International Research Journal of Biological Sciences _____ ISSN 2278-3202
Vol. **10(2),** 36-40, May **(2021)** *Int. Res. J. Biological Sci.*

Short Communication

The first record of *Rhagoderma tricolor* Roewer, 1941 (Solifugae: Rhagodidae) from North Gujarat, India

B.M. Parmar
Central Laboratory, Dudheswar waterworks, Ahmedabad Municipal Corporation, Gujarat, India
parmarbhaveshkumar@gmail.com

Available online at: www.isca.in, www.isca.me
Received 26th September 2020, revised 29th April 2021, accepted 8th May 2021

Abstract

Present study reports Rhagoderma tricolor Roewer, 1941(Solifugae: Rhagodidae) recorded first time for the North Gujarat. A detailed morphological description, diagnosis, body measurements, ecology and geographical distribution of the species are provided. Distribution of genus Rhagoderma in South Asia is documented.

Keywords: Rhagoderma tricolor, Solifugae, Rhagodidae, new record, North Gujarat, India.

Introduction

Order Solifugae contains 1,116 species belonging to 13 families and 144 genera[1-3]. Family Rhagodidae contains 27 genera and 98 species from worldwide. Members of Rhagodidae are distributedspecifically in northeastern Africa, southwestern Asia and the Near East[1]. The genus Rhagoderma Roewer, 1933 is distributed in Israel, Turkey, Pakistan and India with three species: R. nigriceps; R. assamensis and R. tricolor[4-8]. This paper offers with first record of Rhagoderma tricolor Roewer, 1941 in North Gujarat. This species previously recorded from Israel and Turkey only[7,8].

Methodology

The specimen was collected using hand picking method from the rural area of the Deesa, Banaskantha district (24°14' 33.0252" N &72°12' 31.9212"E). The Study area is lies in the North part of Gujarat. Climate of North Gujarat is dry and semiarid type. The collected specimen was observed under stereo zoom microscope and USB digital microscope with micro-measure software package was used for body parts measurements. All the measurements of specimen are in the millimeters.

Results and discussion

Diagnosis: The family Rhagodidae is separated through morphological characteristics other members of the order Solifugae by the distinctive hemispherical arrangement of their anal segment and their ventrally located anus[9] (Figure-4B). Rhagodids are heavy-bodied and short-legged. Many are brightly or contrastingly colored [9].

The genus Rhagoderma is recognize through the characteristics of the family and 2nd and 3rd tarsus ventrally with each 1.2 thorns and 4th tarsus ventrally reinforced with 1.2.2.2 thorns (Figure-4). The Rhagoderma tricolor is distinguished from the two other species: R. nigriceps; R. assamensis of this genus primarily by the dorsal end spines of the 2nd and 3rd tibia and by the coloring of the body. The sample was identified as Female based onpresence of malleoli or Racquet organs (Figure-2).

***Rhagoderma tricolor* roewer, 1941 (solifugae: rhagodidae)**

Material Examined: 1♀ (BMP), 20.05.2020, collected from road side at night (24°14'33.0252" N & 72°12' 31.9212" E), Deesa, Banaskantha district, Gujarat, India

Distribution: India, Israel, Turkey. A distribution of Genus Rhagoderma is recorded based on Pocock and present record from South Asia.

Description: Coloration: The general color of the body and edges in Female is discolored reddish-brown, cephalothorax, pedipalp, tarsus and metatarsus blackish brown (Figure-1&2). There is a reddish stripe starting from the abdomen basal to the segment along the tergites, expanding towards the back. This reddish stripe is bordered by a black-brownish brown stripe, which narrows gradually Abdomen sides (pleura) are dark gray. Abdomen sternites, genital segment, sternites other than the 2nd, 3rd and last sternites, and the side edges of these sternites are dark brownish brown. The anus to the back along 1-8 segments from the sides. Around the anus, there are grayish spots on both sides of the segment. The underside of the abdomen segments is discolored reddish-brown, I.-IV. The anterior half of the leg femurs is indistinct brownish brown. All upper surfaces and extremities of the body are covered with light colored fine hairs and brownish brown spikes. Its limbs have yellow-brownish brown thorn groups in row.

Dentition: Movable finger with two teeth: medial tooth and proximal tooth (MP &MM); fixed finger with 8 teeth: 1 distal

tooth (FD), 1 medial tooth (FM), 1 proximal tooth (FP), and 5 retrofondal teeth (3 retrofondal apical teeth,1 retrofondal medial tooth, and 1retrofondal proximal tooth) (Figures-3).

Chaetotaxy: Fixed finger: A regular distributed and distally directed and longitudinal row of pdp setae, from proximal to distal, and a row of secondary pdp setae; deformed and distally focused; a row of extended acuminate pvsd setae; weak, small pm setae thinly dispersed among stridulatory setae; a tinny, longitudinal field of a little bowed, ventro-distally to distally focused pv setae, collective in length and extent distally Stridulatory apparatus. Containing parallel, regularly-spread out and distally focused stridulatory setae. Movable finger: A Sequences of straight to slightly bowed, dorso-distally focused mpd setae, the apical-most setae is longer; straight sequence, ventrodistally directed mpv setae, distally increasing in length, breadth anda narrow field of conventional, non-plumose, distally focused mpm setae.

Bacilli: The first three pairs of legs Coxae have with long light brown bacilli, which are relatively well observable on the Coxae of legs III. Their figure varies among Coxae and they are typically located at Coxae of legs II and III (Leg I- 6/7, Leg II-13/9, and Leg III- 13/19) (Arrows at Figure-4A).

Spinulation: The entire upper surface and extremities of the body are covered with light colored fine hairs and grayish brown spines. There are groups of yellow-gray brown spines in rows on its extremities. The underside of the abdominal segments, the extremities and the terminal of the abdomen are covered with long, thin and very light colored hair. The bristles in the femur between these light colored hairs are barely noticeable. In addition, the bristles are half the length of the femur and narrow from the bottom to the tip II and III. Leg IV at the anterior edge of the femur. If the leg is in the middle of the inner edge of the femur, there is 1 thorn (Figure-5).

III Leg femur has single spines. Often there are prominent and short barbs at the posterior end of the femur. One of them is slightly thickened and differs in appearance and size from normal thorn. IV. Bumps in the form of the leg tarsus 0.0.1. (0). 1 in the formulation. In other words, the two spines in the tarsus are dark in color and draw attention because they are bent inward. The number of barbs on the front of the tarsus can sometimes be 0.1.1. (0). 1. II. and III. Leg tarsus usually has bumps in the form of 0.0.0.1 and very rarely 0.0.1.1. There is 1 thorn on the front of Tarsus. On the pedipalp metatarsus there are 14-16 yellow, gray-brown, 5-6 long spines on the first leg metatarsus.

Opisthosoma: Abdomen flanks (pleura) are dark gray in color. Abdomen sternites, genital segment, sternites excluding the 2nd, 3rd and last sternites and the lateral edges of these sternites are dark gray brown. Anus around, there are grayish spots on both sides of the 11th segment. The underside of the abdominal segments is brownish-white, I.-IV. Anterior half of the femurs of the legs are inconspicuous gray brown.

Bio-ecological Notes: The species was collected from rural area of Deesa Taluka of Banaskantha and, it was collected from under the stone at night. The species is nocturnal. Probably this species prefers living in semiarid area like North Gujarat.

Table-1: Measurements of Body Parts.

Body Part	Length		Width		
Chelicerae	11.27		7.15		
Propeltidium	7.65		7.49		
Abdomen	21.60		7.88		
Extremity	Tarsus	Metatarsus	Tibia	Femur	Total
Palp	4.13	6.38	8.33	7.12	25.96
Leg I	3.14	4.38	6.21	6.80	20.53
Leg II	2.61	3.10	2.91	4.80	13.42
Leg III	2.73	4.93	3.84	4.13	15.63
Leg IV	4.18	6.09	7.43	8.48	26.18

Figure-1: Dorsal view of the Female *Rhagoderma tricolor.*

Figure-2: Ventral view of the Female *Rhagoderma tricolor.*

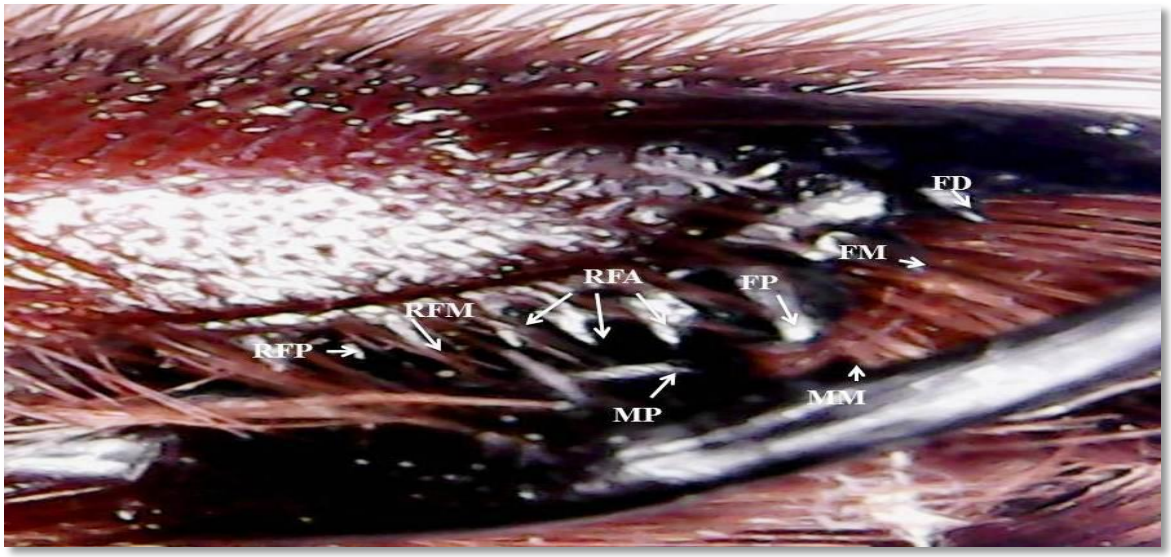

Figure-3: Dentition.

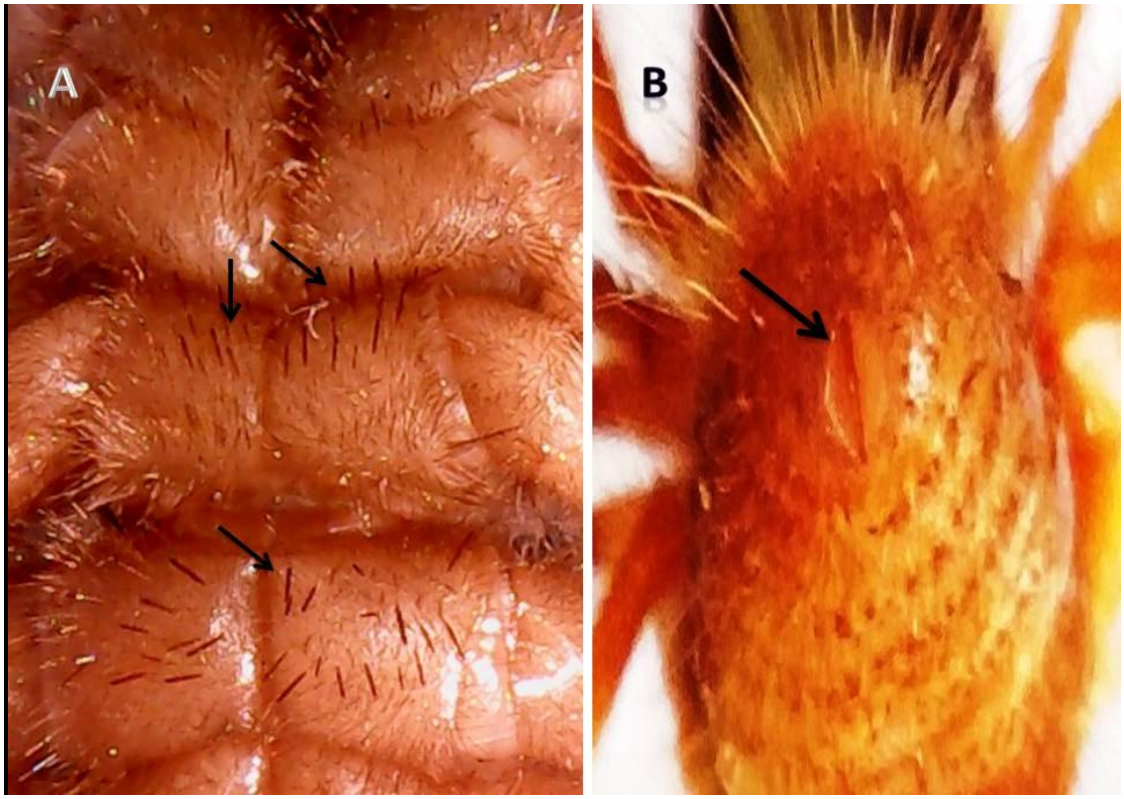

Figure-4: (A) Bacilli, (B) ventrally located anus.

Figure-5: 4th Leg of *Rhagoderma tricolor*.

Conclusion

The Family Rhagodidae studies in Gujarat (India) in the past about a century ago; Pocock dealt with Solifugae in his 'Fauna of British India (Arachnida)' and attempted to work out. After Pocock till today, unfortunately there is no attempt to explore Rhagodidae of Solifugae in Gujarat (India). After this record, the genus Rhagoderma Roewer is distributed in South Asia with total three species: R. nigriceps; R. assamensis and R. tricolor.

References

1. Harvey, M. S. (2003). Catalogue of the smaller arachnid orders of the world: Amblypygi, Uropygi, Schizomida, Palpigradi, Ricinulei and Solifugae. Csiro Publishing. Catalogue of the Smaller Arachnid Orders of the World. Collingwood, Victoria, Australia. 385 pp.

2. Parmar B. M. (2020). The first record of *Galeodes indicus* pocock, 1900 (Solifugae: Galeodidae) from Gujarat, India. *Life sciences leaflets*, 127, 46-51.

3. Parmar, B. M. (2020). First record of genus Rhagodes, pocock, 1897 (Solifugae: Rhagodidae) from Gujarat, India. *Life sciences leaflets*, 130, 1-7.

4. Pocock, R.I. (1895). On the species of Galeodidae inhabiting India and Ceylon. *Journal of the Bombay Natural History Society*, 9, 438-452.

5. Pocock, R. I., Baker, E. S., Oates, E. W., Bingham, C. T., Talbot, G., Southwell, T., ... & Distant, W. L. (1912). The Fauna of British India: Including Ceylon and Burma. 6, Taylor & Francis.

6. Roewer, C.F. (1933). Solifugae, Palpigradi. In 'Klassen und Ordnungen des Tierreichs. 5: Arthropoda. IV: Arachnoidea'. (Bronns, H. G. Ed.). 5(4), 161-480. Akademische Verlagsgesellschaft M B.H.: Leipzig.

7. Roewer, C.F. (1941). Solifugen 1934-1940. Veroffentl. Deutschen Kolonial- und Übersee- Mus., Bremen, 3, 97-192.

8. Koç, H. (2008). A new genus and species record from Turkey: Rhagoderma tricolor Roewer, 1941 (Solifugae: Rhagodidae). *Turk J Arach*., 1(2), 137-140.

9. Savary, W. (2006). Solpugid: A source of information on the arachnid order Solifugae. Online: http://www.solpugid.com/Rhagodidae.htm2006.