



New fossil species of Nymphidae (Neuroptera) from the Eocene of North America and Europe

S. BRUCE ARCHIBALD¹, VLADIMIR N. MAKARKIN^{2,3} & JÖRG ANSORGE⁴

¹Department of Biological Sciences, Simon Fraser University, 8888 University Drive, Burnaby, BC, Canada V5A 1S6

²Institute of Biology and Soil Sciences, Far Eastern Branch of the Russian Academy of Sciences, Vladivostok 690022, Russia

⁴Institut für Geographie und Geologie, Ernst-Moritz-Arndt-Universität, Friedrich-Ludwig-Jahn Straße 17a, Greifswald, D-17489, Germany

³Corresponding author. E-mail: vnmakarkin@mail.ru

Abstract

Two new fossil species of Nymphidae (Neuroptera) are described: *Nymphes georgei* **sp. nov.** from the Early Eocene locality at Republic, Washington, U.S.A., and *Pronymphes hoffeinsorum* **sp. nov.** from Late Eocene Baltic amber. The assignment of the new Republic species to *Nymphes* Leach maintains some doubt. This is the first fossil record of the genus (or one very closely related), today restricted to the Australian region, and its biogeographical implications are briefly discussed. The genus *Pronymphes* Krüger is considered to be valid and a diagnosis is provided, as is an amended diagnosis for the wings of *Nymphes*.

Key words: Nymphidae, Eocene, Okanagan Highlands, Baltic amber

Introduction

Today, the Nymphidae is a small family of Neuroptera with 35 known species in 7 genera, restricted to Australia, New Guinea and adjacent islands (New 1982, 1985, 1986, 1988, 1991; Oswald 1997, 1998). A further species was described from the Philippines (Navás 1921), but its single known specimen is apparently lost, and thus it is impossible to confirm the occurrence of the family in that area with certainty (New 1982). Nymphids are of particular phylogenetic interest, as they exhibit numerous plesiomorphic characteristics for the clade of extant myrmeleontid families Nymphidae + Nemopteridae + Myrmeleontidae + Ascalaphidae (Henry 1982; Oswald 1998), with the oldest fossil record among these. Fossil occurrences include eleven species belonging to eight genera recorded from the Late Jurassic to Eocene of Europe, Asia and South America (Krüger 1923; Carpenter 1929; Panfilov 1980; Ponomarenko 1992; Martins-Neto 2005; Menon *et al.* 2005; Ren & Engel 2007; Engel & Grimaldi 2008). Hitherto, Cenozoic nymphids were known only from Late Eocene (Priabonian) Baltic amber, *i.e.*, the genus *Pronymphes* Krüger, represented by an adult (Pictet-Baraban & Hagen 1856; Krüger 1923) and a larva tentatively assigned to this genus (MacLeod 1971). Here we describe two new species of Nymphidae, from the Early Eocene (Ypresian) of the North America, tentatively assigned to the genus *Nymphes* Leach, and from Priabonian Baltic amber, tentatively assigned to the genus *Pronymphes*.

Material and methods

One specimen described here is from exposures of the Tom Thumb Tuff Member of the Klondike Mountain Formation in town of Republic, Ferry County, in northeastern Washington (USA), assigned a date of 49.42 ±