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The fossil mite family Archaeorchestidae (Acari, Oribatida) II: redescription of *Plategeocranus sulcatus* and family-group relationships

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Abstract

The oribatid mite family Archaeorchestidae was proposed based on a single specimen of *Archaeorchestes minguezae* Arillo & Subías, 2000, from Lower Cretaceous amber (Spain). In a previous paper we redescribed *Strieremaeus illibatus* Sellnick, 1918, from Eocene Baltic and Rovno amber, and considered *Strieremaeus* a senior synonym of *Archaeorchestes*. Herein, we transfer a second genus, *Plategeocranus,* to Archaeorchestidae. This is based on a redescription of the type species, *P. sulcatus* (Karsch, 1884), using non-type specimens (44 adults and 2 immatures from Baltic and Rovno ambers). Among these are eight Baltic amber specimens identified by Max Sellnick and currently housed in two museums in Kaliningrad: from the Museum of the World Ocean we designate specimen #39 as neotype and specimens 22, 30, 33, 35 and 37 as paraneotypes; from the Kaliningrad Museum of Amber we designate specimens 197-22 and 197-54 as paraneotypes. The contention of Arillo and Subías that Archaeorchestidae is a member of Zetorchestoidea (Eremaeoidea auct.), and is the extinct sister-family of Zetorchestidae, is supported with additional characters that relate to leg setation and the morphology of immatures. The possible inclusion of another Cretaceous fossil mite, *Rasnitsynella punctulata* Krivolutsky, in Archaeorchestidae or Zetorchestoidea was rejected, leaving it in Plateremaeidae pending the direct investigation of specimens. New diagnoses are presented for *Plategeocranus*, Archaeorchestidae, and Zetorchestoidea.

Key words: Oribatida, Archaeorchestidae, Eremaeidae, Megeremaeidae, Zetorchestidae, Neoliodidae, *Plategeocranus sulcatus*, *Rasnitsynella punctulata*, Eocene, Baltic amber, Rovno amber, fossil, neotype, leg setation

Introduction

This is the second of two papers dedicated to the fossil oribatid mite family Archaeorchestidae. In the first (Sidorchuk & Norton 2011) we established context by overviewing the work of Max Sellnick as it relates to amber fossils and redescribed *Strieremaeus illibatus* Sellnick, 1918 based on both adult and nymphal specimens from Eocene amber (Baltic and Rovno deposits). We then showed that the Cretaceous amber species *Archaeorchestes minguezae* Arillo & Subías, 2000 is very similar to *S. illibatus*, considered *Archaeorchestes* to be a junior synonym of *Strieremaeus*, and presented a new generic diagnosis.

Our overall purpose here is to expand the scope of Archaeorchestidae by including a second genus from Eocene amber—*Plategeocranus* Sellnick, 1918—which was proposed to accomodate the Baltic amber oribatid mite *Nothrus sulcatus* Karsch, 1884. Karsch (1884) did not mention type specimens or other specific material, and Sellnick's (1918) confidence in his identification seems based only on the short original description. In that paper, Sellnick provided a redescription and dorsal drawing (his Tafel-Fig. 2) that allow unequivocal identification, but that leave many morphological characters unassessed. Sellnick did not propose a familial affiliation for *Plategeocranus*, other than to suggest it lays "between eremaeids and tegeocranids." At that time, each of the latter groups encompassed about a half-dozen modern families (cf. Sellnick 1928). Vitzthum (1931) made the first specific proposal, including the genus in a very broad concept of Carabodidae. Despite the more restricted concept of this family that has prevailed for more than half a century, the inclusion of *Plategeocranus* was unchallenged until Labandeira *et al*. (1997) suggested its removal. It has remained unassigned, pending further study (Norton 2006). Herein we redescribe the type species of *Plategeocranus—P. sulcatus* (Karsch, 1884)—based on newly discovered specimens and others studied by Sellnick himself, one of which is selected as ***neotype***. We also extend its known

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