Mantodea of Iran: A review-based study

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Abstract

Scattered taxonomic data can be used to determine the geographic distribution of arthropods such as Mantodea (mantids). The distribution of mantids is not well known in Iran and not readily determined because the literature has been published in a mix of Persian-language and non-Persian-language scientific references, including books, journals, annual congress proceedings, and final reports of academic projects. To create a national checklist of mantids in Iran, I reviewed 35 Persian and non-Persian (English, German, and Italian) publications. I recorded 57 praying mantid species from 9 families described from localities across Iran. I identified 18 species—Ameles decolor, Ameles heldreichi, Ameles picteti, Ameles spallanzania, Evelaea marchali, Empusa pennata, Eremiaphila andresi, Eremiaphila cerisy, Eremiaphila turcica, Geomantis laroides, Iris coeca, Iris pitcheri, Oxyothrips wagneri, Pareuthyrphlebo pbalomoni, Pseudoyersinia paui, Rivetina baetica, Severinia nigrofasciata, and Severinia turcomaniae—with records in Iran that may be incorrect based on geographic ranges that do not include Iran and similarity to other species that do occur in Iran. In the proposed checklist comprising 39 species, the family Rietiniidae, with 9 species, and the 2 families Amorphoscelidae and Nanomantidae, with 1 species each, comprised the greatest and least diversity, respectively. This checklist can facilitate future studies on Iran’s mantodeans.

Keywords

checklist, Middle East, Persia, praying mantis

Introduction

Ancient records indicate that mantids have long been a part of human culture (Evan 2004), including humans in the Persian Plateau of Iran where mantids are depicted in ancient rock art (Kolnegari et al. 2020) and used in traditional medicine (Kolnegari pers. obs.). At 1,648,195 km², Iran is currently the 18th largest country and is located in the Middle East region of southwestern Asia. Iran is bordered to the north by Armenia, Azerbaijan, Turkmenistan, and the Caspian Sea; to the east by Afghanistan and Pakistan; to the south by the Gulf of Oman and the Persian Gulf; and to the west by Iraq and Turkey. About one-third of its 7,680-km boundary is seacoast (Davoudzadeh 1997).

Iran includes three climatic zones: Mediterranean to the south, arid West Asian to the east and west, and temperate humid/semi-humid Caspian zone to the north (Esmaeili et al. 2017). Several major biogeographical regions meet in this country, including the Palearctic, Eremic, and Oriental, which support a broad range of arthropod diversity (Zohary 1973, Olson et al. 2001). This includes a diversity of praying mantids that has been largely overlooked by native entomologists focused on species more important to agriculture (Kolnegari 2022).

Recently, mantid research in Iran has led to significant findings, including the identification of a new species (i.e., Holaption brevipugilis Kolnegari, 2018). This discovery highlights the potential for new discoveries resulting from more thorough taxonomic surveys in Iran. In anticipation of future taxonomic surveys, I undertook a literature review of Mantodea in Iran. Herein, I report the results, and in so doing, I provide the first checklist of the mantids of Iran.

Material and method

I reviewed the database of a national organization, the Iranian Research Institute of Plant Protection (IRIPP), which is regarded as the most important scientific organization working on arthropods in the country. The IRIPP’s database consists of books, research articles, and annual congress proceedings archived since 1946 (IRIPP 2022). I also reviewed two comprehensive books entitled Mantodea – Gottesanbeterinnen der Welt (Ehrmann 2002) and Praying Mantids; From Cognition to Conservation (Kolnegari 2022). Moreover, I used Google to search for the keywords “Mantodea”, “mantis”, “Iran”, and “Persia” in English and Persian. I used these sources to create a national checklist of mantids in Iran. I adjusted the list to reflect current nomenclature and classification as indicated in the Mantodea Species File (Schwarz and Roy 2019, Otte et al. 2023) and in the latest relevant publications (Shcherbakov and Savitsky 2015, Villani 2020). In implementing these adjustments, I consolidated temporal and cross-language synonyms. I also documented records describing species that, if present in Iran, would be geographically highly isolated from their recognized ranges, and I identified these records as doubtful.

The global distribution of each species was assembled by consolidating the local or regional range maps provided by previous researchers (Kaltenbach 1963, Kaltenbach 1982, Ehrmann 2002, Kolnegari 2020). At 1,648,195 km², Iran is currently the 18th largest country and is located in the Middle East region of southwestern Asia. Iran is bordered to the north by Armenia, Azerbaijan, Turkmenistan, and the Caspian Sea; to the east by Afghanistan and Pakistan; to the south by the Gulf of Oman and the Persian Gulf; and to the west by Iraq and Turkey. About one-third of its 7,680-km boundary is seacoast (Davoudzadeh 1997).

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The global distribution of each species was assembled by consolidating the local or regional range maps provided by previous researchers (Kaltenbach 1963, Kaltenbach 1982, Ehrmann 2002, Kolnegari 2020).
Results

I identified 57 species from nine families documented in 35 sources (Table 1). For around 80% of species, source material indicated a type location in a specific area, city, or province (n = 46) (Fig. 1). I consider 18 reported species—*Ameles decolor* (Charpentier, 1825), *Ameles heldreichi* Brunner von Wattenwyl, 1882, *Ameles pictetii* (Saussure, 1869), *Ameles spallanzania* (Rossi, 1792), *Elaea marchali* (Reiche & Fairmaire, 1847), *Empusa pennata* (Thunberg, 1815), *Eremiaphila andresi* Werner, 1910, *Eremiaphila cerisy* Lefebvre, 1835, *Eremiaphila turcica* Westwood, 1889, *Geomantis larvoides larvoides* Pantel, 1896, *Iris coeca* Uvarov, 1931, *Iris pitcheri* Kaltenbach, 1913, *Oxyothrips uswingeri* (Kittay, 1849), *Pareuthyphlebs palmonii* (Uvarov, 1939), *Pseudoryersinia paui* (Bolivar, 1898), *Rivetina baetica baetica* (Rambur, 1838), *Severinia nigrofasciata* Kaltenbach, 1982, and *Severinia turcomaniae* Saussure, 1872—as doubtful due to large separations between their recognized ranges, the locations indicated in Iran, and to their similarity to very similar species known to occur in Iran. Thus, the proposed checklist consists of 39 species with a high degree of certainty. The families Rivetiniidae and Eremiaphilidae accounted for the highest number of Mantodea species (number of identified species). Abbreviations: Alborz (AL), Ardabil (AR), Bushehr (BU), Chaharmahal and Bakhtiari (CB), East Azerbaijan (EA), Fars (FA), Golestan (GO), Hamedan (HA), Hormozgan (HO), Ilam (IL), Iranian islands of Persian Gulf (IP), Isfahan (IS), Kerman (KE), Kermanshah (KS), Khuzestan (KH), Kohgiluyeh and Boyer-Ahmad (KB), Kurdistan (KU), Lorestan (LO), Markazi (MA), Mazandaran (MZ), North Khorasan (NK), Qazvin (QA), Qom (QO), Razavi Khorasan (RK), Semnan (SE), Sistan & Baluchistan (SB), South Khorasan (SK), Tehran (TE), West Azerbaijan (WA), Yazd (YA), Zanjan (ZA).

Table 1. Literature used in the review-based study of Iran’s Mantodea.

<table>
<thead>
<tr>
<th>No. / Code</th>
<th>Scientific publication</th>
<th>No. / Code</th>
<th>Scientific publication</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Bagheri and Tajvand 2008</td>
<td>19</td>
<td>Mirzaee and Sadeghi 2021</td>
</tr>
<tr>
<td>2</td>
<td>Beier 1956</td>
<td>20</td>
<td>Mofidi-Neyestanak 2000</td>
</tr>
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<td>3</td>
<td>Bolivar 1911</td>
<td>21</td>
<td>Mofidi-Neyestanak 2015a</td>
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<td>Bolivar 1913</td>
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<td>Mofidi-Neyestanak 2015b</td>
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<td>Brunner Von Wattenwyl 1878</td>
<td>23</td>
<td>Moradzadeh et al. 2021</td>
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<td>8</td>
<td>Ebner 1963</td>
<td>26</td>
<td>Ramme 1951</td>
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<td>Ehrmann 2000</td>
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<td>Ghahtari and El-Den Nasser 2014</td>
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<td>Sadeghi and Sadeghi 2015</td>
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<td>11</td>
<td>Jamali and Mofidi-Neyestanak 2013</td>
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<td>Salenin et al. 2011</td>
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<td>12</td>
<td>Kolnegari 2022</td>
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<td>Saussure 1870</td>
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<td>14</td>
<td>Kolnegari and Vafei-shohidtari 2018</td>
<td>32</td>
<td>Uvarov 1922</td>
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<td>15</td>
<td>La Greca and Lombardo 1982</td>
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<td>Uvarov 1938</td>
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<td>34</td>
<td>Werner 1905</td>
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<td>Mirzaee and Pashaei Rad 2017</td>
<td>35</td>
<td>Werner 1930</td>
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<td>18</td>
<td>Mirzaee and Sadeghi 2019</td>
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Table 2. Iran’s Mantodea families and number of their species in the country.

<table>
<thead>
<tr>
<th>Family</th>
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<tr>
<td>Rivetinidae</td>
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<tr>
<td>Eremiaphilidae</td>
<td>8</td>
</tr>
<tr>
<td>Mantidae</td>
<td>6</td>
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<td>Empusidae</td>
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</tr>
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<td>Toxodidae</td>
<td>3</td>
</tr>
<tr>
<td>Nanomantidae</td>
<td>1</td>
</tr>
<tr>
<td>Amorphoscelidae</td>
<td>1</td>
</tr>
</tbody>
</table>

Fig. 1. Map of Iran with administrative divisions (provinces) labeled and colored to indicate the relative diversity of Mantodea species (number of identified species). Abbreviations: Alborz (AL), Ardabil (AR), Bushehr (BU), Chaharmahal and Bakhtiari (CB), East Azerbaijan (EA), Fars (FA), Golestan (GO), Hamedan (HA), Hormozgan (HO), Ilam (IL), Iranian islands of Persian Gulf (IP), Isfahan (IS), Kerman (KE), Kermanshah (KS), Khuzestan (KH), Kohgiluyeh and Boyer-Ahmad (KB), Kurdistan (KU), Lorestan (LO), Markazi (MA), Mazandaran (MZ), North Khorasan (NK), Qazvin (QA), Qom (QO), Razavi Khorasan (RK), Semnan (SE), Sistan & Baluchistan (SB), South Khorasan (SK), Tehran (TE), West Azerbaijan (WA), Yazd (YA), Zanjan (ZA).

Institutional abbreviations.—
BMNH British Museum, Natural History, London;
HMIM Hayk Mirzayans Insect Museum, Tehran;
IAUA Islamic Azad University of Arak, Markazi;
INER Istituto Nazionale di Entomologia, Rome;
MBAC Museo del Dipartimento di Biologia Animale dell’Università Catania;
MHNG Muséum d’Histoire Naturelle, Geneva;
MNMS Museo Nacional de Ciencias Naturales, Madrid;
NHMW Naturhistorisches Museum, Vienna;
NIHS Naturhistoriska Riksmuseum, Stockholm;
NHTM Natural History and Technology Museum, Shiraz University;
RMNH Nationaal Natuurhistorisch Museum, Leiden;
SMNS Staatliches Museum für Naturkunde, Stuttgart;
ZMSU Zoological Museum of Shiraz University, Fars.

Checklist of mantids of Iran

The checklist is presented following alphabetic order. The list of references referring to a species are presented under backets after the species name.

Genus *Aethalochroa* Wood-Mason, 1877

1- *Aethalochroa ashmoliana* (Westwood, 1841) [2] [9] [21]

Other names.—*Vates ashmoliana* Westwood, 1841; *Popa ashmoliana* (Westwood, 1841); *Arsacia ashmoliana* (Westwood, 1841).
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Iranian localities.—Sistan & Baluchistan Province (Iranshahr) [2].

Iranian repository.—HMIM [21].

Global distribution.—India, Iran, Pakistan, Sri Lanka, West Bengal.

Genus *Ameles* Burmeister, 1838

2- *Ameles arabica* Uvarov, 1939 [10]

Iranian localities.—Hormozgan Province (Haji-Abad) [10].

Iranian repository.—?

Global distribution.—Iran, Saudi Arabia.

3- *Ameles persa* Bolivar, 1911

[2] [3] [9] [10] [12] [17] [18] [19] [21] [25] [27] [28]

Fig. 2G

Type locality.—Khuzestan Province (Kuh-sefid, Shimbar) [3].

Type specimen.—MNMS [3].

Iranian localities.—Fars Province [19] [28]; Fars Province (Shiraz) [12]; Isfahan Province (Ardestan) [10]; Kurdistan Province [27]; Kurdistan Province (Sanandaj) [12]; Lorestan Province (Kuhdasht) [18]; Markazi Province (Arak, Saveh, Shazand) [12]; Sistan & Baluchistan Province (Kuh-Taftan, Makran, Sangan) [2]; South Khorasan Province [25]; Tehran Province [17].

Iranian repository.—HMIM [21]; IAUA [12]; NHTM [28]; ZMSU [18].

Global distribution.—Afghanistan, Algeria, Canary Islands, Chad, Cyprus, Egypt, Ethiopia, NW India, Iran, Israel, Jordan, Lebanon, Libya, Mauritania, Morocco, Niger, Oman, Pakistan, Somalia, Sudan, Tunisia, Turkey, United Arab Emirates, Uzbekistan, Yemen.

*Amorphoscelis* Stål, 1871

5- *Amorphoscelis pantherina* Roy, 1966 [10] [12] [19]

Fig. 2F

Iranian localities.—Hormozgan Province (Minab) [10]; Fars Province [12] [19].

Iranian repository.—?

Global distribution.—Iran, Iraq, Turkey.

*Armene* Stål, 1877

6- *Armene pusilla* (Eversmann, 1859) [10] [21]

Other names.—Mantis pusilla Eversmann, 1859.
Fig. 2. Photographs of some Mantodea species identified in Iran. A. Empusa pennicornis; B. Elaea richteri; C. Iris oratoria; D. Eremiaphila persica; E. Oxyothecis persica; F. Amorphoscelis pantherina; G. Ameles persa; H. Bolivaria brachyptera; I. Iris nana. Reprinted from M. Kolnegari “Praying Mantids.—From Cognition to Conservation” (Avaye Dornaye Khakestari Institute 2022).
Type specimen.—SMNS [2].

Iranian localities.—Sistan & Baluchistan Province (Khash [8], Konarak [12]).

Iranian repository.—IAUA [12].

Global distribution.—Iran.

**Empusa Illiger, 1798**

10. *Empusa fasciata* Brullé, 1832 [9] [17] [19] [21] [23] [25] [27] [29] [30]

Iranian localities.—Fars Province [19]; Gilan Province (Lahijan) [23]; Ilam Province (Darrehshahr) [30]; Kermanshah Province (Sahneh) [30]; Kurdistan Province [27]; Razavi Khorasan Province (Sarakhs) [29]; South Khorasan Province [25]; Tehran Province [17].

Iranian repository.—HMIM [21].

Global distribution.—Croatia, Cyprus, Egypt, Greece, India, Iran, Israel, Jordan, Romania, Russia, Slovenia, Turkey.

11. *Empusa hedenborgii* Stål, 1877 [2] [9] [10] [12] [17] [18]

Other names.—*Empusa stollii* Saussure, 1871.

Iranian localities.—Khuzestan Province (Ahwaz) [10]; Lorestan Province (Kuhda) [18]; Sistan & Baluchistan Province (Konarak [12], Khash [2], Konarak [12]); Tehran Province [17].

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**Fig. 3.** Photographs of some Mantodea species identified in Iran. A. *Mantis religiosa*; B. *Empusa pennicornis*; C. *Blepharopsis mendica*; D. *Nilomantis floweri*; E. *Holaption brevipugilia*. Reprinted from M. Kolnegari “Praying Mantids.—From Cognition to Conservation” (Avaye Dornaye Khakestari Institute 2022).
12- Empusa pennicornis Lindt, 1978

Global distribution.—Cameroon, Egypt, Eritrea, Ethiopia, Iran, North Somalia, Saudi Arabia, Senegal, Sudan, United Arab Emirates, Yemen.

Other names.—Mantis pennicornis Pallas, 1773; Gongylus marginatus Thunberg, 1815; Empusa orientalis Burmeister, 1838.

Iranian localities.—Arabian Province (Meshkin-Shahr) [29]; Fars Province [19]; Iran Province (Mehran) [30]; Iranian islands of Persian Gulf [20]; Kerman Province (Javanrud) [30]; Kurdistan Province (Sanandaj) [29]; Markazi Province (Arak, Farahan, Khondab, Shazand) [2]; Sistan & Baluchistan Province (Khash, Kuhe-Tafan, Saravan) [2]; South Khorasan Province [2]; Tehran Province (Taleghan) [12].

Iranian repository.—HMIM [20] [21]; IAUA [12]; NHTM [28].

Global distribution.—Afghanistan, China, Georgia, Iran, Iraq, Kazakhstan, Russia, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan.

Eremiaphila Lefebvre, 1835

13- Eremiaphila arabica Saussure, 1871 [21]

Other names.—Eremiaphila dauwydowi Werner, 1905.

Iranian localities.—unknown.

Iranian repository.—HMIM [21].

Global distribution.—Egypt, Iran, Israel, Pakistan, Saudi Arabia, Yemen.

14- Eremiaphila gene Lefebvre, 1835 [9] [10] [25] [29]

Other names.—Eremiaphila burmeisteri Saussure, 1871; Eremiaphila hauensteini Werner, 1905.

Iranian localities.—East Azerbaijan Province (Arasbaran) [29]; Golestan Province (Gonbad) [29]; Isfahan Province (Isfahan) [25]; South Khorasan Province [25].

Iranian repository.—?

Global distribution.—Afghanistan, Armenia, Egypt, Iran, Israel, Jordan, Lebanon, Saudi Arabia, Syria, Turkey, Yemen.

15- Eremiaphila persica persica Werner, 1905

[2] [10] [12] [20] [21] [34]

Fig. 2D

Type locality.—Hoxorasan Province [34].

Type specimen.—ZMAS [34].

Iranian localities.—Iranian islands of Persian Gulf [20]; Isfahan Province (Kashan) [2]; Kerman Province (Jiroft) [21]; Markazi Province (Arak) [12]; South Khorasan Province (Birjand) [2].

Iranian repository.—HMIM [20] [21]; IAUA [12].

Global distribution.—Azerbaijan, Iran, Iraq, Turkey.

- Eremiaphila persica sjoestedti Werner, 1930 [21] [35]

Type locality.—Bushehr Province [35].

Type specimen.—NHRS [35].

Iranian localities.—unknown.

Iranian repository.—HMIM [21].

Global distribution.—Iran, Pakistan.

Hierodula Burmeister, 1838


Type locality.—Hormozgan Province (Jask) [7].

Type specimen.—RMNH [7].

Global distribution.—Iran.

17- Hierodula tenuidentata Saussure, 1869 [19] [29] [33]

Other names.—Hierodula simulacrum (Fabricius, 1793); Sphodromantis tenuidentata (Saussure, 1869); Hierodula heterodera Westwood, 1889.

Iranian localities.—Fars Province [19]; Tehran Province (Shahr-e Rey) [33].

Iranian repository.—?

Global distribution.—Afghanistan, India, Iran, Kazakhstan, Nepal, Pakistan, Tajikistan, Turkmenistan, Uzbekistan.

18- Hierodula transcaucasica Brunner von Wattenwyl, 1878

[2] [5] [10] [11] [12] [17] [21] [23] [24] [25] [29]

Iranian localities.—Arabian Province (Dasht-e Moghan) [24]; Gilan Province [2]; Gilan Province (Lahijan) [23]; Kerman Province (Jiroft) [29]; Markazi Province (Arak) [12]; Mazandaran Province (Ghaemshahr, Juybar, Namak-abrood, Ramsar, Sari) [11]; Razavi Khorasan Province (Masahad) [10]; Sistan & Baluchistan Province (Zabol) [10]; South Khorasan Province [25]; Tehran Province [2] [17].

Type locality.—Golestan Province (Gorgan) [5].

Type specimen.—NHMW [5].

Iranian repository.—HMIM [21] [24]; IAUA [12].

Global distribution.—Armenia, Azerbaijan, Caucasus, Georgia, Iran, Russia; invasive in southern Europe.
**Holaptilon Beier, 1964**

19- *Holaptilon brevipugilis* Kolnegari, 2018 [12] [14]
Fig. 3E

Iranian localities.—Markazi Province (Arak) [12]; Markazi Province (Haft-ad-gholeh Protected Area) [14].

Iranian repository.—IAUA [12] [14].

Global distribution.—Iran.

**Humbertiella Saussure, 1869**

20- *Humbertiella indica* Saussure, 1869 [12]

Other names.—*Humbertiella africana* Rehn, 1912.

Iranian localities.—Sistan and Baluchistan Province (Konarak) [12].

Iranian repository.—IAUA [12].

Global distribution.—India, Iran, Myanmar, Nepal, Pakistan, Sri Lanka.

**Iris Saussure, 1869**

21- *Iris nana* Uvarov, 1930 [9] [12] [17] [19] [21] [33]
Fig. 2I

Other names.—*Iris radians* Uvarov, 1931.

Iranian localities.—Bushehr (Delvar) [12]; Fars Province [19]; Fars Province (Marvdasht) [33]; Semnan Province (Semnan) [12]; Sistan & Baluchistan Province (Konarak) [12]; Tehran Province [17].

Iranian repository.—HMIM [21].

Global distribution.—Afghanistan, India, Iran, Iraq, Pakistan.

22- *Iris oratoria* (Linné, 1758)
[9] [12] [17] [18] [19] [21] [24] [25] [26] [27] [28] [29] [30]
Fig. 2C

Other names.—*Mantis oratorius* Linné, 1758; *Mantis minima* Charpentier, 1825.

Iranian localities.—Alborz Province (Shahrestanak) [12]; Ardabil Province (Dasht-e Moghan) [24]; Fars Province [19] [28]; Kerman Province [26]; Kermanshah Province (Kermanshah) [30]; Kurdistan Province [27]; Kurdistan Province (Marivan) [12]; Lorestan Province (Kuhdasht) [18]; Markazi Province (Arak, Khondab, Shazand) [12]; North Khorasan Province (Bojnurd) [29]; South Khorasan Province [25]; Tehran Province [26] [17].

Iranian repository.—HMIM [21] [24]; IAUA [12]; NHTM [28]; ZMSU [18].

Global distribution.—Albania, Algeria, Chad, Croatia, Cyprus, Egypt, France, Greece, India, Iran, Israel, Italy, Jordan, Morocco, North America, Palestine, Spain, Syria, Tunisia, Turkey; invasive in southwestern USA.

23- *Iris persa* Uvarov, 1922 [2] [8] [21] [32]

Type locality.—Bushehr Province [32].

Type specimen.—BMNH [32].

Iranian localities.—Fars Province (Shiraz) [8]; Sistan & Baluchistan Province (Iranshahr, Khash, Kuhe-Taftan, Saravan) [2].

Iranian repository.—HMIM [21].

Global distribution.—Iran.

24- *Iris polystictica* (Fischer-Waldheim, 1846)
[9] [11] [12] [17] [19] [21] [24]

Other names.—*Mantis polystictica* Fischer-Waldheim, 1846; *Iris tiflisina* Giglio-Tos, 1915.

Iranian localities.—Ardabil Province (Dasht-e Moghan) [24]; Fars Province [19]; Tehran Province [12] [17]; Mazandaran Province (Ghaem-shahr, Juybar, Sari) [11].

Iranian repository.—HMIM [11] [21] [24].

Global distribution.—Afghanistan, Armenia, Azerbaijan, Caucasus, China, Georgia, Iran, Kazakhstan, Russia, Tajikistan, Turkey, Turkmenistan, Uzbekistan.

25- *Iris splendida* Uvarov, 1923 [10] [21] [25]

Iranian localities.—Fars Province (Shiraz) [10]; Hormozgan Province (Bandar-Abbas) [10]; South Khorasan Province [25].

Iranian repository.—HMIM [21].

Global distribution.—Afghanistan, Iran, Pakistan.

**Lobothespis La Greca & Lombardo, 1987**

26- *Lobothespis vignai* La Greca & Lombardo, 1987 [16]

Type locality.—Sistan & Baluchistan Province (Hamun) [16].

Type specimen.—INER [16].

Global distribution.—Iran.

**Mantis Linné, 1758**

27- *Mantis religiosa* Linnaeus, 1758 [1] [2] [8] [9] [10] [11] [12] [13] [17] [18] [19] [20] [21] [24] [25] [27] [28] [29] [30]
Fig. 3A

Other names.—*Gryllus religiosus* Linné, 1758; *Mantis sancta* Fabricius, 1787; *Mantis maroccana* Thunberg, 1815; *Mantis capensis* Saussure, 1872.

Iranian localities.—Ardabil Province (Dasht-e Moghan) [24]; East Azerbaijan Province (Arasbaran) [29]; Fars Province [19] [28]; Fars Province (Kazeroon, Shiraz) [8] [10]; Hormozgan Province...
(Bandar-Abbas) [10]; Ilam Province (Dehloran [10], Ilam [30]); Iranian islands of Persian Gulf [20]; Kerman Province (Manujan) [13]; Kermanshah Province (Javanrud, Kermanshah) [30]; Khuzestan Province [1]; Kurdistan Province [27]; Kurdistan Province (Bijar) [10]; Lorestan Province (Kuhdasht) [18]; Mazandaran Province [2] [12]; Mazandaran Province (Ghaem-shahr, Chalous, Juybar, Mahmood-abad, Namak-abrood, Sari, Savadkuh) [11]; Razavi Khorasan Province (Mashtad, Sabzevar) [10] [29]; South Khorasan Province [25]; Sistan & Baluchistan Province (Iranshahr) [2]; Tehran Province [12] [17]; West Azerbaijan Province (Urmia) [8] [29].

Iranian repository.—HMIM [11] [20] [21] [24]; NHTM [28]; ZMSU [18].

Global distribution.—Africa, Asia, Europe. Invasive in North America.

Microthespis Werner, 1908

28- Microthespis dmitriewi Werner, 1908 [2] [9] [18] [19] [21] [30]

Iranian localities.—Fars Province [19]; Kermanshah Province (Sahneh) [30]; Lorestan Province (Kuhdasht) [18]; Sistan & Baluchistan Province (Iranshahr, Saravan) [2].

Iranian repository.—HMIM [21]; ZMSU [18].

Global distribution.—Bahrain, Egypt, Ethiopia, Iran, Israel, Jordan, Oman, Pakistan, Saudi Arabia, Somalia, United Arab Emirates, Yemen.

29- Microthespis evansi Uvarov, 1931 [21]

Iranian localities.—unknown.

Iranian repository.—HMIM [21].

Global distribution.—Iran, Pakistan.

Nilomantis Werner, 1907

30- Nilomantis floweri Werner, 1907 [9] [12] [21] Fig. 3D

Other names.—Cryptomantis tenella Giglio-Tos, 1915; Nilomantis arabica Beier, 1930.

Iranian localities.—Fars Province [12]; Hormozgan Provincen (Gheshm) [12].

Iranian repository.—HMIM [21].

Global distribution.—Chad, Ethiopia, Iran, Mauritania, Nigeria, Oman, Saudi Arabia, Sudan, United Arab Emirates, Yemen.

Oxyothespis Saussure, 1870

31- Oxyothespis persica Bolivar, 1913 [2] [4] [10] [12] [18] [19] [20] [21] [22] [25] Fig. 2E

Type locality.—Khuzestan Province (Gotvand, Shimbar) [4].
Global distribution.—Bahrain, Iran.

- Rivetina inermis (not assigned to subspecies) [25] [28]

Iranian localities.—Fars Province [28]; South Khorasan Province [25].

Iranian repository.—NHTM [28].

36- Rivetina rhombicollis La Greca & Lombardo, 1982 [15]

Type locality.—Sistan and Baluchistan Province [15].

Type specimen.—MBAC [15], SMNS [15].

Global distribution.—Afghanistan, Iran, Pakistan.

37- Rivetina syriaca syriaca (Saussure, 1869) [21]

Other names.—Iris syriaca Saussure, 1869; Fischeria festae Giglio-Tos, 1916; Eufischeriella festae (Giglio-Tos, 1916); Rivetina festae (Giglio-Tos, 1916).

Iranian localities.—unknown.

Iranian repository.—HMIM [21].

Global distribution.—Iran, Iraq, Lebanon, Syria, Tajikistan, Transcaspia, Turkey.

Sphodromantis Stål, 1871

38- Sphodromantis trimacula (Saussure, 1870) [31]

Other names.—Hierodula trimacula Saussure, 1870; Hierodula arabica Wood-Mason, 1882; Sphodromantis arabica Wood-Mason, 1882; Sphodromantis dhufarica Uvarov, 1933.

Type locality.—unknown.

Type specimen.—BMNH [31]; MHNG [31].

Global distribution.—Egypt, Iran, Iraq, Lebanon, Oman, Saudi Arabia, United Arab Emirates, Yemen.

39- Sphodromantis viridis (Forskål, 1775) [11] [12] [21] [24] [29] [30]

Other names.—Gryllus viridis Forskål, 1775; Mantis gutata Thunberg, 1815; Mantis bioculata Burmeister, 1838; Hierodula bioculata (Burmeister, 1838); Sphodromantis bioculata (Burmeister, 1838).

Iranian localities.—Ardabil Province (Dasht-e Moghan) [24]; East Azerbaijan Province (Arasbaran) [29]; Fars Province (Shiraz) [12]; Kermanshah Province (Kermanshah) [30]; Mazandaran Province (Ghaem-shahr, Ramsar, Sari, Savadkuh, Shargh) [11]; Sistan and Baluchistan Province (Konarak) [12].

Iranian repository.—HMIM [11] [21] [24].

Global distribution.—Algeria, Chad, Croatia, Cyprus, Egypt, Ethiopia, Jordan, Iran, Israel, Kenya, Libya, Mauretania, Morocco, Palestine, Saudi Arabia, Senegal, Somalia, Spain, Sudan, Syria, Tanzania, Tunisia, Uganda, Yemen.

Species likely misidentified in primary literature

1- Ameles decolor (Charpentier, 1825) [21] [24]

Other names.—Mantis decolor Charpentier, 1825.

Iranian localities.—Ardabil Province (Dasht-e Moghan) [24].

Iranian repository.—HMIM [21] [24].

Global distribution.—Albania, Algeria, Croatia, Czech Republic, France, Greece, Italy, Slovenia, Spain.

Note.—The easternmost occurrence of the species is along the north-eastern coast of the Adriatic Sea. No confirmed Asian records of this species exist (Kaltenbach 1963, Agabiti et al. 2010, Villani 2020).

2- Ameles heldreichi Brunner von Wattenwyl, 1882 [29]

Other names.—Parameles heldreichi (Brunner von Wattenwyl, 1882).

Iranian localities.—East Azerbaijan Province (Arasbaran) [29].

Iranian repository.—?

Global distribution.—Cyprus, Greece, Israel, Jordan, Libya, Palestine, Turkey.

Note.—The easternmost distribution of the species includes Crimea, Central Anatolia, and the eastern Mediterranean coast.

3- Ameles picteti (Saussure, 1869) [10] [21]

Other names.—Parameles picteti Saussure, 1869; Mantis nana Charpentier, 1825.

Iranian localities.—Semnan Province (Shahrud) [10].

Iranian repository.—HMIM [21].

Global distribution.—Algeria, Italy, Morocco, Spain.

Note.—This species has not been recorded away from western Mediterranean coasts (Agabiti et al. 2010).

4- Ameles spallanzania (Rossi, 1792) [21]

Other names.—Mantis spallanzania Rossi, 1792; Mantis nana Charpentier, 1825; Ameles abjecta Bolivar, 1897.

Iranian localities.—unknown.

Iranian repository.—HMIM [21].

Global distribution.—Albania, Algeria, Croatia, France, Greece, Italy, Libya, Morocco, Portugal, Spain, Tunisia.

Note.—The easternmost occurrence of this species is Cyprus (Agabiti et al. 2010).
5- Elaea marchali (Reiche & Fairmaire, 1847) [21]

Other names.—Eremiaphila marchali Reiche & Fairmaire, 1847; Humbertiella perloides Saussure, 1869; Elaea perloides (Saussure, 1869); Elaea somalica Schulthess-Schindler, 1898.

Iranian localities.—unknown.

Iranian repository.—HMIM [21].

Global distribution.—Algeria, Cameroon, Egypt, Ethiopia, Guinea, Kenya, Nigeria, Senegal, Sudan.

Note.—This species is mainly found throughout the savanna regions of Northern Africa. No confirmed records of this species exist outside the Ethiopian region.

6- Empusa pennata (Thunberg, 1815) [2] [9] [10] [11] [21] [24]

Other names.—Gongylus pennatus Thunberg, 1815; Empusa pauuperata (Fabricius, 1781); Empusa egena Charpentier, 1841; Empusa brachyptera Fischer-Waldheim, 1846.

Iranian localities.—Ardabil Province (Dasht-e Moghan) [24]; Mazandaran Province (Ghaem-shahr, Namak-abrood, Ramsar, Savad-kuh, Shirgah) [11]; Sistan & Baluchistan Province (Iranshahr [2], Zahedan [10]).

Iranian repository.—HMIM [21].

Global distribution.—Algeria, Italy, Libya, Morocco, Spain, Tunisia.

Note.—This is a western Mediterranean species. The easternmost distribution of it includes Istria (Kaltenbach 1963).

7- Eremiaphila andresi Werner, 1910 [30]

Iranian localities.—Ilam Province (Darrehshahr) [30].

Iranian repository.—?

Global distribution.—Egypt, Iraq, Libya.

8- Eremiaphila cerisy Lefebvre, 1835 [9]

Iranian localities.—unknown.

Iranian repository.—?

Global distribution.—Egypt, Iraq, Oman, Saudi Arabia, United Arab Emirates.

9- Eremiaphila turcica Westwood, 1889 [9]

Iranian localities.—unknown.

Iranian repository.—?

Global distribution.—Iraq, Turkey.

10- Geomantis larvoides larvoides Pantel, 1896 [29]

Other names.—Fischeria baetica Pantel, 1886.

Iranian localities.—Gilan Province (Astara) [29].

Iranian repository.—?

Global distribution.—Albania, Croatia, France, Greece, Italy, Morocco, North Africa, Portugal, Spain, Tunisia, Turkey.

Note.—This species has not been recorded away from Mediterranean coasts.

11- Iris coeca Uvarov, 1931 [10] [21]

Iranian localities.—Ilam Province (Dehloran) [10].

Iranian repository.—HMIM [21].

Global distribution.—Egypt, Saudi Arabia, Sudan, Yemen.

12- Iris pitcheri Kaltenbach, 1982 [21]

Iranian localities.—unknown.

Iranian repository.—HMIM [21].

Global distribution.—Saudi Arabia.

13- Oxyothespis wagneri (Kittary, 1849) [9]

Other names.—Mantis wagneri Kittary, 1849.

Iranian localities.—unknown.

Iranian repository.—?

Global distribution.—Afghanistan, Kazakhstan.

14- Pareuthyphlebs palmonii (Uvarov, 1939) [21]

Other names.—Xenomantis palmonii Uvarov, 1939.

Iranian localities.—unknown.

Iranian repository.—HMIM [21].

Global distribution.—Israel, Jordan, Palestine.

Note.—Distribution of the species is limited to distinct regions of the Middle East along Mediterranean coasts.

15- Pseudoyersinia paui (Bolivar, 1898) [24]

Other names.—Ameles paui Bolivar, 1898; Parameles paui (Villani 2020).

Iranian localities.—Ardabil Province (Dasht-e Moghan) [24].

Iranian repository.—HMIM [24].
Global distribution.—Spain.

Note.—This species has been recorded only in Spain.

16- Rivetina baetica baetica (Rambur, 1838) [12] [21] [22] [29]

Other names.—Mantis baetica Rambur, 1838; Mantis fasciata Thunberg, 1815; Fischeria baetica (Rambur, 1838).

Iranian localities.—East Azerbaijan Province (Arasbaran) [29]; Markazi Province (Arak, Farahan) [12].

Iranian repository.—HMIM [21] [22]; IALIA [12].

Global distribution.—Algeria, Chad, Egypt, Italy, Libya, Malta, Mauritania, Morocco, Senegal, Spain, Tunisia.

Note.—This species mainly occurs in Northern Africa and Southern Europe (La Greca and Lombardo 1982).

17- Severinia nigrofasciata Kaltenbach, 1982 [21]

Iranian localities.—unknown.

Iranian repository.—HMIM [21].

Global distribution.—Saudi Arabia.

18- Severinia turcomanicae Saussure, 1872 [28]

Other names.—Oxythespis turcomanicae Saussure, 1872.

Iranian localities.—Fars Province [28].

Iranian repository.—NHTM [28].

Global distribution.—Mongolia, Turkestan.

Discussion

This study demonstrates the potential significance of Iranian repositories for future investigations. However, to validate the primary identification of Iranian repositories, the specimens need to be properly preserved. Unfortunately, some have been poorly preserved in local institutions where they are prone to accidental destruction or loss (Kolnegari pers. obs.). The Hayk Mirzayans Insect Museum (HMIM) has solved these problems by limiting access to voucher specimens. This ensures conservation of the largest insect collection of Iran with significant achievements.

Moreover, each of the 17 known ecoregions of Iran—particularly marginal ecoregions—could be highly important from a zoogeographical perspective (Olson et al. 2001), but they were not considered in previous studies. Therefore, conducting systematic surveys in mantid habitats in the unexplored provinces and in all ecoregions of Iran could lead to taxonomically and faunistically significant achievements.

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