



Original Research Article

***Limnophila rugosa* (Roth.) Merrill (Scrophulariaceae): A new record to the Flora of Gujarat State, India**

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Abstract: *Limnophila rugosa* (Roth.) Merrill (Syn. Names: *Limnophila roxburghii* G. don. and *Limnophila menthastrum* B.) has been reported first time from North-East parts (i.e. Mahisagar district) of Gujarat State. It was found near natural source of water within undulating forest area in Bhamari-Kunda village of Sant-rampur forest. Our record of this species is a new naturalization of a species in the area and also from the Gujarat State. A taxonomic account of *Limnophila rugosa* (Roth.) Merrill also given for further taxonomic studies. A illustration of plant with photographs are also provided for further confirmation and identification of this species.

Key word: Newly naturalized plant, Scrophulariaceae, *Limnophila rugosa* (Roth.) Merrill, Gujarat.

Introduction

The Mahisagar district is situated in the North-East corner of the Gujarat State. It is one of the tribal district of the Gujarat State. During the regular botanical exploration, few specimens of *Limnophila rugosa* (Roth.) Merrill were collected from Karamadi nala and near Bhamari Kunda village area. On the critical examination with available published floristic literature, these specimens were confirmed as *Limnophila rugosa* (Roth.) Merrill., with available literature and references, this species is also distributed in Andhra Pradesh, Karnataka, Kerala, Maharashtra, Orissa, Uttar Pradesh and West Bengal. (Acharya, 2012; Almida, 1990; Cook, C.D.K., 1996; Santapau, 1950). Hence, this species has not been reported from Gujarat State (Shah, 1978, BSI, 1981; Meena, 2012; Parmar, 2012) and therefore our record is new distributional range of this species. Voucher specimens SPU-Bio-3322, SPU-Bio3351 are deposited in G. L. Shah Herbarium, Vallabh Vidyanagar, Anand and Government Science College, Gandhinagar, Gujarat.

Limnophila rugosa (Roth.) Merrill, interp. Herb. Amb. 466, 1917 & Enum. Phil. Fl.Pl. 3: 434, 1922; Pennell, Scroph. West. Himal. 26, 1943. (Figure-1) An erect very aromatic herb with 15-80cm height, stem stout, simple or branched. Leaves all flattened blades none divided into the linear segments upper leaves of the shoots with flat,

laminar blades not divided to the base, leaves decussate, petiolate, glabrous to densely hairy; ovate to oblong-ovate, 15-90 mm long, 7-50 mm wide, petiole 5-30 mm long; the base decurrently into the petiole, the margins crenate to crenate-dentate, the apex acute. Flowers sessile, solitary in leaf axils or in axillary, short or long pedunculate heads, peduncles 2-50mm long, glabrous to hirsute; bracteoles absent. Sepals glandular, hirsute on the main nerves, not striate at maturity; sepal lobes unequal; broadly ovate lanceolate, acute, ciliate; remaining sepal lobes narrowly ovate-lanceolate and ciliate. Petals pale blue to violet with yellow in the throat, lower lip with yellow hairs in the throat, pilose outside and inside; petal tube 6-7mm long. Stamens 4, didynamous. Capsules flattened-ovoid, 5-7 mm long; style up to 6mm long, broad ended above just below the stigma. Seeds are cylindrical to oblong.

Flowering and Fruiting: August to November

Exsiccata: SPU-Bio-3322 (Date-11-11-2012), SPU-Bio3351 (27-10-2013)

Field Notes: This species is prefer shady marshy habitats, along streams and lotic type of ecosystem. Locally this species is known as a *Variyali* due to smell and test of leaves and stem are like *Foeniculum vulgare*

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Mill. (Apiaceae). Several plant species like *Ammania multiflora* Roxb. (Lythraceae), *Alternanthera sessilis* (L.) DC. (Amaranthaceae), *Alternanthera pungens* Kunth, (Amaranthaceae), *Ludwigia octovalvis* (Jacquin) Raven (Onagraceae) are closely associated species of this plant. Soil are sandy-silty with high porosity and require continue flow of water and prefer shady habitats.

propose this species under higher rarity class of IUCN. Intensive Status Survey (ISS) is suggested to understand the ecological status and environmental significance of this species. In depth study on the seed germination, seed viability and dispersal mechanisms along with the variations in the population of this species are very necessary for long-term conservation plan.

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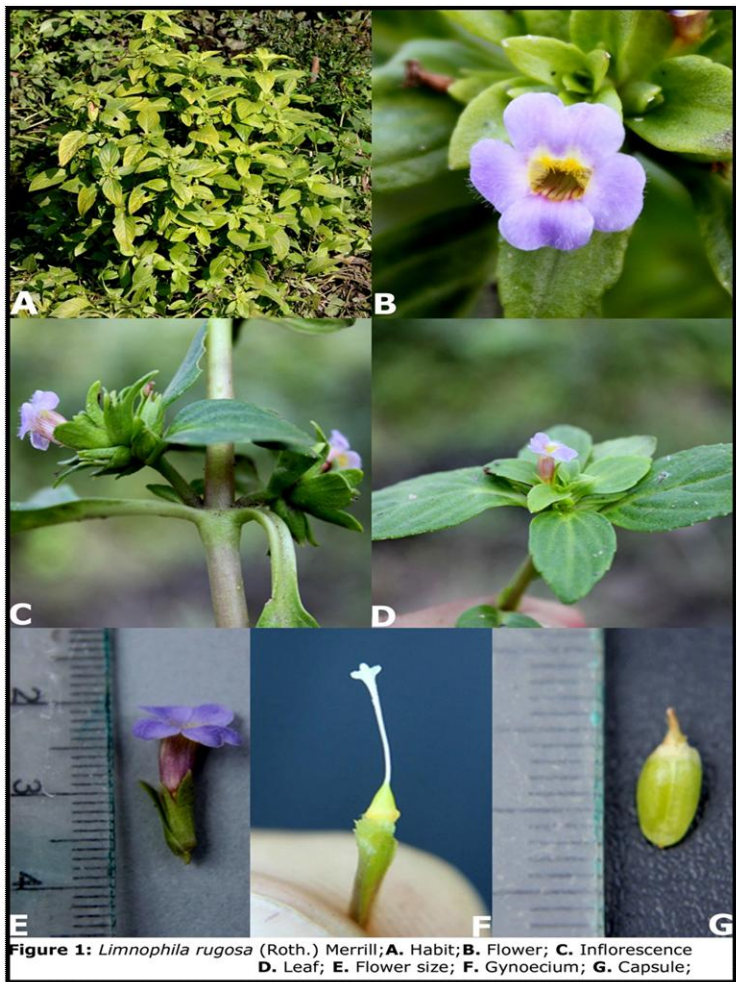


Figure 1: *Limnophila rugosa* (Roth.) Merrill; A. Habit; B. Flower; C. Inflorescence D. Leaf; E. Flower size; F. Gynoecium; G. Capsule;

Distribution in Gujarat state

Our new distribution of this species from dry deciduous forest areas of Sant-rampur Forest Range of Mahisagar district is new locality and first time recorded from Gujarat State. It shows, very restricted distribution of this species in the state and after in-depth of literature review, there are no any other sites or areas recorded with this species. During our attempt to search other localities for this species, we found only two spots with this plant and recorded with not more than 200 individuals. As we surveyed almost more than 20-30sq km areas of surrounding forests and recorded only few individuals. We strongly recommend to

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