

## The scorpion fauna of West Azerbaijan Province in Iran (Arachnida: Scorpiones)

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**Abstract.** In this study, investigation on the scorpion fauna related to borderline cities of West Azerbaijan Province (Poldasht, Piranshahr, Oshnaviyeh, Sardasht, Chaldoran, Salmas, Urmia and Khoy) was carried out. A total of 216 scorpion specimens were collected and *Androctonus crassicauda* (Olivier, 1807), *Hottentotta saulcyi* (Simon, 1880), *Mesobuthus caucasicus* (Nordmann, 1840), *Mesobuthus eupeus* (C.L. Koch, 1839) and *Scorpio maurus* Linnaeus, 1758 were identified. *Hottentotta saulcyi* and *Scorpio maurus* were recorded for the first time in West Azerbaijan Province, Iran.

**Key words:** scorpion, fauna, West Azerbaijan, Iran.

### Introduction

Fifty four scorpion species have been recorded from Iran (Karataş & Gharkheloo 2013, Kovařík 2013, Kovařík et al. 2017, Mirshamsi et al. 2011b, Mirshamsi et al. 2013, Navidpour et al. 2013, Teruel et al. 2014, Vignoli et al. 2003, Yağmur et al. 2016), indicating that the scorpion fauna in Iran is rich and intensive. Until recently, due to the random collection of scorpion specimens, determining Iranian scorpion fauna has always been a difficult issue.

Recently some provinces have been studied in detail and extensive contributions have been provided (Jafari et al. 2015, Moradi et al. 2015, Navidpour et al. 2008a, 2008b, 2008c, 2008d, 2010, 2011, 2012, 2013, Pirali-Kheirabadi et al. 2009). But detailed research in West Azerbaijan Province has not performed up to now.

West Azerbaijan is located on the northwest of Iran and partly Zagros mountain range. The scorpions *Androctonus crassicauda* (Olivier, 1807), *Mesobuthus eupeus* (C.L. Koch, 1839), *Mesobuthus caucasicus* (Nordmann, 1840) and *Hottentotta zagrosensis* Kovařík, 1997 have been recorded from West Azerbaijan Province until now (Farzanpay & Pretzmann 1974, Fet & Lowe 2000, Karataş et al. 2012, Kovařík 1997).

The purpose of this study is to determine the scorpion species which live in borderline cities of West Azerbaijan Province as a contribution to widen our knowledge of Iranian scorpion fauna.

### Material and methods

The field studies were carried out between May 2016 and September 2016 by the first author. A total of 216 specimens have been collected and examined from 29 different localities in West Azerbaijan Province (Fig. 1). The specimens were collected by hand under stones during the daytime and with UV light at night. All the material mentioned in this work is preserved in 70% alcohol and deposited in the animal biosystematics laboratory at Department of Biology, University of Zanjan.

The measurements were taken with an Electronic Digital Caliper and the identifications were made using a Stereo Microscope Leica EZ4.

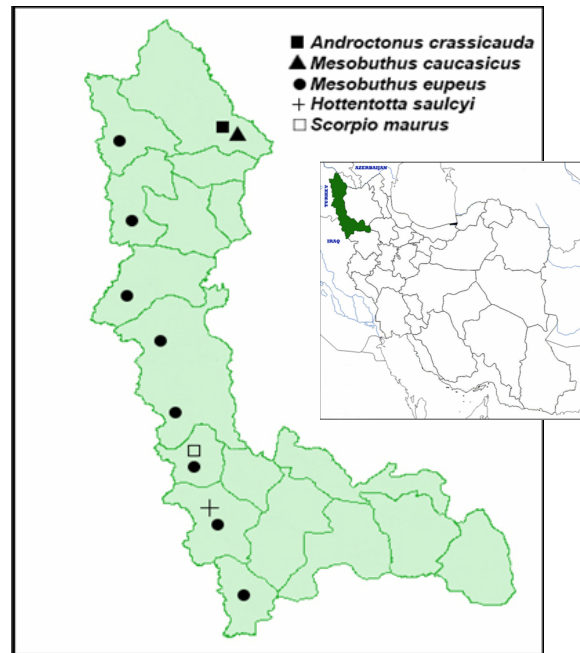


Figure 1. The geographic distribution of the scorpions collected in the borderline cities of West Azerbaijan.

### Results

#### Family Buthidae C.L. Koch, 1837

##### *Androctonus crassicauda* (Olivier, 1807) (Fig. 2)

**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 (Fet & Lowe 2000, Hendrixson 2006).

**Distribution in Iran:** Widespread in Iran, found in most provinces. *A. crassicauda* was recorded from Alborz, Bushehr, Chaharmahal & Bakhtiari, Fars, Hormozgan, Ilam, Kashan, Kerman, Kermanshah, Khozestan, Khorasan, Kohgiluyeh & Boyer Ahmad, Lorestan, Qazvin, Tehran, Yazd, West Azerbaijan and Zenjan Provinces in Iran (Jafari et al. 2015, Karataş et al. 2012, Mirshamsi et al. 2011b, Moradi et al. 2015, Navidpour et al. 2013).

**Material examined:** Iran, West Azerbaijan Prov., 3♂♂, 7♀♀, Poldasht county, Qarqluq village, 07.08.2016, 39°18'28"N, 45°06'33"E, 810 m. 7♂♂, 5♀♀, Poldasht county,



Figure 2. *Androctonus crassicauda* (Olivier, 1807), female dorsal view, Poldasht county, Qlysh Lanmysh village.

Qlysh Lanmysh village, 08.08.2016, 39°19'35"N, 45°00'49"E, 840 m.

**Comments:** This species is one of the species with wide distribution in Iran. It is distributed in northwestern, western and southwestern regions of Iran.

***Hottentotta saulcyi* (Simon, 1880)** (Fig. 3)

**Distribution:** *H. saulcyi* known from Iran, Iraq, Afghanistan, Syria and Turkey (Crucitti & Vignoli 2002, Kovařík 1997, 2007, Fet & Lowe 2000, Vachon 1966).

**Distribution in Iran:** *H. saulcyi* known in Iran from Kermanshah (formerly Bachtaran), Fars, Chaharmahal & Bakhtiyari Province, Hamadan, Hormozgan, Ilam, Khuzestan, Kohgiluyeh va Boyer-Ahmad, Bushehr, Khorasan Provinces (Mirshamsi et al. 2011b, Navidpour et al. 2013, Navidpour et al. 2012, Moradi et al. 2015) and West Azerbaijan (New record).

**Material examined:** Iran, West Azerbaijan Prov., 1♂, 5♀♀, Piranshahr county, Jaldian village, 27.07.2016, 36°52'40"N, 45°10'05"E, 1530 m.

**Comments:** This species is widespread in Iran. It is distributed in northwestern, western and southwestern Iran.



Figure 3. *Hottentotta saulcyi* (Simon, 1880), male dorsal view, Piranshahr county, Jaldian village.

***Mesobuthus eupeus* (C.L. Koch, 1839)** (Fig. 4)

**Distribution:** *M. eupeus* is known from Afghanistan, Armenia, Azerbaijan, China, Georgia, Iran, Kazakhstan,



Figure 4. *Mesobuthus eupeus* (C.L.Koch, 1839), female dorsal view, Chaldoran county, Shahgalan village.

Kyrgyzstan, Mongolia, Pakistan, Russia (Astrakhan Region), Tajikistan, Turkey, Turkmenistan, and Uzbekistan. Russia (Astrakhan Region) (Fet & Lowe 2000, Fet 1989, 1994, Kovařík et al. 2011).

**Distribution in Iran:** *M. eupeus* is widely distributed in Iran and known from Ardebil, West Azerbaijan, Isfahan, Abadeh, Shiraz, Hamadan, Bandarabbas, Bushehr, Kashan, Khozestan, Kerman, Kohgiluyeh & Boyer Ahmad Province, Chaharmahal & Bakhtiyari Province, Golestan, Khorasan, Markazi, Mazandaran, Semnan, Sistan va Baluchistan, Tehran, and Yazd Provinces (Dehghani et al. 2008, Farzanpay 1987, Habibi 1971, Kovařík 1997, Vignoli et al. 2003, Vignoli & Crucitti 2005, Mirshamsi et al. 2010, Navidpour et al. 2008a, 2008b, 2008c, 2008d, 2010, 2011, Piralikheirabadi et al. 2009).

**Material examined:** Iran, West Azerbaijan Prov., 5♂♂, 1♀, Urmia county, Silvaneh district, 11.07.2016, 37°27'44"N, 44°55'48"E, 1525 m. 3♂♂, 2♀♀, Urmia county, Serow district, 37°42'49"N, 44°55'5"E, 1629 m. 2♂♂, 3♀♀, Salmas county, Mafi village, 26.08.2016, 38°19'20"N, 44°55'40"E, 1518 m. 2♂♂, 3♀♀, Salmas county, 25.08.2016, 38°12'02"N, 44°47'45"E, 1385 m. 6♂♂, 2♀♀, Salmas county, Chichak village, 26.08.2016, 38°15'20"N, 44°47'19"E, 1458 m. 4♂♂, 3♀♀, Piranshahr county, Tamarchin village, 26.07.2016, 36°41'40"N, 44°07'18"E, 1654 m. 3♂♂, 4♀♀, Piranshahr county, Pasveh village, 27.07.2016, 36°46'56"N, 45°21'56"E, 1710 m. 9♂♂, 3♀♀, Piranshahr county, Kanimola village, 28.07.2016, 36°46'12"N, 45°23'50"E, 1566 m. 7♂♂, 3♀♀, Piranshahr county, 26.07.2016, 36°42'57"N, 45°08'50"E, 1493 m. 4♂♂, 7♀♀, Oshnavieh county, Galatian village, 13.07.2016, 36°58'47"N, 45°07'52"E, 1473 m. 10♂♂, 1♀, Oshnavieh county, Nalus village, 12.07.2016, 36°59'08"N, 45°08'21"E, 1435 m. 3♂♂, 5♀♀, Oshnavieh county, 12.07.2016, 37°03'17"N, 45°06'59"E, 1456 m. 5♂♂, 1♀, Khoy county, Qatur district, 29.07.2016, 38°28'45"N, 44°24'27"E, 1954 m. 2♂♂, 2♀♀, Khoy county, 29.07.2016, 38°30'16"N, 44°57'10"E, 1188 m. 4♂♂, 2♀♀, Sardasht county, Barica village, 01.09.2016, 36°11'20"N, 45°39'03"E, 1660 m. 4♂♂, 5♀♀, Sardasht county, Alvatan village, 02.09.2016, 36°24'00"N, 45°20'00"E, 1770 m. 5♂♂, 1♀, Sardasht county, Divalan village, 02.09.2016, 36°15'57"N, 45°25'03"E, 1620 m. 7♂♂, 2♀♀, Chaldoran county, Shahgalan village, 01.08.2016, 39°07'24"N, 44°22'45"E, 1798 m. 7♂♂, 2♀♀, Chaldoran county, Qadocandi village, 31.07.2016, 39°03'11"N, 44°28'03"E, 2055 m. 1♂, 6♀♀, Chaldoran county, Dardarasi village, 02.08.2016, 38°59'51"N, 44°24'08"E, 2066 m. 5♂♂, 3♀♀, Chaldoran county, 03.08.2016, 39°02'14"N, 44°23'02"E, 1921 m.

**Comments:** Recently, *M. eupeus* populations were reviewed in Turkey, Iraq, Iran and Caucasus by Kovařík et al. (2011) and *M.e. philippovitschi* (Birula, 1905) was synonymized with *M.e. eupeus* and *M.e. mesopotamicus* (Penther, 1912) was synonymized with *M.e. phillipsii*. Northwestern Iran populations were classified as *M.e. eupeus* (Kovařík et al. 2011, Mirshamsi et al. 2011a). Recently *M. e. kirmanensis* (Birula, 1900) was synonymized with *M. e. persicus* (Pocock, 1899) (Navidpour et al. 2011). Kovařík (1997) recorded *M. eupeus* in West Azerbaijan Province.

**Mesobuthus caucasicus (Nordmann, 1840) (Fig. 5)**

**Distribution:** *M. caucasicus* known from Afghanistan, Armenia, Azerbaijan, China, Georgia, Iran, Iraq, Kazakhstan, Kyrgyzstan, Mongolia, Russia (Chechnya, Dagestan), Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan (Fet & Lowe 2000, Fet 1989, 1994).

**Distribution in Iran:** *M. caucasicus* known in Iran from East Azerbaijan, Khorasan, Isfahan, Markazi, Semnan, Sistan & Baluchistan, Tehran and West Azerbaijan Provinces (Birula 1903, Farzanpay & Pretzmann 1974, Habibi 1971, Karataş et al. 2012).

**Material examined:** Iran, West Azerbaijan Prov., 2♂♂, 3♀♀, Poldasht county, 04.08.2016, 39°19'40"N, 45°04'36"E, 810 m. 3♂♂, 4♀♀, Poldasht county, Jamal Kandi village, 05.08.2016, 39°17'44", 45°02'54"E, 820 m. 6♂♂, 2♀♀, Poldasht county, Sanam Bolagi village, 06.08.2016, 39°22'26"N, 45°02'30"E, 818 m. 1♂, 4♀♀, Poldasht county, Qarqluq village, 07.08.2016, 39°18'28"N, 45°06'03"E, 810 m.

**Comments:** *M. caucasicus* had been classified in the genus *Olivierus* by Farzanpay (1987). But *Olivierus* Farzanpay, 1987 was synonymized with *Mesobuthus* Vachon, 1958 by Gantenbein et al. (2003). *M. caucasicus* has wide distribution in Asia and includes six subspecies (Fet & Lowe 2000). The distribution area is very wide and some of these subspecies may be elevated to species level. Therefore these subspecies need to be reviewed.

#### Family Scorpionidae Latreille, 1802

##### *Scorpio maurus* Linnaeus, 1758 (Fig. 6)

**Distribution:** *S. maurus* is distributed in Iraq, Israel, Jordan, Kuwait, Lebanon, Qatar, Saudi Arabia, Syria, Turkey and Yemen in the Middle East (Levy & Amitai 1980).

**Distribution in Iran:** This species has wide distribution range in Iran. It was recorded from Azerbaijan, Bushehr, Chahar Mahal & Bakhtiyari, Isfahan, Fars, Gilan, Ilam, Khorasan, Khuzestan, Kohgiluyeh & Boyer-Ahmad, Kordestan, Lorestan, Qazvin and Semnan Provinces (Mirshamsi et al. 2011b) and West Azerbaijan (New record).

**Material examined:** Iran, West Azerbaijan Prov., 3♂♂, 1♀, Oshnavieh county, Qalatyan village, 13.07.2016, 36°58'47"N, 45°07'52"E, 1473 m.

**Comments:** *Scorpio* Linnaeus, 1758 was a monotypic genus that includes single species, *Scorpio maurus* Linnaeus, 1758 and taxonomically 19 subspecies (Levy & Amitai 1980). But recently, Lourenço (2009) reviewed North African populations and elevated 8 of them to species level. Also Talal et al. (2015) reviewed Israeli *Scorpio* populations and elevated four subspecies to species level (*Scorpio fuscus* (Ehrenberg, 1829), *Scorpio palmatus* (Ehrenberg, 1828), *Scorpio propinquus* (Simon, 1872) and *Scorpio kruglovi* (Birula, 1910)). But the rest populations of Middle East still need to be reviewed. Two subspecies have been recorded from Iran, *S. m. townsendi*



Figure 5. *Mesobuthus caucasicus* (Nordmann, 1840), female dorsal view, Poldasht county, Qarqluq village.

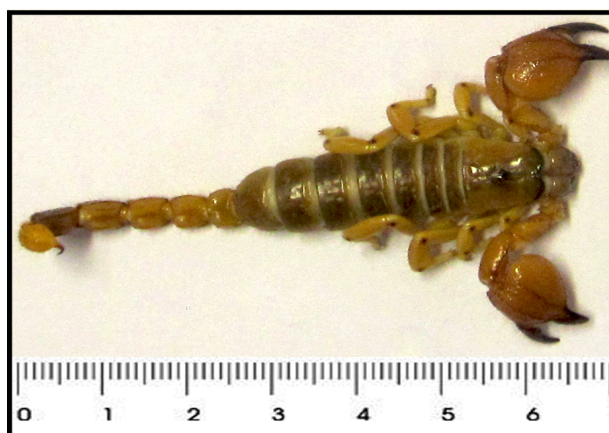


Figure 6. *Scorpio maurus* Linnaeus, 1758, female dorsal view, Oshnavieh county, Qalatyan village.

and *S. m. kruglovi* (Mirshamsi et al. 2011b). Due to ambiguities in *Scorpio* populations in Iran, we accept West Azerbaijan population as *S. maurus*. This species is recorded for the first time in West Azerbaijan Province.

#### Discussion

West Azerbaijan Province includes 5 of 54 recorded scorpion species in Iran. West Azerbaijan province has poorer fauna in relation to the southern provinces, probably, because it is situated in higher elevation. *Androctonus crassicauda*, *Hottentotta saulcyi*, *Mesobuthus caucasicus*, *Mesobuthus eupeus* and *Scorpio maurus* were identified in West Azerbaijan Province. Among them, *Hottentotta saulcyi* and *Scorpio maurus* have been recorded for the first time in West Azerbaijan Province.

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