

A new record for Korean flora: *Drosera spathulata* Labill. (Droseraceae)

Sung-Won Son*, Byung-Chun Lee, Jae-Min Chung, Hyung-Ho Yang and Seong-Won Lee¹

Division of Forest Resource Conservation, Korea National Arboretum, Pocheon 487-821, Korea

¹Research Council for Korea Plant, Anyang 431-744, Korea

(Received 25 January 2012 : Revised 5 March 2012 : Accepted 12 March 2012)

한국 미기록 식물: 좀끈끈이주걱(끈끈이귀개과)

손성원* · 이병천 · 정재민 · 양형호 · 이성원¹

국립수목원 산림자원보존과, ¹한반도 식물연구회

ABSTRACT: *Drosera spathulata* Labill., belonging to the family Droseraceae, was recently recorded for the first time in a forest wetland in Busan-si, Gijang-gun, Cheolma-myeon. This plant is distributed from eastern Australia throughout South East Asian, Japan, China, Taiwan, and now, Korea. This species, related by taxa to *D. rotundifolia*, is distinguished by possessing a smaller leaf size (10–20 mm long, 2.5–4.5 mm wide), racemes that are glandular-hairy, and pinkish petals. The newly given Korean name, ‘Jom-kkeun-kkeun-yi-ju-geok’ reflects the small size as compared to related taxa. A description of the key characteristics, an illustration, and photographs of the habitats of this plant are provided in this report.

Keywords: Droseraceae, *Drosera spathulata*, unrecorded

적 요: 부산광역시 기장군 철마면에서 우리나라 끈끈이귀개과의 미기록 분류군인 좀끈끈이주걱(*Drosera spathulata* Labill.)이 발견되었다. 이 분류군은 동부 오스트레일리아에서부터 동남아시아, 일본, 중국, 대만에 주로 분포하는 것으로 알려져 왔다. 근연 분류군인 끈끈이주걱(*D. rotundifolia*)과 비교하여 잎의 크기가 작고 (10–20 mm long, 2.5–4.5 mm wide), 화서에 조밀한 선모가 있으며, 분홍색 꽃이 피는 점에서 뚜렷이 구분된다. 국명은 전체가 근연 분류군보다 왜소한 특징을 고려하여 ‘좀끈끈이주걱’으로 신칭하였다. 주요 형질에 대한 도해와, 기재, 서식지 식물사진, 검색표를 제시하였다.

주요어: 끈끈이귀개과, 좀끈끈이주걱, 미기록종

Historically, the family Droseraceae has included four genera: the sundews *Drosera*, *Drosophyllum*, *Aldrovanda*, and the Venus’s flytrap *Dionaea*, the last three of which are monotypic (Cronquist, 1981; Takhtajan, 1997; Rivadavia et al., 2003; Hoshi et al., 2010). The genus *Drosera* L. (Droseraceae), which is comprised of nearly 150 species, are mostly perennials (Juniper et al., 1989; Lowrie, 1998) and are distributed throughout Australia, Africa, East Asia, South America, and Northern Hemisphere (Rivadavia et al., 2003; Iwatsuki, 2001). *Drosera* have active flypaper traps and capture their prey using mobile glandular hairs presented on the adaxial leaf surface

(Rivadavia et al., 2003; Hoshi et al., 2008).

The Northern Hemisphere species of *Drosera* have the basic number of chromosomes ($x = 10$) and belong to series *Drosera* of section *Drosera* in the subgenus *Drosera* (Diels, 1906; Hoshi et al., 2008). In Korea, there were three species reported including *D. rotundifolia* L., *D. anglica* Huds., *D. peltata* var. *nipponica* (Masam.) Ohwi (Lee, 1996; Lee, 1980; Choi, 2007).

In the present study, *D. spathulata* Labill. was recently collected for the first time from the forest wetland of Busan-si, Gijang-gun, Cheolma-myeon in southern region of Korea. This region composed of *Juniperus rigida* Siebold & Zucc., *Rhus tricarpa* Miq., *Lespedeza maximowiczii* C.K.Schneid., *Sanguisorba officinalis* L., and *Molinia japonica* Hack. etc.

*Author for correspondence: coreanomecon@gmail.com

This taxon is distinguished from *D. rotundifolia* by having pinkish petals and comparatively small leaf size (approximately 10–20 mm long, 2.5–5 mm wide). The Korean name, “Jom-kkeun-kkeun-yi-ju-geok” was given in consideration of the smaller size than related taxa in Korea. The voucher specimens were deposited at the Korea National Arboretum Herbarium (KH, Son, S. W. et al. JMC13155).

Species Description

Drosera spathulata Labill., Nov. Holl. Pl. 1: 79 (1805).

Drosera loureiri Hook. et Arn., Bot. Beechey Voy.: 167 (1833).

Drosera burmanni DC., non Vahl.

Insectivorous perennials, height 15–22 cm. Rhizomes short. **Leaves** forming a dense, rosulate, spreading; Stipe deeply 3-lobed; Blade pale green or often tinged with red, ovate, spatulate, or cuneate, 10–20 mm long, 2.5–5 mm wide, apex rounded, with dense long reddish-purple gland tipped bristlelike hairs throughout on upper surface, base cuneate; Petiole broad, short, obscure. **Scapes** 1–6, 5–25 cm long, erect, slender. **Racemes** terminal, 1-sided, glandular hairy, 5–15-flowered; Bract subulate to linear-lanceolate; Pedicels 0.5–10 mm. **Flower** June to August; Sepals 5, green, lanceolate or narrow ovate, 2.5–3 mm long, apex obtuse, margin entire; Petals 5, pink to reddish violet, oblanceolate, 4–8 mm long; Stamens 5; filament flate; anthers oblong, ca. 1.5 mm; Ovary ellipsoid-globose; styles 3, deeply 2-parted to base, sometimes

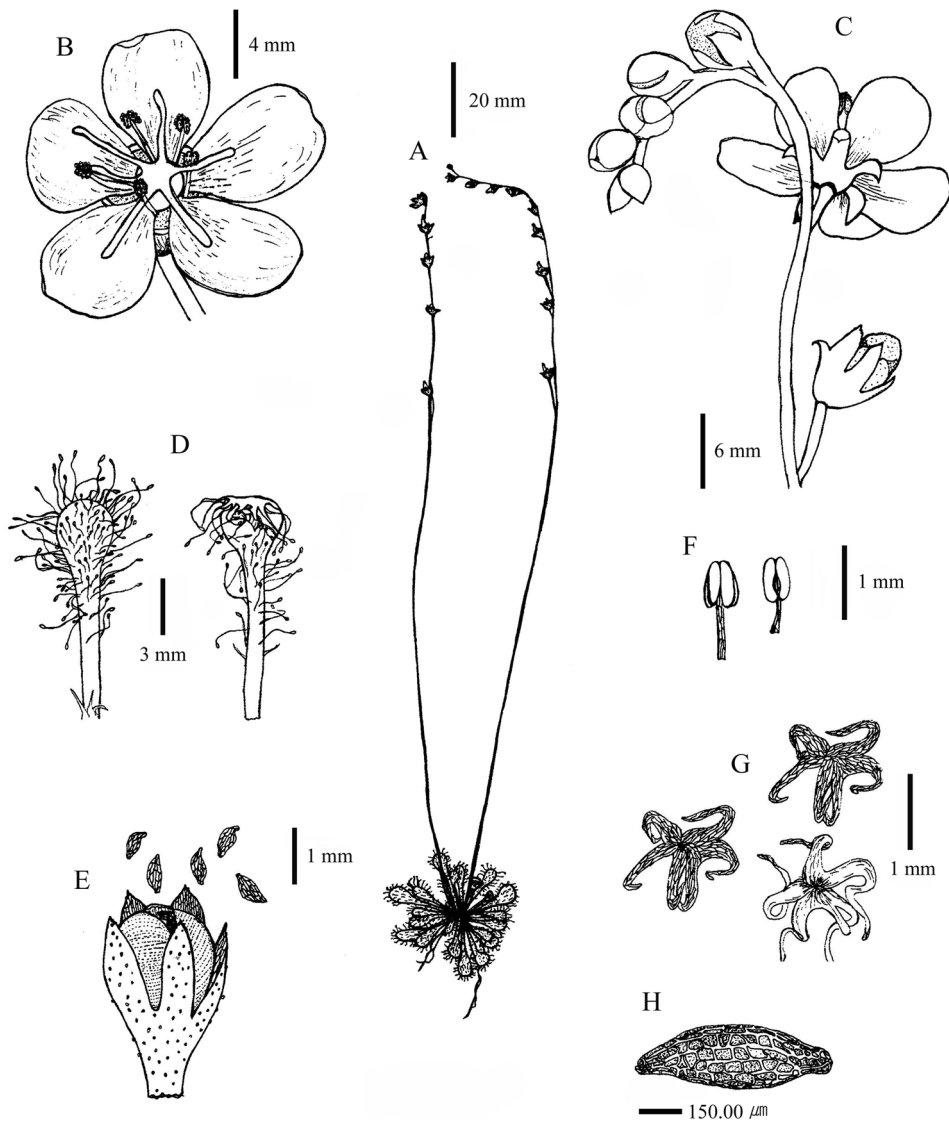


Fig. 1. *Drosera spathulata* Labill. A. Habit; B. Flower; C. Inflorescence; D. Leaf; E. Fruit; F. Stamen; G. Stigma; H. Seed.

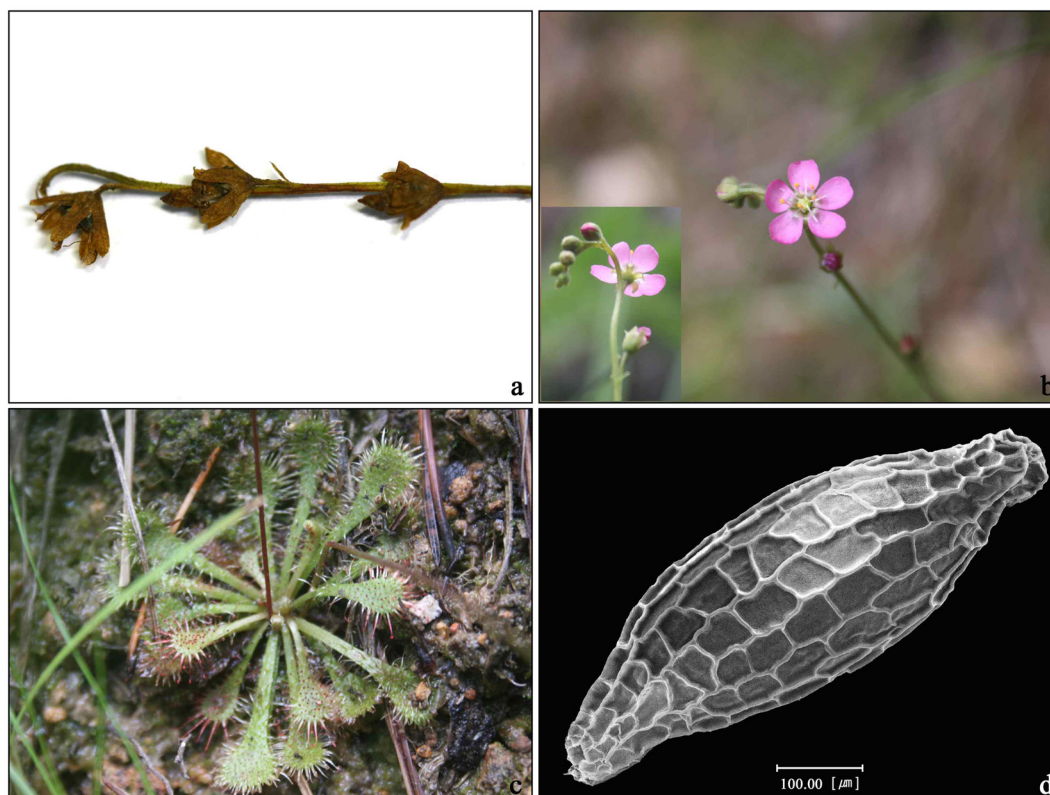


Fig. 2. Photograph of *Drosera spathulata* Labill. a. Inflorescence; b. Flowering; c. Leaf, d. Seed.

again parted distally; stigma simple, persistent. **Fruits** capsules globose, 1.5 mm in diam; Seed black, minute, ellipsoid, venation thick and scrobiculate.

Korean name: Jom-kkeun-kkeun-yi-ju-geok (좁근근이주걱)

Distribution: Japan, China, Taiwan, Korea, S. & SE. Asia and Australia.

Voucher specimens: Busan-si, Gijang-gun, Cheolma-myeon 19 Sept. 2011, Son, S. W. *et al.* JMC13155 (KH)

Key of the genus *Drosera* in Korea

1. Plants stemless, scapose; leaves with stipules
 2. Leaves 5–15 cm long; racemes glabrous or nearly glabrous; petals whites; capsules longer than sepals
 3. Leaves depressed-obovate, 0.5–1 cm; seeds nearly linear 1. *D. rotundifolia*
 3. Leaves linear-oblanceolate, 3–4 cm, seeds lanceolate 2. *D. anglica*
 2. Leaves 1–2 cm long; racemes with dense minute glandular hairs; petals pinkish; capsules shorter than sepals 3. *D. spathulata*
1. Stems elongate, with alternate leaves; stipules absent 4. *D. peltata* var. *nipponica*

Discussion

D. spathulata complex, which is taxonomically same to the Northern Hemisphere group, is founded in the eastern part of Australia throughout the South East Asian countries, to Japan, China, and Taiwan (Hoshi *et al.*, 2008). *D. spathulata* complex exhibits chromosome variation (diploid, tetraploid, hexaploid) and these variants also differ morphologically. Diploid and tetraploid plants of the *D. spathulata* complex have a spatulate leaf-shape (Hoshi *et al.*, 2008). In contrast, hexaploids in *D. spathulata* complex have a leaf shape intermediate between obovate and spatulate shapes (Hoshi *et al.*, 2008). In Japan, there are two morphological types of the *D. spathulata* complex, the ‘Kanto-’ and ‘Kansai-type’, which have been recognized as *D. spathulata* ssp. *tokaiensis* (Nakamura and Ueda, 1991). But, these two types reveal continuous variations in morphological characteristics such as leaf and seed size. Although the plants collected in Korea have not yet been surveyed for cytological characteristics, they have been identified as *D. spathulata* Labill. due to their petal, seed, and leaf morphology. In the near future, we will conduct a cytological study of this taxon.

Acknowledgements

This paper was carried out as part of 'Infrastructure for conservation and restoration of rare and endemic plants' in Korea National Arboretum (KNA). Special thanks to Yoonju Jeon for the illustration.

Literature Cited

- Choi, H. K. 2007. Droseraceae. In The Genera of Vascular Plants of Korea. Flora of Korean Editorial Committee (eds). Academy Publishing Co, Seoul.
- Cronquist, A. 1981. An Integrated System of Classification of Flowering plants. Columbia University Press, New York.
- Diels, L. 1906. Droseraceae. In Das Pflanzenreich: Regni vegetabilis conspectus. IV. Engler, A. (ed.). Leipzig. Pp. 112.
- Hoshi, Y., J. Shirakawa, M. Takeo and K. Nagano. 2010. A molecular genetic of *Drosera spathulata* complex by using of RAPD analysis. Chromosome Botany 5: 23-26.
- Hoshi, Y., J. Shirakawa, M. Hasebe, K. Fukushima and K. Kondo. 2008. Tandem Repeat rDNA sequence derived from parents were stably maintained in hexaploids of *Drosera spathulata* complex (Droseraceae). Cytologia 73: 313-325.
- Iwatsuki, K. 2001. Droseraceae. In Flora of Japan, Vol. IIB. Iwatsuki, K., D. E. Boufford and H. Ohba (eds.). Kodansha Ltd., Tokyo. Pp. 1-3.
- Juniper, B. E., R. J. Robins and D. E. Joel. 1989. The carnivorous plants. Academy Press, London, UK.
- Lee, T. B. 1980. Illustrated Flora of Korea. Hyangmunsa, Seoul (in Korean).
- Lee, W. T. 1996. Lineamenta Florae Korea. Academy Publishing Co., Seoul (in Korean).
- Lowrie, A. 1998. Carnivorous plants of Australia, Vol. 3. University of Western Australia Press, Western Australia, Australia
- Nakamura, T. and K. Ueda. 1991. Phytogeography of Tôkai hilly land element II. Taxonomic study of *Drosera tokaiensis* (Komiya & C. Shibata) T. Nakamura & Ueda (Droseraceae). Acta Phytotax. Geobot. 42: 125-137.
- Rivadavia, F., K. Kondo, M. Kato and M. Hasebe. 2003. Phylogeny of the sundews, *Drosera* (Droseraceae), based on chloroplast *rbcL* and nuclear 18S ribosomal DNA sequence. Amer. Journ. Bot. 90: 123-130.
- Takhtajan, A. 1997. Diversity and Classification of Flowering Plants. Columbia Univ. Press, New York.