

KILLIFISH PALAEO DIVERSITY FROM A MIDDLE MIOCENE LAKE IN THE BUGOJNO BASIN, BOSNIA AND HERZEGOVINA

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Killifishes are known for their amazing diversity and ability to survive in difficult and extreme conditions. Fossil killifishes are known around Europe and, like their extant relatives, appear to present low interspecific variability, which makes correct identification of species difficult. This research aims to identify the killifish palaeodiversity in the middle Miocene alkaline paleolake of Gračanica in the Bugojno Basin, Bosnia and Herzegovina. The studied material comprises an exceptional high number of fossil killifish skeletons (177 specimens), often with otoliths preserved in situ. Morphometry of the fossil skeletons and the otoliths, meristic counts and osteological study was done along with statistical analyses to understand the composition of the sample. Cluster and multivariate analyses of the otoliths differentiated two groups. However, it was not possible to accurately separate the corresponding skeletal material into two species. We conclude that a single species is present that is characterized by high intraspecific variation of both skeleton and otolith traits. Based on both osteological and otolith characters, the material is preliminary identified as a new species of †*Aphanolebias* Reichenbacher & Gaudant, 2003. This would be the second known species of this genus that is based on skeletal material. The new species differs from the type species of †*Aphanolebias*, †*A. meyeri*, in meristic counts as well as body morphometry. It can be differentiated in otolith morphology from the three species that have been diagnosed solely based on otoliths (*A. konradi*, *A. gubleri*, *A. sarmaticus*). The new species expands the geographic distribution of *Aphanolebias* in the middle Miocene, allowing better knowledge on the genus palaeobiogeography. It also adds new information on the intraspecific variability of *Aphanolebias*. It can be concluded that the new species was adapted to extreme environmental conditions, as it is known from many recent species of killifishes.