NEW RECORD ZOOS' PRINT JOURNAL 19(11): 1694-1695

A NOTE ON DESERT MANTIS *EREMIAPHILA ROTUNDIPENNIS* KIRBY (INSECTA: MANTODEA: EREMIAPHILIDAE) FROM RAJASTHAN, INDIA

S.P. Ranade [1], Shomen Mukherjee [2] and H.V. Ghate [3]

[1, 3] Department of Zoology, Modern College, Pune, Maharashtra 411004, India
[2] Mitrani Department of Desert Ecology, Ben-Gurion University of the Negev, Sede Boker Campus, 84990, Israel
Email: [3] hemantghate@hotmail.com (corresponding author)

web supplement

The Family Eremiaphilidae (Mantodea) is known to be distributed in the deserts, especially the semi arid regions (Mukherjee *et al*. 1995). Only a single genus, *Eremiaphila*, from this family is found in India. Genus *Eremiaphila*, according to Giglio-Tos (1927), includes some 47 species distributed in deserts of South-West Asia, Mediterranean and Red Sea. Ehrmann (2002) in his recent catalogue of world Mantodea lists 68 species. An interesting feature of this genus is the presence of a pair of terminal spines on the last abdominal sternite (= subgenital plate) of a female, a character also present in the only other genus in this family. The species *Eremiaphila rotundipennis* (wrongly designated as *E. irridipennis*) was reported for the first time from India (Rajkot in Gujarat) by Mukherjee and Hazra (1985). The species is distributed in northwestern Egypt, India and Libya, according to Ehrmann. Little is known about its biology and ecology. The present note extends the range of this species to adjacent state, namely Rajasthan and adds comments and morphometry of nymphs for the first time.

On 27 December 2000, during a walk near the Desert National Park (Jaisalmer, Rajasthan), one of us (SM) came across a female of this species, moving around on the ground. The species was identified using keys in the "Fauna of Mantodea" (Mukherjee *et al*., 1995). Subsequently male and nymphs of this species were collected between July 2002 and March 2003 in an area near Jaisalmer and brought to Pune for detailed measurements. The male and female were kept alive for some time by feeding ants and flies. The mantids (adult and nymphs) were later preserved and are kept in Modern College, Pune. The male and female both appear larger than the ones reported earlier by Mukherjee and Hazra (1985). The appearance of nymphs of various sizes in March as well as July suggests breeding season to be quite long, at least in Rajasthan.

The area around Jaisalmer, where the species is found, is predominantly sandy. Interspersed among the sandy terrain are small (roughly 10 to 50m in diameter), dark, circular patches of hard and compact ground with gravel, locally known as *magra*. Some amount of thin grass is also present around these places. The mantids were sighted in some of these patches of hard ground. *E. rotundipennis* is a fairly common species in that area and, interestingly, most of the sightings were in this *magra* habitat. Since this mantis is greyish-brown, this terrain provides it with good camouflage because it is difficult to spot this insect readily.

Ants and some species of termites, which are common in the area, possibly form the main food for this mantis as one of the mantid was seen feeding on ants. In a very interesting note on desert mantis *Eremiaphila braueri* Kr., found in Baluchistan (although this species is not shown to occur in this area in a recent book on world Mantodea: see Ehrmann, 2002), Roonwal (1938) had also stated that the mantids were found on hard, clayey *kallar* (saltish) soil, and not on sand, in Pasni (Baluchistan). It was further stated that the principal food, determined by gut-content analysis, were ants. Roonwal further briefly described the interesting frightening attitude, which involved display of beautiful colouration under the elytra and the wings, of this mantis. We photographed this peculiar behaviour in *Eremiaphila* and a few other species (Images 1-3[w]), as this is a common display among mantids (see Varley, 1939).

Morphological features of this species have already been given by Mukherjee and Hazra (1985) and by Mukherjee *et al.* (1995), and are not repeated here. A few additional features are however given below along with a table of measurements for adults and nymphs (Table 1).

In female, elytra are longer than broad. In fore legs, coxae possess 14-15 very small spines on the anterior edge; external femoral spines are 4 (all ½ to ¾ brown), internal femoral spines are 18 (proximal 2 and distal 2 long and brown up to ¾ from the tip). Tibia has five external spines (all ½ to ¾ brown) and 12 internal spines (that are progressively longer distally and brown at ½ from the tip). Discoidal spines four, third of which is the longest. Frontal sclerite 2.6mm/1.0mm, that means it is transverse, about 2.6 time broader than long. Some part of frontal sclerite and vertex is covered with rounded tubercles. A row of dark brown tubercles is present on the lateral lobe of the vertex, just before the eye.

Whole pronotum is covered with shining light brown tubercles while front edge and posterior edge has dark brown tubercles. Lateral margin of pronotum flattened. A white line from between the antennae runs throughout the vertex to the end of metazona. Metazona is with a faint carina in female.

Inner face of mid-hind legs is cream coloured, with many fine punctures. Last abdominal sternite is provided with a posteriorly directed pair of spines that are 1.1mm long. These spines are deep brown in the distal half. This last sternal plate is also covered with fine punctures not seen on other sternites. Similar fine punctures are seen on the inner faces of the mid and hind coxae, tibiae and tarsal segments; in fore legs such punctures are seen only on trochanter. Inner face of fore coxae and femur is tuberculate and spiny. Mid and hind femora and tibiae are covered with setae on ventral surface.

Outer face of mid and hind legs is covered with black spots and light brown tubercles as well as spines. Both femur and tibia of all legs are covered with three faint brown, circular bands that

[w] See Images 1-3 in the web supplement at www.zoosprint.org

Manuscript 1212; Received 24 May 2004; Finally accepted 26 August 2004;

are distinct only on dorsal side. Tarsal segments are light brown. There are sharp distal spines for mid and hind tibiae.

Abdominal tergites are covered with light brown tubercles. Dorso-median triangular region of each segment is slightly raised and projecting above the subsequent segment like a fine beak. Posterior edge of each abdominal segment is covered with dark brown tubercles placed about 1mm apart.

As far as nymphs are concerned, these appear to have darker bands on legs and in very small nymphs the bands form complete circles. In larger nymphs the bands are very pale ventrally and in adults these are almost indistinct.

It would be interesting to see ootheca formation, period of embryonic and post embryonic development. Continuous field observations from March to July will be fruitful.

References

Ehrmann, R. (2002). *Mantodea: Gottesanbeterinnen der Welt*. Natur und Tier-Verlag, Munster, Germany (Praying Mantids of the World [in German]), 519pp.

Giglio-Tos, E. (1927). *Orthoptera Mantidae*. Das Tiereich Walter de Gruyter & Co., Berlin, 707pp.

Mukherjee, T.K. and A.K. Hazra (1985). New records of a deserticolous mantid family (Mantodea: Eremiaphilidae) from India. *Entomon* 10: 245-247.

Mukherjee, T.K., A.K. Hazra and A.K. Ghosh. (1995). The Mantid Fauna of India (Insecta: Mantodea). *Oriental Insects* 29: 185-358.

Roonwal, M.L. (1938). The frightening attitude of a desert mantid, *Eremiaphila braueri* Kr. (Orthoptera, Mantodea). *Proceedings of the Royal Entomological Society, London (A)* 13: 71-72.

Varley, G.C. (1939). Frightening attitude and floral simulation in praying mantids. *Proceedings of the Royal Entomological Society, London (A)* 14: 7-8.

Acknowledgements

Authors would like to thank WWF India, Pune division for sponsoring the trip. We are grateful to Andreas Gumprecht (Germany) for invaluable gift of the Giglio-Tos volume. We are equally indebted to Dr. T.K. Mukherjee (Presidency College, Kolkata), Dr. Sagar Petkar (New Castle upon Tyne, UK), Drs. David Gower and Mark Wilkinson (NHM, UK) for their timely support, interest and encouragement that enormously helped our research on Mantodea. Thanks are also due to the authorities of Modern College for facilities and encouragement.

Table 1. Morphometry of* Eremiaphila rotundipennis *from Rajasthan (all measurements in mm)

Parameter	Male	Female I	Female II	N No. 1	N No. 2	N No. 3	N No. 4 *	N No. 5**
Total length	21.0	22.0	24.0	4.2	6.5	7.2	15.0	14.6
Pronotum length/width	4.2/4.2	4.2/5.2	4.1/5.1	0.8/1.2	1.5/2.2	1.4/1.7	2.7/3.5	3.1/4.0
Prozona	1.7	1.7	1.7	0.4	0.7	0.6	1.3	1.4
Elytra length/width	6.5/4.5	7.3/6.0	7.5/5.5					
Fore Coxa	3.5	4.2	4.2	1.2	1.5	1.4	2.5	3.0
Fore Femur	5.2	5.2	5.5	1.2	2.2	1.8	3.5	3.5
Fore Tibia	2.7	3.8	3.5	0.7	1.2	1.0	1.6	2.0
Mid Coxa	1.9	2.8	2.5	0.5	1.2	0.6	2.0	2.0
Mid Femur	7.7	8.3	9.0	2.0	3.5	3.0	5.5	5.8
Mid Tibia	6.5	7.5	7.6	1.7	2.7	2.2	4.4	5.0
Hind Coxa	1.9	2.2	2.5	0.5	1.2	0.6	1.8	2.0
Hind Femur	10.2	10.6	12.5	2.5	4.7	3.5	7.3	7.7
Hind Tibia	10.0	12.8	13.5	2.8	5.0	3.8	7.5	8.3
Hind Tarsus	5.5	6.0	6.0	2.2	3.2	2.3	4.5	5.0

N - Nymph; * of the nymphs only Nymph 4 female showed sternal spines; ** Male nymph.
In small nymphs, i.e. Nymphs 2 and 3, the dark rings on mid and hind legs are complete and are of almost the same intensity on dorsal and ventral side. In the remaining nymphs the intensity of color is reduced on ventral side. In adults the ventral surface is almost totally pale cream with very only a faint indication of the former coloration.