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

L. Velayudham¹, K. Jeyaprakash¹* N. Balachandran² and M. Rajantheran³

¹Center for Medicinal Plants Research, Siddha Foods Tech, Sithireddipatti, Thirumangalam, Madurai-625704 (Tamil Nadu), India
²Department of Ecology, French Institute of Pondicherry – 605 001 (Tamil Nadu), India
³Department of Indian Studies, Faculty of Arts and Social Sciences, University of Malaya-50603 Kuala Lumpur, Malaysia

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 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 (1936), 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).
**Taxonomic treatment:**


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 appended; 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](image1.jpg)  
B. FLOWERS AND FRUITS


Lindernia micrantha D. Don (Linderniaceae): A red listed plant species New discovery to Tamil Nadu, India

**Flowers & Fruits:** May – November

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


**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. Jeyaprapaksh 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*, *Dactylocrinum 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 (Quattrocci, 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).

**Acknowledgement:**

Authors are grateful to the Scientist “E” & Head of Office, BSI, Southern Regional Centre, Coimbatore for authentication of the plant (No.: BSI/SRC/5/23/2019/Tech./43) and Officers of the Forest Department, Madurai circle for providing permission carryout the research work.

**References**


Hooker, J.D. (1884). The Flora of British India, State for India in Council. 4: 282


Pennell, F.W. (1943b). The *Scrophulariaceae* of the Western Himalayas. The Academy of Natural Sciences of


Prasad, M.G and P.Sunojkumar (2014). First record of *Lindernia dubia* (*Linderniaceae*) in India and reduction of *Lindernia nelliyampathiensis* as one of its synonyms. – *Phytotaxa* 184:165. [http://dx.doi.org/10.11646/phytotaxa.184.3.7](http://dx.doi.org/10.11646/phytotaxa.184.3.7)


**Website:**