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Range Extension of endemic plant variety *Euphorbia pycnostegia* var. *zornioides* (Boiss.) Santapau from Indian desert, Rajasthan, India

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Abstract:
Euphorbia pycnostegia var. *zornioides* (Boiss.) Santapau is an endemic variety of India and has been reported from different parts of the country. In Rajasthan, this variety has been reported from only Mt. Abu, Sirohi. This paper deals with its range extension to Barmer and Jodhpur districts in Rajasthan and also reportstheir first locations in the Indian Desert.

Keywords: *Euphorbia pycnostegia* var. *zornioides*, Endemic, Range extension, Rajasthan.

INTRODUCTION

The genus *Euphorbia* was described by Carl Linnaeus in 1753 in Species Plantarum. It contains 2055 species (Plants of the world online, 2024), distributed worldwide. This genus is represented by 87 taxa (Mao & Das, 2020) from India and 19 taxa from Rajasthan (Shetty & Singh, 1991). One of its species, *Euphorbia pycnostegia* which described by Boiss in 1860, is endemic to India and uncommon in Rajasthan. Its variety *zornoides* was described by Santapau in 1955.

Euphorbia pycnostegia var. *zornioides* (Boiss.) Santapau is a prostrate or ascending, glabrous annual herbs. It is also endemic to India and has been reported from Andhra Pradesh, Daman, Diu, Goa, Gujarat, Rajasthan, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha and Tamil Nadu (Mao & Das, 2020).In Rajasthan this variety has been reported from only Mt. Abu, Sirohi by Rao (Shetty and Singh 1991).

MATERIALS AND METHODS

During the plant exploration survey of Indian Desert in September 2023, the authors came across population of *Euphorbia* species having floral leaves distichously imbricate at two different locations i.e. (1) foothill of Viratra Hill, Barmer and (2) BSI Residential Complex in Jodhpur, Rajasthan. The samples were collected and preserved. After the detailed scrutiny of the literatures (Hooker, 1890; Blatter and Halberg, 1921; Bhandari, 1990; Pandey et al., 1983; Shetty & Singh, 1991; Balakrishnsn & Chakrabarty 2007; Kumar & Purohit, 2015; Purohit *et al.*, 2019, 2024; Purohit, 2020a & b; Dash & Mao, 2020; Binojkumar *et. al.*, 2010; Hara et. al., 1982),

herbaria (BSJO, BSA, RUBL, JAC, BLAT, DCH, CAL) and microscopic study of the floral and seeds characters of the samples, the species was identified as *Euphorbia pycnostegia* Boiss. The samples from Viratra Hill, Barmer and BSI Residential Complex, Jodhpur were identified as *Euphorbia pycnostegia* Boiss.var. *zornoides*, on the basis of morphological characters smoothseeds.

RESULT AND DISCUSSION

The detailed description, distribution map and photographs of *Euphorbia pycnostegia* Boiss.var. *zornioides* is provided here for easy identification.

Euphorbia pycnostegia var. zornioides (Boiss.) Santapau, Bull. Bot. Soc. Bengal 8: 11. 1954. Euphorbia zornoidesBoiss. in DC. Prodr. 15 (2): 19. 1862; Hook. F. Fl. Brit. India 5: 246, 1887; Cooke, Fl. Bombay 2: 565, 1906.

Identification characters: Very similar to type variety but differs in having cocci keeled and angled at base, nearly glabrous. Seed ovoid, smooth and limb of glands white or pink. In var. pycnostegia cocci are obtusely keeled, hirsute or glabrous. Seeds obtusely 4-angled, transversely furrowed, tuberculate and limb of glands white (Shetty and Singh 1991) [Fig. 1].

Flowering and fruiting: September – December.

Specimen examined: India: Rajasthan, Barmer, Viratra Hill, 18-09-2023, S.L. Meena, C.S. Purohit & Amit Kumar 23938 (BSJO), Rajasthan, Jodhpur, BSI Residential Complex, 21.10.2024, C. S. Purohit & Amit Kumar 41509.

Distribution: India: Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Tamil Nadu& Rajasthan (Mount Abu, Barmer, Jodhpur) [Fig. 2, 3, 4 & 5].

Ecology: *Euphorbia pycnostegia* var. *zornioides* is found on the hill slopes. During the present survey this taxon was first found at the foot hill of Viratra Hill in sandy soil, having only few individuals growing at the locations in association with *Heliotropium strigosum* Willd., *Capparis decidua* (Forssk.) Edgew., *Prosopis cineraria* (L.) Druce, and *Cassia tora* L. The second population was found in the BSI Residantial Complex in association with *Tephrosia purpurea* (L.) Pers., *Cynodon dactylon* (L.) Pers., *Tribulus terrestris* L. and some other ornamental species [Fig. 3].

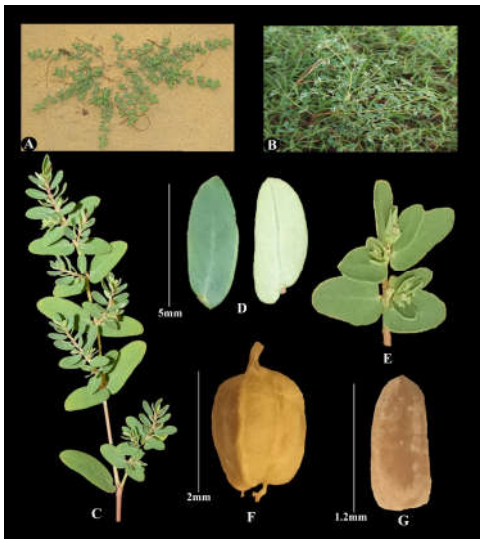

Figure 1: ***Euphorbia pycnostegia var. zornioides*** **(Boiss.) Santapau:** (A): Habit [Viratra Hill] (B): Habit [BSI Residantial Complex], (C): Branch, (D): Leaves [dorsal and ventral sides], Fruit and (E): A branch with flowers, (F): Fruit and (G): Seed.

Threat: The most common threat associated with this species is the grazing. The local people residing nearby domesticate cattles which graze in the open lands. The other threats observed during the survey includes habitat destruction due to urbanization and pollution.

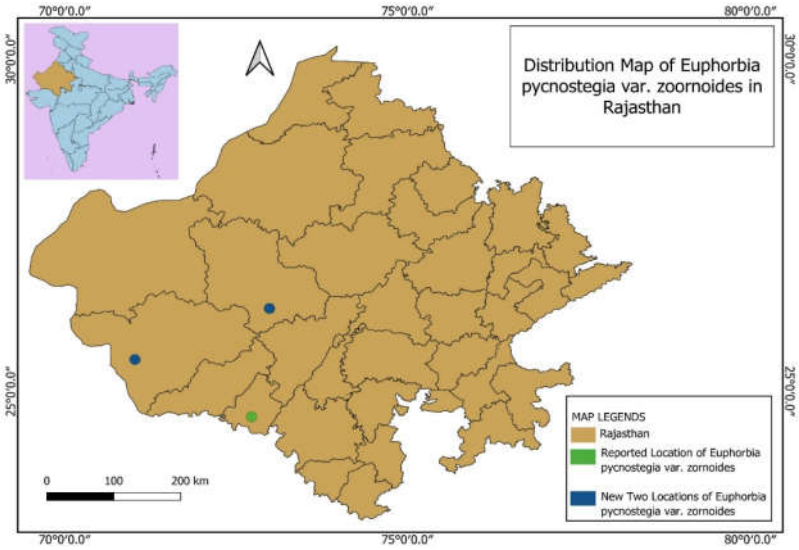

Figure 2: Distribution Map of Euphorbia pycnostegia var. zornioides in Rajasthan

Figure 3: Habitat of *Euphorbia pycnostegia* var. *zornioides* at foothills of Viratra Hill, Barmer, Rajasthan

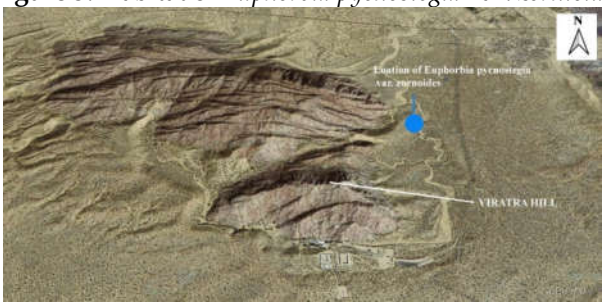

Figure 4: Satellite view of the new location of *Euphorbia pycnostegia* var. *zornioides* (Boiss.) Santapau at foot hills of Viratra Hill, Barmer, Rajasthan (Source: Bhuvan 3D).

Figure 5: Satellite view of the second new location of *Euphorbia pycnostegia* var. *zornioides* (Boiss.) Santapau at BSI Residantial Complex, Jodhpur, Rajasthan (Source: Bhuvan 3D).

CONCLUSION

The endemic and rare variety, *Euphorbia pycnostegia* Boiss. var. *zornioides* (Boiss.) Santapau has been reported from the Indian desert for the first time and new population location in Rajasthan in Barmer and Jodhpur districts. Further exploration surveys are strongly recommended in this region to figure out the actual distribution of this species in the Indian desert. Also, IUCN assessment of this species is needed in order to conserve it efficiently.

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