



## *Impatiens nilalohitae* (Balsaminaceae): a new species from Northeastern India

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### Abstract

*Impatiens nilalohitae* is described from Arunachal Pradesh, Northeastern India. The new species shows similarities with *I. adamowskiana* and *I. rugosipetala*, but differs by having a 10–15-flowered inflorescence, dark purple flowers, and four lateral sepals, among other characters. A detailed description and colour photographs, as well as remarks on geographic distribution and ecology, are provided.

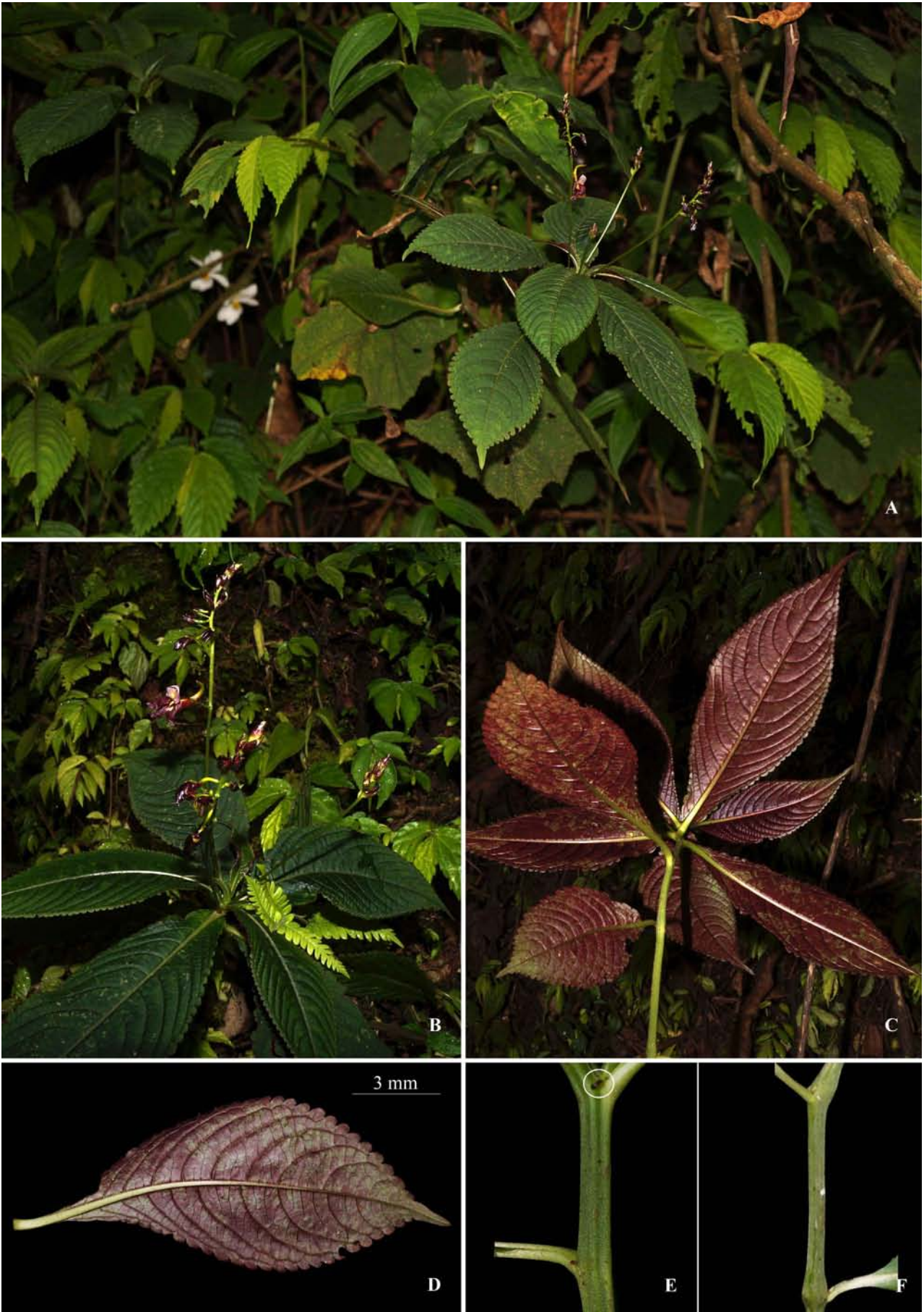
**Key words:** Arunachal Pradesh, Balsaminaceae, *Impatiens*, new species

### Introduction

In India, the genus *Impatiens* Linnaeus (1753: 937) (Balsaminaceae) is represented by more than 210 taxa distributed mainly in the eastern Himalaya, the neighboring northeastern states and the Western Ghats (Hooker 1908a,b, Vivekananthan *et al.* 1997, Bhaskar 2012). During recent botanical exploration to the eastern Himalaya the authors collected an interesting specimen of *Impatiens* (*I.* section *Racemosae*, Yu *et al.* 2016) from the Lower Dibang Valley district of Arunachal Pradesh in northeastern India. The identity of the specimen did not key out after detailed taxonomic studies with the perusal of relevant literature (Hooker & Thomson 1860, Hooker 1875, 1904–1906, 1908, 1910, 1911, Toppin 1920, Grey-Wilson 1991, Vivekananthan 1997, Huang *et al.* 2003, Huang 2006, Chen *et al.* 2008, Pusalkar & Singh 2010, Bhaskar 2012, Yu 2012, Akiyama & Ohba 2015a,b, Gogoi & Borah 2015, 2017, Hareesh & Sabu 2016, Hareesh *et al.* 2016a,b, 2017a,b, Gogoi *et al.* 2017). Observations and studies revealed that the specimen shares similarities with *I. adamowskiana* Gogoi & Borah (2015: 586) and *I. rugosipetala* Gogoi & Borah (2017: 1), two recently published species also from the Lower Dibang Valley district, but can be distinguished by its 10–15-flowered inflorescence, dark purple flowers, and four lateral sepals, among other characters (Table 1). Hence it is confirmed that the specimen belongs to a new species, described here.

**TABLE 1.** Diagnostic morphological differences among *Impatiens nilalohitae*, *I. adamowskiana* and *I. rugosipetala*.

Character	<i>I. nilalohitae</i>	<i>I. adamowskiana</i>	<i>I. rugosipetala</i>
Stem	not winged	winged	not winged
Leaf	subsessile to petiolate	sessile	subsessile to petiolate
Leaf blade abaxial surface	purplish	pale green	pale green
Stipular gland	present	absent	present
Inflorescence	10–15-flowered	20–30-flowered	to 6-flowered
Bract	subovate, apex acuminate	ovate-acute, apex acute	falcate, apex acute
Pedicel	1–1.2 cm long, green	1–1.5 cm long, purple	1.5–2.3 cm long, green
Lateral united petals	dark purple with yellow throat	blood red	brick red or reddish with yellow throat
Petals	non-rugose	non-rugose	rugose
Lower sepal mouth	acute	acute	long-awned or beaked
Lateral sepals	four	two	two
Spur apex	notched	entire	entire



**FIGURE 1.** *Impatiens nilalohitae* Hareesh & M.Sabu sp. nov. A. & B. Habit; C. Twig showing abaxial surface of leaf blade; D. Abaxial surface of leaf blade; E. Immature stem (stipular gland circled); F. Mature stem showing swollen node. Photos by V.S. Hareesh.





**FIGURE 2.** *Impatiens nilalohitae* Hareesh & M.Sabu sp. nov. A. Inflorescence; B. Lateral view of flower; C. Dorsal petal; D. Lateral sepals; E. Lateral united petals; F. Lower sepal with spur; G. Apex of spur; H. Bract; I. Column with pistil; J. Pistil; K. Capsule; L. Seeds. Photos by V.S. Hareesh.

## Taxonomy

### *Impatiens nilalohitae* Hareesh & M.Sabu **sp. nov.** (Figures 1 & 2)

*Impatiens nilalohitae* is phenotypically similar to *I. adamowskiana* but differs by having a non-winged stem, setaceous stipular gland, 10–15-flowered inflorescence, dark purple flower, four lateral sepals, and spur with a notched apex. It is also similar to *I. rugosipetala* but differs by having 10–15-flowered inflorescence, dark purple flower with non-rugose petals, four lateral sepals, lower sepal with an acute apex, and a spur with a notched apex.

Type:—INDIA. Arunachal Pradesh: Lower Dibang Valley district, in between Tiwari Gaon and Mayodia ± 2100 m. a.s.l., N 28° 15.225', E 95° 52.706', 6 May 2016, *V.S. Hareesh 143753* (holotype CALI!, isotype CAL!).

Non-succulent herbs to 1 m long; stem subterete or quadrangular, not winged, glabrous, green; internodes 3–8 cm long, green, glabrous; nodes swollen when mature; stipular glands setaceous, glabrous, dark pink. Leaves alternate or spirally arranged proximally and crowded at apex, subsessile or petiolate; lamina 12–20 × 4.5–8.5 cm, ovate-elliptic, caudate-acuminate at apex, cuneate at base, coriaceous, dark green above and purple beneath, glabrous on both sides; lamina margin crenate or serrate, serrations apiculate; lateral nerves 13–16 on each side of midvein, prominent; petiole 2–3 cm long, glabrous, pale green; stipular gland small, setaceous, pink. Inflorescence an axillary raceme, 10–15-flowered; bract 8–9 × 3–3.5 mm, subovate, acuminate at apex, glabrous; pedicel 10–12 mm long, glabrous, green; lateral sepal 4, outer sepals 2, 5–6 × 2–2.5 mm, ovate, apex subacute, glabrous, dark violet or deep pink; inner sepals 2, 1.5–2 × 0.5–0.8 mm, linear with broadened base, acuminate at apex, glabrous, dark violet; dorsal petal 5–7 × 5–6.5 mm, broadly ovate, slightly keeled dorsally, glabrous, dark violet; lateral united petals 12–15 × 4–6 mm, 2-lobed, dark purple with yellow throat; basal lobe 4.5–5 × 5–6 mm, broadly ovate, shallowly clawed, dark purple; distal lobe 8–10 × 0.75–1.25 mm, lorate, twisted, rounded or obtuse at apex, violet; dorsal auricle inconspicuous; lower sepal 10–13 × 6–7 mm, navicular, apex acute, glabrous, dark pink; spur 10–15 cm long, cylindrical, deeply outwardly curved, glabrous, yellowish green with notched apex. Column ca. 5 × 3.5 mm, straight; filaments ca. 3 × 1.5 mm, glabrous, pale yellow with pale pink streaks at junction of anther lobes; anthers 1.75–2 × 3–3.5 mm, glabrous, yellow. Pistil 3–3.5 × ca. 1 mm; ovary ellipsoid, glabrous. Capsule 1.75–2 × 0.5 cm, linear, glabrous, green; seeds 2 × 1 mm, obovate, cream.

**Flowering and Fruiting**—April to August.

**Etymology**—The specific epithet refers to the purple colour (*nilalohita* in Sanskrit) of the flower and the abaxial leaf blade surface.

**Distribution and conservation status**—*Impatiens nilalohitae* is known only from the Lower Dibang Valley district of Arunachal Pradesh, northeastern India. The specimens were collected from moist areas between the way from Tiwari Gaon and Mayodia at elevations from 2000 to 2100 m a.s.l. The taxon grows in association with, e.g., *Arisaema concinnum* Schott (1859: 27) and *Impatiens arguta* J.D. Hooker & Thomson (1860: 37). Presently the new species appears to not be threatened. We observed more than 100 individuals during field trips in 2016 and 2017 but there may be a chance for population decrease by road broadening and other development. From the available data, the conservation status is assessed as Data Deficient (DD).

**Additional specimen examined (Paratype)**—INDIA. Arunachal Pradesh: Lower Dibang Valley district, between Tiwari Gaon and Mayodia, ± 2100 m a.s.l., 18 May 2017, *M. Sabu & V.S. Hareesh 149392* (CALI).

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