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A new species of *Melampyrum* (Orobanchaceae) from Southern Korea

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Abstract

A new species, *Melampyrum koreanum* K.-J. Kim & S.-M. Yun, is described and illustrated. The new species is similar to *M. roseum* Maxim. in general habit, but the new species has a corolla tube and style up to 3 cm long. The new species occurs on one of the islands of the southern Korean peninsula.

Key words: *Melampyrum*, Korea, Orobanchaceae

Introduction

Melampyrum L. is a genus of approximately 20 species of herbaceous flowering plants in the family Orobanchaceae (formerly included in the family Scrophulariaceae *sensu lato*, Hong *et al.*, 1998). The genus is native to temperate regions of Eurasia and North America. The species are hemiparasites, obtaining mineral nutrients and water from their host plants. However, they are facultative hemiparasites, meaning they can complete their life cycle without parasitizing host plants. As a part of the Flora of Korea project, we revised the genus *Melampyrum* from Korea. During extensive field collection of Orobanchaceae in Korea, we collected several specimens of distinctive flower form of *Melampyrum* from a small island of South Korea. After comparative studies of the numerous Asian specimens from K, KUN, IBSC, MO, PE and TI herbaria, we concluded that the newly collected specimens represent a new species. The new species has the longest corolla tube and style within *Melampyrum*.

Melampyrum koreanum K.-J. Kim & S.-M. Yun, *sp. nov.* Fig. 1 A–K

M. roseum Maxim. similis sed corolla tubus et stylus 25–30 mm longus differt.

TYPE:—KOREA, Keungsangnam-do: Tongyoung-shi, Hansan-myeon, Somaemuldo, Oct. 17, 2008. *K.-J. Kim and Seok Min Yun 2008-1561*, (holotype, KUS; isotype, 7 sheets, KUS, MO, NIBR).

Herbs, annuals, hemiparasites; glabrous or pubescent; stems erect, 50–90 cm tall, with many opposite branches. Leaves opposite, glabrous; lower leaves lanceolate, 1.0–1.5 cm wide, 4.0–5.5 cm long, petiole 0.4–0.9 cm long, mid-vein distinct on the lower surface, lateral veins opaque, base acute, tip acute, margin entire; upper leaves lanceolate, 0.5–1.0 cm wide, 2.0–3.0 cm long, petiole 2–4 mm long, mid-vein distinct on the lower surface, lateral veins opaque, base acute, tip acute, margin entire; bract-like leaves triangular-lanceolate, one or two pairs with setose teeth at base, 4–6 mm wide at base, 10–15 mm long, petiole 2–4 mm long, mid-vein distinct on the lower surface, base truncate, tip acute-acuminate, sometimes upper leaves and bract-like leaves are indistinctive. Flowers solitary in axils of upper bract-like leaves or congregated into terminal spikes;

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FIGURE 1. *Melampyrum koreanum* K.-J. Kim & S.-M. Yun. A. Flowering branches. B. Upper corolla lobes and stamens. C. Developing flowers. D. Mature flower. E. Calyx and style. F. Lower leaf. G–H. Upper bract-like leaves. I–J. Capsules. K. Seeds. All scale bars are 1 cm. Drawn from the holotype *K.-J. Kim and Seok Min Yun 2008-1561*(KUS).

peduncles 1–2 mm long; calyx tubular-campanulate, 2–3 mm in diameter, 3–5 mm long; lobes 4 with setose tip, upper 2 lobes slightly larger than lower lobes, glabrous or pubescent; corolla tube linear-cylindrical, 2 mm in diameter, 25–30 mm long, slender, expanded upward; limb dilated, bilabiate; upper lip galeate, laterally compressed, with narrow, recurved margin; lower lip slightly longer than upper lip, patent, base 2-plicate, apex 3-lobed; stamens 4, didynamous, enclosed by galea, 10–14 mm long; anthers connivent, held almost vertically in throat, bilocular, thecae with sharply pointed appendages at base; pistil with bilocular ovary; style filiform, curved tip, 25–30 mm long, stigma slightly capitate, entire; ovules 2 per locule. Fruit a capsule, oblong, surface with reticulate veins, ovoid with pointed tip, 7 mm wide, 8–10 mm long, slightly compressed, straight or oblique, loculicidal, apex obtuse or tapered; seeds 3–4, oblong.

Distribution and habitat:—*Melampyrum koreanum* is known only from the small island Somaemul-do, of Kyeongsangnam-do, South Korea. It grows on open mountain slopes in *Pinus thunbergii* forest on brown soil. This species is only known from its type locality and only 60 individuals occur in a small area. Therefore, we think that the habitat of this remarkable species should be conserved.

Additional specimens examined:—No previous collections available.

Comparison:—*Melampyrum koreanum* is closely related to the *M. roseum* complex (Nakai, 1917; Hong et al., 1998; Yamazaki, 1989; 1993). However, *Melampyrum koreanum* differs from *M. roseum* notably by having a longer, more slender corolla tube, longer style, larger capsules with more seeds, fewer setaceous teeth on the bract-like leaves, as well as being more branched and taller. The corolla length and style length of *M. roseum* are usually 10–15 mm. We examined numerous herbarium specimens of *Melampyrum* from K, KUN, IBSC, MO, PE and TI. None of the described species of *Melampyrum* has a corolla tube longer than 20 mm. Therefore, we believe that *M. koreanum* has the longest corolla tube and style of any *Melampyrum* species. We observed pollinators from the natural locality of *M. koreanum* for more than one hour. Hawkmoths of family Sphingidae were the only insects attracted to the *M. koreanum* flowers. Therefore, we believe that the long corolla tube and style are the adaptive traits to the pollinator. In contrast, the flowers of *M. roseum* complex are usually visited by bees.

Etymology:—The specific epithet of the new species refers to the endemism in Korea.

Phenology:—Flowering in September to late October; fruiting in early October to early November.

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