

## Rediscovery of *Impatiens khasiana* Hook.f. after more than a century

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### Abstract

*Impatiens khasiana* Hook.f. (Balsaminaceae) has been rediscovered after a period of 129 years from Meghalaya, in north-eastern India. A detailed description from living specimens, coloured photographs and other relevant information are provided for easy identification. The name *I. khasiana* Hook.f. is here lectotypified.

### Introduction

During a plant exploration tour in July, 2014 in Laitkyrhong, East Khasi hills district, Meghalaya, N. Odyuo and Chaya Deori discovered a small population of a species of *Impatiens* L. Critical examination and comparison of previously published species (Hooker 1875, 1905; Toppin 1920; Vivekananthan *et al.* 1997) revealed that it was *I. khasiana* Hook.f. The species was first collected by J.D. Hooker and T. Thomson in 1850 and then by G. Mann in 1885. Over the past 129 years, the species was considered extinct. The status of the species was treated as unresolved in ‘The Plant List’ (<http://www.theplantlist.org/>), because there were no further collections of the species since the second collection.

Hooker (1874, 1905) only provided a short description of this taxon. Therefore, a detailed description from living specimens, coloured illustrations and other relevant information are provided here for easy identification.

### Description

*Impatiens khasiana* Hook.f., *Records of Botanical Survey of India* 4: 27. 1905.

*Impatiens bella* Hook.f. & Thomson var. *major* Hook.f., *Flora of British India* 1: 459. 1874.

Lectotype (designated here): India, Meghalaya, Khasi hills, 5(000)–6000 ft, anno 1850, *J.D. Hooker & T. Thomson s.n.* (K694831, image!) **Fig. 1**

Residual syntypes: India, Meghalaya, Khasi hills, 5(000)–6000 ft, anno 1850, *J.D. Hooker & T. Thomson s.n.* ‘HERBARIUM HOOKERIANUM 1867’ (K694829, K694832).

Perennial succulent herb up to 80 cm high, sparsely branched; stem terete, hispidulous; nodes not swollen. *Leaves* confined mainly to upper part, alternate; petiole 0.5–3.6 cm long, glandular pubescent; lamina broadly ovate or oblanceolate, 8–11.5 cm long, 3–5 cm wide, pubescent on both sides, green above, pale green beneath,

base abruptly cuneate or gradually attenuate, margin crenate, apex acute to acuminate; lateral veins 8–13 pairs. *Inflorescence* axillary, 1- or 2- flowered; peduncle to 0.6 cm long, pubescent; pedicel 1–2 cm long, pubescent, green; bract at base of pedicel, lanceolate, to 7.5 mm long, 1.5 mm wide, pale green, persistent, pubescent, apex acuminate. *Flowers* purple, *Sepals*: *lateral sepals* 2, slightly obliquely ovate, pubescent, 1 cm long, 0.6 cm wide, green, purplish at base, apex acuminate; *lower sepal* bucciniform, pinkish with purple streaks inside, mouth inconspicuously beaked, with yellow spot on the ventral side at junction of sepal and spur; *spur* hooked, white, hairy, to 1.3 cm long, apex purple. *Petals*: *dorsal petal* shallowly cucullate, sub-orbicular, 1.3 cm long, 0.7 cm wide, purple, with midrib dark purple, hairy on the dorsal side, apex slightly beaked; midrib thick with erect white hairs; *lateral united petals* bilobed, subequal, 2 cm long, purple, basal lobe obovate, 5 mm wide, with apex acute to obtuse; *distal lobe* dolabriform, apex acute to obtuse, 1.3 cm long, 0.8 cm wide; basal auricle golden, 1 mm long. *Stamens* 5, slightly upcurved, to 5 mm long; filaments white with purple dots. *Ovary* green with purple dots. *Capsule* green, fusiform, to 2.2 cm long, 0.8 cm wide, mature seeds not seen. **Fig. 2**

**Flowering & Fruiting:** May–September

**Distribution:** India: Khasi Hills, Meghalaya, Endemic.

**Habitat:** Moist subtropical broad-leaved forest margins at an altitude of 1700 m in association with *Lyonia ovalifolia* (Wall.) Drude (Ericaceae), *Gaultheria fragrantissima* Wall. (Ericaceae), *Viburnum foetidum* Wall. (Caprifoliaceae), *Drymaria cordata* (L.) Willd. ex Schult. (Caryophyllaceae), *Rubus calycinus* Wall. (Rosaceae), and *Panicum* sp. (Poaceae).

**Conservation status:** Not known; however, we regard this species as probably vulnerable since it is known only from one population.

**Specimen examined:** India: Meghalaya: Laitkyrhong, East Khasi Hills, 23 Jul 2014, N. Odyuo & C. Deori 131633 (ASSAM); Khasi hills, Aug 1885, G. Mann s.n. (ASSAM3695)

**Note:** Vivekananthan *et al.* (1997) reported the occurrence of *I. khasiana* from Arunachal Pradesh, but no authentic specimens could be traced during this study to verify the presence of this species in that area.

### Typification:

Hooker (1874) described *I. bella* Hook.f. & Thomson var. *major* Hook.f. but later treated *I. bella* Hook.f. & Thomson as a synonym of *I. porrecta* Wall. Furthermore, Hooker (1905) raised the status of *I. bella* var. *major* to that of species and named it *I. khasiana* Hook.f. In the protologue of var. *major*, the place of collection was given as 'Khasia, alt. 5–6000 ft'. We have designated J.D. Hooker & T. Thomson s.n. (K694831) as the lectotype from the three original material of var. *major* bearing the stamp 'HERBARIUM HOOKERIANUM 1867' (K694829, K694831, K694832). Since J.D. Hooker & T. Thomson s.n. (K694831) matches more closely with the protologue of *I. bella* var. *major* than the other available specimens, and there are hand illustrations drawn by J.D. Hooker on this sheet (Fig. 1), this specimen is chosen as the lectotype.



**Fig. 1.** Lectotype of *Impatiens khasiana* Hook. f., J.D. Hooker & T. Thomson s.n., (K694831!) © The Board of Trustees of the Royal Botanic Gardens, Kew. Reproduced with the consent of the Royal Botanic Gardens, Kew.

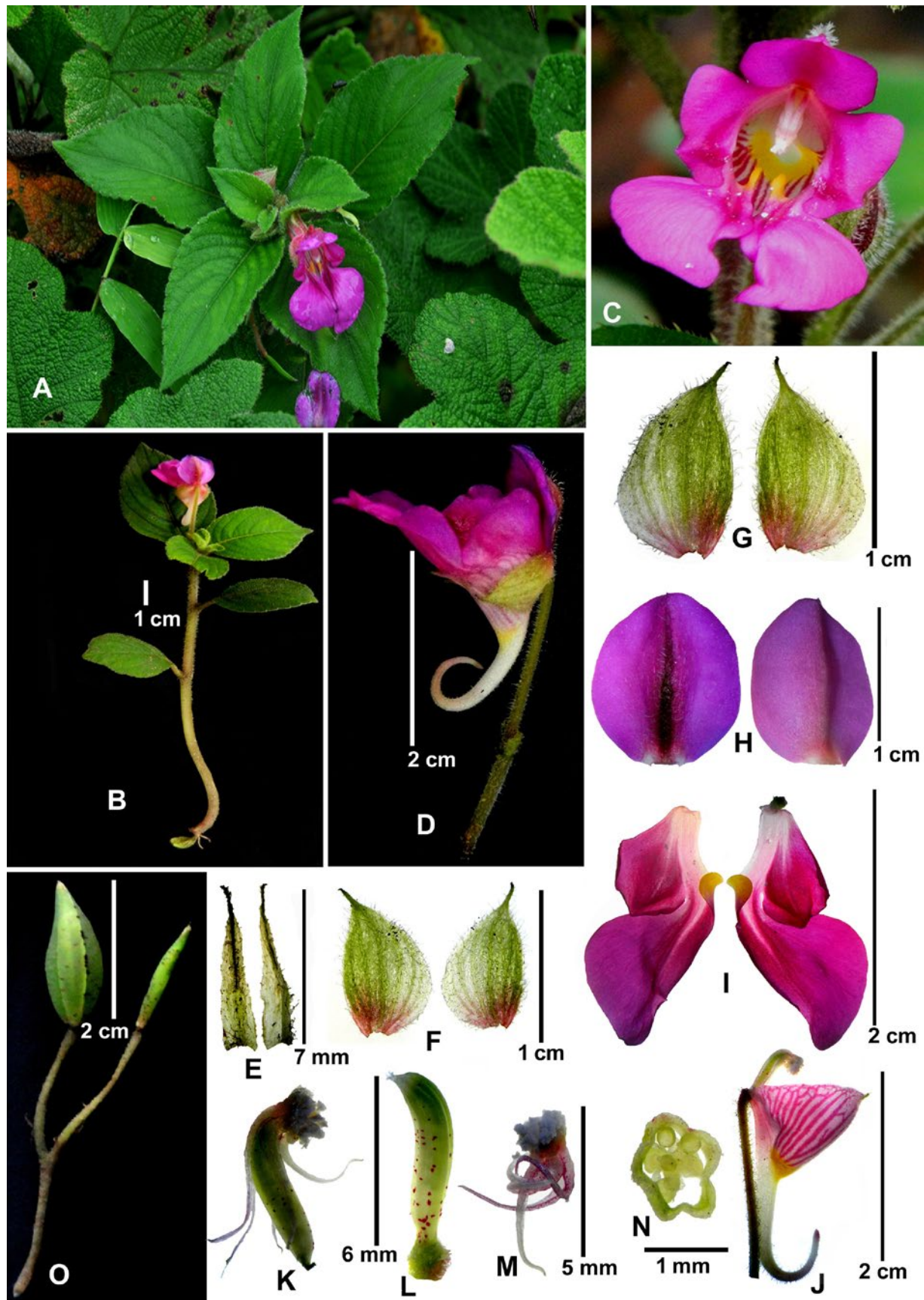


Fig. 2. *Impatiens khasiana*. A. Plants in natural habitat; B. Flowering twig; C. Close view of flower; D. Lateral view of flower; E. Bract; F. Lateral sepals – dorsal view; G. Lateral sepals – lateral view; H. Dorsal petal (dorsal & ventral view); I. Lateral united petals; J. Lower sepal with pedicel and stamens; K. Ovary encircled by stamens; L. Ovary; M. Stamens, N. Transverse section of ovary with immature seeds, O. Capsule

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### References

- Hooker JD (1874) *Impatiens* L. *Flora of British India*, 1. L. Reeve & Co., London, pp. 440–483
- Hooker JD (1905) An epitome of the British Indian species of *Impatiens*. *Records of Botanical Survey of India* 4: 1–58
- Toppin SM (1920) Notes on the Balsams of Chitral and the Kachin Hills. *Bulletin of Miscellaneous Information (Royal Gardens, Kew)* 1920: 345
- Vivekananthan K, Rathakrishnan NC, Swaminathan MS, Ghara LK (1997) Balsaminaceae. In: Hajra PK, Chakraverty RK, Dixit RD, Mondal MS, Chatterjee U (Eds.) *Flora of India* 4. Botanical Survey of India, Kolkata, India, pp. 95–229

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