



Impatiens selvasinghii (Balsaminaceae), a smallest flowered new balsam from Western Ghats, India

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ABSTRACT: *Impatiens selvasinghii* Bharath & Karupp., an interesting new species of Balsaminaceae is described with a photographic figure from the Western Ghats of Kudremukha peak, Karnataka state, India. The detailed description of new taxon along with diagnostic characters between closely allied species, photographs, and distribution are provided to facilitate the easy identification. A provisional conservation status is also accessed according to IUCN Red Data Categories.

KEY WORDS: *Impatiens herbicola*, Karnataka, Kudremukha peak, new species, smallest flower, taxonomy.

INTRODUCTION

The genus *Impatiens* L. (Balsaminaceae) comprises 1120 accepted taxa, with native range of distribution in old world, North and Central America (POWO, 2024). This genus has diversified growth forms, from annual or perennial herbs to subshrubs, epiphytic and lithophytic occurrence (Bhaskar, 2012; Stevens, 2012). In India genus *Impatiens* is represented with more than 280 taxa, chiefly distributed in Eastern Himalayas and Western Ghats (Vivekananthan *et al.*, 1997; Swaminathan *et al.*, 2001; Bhasakar, 2012). Many novelties published in last 20 years, approximately 71 taxa described from India (Yadav and Karuppusamy, 2023). According to Bhaskar (2012) over 210 taxa are endemic to India, of which *c.* 130 are endemic to the Western Ghats, and 80% taxa in the Western Ghats are categorised as endangered as per IUCN Red List Categories and Criteria: Version 3.1. Apart from this, several new species published in last few years from the different localities of Western Ghats, most of them are restricted to type location (Bhaskar, 2006, 2012; Kumar *et al.*, 2011; Narayanan *et al.*, 2011, 2012a,b; Hareesh *et al.*, 2015; Prabhukumar *et al.*, 2015a,b, 2016, 2017; Ramasubbu *et al.*, 2015a,b, 2017, 2020; Chhabra *et al.*, 2016; Bhaskar and Sringswara, 2017; Mani and Thomas, 2017; Mani *et al.*, 2018, 2020; Karuppusamy and Ravichandran, 2019; Salish *et al.*, 2019; Vishnu *et al.*, 2020; Mohan *et al.*, 2021; Richard *et al.*, 2021; Ravichandran *et al.*, 2023).

During a floristic exploration of the Western Ghats in Karnataka, India, authors collected an interesting specimen of the genus *Impatiens* along the roadside on the way to Kudremukha peak, at an elevation of 1630 m (msl). After a critical examination of the collected specimen with the pertinent literature (Hooker, 1906; Fischer, 1934; Bhaskar, 2012; Mani and Thomas, 2017; Mani *et al.*, 2018, 2020; Arya *et al.*, 2021) and a

comparison to the type specimens and virtual images available at the relevant herbaria (CAL, CALI, E, GDC, K, L, LINN, MH, SGH and P), it was determined that the collected specimen represents hitherto undescribed species. Hence, the specimen collected was described here as new species with detailed description and colour photographs based on the comparison of closely allied species.

TAXONOMIC TREATMENT

Impatiens selvasinghii Bharath & Karupp. *sp. nov.*

Fig. 1

Type: INDIA, Karnataka, Chikkamagalur District, Kudremukha National Park, Kudremukha peak, 30 August 2023, P. Bharath & Sonali 3148 (holotype, SGH! isotype MH!)

Diagnosis: *Impatiens selvasinghii* Bharath & Karupp., is allied to *Impatiens herbicola* Hook.f., but differs by absence of extra petiolar gland (**vs** present), lanceolate to oblanceolate leaves (**vs** linear lanceolate), pendulous flowers (**vs** erect), large basal lobe, 0.5–0.8 mm (**vs** very small, less than 0.2 mm), lip without spur (**vs** lip with saccate spur), seeds 10–12 (**vs** many). Especially the smallest flower size 4 mm across among the known balsams and prominently lobed wing petals makes this species unique from its allied species (**Table 1 & Fig. S1**)

Description: Erect glabrous herbs, 15–20 cm tall. Stems tetragonal, branched sometimes, green. **Leaves** opposite-decussate, lanceolate to oblanceolate, 3–4 × 1–1.5 cm, pale green abaxially, whitish green adaxially, basal leaves broad, apiculate or acute, base attenuate, distantly serrate, reflexed upwards, lateral veins inconspicuous, sessile or shortly petiolate. **Flowers** simple, pedicellate, paired in axil, pendulous, small (4 mm across), standard to wing 4 mm long, creamy white, appears transparent; **pedicels** 5–7 mm long, in fruit 6–8

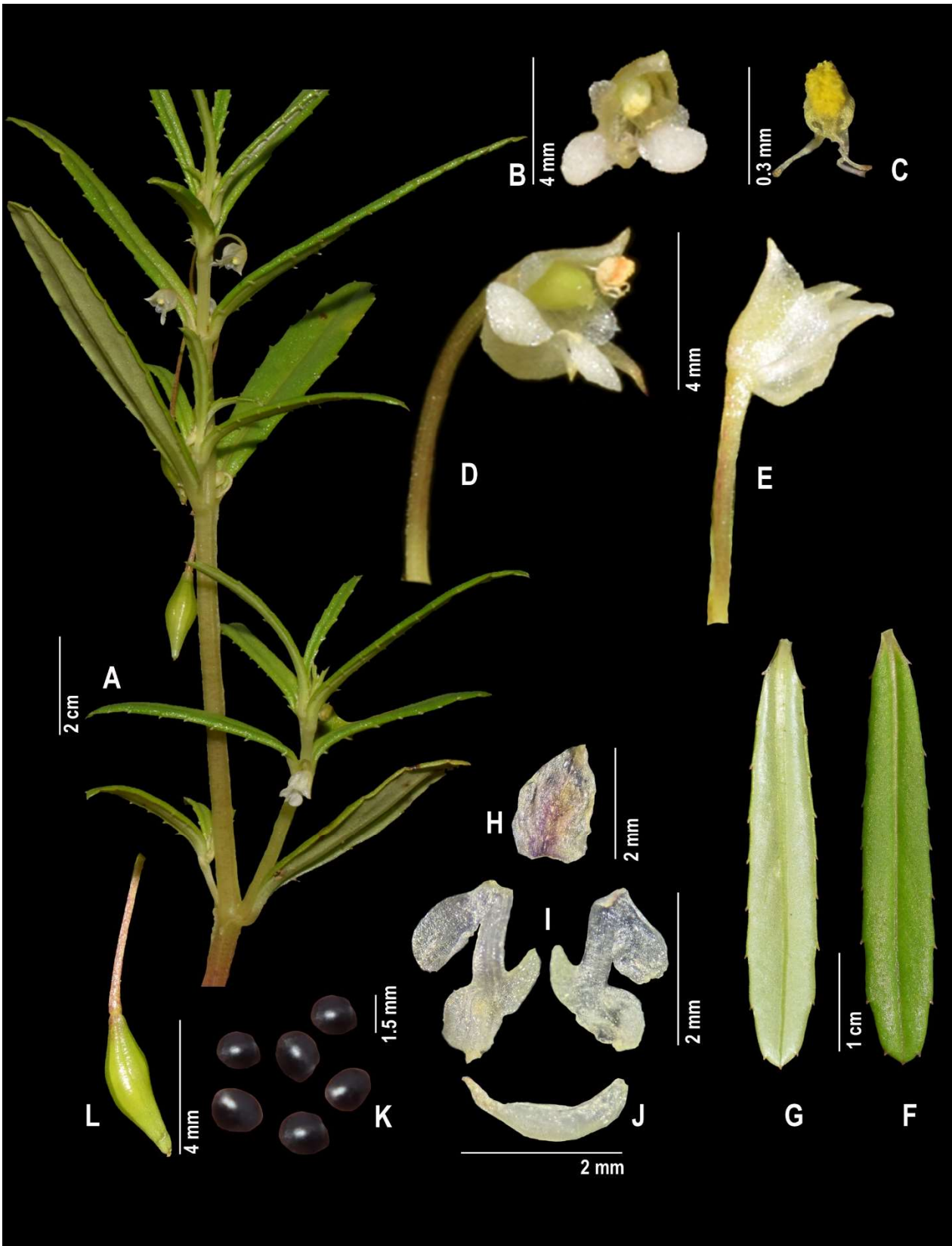


Fig. 1. *Impatiens selvasinghii*. A. Flowering twig. B. flower front view. C. Anther and stamens. D. Flower with gynoecium. E. Flower side view. F. Leaf adaxial view. G. Leaf abaxial view. H. Standard petal. I. Lateral united petals. J. lip. K. Seeds. L. Capsule.

**Table 1.** Comparison of diagnostic morphological characters of *Impatiens selvasinghii* and *I. herbicola*.

Characters	<i>I. selvasinghii</i> sp.nov.	<i>I. herbicola</i>
Extra petiolar gland	Absent	Present
Leaf shape	lanceolate to oblanceolate, rounded at apex	linear lanceolate, acute at apex
Flowers	Pendulous, 4 mm across, creamy white	Erect, 6–8 mm across, yellow or white
Wing petal	Prominently two lobed, 2 mm long	Not prominently two lobed, 7–8 mm long
Basal lobe	Large, 0.8 mm	Very small, less than 0.2 mm
Lip	Without spur	With spur or gibbous
Seeds	10–12	Many

mm long, sparsely hairy, hair appears in two rows; *sepals* 2, linear, acute, 3×0.5 mm, not keeled, *lip* scaphiform, 2 mm long, lanceolate, horizontal, creamy white, spurless; standard 2×1 mm, apiculate, margin entire; *wings* 2 mm long, *basal lobe* spatulate or obovate, $0.5\text{--}0.8 \times 0.4$ mm, apex mucronate, *distal lobe* partially distally bilobed, outer lobes obovate to elliptic-obovate, rounded at tip, inner lobe incurved, obliquely ovate, obtuse at apex; *stamens* 5, cohering above pistil; column 1 mm long; filament subulate, narrow at base, connate at apex, *anther* 0.3 mm, pollen yellow; ovary elliptic-ovoid. *Capsules* small, pendulous, lanceolate-ovoid, 4.5×5 mm, ridged, beaked, matured capsule with purple spots, *seeds* 10–12, black, round, small, smooth, glabrous, 1.5 mm diam.

Flowering and fruiting: August–October

Distribution and Ecology: This species is growing under shola grasslands of Kudremukha range of Western Ghats in Karnataka state. The new plant species is associated with *Habenaria heyneana* Lindl., *Exacum tetragonum* Roxb., *Murdannia lanuginosa* (Wall. ex C.B. Clarke) G.Brückn., *Crassocephalum crepidioides* (Benth.) S. Moore, *Mikania houstoniana* (L.) Willd., *Pteridium aquilinum* (L.) Kuhn, *Elaeocarpus tuberculatus* Roxb., *Rothea serrata* (L.) Steane & Mabb., and *Strobilanthes sessilis* Nees.

Etymology: This species named in honour of Dr P Selva Singh Richard, Associate Professor, The Madras Cristian College, Tambaram, Chennai, India, in recognition of his tremendous contribution to reproductive biology of endemic trees and plant taxonomy of Western Ghats.

Preliminary conservation status assessment: Despite the fact that the habitat of this species is within the trekking path of Kudremukha peak, the proximity of the over tourism, extension of trekking path, and impact of human influence could pose a threat to this species in the future. The current conservation assessment of this species is DD (IUCN, 2024-1). Further study is necessary to check the population status and reproductive trends to confirm the green status of the species.

Note: This species belongs to the section *Annuae*, subsection *Oppositifolia*, and is allied to *Impatiens herbicola*, which also belongs to the same group. This species is the smallest-flowered balsams among the *Impatiens* species in the Western Ghats of India, even smaller than *I. herbicola* and *I. inconspicua*. Bhaskar

(2012) also collected a similar species (*Bhaskar 393*; MGM!) from Mercara, Karnataka, initially identifying it as *I. herbicola*. However, he noted that it differed in many characters compared to the original protologue. Due to the inaccessibility of the *I. herbicola* type sheet, Bhaskar left his collection (393) unidentified and suggested that further study might reveal its correct identity. After examining the type sheet of *I. herbicola* at Kew (K000720271; K000720270), Bhaskar's collection (393) was identified as *I. selvasinghii*.

Other specimens examined: India: Mercara, 20 October 1973, *Bhaskar 393* (MGM!); Kudremukha, 30 August 2024, *P Bharath & Sonali 3958* (MGH!).

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