A NEW SPECIES OF BALSAMINACEAE, *IMPATIENS TIRUNELVELICA*, FROM PENINSULAR INDIA

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Impatiens contains about 900 species distributed scatteredly throughout wet tropical and subtropical regions of the world especially in montane forests of Asia and Africa with a few in temperate regions of Asia, Europe and N. america (Grey-Wilson, 1985). Hooker (1908) reported about 200 species in India. Out of 202 species of *Impatiens* found in India, 16 are acauline (Vivekananthan & al., 1997). The acauline specimens collected from stream sides on rocky surfaces in muddy areas growing with mosses in the Kalakkad-Mundanthurai Tiger Reserve of TamilNadu, India, on scrutiny of literature, revealed to be a new species, which is described here with illustrations.

Impatiens tirunelvelica M. B. Viswan. & U. Manik. *sp. nov.* **Figs. 1-15**

I. clavicornuae Turcz. *et I. modestae* Wight, caudice tuberoso, foliis acaulatis, inflorescentis scaposis, petails unitis lateralibus 3-lobatis affinis. A duo species bracteis oblongo-ovatis, sepalis lateralibus oblique oblongo-ovatis, sepalis inferioribus, brevissime calcaratis, statura et forma loborum petalorum lateralium, fructibus brevioribus, seminibus minoribus brevioribus eburneis differt. A. *I. clavicornuae* Turcz. foliis brevioribus, hirsutis et calcaro recto differt. A *I. modestae* Wight foliis reniformibus vel cordato-reniformibus, infere puberulis et non nitidis, petiolis brevioribus et seminibus egranulatis differt.

Typus : India, Tamil Nadu, Kalakkad-Mundanthurai Tiger Reserve, *M. B. Viswanathan & U. Manikandan* 6256 (holotypus K; isotypus MH, Sri Paramakalyani Centre for Environmental Sciences); *M. B. Viswanathan & U. Manikandan* 5710, 18499.

Impatiens tirunelvelica M. B. Viswan. & U. Manik. *sp. nov.*

Terrestrial, scapigerous, stoloniferous, herbs; stolons 1-7, continuous up to 3 stolons; rootstock tuberous; tubers white, subglobose, 6-8 × 0.5-0.6 cm; buds 1-7, developing into new shoots. Leaves 3-5, 0.5-4 × 0.6-4.5 cm, reniform or cordate-reniform, deeply cordate at base, bristly crenate-serrate along margins, rounded, rarely acute at apex, sparsely strigose along nerves above, puberulous beneath; primary nerves 7-10, fan-shaped; secondary nerves 5-7; petioles pinkish streaked, 1-5.5 × 0.05-0.23 cm; streaks up to 8. Scapes 1-4, up to 25.5 cm long, 6-17-flowered at apex, pinkish streaked; streaks 8, 2-lined each; bracts pale green, pinkish streaked, oblong-ovate, slightly broad at middle, bluntly acute at apex, 0.31-0.35 × 0.13-0.16 cm; streaks 6-8. Flowers pinkish purple, hayline, 11-11.5 × 6.2-6.3 mm; pedicels pinkish streaked, 1.2-1.8 × 0.05-0.07 cm; streaks 6-8. Lateral sepals obliquely oblong-ovate, bluntly acute at apex, pinkish streaked, 5-nerved, 2-3 × 0.9-1.6 mm; streaks 8; nerves white. Lower sepal creamish white, pinkish purple-dotted outside, creamish white inside, naviculate, obtusely rounded at apex, split just above base exposing wider mouth, 3.8-4 × 3.8-4.35 mm, spurred; spur terete, stright, broadened at base, narrowed towards apex, obtusely rounded at apex, 1.7-1.8 × 1.5-1.6 mm. Dorsal petal creamish white, pinkish purple at margin, orbicular, undulate, c. 5 × 5.5 mm. Lateral united petals 3-lobed, pinkish purple-dotted streaks just above base to middle, pinkish purple just above base to till base of distal lobe but faint towards above, c. 12 × 7 mm; finger-like hairy appendages at base of inner side margin; basal lobe thick, pinkish purple inside, pale pinkish purple inside, oblong-elliptic, bluntly obtuse at apex, broader from base to middle, 5-6 subulate hairy appendages at base, c. 2 × 2 mm; hairy appendages pinkish purple, white towards apex; middle lobe pale pinkish tinged at base to white towards apex, white outside, broadly elliptic, bluntly obtuse at apex, broader up to middle, merged with distal one, 7-subulate hairy appendages at base, c. 2 × 2 mm; hairy appendages pinkish purple, white towards apex; distal one elliptic, creamish white, c. 1.5 × 1 mm. Stamens 5, connate, c. 2 × 1mm; filaments white, connate above middle, faintly 1-nerved, c. 1.2 × 1 mm; anthers pale blue, c. 0.75 × 1.2 mm. Ovary pale yellowish green, 1.8 - 1.9 × 1-1.3 mm, elliptic, abruptly bluntly acute at apex, glabrous; ovule c. 0.2 × 0.15 mm. Fruits pinkish streaked, ampulliform, 3-4 × 1.5-1.8 mm. Seeds 36-50, creamish white, ovoid, granulate, 0.16-0.2 × 0.13-0.15 mm.

Fl. & Fr.: Mar.-May.

Type : India : Tamil Nadu, Kalakkad-Mundanthurai Tiger Reserve, 8° 20′-8° 53′N and 77° 10′-77° 35′ E, ± 1,050 m, 6.5.2000, *M. B. Viswanathan & U. Manikandan* 6256

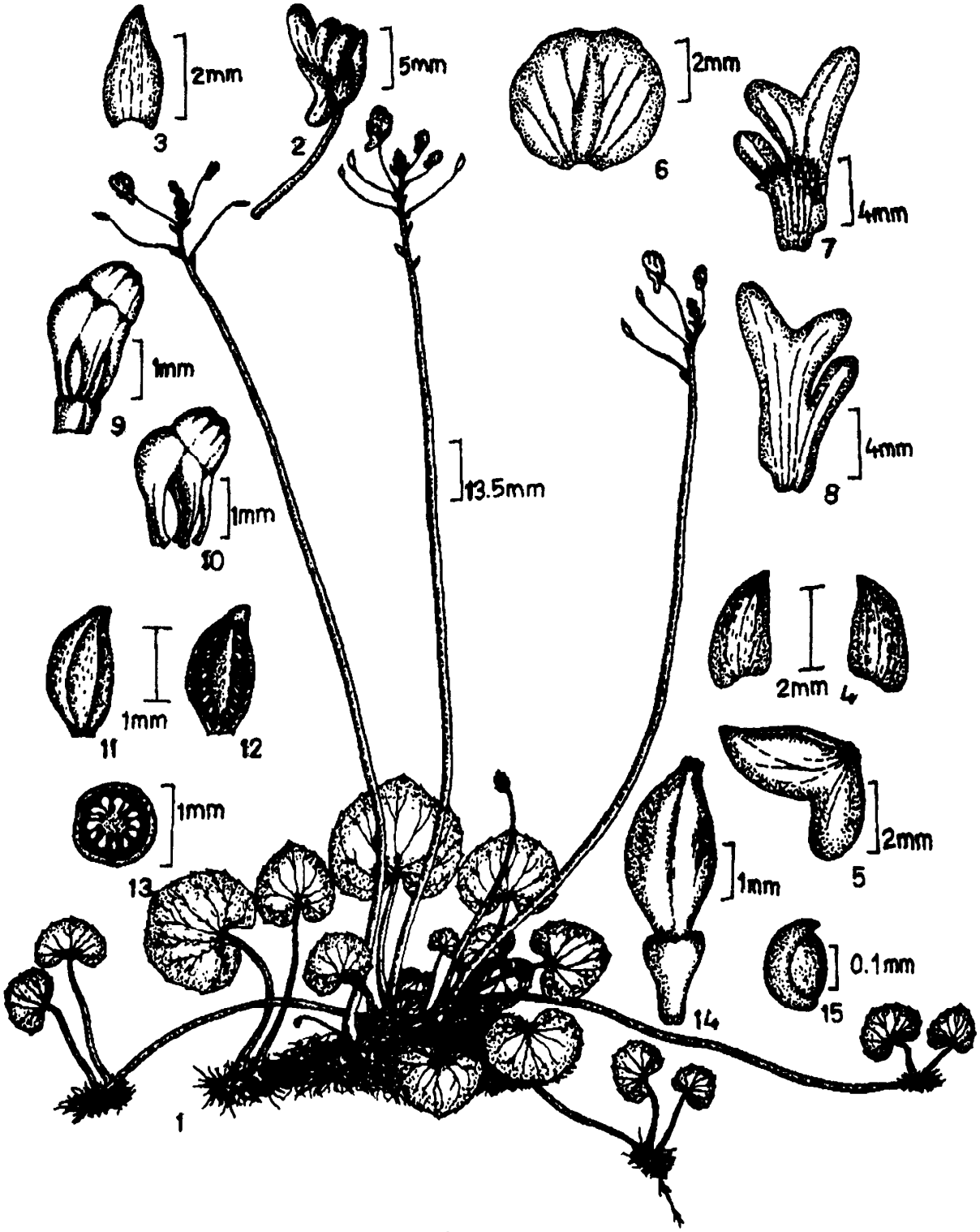


Fig.1-15 : *Impatiens tirunelvelica* M.B. Viswan. & U. Manik.
1. Habit; 2. Flower; 3. Bract; 4. Lateral sepals; 5. Lower sepal; 6. Dorsal petal; 7. Lateral united petal (ventral side); 8. Lateral united petal (dorsal side); 9. Stamens and ovary; 10. Stamens; 11. Ovary; 12. Longitudinal section of ovary; 13. Cross section of ovary; 14. Fruit and 15. Seed.

(holotype K; isotypes MH, Sri Paramakalyani Centre for Environmental Sciences); same locality, 22.3.2000, *M. B. Viswanathan & U. Manikandan* 5710; same locality, 4.5.2002, *M. Viswanathan & U. Manikandan* 18499 (paratypes Sri Paramakalyani Centre for Environmental Sciences).

Distrib.: Endemic to Kalakkad-Mundanthurai Tiger Reserve in the southern Western Ghats, Peninsular India.

Habitat : Tropical riparian in the southern tropical wet evergreen forest in association species like *Memecylon subcordatum* Cogn., *Erythroxylum obtusifolium* (Wight) Hook.f., *Chassalia curviflora* (Wall. ex Kurz) Thw. var. *ophioxyloides* (Wall.) Deb & Krishna and *Begonia fallax* A.DC. and *Elettaria cardamomum* (L.) Maton var. *major* Thw., etc.

Conservation status : This species is so far known only from the type locality. Based on the scrutiny of field data of the authors (*pers. observ.* 2000-2002), IUCN Red List Category (2001) of Cr-Critically endangered (B2-Area of occupancy estimated to be less than 10 km^2; a-severely fragmented; b-continuing decline, observed, and inferred basing; ii-area of occupancy and iii-number of locations) is assigned here.

The distinguishing features of three allied species are presented below in Table 1.

Table 1. Distinguishing characters of *I. tirunelvelica* and related species.

Characters	*I. clavicornu* Turcz.	*I. modesta* Wight	*I. tirunelvelica* M.B. Viswan. & U. Manik.
Leaves	1.7-8.8 × 1.8-10 cm, circular-reniform, obicular, cordate-reniform	2.5-14 × 2-9.8 cm, cordate, cordate-ovate, suborbicular	0.5-4 × 0.6-4.5 cm, reniform or cordate-reniform
Leaf surfaces	glabrous on both sides, not glaucous beneath	sparsely hairy above, glabrous and shining pale glaucous beneath	sparsely strigose along nerves above, puberulous and not glaucous beneath
Petioles	2.5-11 × 0.1-0.4 cm	2.1-22 × 0.35-0.4 cm	1-5.5 × 0.05-0.23 cm

Characters	*I. clavicornu* Turcz.	*I. modesta* Wight	*I. tirunelvelica* M.B. Viswan. & U. Manik.
Bracts	broadly ovte, obtuse or subacute, 0.25-0.62 × 0.15-0.35 cm	subulate-lanceolate, 0.2-0.3 × 0.12-0.15 cm	oblong-ovate, 0.31-0.35× 0.13-0.16 cm
Lateral sepals	broadly and obliquely ovate, 2.5-5 × 1.8-2.5 mm	narrowly and obliquely lanceolate or subulate, 3-4 × 2.3-3.3 mm	obliquely oblong-ovate, 2-3 × 0.9-1.6 mm
Spur of lower sepal	incurved 8-11 mm long	straight, 3.5-5 mm long	straight, 1.7-1.8 mm long
Basal lobes of lateral united petals	broadened just above base to apex	broadened at middle only	slightly broadened about middle
Middle lobes of lateral united petals	broadened just above base to apex, larger than distal and basal lobes	broadened just above base to subapex, smaller than distal and basal lobes	narrowed above middle, larger than basal lobe but smaller than distal lobe
Distal lobes of lateral united petals	equal to middle lobe	2 times longer than middle lobe	1/6 longer than middle lobe
Fruits	8-12 × 3-4 mm	6-8 × 2.6-3 mm	3-4 × 1.5-1.8 mm
Seeds	75, reddish brown, granulate, 0.8-1 × 0.3-0.5 mm	75-100, reddish brown, egranulate, 0.7-0.8 × 0.25-0.3 mm	36-50, creamish white, granulate, 0.16-0.2 × 0.13-0.15 mm

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