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A new subgenus and species of *Alloscorpions* Vachon, 1980 from Laos (Scorpiones, Euscorpidae, Scorpiopinae); implications for the taxonomy of the group

Un nouveau sous-genre et nouvelle espèce d'Alloscorpions Vachon, 1980 du Laos (Scorpiones, Euscorpidae, Scorpiopinae) ; implications pour la taxonomie du groupe

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ARTICLE INFO

Article history:

Received 11 December 2012

Accepted after revision 3 January 2013

Available online 24 January 2013

Keywords:

Scorpion

Euscorpidae

Laos

New subgenus

New species

Trichobothrial pattern

Mots clés :

Scorpion

Euscorpidae

Laos

Nouveau sous-genre

Nouvelle espèce

Modèle trichobothriotaxique

ABSTRACT

Alloscorpions (Laoscorpions) calmonti subgen. n., sp. n., belonging to the family Euscorpidae Laurie, is described on the basis of single female specimen collected in the Pathoumphone District of southern Laos. This new scorpion taxon may represent yet another endemic element for the fauna of Laos. The new subgenus is characterized by a previously unknown and possible unique trichobothrial pattern.

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R É S U M É

Alloscorpions (Laoscorpions) calmonti sous-gen. n., sp. n., appartenant à la famille des Euscorpidae Laurie, est décrit sur un seul spécimen femelle collecté dans le district de Pathoumphone, dans le Sud du Laos. Ce nouveau taxon scorpionique peut encore représenter un élément endémique pour la faune du Laos. Le nouveau sous-genre est caractérisé par un modèle trichobothriotaxique encore inconnu et peut-être unique parmi les scorpions.

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1. Introduction

The subfamily Scorpiopinae was first proposed by Kraepelin [1] as Scorpiopsinae, a subfamily of Vaejoidea. The correct Latinized subfamily name, derived from the type genus *Scorpiops*, is Scorpiopinae, and was corrected by Fet [2]. Francke [3] drew attention to the inconvenient

classification of Kraepelin [1] and suggested that Scorpiopsinae should no longer be incorporated in the Vaejoidea. Stockwell [4] raised Scorpiopsinae to family level (as 'Scorpiopsidae'), and Lourenço [5] confirmed this decision. Fet [2] listed the family Scorpiopidae. Subsequently, Soleglad and Sissom [6] downgraded Scorpiopidae to a subfamily of Euscorpidae, grouped its Asian genera into the tribe Scorpiopini, and also included in this subfamily the North American genus *Troglocormus* (tribe Troglocormini). The subfamily currently forms a

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monophyletic group within Euscorpidae, and does not share any synapomorphies with North American Vaejovidae [6]. The tribe Scorpiopini includes six Asian genera, mainly from the South and Southeast of the continent.

Vachon [7] revised the genus *Scorpiops* and described three new subgenera, *Alloscorpiops*, *Euscorpiops*, and *Neoscorpiops*, in addition to the nominotypical subgenus *Scorpiops*. These four subgenera were later elevated to generic rank by Lourenço [5], who added the monotypic genera *Parascorpiops* Banks 1928 and *Dasyscorpiops* Vachon, 1974, thus bringing the total number of genera to six. Kovařík [8] revised the family Scorpiopidae and distinguished five genera: *Alloscorpiops*, *Dasyscorpiops*, *Neoscorpiops*, *Parascorpiops*, and *Scorpiops*. He synonymized *Euscorpiops* with *Scorpiops*, suggesting that *Euscorpiops*, as defined by Vachon [7], should be considered invalid since the diagnostic differences were based on only one external trichobothrium of the patella. Soleglad and Sissom [6], however, restored the genus *Euscorpiops*, based on the position of chela trichobothrium **Eb₃** and the presence of an annular ring on the telson [6]. Kovařík [9] finally accepted this division, and considered *Euscorpiops* to be a valid genus. In the present note a new subgenus and species belonging to the genus *Alloscorpiops* are described from southern Laos. Consequently, the composition of the euscorpoid, subfamily Scorpiopinae can be summarized as follows:

- Genus *Scorpiops* Peters, 1861
- Genus *Parascorpiops* Banks, 1928
- Genus *Dasyscorpiops* Vachon, 1974
- Genus *Alloscorpiops* Vachon, 1980
 - Subgenus *Alloscorpiops* Vachon, 1980
 - Subgenus *Laoscorpiops* subgen. n.
- Genus *Euscorpiops* Vachon, 1980
- Genus *Neoscorpiops* Vachon, 1980

For detailed diagnoses and geographical distribution of each genus, see Vachon [7], Stockwell [4] and the Catalogue of the Scorpions of the World [2].

2. Methods

Illustrations and measurements were produced using a Wild M5 stereo-microscope with a drawing tube and an ocular micrometer. Measurements follow Stahnke [10] and are given in mm. Trichobothrial notations follow Vachon [11] and morphological terminology mostly follows Vachon [12] and Hjelle [13].

3. Taxonomic treatment

Family EUSCORPIIDAE Laurie, 1896
 Subfamily SCORPIOPINAE Kraepelin, 1905
 Genus **Alloscorpiops** Vachon, 1980
 Subgenus *Laoscorpiops* subgen. n.

Diagnosis of the new subgenus: the new subgenus presents most of the characteristics already defined for the genus *Alloscorpiops* [6,7]. It can, however, be characterized by the trichobothrial patterns of some 'territories' or series.

Femur with three trichobothria: dorsal, internal and external. Patella with two dorsal, one internal, 18 ventral and an unusual number of 30 external trichobothria. Chela-hand with 11/12 ventral, two dorsal (**Dt**, **Db**), two internal (**ib**, **it**), **Est**, five **Et**, **Esb** and an unusual number of five trichobothria in the **Eb** series. The latter number is unusual because in the other genera of the family only three trichobothria are observed on **Eb** series. The trichobothrium called here **Eb₅** is very distal in relation to **Eb₁₋₄**. The position of **Eb₅** in the new subgenus corresponds to that of trichobothrium **Eb₃** as defined both by Vachon [7] and Soleglad and Sissom [6].

Type species: *Alloscorpiops (Laoscorpiops) calmonti* sp. n.

Taxonomic comments: the unusual number of trichobothria in the **Eb** series of the new subgenus allows a nomenclatural question to be addressed. Vachon [11] defined this 'territory' or series as always having only three trichobothria: **Eb₁**, **Eb₂**, and **Eb₃**. In the case of certain genera showing the type C trichobothrial pattern, Vachon [11] suggested a possible 'displacement' of some ventral trichobothria to the external surface. However, this was only postulated for groups presenting 'plethotaxic patterns' [11]. In the case of Scorpiopinae, and in particular the genus *Alloscorpiops*, the ventral trichobothria of the chela are clearly delimited by the ventro-external carina [7,12]. If a correlation can be established between the distal trichobothrium **Eb₃**, as defined by Vachon [7,11], and **Eb₅**, as defined here for the new subgenus *Laoscorpiops*, then it can be suggested that the presence of only three **Eb** trichobothria in most taxa is due to one or more losses during the evolutionary history of the group.

The other two known species of the genus *Alloscorpiops* show only three trichobothria on the **Eb** series, consequently they remain in the nominal genus and subgenus as *Alloscorpiops (Alloscorpiops) anthracinus* (Simon, 1887) and *Alloscorpiops (Alloscorpiops) lindstroemii* (Thorell, 1889). Both these species are found in Myanmar (Fig. 1).

4. Description of the new species

Alloscorpiops (Laoscorpiops) calmonti sp. n. (Figs. 2 and 3).

Laos, Pathoumphone District, 'on track' 2 km before Ban Kiet Ngong, 29/XII/2003 (B. Calmont leg.), in disturbed forest, under log (Fig. 4). Holotype female. Deposited in the Muséum national d'histoire naturelle, Paris.

Etymology: Patronym in honor of Benjamin Calmont, Vassel, France who collected the new species.

Diagnosis: Species of large size relative to other species of the genus, adult female 72 mm in total length. Coloration dark reddish-brown to blackish; three pairs of lateral eyes, the third pair vestigial; pectines with 10–10 teeth, without fulcra. Annular ring clearly marked in telson. Trichobothrial pattern as in subgeneric diagnosis.

Description: Coloration: Dark reddish-brown to blackish. Carapace dark brown to blackish. Tergites reddish-brown. Metasomal segments blackish-brown; telson blackish-brown; base of aculeus reddish and tip blackish. Chelicerae reddish-brown with blackish variegated spots. Pedipalps blackish-brown; extremities of fingers slightly



Fig. 1. Map showing known distribution of the genus *Alloscorpiops*: *Alloscorpiops* (A.) *anthracinus* (black asterisk), *Alloscorpiops* (A.) *lindstroemii* (black triangle) and *Alloscorpiops* (L.) *calmonti* sp. n. (black circle).

red. Legs blackish-brown. Venter and sternites reddish-brown; genital operculum and pectines reddish-yellow.

Morphology. Carapace strongly granular, furrows moderately deep. Median eyes anterior to centre of

carapace; three pairs of lateral eyes, the third pair vestigial and situated behind the first two. Sternum pentagonal, longer than wide. Tergites moderately granulated; VII with four carinae. Pectinal tooth count 10-10; fulcra absent. Sternites smooth and shiny; VII with four vestigial carinae and some punctations. 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; metasomal tegument weakly granulated; ventral carina on segment V with spinoid granules. Telson vesicle with minute granulations. Pedipalps: femur with dorsal internal, dorsal external, ventral internal and ventral external carinae strongly marked; tegument moderately to strongly granular. Patella with dorsal internal, ventral internal, dorsal external, ventral external and external carinae strongly marked; two very strong and one moderate spinoid granule present on internal aspect, the interno-ventral being much larger than the interno-dorsal granule; tegument moderately granular. Chela with dorsal marginal, external secondary, ventral internal and ventral carinae strongly marked; other carinae moderately marked; tegument granulated dorsally and ventrally. Chelal fingers with two longitudinal series of granules and a few inner accessory granules (Fig. 3). Chelicerae dentition as in Fig. 3 [14]; five teeth on ventro-internal face of movable finger. Trichobothriotaxy type C, as in Fig. 3 [11]; see subgeneric diagnosis.

Morphometric values (in mm) of female holotype. Total length (including telson) 72.1. Carapace: length 11.4; anterior width 6.9; posterior width 11.8.



Fig. 2. *Alloscorpiops* (*Laoscorpiops*) *calmonti* sp. n. Female holotype. A. Carapace and chelicerae. B. Ventral aspect, showing coxapophysis, sternum, genital operculum and pectines.

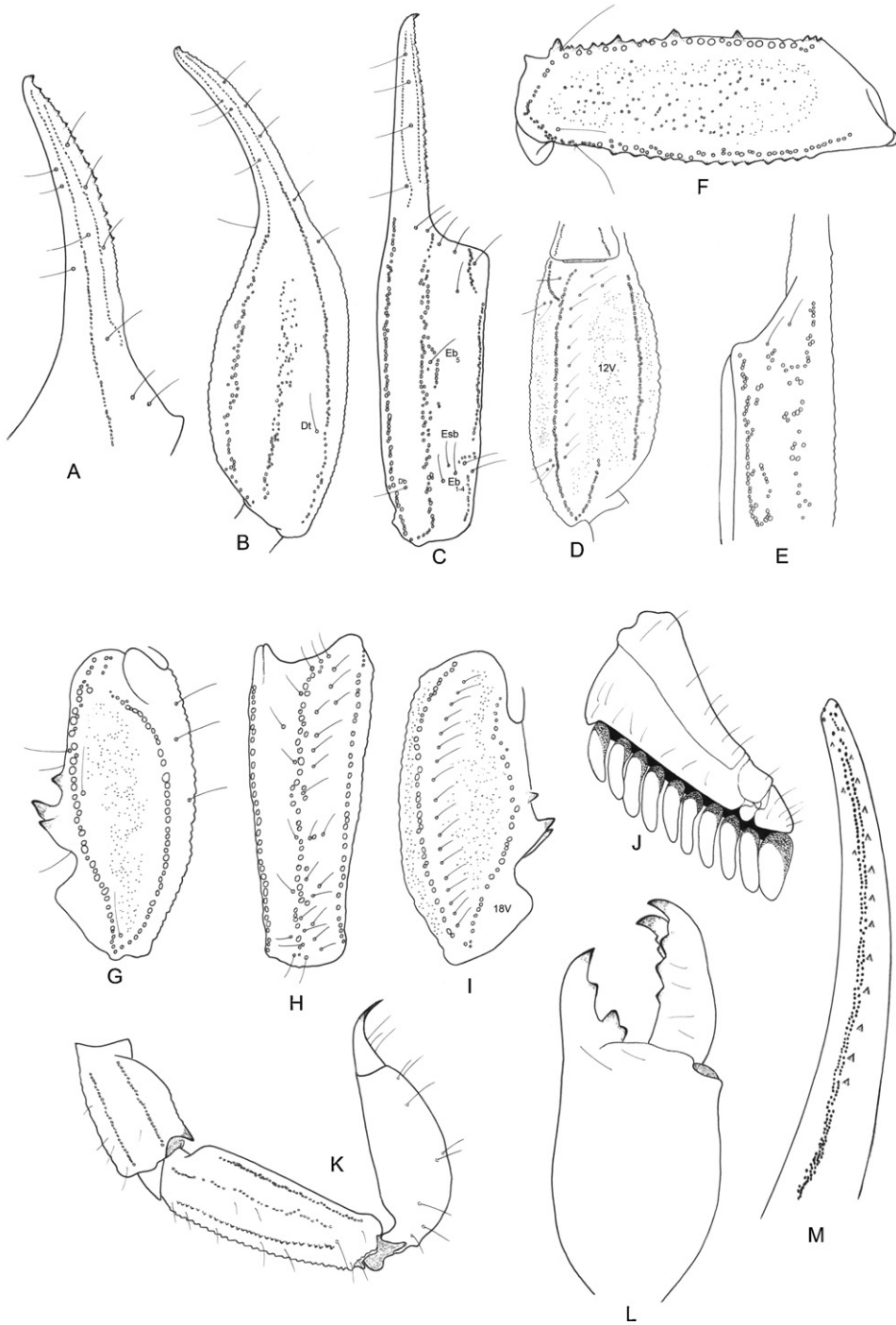


Fig. 3. *Alloscorpiops (Laoscorpiops) calmonti* sp. n. Female holotype. A–I. Trichobothrial pattern. A–E. Chela. A. Finger in detail. B–E. Dorso-external, external, ventral and internal aspects. F. Femur, dorsal aspect. G–I. Patella, dorsal, external and ventral aspects. J. Pecten. K. Metasomal segments IV–V and telson, lateral aspect. L. Chelicera. M. Cutting edge of movable chelal finger.

Mesosoma length 29.9. Metasomal segment I: length 2.9, width 3.5; II: length 3.2, width 3.1; III: length 3.8, width 2.8; IV: length 4.2, width 2.6; V: length 7.9, width 2.5, depth 2.6. Telson length 8.8. Vesicle:

width 2.4, depth 2.5. Pedipalp: femur length 11.2, width 4.2; patella length 9.5, width 4.8; chela length 21.7, width 5.8, depth 4.3; movable finger length 10.4.



Fig. 4. Natural habitat of the new species in the region of Ban Kiet Ngong, southern Laos.

Disclosure of interest

The author declares that he has no conflicts of interest concerning this article.

Acknowledgements

I am most grateful to Benjamin Calmont, Vassel, France, for sending the holotype and donating it to the collections of the MNHN; to Mark Judson, MNHN for the revision of the manuscript; and to Élise-Anne Leguin, MNHN, Paris for the preparation of some photos and plates.

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