

# PATTERNS OF FORAMINIFERAL DISTRIBUTION, NORTHWEST GULF OF MEXICO

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## ABSTRACT

Within the past 30 years, a number of investigators have collected material and reported on Recent Foraminifera in the northwest Gulf. The investigations included lagoonal, deltaic, shelf, slope and abyssal environments. The reports, however, cover only the particular areas of investigation. This report is an attempt to evaluate and integrate the existing data in the form of geographic distribution patterns. The species reported in approximately 1200 samples form the basis of this study; environmental data come from sedimentologic and oceanographic investigations.

## MARGINAL MARINE ENVIRONMENTS

Faunas reported primarily from Texas bays and lagoons change in composition geographically. To the southwest, the Laguna Madre, lower Corpus Christi and lower Aransas bays are dominated primarily by miliolids and secondarily by species of *Elphidium* and *Streblus*. The miliolids are replaced by the *Elphidium-Streblus* fauna in Aransas, lower San Antonio, Matagorda and Galveston bays and in the pass area of Sabine Lake. These areas contain the so-called Lower Bay fauna. The landward portions of these same water bodies contain an Upper Bay fauna, usually dominated by the arenaceous *Ammotium salsum*; where streams enter the bays, *Eponidella* usually becomes characteristic. Sparse data from Louisiana bays indicate that the Upper Bay fauna predominates throughout the coastal area. The south-west-to-northwest changes occur in response to changing climatic zones, increasing stream discharge and sediment type.

## MARINE ENVIRONMENTS

The continental shelf extending from the Gulf beach to about 70 fathoms contains a variety of geographically bounded faunas. Despite the emphasis on "depth facies," many shelf genera show a pronounced change along strike. For example, the inner shelf from the beach to about 20 fathoms is generally dominated by species of *Elphidium* and *Streblus*. Off south Texas, *Elphidium* is dominant near shore and is succeeded by a band of *Streblus* in somewhat deeper water; the bands are reversed off southeast Texas and Louisiana.

The middle shelf, from 20 to 50 fathoms, is characterized by a laterally diverse system of dominant taxa. *Hanzawaia*, *Virgulina*, and *Protonina* occur in elongate and often inter-fingering bands. These dominant forms, however, are replaced in the vicinity of the Mississippi Delta by *Nonionella*, *Buliminella* and *Epistominella*.

The outer shelf contains dominant abundances of *Cibicides*, *Uvigerina* and *Bigenerina*; species of *Bolivina* occur dominantly on the outer shelf off southeastern Louisiana.

The continental slope, in contrast to the shelf, is characterized by more uniform lateral distributions of genera. The upper slope from 70 to approximately 400-500 fathoms is strongly dominated by species of *Bolivina*. This genus is replaced by *Bulimina* from 500 to 900 fathoms and can be considered as indicative of the middle slope environment. The lower slope and abyssal environments deeper than 900 fathoms are characterized by *Pseudoparrella*, *Eponides* and *Glomospira*.

The number of species per sample increases from a low average of about 10-12 in the bays and nearshore zone to a maximum of more than 55 at or near the shelf-slope break. The faunal diversity decreases again on the slope reaching a minimum of 10 to 15 species in abyssal samples.

Planktonics increase uniformly in abundance from the beach into the Sigsbee Deep. Their increase is directly related to decreasing rates of dilution by sediments and other organisms.