

Notes on identity, distribution and typification of *Merremia rajasthanensis* (Convolvulaceae) an endemic species from India

Patil S.B.¹, Patel R.M.², Simões A.R.G.³ & V.B. Shimpale^{1*}

¹Department of Botany, The New College, Kolhapur, Maharashtra – 416012, India

²Department of Botany, Government Science College, Gandhinagar, Gujarat – 382016, India

³Africa & Madagascar Department, Missouri Botanical Garden, USA

*E-mail: shimpale.vb@newcollege.ac.in

Abstract: *Merremia rajasthanensis* Bhandari (Convolvulaceae) is a rare endemic species of Indian deserts (Western India). During ongoing revisionary studies of Indian *Merremia*, it was re-collected, photographed and described. The conservation assessment and notes on its identity are provided in the present paper. It is also lectotypified during the present communication.

Keywords: Lectotype, Recollection, Morning glory, Indian Desert.

Introduction

Currently the family Convolvulaceae comprises 57 genera and 1959 accepted species (POWO, 2025), classified into six subfamilies and 12 tribes (Simoes *et al.*, 2024). The now extinct tribe Merremieae, in subfamily Convolvuloideae, and its largest genus *Merremia* Dennst. ex Endl., have been subject to major reclassification, with the species of this tribe reassigned to 10 different genera (Simões *et al.*, 2015; Simões *et al.*, 2017). Even though *Merremia sensu stricto* is well circumscribed, several species of former tribe Merremieae have remained placed in *Merremia*, due to deficient information on their morphology or molecular phylogenetics to make a correct generic placement, awaiting novel information that could help make a more informed decision. In India, genus *Merremia* is represented by seven species, four of which clearly belonging

in *Merremia sensu stricto* [*M. gemella* (Burm.f.) Hallier f., *M. emarginata* (Burm.f.) Hallier f., *M. hederacea* (Burm.f.) Hallier f., *M. hirta* (L.) Merr.] and three others, with yet uncertain generic placement [*M. poranoides* (C.B. Clarke) Hallier f., *M. sibirica* (L.) Hallier f. and *M. rajasthanensis* Bhandari]. Of these, *M. rajasthanensis* is the only species endemic to India, with the curious characteristic of being restricted to the Indian deserts. During revisionary studies on tribe Merremieae from India, authors encountered an interesting population of *Merremia* from the deserts of Gujarat. A detailed laboratory analysis along with a thorough screening of pertinent literature (Bhandari, 1980; Patel *et al.*, 2011; Patel, 2013; Kotiya *et al.*, 2020) and consultation of types, allowed to identify it as *M. rajasthanensis* Bhandari which is an endemic species of Rajasthan (Staples, 2010). The type was originally collected from the Jodhpur and Barmer districts of Rajasthan state, India in 1975 and 1976 respectively (Bhandari, 1988). After repetitive visits to these localities, authors could not trace the species and since then, it has been not collected from type locations. The present collection from Kachchh in Gujarat extends its known distributional record.

The species presents of markedly winged stems and palmately dissected leaves which does not fit the circumscription of *Merremia sensu stricto* nor any of the now recognised genera of former

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tribe Merremieae (Simões *et al.*, 2017). This morphological similarity has already been pointed out, even by Bhandari (1988), who stated in the protologue that *M. rajasthanensis* is closely allied to *M. quinquefolia* (L.) Hallier f. and shows relation with the African species *M. palmata* Hallier f. and *M. verecunda* Rendle. Also, Staples (2010) pointed out that *M. rajasthanensis* could belong to a species complex with three African species viz., *M. palmata*, *M. verecunda* and *M. pterygocaulous* (Choisy) Hallier f. and also mentioned that the generic placement of this species, and its relationship with others in *Merremia* or other genera of Convolvulaceae, still needs to be further explored. Hence, authors here provide a full morphological characterisation of the species along with a comparison with its allied species (Table 1), to clarify the identity of the species and support future systematic studies for placement of the ambiguous “*Merremia*” species that still need to be assigned correct generic placement.

Shetty and Singh (1991) and Singh *et al.* (2015) did not include this species in Flora of Rajasthan and Endemic plants of India. *Merremia palmata* Hallier f. has also been said to be recorded from India (Meeuse & Welman, 2000; POWO, 2025) but this occurrence is doubtful as there is no evidence that we were able to trace. *Merremia rajasthanensis* was described by Bhandari (1988) based on his own collections from Sardarsamand area of Jodhpur district, Rajasthan. In the protologue, Bhandari indicated that the holotype has been deposited at K with isotypes at JAC. Authors were unable to locate the holotype at K. However, could able to locate isotypes at JAC without collection numbers.

Authors could trace both the isotypes at JAC but without collection number but it was noted that both the specimens are deposited by Bhandari with the collection date aligning perfect as in the protologue (i.e. August 1975). As holotype is missing, one of these collections with peduncles and well-preserved leaves has been selected as the lectotype of the name *M. rajasthanensis* following Art. 9.3 of Shenzhen Code (Turland *et al.*, 2018).

In future, revisionary studies of Indian species of former tribe Merremieae will continue to progress with filling in knowledge gaps for this complex taxonomic group. Recently, this has already resulted in the re-discovery and correct re-assignment of doubtful species, i.e. *Distimake rhyncorhiza* (Simões & More, 2018; Tamboli *et al.*, 2021), and other American and African species in *Merremia s.l.* (Petrongari *et al.*, 2018; Simões *et al.*, 2020; Pisuttimarn *et al.*, 2023; Petrongari *et al.*, 2024).

Taxonomic treatment

Merremia rajasthanensis Bhandari, J. Bombay Nat. Hist. Soc. 84:645. 1988; Kotiya, Solanki & Reddy, Fl. Rajasthan 1: 324. 2020. *Lectotype* (designated here): INDIA, **Rajasthan**, Jodhpur district, Sardarsamand, 29.8.1975, Bhandari *s.n.* (JAC digital image!).

Figs. 1 & 2

Perennial, herbaceous climbers with milky latex, glabrous; stems twinning, up to 1 m, alate, 3-winged, internodes 8 – 12 cm long. Leaf petiole 5 – 8 cm long, grooved on upper side; leaf blades pedately divide above near to base, 7-lobed, the outermost lobes again divided into the 2 – sub lobes; lobes lanceolate, 3 – 7 × 1 – 2 cm, middle one is longer than others, apex acuminate, base narrow, margins entire, leaf veins prominent abaxially. Inflorescence an axillary cyme, 1 – 2 flowered; peduncle shorter or equal to petiole, 2 – 4 cm, 4-angled; pedicel grooved, 5-angled, 1 – 1.2 cm long, dilated towards the apex. Bracts linear, c. 0.5 cm long, caducous scarred at the base. Flowers up to 1.5 cm across. Sepals 5, free, sub-equal, oblong-ovate, c. 1.2 × c. 0.8 cm, mucronate, coriaceous. Corolla white or creamy white, funnel shaped, c. 2 cm long; lobes 5, rounded at apex, mid-petaline bands inconspicuous, glabrous. Stamens inserted; filaments up to 1 cm, attached at corolla base, hairy at dilated base; anther curved at apex on anthesis; pollens 3-zonocolpate. Ovary glabrous, slightly dilated at base; style inserted, c. 1.4 cm long; stigma 2-lobed, globular. Capsule triangular-pyramidal, c. 0.8 cm long, brown,

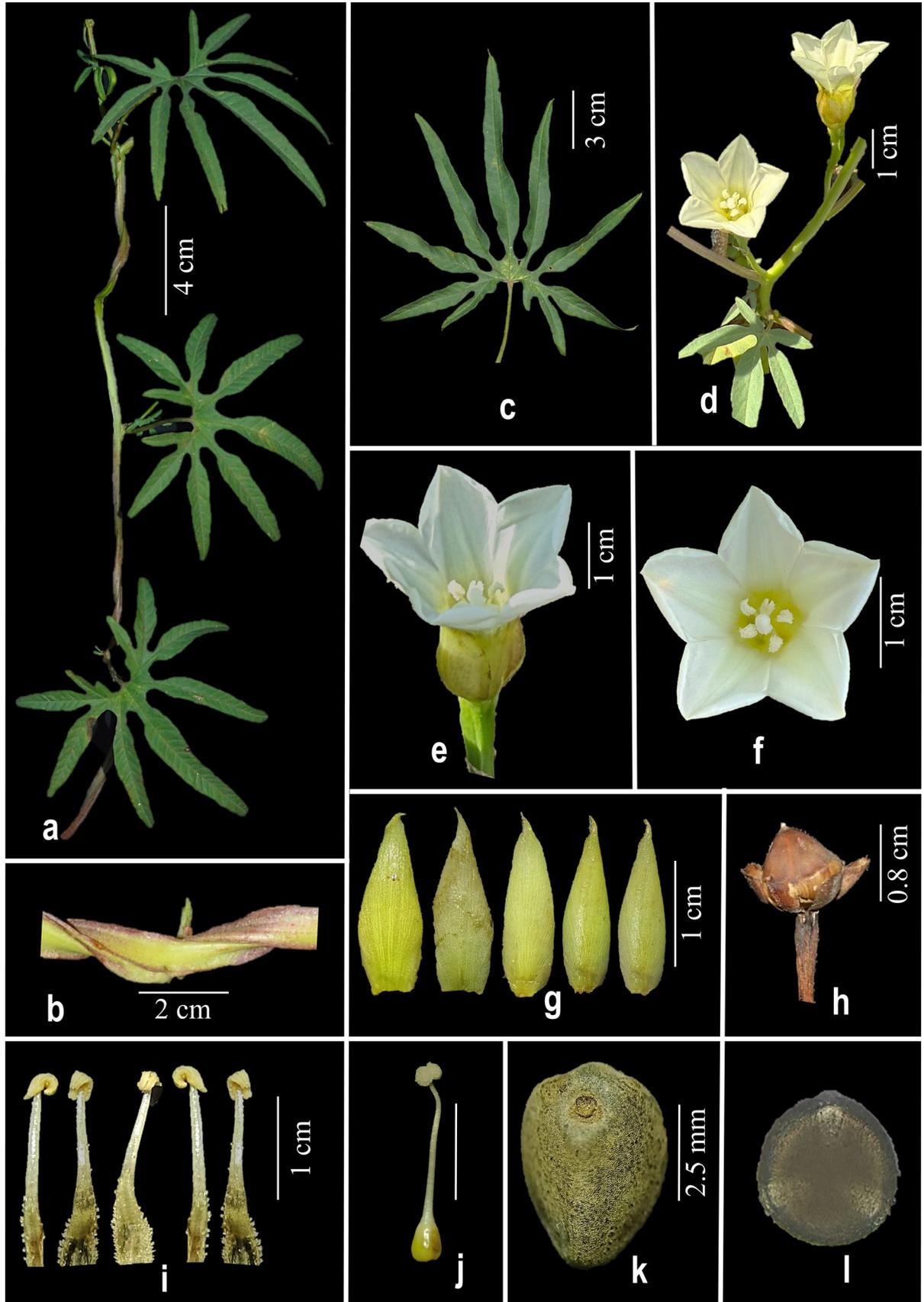


Fig. 1. *Merremia rajasthanensis* Bhandari: **a.** Habit; **b.** Winged stem; **c.** Leaf; **d.** Inflorescence; **e.** Single flower; **f.** Flower top view; **g.** Sepals; **h.** Capsule; **i.** Stamens; **j.** Gynoecium; **k.** Seed; **l.** Pollen.

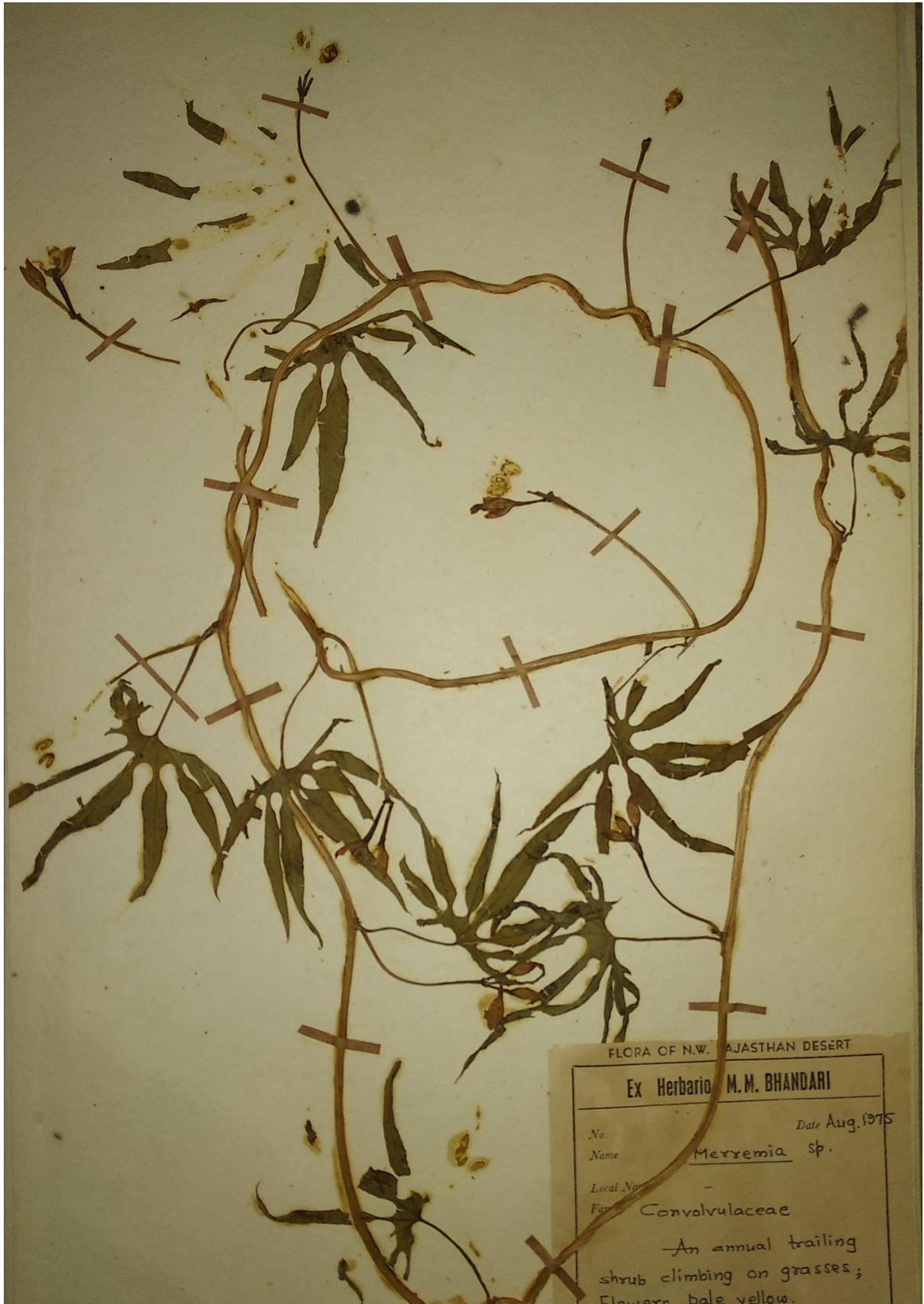


Fig. 2. Lectotype of *Merremia rajasthanensis* Bhandari (Bhandari s.n.) [© Authorities of herbarium of JAC, Jodhpur]. Reproduced with the consent of the Jodhpur Herbarium authorities.

glabrous, surrounded by persistent calyx. Seeds 4, dull black, c. 0.5 × 0.4 cm, trigonous, smooth indumentum, glabrous.

Flowering & fruiting: Flowering and fruiting from September to November.

Habitat: It climbs on bushes in the desert or trails on the grasses and commonly associated with *Vachellia nilotica* (L.) P.J.H. Hurter & Mabb., *Ziziphus nummularia* (Burm.f.) Wight & Arn. and *Catunaregam spinosa* (Thunb.) Tirveng.

Distribution: Endemic to India (Rajasthan and Gujarat).

Provisional Conservation status: The species is reported from four locations and the area of

occupancy (AOO) is estimated 16 km² and Extent of occurrence (EOO) is 24,027.447 km² hence it is provisionally assessed here as Endangered [ENB2ac(i)], in accordance with the IUCN categories and guidelines (IUCN, 2022).

Specimen examined: INDIA, **Gujarat**, Kachchh district, Lakhpat Taluka, Gugaliyana RF, 23°31'51.5' "N 68°58'23.7"E, 15.10.2024, Patil & Shimpale 2104 (NCK).

Nomenclatural note: *Merremia rajasthanensis* was described by Bhandari (1988) based on his own collections from Sardarsamand area of Jodhpur district, Rajasthan. In the protologue, Bhandari indicated that the holotype has been deposited at K with isotypes at JAC. Authors were unable to locate

Table 1. Showing morphological comparison of closely related species of *Merremia s.l.*

Character	<i>M. rajasthanensis</i> Bhandari	<i>M. verecunda</i> Rendle	<i>M. palmata</i> Hallier f.	<i>M. pterygocaulous</i> (Choisy) Hallier f.
Stem	3-winged	Cylindrical	Sulcate or ribbed to almost winged	4-winged
Leaves	Pedately divided 7-lobed, lower lobes again subdivided in 2 lobes, glabrous	Deeply palmately 7 – 9 lobed, adaxially glabrous abaxially pubescent	Deeply palmately 5-9-lobed, glabrous	Deeply cordate, 3 – lobed, glabrous
Petiole	Adaxially grooved, 4 angled, glabrous	Slender, pubescent	Slender, glabrous	4- angled, not grooved, glabrous
Sepals	Glabrous, without nerves, membranous, mucronate	Pubescent, with 6 – 7 marked purple brown nerves	Glabrous, elliptic, coriaceous with membranous edge	Glabrous, without nerves, chartaceous, obtuse
Corolla	White coloured, without coloured throat, midpetaline bands glabrous	White with purple brown or chocolate throat, mid petaline bands glabrous	Pale or sulphur yellow, with deep red, maroon or magenta throat, mid petaline bands sparsely pubescent at apex	Pale yellow or creamy with red or purple throat, midpetaline bands strigosely pilose outside
Seeds	Trigonous, dull black, glabrous, smooth,	Blackish, edges with flattened hairs	Greyish brown to black, glabrous, rugose	Subglobose, black, smooth

the holotype at K. However, could able to locate the isotype at JAC without collection numbers. Authors could trace both the isotypes at JAC but without collection number but it was noted that both the specimens are deposited by Bhandari with the collection date aligning perfectly with the protologue (*i.e.* August 1975). As holotype is missing, one of these collections with peduncles and well-preserved leaves has been selected as the lectotype of the name *M. rajasthanensis* following Art. 9.3 of Shenzhen Code (Turland *et al.*, 2018).

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