

## First record of *Menemerus marginatus* (Kroneberg, 1875) (Araneae: Salticidae: Chrysillini) from India

Rishikesh Tripathi<sup>1</sup>, Ashish Kumar Jangid<sup>2,3</sup>, Manju Siliwal<sup>2</sup>, Sutirtha Dutta<sup>2</sup> and Ambalaparambil Vasu Sudhikumar<sup>1</sup>

<sup>1</sup> Centre for Animal Taxonomy and Ecology, Department of Zoology, Christ College, Irinjalakuda, Kerala, India- 680125

<sup>2</sup> Department of Animal Ecology and Conservation Biology, Wildlife Institute of India, Dehradun, Uttarakhand, India- 248001

<sup>3</sup> Corresponding author, *email* ashishjangid22@gmail.com

**Abstract.** The jumping spider *Menemerus marginatus* (Kroneberg, 1875) is reported for the first time from India, from the Desert National Park in Rajasthan. The male and female *M. marginatus* are redescribed from Indian specimens and the known distribution of this species, in southwestern Asia, is mapped.

**Keywords.** Desert National Park, distribution, jumping spider, Rajasthan

The genus *Menemerus* (Simon, 1868) is most diverse on the African, Asian, and European continents (Mariante & Hill, 2020). Presently this genus includes 65 species worldwide. Of these, *M. albocinctus* (Keyserling, 1890), *M. brachygnathus* (Thorell, 1887), *M. brevibulbis* (Thorell, 1887), *M. fulvus* (L. Koch, 1878) and *M. nigli* (Wesołowska & Freudenschuss, 2012) are known from India (Keyserling, 1890; Jastrzębski, 1997; Roy et al., 2016; Chatterjee et al., 2017; World Spider Catalog, 2021). During a recent *Arachnological Diversity Assessment* of the Desert National Park Wildlife Sanctuary of Rajasthan, India, three *Menemerus* spiders were collected. Later, we identified these as *M. marginatus* (Kroneberg, 1875) through the use of taxonomic keys provided by Wesołowska et al. (2011) and Bauer et al. (2015).

The known distribution of *Menemerus marginatus* includes parts of Afghanistan, Azerbaijan, Central Asia (southwestern European part of the former USSR, to include Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan), Iran, Pakistan, and the United Arab Emirates (Figure 1; World Spider Catalog, 2021). This new record (Figure 1: locality 32) extends the known distribution of this species in southwestern Asia to the southeast, into India. As previously suggested (Pook et al., 2009; Linder et al. 2017), climatic conditions in the Thar Desert that divides India and Pakistan are similar to those in contiguous, arid areas of southwestern Asia, and this area can be expected to harbor species previously found only to the north and west.



**Figure 1.** Known distribution of *Menemerus marginatus* in southwestern Asia, based on published records. Our new record (32), in Rajasthan, is highlighted in yellow.

## Materials and methods

Multifocal photographs of each specimen were taken with Leica DMC4500 digital camera mounted on a Leica M205 C stereomicroscope. Photographs were stacked with the image stacking software Leica Application Suite (LAS) version 4.3.0. Measurements were taken using Leica Application Suite (LAS) version 4.3.0 software, and all are in mm. Bracketed measurements for each leg segment are listed from the proximal to distal position [femur, patella, tibia, metatarsus, tarsus]. Terminology follows Ali et al. (2018) and Bossellaers & Jocque (2000) for leg spination. Specimens described here are deposited in the reference collection at the National Centre for Biological Studies (NCBS), Bangalore, Karnataka, India.

Abbreviations used in text: **ALE**, anterior lateral eye; **AME**, anterior median eye; **PLE**, posterior lateral eye; **PME**, posterior median eye; **pl**, prolateral; **plv**, prolateral ventral; **rl**, retrolateral; **RTA**, retrolateral tibial apophysis; **rlv**, retrolateral ventral; **NRC**, NCBS Research Collection.

## Taxonomy

### Salticidae Blackwall, 1841: *Menemerus marginatus* (Kroneberg, 1875)

Figures 1 (map), 2-23

*Material examined.* INDIA: Rajasthan: Jaisalmer District: Desert National Park Wildlife Sanctuary: Sudasari area, 1♂ & 2♀, 26°40'46.84"N, 70°36'10.06"E, 225m asl, coll. R. Tripathi & A.K. Jangid, 18 April 2018 (Figure 1: locality 32).

*General appearance* (Figures 2-17). Carapace dark brown in color, a black band on each side, a band of white hairs on the margins, ocular area black with long black bristles, cephalic region black in color and bearing very small white hairs, clypeus low. Chelicerae black. Legs yellowish to brown, leg I darker than the others, covered with dense white hairs and spines. Anterior half of abdomen with a wide, longitudinal, middorsal band, brown with a wavy pattern of lighter setae on either side. Posterior half of dorsal abdomen with several middorsal, forward-pointing chevrons. Long, dense, white-brown hairs at the anterior margin of the abdomen. Ventral abdomen dark brown in the male and pale white in the female. Sternum dark brown in both sexes. Spinnerets yellowish brown in color.

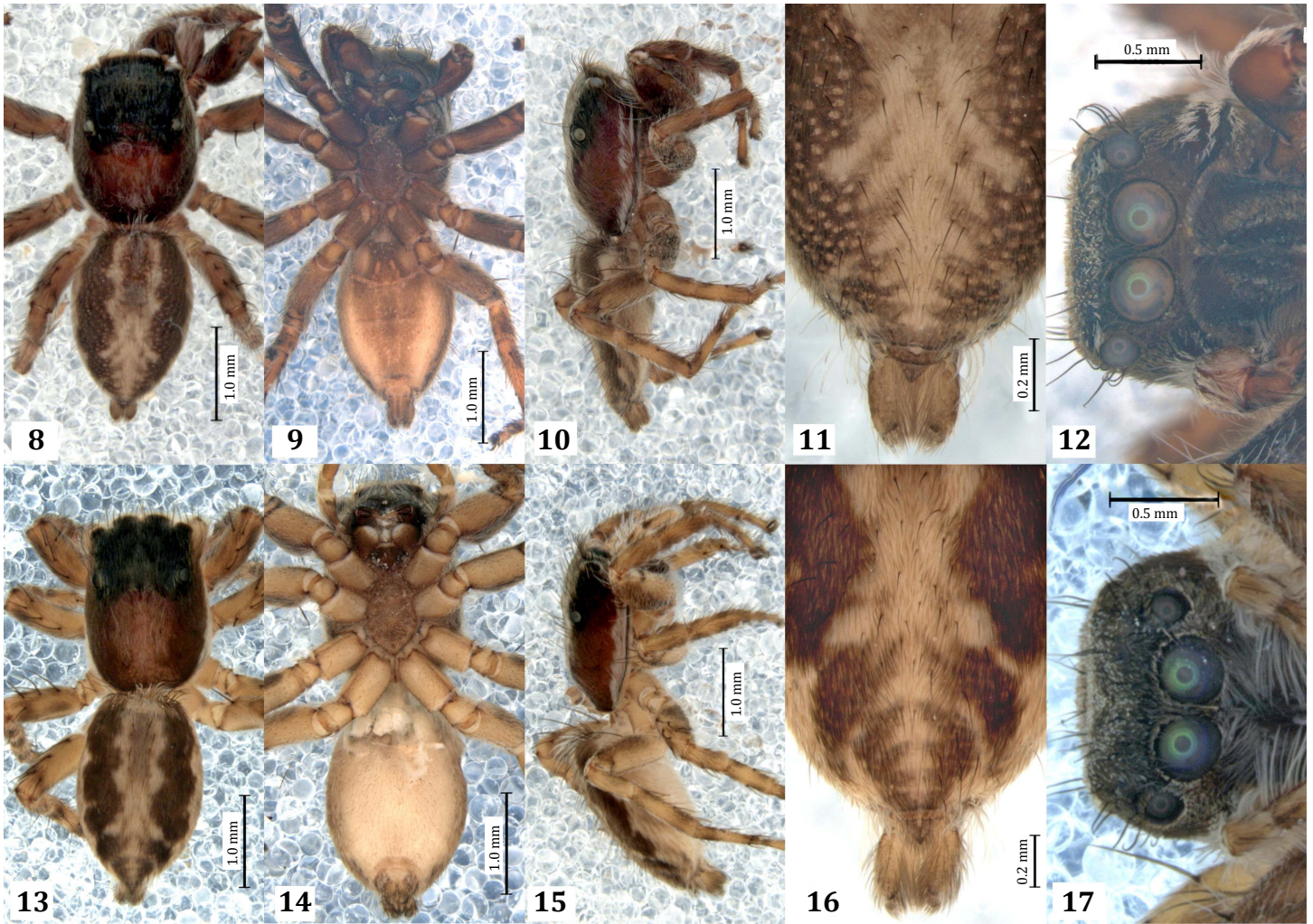
*Male* (Accession number NRC-AA-1717; Figures 2-4, 8-12; 18-21). Body length 4.05. Carapace 1.86 long, 1.31 wide. Abdomen 2.17 long, 1.24 wide. Eye diameters: AME 0.30, ALE 0.16, PME 0.04, PLE 0.16. Separation of eyes: AME-AME 0.03, AME-ALE 0.07, PME-PME 0.99, ALE-ALE 0.75, PME-PLE 0.17, PLE-PLE 0.79, ALE-PME 0.26. Chelicera 0.68 long, 0.30 wide, clypeus 0.02 high, sternum 0.80 long, 0.50 wide, labium 0.31 long, 0.22 wide, endite 0.26 long, 0.24 wide. Leg I 3.66 [1.10, 0.66, 0.90, 0.64, 0.36], leg II 2.94 [0.95, 0.56, 0.66, 0.50, 0.27], leg III 2.95 [0.93, 0.39, 0.66, 0.57, 0.40], leg IV 3.78 [1.15, 0.53, 0.93, 0.74, 0.43]. Leg formula: 4132. Leg spines: femur I-II do 4, III-IV do 5; patellae I-IV spineless; tibia I plv 3 rlv 3, II rl 1 plv 2 rlv 1, III plv 2 rlv 2, IV rl 2 plv 2 rlv 3, metatarsi I-II plv 4 rlv 4, III pl 2 rl 1 plv 3 rlv 2, IV pl 1 rl 1 plv 2 rlv 1; tarsi I-IV spineless. Male slightly smaller and darker than female. Palp: cymbium surrounded by long black hairs and truncated at the anterior tip, single strong sclerotized RTA has broad base, straight embolus with distal lamella (Figures 18-20).

*Female* (Accession numbers NRC-AA-1718, NRC-AA-1719; Figures 5-7, 13-17; 22-23). Body length 4.18. Carapace 1.88 long, 1.34 wide. Abdomen 2.08 long, 1.37 wide. Eye diameters: AME 0.31, ALE 0.16, PME 0.07, PLE 0.17. Separation of eyes: AME-AME 0.04, AME-ALE 0.07, PME-PME 0.99, ALE-ALE 0.78, PME-PLE 0.19, PLE-PLE 0.83, ALE-PME 0.31. Chelicera 0.57 long; 0.29 wide, clypeus 0.02 high, sternum 0.84 long, 0.50 wide, labium 0.31 long, 0.28 wide, endite 0.28 long, 0.26 wide. Leg I 3.01 [1.02, 0.53, 0.70, 0.50, 0.35], leg II 2.88 [0.87, 0.57, 0.64, 0.54, 0.30], leg III 2.93 [0.90, 0.44, 0.62, 0.61, 0.36], leg IV 3.77 [1.12, 0.53, 0.86, 0.71, 0.55]. Leg formula: 4132. Leg spines: femur I-II do 4, III do 6, IV do 5; patellae I-IV spineless; tibia I plv 2 rlv 2, II plv 2, III pl 1 rl 1 plv 1 rlv 1, IV pl 1 rl 2 plv 2 rlv 1, metatarsi I-II plv 2 rlv 2, III pl 1, rlv 1 plv 3 rlv 2, IV pl 1 rl 1 plv 3 rlv 2; tarsi I-IV spineless. Distinct sclerotized round epigynum, with an indentation at the posterior edge, large oval pockets near epigastric furrow, strongly sclerotized internal structure including genital pores, short seminal ducts. Spermathecae away from the midline and spherical in shape (Figures 22-23).

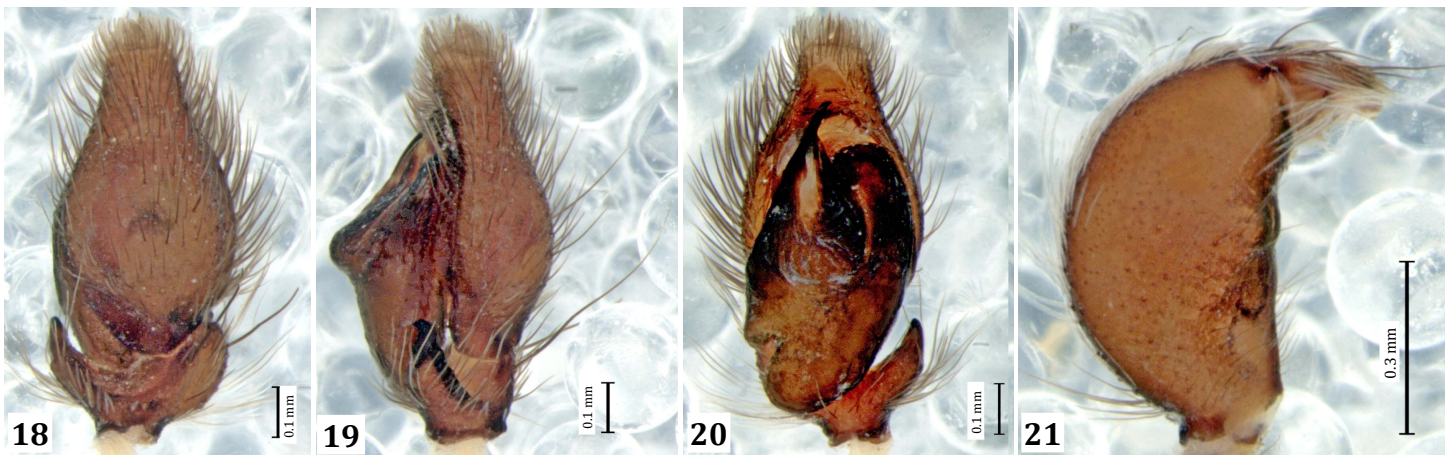
*Habitat.* *Menemerus marginatus* were observed in crevices of the trunk of a native flowering tree, *Prosopis cineraria* (Fabaceae).



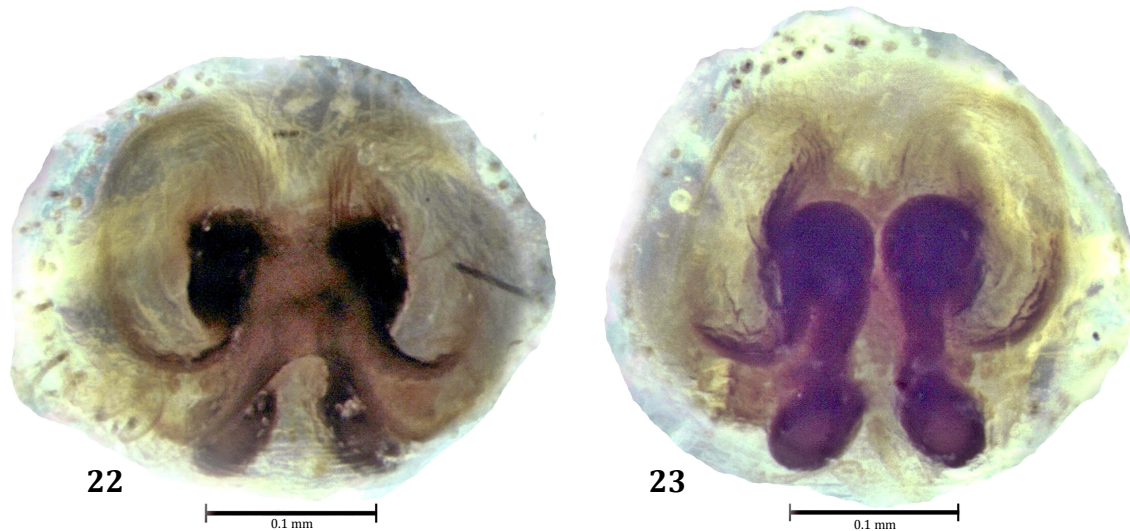
**Figures 2-7.** Images of live *Menemerus marginatus* from India. 2-4, Adult male, dorsal (2), dorsolateral (3) and anterolateral (4) views. 5-7, Adult female, dorsal (5-6) and dorsolateral (7) views.



**Figures 8-17.** General appearance in alcohol of *Menemerus marginatus* collected in Rajasthan. **8-12, Male.** **13-17, Female.** Note the chevrons on the posterodorsal abdomen of both the male (11) and the female (16).



**Figures 18-21.** Left pedipalp of male *Menemerus marginatus* collected in Rajasthan. **18, Dorsal view.** **19, Retrolateral view.** **20, Ventral view.** **21, Prolateral or medial view.**



**Figures 22-23.** Extracted and cleared epigynum of female *Menemerus marginatus* collected in Rajasthan. **22**, Dorsal (interior) view. **23**, Ventral (exterior) view.

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