



## *Impatiens gongchengensis* (Balsaminaceae), a new species from Guangxi, Southern China

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(Manuscript received 8 August 2019; Accepted 11 November 2019; Online published 1 January 2020)

**ABSTRACT:** *Impatiens gongchengensis* Z.C. Lu, B. Pan & Yan Liu is described and illustrated as a new species in northeastern Guangxi, China. This new species is similar to *Impatiens platychna* Hook.f., *Impatiens soulieana* Hook.f. and *Impatiens faberi* Hook.f., but differs in having stipitate glands at leaves base, 4–5 pairs of lateral veins, pale purple or purple-red flowers and the shape of the flower.

**KEY WORDS:** Balsaminaceae, China, *Impatiens faberi*, *Impatiens platychna*, *Impatiens soulieana*, morphology, taxonomy.

### INTRODUCTION

The genus *Impatiens* Linnaeus (1753) (Balsaminaceae) comprises over 1000 species, distributed throughout much of tropical Africa, India, southwestern Asia, southwestern China and Japan (Grey-Wilson, 1980; Fischer, 2004). Currently, there are more than 270 species of *Impatiens* distributed in China (Chen, 2001; Chen *et al.*, 2007; Yu, 2012), and most of them located in southwestern China. *Impatiens* species can adapt to various habitats, often in precipitation or high humidity forest, valley shade, river banks, abandoned fields, along streams and in seepage, even in drier habitats (Chen, 2001; Yu *et al.*, 2015).

During our floristic surveys in Gongcheng County of northern Guangxi, China, we collected a species of *Impatiens*. According to the classification of Yu *et al.* (2015), this species belongs to *Impatiens* subgen. *Impatiens* sect. *Impatiens* by the characters of inflorescences 1-flowered, ovary 5-carpellate and capsule linear. After carefully checking morphological characters of this species, and compared with hitherto known species of *Impatiens* (Chen, 2001; Chen *et al.*, 2007; Yu *et al.*, 2007, 2009, 2015; Bi *et al.*, 2010; Hou *et al.*, 2011; Yu, 2012; Zeng *et al.*, 2015; Guo *et al.*, 2016; Xia *et al.*, 2019), we confirmed this species as a new species, and described it as below.

### TAXONOMIC TREATMENT

*Impatiens gongchengensis* Z.C. Lu, B. Pan & Yan Liu, *sp. nov.* 恭城鳳仙花 Figs. 1 & 2

**Type:** CHINA. Guangxi: Guilin City, Gongcheng County, Sanjiang Township, Sanzhai Village, in the evergreen broad-leaved forest, at an elevation ca. 1100 m, 12 October 2018, Zhao-Cen Lu and Ying Qin. LZC135 (holotype: IBK; isotypes: IBK and PE).

**Diagnosis:** *Impatiens gongchengensis* is similar to *Impatiens platychna* Hook.f. (1908), *Impatiens soulieana* Hook.f. (1908) and *Impatiens faberi* Hook.f.

(1910), but it is distinct from the three latter species in its having stipitate glands at leaves base, 4–5 pairs of lateral veins; pale purple or purple-red flowers, upper petal oblate, abaxial midvein thickened, narrowly carinate, beak-like, purple-red, 2-lobed lateral united petals, with a filamentous long hair at apex of base lobes and distal lobes.

Annual herb, 50–70 cm tall, glabrous, stems fleshy, erect, branched, basal nodes swollen with adventitious roots. Leaves alternate, membranous, leaf ovate-elliptic, elliptic or elliptic-lanceolate, 5–8 (13)×3–5 cm, apex acuminate or caudate, with stipitate glands at base, margin coarsely crenate, teeth emarginate, mucronulate, lateral veins 4–5 pairs, green above, pale green beneath. Upper leaves shortly petiolate or sessile, base rounded or shallowly cordate; lower and middle leaves petiolate, petiole 1.5–4 cm long, base cuneate. Inflorescences in upper leaf axils, 1-flowered; peduncle 1.2–1.5 cm long, shorter than leaves, slender. Pedicels bracteate at above middle; bracts persistent, ovate, ca. 2.5 mm long, apex acuminate. Flowers pale purple or purple-red, large, 4–4.5 cm long. Lateral sepals 2, ovate-orbicular, ca. 1 cm long, 6–7 mm wide, papery, margin entire, apex mucronulate, 7-veined. Lip (lower sepal) yellow and violet striate, 2.8–3 cm long, broadly funnelform, mouth vertical, ca. 1.8 cm wide, tip acuminate, base gradually narrowed into an incurved spur; spur 1.3–1.5 cm long, slender, 2-lobed. Upper petal oblate, 1.1–1.3 cm long, 1.5–1.7 cm wide, apex emarginate, mucronulate, abaxial midvein thickened, narrowly carinate, beak-like. Lateral united petals sessile, 2–2.2 cm long, 2-lobed, lobes with a filamentous long hair at apex, base lobes purple spotted, little, 5–7 mm long, ovate; distal lobes purple striate, 1.3–1.5 cm long, dolabiform, apex obtuse, auricle rounded, inflexed. Stamens 5, filament linear, short, ca. 2 mm long, anthers obtuse. Ovary fusiform, erect. Capsule linear, 3–4 cm long, apex beaked. Seeds ovoid, flatten, brown, ca. 4×5 mm.

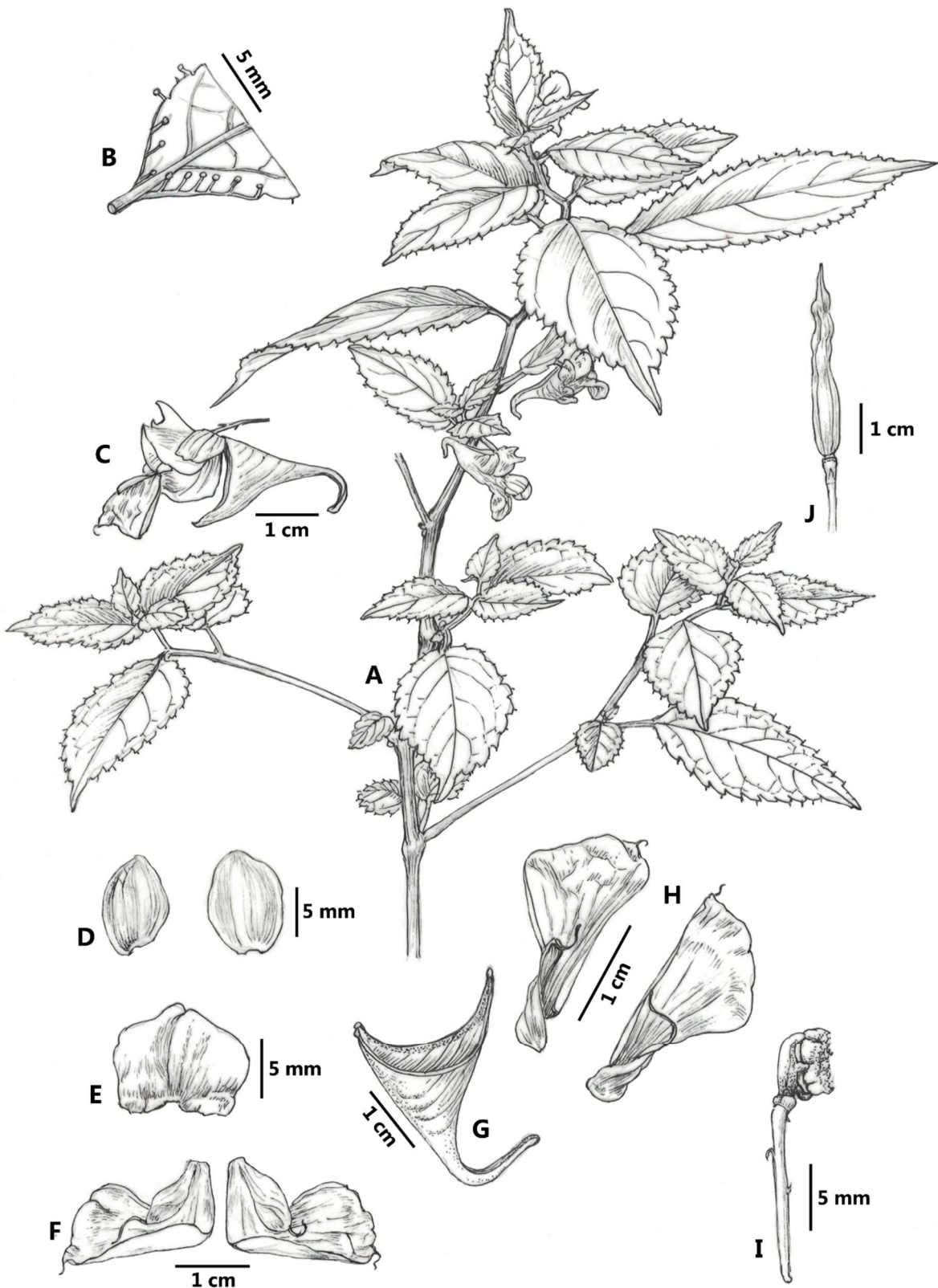
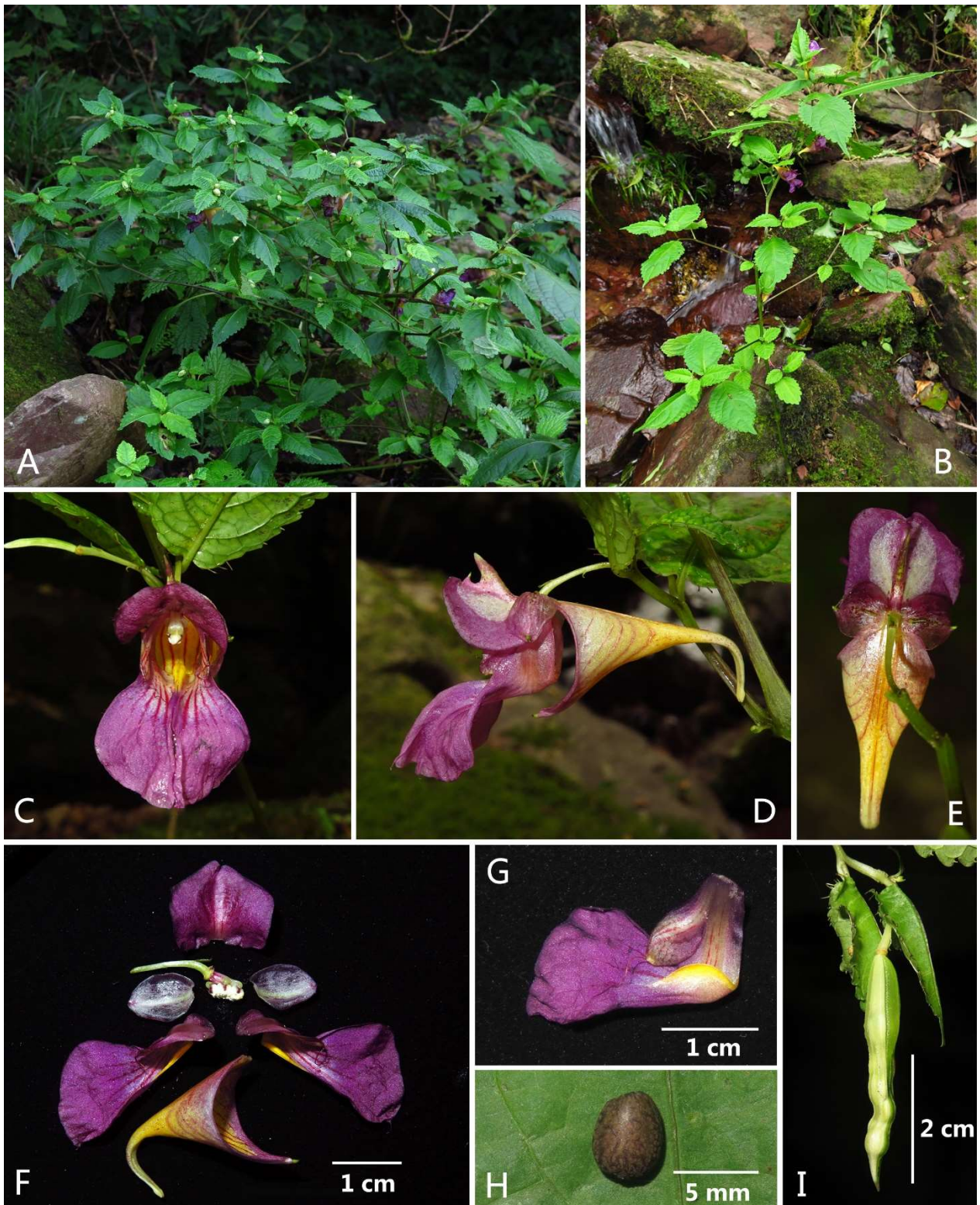


Fig. 1. *Impatiens gongchengensis* Z.C. Lu, B. Pan & Yan Liu A. Flowering twig, B. Leaf base dorsal view with stipitate glands, C. Flower lateral view, D. Lateral sepals, E. Upper petal dorsal view, F. and H. Lateral united petals, G. Lip side view, I. Stamens and pistils, J. Capsule.



**Fig. 2.** *Impatiens gongchengensis* Z.C. Lu, B. Pan & Yan Liu **A.** Habitat, **B.** Habit, **C.** Flower face view, **D.** Flower side view, **E.** Flower dorsal view, **F.** Dissected floral parts, **G.** Lateral united petal, **H.** Seed, **I.** Capsule.

**Table 1.** Comparisons among *I. gongchengensis*, *I. platychlaena*, *I. soulieana* and *I. faberi*.

Character	<i>I. gongchengensis</i>	<i>I. platychlaena</i>	<i>I. soulieana</i>	<i>I. faberi</i>
Leaves	with stipitate glands at base, lateral veins 4–5 pairs	without stipitate glands at base, lateral veins 7–9 pairs	without stipitate glands at base, lateral veins 5–7 pairs	without stipitate glands at base, lateral veins 5–8 pairs
Flowers	pale purple or purple-red	pale yellow	yellow	purple-red
Lateral sepals	ovate-orbicular, ca. 1 cm long, purple-red	orbicular, 1.3–1.5 cm wide, brown to purple-red with purple spot	broadly ovate, 0.8–1 cm long, yellow or yellow-green	ovate, 6–8 mm long, green
Upper petal	oblate, 1.5–1.7 cm wide, abaxial midvein thickened, narrowly carinate, beak-like, purple-red	orbicular, ca. 1.5 cm wide, abaxial midvein thickened, broadly cristate, purple or yellow	orbicular, 2–2.2 cm wide, abaxial midvein narrowly cristate, yellow	orbicular, 1.3–1.7 cm wide, abaxial midvein thickened, carinate, purple-red
Lateral united petals	2–2.2 cm long; with a filamentous long hair at apex of base lobes and distal lobes	2.5–3 cm long; with a filamentous long hair at apex of base lobes and distal lobes	ca. 2.8 cm long; with a filamentous long hair at apex of base lobes	2–2.5 cm long; without filamentous long hair at apex of base lobes and distal lobes
Lip	broadly funnelliform, yellow with violet striate; spur 1.3–1.5 cm long, slender	deeply saccate, pale yellow with violet striate; spur stout, short	funnelliform, spur ca. as long as or longer than limb, stout	cornute, 3–4 cm deep, spur incurved or erect
Seeds	ovoid, ca. 4×5 mm	oblongoid, 2–3 mm long	globose	oblongoid, ca. 4 mm long

**Additional specimens examined (Paratypes):** CHINA. Guangxi: Guilin City, Gongcheng County, Sanjiang Township, Sanzhai Village, in the evergreen broad-leaved forest, elevation ca. 1100 m, 29 November 2017, *Ying Qin and Guang-Fu Mou. LZC194* (IBK and PE).

**Distribution and habitat:** *Impatiens gongchengensis* grows in a valley of evergreen broad-leaved forests, at an elevation between 1100–1200 m. The associated species include *Laportea bulbifera* (Sieb. et Zucc.) Wedd., *Daphne papyracea* Wall. ex Steud., *Liparis inaperta* Finet, *Impatiens chlorosepala* Hand.-Mazz., *Hemiboea cavaleriei* H. Lev., *Rhododendron* sp., etc.

**Phenology:** Flowering from September to October, and fruiting from November to December.

**Etymology:** The specific epithet *gongchengensis* refers to the type locality of this species.

**Notes:** *Impatiens gongchengensis* is easily distinguished from the other species of *Impatiens* by having stipitate glands at leaves base; 4–5 pairs of lateral veins; pale purple or purple-red flowers; 2-lobed lateral united petals, lobes with a filamentous long hair at apex; basal lobes ovate, purple spotted; distal lobes dolabriform, purple striate, apex obtuse. More detailed morphological dissimilarities between *I. gongchengensis* and its related species are presented in Table 1.

## ACKNOWLEDGMENTS

The authors are grateful to Wen-Hong Lin (IBK) for the beautiful drawing, Ying Qin (IBK) and Guang-Fu Mou (IBK) for company during the fieldwork. The authors especially thank Wei-Bin Xu (IBK), Sheng-Xiang Yu (PE) and Chun-Rui Lin (IBK) for assistance with the literature and improvement of first draft. This study was supported by the National Natural Science Foundation of China (31560088) and Special Funds for Local Science and Technology Development Guided by the Central Committee (ZY1949013).

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