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## Discovery of New Population of an Endemic species *Euphorbia jodhpurensis* Blatt. & Hallb. from Indian Desert, Rajasthan, India

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### ABSTRACT

*Euphorbia jodhpurensis* Blatt. & Hallb. is an endemic to Rajasthan with only small numbers reported in wild and reported from Jodhpur and Ajmer. The study reports new distributional sites from Sikar and Bikaner districts. The first population, a gravelly habitats (altitude), had a maximum of approximately 15 younger plants. The second population in thorny forest (altitude), had a maximum of approximately 25 individuals only. Further population explorations are strongly recommended in this arid region to investigate the actual distribution of *Euphorbia jodhpurensis*. This paper deals with reporting of two new population sites from Sikar and Bikaner districts of Rajasthan.

**Key words:** Endemic, Discovery, Population, Endangered, Rajasthan Desert.

### INTRODUCTION

The genus *Euphorbia* L. (1753) of Euphorbiaceae Juss. (1789) is cosmopolitan all over the world with its 2040 accepted (POWO, 2023) genera. Hooker (1890) reported 52 species of *Euphorbia* from British India. Out of these, 88 species have been reported from India (Binojkumar & Balakrishnan, 2010). Approximately 34 species belonging to genus *Euphorbia* is endemic to India and one such species is *Euphorbia jodhpurensis* Blatt. & Hallb., endemic to Jodhpur, Rajasthan (Purohit *et al.*, 2019). It was published as a new species by Blatter and Halberg (1920) without type, originally collected from a rocky area in Jodhpur (Rajasthan). After that Santapau (1959) designated a lectotype of Blatter & Halberg's specimen (92281), collected in November, 1921 (BLAT). Thereafter, Purohit *et al.* (2019) reported a

new population site from Todgarh-Raoli wildlife sanctuary (Ajmer district), Rajasthan.

### MATERIAL AND METHODS

While working on the floristic survey of Indian Desert during Oct. 2023 to Feb. 2024, authors noticed populations of 15 to 20 *Euphorbia* specimens having dichotomous branching and toothed leaf margin throughout the lamina at two locations of Rajasthan, viz. Sikar and Bikaner. Herbarium specimens were collected and deposited at Botanical Survey of India (BSJO), Jodhpur. After the detailed study of the literatures (Hooker, 1890; Blatter and Halberg, 1921; Bhandari, 1990; Pandey *et al.*, 1983; Shetty & Singh, 1991; Balakrishnan & Chakrabarty 2007; Kumar & Purohit, 2015; Purohit, 2020a & b; Dash & Mao, 2020) and herbaria (BSJO, BSA, RUBL, JAC, BLAT,

DCH, CAL) it was identified as *Euphorbia jodhpurensis* Blatt. & Hallb. It was also noticed that earlier it was reported from type locality, Jodhpur and Todgarh-raoli wildlife sanctuary, Ajmer district with typical rocky, gravelly habitat.

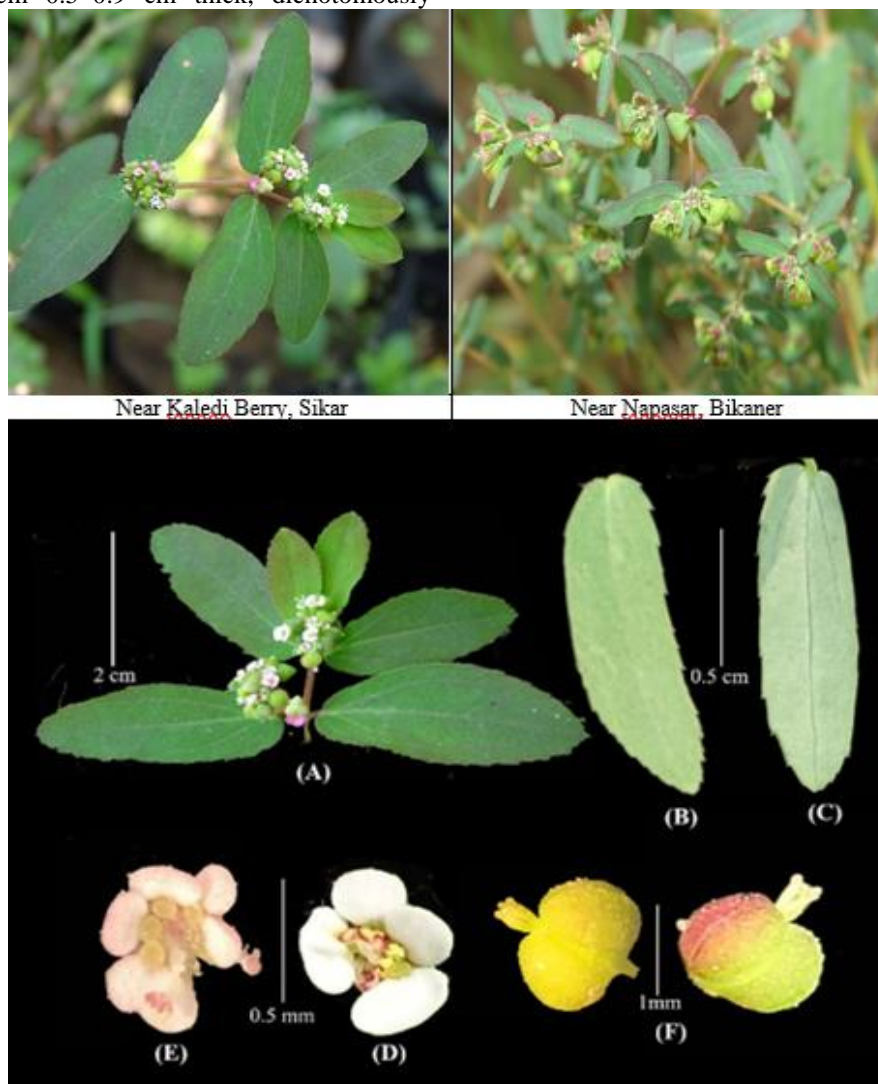
## RESULT AND DISCUSSION

The detail descriptions, distribution, ecology, notes, threats, distribution maps and photographs of *Euphorbia jodhpurensis* are provided here for its easy identification.

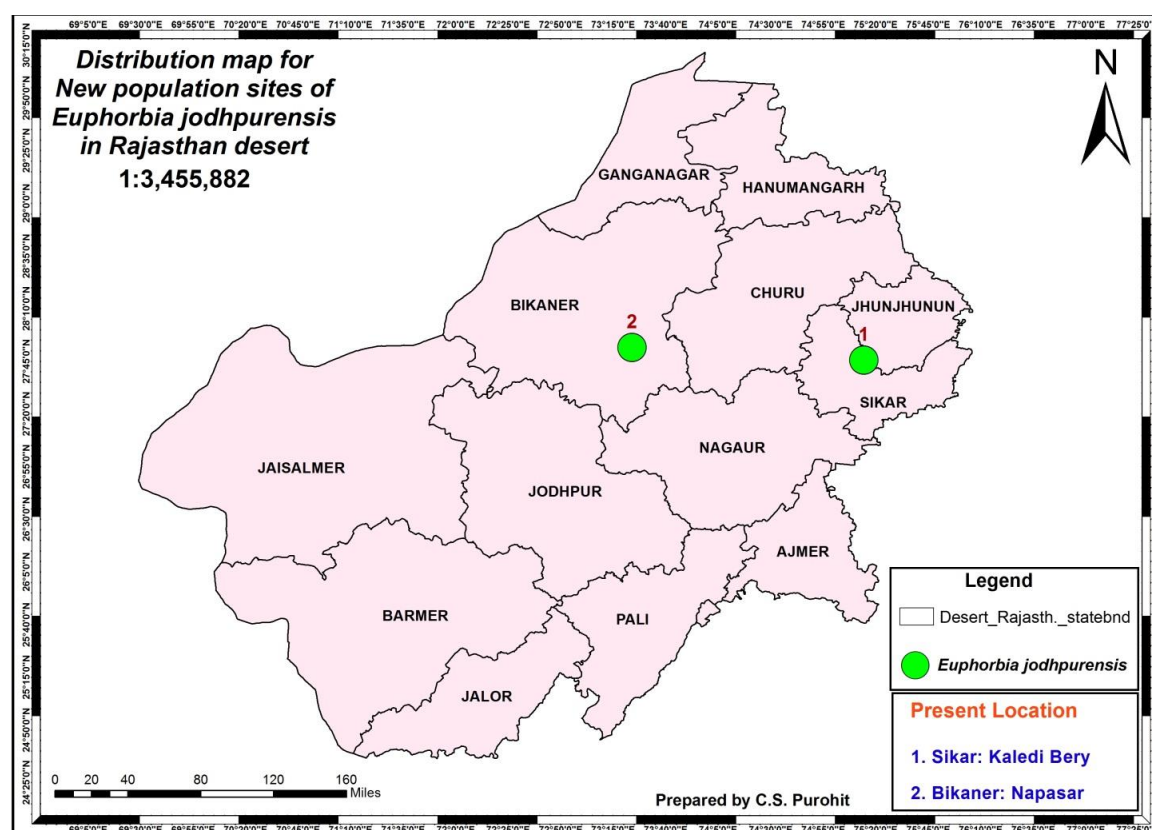
***Euphorbia jodhpurensis* Blatt. & Hallb.** in J. Bomb. Nat. Hist. Soc. 26(4): 971. 1920; Pandey et al. in Jain & Rao Assessm. Threat. Pl. India 59. 1983. *Euphorbia clarkeana* Hook.f. var. *erecta* Hook.f., Fl. Brit. India 5: 253. 1887. *Chamaesyce jodhpurensis* (Blatt. & Hallb.) Raju & Rao in Phytologia 40: 392. 1978. (Fig. 1)

**Taxonomic characters:** Herb, erect, glabrous upto 50 cm high.; stem 0.5–0.9 cm thick, dichotomously

branched, straw coloured; nodes annular, thickened; internodes 2.0–4.5 cm long, terete; branches 0.3–0.6 cm thick, slender; leaves opposite, oblong to linear oblong, oblique at base, entire, serrate towards the apex, 0.5–2 x 0.1–0.4 cm, green or pale green, glabrous, nerves obscure; petioles upto 1mm long; stipules broad, deeply lacinate; cyathia terminal or subterminal, solitary; peduncle upto 1 mm long; involucre campanulate, ca 1.2 x 1 mm, glabrous; involucral lobes 5, triangular, toothed; glands 4, rounded ca 1 mm in diam., with appendages ca 1.5 x 1 mm, orbicular, entire, white or pale pink; male florets few, pedicel upto 0.5 mm long; anther subglobose, transversely dehiscent; female floret: gynophore, ca 1 mm long, glabrous; ovary subglobose, ca 1 mm across; styles 3, upto 1.3 mm long, free from base, each bifid at apex; stigma capitate; capsule subglobose, obtusely keeled, ca 4 x 4 mm, glabrous; seed subquadrangular, oblongoid ca 1.5 x 1 mm, 2–3-striated, pale pink (Bhandari, 1990; Purohit *et al.*, 2019, 2020b).



**Fig. 1: *Euphorbia jodhpurensis* in Rajasthan desert and their different plant parts; (A) Habit, (B) Leaf (Dorsal), (C) Leaf (Ventral), (D) Flower, (E) Flower with limb of nodes, (F) Fruits**



**Fig. 2.** Distribution map of *Euphorbia jodhpurensis* showing two new population sites in Rajasthan desert (prepared by C.S. Purohit)

#### Flowering and fruiting: July to October

**Specimen Examined:** India: Rajasthan, Sikar, Kaledi Berry, 24-10-2023, C.S. Purohit & Amit Kumar 38254 (BSJO); Bikaner, Napasar, 29-10-2023, C.S. Purohit & Amit Kumar 38557 (BSJO); Sriganganagar, Harsinghpura, 30-10-2023, C.S. Purohit & Amit Kumar 38570 (BSJO).

**Distribution:** India: Rajasthan, Jodhpur (Jodhpur) (Bhandari 1990), Barmer (Chohtan) (Bhandari 1990), Ganganagar (Suratgarh) (Shetty & Singh, 1991), Ajmer (Katarghati) (Purohit *et al.* 2019); Sikar (Kaledi Berry) [Present survey]; Bikaner (Napasar) [Present survey] (Fig. 2).

**Ecology:** This species has its typical habitat in arid and semi-arid rocky and gravelly areas in the Rajasthan desert, in association with *Cleome gynandra* L. (CSP32855), *Clerodendrum phlomidis* L.f. (CSP32842), *Heliotropium ovalifolium* Forssk. (CSP32851), *Moringa oleifera* Lam. (CSP32845), *Nyctanthes arbor-tristis* L. (CSP32853), *Oxalis corymbosa* DC. (CSP32856), *Portulaca oleracea* L. (CSP32857), *Solanum nigrum* L. (CSP32844) and *Tecoma stans* Juss. (CSP32852) at Kaledi Berry, Sikar and in association with *Calligonum polygonoides* L. (CSP38556), *Suaeda fruticosa* Forssk. ex J.F.Gmel. (CSP38560), *Panicum turgidum* Forssk. and *Cynodon barberi* Rang. & Tadul. at Napasar, Bikaner. Earlier, it was reported in the buffer zone of the Todgarh-

Raoli wildlife sanctuary, Rajasthan, associated with *Acacia nilotica* Delile subsp. *indica* (Benth.) Brenan (CSP32918), *Anogeissus pendula* Edgew. (CSP32916), *Annona squamosa* L. (CSP32925), *Cardiospermum halicacabum* L. (CSP32927), *Chloris virgate* Sw. (CSP32920), *Commelina erecta* L. (CSP32917), *Commiphora wightii* (Arn.) Bhandari (CSP32922), *Digitaria pennata* (Hochst.) T.Cooke (CSP32919), *Enicostema axillare* (Lam.) A.Raynal (CSP32928), *Glossocardia bosvallia* DC. (CSP32931), *Justicia simplex* D.Don (CSP32921), *Moringa concanensis* Nimmo (CSP32924), *Pavonia zeylanica* (L.) Cav. (CSP32926).

**Notes:** It is very much similar to *Euphorbia clarkeana* Hook.f., but differs in having erect habit with dichotomous branches, leaf margins spinulose-serrate throughout the lamina and limbs of glands larger than the glands (Shetty & Singh, 1991; Narain & Renu, 2017; Purohit *et al.*, 2019).

**Threat:** The major threat to this species is habitat loss due to urbanization because its natural location is nearby developed area of district. Some other threats also observed during the study i.e. grazing by animals, young shoot is eaten by birds (peacock) and poor germination rate. Hence, this species needs immediate conservation efforts so that its number can be increased. This species has been considered under

endangered category as on IUCN Red List 2013 (Purohit & Kumar 2021; Purohit & Kulloli, 2022).

## CONCLUSION

An Endemic plant *Euphorbia jodhpurensis* has been reported from Kaledi bery, Sikar district and Napasar, Bikaner district, reported as extended distribution and new population sites with few individuals in the Rajasthan desert. This plant is categorized under endangered category as per IUCN Red List so it needs to be conserve for further study. Further population explorations are strongly recommended in this arid region to investigate the actual distribution of this plant in the Rajasthan state.

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