

Scorpion Fauna of Zanjan Province, Iran (Arachnida: Scorpiones)

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Abstract

In this study scorpion fauna of Zanjan province (Northwestern of Iran) is searched which has not previously studied in detail. In this work, in 2013 and 2014, a total of 99 scorpion specimens were collected and *Androctonus crassicauda* (Olivier, 1807), *Hottentotta salucyi* (Simon, 1880), *H. zagrosensis* Kovarik, 1997, *Odontobuthus doriae* (Thorell, 1876), *Mesobuthus eupeus eupeus* (C. L. Koch, 1839), and *Scorpio maurus townsendi* (Pocock, 1900) taxa were identified. Among them *H. salucyi*, *H. zagrosensis*, *O. doriae*, *M. e. eupeus*, and *S. m. townsendi* are recorded for the first time from the Zanjan province. Zoogeographical and ecological remarks are given.

Keywords: Fauna, Scorpiones, Buthidae, Scorpionidae, Zanjan, Iran

INTRODUCTION

Iran has very rich scorpion fauna including high level endemism relatively adjacent countries. Recently Mirshamsiet al. [14-15] and Navidpour et al. [23] listed 53 species (among them 32 species are endemic), whereas Al-Asmari et al. [1] listed 28 species from Saudi Arabia and Çaliskan [3], Yağmuret al. [30] and Tropea et al. [25] listed 28 species from Turkey. Although this rich fauna, generally samplings were made randomly from Iran [14]. But recently Navidpour and his team began to review of Iranian scorpion fauna province by province [16-24]. But Zanjan Province has not searched in detail yet. The known scorpion records were given by Karataş et al. [6] from Zanjan Province. Karataş et al. [6] gave *A. crassicauda* and *M. eupeus* records that have very wide distribution area in the Palearctic.

The purpose of this study is to introduce the scorpion species which live in Zanjan Province as a contribution to increasing our knowledge of Iranian scorpion fauna.

MATERIAL AND METHODS

Field work was carried out between March 2013 and September 2014 by first author. 99 specimens have been collected and examined from 24 different localities in Zanjan Province (Fig-1). Scorpions were collected by hand

from under stones during the day and with UV light at night. All the material mentioned in this work is preserved in 70% alcohol and deposited in animal biosystematic laboratory at department of Biology, University of Zanjan and some of the samples were stored at Museum of Alaşehir Vocational School, Celal Bayar University, Manisa, Turkey (AZM). The specimens were identified using an Leica EZ4 stereomicroscope.

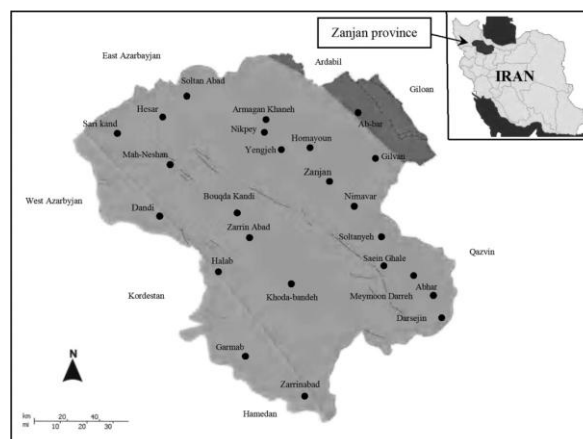


Figure 1. Distribution map of samples locality collected from Zanjan province

RESULTS

5 species and 4 genera belonging to family Buthidae and 1 species belonging to family Scorpionidae were identified.

Androctonus crassicauda (Olivier, 1807)

Examined material and stations:

3♂♂, 1♀, Central District, Campus of Zenjan University, 12.08.2014, 36°41'38"N, 48°23'02"E, 1579 m. 1♂, 2♀♀, Central District, Tazekent Village, Mianneh road, 25. Km, 18.08.2014. 2♂♂, Khodabandeh District, 1 km west of Katala Khor Cave, 13.08.2014, 36°50'06"N, 48°09'45"E, 1710 m. 1 juv., Abhar District, Soltanieh environs, 18.06.2014, 36°27'26"N 48°47'46"E, 1769 m.

Comments

A. crassicauda was recorded from Zenjan Province by Karataş et al. [6]. Zenjan Province known northern most locality in Iran for *A. crassicauda*. This species generally prefers low altitude localities. But it was found relatively higher places in Zenjan Province. It is one of the species with wide distribution in Iran.

Distribution

A. crassicauda is known from Armenia, Azerbaijan, Bahrain, Egypt (Sinai), Iran, Iraq, Israel, Jordan, Kuwait, Oman, Saudi Arabia, Syria, Turkey, United Arab Emirates and Yemen [4-5], [31]. *A. crassicauda* was recorded from Bushehr, ChaharMahal & Bakhtiyari, Fars, Hormozgan, Ilam, Kashan, Kerman, Kermanshah, Khozestan, Khorassan, Kohgilouyeh & Boyer Ahmad, Lorestan, Qazvin, Tehran and Yazd Provinces in Iran [6, 16-24].

Ecological Notes

A. crassicauda specimens were observed in sandy soil and hard calcarous soil areas. The habitats are steppe and sometimes includes thornbushes. It was observed that some specimens were sitting entrance of some rodent burrows. Their collecting localities have lower altitudes than the other places of Zanjan.

Hottentotta saulcyi (Simon, 1880)

Examined material and stations:

1♂, Khodabandeh District, Hirabad Village, 12.06.2013, 35°52'50"N, 48°40'24"E, 2025 m. 1♀, Abhar District, Dolatabad Village 23.06.2013, 35°58'36"N, 49°07'49"E, 2003 m. 1♂, Abbar, District, Abbar Town, 21.09.2013, 36°56'21"N 48°55'51"E, 684 m.

Comments

H. saulcyi is firstly recorded from Zenjan province. Probably Zenjan localities are determine northern distribution border of this species. When these records evaluate with the records of Yağmur et al. [32] from Southeastern Turkey, they determine all northern distribution border of this species.

Distribution

H. saulcyi is known from Afghanistan, Iraq, Iran, and Turkey [2,7, 8,26] (Vachon, 1966; Kovařík, 1997, 2007; Crucitti and Vignoli, 2002; Yağmur et al., 2008b). It is known from Chahar Mahal & Bakhtiyari, Fars, Hamadan, Hormozgan, Ilam, Kermanshah, Khuzestan, Kohgilouyeh & Boyer Ahmad, and Lorestan provinces in Iran (Mirshamsi et al., 2011b; Navidpour et al., 2012, 2013).

Ecological Notes

H. saulcyi specimens were observed in steppe habitats including calcarous soil. They were collected from the elevations between 684-2025m vertically. Yağmur et al. (2008b) reported this species until 1100 m vertically. Our records show that this species can be distributed until 2000 m.

Hottentotta zagrosensis Kovarik, 1997

Examined material and stations

1♀, Khodabandeh District, Dashbloagh Village, 26.06.2013, 35°41'01"N, 48°29'14"E, 1822 m. 1 subadult, Mahneshan District, Qavaq Sofla Village, 15.08.2013, 36°26'28"N, 47°36'01"E, 1833 m.

Comments

H. zagrosensis is firstly recorded from Zenjan province. Very little is known about this species. Its exact distribution area still unclear. Similarly *H. saulcyi*, Zenjan localities are determine northern distribution border of this species. Zagros mountains range lies until west of Zenjan province. Due to location of Zagros mountains, existing of this species in this province is not big surprise, although this species have not been recorded until now from Zenjan.

Distribution

This species is endemic to Iran. It is found in Fars, Khuzestan, Kohgilouyeh & Boyer Ahmad, Qazvin, Lorestan, and West Azerbaijan provinces (Kovařík, 1997, 2007; Navidpour et al., 2008d, 2010; Karataş et al., 2012)

Ecological Notes

H. zagrosensis specimens were collected in steppe habitats including calcarous soil. They were found in the elevations between 1822 -1833 m vertically. Their collecting localities have high altitudes. This species is endemic in Zagros mountains and probably prefers high places in slopes of Zagros mountains.

Mesobuthus eupeus eupeus (C. L. Koch, 1839)

Examined material and stations

2♂♂, 2♀♀, Central District, Qavazang Mountains, 11.08.2014, 43°43'N, 48°32'39"E, 2091 m. 3♂♂, Central District, Saidkandi Village, 16.08.2014, 36°36'39"N, 48°12'16"E, 2040 m. 1♂, Central District, Papai Village, 16.08.2014, 36°33'59"N, 48°21'53"E, 1886 m. 12♂♂, 5♀♀, 3 juv., Central District, Taham Dam area, 14.08.2014, 36°46'40"N, 48°30'06"E, 1998 m. 4♂♂, 2♀♀, 3 juv., Central District, Bagdakendi Village, 15.08.2014, 36°37'01"N, 48°16'22"E, 1954 m. 5♂♂, 8♀♀, 8 juv., Abhar District, Soltanieh environs, 18.06.2014, 36°27'26"N, 48°47'46"E, 1769m. 1♀, Central District, Campus of Zenjan University, 23.05.2014, 36°41'38"N, 48°23'02"E, 1579 m. 1♀, Central District, Nimavar town environs, 26.05.2014, 36°33'16.28"N 48°40'15.02"EE, 1770 m. 2♂♂, 1♀, 3 juv., Central District, Yamch Village, 26.06.2014, 36°46'34"N, 48°12'28"E, 1523 m. 1♂, Mahneshan District, Anguran town environs, 05.08.2014, 36°35'03"N, 47°38'30"E, 1566 m. 1♂, Central District, Tazekent Village, Mianneh road, 25. Km, 18.08.2014.

Comments

Kovařík et al. [9] reviewed some *M. eupeus* populations in Turkey, Iraq, Iran and Caucasus and *M.e. philippovitschi* (Birula, 1905) was synonymized with *M.e. eupeus* and *M.e. mesopotamicus* (Penther, 1912) was synonymized with *M.e. phillipsii*. Kovařík et al. [9] and Mirshamsi et al. [13]

classified Northwestern Iran populations as *M.e. eupeus*. Our this record completed records of Kovařík et al. [13] and Mirshamsiet al. [13]. Karataş et al. [6] informed existing of *M. eupeus* in Zanjan province, but they did not informed any information about subspecific level of *M. eupeus* populations in Zanjan province. Therefore our *M.e. eupeus* recordis first for Zanjan province.

Distribution

M.e. eupeus is known from Armenia, Azerbaijan, Georgia, Turkey, Iran, Turkmenistan [4, 9]. It is found in Ardabil, Khorāsān, Mazandran, West Azerbaijan[9, 14].

Ecological Notes

M.e. eupeus specimens were collected from high places in Zanjan. The collecting localities composed hard calcerous soil and steppe vegetations.

Odontobuthus doriae (Thorell, 1876)

Examined material and stations

1♀, Abhar District, Abhar Town, 28.07.2013, 36°08'22"N, 49°10'01"E, 1630 m. 4 juv., Abhar District, Soltanieh environs, 18.06.2014, 36°27'26"N, 48°47'46"E, 1769m. 1♀, Central District, Campus of Zanjan University, 23.05.2014, 36°41'38"N, 48°23'02"E, 1579 m.

Comments

This species is distributed in Northwestern, Western and Southwestern Iran. Its distribution is restricted by Zagros mountains. Zagros mountain is a border between distribution are of *O. bidentatus* and *O. doriae*. Zanjan localities probably part of northern distribution border of *O. doriae*. Similarly *H. zagrosensis*, *O. doriae* is distributed until Zanjan province along to northern foot hills of Zagros mountains.

Distribution

This species is endemic to Iran. It is found in Esfahan, Fars, Hamadan, Kerman, Kermanshah, Mazandaran, Markazi, Teheran, West Azarbaijan, Yazd, Chahar Machal & Bakhtiyari, Hormozgan, Sistan & Baluchistan Provinces. [7, 12, 23, 24]

Ecological Notes

O. doriae specimens were observed in calcarous soil and stony area. Their habitats are steppe.

Scorpio maurus townsendi (Pocock, 1900)

Examined material and stations

2 ♂♂, Central District, Campus of Zanjan University, 12.08.2014, 36°41'38"N, 48°23'02"E, 1579 m. 1♂, Khodabandeh District, 1 km west of Katala Khor Cave, 13.08.2014, 36°50'06"N, 48°09'45"E, 1710 m. 2 juv., Abhar District, Soltanieh environs, 18.06.2014, 36°27'26"N, 48°47'46"E, 1769m. 1♂♂, Central District, Nimavar town environs, 26.05.2014, 36°33'16"N, 48°40'15"E, 1770 m. 4♂♂, Central District, Tazekent Village, Mianneh road, 25. Km, 18.08.2014.

Comments

S. maurus comprises taxonomically 19 subspecies [10]. But recently Lourenço [11] reviewed North African population and elevated 8 of them to species level. But populations of Middle East need reviewing. Among them two subspecies recorded from Iran, *S. m. townsendi* and *S. m. kruglovi* [14]. *S. m. townsendi* is recorded from Zanjan Province firstly.

Distribution

S. maurus recorded from Iraq, Israel, Jordan, Kuwait, Lebanon, Qatar, Saudi Arabia, Syria, Turkey and Yemen in the Middle East [10]. This species has wide distributin area in Iran. It was recorded from Azerbaijan, Busher, Chahar Machal & Bakhtiyari, Esphehan, Fars, Gilan, Ilam, Khorasan, Khuzestan, Kohgilouyeh & Boyer Ahmad, Kordestan, Lorestan, Qazvin and Semnan provinces [14].

Ecological Notes

S. maurus specimens were collected in sandy soil and hard calcarous soil areas. They were observed in open steppe or includes thornbushes steppe habitats. They were collected from low land areas. They were collected in low altitudes places in Zanjan.

DISCUSSION

Zenjan Province comprises 6 species of 53 recorded species in Iran. When consider all Iranian fauna and searched provinces, Zanjan province has poor fauna. Relatively Zanjan Province has 6 species whereas Hormozgan Province has 20, Fars Province has 18, Khoozestan Province has 17, Bushehr and Ilam Provinces have 14, Kerman Province has 13, Kohgilouyeh & Boyer Ahmad Province has 11, Chahar Mahal & Bakhtiyari and Lorestan Provinces have 10 [16-24].

The reason of this poorness in Zanjan Province probably related with high elevation. Elevation of this province generally between 1800-2000 m. This amount high elevation is not suitable for most of scorpion species in Iran. But this high elevation reason to the species that adaptated to high elevation and cold habitats, present in Zanjan. Therefore *M. eupeus* good adaptated such habitats, it is dominat and most widespread species of Zanjan.

Considering distributional affinities of the genera, genus *Mesobuthus* has Central Asian-Balkan range while the genera *Androctonus*, *Scorpio* have Saharo-Sindian distribution and the genera *Hottentotta*, *Odontobuthus* Iranian distribution. Since Zanjan is situated in the northwestern Iran, the scorpion fauna of this area is a mixture of the species with Caucasus and Iran origin origines.

Hottentotta salucyi, *H. zagrosensis*, *Odontobuthus doriae*, *M.e. eupeus*, sand *Scorpio maurus townsendi* are reported in this study as new geographical records for Zanjan Province.

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