



Nedubroviidae, a new family of Mecoptera: the first Paleozoic long-proboscid scorpionflies

ALEXEI S. BASHKUEV

Paleontological Institute, Russian Academy of Sciences, Moscow, 117997, Russia. E-mail: fossilmec@gmail.com

Abstract

Nedubroviidae **fam. nov.** consists of *Nedubrovia* **gen. nov.**, with *Nedubrovia shcherbakovi* **sp. nov.** as the type species, *N. deformis* **sp. nov.**, and *N. mostovskii* **comb. nov.**, originally described in *Mesopanorpodes*. The second genus of Nedubroviidae is *Paranedubrovia* **gen. nov.**, with *Paranedubrovia novokshonovi* **sp. nov.** as the type species, and including *P. minutissima* **sp. nov.** Of these five species, all originate from the Late Permian of European Russia except for the Early Triassic *N. mostovskii*. The wing venation of these species indicates membership in the long-proboscid mecopteran clade Aneuretopsychina. The body structure of one species, *N. shcherbakovi*, includes a long proboscis consistent with fluid feeding on contemporaneous plants.

Key words: Mecoptera, Aneuretopsychina, new family, long-proboscid insects, Late Permian, Early Triassic, Russia

Introduction

Novokshonov *et al.* (2004) described a new species of *Mesopanorpodes* Tillyard 1918, *M. mostovskii*, based on two isolated forewings from the basal Triassic of Russia. The taxonomic attribution of these fossils to a genus of Permochoristinae (Permochoristidae) was based mainly on the following venational characters (fig. 2A): long SC with a single fore-branch, two-branched RS and MA with equally short forks, and four-branched MP (venational terminology is discussed below). However, the authors did not consider the nature of the junction between the CuA and MP veins of *M. mostovskii*, which are in fact fused for a distance, with M_5 being reduced, a feature not previously noted in *Mesopanorpodes*. Newly discovered mecopteran fossils from the Upper Permian, which undoubtedly are closely related to *M. mostovskii*, reveal additional features that question its systematic position. Particularly, some of the new species demonstrate CuA fused with MP very basally and for a long distance.

Fusion of CuA and MP is not characteristic of Permochoristidae, except for a few Permian and Mesozoic Mesochoristini (e.g. *Baianochorista mongolica* (Novokshonov 1997b) and often as individual deviations in some Permian species), as well as in some Mesozoic “paratricopteran”-like forms (e.g. *Choristopsyche tenuinervis* Martynov 1937 (Novokshonov & Sukacheva 2001) and *Mesageta* spp. (Novokshonov 1997c)), whose relationship to Permochoristidae is doubtful. The MP+CuA fusion is still less expected in Mesopsychidae, in which *Mesopanorpodes* is a likely subordinate taxon (Bashkuev, in prep.). This family demonstrates a contrary tendency, with the CuA base shifted far distad to M_5 , accompanied by an opposite change in branching angle. Finally, the new material reveals a rather complete specimen showing the hind wings and the head with elongated proboscis, a feature implying quite different taxonomic affinities of the group under consideration. This evidence indicates that the group in question forms a taxon of its own, which is established herein as Nedubroviidae **fam. nov.**

Material and methods

Described material was collected from four localities in the continental Permian-Triassic sequences of north-central European Russia (Fig. 1). The Isady locality is a lens of fluvio-lacustrine deposits within the Sukhona River