PALEOENVIRONMENTAL ANALYSIS OF THE LOWER CRETACEOUS CUPIDO FORMATION, NORTHEAST MEXICO

Jack Conklin[1] and Clyde Moore[2]

ABSTRACT

Limestones of the Lower Cretaceous Cupido Formation (late Neocomian to Early Aptian) were deposited during the general Mesozoic transgression of a warm, clear-water, epeiric seaway over northeastern Mexico.

The development of the massive Cupido carbonate platform, with the Coahuila peninsula acting as a nucleus, was primarily due to the sudden proliferation of rudistid bivalves in the Lower Cretaceous. Rudists, mostly requinids and caprinids, along with dendroid corals, red algae, and stromatoporids constructed ecologic reefs in the higher energy zone as waves touched bottom along a shallow carbonate ramp (formed by the underlying Taraises Formation). The reefs trapped bioclastic debris and baffled the wave energy to produce lower energy back reef environments. The accumulation of carbonate material in the reef complex kept up with basinal subsidence and sea level rise, and in approximately nine million years formed a platform with a shelf margin of considerable submarine topographic relief.

The vertical sequence of lithologies found at several localities indicate localized regression of the sea as the reef and its laterally coexisting environmental facies prograded over basinal lime muds. Six laterally coexisting facies are listed below in the order in which they are commonly found in a vertical measured section:

6. Lagoon, restricted lagoon, and sabkha facies
5. Near-reef tidal flat facies
4. Near-reef shoal facies
3. Organic reef facies
2. Fore-reef slope talus facies
1. Basinal facies.

[1]City Service Oil Company, Tulsa, Oklahoma
[2]Dept. of Geology, L.S.U., Baton Rouge, Louisiana

EARLY AND MIDDLE CRETACEOUS HIPPURITACEA (RUDISTS) OF THE GULF COAST

Alan H. Coogan[1]

ABSTRACT

A rich and diverse Early and Middle Cretaceous (Aptian-Cenomanian) rudist fauna of five stocks, the requienids, monopleurids, caprotinids, radiolitids, and coalcomaninid caprinids, built the widespread and often thick bank and reef deposits of the Gulf Coast area of the United States, Mexico, and the Caribbean islands.

Provincialism in the Early and Middle Cretaceous fauna, especially among the coalcomaninid caprinids in the Western Hemisphere, limits the use of caprinid genera for interhemispherical correlation. Late Cretaceous (Turonian-Maastrichtian) provincialism is more pronounced in both hemispheres among the rudists involving caprinid, radiolitid, and hippuritid genera.

Biostratigraphically, the coalcomaninid caprinids are as useful for dating the Early and Middle Cretaceous strata of the Western Hemisphere reef and bank facies as are the large arenaceous foraminifers. Establishment of an interrelated stratigraphic framework based on surface and subsurface control allows the recognition of Aptian, early, middle and late Albian, and Cenomanian stages using genera and species of rudists and arenaceous foraminifers of the reef and bank facies. The rudist faunas, described here, are correlated to the Gulf Coast Cretaceous stages and less precisely to the established ammonite zonation.

Further biostratigraphic and palentologic work is necessary to fully elucidate the composition of Early and Middle Cretaceous rudist faunas. Nevertheless, at this time, morphologically distinct and widespread genera can be used.

[1]Department of Geology, Kent State University, Kent, Ohio