



First record of *Neottia japonica* (Orchidaceae) from Korea

Ji Hyeon So, Mi Sook Chung¹, Young Sun Chung¹ and Nam Sook Lee*

Division of EcoScience, Graduate School, Ewha Womans University, Seoul 120-750, Korea

¹463, 516-ro, Seogwipo-si, Jeju-do 697-050, Korea

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한국 미기록 식물: 아기쌍잎난초(난과)

소지현 · 정미숙¹ · 정영순¹ · 이남숙*

이화여자대학교 대학원 에코과학부, ¹제주도 서귀포시 516로 463

ABSTRACT: *Neottia japonica* (Blume) Szlach. (Orchidaceae), previously known to be native in southern part of Japan and Taiwan, was found in Seogwipo-si, Jeju-do, Korea. This species is distinguished from the related taxa of *Neottia pinetorum* (Lindl.) Szlach and *N. nipponica* (Makino) Szlach. by smaller plant, lip with T-shaped lamella and auricles embracing column, and flowering in the spring. The local name was given as “A-gi-ssang-nip-nan-cho” based on the cuter and smaller plant than *N. pinetorum*. The description and illustrations of the species on morphological characters, voucher specimens, and photograph at the habitat are provided.

Keywords: *Neottia japonica*, Orchidaceae, Korea

적 요: 일본과 대만에 분포하는 것으로 알려진 난과의 아기쌍잎난초(*Neottia japonica* (Blume) Szlach.)가 제주도 서귀포시에서 발견되었다. 이 종은 식물체가 작으며 입술꽃잎에 꽃술대를 둘러싸는 소열편과 T자 모양의 신장된 육상체가 있고 꽃이 이른 봄에 피는 특징에 의해 근연종들인 쌍잎난초 및 털쌍잎난초와 구별된다. 국명은 쌍잎난초보다 귀엽고 작아서 아기쌍잎난초로 신칭하였다. 아기쌍잎난초의 형태적 특징을 기재하고, 확증표본, 도해와 생태 사진을 첨부하였다.

주요어: 아기쌍잎난초, 난과, 한국

The genus *Neottia* Guett. belongs to the tribe Neottieae of the Orchidaceae (Dresser, 1993) and is comprised about 70 taxa in eastern and northern part of Asia, Europe, and North America, with a few species extending into tropical Asia. Five taxa of *Neottia* have been reported in Korea: *N. pinetorum* (Lindl.) Szlach, *N. nipponica* (Makino) Szlach., *N. papiliger* Schltr., *N. acuminata* Schltr., and *N. kiusiana* T. Hashim. & S. Hatus. *Neottia hypocaustoptica* Y. N. Lee had been reported as a new species (Lee, 1998), but it was retreated as a synonym of *N. kiusiana* T. Hashim. & S. Hatus (Yukawa et al., 2009).

Of five taxa, *Neottia pinetorum* and *N. nipponica* had been treated as the members of *Listera* (Lee, 1989; Lee, 1996; Lee, 2006). However, the genus *Listera*, which is autotrophic with two leaves, is moved into genus *Neottia* which lacks green leaves (Govaerts et al., 2013). *Neottia pinetorum* and *N. nipponica* were known to be distributed in the northern part of Korea (Lee, 1989; Lee, 1996; Lee, 2006). Even though, *N. nipponica* was listed or described in a few Korean flora, we could not found any collected voucher specimen and/or photo from the northern part of Korea. Therefore, it is unclear whether *N. nipponica* is distributed in Korea, and this species was excluded in a key of the genus *Neottia* for Korea (Lee, 2011).

Two populations of *N. japonica* Szlach., one population with about 30 individuals per 10 m², and the other one with 12 individuals per 5 m² were observed at Seogwipo-si, Jeju-do in

*Author for correspondence: namsook@ewha.ac.kr

2012. It grows under the mixed forest of *Acer palmatum* Thunb., *Carpinus laxiflora* (Siebold. & Zucc.) Blume, *Eurya japonica* Thunb., *Rhododendron weyrichii* Maxim., *Quercus acuta* Thunb., *Dendropanax morbiferus* H. Lev., *Daphniphyllum macropodum* Miq., *Pinus densiflora* Sieb. & Zucc., *Goodyera schlechtendaliana* Rchb.f., *Goodyera velutina* Maxim. ex Regel and *Liparis krameri* Franch. & Sav. *Neottia japonica* was previously known to be in Ryuku islands, Kyushu, Shikoku of southern Japan and Taiwan (Maekawa, 1971; Su, 2000), extended its distribution range to Prefectures of Tokyo, Kanagawa, Chiba, Ibaraki, Saitama, Tochigi and Gunma in Honshu. Its distribution moved to northward might be caused by global warming. *Neottia japonica* is distinguished from *N. pinetorum* by the lip with T-shaped lamella and auricles embracing column, smaller plant, and flowering in the spring. The local name was given as "A-gi-ssang-nip-nan-cho" based on the cuter and smaller plant than *N. pinetorum*. The voucher specimens are preserved in the Ewha Womans University Herbarium (EWH).

***Neottia japonica* (Blume) Szlach.**, *Fragm. Florist. Geobot.*, Supp. 3: 117 (1995). Figs. 1, 2, & 3.

Listera japonica Blume, *Coll. Orchid.* 136 (1859).

Diphryllum japonicum (Blume) Kuntze, *Revis. Gen. Pl.* 2: 659 (1891).

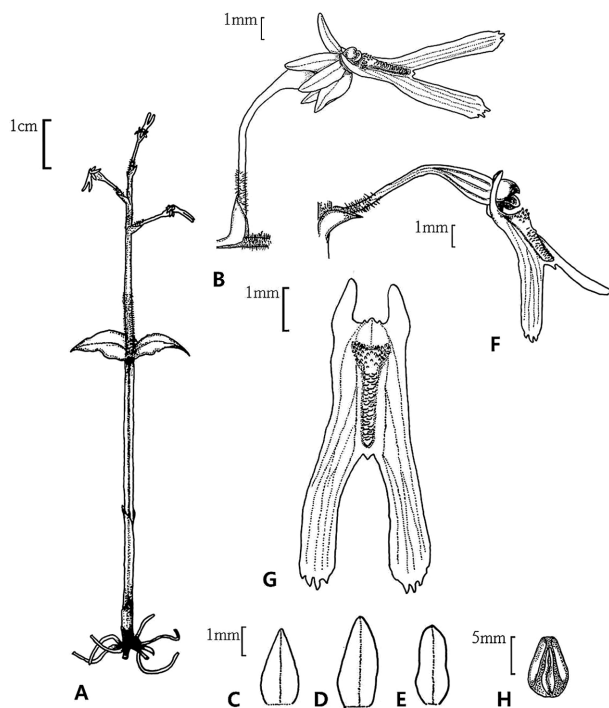


Fig. 1. *Neottia japonica* (Blume) Szlach. A. Habit; B. Flower; C. Dorsal sepal; D. Lateral sepal; E. Lateral petal; F. Lip, column, ovary, pedicel, and bract; G. Lip; H. Anther cap.

Ophrys japonica (Blume) Makino, *J. Jap. Bot.* 6: 33 (1929).
Listera shikokiana Makino, *Bot. Mag. (Tokyo)* 7: 68 (1893).
Ophrys shikokiana (Makino) Makino. *Journ. Jap. Bot.* 6: 34 (1929).

Listera shaoi S. S. Ying, *Coloured Ill. Indig. Orchids Taiwan* 1(2): 236 (1977).

Neottia shaoi (S. S. Ying) Szlach. *Fragm. Florist. Geobot. Supp.* 3: 118 (1995).

Korean name: A-gi-ssang-nip-nan-cho 아기쌍잎난초

Plants autotrophic, 4-8 cm tall. Rhizome with few elongate, filiform roots. Stem slender, ridged, squared, with 1 or 2 tubular sheaths at the base, pale green or purplish green, glabrous at lower part of stem under the leaves. Leaves 2, opposite, borne slightly below middle of plant, sessile, ovate-triangular, larger leaf 1.1-1.9 cm wide, 1.4-1.9 cm long, smaller leaf 1.35-1.4 cm wide, 1.5-1.9 cm long, base cordate or truncate, apex acute. Peduncle with rachis 2.8-3.9 cm, pubescent; laxly 1-3-flowered; floral bracts broadly ovate, 1.5-3 mm, acute. Flowers resupinate, purplish green, lip deep purple; pedicel 5-7 mm, slender, glabrous or slightly pubescent toward base; ovary 2.5-3 mm, glabrous; sepals and lateral petals reflexed. Dorsal sepal

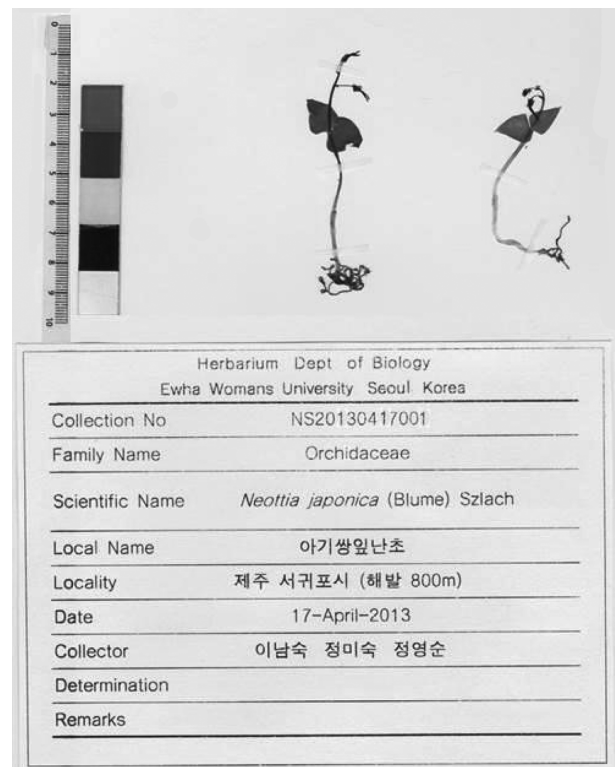


Fig. 2. Voucher specimen of *Neottia japonica* (Blume) Szlach. in EWH.



Fig. 3. Photograph of *Neottia japonica* (Blume) Szlach. taken by NS Lee in Jeju-do on 14 April 2013.

obovate-lanceolate, 2-2.5 × 1-1.3 mm, apex acute or obtuse; lateral sepals ovate, oblique, 2.5-3 × 1.1-1.2 mm, apex obtuse. Lateral petals lanceolate or lanceolate-linear, 2.3 × 1-1.1 mm, apex obtuse; lip narrowly cuneate, 6.2-6.5 mm, with T-shape lamella in the center, a pair of auricles at base, apex deeply 2-lobed; lobes diverging at an acute angle, linear, 2.5-3.1 mm, apex margin toothed; sinus with a triangular tooth between lobes; auricles strongly incurved, embracing column, slender. Column less than 1 mm. Flowering March - April.

Voucher Specimen: Mt. Halla. April 17, 2013. NS2013-0417001. Ewha Womans University Herbarium (EWH).

Distribution: Taiwan (Central and Northern area, 1400-3000 m), Japan (Ryukyu Islands, Shikoku, Kyushu, Kanto area of Honshu, 300-500 m), and Korea (Jeju-do, 700-900 m).

Neottia japonica (Blume) Szlach. of Japan and Taiwan is taller (10-18 cm) and has longer peduncle with rachis (6-10 cm), many flowers (3-8/peduncle), and typically overlapping auricles on the column as compared to *N. japonica* of Korea.

Neottia japonica of Korea can be distinguished from the other four taxa of the genus *Neottia* in Korea as follows, but *N. nipponica* is included for comparison with *N. japonica* in this artificial key.

Key to *Neottia japonica* and its related taxa in Korea

1. Plants holomycotrophic, lacking green leaves
 2. Lip entire, same length with lateral petal length, column less than 0.5 mm *N. acuminata*
 2. Lip bilobed, 2.5-3 times length of lateral petal length, column 2-3.5 mm
 3. Plants in evergreen forest, plant height 6-15cm, floral bract 11 mm long *N. kiusiana*
 3. Plants in pine forest, plant height 20-45 cm, floral bract 5 mm long. *N. papiliger*
1. Plants autotrophic, with 2 green leaves
 4. Lip without a pair of auricles near base *N. pinetorum*
 4. Lip with a pair of auricles near base
 5. Auricles of lip spreading, not embracing the column, flowers in summer *N. nipponica*
 5. Auricles of lip embracing the column, flowers in spring *N. japonica*

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