see (TN) are reported in this study. These data have been used to assign each of the following nannoplankton-bearing formations and members to Martini's 1971 internationally recognized calcareous nannoplankton zones.

Formations and Members	*Zones*
Paynes Hammock Formation (MS)	NP 24
Chickasawhay Limestone (AL)	NP 24
Bucatunna Formation (AL)	NP 22
Byram Formation (MS)	NP 22
Glendon Limestone (MS)	NP 22
(AL)	NP 22
Marianna Limestone (MS)	NP 21, 22
(AL)	NP 21
Mint Spring Formation (MS)	NP 22
Forest Hill Formation (MS)	NP 21
Red Bluff Formation (AL)	NP 21
Bumpnose Limestone (AL)	NP 21
Crystal River Formation (AL)	NP 19/20
Yazoo Formation	
Shubuta Clay Member (MS)	NP 19/20, 20, 21
(AL)	NP 19/20, 20, 21
Pachuta Marl Member (MS)	NP 19/20
(AL)	NP 19/20
Cocoa Sand Member (AL)	NP 17, 18, 19
North Twistwood Creek Clay Member (AL)	NP 17
Moodys Branch Formation (MS)	NP 17
(AL)	NP 17
Gosport Sand (AL)	NP 17
Cook Mountain Formation	
Potterchitto Member (MS)	NP 16
Lisbon Formation	
"Upper" (AL)	NP 16, 17
"Middle" (AL)	NP 16
"Lower" (AL)	NP 15
Tallahatta Formation (AL)	NP 14, 15
Hatchetigbee Formation	
Bashi Marl Member (AL)	NP 9, 10
Tuscahoma Sand	
Bells Landing Marl Member (AL)	NP 9
Nanafalia Formation	
"*Ostrea thirsae*" beds (AL)	NP 7, 8
Salt Mountain Limestone (AL)	NP 7
Naheola Formation	
Coal Bluff Marl Member (AL)	NP 5
Porters Creek Formation (AL)	NP 3/4
Matthews Landing Marl Member (AL)	NP 3/4
Clayton Formation (TN)	NP 2, 3/4
McBryde Limestone Member (AL)	NP 3/4, 4
Pine Barren Member (AL)	NP 1, 2

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Basement Model for Panhandle of Florida

Core samples from deep boreholes in panhandle Florida form the basis of a basement model involving at least eight separate fault blocks and basins, each with a distinct depositional history. The dominant structures are a northwest-trending fault and a large, northeast-trending Triassic graben which encompasses several secondary fault blocks and forms the Southwest Georgia Embayment (Apalachicola Embayment). This graben as well as associated perpendicular (northwest-southeast) faults were formed in response to tensional forces related to the Mesozoic separation of North American and South American landmasses and the consequent formation of the Gulf of Mexico. Granitic basement blocks, perhaps early Cambrian in age, experienced differential subsidence and changing relationships with various sedimentary source terranes. Thus, the separate basins accommodated different combinations of Triassic Eagle Mills red beds and Jurassic deposits ranging from the Louann Salt to the Cotton Valley sandstones and shales.

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Red Bluff, Marion County, Mississippi: A Citronelle Braided-Stream Deposit

Red Bluff is an erosional escarpment located on the western margin of the Pearl River flood plain in northwestern Marion County, Mississippi. The bluff shows approximately 30 m (100 ft) of relief and is composed of alternating units of red-to-yellow sand and sandy gravel. The sand grains are composed primarily of quartz, with small amounts of heavy minerals and feldspar. The gravel is composed of varying percentages of chert, flint, jasper, rip-up clasts, quartz, and tripoli, including a small fraction of silicified Paleozoic fossils.

Grain-size analysis of the sediment and investigation of the sedimentary structures suggest a braided-fluvial environment of deposition. Particle sizes in the medium sand to pebble range predominate in all units; very little silt and clay is present. The largest "particles" present are boulder-size rip-up clasts. The most conspicuous sedimentary structures at Red Bluff are graded bedding, low-angle to medium-angle cross-bedding, and well-developed paleochannels.

A statistical comparison (discriminant analysis) of the seven most abundant heavy minerals of Red Bluff, with the same suite of heavy minerals found at the type section of the Citronelle Formation (Pliocene-Pleistocene), and outcrops of a known Miocene coarse clastic unit indicates a correlation of Red Bluff to the Citronelle Formation. These heavy minerals are kyanite, staurolite, rutile, tourmaline, zircon, black opaques (primarily ilmenite and magnetite), and white opaques (primarily leucoxene).

The suite of heavy minerals present at Red Bluff belongs to the east Gulf province. This metamorphic assemblage of heavy minerals implies the source area of the sediments at Red Bluff to be the southern Appalachians. The silicified pebble-size Devonian-Mississippian fossils were derived most likely from formations flanking the southern Appalachians in northern Alabama.

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Sedimentary Regimes of Upper Midway and Lower Wilcox Lignite in Alabama

Paleoenvironments favorable for lignite deposition existed in sedimentary regimes of the Naheola Formation (upper Midway Group) and in Midway-Wilcox transition sediments apparently assignable to the Nanafalia Formation (Wilcox Group). In addition, lignite horizons are recognized in the Tuscahoma Sand (Wilcox Group). Lignite of potential economic significance occurs within the Naheola Formation west of Butler County and within the Nanafalia Formation east of Butler County. Lignite horizons in the Naheola Formation west of Butler County probably are not stratigraphically or time equivalent to lignite horizons east of Butler County. Depositional environments of the Naheola west of Butler County were favorable for development of lignite deposits with extensive lateral continuity, whereas lignite depositional environments east of Butler County apparently favored variability in thickness and lateral continuity. Estuarine and back-barrier coastal marsh environments are suggested for the lignite.

Carbonaceous silt and clay in varying proportions are commonly associated with lignite in the Naheola Formation. Lithologic associations of lignite related to the Nanafalia Formation include quartzarenite, carbonaceous silt and clay, oyster beds, and limestone of the Clayton Formation (Midway Group).

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Diagenetic History of Cotton Valley Limestone at Teague Townsite Field, Freestone County, Texas

The Cotton Valley lime was deposited during a regressive phase of the Late Jurassic, in a shallow sea with an extensive platform. Mild salt tectonism has modified depositional and diagenetic environments through time. The Cotton Valley lime is composed of thick, massive oolitic, finely crystalline, micritic limestones which rim the west flank of the East Texas basin. The Cotton Valley lime at Teague Townsite field represents deposition within a shallow sublittoral marine sandbar environment and its associated laterally equivalent facies. Included within the sequence are as many as nine local shoaling upward cycles. Petrographically observed diagenetic features include products of neomorphism, compaction and pressure-solution, cementation, leaching, and replacement intergranular porosity was occluded early by rim and pore-filling cements. Intragranular porosity was produced as a result of early meteoric leaching, a feature abundant in porous zones, and occasionally accompanied by equant cement. Compaction is expressed mainly as pressure-solution features and stylolitization. It is inferred that early mineralogic stabilization and meteoric cementation armored grains in porous intervals against burial