
Regional Depositional Systems of the Woodbine, Eagle Ford, and Tuscaloosa of the U.S. Gulf Coast

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ABSTRACT

The Cretaceous Cenomanian and Turonian sediments of the Gulf Coast, including the Woodbine, Tuscaloosa, Eagle Ford, and Sub-Clarksville, form a clastic third order sequence, with multiple preserved fourth and fifth order cycles. The Woodbine interval (lower Cenomanian) of East Texas, is a regressive system capped by a lowstand unconformity, herein named the Eagle Ford Unconformity. The following upper Cenomanian to early Turonian transgressive system is the Eagle Ford/Sub-Clarksville interval; the Tuscaloosa of Louisiana and Mississippi. A minor unconformity separates the Eagle Ford/Sub-Clarksville interval from the overlying Austin Chalk. On the South Texas and Louisiana shelves, the regressive Woodbine Group equivalent is absent due to non-deposition and erosion.

The Laramide Orogeny in Central Mexico folded the Gulf Coast into a series of uplifts and basins. The East Texas Basin was the deepest basin of these; preserving the greatest volume of Woodbine-aged sediments. Longshore currents redistributed lower Woodbine sediments from the emergent Sabine Uplift, to the south and southwest into a large peninsula that partially closed off the mouth of the East Texas Basin (Harris Delta). Sedimentological evidence proves that the Eagle Ford/Sub-Clarksville sands of Madison and Brazos counties were carried from the northwest by the paleo-Brazos River, and are not local reworking of the Harris Delta sands.

The South Texas "Eagle Ford Shale" is a upper Cenomanian to lower Turonian transgressive shale that accumulated in shallow silled basins. The "Eagle Ford Shale" of Burleson, Grimes, and Brazos counties is actually the regressive lower Cenomanian Maness Shale (Lower Woodbine) preserved in anoxic silled basins behind the Lower Cretaceous shelf margin.