



## A new species of *Lindernia* (Linderniaceae) from India

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### Abstract

A new species, *Lindernia tamilnadensis* is described and illustrated from Vijayanarayanam, Tirunelveli district of Tamil Nadu, India. The species shows similarity with a worldwide distributed species, *Lindernia rotundifolia* in its leaf and seed characters but differs mainly in comparatively smaller floral parts, lanceolate calyx lobes, in the absence of trichomes at the base of the anterior corolla lobes, the presence of staminodal appendages, undeflexed fruiting pedicels and globose capsules. Detailed description, illustration and other relevant notes are provided.

**Key words:** Scrophulariaceae, Linderniaceae, South India

### Introduction

The genus *Lindernia* Allioni (1766:178, t5) comprises about 100 species (Fischer 1999), distributed almost throughout the tropical and temperate regions of both the old and new world (Lewis 2000). The centers of diversity of *Lindernia* are situated in Africa (Fischer 1992) and South East Asia (Philcox 1968).

This genus was originally placed in the Scrophulariaceae *sensu lato*. Based on molecular studies, Rahmanzadeh *et al.* (2005) segregated *Lindernia* along with 12 other genera from the rest of Scrophulariaceae to a new family Linderniaceae. According to him, the new family forms a monophyletic group characterized by a unique abaxial staminal filament with a club shaped appendage.

A preliminary studies on the genus *Lindernia* shows that there are 30 taxa reported from India (28 species, 1 subspecies and 1 variety), among them 25 are known from South India (Mukherjee 1945, Sivarajan & Mathew 1983, Sivarajan 1983, Murugan *et al.* 2002, Tandyekkal & Mohanan 2010, Ratheesh *et al.* 2012).

During the present study for the revision of the genus in Peninsular India, we came across good population of an interesting *Lindernia* species growing along with several other herbaceous angiosperms along the banks of occasional ponds flooded by monsoon rains. Critical comparison with allied taxa has confirmed this to be a new species and is described here. It is closely related to *L. rotundifolia* (Linnaeus) Alston (1931:214) but can be distinguished by the characters shown in Table 1.

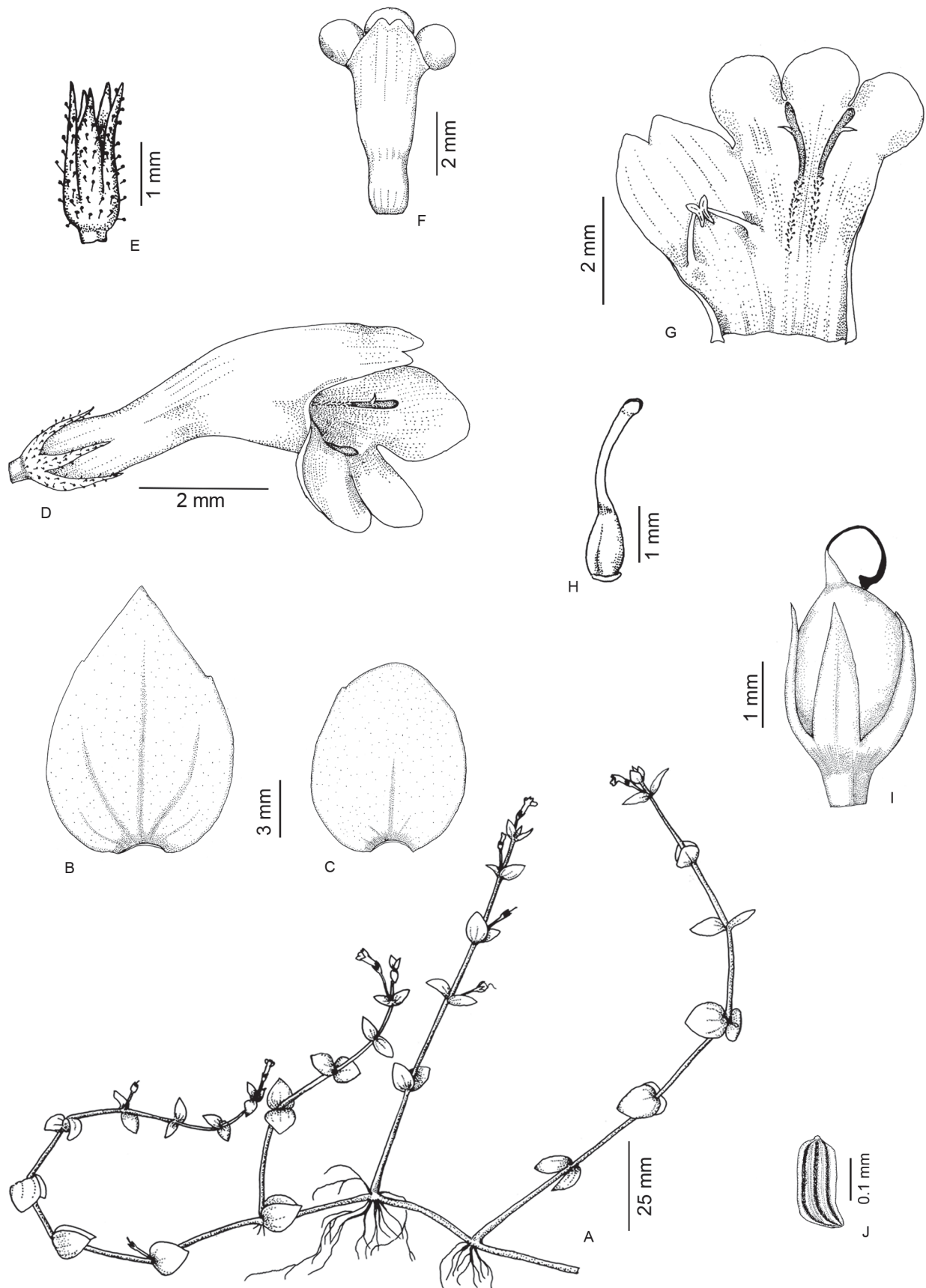
### Taxonomy

*Lindernia tamilnadensis* M.G. Prasad & Sunojk., *sp. nov.* (Fig. 1)

**Diagnosis:**—*Lindernia tamilnadensis* is related to *L. rotundifolia*, but differs mainly in comparatively smaller floral parts, in the absence of trichomes at the base of the anterior corolla lobes, the presence of staminodal appendages, undeflexed fruiting pedicels and globose capsules.

**Type:**—INDIA. Tamil Nadu: Tirunelveli district, Vijayanarayanam, 40 m, 18 March 2012, M.G. Prasad & P. Sunojkumar CU117880 (Holotype: CALI; Isotypes: CALI, MH).

Erect or procumbent tufted herb, up to 15 cm high, rooting from the basal nodes. *Stem* slender, weak, 4-angled, glabrous, highly branched from the base; internodes about 2.5 cm long. *Leaves* sessile, 0.5–1.5 × 0.4–1.2 cm, ovate,



**FIGURE 1.** *Lindernia tamilnadensis*. **A.** Habit; **B & C.** Leaves; **D.** Flower; **E.** Calyx; **F.** Corolla; **G.** Corolla split opened; **H.** Gynoeceium; **I.** Fruit; **J.** Seed. All drawn from *M.G. Prasad & Sunojkumar CU117880* by M.G. Prasad.

base subcordate, apex acute or sometimes rounded, margins entire towards the older parts, 2–4 dentate towards the apex, glabrous, basally 3–5 nerved, veins distinct, lamina glandular punctate. *Flowers* pedicellate, axillary, solitary, alternately on leaf axils, one per node; pedicel slender, ca. 4–8 mm long, 4-angled, glandular hairy; fruiting pedicel glabrous, erect. *Calyx* 2–2.5 mm long, deeply 5-lobed, glandular hairy outside, glabrous within; lobes lanceolate, 1.5–2×0.3–0.5 mm, apex acute. *Corolla* 4–5 mm long, 2-lipped, white with pale blue blotches on lower lip; corolla tube cylindrical, 3–4 mm long, glabrous; upper lip 1×1 mm, slightly emarginated at apex, glabrous; lower lip distinctly 3-lobed, lobes 1×1 mm, rounded, glabrous. *Perfect stamens* 2, coherent below the upper lip, filaments ca. 1 mm long, glabrous, anthers 2-lobed, lobes ovate, acute. *Staminodes* 2, linear, ca. 1 mm long, glandular hairy throughout, dense yellow glandular hairs at the base of filaments and corolla tube below, bluish towards apex, hairs 2–3-celled, a distinct spur present just below the staminodal apex. *Gynoecium* 3–3.2 mm long; ovary 1.0×0.5 mm, ovate–acute, subglobose, glabrous; style 2 mm long, glabrous; stigma simple, bilobed. *Capsule* globose, 2.5×2 mm, glabrous, shiny, slightly exceeding the length of persistent calyx. *Seeds* numerous, minute, 0.3×0.15 mm, bended, golden yellowish, distinctly 5-ridged.

**Flowering and fruiting:**— October–March.

**Distribution and ecology:**— Semi-aquatic herb found up to now only in the dry scrub forest areas of Vijayanarayanam in Tamil Nadu, growing on wet soils around the occasional pools soon after the rainy season. It is often found intermingled with several other herbs such as *Striga angustifolia* (Don, David) Saldanha (1963:70), *Basilicum polystachyon* (Linnaeus) Moench (1802:143), *Limnophila indica* (Linnaeus) Druce (1914:420) and *Stemodia viscosa* Roxburgh (1802:33).

**Etymology:**— The species is named after the South Indian state Tamil Nadu from where the specimens were originally collected.

**Additional Specimens Examined:**—INDIA. Tamil Nadu: Tirunelveli district, Vijayanarayanam, 40 m, 2 April 2012, *M.G. Prasad & P. Sunojkumar CU117880* (CALI); Tirunelveli district, South Vijayanarayanam, 40 m, 9 March 2011, *M.G. Prasad & P. Sunojkumar CU88160* (CALI).

**TABLE 1.** Comparison of morphological characters of *L. rotundifolia* and *L. tamilnadensis*.

Characters	<i>Lindernia rotundifolia</i>	<i>Lindernia tamilnadensis</i>
Calyx lobes	equal, ovate–elliptic, apex acute, densely glandular hairy	unequal, lanceolate, apex acute–acuminate, sparsely glandular hairy
Corolla tube	8–9 mm long	3–4 mm long
Corolla-upper lip	3.5×3 mm, distinctly 2-lobed at apex, lobes ca. 1 mm long	1×1 mm, slightly emarginated at apex
Corolla-lower lip	trichomes present at the base of the lobes, lobes 3.5×3–3.2 mm	trichomes absent at the base of the lobes, lobes 0.5×0.5 mm
Staminode	≥ 2 mm long	≤ 0.5 mm long
Staminodal appendage	absent or rudimentary	distinct
Staminal filament	1 mm long	0.5 mm long
Fruiting pedicel	deflexed to undeflexed	undeflexed
Capsule	oblong–ellipsoid, 1.5–3×1–2 mm, equaling the length of fruiting calyx	globose, 2×2 mm, slightly exceeding the length of fruiting calyx
Seed	0.3×0.2 mm	0.3×0.15 mm

## Acknowledgements

The second author thanks the Department of Science & Technology, Government of India for the financial support (Project No. SR/FT/LS-119/2010). The authors also thank the editors and reviewers for their critical comments and revision of the manuscript.

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