

# MULTIPROXY ARCHEOMALACOLOGICAL ANALYSIS OF FRESHWATER SHELLFISH: A NEW PROMISING TOOL IN RECONSTRUCTIONS OF LOCAL, REGIONAL ENDOWMENTS OF THE RIPARIAN ENVIRONMENT AND SUBSISTENCE OF PREHISTORIC FARMING COMMUNITIES IN THE CARPATHIAN BASIN

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Paleoenvironmental studies are gaining increasing importance in understanding relations of man and environment for prehistoric communities world-wide. Several methods have been deployed to capture various aspects of the past environment hosting archeological cultures, most of which have long-lasting scientific background and are extensively used in daily research. In those areas where prehistoric sites are confined to rivers or lakes, a new promising tool in capturing the interaction of man and riparian environment might be that of the extensive analysis of freshwater mollusks retrieved from archeological sites. Since these mollusks collected by humans on the one hand characterize the quality of the water body from which they derive. Furthermore, they also yield us information about the use of second-line aquatic resources in subsistence. According to the archeological record, foraging remained an important part of daily subsistence in farming communities probably because flexible opportunistic agricultural systems, like reliance on multiple resources aimed at diversifying landscape capital, offers an advantage of greater economic security if there are fluctuations in the weather, water supply, or during periodic die-offs of crop yields. Fluctuations in available food sources are most likely the result of a complex interplay of various environmental (climatic) and social (behavioral) factors. Rapid or sudden deterioration in natural endowments may put forth an increased reliance on second-line resources in subsistence. Thus an intensive use of freshwater shellfish in subsistence along with other aquatic resources may indicate a socioeconomic response to some environmental stress.

Faunal changes observable in the shellfish material must be attributed to various factors, if we appreciate the human or cultural context of the material. Abundance of certain elements is the outcome of the complex interplay of various biotic (predation including humans) and abiotic ecological components (substrate conditions, hydraulic parameters, water temperature, pH, bioproduction, sediment accumulation etc). Thus to resolve issues of temporal change observable in the studied archeofauna a complex analysis of several lines of information is needed. To achieve this goal a new multi-proxy paleoecological analytical method was developed based on the collective handling of faunal taxonomic and demographic data as well as the geochemistry of the shells along with information on taphonomic bias and role of shellfish in both subsistence and other type social, behavioral activities. As a first step the main physical and chemical properties of fluvial and floodplain aquatic habitats (substrate conditions, hydraulic parameters, water temperature, pH, bioproduction, sediment accumulation) surrounding the site is reconstructed based on the analysis of faunal abundance, ecological and geochemical data. A regional reconstruction of the riparian environment highlighting potential differences and short-term sub-centennial transformations as well as background causes follows. The received pattern is then interpreted in the light of cultural, economic and human behavioral patterns gleaned partly from the archeology of the sites and proxies gained via the analysis of taxonomic and demographic composition of the studied faunas reflecting foraging strategies. Finally, potential alterations inferred for the local natural shellfish population as a result of foraging strategies employed is also assessed. The presentation will highlight the most

important aspects of the method giving some examples of its application for some Neolithic archeological sites and cultures in the Carpathian Basin.

Keywords: freshwater shellfish, multiproxy paleoecological analysis, riparian environment, subsistence