Revista Ibérica de Aracnología, nº **39** (31/12/2021): 13–16.
Grupo Ibérico de Aracnología (S.E.A.). ISSN: 1576 - 9518.

THE GENUS *ANANTERIS* THORELL, 1891 (SCORPIONES: BUTHIDAE) IN THE STATE OF AMAPÁ, BRAZIL, WITH DESCRIPTION OF A NEW SPECIES

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Abstract: A new species of the genus *Ananteris* Thorell is described from Monte Karupina in the Serra Lombarda, State of Amapá, representing the first record from this state and the northernmost locality for an *Ananteris* Thorell, 1891 in Brazil. The scorpion was collected at the base of Monte Karupina (an inselberg), which presents typical rainforest vegetation. The description of this new species brings further evidence about some particularities in the biogeographic distribution patterns of most *Ananteris* species. The species are highly endemic and can inhabit in sympatry with other species of the genus. In the present case the new species may represent a vicariant element recently isolated and distributed along a corridor going from the Brazilian Guiana (Amapá) to the coastal region of Suriname.
Key words: Scorpiones, Buthidae, taxonomy, new species, vicariant element, Brazilian Guiana.

El género *Ananteris* Thorell, 1891 (Scorpiones: Buthidae) en el estado de Amapá, Brasil, y descripción de una especie nueva
Resumen: Se describe del Monte Karupina, Sierra Lombarda, Estado de Amapá, una especie nueva de *Ananteris* Thorell, 1891 la cual representa el primer registro del género para este estado de la Guayana Brasileña. Este escorpión se colectó en la base del Monte Karupina (un cerro isla o "inselberg"), el cual presenta una pluvisilva típica. La descripción de esta especie aporta datos adicionales sobre algunas peculiaridades de los patrones biogeográficos de distribución de la mayoría de las especies de *Ananteris*. Las especies de este género tienen un elevado nivel de endemismo y pueden vivir en simpatría con otros congéneres. En este caso, la especie nueva pudiera representar un elemento vicariante recientemente aislado y distribuido a lo largo de un corredor que se extiende desde la Guayana Brasileña (Amapá) hasta la región costera de Surinam.
Palabras clave: Scorpiones, Buthidae, taxonomía, especie nueva, elemento vicariante, Guayana Brasileña.

Taxonomy / Taxonomía: Ananteris *karupina* **sp. n.**

Introduction

After the creation of the genus *Ananteris* by Thorell (1891) this group remained inconspicuous and for almost a century only three species were known. In recent years, the number of species knew a significant growing, starting with the revision by Lourenço (1982), which was followed by the description of numerous species from almost all regions of South America, in particular from Brazil, Venezuela and the countries of the Guayana region (e. g. González-Sponga, 2006; Lourenço, 2015, 2020, 2021; Lourenço & Motta, 2019, 2021; Lourenço *et al*., 2020a; Ythier *et al*., 2020). A recent synopsis proposed by Dupré (2020) suggests 92 described species up to 2020. With such numbers, *Ananteris* occupies the third rank among scorpion genera, being only surpassed by the genera *Centruroides* Marx (≈ 95 species) and *Tityus* C. L. Koch (≈ 220 species). The validity of some species can probably be questioned, such as those described from Venezuela by González-Sponga (2006). This country holds on its own about half of the known species. Nevertheless, the biogeographic patterns of distribution presented by a majority of *Ananteris* species seem to support this concentration in some limited zones of distribution. The species are highly endemic and can be observed in sympatry with other species of the genus (Lourenço, 1982; Lourenço & Motta, 2019, 2021). Convergent morphological patterns also suggest the possible existence of vicariant species, a model already observed for other buthid genera such as *Grosphus* Simon in Madagascar (Lourenço *et al*., 2020b).

It is quite possible that a significant revision of this genus may bring more precise details on its pattern of distribution and differentiation. Recently some information about the existence of a possibly revisionary work become available; in fact a doctoral thesis produced by Santos da Silva (2019). The access to this publication was however limited to a simplified version of this monograph. From what was presented in the simplified version, it seems, once again, that it corresponds mainly to one more phylogenetic study which attempt to change most aspects of the classical classification, but in most cases based only on theoretical evidence but without the necessary study of the available type material. Only the full publication of this study will reveal which final conclusions are reached by the author.

In this note one new species is described from low altitude rain forests located at the base of Monte Karupina in the Serra Lombarda, in fact an Inselberg. This mountain is located in the State of Amapá, which is also part of the Guayana region (Mori, 1991). The type locality of the new species represents the most northern location ever confirmed for an *Ananteris* species in Brazil.

Methods

Measurements and illustrations were produced using a Wild M5 stereo-microscope with a drawing tube and an ocular micrometre. Measurements follow Stahnke (1970) and are given in mm. Trichobothrial notations are those developed by Vachon (1974), morphological terminology mostly follows Vachon (1952) and Hjelle (1990), and chelicerae dentition follows Vachon (1963).

Taxonomic treatment

Family **Buthidae** C. L. Koch, 1837

Genus ***Ananteris*** Thorell, 1891

***Ananteris karupina* sp. n.** (Figs. 1-4, 6-12)

TYPE MATERIAL. Brazil, State of Amapá, Serra Lombarda, Monte Karupina (Inselberg), in low altitude rain forest (J.-M. Betsch leg.), IV/2001. One male holotype. The holotype will be deposited in the collections of the Museu Nacional, Rio de Janeiro, Brazil.

ETYMOLOGY. The specific name is placed in apposition to the generic name and refers to the type locality, Karupina Mountain.

DIAGNOSIS. Species of small size compared to the average size of the other species within the genus (total length 17.2 mm for male holotype; see morphometric values after the description). General coloration yellow, marked with brownish spots over the body and appendages. Chelicerae yellow without variegated spots over their entire surface; fingers strongly marked with blackish spots. Chela fingers with six rows of granules. Pectines of male holotype with 17-16 teeth. Telson with a globular shape, not elongate and with some conspicuous granules on ventral carina; subaculear tubercle spinoid. Carinae and granulation moderately marked. Metasomal segments with 10-8-8-8-5 carinae; dorsal on segments II-IV with some spinoid granules. Trichobothriotaxy, type A-β. Femur trichobotrium $\mathbf{e_1}$ proximal in relation to $\mathbf{d_5}$; fixed finger trichobothria **db** and **est** at the same level; trichobothrium $\mathbf{eb_2}$ on external aspect of patella in a more proximal position than $\mathbf{eb_1}$. The type specimen although preserved for only twenty years showed a weak reaction to UV light.

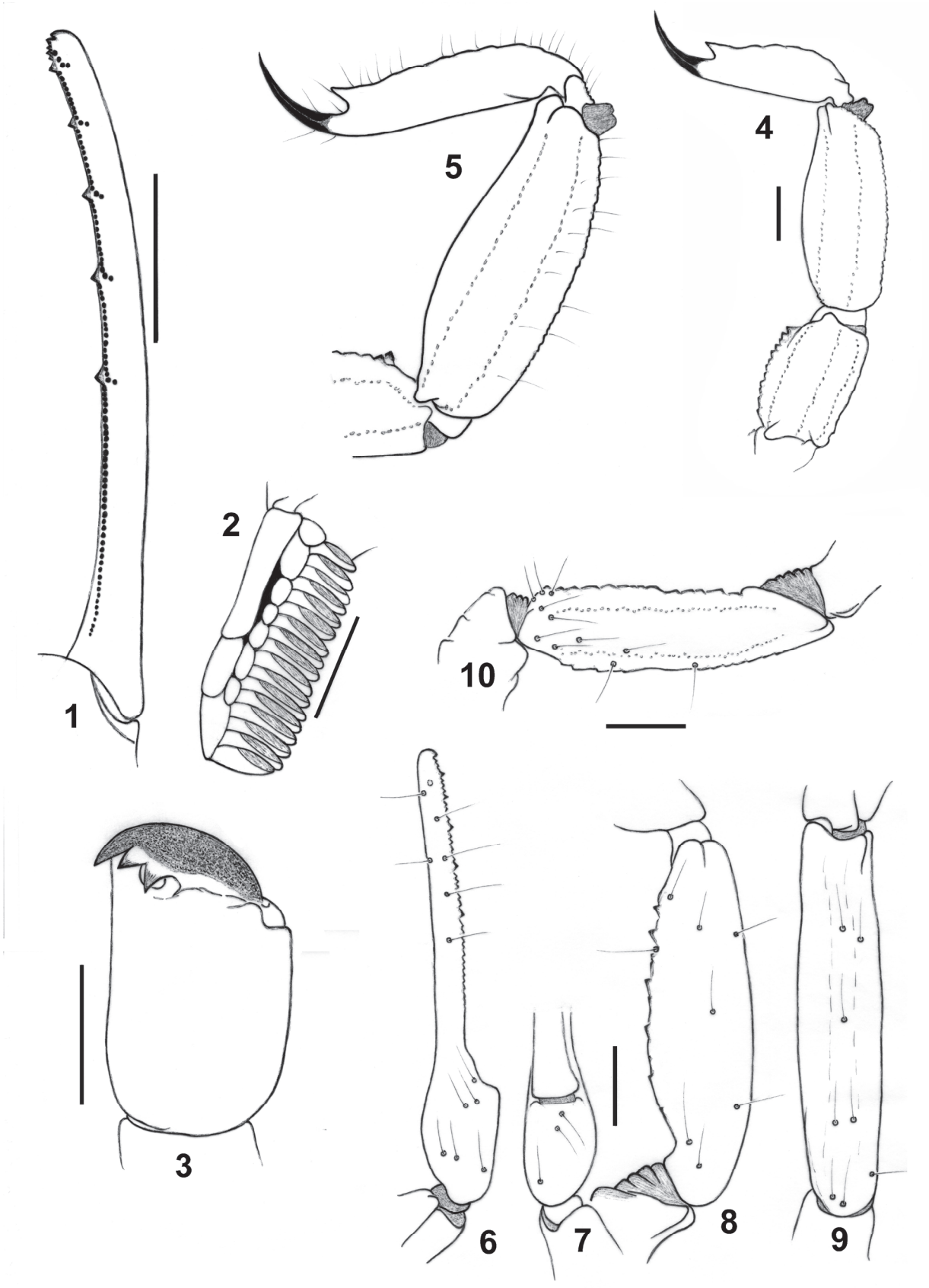
DESCRIPTION BASED ON MALE HOLOTYPE

Coloration. Generally yellow with brownish variegated pigmented zones on the body and appendages. Carapace yellow with brownish spots, better marked centrally; anterior and posterior edges with white spots; median ocular tubercle and lateral eyes dark, almost blackish. Mesosoma with confluent dark brown spots on tergites I to VI; tergite VII with a triangular central dark brown spot and square shaped dark brown spots on lateral sides. Sternites yellow to pale yellow without spots; pectines pale yellow; genital operculum, sternum and coxapophysis yellow, without spots. Metasoma yellow; dorsal aspect of segments I to IV with a triangular brown spot; ventral and lateral sides of all segments with dark brown spots on their posterior region. Telson with vesicle yellow; base of subaculear tooth with diminutive brownish spots; base of aculeus reddish yellow, tip reddish. Chelicerae yellow without any spots over their entire surface; fingers yellow but strongly marked with blackish; teeth reddish. Pedipalp femur with dorsal side almost entirely marked with blackish-brown spots, with few yellowish zones posteriorly; patella yellow with several conspicuous brown spots; chela hand yellow, strongly marked with brown spots; fingers dark brown. Legs yellow intensely marked with brown spots.

Morphology. Carapace with moderately marked granulation over the entire surface except on the anterior and distal edges; anterior margin almost straight, with a small convexity; carinae moderately to weakly marked; median ocular carinae forming an interocular furrow; lateral ocular carinae and posterior median carinae weak or vestigial; median ocular tubercle distinctly anterior to the centre of carapace; median eyes separated by a little less than one ocular diameter; three pairs of lateral eyes. Tergites with moderately marked granulation, similar to that of carapace, better marked posteriorly; axial carina well marked on all tergites; tergite VII pentacarinate, with axial carina incomplete, median and lateral pairs of carinae complete. Sternum subpentagonal. Pectines large, with pectinal tooth count 17-16 for male holotype; fulcra absent. Sternites almost smooth; spiracles linear, slightly elongated. Metasomal segment I with 10 carinae; segments II-IV with 8 complete carinae; segment V with 5 complete carinae; intercarinal spaces weakly granular; segment V rounded without granules; dorsal and latero-dorsal carinae of segments I to IV with minute spinoid granules on their posterior region. Telson slightly globular in shape and weakly elongated and smooth; ventral median carina well marked with some strong granules; aculeus with a subaculear tooth strong and spinoid. Pedipalp femur with five carinae almost complete; patella with carinae much less marked, sometimes incomplete; chela with carinae weak to vestigial, almost always incomplete, made of scattered granules; dorso-internal carina of patella with 4-5 better marked spinoid granules; fixed and movable fingers with 6-6 longitudinal rows of granules, almost straight or slightly oblique, separated by bigger granules. Legs with tibial spurs well developed. Cheliceral dentition characteristic of family Buthidae (Vachon, 1963). Trichobothriotaxy of type A-β (Vachon, 1974, 1975). See diagnosis for details.

Morphometric values (in mm) of the male holotype of *Ananteris sipilili* Ythier *et al*., 2020, and the male holotype of *Ananteris karupina* sp. n. Total length including telson, 24.4/17.2. Carapace: length, 2.9/2.2; anterior width, 1.8/1.5; posterior width, 2.5/2.0. Mesosoma length, 5.6/4.3. Metasomal segments. I: length, 1.5/1.1; width, 1.5/1.2; II: length, 1.7/1.2; width, 1.4/1.1; III: length, 2.0/1.4; width, 1.4/1.1; IV: length, 2.7/1.7; width, 1.4/1.0; V: length, 4.3/2.8; width, 1.3/1.0; depth, 1.5/1.0. Telson: length, 3.7/2.5; width, 0.8/0.7; depth, 0.8/0.7. Pedipalp: femur length, 2.5/2.0, width, 0.7/0.5; patella length, 3.2/2.4, width, 0.8/0.6; chela length, 3.9/3.1, width, 0.6/0.4, depth, 0.5/0.4; movable finger length, 3.0/2.1.

RELATIONSHIPS. *Ananteris karupina* sp. n. seems to be related to *Ananteris sipilili*, species known from the north-west range of French Guiana. Both species are similar for a number of features and could even represent vicariant species, recently isolated, distributed along a corridor going from the Brazilian Guiana (Amapá) to the Coastal region of Suriname. The two species can however be readily distinguished by a number of characters: (i) a general smaller size for the new species (see measurements), (ii) telson shorter and more to oval in the new species (see figs. 4-5), (iii) trichobothria **db** et **est** located at the same level in the new species, whereas in *A. sipilili* trichobothrium **db** is basal to **est**; in the new species trichobothrium $\mathbf{eb_2}$ on external aspect of patella is located in a more proximal position than $\mathbf{eb_1}$ (figs. 6-10).



Figs. 1-10. Male holotype. 1-4, 6-10: *Ananteris karupina* **sp. n. 1**. Cutting edge of movable finger, showing rows of granules. **2**. Pecten. **3**. Chelicera, dorsal aspect. **4**. Metasomal segments IV-V and telson, lateral aspect. **5**. Idem for the male holotype of *Ananteris sipilili*. **6-10.** Trichobothrial pattern. **6-7**. Chela dorso-external and ventral aspects. **8-9**. Patella, dorsal and external aspects. **10**. Femur, dorsal aspect (scale bar = 0.5 mm).

Fig. 11. The Monte Karupina (Inselberg) in the Serra Lombarda surrounded by the low altitude rain forest, type locality of *Ananteris karupina* **sp. n.** (from Creative Commons). **Fig. 12.** Map of the Guayana region, showing the type localities of *Ananteris sipilili* (black cross) and *Ananteris karupina* **sp. n.** (black asterisk).



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References

DUPRÉ, G. 2020. Check-list des espèces du genre *Ananteris* Thorell, 1891 (Scorpiones: Buthidae). *Arachnides*, **97**: 1-12.

GONZÁLEZ-SPONGA, M. A. 2006. *Arácnidos de Venezuela. El género Ananteris Thorell, 1891, en Venezuela (Scorpionida: Buthidae).* Serie de libros arbitrados del Vicerrectorado de Investigación y Postgrado, UPEL, Caracas. 223p.

HJELLE, J. T. 1990. Anatomy and morphology. Pp. 9-63, *In*: Polis, G. A. (ed.). *The Biology of Scorpions*. Stanford Univ. Press, Stanford: 587 pp.

LOURENÇO, W. R. 1982. Révision du genre *Ananteris* Thorell, 1891 (Scorpiones, Buthidae) et description de six espèces nouvelles. *Bulletin du Muséum national d'Histoire naturelle*, Paris, 4e sér. **4** (A 1/2): 119-151.

LOURENÇO, W. R. 2015. Comments on the Ananterinae Pocock, 1900 (Scorpiones: Buthidae) and description of a new remarkable species of *Ananteris* from Peru. *Comptes Rendus Biologies*, **338**: 134-139.

LOURENÇO, W. R. 2020. A propos de la localité d'origine d'*Ananteris balzanii* Thorell, 1891, espèce type du genre *Ananteris* Thorell, 1891 (Scorpiones: Buthidae). *Revista Ibérica de Aracnologia*, **36**: 185-187.*

LOURENÇO, W. R. 2021. Some additional comments on the Ananterinae or '*Ananteris* group' and description of a new species of *Ananteris* Thorell, 1891 from Central Brazil (Scorpiones: Buthidae). *Zootaxa*, **4984**(1): 347-356.

LOURENÇO, W. R. & P. C. MOTTA 2019. The genus *Ananteris* Thorell, 1891 (Scorpiones: Buthidae) in Central Brazil, and description of one new species. *Revista Ibérica de Aracnologia*, **35**: 9-13.*

LOURENÇO, W. R. & P. C. MOTTA 2021. One more new species of *Ananteris* Thorell, 1891 (Scorpiones: Buthidae) from the Cerrados of the Federal District in Brazil. *Revista Ibérica de Aracnologia*, **38**: 121-125.*

LOURENÇO, W. R., J. CHEVALIER, A. GANGADIN & E. YTHIER 2020a. Description of a new species of *Ananteris* Thorell, 1891 (Scorpiones: Buthidae) from Suriname. *Bulletin de la Société Entomologique de France*, **125**(3): 233-239.

LOURENÇO, W. R., A. ROSSI, L. WILMÉ, M. J. RAHERILALAO, V. SOARIMALALA & P. O. WAEBER 2020b. The remarkable diversity of the genus *Grosphus* Simon, 1880 (Scorpiones: Buthidae) in Southern Madagascar and in particular in the region of Cap Sainte Marie. *Arachnida – Rivista Aracnologica Italiana*, **27**: 2-35.

MORI, S. A. 1991. The Guayana lowland floristic province. *Comptes Rendu de la Société de Biogéographie,* **67**: 67-75.

SANTOS DA SILVA, A. P. 2019. *Análise filogenética dos escorpiões do gênero* Ananteris *Thorell, 1891 (Arachnida; Scorpiones: Buthidae.* Tese de doutoramento, Universidade de São Paulo (simplified version): 38 pp.

STAHNKE, H. L. 1970. Scorpion nomenclature and mensuration. *Entomological News*, **81**: 297-316.

THORELL, T. 1891. Nova species Brasiliana ordinis Scorpionum. *Entomologisk tidskrift,* **12** (2): 65-70.

VACHON, M. 1952. *Etudes sur les scorpions*. Publications de l'Institut Pasteur d'Algérie, 482 pp. Alger.

VACHON, M. 1963. De l'utilité, en systématique, d'une nomenclature des dents des chélicères chez les Scorpions. *Bulletin du Muséum national d'Histoire naturelle,* Paris 2è sér., **35**(2): 161-166.

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. *Bulletin du Muséum national d'Histoire naturelle*, Paris, 3è sér., n° 140, Zool., **104**: 857-958.

VACHON, M. 1975. Sur l'utilisation de la trichobothriotaxie du bras des pédipalpes des Scorpions (Arachnides) dans le classement des genres de la famille des Buthidae Simon. *Comptes Rendus des séances de l'Académie des Sciences*, Paris, sér. D, **281**: 1597-1599.

YTHIER, E., J. CHEVALIER & W. R. LOURENÇO 2020. A synopsis of the genus *Ananteris* Thorell, 1891 (Scorpiones: Buthidae) in French Guiana, with description of four new species. *Arachnida – Rivista Aracnologica Italiana*, **28**: 2-33.

* References available at www.sea-entomologia.org