



## *Impatiens siangensis* (Balsaminaceae), a new species from Arunachal Pradesh, India

RAJIB GOGOI\* & SOURAVJYOTI BORAH

Botanical Survey of India, Arunachal Pradesh Regional Centre, Senki View, Itanagar-791111, India.\*E. mail: rajibdzuko@gmail.com

### Abstract

*Impatiens siangensis* Gogoi, a new species, is described and illustrated from Arunachal Pradesh, India. The new species differs from *I. marianae* Hooker by the absence of white blotches on the upper leaf surface, flowers only partially purple, bracts ovate, glabrous, lateral sepals glabrous, dorsal petal glabrous, navicular, lower sepal with straight purple streaks and spur almost straight. The new species differs from *I. porrecta* Wallich in having stems, leaves, and floral parts glabrous, stems branched, flowers partially purple, lower sepal navicular with straight purple streaks and spur almost straight.

**Key words:** *Balsaminaceae*, new taxa, taxonomy, Siang valley

### Introduction

*Impatiens* Linnaeus (1753: 937) is the largest genus in the Balsaminaceae, with more than 900 species distributed worldwide except in Latin America (Chen *et al.* 2008). Most of the species occur in Africa and Asia. The centre of origin has been suspected in south China (Yuan *et al.* 2004, Janssens *et al.* 2007, Chen *et al.* 2008, Mabberley 2008), although Bhaskar (2012) noted that the most primitive species of *Impatiens*, with lowest chromosome numbers and the largest sized chromosomes, are recorded from the Western Ghats and thus argued that the centre of origin lies in the Western Ghats, South India.

There are 203 species of *Impatiens* recorded in India, of which 137 species are endemic (Vivekananthan *et al.* 1997, Swaminathan *et al.* 2001). New species continue to be discovered and added to the *Impatiens* flora of India (e.g., Pusalkar & Singh 2010, Dessai & Janarthanam 2011, Bhaskar 2012, Gogoi & Borah 2013a,b). In the past few years, *Impatiens* were collected in Arunachal Pradesh by the authors under the Annual Action Plan of the Botanical Survey of India for the project “*Impatiens* L. (Balsaminaceae) of Arunachal Pradesh”. After examination of the specimens and studies of the literature (Hooker 1875, 1905, 1908, 1910, Toppin 1920, Grey-Wilson 1991, Vivekananthan *et al.* 1997, Swaminathan *et al.* 2001, Huang 2003, Huang *et al.* 2006, Chen *et al.* 2008, Yu 2012, Pusalkar & Singh 2010, Dessai & Janarthanam 2011, Bhaskar 2012, Gogoi & Borah 2013a,b), one of the collections could not be referred to any known species. It is described here as a new species with illustrations based on living material.

### *Impatiens siangensis* Gogoi *sp. nov.* (Figure 1)

Differs from *I. marianae* Hooker (1905:27) by the absence of white blotches on the upper leaf surface, flower only partially purple, bract ovate, glabrous, lateral sepals glabrous, dorsal petal glabrous, navicular, lower sepal navicular with straight purple streaks and spur almost straight. From *I. porrecta* Wallich (1832:7275), it differs in having stem, leaves, and floral parts glabrous, stem branched, flower partially purple, lower sepal navicular with straight purple streaks and spur almost straight.

**Type:** —INDIA. Arunachal Pradesh: East Siang, between Pasighat and Along, 95°3'26.56"E, 28°07'44.29"N, 18 July 2013, *R. Gogoi* 30501 (holotype CAL!; isotypes ARUN!, ASSAM!).

Annual erect to prostrate, succulent herbs, sparsely branched, to 25 cm tall. Stem green or pinkish, terete, nodes not swollen. Leaves confined to upper portion of the stem, alternate, petiole 0.7–4.5 cm long, pinkish, with few filiform glands, stipule absent; blade simple, elliptic to broadly elliptic, 1.5–7 × 1–4.5 cm, glabrous, vein pairs 7–8, opposite, base cuneate, apex acute, margin crenate, bristle present terminal on the teeth. Inflorescence axillary, single flowered,

**Etymology:**—The specific epithet refers to “the Siang Valley”, where from it was collected.

**Conservation status:**—Presently *Impatiens siangensis* is not threatened in its natural habitat, hence its conservation status is Least Concern (LC), according the IUCN Red List criteria (IUCN 2010).

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## References

- Bhaskar, V. (2012) *Taxonomic monograph on Impatiens L. (Balsaminaceae) of western Ghats, south India: The key genus for endemism*. Centre for Plant Taxonomic Study, Bangalore, 283 pp.
- Chen, Y.L., Akiyama, C.S. & Ohba, H. (2008) *Impatiens*. In: Wu, Z.-Y., Raven, P.H. & Hong, D.Y. (Eds.) *Flora of China*, 12. Science Press, Beijing & Missouri Botanical Garden Press, St. Louis, pp. 43–113.
- Chen, Y.L. (1989) Four new species of *Impatiens* (Balsaminaceae) from China. *Acta Phytotaxonomica et Sinica* 27: 395–404.
- Dessai, J.R.N. & Janarthanam, M.K. (2011) The genus *Impatiens* (Balsaminaceae) in the northern and parts of central western Ghats. *Rheedea* 21: 23–80.
- Gogoi, R. & Borah, S. (2013a) *Impatiens lohitensis*, a new species of *Impatiens* (Balsaminaceae) from Arunachal Pradesh, India. *Taiwania* 58: 15–19.
- Gogoi, R. & Borah, S. (2013b) *Impatiens sicutifer* Hook.f. var. *sicutifer* (Balsaminaceae) and *Tricarpelema chinense* D. Y.Hong (Commelinaceae) two new additions to the flora of India from Lohit Valley of Arunachal Pradesh, India. *Taiwania* 58: 146–150.
- Grey-Wilson, C. (1991) *Impatiens* L. In: Grierson, A.J.C. & Long, D.G. (Eds.) *Flora of Bhutan* 2. Royal Botanic Garden, Edinburgh, pp. 82–102.
- Hooker, J.D. (1875) *Impatiens* L. *Flora of British India*, 1. L. Reeve & Co., London, pp. 440–483.
- Hooker, J.D. (1905) An epitome of the British Indian species of *Impatiens*. *Records of Botanical Survey of India* 4: 1–58.
- Hooker, J.D. (1908) Les especes du genre “*Impatiens*”. [series 4] *Nouvelles Archives du Museum d’histoire Naturelle* 10: 246.
- Hooker, J.D. (1910) Indian species of *Impatiens*. Generis *Impatiens* species Indicae novae et minus rite cognitae a Cl. A. Meebold detectae. *Bulletin Miscellaneous Information, Kew* 1910: 291–300.  
<http://dx.doi.org/10.2307/4111723>
- Huang, S.H. (2006) Balsaminaceae. In: Wu, C.Y. (Ed.) *Flora Yunnanica*. Tomus 16. Science Press, Beijing, pp. 66–156.
- Huang S.H., Shui, Y.M. & Chen, W.H. (2003) New taxa of *Impatiens* from Yunnan. *Acta Botanica Yunnanica* 25: 261–280.
- IUCN (2010) *IUCN Red List Categories and Criteria*. Version 3.1. Prepared by the IUCN Species Survival Commission, Gland, 30 pp.
- Janssens, S., Geuten, K., Viaene, T., Yuan, Y.-M., Song, Y. & Smets, E. (2007) Phylogenetic utility of the AP3/DEF K-domain and its molecular evolution in *Impatiens* (Balsaminaceae). *Molecular Phylogenetics and Evolution* 43: 225–239.  
<http://dx.doi.org/10.1016/j.ympev.2006.11.016>
- Linnaeus, C. (1753) *Species plantarum*. Salvius, Stockholm, 1200 pp.
- Mabberley, D.J. (2008) *The plant book – A portable dictionary of plants*, 3<sup>rd</sup> edition. Cambridge University Press, Cambridge, 1040 pp.
- Pusalkar, P.K. & Singh, D.K. (2010) Three new species of *Impatiens* (Balsaminaceae) from Western Himalaya, India. *Taiwania* 55: 13–23.
- Swaminathan, M.S., Vivekananthan, K. & Nair, V.J. (2001) *Impatiens*. In: Singh, N.P. & Singh, D.K. (Eds.) *Floristic diversity and conservation strategies in India* 4. Botanical Survey of India, Kolkata, pp. 2139–2157.
- Toppin, S.M. (1920) Notes on the balsams of Chitral and the Kachin Hills. *Bulletin of Miscellaneous Information, Kew* 10: 345–367.  
<http://dx.doi.org/10.2307/4118598>
- Vivekananthan, K., Rathakrishnan, N.C., Swaminathan, M.S. & Ghara, L.K. (1997) Balsaminaceae. In: Hajra, P.K., Chakraverty, R.K., Dixit, R.D., Mondal, M.S. & Chatterjee, U. (Eds.) *Flora of India* 4. Botanical Survey of India, Kolkata, India, pp. 95–229.

- Yu, S.X. (2012) *Balsaminaceae of China*. Peking University Press, Beijing, 215 pp.
- Yuan, Y.-M., Song, Y., Geuten, K., Rahelivololona, E., Wohlhauser, S., Fischer, E., Smets, E. & Küpfer, P. (2004) Phylogeny and biogeography of *Balsaminaceae* inferred from ITS sequences. *Taxon* 53: 391–403.  
<http://dx.doi.org/10.2307/4135617>
- Wallich, N. (1832) *A numerical list of dried specimens of plants in the East India Company's Museum: collected under the superintendence of Dr. Wallich of the Company's botanic garden at Calcutta*. London. no.7275.  
<http://dx.doi.org/10.5962/bhl.title.1917>