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Two new species of *Mesoplecia* (Insecta: Diptera: Protopleciidae) from the late Middle Jurassic of China

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Abstract

Two new species of *Mesoplecia* Rohdendorf, 1938, *M. plena* sp. nov. and *M. fastigata* sp. nov., are described from the late Middle Jurassic Jiulongshan Formation of Daohugou, Inner Mongolia, China. Based on the emended generic diagnosis of *Mesoplecia* by Zhang in 2007, these two new species are assigned to *Mesoplecia* by a combination of the following five characters: (1) Head small; (2) Vein bRs not more than twice as long as dRs; (3) M_1 , M_2 at least 5 times as long as dM_{1+2} ; (4) bM_{1+2} longer than dM_{1+2} ; and (5) Legs with coxae and femora thick. In addition, a key to *Mesoplecia* is provided.

Key words: Fossil insect, Daohugou, Jiulongshan formation, taxonomy

Introduction

The Protopleciidae is an extinct dipteran family known from the Jurassic of Europe and Asia (Hao & Ren 2009). The earliest record of the Protopleciidae is *Macropeza liasina* Geinitz 1884 from the Early Jurassic in Liassic Formation of Germany (Geinitz 1884). The family, comprising originally three genera: *Protoplecia* Handlirsch, 1906 (type species: *Macropeza liasina* Geinitz, 1884), *Mesoplecia* Rohdendorf, 1938 (type species: *Mesoplecia jurassica* Rohdendorf, 1938) and *Mesopleciella* Rohdendorf, 1946 (type species: *Mesopleciella minor* Rohdendorf, 1946), was erected by Rohdendorf (1946) (Evenhuis 1994). *Simulidium priscum* Westwood, 1854 was placed in Protopleciidae (Crosskey 1988), however, it was later determined to belong to the Rhagionidae (Brachycera) (Mostovski *et al.* 2003). Kovalev (1987) subsequently transferred 14 species in *Rhaetofungivora* Rohdendorf, 1964 of the Pleciofungivoridae to this family, later some of these were assigned to several different genera (Blagoderov 1996). Since 1976, some Chinese genera and species have been described as members of the Protopleciidae (Lin 1976; Hong 1984; Hong & Wang 1990), however, many of them do not belong to the Protopleciidae (Blagoderov 1996). Blagoderov (1996) transferred *Palaeoplecia* Rohdendorf, 1962 in Protopleciidae and synonymized *Phragmoligoneura* Rohdendorf, 1962 (Phragmoligoneuridae) and *Protoligoneura* Rohdendorf, 1962 (Protoligoneuridae) respectively with *Protoplecia* Handlirsch 1906 and *Protoligoneura* Rohdendorf, 1962 in the Protopleciidae. Ansoerge (1996) provided an updated description for *Protoplecia liasina* Geinitz, 1884 and described *Protoplecia klafackii* from the upper Liassic of Germany. Ansoerge (1996) considered the affiliation of *Mesoplecia* and *Mesopleciella* with the Protopleciidae questionable due to the clearly shorter Sc, and suggested that *Archipleciomima* belonged to the stem group of Pleciofungivoridae and Pleciomimidae due to long Rs stem. Zhang (2007) reported 4 species in 2 genera as members of the Protopleciidae, emended the diagnose of *Mesoplecia* Rohdendorf, 1938 and excluded *Paraoligus exilus* Lin, 1976 and *Mesoplecia xinboensis* Hong, 1984 from this family, but stated that an alternative placement could not be suggested. Hao & Ren (2009) described 3 species of *Mesoplecia*, *M. anfracta*, *M. antiqua*, and *M. coadnata* Hao & Ren, 2009. Due to R_{2+3} of *M. antiqua* Hao & Ren 2009 reaching R_1 forming a cell r, instead of reaching the anterior margin as all other protopleciids, we believe that *M. antiqua* should be transferred to Mesosciophilidae.

Up to date, after documented corrections and transfers, 7 genera of Protopleciidae have been recorded, exclusively from the Jurassic localities in Eurasia: *Protoplecia* Handlirsch, 1906; *Mesoplecia* Rohdendorf, 1938;

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