

A new species of *Impatiens* (Balsaminaceae) from Yunnan, China

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Abstract. *Impatiens jinpingensis*, a new species of Balsaminaceae from Yunnan, China, is described and illustrated. It is compared to the three similar species (*Impatiens kamtilongensis*, *Impatiens wuchengyihii* and *Impatiens lancisepala*) from Yunnan, China.

Key Words: Floristics, flower structure, Jinping County, morphology, taxonomy.

The genus *Impatiens* (Balsaminaceae) contains more than 900 species and is mainly distributed in the tropical and subtropical mountains of the eastern hemisphere, extending to temperate Eurasia and North America (Chen et al., 2007). The genus is taxonomically difficult because the main diagnostic features such as position and shape of bracts and the morphology of flowers and fruits are often obscured by preservation (Hooker, 1908). Currently, there is no established infrageneric classification. In China, there are 227 species currently recognized, as well as numerous entities of uncertain status (Huang, 2006; Chen et al., 2007).

In 1999, the first botanical survey of Xilong Mountain was conducted on the Yunnan border with northwestern Vietnam. As an important part of the Jinping Fen-shuilin National Nature Reserve in China, the Xilong Mountain remains a well-preserved tropical vertical vegetation zone from 400 m to 3074 m elevation (Xu, 2002). New taxa and new records for China have been collected and reported from this region (Shui et al., 2002; Chen et al., 2003; Huang et al., 2004; Yu et al., 2009). Field work during 2006 brought to our attention two *Impatiens* specimens collected earlier on the Xilong Mountain that appeared to be misidentified (Z. K. Zhou et al. EXLS-0564 and EXLS-0574, KUN). The two specimens had been identified as *Impatiens wuchengyihii* for their pilose indument and similar flower characters.

During the past four years, several additional specimens were collected at the same and neighboring locations. Comparison of the specimens with those reported for China and neighboring countries confirmed the novelty of the species (Hooker, 1874, 1908, 1911; Toppin, 1920; Tardieu-Blot, 1946; Ho, 1992; Akiyama et al., 1995, 1996; Chen, 2001; Huang, 2006; Chen et al., 2007; Yu, 2008).

The new species is closely related to *Impatiens kamtilongensis* Toppin, *Impatiens wuchengyihii* S. Akiyama, H. Ohba & S. K. Wu and *Impatiens lancisepala* S. H. Huang, which form an undescribed group within the genus. The group is characterized by the pilose or pubescent indument, ovate or elliptic leaves, 1–3-flowered inflorescences, yellow flowers with a navicular lower sepal, elliptic dorsal petals and a reniform ventral appendage of the distal lobe in lateral united petals (Fig. 1). The new species is more similar to *Impatiens kamtilongensis* in its pilose herbage and ovate lateral sepals.

***Impatiens jinpingensis* Y. M. Shui & G. F. Li, sp. nov.** Type: China. Yunnan: Jinping County, A-De-Bo community, Fen-shui-ling, 22°53'49.2"N, 103°13'32.6"E, 1650 m, 8 Jul 2007 (fl), Y. M. Shui, W. H. Chen, Z. D. Wei, R. M. Zhang, H. T. Zhao 71541 (holotype: KUN; isotypes: NY, PE, US). (Figs. 1 A–C, 2)

Impatiene kamtilongensi Toppin sepalis lateralibus ovatis similis, sed calcare in parte inferiore in circulum involventi apice subbifido (nec incurvo in apice obtuso),

petalo dorsali appendiculo lunato (nec cornuto) praedito atque petalis lateralibus connatis lobo basali subunguiculiformi, ungue ca. 2 mm longo (nec ungue ca. 4 mm longo) et lobo distali oblongo (nec semi-orbiculato) differt.

Herb, perennial, succulent, 10–40 cm tall. Stem base 8–12 mm in diam. (when fresh), branched, densely pilose. Petiole 1.2–6.4 cm long, pilose, with 2–3 pairs of glands; glands 1–1.5 mm long, claviform. Leaves alternate, somewhat aggregated distally, green or dark purplish; blades elliptic, 11.5–20×5–7.5 cm, pubescent on both surfaces, the apex acute or acuminate, the base attenuate with 1–2-paired, claviform glands, the margins with

14–21-paired crena; lateral veins 6–12-paired, prominent abaxially. Inflorescences racemose, axillary, usually from the upper leaf axils, ascending, with 1–3 flowers. Peduncles 2–3 cm long, densely pubescent, with 1–3 medial bracts; pedicel ca. 2 cm long, with a bracteole at base. Flowers yellow with reddish patches. Lateral sepals 2, ovate, ca. 7×4 mm, apex acuminate, pilose outside, glabrous inside. Lower sepal yellow, navicular, pilose outside, ca. 1.7 cm long and ca. 0.9 cm deep (excluding spur), constricted into a spur; spur spirally incurved up to ca. 360°, ca. 2.8 cm long in overall length, end slightly bifid. Dorsal petal yellow, elliptic, ca. 1.3×0.8 cm, the apex truncate or retuse, outside with

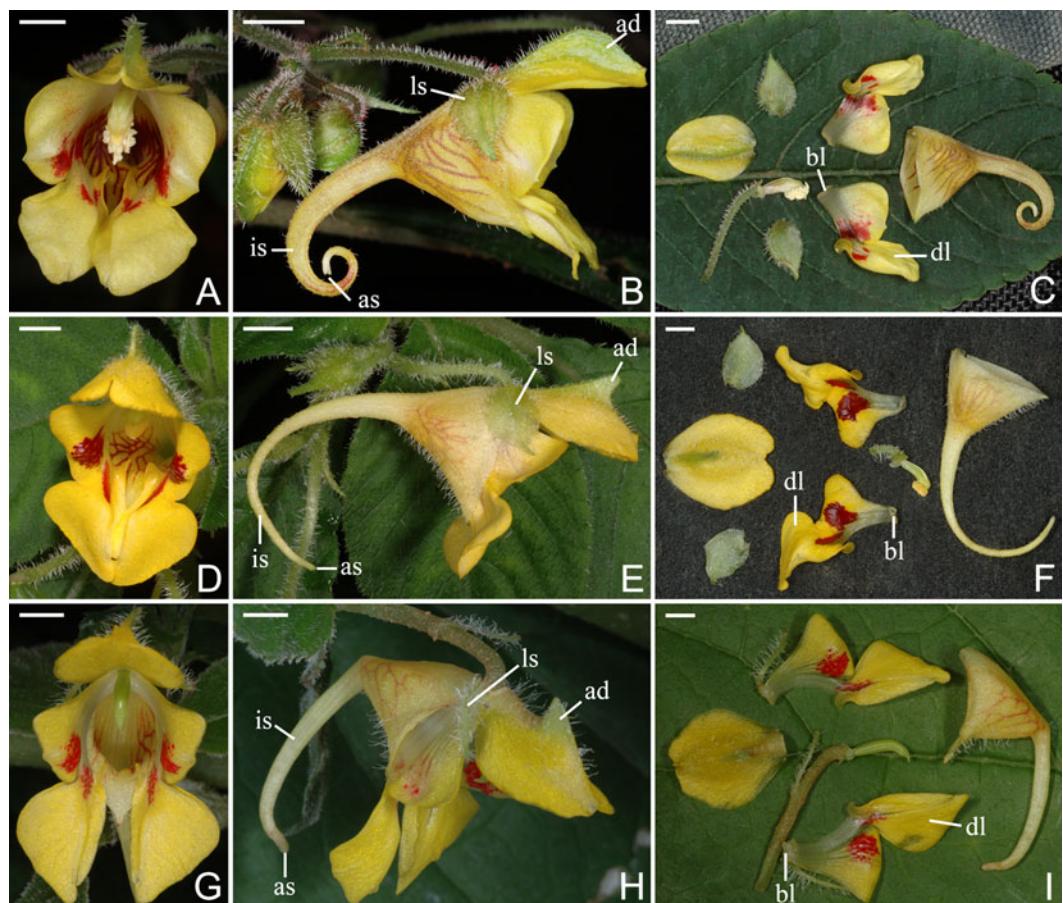


FIG. 1. Flowers of *Impatiens*. A–C. *I. jinpingensis*. D–F. *I. kamtilongensis*. G–I. *I. wuchengyihi*. Abbreviations: ls = lateral sepals; as = end of the spur; is = inferior part of the spur; ad = costa of the dorsal petal; bl = claw of the basal lobe in the lateral united petals; dl = distal lobe of the lateral united petals. Scale bars = 5 mm. Photographs by Yu-Min Shui.

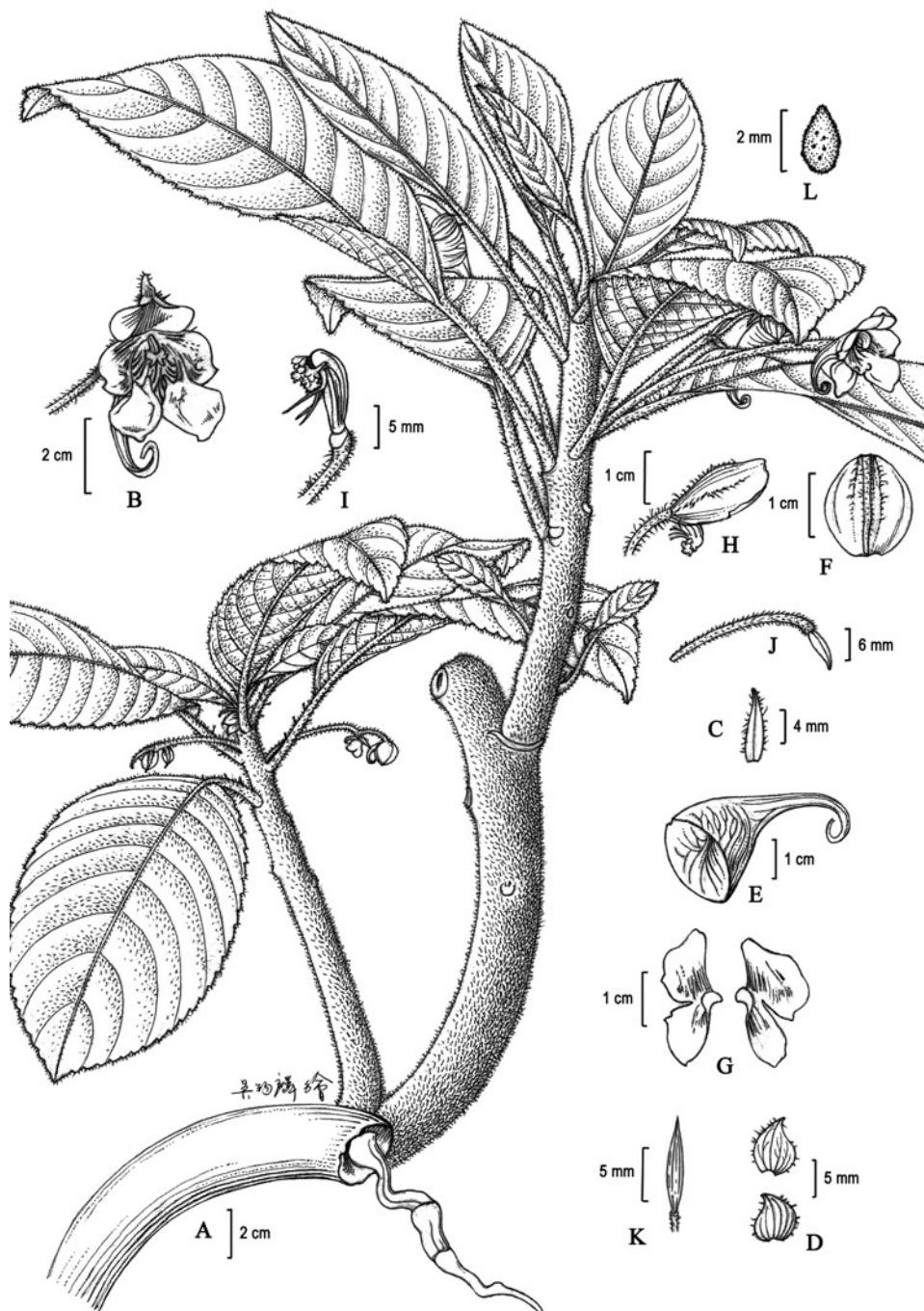


FIG. 2. *Impatiens jinpingensis*. A. Plant. B. Flower. C. Bract. D. Lateral sepals. E. Lower sepal with a spirally incurved spur. F. Dorsal petal. G. Lateral united petals. H. Lateral view of dorsal petal with stamens. I. Stamens. J. Ovary. K. Fruit. L. Seed. A–J drawn by Xi-Lin Wu from the holotype. K–L drawn by Kai Wen from Z. K. Zhou et al. EXLS-0564.

TABLE 1
MORPHOLOGICAL COMPARISON OF *IMPAVIENS JINPINGENSIS* AND SIMILAR SPECIES.

Characters	<i>I. jinpingensis</i>	<i>I. kamtilongensis</i>	<i>I. wuchengyihi</i>	<i>I. lancisepala</i>
Indument	pilose	pilose	pubescent	puberulent
Stem base (when fresh)	8–12 mm diam.	3–5 mm diam.	2–4 mm diam.	2–3 mm diam.
Lateral sepal	ovate, ca. 7×4 mm	ovate, ca. 7×3–4 mm	linear, ca. 10×1 mm	lanceolate, ca. 7×2 mm
Spur	spirally incurved up to ca. 360°, apex bifid	slightly incurved to ca. 120–270°, apex obtuse	slightly incurved up to ca. 45–90°, apex obtuse	slightly incurved up to ca. 180°, apex obtuse
Dorsal petal	with a lunate costa outside	with a cornute costa outside	with a cornute costa outside	with a cornute costa outside
Lateral united petals	basal lobe with ca. 2 mm long claw, distal lobe oblong	basal lobe with ca. 4 mm long claw, distal lobe semi-orbicular	obviously with ca. 5 mm long claw, distal lobe semi-orbicular	basal lobe with ca. 4 mm long claw, distal lobe semi-orbicular

a lunate costa, the costa ca. 4 mm high, sparsely pubescent. Lateral united petals yellow with reddish patches, 1.7–2.2 cm long; basal lobe widely triangular-obovate, 0.9–1.1×0.8–0.9 cm, the apex mucronate, with ca. 2 mm long claw on the base; the distal lobe oblong, 1.2–1.5×0.8–1.0 cm, apex slightly obtuse; ventral appendage reniform and inflexed at the interior lateral of lateral united petals. Stamens 5, anthers without appendage, apex retuse. Fruits claviform, glabrous, ca. 1.4 cm long, ca. 2 mm in diam. Seeds ovate, ca. 1.2×0.8 mm, with a mucronate appendage.

Distribution and ecology.—*Impatiens jinpingensis* is only known from Jinping and Yuanyang Counties, southeastern Yunnan, China. The species occurs between 1400 and 1975 m elevation along wet brooks in evergreen broad-leaved forest.

Phenology.—Flowering from July to November; fruiting from September to January.

Etymology.—The new species is named after the type locality.

Additional specimens examined. CHINA. Yunnan: Jinping County, Xilong Mountain, 1634 m, 22°41'30.06"N, 102°48'39.71"E, 14 Jun 2010 (fl), Y. M. Shui et al. 90278 (KUN); Jinping County, Xilong Mountain, 1975 m, 22°40'44.31"N, 102°48'08.30"E, 13 Jun 2010 (fl), Y. M. Shui et al. 90749 (KUN); Jinping County, Xilong Mountain, 1764 m, 22°41'16.90"N, 102°48'36.46"E, 14 June 2010 (fl), Y. M. Shui et al. 90822 (KUN); Yuanyang County, Guanyin Mountain, 22°59'22.86"N, 103°01'33.19"E, 1610 m, 10

Nov 2010 (fl), Y. M. Shui et al. 85202 (KUN); Jinping County, Xilong Mountain, 1400 m, 25 Oct 1999, Z. K. Zhou et al. EXLS-0564, EXLS-0574 (KUN).

The new species is morphologically similar to *Impatiens kamtilongensis* but differs most strikingly in its spirally incurved spur with a bifid end, lunate costa on the dorsal petal, basal lobe with ca. 2 mm claw and oblong distal lobe of lateral united petals. It is also similar to *Impatiens wuchengyihi* but that species has pubescent herbage (vs. pilose) and linear lateral sepals (vs. ovate). The new species is somewhat like *Impatiens lancisepala* but the latter species has puberulent herbage and lanceolate lateral sepals. The new species is easily diagnosed by its lunate lateral sepals, spiral spur with a bifid end, and oblong lateral united petals with ca. 2 mm claw (Table 1).

Acknowledgments

This research was funded by the National Geographic Society (grant no.8288-07) and National Natural Science Foundation of China (grant no. 30870165). The authors thank two anonymous reviewers for their valuable comments. The authors are also indebted to Ms. Rong-Mei Zhang and Mr. Hou-Tao Zhao for their collecting in the field. Prof. Xi-Lin Wu and Mr. Kai Wen are thanked for their excellent drawings.

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