

## On the genus *Hottentotta* Birula 1908, with the description of a new species from Chad (Scorpiones, Buthidae)

WILSON R. LOURENÇO

(With 9 figures)

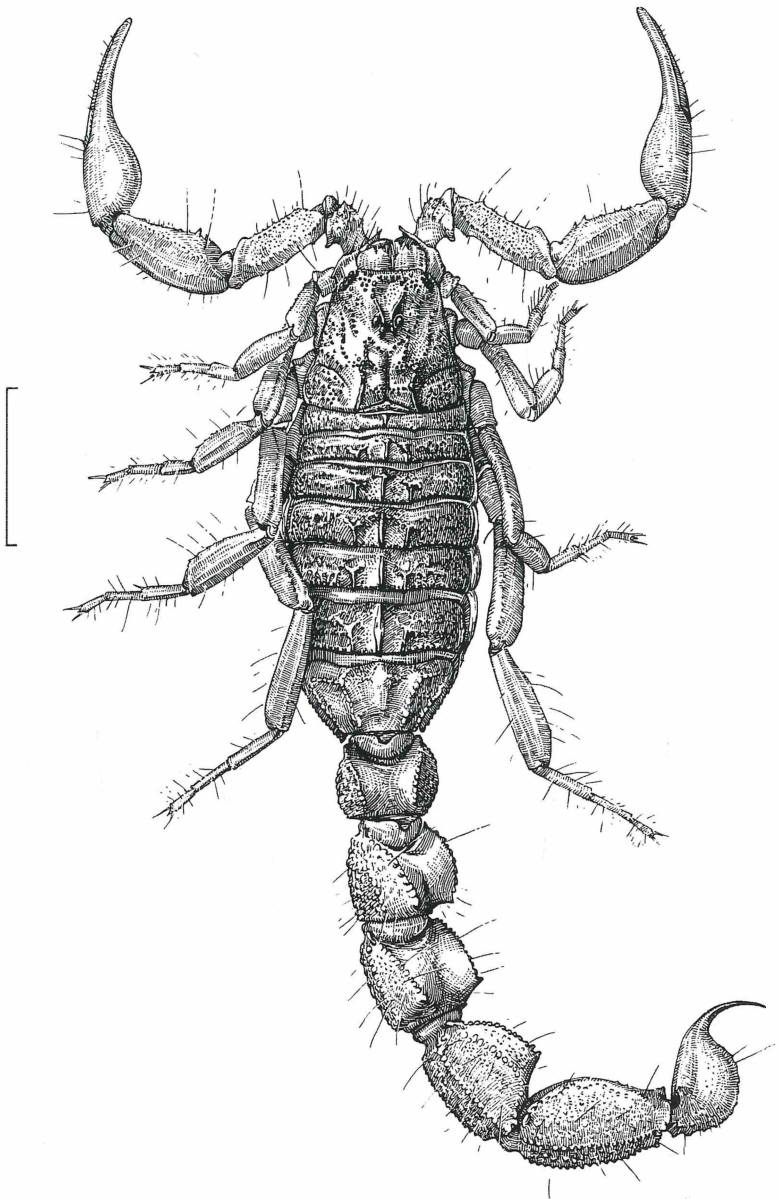
### Abstract

A new species of scorpion, *Hottentotta acostai* sp. n. (Buthidae) is described. The type material was collected in a steppe formation South of Tibesti Mountains, the North of Chad. The new species is unquestionably associated with *Hottentotta minax* (L. Koch, 1875) and related species. Its distribution is located where two of the territories defined by Vachon & Stockmann (1968): 'Eastern sub-equatorial' and 'Western sub-equatorial', overlap.

**Key words:** Scorpiones, taxonomy, *Hottentotta acostai* sp. n., Chad, Tibesti, steppe.

### Introduction

About the middle of the 1940s, Vachon (1952) began a series of studies on the scorpions of North of Africa. One of his main preoccupations was to define the various groups within the family Buthidae. This led to the subdivision of what was then the genus *Buthus* Leach, 1815 into about 10 separate genera. One of the genera proposed by Vachon (1949) was *Buthotus*. This comprised the majority of species in the old subgenus *Hottentotta* Birula, 1908 (Vachon & Stockmann 1968). In fact, Kraepelin (1891) was the first to distinguish a "*hottentotta*-group" (species-group) within the genus *Buthus*. Most of the species within it were allied to *Buthus hottentotta* (Fabricius, 1787). Birula (1908) created the subgenus *Hottentotta*, however, without explaining why. Vachon (1949) disregarded both *Hottentotta* Birula and *Dasyscorpio* Pallary, 1938 and established a new name, *Buthotus*. *Hottentotta* is, however, a valid senior synonym for this and was reestablished by Francke (1985). Other valid subgenera besides the nominotypical *Hottentotta* are *Balfourianus* which was described by Vachon (1979) to include the species *Hottentotta socotrensis* (Pocock, 1885) which is endemic to the Island of Socotra, and *Deccanobuthus* described by Lourenço (2000) for the species *Hottentotta* (*Deccanobuthus*) *geffardi* from India.



**Fig. 1.** Habitus of *Hottentotta minax* (L. Koch), ♀ (from Vachon & Stockmann, 1968). Total length 66 mm (scale bar = 10 mm).

In their exhaustive study of the genus *Buthotus* (= *Hottentotta*), Vachon & Stockmann (1968) defined several lineages and sub-lineages. One of these sub-lineages, the 'Eastern African sub-equatorial' was grouped around the species *Hottentotta minax* (L. Koch, 1875): *H. minax minax*, *H. minax niloticus* (Birula, 1927), *H. minax tigrinus* (Caporiacco, 1937) and *H. minax occidentalis* (Vachon & Stockmann, 1968).

Vachon & Stockmann (1968) and Vachon & Kinzelbach (1987) suggested that the African, Saharo-Sindian and Indian lineages might be different. In fact, several species thought to belong to the Indian lineage are currently placed in the genus *Mesobuthus* Vachon, 1950 but, according to Fet & Lowe (2000), their status remains uncertain. The precise composition of the genus *Hottentotta* remains unclear, and *Deccanobuthus* shows also affinities with *Mesobuthus*. Therefore in the present article I am discussing the African lineages as *Hottentotta* without any subgeneric division.

Kovarik (2003) raised *H. niloticus* to the rank of species and synonymized *H. minax tigrinus* with *H. minax* in an extensive study of the scorpions of North Oriental Africa. Based on the study of several specimens of the Paris collections, including the type material of *H. minax occidentalis*, I am in agreement with Kovarik's decision, but suggest that more material belonging to the subspecies *H. minax tigrinus* should be examined before a final decision is made about its status. In addition, I have raised *H. minax occidentalis* to the species level as *H. occidentalis* stat. n. in the present paper, and below describe a new species from Chad belonging to this lineage.

## Description

### *Hottentotta acostai* sp. n. (Figs 2-9)

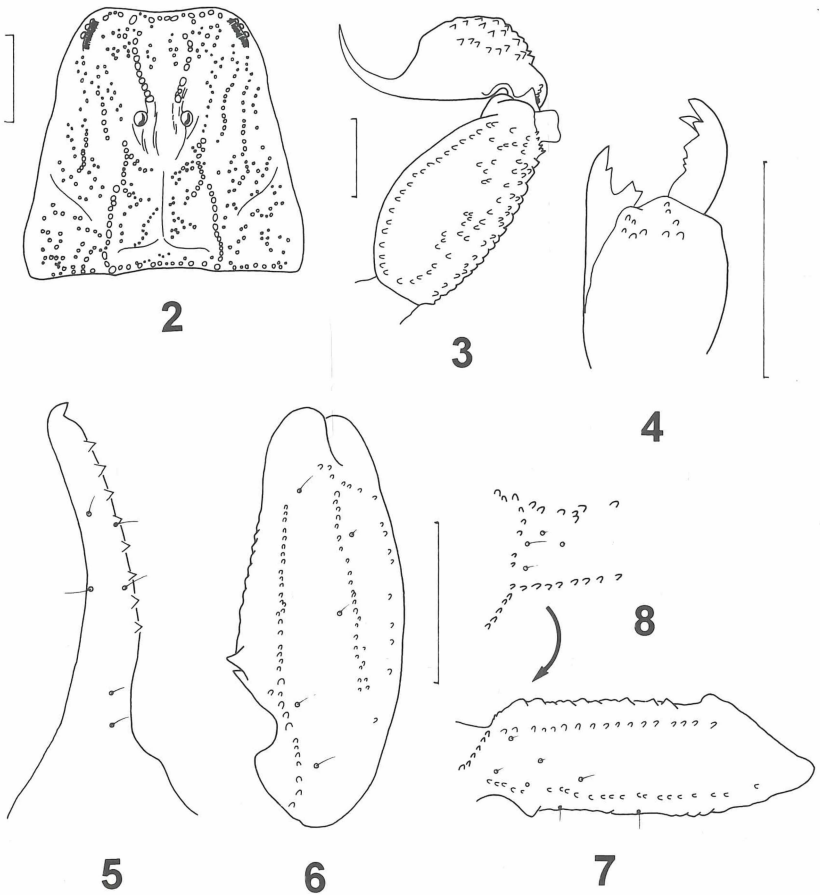
**TYPE MATERIAL:** holotype (♂), five paratypes (3 ♂, 2 ♀). Chad, South of Tibesti, NE Sherda-Zouar (steppe formation), 7 April 1968, coll. P. M. Brignoli. Holotype and 3 paratypes deposited in the Zoologisches Museum Hamburg [ZMH Acc. No. A36/04 (holotype); A37/04 (paratypes)]. Two paratypes in the Muséum National d'Histoire Naturelle, Paris.

**ETYMOLOGY:** The patronym in honour of Dr. Luis E. Acosta of the University of Cordoba, Argentina, for his contribution to the study of scorpions.

**DIAGNOSIS:** Scorpions of small to moderate size, males reaching 45 and females 51 mm in total length. General coloration yellowish with some slightly darker zones on female tergites. Carinae and granulations strongly marked on carapace, tergites and metasomal segments. Pectinal tooth count 22-23 in males and 19-20 in females. Trichobothrial pattern of type A, orthobothriotaxic; dorsal trichobothria of femur arranged in  $\beta$  (beta) configuration (Vachon 1974, 1975).

Description [based on holotype (♂) and one paratype (♀); measurements in Table I].

**Coloration.** Basically reddish-yellow with some slightly darker zones on female tergites. Prosoma: carapace reddish-yellow, with darker carinae; eyes surrounded by black pigment. Mesosoma: yellowish in males and with very light gray confluent spots over tergites I to VII in females. Meta-soma: segments I to V and telson yellowish in males, reddish-yellow in females; aculeus reddish in both sexes. Venter pale-yellow, except for the carinae of sternite VII which is dark reddish in females. Chelicerae yellowish without any variegated spots; fingers yellowish with reddish teeth. Pedipalps yellowish chela fingers with the oblique rows of granules reddish. Legs yellowish without spots.



**Figs 2-8.** *Hottentotta acostai* sp. n., holotype ♂ and paratype ♀: **2** - carapace (♀); **3** - metasomal segment V and telson, lateral aspect (♂); **4** - chelicera (♀); trichobothrial pattern (Figs 5-8, ♂): **5** - Movable finger of chela, dorso-external aspect; **6** - patella, dorsal aspect; **7+8** - femur, dorsal and internal aspect (scale bar = 2 mm).



**Fig. 9.** The type locality of *Hottentotta acostai* sp. n. (black circle with white star), and that of *H. occidentalis* (Vachon & Stockmann) (black circle: the vicinity of Fort Lamy) in Chad.

**MORPHOLOGY.** *P r o s o m a*: Carapace strongly granular; anterior margin with a weak median concavity; carinae strong; anterior median, central median and posterior median carinae strongly granular; furrows moderate to weak. Median ocular tubercle anterior to the centre of carapace in males; more central in females; median eyes small, separated by almost two ocular diameters; three pairs of lateral eyes. Sternum subtriangular and wide at the base; longer than wide. *M e s o s o m a*: tergites moderately to strongly granular; three longitudinal carinae strongly crenulate in all tergites; tergite VII pentacarinata. *V e n t e r*: genital operculum divided longitudinally; each plate with a semi-oval shape. Pectines: pectinal tooth count 23-22 in the male holotype and 20-20 in the female paratype; middle basal lamella of the pectines not dilated. Sternites smooth with moderately elongated spiracles; four weak carinae on male sternite VII, more marked in female; other sternites without carinae, with only two weak furrows. *M e t a s o m a*: male with 10 moderately crenulate carinae on segments I to III; segment IV with 8 moderately crenulate carinae; segment V with 5 moderately crenulate carinae; females with 10 carinae on segments I to IV; crenulate; segment V with 5 crenulate carinae; lateral inframedian carina incomplete on segment IV; all segments with a smooth dorsal depression. Intercarinal spaces weakly granular in males, moderately granular in females. Telson smooth dorsally and granular latero-ventrally, with a moderately short and curved aculeus; subaculear tooth vestigial. *C h e l i c e r a e*: Cheliceral dentition as defined by Vachon (1963) for the family Buthidae; movable finger with the external distal tooth slightly shorter than the internal distal tooth, and the basal teeth strongly reduced; ventral aspect of both finger and manus covered with setae. *P e d i p a l p s*: femur pentacarinata; patella with seven weakly marked carinae; chela smooth without carinae; tegument from weakly granular to almost smooth. Fixed and movable fingers with 12 oblique rows of granules in males and 12/13 granules in females; internal and external accessory granules present; distal extremity of movable fingers with three granules. *L e g s*: tarsus ventrally with two longitudinal rows of 6/8 spines. Tibial spurs present on legs III and IV; prolateral and retrolateral spurs present in all legs. Trichobothriotaxy: trichobothrial pattern of Type A, orthobothriotic as defined by Vachon (1974). Dorsal trichobothria of femur arranged in  $\beta$  (beta) configuration (Vachon 1975).

**REMARKS:** *Hottentotta acostai* sp. n. is undoubtedly associated with the *Hottentotta minax* (L. Koch, 1875) group of species. It can, however, be distinguished from other species of this group, and in particular from *Hottentotta occidentalis* (Vachon & Stockmann, 1968) by: 1), smaller size (45 and 51 mm in total length against 58 and 65 mm for *H. occidentalis*); 2), much more pale coloration; 3), more marked granulation on carapace and tergites; 4), pectinal tooth counts in the new species disclose a smaller number of teeth than are found in *H. occidentalis*; 22-23 and 19-20 in males and females against 24-26 and 21-24.

**Table I.** Morphometric values (in mm) of the holotype and paratype of *Hottentotta acostai* sp. n.

	Holotype (♂)	Paratype (♀)
Total length	44.3	50.4
Carapace:		
- length	5.1	6.2
- anterior width	3.4	4.3
- posterior width	5.8	7.3
Metasomal segment I:		
- length	3.4	3.6
- width	3.8	4.6
Metasomal segment V:		
- length	6.1	6.8
- width	3.3	3.9
- depth	3.2	3.6
Vesicle:		
- width	2.8	3.2
- depth	2.2	2.7
Pedipalp:		
- femur length	4.7	5.3
- femur width	1.4	1.8
- patella length	5.3	6.3
- patella width	2.1	2.6
- chela length	9.2	10.3
- chela width	2.6	3.1
- chela depth	2.7	2.9
Movable finger: length	5.7	6.3

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Author's address:

DR. W. R. LOURENÇO, Département de Systématique et Evolution, USM 0602, Section Arthropodes (Arachnologie), Muséum National d'Histoire Naturelle, CP 053, 61 rue Buffon, 75005 Paris, France (e-mail: arachne@mnhn.fr).



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