

First record of *Androctonus australis* (Linnaeus, 1758) from Jordan (Scorpiones: Buthidae)

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Abstract: This study reports the first record of *Androctonus australis* (Linnaeus, 1758) from Jordan. The species is herein recorded from near Al Zarqa' city, Al Zarqa' province. Body measurements and comparison with similar *Androctonus* Ehrenberg, 1828 species in this area are provided.

Key words: Scorpiones, Buthidae, *Androctonus australis*, first record, Jordan.

Primera cita de *Androctonus australis* (Linnaeus, 1758) de Jordania (Scorpiones: Buthidae)

Resumen: Se registra *Androctonus australis* (Linnaeus, 1758) por primera vez de Jordania. La especie es reportada aquí de los alrededores de la ciudad de Al Zarqa', en la provincia homónima. Se ofrecen las dimensiones morfométricas de los especímenes estudiados, así como su comparación con otros miembros similares del género *Androctonus* Ehrenberg, 1828 que habitan dicha área geográfica.

Palabras clave: Scorpiones, Buthidae, *Androctonus australis*, primera cita, Jordania.

Introduction

The genus *Androctonus* Ehrenberg, 1828 currently includes 19 species. They have a widespread distribution, from both Africa and Middle East. A lot papers are dealing with this genus and since Vachon (1948, 1952) published a complete definition of the genus *Androctonus* several researchers contributed useful information and new species (Lourenço, 2005, 2008; Lourenço & Qi 2006, 2007). However, the scientific contributions of taxonomists in general have been largely not respected by not citing the authority on which they are based, so we follow Wägele *et al.* (2011) and mention all authors in the references list below for all 21 known and up to date valid species, e.g. *Androctonus afghanus* Lourenço & Qi, 2006, *Androctonus alexandrplotkini* Lourenço & Qi, 2007, *Androctonus amoreuxi* (Audouin, 1826), *Androctonus australis* (Linnaeus, 1758), *Androctonus baluchicus* (Pocock, 1900), *Androctonus bicolor* Ehrenberg, 1828, *Androctonus crassicauda* (Olivier, 1807), *Androctonus dekeyseri* Lourenço, 2005, *Androctonus eburneus* (Pallary, 1928), *Androctonus finitimus* (Pocock, 1897), *Androctonus gonnati* Vachon, 1948, *Androctonus hoggarensis* (Pallary, 1929), *Androctonus liouvillei* (Pallary, 1924), *Androctonus maelfaiti* Lourenço, 2005, *Androctonus mauritanicus* (Pocock, 1902), *Androctonus maroccanus* Lourenço, Yhtier & Leguin, 2009, *Androctonus pallidus* Lourenço, Duhem & Cloudsley-Thompson 2012, *Androctonus sergenti* Vachon, 1948, *Androctonus togolensis* Lourenço, 2008, *Androctonus robustus* Kovařík & Ahmed, 2013 and *Androctonus cholistanus* Kovařík & Ahmed, 2013.

A. australis was described by Linnaeus (1758) under the generic name *Scorpio australis* Linnaeus, 1758 This species is one of the most widespread species of the family. It occurs from the north eastern part of Morocco, Algeria, Tunisia, Libya, Niger, Chad, Sudan and Egypt (Fet & Lowe, 2000; Geniez, 2009; Levy & Amitai, 1980; Lourenço, 2005; Vachon, 1952). Lourenço (2005) reduced the spread exclusively on Africa and put all Middle East populations into other species. For all that, here we want to record for the first time *A. australis* for Jordan. Iterating, we don't want to add more confusion surrounding *A. australis* and its clear taxonomic position. Moreover, the more information presented in this study assists prospective researcher to understand the widespread distribution of this species and the proximate mechanisms of their dispersion.

Material and methods

A. australis (fig. 1) specimens were collected in Al-Zarqa' province, near Al-Zarqa' city in the northern Jordan with the coordinates

2°06.59'N, 36°09.50'E (fig. 2). We received 1 subadult female and one subadult male from a private person. They were captured together with *Leiurus quinquestriatus hebraeus* (Birula, 1908) in a sandy and rocky area with low vegetation (fig. 3). They have been reared in plastic terraria of different sizes using standard methods. These contained a layer of soil and some pieces of bark to hide. Food consisted of crickets (*Acheta domestica* (Linnaeus, 1758)) and different small cockroaches. The temperature ranged from 25°C to 40°C and the humidity was very low during the day, and climbed up a little bit during the night. The morphometric values were measured both in dead species and exuvia. Specimens were studied, measured and photographed under a NOVEX FL-100 microscope, equipped with a Samsung Digimax V50 digital camera, and a Samsung Lens Adapter SLA-3537. Digital images were slightly processed using Adobe Photoshop® 8.0 to optimize contrast feature of micrographs. The prepared images were measured with the computer program ImageJ Version 1.43u. Nomenclature and measurements follow Stahnke (1970), morphological terminology follows Vachon (1952) and Hjelle (1990). The specimens are in the collection of the Natural History Museum Vienna (NHMW).

Abbreviations: List of depositories: NHMW, Natural History Museum Vienna, Vienna, Austria; SM, Seiter Michael personal collection, 2486 Pottendorf, Austria.

Material examined:

Androctonus australis: **Jordan**, Al-Zarqa' province, near Al-Zarqa' city in the northern Jordan @ 2°06.59'N, 36°09.50'E, 1♀, leg. Hussein Burçin Abdullah, Jordan, NHMW 21877; **Jordan**, Al-Zarqa' province, near Al-Zarqa' city in the northern Jordan @ 2°06.59'N, 36°09.50'E, 1♂, leg. Hussein Burçin Abdullah, Jordan, NHMW 21876; **Tunisia**, 1♂, leg. M.Stockmann, SM; **Tunisia**, 1♀ 1♂, leg. M.Stockmann, SM; **Tunisia**, Gabes, 1♀ 1♂, leg. Gabriel, NHMW 2736; **Egypt**, 1♂, leg. M.Stockmann, SM; **Egypt?**, Red Sea, 1♀ 1♂, leg. Frauenfeld, NHMW 2720.

Androctonus amoreuxi: **Egypt**, Gizeh, 1♀, leg. Werner, NHMW 2810; **Egypt**, Assuan, 1♀, leg. Kotschy, NHMW 2801.

Characteristics of *A. australis* (in general)

A scorpion of large size, can reach a total length of 100 mm in female. General coloration yellow to ochre, with pale yellow sternites. Carinae on carapace moderately developed. Ventral cari-

Table 1: Measurements of *A. australis* ♀ (NHMW 21877), *A. australis* ♂ (NHMW 21876), *A. australis* ♀ (NHMW 2736) and *A. amoreuxi* ♀ (NHMW 2810)

	<i>Androctonus australis</i> Jordan		<i>Androctonus australis</i>	<i>Androctonus amoreuxi</i>
	♀ (NHMW 21877)	♂ (NHMW 21876)	Egypt ♀ (NHMW 2736)	Egypt ♀ (NHMW 2810)
Total length	100,63	85,07	83,26	104,05
Carapace:				
length	11,33	9,21	10,37	12,06
anterior width	7,64	6,05	6,01	6,93
posterior width	13,95	10,27	11,03	14,16
Metasomal segment I:				
length	7,20	6,92	6,69	8,21
width	7,66	6,68	6,99	7,57
Metasomal segment IV:				
length	10,14	9,06	9,10	10,83
width	8,54	6,22	7,12	7,19
depth	7,09	5,83	6,42	5,29
Metasomal segment V:				
length	10,88	10,10	9,83	12,11
Width	6,67	6,48	6,86	5,57
depth	5,21	4,46	5,10	4,32
Telson length	11,58	9,22	9,69	11,24
Vesicle:				
width	5,15	4,39	4,82	4,76
depth	3,41	3,14	3,74	3,91
Pedipalp:				
Femur length	10,04	8,03	7,18	8,69
Femur width	3,19	2,43	2,91	3,80
Patella length	11,13	8,20	9,48	11,06
Patella width	4,83	3,91	4,28	5,43
Chela length	20,31	14,73	16,70	17,35
Chela width	5,99	5,00	5,35	4,74
Chela depth	5,83	4,74	5,19	5,37
Movable finger: length	13,27	10,61	10,78	12,15

nae on metasomal segments I to IV are brownish, V metasomal segment and vesicle are darker. Aculeus are on the basis reddish and gets more brownish apically. Pedipalps are ocher yellow and the legs pale yellow. Metasoma segments get wider apically with strong developed dorsal carinae on metasoma segment I to IV, with spinoid granules. Anal arc with three lateral lobes and more or less with a linear ventral structure. Aculeus is constant curved and as long as vesicle. Moveable finger with 12 to 14 rows of granules. Pectines with 30 to 36 teeth in males and 22 to 26 in females (Lourenço, 2005; Vachon, 1952).

Characteristics of *A. australis* (Al-Zarqa', Jordan population)

In most of the parts equal to the general description, but the Jordan population have a darker IV and V metasomal segments (comparing with the subspecies originally described *Androctonus australis libycus*). Total body length 100.63 mm in female and 85.07 mm in male. This data are similar to examined specimen form different region in Northern Africa (tab. I, fig. 1). For further measurements see Table 1. Pectines with 32 teeth in male and 24 teeth in female. Female have a much longer chela then male and the width-depth-ratio is also in favor of the female.

Comparison

On the basis of its general morphology and yellowish coloration *A. australis* can be associated with *A. amoreuxi* in this area. *A. bicolor*

and *A. crassicauda* are also known for Jordan (Levy & Amitai, 1980; Wahbeh, 1976) but these two species are black to blackish in coloration, with a complete smooth vesicle and slender chelae in *A. bicolor* and with three rows of granules on the vesicle in *A. crassicauda*, against some widespread granules ventral in *A. australis*. However, it can be distinguished from *A. amoreuxi* by several distinct characters: (i) metasoma segments get wider distally, (ii) with strong developed dorsal carinae on metasoma segment I to IV, (iii) with spinoid granules rows and deeper dorsal depression on the metasoma segments, and (iv) an anal arc with three well developed lateral lobes (tab. 1, fig. 1).

Notes

We do not want to start here now a discussion about the sense of the authority of the authors. We only want to say, that it makes sense to mention the first author (not the first user) and the name bearing type. This may cause in some reactions and discussion, because of the long and maybe not handy references list, but this should be an idea we picked up. For us, in the time of “*.pdf files” and the “search function” in the files, it should be no problem to handle a larger references list as usual.

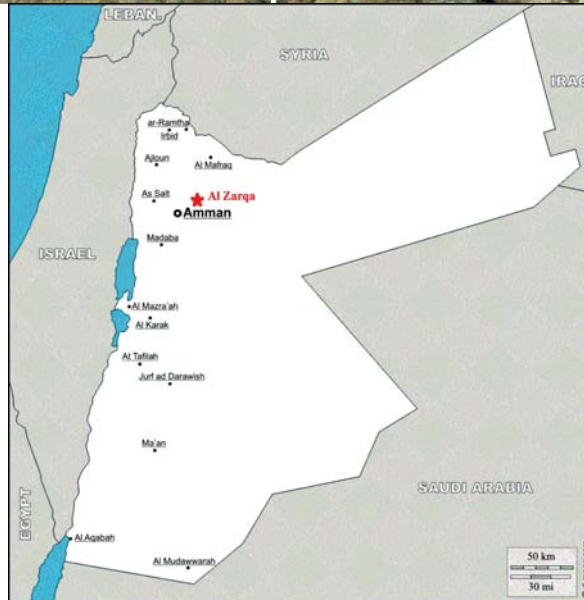
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Fig. 1: *Androctonus australis* from the new locality in Jordan, adult (female left, male right), pictures made in captive care. **Fig. 2:** Distribution map of *Androctonus australis* (red star) in Jordan. d-maps.com **Fig. 3:** Natural habitat of *Androctonus australis* in Al-Zarqa', northern Jordan.

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