



## *Impatiens courtallensis* (Balsaminaceae), a new species of *Impatiens* from Western Ghats, Tamil Nadu, India

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### Abstract

*Impatiens courtallensis*, a new species from Tamil Nadu, India is newly described and illustrated. This species is characterized by having typical opposite decussate leaves, minute flower ( $\leq 4$ mm across), milky white, boat shaped lower sepal with outwardly curved tip, minute spur, seeds with prominent caruncle and typical squarish pollengrains. This combination of characters makes determining the relationships of *I. courtallensis* difficult.

**Keywords:** Balsaminaceae, *I. herbicola*, *I. munnarensis*, Taxonomy

### Introduction

Balsams are a most attractive group of plants bearing curious and variously coloured flowers with peculiar floral structure. The members are more or less succulent annuals or perennial herbs rarely becoming shrubs or epiphytes. Balsams belong to the family Balsaminaceae which has about 1,000 species distributed worldwide with two genera, *Hydrocera* Blume ex Wight & Arnott (1834: 140) and *Impatiens* Linnaeus (1753: 937) (Fischer 2004, Stevens 2004). The genus *Hydrocera* is monotypic and has characteristic free petals with berry like capsular fruits whereas *Impatiens* has variously united and characteristic petals with dehiscent fruit. *Hydrocera triflora* (L.) Wight & Arnott (1834: 140), distributed in the Indo-Malaysian countries including India, Thailand, Cambodia, Malaysia, Sri Lanka, Laos, Vietnam, Indonesia and southern China. The genus *Impatiens* is mainly distributed in the tropics and subtropics of the old world, but a few species are occurring in temperate Eurasia and North America. Most species of *Impatiens* are distributed in five hotspots viz., Southeast Asia and southwestern China, eastern to central Himalayas, southern India, tropical Africa, and Madagascar (Grey-Wilson 1980). In the past centuries, several botanical researchers made extensive contributions to the taxonomy of the genus *Impatiens* along with few new species (Bhaskar 1975, 2012, Vivekananthan *et al.* 1997, Swaminathan *et al.* 2001). In India, there are 203 species of *Impatiens* reported, of which 137 species are endemic (Swaminathan *et al.* 2001). However, several new species have also been discovered by various researchers (Bhaskar 2006, 2012, Jyosna *et al.* 2011, Narayanan *et al.* 2011, 2012, Anilkumar *et al.* 2011, Pusalkar & Singh 2010, Dessai & Janarthanam 2011, Gogoi & Borah 2013) and added to the *Impatiens* flora of India.

During the field exploration of Courtallum hills, Tamil Nadu, India, the authors collected an annual herbaceous species of *Impatiens* with characteristically milky white micro flowers with boat shaped lower sepal. After careful examination of the species and analysis of available literature and herbarium specimens, it has been found that the present collection belongs to a hitherto undescribed species which has close affinity to *I. herbicola* Hooker (1911: 354) and *I. munnarensis* Barnes (1938: 32). Hence it is described here as new species with detailed description and illustrations based on available living material.

**TABLE 1. Comparative morphology of *Impatiens munnarensis*, *I. herbicola* and *I. courtallensis***

Characters	<i>Impatiens munnarensis</i>	<i>Impatiens herbicola</i>	<i>Impatiens courtallensis</i>
Stem	Erect upto 1m tall sparingly branched, green.	Erect, upto 40–60cm, often branched, green	Erect, upto 25–30cm, often branched with purple dots
Leaf	5.5×1.7cm, lanceolate subacute base, pubescent above, glabrous below	Leaf 5–6×1–2cm, linear, truncate base, glabrous	Leaf 3–4.5×0.5–1.0 cm lanceolate, subcordate at base, pubescent above, glabrous below
Inflorescence	Axillary, solitary or upto 4	Solitary or 2–3	2 per angle, 4 per node
Colour of the flower	White with purple veins	White (light blue shade) bluish or yellowish	Milky white
Dorsal petal	ovate, keeled, tip mucronate	orbicular, thickly keeled, apiculate	Orbicular, recurved, thickly keeled, apiculate
Lateral sepals	6mm, filiform, curved	4–5 mm linear, acuminate	3–5 mm, linear, ensiform, inwardly curved, prominently nerved
Lateral united petals	2-lobed, basal lobe triangular, distal lobe obovate - triangular	2-lobed, basal lobe oblong distal lobe spherical	2-lobed, basal lobe oblong, distal lobe round or spherical
Lower sepal & spur	Boat shaped, bottom flattened with small upward pit, spur absent.	Scapiformis, lanceolate, spur absent, upward small pit	Boat shaped, tip outwardly curved, spur minute, 0.5 mm or downward small pit
Fruits & seeds	Fusiform, few seeded, seeds glassy, black	Gibbously ovoid, many seeded, seeds smooth black	Fusiform, 3–5 seeded, seeds shining, black caruncle with minute hairs
Pollen grains	36×29 µm, oval or sub-rectangular, 4-colpate, pale bluish	21×23 µm more or less radical, 4–5 colpate, pollen pale yellow	Pollen 16–18 µm, squarish, 4-colpate, milky white

## References

- Agustine, J., Sasidharan, N. & Sivadasan, M. (1996) Balsams of Periyar Tiger Reserve, Southern Western Ghats, Kerala. In: Sivadasan, M. & Philip, M. (Eds.) *Biodiversity Taxonomy and conservation of Flowering plants*. Mantor books, Calicut, pp. 275–292.
- Anil Kumar, N., Ratheesh Narayanan, M.K., Sujanal, P., Meera Raj, R., Sujana, K.A. & Mithunlal (2011) *Impatiens veerapazhasii* (Balsaminaceae), a new Scapigerous balsam of Wayanad, Western Ghats, India. *Journal of Botanical Research Institute Texas* 5: 153–158.
- Barnes, E. (1938) New or little known plants from South India- VIII. *Bulletin of Miscellaneous Information (Royal Botanic Gardens, Kew)* 1938: 32–37.  
<http://dx.doi.org/10.2307/4115467>
- Bhaskar, V. (1975) *Studies in Balsaminaceae. Vol. I & II*. Ph.D. Thesis submitted to University of Mysore, Mysore, pp. 1–134.
- Bhaskar, V. (2006) *Impatiens clavata* Bhaskar, a new scapigerous balsam (Balsaminaceae) from Bisle Ghat, Western Ghats, South India. *Current Science* 91: 1138–1140.
- Bhaskar, V. (2012) *Taxonomic Monograph on Impatiens L. (Balsaminaceae) of Western Ghats, South India: The Key Genus for Endemism*. Centre for Plant Taxonomic Studies, Bangalore, 283 pp. [in India]
- Dessai, J.R.N. & Janarthnam, M.K. (2011) The genus *Impatiens* (Balsaminaceae) in the Northern and parts of central Western Ghats. *Rheedea* 21: 23–80.
- Fischer, E. (2004) Balsaminaceae. In: Kubitzki, K. (Ed.) *The families and genera of Vascular plants - Dicotyledons: Celastrales, Oxalidace, Rosales, Cornales, Ericales. Vol. 6*. Springer-Verlag, Berlin, pp. 20–25.
- Gogoi, R. & Borah, S. (2013) *Impatiens lohitensis*, a new species of *Impatiens* (Balsaminaceae) from Arunachal Pradesh, India. *Taiwania* 58: 15–19.
- Grey-Wilson, C. (1980) *Impatiens of Africa- Morphology, pollination and pollinators, ecology, phytogeography, hybridization, keys and a systematic treatment of all African species with a note on collecting and cultivation*. Balkema, A. A., Rotterdam, 27 pp.
- Hooker, J.D. (1911) Indian species of *Impatiens*. On Some western Peninsular Indian Balsaminaceae collected by Mr. Meebold. *Bulletin of Miscellaneous Information (Royal Botanic Gardens, Kew)* 1911: 353–356.  
<http://dx.doi.org/10.2307/4113270>

- IUCN (2010) *IUCN Red List Categories and Criteria. Version 3.1*. Prepared by the IUCN Species Survival Commission, Gland, Switzerland, 30 pp.
- Linnaeus, C. (1753) *Species plantarum, exhibentes plantas rite cognitatas, ad genera relatas, cum differentiis specificis, nominibus trivialibus, synonymis selectis, locis natalibus, secundum systema sexuale digestas. Vol 1.-2*. L. Salvii, Holmiae, 1200 pp.  
<http://dx.doi.org/10.5962/bhl.title.669>
- Narayanan, R.M.K., Anil Kumar, N., Meera, R.R., Sivadasan, M. & Alfarhan, A.H. (2011) A new scapigerous species of *Impatiens* (Balsaminaceae) from India. *Bangladesh Journal of Plant Taxonomy* 18: 141–148.  
<http://dx.doi.org/10.3329/bjpt.v18i2.9299B>
- Narayanan, R.M.K., Sujana, K.A., Balakrishnan, V., Meera Raj, R. & Anil Kumar, N. (2012) *Impatiens mohana* (Balsaminaceae), A New Scapigerous Balsam From Wayanad, Western Ghats, India. *Edinburgh Journal of Botany* 69: 281–285.  
<http://dx.doi.org/10.1017/S096042861200008X>
- Pusalkar, P.K. & Singh, D.K. (2010) Three New species of *Impatiens* (Balsaminaceae) from Western Himalaya, India. *Taiwania* 55: 13–23.
- Ramasubbu, R. & Pandurangan, A.G. (2014) Rediscovery of *Impatiens munnarensis* Barnes: A strict endemic Balsam of Southern Western Ghats. *Bangladesh Journal of Botany* 43: 227–229.
- Stevens, P.F. (2004) Angiosperm phylogeny website. Version 7. Available from: <http://www.mobot.org/mobot/research/apweb/> (accessed 1 May 2008)
- 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. Vol. 4*. Botanical Survey of India, Kolkata, pp. 2139–2157. [in India]
- Vivekananthan, K., Rathakrishnan, N.C., Swaminathan, M.S. & Ghara, L.K. (1997) Balsaminaceae. In: *Flora of India. Vol. 4*. Botanical Survey of India, Kolkata, pp. 95–229. [India]
- Wight, R. & Arnott, G.A.W. (1834) *Prodromus florum peninsulae Indiae orientalis*. Parbury, Allen & Co., London, 480 pp.  
<http://dx.doi.org/10.5962/bhl.title.252>