ENTOMOLOGISCHE MITTEILUNGEN
aus dem
Z643 Zoologischen Museum Hamburg

HERAUSGEBER: PROF. DR. H. STRÜMPEL, DR. G. RACK,
DR. H. DASTYCH, PROF. DR. R. ABRAHAM
SCHRIFTLEITUNG: DR. H. DASTYCH

ISSN 0044-5223 Hamburg

14. Band 15. Oktober 2005 Nr. 172

# A new species of the genus *Buthus* Leach, 1815 (Scorpiones, Buthidae) from Senegal and Niger in Western Africa



WILSON R. LOURENÇO

(With 8 figures)

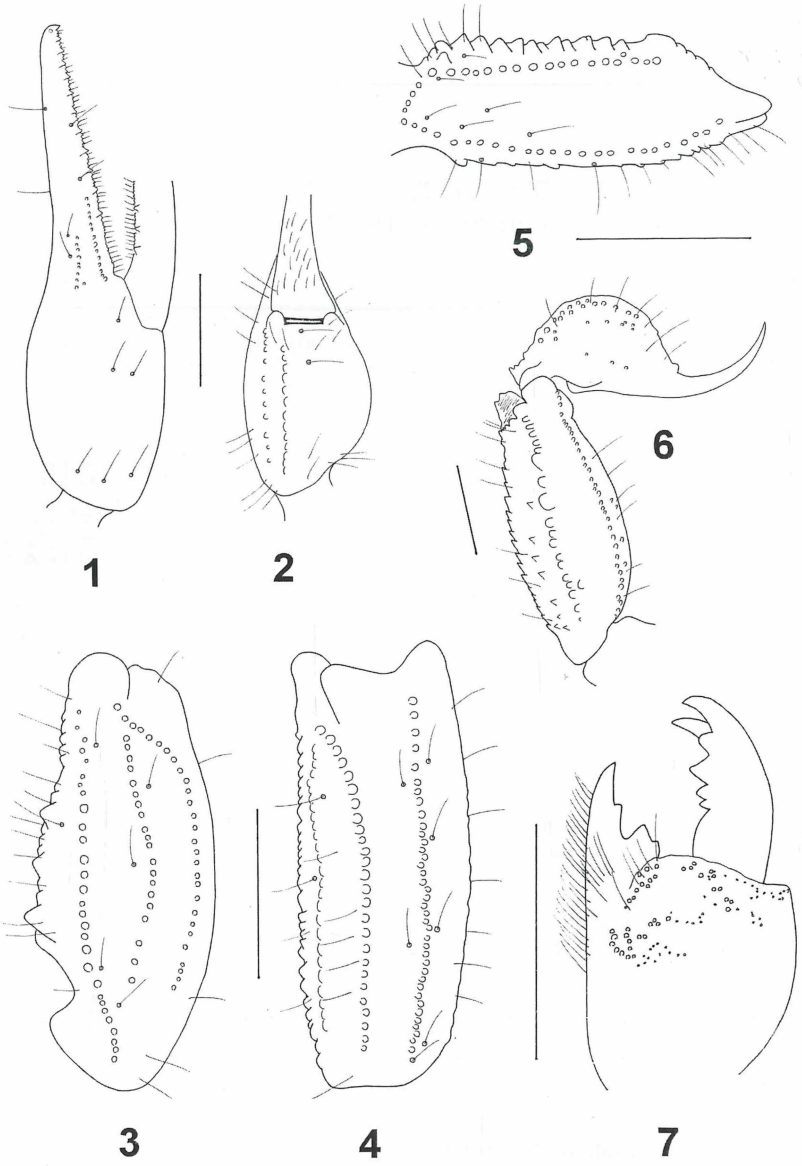
## Abstract

A new species belonging to the genus *Buthus* Leach (Scorpiones, Buthidae) is described from Senegal and Niger in Western Africa. The new species belongs to the "*Buthus occitanus*" complex, and can be associated with the subspecies of *Buthus occitanus* (Amoreux, 1789) from the French Occidental Africa (AOF). This subspecies is not precisely defined by Vachon. With the description of *Buthus elhennawyi* sp. n., the status of one more population of *Buthus* spp. from Western Africa is partly clarified.

K e y w o r d s: Scorpion, *Buthus*, new species, Western Africa, Senegal, Niger.

## Introduction

In a number of previous publications, attempts have been made to clarify the status of the different populations of *Buthus* that occur in northern and western Africa. For details about the history of the study of the genus *Buthus*, refer to Lourenço (2002, 2003, 2005) and Lourenço & Slimani (2004). These studies led to the description of several new species and the elevation of some subspecies to the species rank. Although these contributions clarified the status of several species of the "*Buthus occitanus*" complex, particularly those from Morocco, that of others remains




**Figs 1-7**. *Buthus elhennawyi* sp. n. (trichobothrial pattern of male holotype, Figs 1-5): **1+2** – chela, dorso-external and ventral aspects; **3,4** – patella, dorsal and external aspects; **5** – femur, dorsal aspect; **6** – metasomal segment V and telson, lateral aspect; **7** – chelicera, dorsal aspect (scale bar = 2 mm).

confused. This is the case with certain *Buthus* populations from Western Africa which are distributed mainly over the area between Senegal and Niger. Vachon (1949, 1952) refered to these populations as '*Buthus occitanus*' without any reference to subspecies. The material which was studied by Vachon is still available in the Natural History Museum in Paris, but it is very limited and poorly preserved. For this reason, I did not reach any conclusion concerning these populations in previous publications (Lourenço 2002, 2003). More recently, however (Lourenço 2005), the study of some well preserved specimens of *Buthus* from Guinea, and Senegal have justified the description of one new species, *Buthus elizabethae* Lourenço, 2005. This new species is not, however, associated with *Buthus occitanus* (Amoreux, 1789) as it was suggested by Vachon (1949, 1952), but rather with *Buthus atlantis* Pocock, 1889, a species known only from the south of Morocco. Apparently the populations of *Buthus* distributed in the coastal regions of Western Africa, from Morocco to Senegal and Guinea belong to a complex of species associated with *B. atlantis*. The recent description of *Buthus bonito* Lourenço & Geniez, 2005 from the extreme south of Morocco (l.c. 2005), a species possibly also present in Mauritania, adds further evidence for this pattern of distribution. With the description of *B. elizabethae* which is distributed in the savannas of Guinea and Senegal, the status of at least one population from Western Africa was clarified. However, in my recent publication (Lourenço 2005) I stated that further studies would be necessary in order to clarify the taxonomic position of the *Buthus* populations that are distributed further to the East, mainly in Niger and Côte d'Ivoire. So far, the study of two specimens of *Buthus*, one from the north of Senegal and the second from Niger, have led to the description of a new species, *Buthus elhennawyi* sp. n. presented in this paper. The new species can be associated with the "*Buthus occitanus*" complex, and clearly corresponds to the form previously defined by Vachon (1949, 1952) from the French Occidental Africa.

## Description

### *Buthus elhennawyi* sp. n.
(Figs. 1-7)

TYPE MATERIAL: H o l o t y p e (♂) Senegal, Ferlo, Félé-Olé, 23 June 1981, coll. P. M. Brignoli. Deposited in the Zoologisches Museum Hamburg, Germany (ZMH Acc. No. A42/05). P a r a t y p e (♂): Niger, Rosi (Rossi), 100 km SE Niamey, 12 May 1980, coll. P. M. Brignoli. Deposited in the Muséum National d´Histoire Naturelle, Paris, France.

ETYMOLOGY: The patronym in honor of Dr. HISHAM K. EL-HENNAWY, Cairo, Egypt, in recognition of his contribution to the study of North African scorpions.

DIAGNOSIS: Scorpions of small to medium size, reaching a total length of 45 mm (42 mm according to Vachon 1952). General coloration yellowish apart from slightly reddish zones over the carinae and the granulations on the body and appendages. Venter pale yellow, pedipalps and legs yellowish. Carinae and granulations strongly marked on carapace,

tergites and metasomal segments. Fixed and movable fingers with 11 to 12 rows of granules. Pectines with 30 to 31 teeth in males. Male pectines strongly overlapping in their proximal region.

DESCRIPTION based on male holotype. Measurements in Table 1.

**Table 1**. Morphometric values (in mm) of the male holotypes of *Buthus elhennawyi* sp. n. and *Buthus elizabethae* Lourenço.

| | ***B. elhennawyi* sp. n.** | *B. elizabethae* |
|---|---|---|
| Total length | 45.1 | 56.2 |
| Carapace: | | |
| - length | 5.5 | 7.6 |
| - anterior width | 3.8 | 5.3 |
| - posterior width | 6.2 | 8.6 |
| Metasomal segment I: | | |
| - length | 4.3 | 5.2 |
| - width | 4.0 | 5.2 |
| Metasomal segment V: | | |
| - length | 6.4 | 8.2 |
| - width | 3.3 | 4.3 |
| - depth | 3.8 | 3.7 |
| Vesicle: | | |
| - width | 2.6 | 3.2 |
| - depth | 2.4 | 2.8 |
| Pedipalp: | | |
| - femur length | 4.4 | 5.8 |
| - femur width | 1.5 | 2.1 |
| - patella length | 5.2 | 6.9 |
| - patella width | 2.2 | 2.9 |
| - chela length | 8.9 | 11.8 |
| - chela width | 2.3 | 3.2 |
| - chela depth | 2.4 | 3.2 |
| Movable finger: length | 6.2 | 8.2 |

C o l o r a t i o n. Basically yellowish apart from some slightly reddish zones on the carinae and the granulations on the body and its appendages. P r o s o m a: carapace yellowish with carinae slightly reddish; eyes surrounded by black pigment. M e s o s o m a: tergites yellowish with the carinae and especially the granulations slightly reddish. M e t a s o m a: all segments and vesicle yellowish; carinae reddish; aculeus yellowish at its base and dark reddish at its extremity. Venter pale yellow. Chelicerae yellowish without any variegated spots; fingers yellowish with reddish teeth. Pedipalps: yellowish with carinae slightly reddish; chela fingers with the oblique rows of granules reddish. Legs yellowish without any spots.

MORPHOLOGY. P r o s o m a: Carapace strongly granular; anterior margin almost straight. Carinae strongly marked; anterior median, central median and posterior median carinae strongly granular; 'lyre' configuration well marked. All furrows moderate to strong. Median ocular tubercle slightly anterior to the centre of carapace. Eyes separated by almost three ocular diameters. Four pairs of lateral eyes: the first three of moderate size, the last one only vestigial. Sternum triangular, wider than long. M e s o s o m a: tergites with strong and intense granulation. Three longitudinal carinae strongly crenulate in all tergites; lateral carinae reduced in tergite I. Tergite VII pentacarinate. Venter: genital operculum divided longitudinally and formed by two semi triangular plates. Pectines: pectinal tooth count 31-31; middle basal lamella of the pectines not dilated; pectines strongly overlapping in their proximal region. Sternites smooth, with elongated spiracles; four carinae on sternite VII; other sternites without carinae and with two moderately marked furrows. M e t a s o m a: segments I to III with 10 crenulated carinae; segment IV with 8 carinae, crenulated; ventral more strongly marked on segments II to IV; segment V with five carinae; the ventrolateral carinae crenulate with 2-3 lobate denticles posteriorly; ventral median carina only slightly divided posteriorly; anal arc composed of 8-9 ventral teeth, and two lateral lobes. All segments with a smooth dorsal depression; intercarinal spaces weakly granular, except for the ventral aspect of segment V which presents a thin intense granulation. Telson with some granulations on the lateral and ventral surfaces; aculeus strongly curved, slightly shorter than the vesicle; one vestigial subaculear tooth. C h e l i c e r a l dentition as defined by Vachon (1963) for the family Buthidae; external distal and internal distal denticles of approximately the same length; basal denticles of movable finger small but well distinct; ventral aspect of both fingers and manus covered with long dense setae. P e d i p a l p s: femur pentacarinate; patella with eight carinae; chela smooth with only vestigial carinae; all faces weakly granular to smooth. Fixed and movable fingers with 12-12 oblique rows of granules. Internal and external accessory granules present and moderate; three accessory granules on the distal end of movable finger next to the terminal denticle. Legs: tarsus with two longitudinal rows of 6-7 long setae ventrally; tibial spur strong on legs III and IV; prolateral spurs moderate to strong on legs I to IV. T r i c h o b o t h r i o t a x y: trichobothrial pattern of Type *A*, orthobothriotaxic as defined by Vachon (1974). Dorsal trichobothria of femur arranged in *â*-configuration (Vachon 1975).

REMARKS: *Buthus elhennawyi* sp. n. can be associated with the "*Buthus occitanus*" complex. It can be distinguished from other species of *Buthus* and in particular from *B. elizabethae*, the other *Buthus* species distributed in the same geographical region, by the following characters: (i) Much smaller size, and different morphometric values (see Table 1); (ii) the male pectines in *B. elizabethae* do not overlap in their proximal region, whereas they overlap strongly in males of the new species, (iii) carinae and granulations are more strongly marked in the new species.

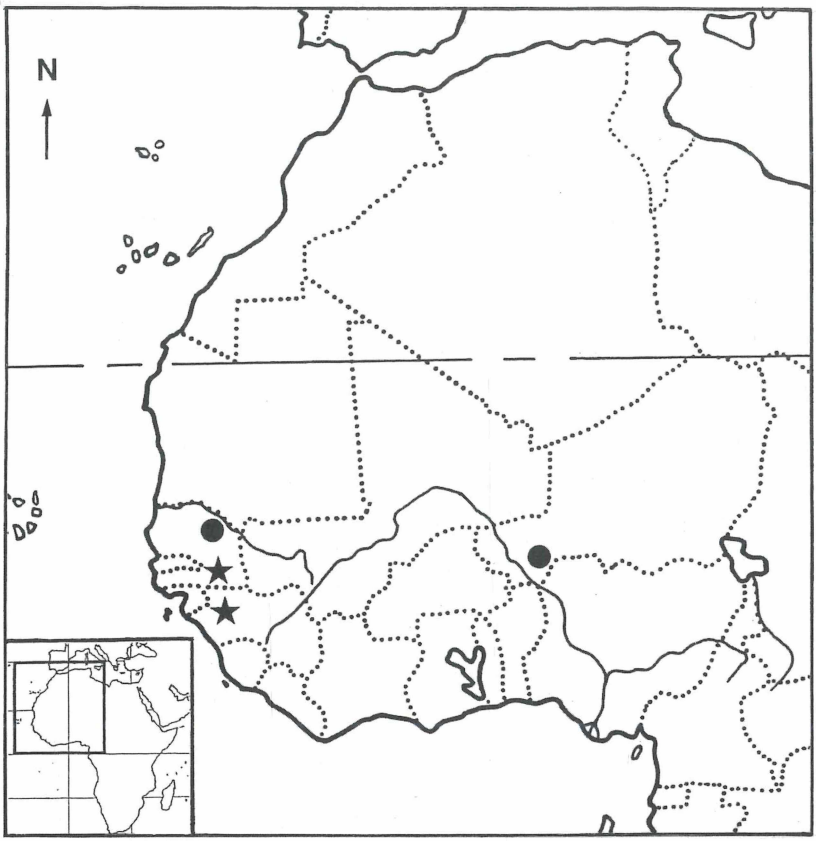



**Fig. 8**. Localities of *Buthus elhennawyi* sp. n. (black circle) and *Buthus elizabethae* Lourenço (black star).

## Acknowledgements

I am most grateful to Prof. John L. Cloudsley-Thomspon, London, for reviewing the manuscript.

## References

Lourenço, W. R., 2002: Considérations sur les modèles de distribution et différentiation du genre *Buthus* Leach, 1815, avec la description d'une nouvelle espèce des montagnes du Tassili des Ajjer, Algérie (Scorpiones, Buthidae). – Biogeographica, **78** (3): 109-127. Paris.

Lourenço, W. R., 2003: Compléments à la faune de scorpions (Arachnida) de l'Afrique du Nord, avec des considérations sur le genre *Buthus* Leach, 1815. – Rev. suisse Zool., **110** (4): 875-912. Geneva.

Lourenço, W. R., 2005: Description of a new scorpion species of the genus *Buthus* Leach, 1815 (Scorpiones, Buthidae) from Guinea and Senegal in Western Africa. – Entomol. Mitt. Zool. Mus. Hamburg, **14** (171): 229-235. Hamburg.

Lourenço, W. R. & Geniez, P., 2005: A new scorpion species of the genus *Buthus* Leach, 1815 (Scorpiones, Buthidae) from Morocco. – Euscorpius, **19**: 1-6. Huntington, West Virginia.

Lourenço, W. R. & Slimani, T., 2004: Description of a new scorpion species of the genus *Buthus* Leach, 1815 (Scorpiones, Buthidae) from Morocco. – Entomol. Mitt. Zool. Mus. Hamburg, **14** (169): 165-170. Hamburg.

Vachon, M., 1949: Etudes sur les Scorpions. III (suite). Description des Scorpions du Nord de l'Afrique. – Arch. 'Institut Pasteur d'Algérie, **27** (4): 334-396. Alger.

Vachon, M., 1952: Etudes sur les scorpions. – Publications de l'Institut Pasteur d'Algérie, 482pp. Alger.

Vachon, M., 1963: De l'utilité, en systématique, d'une nomenclature des dents des chélicères chez les Scorpions. – Bull. Mus. natn. Hist. nat., 2e sér., **35** (2): 161-166. Paris.

Vachon, M., 1974: Etude des caractères utilisés pour classer les familles et les genres de Scorpions (Arachnides). 1. La trichobothriotaxie en arachnologie. Sigles trichobothriaux et types de trichobothriotaxie chez les Scorpions. – Bull. Mus. natn. Hist. nat., 3e sér., **140**, Zool. 104: 857-958. Paris.

Vachon, M., 1975: Sur l'utilisation de la trichobothriotaxie du bras des pédipalpes des Scorpions (Arachnides) dans le classement des genres de la famille des Buthidae Simon. – C. R. Acad. Sci., sér. D, **281**: 1597-1599. Paris.

## 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).