

New fossil lace bugs (Heteroptera: Tingidae) from the Middle Eocene of the Grube Messel (Germany), with a catalog of fossil lace bugs

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Abstract

Lace bugs (Heteroptera: Tingidae) comprise over 2.100 species classified in two subfamilies. So far, nearly 36 fossil species of Tingidae have been described, most of Cenozoic age. The present paper reports on three new species genera of Tingidae from the late Middle Eocene Grube Messel (Germany), inscribed on the UNESCO World Heritage List, describing *Exmesselensis dissipinosus* **gen. et sp. n.** (Canatacaderinae: Phatnomini), *Chorotingiotes prisca* **gen. et sp. n.** (Tinginae: Ypsotingini), and *Oblongomorpha lutetia* **gen. et sp. n.** (Tinginae: Litadeini). The specimens from Messel show once more that Cantacaderinae, especially of the tribe Phatnomini were widespread and highly diverse in Europe during the Paleogene than today. *Oblongomorpha* n. gen. and *Chorotingiotes* n. gen. demonstrate that even the differentiation of the Tinginae in the main tribes has taken place in this period or earlier. A taxonomic catalog of all described, fossil lace bugs is appended.

Key words: Insecta, Hemiptera, Tingidae, fossil, Messel, Middle Eocene

Introduction

In the last decades, excavations of the Middle Eocene deposits of Messel near Darmstadt (Fig. 1) (Hessen, Germany) yield thousands of insects, which offer an unique insight into a terrestrial paleoecosystem, within the Geiseltalian time frame, the last period with a worldwide greenhouse climate. Especially insects attained a remarkable degree of morphological diversity reflecting broad ecological adaptation within the terrestrial biosphere (e.g. Hennig 1969), and so they are important components for the reconstruction of the paleoenvironment.

Insects from the Messel site have been recognized since the beginning of the 20th century. Meunier (1921) was the first who mentioned the perfectly preserved fossils. He