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Short communication

LINDERNIA MADAYIPARENSE (LINDERNIACEAE) - A NEW SPECIES FROM KERALA, INDIA

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ABSTRACT : *Lindernia madayiparense* (Linderniaceae), - a new species of Linderniaceae from Kannur district, Kerala, India is described and illustrated. The new species resembles *Lindernia parviflora* by its 4-angled aerial stem; but differs in having dimorphic leaves, glandular puberulent pedicels and corolla with sharply 2-fid upper lip with acute lobes.

Key words: *Lindernia madayiparense*, Kerala, India

INTRODUCTION

The Genus *Lindernia* All. represented by about 160 species, mostly from the new and Old World tropics. The genus falls naturally in to three main geographical groups, the largest occurring in Asia followed by those in Africa and America. Distribution and taxonomy of *Lindernia* has been studied by various taxonomists in certain widespread areas, namely south eastern North America [1], Himalaya [2], India & Burma [3], China [4], Malesia [5], and Nepal [6]. A total of 28 species of *Lindernia* are reported from Indo-Burma^[3] and 22 species have been recognized from India [7]. A checklist of angiosperms of Kerala possesses 18 species of *Lindernia*[8]. During a floristic exploration of Madayipara, at Kannur District, Kerala, an interesting specimen of *Lindernia* were collected that turned out to represent a new species, here described and illustrated.

Type. INDIA. Kerala, Kannur District, Madayipara, 40 m alt., 12 September 2011, C.N. Sunil, M.K. Ratheesh Narayanan & M. K. Nandakumar 1212 (Holotype: CAL. Isotypes: MSSRF Herbarium, Kalpetta, Wayanad)

Emergent aquatic or amphibious annual herbs. Stem erect or ascending, glabrous, up to 20 cm high; submerged stems spongy, terete; aerial stems 4-angled, not spongy (solid). Leaves sessile, dimorphic (heterophyllous); submerged leaves in whorls, 3–7 per node, 8–12 x 1–2 mm, linear and flattened, apex acute to acuminate or deeply bifid with acuminate lobes; aerial leaves decussate or in whorls below, 9–15 x 2.5–5 mm, oblong-linear or oblong-lanceolate, base amplexicaule, margins 1–3- dentate, apex obtuse or acute, densely punctate, 1–3-nerved, glabrous. Flowers axillary, solitary, borne singly and alternating at axils of opposite bract like leaves, only one flower develop at axils of opposite bract like leaves; pedicels 0.8–2.2 cm long, erect, 4- angled, glandular-puberulent towards apex. Calyx deeply 5- lobed almost to the base; lobes 5, 2–2.5 x 0.5–0.8 mm, linear-oblong, obtuse or sub-acute at apex, slightly unequal, 1-3-nerved, punctate, glandular-puberulent without. Corolla white with blue shades, sparsely glandular-puberulent within, 6–7 mm long, 5–5.5 mm in diameter; tube 3–3.5 mm long, cylindric, upper portion dilated; lower lip spreading with 3 broad orbicular-rounded subequal lobes, 2.5–3 x 4–5 mm; upper lip erect, ca. 2 mm long, sharply 2- fid with acute lobes.

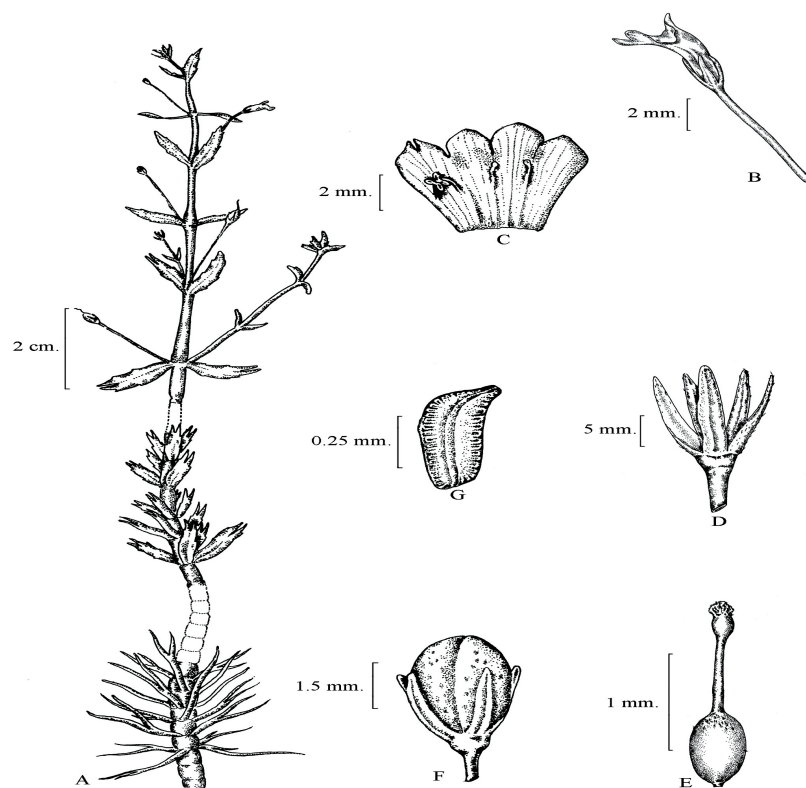


Figure 1: *Lindernia madayiparense* Ratheesh, Sunil & Nandakumar sp. nov:

A. Habit; B. Flower; C. Corolla opened; D. Calyx; E. Gynoecium; F. Fruit; G. Seed

Perfect stamens 2; filaments ca. 1 mm long, glabrous; anther cells divaricate, 0.2–0.3 mm long, ellipsoid, white, meeting in pairs; staminodes simple, ca. 1 mm long, linear to club-shaped, white, glandular hairy at base. Ovary 1–1.2 x 0.8–1 mm, ellipsoid, green; style ca. 2 mm long, white; stigma 2-lamellate, white. Capsules ca. 3 x 2 mm, ellipsoid, sub-equalling or slightly longer than the persistent calyx, sparsely glandular-puberulent when young. Seeds many, ca. 0.4 x 0.2 mm, narrowly ellipsoidal, slightly curved, longitudinally ridged, ridges rugose.

Distribution

It is distributed in the laterite hills of Northern Kerala in Peninsular India.

Similar species

Lindernia madayiparense resembles *Lindernia parviflora* in general habit and by its 4-angled aerial stem, but differs in having whorled submerged leaves and decussate aerial leaves, terete, spongy submerged stem, glandular-pubescent pedicels, corolla with a throat devoid of yellow spots and sharply 2-fid upper lip and mature capsules sub-equalling or slightly longer than the persistent sepals. *Lindernia parviflora* has single type of leaves, flowers without glandular-puberulent pedicels, corolla with a throat provided with two yellow dots and notched upper lip and with mature capsules 2 times as long as the persistent sepals (Table 1).

Distribution, habitat and ecology

Lindernia madayiparense grows in the seasonal pools or wet areas of the lateritic hillocks at an altitude of 40–47 msl. Flowering and fruiting occurs in August–December. It is known only from the laterite hillocks in the Madayipara, Kannur District, Kerala, and hence endemic. It is the type locality of some narrow endemics such as *Lepidagathis keralensis* Madhu & Singh, *Nymphoides krishnakesara* Joseph & Sivar. and *Rotala malabarica* Pradeep.

A recent floristic survey⁹ recorded more than 550 species from this area, which includes 59 Peninsular Indian endemics, of which 14 are narrow endemics of Kerala state, confined to the laterite hillocks. The associate species include *Oryza rufipogon* Griff., *Rhaphicarpa longiflora* (Arn.) Benth, *Rotala malabarica* Pradeep, Joseph & Sivar, *Rotala malampuzhensis* R.V. Nair ex Cook and *Utricularia reticulate* Smith. The laterite hillocks in the Madayipara facing high degree of danger of habitat degradation due to ignorance by the public and administrators. The areas are being heavily converted to building sites, mining grounds, dumping sites, etc. The uncontrolled tourist activities are also damaging this fragile ecosystem

Table 1. Diagnostic morphological characters of *Lindernia madayiparens* sp. nov. and related species

Characters	<i>Lindernia madayiparens</i> Ratheesh, Sunil & Nandakumar sp. nov.	<i>Lindernia parviflora</i> (Roxb.) Haines
Leaves	Leaves dimorphic, submerged in whorls, linear, aerial decussate, oblong-linear; margins of aerial leaves sharply 1-3 dentate, densely punctuate	Leaves not dimorphic; margins of leaves entire or minutely 1-2 dentate, not punctuate
Stems	Submerged stem terete and spongy, aerial stem 4- angled, not spongy	Stem 4- angled and solid
Pedicels	Glandular-puberulent	Pedicels not glandular-puberulent
Sepals	Sepals 2–2.5 mm long, densely punctuate	Sepals 3–4 mm long not densely punctuate
Corolla	Corolla throat devoid of yellow spots, upper lip sharply 2- fid with acute lobes	Corolla throat provided with two yellow dots, upper lip notched
Capsules	Young capsules densely punctuate, mature capsules sub-equalling or slightly longer than the persistent sepals	Young capsules not densely punctuate, mature capsules two times as long as the persistent sepals

Etymology

The species is named after the type locality, Madayipara.

Additional specimens examined

INDIA, Kerala, Kannur District, Madayipara, 40 m alt., 12 October 4 2011, 3111 M. K. Ratheesh Narayanan, Sujana K. A. & M. K. Nandakumar.

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