

## Scorpions from the Tabuk Province, Saudi Arabia

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**Abstract:** Eight species of scorpions belonging to two families (Buthidae and Scorpionidae) are reported from thirteen localities in the Province of Tabuk. The family Buthidae is represented by seven species in seven genera (*Androctonus*, *Compsobuthus*, *Leiurus*, *Parabuthus*, *Orthochirus*, and *Trypanothacus*), while the family Scorpionidae is represented by a single species, *Scorpio kruglovi*. The present data extend the distribution range of *Trypanothacus buettikeri* and *Parabuthus leiosoma* further to the northwestern coastal region and the known range of *Compsobuthus setosus* to include western Saudi Arabia.

**Key words:** Tabuk, Saudi Arabia, Buthidae, Scorpionidae.

### Introduction

The scorpion fauna of Saudi Arabia has been subject to several studies over the past fifty years (Vachon, 1966 and 1979; Levy *et al.*, 1973; Kovařík, 2003; Kovařík and Whitman, 2005; Hendrixson, 2006; Lourenço and Qi, 2006; Al-Asmari *et al.*, 2007, 2009a, b, 2013; Desouky and Alshammari, 2011; El-Hennawy, 2009; Lowe *et al.*, 2014; Alqahtani *et al.*, 2019). Amr *et al.*, (2021) listed thirty-one species within four families, while recently, Alqahtani and Badry (2021) listed only twenty-six species of scorpions from Saudi Arabia. A new species, *Compsobuthus khaybari*, collected from Ain El-Hamah, Khaybar area was described (Abu Afifeh *et al.*, 2021). Fragmentary records from Tabuk

were listed by Hendrixson (2006) and Al-Asmari *et al.*, (2013).

The present study aims at investigating the scorpion fauna of the Tabuk Province in Saudi Arabia based on a recent collection of scorpions.

### Materials and Methods

Scorpions were collected from thirteen localities in the Tabuk Province (Table 1) either by flipping stones or by using ultraviolet torches at night. Specimens were photographed while alive, and then preserved in 75% ethyl alcohol with glycerol for further identification. The species were identified based on taxonomic keys according to Hendrixson (2006) and Alqahtani and Badry (2021).

### Results

In this study, eight species of scorpions belonging to two families (Buthidae and Scorpionidae) were reported from thirteen localities in the Tabuk Province.

### Family Buthidae

*Androctonus crassicauda* (Olivier, 1807) (Figure 1A).

**Material examined:** Magna, May 2011. ♂, Hisma, 23.6.2012. 1 Juvenile, Taima (Al Gharb farms), 2.7.2013. Qala'at Al Azlam, 25.6.2013. 1 Juvenile Um Luj-Al Gabaya farm, 25.6.2013. 3 Juveniles, Al Beda'a, 27.6.2013.

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**Table 1.** Localities from which scorpions were collected.

Locality	Coordinates	
	N	E
Al Beda'a	28° 26' 28.00"	34° 49' 26.00"
At-Tubayq	29° 47' 05.21"	37° 25' 26.53"
Bajdah	28° 20' 50.55"	35° 47' 16.03"
Harat Al Rahah (Ain Al Akhdhar)	27° 38' 20.76"	36° 49' 19.61"
Harat Al Rahah (Wadi Rashdan)	27° 49' 58.00"	36° 33' 05.00"
Halat Ammar	29° 09' 05.98"	36° 05' 28.47"
Hisma	29° 00' 11.35"	35° 30' 10.35"
Magna	28° 23' 46.35"	34° 45' 00.78"
Qala'at Al Azlam	27° 02' 21.88"	36° 01' 13.25"
Quraeah	28° 47' 05.35"	36° 00' 14.93"
Taima (Al Gharb farms)	27° 38' 10.00"	38° 32' 49.00"
Taima (Alnofood Alkabeer)	27° 25' 26.00"	39° 03' 26.00"

**Figure 1.** A. *Androctonus crassicauda*. B. *Compsobuthus setosus*. C. *Leiurus haenggii*. D. *Parabuthus leiosoma*. E. *Orthochirus* sp. F. *Scorpio kruglovi*.

**Diagnosis:** Colour of adults is golden brown to nearly black, pale yellow in juveniles; metasomal segment III wider than long; pedipalp manus broad and stout; outer tooth of basitarsal spur on leg IV generally not bifurcated, mesosomal tergites I and II with at most three carinae (Hendrixon, 2006).

**Remarks:** This is a widely distributed species across Saudi Arabia (Hendrixon, 2006; Alqahtani and Badry, 2021). Its distribution range extends across all of the Middle East and reaches as far as Armenia and Azerbaijan (Hendrixon, 2006).

***Compsobuthus setosus* Hendrixon, 2006 (Figures 1B and 2)**

**Material examined:** 2 ♂, Halat Ammar, 2.7.2013.

**Diagnosis:** Pectinal teeth 19-19 for the two males, moveable fingers of pedipalps with 10 rows of denticles, pedipalp chela fingers without outer accessory granules. Metasomal segment: I with 10 carinae, II with 8 carinae and 5-6 granules, III with 8 carinae and 2-3 granules, IV with 8 carinae.

**Remarks:** This species is endemic to Saudi Arabia. It was originally described from

Khashm Khafs and Riyadh in Eastern Saudi Arabia and near the Jordanian borders in the north (Hendrixon, 2006).

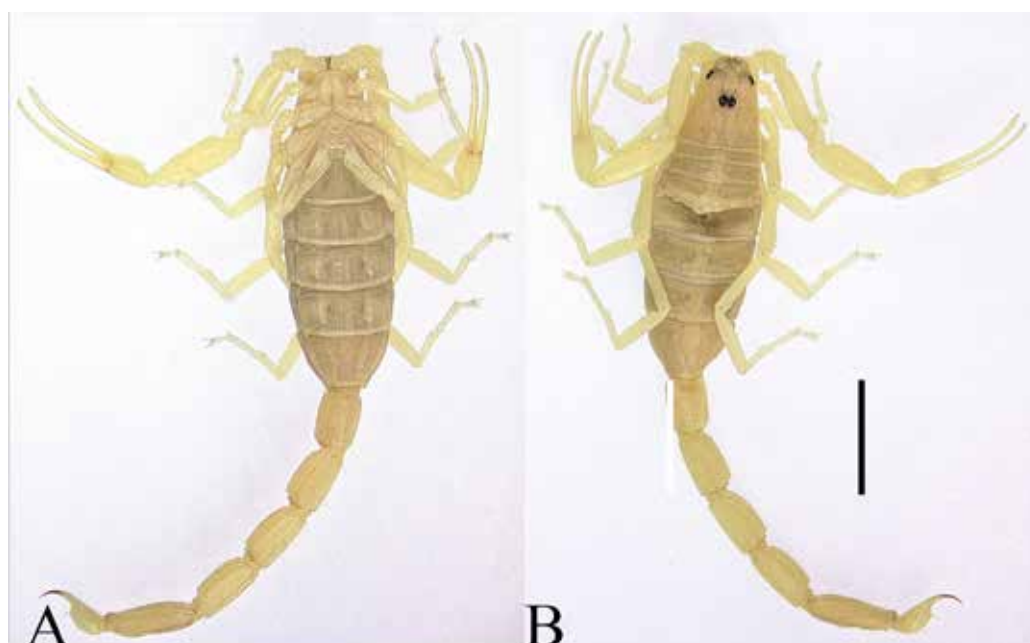
This species belongs to the “*acutecarinatus*” group and is characterized by having fingers without outer accessory granules. Occasionally, there may be external granules present at the basal two or three rows, but these granular rows are *mostly* nonexistent in this species. The present record expands the distribution range of this species further to the west of Saudi Arabia.

***Leiurus haenggii* Lowe, Yağmur and Kovařík, 2014, 2014 (Figure 1C).**

**Material examined:** Manga, 23.5. 2011.

**Diagnosis:** Mesosomal tergites I and II with five carinae, pedipalp patella in females with L/W less than 3.20, Fs less than 23; female sternites III–IV with weak to obsolete median carinae (Lowe *et al.*, 2014).

**Remarks:** Lowe *et al.*, (2014) revised the genus *Leiurus*; all previous records of *Leiurus quinquestriatus* (Ehrenberg, 1828) in Saudi Arabia describe it as either: *Leiurus brachycentrus* (Ehrenberg, 1829) known along the Red Sea coast, reaching as far as the southwest of Makkah, and *Leiurus arabicus* (Lowe, Yağmur and Kovařík, 2014)



**Figure 2.** *Compsobuthus setosus*. **A.** Ventral aspect. **B.** Dorsal aspect. Scale bar = 5 mm.



distributed across eastern Saudi Arabia, or *Leiurus haenggii* known along the Red Sea coast.

***Leiurus jordanensis* Lourenço, Modry and Amr, 2002 (Figure 3).**

**Material examined:** Quraeah, 1.10.2018. At-Tubayq, 21.9.2018.

**Diagnosis:** Mesosomal tergites I and II with five carinae, base colour dark brown to black, ventrolateral carinae of metasomal segment V with spinoid denticles (Hendrixon, 2006).

**Remarks:** It was collected from Al Jawf (Alqahtani and Badry, 2021). This is the second record from Saudi Arabia. It was originally described from Al-Mudawwarah, Jordan, close to the Tabuk Province (Lourenço *et al.*, 2002).



**Figure 3.** Male *Leiurus jordanensis*.

**Diagnosis:** Pedipalp femoral trichobothria arranged in alpha-configuration; a stridulatory patch present on the dorsal surface of metasomal segments I-III (Hendrixon, 2006).

**Remarks:** This species is known in western Saudi Arabia. Its distribution extends across north-eastern Africa, Yemen, and western

***Orthochirus* sp. (Figure 1E)**

**Material examined:** Bajdah, 2.7.2013

**Diagnosis:** Small scorpion; carapace and tergites densely granular; metasomal segment V punctate (Hendrixon, 2006).

**Remarks:** Hendrixon (2006) maintained that the genus *Orthochirus* is represented by *Orthochirus innesi* (Simon, 1910). This species, *O. innesi*, is confirmed only in North Africa. The taxonomic status of this genus is still unclear due to its morphological variability.

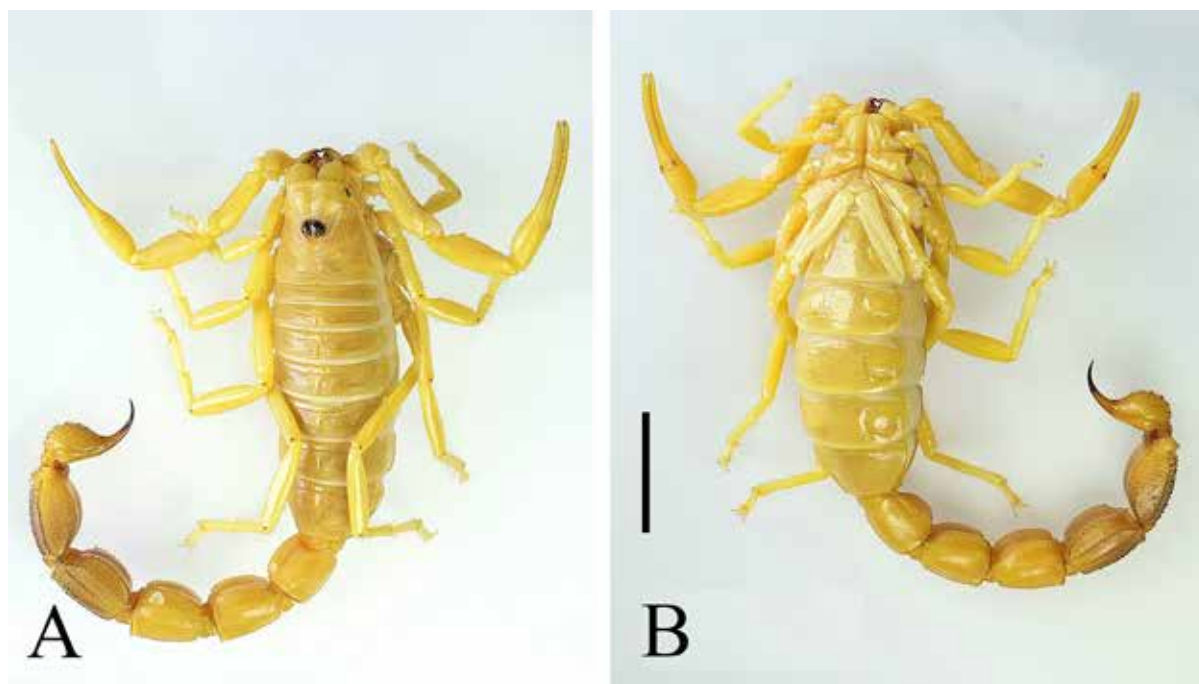
***Parabuthus leiosoma* (Ehrenberg, 1828) (Figures 1D and 4).**

**Material examined:** ♂, Um Luj-Al Gabaya farm, 25.6.2013

Saudi Arabia (Hendrixon, 2006).

***Trypanothacus buettikeri* (Hendrixon, 2006) (Figure 5)**

**Material examined:** ♂ and ♀, Qala'at Al Azlam, 25.6.2013. ♂ and ♀ Ain Al Akhdhar, 5 July 2021.



**Figure 4.** *Parabuthus leiosoma*. Male: **A.** Dorsal aspect. **B.** Ventral aspect. Scale bar = 10 mm.

**Diagnosis:** The male of this species is yellow and the female exhibits a reddish-brown coloration. The male has nine rows of denticles on the movable finger, trichobothrium  $e_2$  distal to  $d_5$  on the femur of pedipalp, pectinal teeth 25-25, while dentition in females shows nine to six on the fixed finger, pectinal teeth 21-21 (Hendrixon, 2006).

**Remarks:** This species is endemic to Saudi Arabia with records from Ha'il, Al Madinah, Ash Sharqiyah, and Asir (Hendrixon, 2006; Alqahtani, and Badry, 2021). The present record extends its distribution to northwest Saudi Arabia.

### Family Scorpionidae

#### *Scorpio kruglovi* Birula, 1910 (Figure 1F)

**Material examined:** Hisma, 22.6.2013. Harat Al Rahah (Ain Al Akhdhar), 28.6.2013. Harat Al Rahah (Wadi Rashdan), 28.6.2013.

**Diagnosis:** Pedipalps lobster-like; metasomal segments I–IV with two axial carinae in the ventral part; a cheliceral movable finger

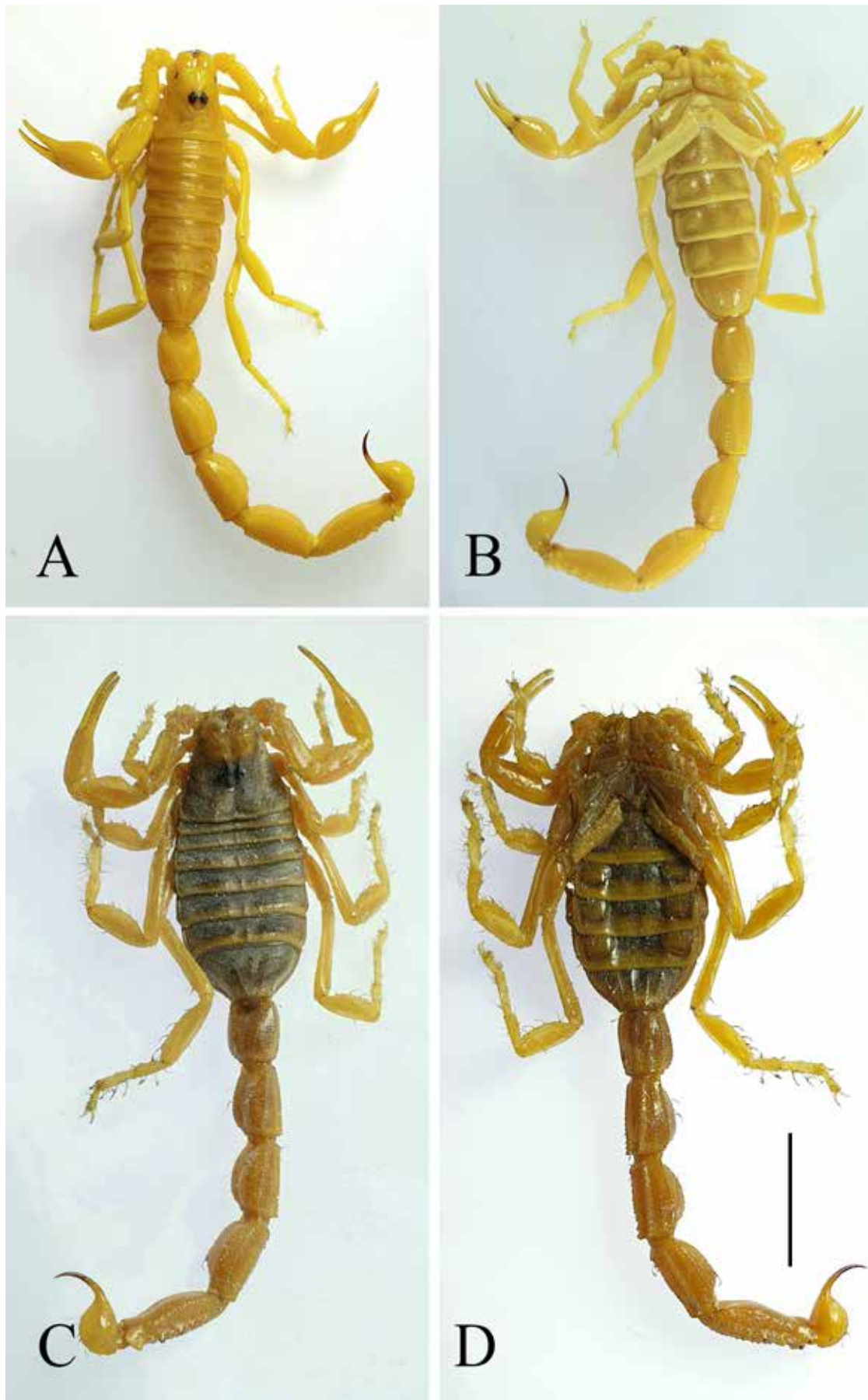
with a single denticle (Alqahtani and Badry, 2021).

**Remarks:** Hendrixon (2006) described the species of this genus as *Scorpio maurus* sp. However, Alqahtani and Badry (2021) listed three species belonging to the genus *Scorpio*; *Scorpio fuscus* (Ehrenberg, 1829), *Scorpio palmatus* (Ehrenberg, 1828), and *Scorpio kruglovi* Birula, 1910; the latter was recorded from Tabuk.

### Discussion

This is the first documentation of scorpions from the Tabuk Province presenting records of eight species. All species have been recorded from Saudi Arabia, however, the records of *T. buettikeri* and *P. leiosoma* extend their distribution range further to the northwestern coastal region (Alqahtani and Badry, 2021), while the record of *Compsobuthus setosus* extends its known distribution range to include western Saudi Arabia.

The variety of habitats in the Tabuk Province offers several living conditions suitable for sand-dwelling species such as *T. buettikeri*, *S. kruglovi* and *P. leiosoma*, in addition to *L.*



**Figure 5.** *Trypanothacus buettikeri*. Male: **A.** Dorsal aspect. **B.** Ventral aspect. Female: **C.** Dorsal aspect. **D.** Ventral aspect. Scale bar = 10 mm.

*haenggii* and *L. jordanensis* which inhabit the rocky areas.

Further studies are recommended to investigate the scorpion fauna of the Tabuk Province both at the molecular and morphological levels.

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