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Notes on the scorpions collected during the Fuhrmann's expedition to Colombia and described by Kraepelin

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(With 10 figures)

Abstract

Considerations are proposed regarding the species of scorpions described by Kraepelin (1914) and collected during Fuhrmann's 1911 expedition to Colombia. Ten species were cited by Kraepelin; seven belonging to the family Buthidae, two to the family Chactidae, and one to the family Ischnuridae. *Tityus parvulus* Kraepelin is confirmed as a valid species, while *Chactas lepturus major*, described by Kraepelin as a variety, is now raised to the species rank. *(= C. major* Kraepelin: stat. n.). Finally, *Chactas ozendai* sp. n., is described from the region of La Camelia, Angelopolis, in Colombia.

Introduction

In a paper by Kraepelin (1914) on the scorpions and pedipalps collected by O. Fuhrmann in 1911 in Colombia, particularly in what is now the Department of Antioquia*, a total of 10 species, including three new species and a new variety were reported.

Although several publications dealing with Colombian scorpions have been published in the last 10 years (see Lourenço 1997), practically no new work has been carried out in the region of the Department of Antioquia since the publication of

* The new species described by Kraepelin were collected mainly in La Camelia, adjacent to Medellin, and in Angelopolis (see Fig. 1).

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Kraepelin's paper. The only exceptions are the revisions of some of Kraepelin's species (Lourenço 1984a, b).

A field trip to the Department of Antioquia in February 1998, enabled a collection of several Kraepelin's species to be made and a new species of *Tityus* to be described (Lourenço & Otero 1998). The study of some specimens previously collected in the same area of Colombia, justifies (i) a redefinition of the status of some of the species described by Kraepelin and, (ii) the description of a new species belonging to the genus *Chactas*.

1. The status of the species of the family Buthidae cited or described by Kraepelin in 1914

Among the 10 scorpion species cited by Kraepelin (1914), seven belonged to the family Buthidae: *Tityus macrochirus* Pocock, *T. pachyurus* Pocock, 1897, *T. columbianus* (Thorell, 1876), *T. intermedius* Borelli, 1899, *Centruroides margaritatus* (Gervais, 1841) as well as *T. fuhrmanni* Kraepelin, 1914 and *T. parvulus* Kraepelin, 1914 which he then described as new species. With the exception of *T. parvulus*, the status of all the buthids has been clarified in recent papers (Lourenço 1984b, 1997).

The taxonomic position of *T. parvulus* remained unclear mainly because this species was described on the basis of two female specimens, and the females of both *T. parvulus* and *T. columbianus* are extremely difficult to distinguish. The discovery of a single male specimen of *T. parvulus** not only confirms the validity of this species but makes it possible to describe this sex for the first time.

1 a. The male of *Tityus parvulus* Kraepelin

The male of *T. parvulus* can be distinguished from those of *T. columbianus* and the other Colombian species of the "*Tityus clathratus*"-group by the following key:

1. Dorsolateral keels of metasomal segments I to IV without a spinoid posterior granule or with only a very feeble granule **2**

- Dorsolateral keels of metasomal segments I to IV with a strong spinoid posterior granule . . . . . *T. bastosi* Lourenço, 1984

2. Subaculear tooth strong and markedly rhomboidal **3**

- Subaculear tooth moderate and feebly rhomboidal . . . . *T. betschi* Lourenço, 1992

3. Sternite V with a conspicuous smooth and shiny expanded zone . . . . . *Tityus* sp. n.**

- Sternite V without a conspicuous smooth and shiny expanded zone. **4**

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* The male specimen of *Tityus parvulus* recorded and illustrated by Lourenço (1984a), was collected in Sierra Nevada, Santa Marta. It has subsequently been shown to be a different and entirely new species which was later described as *Tityus tayrona* (Lourenço, 1991).

** Lourenço, W. R., Revue Arachnologique, in press.

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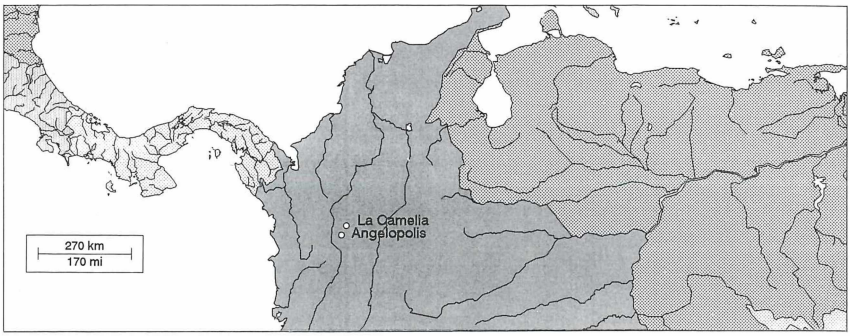

Fig. 1. The locations of La Camelia and Angelopolis in Colombia.

4. All metasomal segments longer than wide . . . . . T. parvulus

- Only metasomal segments II to V or III to V longer than wide **5**

5. Pectines with 10 to 14 teeth . . . . . *T. columbianus*

- Pectines with 14 to 17 teeth . . . . . *T. tayrona* Lourenço, 1991

Description of the male of *Tityus parvulus* Kraepelin (Figs 2 - 5)

Tityus parvulus: Kraepelin 1914 (p. 19), Mello-Leitão 1945 (347), Lourenço 1984a (355).

MALE: Colombia, Department of Antioquia, La Clara, Angelopolis. In wet forest at high altitude, 1840 m, under bark; 17 February 1998; coll. W. R. Lourenço. Deposited in the Zoologisches Museum, Hamburg (ZMH).
The female holotype, lodged also ZMH, was examined as well (measurements are given in Table 1).

Coloration. Basically yellowish, symmetrically marbled with dark reddish brown producing an overall spotted appearence. Prosoma: carapace yellowish and heavily spotted except on the anterior margin; eyes surrounded with black pigment. Mesosoma: yellowish with variegated brown spots over all tergites. Metasoma: segments I to IV yellowish, with variegated brown spots ventrally and laterally, triangular spots dorsally. Segment V slightly darker on the posterior end. Vesicle yellowish with variegated brown spots; base of the aculeus yellowish with the extremity reddish. Venter yellowish with small darker spots on the coxapophysis and on all sternites. Chelicerae yellowish with variegated brown spots on the central and anterior regions; base of fingers without pigments; fingers yellowish with reddish teeth. Pedipalps: yellowish with several dark spots on the femur and tibia; chelae less densely spotted; fingers yellowish with small brown spots. Legs yellowish with dark brown variegated spots on all segments.

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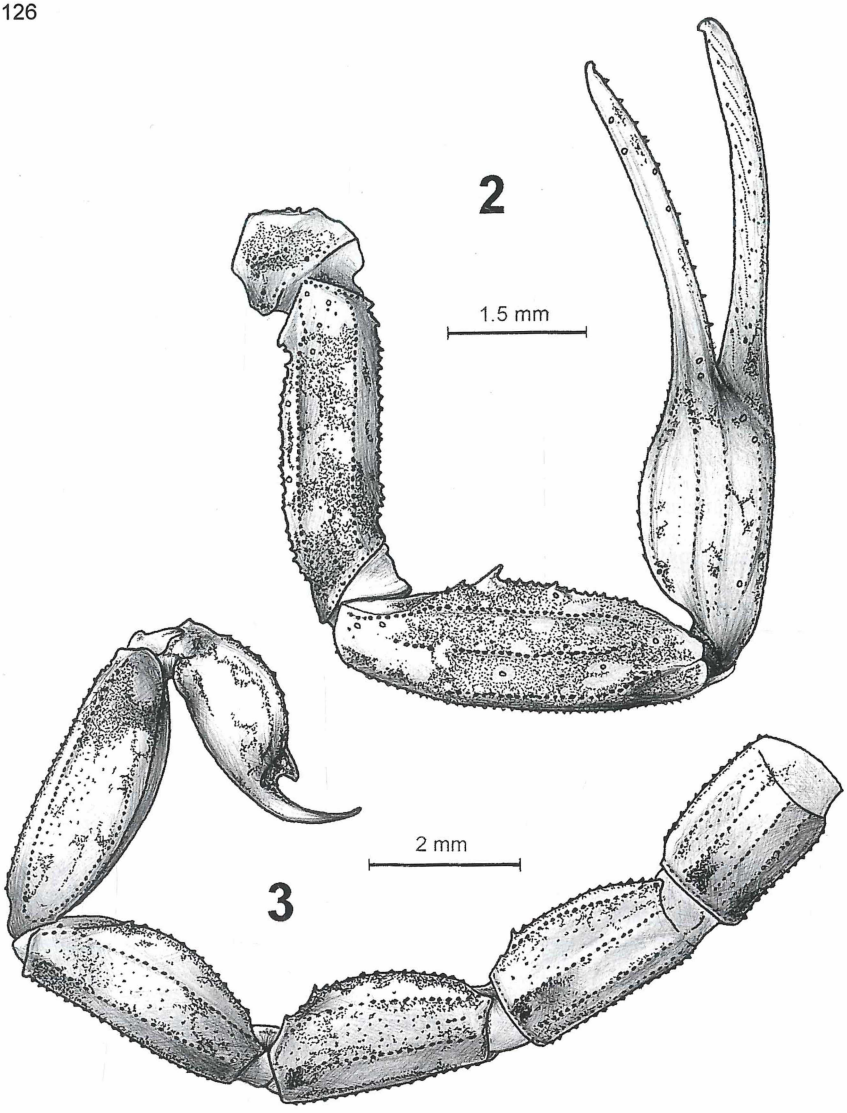

Figs 2 - 3. *Tityus parvulus* Kraepelin (♂): **2** - right pedipalp with trichobothrial pattern, **3** - metasoma and telson, lateral view.

M o r p h o l o g y. Carapace moderately granular; anterior margin with a moderate median concavity. Anterior median superciliary and posterior median keels moderate. All furrows moderate to feeble. Median ocular tubercle distinctly anterior to the centre; median eyes separated by one and a half ocular diameters. Three pairs of lateral eyes. Sternum subtriangular. Mesosoma: tergites moderately granular. Median keel present in all tergites; transversal keels present in all tergites. Tergite VII pentacarinate. Venter: genital operculum with an oval shape and divided longitudinally. Pectines: pectinal tooth

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count 14-14; basal middle lamellae of the pectines not dilated. Sternites moderately granular with short linear-shaped stigmata; VII with vestigial keels. Metasoma: segments I and II with 10 keels, crenulate; lateral inframedian keels on segment II almost complete; segments III and IV with 8 keels. Segment V with 5 keels. Intercarinal spaces moderately to strongly granular. Telson with 5 vestigial keels ventrally and with a long and moderately curved aculeus; subaculear tooth very strong and rhomboidal. Cheliceral dentition characteristic of the family Buthidae (Vachon 1963). Pedipalps: femur pentacarinate; tibia with 7 keels; chelae with 9 keels but moderately crenulate; internal face of tibia with spinoid granules, and one much larger than the others; all faces moderate to strongly granular. Movable fingers with 14-14 oblique rows of granules. Trichobothriotaxy: orthobothriotaxy *A-α* (Vachon 1973, 1975). Legs: tarsus: ventrally with very numerous median fine setae.

2. Status of the species in the families Ischnuridae and Chactidae, cited or described by Kraepelin in 1914

Other than buthids, Kraepelin also cited the ischnurid *Opisthacanthus elatus* (Gervais, 1843), and the chactid *Chactas lepturus* Thorell, 1876, to which in a key, he added a new variety, *C. lepturus major* Kraepelin, 1914. He also described a new species of chactid as *C. reticulatus* Kraepelin, 1914.

The status of *O. elatus* is clearly defined (Lourenço 1995). As for the *Chactas* species, the study both of the types and the specimens collected in the field in 1998, confirms the validity of *C. reticulatus* and demonstrates that the variety proposed by Kraepelin as *C. lepturus major* is, in fact, a distinct species and is upgraded here to the species level. Thus, the correct name of this taxon ist now *C. major* Kraepelin, 1914 (**stat. n.**). Moreover, one new species is described below from the Department of Antioquia. The three *Chactas* species known at present from the above region can readily be distinguished by the enclosed key.

Chactas ozendai sp. n.
(Figs 8 - 10).

HOLOTYPE ♂: Colombia, Department of Antioquia, Angelopolis, in wet forest at high altitude, 1860 m, under a log; 10 February 1987, O. Villalobos coll. Deposited in the Zoologisches Museum, Hamburg.

ETYMOLOGY: Patronym in honor of Prof. Paul Ozenda, Emeritus Professor of the Centre de Biologie Alpine, Université Joseph Fourier, Grenoble, France.

D e s c r i p t i o n (based on male holotype). Measurements in Table 1.

C o l o r a t i o n. Basically reddish-brown with some diffuse variegated fuscous tints. Carapace reddish-brown. Tergites reddish-brown with a longitudinal and central yellowish strip. Metasomal segments brownish-yellow; vesicle yellowish. Chelicerae yellowish, with diffuse variegated brownish colour; fingers uniformly dense reddish in colour. Pedipalps reddish yellow; fingers densely reddish, almost blackish distally. Venter and sternites yellowish, except for sternite VII which is brownish-yellow; brownish spots present on coxapophysis.

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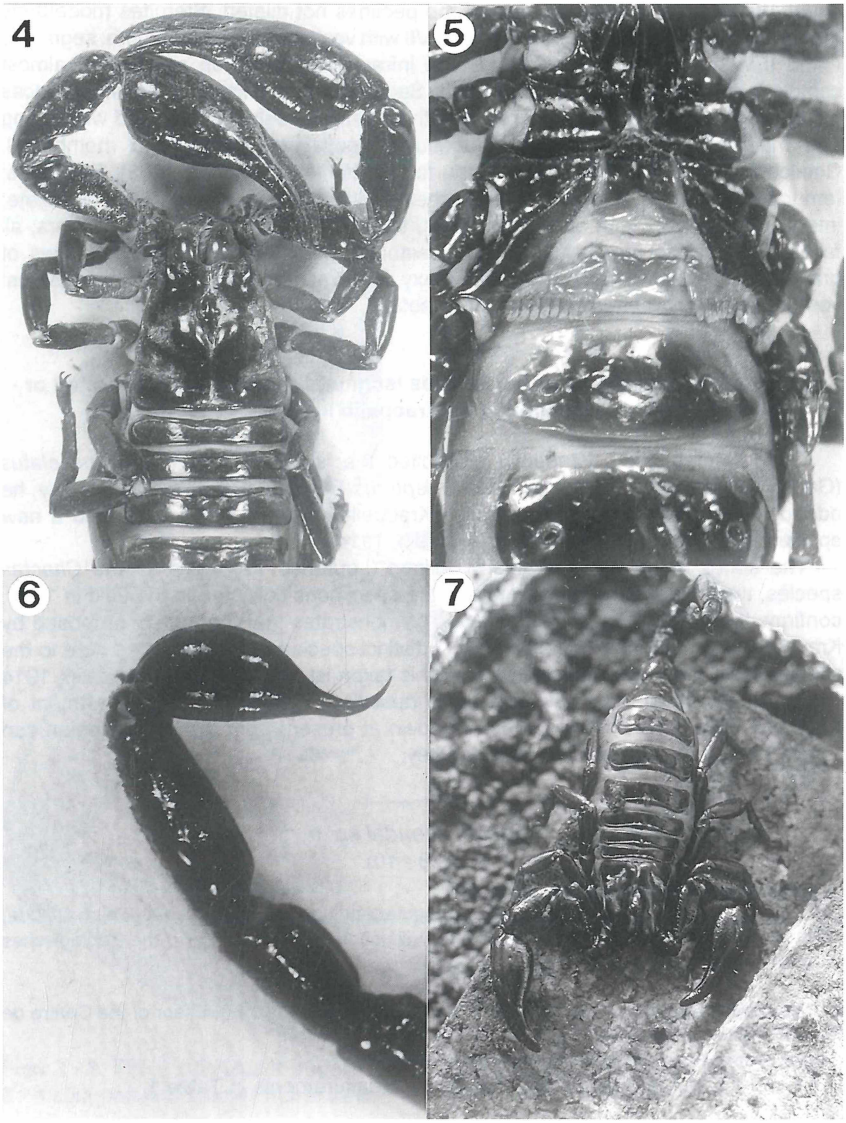

Figs 4 - 7. *Chactas major* Kraepelin, holotype ♀ (4 - 6): **4** - dorsal, **5** - ventral, **6** - metasomal segments IV, V and telson, lateral, **7** - female from Angelopolis, in captivity.

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M o r p h o l o g y. Carapace lustrous and acarinate, furrows shallow. Sternum pentagonal, wider than long. Tergites acarinate, smooth and shiny. Pectinal tooth count 6-6. Sternites smooth and shiny; VII acarinate. Metasomal segments III to V longer than wide, smooth and shiny; segment V with dense, ventral granulations small. All keels of segments I-IV weak or absent. Segment V with ventral lateral and ventral median keels moderate, granulose. Pedipalps: femur with dorsal internal, dorsal external and ventral internal keels strong, tuberculate; ventral external keel vestigial; dorsal and ventral faces without granulation; internal face feebly granulose. Tibia smooth, lustrous; dorsal internal, ventral internal, ventral external and external keels weak; other keels vestigial. Chelae lustrous; dorsal marginal, external secondary, and ventrointernal keels vestigial; ventral median keel strong; other keels vestigial to absent, smooth. Chelicerae typical of the family Chactidae (Vachon 1963). Trichobothriotaxy type *C*; neobothriotaxic; ventral face of tibia with 5 trichobothria (Vachon, 1973).

D i f f e r e n t i a l d i a g n o s i s: *C. ozendai* sp. n. can be distinguished from *C. reticulatus* and *C. major* by its very small size. Other differences between these taxa are given below in the identification key.

Table 1. Morphometric values (in mm) of the species described

	Tityus parvulus ♂	***Chactas ozendai* sp. n.** ♂
C a r a p a c e:		
length	2.8	3.8
anterior width	2.1	2.4
posterior width	3.2	3.6
M e t a s o m a l s e g m e n t I:		
length	2.2	1.2
width	1.7	1.4
M e t a s o m a l s e g m e n t V:		
length	4.0	2.9
width	1.4	1.4
depth	1.5	1.0
V e s i c l e:		
width	1.1	1.4
depth	1.1	1.0
P e d i p a l p:		
femur length	3.2	3.3
femur width	1.0	1.3
tibia length	3.7	3.2
tibia width	1.2	1.5
chela length	5.8	6.9
chela width	1.1	2.0
chela depth	1.0	1.4
Movable finger:		
length	3.7	3.2

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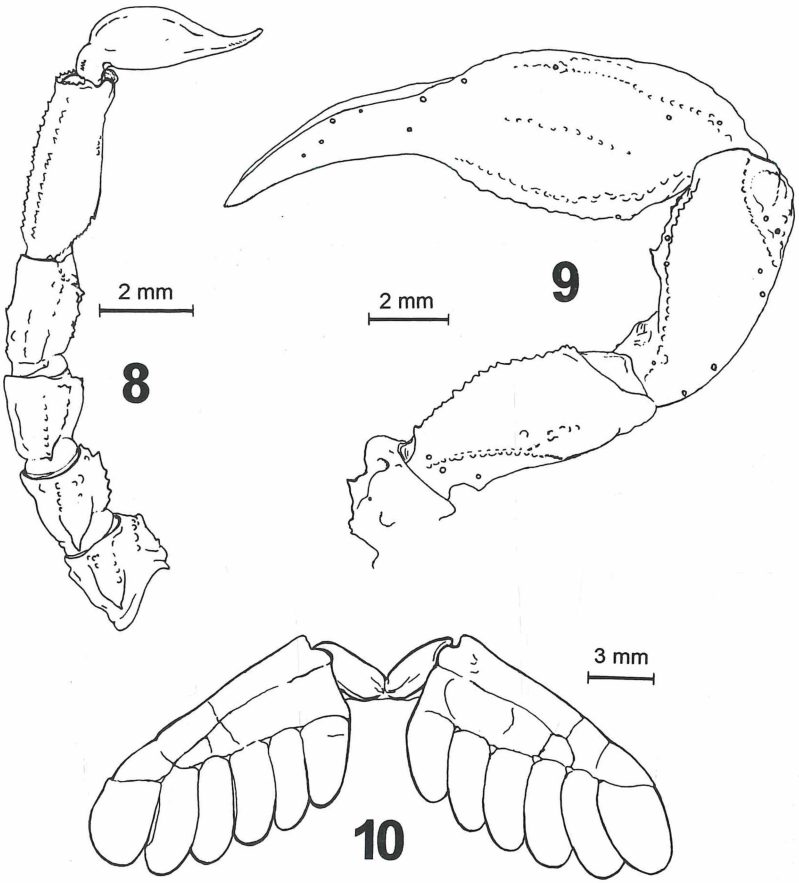

Figs 8 - 10. *Chactas ozendai* sp. n. (♂): **8** - pectines, **9** - right pedipalp, with trichobothrial pattern, dorsal, **10** - metasoma and telson, lateral.

Key to the *Chactas* species reported from the Department of Antioquia, Colombia

1. Scorpions with a total length ranging from 60 to 70 mm; pectines with 6 to 9 teeth **2**

- Scorpions with a total length ranging from 25 to 30 mm; pectines with 5 to 6 teeth; tegument smooth and shining . . . . . ***C. ozendai* sp. n.**

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2. Tegument smooth and shining; pectines with 8 to 9 teeth . . . . . *C. major*

- Tegument matt; pectines with 6 to 7 teeth . . . . . *C. reticulatus*

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