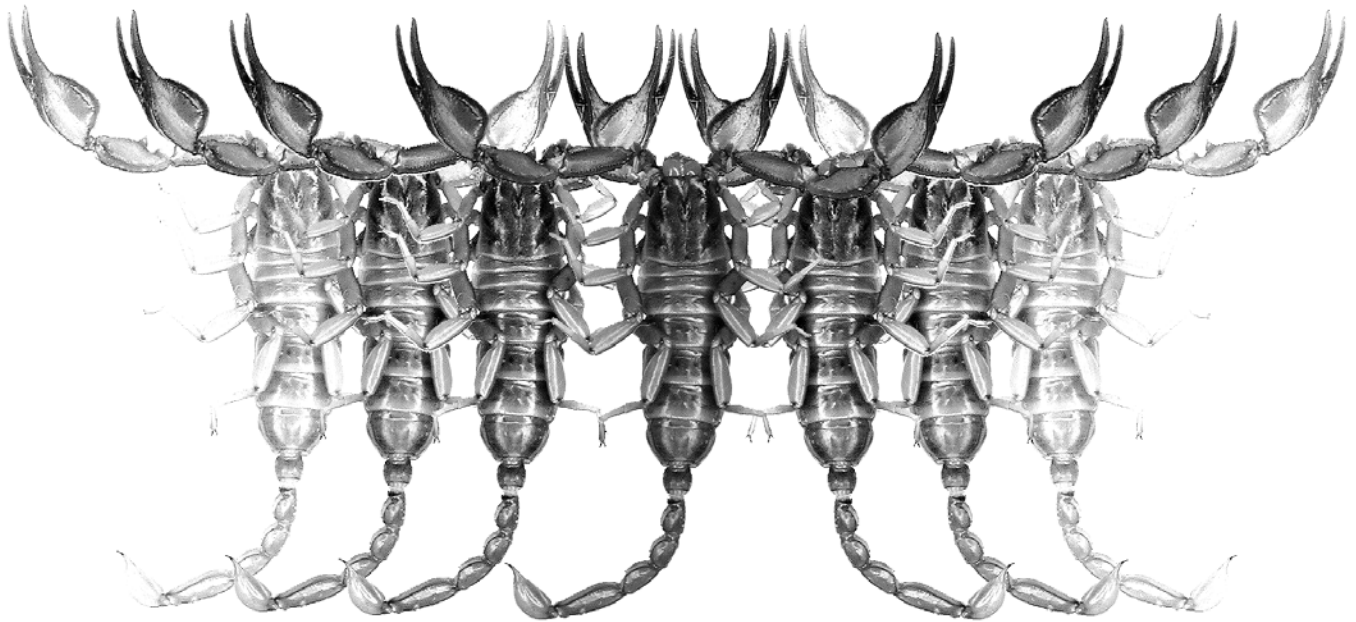


# *Euscorpius*

Occasional Publications in Scorpiology



**A New Species of the Genus *Buthus* (Scorpiones: Buthidae)  
from Northern Cameroon**

**Wilson R. Lourenço & Elise-Anne Leguin**

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# *Euscorpius*

## Occasional Publications in Scorpiology

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- **ZISP**, Zoological Institute, Russian Academy of Sciences, St. Petersburg, Russia
- **WAM**, Western Australian Museum, Perth, Australia
- **NTNU**, Norwegian University of Science and Technology, Trondheim, Norway
- **OUMNH**, Oxford University Museum of Natural History, Oxford, UK
- **NEV**, Library Netherlands Entomological Society, Amsterdam, Netherlands

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## A new species of the genus *Buthus* (Scorpiones: Buthidae) from northern Cameroon

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### Summary

A new species belonging to the genus *Buthus* Leach (Scorpiones: Buthidae) is described from northern Cameroon in Central Western Africa. The new species can be included in the "*Buthus occitanus*" complex of species, and probably can be associated with the "*Buthus occitanus*" from the former French West Africa (AOF) previously reported by Vachon from this large region. This is the first record of a *Buthus* species from Cameroon, and with the description of *Buthus prudenti* sp. n., the status of one more population of *Buthus* spp. from the sub-Saharan region of Africa is clarified.

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### Introduction

In previous publications by the senior author (Lourenço, 2002, 2003) the taxonomy of the genus *Buthus* Leach, 1815 was discussed in detail. Only a complete and precise study of several species led to a clear definition of their status (Lourenço, 2003; Lourenço & Vachon, 2004). Despite of the efforts attempted by Vachon (1952) in his monograph about the North African scorpions, the composition of the genus *Buthus* remained complex and confused for several decades. Vachon (1952) tried to establish a better definition of the genus and proposed a classification for the species of *Buthus*, in particular for those belonging to the "*Buthus occitanus*" complex of species, but this classification remained unsatisfactory (Lourenço, 2003).

Only recently, a more precise definition of the *Buthus* species belonging to the "*Buthus occitanus*" complex, was again attempted (Lourenço 2002, 2003), followed by the elevation of some subspecies to species rank and description of several new species (Lourenço, 2002, 2003, 2005a, 2008; Lourenço & Slimani, 2004; Lourenço & Qi, 2006; Kovařík, 2006; Lourenço et al., 2009; Lourenço & Cloudsley-Thompson, 2012; Lourenço & Simon, 2012). Other contributions (Lourenço, 2005b, 2005c; Lourenço & Geniez, 2005) have also attempted to clarify the taxonomic status of species of *Buthus* associated with *Buthus atlantis* Pocock, or belonging to the "*Buthus occitanus*" complex, but distributed in the more southern region of the Sahara. These contributions, however, are far from being

complete, and further studies on several species of these regions are yet necessary.

This is the case with certain *Buthus* populations from Western and sub-Saharan Africa which are distributed mainly over the area between Senegal, Niger and now Cameroon. Vachon (1949, 1952) referred to these populations as "*Buthus occitanus*" without any reference to subspecies. The material which was studied by Vachon is still in part available in the Muséum national d'Histoire naturelle, Paris, but it is limited and poorly preserved. For this reason, no conclusion was reached concerning these populations in preliminary publications (Lourenço, 2002, 2003). More recently, however (Lourenço, 2005b, 2005c), the study of some well preserved specimens of *Buthus* from Guinea, Senegal, and Niger have justified the description of two new species, *Buthus elizabethae* Lourenço, 2005 and *Buthus elhennawyi* Lourenço, 2005. The first of these new species was not, however, associated with *Buthus occitanus* as it was suggested by Vachon (1949, 1952), but rather with *Buthus atlantis* Pocock, a species known only from the south of Morocco. The description of *Buthus bonito* (Lourenço & Geniez, 2005) from the extreme south of Morocco, a species possibly also present in Mauritania brought further evidence for the pattern of distribution of these species. With the description of *Buthus elizabethae* which is distributed in the savannas of Guinea and Senegal, the status of this population from Western Africa was in part clarified. However, as stated by Lourenço (2005b, 2005c), the taxonomic position of other *Buthus* populations dis-



**Figures 1–4:** *Buthus prudenti* sp. n., Male holotype and female paratype. Habitus, dorsal and ventral aspects. 1–2. Male holotype. 3–4. Female paratype.

tributed further to the East, mainly in Niger, Cameroon, and Côte d'Ivoire required yet clarification. The study of two specimens of *Buthus*, from Senegal and Niger, have led to the description of a new species, *Buthus elhennawyi*. This species was, however, associated with the “*Buthus occitanus*” complex of species, and certainly corresponds with one of the forms previously defined by Vachon (1949, 1952) from the former French West Africa. By the same time *B. elhennawyi* was described (Lourenço, 2005c), we located in the collections of the Muséum in Paris a small series of *Buthus* sp. composed of two males and five females, collected in the region of

Garoua in the northern Cameroon. This material, collected by P. Malzy in 1951, is, however, in a very poor state of preservation and was disregarded during the 2005 study. Incidentally, there is no reference to any *Buthus* species from Cameroon in Vachon's (1952) monograph.

Very recently, we received a large series of *Buthus* sp. from the region of Sanguéré in Cameroon. A detailed study of the new material allows us to confirm this population as yet another new species of *Buthus*. This is the first record of a *Buthus* species from Cameroon, and with the description of *Buthus prudenti* sp. n., the status

	♂ (holotype)	♀ (paratype)
Total length	62.6 (69.8*)	61.5 (68.5*)
Carapace:		
- length	7.3	7.6
- anterior width	4.8	5.4
- posterior width	8.0	9.5
Mesosoma length	20.0	22.2
Metasomal segment I:		
- length	5.5	5.2
- width	5.3	5.4
Metasomal segment V:		
- length	8.6	8.3
- width	4.3	4.5
- depth	3.5	3.6
Telson length	7.2	7.0
Vesicle:		
- width	3.2	3.3
- depth	2.8	3.1
Pedipalp:		
- Femur length	5.9	5.8
- Femur width	2.0	2.2
- Patella length	7.0	7.0
- Patella width	2.8	2.9
- Chela length	11.5	12.2
- Chela width	3.0	2.9
- Chela depth	3.2	3.1
Movable finger: length	7.4	8.0

**Table 1:** Morphometric values (in mm) of the male holotype and female paratype of *Buthus prudenti* sp. \* including telson.

of one more population of *Buthus* spp. from the sub-Saharan Africa is clarified.

## Methods

Illustrations and measurements were produced using a Wild M5 stereo-microscope with a drawing tube and an ocular micrometer. Measurements follow Stahnke (1970) and are given in mm. Trichobothrial notations follow Vachon (1974) while morphological terminology mostly follows Vachon (1952) and Hjelle (1990).

### *Buthus prudenti* sp. n. (Figs. 1–14)

Type material: Cameroon, Region of Sanguéré-Djoi (9°23.229'N 13°500.68'E), 1 male holotype, 7 males and 8 females paratypes (P. Prudent leg.), August–November 2011. Cotton field, scorpions collected with Barber traps. Holotype and 11 paratypes deposited in the Muséum national d'Histoire naturelle, Paris, France. 4 paratypes deposited in the collections of the CIRAD, UMR CBGP (INRA/IRD/Cirad/Montpellier SupAgro).

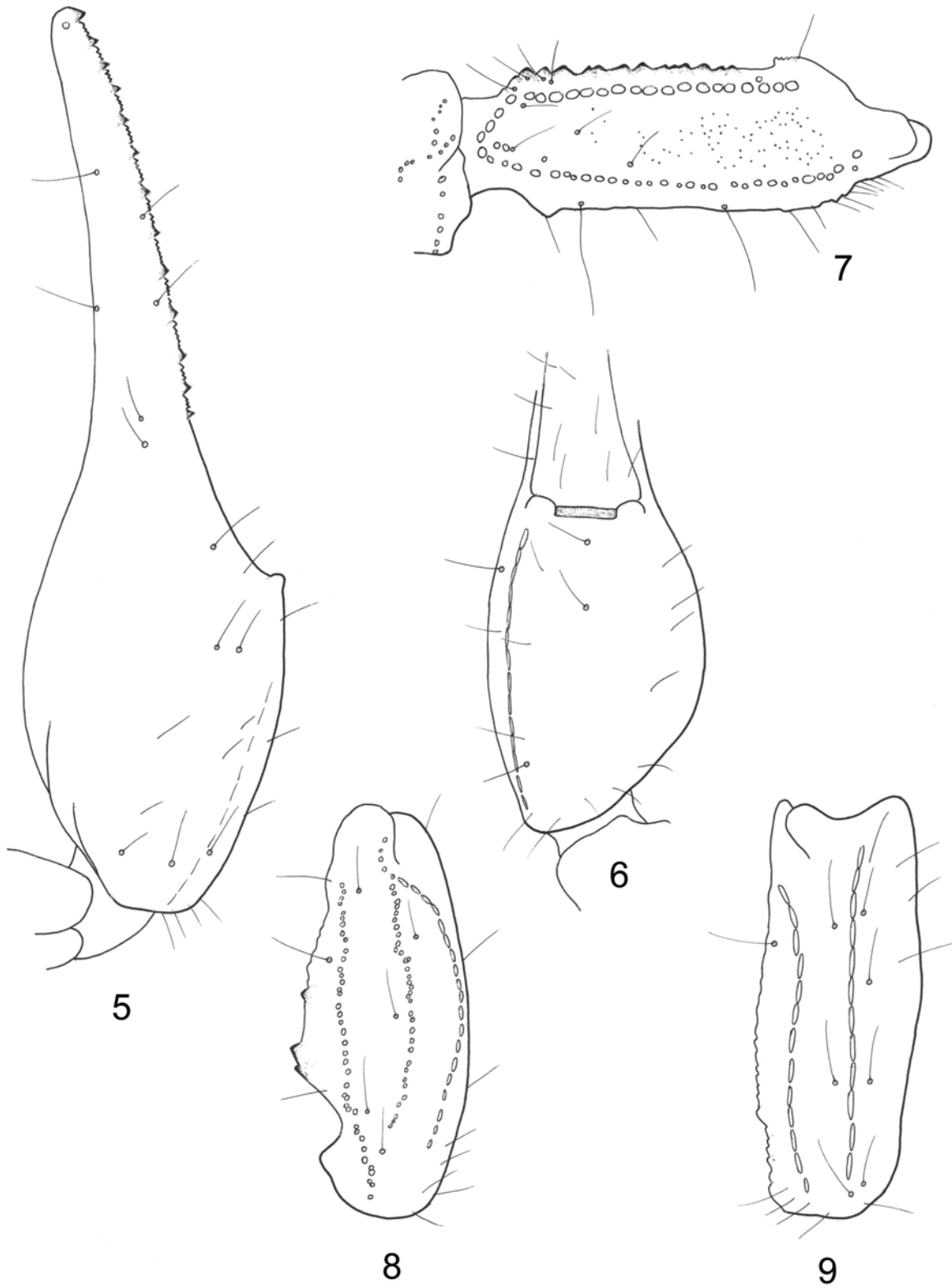
*Etymology:* patronym in honor of Dr. Patrick Prudent, CIRAD/IRAD, Garoua, Cameroon, who collected the material described as the new species.

## Diagnosis

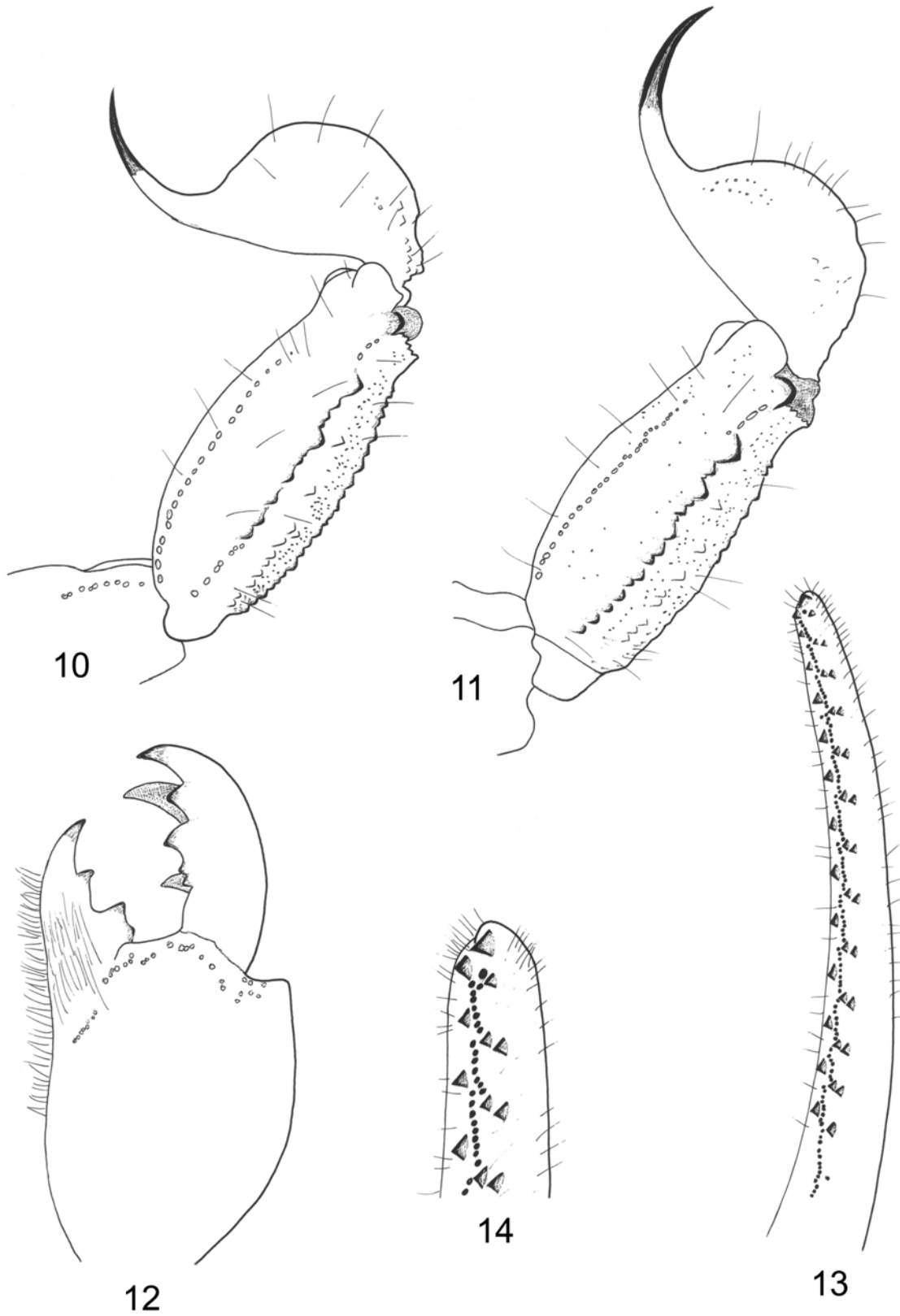
Scorpions of medium to large size, in relation to the species of the genus, reaching a total length of 63 mm for males and 62 mm for females. General coloration yellow to reddish-yellow; in some specimens tergites and sternites can be darker, more to brownish. Pedipalps and legs yellow. Chelicerae yellow with fingers' teeth almost blackish. Carinae and granulations strongly marked on carapace and tergites; moderately marked on metasomal segments. Furrows on carapace strongly marked and deep. Fixed and movable fingers with 12 rows of granules in males and 11 on females. Pectines with 27 to 29 teeth in males, 25 to 29 in females. Male pectines just touching, but not overlapping in their proximal region.

*Description* (based on male holotype and one female paratype; measurements see Table 1).

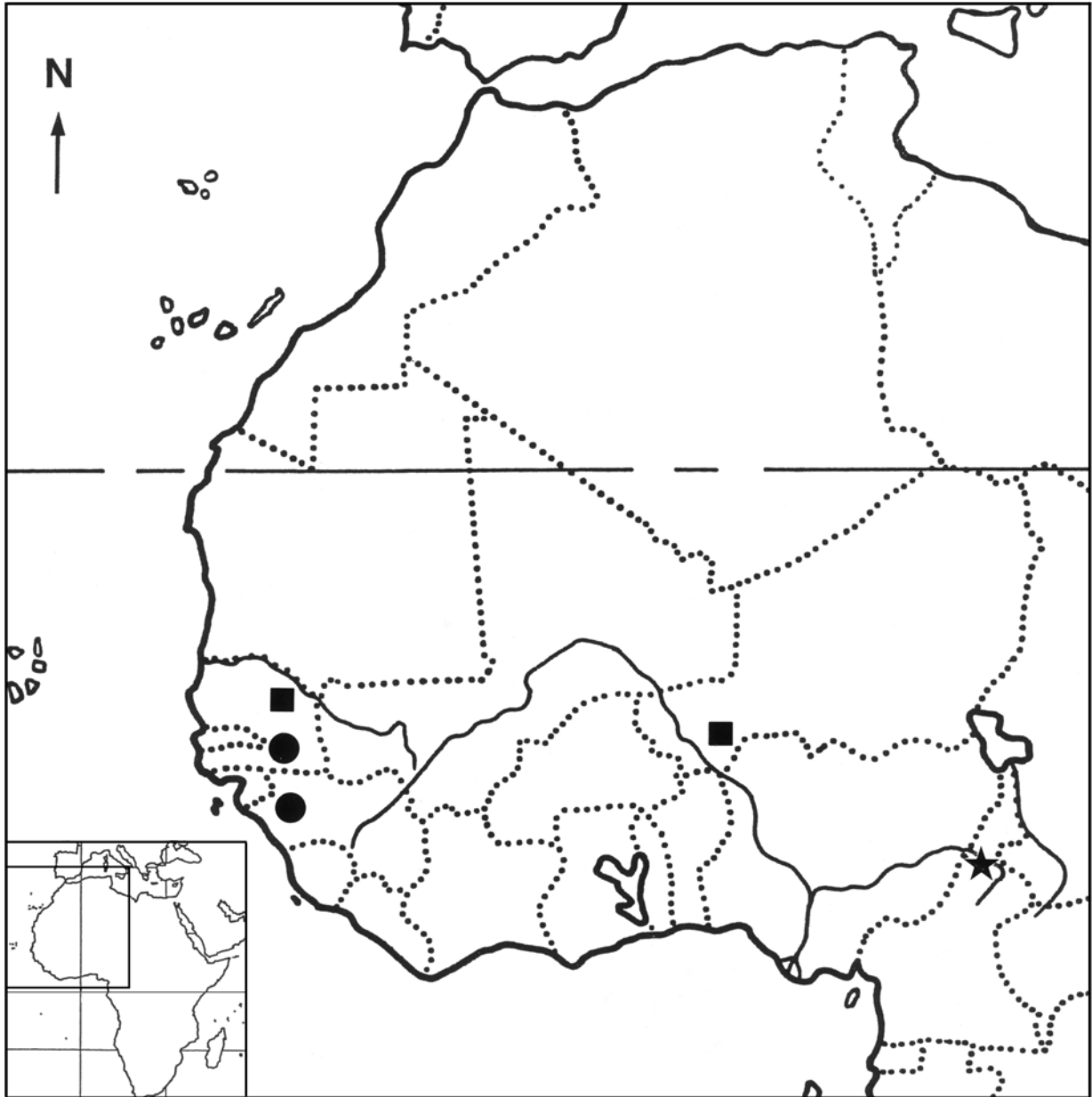
Coloration. Basically yellow to reddish-yellow; in some specimens, tergites and sternites are darker, more to brownish. Prosoma: carapace reddish-yellow; eyes surrounded by black pigment. Mesosoma: tergites reddish-yellow with the carinae and granulations slightly darker. Metasomal segments and vesicle yellowish; aculeus yellowish at its base and dark reddish at its extremity. Venter reddish-yellow. Chelicerae yellowish without any variegated spots; fingers yellowish with



**Figures 5–9:** *Buthus prudenti* sp. n., male holotype. Trichobothrial pattern. **5–6.** Chela, dorso-external and ventral aspects. **7.** Femur, dorsal aspect. **8–9.** Patella, dorsal and external aspects.



**Figures 10–14:** *Buthus prudenti* sp. n. 10–11. Metasomal segment V and telson lateral aspect. 10. Male holotype. 11. Female paratype. 12. Chelicera (male holotype). 13. Movable finger of pedipalp chela with rows of granules. 14. Extremity of the finger in detail (male paratype).



**Figure 15:** Map of Western Central Africa, showing the type locality of the new species (black star), and the known distributions of *Buthus elizabethae* (black circle) and *Buthus elhennawy* (black square).

blackish teeth. Pedipalps: yellowish with some carinae slightly reddish; chela fingers with the oblique rows of granules blackish. Legs yellowish with some vestigial infuscate spots.

**Morphology.** Carapace strongly granular; anterior margin slightly convex on male and almost straight on female. Carinae strongly marked; anterior median, central median and posterior median carinae strongly granular; 'lyre' configuration well marked. All furrows strong and deep. Median ocular tubercle almost in the centre of carapace. Eyes separated by almost three ocu-

lar diameters. Four pairs of lateral eyes: the first three of moderate size, the last one only vestigial. Sternum triangular, wider than long. Mesosoma: tergites with strong and intense granulation. Three longitudinal carinae strongly crenulate in all tergites; lateral carinae reduced in tergite I. Tergite VII pentacarinata. Venter: genital operculum divided longitudinally and formed by two semi triangular plates. Pectines: pectinal tooth count 27-28 in male holotype and 28-28 in female paratype; middle basal lamella of the pectines not dilated; male pectines just touching but not overlapping in their prox-





16



17

**Figures 16–17:** Aerial view of the Sanguéré-Djoi region, showing the typical Savannah/Sahel vegetation. In Figure 17 (bottom) one can also observe some agricultural fields (photos by François-Régis Delobal).

imal region. Sternites smooth, with elongated spiracles; four carinae on sternite VII; sternite VI with two weak carinae next to the spiracles; other sternites without carinae and with two moderately marked furrows. Metasomal segments I to III with 10 moderate carinae; segment IV with 8 moderate carinae; intermediate carinae incomplete on segments II and III; ventral carinae more strongly marked on segments II to IV, particularly in female; 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 and some larger granules. Telson almost smooth on male and with some granulations on female; aculeus strongly curved, slightly shorter than the vesicle; subaculear tooth absent. Cheliceral 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. Pedipalps: femur pentacarinata; 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 in most males, 11–11 in females; some males may present also 11–11 rows. 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 8–10 long setae ventrally; tibial spur strong on legs III and IV; prolateral spurs moderate to strong on legs I to IV. Trichobothriotaxy: trichobothrial pattern of Type A, orthobothriotaxic as defined by Vachon (1974). Dorsal trichobothria of femur arranged in  $\beta$ -configuration (Vachon, 1975).

#### Relationships

*Buthus prudenti* sp. n. can be associated with the “*Buthus occitanus*” complex of species. It can be distinguished from other *Buthus* species and in particular from *Buthus elhennawyi*, the most geographically close species, by the following characters: (i) Much bigger total size and different morphometric values; see Table 1 and Lourenço (2005c); (ii) male pectines in *B. prudenti* sp. n., do not overlap in their proximal region, whereas they overlap strongly in males of *B. elhennawyi*; the number of pectinal teeth in *B. prudenti* sp. n. is also lower than in *B. elhennawyi*; (iii) furrows in carapace are more strongly marked in the new species; (iv) male telson of *B. prudenti* sp. n., is almost smooth without any subaculear tooth.

#### Habitat of the New Species

The area in which *Buthus prudenti* sp. n. was collected is the transitional zone between the Sahel and savannah formations (Fig. 15–17). Most of these natural formations have been replaced in recent years by agriculture activities. The new species was collected in cotton fields, with the help of Barber traps used to test the efficacy of seed treatment. In present days, most of the area of the Senguéré-Djoi is used for agriculture, but some parcels can also be replaced by others composed of bushes (Figs. 16–17).

Two other scorpion species have also been collected in the northern Cameroon, but in older times when large parcels of the natural environment were yet present: *Leiurus savanicola* Lourenço, Qi et Cloudsley-Thompson, 2006 and *Scorpio savanicola* Lourenço, 2009 (Lourenço et al., 2006; Lourenço, 2009). It is quite possible, however, that with increasing anthropic action on the environment, most scorpion species will know an important regression of their populations. Only more opportunistic species, what seems to be the case of *Buthus prudenti* sp. n., will see their populations expand and colonize most of the area (Lourenço, 1991).

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