

A faunistic study on the Mantodea (Insecta) from western Iran

NAJMEH SAMIN, HASSAN GHAHARI & AHMAD KATBEH-BADR

Samin, N., Ghahari, H. & Katbeh-Badr, A. 2016. A faunistic study on the Mantodea (Insecta) from western Iran. *Norwegian Journal of Entomology* 63, 116–119.

This paper deals with the fauna of Mantodea in Ilam and Kermanshah provinces in western Iran. In total 8 species from 7 genera (*Empusa* Illiger, 1798, *Ameles* Burmeister, 1838, *Mantis* Linnaeus, 1758, *Sphodromantis* Stål, 1871, *Microthespis* Werner, 1908, *Eremiaphila* Lefèbvre, 1835 and *Iris* Saussure, 1869) and 5 families (Empusidae, Amelidae, Mantidae, Eremiaphilidae and Tarachodidae) were collected and identified. *Ameles syriensis* Giglio-Tos, 1915 and *Eremiaphila andresi* Werner, 1910 are new records for the fauna of Iran.

Key words: Mantodea, fauna, new records, Iran

Najmeh Samin, Young Researchers and Elite Club, Science and Research Branch, Islamic Azad University Tehran, Iran. E-mail: n_samin63@yahoo.com

** Hassan Ghahari, Department of Plant Protection, Yadegar – e- Imam Khomeini (RAH) Shahre Rey Branch, Islamic Azad University, Tehran, Iran*

Ahmad Katbeh-Badr, Department of Plant Protection, Faculty of Agriculture, University of Jordan, Amman, 11942, Jordan. E-mail: Ahmadk@ju.edu.jo

** Corresponding author. E-mail: hghahari@yahoo.com*

Introduction

Mantodea is a group of mostly large and conspicuous predatory insects, which is mostly confined to the tropical regions and includes approximately 2366 described species in 436 genera (Ehrmann 2002, Otte & Spearman 2005, Kment 2012). They are carnivorous insects preying upon a wide array of animals, ranging from springtails (Collembola) to small vertebrates (Prete *et al.* 2002) and are occasionally used in biological pest control (Symondson *et al.* 2002). The fauna of Iranian Mantodea was poorly studied by a few disparate studies (Uvarov 1938, Uvarov & Dirsh 1952, Beier 1956, Mofidi-Neyestanak 2000, 2014, Battiston & Massa 2008, Ghahari *et al.* 2008, Sakenin *et al.* 2008a, b & 2011, Morshedi-Aghbolagh *et al.* 2012, Ghahari & El-Den Nasser

2014). About 34 species of mantids have been recorded from Iran so far, but the true number of Iranian Mantodea needs more investigations. The aim of this research is a faunistic work on Mantodea specimens collected from some regions of western Iran, and introducing two new records for the country. Classification by Ehrmann & Roy in Ehrmann (2002) and Roy (2014) have been followed.

Material and methods

The materials of this research were collected from different localities of western Iran, Ilam (33.6384°N 46.4226°E) and Kermanshah (34.3176°N 47.0869°E) provinces mainly by sweeping net and searching vegetation visually.

Identification was carried out with the aid of Giglio-Tos (1927), Beier (1934, 1935), Kaltentbach (1976, 1982, 1996, 1998), Abu-Dannoun & Katbeh-Baderbu (2007), Battiston *et al.* (2010), Mohammad *et al.* (2011) and Ghahari & El-Den Nasser (2014).

Results and discussion

In this research, totally 8 species of Mantodea were collected from some regions of western Iran. Two species *Ameles syriensis* Giglio-Tos, 1915 and *Eremiaphila andresi* Werner, 1910 are new records for the fauna of Iran. The new records represent the eastern distributional limit for the two species. It would be interesting to conduct future sampling for these species to verify how their distribution may extend to eastern regions. Some mantid species of eastern part of Iraq may be occurred in western Iran. The fauna of Mantodea was poorly studied in most regions of the world because of low population density. Since Iran is a large country with various geographical regions and climates, especially most regions of the country contain warm climates, so we expect more diverse fauna of mantids in different regions of Iran especially in southern parts. The list of species with distributional data is given below.

EMPUSIDAE EMPUSINE

Empusini

Empusa Illiger, 1798

Empusa Illiger, 1798: 499

Empusa fasciata Brulle, 1832

Empusa fasciata Brulle, 1832: 83

Material examined: Kermanshah province, Sahneh, 1365 m, 34°30'N 47°35'E, 1♀, 1♂, August 2011. Ilam province, Darrehshahr, 712 m, 33°08'N 47°22'E, 1♀, June 2012.

Distribution outside Iran: Algeria, Asia Minor, Crete, Croatia, Cyprus, East-Europe, Egypt, Greece, India, Italy, Jordan, Slovenia, Palestine, Rumania, Turkey.

Empusa pennicornis pennicornis (Pallas, 1773)

Mantis pennicornis Pallas 1773: 728. *Mantis pallasiana* Olivier 1792: 637-638 (#66). *Gongylus marginatus* Thunberg 1815: 294. *Empusa (Empusa) orientalis* Burmeister 1838: 546-547.

Material examined: Ilam province, Mehran, 162 m, 33°16'N 46°24'E, 1♀, 1♂, June 2012. Kermanshah province, Javanrud, 1367 m, 34°46'N 46°19'E, 1♂, August 2011.

Distribution outside Iran: China, Syria, Turkey, Turkmenistan, Uzbekistan.

AMELIDAE AMELINAE

Amelini

Ameles Burmeister, 1838

Ameles Burmeister, 1838: 531. *Parameles* Saussure, 1869: 59, 72

Ameles syriensis Giglio-Tos, 1915

Ameles syriensis Giglio-Tos, 1915: 150

Material examined: Ilam province, Ilam, 987 m, 33°41'N 46°16'E, 1♀, June 2012. New record for the fauna of Iran.

Distribution outside Iran: Jordan, Syria, Turkey.

MANTIDAE MANTINAE

Mantini

Mantis Linnaeus, 1758

Gryllus (Mantis) Linnaeus, 1758: 425. *Mantes* Geoffroy, 1764: 399. *Mantis* Lichtenstein, 1802: 18.

Mantis religiosa religiosa Linnaeus, 1778

Gryllus (Mantis) religiosus Linnaeus, 1758: 426. *Mantis sancta* Fabricius, 1787: 228. *Mantis maroccana* Thunberg, 1815: 287. *Mantis pia* Audinet-Serville, 1839: 193. *Mantis radiata* Fischer-Waldheim, 1846: 101. *Mantis capensis* Saussure, 1872: 46. *Mantis religiosa* Linnaeus, 1758 (cited in Werner, 1913: 211). *Mantis religiosa* Linnaeus, 1758 (cited in Storey, 1918: 50).

Material examined: Kermanshah province, Javanrud, 1367 m, 34°46'N 46°19'E, 1♀, 1♂, August 2011; Kermanshah, 1308 m, 34°20'N 47°00'E, 2♀, August 2011. Ilam province, Ilam, 987 m, 33°41'N 46°16'E, 1♀, June 2012;

Darrehshahr, 712 m, 33°08'N 47°22'E, 1♂, June 2012.

Distribution outside Iran: Africa, Asia, Europe, North America.

Paramantini

Sphodromantis Stål, 1871

Sphodromantis Stål, 1871: 390, 399.

Sphodromantis viridis viridis (Forskål, 1775)

Gryllus viridis Forskål, 1775: 81. *Mantis guttata* Thunberg, 1815: 290. *Mantis (Stagmatoptera) bioculata* Burmeister, 1838: 537. *Hierodula bioculata* Burmeister, 1838 (cited in Krauss, 1890: 236). *Sphodromantis bioculata* Burmeister, 1838 (cited in Werner, 1913: 210). *Sphodromantis bioculata* Burmeister, 1838 (cited in Storey, 1918: 50). *Hierodula (Sphodromantis) viridis* Forskål, 1775 (cited in Beier 1935: 87). *Sphodromantis viridis viridis* Roy 2010: 347.

Material examined: Kermanshah province, Kermanshah, 1308 m, 34°20'N 47°00'E, 1♀, 1♂, August 2011.

Distribution outside Iran: Egypt, Libya, Oman, Palestine, Somalia, Sudan, Syria, Turkey, Uganda, United Arab Emirates, Yemen.

SOLYGIINAE

Solygiini

Microthespis Werner, 1908

Microthespis Werner, 1908: 119.

Microthespis dmitriewi Werner, 1908

Microthespis dmitriewi Werner, 1908: 120.

Material examined: Kermanshah province, Sahneh, 1365 m, 34°30'N 47°35'E, 2♀, August 2011.

Distribution outside Iran: Ethiopia, Jordan, Oman, Pakistan, Palestine, Saudi Arabia, Somalia, United Arab Emirates, Yemen.

EREMIAPHILIDAE

EREMIAPHILINAE

Eremiaphila Lefèbvre, 1835

Eremiaphila Lefèbvre, 1835: 468. *Eremophila* Burmeister, 1838: 524. *Centromantis* Werner, 1904: 404.

***Eremiaphila andresi* Werner 1910**

Eremiaphila andresi Werner, 1910: 200.

Material examined: Ilam province, Darrehshahr, 712 m, , 1♀, June 2012. New record for the fauna of Iran.

Distribution outside Iran: Egypt, Iraq, Libya.

TARACHODIDAE

IRIDINAE

Iris Saussure, 1869

Iris Saussure, 1869: 64.

Iris oratoria (Linnaeus, 1758)

Gryllus (Mantis) oratorius Linné, 1758. *Mantis dentata* Goeze, 1778. *Mantis bella* Salzmann, 1817. *Ameles minima* Charpentier, 1825. *Mantis fenestrata* Brullé, 1832.

Material examined: Kermanshah province, Kermanshah, 1308 m, 34°20'N 47°00'E, 1♀, 1♂, August 2011.

Distribution outside Iran: Algeria, Crete, Croatia, Greece, Cyprus, Egypt, France, India, Italy, Jordan, Morocco, Pakistan, Palestine, Spain, Syria, Tchad, Tunisia, Turkey.

Acknowledgements. The authors are grateful to R. Ehrmann (SMNK, Karlsruhe-Germany) for his insightful comments on the manuscript and providing some necessary papers. This research was supported by Islamic Azad University (Young Researchers and Elite Club, and Yadegar – e- Imam Khomeini (RAH) Shahre Rey Branch).

References

- Abu-Dannoun, O. & Katbeh-Bader, A. 2007. Mantodea of Jordan. *Zootaxa* 1617, 43–56.
- Battiston, R. & Massa, B. 2008. The Mantids of Caucasus (Insecta, Mantodea). *Atti della Accademia Roveretana degli Agiati* a. 258, ser. VIII, vol. VIII, B, 5–28.
- Battiston, R., Picciau, L., Fonatana, P. & Marshal, J. 2010. *Mantids of the Euro-Mediterranean area*. WBA Handbooks 2. World Biodiversity Association, Verona, 239 pp.
- Beier, M. 1934. *Mantodea. Subfam. Sibyllinae, Empusinae*. Genera Insectorum, Fascicule, 197: 10 pp.
- Beier, M. 1935. *Mantodea. Subfamilie: Mantinae*. Genera Insectorum, Fascicule 203: 146 pp.
- Beier, M. 1956. Mantiden aus Iran 1954 (Orthopt.). Ergebnisse der Entomologischen Reisen Willi Richter, Stuttgart, im Iran 1954 und 1956, Nr.

2. *Jahreshefte des Vereins für vaterländische Naturkunde in Württemberg* 111 (1), 68–75.
- Ehrmann, R. 2002. *Mantodea – Gottesanbeterinnen der Welt*. Natur und Tier, Münster, 519 pp.
- Ghahari, H., Hayat, R., Tabari, M., Ostovan, H. & Imani, S. 2008. A contribution to the predator and parasitoid fauna of rice pests in Iran, and a discussion on the biodiversity and IPM in rice fields. *Linzer biologische Beiträge* 40/1, 735–764.
- Giglio-Tos, E. 1927. *Das Tierreich. Orthoptera-Mantidae*. Walter de Gruyter, Berlin, 707 pp.
- Kaltenbach, A. 1976. Mantodea, pp. 129–169. In: Harz, K. & Kaltenbach, A. P. (eds). *Die Orthopteren Europas 3*. Series Entomologica. Vol. 12. 433 pp.
- Kaltenbach, A.P. 1982. Insects of Saudi Arabia. Mantodea. *Fauna of Saudi Arabia* 4, 29–72.
- Kaltenbach, A.P. 1996. Unterlagen für eine Monographie der Mantodea des südlichen Afrika: 1. Artenbestand, geographische Verbreitung und Ausbreitungsgrenzen (Insecta: Mantodea). *Annalen des Naturhistorischen Museums in Wien* 98 (B), 193–346.
- Kaltenbach, A.P. 1998. Unterlagen für eine Monographie der Mantodea (Insecta) des südlichen Afrika: 2. Bestimmungstabellen für die höheren Taxa, Nachträge zum Artenbestand. *Annalen des Naturhistorischen Museums in Wien* 100 (B), 19–59.
- Kment, P. 2012. First exact records of Mediterranean Mantis, *Iris oratoria* (Dictyoptera: Mantodea: Tarachodidae) from Croatia. *Časopis Sleziškého muzea Opava* (A), 61, 43–48.
- Latreille, P.A. 1802. Histoire naturelle, générale et particulière des Crustacés et des Insectes. Dufart, Paris, 3, 12 + 467 (Mantodea, pp. 270–274).
- Mofidi-Neyestanak, M. 2000. A preliminary survey on the Orthopteroidea of the Iranian islands of Persian Gulf. *Proceedings of 14th Iranian Plant Protection Congress*, Isfahan University of Technology, p. 339.
- Mofidi-Neyestanak, M. 2014. An investigation on the biodiversity, distribution and identification of Mantodea in Iran. *Proceedings of 21st Iranian Plant Protection Congress*, p. 615.
- Mohammad, S.K., Gadallah, S.M., El-Hamouly, H., Ehrmann, R. & Nasser, M.G. 2011. Mantodea of Egypt. *Zootaxa* 3044, 1–27.
- Morshedi-Aghbolagh, A., Mofidi-Neyestanak, M. & Taghizadeh, M. 2012. Fauna of Mantodea (Insecta) of Dasht-e Moghan in Ardabil province, Iran. *Journal of Field Crop Entomology* 1 (3), 85–94.
- Otte, D. & Spearman, L. 2005. Mantida species file. Catalogs of the Mantids of the World. Insect Diversity Association, Philadelphia, Publication Number 1, 489 pp.
- Prete, F.R., Hurd, L.E., Branstrator, D. & Johnson, A. 2002. Responses to computer-generated visual stimuli by the male praying mantis, *Sphodromantis lineola* (Burmeister). *Animal Behaviour* 63, 503–510.
- Roy, R. 2014. A historical review of nomenclature and high-level classification of praying mantises (Mantodea), including a provisional checklist of the names associated to suprageneric ranks. *Zootaxa* 3797 (1), 9–28, Appendix.
- Sakenin, H., Eslami, B., Samin, N., Imani, S., Shirdel, F. & Havaskary, M. 2008a. A contribution to the most important trees and shrubs as the hosts of wood-boring beetles in different regions of Iran and identification of many natural enemies. *Journal of Plant and Ecosystem* 16, 27–46.
- Sakenin, H., Raheb, J., Imani, S., Havaskary, M., Shirdel, F. & Mohseni, H. 2008b. A preliminary survey on dipteran predators and parasitoids and Odonata in Iranian rice fields. Proceedings of National Conference of Agronomical Rice Breeding, Young Research Club Islamic Azad University of Ghaemshahr, 26–27 November, p. 79 (Full paper as CD Rom, 14 pp.) (in Persian with English Summary).
- Sakenin, H., Samin, N., Shakouri, M.J., Mohebbi, H. R., Ezzatpanah, S. & Moemen Beitollahi, S. 2011. A faunistic survey of the insect predators in some regions of Iran. *Calodema* 142, 1–10.
- Symondson, W.O.C., Sunderland, K.D. & Greenstone, M.H. 2002. Can generalist predators be effective biocontrol agents? *Annual Review of Entomology* 47, 561–594.
- Uvarov, B.P. 1938. Orthoptera from Iraq and Iran. *Zoology Ser. Field. Museum Natural History* 20 (33), 439–451.
- Uvarov, B.P. & Dirsh, V.M. 1952. Orthoptera collected in Iran. Ergebnisse einer botanischzoologischen Sammelreise durch den Iran 1948/49. *Verhandlungen der Naturforschenden Gesellschaft in Basel* 63 (1), 1–16.

Received: 16 June 2015

Accepted: 7 May 2016