
Palynological Age Control of Wilcox Group Sediments in the Northwestern Gulf of Mexico

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ABSTRACT

Palynological sampling within shoaling-upward regressive deposits in the upper Calvert Bluff Formation at Red Bluff and overlying transgressive deposits of the Carrizo Formation, exposed beside the Colorado River near Bastrop, Texas, reveals a rich assemblage of well-preserved palynomorphs. This section contains an unconformity possibly equivalent to the sequence boundary between the Lower-Middle Wilcox and Upper Wilcox of the subsurface and perhaps coinciding with the Paleocene Eocene Thermal Maximum. Regressive deposits are shallow marine and shorezone in origin, later eroded and channeled during lowstand exposure, covered with fluvial channel fill deposits and capped with shallow marine shorezone sheet sands of the Carrizo Formation. Previous palynological work has placed the age of the Calvert Bluff here in the late Paleocene, but this study has shown that these sediments are probably Eocene, with the Paleocene-Eocene boundary subsurface to the outcrops. In addition, the Red Bluff sediments have been labeled fluvial in origin, while this study uses dinoflagellates and stratigraphic and sedimentary features to argue for a marine influence. These Wilcox Group sediments extend from central Texas into the deepwater Gulf of Mexico. The Wilcox has become a popular exploration target in the Gulf of Mexico, but correlating these sediments is extremely difficult due to increased basinward faulting. In addition, a lack of macrofossils exists because sedimentation rates were high and large amounts of plant material were deposited, resulting in the destruction of calcareous fossils due to production of acids from decaying plant material. Thus, palynology remains the key to understanding these deposits.