



Paleocene and Early Eocene Ostracode Biostratigraphy of the Atlantic Coastal Plain with Reference to the Gulf Coastal Plain

Donald Van Nieuwenhuse

University of Houston

ABSTRACT

The Danian through Ypresian Black Mingo Group (BMG) of South Carolina sediments were deposited between a significant mass extinction event followed by one of the warmest periods of the Cenozoic. This warm period began with the Paleocene-Eocene thermal maximum. Within this environmentally eventful time-frame, sediments of the BMG on the southern flank of the Cape Fear Arch were deposited on a stable shelf with limited subsidence. Consequently, the interval contains periods of significant erosion and non-deposition occurring in response to intervening eustatic sea-level drops. Similar sequences are seen along the Atlantic Coastal Plain (ACP) with limited development of low-stand deposits but with significant development of transgressive and regressive (T-R) cycles of littoral to middle neritic deposition punctuated by significant hiatal events.

The ostracod assemblages record these T-R cycles with striking changes in the assemblages from one cycle to the next suggesting significant gaps of recorded time and evolutionary events. In assemblages of comparable age along the ACP, similar significant pulses of deposition are punctuated by periods of non-deposition and erosion with slightly different timing. As such, four assemblage zones proposed by Van Nieuwenhuse and Colquhoun (1982) were distinctive and locally significant. In 2007, Van Nieuwenhuse revised these assemblage zones as more broadly defined zones to include sections occurring in the Gulf Coastal Plain (GCP) and the ACP that were missing in the BMG. Herein, we propose a revision of these zones to more precisely define a more complete section compiled between the GCP and ACP.

This compilation adds to our understanding of the paleogeographic and evolutionary migration of some of the taxa within these assemblages between the ACP and GCP. At the same time it provides additional stratigraphic control that aids in mapping vital aquifers and other subsurface resources.