
Neoichnology of the Micro-Tidal Gulf Coast of Texas: Implications for Paleocological and Paleoenvironmental Interpretations of Ancient Micro-Tidal Clastic Shoreline Systems

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ABSTRACT

The micro-tidal clastic shoreline of the Gulf Coast of Texas is a reasonable analog for time-slice analysis of ancient micro-tidal shoreline systems. Because, relative to meso-tidal and macro-tidal environments, both infaunal and epifaunal organisms are subject to different types of environmental stresses in micro-tidal shoreline environments, an evaluation is warranted and provides some insight into possible ichnofacies variability and/or overlap between ichnofacies.

A regional study of the neoichnology of selected shoreline ecosystems along the Gulf Coast of Texas from Galveston Island to Baffin Bay has been conducted (1) to explore the ecological controls on the abundance and diversity of trace-making organisms, (2) to determine the preservation potential of modern burrows and traces, and (3) to determine the effects of burrows and traces on the preservation potential of primary sedimentary structures. This study examines the ecology and behavior of trace-making organisms in back beach, foreshore, shoreface, wave-dominated delta, flood tidal delta, wash-over fan, estuarine bayhead delta, estuarine tidal sand flat, and lagoon tidal sand flat environments. This investigation allows an assessment of the neoichnology over a range of salinities, substrate consistencies, wave energies, and sediment compositions.

The burrows and traces of infaunal and epifaunal organisms of the micro-tidal Gulf Coast of Texas can be assigned to the ichnofacies *Skolithos*, *Cruziana*, and *Psilonichnus*. These ichnofacies all occur in a variety of micro-tidal coastal environments. Their use in the interpretation of local bathymetry, salinity, and/or substrate consistency can be somewhat problematic. It is concluded that ichnofossils should first be used to determine local paleoecology prior to their application to paleoenvironmental analysis.