese edition printed in 1932, Vol. 6, No. 2.]
- Lee, T. B. 1993. Illustrated Flora of Korea, 5th ed. Hyangmunsu, Seoul.
- Lee, W. T. 1996. Lineamenta Florae Koreae. Academy-book, Seoul.
- Lee, Y. N. 1997. Flora of Korea. Kyo-Hak Publishing, Seoul.
- Merrill, E. D. & E. H. Walker. 1938. A Bibliography of Eastern Asiatic Botany. The Lord Baltimore Press, Baltimore.

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- Nakai, T. 1943. A list of Professor Nakai's papers, with indices to names of plants and taxa published as new to science by him. [Festschrift.]
- . 1952. Synoptical sketch of Korean flora. Bull. Natl. Sci. Mus. 31: 1–152.
- . 1953. Opera phytologica novissima. Bull. Natl. Sci. Mus. 33: 1–30.
- Novopokrovskij, I. V. & N. N. Tzvelev. 1958. Sem. CXVLVI. Zarazychovyje—Orobanchaceae Vent. Pp. 19–115 in K. Schischkin & E. Bobrov, Flora SSSR. Vol. 23. Leningrad. [English edition printed in 2000 by Bishen Singh Mahendra Pal Singh, Dehra.]
- Thieret, J. W. 1971. The genera of Orobanchaceae in the southeastern United States. J. Arnold Arbor. 52: 404–434.
- Walker, E. H. 1960. A Bibliography of Eastern Asiatic Botany, Supplement 1. Pan-Pacific Press, Tokyo.
- Zhang, Z. & N. N. Tzvelev. 1998. Orobanchaceae. Pp. 229–243. in Z.-Y. Wu & P. H. Raven, Flora of China, Vol. 18. Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis.