



A new record and a new species of Aradidae fossils (Hemiptera: Heteroptera)

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Abstract

Calisius balticus, previously known from the Middle-Late Eocene Baltic amber, is recorded for the first time in the Lowermost Eocene French amber. It is the second case of an insect species present in both these two ambers, representing a morphological stasis of ca. 10 Ma. It is the oldest record of the genus *Calisius*. *Aradus andancensis* n. sp. in Upper Miocene sedimentary deposit from France is also described.

Key words: Aradoidea, Early Eocene, Miocene, Oise amber, sedimentary deposit, new species, *Calisius*, *Aradus*

Introduction

Aradidae is a world-wide family of Heteroptera containing about 2,000 described extant species. Despite a scarce fossil record (only about 50 fossils recorded until now), the family Aradidae is relatively ancient. The oldest records occurred in the Cretaceous, viz. *Archeoradus burmensis* Heiss & Grimaldi, 2001 in Late Albian Burmese amber (Heiss & Grimaldi 2001, 2002), *Aradus nicholasi* Popov, 1989 in the Lower Cretaceous outcrop of Bon-Tsagan (Mongolia) (Popov 1989), and *Aradus creticus* Kormilev & Popov, 1986 in the Cenomanian-Turonian of North-east Siberia (Kormilev & Popov 1986). Cenozoic taxa are described from the Middle-Late Eocene Baltic amber (Heiss 2000a, 2001, 2002a,b,c), the Eocene of Eckfelder Maar (Wappler & Heiss 2006b), the Messel Maar (Wappler & Heiss 2006a) and the Oligocene of Enspel (Wappler & Heiss 2006c) in Germany, the Miocene Mexican amber (Hurd *et al.*, 1962), the Miocene Dominican amber (Froeschner 1992; Heiss 2000b), a Miocene Chinese diatom paleolake (Zhang *et al.* 1994), the Miocene Foulden Maar in New Zealand (Kaulfuß *et al.* in press) and the Holocene copal from Madagascar (Bervoets 1909).

Two of the three oldest aradids are currently attributed to the genus *Aradus*, namely *Aradus creticus* and *Aradus nicholasi* from the Mesozoic, which represent a remarkable, rather unusual, genus antiquity (Kormilev *et al.* 1986; Popov 1989). The more recent species described are mostly from the Eocene Baltic amber (Germar & Berendt 1856; Popov 1978; Heiss 1998, 2002c). A new species of an imprint *Aradus* Fabricius from the Late Miocene of France (circa 8 Ma old) is described in this article.

A new record of the Baltic amber species *Calisius balticus* Usinger, 1941 is given for the Lowermost Eocene Oise amber. It is the oldest record of the genus *Calisius* Stål, 1860 and the unique aradid found in this amber entomofauna, based on ca. 20,000 fossil insects.

Material and methods

The fossil specimens described are deposited in the collections of the Museum National d'Histoire Naturelle in Paris (MNHN). The specimens were studied under a binocular and all measurements were taken with an ocular micrometer; structures were measured as preserved.

The specimen of *Aradus andancensis* n. sp. is an imprint on limestone from the volcano-sedimentary diatom paleolake of Saint Bazile, the largest deposit of diatomite in Europe. Recent measurements by ⁴⁰Ar/³⁹Ar revealed