

Impatiens violascens (Balsaminaceae): A new species from Korea

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꼬마물봉선: 한국에서 발견된 물봉선속(봉선화과)의 1신종

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ABSTRACT: Herein is described a new species of *Impatiens violascens* B.U. Oh & Y.Y. Kim (Balsaminaceae) discovered on Bohyeon Mountain in Yeongcheon-si, Gyeongsangbuk-do, Korea. The new species is distinct from a closely-related species, *I. textorii*, by having a flower half the size that of *I. textorii*, sharply narrowed lower sepal, one half- to one time-coiled spur, and distal lobes of elliptical type laterally united petals. The key to these two species is provided.

Keywords: Balsaminaceae, *Impatiens* L., new species, *Impatiens violascens*

적 요: 물봉선속(봉선화과)의 1신종인 꼬마물봉선이 한국의 경상북도 영천시 보현산에서 발견되어 기재되었다. 신종은 근연종인 물봉선(*I. textorii*)에 비해 1/2 크기의 꽃, 급격히 좁아지는 하악편, 1/2 회에서 1 회 감기는 거, 타원형인 측화판의 선단부 열편을 가짐으로써 뚜렷하게 구별되었다. 본 연구에서 이들 두 종의 검색표를 제시하였다.

주요어: 봉선화과, 물봉선속, 신종, 꼬마물봉선

Balsaminaceae are family including the genera *Hydrocera* and *Impatiens*. The latter is the larger genus, and is considered to be one of the most difficult genera to study taxonomically. The species are extremely variable and lack the synapomorphic characters necessary to define subdivisions within the genus (Cong et al., 2008). The genus *Impatiens* L. is composed of more than 900 species worldwide (Yuan et al., 2004; Chen et al., 2007), and distributed mainly in the mountain areas of tropical and subtropical regions, from India to SE Asia (Fischer and Rahelivololona, 2002). Some species also occur in temperate Asia, Europe and North America (Chen et al., 2007). In Korea, two taxa are known to be endemics among the eight recorded ones (Hong and Oh, 1993; Lee, 1998; Oh and Hong, 2001; Oh et al., 2005; Oh, 2007).

In this study, one uncertain species which was collected from

the province Gyeongsangbuk-do in 2008, is described as a new species, *I. violascens* under *Impatiens* sect. *Brachycentron*.

Impatiens violascens B.U. Oh & Y.Y. Kim, sp. nov., Figs. 1, 2, 3, 4

Haec species *I. textorii* Miq. similis, sed, flore magnitudine dimidiata, inferior-sepalis acutatus, calaria 1/2 ad 1 spira, distalis lobo ellipticus diversa.

Holotype: KOREA. Province Gyeongsangbuk-do, Yeongcheon-si, Hwabuk-myeon, Jeonggak-ri, Mt. Bohyeonsan slope in mountain forest near the summit, alt. 1,069 m, 36°09'46.50N, 128°58'36.00E, 2 Sep. 2008, B.U. Oh et Y.Y. Kim, 080902-001 (CBU)

Isotypes: CBU

Herbs annual, 15.0–70.0 cm tall. **Roots** taproots. **Stems** erect, green to reddish green, simple or branched, with glandular

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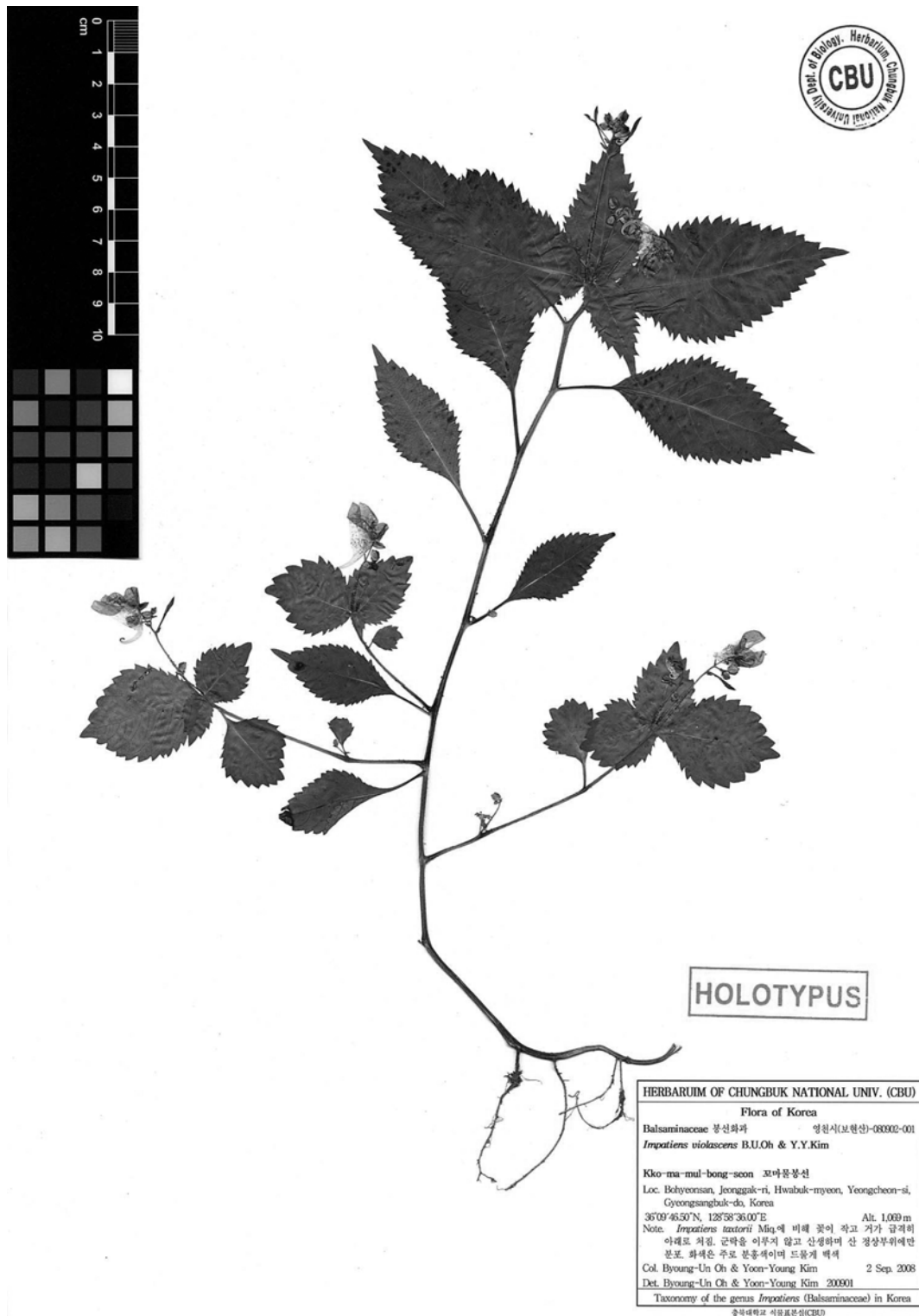


Fig. 1. Holotype of *Impatiens violascens* B.U. Oh & Y.Y. Kim.

and multicellular hairs. **Leaves** alternate; petioles subsessile or up to 3.5 cm long; blade rhombic-ovate to lanceolate, 1.0–10.0 cm long, 0.5–5.5 cm wide, apex acuminate or rarely acute,

base cuneate or rarely obtuse to rounded, margin serrate to dentate, crenate, with multicellular hairs. **Inflorescences** racemose; peduncles green or rarely reddish green, 1–3, erect or ascending,

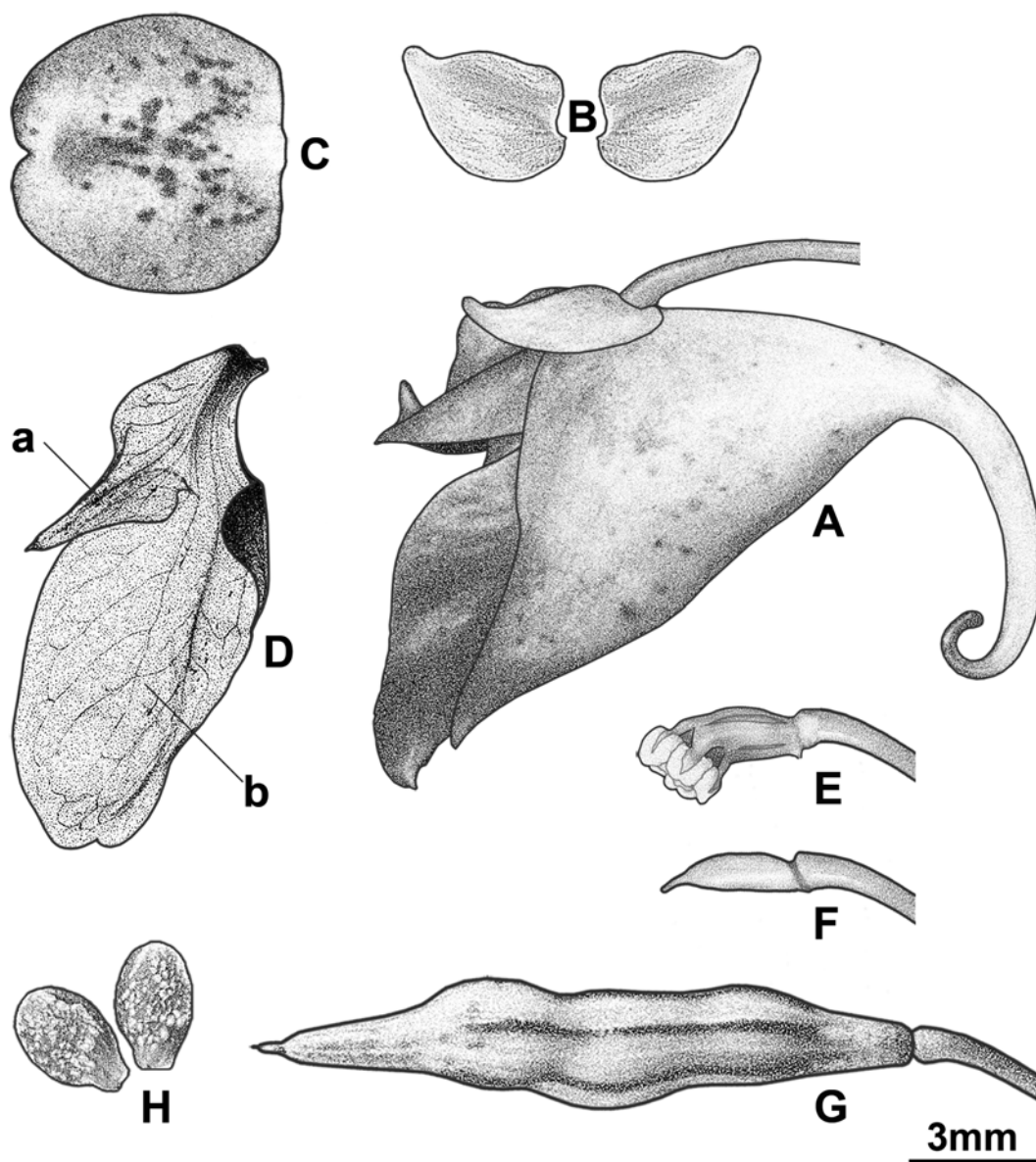


Fig. 2. Illustration of *Impatiens violascens* B.U. Oh & Y.Y. Kim. A. Flower; B. Lateral sepals; C. Dorsal petal; D. Laterally united petals (a: basal lobe, b: distal lobe); E. Stamen; F. Pistil; G. Fruit; H. Seeds.

0.5–10.0 cm long, with red-glandular hairs except on upper part; bracts at base of pedicel, ovate to lanceolate, 2.0–4.0 mm long; pedicels green, 3.0–9.0 mm long. **Flowers** pink or rarely white, with purple spots, 1.4–2.4 cm long. **Sepals** 3; lateral ones 2, pink to greenish pink or greenish white, broadly ovate, 3.5–4.5 mm long, 2.5–3.5 mm wide, apex apiculate; lower one, white or rarely pinkish white, with red-purple spots, funnellform, sharply narrow; spur involute, downward, half- or one-coiled, retuse apex. **Petals** 3; dorsal one, pink or rarely white, with red-purple spots, oval to suborbicular, 6.0–8.0 mm long and wide, apex obcordate, base truncate; lateral united ones 2, pink or rarely

white, with purple spots, 2-lobed, 10.0–14.0 mm long, 4.5–5.5 mm wide, upper surface with multicellular hairs; basal lobe lanceolate, 3.0–4.5 mm long, 1.5–2.0 mm wide; distal lobe elliptical, 8.0–10.0 mm long, 4.5–5.5 mm wide. **Stamens** 5, ca. 3.0 mm long; filaments linear, ca. 2.5 mm long; anthers white, ovoid, ca. 0.5 mm, joined in a ring around the ovary. **Pistil** 1; ovary fusiform, 2.5–2.8 mm long; style ca. 0.5 mm long. **Fruits** capsules, fusiform, 10.0–16.0 mm long, 2.7–3.2 mm diam. **Seeds** 1–3 per capsule, brown, obovate, 2.8–3.1 mm long, 1.9–2.1 mm diam., faveolate. **Flowering** from Aug. to Sep. **Fruiting** from Sep. to Oct.

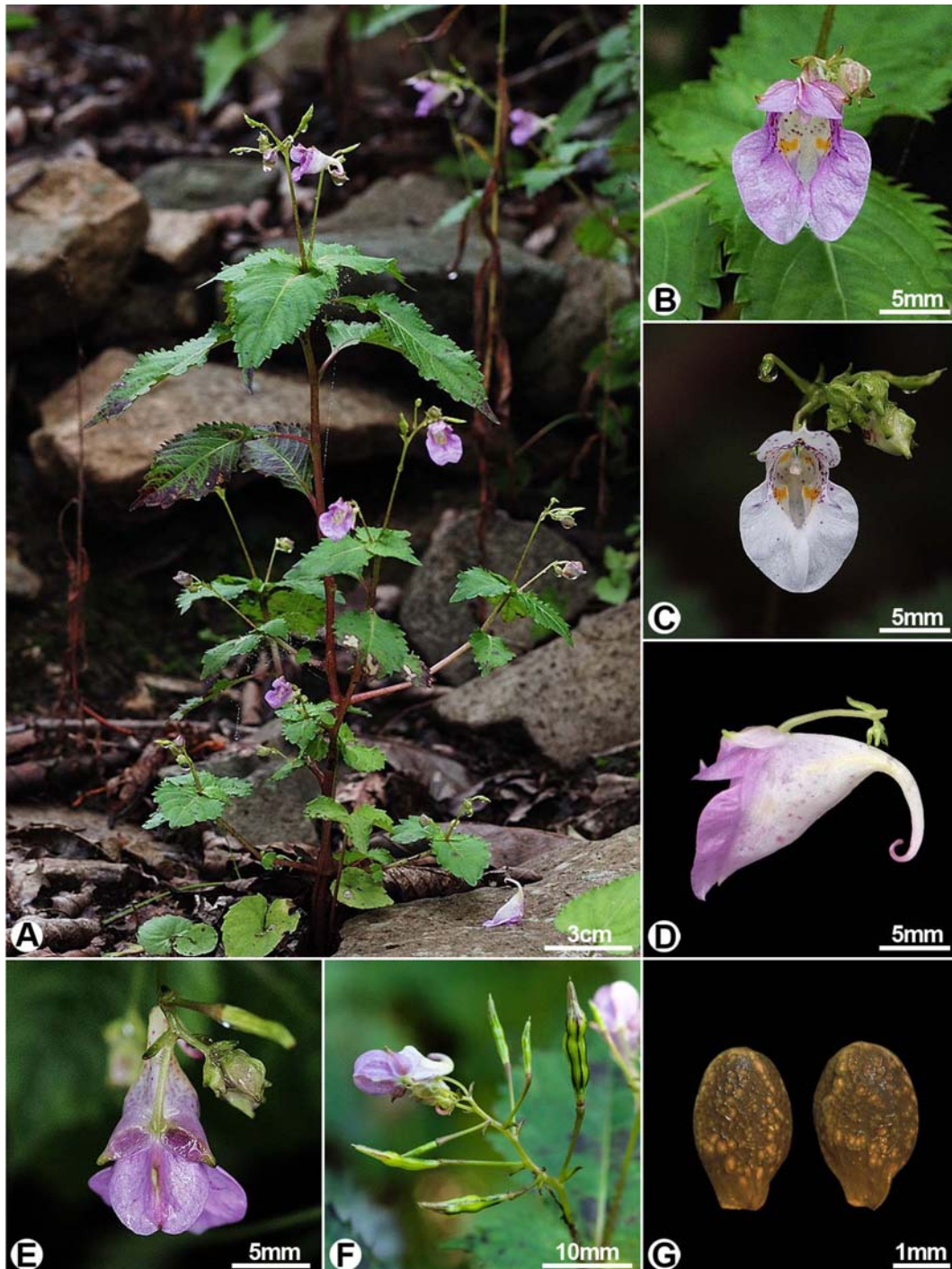


Fig. 3. Photographs of *Impatiens violascens* B.U. Oh & Y.Y. Kim. A. Habit; B-E. Flowers (B, C. anterior; D. lateral; E. dorsal); F. Fruits; G. Seeds.

Korean name: Kko-ma-mul-bong-seon (꼬마물봉선)

Impatiens violascens is distinct from *I. textorii*, which is supposed to be the most closely-related species, by having a flower only half the size of *I. textorii*, sharply narrowed lower sepal, one half- to one time-coiled spur, and distal lobes of

elliptical type laterally united petals (Table 1). This species mainly grows underneath trees of the genus *Quercus* on the slope near the summit of Mt. Bohyeonsan. Those individual plants which belong to the new species are scattered within an area of ca. 1 km². They are accompanied by other species such as *Pimpinella brachycarpa*, *Lychnis cognata*, *Hypericum ascyron*,

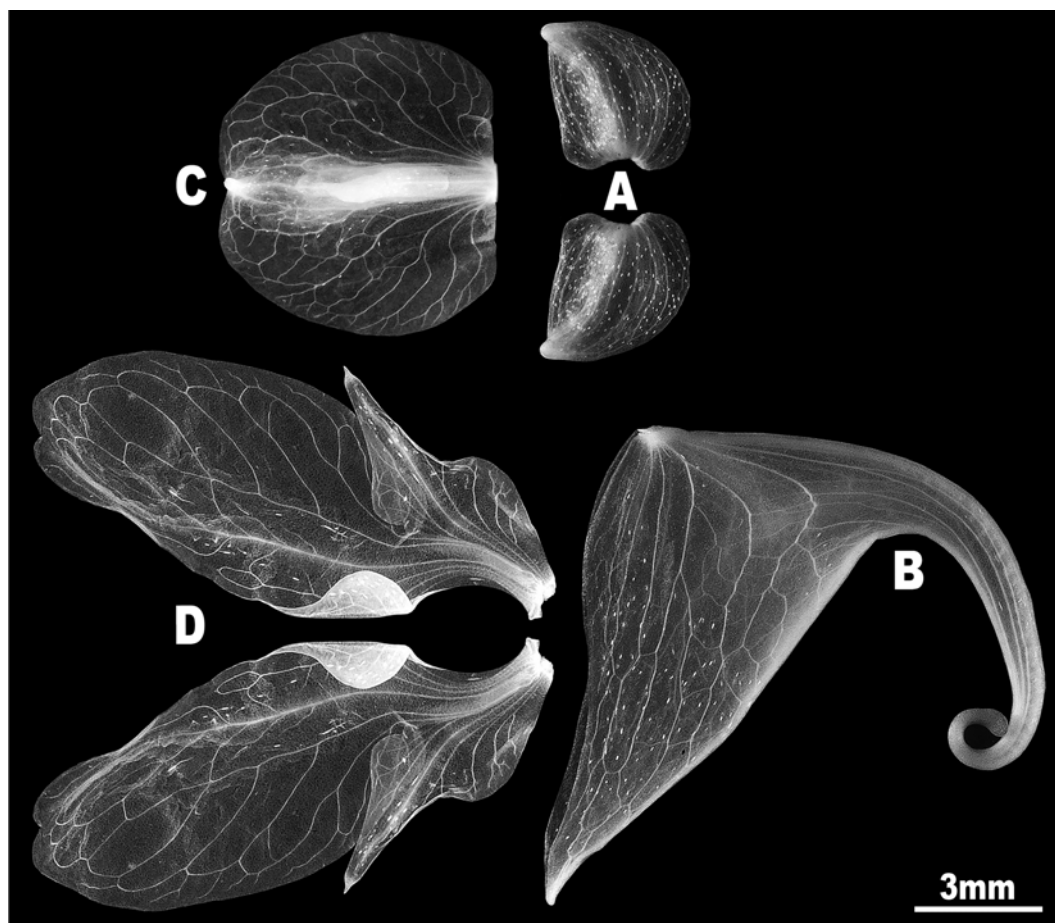


Fig. 4. Vasculature characteristics of floral organs of *Impatiens violascens* B.U. Oh & Y.Y. Kim. A. Lateral sepals; B. Lower sepal; C. Dorsal petal; D. Laterally united petals.

Table 1. Comparison of major characters between *I. violascens* and *I. textorii*.

Characters		<i>I. violascens</i>	<i>I. textorii</i>
Lateral sepals	color	pink to greenish pink or greenish white	dark purple to greenish purple
Lower sepals	color	white or rarely pinkish white	purple to purplish white
	shape	sharply narrowed funnellform	gradually narrowed funnellform
Spurs	apex	retuse	emarginate
	coiling	0.5-1 coiled	1-2 coiled
Dorsal petals	color	pink or rarely white	dark purple to purplish white
Lateral united petals	color	pink or rarely white	dark purple to purplish white
	shape	elliptical	semicircled
Stamens	length	2.9–3.1 mm	3.5–5.5 mm
Pistils	length	3.0–3.3 mm	3.5–6.0 mm
Seeds	size	2.8–3.1 × 1.9–2.1 mm	3.2–4.5 × 2.1–2.7 mm

Cirsium chanroenicum, *Scrophularia kakudensis*, *Silene seoulensis*, *Pedicularis resupinata*, *Rubus crataegifolius*, *Aster ageratoides*, *Isodon inflexus*, and *Ainsliaea acerifolia*.

Key to *Impatiens violascens* and *I. textorii* of *Impatiens* sect. *Brachycentron*

1. Flowers 2.6–4.2 cm long. Lower sepal gradually narrow; spur backward, coiled more than once. Distal lobes of laterally united petals semicircled. Stamens longer than 3.2 mm. Seeds 3.2–4.5 mm long, 2.1–2.7 mm diam. *I. textorii*
1. Flowers 1.4–2.4 cm long. Lower sepal sharply narrow; spur downward, one half- to one-time coiled. Distal lobes

of laterally united petals elliptical. Stamens shorter than 3.2 mm. Seeds 2.8–3.1 mm long, 1.9–2.1 mm diam.
 *I. violascens*

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Literature Cited

- Chen, Y. L., S. Akiyama and H. Ohba. 2007. Balsaminaceae. *In* Flora of China. Vol. 12. Wu, Z. Y., P. H. Raven and D. Y. Hong (eds.). Science Press and Missouri Botanical Garden Press, Beijing and St. Louis.
- Cong, Y. Y., K. M. Liu., X. Z. Cai and S. Z. Tian. 2008. *Impatiens fugongensis* (Balsaminaceae), a new species from Yunnan, China. *Botanical Studies* 49: 161-165.
- Fisher, E. and M. E. Rahelivololona. 2002. New taxa of *Impatiens* (Balsaminaceae) from Madagascar. I, *Adansonia* sér. 3, 24: 271-294.
- Hong, W. P. and B. U. Oh. 1993. Taxonomy of Korean *Impatiens* L.: Morphological study. *Korean J. Pl. Taxon.* 23: 243-261.
- Lee, Y. N. 1998. New taxa on Korean flora (6). *Korean J. Pl. Taxon.* 28: 25-39.
- Oh, B. U. 2007. Balsaminaceae. *In* The Genera of Vascular Plants of Korea. Flora of Korea Editorial Committee (eds.). Academic Publishing Co., Seoul.
- Oh, B. U. and W. P. Hong. 2001. Anatomical characters of Korean *Impatiens* L. and taxonomic status of *Impatiens atrosanguinea* (Nakai) B.U. Oh et W.P. Hong. *Korean J. Pl. Taxon.* 31: 161-181.
- Oh, B. U., D. G. Jo, K. S. Kim and C. G. Jang. 2005. Endemic Vascular Plants in the Korean Peninsula (1st Sept Result). Dae Sin Printing, Seoul (in Korean).
- Yuan, Y. M., Y. Song, K. Geuten, E. Rahelivololona, S. Wohlhauser, E. Fischer, E. Smets and P. Küpfer. 2004. Phylogeny and biogeography of Balsaminaceae inferred from ITS sequences. *Taxon* 53: 391-403.