Geophysical Research Abstracts
Vol. 12, EGU2010-5800, 2010
EGU General Assembly 2010

Spatial variation in drilling predation from intertidal, shallow sublittoral and shelf environments from the Early and Middle Miocene marine fossil record of the Central Paratethys

Jennifer Sawyer and Martin Zuschin
Department of Palaeontology, University of Vienna, Althanstrasse 14, A-1090 Vienna, Austria (martin.zuschin@univie.ac.at)

Drilling predation is among the most studied biotic interactions in the fossil record, and its overall patterns are well established on Cenozoic molluscs from North America. Few studies have examined such predation in Europe. This study aims to evaluate molluscan drilling intensities from the Burdigalian, Langhian and Serravallian of the Central Paratethys. Using drill frequency (DF) and prey effectiveness (PE), a measure of prey's ability to survive predatory attacks, we examine taxonomic and environmental effects on drilling predation, evaluate local and regional spatial variation, and compare Central Paratethys values to other contemporaneous basins using > 38,500 whole shells from 162 Karpatian (Upper Burdigalian) and Badenian (Langhian and Lower Serravallian) bulk samples from Austria and Slovakia.

DF and PE were slightly higher in bivalves than gastropods, and DF could vary drastically within single environments at single localities (maximum at Immendorf: mean = 10.9 %, standard deviation = 12.9 %). Both DF and PE were more variable in the Karpatian than Badenian. Higher overall DFs, but lower PEs were seen in the Badenian than in the Karpatian. A similar pattern was observed between intertidal and sublittoral deposits.

We interpret the increase in predation from the Lower to Middle Miocene to reflect environmental shifts from restricted estuarine to deeper, normal marine conditions. Regional predation intensities from the Central Paratethys are distinctly lower than those of other Miocene seas, potentially due to lower predator abundance, differences in faunal composition, and/or fluctuating salinities typical of inland seas.