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On the Eocene age of *Limodromus* Motschulsky, 1850, with description of *L. hoffeinsorum* sp. n. from Baltic Amber (Coleoptera: Carabidae: Platynini)

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Abstract

The first platynine ground beetle, *Limodromus hoffeinsorum* sp. n., is described from Baltic amber at species level. The fossil species is considered the sister taxon of the modern species group of *L. assimilis* (Paykull, 1790). However, it was adapted to warmer climate conditions. The habitat of the new species is assumed similar to that of the modern *L. klausnitzeri* Schmidt, 2005, which represents a more basal branch of *Limodromus* and which occurs in the mountains of northern Vietnam.

Key words: Fossil species, new species, ground beetles

Introduction

The exquisite preservation of arthropods in amber enables the observation of minute structures, even at the micron scale (Grimaldi & Engel 2006). Amber fossils are of particular importance in phylogenetic studies. If amber fossils can be assigned to certain lineages of extant species groups, they are of high value for dating branching patterns in phylogenetic trees (e.g., Rehan *et al.* 2010, Wood *et al.* 2012, Cardinal, S. & Danforth 2013, Kuntner *et al.* 2013). Amber deposits are known from across the globe, and the geological age of these deposits ranges from the Late Trias to the relatively recent (Weitschat & Wichard 1998, Schmidt *et al.* 2012). The Baltic amber is based on resin primarily produced from conifers of the family Sciadopityaceae (Wolfe *et al.* 2009) approx. 35-50 Mya (Standke 2008). The distribution of the Baltic amber producing Eocene forest probably covered a vast area, ranging from Central Europe (South Sweden, Berlin) of today eastwards to the Ural Mountains (Weitschat & Wichard 1998). This amber is particularly rich in inclusions of insects, and its deposits are huge. The largest known deposit is located on the Sambia Peninsula (Kaliningrad Oblast, Russia) where the reserves are estimated at about 640 000 tons (Weitschat & Wichard 1998).

A large number of Carabidae inclusions is known from Baltic amber, however, only very little is known about the systematic positions of the fossil species within the family. Although several Baltic amber preserved specimens from recent genera of ground beetles were mentioned in the literature, e.g., *Acupalpus* Latreille, 1829, *Agonum* Bonelli, 1810, *Amara* Bonelli, 1810, *Anchomenus* Bonelli, 1810, *Apristus* Chaudoir, 1846, *Bembidion* Latreille, 1802, *Bradycellus* Erichson, 1837, *Clivina* Latreille, 1802, *Calathus* Bonelli, 1810, *Dromius* Bonelli, 1810, *Dyschirius* Bonelli, 1810, *Lebia* Latreille, 1802, *Nebria* Latreille, 1802, *Ophonus* Dejean, 1821, *Platynus* Bonelli, 1810, *Polystichus* Bonelli, 1810, *Pterostichus* Bonelli, 1810, *Trechus* Clairville, 1806, and other (e.g., Klebs 1910, Bachofen-Echt 1949, Abdullah 1969, Larsson 1978, Spahr 1981, Keilbach 1982, Hieke & Pietrzeniuk 1984, Alekseev 2013), most of the determinations have to be considered provisional since they are not based on detailed and comprehensible character analyses. Already Hieke & Pietrzeniuk (1984) noted that most of the ground beetle fossils from the Baltic amber historical collections which are housed in the Museum für Naturkunde, Berlin, were misidentified. One of the most spectacular reports from Baltic amber, the extant tiger beetle *Megacephala* (*Tetracha*) *carolina* (Linné, 1767) (Horn 1906, Hieke & Pietrzeniuk 1984), was subsequently questioned by Röschmann (1999). Based on a more detailed morphological study this author believes that the Eocene fossil