



## SURVEY OF THE SUPERORDER DICTYOPTERA MANTODEA FROM SANGHAR, SINDH, PAKISTAN

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S.F collected the material and analyzed the samples, R.S planned the study, and M.S.W identified the material and finalized the result. All the authors read and approved the final version of the article.

*Key words:*

Mantodea, Sanghar, Empusidae, Liturgusidae, Mantidae, Tarachodidae.

### ABSTRACT

This paper deals with the fauna of different species of Mantodea from different localities of Sanghar (district). A total of 16 species from 12 genera including (*Blepharopsis*, *Empusa*, *Humbertiella*, *Deiphobe*, *Archimantis*, *Hierodula*, *Mantis*, *Stalilia*, *Polyspilota*, *Iris*, *Rivetina* and *Eremphilia* belong to 05 families Mantidae, Tarachodidae, Empusidae, liturgusidae and Eremiaphilidae) were identified and presented. A comparison of Pakistani Mantodea's fauna at global level was also done and six new regional record species were also found and presented here. During this study significant numbers were captured. It was also noticed that its predatory behavior has very important for reorganization of it's as bio-control agent.

## 1. INTRODUCTION

Very rare papers published on praying mantids of (Sindh) Pakistan. The first important information was provided by Wood-Mason [1]. He described three new species, *Aethalochroa affinis*, *Aethalochroa spinipes* and *taxoderopsis Taurus* [1, 2]. Praying mantids play a significant role in bio-control agent without any harmful to other, kill insect pests. They are predatory insects actively feeding on a varieties of other insects like grasshopper, moths, flies, aphids including their mating partners, as well are also well known for their camouflage and mimicry. Pakistan has a spectacular position between vegetation zone and agro-ecological zone, from a taxonomic point of view. The Mantodea of Pakistan are poorly studied, either widely separated in time or in the aim of the work itself. [1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18]. It was need of today this study was carry out more extensive survey; 16 species of mantids from Sindh Pakistan, have been recorded and checklist is enhance to the previously known fauna of mantids.

## 2. MATERIAL AND METHODS

### 2.1 Study site

Samples were collected from various localities i-e Khipro, Sanghar, Sanjoro, Jam Nawab Khan and Shahdadpur of different ecological zones of Sanghar, through sweep net, searching on vegetation bushes, grasses, bark of tree, and agriculture land near the light sources.

### Collection of samples

The collected samples were brought to the laboratory for detailed study. The identification was carried out under microscope and identified up to species level with the aids of [7, 19, 20, 21, 22, 23]. Sex was differentiated on the bases of abdominal segments mostly the female possess 6 abdominal segments and male with 8 segments. Further, samples were kept isolated in order to avoid their cannibalistic behavior.

### Killing and preservation of Samples

The collected specimens were killed by means of Potassium cyanide in standard entomological bottles. After pinning the specimens they were stretched on

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the stretching board and the attention was paid to the position of antenna, wings and legs in order to display important taxonomic characters. The fully dry specimen removed from the stretching boards and stored in the insect's boxes with the labels showing locality, date and collector's name. The taxonomic material was properly mounted, labeled and sorted and photographs of the various species were taken out through camera (SONY.CORP.DSC. W630).

### 3. RESULTS AND DISSUSION

Globally, 2300 species belonging to 434 genera and 15 families has been known. In total, 16 species of Mantodea were collected and identified from various localities of Sanghar. The list of species is given below with distribution data and identification key. The order Mantodea of the district Sanghar is represented by 16 species i-e *Blepharosis mendica* (Fabricius 1775), *Empusa unicornis* (Saussure,1871), *Iris splendida* (Uvarov,1922), *I. oratoria* (Linne,1758), *I. radians* (Uvarov,1930), *Archimantis*

*monstrosa* (Wood-Mason, 1878), *A. latistyla* (Serville,1839), *A. sobrina* (Saussure,1872), *Mantis religiosa* (Linnaeus,1758), *Statilia ocellata* (Uvarov,1922), *Hierodula transcausica* (Brunner von Wattenwyl,1878), *Polyspilota aeruginosa* (Goezla,1778), *Deiphobe infuscata* (Saussure,1870), *Rivetina baetica* (Rambur,1839), *Humbertiella indica* (Saussure,1869) and *Eremiaphila arabica* (Saussure,1871) contains 12 genera, 08 tribes, 07 sub-families and 5 families which occurring in district Sanghar. The species *Archimantis monstrosa*, *A. latistyla*, *A. sobrina*, *Deiphobe infuscata*, *Rivetina baetica*, *Polyspilota aeruginosa* and *Mantis religiosa* were for the first time recorded from Sanghar. This study proved that, the mantids fauna of the Sanghar is very poorly studied before. Since most parts of the Sindh are unexplored regarding mantids fauna, serious attempts for fantastic surveys and field collection of these insects will be highly rewarding. Hopefully after extensive survey, treasure of this fauna might be increased with addition of some new species and new records.

**Table 1-** The Global distribution and diversity of Mantodea.

S.No.	Family	Families occurring in Pakistan	No. of Genera				No. of Species			
			World	Oriental	India	Pakistan	World	Oriental	India	Pakistan
01	Amorphoscelidae	+	1	0	0	1	9	0	0	1
02	Acanthopidae	-	1	0	0	0	4	0	0	0
03	Chaeteessidae	-	1	1	1	0	5	5	1	0
04	Eremiaphilidae	+	15	1	1	1	84	39	3	3
05	Empusidae	+	2	1	1	2	70	68	2	3
06	Hymenopodidae	+	11	0	0	1	58	0	0	2
07	Iridopterygidae	-	44	22	12	0	223	117	35	0
08	Liturgusidae	+	17	4	2	1	65	18	8	2
09	Mantidae	+	37	11	6	7	221	51	16	16
10	Mantoididae	-	43	7	5	0	192	23	5	0
11	Metallyticidae	-	53	41	7	0	125	41	9	0
12	Tarachodidae	+	182	45	29	1	1137	338	86	4
13	Thespidae	-	14	9	6	0	42	24	11	0
14	Toxoderidae	+	4	0	0	0	14	0	0	0
15	Sibyllidae	-	9	2	3	0	51	36	8	0
<b>Total</b>			<b>434</b>	<b>144</b>	<b>73</b>	<b>16</b>	<b>2300</b>	<b>710</b>	<b>184</b>	<b>31</b>

**\*Note:** During present survey 05 families i-e Empusidae, Eremiaphilidae, Liturgusidae, Mantidae, and Tarachodidae were reported from Sanghar, while family Amorphoscelidae, and Hymenopodidae reported by Naeem and Yousuf (1996-1999) from Punjab (Pakistan).

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**Table 2-** The percentage of sub-families of order Mantodea during the year 2014-2016.

Subfamilies	No. of collected specimens (n=160)	Percentage
Blepharodinae	17	10.62 %
Empusinae	10	6.25%
Tarachodinae	45	28.12%
Mantinae	62	38.75%
Miomantinae	15	9.37%
Liturgusinae	10	6.25%
Eremiaphilinae	01	0.62%

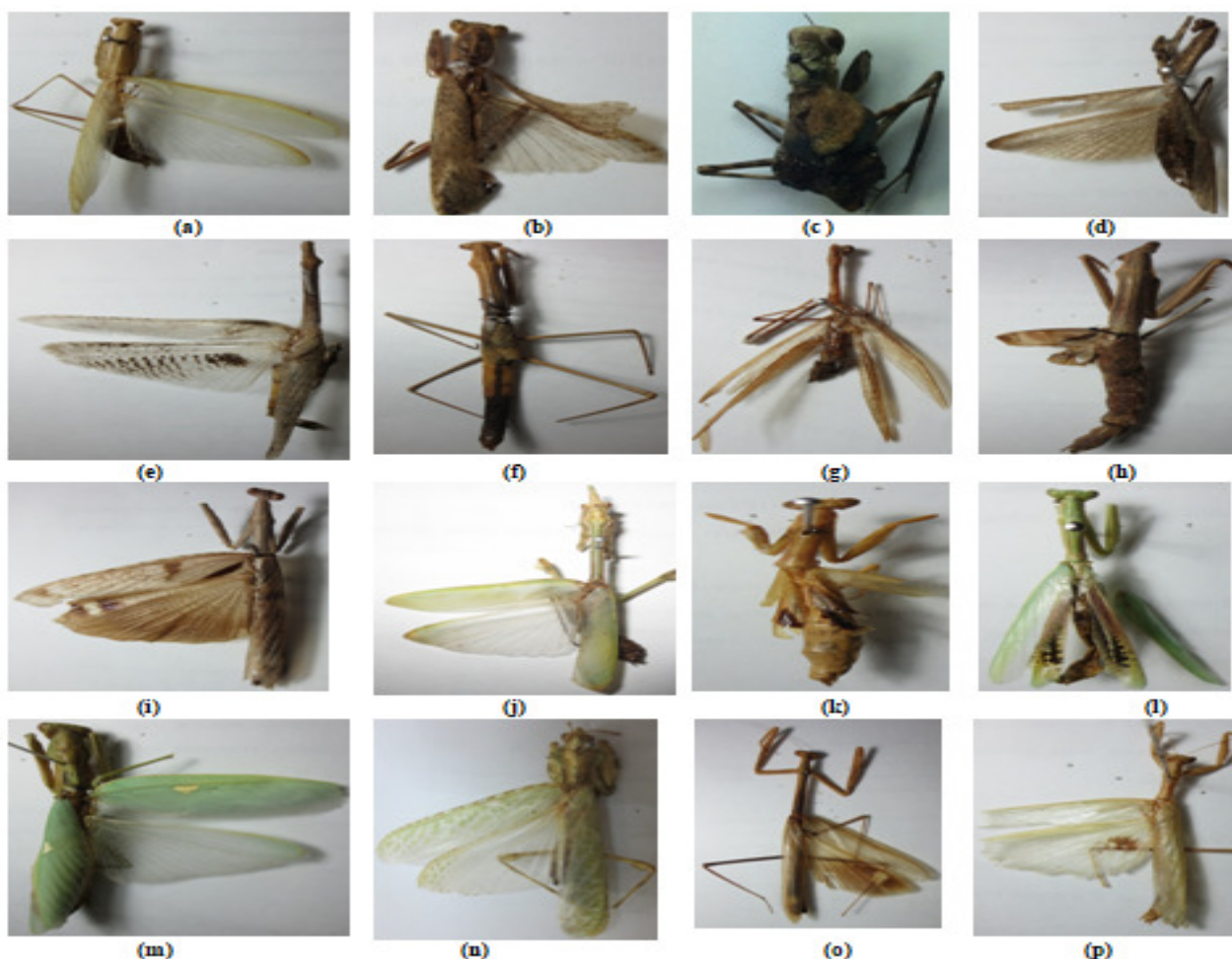
**Table 3-** Comparative table showing the status of order Mantodea occurring in Sindh

Family	Subfamily	Order	Tribe	Genus	Species
Empusidae	Blepharodinae	Mantodea		<i>Blepharopsis</i>	<i>Mendica</i>
	Empusinae		Empusini	<i>Empusa</i>	<i>Unicornis</i>
Liturgusidae	Liturgusinae		Liturgusini	<i>Humbertiella</i>	<i>Indica</i>
Mantidae	Miomantinae Mantinae		Rivetinini	<i>Deiphobe</i> <i>Rivetina</i>	<i>infuscata</i> <i>baetica</i>
			Archimantini	<i>Archimantis</i>	<i>monstrosa</i> <i>latistyla</i> <i>sobrina</i>
			Paramantini	<i>Hierodula</i>	<i>Transcausica</i>
			Mantini	<i>Mantis</i> <i>Stalilia</i>	<i>religiosa</i> <i>ocellata</i>
			Polyspilotini	<i>Polyspilota</i>	<i>Aeruginosa</i>
Tarachodidae	Tarachodinae		Tarachodini	<i>Iris</i>	<i>radians</i> <i>oratoria</i> <i>splendid</i>
Eremphilidae	Eremiaphilinae			<i>Eremiaphila</i>	<i>Arabica</i>

**Table 4-** The number of adult order Mantodea collected from different localities of district Sanghar.

Sub-family / Species	T.A	J.N.K	SHD	SIN	SANG.T	Total %
<b>Sub-family Blepharodinae</b> <i>Blepharopsis mendica</i> (Fabricius,1775)	04	04	02	05	02	10.62%
<b>Sub- family Empusinae</b> <i>Empusa unicornis</i> (Saussure, 1871)	01	04	3	--	2	6.25%
<b>Sub-family Tarachodinae</b> <i>Iris splendida</i> (Uvarov,1922) <i>I. radians</i> (Uvarov,1930) <i>I. oratoria</i> (Linneaus,1758)	6 - 10	- - 9	4 - 7	3 1 -	5 - -	11.25% 0.62% 16.25%
<b>Sub-family Mantinae</b> <i>Archimantis monstrosa</i> (Wood-Mason,1878) <i>A.latistyla</i> (Serville,1839) <i>A.sobrina</i> (Saussure,1872) <i>Mantis religiosa</i> (Linneaus,1758) <i>Stalilia ocellata</i> (Uvarov,1922) <i>Hierodula transcausica</i> (Brunner von Wattenwyl,1878) <i>Polyspilotaeruginosa</i> (Goeze,1778)	- - - 4 1 10 -	1 - 1 7 - 7 -	- - - 3 - 8 1	- 1 - 6 - 6 -	- - - 1 - 5 -	0.62% 0.62% 0.62% 13.12% 0.62% 22.5% 0.62%
<b>Sub-family Miomantinae</b> <i>Deiphobeinfuscata</i> (Saussure,1870) <i>Rivetina baetica</i> (Rambur,1839)	2 3	1 1	1 2	3 -	- 2	4.37% 5.66%
<b>Sub-family liturgusinae</b> <i>Humbertiella indica</i> (Saussure,1869)	1	2	2	3	2	6.25%
<b>Sub-Family Eremphilinae</b> <i>Eremphilia arabica</i> (Saussure,1871)	0	0	1	0	0	0.62%

\* **Note:** T.A= Tando Adam, J.N.K= Jam Nawaz Khan, SHP=Shahdadpur, SIN=Sinjhor, SANG=Sanghar.



**Figure 1-** (a) *Mantis religiosa*, (b) *Humbertiella indica* (c) *Eremiphila arabica* (d) *Polyspilota aeruginosa* (e) *Archimantis monstrosa* (f) *A. latistyla* (g) *Statilia ocellata* (h) *A. sobrina* (i) *Rivetina baetica* (j) *Empusa unicornis* (k) *Iris radians* (l) *I. splendida* (m) *Hierodula transcausica* (n) *Blepharosis mendica* (o) *Diephobe infuscata* (p) *I. oratoria*.

#### 4. CONCLUSION

In the present study 16 species have been described amongst them *Eremiphila arabica* (Saussure, 1871), *Humbertiella indica* (Saussure, 1869), *Blepharosis mendica* (Saussure,1871), *Empusa unicornis* (Fabricius,1775), *Iris splendida* (Uvarov,1922), *I. oratoria* (Linneaus,1758), *I. radians* (Uvarov,1922), *Mantis religiosa* (Linneaus,1758), *Statilia ocellata* (Uvarov,1922), *Hierodula transcausica* (Brunner von Wattenwyl, 1878), while six new species i-e *Diephobe infuscata* (Saussure,1870), *Archimantis monstrosa* (Wood-Mason,1878), *A. latistyla* (Serville,1839), *A. sobrina* (Saussure,1872), *Rivetina baetica* (Rambur,1839) and *Polyspilota aeruginosa* (Goeze,1778) were reported for the first time.

#### 5. CONFLICT OF INTEREST

The authors have declared that there is no conflict of interest regarding the publication of this article.

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