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A new species of the genus *Tylorida* Simon, 1894 (Araneae: Tetragnathidae) from a rocky outcrop in the northern Western Ghats, India

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Abstract: A new species *Tylorida sataraensis* sp. nov. is described from the northern Western Ghats based on female only. Its behaviour of holding under water in response to disturbance is discussed.

Keywords: New species, Satara, *Tylorida*, Western Ghats.

Abbreviations: AME - Anterior median eyes; CD - Copulatory duct; FD - Fertilization duct; MOA - Median ocular area; ZSI - Zoological Survey of India.

The genus *Tylorida* is, represented by nine species worldwide, of which two species *T. culta* (Cambridge, 1869) and *T. ventralis* (Thorell, 1877) are reported from India and Sri Lanka. *T. ventralis* has a wide distribution that extends from India to Taiwan, Japan and New Guinea while *T. culta* is limited to India and Sri Lanka (Platnick 2013). The genus is recognized by the presence of smooth trichobothria on femur IV, and by copulatory and fertilization ducts running parallel before entering the spermathecae (Alvarez-Padilla & Hormiga 2011). The dorsum is slightly raised distally in *T. ventralis* to which Tikader (1982, fig. 169) refers as 'indistinct caudal tubercle,' but is absent in *T. culta*.

Rocky outcrops are basalt/ferricrete rocks exposed landform ranging from cliffs, inselbergs, and to rocky hills (Porembski & Barthlott et al. 2000). These were recently reviewed by Watve (2013) stating that these are specialized habitats accommodating a rich diversity of flora and fauna and a site for active speciation. Geomorphologically, these belong to the category of high level ferricretes in the northern Western Ghats. The maximum altitude of the plateau is 1200m, and these are surrounded by hill slopes which drop to a valley at about 800m.

Methods

The present area of study is a group of rocky plateaus in Chalkewadi region (17.57^{0}N & 73.83^{0}E) in Satara District, Maharashtra (Fig. 1). Spiders were collected from the webs constructed over streams flowing along the slopes of plateaus and studied under Olympus (MSZ-B) stereomicroscope. All the lengths are in millimeters. Epigyne were dissected and cleared in 10% warm KOH for 25 minutes before drawing. All specimens are deposited at the Western Regional Station, Zoological Survey of India, Pune.

Tylorida sataraensis sp. nov.
(Images 1–5, Figs. 2–4)

urn:lsid:zoobank.org:act:A477CA6F-7EDF-4FED-AF3A-396AAF37D1BA

Specimens examined: Holotype: ZSI-WRC-Ar/439, 06.iii.2013, female, Chalkewadi, coll. S. Kulkarni.

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Competing Interest: The authors declare no competing interests.

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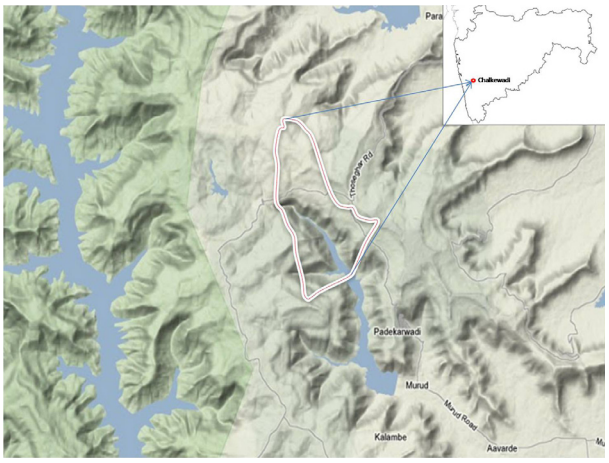

Figure 1. Location of type-locality in Maharashtra

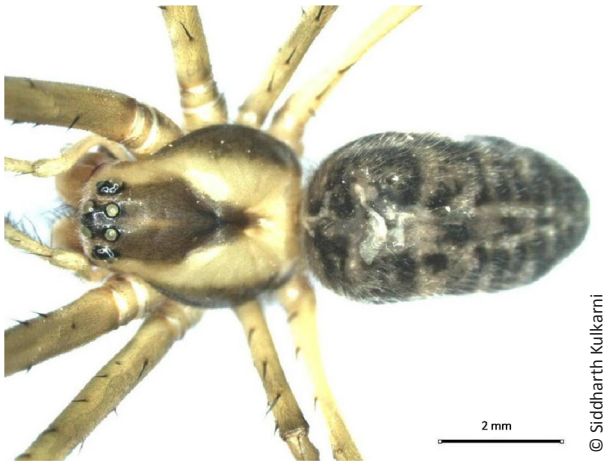

Image 1. *Tylorida sataraensis* sp. nov. female holotype - Habitus

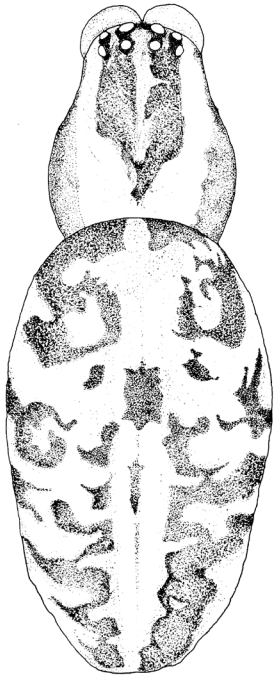

Figure 2. Habitus, dorsal

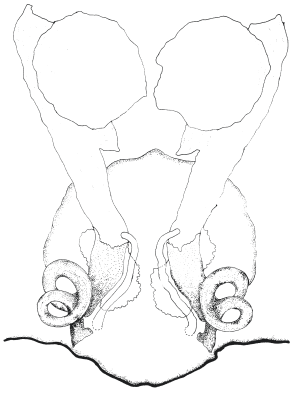

Figure 3. Epigyne dorsal

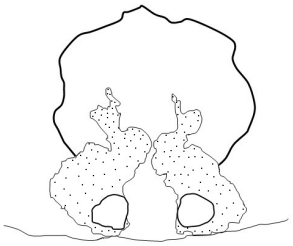

Figure 4. Epigyne ventral

Image 2. Ocular region

Paratypes: ZSI-WRC-Ar/440, 12.i.2012, four, females, Chalkewadi, coll. S. Kulkarni & A. Sargar (single accession number for all paratypes).

Diagnosis: The new species can be distinguished from all other *Tylorida* species by the narrow tip at the apex of the spermatheca (fig. 3) (which is absent in all other *Tylorida* species). It closely resembles *T. ventralis* (Thorell, 1877), but can be distinguished by the absence of silver striations, the caudal tubercle and the epigynal plate not quadrangular (see Tanikawa 2007, fig. 798); epigynal atrium is arch shaped (Image 4, fig.4); spermatheca with a bulbous head facing inwards but globular and bending outwards in *T. ventralis* (see Jäger & Praxaysombath 2009, fig.29); CD not overlapping FD but run adjacently (fig. 3) (similar arrangement seen in *T. cylindrata* (Wang, 1991)); two diffuse broad yellowish line on the mid-dorsum not present in *T. ventralis*.

Description: Holotype. A female having a total length of 10.1; carapace 3.66 long, 2.63 wide; abdomen 6.79 long, 4.04 wide. Other material: Total. 9.9–11.7; carapace 3.34-3.89 long, 2.60–3.12 wide; abdomen 6.57–7.92 long; 3.96–4.30 wide. Cephalic region and margins of thoracic region deep brown; faint yellow middle longitudinal line on cephalic part and is higher than thoracic in lateral view. Thoracic groove Y-shaped (Image 1). Median ocular area forms square and sides of each eye encircled by black patch. Clypeus about 1½ times diameter of AME. Lateral eyes placed on two slight tubercles (Image 2). Labium semicircular; endites longer than wide margined black with tips bent outwards, both brown with yellowish edges. Legs yellow with

Image 3. Chelicera

Image 4. Epigynal plate

Image 5. Epigyne ventral

Image 6. Habitat at Chalkewadi, Satara (type locality)

some blackish patches. Leg I about six times the length of carapace (Leg I - 21mm) and Leg III (smallest) - 9.6 mm. Ventral side of coxa IV provided with a black line at proximal half. Coxa II with black patch ventro-laterally. Trochanter with a few soft setae at distal edge ventrally. Femora IV thin and paler ventrally provided with trichobothria in proximal half. Sternum greenish-brown; roughly heart shaped, edges folded at coxae and covered with a few long setae rising even above maxillae when seen laterally. Chelicerae with three promarginal and four retro marginal denticles; fang with fine serrations on ventral side (Image 3). Abdomen slightly less than twice of the carapace. Oval and posteriorly flattened in lateral view; slightly overlapping cephalothorax. Venter black (pigment) margined by thick yellow lines covered sparsely by whitish pubescence. Epigynal plate flat; ventrally brown with black margins and resembling typical tree shaped structure (Image 4). Genital openings in shallow depression located slightly above base of tree shape (Image 5). Cuticle appreciably sclerotized as compared to walls of spermathecae which are very weakly sclerotized. CD and FD with many closely spaced coils forming a slant S-shape (and its reflection) at each respective side (fig. 3).

Male: Unknown.

Distribution: India: Satara, Chalkewadi.

Etymology

The species name is derived from the name of the district Satara, of type locality.

Discussion

The spiders build their orb-webs just above the course of streams running through the boulders (Image 6) on the high altitude rocky plateaus. These spiders are generally seen in their webs but when disturbed, they drop into the water leaving a dragline and cling to a rock surface at a depth of an inch below the surface of water waiting till the disturbances are halted. Observation of 16 specimens showed a maximum time of 14 minutes of being underwater. I could not photograph this in the field, but put a live specimen in a water filled transparent container with a stone immersed in it. When capped and overturned, the spider clung to the substratum and I observed bubbles forming along the dorsal abdomen, continuous with book lung openings. Similar field observations were reported by Gravely (1915, p. 537) in *Orsinome marmorea* Pocock, 1901, but, could not study it in detail.

Orsinome marmorea has been reported only once (Gravely, 1921) after its description by the author and with insufficient characters to make any reliable identification. Similar is the case with the remainder of two Indian species *O. armata* Pocock, 1901 and *O. listeri* Gravely, 1921. Since, *Orsinome* has been recently placed as a phylogenetic sister to *Tylorida* (Alvarez-Padilla & Hormiga 2011) it means that these genera are closely related. This also agrees with the morphological closeness and may have mixed species; thus indicating that both groups need revision.

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