

PALEONTOLOGICAL IMPLICATIONS OF REWORKED SANTONIAN, CAMPANIAN, AND MAASTRICHTIAN MACROFOSSILS IN TRANSGRESSIVE LAG DEPOSITS OF THE ATLANTIC AND EASTERN GULF COASTAL PLAINS

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Unconformities and fossil rich layers are common elements of the stratigraphic architecture in the upper Cretaceous sediments exposed on both the Atlantic and Eastern Gulf Coastal Plains. Contacts between the Eutaw Formation and Tombigbee Sands member in Alabama, the Blufftown Formation and Cusseta Sands in Georgia and the Wenonah-Mt. Laurel and Navesink Formations in New Jersey are marked by erosional surfaces with overlying blankets and lenses of macrofossil residuum. These contacts correspond to bounding unconformities and transgressive lags separating Santonian-Campanian, lower Campanian-upper Campanian and Campanian-Maastrichtian depositional sequences.

Regression and subsequent transgression of sea level at the top of these depositional sequences resulted in hydrodynamic sorting of sediments and fossils that accumulated in shelf and lower shoreface paleoenvironments. Remobilization of sediments by shoreface retreat reworked fossil hard-parts which became concentrated above erosional surfaces as sea level rose. Because of the abundance of chondrichthyan, pelecypod and ammonite fossils, these lags have biostratigraphic significance and provide sites for studying time averaging in macrofossil zonation.

Detailed collection of macrofossils from exactly the same stratigraphic horizons within these lag deposits show that mixing of range zones occurred as these upper Cretaceous lag deposits developed.

Dynamic basin stratigraphy and hydrodynamic sorting of fossils have important implications for interpretation of the stratigraphic record and paleoecologic reconstructions in strata containing lag deposits. Abrupt appearance and disappearance of organisms and spurious fossil assemblages may be artifacts of a physical sorting associated with sea-level cyclicity.