



# **LINDERNIA MICRANTHA D. DON (LINDERNIACEAE): A RED LISTED PLANT SPECIES NEW DISCOVERY TO TAMIL NADU, INDIA**

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## **Abstract**

*Lindernia micrantha* D. Don is a red listed (*Least Concern*) species, recorded first time from Sathuragiri hills, Madurai District, Southern Western Ghats of Tamil Nadu, India. This communication brings with detailed description, distribution, phenology and photographs of the species for easy identification.

**Key words:** *Lindernia micrantha*, new record, Southern Western Ghats, Tamil Nadu, India

## **Introduction**

The genus *Lindernia* was named in 1766 by Allioni after von Lindern (1682-1755), who first illustrated in Tournefortius *Alsaticus* (1728). It comprises about 234 species and distributed throughout the tropical and temperate regions of the world. They fall in 3 main geographical groups, the largest in Asia (*ca.* 176 species) followed by Africa (*ca.* 40 species) and *ca.* 14 species and four varieties in the Americas. The centers of diversity of *Lindernia* are situated in Africa (Fischer 1992) and South East Asia. Philcox (1968) reported 23 species from Malaysia, Pennell (1936, 1939, 1943a 1943b.) reported 10 species for Western Himalaya, Papua and New Guinea, Deyuan *et al.* (1998) treated 29 species from China; Mill (2001) documented 10 species from Bhutan and Yamazaki (1977; 1981 and 1990) recorded 47 species from Japan, Taiwan, Indochina and 30 for Thailand. Newman *et al.* recorded 26 *Lindernia* species from Loa. It is also considered extinct in Bangladesh (Ahmed *et al.* 2009). The generic circumscription of *Lindernia* Allioni was recently revised by Fischer *et al.* (2013) based on phylogenetic study of the family *Linderniaceae* and they resurrected the old genera *Bonnaya* Link & Otto (1821:25) and *Vandellia* Linn. (1767:384) together with

*Lindernia sensu stricto* and a new genus *Linderniella* Fischer *et al.* (2013).

In India the genus *Lindernia* Allioni shows that there are *ca.* 31 taxa reported 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), Prasad & Sunojkumar (2014), Prasad *et al.* (2014).

## **Materials and Methods**

During the recent survey of medicinal flora in Sathuragiri hills located in the southern Western Ghats of Tamil Nadu, Peninsular India, the second author came across least population of an interesting *Lindernia* Allioni species growing along with several other herbaceous angiosperms along the banks of occasional ponds flooded by monsoon rains. The specimens collected were vouchered and identified as *Lindernia antipoda* and *Lindernia dubia* by referring the local flora (Matthew, 1983) and published relevant literature (Prasad & Sunojkumar, 2014 and Jothimani & Rajendran, 2015). Among the collected specimens, one species which could not be identified and further examined with the descriptions (Flora of British India, 1884 and Flora of Maharashtra, 2001) and Lectotype illustrations (Baden, 2005).

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**Taxonomic treatment:**

*Lindernia micrantha* D. Don, Prodr. Fl. Nep. 85. 1824. Type: BM, not seen; Shetty & Singh, Flora of Rajasthan (2)597:1991. *Lindernia angustifolia* (Benth.) Wettst. in Engler, Pfl.fam. IV - 3b: 79. 1891. Hara *et al.* in Enum. Fl. Pl. Nep. 3:116 (1982); Deyuan *et al.* in Fl. Chin. 18:35 (1998); Press *et al.* in Ann. Check. Fl. Pl. Nep. 294:2000; Almeida, Flora of Maharashtra 3(B) 404:2001; *Vandellia angustifolia* Benth., Scoph. Ind. 37:1835; *Vandellia angustifolia* Benth., Hooker in Fl. Br. Ind. 4: 282 (1884).

Annual herb; root fibrous; up to 20 cm, stem erect, branching, 0.5-1.3 mm diameter, slightly winged, glabrous. Leaves sessile to 2 mm petiolate, lamina succulent, univeined, linear, entire to obscurely serrate, 10-30 x 1.4-4.2

mm, ciliate; base attenuate, apex acuminate, margin entire to obscurely incised, glabrous. Inflorescence solitary, axillary, leaves subtending pedicels same size as leaves below, smaller when subtending pedicels of immature capsules; pedicels 4-15 mm in flower, 15-32 mm in fruit. Calyx 3.5-4.3 in flower, 3.5-5 mm in fruit, striate, glabrous; calyx lobes 3-3.6 mm in flower, *ca.* 4 mm in fruit, margins apex ciliate. Corolla pink, 7-10 mm, lower lip slightly longer than upper, spreading flat, *ca.* 8 mm wide, central anterior lip lobe *ca.* 3 mm wide; posterior lip *ca.* 5 mm wide; anterior 2 filaments *ca.* 5 mm, linear appendaged; posterior 2 filaments *ca.* 1 mm, stamens all fertile, anthers 0.8-1.3 mm. Ovary 2.2-2.7 mm, style 3.5-4 mm, style persistent. Capsule golden brown, striate, ellipsoid to linear, 9-15 x 1.2-2 mm. Seeds lanceoloid, alveolate 3.5 x 2.5 mm, brownish.



**FIG.1. A. LINDERNIA MICRANTHA D.DON HABIT**

**B. FLOWERS AND FRUITS**



**FIG.2. A. HERBARIUM SPECIMEN OF LINDERNIA MICRANTHA**

**Flowers & Fruits:** May – November

**Distributions:** **India:** Tamil Nadu, Kerala (Lansdown, 2011), Maharashtra (Almeida, 2001), Rajasthan (Shetty & Singh, 1991) and Subtropical Himalayas (Hooker, 1884).

**Global:** Sri Lanka, Nepal, Bhutan, China, Korea, Japan, Indochina, Malaysia, Thailand, Peninsula, Indonesia, Papua, New Guinea and Bangladesh (Yamazaki 1990, Nguyen *et al.* 2005, Newman *et al.* 2007, Ahmed *et al.* 2009).

**Specimens examined:** INDIA, Tamil Nadu, Madurai District, Peraiyur Taluka, T. Krishnapuram Block, Sathuragiri hills, Kottai Malai River check dam; 230 m amsl, 9°46'23.48" N & 77°39'36.44" E, K. Jeyaprakash SFTH- 00235, dated 03.07.2018.

**Habitat & Ecology:** This species is rarely found on the stream sides at 921 m elevations. Only few individual has been located in single location of the dry deciduous forests of the Sathuragiri hills, Kottai Malai River check dam; Western Ghats. The commonly associated species in the habitat include *Lindernia dubia*, *Cyperus dubius*, *Dactyloctenium aegyptium*, *Urochloa panicoides*, *Spermacoce ocymoides*, *Phyllanthus virgatus* and *Scoparia dulcis*.

### Results & Discussion

The critical study with regional and national floras has confirmed this is *Lindernia micrantha* D. Don in the family of *Linderniaceae*. This species has been assessed at Least Concern by Lansdown (2011) and this

particular species has not been reported so far from the erstwhile, hence reported as a new distributional record for Tamil Nadu state.

The voucher specimen deposited at deposited at Center for Medicinal Plants Research, Siddha Foods Tech, Sithireddipatti, Thirumangalam Taluka, Madurai. Most of the *Lindernia* species are used in various parts of the Asia (China, Malaysia and India). In china the whole plant of *L. micrantha* used for stomach disorder (Quattrocchi, 2012). The plant is used as a condiment. Most of the *Lindernia* species are very bitter and many are used medicinally. This is one of several species that are often used more or less interchangeably to treat dysentery and other intestinal problems. Decoction of the leaves is given after childbirth. The aerial parts are widely used in poultices for relieving boils, sores and itches. The juice of the aerial parts are mixed with turmeric (*Curcuma longa*) and boiled with little water and applied to infected fingernails (Prosea, 2012).

Resistance to sulfonylurea herbicides was discovered in naturally occurring populations of *L. micrantha* D. Don in rice fields that had been treated with sulfonylurea based herbicides for 3–7 consecutive years. The resistant biotype was approximately 80~300 times more resistant than the susceptible one to the above four sulfonylurea herbicides. This is the second confirmed occurrence of herbicide resistance resulting from the use of sulfonylurea herbicides in Japan (Itoh, *et al.*, 1999).

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