

## *Selaginella heterostachys* Baker (Selaginellaceae): first report for Korea

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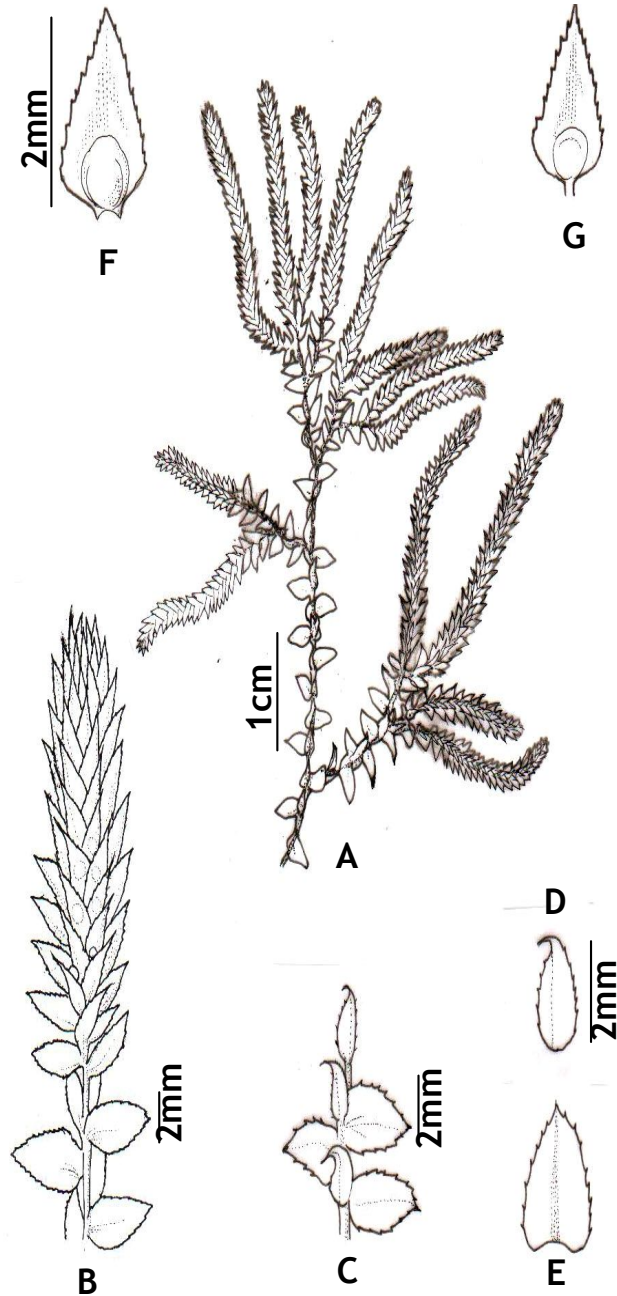
*Selaginella heterostachys* Baker (Selaginellaceae), previously known only from southern Japan, China, Taiwan and Vietnam, was found on sunny slopes at forest edges, Gangchon-ri, Chuncheon-si, Gangwon-do. This species is distinguished from the related taxon by ovate lateral microphylls with shallowly cordate base and elongated median microphylls with recurved apex. The local name Gak-si-bi-neul-ikki, meaning of the bride's skirt shape of median microphylls with recurved apex rather than *S. nipponica*. The morphological characters and illustrations of this species are provided with photographs of the habit.

Keywords: *Selaginella heterostachys*, Selaginellaceae, Korea

*Selaginella* L. ("spike moss") is a monotypic genus of the family Selaginellaceae and comprises about 700 taxa distributed in tropical and warm temperate climates. The cosmopolitan genus *Selaginella* is a small, spreading, herbaceous, spore-bearing vascular plant (Tagawa, 1959; Ohwi, 1984; Wagner *et al.* 1993; Iwatsuki, 1995; Marbberley, 2008). *Selaginella* L. belongs to the Lycopsidea as well as Isoetaceae ("quillwort") and Lycopodiaceae ("clubmoss") (Korall *et al.*, 1999). For Korean *Selaginella*, Park (1975) had reported 8 taxa without *S. stauntoniana*, Lee (1980) listed 6 taxa excluding *S. shakotanensis*, *S. nipponica*, *S. remotifoia*, and Lee (2006) listed 9 taxa: *S. helvetica*, *S. involvens*, *S. nipponica*, *S. remotifoia*, *S. rossii*, *S. shakotanensis*, *S. sibirica*, *S. stauntoniana*, and *S. tamariscina*.

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**Fig. 1.** Drawings of *Selaginella heterostachys* Baker. A. Habit, B. Abaxial view of a fertile branch, C. Adaxial view of a main branch, D. Median microphyll on branch, E. Lateral microphyll on branch, F. Megasporophyll, G. Microsporophyll.

In the present study, *Selaginella heterostachys* Baker, which has been collected from sunny slopes at forest edges, Gangchon-ri, Namsan-myeon, Chuncheon-si, is reported as new taxon for Korea. This taxon was previously known from southern Japan, China, Taiwan and Vietnam, where it is of rare occurrence. *Selaginella heterostachys* is distinguished from *S. nipponica* by ovate lateral microphylls with shallowly cordate base and a elongated median microphyll with recurved apex (Iwatsuki, 1995). The local name was given as 'Gak-si-bi-neul-ikki' based on the shape of median microphyll with recurved apex. The voucher specimens are preserved in the Ewha Womans University Herbarium (EWH, Kim Y.S. 08080100).

## Description

*Selaginella heterostachys* Baker. J. Bot. 23: 177 (1885)

Korean name: Gak-si-bi-neul-ikki

Evergreen herb, perennial, yellowish green, height 5–20 cm. Stems two forms, rhizomes and branches. Rhizome creeping, main stem including microphyll thick, 3–5 mm width, seen from spring to autumn. Branches erect, slender, Y shape or rarely pinnate, 3–4 mm width including microphyll, rooting at the branch axils, seen from summer to autumn. Lateral microphylls dense on rhizome, nearly symmetric, triangular-ovate, acute at apex, shallowly cordate base, denticulate margin. Median microphylls almost asymmetric, oblong, recurved near apex, denticulate and whitish membrane at margin. Cones with sporophylls 1–2, attached at terminal to each lateral branch, 0.5–3.0 cm long. Sporophylls dimorphic, lateral microphylls larger than median microphylls, about 2.0 mm long, acute apex, denticulate margin, and median microphylls smaller, about 1.5 mm long, caudate apex.

Distribution: Korea, southern Japan, China, Taiwan and Vietnam. Sunny and rocky slopes at forest edges in mountain areas as well as villages.

*Selaginella heterostachys* Baker can be distinguished from the other taxa of genus *Selaginella* in Korea as follows:

1. Microphylls monomorphic, spirally arranged on stem.



**Fig. 2.** Photographs of *Selaginella heterostachys* Baker. (Chuncheon, photograph by Kim Yoo Sung, 2007. 8. 30). A. Habit, B. Branch with lateral and median microphylls, C. Sporophyll.

A. Habit, B. Branch with lateral and median microphylls, C. Sporophyll

- 2. Hairs dense at margin, apex trichomes as long as 1/3 length of microphyll  
----- *S. sibirica*
- 2. Hairs sparse at margin, apex trichomes as long as 1/5 length of microphyll  
----- *S. shakotanensis*
- 1. Microphylls dimorphic, lateral and median microphyll, each arranged in two ranks on stem.
- 3. Stems arising from rhizoid ----- *S. tamariscina*
- 3. Stems arising from one rhizome.
- 4. Stems erect.
- 5. Margin of microphyll base pubescent ----- *S. stauntoniana*

5. Margin of microphyll base nearly entire ----- *S. involvens*
4. Stems decumbent.
6. Branches of sporophylls erect.
7. Median microphylls symmetric, sporophylls monomorphic.
8. Lateral microphylls broad ovate, acute at apex, 2.0-3.5mm long -----  
----- *S. nipponica*
8. Lateral microphylls ovate or oblong, moderately acute at apex,  
1.5-1.8mm long ----- *S. helvetica*
7. Median microphylls asymmetric, sporophylls dimorphic -----  
----- *S. heterostachys*
6. Branches of sporophylls not erect.
9. Lateral microphylls entire at margin, acute at apex, about 3mm  
long ----- *S. remotifolia*
9. Lateral microphylls dentate at margin, moderately acute at apex,  
2mm long ----- *S. rossii*

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## 부처손속 (부처손과)의 미기록종: 각시비늘이끼

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일본, 중국, 대만 및 베트남에 분포하는 것으로 알려진 부처손과의 각시비늘이끼 (*Selaginella heterostachys* Baker)가 강원도 춘천시 남산면 강촌리 저지대에서 발견되었다. 이 종은 선비늘이끼와 유사하나 측면의 소엽이 난상이며 기부가 심장저이고, 중앙부의 소엽은 길며 정단부가 구부러진 점으로 구별된다. 국명은 선비늘이끼보다 중앙부의 소엽이 구부러져 각시의 치마와 비슷하여 각시비늘이끼라고 신칭하였다. 각시비늘이끼의 형태적 특징을 기재하였고, 도해와 생태 사진을 첨부하였다.

주요어: 각시비늘이끼, 부처손과, 미기록종

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