

Impatiens sikkimensis (Balsaminaceae), a new record for the flora of Bhutan

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इंपेशियंस सिक्किमेन्सिस (बालसेमिनेसी) – भूटान के वनस्पतिजात के लिये एक नवीन अभिलेख

संगेय वांगचुक, शेराब जमत्सो, फुब ग्लेसचेंग, धन बहादुर सुब्बा एवं लेट्रो लेट्रो

सारांश

इंपेशियंस सिक्किमेन्सिस जिसे पूर्व में सिक्किम एवं दार्जिलिंग हिमालय की स्थानिक जाति माना जाता रहा है, को प्रथम बार मध्य भूटान से अभिलेखित एवं वर्णित किया गया है। यह अध्ययन इस जाति का पूर्व में वितरण दर्शाता है और यह भूटान के लिये इसका प्रथम एवं नवीन वितरणपरक अभिलेख है।

ABSTRACT

Impatiens sikkimensis earlier known to be endemic to the Sikkim and Darjeeling Himalaya has been found in Central Bhutan. The study shows an eastern range of the species affirming a new distributional record and an addition to the flora of Bhutan.

Keywords: Balsam, Bhutan, distribution, Himalaya, *Impatiens*, Sikkim

INTRODUCTION

The genus *Impatiens* L. (Balsaminaceae) comprises of over 1,000 species worldwide (Janssens & al. 2006) distributed in the tropical and subtropical regions of the world as well as in the northern temperate regions (Grey-Wilson, 1985). The species belonging to this genus are commonly referred to as 'Balsams' or 'Jewel weeds'

and are often cultivated as ornamental plants, besides being used in medicines and cosmetics (Dessai and Janarthanam, 2011). Grey-Wilson (1991) enumerated 25 species of *Impatiens* for the Flora of Bhutan.

During a recent biodiversity expedition to Zhemgang district in central Bhutan, we collected few specimens of *Impatiens*; on critical observation of specimen and examination of literatures (Hooker, 1905, Govaerts and

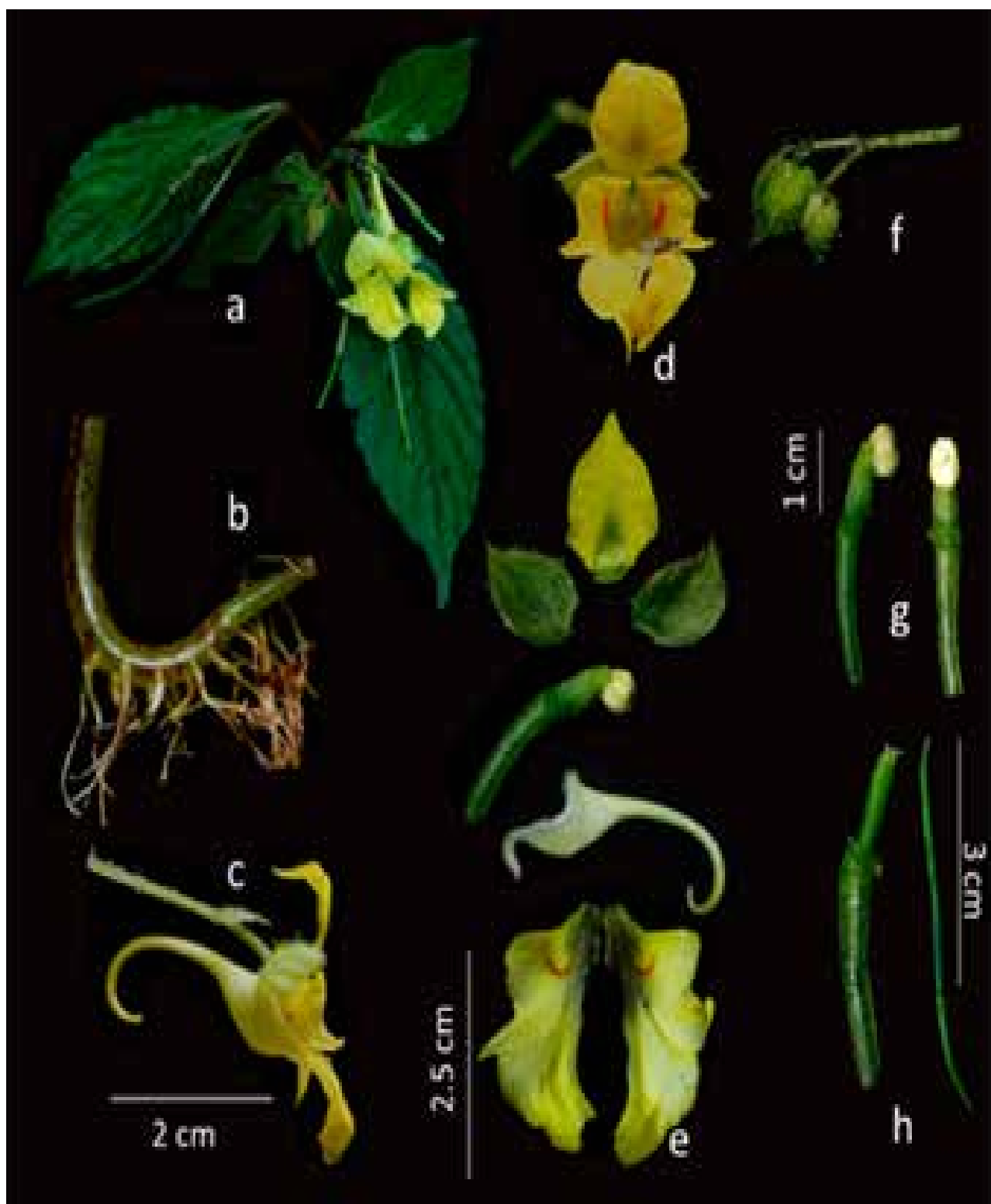


Plate 1. *Impatiens sikkimensis*. **a.** flowering twig, **b.** root stock, **c.** Flower (lateral view), **d.** flower (front view), **e.** dissected floral parts (top to bottom: dorsal petal, lateral sepals, androecium, lower sepal and lateral united petals), **f.** flower buds, **g.** pedicel with androecium, **h.** pistil and capsule.

Chakrabarty, 2011, Gogoi & al., 2018), the specimens were identified as *Impatiens sikkimensis* Govaerts & Chakrab. The collected specimens were processed following conventional herbarium techniques and the voucher specimens are deposited at the National Biodiversity Centre, Bhutan (THIM). The species originally described as *I. lutea* Hook. f. (1905) non Lam. (1779) was known to be endemic to the Sikkim and Darjeeling Himalaya. Its distribution, until now was known restricted to the South Sikkim district in Sikkim and Kalimpong in West Bengal, India (Gogoi & al., 2018, Govaerts and Chakrabarty, 2011, Grey-Wilson, 1991) and, its presence was not recorded in Bhutan. Hence, it is reported here as an addition to the flora of Bhutan. This is also the first record of eastward distribution of the species beyond its previously known localities. A brief description along with photographic illustration are provided for easy identification of the species in field.

TAXONOMY

Impatiens sikkimensis Govaerts & Chakrab., in *Rheede* 21 (2): 173. 2011; Gogoi & al. in *Nelumbo* 60 (1): 23. 2018. *sensu I. lutea* Hook.f. non Lam. (1779) in. in *Rec. Bot. Surv. India* 4: 18. 1905; Grey-Wilson in Grierson & Long (eds), *Fl. Bhutan* 2: 96. 1991. (**Plate 1**)

Annual non succulent herbs, sparsely branched, 40 cm tall, mildly hairy on upper parts, nodes not swollen. Leaves evenly distributed along stem, alternate, blade elliptic to ovate, 2.0 - 10 × 1.2 - 3.5 cm, sparsely hairy on both sides, base cuneate, apex acuminate, margin crenate, crenations setose between teeth, stipule absent, lateral veins 8 - 9 pairs, sub opposite. Inflorescence axillary, pedunculate, up to 2 cm long, usually 2 (1) flowered, bud greenish, hairy. Flower yellow, pedicellate to 1 - 1.8 cm long, green, hairy, bract at the base, ovate, green, to 0.4 cm long, apex acuminate, midvein prominent, sparsely hairy. Lateral sepals 2, ovate, to 0.9 × 0.7 cm, apex cuspidate, sparsely hairy dorsally. Lower sepal navicular, gradually tapering into a coiled or annular spur, creamy or yellow, to 1 - 1.4 cm deep, mouth beaked, beak to 0.2 cm long, spur up to 1.6 cm long. Dorsal petal, yellow, ovate, to 1.3 × 1.3 cm, apex acute-obtuse, non-beaked, dorsally not ridged. Lateral united petals yellow with greenish splotch at base, red blotches on throat, bilobed, subequal, to 2.4 cm long, basal lobe unevenly ovate, not clawed, apex obtuse to emarginated, to 1.1 × 0.9 cm, distal lobe unevenly dolabriform, to 1.4 × 0.6 cm, apex notched, basal auricle absent. Stamens up to 0.7 cm. Capsule up to 4.2 cm.

Distribution: India (Sikkim and West Bengal; Bhutan (Shingkhari, Zhemgang district- present report).

Flowering and fruiting: July to September

Habitat and ecology: The species is found in warm-broadleaved forests dominated by *Alnus nepalensis* D. Don, *Lithocarpus* spp., *Maesa rugosa* C.B. Clarke, *Osbeckia* spp.,

Schima khasiana Dyer and, *Strobilanthes* spp. The present locality at Shingkhari in Zhemgang district harbors a healthy population of the species with around 200 mature individuals. No major threats can be foreseen as the area falls under the biological corridor, one of the protected area networks of Bhutan, where development activities are restricted by the Forests and Nature Conservation Act of Bhutan, (1995) and Forest and Nature Conservation Rules and Regulations (2017) of the kingdom of Bhutan.

Specimens studied: Bhutan, Shingkhari, Zhemgang district, N 27°09'47.304'' E 89°55'10.986'', Altitude: 1799 m, 26 July 2020, S. Wangchuk, S. Jamtsho, P. Gyeltshen & D.B. Subba: 01080 (THIM, 86).

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REFERENCES

- DESSAI J. R. N. AND M.K. JANARTHANAM. 2011. The genus *Impatiens* (Balsaminaceae) in the northern and parts of central Western Ghats. *Rheede* 21 (1): 23–80.
- Forests and Nature Conservation Act of Bhutan*. 1995. Ministry of Agriculture and Forests, Royal Government of Bhutan (testimony of RGoB).
- Forests and Nature Conservation Rules and Regulations of Bhutan*. 2017. Ministry of Agriculture and Forests, Royal Government of Bhutan (testimony of RGoB).
- GOGOI R., A. KUMAR AND W. ADAMOWSKI. 2018. Notes on *Impatiens sikkimensis* (Balsaminaceae)- and its recollection after a century. *Nelumbo* 60 (1): 23-25.
- GOVAERTS R. AND T. CHAKRABARTY. 2011. *Impatiens sikkimensis* (Balsaminaceae), a new name for *I. lutea*. *Rheede* 21 (2): 173.
- GREY-WILSON C. 1985. Balsaminaceae. In: Dassanayake (ed.), *A Revised Handbook to the Flora of Ceylon*. Vol. 5. Oxford & IBH Publishing Co, New Delhi-pp.76-120.
- GREY-WILSON, C. 1991. Balsaminaceae. In: Grierson, A.J.C. and Long, D.G. (eds.). *Flora of Bhutan* 2 (1). Royal Botanic Garden Edinburgh, pp. 82-102.
- HOOKE, J.D. 1905. An epitome of the British Indian species of *Impatiens*. *Rec. Bot. Surv. Ind.* 4: 11-23.
- JANSSENS S., K. GEUTEN, Y.M. YUAN, Y. SONG, P. KÜPFER AND E. SMETS. 2006. Phylogenetics of *Impatiens* and *Hydrocera* (Balsaminaceae) using chloroplast atpB-rbcL spacer sequences. *Syst. Bot.* 31 (1): 171–180.