

# Migration route of *Trifolium tomentosum* L. (Fabaceae) in Bhoj Ramsar Site of Madhya Pradesh, India

Arti Garg

Botanical Survey of India, Central Regional Centre,  
10 Chatham Lines, Allahabad – 211002, Uttar Pradesh, India.  
Corresponding author's e-mail: artibsi.garg@gmail.com

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## ABSTRACT

Migration route of the Legume species *Trifolium tomentosum* L. in Bhoj Ramsar Site in central region of Madhya Pradesh from the adjoining state of Uttar Pradesh is traced. The species gradually occupied the border regions of District Tikamgarh into the central regions of Madhya Pradesh. Fresh specimens were collected from this state after a lapse of about three decades.

**Key words:** Bhoj Ramsar Site, Bhopal, Madhya Pradesh, Tikamgarh, *Trifolium tomentosum*, Uttar Pradesh.

## INTRODUCTION

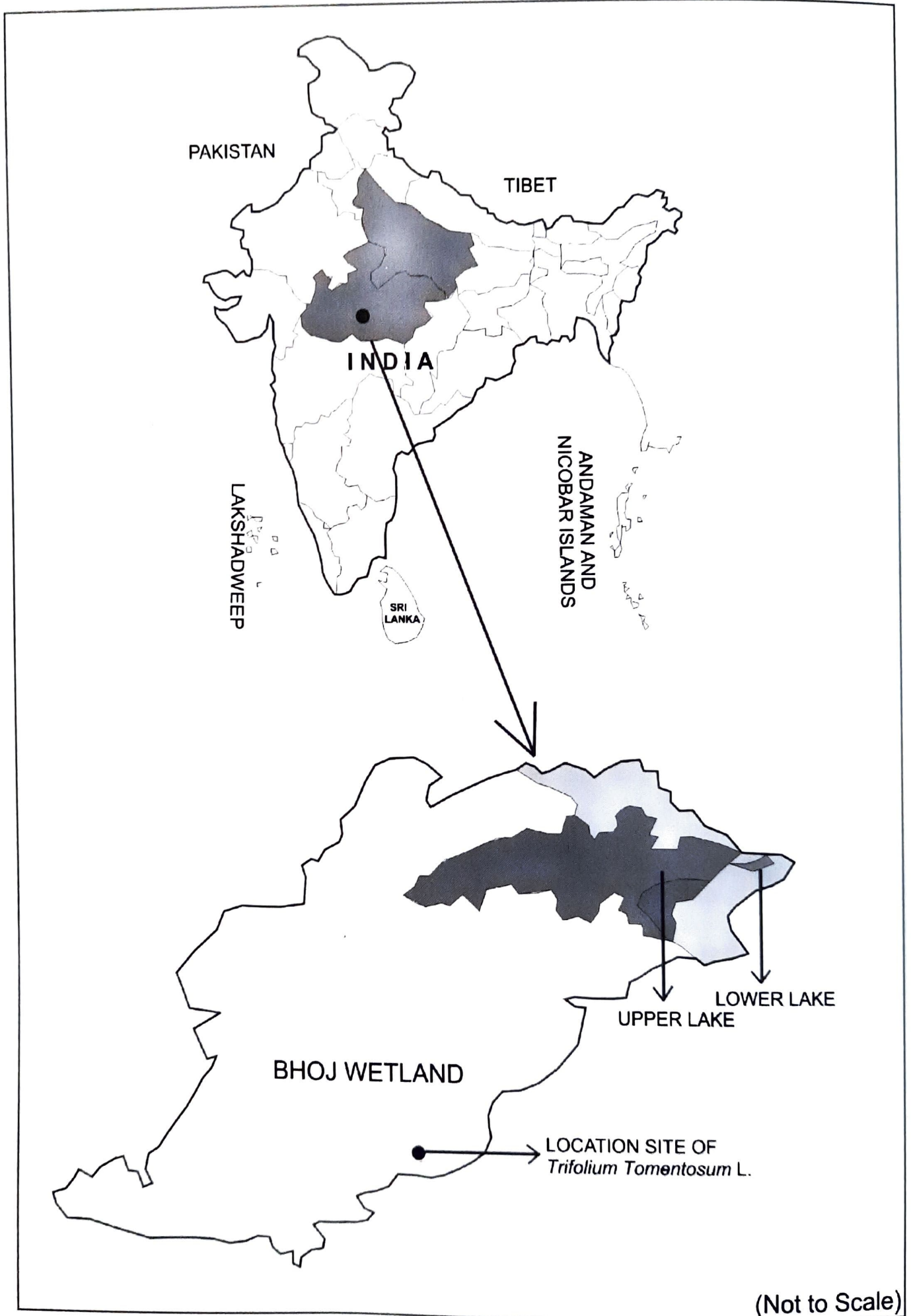
The genus *Trifolium* L. represented by approximately 300 species (Mabberly 2008) is distributed both in the old and new world i.e., Europe and Asia. Amongst these, 12 species are found in India (Sanjappa 1992). The dwarf plant *Trifolium tomentosum* L. was first reported from India by Babu (1969). The plant is ~8-15 cm high, decumbent, very delicate and herbaceous, inhabiting wet places generally along the stagnant and shallow water pools. A recent report pronounced its occurrence from Niwari in Tikamgarh District (Singh & Srivastava 2017) which is geographically situated at the border of the two states of India, i.e., Uttar Pradesh and Madhya Pradesh that lie towards the western side of the Bundelkhand Plateau. This advantageous geographical position of Tikamgarh makes it unique site with admixture of floristic constituents of both the states and thus accounts for the present occurrence of *Trifolium tomentosum* L. in Madhya Pradesh.

## MATERIAL AND METHODS

During the floristic survey and plant collection from Bhoj Ramsar Site in Bhopal, Madhya Pradesh, the authors, while collecting plants from wetland pockets surrounding the Bhoj lake in Bhopal and adjoining regions, embarked upon a miniature leguminous population comprising three to four individuals, of the dwarf plant in periphery of a small ditch along the Bhopal – Itarsi highway (Text-Figure 1, Text-Figure 2a-b). The specimens were collected and deposited in the herbarium of the Botanical Survey of India (BSI), Central Regional Centre, Allahabad (78842, BSA).

## RESULTS AND DISCUSSION

The conspicuously pink, globose flowers and bladder like, densely woolly inflated calyx suggest its affinity with the two species of *Trifolium* L. viz. *T. tomentosum* L. and *T. resupinatum* L. Closer examination of the plant, critical studies, perusal of published literature (Baker 1876 – 78, Verma et al. 1993, Mudgal et al. 1997, Kumar & Khanna 1998,



**Text-Figure 1.** Map showing ingress route and location of *Trifolium tomentosum* L. in Bhoj Ramsar Site, Madhya Pradesh.



**Text-Figure 2.** *Trifolium tomentosum* L. a. habitat, b. closer view of plant showing diagnostic characters.

Khanna et al. 2001, Khanna & Kumar 2007, Jha & Khanna 2002, Sinha & Shukla 2007, Khanna et al. 2009, Sikarwar et al. 2010, Mujaffar 2012, Sahu et al. 2012, Mujaffar et al. 2013, Sainkhediya & Ray 2013, Ray & Sainkhediya 2014, Sikarwar & Tiwari 2014, Tiwari & Khanna 2014, Joshi 2015, Tiwari et al. 2015) and photographs supported with detailed study of taxonomic characters, confirmed its identity as *Trifolium tomentosum* L. (Text-Figure 2b). The diagnostic characters such as peduncles shorter than subtending leaves and globose, bladder like, woolly, inflated part of the calyx clearly demarcates *T. tomentosum* L. from the closely allied *T. resupinatum* L. having peduncles longer than the subtending leaves and a pyriform, glabrate inflated part of the calyx.

Detailed scrutiny of published literature revealed that *Trifolium tomentosum* L. which was first reported in India in 1969 (Babu 1969) and was found in Bijnor

and Saharanpur districts of Uttar Pradesh (Singh et al. 2016) and subsequently from Uttar Pradesh and Madhya Pradesh bordering district of Tikamgarh in 1980. Presently, after about three decades, it is found as a rare, miniature population in Bhoj Ramsar Site, suggesting its recent ingress and slow establishment within the precincts of the Bhoj Ramsar Site in central region of Madhya Pradesh (Text-Figure 1).

## CONCLUSIONS

The finding is implicative of the pathway of migration, spread and establishment of *Trifolium tomentosum* L. from the borders of Uttar Pradesh at Tikamgarh into precincts of the Bhoj Ramsar Site in Bhopal, Madhya Pradesh. Fresh collection of the species has been done from this state after a gap of about three decades. Its habitat details is also of botanical interest suggesting that the species, on account of its dwarf size and habitat along the fringes of shallow water filled ditches and nallas, mostly tends to get submerged and eclipsed under water cover. The miniature plant growing in association with grasses is also liable to get trampled and razed by grazing animals, causing irreversible damage to the species establishment in its new environment.

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