



## A new species of *Potentilla* (Rosaceae): *P. gageodoensis* M. Kim

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### 양지꽃속(장미과)의 신종: 가거양지꽃 (*Potentilla gageodoensis* M. Kim)

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**ABSTRACT:** A new species, *Potentilla gageodoensis* M. Kim found in Is. Gageodo, Jeollanamdo Province, Korea, is firstly named and described. This species is similar to its related species *P. fragarioides* in having several characteristics like pinnately compound leaves, pubescent leaf blades and leaf petioles, different leaflets size, absent stolons, etc., but is distinct from *P. fragarioides* which has thin leaf textures, 7-13 leaflets, elliptic terminal leaflets, small petal size, and ciliate leaflet margin by having thick leaf textures, 5 leaflets, broadly ovate terminal leaflets, large petal size, and densely white ciliate leaflet margin.

**Keywords:** *Potentilla gageodoensis*, *P. fragarioides*, Rosaceae

**적 요:** 전남 가거도에서 양지꽃속의 신종인 가거양지꽃(*Potentilla gageodoensis* M. Kim)을 새로이 발견하여 기재하였다. 가거양지꽃은 잎은 우상복엽이며 엽신과 엽병에 털이 있고 3개의 정소엽이 측소엽보다 크며 포복경이 없어 양지꽃과 유사하다. 그러나 가거양지꽃은 잎은 두껍고 근생엽은 흔히 5장의 소엽으로 이루어졌으며 정소엽은 광난형이고 꽃잎이 크며 소엽 가장자리에 흰털이 밀생해서 흰색 테두리가 있는 것처럼 보인다. 반면에, 양지꽃은 잎은 얇고 근생엽은 흔히 7-13장의 소엽으로 이루어졌으며 정소엽은 타원형이고 꽃잎이 작으며 소엽 가장자리에 흰털이 적은 점에서 두 종이 뚜렷하게 차이가 난다.

**주요어:** 가거양지꽃, 양지꽃, 장미과

The genus *Potentilla* L. (Rosaceae) consists of approximately 500 species and is distributed primarily in temperate, arctic, and alpine zones of the Northern Hemisphere (Li et al., 2003). *Potentilla* are characterized by yellow petals, many stamens, carpels more than 10, and dry fruiting receptacle (Lee, 2007). Seventeen taxa of *Potentilla* are distributed in Korea (Lee, 2007). Of them, *P. fragarioides* L. and *P. freyniana* Bormm occur widely in Korea, while *P. palustris* (L.) Scop.

and *P. nivea* L. are rather rare and sporadically distributed (Lee, 2006; Heo et al., 2013).

A new species of *Potentilla* was discovered for the first time in Is. Gageodo, Jeollanamdo Province in Korea. The new species shares several characters with its related species, *P. fragarioides* L., but it can be distinguished based on leaflet numbers (i.e., 5 (7)), leaf textures (i.e., thick), leaflet margin (i.e., densely white ciliate), petal size (i.e., large), etc. Thus, we named this new taxon as *Potentilla gageodoensis* M. Kim .

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1. *Potentilla gageodoensis* M. Kim, sp. nov. (Fig. 1, 2, 3)

Korean name: Ga-geo-yang-ji-kkot 가거양지 꽃

Herbs perennial. Roots numerous. Basal leaves 20-45 cm including petiole; stipules light-brown, spreading villous; leaf blade pinnately compound with 5 (7) leaflets; leaflets at intervals of 2-5 cm, shortly petiolulate or sessile, green on both surfaces, broadly ovate, 2.5-8 × 2-6 cm, both surfaces pilose, margins serrate with densely white ciliate but entire near base. Flowering stems 1-3, ascending or spreading, 19-30 cm. Cauline leaves 3 leaflets, ovate, spreading pilose, margin serrate with densely white ciliate. Inflorescence cymose. Flowers 2.5-3.0 cm in diameter. Pedicel 1-3 cm, pilose. Sepals lanceolate, 4.5-5.5 × 1.5-2.5 mm; epicalyx segments oblanceolate, 4.8-5.3 × 1.8-2.3 mm. Petals yellow, obovate, apex emarginate, 0.8-1.1 × 0.6-1.3 cm. Style subterminal, 1 mm. Fruits achene, seeds subreniform, 1.0-1.2 × 0.6-0.8 mm. Fl. May, fr. June.

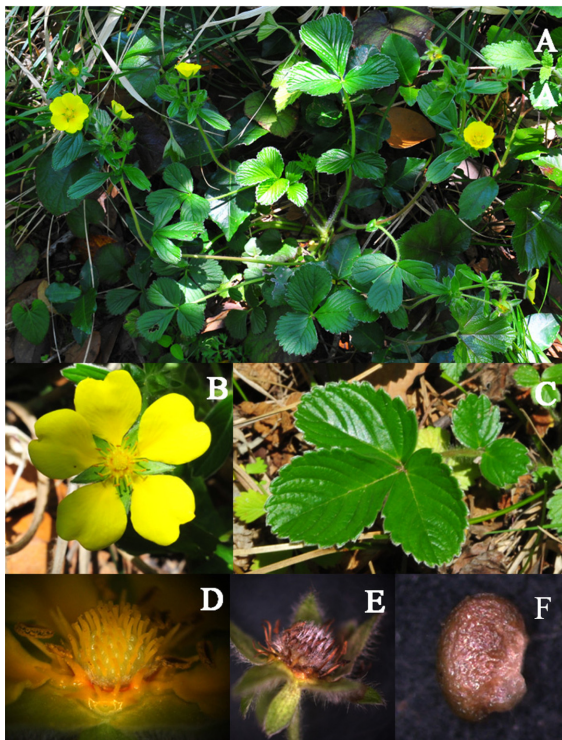
**Type Locality:** Is. Gageodo, Jeollanamdo Province, Korea.

**Holotype:** Is. Gageodo, Jeollanamdo Province, Korea. May 4, 2014. *M. Kim 20140121*. Herbarium of Chonbuk National University (JNU).

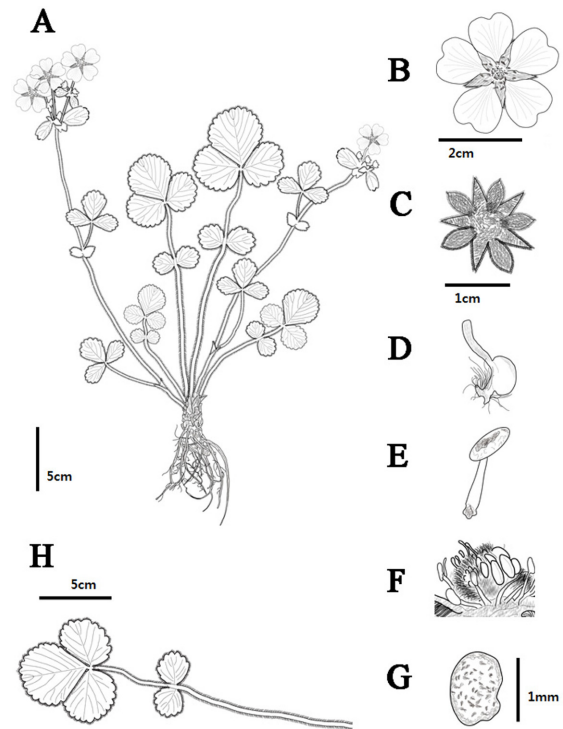
**Isotypes:** Is. Gageodo, Jeollanamdo Province, Korea. May 4, 2014. *M. Kim 20140122-20140123* (JNU).

**Paratypes:** Is. Gageodo, Jeollanamdo Province, Korea. June 29, 2014. *M. Kim 201400127-201400130* (JNU)

**Flowering:** May



**Fig. 1.** Photographs of *Potentilla gageodoensis* M. Kim at type locality. A. Adult plants with flowers; B. Front view of flower; C. Leaf; D. Pistils & Stamens; E. Side view of fruit; F. Seed.



**Fig. 2.** *Potentilla gageodoensis* M. Kim A. Adult plant with flowers; B. Flower; C. Sepals and epicalyx segments; D. Pistil; E. Stamen; F. Fruit; G. Seed; H. Basal leaf.



**Fig. 3.** Holotype of *Potentilla gageodoensis* M. Kim

**Table 1.** Comparison of some morphological characters between *Potentilla gageodoensis* and its related species *P. fragarioides*.

Characters	<i>P. gageodoensis</i>	<i>P. fragarioides</i>
Stolons	absent	absent
Basal leaf length	20-45 cm	20-30 cm
Petiole color	green	greenish purple
Leaflet numbers	5 (7)	(3-5) 7-15
Leaflet shape	broadly ovate	elliptic
Leaflet length	2.5-8 cm	2-6cm
Leaflet width	2-6 cm	1-3 cm
Leaflet margin	densely white ciliate	ciliate
Leaflet hairs	pubescent	pubescent
Flowering stem length	19-30 cm	12-25 cm
Flowering stem color	green	greenish purple
Cauline leaves	3	3 (5)
Cauline leaves shape	ovate	elliptic
Flower diameter	2.5-3.0 cm	1.3-2.0 cm
Pedicel length	1-3 cm	1.5-2 cm
Sepal shape	lanceolate	ovate
Sepal size	4.5-5.5 × 1.5-2.5 mm	4-5 × 1-2 mm
Epicalyx segment shape	obovate	lanceolate
Epicalyx segment size	4.8-5.3 × 1.8-2.3 mm	4-5 × 1-2 mm
Petal length	0.8-1.1 cm	0.5-0.7 cm
Petal width	0.6-1.3 cm	0.5-0.7 cm
Seed shape	subreniform	subreniform

**Distribution:** southern Korea (Is. Gageodo).

**Etymology:** The specific epithet is derived from Is. Gageodo where this new species is located.

**Habitats:** A population of *Potentilla gageodoensis* M. Kim was found at woodlands in Is. Gageodo. This new species occurs under trees in forests dominated by *Machilus thunbergii* and *Castanopsis sieboldii*. This species also occurs with other herbaceous species dominated by *Trachelospermum asiaticum*, *Dryopteris erythrosora*, *Lilium lancifolium*, and *Isodon excisus* (Yun et al., 2012).

**Key to *Potentilla gageodoensis* and its related taxa.**

- 1. Leaves ternately compound
  - 2. Stolons absent ..... *P. nivea* 은양지꽃
  - 2. Stolons present ..... *P. freyniana* 세잎양지꽃
- 1. Leaves pinnately compound

- 3. Leaflets lobed ..... *P. chinensis* 딱지꽃
- 3. Leaflets serrulate
  - 4. Stolons present ..... *P. stolonifera* 제주양지꽃
  - 4. Stolons absent
    - 5. Leaflets lower surfaces glabrescent ..... *P. supina* 개소시랑개비
    - 5. Leaflets lower surfaces pilose or glaucous
    - 6. Leaflets lower surfaces glaucous ..... *P. dickinsii* 돌양지꽃
    - 6. Leaflets lower surfaces pilose
      - 7. Leaflets 7-13, leaflet margin ciliate, leaf textures thin, terminal leaflets elliptic, petal length 0.5-0.7 cm ..... *P. fragarioides* 양지꽃
      - 7. Leaflets 5, leaflet margin densely white ciliate, leaf textures thick, terminal leaflets broadly ovate, petal length 0.8-1.1 cm .. *P. gageodoensis* 가거양지꽃

By applying the IUCN Red List criteria (IUCN, 2011), *Potentilla gageodoensis* M. Kim will be evaluated as the category of Endangered (EN) species, because of its small population of four hundred individuals found in Is. Gageodo.

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