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## New records of Jordanian scorpions

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Zuhair Amr<sup>1</sup>, Omar A. Abed<sup>2</sup>, Thabet Al Share<sup>2</sup>, Nashat Hamidan<sup>2</sup>  
& Lorenzo Prendini<sup>3</sup>

1. Department of Biology, Jordan University of Science & Technology, Irbid, Jordan.
  2. The Royal Society for the Conservation of Nature, Amman, Jordan.
  3. Division of Invertebrate Zoology, American Museum of Natural History, New York, U.S.A.
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### ABSTRACT

Fourteen scorpion species were collected during a recent field expedition to Jordan. Family Buthidae was represented by twelve species in seven genera (*Androctonus*, *Birulatus*, *Buthacus*, *Compsobuthus*, *Hottentotta*, *Leiurus*, and *Orthochirus*) and families Diplocentridae and Scorpionidae by one genus and species each (*Nebo* and *Scorpio*) respectively. *Buthacus nigroaculeatus* and *B. yotvatensis* were recorded for the first time in Jordan.

**Key words:** Scorpions, Jordan, Buthidae, Diplocentridae, Scorpionidae, *Buthacus yotvatensis*.

### INTRODUCTION

Although the scorpion fauna of Jordan has never been systematically surveyed, it is better known than that of many other countries in the Middle East. Thus far, 18 species and subspecies representing 10 genera in three families, Buthidae (*Androctonus*, *Birulatus*, *Buthacus*, *Buthus*, *Compsobuthus*, *Hottentotta*, *Leiurus* and *Orthochirus*), Diplocentridae (*Nebo*) and Scorpionidae (*Scorpio*) have been reported from Jordan (Vachon, 1966; Levy *et al.*, 1973; Kinzelbach 1984; Amr *et al.*, 1988; Amr & El-Oran, 1994; Stathi & Mylonas, 2001; Lourenço *et al.*, 2002, 2010; Kovařík, 2003, 2012; Amr & Abu Baker, 2004; Kovařík & Whitman, 2004; Lowe *et al.*, 2014).

During September 2013, we conducted a field trip to collect scorpions from Jarash, along the desert highway to Aqaba, Ash Shawbak, Wadi Ramm and Al Mudawwarah. The present report documents the fourteen species of scorpions collected.

### Materials and Methods

Scorpions were mostly collected by ultraviolet light detection at night, although some were collected by turning stones or excavating burrows during daytime. Material examined is deposited in the Collection of Arachnida and

Myriapoda at the American Museum of Natural History, New York. Table (1) indicates localities from which materials were collected.

**Table 1:** Coordinates for collecting sites.

Location	N	E
Al Barah, Wadi Rum	29°32'47.7"	35°19'36.3"
Al Brerah, Wadi Ramm	29°32'08.4"	35°32'14'00"
Al Gaal (Al Ghal), Wadi Rum	29°33'54.0"	35°37'48.4"
Al Hussainiha (Hysayneiah), ca. 2 km N on Amman–Aqaba Highway	30°52'26.9"	35°59'06.7"
Al Hussainiha (Hysayneiah)–Al Qadasiah (Qadeseah)/Qadessyah/Qadisiyeh) road	30°35'14.1"	35°46'29.2"
Al Khoshakhashe (Kheskhasheh), Wadi Rum	29°29'52.1"	35°25'54.4"
Al Shaubak (Showbak/Shawbak) castle, hillside opposite	30°31'35.6"	35°33'57.2"
Al Shaubak (Showbak/Shawbak) castle, slopes below	30°31'56.9"	35°33'36.1"
Ash Shawbak Castle	30°31'35.6"	35°33'57.2"
Dana Guest House, cliffs above	30°40'27.4"	35°36'29.7"
Dibbin (Dibeen) Forest Reserve	32°14'46.9"	35°49'22.0"
Jabal Al Romman	30°41'40.0"	35°33'46.7"
King Talal Dam road	32°11'52.4"	35°50'13.4"
Makheet, Wadi Rum	29°31'27.8"	35°23'02.3"
NW of Al Mudawwarah (Modawarah)	29°19'10.6"	35°58'58.9"
NW of Al Mudawwarah (Modawarah)	29°19'15.7"	35°59'51.5"
Wadi Al Ahmar	30°41'21.6"	35°34'28.1"
Wadi Al Mohark, Wadi Ramm	29°36'15.6"	35°31'00.4"
Wadi 'Araba, Qaser Al Tlah	30°49'47.5"	35°24'38.2"
Wadi 'Araba, Wadi Al Ghwaibeh (Ghwaqibeh)	30°48'13.3"	35°24'21.6"
Wadi 'Araba, Wadi Khanzeerah (Khanzairh)	30°53'39.9"	35°25'38.2"
Wadi Daba'a, ca. 1 km W of Amman–Aqaba Highway	31°35'49.2"	35°59'27.1"
Zogreet (Zograit), Jarash–Ajloun road	32°17'03.6"	35°51'27.7"

## RESULTS

Family Buthidae was represented by twelve species in seven genera (*Androctonus*, *Birulatus*, *Buthacus*, *Compsobuthus*, *Hottentotta*, *Leiurus*, and *Orthochirus*) and families Diplocentridae and Scorpionidae by one genus and species each (*Nebo* and *Scorpio*, respectively). *Buthacus nigroaculeatus* and *B. yotvatensis* are recorded for the first time in Jordan.

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

*Androctonus bicolor* Ehrenberg, 1828

Fig. 1A

**Material Examined:** 1 ♂, 1 ♀, Ash Shawbak Castle, 8.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam.

**Remarks:** *Androctonus bicolor* was previously reported from only a few localities in Jordan, including Aqaba, Karak, Ma'an, Petra, Wadi Ramm (El-Hennawy,

1988; Amr & El-Oran, 1994; Kovařík & Whitman, 2004). At Ash Shawbak, it was collected from the wadi and slopes below the castle ruins.

*Androctonus crassicauda* (Olivier, 1807)

**Fig. 1B**

**Material Examined:** 1 ♀, Al Brerah, Wadi Ramm, 11.ix.2013, Z. Amr, N. Hamidan & T. Al Share.

**Remarks:** *Androctonus crassicauda* is one of the most venomous scorpion species in the Middle East. In Jordan, it is widely distributed in the eastern desert and Wadi Araba to Aqaba and Wadi Ramm (Levy & Amitai, 1980; Amr *et al.*, 1988; Amr & El-Oran, 1994; Stathi & Mylonas, 2001, Kovařík & Whitman, 2004). It was also collected from the Mediterranean region but in low numbers. It lives in horizontal burrows or rodent burrows.

*Birulatus haasi* Vachon, 1974

**Material Examined:** 1 ♀, Al Hysayneiah, ca. 2 km N on Amman–Aqaba Highway, 7.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam. -- 1 ♂, Ash Shawbak Castle, 8.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam.

**Remarks:** *Birulatus haasi* was originally described from the Tafilah area (Vachon, 1974). It was redescribed by Lourenço (1999), who mistakenly suggested that it is a cave-dwelling scorpion. This is the second collection of this species from Jordan, with an additional locality from Al Hussainiha, expanding the known distribution into more arid regions of Jordan.

*Buthacus nigroaculeatus* Levy *et al.*, 1973

**Fig. 1C**

**Material Examined:** 2 juv. ♂, Wadi Al Mohark, Wadi Ramm, 11.ix.2013, L. Prendini, O. Abed & L. Al Azam. -- 3 ♂, 3 ♀, Al Barah, Wadi Ramm, 10.ix.2013, Z. Amr, N. Hamidan & L. Al Azam. -- 1 ♀, Al Barah, Wadi Ramm, 10.ix.2013, Z. Amr, N. Hamidan & L. Al Azam.

**Remarks:** Specimens from Wadi Ramm (Kinzelbach, 1984; Stathi & Mylonas, 2001; Kovařík & Whitman, 2004), previously referred to as *Buthacus leptochelys* (Ehrenberg, 1829), are here referred to *Buthacus nigroaculeatus*, making this the first record of the species from Jordan.

*Buthacus yotvatensis* Levy, Amitai & Shulov, 1973

**Fig. 1D**

**Material Examined:** 1 ♀, Wadi 'Araba, Wadi Khanzeerah, 9.ix.2013, L. Prendini, Z. Amr & L. Al Azam. -- 2 ♂, 1 ♀, Wadi 'Araba, Wadi Al Ghwaibeh, 9.ix.2013, L. Prendini, Z. Amr & L. Al Azam. -- 2 ♂, 1 ♀, Wadi 'Araba, Wadi Al Ghwaibeh, 9.ix.2013, L. Prendini, Z. Amr & L. Al Azam.

**Remarks:** *Buthacus yotvatensis* was collected in the sand dunes of Wadi Al Ghwaibeh and Wadi Khanzeerah, the first records of this species in Jordan. It was previously found on sand dunes of Wadi Araba on the Israeli side (Levy & Amitai, 1980).

*Compsobuthus jordanensis* Levy, Amitai & Shulov, 1973

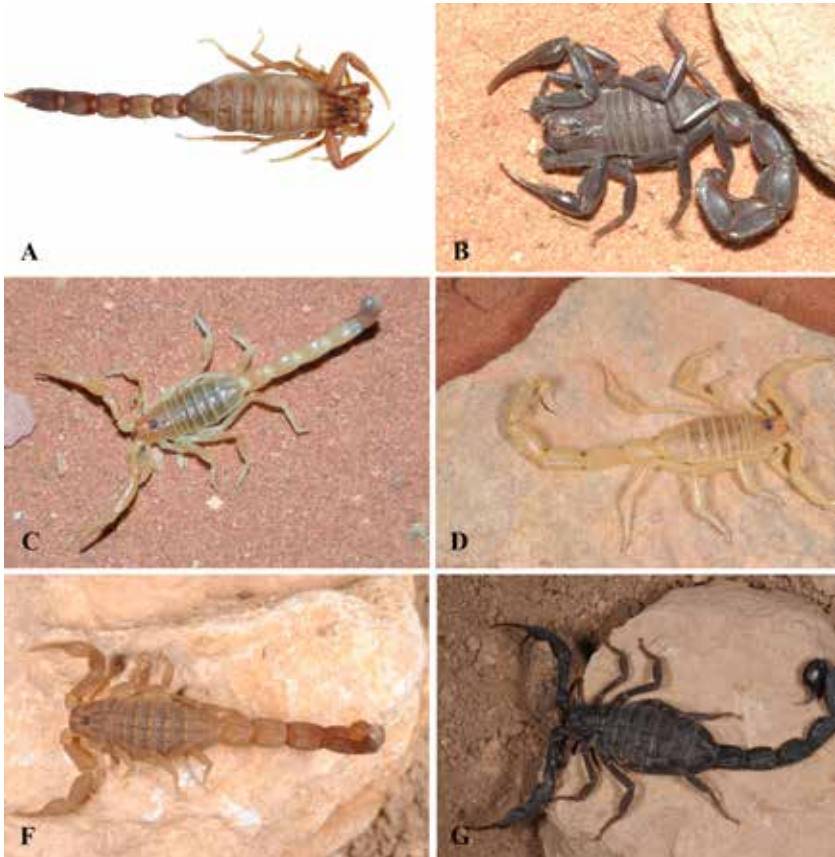
**Material Examined:** 6 ♂, 6 ♀, 1 subad. ♀, Wadi Daba'a, ca. 1 km W of Amman–Aqaba Highway, 7.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam. -- 9 ♂, 4 ♀, Al Hysayneiah–Al Qadessyah road, 7.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam.

**Remarks:** *Compsobuthus jordanensis* was previously reported from around Wadi Daba'a, southeast of Amman, and Al-Hasa toward Ma'an (Levy *et al.*, 1973). It appears to be widely distributed in Jordan, extending further south and to the west of the Irano-Turanian zone.

*Compsobuthus levyi* Kovařík, 2012

**Material Examined:** 1 ♂, Dana Guest House, 8.ix.2013, L. Prendini. -- 5 ♂, Ash Shawbak Castle, 8.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam. -- 4 ♂, Ash Shawbak Castle, 8.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam.

**Remarks:** *Compsobuthus levyi* was previously reported from Qasr Burqu, in the eastern desert of Jordan (Kovařík, 2012). The new locality records extend its distribution further into southwestern Jordan.



**Figure 1:** A. *Androctonus bicolor*. B. *Androctonus crassicauda*. C. *Buthacus nigroaculeatus*. D. *Buthacus yotvatensis*. E. *Compsobuthus schmiedeknechti*. F. *Hottentotta judaicus*.

*Compsobuthus schmiedeknechti* Vachon, 1949

Fig. 1E

**Material Examined:** 8 ♂, 2 ♀, Dibeen Nature Reserve, 6.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam.

**Remarks:** *Compsobuthus schmiedeknechti* occurs in rocky habitats in the Mediterranean region of Jordan (Levy & Amitai, 1980). Published records include Bonifca and Petra (Vachon, 1949; Kovařík & Whitman, 2004).

*Hottentotta judaicus* (Simon, 1872)

Fig. 1F

**Material Examined:** 3 ♀, Zogreet, Jarash–Ajloun road, 6.ix.2013, L. Prendini, Z. Amr. -- 1 juv., Dibeen Forest Reserve, 6.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam.

**Remarks:** *Hottentotta judaicus* was previously reported from several localities within the Mediterranean region of Jordan (Wahbeh, 1976; Kinzelbach, 1984; El-Hennawy, 1988; Amr & El-Oran, 1994). It is often associated with the *terra rossa* soil.

*Leiurus jordanensis* Lourenço, Modry & Amr, 2002

Fig. 2A

**Material Examined:** 1 ♂, NW of Al Mudawwarah, 10.ix.2013, L. Prendini, O. Abed & T. Al Share.

**Remarks:** *Leiurus jordanensis* was originally described from a desert habitat in southern Jordan composed of sandstone cliffs surrounded by flat sand dunes (Lourenço *et al.*, 2002). It was subsequently recorded from northern Saudi Arabia (Hendrixson, 2006; Lowe *et al.*, 2014).

*Leiurus hebraeus* (Birula, 1908)

Fig. 2B

**Material Examined:** 6 ♂, 10 ♀, 1 subad. ♂, 1 subad. ♀, 9 juv. ♂, 6 juv. ♀, King Talal Dam road, 6.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam. -- 2 ♀, 1 juv. ♂, 4 juv. ♀, Jabal Al Rumman, 9.ix.2013, O. Abed & T. Al Share. -- 1 ♂, Wadi Al Ahmar, 9.ix.2013, O. Abed & T. Al Share. -- 2 ♂, Dana Guest House, 9.ix.2013, L. Prendini. -- 55 ♂, 42 ♀, 8 subad. ♂, 8 subad. ♀, 11 juv. ♂, 12 juv. ♀, Ash Shawbak Castle, 8.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam. -- 50 ♂, 63 ♀, 6 subad. ♂, 7 subad. ♀, 1 juv. ♂, 3 juv. ♀, Ash Shawbak Castle, 8.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam. -- 3 ♂, 8 ♀, 2 subad. ♀, 1 juv. ♂, Ash Shawbak Castle, 8.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam.

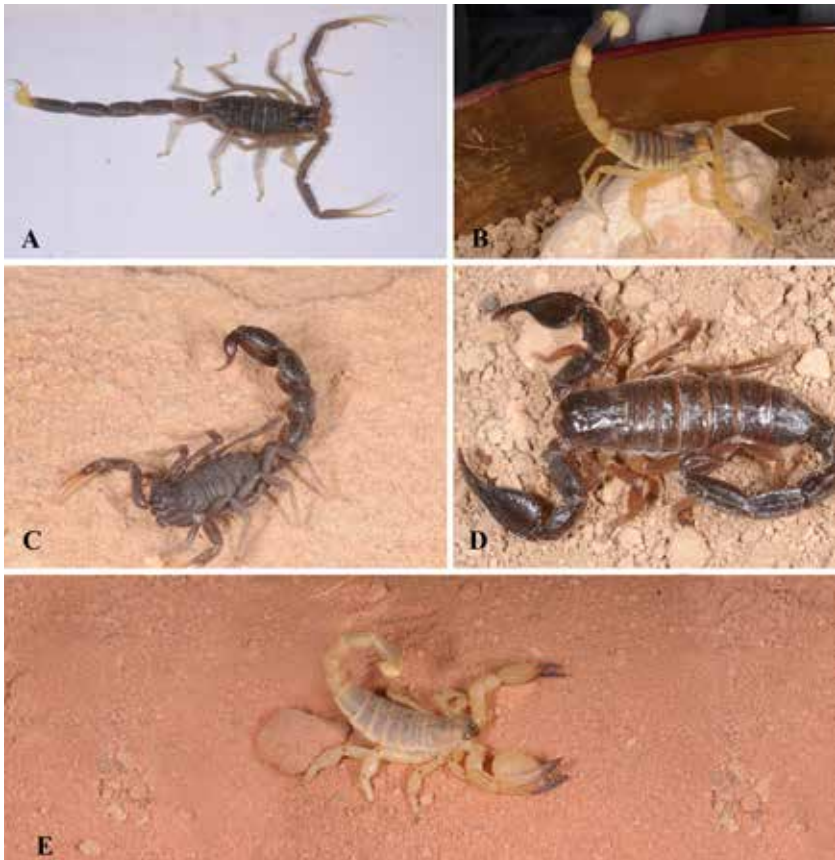
**Remarks:** This species, previously regarded as a subspecies of *Leiurus quinquestriatus* (Ehrenberg, 1828), is the most venomous scorpion species in Jordan (Amr *et al.*, 1994). It is also the most common species with a wide distribution covering much of the western part of the country (Levy *et al.*, 1970; Wahbeh, 1976; Levy & Amitai, 1980; El-Hennawy, 1988; Amr & El-Oran, 1994; Stathi & Mylonas, 2001; Lowe *et al.*, 2014). More than a hundred specimens were collected near Ash Shawbak Castle, on the walls of caves, under bushes and in rocky areas.

*Orthochirus scrobiculosus negebensis* Shulov & Amitai, 1960

Fig. 2C

**Material Examined:** 2 ♂, 2 ♀, Wadi Daba'a, ca. 1 km W of Amman–Aqaba Highway, 7.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam. -- 1 ♂, 1 ♀, Al Hysayneiah, ca. 2 km N on Amman–Aqaba Highway, 7.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam. -- 1 ♀, Wadi 'Araba, Qaser, Al Tlah, 9.ix.2013, L. Prendini, Z. Amr & L. Al Azam.

**Remarks:** The status of this taxon is unclear. *Orthochirus* populations from Jordan, Palestine, and Sinai were initially described as *O. innesi negebensis* Shulov & Amitai, 1960 and later regarded as *O. scrobiculosus negebensis* (Levy & Amitai, 1980; Fet & Lowe, 2000). Kovařík (2004: 27) suggested these populations may be a 'separate species' while Kovařík & Whitman (2004) identified specimens from Wadi Ramm as *Orthochirus innesi* Simon, 1910. Hendrixson (2006) referred specimens from neighboring Saudi Arabia to *O. innesi*. *Orthochirus scrobiculosus negebensis* is usually found under stones and was previously reported from arid and semi-arid regions of Jordan, e.g., Azraq, Jerash, Madaba, Thgrat al Jubb (Wahbeh, 1976; Amr & El-Oran, 1994; Stathi & Mylonas, 2001). High population densities were previously reported in the Azraq area (Amr & El-Oran, 1994). The newly reported material was collected along the desert highway within the Irano-Turanian region and from Wadi Araba.



**Figure 2:** A. *Leirus jordanensis*. B. *Leirus hebraeus*. C. *Orthochirus scrobiculosus negebensis*. D. *Nebo hierichonticus*. E. *Scorpio kruglovi*.

## Family Diplocentridae Karsch, 1880

*Nebo hierichonticus* (Simon, 1872)

Fig. 2D

**Material Examined:** 1 subad. ♀, King Talal Dam road, 6.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam. -- 1 ♂, Wadi Al Ahmar, 9.ix.2013, O. Abed & T. Al Share.

**Remarks:** *Nebo hierichonticus* is endemic to the Levant. In Jordan, it was previously reported from several localities including Al-Mazar al-Janubi, Al Karak Amman, Jarash, Madaba, Petra, Wadi Araba, Wadi Karak, and Wadi Ramm (Wahbeh, 1976; Levy & Amitai, 1980; Amr & El-Oran, 1994; Stathi & Mylonas, 2001; Kovařík & Whitman, 2004). This species constructs burrows and can be found under rocks and in crevices. In the Jarash area, it was found in deep crevices among large boulders and in earthen walls.

## Family Scorpionidae Latreille, 1802

*Scorpio kruglovi* Birula, 1910

Fig. 2E

**Material Examined:** 1 ♂, Jabal Al Rumman, 9.ix.2013, O. Abed & T. Al Share. -- 3 ♂, Ash Shawbak Castle, 8.ix.2013, L. Prendini, Z. Amr, O. Abed, T. Al Share & L. Al Azam. -- 1 ♂, Al Barah, Wadi Ramm, 10.ix.2013, Z. Amr, N. Hamidan & L. Al Azam. -- 1 ♂, Al Khoshakhashe, Wadi Ramm, 11.ix.2013, Z. Amr, N. Hamidan & T. Al Share.

**Remarks:** *Scorpio kruglovi* was previously reported, as *Scorpio maurus palmatus* (Ehrenberg, 1828), from Ajloun, Amman, Theban, Wadi Musa, and Wadi Ramm (Wahbeh, 1976; El-Hennawy, 1988; Amr & El-Oran, 1994; Kovařík & Whitman, 2004). The new material was collected from rocky areas around Ash Shawbak and compacted sand areas at several localities in Wadi Ramm.

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