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Matúš Hyžný, Carolin Haug, Joachim T. Haug

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***Mesoprosopon triasinum* from the Triassic of Austria revisited: the oldest eumalacostracan larva known to date and its significance for interpreting fossil cycloids**

Matúš Hyžný^{1,2}, Carolin Haug³, Joachim T. Haug³

¹*Comenius University, Faculty of Natural Sciences, Department of Geology and Palaeontology, Ilkovičova 6, 842 15 Bratislava, Slovakia. E-mail: hyzny.matus@gmail.com*

²*Natural History Museum, Vienna, Burgring 7, 1010 Vienna, Austria.*

³*Functional Morphology, Department of Biology II and GeoBio-Center, LMU Munich, Großhaderner Strasse 2, 82152 Planegg-Martinsried, Germany.*

Abstract

The enigmatic *Mesoprosopon triasinum* from the Triassic Hallstatt Limestone of Austria which was once considered to be either a representative of Brachyura or Cycloidea, is re-interpreted herein as a eumalacostracan larva and oldest of its type known to date. It shows a mixture of characters that are typical of the zoea stages of certain meiuran ingroups (e.g., Hippidae) or of erichthus-type larvae of stomatopods. Four long spines evidently provided additional buoyancy to counteract the comparatively heavy load of a calcified shield. Additionally, a distinct ventral gape might imply that the animal was able to enrol into a tight ball. Our recognition of specimens of *M. triasinum* as larval stages, rather than adults, may have a major impact on the re-study of some still poorly known cycloids. In future, the term 'mesoprosopon' may be salvaged as the name of this type of larva.

Key words: Mesozoic; Hallstatt Limestone; Cycloidea; Stomatopoda; Meiura

1. Introduction

In modern-day marine faunas larval crustaceans represent an important part of the biomass. Among these, larval stages of malacostracans constitute a significant fraction. Being an important element in extant assemblages, a comparable role in extinct faunas seems reasonable to assume, but more direct fossil evidence of such an assumption has largely been lacking in the past.

However, fossil malacostracan larvae have received much attention during the last decade (J. Haug et al., 2011, 2014). Virtually all the material has been recorded from Lagerstätten with exceptional preservation, including platy limestones from the Jurassic of

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