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A NEW SPECIES OF *RHOPALURUS* THORELL, 1876 FROM DOMINICAN AMBER (SCORPIONES, BUTHIDAE)

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Abstract: *Rhopalurus renelauerae* Lourenço, 2016 **sp. n.**, a new species of fossil scorpion belonging to the genus *Rhopalurus* Thorell 1876, is described from a specimen in amber from the Dominican Republic. The new species is clearly associated with the extant fauna of the Neotropical region. This discovery attests to a considerable degree of diversity in the Dominican amber-producing forests.
Key words: Scorpiones, Buthidae, *Rhopalurus*, fossil, new species, amber, Dominican Republic.

Una especie nueva de *Rhopalurus* Thorell, 1876 del ámbar dominicano (Scorpiones, Buthidae)
Resumen: Se describe *Rhopalurus renelauerae* Lourenço, 2016 **sp. n.**, una nueva especie de escorpión fósil perteneciente al género *Rhopalurus* Thorell 1876, a partir de un ejemplar encontrado en ámbar de la República Dominicana. La nueva especie está claramente asociada con la fauna existente de la región Neotropical. Este descubrimiento atestigua un grado considerable de diversidad en el ámbar producido por los bosques dominicanos.
Palabras clave: Scorpiones, Buthidae, *Rhopalurus*, fósil, especie nueva, ámbar, República Dominicana.

Taxonomy / Taxonomía: *Rhopalurus renelauerae* **sp. n.**

Introduction

As already outlined in previous papers (e.g. Lourenço, 2016), scorpions are rare among the arthropods fossilized in amber. The history of scorpions found in amber has already been discussed in detail (see Lourenço, 2009a, 2016) and will not be reprised here. Following some isolate discoveries which took place during the 19th century, the study of amber fossil scorpions restarted in the 1970s with specimens from Dominican Republic (Schawaller, 1979, 1982; Santiago-Blay & Poinar Jr., 1988, 1993; Santiago-Blay, Schawaller & Poinar Jr., 1990). However, not all described species have been correctly diagnosed and described both from Oligocene/Miocene amber from the Dominican Republic or Mexico (see Lourenço, 2016). The amber fossils found in Hispaniola and Mexico seem without exception to be closely related to the extant buthid scorpion taxa of the Caribbean and Neotropical regions (see Lourenço, 2009b, 2013, 2014). In this publication, a new species of *Rhopalurus* is described from Dominican Republic amber. This is the first case of a *Rhopalurus* species ever found in amber and attests to an important degree of diversity in the Hispaniola amber-producing forests.

Material and methods

The specimen investigated was obtained by the junior author from an International amber dealer, and is now deposited in the personal collection of Miss René Lauer, Wheaton, USA, who supported this study. It is embedded in a very clear rounded piece of yellow-reddish amber measuring 21 x 16 x 2-4 mm. Both dorsal and ventral sides of the scorpion are clearly visible and allow detailed investigation. Precise observation of the specimen reveals, however that it represents in fact an exuvia; consequently some parts suffered a dislocation process. The schematic drawings provided are an interpretation of what could be observed. Illustrations and measurements were made with the aid of a Wild M5 stereo-microscope with a drawing tube (camera lucida) and an ocular micrometer. Measurements follow Stahnke (1970) and are given in mm. Trichobothrial notations follow Vachon (1974) and morphological terminology mostly follows Hjelle (1990).

Systematic description

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

Genus ***Rhopalurus*** Thorell, 1876

TAXONOMIC NOTE: The possibility of studying the internal side of pectinal teeth, allowed the observation of possible stridulatory lyriform files. For this raison, it was decided to accommodate the new species in the genus *Rhopalurus* instead of *Centruroides* (Lourenço & Cloudsley-Thompson, 1995).

***Rhopalurus renelauerae* Lourenço, 2016 sp. n.**
Fig. 1-14.

DIAGNOSIS: Total length, including the telson, 17.03 mm Morphology somewhat similar to that of extant species of *Rhopalurus* in general. Large pectines with 23-24 teeth and the presence of some stridulatory lyriform files in the internal side of teeth. Spiracles between oval and slit-like, but rather short. Fixed and movable fingers of chela with 7-8 oblique rows of granules, without accessory granules – what attests that the specimen is a juvenile. Trichobothrial pattern of type A-α (alpha), orthobothriotaxic.

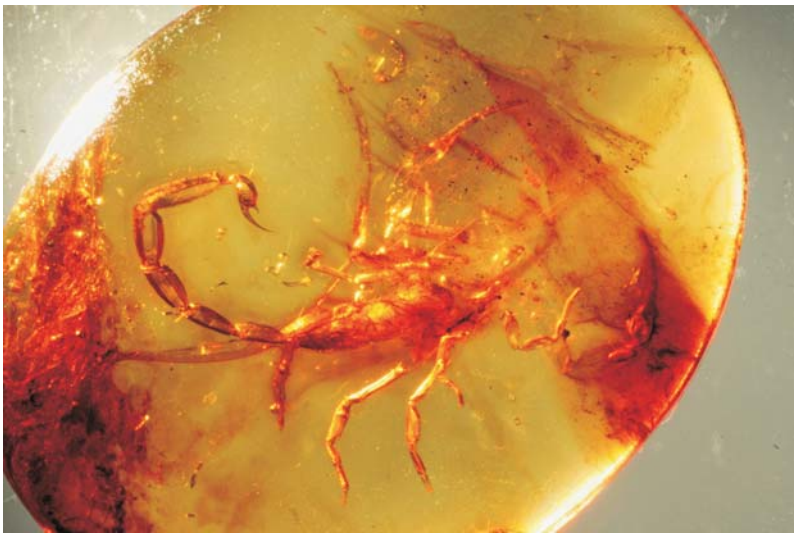


Fig. 1. *Rhopalurus renelauerae* Lourenço, 2016 sp. n. Male holotype. Habitus, dorsal aspect (photo by J. Velten).

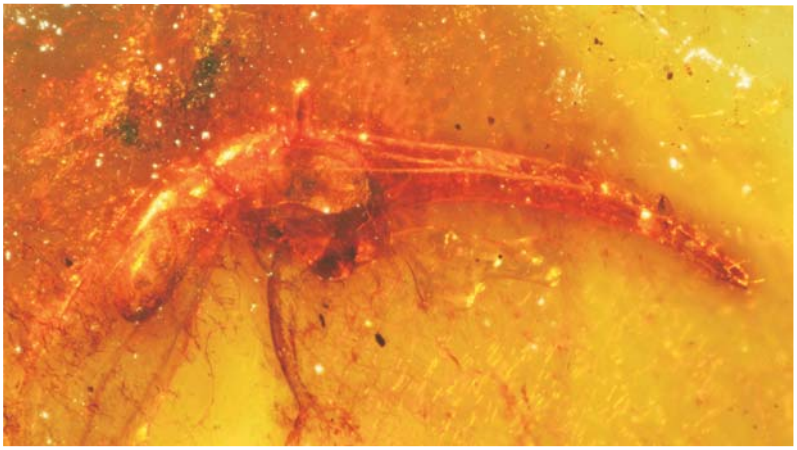


Fig. 2. *Rhopalurus renelauerae* Lourenço, 2016 sp. n. Male holotype. Patella and chela of pedipalp (photo by J. Velten).

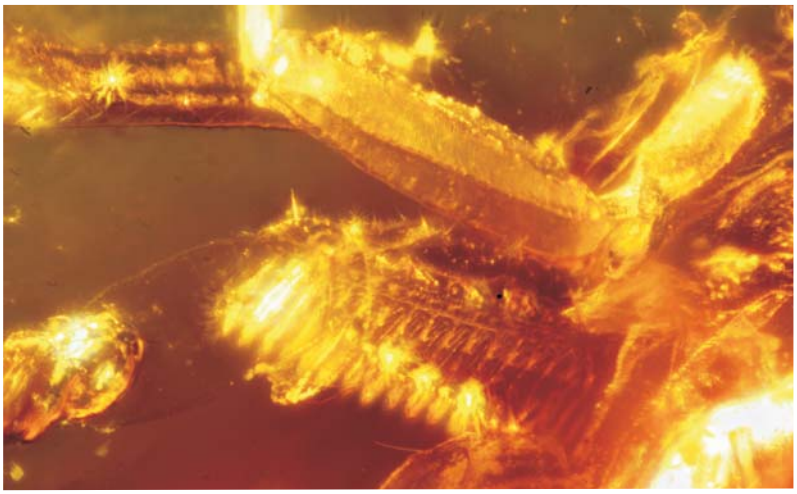


Fig. 3. *Rhopalurus renelauerae* Lourenço, 2016 sp. n. Male holotype. Pecten in detail (photo by J. Velten).

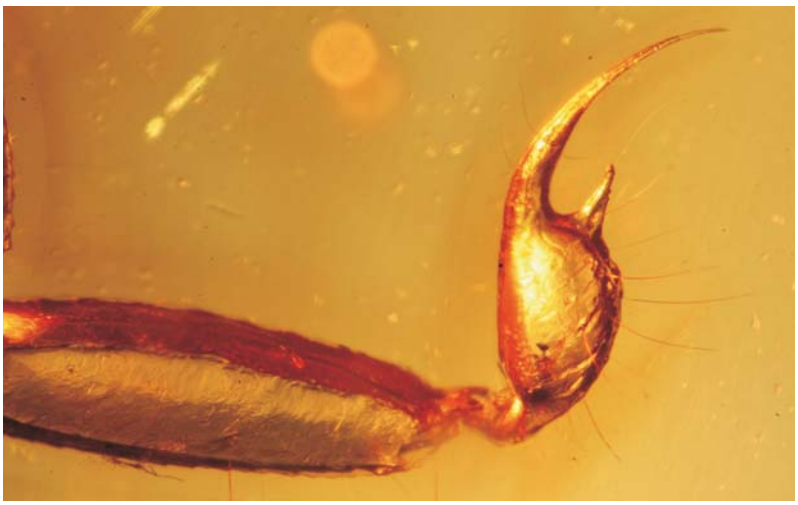


Fig. 4. *Rhopalurus renelauerae* Lourenço, 2016 sp. n. Male holotype. Metasomal segment V and telson, lateral aspect (photo by J. Velten).

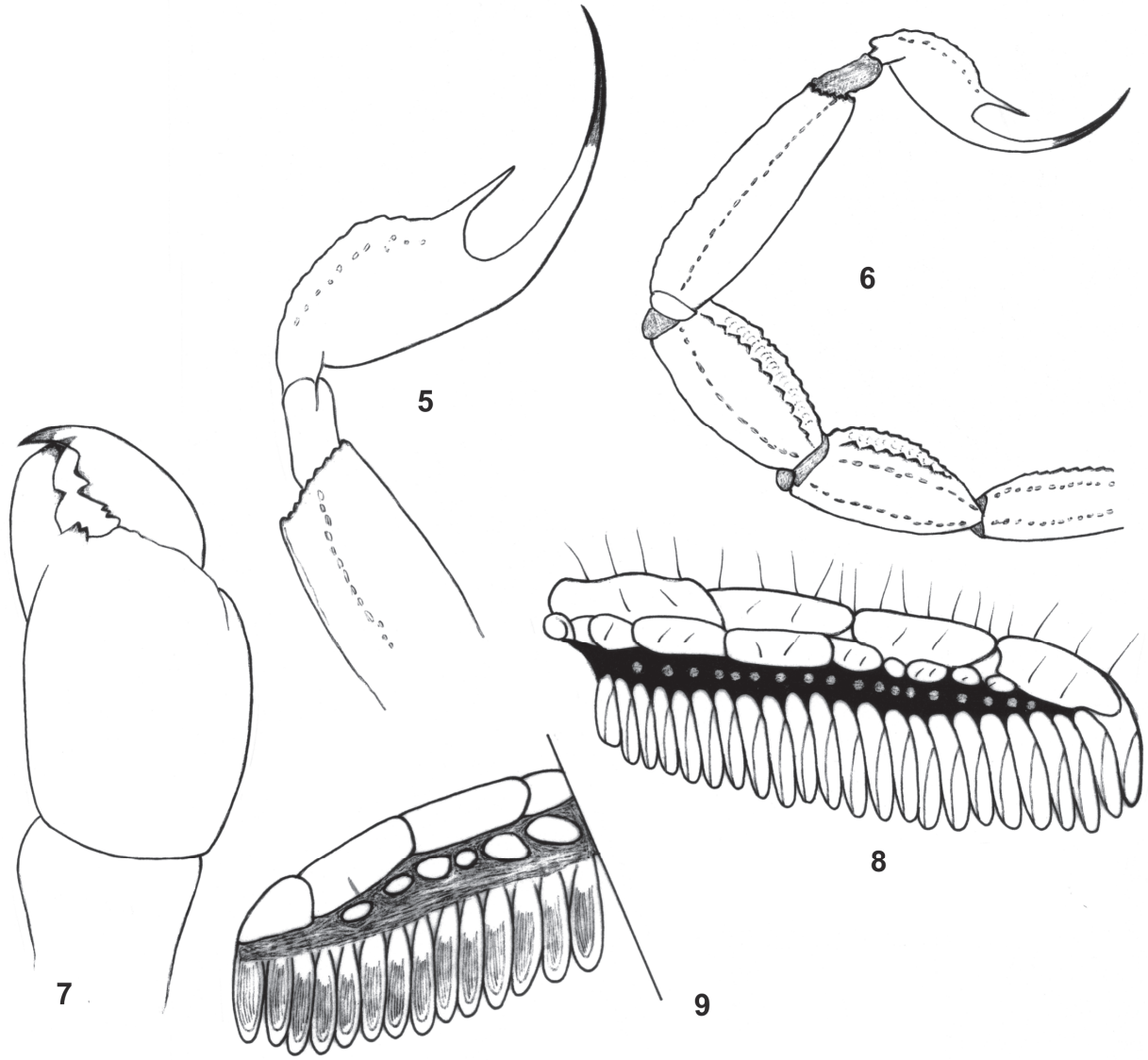


Fig. 5-9. *Rhopalurus renelauerae* Lourenço, 2016 sp. n. Male holotype. **5**. Telson in detail. **6**. Metasomal segments II to V and telson, lateral aspect. **7**. Chelicera, dorsal aspect. **8**. Pecten, external aspect. **9**. Pecten, internal aspect showing stridulatory lyriform files.

RELATIONSHIPS: The new species can be distinguished from other extant species of *Rhopalurus* by a combination of several distinct characters: (i) spiracles between oval and slit-like, but very short, (ii) sternum pentagonal; (iii) aculeus extremely long with a subaculear tooth very long and spinoid.

HOLOTYPE: A juvenile. Considering the slender pedipalps and the morphology of the pectines, it is most certainly a male.

TYPE LOCALITY AND HORIZON: Dominican Republic, Palo Quemado. Precise amber mine not confirmed. Oligocene to Miocene.

DEPOSITORY: The specimen is deposited in the personal collection Miss René Lauer, Wheaton, USA.

ETYMOLOGY: The specific name is dedicated to Miss René Lauer, Wheaton, USA for her support to this study.

DESCRIPTION:

Coloration: the general colour is yellow to reddish-yellow with some dark reddish patches more or less well defined on the pedipalps. The ventral aspect of the specimen bears shaded areas associated with the zone of the pectines.

Morphology. Carapace weakly granular; anterior margin with a moderately marked median concavity. All carinae obsolete. All furrows weak to obsolete. Median ocular tubercle distinctly anterior to the centre of the carapace. Median eyes separated by two ocular diameters. Three pairs of lateral eyes. Sternum pentagonal, longer than wide. Mesosomal tergites weakly granular to smooth; tergites I to VI each with one longitudinal carina, moderate to strong. Tergite VII pentacarinate. Venter: genital operculum formed by two semi-oval plates. Pectines comprising 3-4 marginal lamellae and several small median lamellae; fulcra present but inconspicuous; pectinal tooth count 23-24. Sternites smooth; spiracles small, between oval and slit-like in shape. Metasomal segment I with ten carinae; segments II-IV with eight carinae; segment V with five carinae; dorsal carinae on segments II to IV with some minute spinoid granules. Telson slightly globular; vesicle with ventral granulations; aculeus extremely long and strongly curved; longer than the vesicle; subaculear tooth

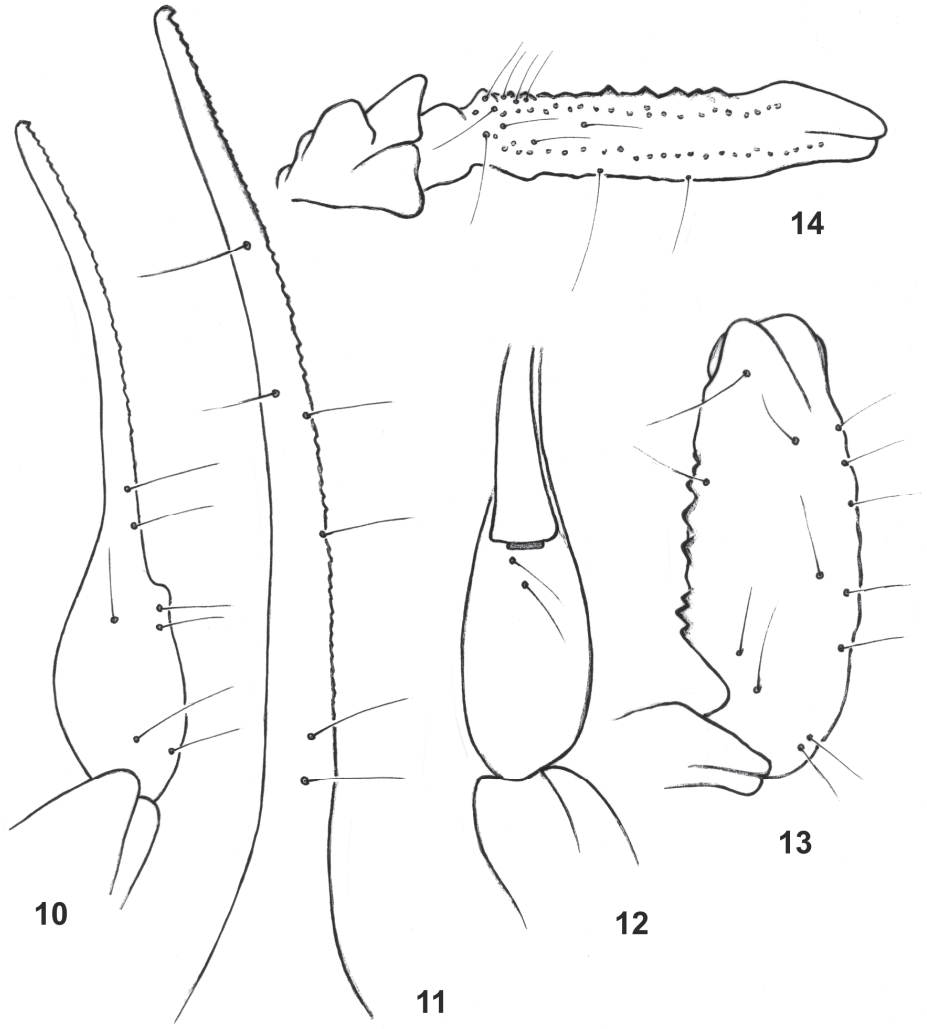


Fig. 10-14. *Rhopalurus renelauerae* Lourenço, 2016 sp. n. Male holotype. Trichobothrial pattern. **10-12**. Chela. **10**. Dorso-external aspect. **11**. Fixed finger in detail. **12**. Ventral aspect. **13**. Patella, dorsal aspect. **14**. Femur, dorsal aspect.

very long and spinoid Cheliceral dentition typical of the family Buthidae; external distal tooth of movable finger shorter than internal distal tooth (Vachon, 1963); ventral aspect with setae. Pedipalps: Femur pentacarinate; patella with internal, ventral and dorsal carinae inconspicuous; internal aspect with a few spinoid granules; chela with inconspicuous carinae; all faces smooth. Fixed and movable fingers with 7-8 oblique rows of rounded granules separated by separated by larger granules; internal and external accessory granules absent; extremities of the fingers with three spinoid granules. Trichobotriotaxy: Type A-α (alpha) (Vachon, 1974, 1975) orthobothriotaxic; femur with 4 internal, 5 dorsal and 2 external; patella with 1 internal, 5 dorsal and 7 external: chela hand with 6 dorso-external and 2 ventral; seven trichobothria on fixed finger. Tarsus of legs with thin ventral setae; pedal spurs moderate; tibial spurs absent

Measurements (in mm) of the holotype of *Rhopalurus renelauerae* Lourenço, 2016 sp. n. (some measurements could not be taken because of the position of the specimen). Total length: 17.03 (including the telson). Carapace, length: 2.40, anterior width: 1.60, posterior width: 2.34. Mesosoma length: 4.47. Metasoma: Segment I, length: 1.40, depth: 0.60. Segment II, length: 1.47, depth: 0.54. Segment III, length: 1.54, depth: 0.74. Segment IV, length: 1.54, depth: 0.87. Segment V, length: 2.27, depth: 0.60. Telson length: 1.94. Vesicle depth: 0.54. Pedipalp: Femur length: 2.00, width: 0.47. Patella length: 2.07, width: 0.80. Chela length: 3.47, width: 0.54. Movable finger length: 2.47.

Acknowledgements

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