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**Early Cretaceous Burmite fossils of the genus
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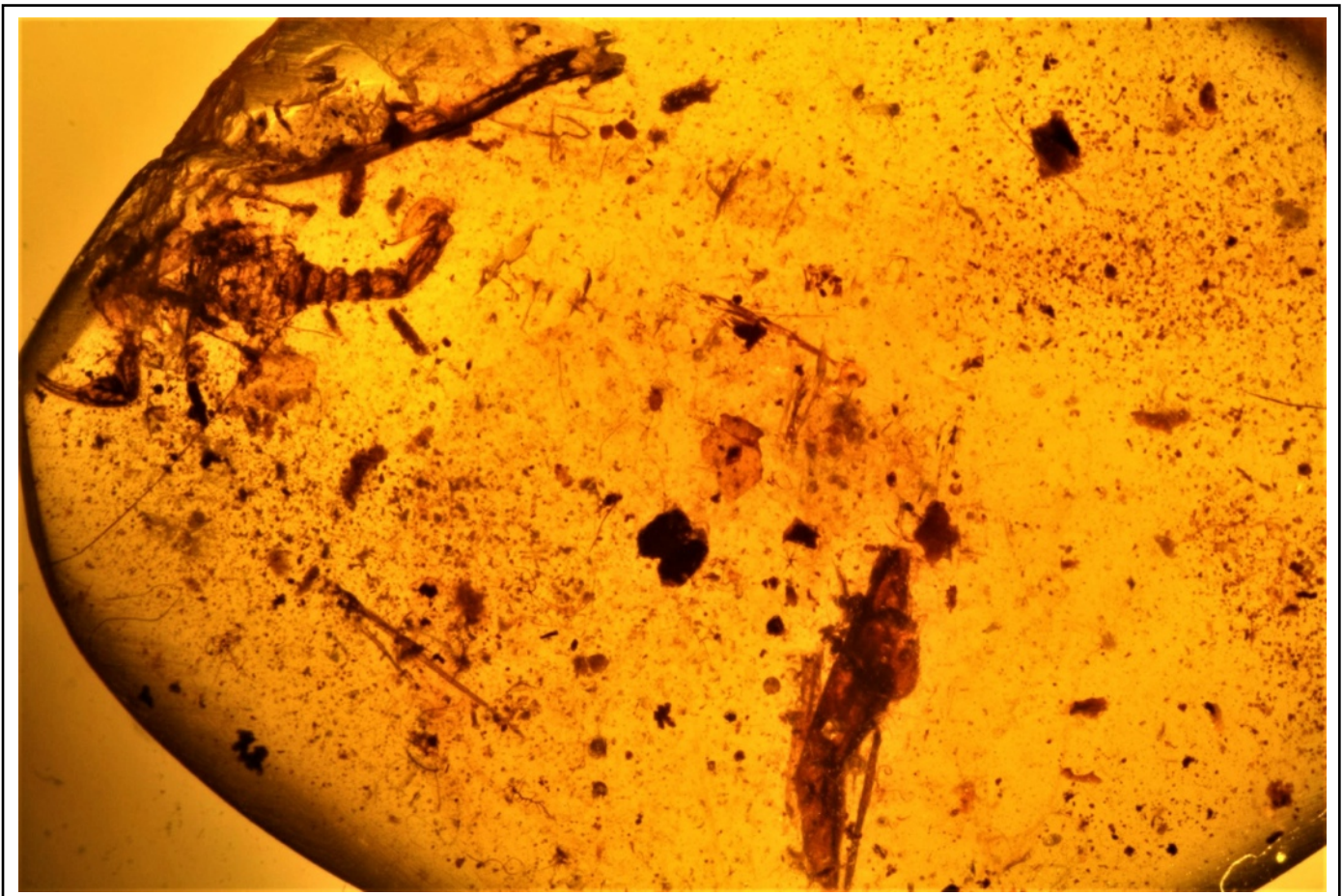
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Early Cretaceous Burmite fossils of the genus *Chaerilobuthus* Lourenço & Beigel, 2011 (Scorpiones: Chaerilobuthidae) and description of a particular new species

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Myanmar;
description.

Abstract. – One more new species of fossil scorpion belonging to the genus *Chaerilobuthus* Lourenço & Beigel, 2011, *Chaerilobuthus meggeri* Lourenço **sp. n.**, is described from early Cretaceous amber of Myanmar (Burma). To present, this is the 11th species of the genus *Chaerilobuthus* to be described among 12 specimens already listed in Burmese amber. One specimen remained as *Chaerilobuthus* sp. This new find attests, once again, to the important degree of diversity among the scorpion fauna found in Burmite amber, and confirms the speciose characteristic of the family Chaerilobuthidae.

Lourenço W. R. & Velten J., 2021. – Early Cretaceous Burmite fossils of the genus *Chaerilobuthus* Lourenço & Beigel, 2011 (Scorpiones: Chaerilobuthidae) and description of a particular new species. *Faunitaxys*, 9(30): 1 – 5.

ZooBank: <http://zoobank.org/4A074A21-267A-485E-A5C7-0E016F54470C>

Introduction

In several previous publications it was frequently outlined that scorpions could yet be considered as rare among the arthropods found in any type of amber (Lourenço, 2016a, 2018a,b,c, 2021; Lourenço & Rossi, 2017; Lourenço & Velten, 2020, 2021). Nevertheless, the number of new described taxa increased remarkably in recent years. This is particularly true for specimens found in Cretaceous Burmese amber, mainly due to the increasing commercial availability of this amber during the last 10-15 years. The majority of the elements described belong to two families: Palaeoburmesebuthidae Lourenço, 2015 and Chaerilobuthidae Lourenço & Beigel, 2011, however, a relevant number of other elements belonging to several distinct families were also the subject of recent studies (Lourenço, 2015a, 2016b; Lourenço & Velten, 2017, 2021).

In this contribution one new species of *Chaerilobuthus* Lourenço & Beigel 2011 is described. The discovery of yet one new element of this family attests to the considerable degree of diversity in the Burmese amber-producing forests, and confirms that the family Chaerilobuthidae is one of the most speciose groups present in this Cretaceous fauna. Nevertheless, the increased pace of descriptions brings more and more problems for future identifications, since many species found in Burmese amber show quite similar morphologies. Obviously, some of the first descriptions of new fossil taxa were based only on fragments, as in the case of *Palaeoburmesebuthus grimaldii* Lourenço, 2002 (Lourenço, 2002) or poorly preserved specimens (Lourenço & Rossi 2017), but as more and more taxa will be known for a given group, the quality of the pieces required to justify new

description will necessarily be raised (Lourenço, 2016a, 2021). Moreover, only a complete knowledge of all the fossils previously described will authorise new descriptions with a low rate of misidentifications (Lourenço, 2016a; 2021).

Material and methods

The specimen investigated is preserved in a more or less clear oval piece of yellowish amber that measures 23 x 18 mm and is about 3 mm thick. The scorpion is almost complete; however, one pedipalp is missing. Besides, some characters are not clearly visible mainly disturbed by the presence of numerous vegetal inclusions and dust. A precise examination confirms that the specimen is in reality an exuviae, as already observed for other Burmite scorpions (Lourenço, 2015b; Lourenço & Velten, 2017). Some parts of the exuviae such as the carapace and one chelicera were dislocated and are found next to the main body of the scorpion (see figure 13). Nevertheless, many characters, in both dorsal and ventral view, can be observed and allow detailed investigations. The schematic drawings provided are an interpretation of what was observable. Illustrations and measurements were produced using a Wild M5 stereomicroscope and a Leica microscope DMLB, both equipped 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). Trichobothria were definitely recorded only when their bothria (areoles) could be observed. In account of the morphology of the pedipalp, pecten and telson the scorpion is most certainly a male. In the absence, however of the real specimen, it is impossible to define if the exuviation process led to an adult.

Systematic description

Family **Chaerilobuthidae** Lourenço & Beigel, 2011

Genus ***Chaerilobuthus*** Lourenço & Beigel, 2011

Chaerilobuthus meggeri Lourenço sp. n.

(Fig. 6-15).

ZooBank: <http://zoobank.org/E455CE58-7874-4E75-A04C-BC089FC3A500>

Holotype: A juvenile which in fact corresponds to an exuvia. Considering the morphologies of the pedipalp, pecten and globular telson, the specimen is most certainly a male.

Type locality and horizon: Myanmar (Burma), Kachin; precise locality unknown; Lower Cretaceous.

Patronym. – The specific name honors Mr Gerd Megger (Freiberg am Neckar, Germany).

Repository. – The type specimen is deposited in the collection of Mr Gerd Megger (Freiberg am Neckar, Germany).

Diagnosis. – General morphology shows similarities with other members of the family Chaerilobuthidae. The following combination of characters can be used to diagnose the new species: Carapace straight anteriorly; median eyes absent and lateral eyes replaced by a large macula. Internal face of pedipalp chela with some strongly marked spinoid granules. A distinct trichobothrial pattern with at least 3 dorsal and 2-3 external trichobothria on femur; 2 dorsal, 1 internal and 2-3 ventral trichobothria on the patella; 2 dorsal, 3 external and one internal trichobothria on chela hand and 6 dorso-external on fixed finger; the internal trichobothrium on chela is observed for the first time. Pecten short and bulky with 6 or 7 teeth; sternum pentagonal; spiracles very small and round; chelicerae with long distal teeth which overlap for about one third of their length; movable finger with two basal and one median tooth; vesicle strongly globular with a moderately long and very thin aculeus. Pedipalp patella with two sharpened apophysis on the internal face. Fixed and movable fingers of pedipalps with 6 rows of granules separated by larger accessory granules; tibial spurs absent from legs III and IV.

Description

Coloration. – The scorpion is reddish-yellow to reddish-brown with several dark zones on body and appendages; carapace, tergites and sternites reddish-brown; metasomal segments reddish-brown; telson yellow; pedipalps and legs reddish-yellow to reddish-brown. Ventral aspect of the specimen is less well observable; mainly disturbed by the presence of inclusions.

Morphology. – Carapace without granulations, smooth; anterior margin straight. Carinae absent and furrows weak or absent. Median ocular tubercle absent. Absence of lateral eyes which are replaced by a large macula. Sternum pentagonal. Mesosomal tergites almost smooth, as carapace, and with vestigial carinae; tergite VII with five weakly marked carinae. Pecten short and bulky, with 6 or 7 teeth without fulcra. Sternites can be observed but suffered with the dislocation process; almost smooth, with small round spiracles. Metasomal segments I to IV almost acarinated; only dorsal carinae are well marked with spinoid granules; segment V with two dorsal carinae equally with spinoid granules; ventral carinae on segments I to V inconspicuous or absent; setation on segments I to V weakly marked. Telson with a strongly globular vesicle totally smooth; aculeus shorter than vesicle but strongly curved; setation weakly marked. Cheliceral dentition not well observable; distal teeth of fixed and movable fingers

long and overlapping for about one third of their length (Vachon, 1963). Pedipalp: Femur with four carinae and a few small spinoid granules on internal face; patella with dorso-internal and ventro-internal carinae well observable; other carinae vestigial; internal face with two sharpened apophysis. Chela with weakly marked carinae; all faces weakly granular, almost smooth; internal face with some small spinoid granules. Fixed and movable fingers with 6 longitudinal rows of small rounded granules, separated by stronger accessory granules; extremity of fingers with one stronger spinoid granule. Trichobothriotaxy: trichobothrial pattern related to those of both buthoid and chaeriloids, types A and B can be observed (Vachon, 1974); see diagnosis for details. Leg tarsi with long, thin ventral setae. Pedal spurs present and moderately marked; tibial spurs absent.

Morphometric values (mm), juvenile holotype.

– *Total length*: 7.52 (including telson).

– *Carapace*: length 1.17, anterior width 0.77, posterior width 0.97.

– *Mesosoma*: length 1.87.

– *Metasomal segments*

I: length 0.37, width 0.70;

II: length 0.40, depth 0.60;

III: length 0.47, depth 0.57;

IV: length 0.57, depth 0.53;

V: length 1.37, depth 0.47.

– *Telson*: length 1.30.

– *Vesicle*: depth 0.54.

– *Pedipalp*

femur length 1.10, width 0.37;

patella length 1.14, width 0.40;

chela length 1.80, depth 0.47;

– *Movable finger*: length 0.90.

References

- Hjelle J. T., 1990. – Anatomy and morphology (p. 9-63). In: Polis G. A. (ed.), *The Biology of Scorpions*. Stanford: Stanford University Press, 587 p.
- Lourenço W. R., 2002. – The first scorpion fossil from the Cretaceous amber of Myanmar (Burma). New implications for the phylogeny of Buthoidea. *Comptes Rendus Palevol* (Académie des Sciences) Paris, 1: 97-101.
- Lourenço W. R., 2015a. – A new subfamily, genus and species of fossil scorpions from Cretaceous Burmese amber (Scorpiones: Palaeoescorpiidae). *Beiträge zur Araneologie*, 9: 457-464.
- Lourenço W. R., 2015b. – A new contribution to the knowledge of Cretaceous Burmese amber scorpions with the description of two new species of *Betaburmesebuthus* Lourenço, 2015 (Scorpiones: Archaeobuthidae: Palaeoburmesebuthinae). *Arachnida – Rivista Aracnologica Italiana*, 1(3): 27-36.
- Lourenço W. R., 2016a. – A preliminary synopsis on amber scorpions with special reference to Burmite species: an extraordinary development of our knowledge in only 20 years. *Zookeys*. 600: 75-87.
- Lourenço W. R., 2016b. – A new genus and three new species of scorpions from Cretaceous Burmese amber (Scorpiones: Chaerilobuthidae: Palaeoescorpiidae). *Arthropoda Selecta*. 25(1): 67-74.
- Lourenço W. R., 2018a. – A new remarkable scorpion genus and species from Cretaceous Burmese amber (Scorpiones: Protoischnuridae). *Arachnida – Rivista Aracnologica Italiana*, 18: 2-14.

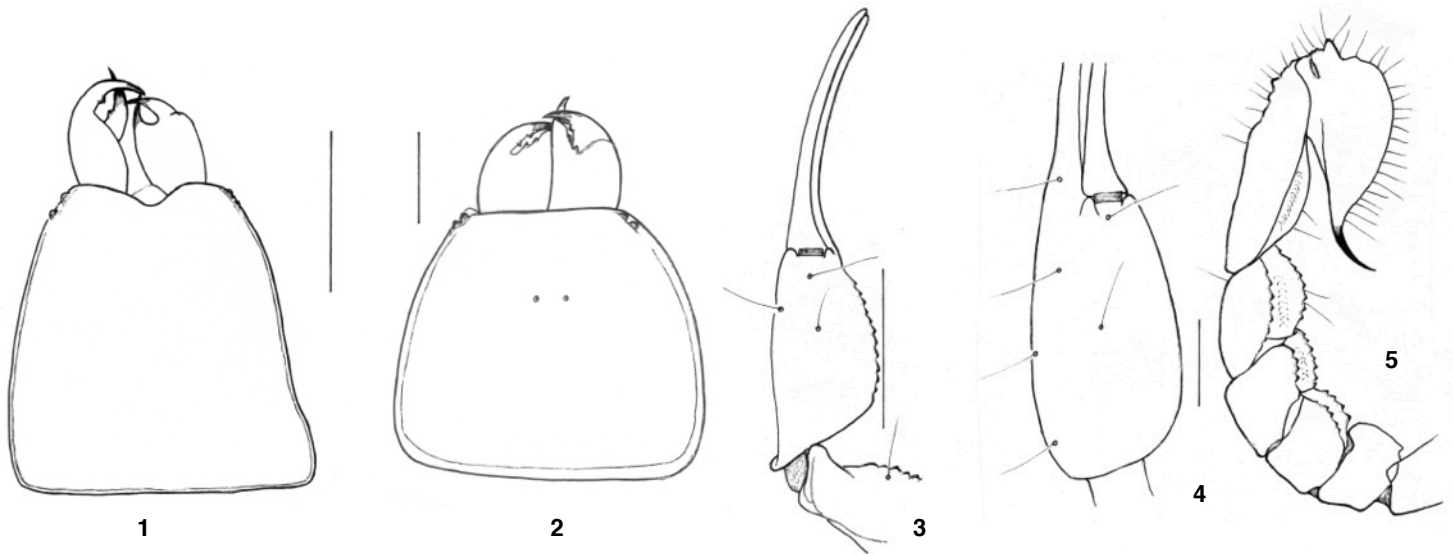


Fig. 1-5. General characteristics of the genus *Chaerilobuthus* (scales = 0.5 mm).

- 1-2) Carapaces of *C. schwarzi* Lourenço, 2015 (1) and *C. hansgeorgmuelleri* Lourenço, 2019 (2) with absence or much reduced median eyes.
 3-4) Ventral aspect of chela, showing two ventral trichobothria, but no internal trichobothria, for *C. schwarzi* (3) and *C. enigmaticus* Lourenço, 2015 (4).
 5) Metasomal segments and telson of *C. enigmaticus*.

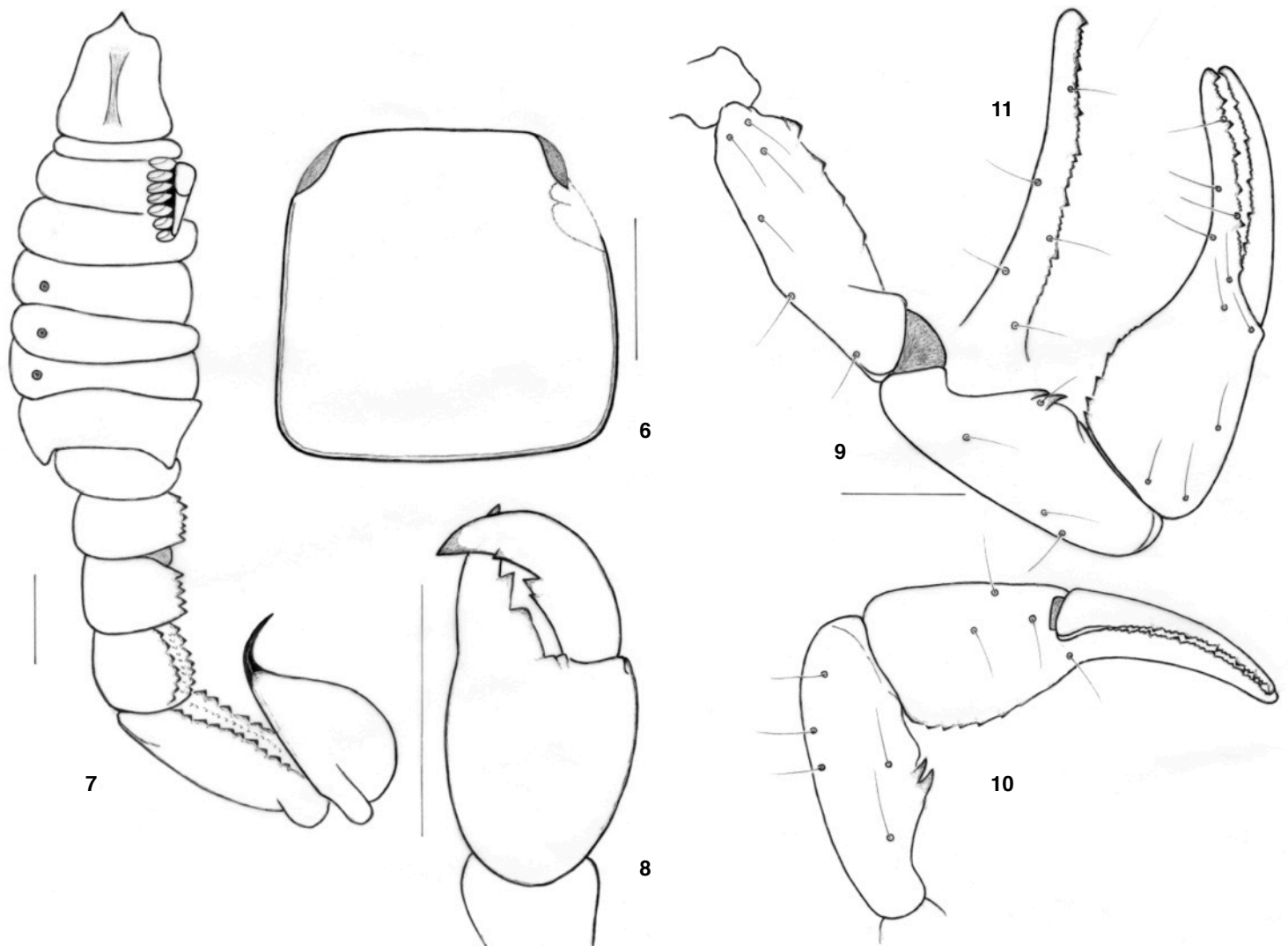


Fig. 6-11. *Chaerilobuthus meggeri* Lourenço sp. n. Male holotype (scales = 0.5 mm).

- 6) Carapace with the presence of maculae on the position of lateral eyes. 7) Ventral aspect showing sternum, sternites with dislocated pecten, metasomal segments and the very globular telson. 8) Chelicera, dorsal aspect.
 9-11) Trichobothrial pattern. 9) Femur, patella and chela, dorsal aspect. 10) Patella and chela, ventral aspect. 11) Fixed finger in detail, showing also granulations on the cutting edge.

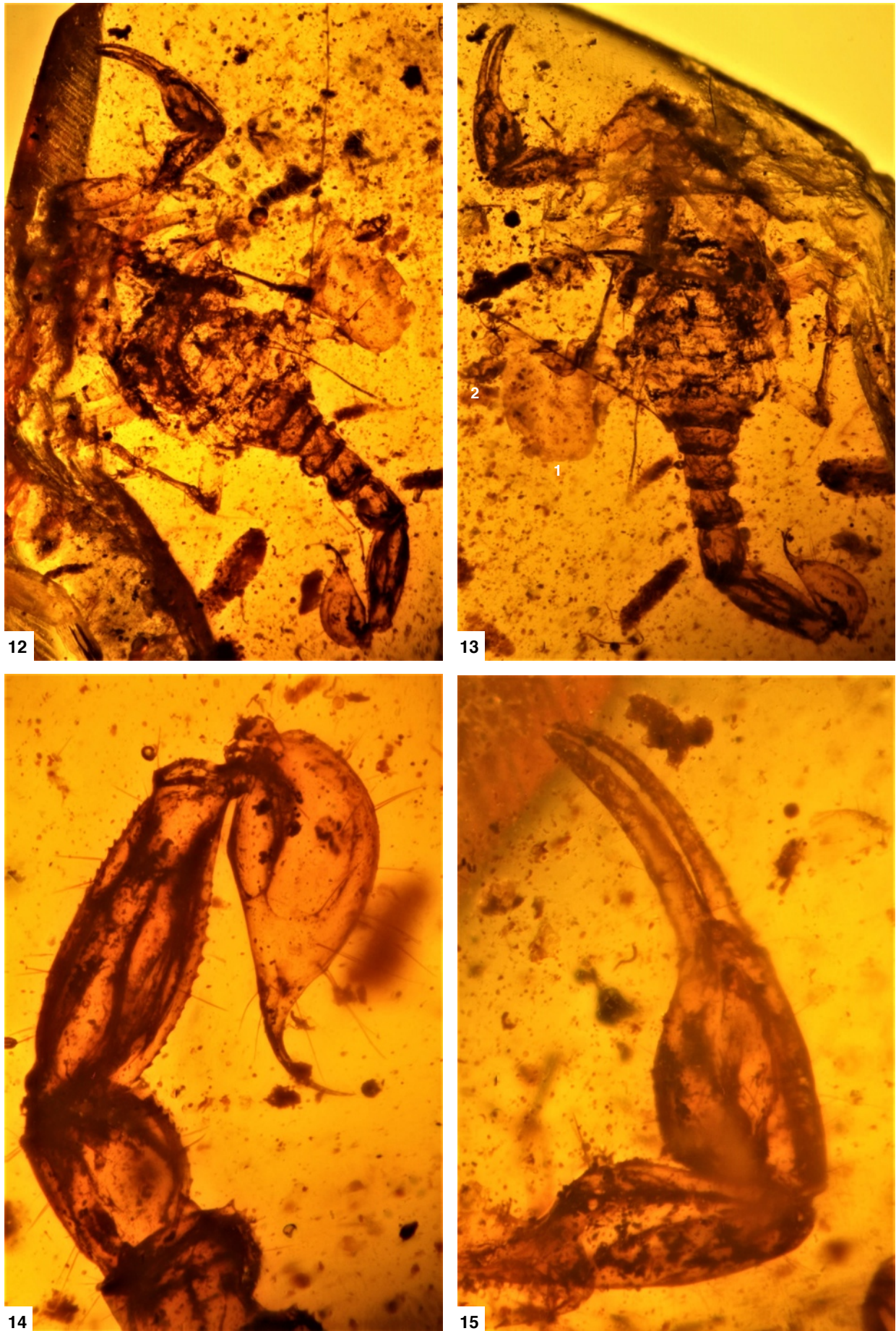


Fig. 12-15. *Chaerilobuthus meggeri* Lourenço **sp. n.** Male holotype.

12-13) Habitus, dorsal and ventral aspects. To be noticed the dislocated carapace and chelicera (1 and 2).

14) Metasomal segments and telson, lateral aspect. 15) Dorso-lateral aspect of right pedipalp.

- Lourenço W. R., 2018b. – A further new species of *Palaeoburmesebuthus* Lourenço, 2002 (Scorpiones: Palaeoburmesebuthidae) from Burmite *Revista Ibérica de Aracnologia*, 32: 51-54.
- Lourenço W. R., 2018c. – Further data on the genus *Chaerilobuthus* Lourenço & Beigel, 2011 (Scorpiones: Chaerilobuthidae) from Cretaceous Burmite and description of a new species. *Arachnida – Rivista Aracnologica Italiana*, 19: 2-13.
- Lourenço W. R., 2021. – Further comments on the elements of the family Palaeoburmesebuthidae Lourenço, 2015 with description of a new species of *Spinoburmesebuthus* Lourenço, 2017 from Early Cretaceous Burmite amber (Scorpiones). *Faunitaxys*, 9(17): 1-6.
- Lourenço W. R. & Rossi A., 2017. – Two more new species of Burmese amber scorpions of the family Palaeoburmesebuthidae Lourenço, 2015 (Scorpiones). *Arachnida - Rivista Aracnologica Italiana*, 13: 11-21.
- Lourenço W. R. & Velten J., 2017. – One more new genus and species of fossil scorpion from Burmese Cretaceous amber belonging to the family Palaeoburmesebuthidae. *Arachnida – Rivista Aracnologica Italiana*, 13: 2-10.
- Lourenço W. R. & Velten J., 2020. – A new contribution to the knowledge of Cretaceous Burmese amber scorpions with the descriptions of two new genera and two new species (Scorpiones: Chaerilobuthidae: Palaeoescorpiidae: Archaeoscorpioninae). *Arachnida – Rivista Aracnologica Italiana*, 28: 34-50.
- Lourenço, W. R. & Velten J., 2021. – One more new genus and species of scorpion from Early Cretaceous Burmese amber (Scorpiones: Protoischnuridae). *Faunitaxys*, 9 (14): 1-5.
- Stahnke H. L., 1970. – Scorpion nomenclature and mensuration. *Entomological News*, 81: 297-316.
- 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, 2e 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, 3e sér., n° 140, Zool. 104 : 857-958.

Résumé

Lourenço W. R. & Velten J., 2021. – Les fossiles de l'ambre du Crétacé inférieur de la Birmanie appartenant au genre *Chaerilobuthus* Lourenço & Beigel, 2011 (Scorpiones: Chaerilobuthidae) et la description d'une espèce particulière. *Faunitaxys*, 9(30) : 1 – 5.

Une nouvelle espèce de scorpion fossile appartenant au genre *Chaerilobuthus* Lourenço & Beigel, 2011, *Chaerilobuthus meggeri* Lourenço **sp. n.** est décrite de l'ambre du Crétacé inférieur du Myanmar (Birmanie). La nouvelle espèce est la onzième décrite pour le genre *Chaerilobuthus* parmi 12 spécimens déjà répertoriés pour ce type d'ambre. Un spécimen est resté en tant que *Chaerilobuthus sp.* Cette nouvelle découverte atteste, une fois de plus de la grande diversité de la faune de scorpions trouvée dans l'ambre Birman et confirme en outre la richesse en espèces de la famille des Chaerilobuthidae.

Mots-clés. – Scorpiones, Chaerilobuthidae, fossile, nouvelle espèce, *Chaerilobuthus, meggeri*, Crétacé, ambre Birman, Myanmar, description.

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Illustration de la couverture : *Chaerilobuthus meggeri* Lourenço **sp. n.** dans l'ambre du Crétacé inférieur de la Birmanie.

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