Paper No. 11-1

Presentation Time: 8:00 AM-12:00 PM

$d^{18}O$ ANALYSIS OF THE CLAM *CRASSATELLITES VADOSUS* FROM THE LATE CRETACEOUS COON CREEK FORMATION

KELLER, Sandy M.[1], ETAYO-CADAVID, Miguel F.[1], ANDRUS, C. Fred T.[2], CHAPMAN, Philip[1], RAMIREZ, Victor O.[1], WILSON, Crystal[1], and CALLAHAN, Joseph[1], (1) Geological Sciences, University of Alabama, Bevill Building, Tuscaloosa, AL 35487, sandy.m.keller@ua.edu, (2) Geological Sciences, University of Alabama, 240 Bevill, Tuscaloosa, AL 35487

The Coon Creek Formation (western Tennessee) is a marine lagerstätte with high potential for Late Cretaceous Western Interior Seaway paleoenvironment research. Two clams (both *Crassatellites vadosus*) were collected from the type locality of the Coon Creek Formation for carbon ($d^{13}C$) and oxygen ($d^{18}O$) isotope analysis to determine if the bivalves could be used in paleoenvironment analysis. These valves were sampled sequentially following ontogeny via micromill and were analyzed by conventional phosphoric acid digestion isotope ratio mass spectrometry. Analytical precision was estimated better than 0.1‰ (1s) for both $d^{13}C$ and $d^{18}O$.

Preliminary lab analysis shows no significant linear correlation between carbon and oxygen isotopes, suggesting no measurable kinetic or vital fractionation effects and indicating no apparent diagenetic recrystallization of the clam shell; oxygen isotopes appear to have been in or near equilibrium with the clams' ambient water at the time of carbonate shell accretion. Environmental conditions such as temperature and salinity can thus be inferred from the oxygen isotope profiles of these mollusks.

Results of the analyses show oxygen isotopes oscillate in a roughly sinusoidal pattern around a median value of -1‰ in each shell, while amplitude of the oscillations varies slightly between shells. Values do not appear negative enough to suggest an environment near a freshwater source such as a bayhead or delta. In addition, the isotope profiles are not significantly different from values measured in roughly contemporaneous carbonates in open marine environments and other areas of the Western Interior Seaway. These intimations parallel previous paleoenvironment interpretations of a nearshore – shelf environment based on paleofaunal assemblages, planktonic:benthic foraminifera ratios, and sediment analyses.

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General Information for this Meeting

Session No. 11--Booth# 26
Paleontology (Posters)
Marriott Hotel: Georgia/Carolina Ballrooms
8:00 AM-12:00 PM, Thursday, 23 March 2006

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