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## RESEARCH ARTICLE

## ***LINDERNIA NELLIYAMPATHIENSIS* (LINDERNIACEAE) - A NEW SPECIES FROM KERALA, INDIA**

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### **Abstract**

*Lindernia nellyampathiensis*, a new species of *Lindernia* (Linderniaceae) from Nellyampathi hills, Kerala, India is described and illustrated. It is closely allied to *Lindernia parviflora*, but mainly differs in having stout habit, ovate, 3–7 ribbed larger leaves, glandular pubescent pedicels, uniformly white corolla and papillose larger staminodes

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### **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 (Pennell, 1935), Himalaya (Pannell, 1943), India & Burma (Mukherjee, 1945), China (Yamazaki, 1981), Malesia (Philcox, 1968), and Nepal (Baden, 2005). A total of 28 species of *Lindernia* are reported from Indo-Burma ((Mukherjee, 1945)) and 22 species have been recognized from India (Sivarajan and Mathew, 1983). A checklist of Angiosperms of Kerala possesses 18 species of *Lindernia* (Nayar *et.al.*, 1986). Floristic explorations in India have resulted in discovery of few new species, viz. *Lindernia manilaliana* (Sivarajan, 1976), *L. calameriana* (Sivarajan, 1983), *L. ciliata* subsp. *sivarajanii* (Dhruvan and Mohanan, 2010), *L. madayiparense* (Ratheesh *et.al.*, 2012).

During a recent floristic exploration in the Nellyampathi hills the authors collected an interesting specimen belonging to the genus *Lindernia* All. On critical analysis, revealed that the specimen was distinct from the hitherto known taxa of the genus and is described here as a new species.

***Lindernia nellyampathiensis* Sunil, Jaleel & Ratheesh sp. nov. (Fig. 1).**

**Type.** INDIA, Kerala, Palghat District, Nellyampathi, Karappara, 12, March 2012, Sunil, Abdul Jaleel & Ratheesh Narayanan 4904 (Holotype, CAL; Isotype, MH).

Annual herbs. Stem erect or ascending, stout, up to 24 cm long, 4-angled, glabrous, pellucid punctiate when young, rooting at the lower nodes. Leaves sessile, 1.2–2.2 x 0.8–2 cm, broadly ovate, base rounded to cordate, margins entire or minutely 1–2 toothed in upper leaves, apex acute to obtuse, 3–5, rarely 7-ribbed from the base, pellucid punctiate, glabrous. Flowers axillary, solitary; pedicels 7–12 mm long, 4-angled, lower half covered with stalked glandular hairs, fruiting pedicels erect or horizontal. Calyx divided to the base; sepals 2–2.5 x 4–6 mm, linear or linear-elliptic, margins sometimes minutely scabrid, apex acute to obtuse, 1-nerved, sparsely covered with

stalked glands when young. Corolla white, 6–7 mm long, 2-lipped, sparsely glandular pubescent externally or glabrous; tube ca. 5 mm long, 2–2.3 mm across at mouth with few hairs; upper lip shortly 2-fid, 1.2–1.4 mm long; lower lip 3.5–4 x 3.5–4 mm, spreading with 3 broad orbicular, sub equal lobes. Perfect stamens 2; filaments ca. 1 mm long, hyaline, glabrous; anthers coherent below the upper lip, ellipsoid; staminodes 2, 1–1.3 mm long, linear to club-shaped, bilobed, densely covered with clavate and globular yellow papillae with this extending on the pronounced antero-lateral ridges; lobe ca. 0.3 mm long, linear, glabrous, arising near the apex of staminodes. Ovary 1.3–1.5 x 0.6–0.8 mm, obliquely ellipsoid; disc annular, yellow; style 2–2.3 mm long, hyaline; stigma 2–lamellate. Capsule 4–5 x 1.7–2 mm, ellipsoid or obliquely ellipsoid, obtuse to acute at apex, glabrous. Seeds 0.3–0.4 x ca. 0.2 mm, ellipsoid, apiculate, pale yellow, longitudinally ridged, reticulate.

#### Similar species:

*Lindernia nellyampathiensis* resembles *L. parviflora*, but differs in its stout habit, ovate, 3–7 ribbed larger leaves, glandular pubescent pedicels not deflexed in fruit, uniformly white corolla with papillose larger staminodes. It also resembles with *Lindernia manilaliana*, but differs in having larger leaves, glandular pubescent pedicels, uniformly white corolla, papillose bilobed staminodes and longitudinally ridged seeds. Though closely allied to *Lindernia parviflora*, *L. manilaliana* and *L. hyssopioides*, the new species can be differentiated by the characters set out in Table 1.

#### Distribution, habitat and ecology:

*Lindernia nellyampathiensis* was collected from an open river bank in moist deciduous forest. Flowering and fruiting occurs during January to April. It grows in association with *Isachne globosa*, *Echinochloa colona*, *Cyperus iria*, *Fimbristylis miliacea*, *Ludwigia perennis* and *Lindernia antipoda*.

#### Etymology:

The species is named after the type locality, Nellyampathi, one of the famous hill stations situated in the Western Ghats in Palakkad District, Kerala.

#### Additional specimens examined (Paratype):

INDIA, Kerala, Palghat District, Nellyampathi, 23 March 2013, 4354 MSSH, Sunil, Abdul Jaleel & Ratheesh Narayanan (Herbarium of M. S. Swaminathan Research Foundation).

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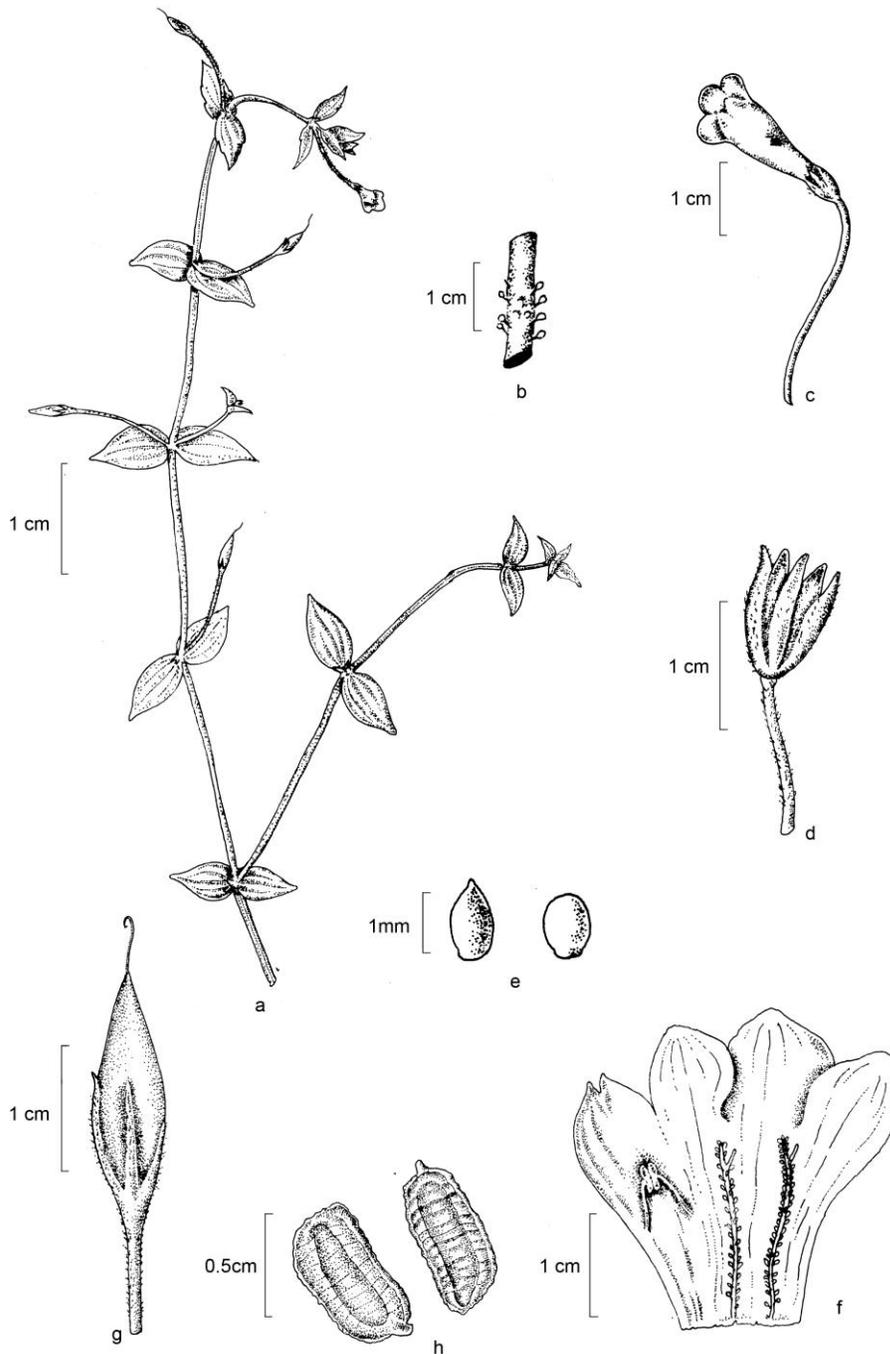
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**Table 1. Comparative chart of *Lindernia nellyampathiensis* and related species**

Characters	<i>Lindernia hyssopioides</i>	<i>L. parviflora</i>	<i>L. manilaliana</i>	<i>L. nellyampathiensis</i>
Leaves	Linear-lanceolate to oblong, 5–30 x 1–6 mm, 1–3 nerved	Linear-lanceolate to oblong-lanceolate, 3–15 x 1.5–3 mm, 1–5 nerved	Ovate or elliptic, up to 10 x 6 mm, 3–5 nerved	Ovate, 12–22 x 8–20 mm, 3–7 nerved
Pedicels	20–50 mm long, glabrous	5–15 mm long, glabrous	Up to 10 mm long, glabrous	7–12 mm long, lower half glandular pubescent
Corolla	10–15 mm long, white with blue to purple at the throat and at base of lower lip	4–6 mm long, white or pinkish-white, with two yellow dots at the throat	6–7 mm long, white with bluish blotches on both upper and lower lips	6–7 mm long, uniformly white
Staminodes	ca. 1 mm long, 2-lobed, hairy	ca. 0.5 mm long, 2-lobed, hairy	ca. 1 mm long, not lobed, hairy	ca. 1 mm long, 2-lobed, papillose
Capsules	5–7 mm long, fruiting pedicels deflexed	3–4.5 mm long, fruiting pedicels deflexed	5–6 mm long, fruiting pedicels not deflexed	4–5 mm long, fruiting pedicels not deflexed
Seeds	ca. 0.4 mm long, oblong, longitudinally ridged	ca. 0.2 mm long, ellipsoid, longitudinally ridged	ca. 0.3 mm long, ellipsoid, not ridged	0.3–0.4 mm long, ellipsoid, longitudinally ridged

**Figure 1.** *Lindernia nellyampathiensis* Sunil, Abdul Jaleel & Ratheesh

**Legends:** a. Habit; b. A portion of pedicel showing glandular hairs; c. Flower; d. Calyx; e. Papillae on the staminodes; f. Corolla opened; g. Capsule; h. Seeds.