

## NOTES

### NOTES ON *HEMEROCALLIS MIDDENDORFFII* (LILIACEAE) IN KOREA

*Hemerocallis middendorffii* complex (Liliaceae) grows in northeastern China, northern Korea, the central and northern Japanese Archipelago, and parts of the Kuril Islands (Noguchi 1986). As the taxonomy of the complex has been extremely controversial, Noguchi (1986) conducted a detailed study of morphological analyses on 14 characters collected from 35 localities throughout the geographic range of the complex in Japan. More recently, she also investigated the historical differentiation processes of the complex in Japan with chloroplast DNA restriction site variation (Noguchi et al. 1995). For *H. middendorffii* in Korea, only a few locations in northern regions has been documented in previous studies (e.g., Fig. 2 in Matsuoka & Hotta 1966; Fig. 35 in Noguchi 1986; Noguchi et al. 1995). In an attempt to improve our knowledge of the genus, we have collected samples from 75 locations in South Korea during the past 10 years to determine the overall distribution patterns for Korean species and to analyze morphological variation within and among species (Chung & Kang 1994, Kang & Chung 1994, Kang & Chung 1997). Based on these studies, we recognize five *Hemerocallis* species native in Korea: *H. bakuunensis* Nakai (= *H. micrantha* Nakai), *H. thunbergii* Baker (= *H. coreana* Nakai), *H. middendorffii* Tr. et Mey., *H. bongdoensis* M. Chung & S. Kang, *H. taeanensis* S. Kang & M. Chung. Except *H. middendorffii*, the variation patterns of several morphological characters and distribution of the four Korean species have been documented in these studies. From May to June 1995, while conducting field trips in the central and southeastern Korean Peninsula, we encountered three populations of *H. middendorffii* (see arrows in Fig. 1). Samples of rootstocks were collected from the locations and were grown under uniform conditions in Biology Plant Growth Facilities at Gyeongsang National University. Voucher specimens of all collections are deposited at GNUC. From May to June 1996, the 12 morphological characters (Chung & Kang 1994) were measured for 15 individuals from the three populations. In addition, the herbaria of Seoul National University (SNU) and Tokyo University (TI) were visited in order to determine the overall geographic distribution patterns for *H. middendorffii* in Korea. Here we report the distribution and description of *H. middendorffii* in Korea to provide an information for better understanding the complex in east Asia.

Although Matsuoka and Hotta (1966) and Noguchi (1986) presented distribution maps in which the species grows only in northeastern Korea,

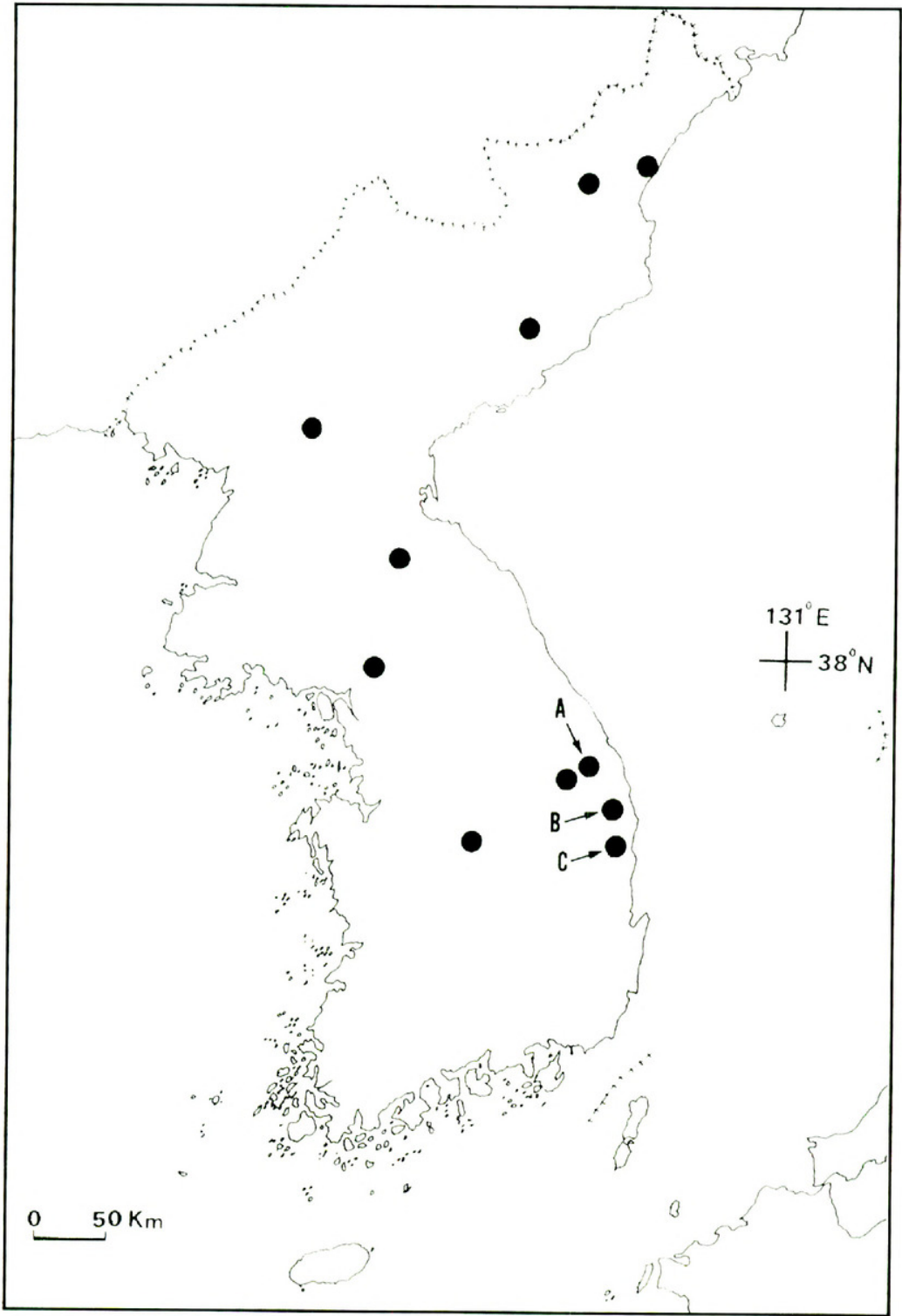


FIG. 1. Documented distribution of *Hemerocallis middendorffii* in Korea. Arrows (A, B, and C) indicate recently discovered populations. Population A (alt. 800 m) grows along a streamside with *Hosta capitata* (Koidz.) Nakai, *Lilium* sp, *Polygonatum* sp., and grasses. Population B (alt. 400 m) grows on the margins of pine forest along a streamside. Population C (alt. 240 m) grows on the hillside of mesoic pine-oak understory.



as presented in Figure 1, *H. middendorffii* is widely distributed from the central to northern Korean peninsula. According to Noguchi (1986), populations of *H. middendorffii* in Japan maintain complex local variation in several morphological characters partly due to diverse ecological habitats such as alpine meadows, low grasslands, and margins of forest understories. Sizes of the three Korean populations were relatively small (< 100 individuals per population) and these isolated populations were found along stream sides of hillsides.

The description of *H. middendorffii* in Korea is as follows:

***Hemerocallis middendorffii*** Traut. & May., Flor. Och. Phaen. 94. 1856.

Leaves 30–60 cm long, 0.8–1.5 cm wide, greenish yellow. Scapes erect, 20–60 cm long. Inflorescences are basically short dichotomous or capitate type with 2–4 flowers. Inflorescence bracts ovate, greenish, 2.5–5.5 cm long, 1.1–3.0 cm wide. Flower weakly fragrant. Perianth orange-yellow, tubular-funnelform, 6.8–9.6 cm long; tube short, 1.0–1.8 cm long; throat orange-yellow, inner perianth lobes 4.6–6.3 cm long, 1.1–2.3 cm wide, outer perianth lobes 4.7–6.7 cm long, 0.9–1.6 cm wide. Stamens 3.5–4.5 cm long, inserted; anthers ca. 5 mm long, dark brown with purple tint. Style filiform, ca. 8.5 cm long, exerted beyond the stamens. Capsule 1.8–2.2 cm long, apex emarginate; seeds shining black, ovoid, angled below, 7 mm long, 5 mm wide. Flowering from late May to June in Korea; fruiting and maturing seed in July.

Specimens examined: KOREA. Prov. Hamgyeongbuk-do: Ch'ungjin-shi, 17 Jul 1909, T. Nakai s.n. (TI); Mt. Kwanmyobong, 20 Jul 1936, B.S. Tob 4507 (SNU). Prov. Hamgyeongnam-do: Sambang, 6 Jun 1933, B.S. Tob s.n. (SNU); Mt. Baekam, 15 Jul 1934, B.S. Tob, & H.J. Shim 3549 (SNU); Musan, Aug 1913, T. Mori 311 (TI). Prov. Hamgyeongbuk-do: Mt. Myohwang, 2 Jul 1932, B.S. Tob, & H.J. Shim 2784 (SNU). Prov. Kyeong-do: Kwangrung, 12 Jun 1932, B.S. Tob 900 (SNU). Prov. Ch'ungch'eongbuk-do: Mt. Sokri, B.S. Tob, & H.J. Shim 9596 (SNU). Prov. Kangwon-do: Mt. Myeon, S.H. Oh s.n. (SNU); Mureung-ri, Jungsun-gun, 11 Jun 1995, S. Kang, M. Chung, & G.S. Oh 2040 (GNUM). Prov. Kyeongsangbuk-do: Bulyoung Valley, Wuljin-gun, 29 May 1995, S. Kang, M. Chung, & G.S. Oh 2038 (GNUM); Bongwha-gun, 10 Jun 1995, S. Kang, M. Chung, & G.S. Oh 2039 (GNUM).

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