

Impatiens yaoshanensis (Balsaminaceae), a new species from Yunnan, China

Yi-Yan Cong, Ke-Ming Liu* & Shu-Zhen Tian

Department of Botany, College of Life Science, Hunan Normal University, Changsha, 410081, Hunan, P. R. China (*corresponding author's e-mail: lkming8@yahoo.com.cn)

Received 6 Feb. 2007, revised version received 16 Apr. 2007, accepted 15 May 2007

Cong, Y. Y., Liu, K. M. & Tian, S. Z. 2008: *Impatiens yaoshanensis* (Balsaminaceae), a new species from Yunnan, China. — *Ann. Bot. Fennici* 45: 148–150.

Impatiens yaoshanensis K.M. Liu & Y.Y. Cong *sp. nova* (Balsaminaceae) is described from northern Yunnan, China, and illustrated. It is morphologically similar to *I. cyanantha*, *I. purpurea*, *I. blinii*, *I. pseudo-kingii*, and *I. loulanensis*. The distinguishing characters are given in a key to the six species.

Key words: Balsaminaceae, *Impatiens*, new species, taxonomy

Balsaminaceae are a family of two genera: *Hydrocera* and *Impatiens*. The latter is the larger genus and considered to be one of the taxonomically most difficult angiosperm genera. The species are extremely variable and lack the synapomorphic characters necessary to define subdivisions within the genus (Grey-Wilson 1980). There are more than 900 species worldwide (Chen 2001), most of which occur in the highlands and mountains of tropical and subtropical regions from India to southeastern Asia. About 240 species have been reported from China (Chen 2001, Jin & Ding 2002, Huang *et al.* 2003), most of which are endemic there.

Since 1999 we have studied the taxonomy and pollination ecology of *Impatiens* (Liu 1999, Tian *et al.* 2004). During a recent survey in northern Yunnan, we discovered an apparently new species on Yao Shan. After carefully studying the morphology, consulting the literature (Chen 1986, Xiong & Luo 1988, Chen 2001, Huang 2006) and examining many additional specimens (including those in PE and KUN),

we concluded that these plants represent a new species.

Impatiens yaoshanensis K.M. Liu & Y.Y. Cong, *sp. nova* (Fig. 1)

Haec species I. cyananthae et I. purpureae affinis, sed inflorescentiis vulgo 9–21-floribus; sepalis infero apice in rostrum elongatum 8–10 mm longum; petalis lateralibus trilobis facile differt.

TYPE: China. Northern Yunnan Province, Qiaojia County, Qiaomaidi Township, Yaoshan Mountain, 27°09'N, 103°05'E, alt. 2400 m, within moist forest near farmhouse, 31.VIII.2006 Liu Ke-Ming & Cong Yi-Yan 791343 (holotype HNU; isotypes KUN, HNU).

Annual herb, 40–80 cm tall. Stem erect, succulent, laxly branched, sparsely glandular hairy at upper part. Leaves alternate, often crowded at upper part and subverticillate, subsessile or shortly petiolate; petiole 5–25 mm, base with 2

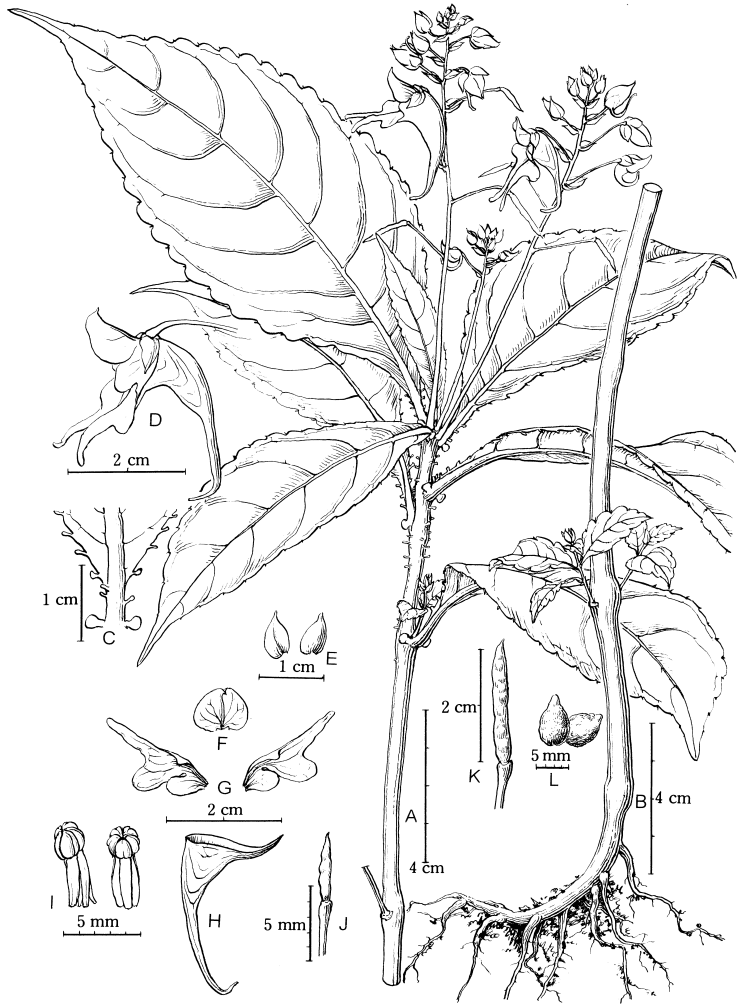


Fig. 1. *Impatiens yaoshanensis* (from the holotype). — **A:** Upper part of plant. — **B:** Lower part of plant. — **C:** Basal portion of abaxial leaf surface showing glandular hairs and two stipitate glands. — **D:** Flower, lateral view. — **E:** Lateral sepals. — **F:** Dorsal petal. — **G:** Lateral united petals. — **H:** Lower sepal. — **I:** Androecium. — **J:** Gynoecium. — **K:** Fruit. — **L:** Seeds.

stipitate glands; lamina dark green adaxially, pale green abaxially, elliptic, sometimes ovate-elliptic, 5–14 × 3–6 cm, pinnately veined, 6–8 pairs, margin coarsely crenate-serrate, setose between teeth, base with 3 or 4 pairs of glandular hairs, cuneate, apex caudate-acuminate. Inflorescence in upper leaf axils, racemose, 9–21-flowered; peduncles erect, 3.5–10 cm. Pedicels 10–20 mm, bracteate at base; bracts caducous, rigid, ovate-lanceolate, 4.5–7 mm long, ca. 2 mm wide, apex acuminate. Flowers purple-tinged or purple-red, 25–32 mm long. Lateral sepals 2, ovate, 5–6 mm long, ca. 3 mm wide, base asymmetric, apex cuspidate. Lower sepal narrowly infundibular, depth of lower sepal from pedicel to base of spur 9–11 mm; mouth 9–10 mm wide, anterior gradu-

ally narrowed downward into a long beak, beak 8–10 mm long; base gradually narrowed into an incurved spur 16–20 mm. Dorsal petal subreniform, 6–8 × 8–10 mm, base truncate, apex cuspidate, slightly recurved, abaxial midvein slightly thickened, not carinate. Lateral united petals sessile, 3-lobed: upper lobes suborbicular, 4–5 mm wide; lower lobes 18–25 × 7–9 mm, deeply splitting to 2 lobes, abaxial auricle reflexed. Stamens 5, ca. 5 mm long, filaments linear, free for about 1/2 their length; anthers ovoid, joined in a ring around the ovary apex, apex obtuse. Ovary superior, 5-carpellate, placentation axile, fusiform, ca. 3 mm long, erect, style 1. Capsule green, clavate, 18–27 mm long, apex acute, rostellate, 5-valved, fleshy, elastic; seeds 8 to 10, dispersed explo-

sively from opening valves, ovoid-orbicular, 2–3 mm long, brown, testa tuberculate. Flowering from August to September; fruiting from September to October. Flower visitors (insects of Hymenoptera) were seen in the field.

HABITAT AND DISTRIBUTION. Within wet evergreen broad-leaved montane forests, 2280–2600 m; known only from Yaoshan Mountain in Qiaojia County, northern Yunnan, China.

Impatiens yaoshanensis is fairly similar to *I. cyanantha* and *I. purpurea*, but differs mainly in having 9–21 flowers in a raceme, anterior part of mouth of lower sepal gradually narrowed downward into a 8–10 mm long beak, and conspicuously bilobed lower lobes of lateral united petals. It also resembles to some extent *I. blinii*, *I. pseudo-kingii* and *I. loulanensis*. However, it is not difficult to distinguish it from the latter three. *Impatiens blinii* and *I. pseudo-kingii* differ mainly in that the lower sepals have an erect spur, the dorsal petals have a cristate abaxial midvein, and the lateral united petals have two lobes. *Impatiens loulanensis* is distinct by the yellow flowers, glandular-aristate apices of bracts and lateral sepals, dorsal petal with a cristate abaxial midvein, and bilobed lateral united petals. The following key should aid in the identification of the six species.

1. Flowers yellow; apices of bracts and lateral sepals glandular-aristate *I. loulanensis*
1. Flowers blue, purple-blue or purple-red; apices of bracts and lateral sepals mucronulate 2
2. Lower lobes of lateral united petals lanceolate, entire; bracts persistent *I. purpurea*
2. Lower lobes of lateral united petals dolabriform or bilobed; bracts caducous 3
3. Lamina ovate, oblong, ovate-lanceolate or ovate-oblong; lower sepal with erect spur; dorsal petal with abaxial midvein cristate 4
3. Lamina elliptic, lanceolate, sometimes ovate-elliptic; lower sepal with incurved spur; dorsal petal with abaxial midvein not cristate 5
4. Inflorescence with 8–12 flowers; lower sepal with spur 5 mm; upper lobes of lateral united petals orbicular *I. pseudo-kingii*
4. Inflorescence with 3–4 flowers; lower sepal with spur

- 18–20 mm; upper lobes of lateral united petals ovate *I. blinii*
5. Lateral sepals not downward-saccate at base; mouth of lower sepal with anterior part gradually narrowed downward into a long beak 8–10 mm; lateral united petals with 3 lobes *I. yaoshanensis*
5. Lateral sepals downward-saccate at base; mouth of lower sepal with anterior part not beaked; lateral united petals with 2 lobes *I. cyanantha*

Acknowledgements

The study was supported by the National Natural Science Foundation of China, Grant Nos. 30470130 and 39899400, and a Key Knowledge Innovation Project of the Chinese Academy of Sciences, Grant No. KSCX-SW-122. We are grateful to Mr. Hui-jun Guo, vice director of Yunnan Forestry Department, for his kind help during the fieldwork, to Prof. Chun-lin Long, Dr. Zhi-ling Dao, and Dr. Guang-wan Hu, Kunming Institute of Botany, the Chinese Academy of Sciences, for their help and support during our visit to KUN. We also thank Prof. Lin-han Liu for the excellent illustration.

References

- Chen, Y. L. 1986: Balsaminaceae. — In: Wu, C. Y. (ed.), *Flora Xizangica* 3: 166–199. Sci. Press, Beijing. [In Chinese].
- Chen, Y. L. 2001: *Flora Reipublicae Popularis Sinicae. Tomus* 47(2). — Sci. Press, Beijing. [In Chinese].
- Grey-Wilson, C. 1980: *Impatiens of Africa*. — A. A. Balkema, Rotterdam.
- Huang, S. H., Shui Y. M. & Chen W. H. 2003: New taxa of *Impatiens* from Yunnan. — *Acta Bot. Yunnanica* 25: 261–268.
- Huang S. H. 2006: Balsaminaceae. — In: Wu, C. Y. (ed.), *Flora Yunnanica* 16: 66–156. Sci. Press, Beijing. [In Chinese].
- Jin, X. F. & Ding B. Y. 2002: [A new species of *Impatiens* from eastern Zhejiang, China]. — *Acta Phytotax. Sin.* 40: 167–169. [In Chinese].
- Liu, K. M. 1999: [A new species of *Impatiens* L. (Balsaminaceae) from Hunan, China]. — *Acta Phytotax. Sin.* 37: 201–203. [In Chinese].
- Tian, J. P., Liu K. M. & Hu, G. W. 2004: Pollination ecology and pollination system of *Impatiens reptans* (Balsaminaceae) endemic to China. — *Ann. Bot.* 93: 167–175.
- Xiong, Y. X. & Luo, Y. C. 1988: Balsaminaceae. — In: Li, Y. K. (ed.), *Flora Guizhouica* 7: 626–641. Sichuan Nat. Press, Chengdu. [In Chinese].