Geophysical Research Abstracts,
Vol. 11, EGU2009-8125, 2009
EGU General Assembly 2009

Taxonomic and palaeoecological comparison of Sarmatian (Middle Miocene) molluscs from Rumania, the Ukraine and Austria

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13 - 11.5 Ma ago the Paratethys was separated from the Mediterranean basins. The semi-enclosed sea reached from eastern Austria to the Caucasus and was populated by an increasingly endemic fauna of molluscs with a comparatively low number of species but high morphological variety. This is well studied and understood for the Austrian localities of the Vienna Basin, but data from the Eastern Paratethys are still punctual. The present study therefore aims to compare Sarmatian assemblages from the Eastern and Central Paratethys. Presently, we can quantitatively compare samples from Soceni (Rumania), Zhabiak (Ukraine) and Nexing (Austria), but for more detailed comparison we took additional samples from different localities of the Vienna basin (Kettlasbrunn, Nexing, Hauskirchen, Siebenhirten) and furthermore we enlarged our study area to the western part of the eastern Paratethys (Crimean Peninsula).

At Soceni, located in the north-west of Rumania, molluscs are common in the sandy parts of a siliciclastic succession, which is dominated by the bivalves Ervilia podolica, Modiola incrassata and also different species of Cardiidae. Among the gastropods Granulolabium bicinctum, Melanopsis impressa, Cerithium rubiginosum, Theodoxus spp., Acteocina lajonkaireana, Gibbula spp. and Mohrensternia spp. dominate.

At Zhabiak, located in the north-west of the Ukraine, molluscs occur in cross bedded shell beds. They contain Ervilia podolica, and Cardiidae, mixed with Mohrensternia spp. and reworked mikrobialith clasts. Below a mikrobialith-serpulid-bioherm the mollusc assemblage is dominated by Ervilia podolica and Mohrensternia spp., but Theodoxus spp. and Acteocina lajonkaireana are also frequent.

The cross bedded deposits of Nexing consist of up to 81 % of shell and shell-hash dominated by the gastropods Granulolabium bicinctum and Hydrobia frauenfeldi. Among bivalves Venerupis gregarius and Obsoletiforma vindobonensis are the most common species (Harzhauser & Piller, in press).

By using cluster analysis and non metric MDS we found that faunas from Nexing and Soceni show high similarities and both differ strongly from the fauna at Zhabiak. Considering that Soceni and Zhabiak have the same age (Mohrensternia zone) and Nexing is slightly younger (upper Ervillia zone) these results are surprising. Soceni and Nexing show a much higher species diversity than Zhabiak, which affects the results of the cluster analysis and the non metric MDS much more than the stratigraphic affiliation.

References:

Harzhauser, M. & Piller, W. (in press): Molluscs as major part of subtropical shallow water carbonate production – an example from a Middle Miocene oolite shoal (Upper Serravallian, Austria). IAS, special publications.