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Faunistic composition and spatial distribution of scorpions in Fars Province, south of Iran

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ABSTRACT. The major type of animal envenomation in Iran is related to scorpion stings. In the present study, we aimed to investigate the faunistic composition and spatial distribution of scorpions in Fars Province. Collected scorpions were transformed to the Entomo-Zoology Museum at Shiraz University of Medical Science (EZMSUMS) and identified at the species level using valid morphological keys. Furthermore, we performed a literature review containing data on species composition and distribution of the scorpion recorded from Fars counties. Finally, the map of the scorpion's distribution was drawn by the software ArcGIS. Based on the specimens examined in the present study and the literature review, the scorpion fauna of Fars Province included 27 species belonging to 11 genera and three families of Buthidae (24 species), Scorpionidae (one species), and Hemiscorpiidae (two species). Of 27 species recorded from Fars Province, 15 are endemic to Iran. *Androctonus crassicauda* and *Mesobuthus eupeus* were the Province's most abundant and widespread species. The counties with warmer bioclimate located in the west and south of the Province, including Larestan, ZarrinDasht, Kazeroun, and GhirKarzin, had the richest scorpion diversity.
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KEY WORDS: Biodiversity, Buthidae, Hemiscorpiidae, Scorpionidae, fauna, Iran.

Фаунистический состав и распределение скорпионов в провинции Фарс, южный Иран

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РЕЗЮМЕ. Наибольшее количество ядовитых поражений в Иране связано с ужалениями скорпионов. Цель настоящей работы — исследование состава фауны и распределения скорпионов в провинции Фарс. Скорпионы определены по ключам с использованием морфологических признаков; собранный материал хранится в энтомо-зоологическом музее Медицинского университета в Ширазе (Entomo-Zoology Museum at Shiraz University of Medical Science, EZMSUMS). Привлечена исчерпывающая информация по литературным данным из всех районов провинции. Карты распространения скорпионов созданы при помощи компьютерной программы ArcGIS. По оригинальным и литературным данным, фауна скорпионов провинции Фарс представлена 27 видами из 11 родов, относящихся к трем семействам: Buthidae (24 вида), Scorpionidae (1 вид), и Hemiscorpiidae (2 вида). 15 из обнаруженных 27 видов эндемичны для Ирана. Наиболее многочисленны и широко распространены в провинции *Androctonus crassicauda* и *Mesobuthus eupeus*. Наибольшее видовое богатство скорпионов представлено в более теплых западных и южной районах провинции, включая Ларестан, Заррин-Дашт, Казерун и Гир-Казвин.
Как цитировать эту статью: Azizi K., Ebrahimi M., Paksa A., Soltani Z., Ainvand M.H., Shahabi S. 2024. Faunistic composition and spatial distribution of scorpions in Fars Province, south of Iran // Invert. Zool. Vol.21 No.2. P.193–209. doi. 10.15298/invertzool.21.2.07

КЛЮЧЕВЫЕ СЛОВА: биоразнообразие, Buthidae, Hemiscorpiidae, Scorpionidae, фауна, Иран.

Introduction

Scorpion stings are a significant public health problem in many underdeveloped tropical and subtropical countries, as the estimated annual number of scorpion stings is 1.2 million, leading to 3250 deaths (0.27%) (Chippaux, Goyffon, 2008; Khatony *et al*., 2015; Queiroz *et al*., 2015). Scorpion stings are also a public health problem in Iran (Bagheri *et al*., 2021; Dehghani *et al*., 2022), as the primary type of animal envenomation in Iran is related to scorpion stings. After Mexico, the highest incidence rates of scorpion stings have been reported in Iran (Ghorbani *et al*., 2021). It has been estimated that about 50,000 scorpion stings are recorded annually in Iran (Dehghani, Fathi, 2012; Dehghani *et al*., 2018).

According to the last updated checklist of the scorpion fauna of Iran, it consists of 68 species belonging to 19 genera and four families of Buthidae, Hemiscorpiidae, Scorpionidae, and Diplocentridae (Barahoei *et al*., 2020). The number of species recorded in the checklist is different and needs considerable revision. However, about 20 percents of scorpion species in Iran are medically important; from them, *Hemiscorpius* species, especially *H. lepturus* Peters, 1861 and *Androctonus crassicauda* (Olivier, 1807), are responsible for most fatal envenomation cases in Iran (Dehghani, Valaie, 2005; Khatony *et al*., 2015; Dehghani *et al*., 2018; Barahoei *et al*., 2020; Bagheri *et al*., 2021; Ghorbani *et al*., 2021). Therefore, studying scorpion composition and spatial distribution of scorpions in each region is very important for preventive measures against scorpion bites and the health surveillance of people. In the present study, we aimed to investigate the spatial distribution and scorpion fauna of Fars province.

Material and Methods

Area of Study

The study was conducted in Fars Province, one of the thirty-one provinces of Iran, located in the southwestern portion of the country. It covers an area of about 125,000 km² (7.6% of the total area of Iran) between latitudes 27–32°N and longitudes 50–55°E (Fig. 1). The elevation range extends from 450 m in the southern parts to about 4050 m in the northern parts (Boll Mountain), with a mean of 1491 m that encompasses most of the southern ends of the main Zagros ranges. Therefore, this region is of great significance regarding scorpion fauna because of various climatic regions and suitable zoogeographical conditions. There are three different climate zones in the western, northern, and north-western parts of Fars Province (Spitalska *et al*., 2005). The first zone includes the western, northern, and northwest mountainous areas, with cold and moderate weather

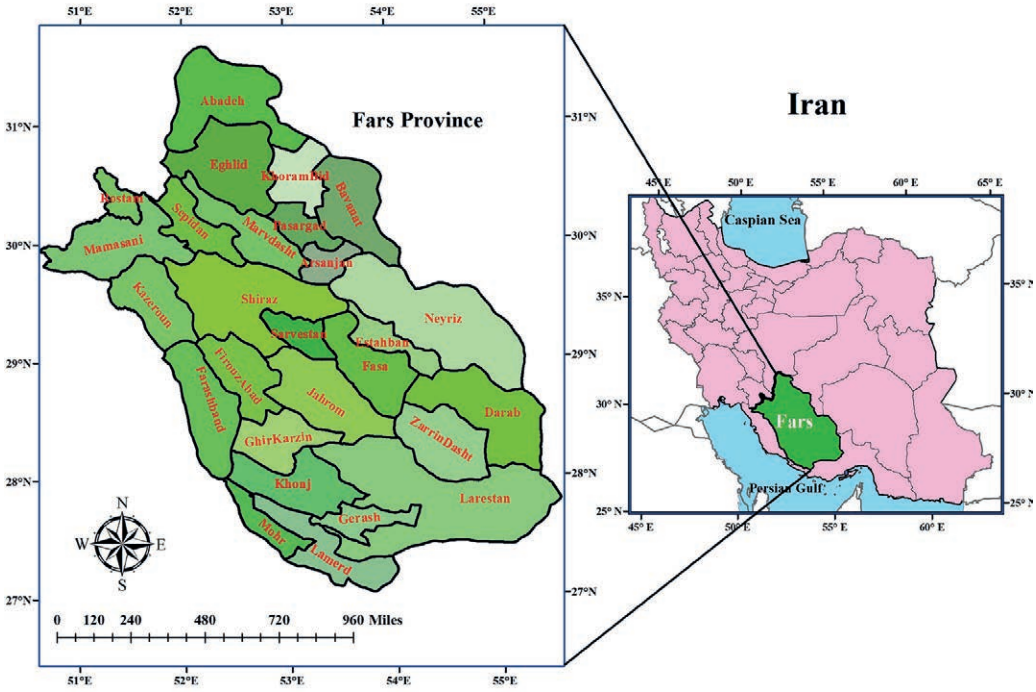

Fig. 1. Geographical position of Fars Province and its counties are located in southwestern Iran.
Рис. 1. Географическое положение провинции Фарс и ее районов в юго-западном Иране.

covered with green land. The second is the central region with mild winter, plenty of rain, and warm and dry summer. The third one is located in the south and southeast of the Province with a dry climate, moderate winter, and sweltering summer (Spitalska *et al*., 2005).

Sampling and species identification

Scorpions were sampled day and night using rock-turning, searching under the stones, rocks, and U.V. lights. In addition, pouring water in holes, digging, and rubber band techniques were used in various scorpion habitats to capture burrowing scorpions. Geographical location, latitude, longitude, and altitude (using GPS) were recorded during sampling. All samples were transformed to the Entomo-Zoology Museum at Shiraz University of Medical Science (EZMSUMS) for further morphological studies. Scorpions were identified at the species level using valid morphological keys. Furthermore, to achieve more comprehensive information on the scorpion fauna of the Province, we performed a literature review containing data on species composition and distribution of the scorpion recorded from Fars counties. All distribution data of each species were illustrated on the Fars map, including county boundaries using GIS software version 10.7.

Results

Based on the specimens examined in the present study and the literature review, the scorpion fauna of Fars Province included 27 species belonging to 11 genera and three families of Buthidae (24 species), Scorpionidae (one species), and Hemiscorpiidae (two species). Of 27 species recorded from Fars Province, 15 are endemic to Iran. Among Counties, Larestan (14), Kazeroun (12), ZarrinDasht (12), and GhirKarzin (11) have the most significant number of species (Fig. 2). There was data deficiency regarding the scorpion fauna of some counties such as Arsanjan, Sarvestan, Estahban, Bavanat, and Khorrambid. No study and data on the scorpion fauna of Arsanjan, Eghlid, Bavanat, Khorambid, Fasa, and Lamerd were found.

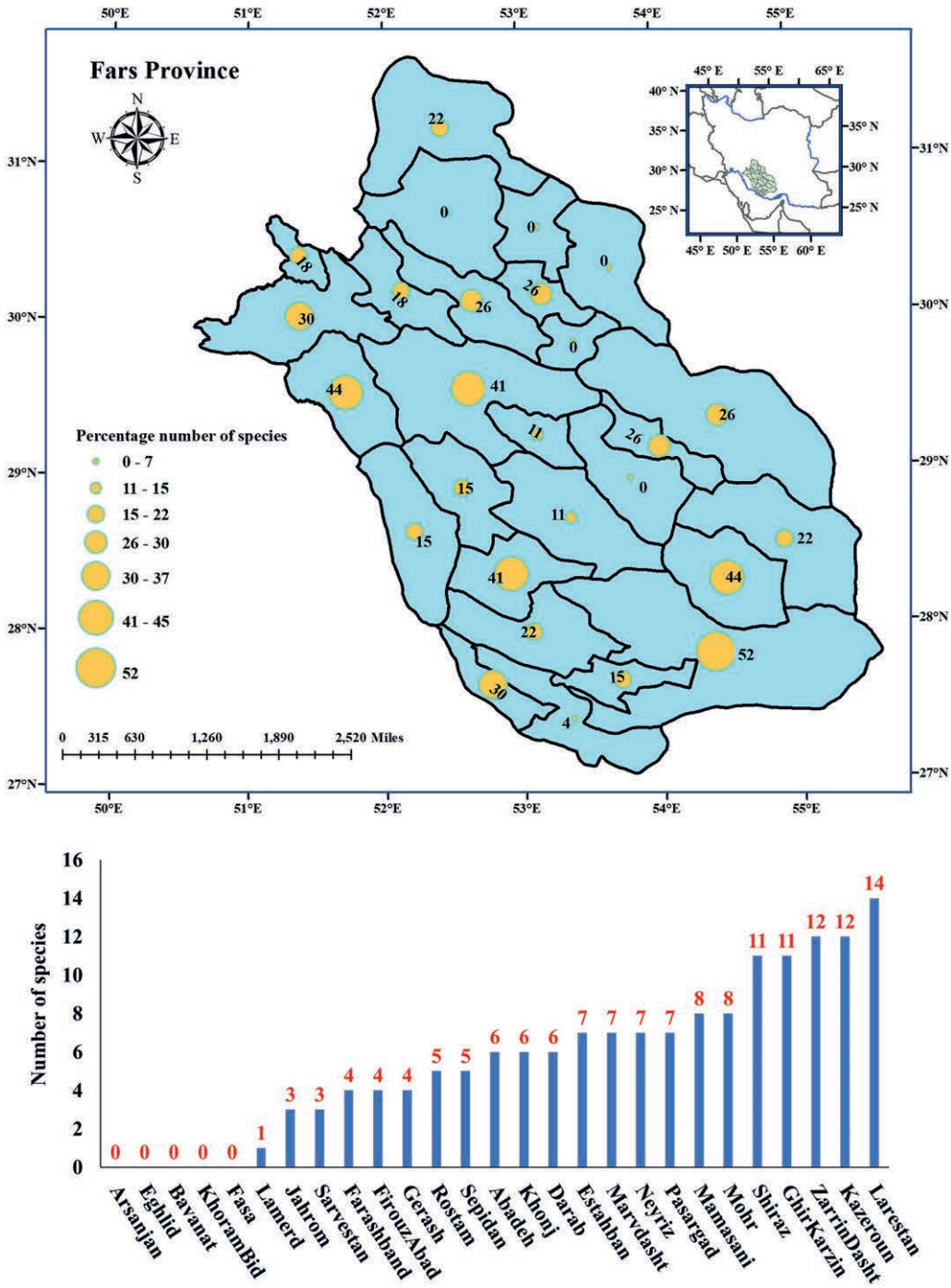

Fig. 2. Map (upper) and chart (lower) of the counties in the Fars Province show the percentage number and number of scorpion species found in each region, respectively.
Рис. 2. Карта (вверху) и диаграмма (внизу) районов провинции Фарс, показывающие количество видов скорпионов, обнаруженных в каждом районе.

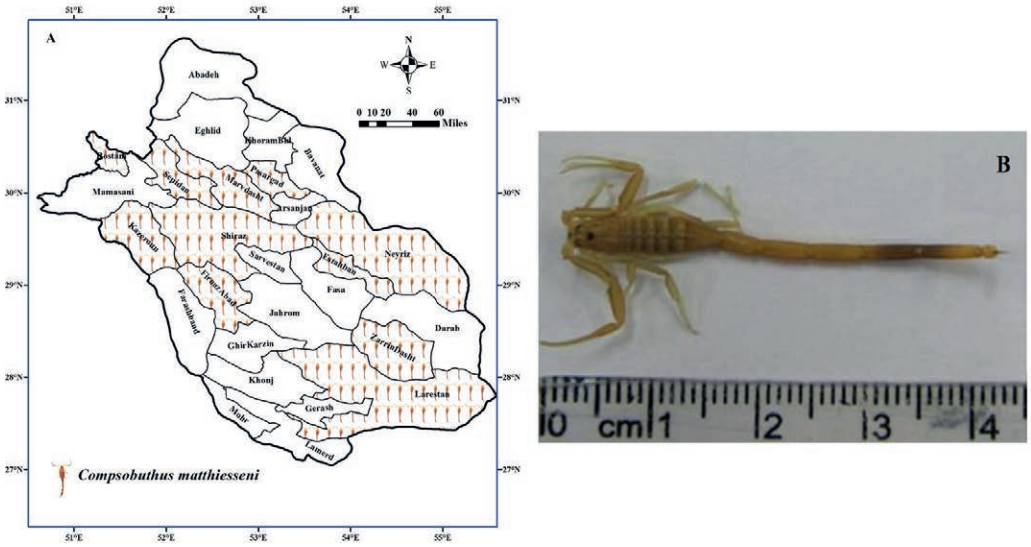

Fig. 3. Distribution map (A) of *Compsobuthus matthiesseni* (B).
Рис. 3. Карта распространения (A) и внешний вид (B) *Compsobuthus matthiesseni*.

Scorpions of Fars Province

Family Buthidae C.L. Koch, 1837

Compsobuthus Vachon, 1949

Compsobuthus matthiesseni (Birula, 1905)
Type locality: Iran, Kum, province Irak-Adschemi (now Qom).
DISTRIBUTION in Fars (Fig. 3): present study — Larestan, Estahban, Neyriz, Rostam, Sepidan, ZarrinDasht, Zarghan; other studies — Marvdasht (Farzanpay, Pretzmann, 1974), Pasargad (Kovařík, 1997), Kazeroun (Nazari *et al*., 2018), FirouzAbad (Navidpour *et al*., 2012; Nazari *et al*., 2018).
COMMENT: the species is endemic to Iran.

Compsobuthus petriolii Vignoli, 2005
Type locality: Iran, Fars province, Persepolis, Takht-e Jamshid.
DISTRIBUTION in Fars (Fig. 4): Marvdasht, Takht-e Jamshid (Navidpour *et al*., 2012; Nazari *et al*., 2018).
COMMENT: the species is endemic to Iran.

Compsobuthus persicus Navidpour *et al*., 2008
Type locality: Iran, Bushehr province, Borazjan, Dalaki.
DISTRIBUTION in Fars (Fig. 4): Larestan, GhirKarzin, Khonj (Navidpour *et al*., 2008, 2012).
COMMENT: the species is endemic to Iran.

Compsobuthus rugosulus (Pocock, 1900)
Type locality: Pakistan, Sind province, Hyderabad.
DISTRIBUTION in Fars (Fig. 4): ZarrinDasht (Kassiri *et al*., 2015).

Androctonus Hemprich et Ehrenberg, 1828

Androctonus crassicauda (Olivier, 1807)
Type locality: Iran, Esfahan province, Kashan.
DISTRIBUTION in Fars (Fig. 5): present study — Abadeh, Darab, Estahban, Gerash, Kazeroun, Larestan, Mamasani, Mohr, Neyriz, Rostam, Sarvestan, Shiraz, ZarrinDasht; other Studies-Shiraz (Karataş *et al*., 2012), Pasargad, Kazeroun, Farashband, GhirKarzin, Khonj, Larestan, Jahrom (Navidpour *et al*., 2012; Kassiri *et al*., 2015; Nazari *et al*., 2018).

Mesobuthus Vachon, 1950

Mesobuthus eupeus (C.L. Koch, 1839)
Type locality: Northeastern Iran, between Harirud River and Meshed.
DISTRIBUTION in Fars (Fig. 6): present study — Abadeh, Darab, Estahban, FarashBand, GhirKarzin, Larestan, Mamasani, Mohr, Neyriz, Sepidan, Sarvestan, Shiraz (Zaghan); other studies — Pasargad (Kovařík, 1997a: 46), Kazeroun (Nazari *et al*., 2018), FirouzAbad, GhirKarzin, (Mirshamsi *et al*., 2010), FirouzAbad, Abadeh, Kazeroun, ZarrinDasht, Pasargad (SaadatShahr), Khonj, Larestan (Navidpour *et al*., 2012; Kassiri *et al*., 2015; Nazari *et al*., 2018).
COMMENT: the species is endemic to Iran.

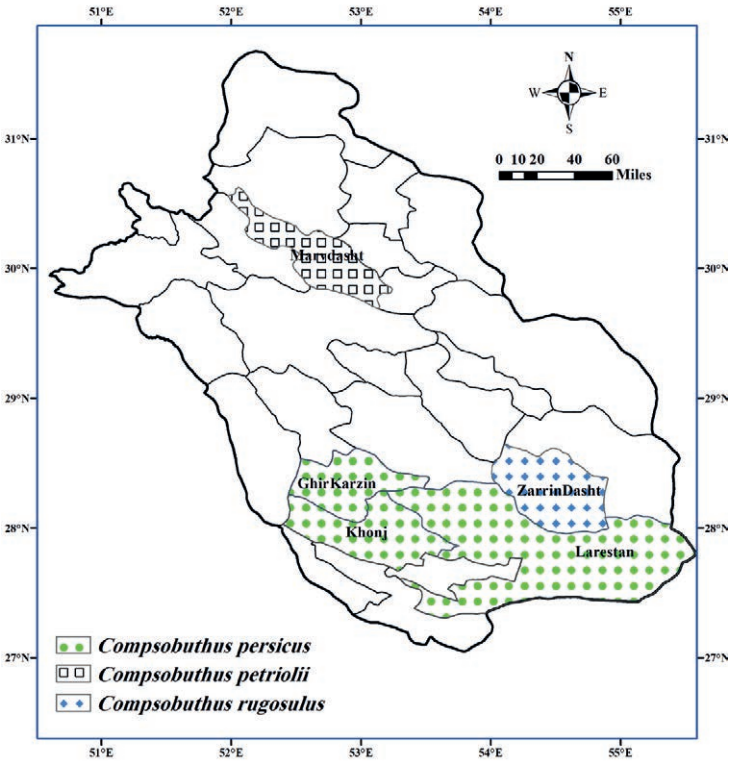

Fig. 4. Distribution map of *Compsobuthus persicus*, *C. petriolii*, and *C. rugosulus*.
Рис. 4. Карта распространения *Compsobuthus persicus*, *C. petriolii*, и *C. rugosulus*.

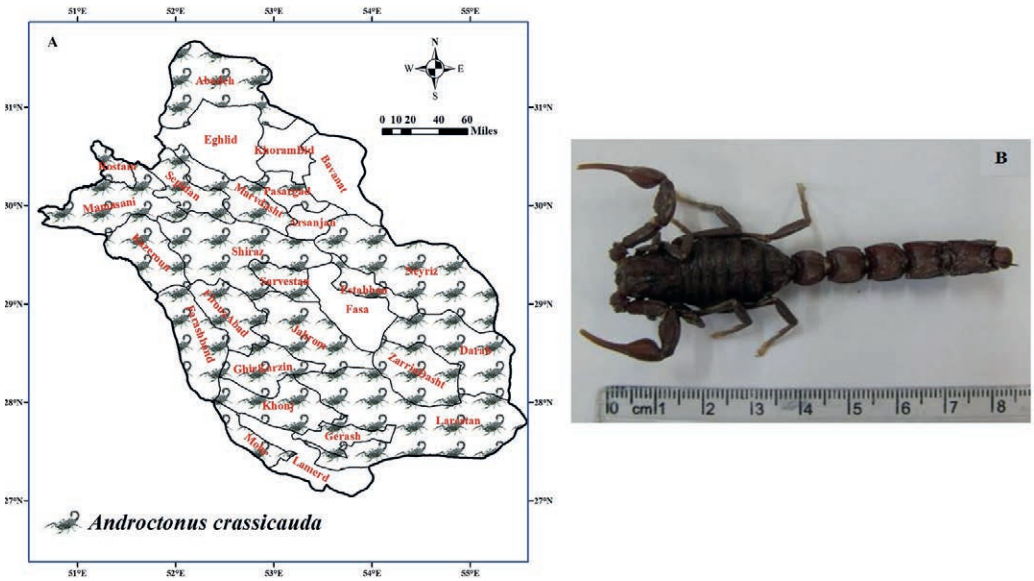

Fig. 5. Distribution map (A) of *Androctonus crassicauda* (B).
Рис. 5. Карта распространения (A) и внешний вид (B) *Androctonus crassicauda*.

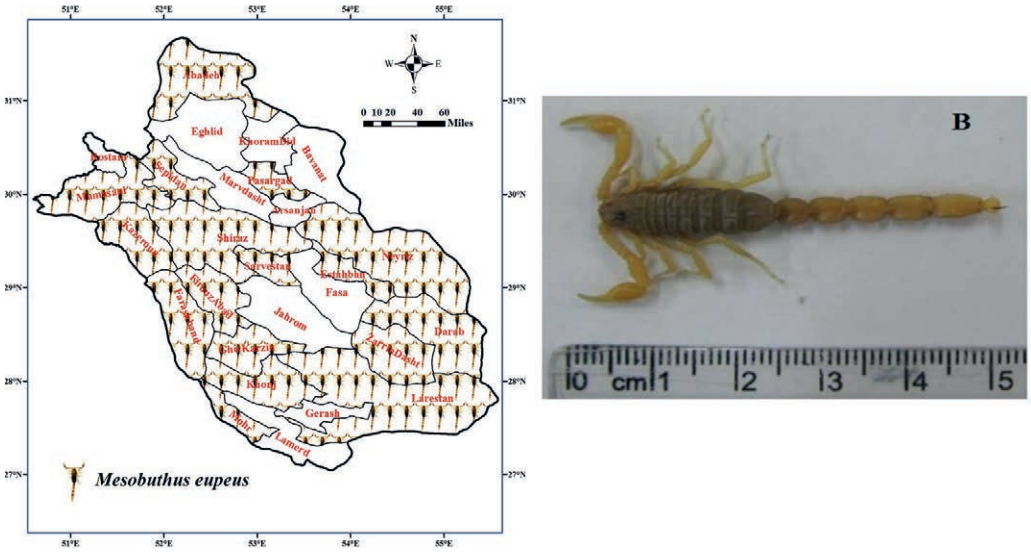

Fig. 6. Distribution map (A) of *Mesobuthus eupeus* (B).
Рис. 6. Карта распространения (A) и внешний вид (B) *Mesobuthus eupeus*.

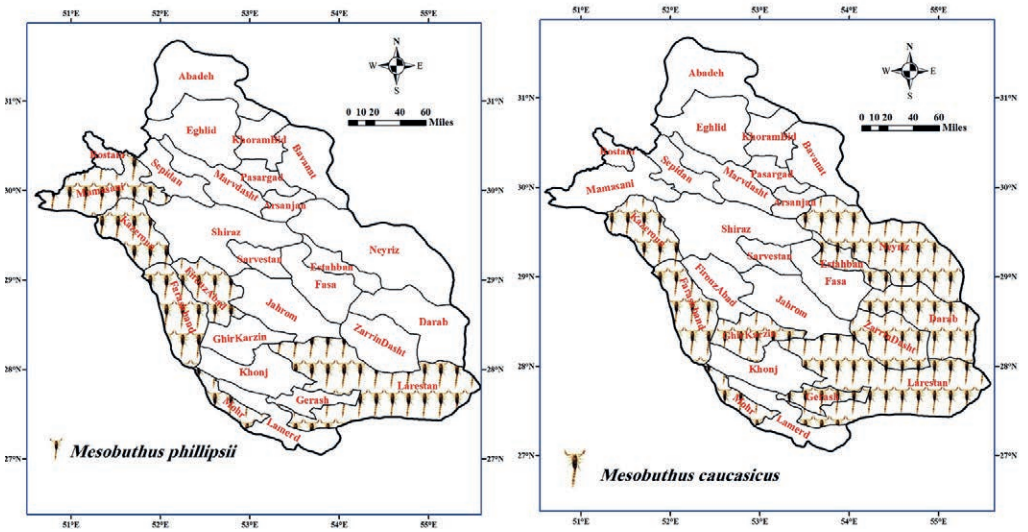

Fig. 7. Distribution map of *Mesobuthus phillipsii* (left) and *M. caucasicus* (right).
Рис. 7. Карта распространения *Mesobuthus phillipsii* (слева) и *M. caucasicus* (справа).

Mesobuthus phillipsii Mirhashemi *et al*., 2011

Type locality: Iran, Bushehr province, Farsistan.

DISTRIBUTION in Fars (Fig. 7): FirouzAbad (Kovařík *et al*., 2011), Kazeroun, Farashband, Larestan, Mohr, Mamasani (Navidpour *et al*., 2012).

Mesobuthus caucasicus (Nordmann, 1840)

Type locality: Georgia, Tbilisi province, Tbilisi.

DISTRIBUTION in Fars (Fig. 7): present study — Darab, Estahban, Farrashband, GhirKarzin, Gerash, Larestan, Mohr, Neyriz, ZarrinDasht; other studies — ZarrinDasht (Kassiri *et al*., 2015), Kazeroun (Nazari *et al*., 2018).

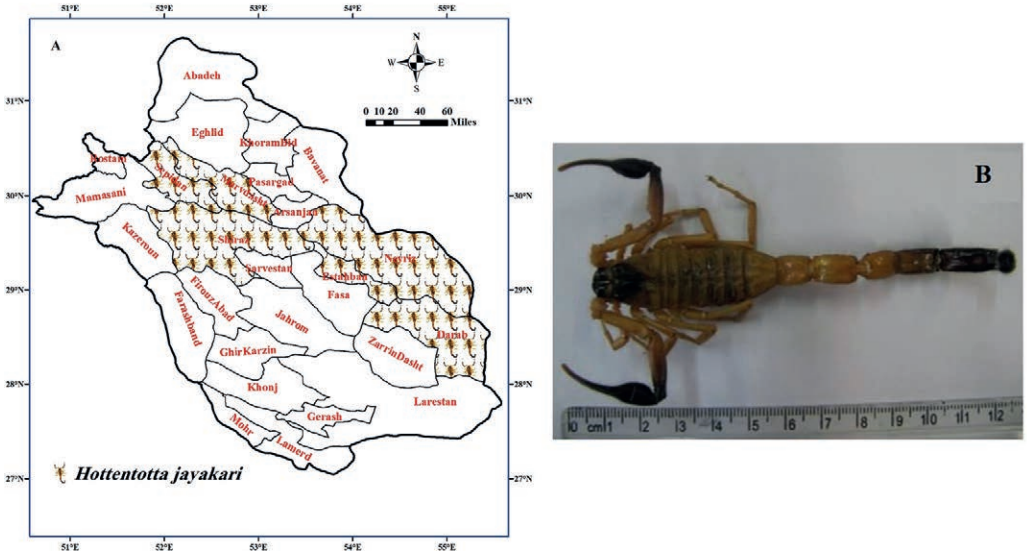

Fig. 8. Distribution map (A) of *Hottentotta jayakari* (B).
Рис. 8. Карта распространения (A) и внешний вид (B) *Hottentotta jayakari*.

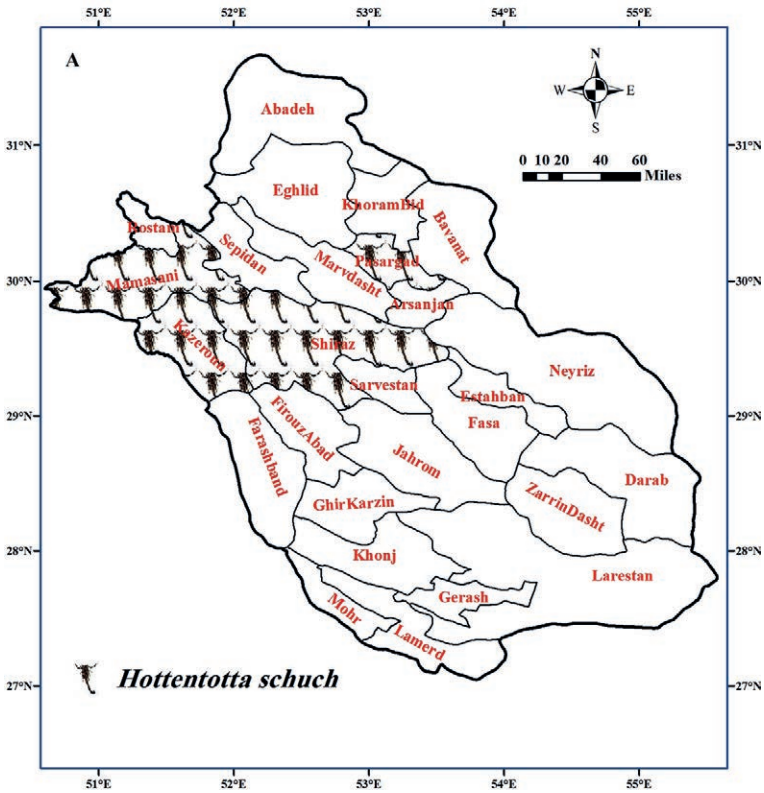

Fig. 9. Distribution map of *Hottentotta schach*.
Рис. 9. Карта распространения *Hottentotta schach*.

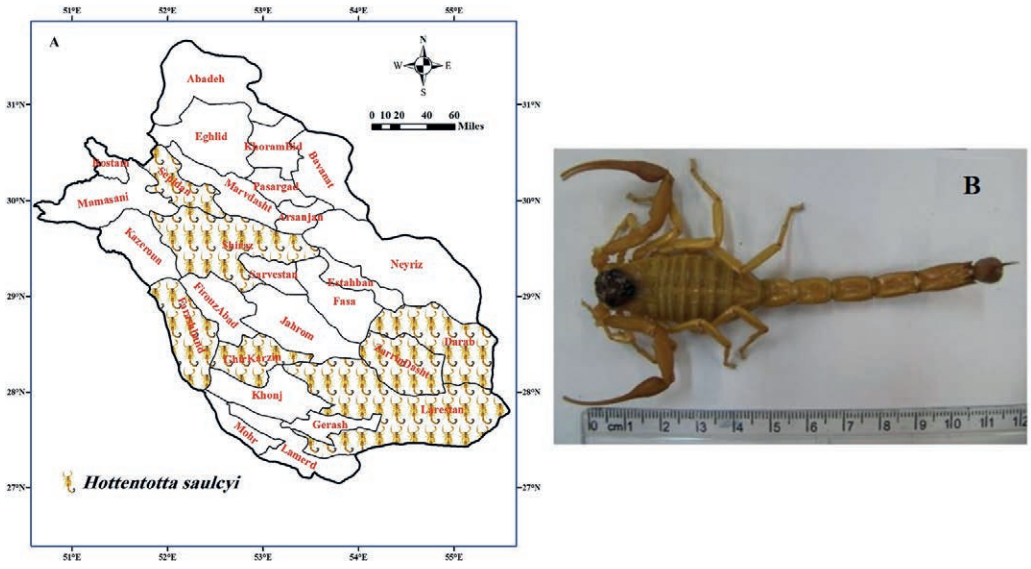

Fig. 10. Distribution map (A) of *Hottentotta saulcyi* (B).
Рис. 10. Карта распространения (A) и внешний вид (B) *Hottentotta saulcyi*.

Hottentotta **Birula, 1908**

Hottentotta jayakari (Pocock, 1895)

Type locality: Oman, Muscat province, Muscat.

DISTRIBUTION in Fars (Fig. 8): present study — Darab, Estahban, Neyris, Sepidan, Shiraz (Zarghan), Marvdasht; other studies — Shiraz (Sanaei-Zadeh *et al*., 2017), Northwest of Fars (Akbari *et al*., 1997).

Hottentotta schach (Birula, 1905)

Type locality: Iran, Khuzestan province, Dehdez.

DISTRIBUTION in Fars (Fig. 9): present study — Kazeroun, Mamasani; other studies — Pasargad (Kovařík, 1997), Shiraz (Karataş *et al*., 2012), Kazeroun, Mamasani (Karataş *et al*., 2012; Akbari *et al*., 2020).

COMMENT: the species is endemic to Iran.

Hottentotta saulcyi (Simon, 1880)

Type locality: Iraq, Mosul province, Mosul.

DISTRIBUTION in Fars (Fig. 10): present study — Farrashband, Larestan, Sepidan, ZarrinDasht; other studies — Shiraz (Kovařík, 2007), GhirKarzin (Navidpour *et al*., 2012), Darab (Kovařík *et al*., 2018).

COMMENT: the species has a wide distribution in Iran.

Hottentotta zagrosensis Kovařík, 1997

Type locality: Iran, Fars province, Zagros Mountains, Abshar village.

DISTRIBUTION in Fars (Fig. 11): present study — Mamasani, Darab, Mohr, Rostam, Sepidan; other studies — Kazeroun (Kovařík, 1997; Navidpour *et al*., 2012; Nazari *et al*., 2018).

COMMENT: the species areis endemic to Iran.

Hottentotta juliae Kovařík *et al*., 2019

Type locality: Iran, Fars province, 10 km east of Sivand village.

DISTRIBUTION in Fars (Fig. 12): Abadeh, Shiraz, Estahban, Neyriz, Pasargad (Sivand), Marvdasht, Harvestman (Kovařík *et al*., 2019; Akbari *et al*., 2020).

COMMENT: *H. juliae* is endemic to Iran and have been recorded from Fars and Khuzistan Province. This species was described by Kovařík *et al*. (2019), based on specimens which were incorrectly identified in previous publications as *H. schach*.

Hottentotta navidpouri Kovařík, Yağmur et Moradi, 2018

Type locality: Hormozgan Province, Lengeh, Iran.

DISTRIBUTION in Fars (Fig. 12): Evaz, Jahrom, GhirKarzin, Lamerd, Larestan (Akbari *et al*., 2020).

COMMENT: the species is endemic to southern Iran.

Iranobuthus **Kovařík, 1997**

Iranobuthus krali Kovařík, 1997

Type locality: Iran, Fars province, Sivand village.

DISTRIBUTION in Fars (Fig. 13): Pasargad (Sivand) (Kovařík, 1997), Marvdasht (Navidpour, Masihipour, 2009), Shiraz (Dasht-e Arzhan) (Navidpour *et al*., 2012).

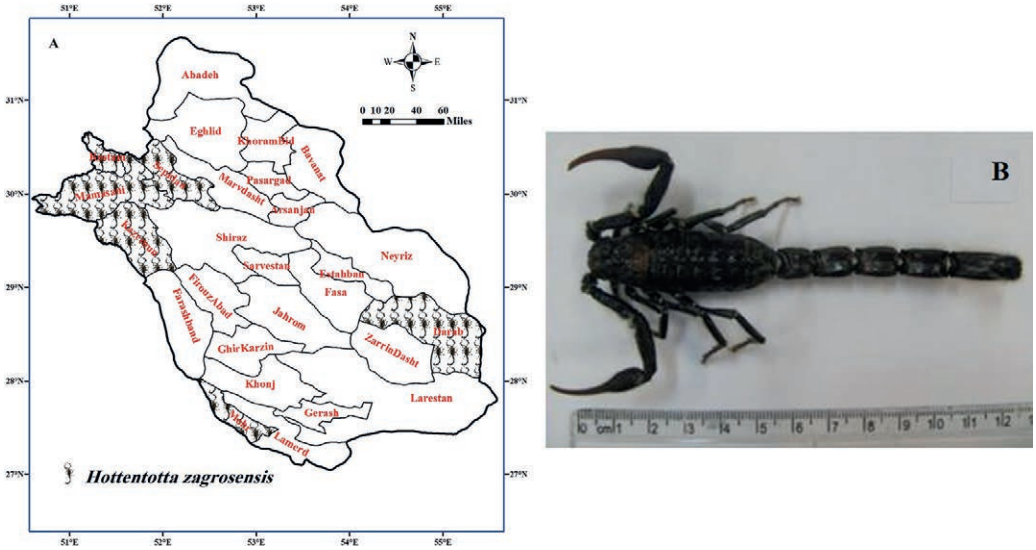

Fig. 11. Distribution map (A) of *Hottentotta zagrosensis* (B).
Рис. 11. Карта распространения (A) и внешний вид (B) *Hottentotta zagrosensis*.

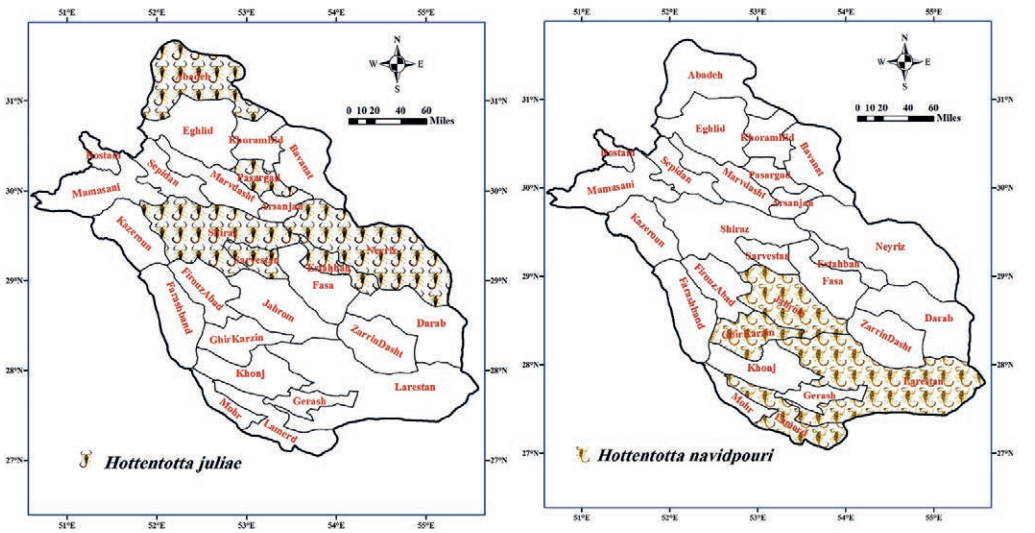

Fig. 12. Distribution map of *Hottentotta juliae* (left) and *H. navidpouri* (right).
Рис. 12. Карта распространения *Hottentotta juliae* (слева) и *H. navidpouri* (справа).

COMMENT: the species is endemic to Iran.

Odontobuthus Vachon, 1950

Odontobuthus doriae (Thorell, 1876)

Type locality: Iran, Teheran.

DISTRIBUTION in Fars (Fig. 13): present study — Darab, Estahban, Gerash, GhirKarzin, Larestan, ZarrinDasht, Mamasani; other studies — Neyriz (Lourenco, Pezier, 2002), Abadeh, Larestan (Navidpour *et al*., 2012).

COMMENT: the species is endemic to Iran.

Odontobuthus bidentatus Lourenço et Pézier, 2002

Type locality: Iraq, 180 km north of Bagdad, Khanagin-Dyala.

DISTRIBUTION in Fars (Fig. 13): Kazeroun, Farashband, GhirKarzin, Khonj, Larestan, Mohr,

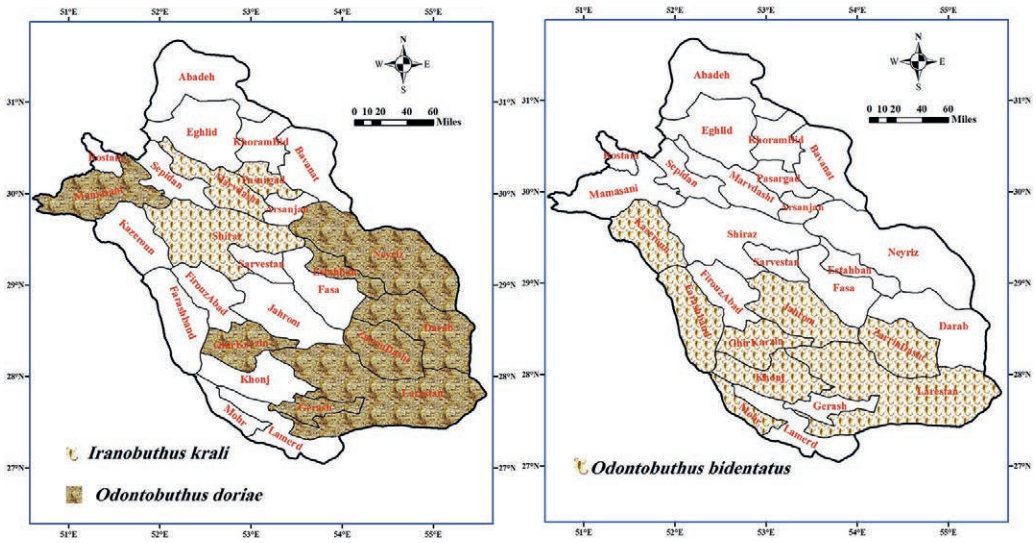

Fig. 13. Distribution map of *Iranobuthus krali* (left), *Odontobuthus doriae* (left), and *O. bidentatus* (right).
Рис. 13. Карта распространения *Iranobuthus krali* (слева), *Odontobuthus doriae* (слева) и *O. bidentatus* (справа).

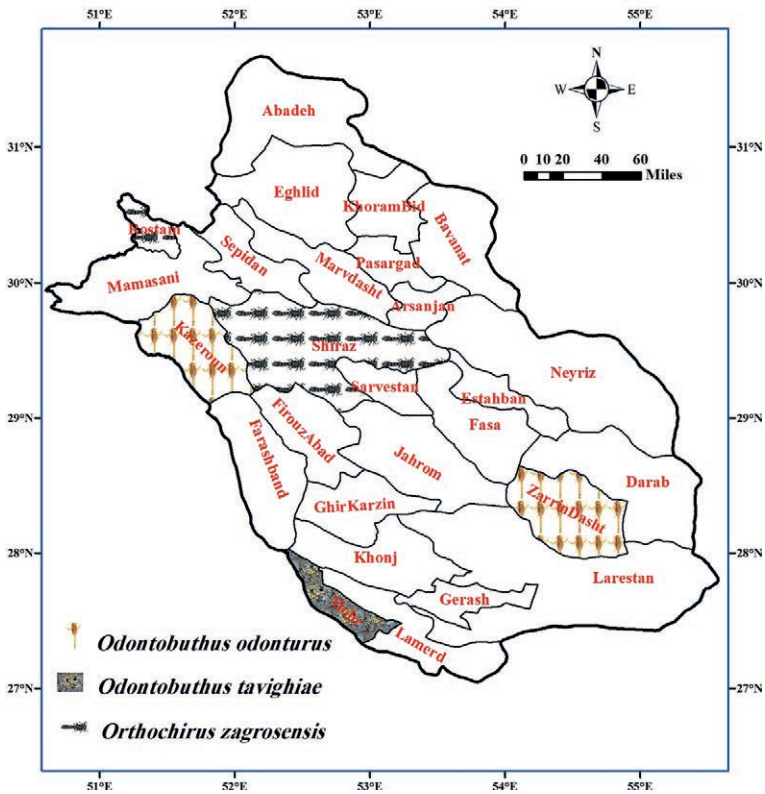

Fig. 14. Distribution map of *Odontobuthus odonturus*, *O. tavighiae*, and *Orthochirus zagrosensis*.
Рис. 14. Карта распространения *Odontobuthus odonturus*, *O. tavighiae* и *Orthochirus zagrosensis*.

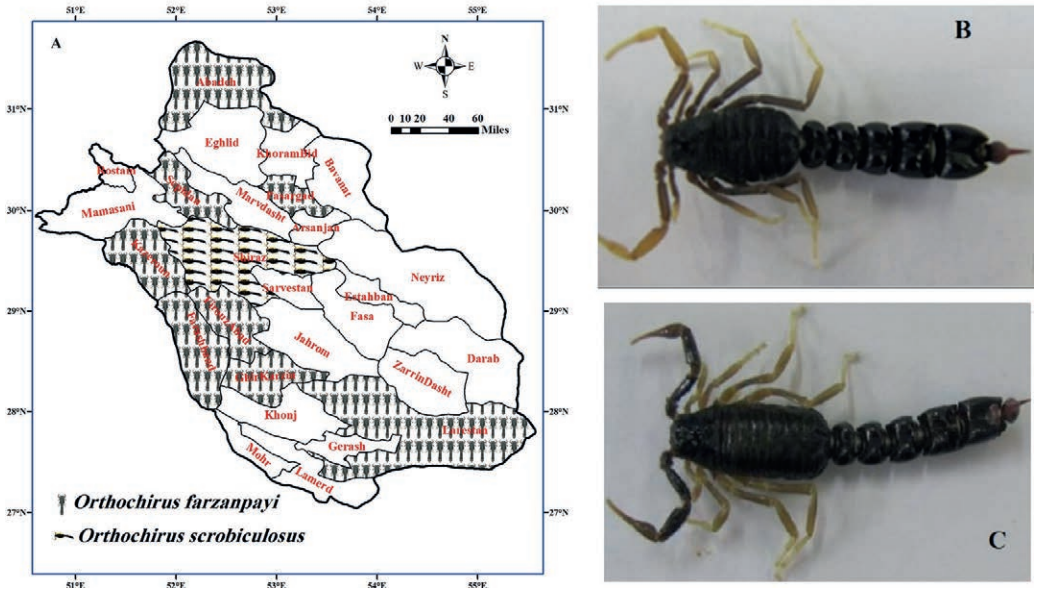

Fig. 15. Distribution map (A) of *Orthochirus farzanpayi* (B) and *O. scrobiculosus* (C).
Рис. 15. Карта распространения (A) и внешний вид *Orthochirus farzanpayi* (B) и *O. scrobiculosus* (C).

Jahrom (Navidpour *et al*., 2012; Azghadi *et al*., 2014), ZarrinDasht (Kassiri *et al*., 2015).

Odontobuthus odonturus (Pocock, 1897)

Type locality: Pakistan, Khelat Frontier, Upper Scinde.

DISTRIBUTION in Fars (Fig.14): Kazeroun (Nejati *et al*., 2014), ZarrinDasht (Kassiri *et al*., 2015).

COMMENT: The species in Iran have been recorded from Fars, Sistan, and Baluchistan (Nejati *et al*., 2014).

Odontobuthus tavighiae Navidpour *et al*., 2013

Type locality: Iran, Hormozgan province, Lengeh Port.

DISTRIBUTION in Fars (Fig. 14): Mohr (Barahoei *et al*., 2020).

COMMENT: the species is endemic to Iran and have been recorded from Fars and Hormozgan Provinces.

Orthochirus Karsch, 1891

Orthochirus zagrosensis Kovařík, 2004

Type locality: Iran, Fars province, Dasht-e Arzhan.

DISTRIBUTION in Fars (Fig. 14): Shiraz (Dasht-e Arzhan) (Kovařík, 2004), Shiraz (Kovařík, Fet, 2006), Rostam (Abshar village) (Navidpour *et al*., 2012).

COMMENT: the species is endemic to Iran.

Orthochirus farzanpayi Vachon et Farzanpay, 1987

Type locality: Iran, Hormozgan province, 215 km north of Bandar Abbas.

DISTRIBUTION in Fars (Fig. 15): present study — Farrashband, FirouzAbad, Kazeroun, Larestan, Sepidan; other studies — Kazeroun (Kovařík, 1997, 2004); FirouzAbad, Abadeh, Pasargad, GhirKarzin (Navidpour *et al*., 2012).

COMMENT: the species is endemic to Iran.

Orthochirus scrobiculosus Birula, 1900

Type locality: Kazakstan, Novoaleksandrovskoye (now Mangyshlak Region).

DISTRIBUTION in Fars (Fig. 15): present study — Shiraz (Zarghan); other studies — 160 km north of Shiraz (Farzanpay, Pretzmann, 1974).

Razianus Farzanpay, 1987

Razianus zarudnyi (Birula, 1903)

Type locality: Iran, Sistan, and Baluchistan province, between Kala-Eybi and Mushkutuk in Kugak district.

DISTRIBUTION in Fars (Fig. 16): present study — Farrashband, Mamasani, ZarrinDasht; Other studies — Kazeroun (Nazari *et al*., 2018); Farashband, GhirKarzin, Marvdasht, Larestan, Khonj (Navidpour *et al*., 2012; Nazari *et al*., 2018).

COMMENT: the species is endemic to Iran.

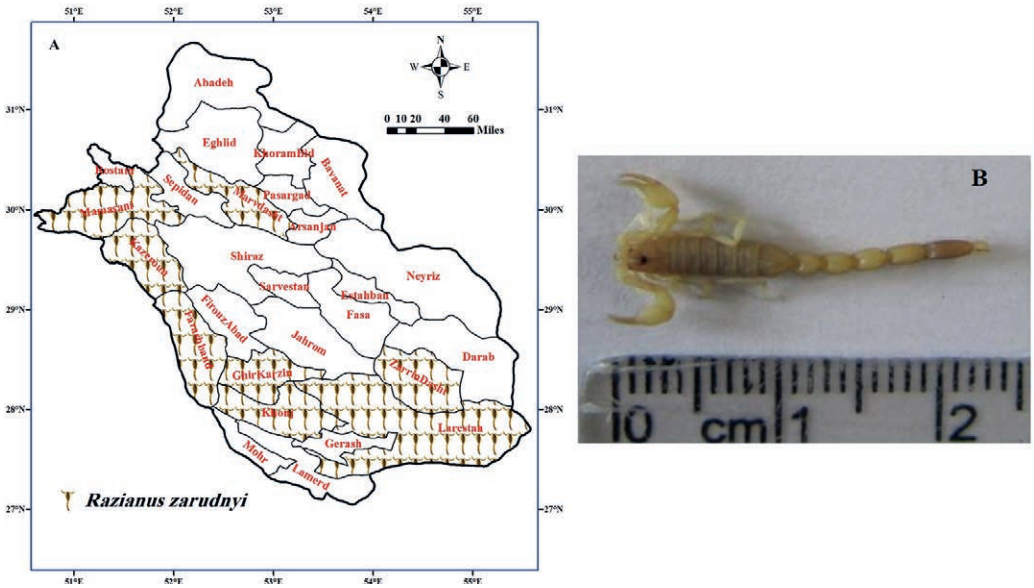

Fig. 16. Distribution map (A) of *Razianus zarudnyi* (B).
Рис. 16. Карта распространения (A) и внешний вид (B) *Razianus zarudnyi*.

Sassanidotus **Farzanpay, 1987**

Sassanidotus zarudnyi (Birula, 1900)

Type locality: Eastern Persia (now Iran), Sistan (now Sistan and Baluchistan province), Nasirabad (now Zabol).

DISTRIBUTION in Fars (Fig. 17): Fars, ZarrinDasht (Kassiri *et al*., 2015).

COMMENT: the species is endemic to Iran.

Family Hemiscorpiidae Pocock, 1893

Hemiscorpius **Peters, 1861**

Hemiscorpius gaillardi Vachon, 1974

Type locality: Iran, Sistan and Baluchistan Province, Chabahar.

DISTRIBUTION in Fars (Fig. 17): Larestan (Navidpour *et al*., 2012).

COMMENT: the species is endemic to Iran.

Hemiscorpius lepturus Peters, 1861

Type locality: Iraq, Mendeli near Baghdad.

DISTRIBUTION in Fars (Fig. 18): present study — Mammasani, ZarinDasht; Other studies — Marvdasht (Farzanpay, Pretzmann, 1974); Shiraz (Farzanpay, 1987); Pasargad (Sivand) (Kovařík, 1997); Marvdasht (Persepolis), Abadeh (Monod, Lourenco, 2005); Pasargad, Marvdasht, Rostam (Abshar village) (Navidpour *et al*., 2012); ZarrinDasht (Kassiri *et al*., 2015); Kazeroun (Nazari *et al*., 2018).

Family Scorpionidae Latreille, 1802

Scorpio **Linnaeus, 1758**

Scorpio maurus Linnaeus, 1758

Type locality: Iran, Bushehr province, Fort Reshire near Bushehr, Persian Gulf.

DISTRIBUTION in Fars (Fig. 19): present study — Gerash, ZarrinDasht, Mohr, Larestan; other studies -— Kazeroun (Nazari *et al*., 2018), Farashband, Khonj, GhirKarzin, Larestan (Navidpour et al., 2012), ZarrinDasht (Kassiri *et al*., 2015), Mohr (Barahoei *et al*., 2020).

Discussion

In Iran, most scorpion stings occur in the country's south, especially in the southwest of Iran (Dehghani, Valaie, 2005; Dehghani, Fathi, 2012; Shahi *et al*., 2015; Bagheri *et al*., 2021; Dehghani *et al*., 2022). Fars Province *includes Oriental and Palearctic zoogeographical regions and is located near the Ethiopian area.* Because of the Province's climate variation, it comprises a high diversity of biota and animals, including scorpions. As of 66 scorpion species in Iran,

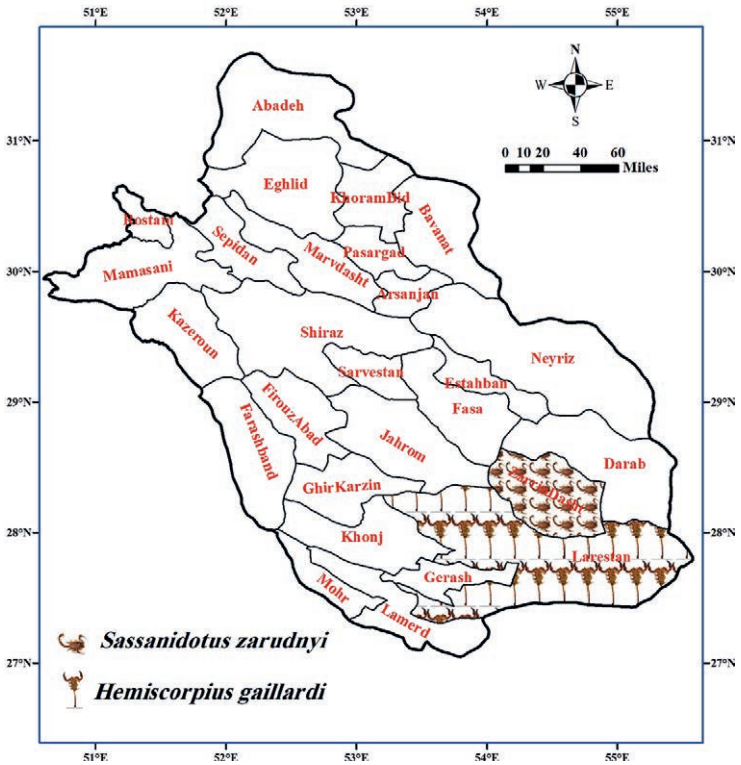

Fig. 17. Distribution map of *Sassanidotus zarudnyi* and *Hemiscorpius gaillardi*.
Рис. 17. Карта распространения *Sassanidotus zarudnyi* и *Hemiscorpius gaillardi*.

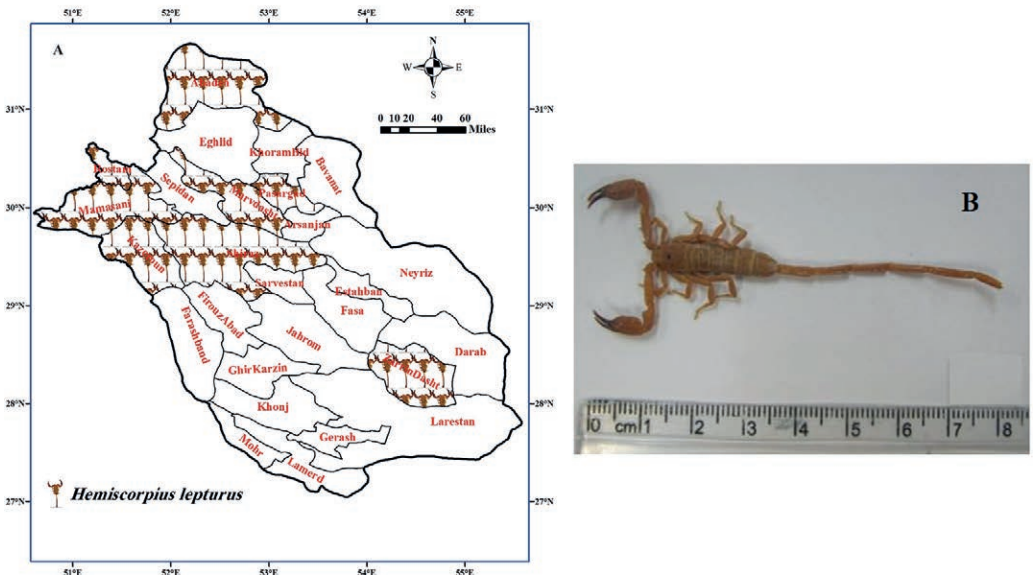

Fig. 18. Distribution map (A) of *Hemiscorpius lepturus* (B).
Рис. 18. Карта распространения (A) и внешний вид (B) *Hemiscorpius lepturus*.

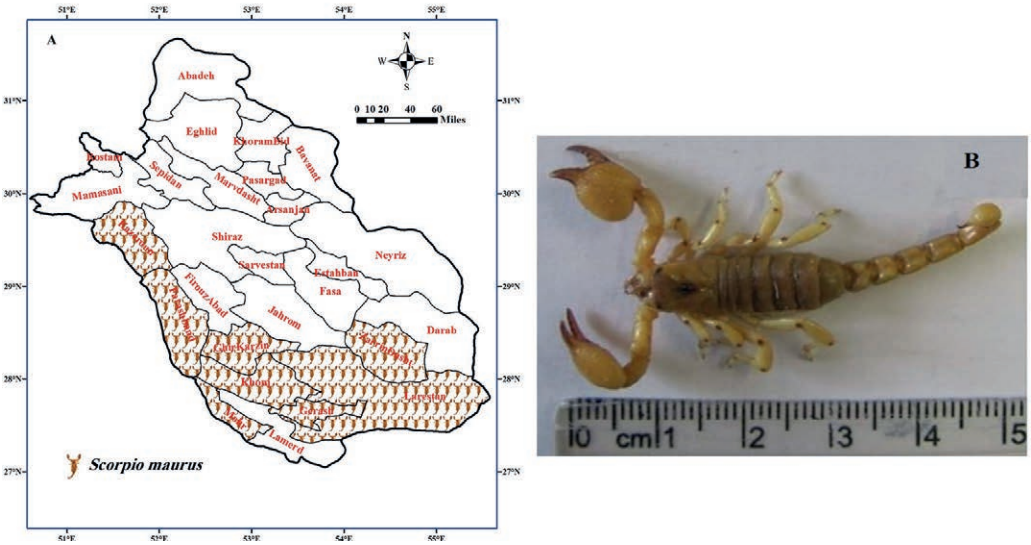

Fig. 19. Distribution map (A) of *Scorpio maurus* (B).
Рис. 19. Карта распространения (A) и внешний вид (B) *Scorpio maurus*.

27 species have also been recorded from Fars (Barahoei *et al*., 2020). Furthermore, 30 species of scorpions have been reported from the neighboring provinces (Hormozgan, Khuzestan, Kerman, Bushehr, Isfahan, Yazd, Kohgilouyeh, and Boyer Ahmad). The species are likely to be present in this Province as well, indicating the rich fauna of this Province in terms of the number of scorpion species. According to the last updated checklist of the scorpion fauna of Iran, the number of scorpion species reported as 68 species belonging to 19 genera and four families of Buthidae, Hemiscorpiidae, Scorpionidae, and Diplocentridae. The number of species seems incorrect and should be different from those recorded in the checklist. Some new species have been recorded and described based on relatively few traditional morphological and morphometric characters, without any statistical analysis or a molecular study based on mitochondrial or nuclear gene markers. For example, 11 new morphospecies have been recorded based on morphological characters in the genus *Orthochirus* and added to the checklist of Iran without a molecular phylogenetic examination. Alternatively, it has been supposed that report of six species is incorrect and has been removed from the scorpion checklist of Iran. Some other species previously recorded from Iran are not seen in this latest checklist. For example, Navidpour *et al*. (2012) did not report *Hottentotta jayakari* from Hormozgan and Fars. Barahoei *et al.* (2020) consider the existence of *H. jayakari* doubtful in Iran, but Zarei *et al*. (2009) and Sanaei-Zadeh *et al*. (2017) reported it from Hormozgan and Fars, respectively. Without any meaningful reason, Barahoei *et al*. (2021) removed *Odontobuthus odonturus* from the scorpion checklist of Iran and considered the record of species from Sistan and Baluchistan a misidentification and supposed that samples of Fars province may be new species. This kind of decisions about the scorpion fauna of Iran is not scientific and valid.

Fars Province, one of the largest provinces of Iran, includes a relatively high diversity of scorpions (27 species) in the country. Of 27 scorpion species in Fars, 15 species are endemic to Iran. *Androctonus crassicauda* and *Mesobuthus eupeus* were the Province most abundant and widespread species. The counties with warmer bioclimates located in the west and south of the Province, including Larestan, ZarrinDasht, Kazeroun, and GhirKarzin, had the wealthiest scorpion diversity (Fig. 2).

Attention to the composition of scorpion species in Fars province, especially in warmer regions, is vital for preventive and control measures against scorpion bites. However, there is no data about some Fars counties' scorpion fauna.

Therefore, it should be considered for studying in the future.

Statements and Declarations

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Conflict of interest: On behalf of all authors, the corresponding author states that there is no conflict of interest

Competing Interests

The authors have no relevant financial or non-financial interests to disclose.

Author Contributions

Kourosh Azizi contributed to the study conception and design. Material preparation, data collection and analysis were performed by all authors. The first draft of the manuscript was written by Saeed Shahabi and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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