

Taphonomic Analysis of Mink Island (XMK-030) Archaeoichthyofauna: Implications for Zooarchaeological and Biogeochemical Research

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My dissertation research is focused on shedding the taphonomic overprint at the Mink Island site (XMK-030) to assess temporal variability of the archaeoichthyofaunal assemblage and to establish sample selection criteria for stable isotope ($\delta^{15}\text{N}$, $\delta^{13}\text{C}$) analysis. These retrospective datasets have the potential to shed light on the causes and consequences of long-term variability in local fish assemblages when combined with modern fisheries and paleo-oceanographic datasets. To use these datasets, it is essential to account for biostratinomic (cooking, burning, cut-marks, breakage, etc.) and diagenic (biological and microbial activity, temperature, water and soil pH, etc.) agents that may have structured and contaminated the fishbone assemblage. Inter-taxa and inter-elemental differences in bone density, shape, size, protein and lipid content result in differing preservation and contamination potential. Without mitigating for the effects of these agents, abundance measures may be skewed in favor of those skeletal elements that best survive diagenic destruction. Moreover, stable isotope ($\delta^{15}\text{N}$, $\delta^{13}\text{C}$) values may reflect differences in preservation and contamination rather than variability in ecosystem structure and function. A series of experiments (burning/cooking assessments, bulk bone percent nitrogen, bulk bone percent carbon, expected versus actual bulk bone percent carbon, collagen yield, and stable isotope quality control assessments) using modern and Mink Island specimens will be conducted to assess preservation and contamination levels. The modern specimens will provide baseline data to which the ancient Mink Island specimens will be compared.