



A new species of *Pseudostellaria* (Caryophyllaceae): *P. baekdusanensis* M. Kim

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개별꽃속(석죽과)의 신종: 애기개별꽃 (*Pseudostellaria baekdusanensis* M. Kim)

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ABSTRACT: A new species, *Pseudostellaria baekdusanensis* M. Kim (Caryophyllaceae), has been named and described from Mt. Baekdu of the Korean peninsula. *Pseudostellaria baekdusanensis* shares several characteristics (same size leaves, axillary or terminal flowers, emarginate petals, etc.) with its related species *P. japonica* (Korshinsky) Pax. It is, however, distinct from *P. japonica* which have large plant (25-35 cm), leaf blade margins and midveins with long hairs, shallow emarginate petal apex, (2) 3 styles, and cleistogamic flowers by having small plants (9-13 cm), leaf blade basal margins with long hairs, deep emarginate petal apex, 2 styles, and non-cleistogamic flowers.

Keywords: *Pseudostellaria baekdusanensis*, Caryophyllaceae, Mt. Baekdu

적 요: 백두산에서 개별꽃속의 신종인 애기개별꽃(*Pseudostellaria baekdusanensis* M. Kim)을 새로이 발견하여 기재하였다. 애기개별꽃은 잎의 크기가 비슷하며 꽃은 줄기 끝에 액생 또는 정생하고 꽃잎은 요두인 특징을 가져 긴개별꽃(*P. japonica* (Korshinsky) Pax)과 유사하다. 그러나 애기개별꽃은 식물체가 9-13 cm로 소형이고 1줄의 털이 줄기에 있고 엽신 가장자리 기부에만 긴 털이 있으며 꽃잎은 깊은 요두형이고 화주는 2개이며 폐쇄화가 식물체에 달리지 않는다. 반면에 긴개별꽃은 식물체는 25-35 cm로 대형이고 1-2줄의 털이 줄기에 있고 엽신 가장자리와 이면 중륵에 긴 털이 밀생하며 꽃잎은 얇은 요두형이고 화주는 (2) 3개이며 폐쇄화가 엽액에 달린다는 점에서 뚜렷하게 차이를 보인다.

주요어: 애기개별꽃, 석죽과, 백두산

The genus *Pseudostellaria* Pax. (Caryophyllaceae) consists of approximately 18 species and is distributed from Asia through Europe to North America (Lu and Rabeler, 2001).

The genus *Pseudostellaria* is characterized by herbs, tuber roots, opposite leaves, 5-merous flowers, and dehiscent

capsules (Choi, 2007). Eight taxa of *Pseudostellaria* are reported from Korea (Kim, 2004; Choi, 2007). Of 8 taxa, *P. heterophylla*, *P. palibiniana*, and *P. longipedicellata* has a popular occurrence in Korea (Lee, 1980; Lee et al., 2012).

Baekdusan (Mt. Baekdu) is an active volcanic and highest mountain (2,744 m) on the Korean peninsula and in Manchuria (Lee, 1991; Lee et al., 2013). Mt. Baekdu contains about 1,500 species of vascular plants, of which 11 angiosperms are endemic species (Kim, 2004).

In 2014, the authors first discovered *Pseudostellaria*

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baekdusanensis M. Kim on Mt. Baekdu. It forms a small population of one hundred individuals at 1,400 m altitude in the Mt. Baekdu. The species shares several characteristics with its related taxa *P. japonica* (Korshinsky) Pax, but it can be distinguished based on a small plants, deep emarginate petal apex, 2 styles, absent cleistogamic flowers, etc.

***Pseudostellaria baekdusanensis* M. Kim sp. nov.** (Figs. 1-3)

Korean name: Ae-gi-gae-byeol-kkot 애기개별꽃

Root tubers fusiform. Stems erect, 9-13cm tall, un-branched, with 1 line of hairs. Leaves lanceolate, 1.4-2.0 cm × 0.4-0.7 cm, long hair at basal margin, apex acute, petiole 0.8-1.2 mm. Chasmogamic flowers axillary and terminal. Pedicel 1.2-2.2 cm, slender, with 1 line of hairs. Sepals 5, lanceolate, 3.0-3.5 mm × 1.1-1.3 mm, with hairs at basal margin, margin membranous. Petals 5, obovate, 5.5-6.5 × 1.8-2.5 mm, base attenuate, apex deep emarginate. Stamens 10, shorter than petals, anthers purple-brown. Ovary ovoid, styles 2. Capsule round, longer than sepals. Seeds brown, ovate, 2.0-2.5 mm × 1.4-1.8 mm, mammillate with pointed projections. Cleistogamic flower absent. Fl. May, fr. June.

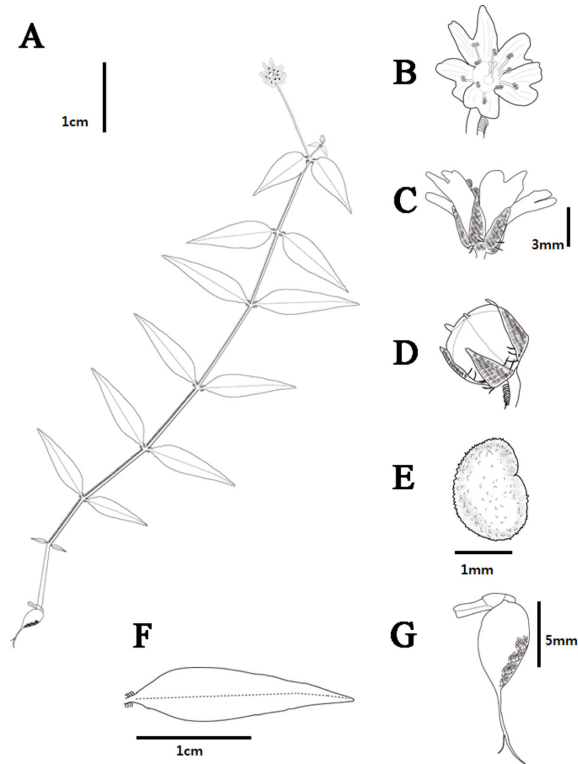


Fig. 1. *Pseudostellaria baekdusanensis* M. Kim. A. Adult plants with flowers; B. Front view of flower; C. Side view of flower; D. Fruit; E. Seed; F. Leaf; G. Root.

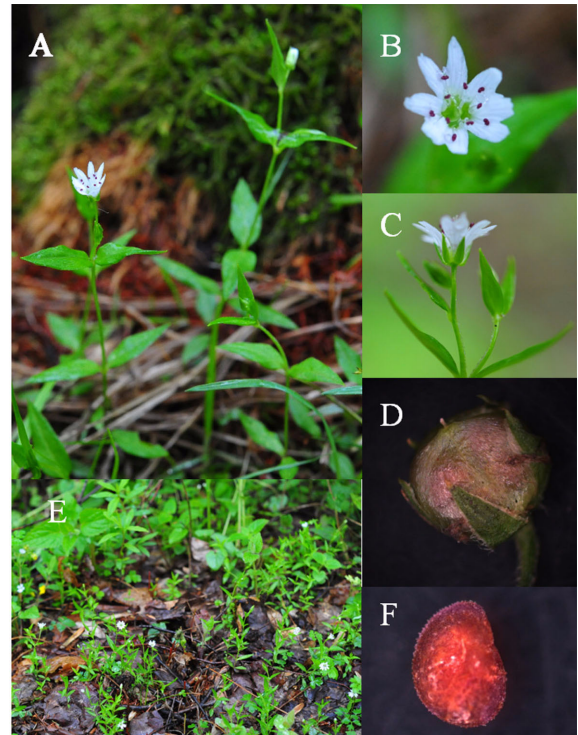


Fig. 2. Photographs of *Pseudostellaria baekdusanensis* M. Kim at the natural habitat in Mt. Baekdu. A. Adult plants with flowers; B. Front view of flower; C. Side view of flower; D. Fruit; E. Habitat; F. Seed.

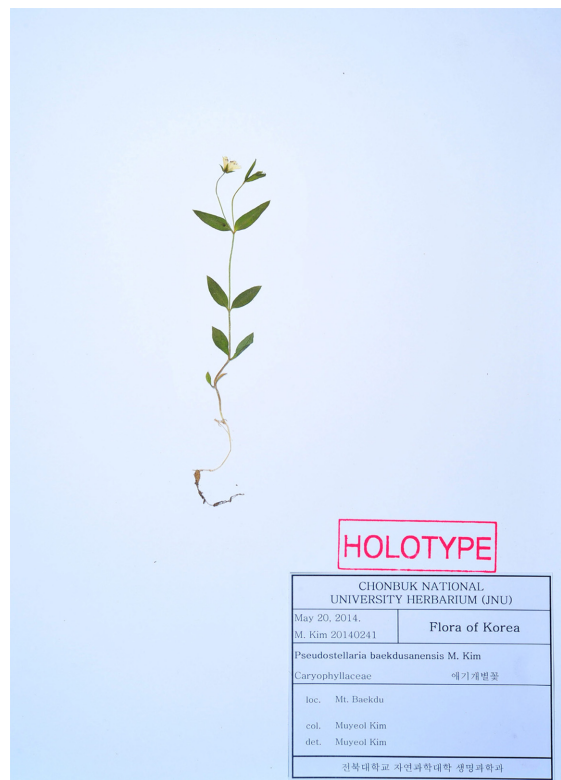


Fig. 3. Holotype of *Pseudostellaria baekdusanensis* M. Kim

Table 1. Comparison of morphological characters between *Pseudostellaria baekdusanensis* M. Kim and *P. japonica* (Korshinsky) Pax.

Characters	<i>P. baekdusanensis</i>	<i>P. japonica</i>
Root tubers	fusiform	fusiform
Plant height	9-13 cm	25-35 cm
Stem	erect	erect
Stem hairs	1 line	1-2 lines
Leaf petiole length	0.8-1.2 mm	2.0-2.6 mm
Leaf blade shape	lanceolate	ovate
Leaf blade length	1.4-2.0 cm	2.0-4.5 cm
Leaf blade width	0.4-0.7 cm	1.3-2.2 cm
Leaf blade hairs	basal margin	margin and midvein
Chasmogamic flowers	axillary and terminal	axillary and terminal
Pedicel length	1.2-2.2 cm	1.0-1.5 cm
Pedicel hairs	1 line	2 lines
Sepal numbers	5	5
Sepal hairs	only at basal margin	at margin and midvein
Sepal length	3.0-3.5 mm	2.8-3.2 mm
Sepal width	1.1-1.3 mm	1.3-1.7 mm
Petal numbers	5	5
Petal apex	deep emarginate	shallow emarginate
Petal length	5.5-6.5 mm	4.0-6.0 mm
Petal width	1.8-2.5 mm	2.4-3.8 mm
Stamens	10	10
Styles	2	(2) 3
Cleistogamic flower	absent	present
Capsule	round	ovoid
Seed surface	mammillate	mammillate
Seed length	2.0-2.5 mm	1.4-1.6 mm
Seed width	1.4-1.8 mm	1.2-1.4 mm

Type Locality: Mt. Baekdu.

Holotype: Mt. Baekdu. May 20, 2014. *M. Kim* 20140241. Herbarium of Chonbuk National University (JNU).

Isotype: Mt. Baekdu. May 20, 2014. *M. Kim* 20140242-20140244 (JNU).

Paratype: Mt. Baekdu. June 12, 2014. *M. Kim* 20140245-20140248 (JNU).

Distribution: Mt. Baekdu

Etymology: The specific epithet is derived from Mt. Baekdu where this new species is located.

Habitats: The natural habitat of *Pseudostellaria baekdusanensis* M. Kim was found in the woodlands on Mt. Baekdu. This species occurs under trees in forests dominated

by *Larix olgensis* and *Betula platyphylla* var. *japonica*. The species also occurs with principal shrub and herbaceous species dominated by *Lonicera caerulea* var. *edulis*, *Pseudostellaria sylvatica*, *Filipendula palmata*, *Anemone umbrosa*, and *Meehaniania urticifolia*.

Key to *Pseudostellaria baekdusanensis* and its related taxa.

1. Flowers terminal, leaves different size
2. Sepals and petals 5-7, pedicel glabrous
3. leaf blade margins without hairs, cleistogamic flowers present
4. Pedicels 2 times than leaves
..... *P. longipedicellata* 태백개별꽃
4. Pedicels same as leaves *P. palibiniana* 큰개별꽃
3. leaf blade margins with densely hairs, cleistogamic flowers absent *P. setulosa* 숲개별꽃
2. Sepals and petals 5, pedicel pubescent
5. Flowers 2-6, pedicels same as leaves
..... *P. heterophylla* 개별꽃
5. Flowers 1, pedicels 2 times than leaves
..... *P. okamotoi* 지리산개별꽃
1. Flowers lateral, leaves same size
6. Leaves linear, petiole absent
..... *P. sylvatica* 가는잎개별꽃
6. Leaves ovate, petiole present
7. Stems repent *P. davidii* 덩굴개별꽃
7. Stems erect
8. Plant 25-35 cm, leaf blade margins and midveins with long hairs, petal shallow emarginate, style (2) 3, cleistogamic flowers present *P. japonica* 긴개별꽃
8. Plant 9-13 cm, leaf blade basal margins with long hairs, petal deep emarginate, style 2, cleistogamic flowers absent *P. baekdusanensis* 애기개별꽃

By applying the IUCN Red List criteria (IUCN, 2011), *Pseudostellaria baekdusanensis* M. Kim will be evaluated as the category of Endangered (EN) species, because of its small population of one hundred individuals found in Mt. Baekdu.

Acknowledgement

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