



Impatiens tajoensis (Balsaminaceae): A new species from Arunachal Pradesh, India

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ABSTRACT: *Impatiens tajoensis*, a new species of *Impatiens* from East Kameng district of Arunachal Pradesh, Eastern Himalaya is described. Detailed description, distribution and ecology along with illustration and photo plate are provided.

KEY WORDS: Arunachal Pradesh, *Impatiens nilalohitae*, *Impatiens adamowskiana*, *Impatiens stenantha* India, India.

INTRODUCTION

Impatiens L. is one of the largest genus of the flowering plants belongs to the family Balsaminaceae. The genus is predominantly distributed in the tropics and subtropics of the old world and few are distributed in temperate regions. This is a fascinating group of plants with high ornamental and horticultural value, consists of ca. 1000 species (Cheng *et al.*, 2008; Bhaskar, 2012; Gogoi *et al.*, 2018). In recent years a number of new species of this genus was described from Himalayas and adjacent geographical regions (Hooker, 1875, 1908,a, 1910; Toppin, 1920; Grey-Wilson, 1989, 1991; Vivekananthan *et al.*, 1997; Huang *et al.*, 2003; Huang, 2006; Pusalkar and Singh, 2010; Dessai and Janarthanum, 2011; Yu, 2012; Gogoi *et al.*, 2013, 2016, 2017a,b;; Gogoi and Borah, 2013a, 2014, 2015a,b,c,d,e, 2017a,b; Swaminathan *et al.*, 2014; Hareesh *et al.*, 2016a,b, 2017a,b; Chowlu *et al.*, 2017; Hareesh and Sabu, 2017; Liden and Bharali, 2017; Moaakum *et al.*, 2017; Yang *et al.*, 2017; Tiwari, 2022), as well as rediscoveries (Gogoi *et al.*, 2013c, Odyuo *et al.*, 2015) and extended distribution (Gogoi and Borah, 2013b, Borah *et al.*, 2015, Gogoi *et al.*, 2015a,b, 2016, 2017b, 2019; Tiwari *et al.*, 2018) were made. Eastern Himalaya with diverse climatic conditions, varied topography and ecosystems diversity is known as one of the centre of diversification of the genus *Impatiens* (Gogoi *et al.*, 2018).

In the year 2017, while conducting floristic study of East Kameng district author came across a peculiar *Impatiens* sp. in the dense forest above Kasse Bagang village. On critical studies of the collected specimens and perusal of published literature (cited in para 1) revealed that it is a hitherto undescribed species. Hence, it is described here as a new species with a photo plate of fresh materials and their illustration.

TAXONOMIC TREATMENT

Impatiens tajoensis U.L.Tiwari, *sp. nov.*

Figs. 1 & 2

Type: INDIA. Arunachal Pradesh: East Kameng district, 5 km away from Kasse Bagang village on way to High altitude area, 27°46'06.3"N, 93°08'59.8"E, 1624m, 3 October 2017, Umeshkumar L. Tiwari 47895 (holotype: ARUN!, isotype: CAL!).

Diagnosis: *Impatiens tajoensis* differs from *I. adamowskiana* Gogoi & Borah by stem not winged, leaves petiolate, stipular glands rounded dark purple, lateral united petals pink, and dorsal petal obovate with a distinct horn; from *I. nilalohitae* Harish & Sabu by leaves petiolate, abaxial surface of leaf blade green, bract falcate with acute apex, and mouth of lower sepal with a distinct awn or appendage, dorsal petal with distinct awn or appendage. It is also similar to *I. stenantha* Hook.f. but differs by having stem not winged, inflorescence 11–20 flowered, bracts falcate, lateral sepals 2, and lower sepal navicular.

Annual non succulent herb; branched, up to 30–45 cm tall. Stems angular, glabrous, ridged, slightly swollen at nodes. Leaves confined to upper part of stem, alternate, spirally arranged, Lamina ovate, 7–11.5 × 2–4 cm, abaxially glabrous, whitish green, adaxially glabrous, dark green, base slightly cuneate to obtuse, apex acuminate, margin dented, setose between teeth; lateral veins 5–7 pairs, subopposite; petioles up to 2.5 cm long with red round stipular glands at base. Inflorescence axillary to terminal raceme, 11–20 flowered; peduncle 13–16 cm long, glabrous. Flowers zygomorphic, resupinate, bud yellowish green and sometimes with red spots, pedicelate; pedicels 1.0–1.2 cm long, green; bracts cauducous, falcate, apex acute, midvein indistinct, glabrous, margin with 1–2 serrations. Lateral sepals 2, linear, green, 2.5–3.0 mm long, apex acute and margin entire. Lower sepal navicular, creamy yellow with pinkish spots at mid of spur, 0.7–0.8 mm long deep, with green awned at mouth; spur 1.6–1.8 cm long, straight or sometime twisted upwards, pale yellow. Dorsal petal

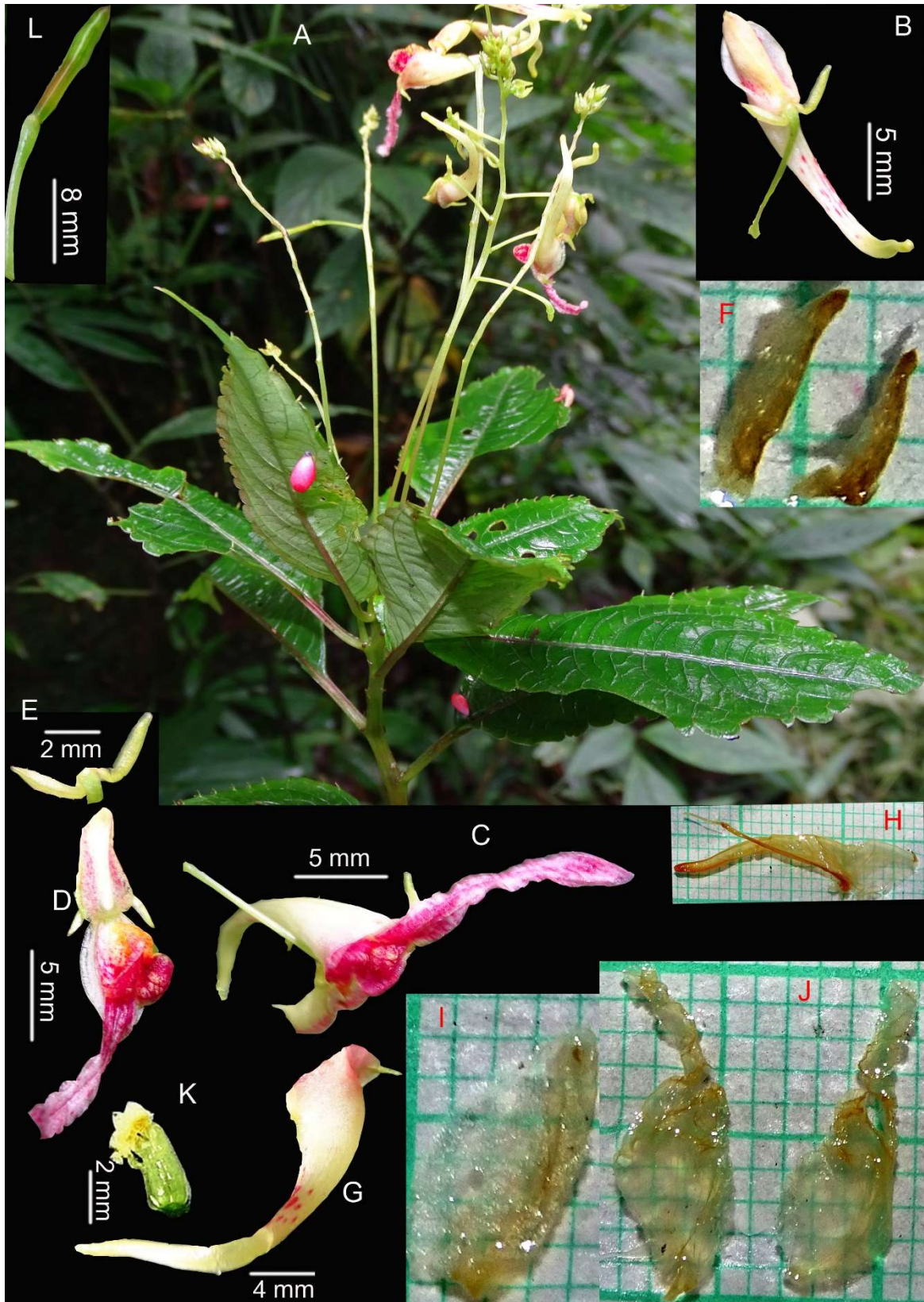


Fig. 1. Photo plate of *Impatiens tajoensis* U.L.Tiwari, sp. nov. **A.** Habit, **B.** flower bud, **C.** mature flower-Side view, **D.** mature flower-front view, **E & F.** lateral sepals, **G & H.** lower sepal with spur, **I.** dorsal petal-ventral view, **J.** lateral united petals-ventral view. **K.** stamens, **L.** fruit-immature, clavate. (Photos by U.L. Tiwari)

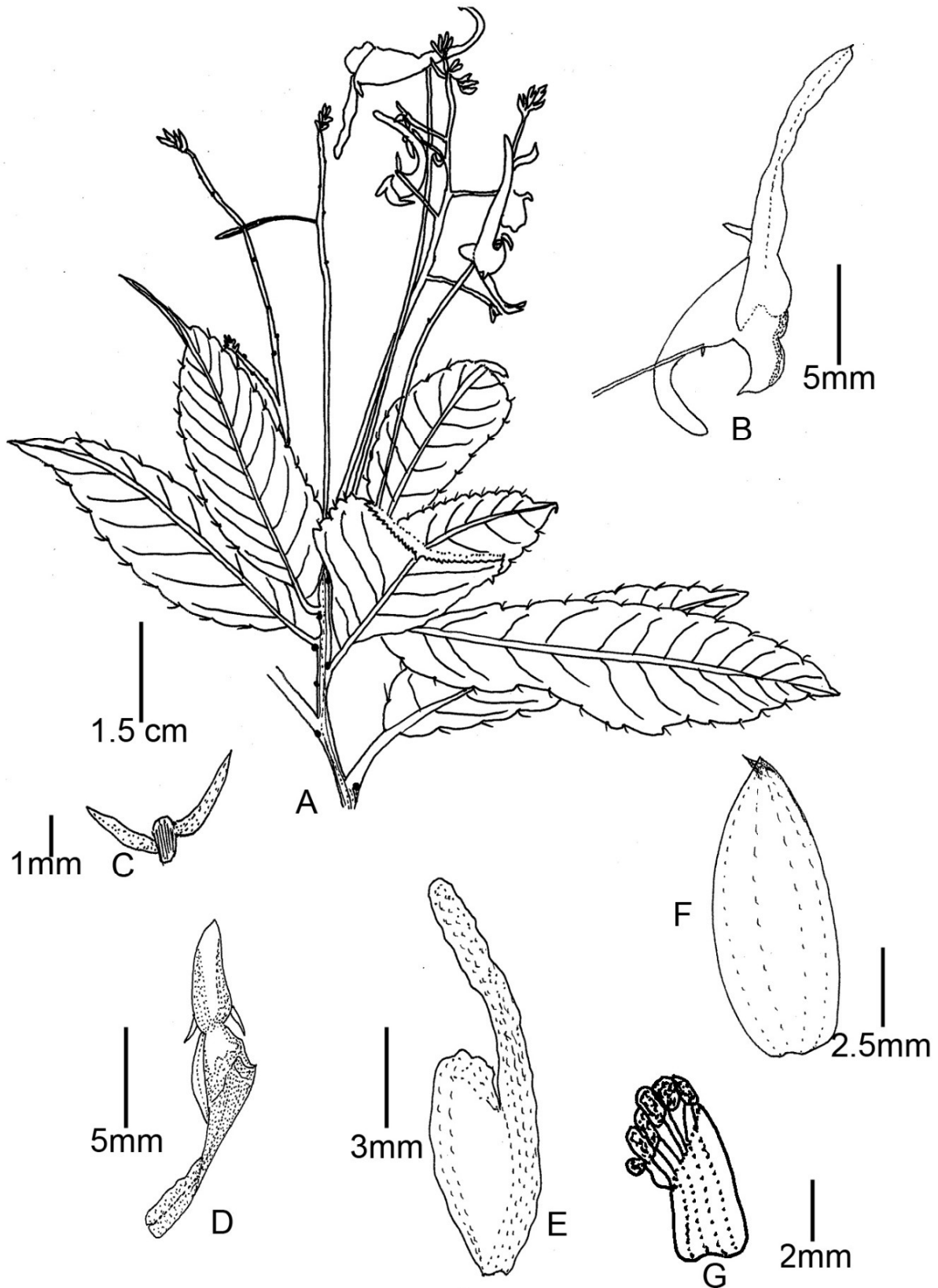


Fig. 2. *Impatiens tajoensis* U.L.Tiwari, sp. nov. **A.** Habit, **B.** flower, **C.** lateral sepals, **D.** front view of flower, **E.** lateral united petals-ventral view, **F.** dorsal petal, **G.** stamens. (Illustrated by U.L. Tiwari)

**Table 1:** Comparison of morphological differences between *Impatiens tajoensis* and its allied species.

	<i>Impatiens tajoensis</i>	<i>I. nilalohitae</i>	<i>I. adamowskiana</i>	<i>I. stenantha</i>
Stem	not winged	not winged	winged	stem ribbed or winged
Leaves	petiolate	subsessile to petiolate	sessile	petiolate
Stipular glands	rounded, purple	setaceous, dark pink	absent	stipitate, red
Inflorescences	11–20 flowered	10–15 flowered	20–30 flowered	2–8 flowered
Bract	falcate, apex acute	subovate, apex acuminate	ovate, acute apex	elliptic-ovate or lanceolate, apex cuspidate
Lateral sepals	2, linear, green, apex acute	4, ovate, dark violet or deep pink, apex acuminate	2, dark red, apex acute,	4, green with red margins, apex acuminate
Lower sepal mouth	creamy yellow with pinkish spots, mouth beaked, apex awn-like or crested	dark pink, mouth not beaked, apex acute	dark red, mouth not beaked, apex acute	yellow with reddish tinge, apex beaked
spur	straight or sometime twisted upwards, 1.6–1.8 cm, pale yellow	cylindrical, deeply outwardly curved, 1.0–1.2 cm, yellowish green with notched apex	upcurved, 1.5–1.8 cm, yellowish green with red, yellow tip unifid apex	upcurved, reddish spotted, 2–2.5 cm, Yellowish to red tip cornute-rostellate
Dorsal petal	obovate, yellowish with red spots along margin, 3 × 7 mm, apex acute, small awned	broadly ovate, dark violet, 7 × 6.5 cm, not beaked	ovate or suborbicular, red, 1 × 1 cm, apex emarginated, shallowly beaked	suborbicular, minutely ridged, 1 × 0.9 cm, apex emarginated, tip slightly acute
Lateral united petals	bilobed, throat dark pink	bilobed, dark purple with yellowish throat	bilobed, red with yellowish blotch	bilobed, yellow with reddish spots

obovate, yellowish with red spots along margins, ca. 3 × 7 mm, apex acute, small awned, pale yellow. Lateral united petals bilobed, subequal, ribbon-shaped, 1.0–1.2 cm long, pink with dark purple spots on basal lobes; basal lobe obovate, crumpled, apex slightly curved to 3–7 mm, clawed, distal lobe linear, 6–7 mm long, margin undulating, base auricled, apex obtuse, dark pink. Stamens 5, united, upright, 3 mm long, anther lobes obtuse. Ovary superior, syncarpous, 5-locular with axile placentation; ovules 5-to many. Fruit a capsule, narrowly clavate.

Phenology: September–November.

Etymology: The specific epithet refers to “Chyang Tajo” of East Kameng district, the locality of the collection.

Distribution and habitat: INDIA: At present the species is known only from Kasse bagang village, Chiyang Tajo block, East Kameng district and it may be endemic to Arunachal Pradesh. It grows in moist places along streams at ca. 1650 m elevations. Currently, there are four populations altogether constitute ca. 85–100 plants in and around Kasse Bagang village. It grows along with *Quercus* spp., *Calamus* spp., *Elatostema* sp., *Pouzolzia* sp., *Begonia* sp., *Panax* sp., *Impatiens arguta*, *Odontochilus* sp. and *Selaginella* sp.

IUCN Conservation status: Present population in the type locality is quite good and there is no threat of existence. From the available data, the conservation status is assessed as Data Deficient (DD).

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