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Impatiens pendula B. Heyne ex Wight & Arn. (Balsaminaceae): A Jewel Weed New to Tamil Nadu, Western Ghats

C. Rajasekar¹, S. Jeevith² and R. Kottaimuthu^{1*}

¹Department of Botany, Alagappa University, Karaikudi-630 003, Tamil Nadu, India

²Division of Forest Ecology and Climate Change, IFGTB, Coimbatore-641 002, Tamil Nadu, India

*Corresponding author.

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ABSTRACT

Impatiens pendula B. Heyne ex Wight & Arn., earlier known from the Western Ghats of Karnataka and Kerala is reported here as an addition to the Balsaminaceae of Tamil Nadu. A detailed description, ecology and a photo plate are provided.

Keywords

Endemic
Grasslands
Impatiens pendula
Nilgiris

Introduction

Western Ghats along with Sri Lanka, one of the 34 biodiversity hotspots of the world, harbours about 106 species of *Impatiens* (Bhaskar, 2012). It forms one of the primary centers of diversity in India (Shajitha et al., 2016; Bhaskar and Sringeswara, 2018) with maximum number of endemic species (Nair, 1991; Singh et al., 2015). Vajravelu (1983) has reported 61 species and 2 varieties of balsams from Tamil Nadu while Bhaskar (2012) has reported 69 species from the state of Tamil Nadu. Recently, six new taxa viz., *Impatiens courtallensis*

Ramas. & Pandur., *I. kawtaryana* Chhabra & Ramneek, *I. megamalayana* Ramas., *I. munnarensis* Barnes, *I. nilgirica* C. E.C.Fisch. var. *nawtaryana* Chhabra & Ramneek, and *I. taihmushkulni* Chhabra & Ramneek have been discovered from Tamil Nadu (Chhabra et al., 2016; Ramasubbu et al., 2014, 2015, 2017).

During the course of our recent studies on the balsams of Nilgiri District, the authors have collected some curious specimens from the Avalanche grasslands. Critical study of the specimens followed by pertinent literature survey

revealed the identity as *Impatiens pendula*. This endemic species was hitherto reported only from the states of Karnataka (Bhaskar, 2012; Bhaskar and Sringswara, 2018; Saldanha, 1996; Singh, 2016) and Kerala (Nayar et al., 2006, 2014; Sasidharan, 2013; Vivekanandan et al., 1997). A further analysis of existing literature revealed that it was hitherto not reported from Tamil Nadu (Manickam et al., 2008; Matthew 1983, 1999; Pallithanam, 2001; Sankar et al., 2012). The present finding from Avalanche not only extends its distribution to the Southern part of Western Ghats but also forms a new record to the state of Tamil Nadu. Hence it is reported here for the first time from Tamil Nadu with a detailed description, biotic association and a photo-plate (Fig.1).

Taxonomic treatment

Impatiens pendula B. Heyne ex Wight & Arn., Prodr. Fl. Ind.Orient. 1: 136. 1834; Hook.f., Fl. Brit. India 1: 455. 1874; Hook.f., Fl. Brit. India 1: 455. 1874 & in Rec. Bot. Surv. India 4(3): 47. 1906; Gamble, Fl. Madras 1: 101. 1915; Saldanha, Fl. Karnataka 2: 256. 1996; Bhaskar, Taxon. Monogr. *Impatiens* W. Ghats: 207. 2012. **Lectotype** (designated by Singh 2016: 172):—INDIA. Karnataka: Chikkamagaluru district, Bababudan, 22 September 1816, Herb. Heyne, *Wallich cat. n. 4744* (K [K001039807!]; isolectotype CAL).

Annual ephemeral herbs, bushy or flaccid, 15-20 cm high; stems erect or procumbent, terete or angled, somewhat condensed with leaves closely packed with short internodal lengths, hairy in opposite decussate lines, decurrent from the sides of base of petiole. Leaves simple, opposite decussate near the base, and alternate or sub opposite above; lamina ovate-elliptic, 5-14 x 3-9 mm across, base cuneate, margins distantly serrate with bristles, apex acute or obtuse with mucronate tip, chartaceous, often reddish green, hairy above with reddish hairs and glabrous beneath; petioles up to 1 cm long and sub-sessile towards the apex. Inflorescence, solitary or 2 in axillary. Flowers bisexual, zygomorphic, white mixed with red or maroon, about 1 cm across, buds reddish; pedicel

slender, thinly hairy, 5-8 mm long; bracts facing towards the stem, sepals 3, imbricate, 2 lateral ones flat, small, linear, apex acute, reddish, glabrous, about 1/4th the length of the bud, posterior sepal (Lip) large, petaloid, naviculate, spur absent, with yellow eye-like in the centre, margins bristly hairy, glabrous outside, apex with mucronate tip, upper standard petal, keeled or cucullate on back, sub orbicular, slightly longer than all parts of the flowers, almost the same length of the wings in opened flower, wing sepals fused in pairs, bilobed, basal lobes ovate about half the size of distal lobes, basal lobe purplish red near mouth, white at the margins, dorsal auricle present. Stamens 5, alternipetalous. Ovary 5 locular. Capsules fusiform, swollen in the middle, about 3 mm long, hairy. Seeds 2, globose or ovoid, dark brown, rugose.

Distribution: INDIA (Karnataka, Kerala and Tamil Nadu [present report]), Endemic.

Flowering and fruiting: September–October.

Specimens examined: Tamil Nadu - Nilgiri District, Avalanche, 12.09.2017, ca. 2000 m, Jeevith & Rajasekar 15113, (BUH!, FRC!).

Ecology: The hanging balsam (*Impatiens pendula*) is found in the high altitude grasslands and grows at an altitude of 1800-2000 m. Associated species include *Anaphalis neelgerryana*, *Andrographis lobelioides*, *Asyneuma fulgens*, *Ceropegia pusilla*, *Drosera peltata*, *Gentiana pedicellata*, *Habenaria perrottetiana*, *Impatiens clavicornu*, *Impatiens pallidiflora*, *Leucas suffruticosa*, *Micromeria imbricata*, *Neanotis indica*, *Satyrium nepalensis*, *Swertia corymbosa*, *Swertia minor*, *Utricularia wightiana* and *Wahlenbergia marginata*.

Interrelationships: *Impatiens pendula* was described by Wight and Arnott (1834) based on the specimens collected by Benjamin Heyne from Bababudangiri. According to them, it is allied to *I. scabriuscula* due to the presence of spurless flowers and differentiated *I. pendula* from *I. scabriuscula* based on the presence of much smaller and glabrous flowers.



Fig. 1: *Impatiens pendula*: a) habit; b) leaves; c) stem; d) flower bud; e) flower side view; f) flower; g) young fruit.

Wight and Arnott (1834) mentioned that the species is similar to *I. chinensis* but differs in the presence of small inconspicuous flowers. Hooker (1874) mentioned that *I. pendula* is closely related to *I. inconspicua* and *I. tenella* but the material is not good for any conclusion. However, Bhaskar (2012) believed that the species forms a connecting link between the two sections 'Annuae' and 'Microsepalae' by its general appearance, basal opposite leaves, solitary axillary flowers and more or less globular seeds with almost smooth testa.

Conservation Status: Critically Endangered (Bhaskar and Sringswara, 2018).

Note: Dessai and Janarthanam (2011) considered *Impatiens pendula* as a doubtful taxon due to the non availability of collections in any herbaria. In Plant list (2018), it is treated as an unresolved name. However, Bhaskar (2012), Bhaskar and Sringswara (2018) and POWO (2018), opined that it is a narrow endemic species confined to the Chikkamagaluru District of Karnataka. Nevertheless, Vivekanandan et al. (1997) reported the areas of distribution for this species as Karnataka and Kerala. Based on the above report, Sasidharan (2013) and Nayar et al. (2006, 2014) included this species in Balsaminaceae of Kerala without precise authentication. Moreover, it has not been reported in any of the floristic works pertaining to the balsams of Kerala (Anilkumar et al., 2005; Antony et al., 2011; Augustine et al., 1999; Manilal, 1988; Mohanan and Henry, 1994; Mohanan and Sivadasan, 2002; Ramachandran and Nair, 1988; Rathakrishnan et al., 2005; Sasidharan and Sivarajan, 1996; Sunil and Sivadasan, 2009; Vajravelu, 1990).

Conflict of interest statement

Authors declare that they have no conflict of interest.

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