

COMPLEMENTS TO THE DESCRIPTIONS OF THREE SPECIES OF SCORPIONS (SCORPIONES: BUTHIDAE, EUSCORPIIDAE, HORMURIDAE)

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Abstract: Complements to the descriptions of three poorly known species of scorpions are proposed. The male of *Butheoloides savanicola* Lourenço, 2013 (Buthidae) from Cameroon and the females of *Euscorpiops alexandreaeorum* Lourenço, 2013 (Euscorpiidae) and *Opisthacanthus piceus* Lourenço & Goodman, 2006 (Hormuridae), respectively from Laos and Madagascar, are described for the first time.

Key words: Scorpiones, Buthidae, Euscorpiidae, Hormuridae, *Butheoloides*, *Euscorpiops*, *Opisthacanthus*, Cameroon, Laos, Madagascar.

Datos complementarios a las descripciones de tres especies de escorpiones (Scorpiones: Buthidae, Euscorpiidae, Hormuridae)

Resumen: Se aportan datos complementarios a las descripciones de tres especies de escorpiones poco conocidas. Se describen por primera vez el macho de *Butheoloides savanicola* Lourenço, 2013 (Buthidae) de Camerún y las hembras de *Euscorpiops alexandreaeorum* Lourenço, 2013 (Euscorpiidae) y *Opisthacanthus piceus* Lourenço & Goodman, 2006 (Hormuridae), respectivamente de Laos y Madagascar.

Palabras clave: Scorpiones, Buthidae, Euscorpiidae, Hormuridae, *Butheoloides*, *Euscorpiops*, *Opisthacanthus*, Camerún, Laos, Madagascar.

Introduction

An important number of new species of scorpions are described based on individuals of a single sex. This is, in general, the consequence of the very low densities of some species in the field. In a given scorpion community, some species may represent only 0.5 to 1.0% of the total individuals (Lourenço, 1975; Polis, 1990). For this reason, complements to the original descriptions may be important.

In this note we bring some complements to the descriptions of three species: **1.** *Butheoloides (Butheoloides) savanicola* Lourenço, 2013, described from savannah-like formations located in the North of Cameroon and based on a single female specimen. **2.** *Euscorpiops alexandreaeorum* Lourenço, 2013, described from limestone formation from the North of Laos and based on a single male. **3.** *Opisthacanthus piceus* Lourenço & Goodman, 2006, described from rainforests located in the 'Parc National d'Andohahela' in the South of Madagascar and based on a single male. The male of *B. savanicola* and the females of *E. alexandreaeorum* and *O. piceus* are described here for the first time.

Material and Methods

Measurements follow Stahnke (1970) and are given in mm. Trichobothrial notations follow Vachon (1974) and morphological terminology generally follows Vachon (1952) and Hjelle (1990).

Examined specimens are deposited in the Muséum national d'Histoire naturelle (MNHN), Paris.

Taxonomic treatment

Family Buthidae C. L. Koch, 1837

Genus *Butheoloides* Hirst, 1925

Subgenus *Butheoloides* Hirst, 1925

Butheoloides (Butheoloides) savanicola Lourenço, 2013

C. R. Biologies, 2013a, 336: 518.

NEW MATERIAL: Cameroon Sorawel, 15 km from Guider, 07/X/2013 (P. Prudent - N°S-0054), 1 male (MNHN); Sorawel, 20/X/2103 (P. Prudent - N°S-0055), 1 male (MNHN). Sanguéré-Guider, 07/IX/2013 (P. Prudent - N°S-0053), 1 female (MNHN). Scorpions collected with Barber traps in cotton fields.

DIAGNOSIS. Scorpions of small size relative to other species of the genus; males with 18 to 21 mm and females with 18 to 23 mm in total length. Males have slender body and spondangues. Coloration globally brownish-yellow to dark brown in both sexes. Carapace strongly emarginated. Telson with a strongly curved aculeus and shorter than vesicle; subaculear tooth strongly marked, with a conical shape. Pectinal tooth count 13 to 15 in females, 15 in males; only minute fulcra present. Fixed and movable fingers of pedipalp with 9-10 rows of granules; internal accessory granules present, conspicuous; distal extremity of movable finger with three teeth. Trichobothrial pattern A- α (alpha), orthobothriotaxy.

DESCRIPTION OF THE MALE. Coloration similar to that of female globally brownish-yellow to dark brown, with brownish pigmentation on chela hands; chelicerae not infusate; femur

and patella of pedipalps with the internal and external aspects weakly infuscated.

Carapace strongly emarginated. Dorsal carinae of metasomal segments moderately marked; telson with some granulation on ventral and lateral aspects; aculeus strongly curved and shorter than vesicle; subaculear tooth strongly marked, with a conical shape. Sternum pentagonal, wider than long. Pectinal tooth count 15-15(x2); most proximal tooth reduced; fulcra moderate. Fixed and movable fingers of pedipalp with 9-10 rows of granules; internal accessory granules present, conspicuous; distal extremity of movable finger with three teeth. Trichobothriotaxy A- α (alpha) orthobothriotaxy (Vachon, 1974, 1975). Legs: tarsi with setae ventrally. Tibial and pedal spurs present on legs III-IV, moderately marked.

Morphometric values (in mm). Total length (including telson) 18.8. Carapace: length 1.9; anterior width 1.3; posterior width 1.9. Mesosoma length 6.1. Metasomal segment I length 1.4, width 1.2; II length 1.7, width 1.1; III length 1.8, width 1.1; IV length 1.8, width 1.0; V length 2.2, width 1.2, depth 1.0. Telson length 1.9. Vesicle width 0.9, depth 0.8. Pedipalp: femur length 1.7, width 0.6; patella length 2.0, width 0.8; chela length 3.3, width 0.8, depth 0.7; movable finger length 2.1.

Family Euscorpidae Laurie, 1896

Subfamily Scorpiopinae Kraepelin, 1905

Genus *Euscorplops* Vachon, 1980

Euscorplops alexandreaneorum Lourenço, 2013

Acta Arachnologica, 2013b, 62: 23.

NEW MATERIAL: Laos, Luangprabang Province, District of Muang Ngoi, 1 km N of Muang Ngoi (20°42'48.33" N, 102°40'26.26" E), 340 m, 01/VIII/2014 -31/VIII/2014 (A. Teynié & A. Lottier), 1 male topotype (MNHN). Nong Kiaw, 17 km S Muang Ngoi, 01/V/2013 (A. Teynié & A. Lottier), 1 female (MNHN).

DIAGNOSIS. Males with a slender body and very elongate pedipalps; females more bulk and with shorter pedipalps. Pectines large in males, small in female; pectinal tooth count 7-7 in both sexes; fulcra absent. Trichobothrial pattern quite similar in both sexes. Femur with three trichobothria: dorsal, internal and external. Patella with two dorsal, one internal, 14 ventral (in male), 13 ventral (in female) and 21 external trichobothria, the latter of which is unusually high. Chela-manus with four ventral, two dorsal (**Dt**, **Db**), two internal (**ib**, **it**), one **Est**, five **Et**, one **Esb** and three trichobothria in the **Eb** series. The **Esb** is located in the same axis between **Eb₂** and **Eb₃**. Trichobothrium **Eb₃** is distal in relation to **Dt**.

DESCRIPTION OF FEMALE. Female with a much less slender body, and less elongate pedipalps. Patella with 13 ventral trichobothria, instead of 14 for the male. Coloration. Dark reddish-brown to blackish. Carapace dark brown with reddish zones in particular on furrows. Tergites reddish-brown. Metasomal segments blackish-brown; telson brownish with lateral yellow stripes; base of aculeus reddish-brown and tip blackish. Chelicerae blackish-yellow with blackish variegated spots. Pedipalps blackish-brown; extremities of fingers slightly red. Legs brownish-yellow. Venter and sternites reddish-yellow to reddish-brown; genital operculum and pectines yellow, slightly infuscated.

Carapace strongly granular, furrows moderately deep. Median eyes anterior to centre of carapace; three pairs of lateral eyes, the third pair only slightly smaller than the first two. Sternum pentagonal, longer than wide. Tergites moderately to strongly granulated; VII with five carinae. Pectines small; pectinal tooth count 7-7; fulcra absent. Sternites almost smooth and punctated; sternite VII with four moderate carinae and some granulations. Metasomal segment I wider than long; segments II to V longer than wide; 10-8-8-8-7 carinae present on segments I to V; dorsal carinae on segments I-IV with a single, strong, posterior spinoid granule, better marked on III-IV; ventral carina on segment V with spinoid granules. Telson vesicle almost smooth. Setation on metasomal segments and telson moderate. Pedipalps carinae strongly marked (see male description). Patella with one very strong, bifid and one less strong spinoid granule present on internal aspect, the interno-ventral being larger than the interno-dorsal granule. Chelal carinae moderately to strongly marked. Chelal fingers with two longitudinal series of granules and a few inner and several outer accessory granules. Chelicerae dentition as for the male. Trichobothriotaxy type C (Vachon, 1974); Patella with 13 ventral trichobothria.

Morphometric values (in mm). Total length (including telson) 36.3. Carapace: length 5.5; anterior width 3.2; posterior width 5.8. Mesosoma length 13.2. Metasomal segment I: length 1.8, width 2.0; II: length 2.1, width 1.8; III: length 2.2, width 1.6; IV: length 2.3, width 1.6; V: length 4.3, width 1.5, depth 1.3. Telson length 4.9. Vesicle: width 1.3, depth 1.2. Pedipalp: femur length 6.2, width 1.8; patella length 5.5, width 2.0; chela length 11.6, width 2.4, depth 2.2; movable finger length 5.7.

Family Hormuridae Laurie, 1896

Genre *Opisthacanthus* Peters, 1861

Opisthacanthus piceus Lourenço & Goodman, 2006

Boln. Soc. Entomol. Aragonesa, 2006, 38: 20.

NEW MATERIAL: Madagascar, Toliara Province, Parc National d'Andohahela (parcel 1), Forêt humide (rainforest), S Vohibaka, 560 m alt., X/1971 (J. M. Betsch - RCP 225). 1 female topotype (MNHN).

DIAGNOSIS. Scorpions of medium to large size scorpions: male with 53.5 mm and female with 63.4 mm in total length. Coloration globally blackish. Pectines with 9-9 and 8-8 teeth in male and female, respectively. Male genital operculum large and rounded; female genital operculum moderate in size and slightly heart-like shaped, with a moderate incision in the base. Trichobothrial pattern of type C, orthobothriotaxy. Hemispermatophore remains unknown.

DESCRIPTION OF FEMALE: Carapace blackish with paler zones on the anterior and posterior edge; median and lateral eyes totally surrounded with black pigment. Tergites blackish with two longitudinal series of paler spots. Metasomal segments blackish; vesicle blackish; aculeus dark reddish. Chelicerae reddish-brown; base of fingers blackish; the whole surface with a variegated blackish colour; fingers blackish with reddish teeth. Pedipalps blackish-brown. Venter and sternites reddish-brown; pectines and genital operculum paler than sternites, without blackish spots; legs blackish-brown with the extremities of tarsi reddish-yellow.

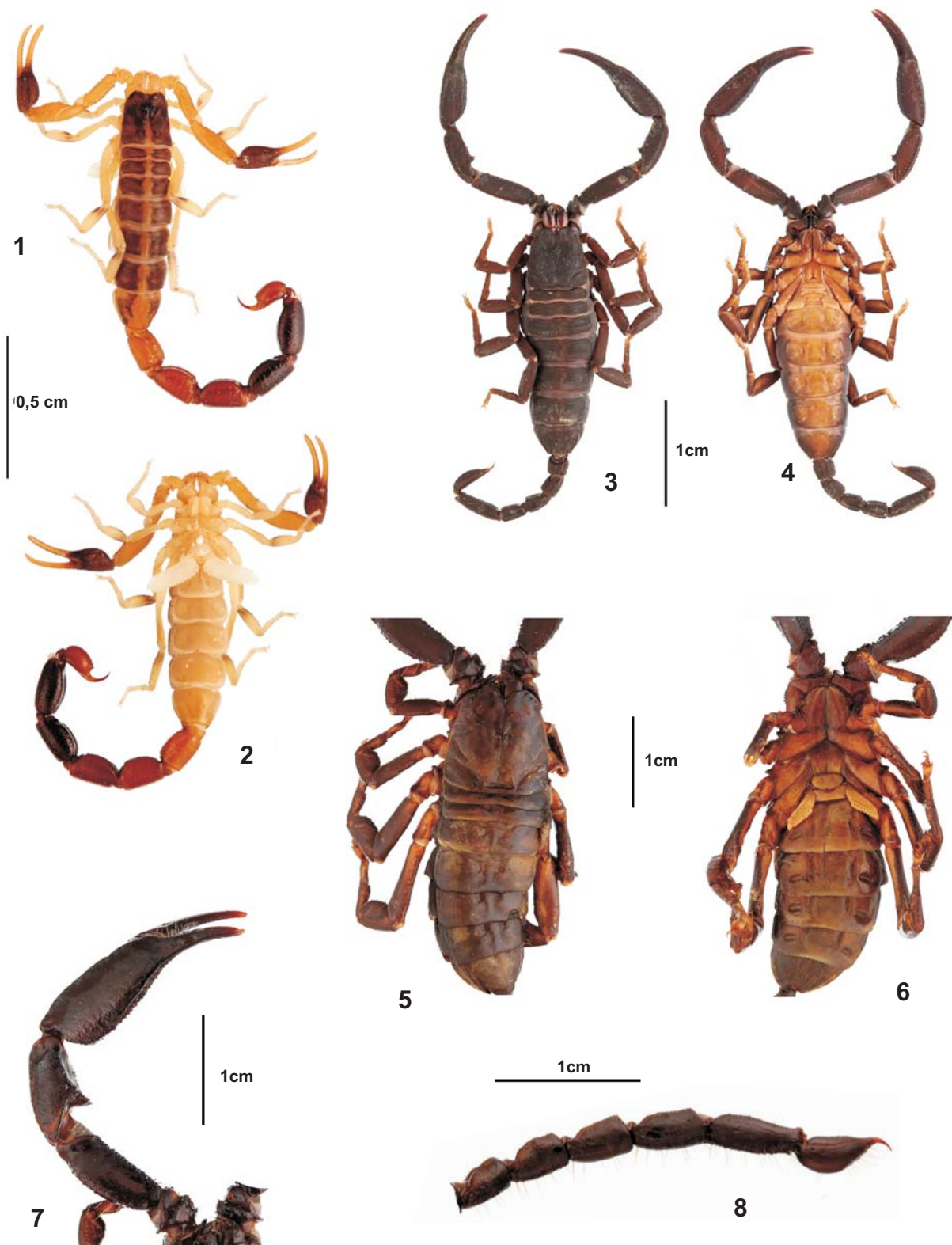


Fig. 1-2. *Butheoloides (Butheoloides) savanicola*. Male from Sorawel. Habitus, dorsal and ventral aspects. **Fig. 3-4.** *Euscorplops alexandreaeorum*. Female from Nong Kiaw. Habitus, dorsal and ventral aspects. **Fig. 5-8.** *Opisthacanthus piceus*. Female from Parc National d'Andohahela. **5.** Chelicerae, carapace and tergites, dorsal aspect. **6.** Ventral aspect showing sternum, genital operculum, pectines and sternites. **7.** Pedipalp, dorsal aspect. **8.** Metasoma, lateral aspect.

Carapace without granulations and with punctuations; furrows shallow. Anterior margin with a strong concavity reaching as far as the level of 2nd lateral eyes. Median ocular tubercle flattened and almost in the centre of the carapace; median eyes moderate, separated by one ocular diameter; three pairs of large lateral eyes. Sternum pentagonal, slightly longer than wide. Genital operculum moderate in size and slightly heart-like shaped, with a moderate incision in the base. Tergites with one vestigial median carina; smooth with punctuations. Pectinal tooth count 8-8. Sternites smooth and shiny; VII acarinate with a few weak punctuations. Metasomal segments I to V longer than wide, with some vestigial granulations, almost smooth. All carinae weak to vestigial in segments I-IV; segment V rounded with latero-ventral and ventral carinae with spinoid granules. All segments with strong chetotaxy. Telson with a pear-like shape; smooth and covered with strong chetotaxy. Pedipalps: femur with carinae strongly tuberculate; dorsal face with very thin granulation; ventral face smooth; internal face moderately granulose. Patella with all faces moderately granulated except for the ventral face which is smooth; carinae moderately to strongly marked. Chela strongly granular except on internal face; carinae moderately to strongly marked. Chelicerae typical of Scorpionoidea (Vachon, 1963); teeth moderately sharp. Trichobothriotaxy type C; orthobothriotaxic (Vachon, 1974). Legs: tarsi with three lateral rows of spines, surrounded by a few long setae. Spurs moderate.

Morphometric values (in mm). Total length (including telson) 63.4. Carapace: length 11.3; anterior width 7.6; posterior width 11.5. Mesosoma length 21.6. Metasomal segment I: length 3.5, width 2.6; II: length 3.9, width 2.4; III: length 4.3, width 2.3; IV: length 5.1, width 1.9; V: length 6.6, width 1.8, depth 2.5. Telson length 7.1. Vesicle: width 1.9, depth 2.6. Pedipalp: femur length 10.8, width 4.2; patella length 9.8, width 4.7; chela length 21.2, width 6.2, depth 3.1; movable finger length 9.1.

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