

A NEW SPECIES OF *TITYUS* C. L. KOCH, 1836 (SCORPIONES, BUTHIDAE) FROM THE STATE OF MARANHÃO IN BRAZIL

Wilson R. Lourenço¹, Marco M. B. G. de Jesus Junior²
& Francisco Limeira-de-Oliveira²

¹ Département de Systématique et Evolution, USM 0602, Section Arthropodes (Arachnologie), Muséum national d'Histoire naturelle, CP 053, 61 rue Buffon 75005 Paris, France – arachne@mnhn.fr

² Universidade Estadual do Maranhão, Centro de Estudos Supiores de Caxias, Depto. De Química e Biologia, Laboratorio de Zoologia, Praça Duque de Caxias s/n, Morro do Alecrim, CEP 65.604-380, Caxias, Maranhão, Brazil. marcomagnomagnobol.com.br, franciscolimeira@cesc.uema.br

Abstract: A new species of buthid scorpion, *Tityus maranhensis* sp. n. belonging to the “*Tityus clathratus* group” is described, based on the study of nine males and one female specimen collected in the region of Caxias, State of Maranhão, Brazil. This is the seventh species of *Tityus* belonging to the “*Tityus clathratus* group” to be recorded from Brazil. Only two species of this group are endemic to the country. The scorpion fauna of Brazil remains one of the most diverse in the world.

Key words: Scorpion, *Tityus maranhensis* sp. n., “*Tityus clathratus* group”, Maranhão State, Brazil.

Una nueva especie de *Tityus* C. L. Koch, 1836 (Scorpiones, Buthidae) del estado de Maranhão en Brazil

Resumen: Se describe una nueva especie de escorpión bûtido, *Tityus maranhensis* sp. n., perteneciente al grupo de “*Tityus clathratus*”. El estudio se basa en nueve machos y una hembra colectados en la región de Caxias, en el Estado de Maranhão, Brasil. Esta es la séptima especies de *Tityus* pertenece al grupo de *Tityus clathratus* registrada de Brasil. Sólo dos especies de este grupo son endémicas del país. La fauna del escorpiones de Brasil resulta ser una de las más diversas del mundo.

Palabras clave: Scorpion, *Tityus maranhensis* sp. n., “*Tityus clathratus* group”, Estado de Maranhão, Brasil.

Taxonomy/Taxonomía: *Tityus maranhensis* sp. n.

Introduction

The known Brazilian scorpion fauna (Lourenço, 2002) has increased greatly in number of species during recent years, in particular with regard to new elements of the family Buthidae (e.g. Lourenço, 2003a,b, 2004a,b, 2005; Lourenço & Giupponi, 2004; Lourenço & Bruehmueller Ramos, 2004; Lourenço et al., 2004). The monograph of Lourenço (2002) represented the first attempt to produce a synthesis. In this work it was admitted that the results probably represented only some of the species actually present in Brazil, since the scorpion fauna of that country is one of the most diverse in the world, and several regions of the country still require detailed inventories. This is particularly true of the region in which are located the states of Maranhão and Piauí in the North of the country. This region corresponds to a zone of vegetational transition between the humid forests of Amazonia, and the drier open formations of the Centre and Northeast (see figure 18.1 in Lourenço, 2001). It undoubtedly contains several endemic elements.

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

Taxonomic treatment

Tityus maranhensis sp. n.

Figs 1 to 7.

TYPE MATERIAL: Holotype male: Brazil, State of Maranhão, Caxias, Reserva Ecologica Inhamum, 19/VI/2005 (F. Limeira-de-Oliveira). Paratypes: same locality as for holotype. 2 males, 24/V/2005 (M.M.B.G. de Jesus-Junior); 1

male (pit fall trap), 27-28/X/2005 (M.M.B.G. de Jesus-Junior); 1 male (pit fall trap), 28/X/2005 (A.S. Costa); 1 male 20/VII/2005 (M.M.B.G. de Jesus-Junior); 1 male (pit fall trap), 25-28/VIII/2005 (M.M.B.G. de Jesus-Junior); 1 female, 3/VIII/2005 (F. Limeira-de-Oliveira); 2 males (pit fall trap), 12-13/IX/2005 (A.S. Costa). Holotype and five paratypes deposited in the ‘Universidade Estadual do Maranhão’. Four paratypes deposited in the ‘Muséum national d’Histoire naturelle’, Paris.

ETYMOLOGY: the specific name makes reference to the State of Maranhão, in which the new species was collected.

DIAGNOSIS: Small scorpions, with a total length of 32-34 mm in males and 27 mm in the only female known. Coloration yellowish to reddish-yellow with variegated pale brown to dark brown spots over the body and appendages. Moderate granulation over the entire body and pedipalps. Fixed and movable fingers of pedipalps with 13-14 rows of granules. All carinae complete or almost complete. Pectines small, with moderate fulcra. Pectinal tooth count 15 to 18 in males, 15 in female. Basal middle lamella not dilated in female. Telson smooth in males, and with two to four vestigial lateral carinae in the female; subaculear tubercle strongly rhomboid.

All the four groups of *Tityus* defined by Lourenço and Pézier (2002), can be found in Brazil. The new species is accommodated in the “*Tityus clathratus*” group which is recognized mainly by its variegated pigmentation and the structure of the telson and subaculear tubercle which are strongly rhomboid. *Tityus maranhensis* sp. n. can, however, be distinguished from the other species of the “*T. clathra-*

tus” group also present in Brazil, and in particular from *Tityus mattogrossensis* Borelli, by the following characters: (i) a distinct pattern of pigmentation; chelicerae with only residual spots, and sternites heavily pigmented (ii) different morphometric values, see Table I, (iii) dorsal carinae of metasomal segments I to IV with spinoid granules, (iv) internal carinae of patella with strongly marked granules, (v) vesicle almost smooth in males.

DESCRIPTION based on male holotype and female paratype (measurements in Table I).

Coloration. Basically yellowish to reddish-yellow, symmetrically marbled with pale brown to dark reddish brown producing an overall spotted appearance. Prosoma: carapace yellowish and heavily spotted except on the anterior and posterior margins; eyes surrounded with black pigment. Mesosoma: yellowish with variegated brown spots over all tergites. Metasoma: segments I to III yellowish, IV reddish-yellow, with variegated brown spots laterally and ventrally, and triangular spots dorsally. Segment V reddish to reddish-brown with darker spots. Vesicle dark reddish to reddish-brown; the base of the aculeus reddish and the extremity dark reddish. Venter light yellow with two dark spots on the coxapophysis; sternites with variegated dark spots; sternum, genital operculum and pectines pale yellow. Chelicerae yellowish with a few minute dark spots at the base of fingers; fingers yellowish with some black spots; teeth reddish. Pedipalps: yellowish with several spots on the femur, patella, chela hand and chela fingers. 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 moderately granular, with the granules distributed over the entire surface. Median ocular tubercle anterior to the centre of the carapace; median eyes separated by a little more than one ocular diameter. Three pairs of lateral eyes. Mesosoma: Tergites I-VI with one moderately marked median carina. Tergite VII pentacarinat, lateral pairs of carinae moderately marked; median carinae marked only on proximal third. Intercarinal spaces moderately granular, with the granules distributed over the entire surface. Sternites: carinae absent on III-VI; four weak to moderate carinae on VII; sternites surface with a thin granulation; spiracles slit-like but short. Pectines small with moderate fulcra; basal middle lamella not dilated in female; pectinal tooth count 17-17 in male holotype; 15-15 in female paratype. Metasoma: Segment I with 10 carinae; II-IV with 8 carinae; segment V with 5 carinae in males; segment II of female with 10 carinae; dorsal carinae of segments I to IV with distal spinoid granules, better marked in female. Dorsal furrow of all segments weakly developed; intercarinal spaces weakly granular. Telson smooth in males; with one ventral and four weak lateral carinae in the female. Aculeus shorter than vesicle, moderately curved; subaculear tubercle very strong and rhomboid, with two dorsal teeth. Chelicerae, with two reduced denticles at the base of the movable finger, as typical in buthids (Vachon, 1963). Pedipalps: Femur pentacarinat; all carinae moderately crenulate. Patella with seven carinae; internal carina with strong spinoid granules; chelae with 8-9 weak carinae; all faces weakly granular; carinae and granules better marked in female. 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 α (alpha) configuration (Vachon, 1975). Legs: Ventral aspect of tarsi with numerous thin setae. Tibial spurs absent. Pedal spurs present but vestigial in all legs.

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CHECK-LIST OF THE BRAZILIAN SPECIES OF *TITYUS*, BELONGING TO THE “*TITYUS CLATHRATUS*” GROUP

- Tityus bastosi* Lourenço 1984
- Tityus clathratus* C. L. Koch 1844
- Tityus maranhensis* sp. n.
- Tityus mattogrossensis* Borelli 1901
- Tityus paraguayensis* Kraepelin 1895
- Tityus pusillus* Pocock 1893
- Tityus silvestris* Pocock 1897

KEY TO THE GROUP OF SPECIES OF *TITYUS* PRESENT IN BRAZIL

1. Small species ranging from 18 to 40 mm in total length with variegated pigmentation2
 - Medium or large species, ranging from 50 to 100 mm in total length; pigmentation varying from yellowish to brown and black3
2. With a very rhomboidal subaculear tooth
 -*Tityus clathratus* group
 - With a spinoid subaculear tooth*Tityus adisi* group
3. 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; basal middle lamellae of female pectines dilated in most species*Tityus asthenes* group

KEY TO THE SPECIES OF THE “*TITYUS CLATHRATUS*” GROUP PRESENT IN BRAZIL

1. Dentate margins of pedipalp-chela fingers composed of 12 to 14 oblique rows of granules2
 - Dentate margins of pedipalp-chela fingers composed of 15 to 16 oblique rows of granules4
2. Metasomal segments I to IV without a spinoid posterior granule; Coastal Atlantic forest, State of Pernambuco, Brazil.....
 -*T. pusillus*
 - Metasomal segments I to IV with a moderate spinoid posterior granule 3
3. Chelicerae with a variegated pigmentation covering the anterior half; Guayana region, State of Roraima, Brazil.....
 -*T. clathratus*
 - Chelicerae with only some minute dark spots; State of Maranhão, Brazil*T. maranhensis* sp. n.
4. Female pedipalp-chela almost as bulky as that of males; metasomal segments more elongated in males than females; Savannas of central Brazil*T. mattogrossensis*
 - Male pedipalp-chela and metasomal segments much more bulky than those of females5
5. Metasomal segments I to IV without a spinoid posterior granule; from French Guyana and over the entire Amazon basin *T. silvestris*

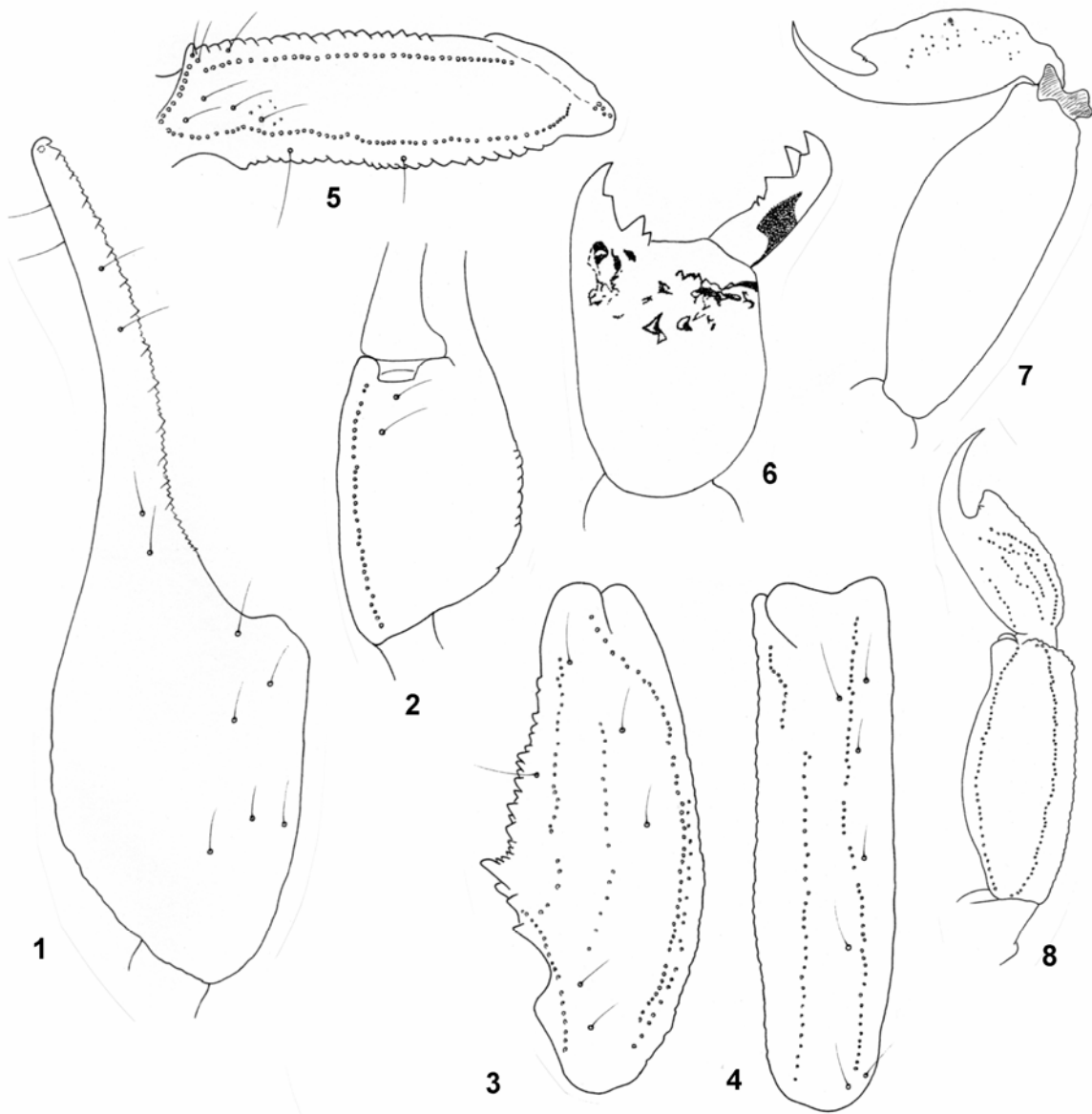


Fig. 1-8. *Tityus maranhensis* sp. n. (male holotype). 1-5. Trichobothrial pattern. 1-2. Chela, dorso-external and ventral aspects. 3-4. Patella, dorsal and external aspects. 5. Femur, dorsal aspect. 6. Chelicera, showing the pattern of pigmentation. 7. Metasomal segments V and telson, lateral aspect. 8. Idem, female paratype.

Fig. 9. Map of the Northeast region of Brazil indicating the type locality of the new species (black star).'

- Metasomal segments I to IV with a small or strong spinoid posterior granule 6
- 6. Spinoid posterior granule very strong; Western Amazonia *T. bastosi*
- Spinoid posterior granule very small; Savannas and Chaco open formations from Argentine and Paraguay to the State of Mato Grosso do Sul in Brazil *T. paraguayensis*

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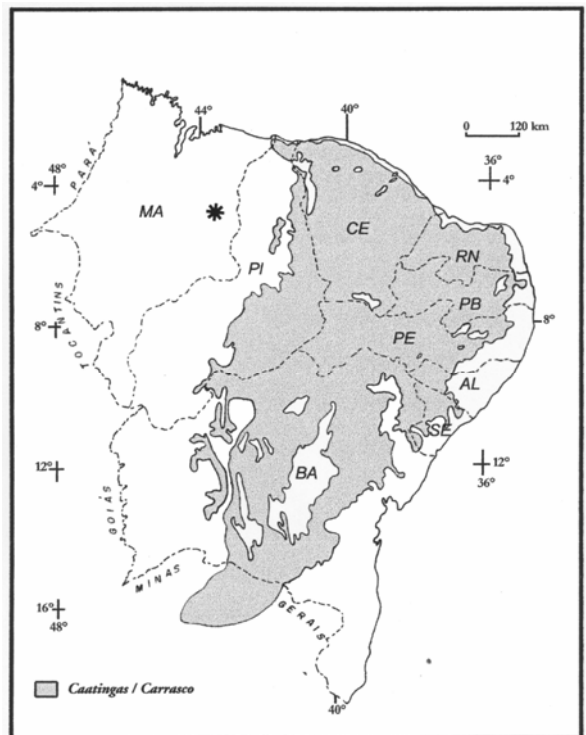


Table 1. Morphometric values (in mm) of the male holotype and female paratype of *Tityus maranhensis* sp. n. and male and female of *Tityus mattogrossensis* Borelli from the Bananal island.

	<i>T. maranhensis</i> sp. n.		<i>T. mattogrossensis</i>	
	♂♂	♀♀	♂♂	♀♀
Total length	33.5	27.1	30.6	29.0
Carapace:				
- length	3.7	3.6	3.3	3.7
- anterior width	2.5	2.3	2.2	2.3
- posterior width	4.2	4.0	3.4	3.7
Metasomal segment I:				
- length	2.8	2.2	2.3	2.2
- width	1.8	1.8	1.8	2.0
Metasomal segment V:				
- length	5.2	4.1	4.7	4.4
- width	2.0	1.7	1.8	1.8
- depth	2.2	1.6	1.9	1.7
Vesicle:				
- width	1.3	1.2	1.2	1.2
- depth	1.3	1.2	1.3	1.3
Pedipalp:				
- Femur length	3.8	3.3	3.3	3.4
- Femur width	1.1	1.2	1.0	1.1
- Patella length	4.2	3.8	3.7	3.8
- Patella width	1.6	1.5	1.3	1.6
- Chela length	6.8	6.2	5.8	6.1
- Chela width	1.8	1.3	1.5	1.3
- Chela depth	1.6	1.2	1.3	1.1
Movable finger:				
- length	4.2	4.3	3.7	4.1

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