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# A new species of *Tityus* Koch, 1836 (Scorpiones, Buthidae) from Ecuador



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(With 7 figures)

## Abstract

A new species of buthid scorpion, *Tityus julianae* sp. n. belonging to the "*Tityus clathratus*"-group, is described based on a single male specimen collected in the valley of the river Cayapas, W of San Miguel, Departamento Esmeraldas in Ecuador. This is the 13th species of *Tityus* to be recorded from Ecuador and the third belonging to the "*Tityus clathratus*"-group. Six species are endemic to the country. The fauna of scorpions of Ecuador remains one of the most diverse in the world.

K e y w o r d s: Scorpiones, taxonomy, *Tityus julianae* sp. n. "*Tityus clathratus*"-group, Esmeraldas, Ecuador.

## Introduction

The known Ecuadorian scorpion fauna has increased greatly in number of species during recent years (Lourenço 1981, 1988). A recent contribution by Lourenço (1995) represents the first attempt to produce a synthesis. In this work it was admitted, however, that the results probably represented only a part of the fauna actually present in Ecuador. In fact, the scorpion fauna of Ecuador is one of the most diverse in the world (Lourenço 1994), with a total of 5 families, 8 genera and 37 (now 38) species, of which 26 are endemic. This becomes specially true if one takes in consideration the small area of this country.

A new species of *Tityus*, belonging to the "*Tityus clathratus*"-group" is described here. A check-list to the species of *Tityus* known to be present in Ecuador and keys to the species of the "*Tityus clathratus*"-group" are also provided.

## Description

*Tityus julianae* sp. n.
(Figs 1-7)

TYPE MATERIAL: holotype (pre-adult male). Ecuador, Departamento Esmeraldas, valley of the river Cayapas, W of San Miguel, 3 July 1963, coll. A. Mendez. Deposited in the Zoologisches Museum Hamburg, Germany (ZMH Acc. No. A38/05).

ETYMOLOGY: A patronym in honour of my student Juliana de Souza Araújo, Zoologia, Universidade Brasilia (Brasília), for her interest and progress in the study of scorpions.

DIAGNOSIS: Small scorpions, measuring 20.5 mm in total length. Coloration yellowish with variegated pale brown spots over the body and appendages. Granulation weak to moderate over all the body and pedipalps. Fixed and movable fingers of pedipalps with 13-14 rows of granules. All carinae complete or almost complete. Pectines small with reduced fulcra. Pectinal tooth count 17-17. Basal middle lamella not dilated. Telson granulated with two lateral carinae; subaculear tubercle strongly rhomboid.

Description based on male holotype (measurements are given below).

Coloration. Basically yellowish, symmetrically marbled with dark reddish brown producing an overall spotted appearance. 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 V yellowish, with variegated brown spots ventrally and triangular spots dorsally. Segment V with more spots and slightly darker. Vesicle yellowish with dark brown spots; the base of the aculeus yellowish and the extremity reddish. Venter light yellow with two very light dark spots on the coxapophysis. Chelicerae yellowish with variegated brown spots; base of fingers dark; fingers yellowish with some black spots at the base of movable one; teeth reddish. Pedipalps: yellowish with several spots on the femur and patella; chela hand less densely spotted; fingers yellowish with small brown spots. Legs yellowish with dark brown variegated spots on all segments.

MORPHOLOGY. Prosoma: Anterior margin of carapace only moderately emarginate. Carapace carinae weakly developed; anterior median carinae weak; central median and posterior median carinae moderate to weak; central lateral carinae vestigial. All furrows weak. Intercarinal spaces weakly granular, except for the anterior margins, which are moderately granular. Median ocular tubercle anterior to the centre of the carapace; median eyes separated by more than one ocular diameter. Three pairs of

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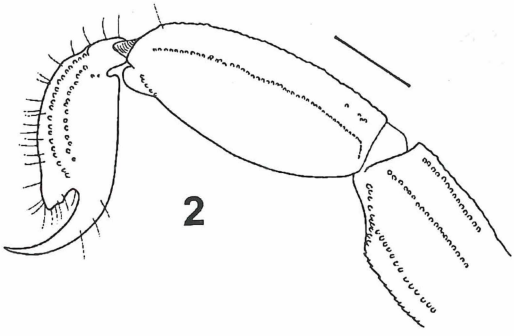

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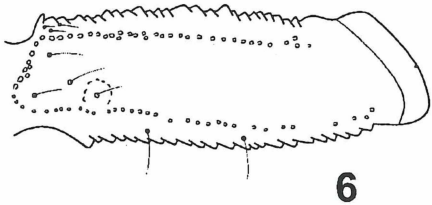

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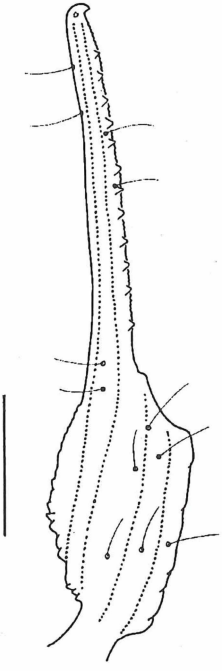

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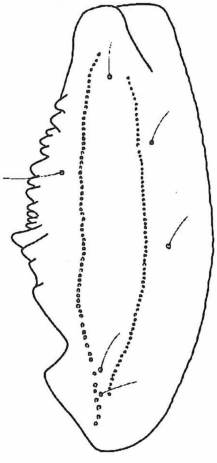

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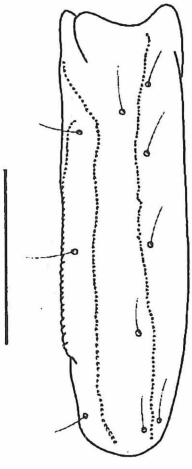

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**Figs 1-6.** *Tityus julianae* sp. n. (holotype ♂). **1** - chelicera, with a pattern of pigmentation; **2** - metasomal segments IV and V and telson, lateral aspect; 3-6: trichobothrial pattern; **3** - chela, dorso-external aspect; **4-5**: patella, dorsal and external aspects; **6** - femur, dorsal aspect (scale bar = 1 mm).

lateral eyes. M e s o s o m a: Tergites I-VI with one moderately marked median carina. Tergite VII pentacarinate, lateral pairs of carinae moderate; median carinae, on proximal third, moderate. Intercarinal spaces moderately granular. Sternites: carinae absent on III-V; two vestigial carinae on VI and four weak to moderate carinae on VII; spiracles slit-like but short. Pectines small with reduced fulcra; basal middle lamella not dilated; pectinal tooth count 17-17. M e t a s o m a: Segments I-II with 10 carinae; III-IV with 8 carinae; segment V with 5 carinae; absence of any stronger spinoid granules on dorsal carinae of segments I to IV. Dorsal furrow of all segments weakly developed; intercarinal spaces weakly granular on segments I to III, moderately granular on IV-V. Telson with a strong ventral and two moderate lateral carina, and some moderate granules on ventral and lateral faces. Aculeus shorter than vesicle, moderately curved; subaculear tubercle very strong and rhomboid. Chelicerae, with two reduced denticles at the base of the ventral aspect of the movable finger (Vachon 1963). P e d i p a l p s: femur pentacarinate, all carinae moderately crenulate. Patella with seven carinae; internal carina with spinoid granules; chelae with 7/8 moderate carinae; all faces weakly granular. Dentate margins of fixed and movable fingers composed of 13-14 oblique rows of granules. Trichobothrial pattern orthobothriotaxic, type *A* (Vachon, 1974); dorsal trichobothria of femur in *á* (alpha) configuration (Vachon, 1975). L e g s: ventral aspect of tarsi with numerous thin setae. Tibial spurs absent. Pedal spurs present on all legs; vestigial on I-II and moderate on III-IV.

M e a s u r e m e n t s (in mm: holotype ♂): Total length 20.5. Carapace: length 2.9, anterior width 1.9, posterior width 3.2. Metasomal segment I: length 1.6, width 1.4. Metasomal segment V: length 3.2, width 1.2, depth 1.3. Vesicle: width 0.9, depth 1.0. Pedipalp: femur length 2.4, femur width 0.8, patella length 2.8, patella width 1.2, chela length 4.9, chela width 0.9, chela depth 0.8. Movable finger: length 3.4.

REMARKS: Of the four groups of *Tityus* defined by Lourenço and Pézier (2002), three can be found in Ecuador. The new species is accommodated in the "*Tityus clathratus*"-group recognized mainly by its yellow-variegated pigmentation and the structure of the telson and subaculear tubercle, strongly rhomboid. *Tityus julianae* sp. n. can, however, be distinguished from the other two *Tityus* species of the "*clathratus*"-group, present also in Ecuador, by the following characters:

- from *Tityus bastosi* Lourenço, 1984, by the absence of any stronger spinoid granules on the distal extremity of the dorsal carinae of metasomal segments I to IV;
- from *Tityus silvestris* Pocock, 1987, by (i) a smaller overall size, (ii) a higher number of pectinal tooth, 17 against 13-14 in males of *T. silvestris*, (iii) the presence of carinae and granulations on the vesicle; in *T. silvestris* the vesicle is almost smooth.

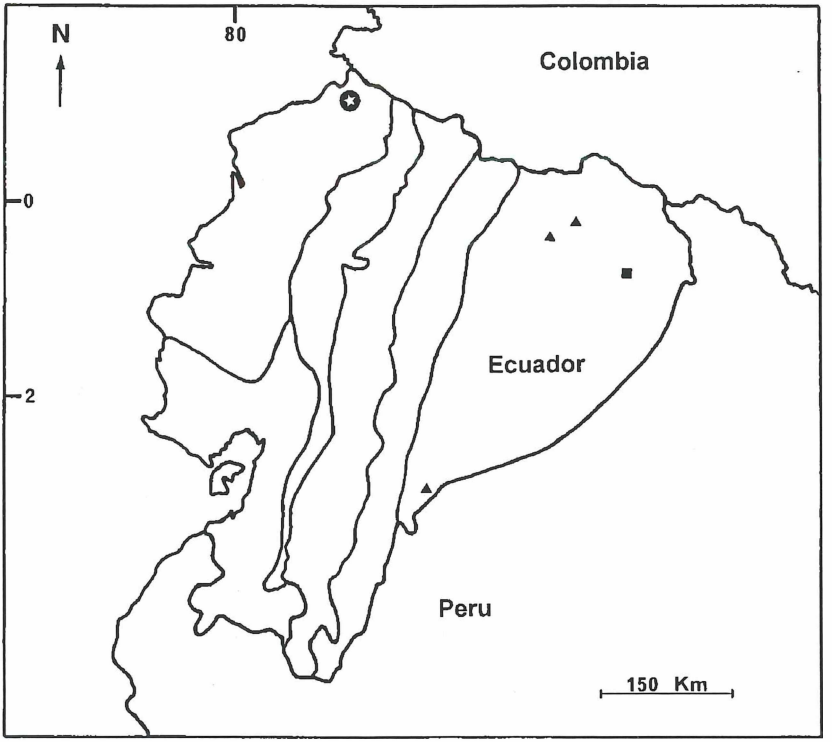


**Fig. 7.** Records of taxa from the "*Tityus clathratus*"-group in Ecuador [*Tityus bastosi* Lourenço: black triangle; *T. silvestris* Pocock: black square; *T. julianae* sp. n.: black circle with white star (type locality)].

## A Check-list of the Ecuadorian species of *Tityus*

Genus *Tityus* Koch, 1836

1. Species belonging to the "*Tityus clathratus*"- group

*Tityus bastosi* Lourenço, 1984
*Tityus silvestris* Pocock, 1897
***Tityus julianae* sp. n.** (*)

2. Species belonging to the "*Tityus bahiensis*"- group

*Tityus demangei* Lourenço, 1981 (*)
*Tityus ecuadorensis* Kraepelin, 1896
*Tityus gasci* Lourenço, 1981
*Tityus intermedius* Borelli, 1899 (*)

*Tityus jussarae* Lourenço, 1988 (*)
*Tityus pugilator* Pocock, 1898 (*)
*Tityus roigi* Maury & Lourenço, 1987 (*)
*Tityus simonsi* Pocock, 1900

3. Species belonging to the "*Tityus asthenes*"-group

*Tityus asthenes* Pocock, 1893
*Tityus forcipula* (Gervais, 1844)

Total 13 species. Six taxa (*) are endemic to Ecuador

**Key to the three groups of *Tityus* proposed in the check-list enclosed below**

**1.** Small species ranging from 18 to 40 mm in total length with variegated pigmentation and a very rhomboidal subaculear tooth . . . . . "*Tityus clathratus*"-group

- Medium or large species, ranging from 50 to 100 mm in total length; pigmentation varying from yellowish to brown and black . . . . . 2

**2.** Species of medium size, ranging from 50 to 70 mm in total length; coloration rather pale varying from yellowish to reddish-brown or brownish, never black; often with conspicuous dark spots; basal middle lamellae of female pectines not dilated in most species . . . . . *Tityus bahiensis*-group

- Large species, ranging from 65 to 100 mm in total length; pigmentation blackish in the adult and yellowish/variegated in immature individuals; subaculear tooth always spinoid; basal middle lamellae of female pectines dilated in most species . . . . . *Tityus asthenes*-group

**Key to the species of the "*Tityus clathratus*"-group from Ecuador**

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

- Dorsolateral carinae of metasomal segments I to IV with a strong spinoid posterior granule; Amazon . . . . . *Tityus bastosi*

**2.** Pectinal tooth count in males 13-14; vesicle almost smooth; Amazon . . . . . *Tityus silvestris*

- Pectinal tooth count in males 17; vesicle with one ventral and two lateral carinae and granulations on ventral and lateral faces; Pacific coastal forest . . . . . ***Tityus julianae* sp. n.**

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