

Karpatian and Badenian Molluscan Assemblages of Austria – A Quantitative Approach to a Major Faunal Turnover in the Central Paratethys

Martin ZUSCHIN, Mathias HARZHAUSER & Oleg MANDIC

The boundary from the Lower to the Middle Miocene of the Paratethys is characterized by a well-known major change of molluscan assemblages. Here we present quantitative data from 3 Lower Miocene (Burdigalian, Karpatian) and 4 Middle Miocene (Langhian, Badenian) localities to capture the major features of this faunal transition. 87 bulk samples, comprising more than 21,000 shells, were taken from shell beds and all molluscs > 1 mm were studied quantitatively and sorted into more than 400 species. Ordination methods indicate strong similarities of Karpatian assemblages (16 samples from Laa, Neudorf, Kleinebersdorf), but strong differences between Badenian assemblages (69 samples from Grund, Immendorf, Niederleis and Gainfarn). Most importantly, the differences between Karpatian and Badenian assemblages are smaller than the differences observed among Badenian assemblages. The similarities between Karpatian assemblages are mostly due to the near shore palaeogeographic position of the respective localities. The striking differences in quantitative composition among Badenian localities are probably due to heterogeneous environments present on the Badenian shelf of the Central Paratethys. Ordination methods indicate the presence of a gradient from near shore Karpatian assemblages, with Neudorf showing a somewhat more open marine molluscan composition, to inner shelf Badenian assemblages. Our quantitative study favours a strong facies change at the Lower/Middle Miocene boundary as main reason for the observed faunal turnover; there is no indication of an ecological turnover in molluscan composition.

Authors address:

Martin Zuschin
University of Vienna
Department of Palaeontology
Althanstrasse 14
A-1090 Vienna
martin.zuschin@univie.ac.at

Mathias Harzhauser & Oleg Mandic
Natural History Museum Vienna
Geological-Palaeontological Department
Burgring 7
A-1010 Vienna