

Two new species of *Compsobuthus* Vachon (Scorpiones, Buthidae) from Africa

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(With 17 figures)

Abstract

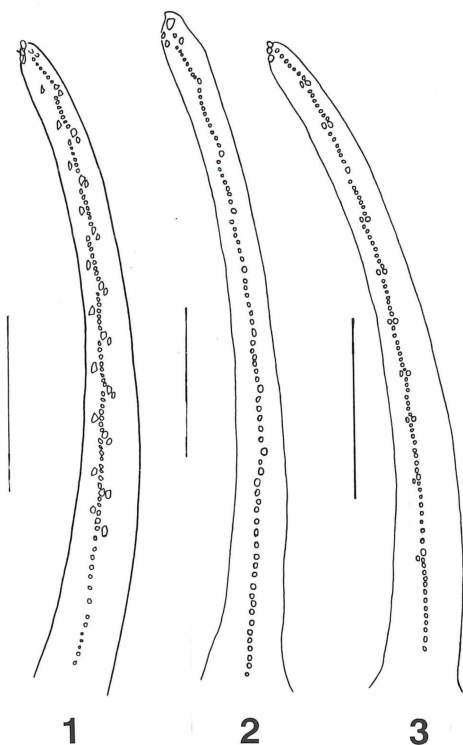
Two new species of *Compsobuthus* Vachon, 1949 are described from Africa: *Compsobuthus williamsi* sp. n. from between Erfoud and Ouarzazate (30° 42' N + 5° 48' W) in Morocco and *Compsobuthus simoni* sp. n. from Birni Nkonn in Niger. Until now only one species, *Compsobuthus berlandi* Vachon, 1950, has been described from the Central-West region of Africa.

Introduction

In his monographic work dealing mainly with the scorpions of North Africa, Vachon (1949) revised the relationships of several species included in the genus *Buthus* Leach 1815, and proposed a number of new genera, including *Compsobuthus* Vachon, 1949 for the species associated with *Buthus acutecarinatus* Simon, 1949. In subsequent years, other species have been added to that genus. A more detailed synthesis was proposed by Vachon (1952).

The exact composition of the genus *Compsobuthus* remains uncertain. Sissom (1990) proposed 12 species to be included in the genus, with a geographic distribution ranging from northern Africa to the Middle East and India. More recently Sissom (1994) revised the taxonomic positions of *Compsobuthus acutecarinatus* (Simon), *Compsobuthus brevimanus* (Werner, 1936), *Compsobuthus wernerii wernerii* (Birula, 1908), and described the new species *Compsobuthus vachoni*. He also discussed a supplementary unnamed subspecies of *Compsobuthus wernerii*, thereby attesting to the problematical status of the species and subspecies within this genus.

Recently, Sissom & Fet (1998) redescribed *Compsobuthus mattiensi* and in another paper by Lourenço & Monod (1998) *Compsobuthus rugosulus* (Pocock, 1900) from India and Pakistan was accepted as a valid species and a precise redescription was made, based on topotypes. Two new species are here described from the Afrotropical Region.



Figs 1-3. Distribution of granulation over the dentate margins of pedipalp-chela fingers: **1** - *Compsobuthus rugosulus* (Pocock) (♀); **2** - *Compsobuthus williamsi* sp. n. (♂); **3** - *Compsobuthus simoni* sp. n. (♀) (scale bar 1 mm).

Taxonomic position of the two new species

In his revision of North African scorpions, Vachon (1952) states that within the genus *Compsobuthus* two groups of species are clearly defined, based on the disposition and structure of the granulations over the dentate margins of the pedipalp-chela fingers. In the first group, in which *Compsobuthus werneri* (Birula) is placed, the dentate margins of the pedipalp-chela fingers present external accessory granules. In the second group composed of species such as *Compsobuthus acutecarinatus* (Simon) and *Compsobuthus maindroni* (Kraepelin, 1901) these external accessory granules are absent. In the key proposed for the African species of *Compsobuthus*, Vachon (1952) indicated the following diagnostic characters in the two species cited : (i) the presence of external accessory granules (= *Compsobuthus werneri*), (ii) the absence of external accessory granules (= *Compsobuthus berlandi* Vachon).

The two new species described here, present different dispositions and structures for the granulations over the dentate margins of the pedipalp-chela fingers (Figs. 1 to 3). In *Compsobuthus williamsi* n. sp., the dentate margins of pedipalp-chela fingers lack both external and internal accessory granules (Fig. 2). In *Compsobuthus simoni* n. sp., these accessory granules are very much reduced. They are almost vestigial and are present only on the internal aspect of the pedipalp-chela fingers (Fig. 3).

Description

Compsobuthus williamsi sp. n. (Figs 2, 4-9, 17)

TYPE MATERIAL. Holotype male, Morocco, between Erfoud and Ouarzazate (30° 42' N + 5° 48' W), 28 March 1972. G. Etienne leg. Deposited in the Zoologisches Museum Hamburg (ZMH Reg. No. A85/99).

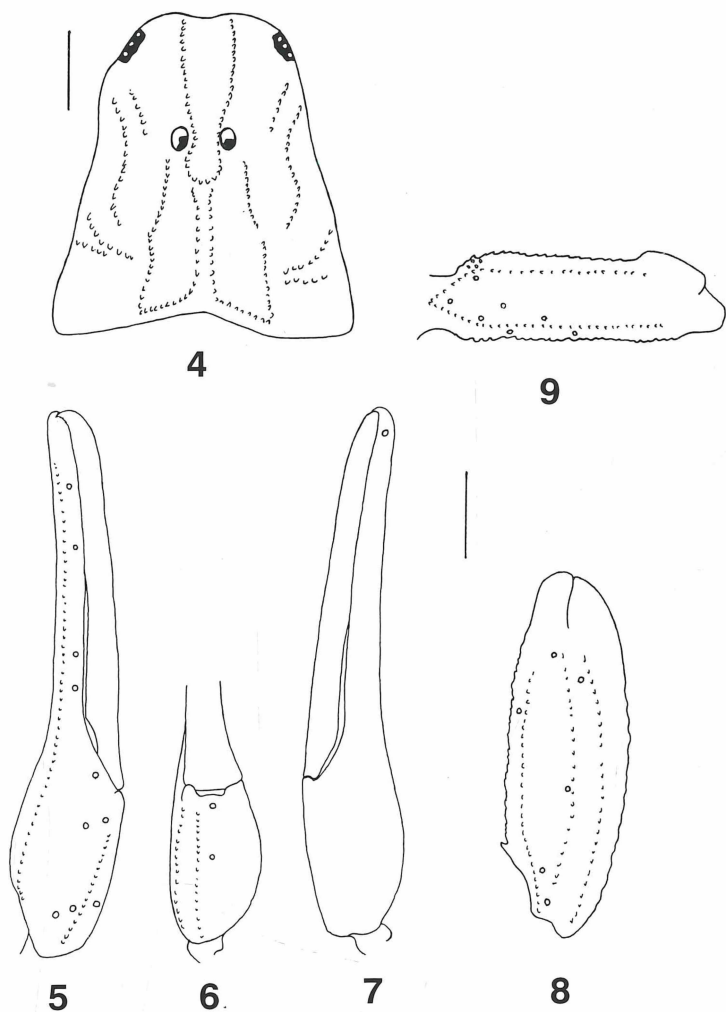
Paratype: male, same locality data, housed in ZMH (No. A86/99)

ETYMOLOGY: Patronym in honor of Dr. Stanley C. Williams, the San Francisco State University, for his important contribution to the taxonomy of scorpions.

Description (based on male holotype). Morphometric measurements in Table 1.

Coloration. Basically yellowish with reddish zones over the carapace and tergite keels. Prosoma: carapace yellowish with reddish areas over the keels; eyes surrounded by black pigment. Mesosoma: yellowish with two longitudinal reddish-yellow areas over longitudinal keels. Metasoma: segments I to V yellowish. Vesicle yellowish; aculeus yellowish at its base and reddish on its extremity. Venter yellowish. Chelicerae yellowish; fingers reddish. Pedipalps: globally yellowish; chela with some reddish yellow areas on the articulations. Legs yellowish.

Morphology. Carapace moderately granular; anterior margin with a feeble concavity. Anterior and posterior ocular keels moderate to strong; furrows moderate to feeble. Median ocular tubercle anterior to the center; median eyes separated by one and a half ocular diameters. Three pairs of lateral eyes. Sternum triangular. Mesosoma: tergites with moderate granulations. Median keel strong in all tergites. Two latero-longitudinal keels arising after the posterior ocular keel of the carapace, strong in all tergites. Tergite VII pentacarinata; all keels strong. Venter: genital operculum divided longitudinally. Pectines: pectinal tooth count 22-22; basal middle lamellae of each pecten not dilated. Sternites feebly granular, almost smooth with moderately elongated stigmata; two feeble longitudinal keels on each sternite; VII with four keels. Metasoma: segments I to III with 10 keels, crenulate; segment IV with 8 keels, crenulate; segment V with 5 keels; the ventral one with spinoid granules posteriorly. Tegument moderately to feebly granular. Telson almost smooth, with a short and moderately curved aculeus. Subaculear tooth absent. Cheliceral dentition characteristic of the family Buthidae (Vachon 1963); ventrum of both finger and manus covered with dense setae. Pedipalps: femur pentacarinata, crenulate; tibia with 7 keels; chelae with



Figs 4-9. *Compsobuthus williamsi* sp. n. (holotype ♂): **4** - carapace. **5-7** - chela, dorso-external, ventral and internal view; **8** - tibia, dorsal view; **9** - femur, dorsal view (scale bar 1 mm).

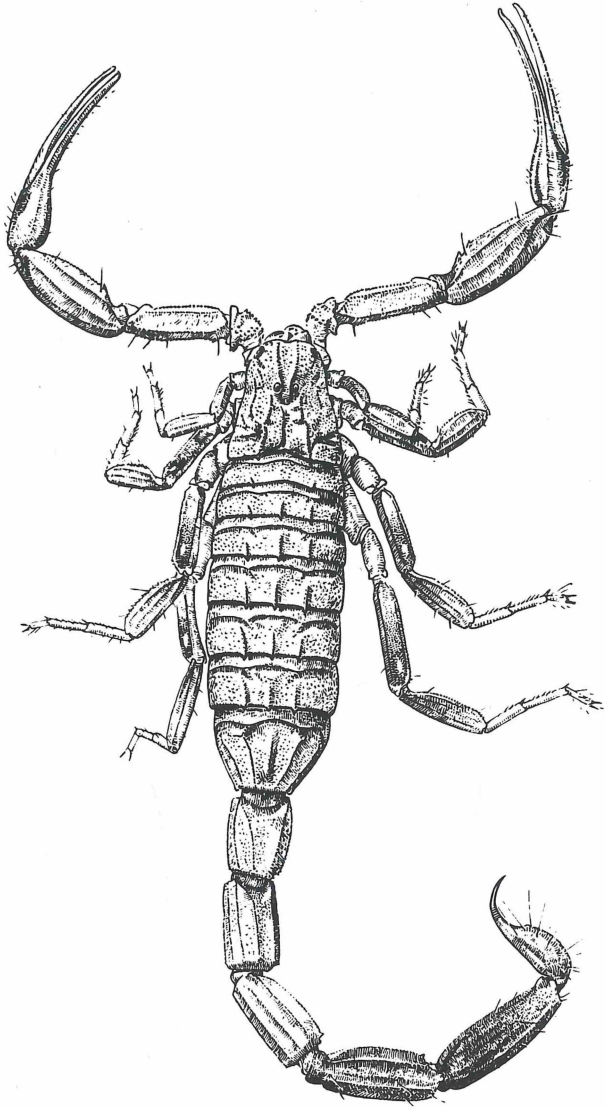
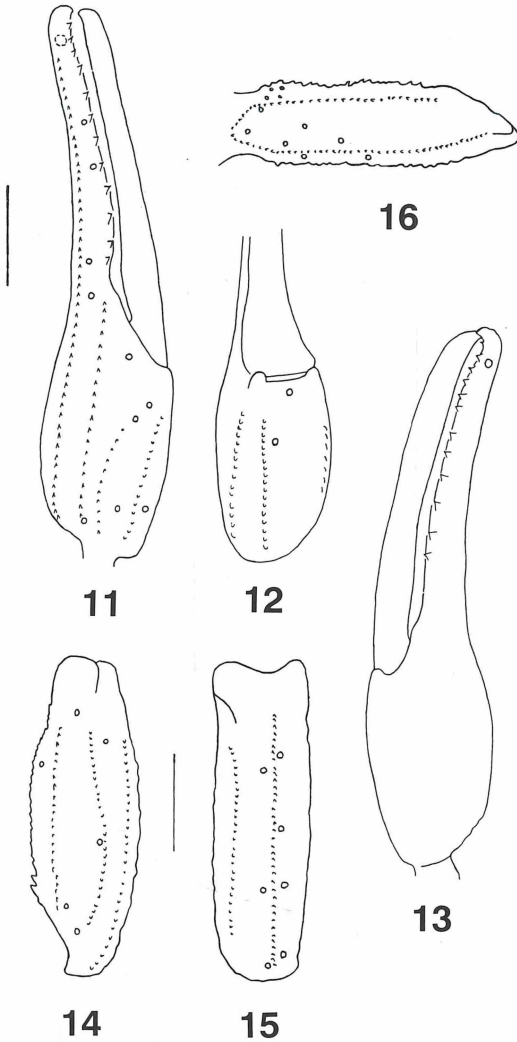


Fig. 10. *Compsobuthus simoni* sp. n., habitus (holotype ♀).



Figs 11-16. *Compsobuthus simoni* sp. n. (holotype ♀): **11-13** - chela, dorso-external, ventral and internal view; **14-15** - tibia, dorsal and external view; **16** - femur, dorsal view (scale bar 1 mm).

7/8 keels feeble to vestigial; all faces feebly granular. Movable fingers with 9 almost linear rows of granules, without internal or external accessory granules. Trichobothriotaxy; $A-\beta$, orthobothriotaxy (Vachon 1973, 1975). Legs: tarsi with some fine setae ventrally. Tibial and pedal spurs present, but moderate in legs III and IV.

P a r a t y p e male (badly preserved): pectinal tooth count 24-23.

Compsobuthus simoni sp. n.

(Figs 3, 10, 11-16, 17)

TYPE MATERIAL. H o l o t y p e female, Niger, Birni Nkonni, (under stones); 9 February 1980, M. Thoniy leg. Deposited in the Zoologisches Museum Hamburg (ZMH Reg. No. A87/99).

P a r a t y p e: female, same data as for the holotype, lodged in ZMH (No. A88/99).

ETYMOLOGY: Patronym in honor of Eugène Simon, for his enormous contribution to the study of Arachnida.

D e s c r i p t i o n (based on female holotype). Morphometric measurements in Table 1.

C o l o r a t i o n. Basically yellowish with some darker reddish areas on the carapace keels, and pale brown zones on metasomal segments IV and V. Prosoma: carapace yellowish with reddish areas over the keels; eyes surrounded by black pigment. Mesosoma. Metasoma: segments I to V yellowish, with pale brown spots present on segments IV and V, more marked on V. Vesicle yellowish; aculeus yellowish at the base and reddish at the extremity. Venter yellowish. Chelicerae yellowish; fingers reddish. Pedipalps: globally yellowish; chela with some reddish yellow areas on the articulations. Legs yellowish.

M o r p h o l o g y. Carapace moderately granular; anterior margin with a feeble concavity. Anterior and posterior ocular keels strong; furrows moderate to feeble. Median ocular tubercle anterior to the center; median eyes separated by one ocular diameter. Three pairs of lateral eyes. Sternum subtriangular. Mesosoma: tergites with moderate to strong granulations. Median keel strong in all tergites. Two latero-longitudinal keels arising after the posterior ocular keel of the carapace, very strong in all tergites. Tergite VII pentacarinat; all keels strong. Venter: genital operculum divided longitudinally. Pectines: pectinal tooth count 17-17; basal middle lamellae of each pecten not dilated. Sternites feebly granular, almost smooth with moderately elongated stigmata; two very feeble longitudinal keels on each sternite; VII with four keels. Metasoma: segments I and II with 10 keels, crenulate; segments III and IV with 8 keels, crenulate; segment V with 5 keels. Tegument moderately granular. Telson almost smooth, with a median and moderately curved aculeus. Subaculear tooth absent, with only a vestigial granule present. Cheliceral dentition characteristic of the family Buthidae (Vachon 1963); ventral aspect of both finger and manus with dense setae. Pedipalps: femur pentacarinat, crenulate; tibia with 7 keels; chelae with 7/8 keels somewhat vestigial;

Table I. Morphometric values (in mm) of holotypes of new *Compsobuthus* species

	<i>C. williamsi</i> sp. n.	<i>C. simoni</i> sp. n.
Carapace:		
- length	3,8	3,2
- anterior width	2,2	2,1
- posterior width	3,6	3,4
Metasomal segment I:		
- length	3,5	2,0
- width	2,2	1,9
Metasomal segment V:		
- length	5,7	3,4
- width	1,4	1,3
- depth	1,5	1,2
Vesicle:		
- width	1,4	1,3
- depth	1,3	1,0
Pedipalp:		
- Femur length	3,6	2,8
- Femur width	1,0	0,9
- Tibia length	4,2	3,3
- Tibia width	1,3	1,3
- Chelae length	6,7	5,5
- Chelae width	1,1	1,2
- Chelae depth	1,0	1,0
Movable finger:		
- length	4,7	3,8

all faces moderately granular. Movable fingers with 10/11 almost oblique rows of granules, with only some vestigial internal accessory granules. Trichobothriotaxy: $A-\beta$, orthobothriotaxy (Vachon 1973, 1975). Legs: tarsi with a few fine setae ventrally. Tibial and pedal spurs present, moderate to strong on legs III and IV.

Paratype (female): pectinal tooth count 18-20.

Acknowledgements

I am very grateful to M. Gaillard, Laboratoire de Zoologie Arthropodes, for preparing some illustrations, and to Prof. John L. Cloudsley-Thompson, formerly of the University College, London, for reviewing the manuscript.

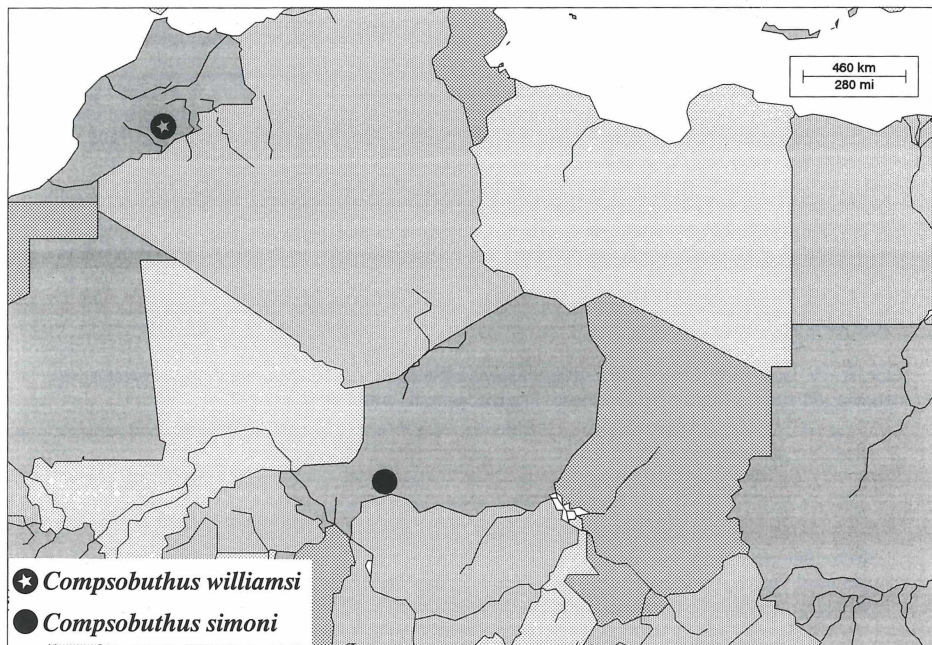


Fig. 17. Type localities of *Compsobuthus williamsi* sp. n. and *C. simoni* sp. n.

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Jahr/Year: 1999

Band/Volume: [13](#)

Autor(en)/Author(s): Lourenco Wilson R.

Artikel/Article: [Two new species of Compsobuthus Vachon \(Scorpiones, Buthidae\) from Africa 85-94](#)