

[Start](#) | [Grid View](#) | [Author Index](#) | [View Uploaded Presentations](#) | [Meeting Information](#)

South-Central Section - 57th Annual Meeting - 2023

Paper No. 20-1

Presentation Time: 8:00 AM

ABUNDANCES, DIVERSITY, AND ECOLOGY OF BENTHIC FORAMINIFERA FROM THE SOUTHERN CALIFORNIA BIGHT

ONONEME, Oghalomeno, Boone Pickens School of Geology, Oklahoma State University, Stillwater, OK 74078, **BURKETT, Ashley**, Boone Pickens School of Geology, Oklahoma State University, 105 NRC, Stillwater, OK 74078 and **RATHBURN, Anthony**, Department of Geological Sciences, California State University Bakersfield, 9001 Stockdale Highway, Bakersfield, CA 93311

Foraminifera are single celled organisms that have tests that are composed of calcium carbonate or detrital materials. The assemblages of foraminifera have been influenced by their immediate environment which depict the influence and results of man's activities and other natural processes that occur in the environment. These environmental changes include salinity, pH, hydrocarbon pollution and organic matter. With these factors, paleoenvironmental interpretations are made by identifying the different patterns in the foraminifera communities. Variations in oxygen concentrations at the sediment-water interface have a significant impact on benthic foraminiferal assemblages and morphologic properties. This is seen in the vertical distribution of foraminifera in response to factors such as food, pore water, and oxygen.

This study documents foraminiferal ecology and abundances across an oxygen transect off the coast of San Diego. Available oxygen ranges from >1.0ml/l are considered oxic; O₂ values from 0.1 - 1.0ml/l will be considered dysoxic and O₂ values <0.10ml/l will be considered anoxic. Previous work in this region has suggested that sediment grain size, rather than oxygen availability, may have as much of an impact on foraminiferal assemblages. These observations were made based on the fact that *Cibicidoides wuellerstorfi*, an epibenthic foraminifera preferring elevated substrates in well-oxygenated environments, were found in greater abundances at areas with coarser grained materials despite low available oxygen. *C. wuellerstorfi* has also been found to have I/Ca and test porosity (size and abundance of pores on the surface of the test) which correlate to the available oxygen in bottom waters at the time of test formation. Not only will this study document foraminiferal assemblages and abundances across an oxygen transect, but *C. wuellerstorfi* from key oxygen environments will be examined under SEM and used in porosity and I/Ca analyses which will contribute to the development of a quantitative oxygen proxy. The development of this quantitative oxygen proxy is essential because despite oxygen being one of the primary variables influencing major geochemical and faunal responses within the world's ocean, no clear proxy currently exists in paleoceanographic reconstructions.

Session No. 20

[T9. Sedimentary Geochemical Characterization of Aquatic Oxygen Dynamics](#)

Tuesday, 14 March 2023: 8:00 AM-12:00 PM