

## A NEW SPECIES OF THE GENUS *SCORPIO* LINNAEUS 1758 FROM SUDAN (SCORPIONES, SCORPIONIDAE)

Wilson R. Lourenço<sup>1</sup> & John L. Cloudsley-Thompson<sup>2</sup>

<sup>1</sup> Muséum national d'Histoire naturelle, Département de Systématique et Evolution, USM 0602, Section Arthropodes (Arachnologie), CP 053, 57 rue Cuvier 75005 Paris, France: – arachne@mnhn.fr

<sup>2</sup> 10 Battishill Street, Islington, London N1 1TE, United Kingdom

**Abstract:** For almost a century, *Scorpio maurus* L., 1758 (Scorpiones, Scorpionidae) has been considered to be no more than a widespread and presumably highly polymorphic species. Recently Lourenço reinvestigated the earlier classifications by Birula and Vachon and raised several African populations to the rank of species. Here, a new species is described from Sudan. This is the first confirmed record of a species of *Scorpio* from that country.

**Key words:** Scorpiones, Scorpionidae, *Scorpio*, new species, Sudan.

### Una especie nueva del género *Scorpio* Linnaeus 1758 de Sudán (Scorpiones, Scorpionidae)

**Resumen:** Durante casi un siglo, *Scorpio maurus* L., 1758 (Scorpiones, Scorpionidae) se ha considerado como una especie muy extendida y muy polimórfica. Recientemente Lourenço revisó las primeras clasificaciones de Birula y Vachon y elevó varias poblaciones africanas al nivel de especie. Aquí se describe una especie nueva de Sudán. Es la primera cita confirmada de un miembro del género *Scorpio* de ese país.

**Palabras clave:** Scorpiones, Scorpionidae, *Scorpio*, especie nueva, Sudán.

**Taxonomy/Taxonomía:** *Scorpio sudanensis* sp. n.

### Introduction

In a recent publication, Lourenço (2009) reinvestigated the taxonomic position of several species of the genus *Scorpio*. Analysis of a number of characters, already defined by Vachon (1952), confirmed that these were valid for the precise definitions of true species. Using this approach, eight forms or subspecies were raised to the rank of species, although one must accept that subsequent adjustments may be necessary. Furthermore, a new species, *S. savanicola*, Lourenço, 2009 was described from Cameroon. This was the second *Scorpio* species to be reported from beyond the Saharan region. Here we describe yet another new species of *Scorpio*, the first confirmed record of this genus from Sudan. The previous citation of *Scorpio maurus* from Sudan by Lourenço (2003), was a mistake, since the specimens in question were actually collected in “Soudan français” (French Sudan), today's Mali (Lourenço, 2009).

### Methods

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

### Taxonomic treatment

#### Family Scorpionidae Latreille, 1802

#### Genus *Scorpio* Linnaeus, 1758

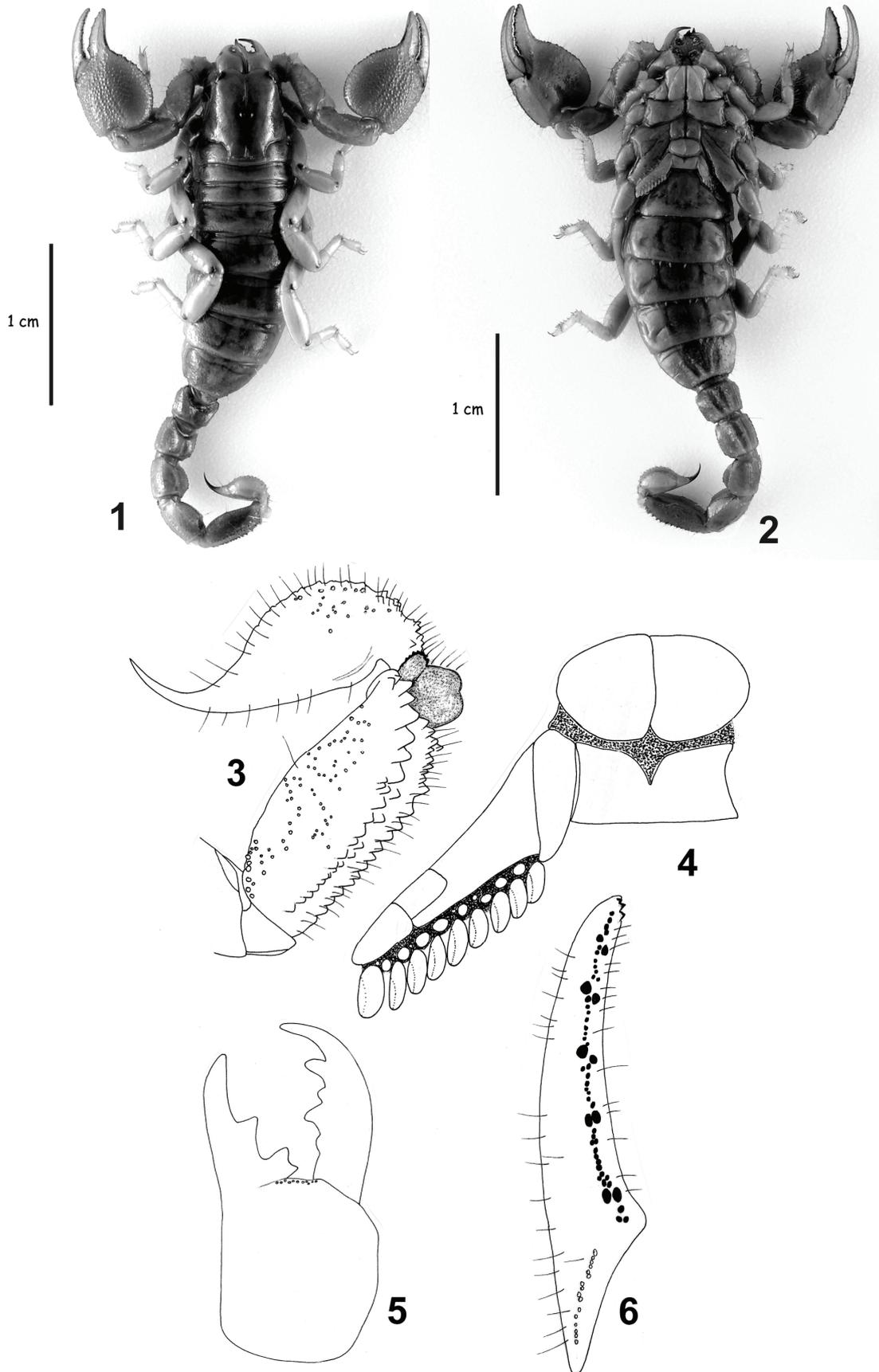
#### *Scorpio sudanensis* sp. n.

Fig. 1-12.

**TYPE MATERIAL:** 1 male holotype (possibly pre-adult). Sudan, Erkowit, 50 miles (80.5 km) SE of Sinkat (18°50'14"N, 36°49'58"E), X/1960 (J. L. Cloudsley-Thompson leg.), deposited in the Muséum national d'Histoire naturelle, Paris.

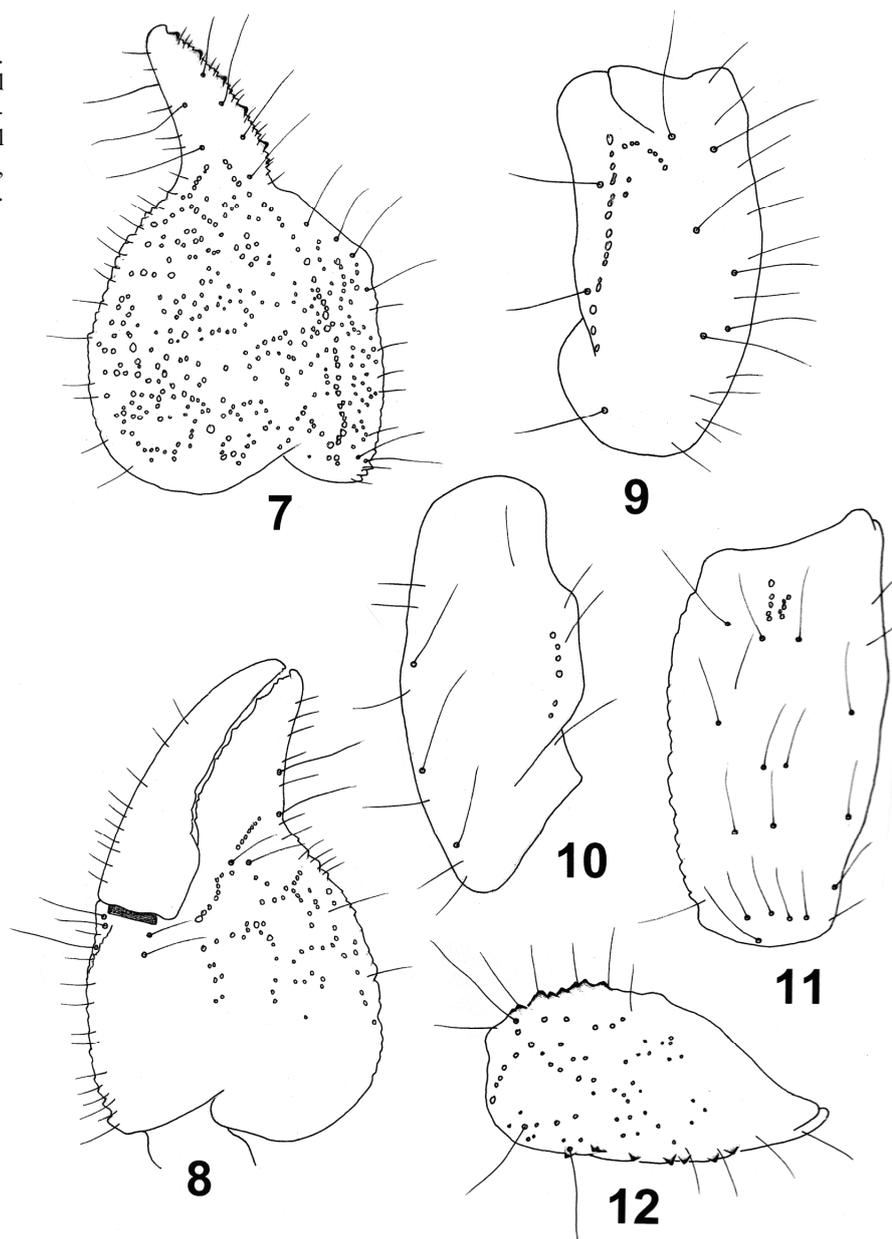
**ETYMOLOGY:** The specific name refers to the country in which the new species was collected.

**DIAGNOSIS:** Scorpions of small size with respect to the genus. Male reaching 39.6 mm in total length. Coloration, basically light yellow-reddish to yellow-brown, without any dusty markings and with pedipalps, legs, chelicerae and telson paler than the body. Pedipalps, especially the chela, almost acarinate; dorsal and dorso-external carinae absent. Chela manus with moderately marked granules on dorso-external aspect. Telson slender and moderately to weakly granulated. Pectines narrowed with 9-9 teeth. Trichobothriotaxy of type C, orthobothriotaxic. Genital operculum with semi-oval plates. Hemispermatophore: Unknown.



**Fig. 1-2.** *Scorpio sudanensis* sp. n. Male holotype, dorsal and ventral aspects. **Fig. 3-6.** *Scorpio sudanensis* sp. n. Male holotype. **3.** Metasomal segment V and telson, lateral aspect. **4.** Ventral aspect, showing genital operculum and pecten. **5.** Chelicera, dorsal aspect. **6.** Dentate margin of movable finger with rows of granules.

**Fig. 7-12.** *Scorpio sudanensis* sp. n. Male holotype. Trichobothrial pattern. **7-8.** Chela, dorso-external and ventro-internal aspects. **9-11.** Patella, dorsal, ventral and external aspects. **12.** Femur, dorsal aspect.



**RELATIONSHIPS:** *Scorpio sudanensis* sp. n., can be distinguished from other *Scorpio* species, and in particular from *S. yemenensis* Werner, 1936 the most geographically related species of the genus (Vachon, 1979; Sissom, 1994) by the following features: (i) paler coloration overall, without any dusty markings; chelicerae pale yellow without any dark variegated pigmentation, (ii) pedipalp chela almost acarinate; dorsal and dorso-external carinae absent; chela manus with moderately marked granules, (iii) telson slender, moderately to weakly granulated, (iv) posterior furrows of carapace strongly marked.

**DESCRIPTION:** Based on male holotype.

**Measurements** in Table I.

**Coloration.** Body basically light yellow-reddish to yellow-brown. Prosoma: Carapace reddish-brown with some blackness near the eyes. Mesosoma: Tergites reddish-brown, as the carapace, with two median longitudinal paler stripes; sternites yellowish-brown. Coxapophysis, sternum, genital operculum and pectines yellowish. Metasoma: all segments reddish-yellow to reddish-brown, with some dark pigment

over carinae. Telson yellowish; aculeus reddish-yellow at the base and blackish at the extremity. Chelicerae yellowish without any variegated brownish spots; fingers yellowish with reddish teeth. Pedipalps: femur, patella and chela yellowish; dentate margins of fingers reddish. Legs yellowish.

**Morphology.** Carapace acarinate with a few thin granulations on median and posterior zones; anterior margin with a moderately pronounced concavity; carinae absent; posterior furrows strongly pronounced; median ocular tubercle distinct in the centre of the carapace; three pairs of lateral eyes of equal size. Mesosoma: Tergites acarinate and smooth (lustrous) with some sparse, thin granulation. Sternum pentagonal, wider than high. Venter: genital operculum formed by two semi-oval plates. Pectines narrowed; pectinal tooth count 9-9; fulcra moderately developed. Sternites smooth and shiny, with two longitudinal parallel furrows on III to VI; VII with four moderately marked carinae; spiracles linear and conspicuous. Metasoma with moderately marked carinae on segments I to IV; granulation becomes spiniform on segment V; ventral and latero-ventral carinae intensely spinoid on V; all intercarinal surfaces weakly granular.

**Table I. Morphometric values (in mm) of the ♂ holotype of *Scorpio sudanensis* sp. n.**

	♂ Holotype
Total length	35.4(39.6*)
Carapace:	
- length	5.9
- anterior width	3.8
- posterior width	5.9
Mesosoma length	14.6
Metasomal segment I:	
- length	2.2
- width	2.9
Metasomal segment V:	
- length	4.4
- width	2.0
- depth	1.8
Telson	
- length	4.2
- width	1.8
- depth	1.6
Pedipalp:	
- Femur length	3.5
- Femur width	1.8
- Patella length	4.2
- Patella width	1.7
- Chela length	7.9
- Chela width	2.6
- Chela depth	4.8
Movable finger length	4.5

\* including telson length.

Telson slender and weakly granular with four ventral carinae formed by spinoid granules; aculeus shorter than vesicle and moderately curved. Cheliceral dentition characteristic of the Scorpionidae (Vachon, 1963); movable finger with one subdistal tooth, and inconspicuous basal teeth. Pedipalps with moderate to weak granulation; femur with four carinae, almost complete; patella with dorsal carina almost complete; chela with weakly marked ventral carinae; other carinae absent; dorso-external aspect of the manus moderately granular. Dentate margin on fixed and movable fingers with a series of granules divided by 4 or 5 strong accessory granules. Trichobothriotaxy of type C; orthobothriotaxic (Vachon, 1974); femur with 3 trichobothria, patella with 19, and chela with 26. Legs: tarsi of legs I to IV with 7/4 : 7-8/3 : 7-8/6 : 7-8/6 internal and external spines arranged in series.

**ECOLOGY:** Erkowit (or Erkiwit) is a plateau lying about 45 km South-West of Suakin on the Red Sea coast and 35 km South-East of Sinkat on the railway. It is at the edge of a steep escarpment dropping abruptly some 600 m to the Red Sea coastal plain. The plateau, as well as the hills rising from it, consists of basement complex rocks (granite, basalt, gneiss, shales, marble etc). The annual rainfall varies from about 40 to 600 mm, most of which falls in August. This is more than 200 mm greater than that of the coastal plain. In addition to rainfall, a certain amount of moisture is precipitated in the form of mist or dew. The vegetation of Erkowit has been described by Andrews (1948) and Kassas (1956).

The junior author went to the Red Sea Hills (including Erkowit) and coastal plains twice in 1960. On each occa-

sion, most of the time was spent on the plains. During the first visit (20 Septembre – 10 October), the investigation was concentrated on bioclimatic measurements. Scorpions were the dominant arachnids in Zone III of Kassas (Cloudsley-Thompson, 1962). The second trek was made in December, 1960 (3-10 December). The faunal list included one Scorpionidae (an unidentified species from Erkowit not previously recorded from Sudan) and, two buthids, *Leiurus quinquestriatus* (Ehrenberg) and *Parabuthus hunteri* Pocock (Cloudsley-Thompson, 1963).

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