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The second genus and species of the extinct neuropteroid family Corydasialidae, from early Eocene McAbee, British Columbia, Canada: do they belong to Megaloptera?

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Abstract

Ypresioneura obscura **gen. et sp. nov.** from the early Eocene (Ypresian) McAbee locality (Canada, British Columbia) is described. It is assigned to the extinct neuropteroid family Corydasialidae, as the second known genus and species. The Corydasialidae was previously known only from late Eocene (Priabonian) Baltic amber. It was originally assigned to the Megaloptera, but the character states that support this conclusion are not strongly diagnostic. There is still doubt as to whether this family belongs to Megaloptera or to the Neuroptera. If this is a megalopteran (which we favor), it is the first specimen of the order from the insect-rich Okanagan Highlands series of Ypresian localities, which occur sporadically across the southern interior of British Columbia, Canada into north-central Washington, USA.

Key words: Megaloptera, Neuroptera, Corydasialidae, Ypresian, Eocene, Okanagan Highlands

Introduction

The Megaloptera is a small holometabolous order of about 380 extant species, distributed across much of the globe (Yang & Liu 2010, Oswald 2013). The larvae are primarily aquatic predators, feeding on a variety of invertebrates. They emerge as winged adults who live only a few days and apparently do not usually eat, although known to feed on small quantities of liquid food such as nectar (e.g. females of Corydalinae: Anderson 2003). Adults range from moderate sized, with wingspans less than 2 cm, to very large, with wingspans reaching 18 cm, and male dobsonflies (*Corydalus* spp.) bear impressively-sized sickle-shaped mandibles of unknown function (Grimaldi & Engel 2005).

The order is currently divided into five families, the extant Sialidae (alderflies) (Early Jurassic to Recent) and the Corydalidae (dobsonflies, Corydalinae; and fishflies, Chauliodinae) (Middle Jurassic to Recent) and three extinct families, the Parasialidae (Permian), Euchauiodidae (Late Triassic), and Corydasialidae (late Eocene) (Riek 1974; Ponomarenko 1976, 1977; Ansoerge 2001; Wang & Zhang 2010; Liu *et al.* 2012). The venation of the minute Permian Nanosialidae is similar to that of Parasialidae, and it probably also belongs to the Megaloptera as we treat it here. Originally, it was assigned to the monotypic suborder Siarapha of the order Panmegaloptera, which included three other suborders: Archimegaloptera (including only Parasialidae), Megaloptera s. str., and Raphidioptera (Shcherbakov 2013). The position of the Euchauiodidae, however, is unclear. It consists of one species, *Euchauiodes distinctus* Riek, 1974, known from a single incomplete forewing from the Late Triassic of the South African Republic (Molteno Formation). Its wing venation is similar to that of some insects in the order Grylloblattodea, e.g., Megakhosaridae, particularly in that M is basally fused for a short distance with CuA (cf. Riek 1974: Fig. 4 and Storozhenko & Aristov 2014: Fig. 16). Ansoerge (2001) suggested that it might in fact belong to the Grylloblattodea. As there is too little evidence to consider *E. distinctus* to belong to Megaloptera, we treat it here as Grylloblattodea *incertae sedis*.