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NOTE

RANGE EXTENSION OF *TRIGONELLA UNCATA* BOISS. & NOË (LEGUMINOSAE) IN PENINSULAR INDIA AND A NEW RECORD FOR MAHARASHTRA STATE, INDIA

Shrikant Ingalthalikar & Adittya Vishwanath Dharap

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RANGE EXTENSION OF *TRIGONELLA UNCATA* BOISS. & NOË (LEGUMINOSAE) IN PENINSULAR INDIA AND A NEW RECORD FOR MAHARASHTRA STATE, INDIA

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Leguminosae is one of the most diverse and widely distributed families in India. While exploring the flowering plants around Pune District in Maharashtra State, India, in 2018, we found a herb belonging to the genus *Trigonella* L. of Leguminosae. In subsequent surveys, specimens were collected from Lonavala, Talegaon Dabhade, and Bhugaon in the district. Detailed photo-documentation was carried out with the fresh specimens.

A total of 12 *Trigonella* species are listed in India (Sanjappa 1992), but a key has not been provided. Out of these, six are reported only from the Himalayan and sub-Himalayan regions. The *Trigonella* species reported from northwestern and central Indian regions are *T. corniculata*, *T. incisa*, *T. occulta*, *T. obcordata*, *T. foenum-graecum*, and *T. uncatata*. For the identification of our specimens, a key was prepared using their characters reported by Duthie (1960), Shah (1968), Shetty & Singh (1987), and Verma et al. (1993).

Three of the six species reported from the northwestern and central Indian regions (*T. corniculata*,

T. incisa, and *T. occulta*) are easily distinguished based on the characters reported in the literature.

Trigonella foenum-graecum is either cultivated or naturalized in some places. *Trigonella uncatata* and *T. obcordata*, however, have a large number of overlapping characters. None of the characters reported in Indian floras or monographs were useful in differentiating these species. The unavailability of a national key for the *Trigonella* species made the task more difficult. Hence, in order to clearly distinguish the two species, we consulted other relevant literature and herbarium specimens.

The identification of the collected specimens was confirmed after viewing the images of the type of *T. uncatata* housed in herbaria Muséum National d'Histoire Naturelle (P) and Naturhistorisches Museum Wien (W). There is no mention of peduncle length of the species in Shetty & Singh (1987). The description of *T. uncatata* in Shah et al. (1968) indicates the peduncle length to be less than that of the leaves. The type specimen housed in W (W–Rchb. 1889-0361491) and P (MNHN–P–P02952755), however, clearly showed the peduncles to be longer than the leaves. This feature was further evident after viewing the images of more herbarium specimens from Royal Botanic Gardens Kew (K) (K000998695 Image!) and Royal Botanic Garden Edinburgh (E) (E00336751 Image!).

We also checked the description of *T. obcordata* in Duthie (1960), which mentions racemes equaling or shorter than the leaves as one of the characters for *T. obcordata* Wall. On consulting The Wallich Catalogue 5986, a specimen of *T. obcordata* (K001122698 Image!)



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collected in Tikari (mentioned by Sirjaev 1928) and housed in K, we found the peduncles of the specimen to be much shorter than the leaves. Sanjappa (1992) mentions the catalogue number as 5989, which seems to be erroneous as it refers to a species of *Vitis* mentioned on page 205 of The Wallich Catalogue.

The two species also differ in having different pod shapes. Sirjaev (1928) in description of *T. obcordata* mentions pods to be straight or a little curved (also evident in K001122698), while the description of *T. uncata* says pods are a little arcuate to semicircular (also clearly visible in W-Rchb. 1889-0361491). The illustrations in Sirjaev (1928) also clearly depict these features. The pods in our collected specimens are arcuate to semicircular.

Considering the specimens, peduncle length and pod shape can be used as key characters that distinguish *T. obcordata* and *T. uncata*. We concluded that the collected specimens belong to *Trigonella uncata* Boiss. & Noë.

This species was not reported from Maharashtra in the earlier regional floras by Cooke (1903), Santapau (1967), Almeida (1998), and Singh et al. (2000). Sanjappa (1992), in his list of *Trigonella* species from India, only mentions Gujarat and Rajasthan in the distribution of *T. uncata*. Hence, our collection from Pune District extends the known distribution of the species in peninsular India to include Maharashtra and is a new record for the state.

There have been different opinions regarding the identity and nomenclature of this species. Townsend (1968) considered *T. uncata* to be a subspecies of *T. hamosa* (*Trigonella hamosa* ssp. *uncata*). According to him, "The differences between *T. hamosa* and *T. uncata* are slight and purely of degree, are correlated with geographical distribution, and it seems best to regard them as subspecies". Later, Lassen (1987) treated it as *T. glabra* ssp. *uncata* (Boiss. & Noë) Lassen; the same was used by The Plant List (2013) for which *T. uncata* is given as a synonym. Sanjappa (1992), however, treated it as a separate species. The determinavit slip on type sheet from W (W-Rchb. 1889-0361491) also mentions the species as *T. uncata*. Taxonomic resolution of the species is beyond the scope of the current paper. Hence we place the current specimens under *T. uncata* following Sanjappa (1992).

We suggest here a key to aid identification of *Trigonella uncata* Boiss. & Noë.

Description: Description is prepared based on specimens collected.

Trigonella uncata Boiss. & Noë (Images 1 & 2)

in Boiss., Diagn. Ser. 2: 12. 1856; Boiss, Fl.Orient.2: 84. 1872; Sirj. in Publ. Fac. Sci. Univ. Masaryk no. 102; 45.t.2 f. 38. 1928; Shah et al., in J. Bombay Nat. Hist. Soc.65: 262. 1968. *T. hamosa* subsp. *uncata* (Boiss. & Noë) Townsend, Kew Bull. 21: 437. 1968, Townsend & Guest, in Fl. Iraq 3: 91. pl. 14 f. 16. 1974; B.V. Shetty & V. Singh, Fl. Rajasthan 1: 268. 1987.

Diffuse annual herb; caespitose, branches prostrate, many from base, 10–50 cm long; stem angled, glabrous. Leaves 3-foliolate; petiole 10–15 mm, angular, softly hairy, extending 5–8 mm beyond basal pair of leaflets; petiolules 1–2 mm; leaflets 10–15 mm, obovate, cuneate, dentate, retuse to truncate, glabrous above, softly pubescent beneath; stipules 4–6 mm, auricled at base, ovate-lanceolate, lacinate, softly hairy. Flowers head-like, capitate in a raceme on axillary peduncle 10–30 mm long, peduncle terminating in a spine, peduncle slightly shorter than, equal to, or longer than leaves; racemes 6–18-flowered; pedicels recurved, 1–2 mm long; calyx 1.5–2.0 mm long, softly hairy, teeth shorter than tube. Corolla 4–5 mm long, yellow. Pods 8–11 mm long, 1.5–2.0 mm wide, turgid, semi-circular, 4–6-seeded, veins transverse; seeds 0.8–1.5 mm, ovoid, brownish-yellow.

Flowering and fruiting: February–March.

Habitat: Locally common in moist places, along banks of rivers and streams and on margins of drying ponds in association with *Hygrophila serpyllum* T. Anderson, *Cyathocline purpurea* (Buch.-Ham. ex D. Don) Kuntze, *Gnaphalium luteo-album* L., and *Grangea maderaspatana* (L.) Poir.

Distribution: Iraq, Iran, Afghanistan, Pakistan, and India (Rajasthan, Gujarat, and Pune District in Maharashtra).

Specimens examined: *Trigonella uncata* Boiss. & Noë. India, Maharashtra, Pune District: 002 (BSI!), 25.ii.2018, Lonavala, 18.761°N & 73.444°E, 676m, coll. Shrikant Ingahalikar; AVD–20183 (BSI!), 17.ii.2018, Kamshet, 18.755°N & 73.522°E, 610m, coll. Aditya Dharap; AVD–20181 (AHMA!), 09.ii.2018, Talegaon Dabhade, 18.737°N & 73.653°E, 614m, coll. Aditya Dharap; 003 (BLAT!), 26.ii.2018, Bhugaon near Pune, 18.494°N & 73.738°E, 739m, coll. Shrikant Ingahalikar; K000998695 (K Image!) 1018, Iraq, coll. F.W. Noë; E00336751 (E Image!), 27.iii.1974, Iran, coll. P.H. Davis & M.H. Bokhari.

Type: W-Rchb. 1889-0361491 (W image!) 1018, 1851, Iraq, coll. F.W. Noë; MNHN-P-P02952755 (P image!), 1018, 1851, Iraq, Kattam Tigris, coll. F.W. Noë.

Note: The *T. uncata* specimens collected under 1018 by Noë are in P (MNHN-P-P02952755), K (K000998695),



Image 1. *Trigonella uncata* Boiss. & Noë: a - habit | b - twig | c - inflorescence | d - stipule | e - pods | f - seeds. © Shrikant Ingalhalikar.

Key to northwestern and central Indian species of *Trigonella*

- 1 Flowers solitary or clustered in leaf axils 2
- 1 Flowers clustered at the end of axillary peduncles 3
- 2 Pods more than 2cm long, with a long beak *Trigonella foenum-graecum*
- 2 Pods less than 2cm long, without a beak *Trigonella occulta*
- 3 Pods not turgid, flat *T. corniculata*
- 3 Pods turgid 4
- 4 Pods with 10–20 seeds *T. incisa*
- 4 Pods with 4–6 seeds 5
- 5 Racemes slightly shorter, equal to or longer than leaves, pods arcuate to semicircular *T. uncata*
- 5 Racemes equal or much shorter than leaves, pods straight or slightly curved *T. obcordata*



Image 2. Herbarium sheet of *Trigonella uncata* Boiss. & Noë (Reg.no. AVD-20181 collection date 09.02.2018).

and W (W-Rchb. 1889-0361491). While the specimens in W and P are clearly designated as 'type', the specimen in K is not. The resemblance of collection numbers, however, indicates that all the specimens probably belonged to the same set collected by Noë.

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