

## *Impatiens yangshanensis* (Balsaminaceae), a new species from Guangdong, China

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*Impatiens yangshanensis* A.Q. Dong & F.W. Xing *sp. nova* (Balsaminaceae) from Guangdong, China, is described and illustrated. It is morphologically similar to *I. macrovexilla*, but differs mainly by its bifid spur, 2-bracted pedicel and lateral united petals with triangular basal lobes, acuminate apex, and dolabriform distal lobes. It also resembles *I. pterosepala*, but that species differs mainly in its 1-flowered inflorescence, 1-bracted pedicel and oblong basal lobes of lateral united petals.

### Introduction

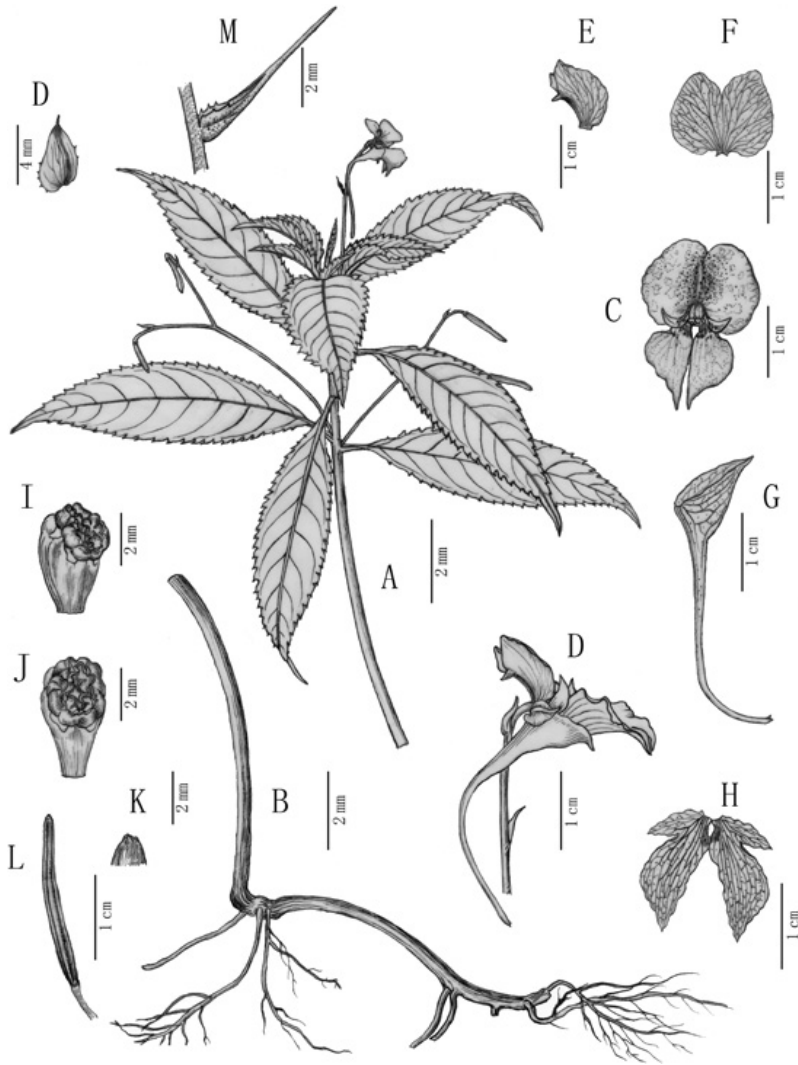
The genus *Impatiens* (Balsaminaceae), including about 900 species worldwide, mainly occurs in the highlands and mountains of the Old World tropics, and also in parts of temperate Asia and Europe (Grey-Wilson 1980a, 1980b, Chen 2001, Fischer 2004). About 240 species, most of them endemic, have been reported from China (Chen 2001, Huang *et al.* 2003, Sheng *et al.* 2007, Cai *et al.* 2008, Xiu *et al.* 2008, An *et al.* 2009). The species of *Impatiens* are difficult to identify as the distinguishing key characters such as the shape and size of the sepals and petals, and the apices of the anthers are quite difficult to observe in herbarium specimens. It is therefore important to observe fresh flowers and to retain their shape in specimens.

During a recent survey in the Nanling National Nature Reserve, Guangdong, a distinc-

tive *Impatiens* was collected in the limestone region of the Yangshan County. During further visits to the same locality, additional material was gathered to provide a range of specimens with flowers and fruits. After comparison with morphologically similar taxa (based on Huang 1993, Shimizu 2000, Chen 2001, Huang *et al.* 2003), we concluded that the plants in the Yangshan County represent an undescribed species.

***Impatiens yangshanensis* A.Q. Dong & F.W. Xing, *sp. nova* (Fig. 1)**

*Species I. macrovexillae et I. pterosepalaе affinis, sed bractis 2 ad pedicellos supra medium alternativis; sepalis inferioribus ad apicem bifidis; lobis corollarum superioribus triangularibus, inferioribus dolabriformibus, apice acuminatis differt.*



**Fig. 1.** *Impatiens yangshanensis* (from the holotype, drawn by Yunxiao Liu). — **A:** Habit. — **B:** Root. — **C:** Flower, front view. — **D:** Flower, side view. — **E:** Upper petal, side view. — **F:** Upper petal, front view. — **G:** Lower sepal. — **H:** Lateral united petals. — **I:** Androecium, side view. — **J:** Androecium, front view. — **K:** Pistil. — **L:** Fruit. — **M:** Bract.

**TYPE:** China. Guangdong Province, Yangshan County, Nanling National Forest Park, Mount Pangumiao, dark soil on limestone, 24°78'N, 112°76'E, ca. 810 m alt., 26 July 2009 *An-Qiang Dong 3001* (holotype IBSC). — **PARATYPE:** China. Guangdong Province, Yangshan County, Nanling National Forest Park, Mount Pangumiao, dark soil on limestone, 24°79'N, 112°79'E, ca. 740 m alt., 26 July 2009 *An-Qiang Dong 2967* (IBSC).

**ETYMOLOGY:** The specific epithet is derived from the county name of the type locality.

Plants annual, 20–80 cm tall, glabrous. Stem erect or obliquely ascending, to 0.6 cm in diam., green, striate when dry, succulent, simple or sometimes branched, lower nodes swollen. Leaves alternate; petiole 0.5–2 cm; lamina membranous, pale green abaxially, green adaxially, ovate-lan-

ceolate or oblong-lanceolate, 2–9 × 0.8–2.5 cm, margin serrulate, setose between teeth, lateral veins 6–10 pairs, base cuneate, attenuate into petiole, margin coarsely crenate, apex acuminate. Inflorescences in upper leaf axils, 2-flowered; peduncles erect, 2.5–3.5 cm; pedicels 1.8–2.5 cm long, erect, with 2 (or 1) bracts, one above middle, other near flower; bracts caducous, lanceolate or linear-lanceolate, 3–8 mm long, thick, apex acuminate. Flowers purple, 2.5–3.5 cm deep. Lateral sepals 2, obliquely ovate, 5–6 × 3–5 mm, margin denticulate, apex long cuspidate. Lower sepal narrowly funnelform, 3.5–4 cm, gradually narrowed into an incurved spur; spur ca. 3 cm, tip bifid; mouth oblique, ca. 1 cm. Upper petal oblate

or reniform, ca. 1 × 1.2 cm, apex retuse, mucronulate, abaxial midvein narrowly carinate; lateral united petals without clawed, 2-lobed, 12–14 × 5–8 mm; basal lobes triangular, apex acute, distal lobes dolabriform, ca. 2.5 cm, apex acuminate, marked with yellow stripes; auricle inflexed, small. Stamens 5, ca. 5 mm long, filaments linear; anthers small, apex obtuse. Ovary erect, fusiform, ca. 5 mm long. Capsule linear, ca. 3 cm long. Seeds unknown. Flowering and fruiting in June–September.

*Impatiens yangshanensis* is narrowly endemic to southern China. It is currently known only from the type locality, where it grows in dark soil on limestone at 700–850 m.

Attempts to collect this rare species in early October were unsuccessful. *Impatiens yangshanensis* appears during late spring and disappears soon after the rains in October. Since the type locality has become a tourist attraction, *I. yangshanensis* is highly endangered. Other common species in this habitat are *Coleus carnosifolius*, *Acer chunii*, *Hemiboea follicularis*, *Hemiboea*

*subcapitata* var. *guangdongensis*, *Lycoris aurea*, *Asplenium wrightii*, *Cymbidium floribundum*, *Pyrrosia tonkinensis* and *Celastrus kusanoi*.

*Impatiens yangshanensis* is unusual in its 2-bracted pedicel; only a few species of *Impatiens* in China have this character. It is morphologically close to *I. macrovexilla*, which is an endemic in the limestone regions about 200 km away in the Guangxi Province. Both species have a 2-flowered inflorescence, the upper petal oblate or reniform, the apex retuse and mucronulate, the abaxial midvein narrowly carinate, and the apex of the two lateral sepals long-cuspidate. However, *I. yangshanensis* differs from *I. macrovexilla* by its bifid spur and 2-bracted pedicel, the lateral united petals with basal lobes triangular and apex acuminate, and the distal lobes broadly dolabriform. *Impatiens yangshanensis* also resembles *I. pterosepala*, but *I. pterosepala* differs by its 1-flowered inflorescence, 1-bracted pedicel and oblong basal lobes of the lateral united petals. A more detailed morphological comparison of the three species is provided in Table 1.

**Table 1.** Morphological comparison of *Impatiens yangshanensis*, *I. macrovexilla* and *I. pterosepala*.

	<i>I. yangshanensis</i>	<i>I. macrovexilla</i>	<i>I. pterosepala</i>
Leaf	ovate-lanceolate or oblong-lanceolate, 2–9 × 0.8–2.5 cm, lateral veins 6–10 pairs	oblong or oblong-lanceolate, 5–9(–12) × 2.5–4 cm, lateral veins 9–12 pairs	9–12 pairs ovate or oblong-ovate, 3–10 × 2.5–4 cm, with 2 globose basal glands, lateral veins 5–7 pairs
Flower	purple, 2.5–3.5 cm deep, 2 flowers in inflorescence	purple, 3.5–4 cm deep, 2 flowers in inflorescence	pale purple or purplish red, 1 flower in inflorescence
Lateral sepal	obliquely ovate, 5–6 × 3–5 mm, margin denticulate, apex long cuspidate	green, broadly ovate, 5–6 × 3–4 mm, margin denticulate, apex long cuspidate	apex long cuspidate ovate, margin sometimes denticulate at one side, apex acuminate, abaxial midvein narrowly carinate
Upper petal	oblate or reniform, ca. 1 × 1.2 cm, apex retuse, mucronulate, abaxial midvein narrowly carinate	oblate or reniform, large, ca. 1.6 × 3.5 cm, apex retuse, mucronulate, abaxial midvein narrowly carinate	orbicular, base cordate, apex slightly emarginate, shortly rostellate, abaxial midvein thickened
Lateral united petals	12–14 × 5–8 mm, basal lobes triangular, apex acuminate, distal lobes dolabriform, apex acuminate	ca. 2.6 cm, basal lobes oblong, apex rounded, distal lobes dolabriform, 2-lobed apically	basal lobes oblong, distal lobes broadly dolabriform
Lower sepal	narrowly funnelform, 3.5–4 cm, gradually narrowed into an incurved, 2-fid spur, spur ca. 3 cm	narrowly funnelform, 4–4.5 cm, gradually narrowed into an incurved spur, spur 2–2.5 cm, slender	narrowly funnelform, base narrowed into an incurved, slender spur, mouth oblique

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