

# ENTOMOLOGISCHE MITTEILUNGEN

aus dem  
Zoologischen Museum Hamburg

HERAUSGEBER: PROF. DR. H. STRÜMPEL, DR. G. RACK,  
DR. H. DASTYCH, PROF. DR. R. ABRAHAM  
SCHRIFTLÉITUNG: DR. H. DASTYCH

ISSN 0044-5223

Hamburg

14. Band

1. Oktober 2007

Nr. 177

## A new species of *Brotheas* C. L. Koch, 1837 (Scorpiones, Chactidae) from Guyana

WILSON R. LOURENÇO

(with 11 figures)

### Abstract

In recent publications, evidence based on biogeographic patterns of scorpions has been put forward in support of the hypothesis that the Guyanan region is an important area of endemism in Northeast South America. In this note a new species of *Brotheas* is described from SW of Isherton in Guyana. This provides further confirmation of the very high level of endemism of the Guyanan region (Lourenço 1991).

**Key words:** Scorpiones, taxonomy, endemism, new species, *Brotheas*, Guyanan region, Guyana.

### Introduction

As noted by Lourenço & Molteni Machado (2004), studies on the scorpion fauna of the Amazonian and Guyanan regions, particularly concerning the family Chactidae, began in the second half of the 19th century with a number of publications, including those of Karsch (1879), Simon (1877, 1880) and Pocock (1893, 1897, 1900). Most of this work focused on Oriental Amazonia, mainly eastern Brazil and parts of the Guayana region\*. In his monograph on the scorpions of South America, Mello-Leitão (1945) presented a global synthesis of the family Chactidae Pocock.

\* A lowland province that has been delineated floristically (see Mori 1991)

Beginning in the 1970's, several studies have been published describing a large number of new taxa belonging to the Chactidae. The most important work is that of Gonzalez-Sponga (see Gonzalez-Sponga 1996), who dealt almost exclusively with the fauna of Venezuela. Also relevant are the publications of Lourenço (1983, 1986, 1988a,b, 1994), Lourenço & Pinto da Rocha (2000), and Monod & Lourenço (2001). These studies indicated that the scorpion faunas of Amazonia and Guyana were much more complex than had previously been supposed, and suggested that many new species still remained to be discovered (Lourenço 1986, 1991, 2002a,b).

Although the great complexity of endemism in the Guyanan region has been discussed by Lourenço (1986, 1991), this region remains poorly investigated. In previous publications, evidence from scorpion biogeographic patterns has already been used to support the Guyanan region as an important area of endemism (Lourenço 1986, 1991, 2001). In the present paper, a new species of *Brotheas* is described from SW of Isherton in Guyana, an area close to the border with Brazil (the State of Roraima). This confirms once again the very high levels of endemism in the Guyanan region.

### Methods

Illustrations and measurements were made using a Wild M5 stereo-microscope with a drawing tube and an ocular micrometer. Measurements follow those of Stahnke (1970) and are given in mm. Trichobothrial notations are those developed by Vachon (1974) and the morphological terminology mostly follows that of Hjelle (1990).

### Taxonomy

Family Chactidae Pocock, 1893  
Genus *Brotheas* C.L. Koch, 1837

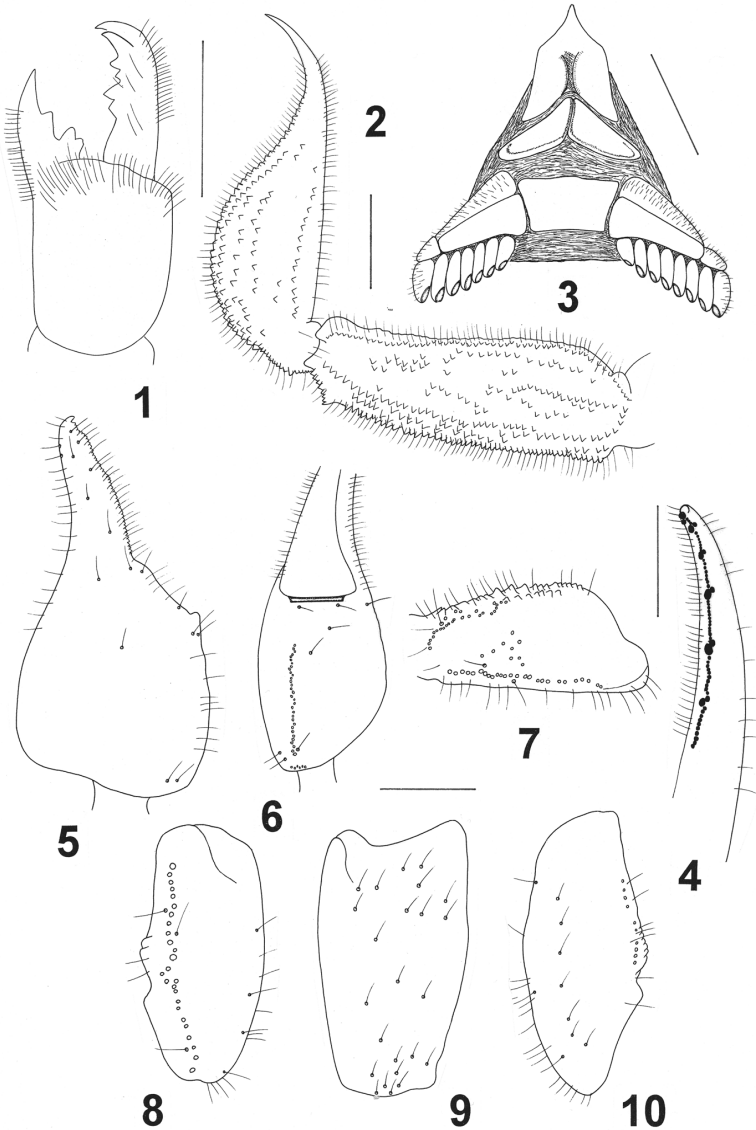
*Brotheas cristinae* sp. n.

(Figs 1-11)

TYPE MATERIAL: holotype (♀) and paratype (♀). Guyana, SW of Isherton, near to the border with Brazil (the State of Roraima), 16 October 1975, collected by local people (F. Castro leg.); holotype deposited in the Zoologisches Museum Hamburg (ZMH Acc. No. A31/07); paratype deposited in the Muséum national d'Histoire naturelle, Paris.

ETYMOLOGY: Patronym in honor of Dr. Cristina A. Rheims of the Instituto Butantan, São Paulo.

DIAGNOSIS: Scorpions moderate to large in size, 63 to 65 mm in total length. Coloration reddish-brown to blackish-brown, except for the chelicerae and telson which are reddish-yellow. Carapace and tergites weakly granulated, almost smooth, with minute punctations. Pectines with 7-8 teeth in females. Trichobothrial pattern type C neobothriotaxic 'majorante'.



**Figs 1-10.** *Brotheas cristinae* sp. n., holotype (♀): **1**, chelicera, dorsal aspect; **2**, metasomal segment V and telson, lateral aspect; **3**, ventral aspect, showing sternum, genital operculum and pectines; **4**, disposition of granulations on the dentate margins of the pedipalp chela movable finger; **5-10**: trichobothrial pattern; **5-6**, chela, dorso-external and ventral aspects; **7**, femur, dorsal aspect; **8-10**, patella, dorsal, external and ventral aspects (scale bars = 3 mm).

DESCRIPTION [based on females (holotype and paratype). Measurements after the description].

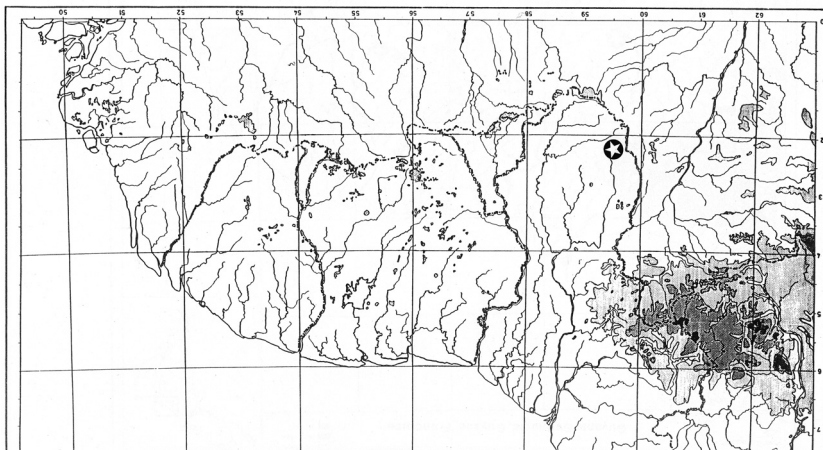
**Coloration:** Basically reddish-brown to blackish-brown. Prosoma: carapace blackish. Tergites blackish-brown. Metasomal segments blackish-brown, with blackish zones over the carinae; vesicle reddish-brown; aculeus reddish-yellow. Chelicerae reddish-yellow, with vestigial diffused variegated brownish spots; fingers uniformly dense reddish colour. Pedipalps blackish-brown; femur and patella darker than chela. Legs reddish-brown. Venter and sternites reddish with some yellowish zones; pectines and genital operculum reddish-yellow.

**MORPHOLOGY.** Carapace lustrous and acarinate, with dense minute punctation; furrows shallow. Sternum pentagonal, longer than wide. Tergites acarinate, smooth and shiny with small punctations; only a few granulations are present on the distal portion of VII. Pectinal tooth count 8-7 (8-8), fulcra absent. Sternites smooth and shiny, VII acarinate. Metasomal segments III to V longer than wide; metasomal tegument strongly granular, including on dorsal surface; segment V with spinoid granulations ventrally. Carinae in segments I-V moderate to strong; ventral carina absent from segment I, weakly marked on segment II. Pedipalps: Femur with dorsal internal, dorsal external and ventral internal carinae strongly marked; ventral external carina weakly marked; dorsal and ventral faces with weakly to moderately marked granulations; internal face moderately granular. Patella smooth and lustrous; dorsal internal, ventral internal, ventral external and external carinae weak; other carinae vestigial. Chela lustrous; ventral median carina moderate; other carinae vestigial or absent; internal face with a few moderate granules, other faces smooth. Dentate margins on movable and fixed fingers composed of 6 rows of granules. Chelicerae with the dentition typical of the family Chactidae (Vachon 1963), and with intense setation ventrally and internally. Trichobothriotaxy type C; neobothriotaxic 'majorante' (Vachon 1974).

Morphometric values (in mm) of the female holotype. Total length, 65.0 (excluding vesicle). Carapace: length, 10.2; anterior width, 6.5; posterior width, 10.3. Metasomal segments: I: length, 3.7; width, 5.4; II: length, 4.5; width, 4.8; III: length, 5.3; width, 4.5; IV: length, 6.4; width, 4.0; V: length, 10.6; width, 4.0; depth, 3.5. Vesicle: width, 4.2; depth, 3.7. Pedipalp: femur length, 7.2, width, 3.6; patella length, 8.3, width, 3.6; chela length, 16.9, width, 6.5, depth, 7.6; movable finger length, 9.6.

**REMARKS:** *Brotheas cristinae* sp. n. like other species of the genus *Brotheas* possess moderately to strongly developed carinae on the metasomal segments, and spinoid granules on the ventral surface of segment V. The new species can be distinguished from others in the genus *Brotheas* and in particular from *Brotheas libinallyi* Gonzalez-Sponga, 1978 which is distributed in the nearby region of the 'Estado Bolívar' in Venezuela, by the following features: (i) front of the carapace straight, whereas in *B. libinallyi* it is convex, (ii) carapace and tergites almost smooth but punctuated, whereas in *B. libinallyi* granulations are

strong, (iii) metasomal segments and telson strongly granulated, whereas in *B. libinallyi* granulations are weakly marked. Moreover, the new species is found in a savanicolous open vegetation habitat – ‘Amazon terra firme savannahs’ (Murça Pires & Prance 1985), whereas other species distributed in the nearby regions are found in tropical forests.



**Fig. 11.** Map of the Guianas' region, showing the type locality of the new species in Guyana (black circle with white star).

### Acknowledgements

I am very grateful to Prof. John L. Cloudsley-Thompson, London, for reviewing the manuscript.

### References

- González-Sponga, M. A. 1996: Guía para identificar escorpiones de Venezuela. – Cuadernos Lagoven. 204 pp. Caracas.
- Hjelle, J. T. 1990: Anatomy and morphology. – pp. 9-63. In: Polis, G. A. (ed.). *The Biology of Scorpions*. Stanford University Press. 587 pp. Stanford.
- Karsch, F. 1879: Scorpionologische Beiträge. Part II. – *Mitt. Münch. entomol. Ver.*, **3**: 97-136. München.
- Lourenço, W. R. 1983: La faune des Scorpions de Guyane française. – *Bull. Mus. natn. d'Hist. nat., Paris*, 4e sér., **5** (A3): 771-808. Paris.
- Lourenço, W. R. 1986: Diversité de la faune scorpionique de la région amazonienne; centres d'endémisme; nouvel appui à la théorie des refuges forestiers du Pléistocène. – *Amazoniana*, **9** (4): 559-580. Kiel.

- Lourenço, W. R. 1988a: Synopsis de la faune scorpionique de la région de Manaus, Etat d'Amazonas, Brésil, avec description de deux nouvelles espèces. – *Amazoniana*, **10** (3): 327-337. Kiel.
- Lourenço, W. R. 1988b: Sinopse da fauna escorpiônica do Estado do Pará, especialmente as regiões de Carajas, Tucuruí, Belém e Trombetas. – *Boletim do Museu Paraense E. Goeldi, Zoologia*, **4** (2): 155-173. Belém.
- Lourenço, W. R. 1991: La province biogéographique guyanaise; étude de la biodiversité et des centres d'endémisme en vue de la conservation des patrimoines génétiques. – *C. R. Soc. Biogéogr.* **67** (2): 113-131. Paris.
- Lourenço, W. R. 1994: Scorpion biogeographic patterns as evidence for a Neblina-São Gabriel endemic center in Brazilian Amazonia. – *Rev. Acad. Colomb. Cienc.* **19** (72): 181-185. Bogota.
- Lourenço, W. R. 2001: Scorpion diversity in Tropical South America: Implications for conservation programs. – Pp. 406-416, In: Brownell, P. & Polis, G. A. (eds.), *Scorpion biology and research*. Oxford Univ. Press. 431 pp. Oxford.
- Lourenço, W. R. 2002a: *Scorpions of Brazil*. – Les Editions de L'IF, 320 pp. Paris.
- Lourenço, W. R. 2002b: *Scorpions*. – Pp. 399-438, In: Adis, J. (ed.), *Amazonian Arachnida and Myriapoda*. Pensoft Publishers, Series Faunistica N° 24, 590 pp. Sofia-Moscow.
- Lourenço, W. R. & Molteni Machado, A. 2004: A new species of *Brotheas* (Scorpiones, Chactidae) from the Rio Negro region in the State of Amazonas, Brazil. – *Rev. Ibér. Aracnol.* **10**: 65-68. Zaragoza.
- Lourenço, W. R. & Pinto da Rocha, R. 2000: Additions to the knowledge of the Chactidae of Brazilian Amazonia (Arachnida: Scorpiones). – *Amazoniana*, **16** (1/2): 259-274. Kiel.
- Mello Leitão, C. 1945: *Escorpiões Sul Americanos*. – Arquivos do Museu Nacional, **40**: 1-468. Rio de Janeiro.
- Monod, L. & Lourenço, W. R. 2001: A new species of scorpion belonging to the genus *Broteochoctas* Pocock from Brazilian Amazonia (Scorpiones, Chactidae). – Pp. 195-202, In: Fet, V. & Selden, P. A. (eds.), *Scorpions 2001, In Memoriam Gary A. Polis*. British Arachnological Society. London.
- Mori, S. A. 1991: The Guayana lowland floristic Province. – *C. R. Séan. Soc. Biogéogr.* **67** (2): 67-75. Paris.
- Murça Pires, J. & Prance, G. T. 1982: The vegetation types of the Brazilian Amazon. – Pp. 109-145. In: Prance, G. T. & Lovejoy, T. E. (eds.). *Amazonia*. Pergamon Press, 442 pp. Oxford.
- Pocock, R. I. 1893: A contribution to the study of Neotropical Scorpions. – *Ann. Mag. Nat. Hist.*, ser. 6, **12**: 77-103. London.

- Pocock, R. I. 1897: Report upon the Scorpiones and Pedipalpi obtained on the Lower Amazons by Messr. E. E. AUSTEN and F. Pickard Cambridge during the trip of Mr. Siemens's Steamship 'Faraday'. – Ann. Mag. Nat. Hist., ser. 6, **19**: 357-368. London.
- Pocock, R. I. 1900: Myriopoda and Arachnida. In: Report on a collection made by Messr. F. V. McConnell and J. J. Quelch at Mount Roraima in British Guiana. – Trans. Linn. Soc., **8**: 64-71. London.
- Simon, E. 1877: Etudes Arachnologiques. X. Arachnides nouveaux ou peu connus. – Ann. Soc. Entomol. France, sér., 5: 225-242. Paris.
- Simon, E. 1880: Etudes arachnologiques 12ème Mémoire (1). XVIII. Descriptions de genres et espèces de l'ordre des Scorpions. – Ann. Soc. Entomol. France (5), **10**: 377-398. Paris.
- Stahnke, H. L. 1970: Scorpion nomenclature and mensuration. – Entomol. News **81**: 297-316. Philadelphia.
- Vachon, M. 1963: De l'utilité, en systématique, d'une nomenclature des dents des chélicères chez les Scorpions. – Bull. Mus. natn. d'Hist. nat., 2è sér., **35** (2): 161-166. Paris.
- Vachon, M. 1974: Etude des caractères utilisés pour classer les familles et les genres de Scorpions (Arachnides). 1. La trichobothriotaxie en arachnologie. Sigles trichobothriaux et types de trichobothriotaxie chez les Scorpions. – Bull. Mus. natn. d'Hist. nat., 3è sér., n° **140**, Zool. 104: 857-958. Paris.

Author's address:

Dr. W. R. LOURENÇO, Département de Systématique et Evolution, USM 0602, Section Arthropodes (Arachnologie), CP 053, Muséum National d'Histoire Naturelle, 61 rue Buffon 75005 Paris, France (e-mail: arachne@mnhn.fr).