OPEN ACCESS

Kashf Journal of Multidisciplinary Research
Vol: 02 - Issue 07 (2025)
P-ISSN: 3007-1992 E-ISSN: 3007-200X
https://kjmr.com.pk

# EXPLORING MANTID DIVERSITY: THREE NEWLY RECORDED SPECIES OF MANTIDS (MANTIDAE: MANTINAE) IN NAUSHAHRO FEROZE DISTRICT, SINDH, PAKISTAN

***Kashif Ali Shar***
*Shah Abdul Latif University, Khairpur Mirs' Sindh, Pakistan.*

***Sanaullah Ansari****
*Shah Abdul Latif University, Khairpur Mirs' Sindh, Pakistan.*

***Kiran Naz***
*Shah Abdul Latif University, Khairpur Mirs' Sindh, Pakistan.*

***Kashif Waheed Ansari***
*Khairpur Medical College, Khairpur, Sindh, Pakistan.*

****Corresponding author: Sanaullah Ansari (sanaullah.ansari@salu.edu.pk)***

**Article Info**



**Abstract**

This research unveils significant additions to the mantid fauna of Naushahro Feroze District, Sindh, Pakistan, with the documentation of three previously unrecorded species within the Mantidae family. Through comprehensive field surveys and taxonomic analysis, we identify and describe these newfound mantid species, shedding light on their ecological roles and distribution patterns within the region. This study not only expands our understanding of mantid diversity in Sindh but also underscores the importance of continued exploration and documentation of insect fauna for conservation and biodiversity management efforts.

**Keywords:**

*Mantids; Mantinae; Taxonomy; Biodiversity; New record.*

## 1. Introduction

Mantodea also referred as “praying mintids” is a word derived from Greek that means “prophet”. Hermann Burmeister, a German entomologist, came up with this name. Mantes and mantis are common names for this order in Latin and Greek, respectively. Mantodea historically belonged to the family of mantids. In Europe, the Mantis religiosa (European mantis) is frequently used. Their peculiar stance of the front two legs, which is like that of a resting or sleeping animal (Döring, 2022). It has a praying-like air to it.

The praying mantis, which is only found in tropical places and has roughly 15 families, 436 genera, and 2366 species, is one of the most fascinating flesh-eating insects (Panhwar et al., 2020). Phasmatodea, Blattodea, and Grylloblattodea (rock crawlers) are all classified as part of the Orthopteroid group by mantises. By combining it with the order Dictyoptera and adding termites and cockroaches, Kristensen (1991) created the suborder mantodea (Terra & Ferreira, 2020). The 08 families were categorized under order by Beier in 1968. Male external genitalia were revisited by Klass (1997; 1998a, b; 2001), who came to the conclusion that the Metallyticidae and Chaeteessidae families are not related (Schwarz & Roy, 2019). Mantodea has been studied and discussed, but Thespidea and other polyphyletic species have also been discussed (Svenson & Whiting, 2009).

Mantodea insects’ range in size from 1 to 17 cm. Females are larger than males are. Mantid adult insects can be separated into thorax, head, and abdomen segments. Three photo receptor ocelli, complex eyes with many lenses, and mouth components are all present on the head. Mantids have distinct mesothorax, prothorax, and metathorax. Anterior prozona and posterior metazona are found in the thorax. Prozona has two front legs, but Mesothorax and Metathorax only have one pair of legs and wings. In contrast to the membranous hind wings, the wing's tegmina are rigid. Different wing structures, including apterous, short, or reduced, and well-developed wings, are found in mantids. The proximal coxa, tibia, trochanter, tarsus, and femur make up the legs. Spines are frequently found in foreleg fragments. Three spines are dispersed throughout the femur, including one on the discoidal area. There are 10 components to the abdomen, including the genitalia and two anal cerci that have two anal styles in male species and multiple segments in female species (Yadav & Painkra, 2021).

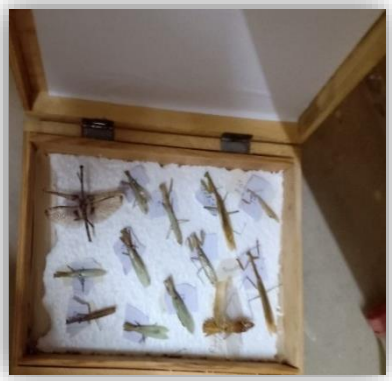
According to updated information on all mantodea species, there are 19 families in all, except for one unmarked family. Of these, eight are well-known in Sindh, Pakistan, and include the following: Empusidae, Hymenopodidae, Metallyticidae, Amorphoscelididae, Mantoididae chaeteissidae, and Mantidae (Panhwar, W.A., R. Sultana, I. Khatri. 2022). Additionally, the current mantodea species from the Mantodea species online file (version 5.0) provided us with spectacular updates, interactions, and access to the entire community of mantodea researchers. Numerous researchers, including Abu-Dannoun and Katbeh-Bader (2007), Battiston and Fontana (2005), Ehrmann and Roy (2009), Chobanov and Mihajlova (2010), Harper (2016), have made significant contributions to our understanding of the mantid fauna of the Indian continent. Praying mantises are obviously important for agriculture, which is why the current study was suggested for Naushahro Feroze in Sindh.

## 2. Methdology

### 2.1. Sample Collection

The mantises were gathered from various Naushahro Feroze locations. Mantises were hand-picked from lawns, gardens, and other agriculture areas and caught using an insect net. The Entomological Laboratory, Department of Zoology, SALU Khairpur received the collected specimens (Fig. 1.). KCN (potassium cyanide) was used to kill collected mantid species in entomological sealed jars.

**Fig. 1. Collection of Samples**



### 2.2. Samples killing

KCN (potassium cyanide) was used to kill the collected mantis species in airtight plastic jars. On the stretching board, mantis species were stretched and pinned to the thorax area. Following drying, samples were placed in bug cabinets or boxes with the necessary information (Collection Date, Collector's Name, and Locality Name). The specimen mounting and preservation were done with great care. Specimens were tagged according to protocol and preserved in designated wooden insect cases. Insects were shielded and preserved with naphthalene balls from fungus and ant predators.

### 2.3. Samples identification

With the use of pertinent literature, the samples were located. The dissecting microscope was used to observe external characteristics. Identification was conducted using regional taxonomic keys from the literature and a binocular microscope (Mohammad, et al., 2011).

### 2.4 Study of genitalia

The specimens were stored in a desiccator for 24 hours while being moistened with water and a few drops of 70% alcohol for the investigation of the genitalia. The abdomen of the specimen was dissected on the subsequent day. Using small forceps, the genitalia were extracted, cleaned in tap water, and meticulously examined under a dissecting microscope. The dissected components were carefully placed into a small vial and preserved with a droplet of glycerin for storage.

### 2.5 Photography and Measurements

Measurements were recorded in millimeters utilizing a scale divider, while digital images were acquired through the use of a Digital camera (Kment, 2012).

## 3. Results

### 3.2 Mantodea Families in the Naushahro Feroze District

#### 3.2.1 Mantidae

Mantidae stands as the most extensive family within the Mantodea Super family, encompassing sturdy mantis species. The pronotum features a central carina that traverses the entire dorsal surface.

### 3.2.2 Toxoderidae

The stick-like mantis belongs to the Toxoderidae family, the smallest within the Super family Mantodea. The pronotum is narrow, exceeding the length of the fore coxae, and characterized by a carinate metazona.

### 3.3 External Structure of the Genus Rhomboderella

Bright green body Serrated margins on the pronotum's lateral side. Throughout the dorsal surface of the pronotum is a median carina.

**Rhomboderella scutata, Boliver, 1889**

**Taxonomic Hierarchy**

**Family:** Mantidae

**Subfamily:** Mantinae

**Tribe:** Paramantini

**Genus:** Rhomboderella

**Species:** scutata

**Description**

Bright green body Serrated borders on the lateral side of the pronotum throughout the dorsal surface of the pronotum is a median carina. Eye color: golden brown. Spines on the forelegs in profusion. Shiny green tegmina Wings are thin. Prey animals have altered forelegs. Spines all over the hind legs. Tarsus has sharp claws. Structure resembling a pretarsi fork. Short, pointy cirri with tiny hairs. Genital plate is concave and widens from the base (Fig. 2; Table. 1.).

**Samples investigated.** Pakistan,1♀ Sindh Province Naushahro feroze, 1.vii.2018.

**Fig. 2. Rhomboderella scutate**

**Table 1. Measurements of Rhomboderella scutata, Boliver, 1889**

| Body parameters | Measurement (mm) |
|---|---|
| Head | 5 |
| Pronotum | 19 |
| Femur | 15 |
| Tibia | 19 |
| Tarsi | 12 |
| Tegmina | 52 |
| Wing | 45 |
| Total length of body | 65 |

### 3.4 External Structure of the Genus Tenodera

The body is elongated and slender, with a convex vertex, and the upper margin is slightly above the eyes. The frontal sclerite is over twice as wide as it is high. The pronotum is not significantly widened, and its lateral borders are smooth.

#### 3.4.1 Tenodera fasciata, Olivier, 1792

**Taxonomic Hierarchy**

**Family:** Mantidae

**Subfamily:** Mantinae

**Tribe:** Polyspilotini

**Genus:** Tenodera

**Species:** fasciata

**Description**

The body is elongated and slender, featuring a curved upper surface, with the highest point just above the eyes. The frontal sclerite is over twice as wide as it is tall. The lateral edges of the pronotum are smooth and not significantly expanded. Four external spines on the femur. The discoidal portion of the fore wing's costa is hyaline and opaque with a dark anterior border (Table. 2.). The pronotum of Tenodera fasciata (Fig. 3.), which is long and slender, and the hind wing, which has reddish transverse veinlets in the coastal region, set it apart from the other five species of the genus Tenodera.

**Samples investigated.** Pakistan, several specimens Sindh Province Naushahro feroze, 26.vii. 2018.

**Fig. 3. Tenodera fasciata**

**Fig. 4. Tenodera aridifolia**

**Table 2. Measurements for the species Tenodera fasciata (Olivier, 1792)**

| **Body parameters** | **Measurement (mm)** |
|---|---|
| Head | 4 |
| Pronotum | 29 |
| Femur | 14 |
| Tibia | 18 |
| Tarsi | 11 |
| Tegmina | 57 |
| Wing | 61 |
| Total length of body | 82 |

### 3.4.2 Tenodera aridifolia (Stoll, 1813)

**Taxonomic Hierarchy**

**Family:** Mantidae

**Subfamily:** Mantinae

**Tribe:** Polyspilotini

**Genus:** Tenodera

**Species:** aridifolia

**Description**

Body is long and cylindrical, with a pale to green-pale colour to the body bark. Typically, the head is wide and broad. Vertex is curved. Sclerites with rounded eyes and a transverse front. The discoidal portion of the front wings is completely green, whereas the costal region is yellowish or pale green (Table. 3.). At the metazona, the pronotum is often elongated and prismatic. Triangular and lengthy supra-anal plate. The base of the wings (hindwings) are reddish to brownish in colour. Legs grew longer (Fig. 4.).

**Material examined.** Pakistan, several specimens Sindh Province Naushahro feroze, 15. viii. 2018.

**Table 3. Measurements of Tenodera aridifolia (Stoll, 1813)**

| Body parameters | Measurement (mm) |
|---|---|
| Head | 3 |
| Pronotum | 15 |
| Femur | 11 |
| Tibia | 13 |
| Tarsi | 8 |
| Tegmina | 35 |
| Wing | 38 |
| Total body length | 50 |

## 4. Conclusion

The current investigation unveiled three novel additions to the praying mantis fauna of district Naushahro Feroze. These species include Rhomboderella scutata (Boliver, 1889), Tenodera fasciata (Olivier, 1792), and Tenodera aridifolia (Stoll, 1813). Alongside detailed descriptions and habitus images, this study expands our understanding of the distribution of these fascinating insects in the region.

## 4. Acknowledgment

The authors are gratefully acknowledging the support from Faculty of Natural Sciences, Shah Abdul Latif University, Khairpur Mir's, Sindh, Pakistan during the period of sampling and throughout the research activities.

## 5. Conflicts

The authors have declared no conflict of interest.

## REFERENCES

Abu-Dannoun, O., & Katbeh-Bader, A. (2007). Mantodea of Jordan. Zootaxa, 1617, 43–56.

Bullock, W. (1812). A companion to the London Museum and Pantherion, 1–50.

Chobanov, D. P., & Mihajlova, B. (2010). Orthoptera and Mantodea in the collection of the Macedonian Museum of Natural History (Skopje) with an annotated check-list of the groups in Macedonia. Articulata, 25, 73–107.

Döring, M. (2022). English Wikipedia - species pages. Retrieved from http://dx.doi.org/10.15468/C3KKGH

Ehrmann, R. (2002). Mantodea - Gottesanbeterinnen der Welt. Natur und Tier, Münster.

Harper, D. (2016). Mantis. Online Etymology Dictionary. Retrieved from http://www.etymonline.com/ [Accessed January 20, 2016].

Kment, P. (2012). First exact records of Mediterranean Mantis, Iris oratoria (Dictyoptera: Mantodea: Tarachodidae) from Croatia. Casopis Slezskeho Zemskeho Muzea (A), 61(1), 43–48.

Mohammad, S. K., Gadalla, S. M., El-Hamouly, H., Ehrmann, R., & El-Den Nadder, M. G. (2011). Mantodea of Egypt. Zootaxa, 3044, 1–27.

Panhwar, W. A., Sultana, R., & Khatri, I. (2022). An annotated checklist of praying mantises (Mantodea) from Pakistan—a review. Journal of Wildlife and Ecology, 6, 48–57.

Panhwar, W. A., Tasleem, S., Asif, M., Alam, M., Anwar, F., Un Nisa, Z., Jatoi, N. A., & Bhatti, W. A. (2020). Praying mantis (Mantodea: Dictyoptera) of Pakistan: A review-based study. Bulletin of Environment, Pharmacology and Life Sciences, 9(7), 180–183.

Schwarz, C. J., & Roy, R. (2019). The systematics of Mantodea revisited: An updated classification incorporating multiple data sources (Insecta: Dictyoptera). Annales de la Société Entomologique de France, 55(2), 101–196. https://doi.org/10.1080/00379271.2018.1556567

Svenson, G. J., & Whiting, M. F. (2009). Reconstructing the origins of praying mantises (Dictyoptera, Mantodea): The roles of Gondwanan vicariance and morphological convergence. Cladistics, 25(5), 468–514. https://doi.org/10.1111/j.1096-0031.2009.00263.x

Terra, W. R., & Ferreira, C. (2020). Evolutionary trends of digestion and absorption in the major insect orders. Arthropod Structure & Development, 56, 100931. https://doi.org/10.1016/j.asd.2020.100931

Yadav, R. S., & Painkra, G. P. (2021). Mantids (Insecta: Mantodea) of Uttar Pradesh, India. Journal of Threatened Taxa, 13(6), 18578–18587. https://doi.org/10.11609/jott.5958.13.6.18578-18587