

Leontopodium seorakensis, a new species of Asteraceae from Korea

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한국산 신종, 설악솨다리

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ABSTRACT: *Leontopodium seorakensis* (Asteraceae), a new species from Mt. Seorak National Park in central Korea is described and illustrated. Its taxonomic history, distribution, habitats, and diagnostic characteristics are discussed and contrasted with those of the closely related *L. japonicum* Miquel and *L. leiolepis* Nakai.

Keywords: *Leontopodium seorakensis*, new species, *Leontopodium leiolepis*, *Leontopodium japonicum*, Korea

적 요: 설악산에 분포하는 신종, 설악솨다리를 기재하였다. 이 종은 산솨다리와 왜솨다리와 유사하나, 포 아랫면에 털이 밀생하며, 포편의 모양과 길이가 거의 같으며, 내외포편의 위쪽에 선모가 거의 없는 점에 의해 구분된다.

주요어: 설악솨다리, 신종, 솨다리솨, 국화과

Leontopodium R. Brown ex Cassini (Asteraceae, Inuleae) is a genus of perennial herbs, with small heads crowded into dense cymes surrounded by conspicuous bract-like leaves (Handel-Mazzetti, 1928; Grubov, 1990). Comprising about 35 species, the genus is distributed mainly in Eurasia and reportedly in the Andes (Mabberley, 1990). In Korea, five species of *Leontopodium*, most of which are quite rare, usually grow in mountainous regions.

Although various taxonomies of *Leontopodium* have been proposed by Beauverd (1911) and Handel-Mazzetti (1928), they are not considered wholly satisfactory (Grubov, 1990). Therefore, recent regional monographs on the genus either did not use a taxonomic system, eg. U.S.S.R. (Grubov, 1990) and Flora of China (only manuscript available from <http://hua/huh/harvard.edu>), or partially adopted Handel-Mazzetti's systems, eg. Flora of Japan (Koyama, 1995).

During the revision of genus *Leontopodium* in Korea, the

taxonomic identity of two species growing in the Mt. Seorak National Park area came into question. For a long time, they have been identified as *L. coreanum* Nakai and *L. leiolepis* Nakai. However, the first species, *L. coreanum*, which has long been classified as an endangered endemic species by the Ministry of Environment of Korea, turned out to be conspecific with *L. japonicum* Miquel (Handel-Mazzetti, 1928; Lee & Park, 2008) and thus no longer endemic to Korea. We also found that the second species is a novel taxon which is similar but clearly different from *L. leiolepis* in the morphological characters of its leaves and involucre. These differences seem to be sufficient to describe it as a new species.

Leontopodium seorakensis Lim, Hyun, Kim & Shin, sp. nov. TYPE: Korea. Kangwon. Inje Gun, near the peak of Mt. Ahn (1,396 m) area in Mt. Seorak National Park, 1,360 m alt, N 38°08'10.2", E 128°20'4.2", Jun 30 2007, *Hyun 20070004* (Holotype KB; Isotype SNU). Fig. 1.

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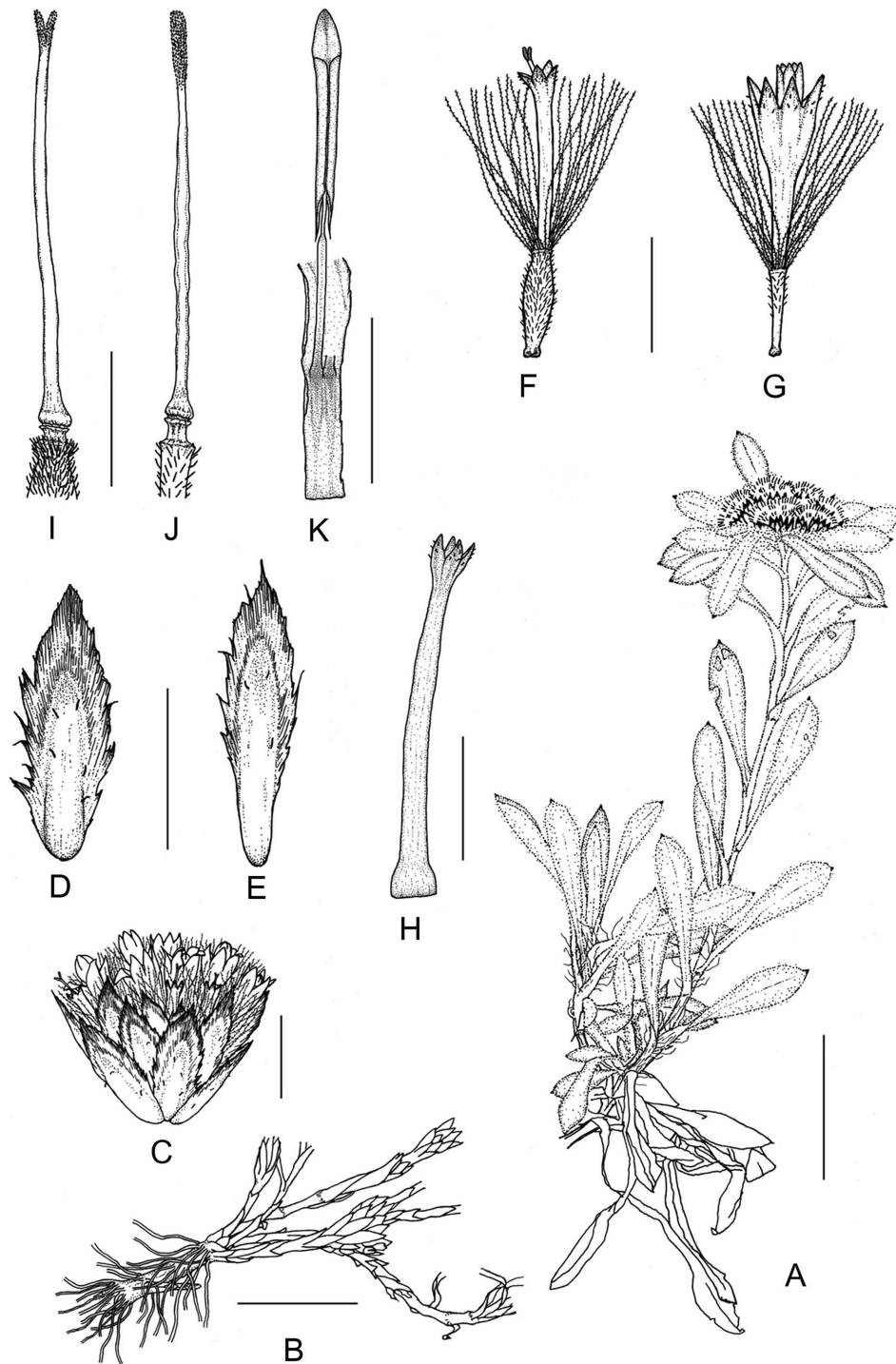


Fig. 1. *Leontopodium seorakensis*. A. habit; B. rhizome; C. capitulum; D. outer phyllary; E. inner phyllary; F. pistillate floret; G. hermaphrodite floret; H. corolla tube of pistillate floret; I. style of pistillate floret; J. style of hermaphrodite floret; K. stamen of hermaphrodite floret. Bar. 2 cm (A, B), 2 mm (C, D, E, F, G), 1 mm (H, I, J, K). Drawn from *Hyun 2007004* (Holotype).

Korean name: Seo-rak-som-da-ri

A *Leontopodium leiolepis* bracteolae adaxialis dense arachnoideus differt, a *L. kurilense* phyllaria fere glabra differt.

Perennial herbs. Rhizomes terete, cespitose, caudex, inflated, overlapping scales. Flowering stems erect, terete, purplish, 4–14 cm tall, 1 mm diameter, hairs white arachnoid and glandular. Leaves simple, alternate, entire, sheathing. Leaves of

innovation shoots oblanceolate, 1.5–4.0 cm long, 0.3–1.0 cm, upper surfaces whitish green, sparsely arachnoid and glandular, lower surfaces white, densely arachnoid and glandular, apex acute, base attenuate, purplish, sheathing, basal margins sparsely arachnoid. Basal leaves congested, tortuous, remain during anthesis. Cauline leaves 6–14, oblanceolate, 1.3–3.0 cm long, 3–7 mm wide, upper surfaces whitish green, thinly arachnoid and glandular, lower surfaces white, densely arachnoid and glandular, apex acute, mucronate, base attenuate, half-sheathing, lower cauline leaves, base purplish, basal margins sparsely arachnoid. Bracteal leaves 6–16, oblanceolate or narrowly elliptic, 0.5–2.2 cm long, 1–6 mm wide, upper surfaces white, densely arachnoid and glandular, lower surfaces white, densely arachnoid and glandular, apex acute, mucronate, base attenuate. Capitula 5–8, in dense corymbs, polygamous, marginal capitula 4–7, 3–5 mm across, a central capitulum largest, 6–8 mm across. Involucre hemispheric or campanulate, phyllaries in 3 series, 4–5 mm long, phyllaries similar in size and shape, oblanceolate or narrowly elliptic, 3–5 mm long, 0.6–1.5 mm wide, apex acute, inner phyllaries sometimes acuminate, abaxial surfaces sparsely or rarely puberulent, central portion pale green to green, navicular, margins brownish scarious, incised, adaxial surfaces glabrous. Marginal disc florets pistillate, 12–23 in central capitulum, 11–20 in marginal capitula, 4–5 mm long, corolla capillary, pale green, 2.5–3 mm long, lower portion usually inflated, 4 lobed, lobes triangular-ovate or triangular-lanceolate, ca. 0.3 mm long, abaxial surfaces sparsely puberulent, apex acute, style cylindrical, 2.5–3.5 mm long, lower portion bamboo node-like, usually inflated, tip bifid, branches 0.3–0.4 mm long, immature achenes narrowly elliptic or oblanceolate, densely pubescent, 1.3–2.0 mm long,

0.2–0.8 mm wide. Central disc florets hermaphrodite, 25–40 in central capitulum, 7–16 in marginal capitula, 4.0–5.5 mm long, corolla tubular, upward funnelform, pale green, 3.0–3.5 mm long, 5 lobed, lobes triangular-ovate, 0.5–0.7 mm long, abaxial surfaces sparsely puberulent, apex acute, style cylindrical, median portion usually compressed, stigmatic portion clavate, lower portion bamboo node-like, usually inflated, stamens 5, attached at quarters of corolla tube, syngenesious, 2.0–2.5 mm long, filaments compressed, glabrous, anthers coalescent, apex acute, base sagittate, ovary oblanceolate or narrowly oblong, compressed, median to upper portion sparsely pubescent or upper portion rarely pubescent, 1.3–2.0 mm long, 0.2–0.3 mm wide. Pappus uniseriate, bristles 21–25, white, barbed, 3.0–3.5 mm.

Paratypes: Korea. Kangwon. Inje-Gun, around the 1,396 m peak of Mt. Ahn area in Mt. Seorak National Park, 1,360 m alt, N 38°08'8.0", E 128°20'7.8", Jun 30 2007, *Hyun 20070006* (KB); around the peak of Mt. Ahn in Mt. Seorak National Park, 1,436 m alt, N 38°08'21.8", E 128°19'40.5", Jun 30 2007, *Hyun 20070006* (SNU); the southern face of Mt. Ahn area in Mt. Seorak National Park, 1,370 m alt, N 38°08'8.0", E 128°20'9.5", Jun 30 2007, *Hyun 20070005* (HHU, KH); Dragon ridge in Mt. Seorak, 1,293 m alt, N 38°08'9.5", E 128°27'51.2", Jun 23 2007, *Hyun 20070002* (KB), 1290 m alt, N 38°08'53.2", E 128°26'42.5", Jun 23 2007, *Hyun 20070003* (KB, SNU, HHU), 1,153 alt, N 38°08'19.6", E 128°27'28.3", Jun 23 2007, *Hyun 20070001* (KH).

Etymology: The species epithet “seorakensis” refers to the local name of the site where *L. seorakensis* was widely

Table 1. Comparison of morphological characters among *Leontopodium seorakensis* and related taxa.

	<i>L. seorakensis</i>	<i>L. leiolepis</i>	<i>L. kurillense</i>	<i>L. japonicum</i>
Shape of cauline leaves	Oblanceolate	linear to narrowly elliptic	linear to oblanceolate	lanceolate to oblanceolate
Length of phyllaries	Similar	inner ones longer than outer ones	similar	similar
Pubescence				
stem	arachnoid and glandular	arachnoid and glandular	arachnoid and glandular	arachnoid
lower surface of bracteal leaves	densely arachnoid	glabrous or thinly arachnoid	densely arachnoid	densely arachnoid
ovary of pistillate florets	densely puberulent	densely puberulent	papillose	papillose
outer phyllaries	sparsely glandular	partially compact tomentose	densely arachnoid	densely arachnoid
Habitat	subalpine (1,000-1,700 m)	alpine (around 2,000 m)	seaside	subalpine to alpine (500-1,500 m)
Distribution	Mt. Seorak area, Central Korea	Northern Korea	Japan	China, Korea, Japan and Russia

distributed, 'Mt. Seorak, Korea'.

Distribution: It occurs throughout the Mt. Seorak, Korea. The plants of *L. coreanum* were thought to be distributed on Mt. Halla, Jeju Island, Korea, however, the plants there were re-identified as *L. hallaisanense* by Handel-Mazzetti (1928).

Habitat: It occurs on the surface or within the cracks of bare rocks above 1,000 m altitude. Sometimes *Potentilla dickinsii* Fr. & Sav., *Carex* sp. and *Lepisorus* sp. cohabit with this species.

In Korea, 5 species of *Leontopodium* were reported (Kim, 2007), including *L. coreanum*, *L. japonicum* Miquel, *L. leiolepis* Nakai, *L. hallaisanense* Handel-Mazzetti and *L. leontopodioides* (Willdenow) Beauverd. According to Handel-Mazzetti's system, *L. japonicum* (including *L. coreanum*) and *L. hallaisanense* were included in Section *Nobilis*, and the others were in Section *Alpina*, which was characterized by having sheathing cauline leaves and unbranched corymbose heads. Among those taxa in section *Alpina*, only those in subsection *Kurilensia* have glandular hairs. Subsection *Kurilensia* was characterized by a white or pale yellowish pappus, a caespitose habit, as well as a tomentose and glandular stem.

Although there is no available worldwide monograph of the genus *Leontopodium*, the taxonomic treatment by Handel-Mazzetti was considered relatively well-founded (Grubov, 1990). Therefore, we compare *L. seorakensis* with relatively similar species, such as *L. leiolepis* and *L. kurilense*, both of which are species within subsection *Kurilensia*, and *L. japonicum*, which is distributed widely throughout Korea and

Japan.

The plants of *L. seorakensis* clearly differ from the other two species of subsection *Kurilensia* in having densely cobwebby hairs on lower surfaces of bracts, phyllaries similar in shape and length, and sparsely glandular hairs on abaxial surfaces of inner and outer phyllaries (Table 1). Especially, this species is differentiated from *L. leiolepis*, distributed in northern Korea, by having short oblanceolate leaves in the innovation shoots, attenuate base of cauline leaves, and pappus shorter than corolla in bisexual florets. However, the plants of *L. leiolepis* were characterized as having long linear leaves in the innovation shoots, obtuse or attenuate bases of cauline leaves and longer pappus in hermaphrodite florets than corolla.

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