THE SUE POINT FOSSIL REEF COMPLEX: A DIAGENETIC HISTORY

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The Sue Point fossil reef complex is located on the east side of San Salvador Island, Bahamas. The reef complex is of Sangamon age, ca. 125,000 years old, and represents a reef complex developed during the last high stand of sea level. A shallowing upward sequence of carbonates was deposited as the interglacial period came to an end. These sediments were subjected to different cementation environments as they pass through four main zones, the saturated 1) Marine Phreatic, 2) Mixed Phreatic, and 3) Freshwater Phreatic Zones and the undersaturated 4) Freshwater Vadose Zone. Saline water will result in a cement composed of either aragonite or high-magnesium calcite, while meteoric or freshwater will be composed of low-magnesium calcite. By determining the type of cement and its associated textures, the diagenetic history of the reef's varying biofacies and lithofacies can be determined.

LUCINOID BIVALVES OF SAN SALVADOR, BAHAMAS: A SUBSTRATE FOR MODERN TRACE MAKING ORGANISMS.

Jennifer Schuster

After the organism dies the lucinoid bivalve shell is broken down by both mechanical and biologic agents. Serpulid worms, calcareous algae, foraminifera, sponges and bryozoans make their home upon lucinoid shells leaving traces in the form of tubes, tests, and borings. This study describes the traces of organisms found on lucinoid shells and makes tentative identifications when possible.

The organisms investigated were not substrate specific, all were found on all three genera of lucinoids investigated, Divaricella spp., Linga spp. and Codakia spp. In coral rubble enivronments the shells become a substrate, much like coral for organisms to encrust. In locations with more turbulence or rapid sedimentation less biologic activity occurs upon these shells. No single pattern of associations or succession was discovered as bio-eroders inhabit these shells.

Environmental factors influencing the kind of biologic activity taking place on the the shell substrate include nutrient availability, photic energy sediment size, sedimentation rate, competition for substrate, and predation pressures. [Jacobs, 1983] In areas of rapid sedimentation where the shells are buried, the valves can remain articulated and the shells become filled with sediment biologic agents do not act upon the shells. Thus sedimentation and lithification of grains cemented in the shells prevent living organisms from breaking down the shells.

If the shells are in an environment in which organisms can thrive, both mechanical and biologic agents work simultaneously eroding at and accreting onto the shell. Boring sponges and bryozoans break down the internal shell structure, and the shells are abraded by other sediments. At the same time sparry calcite is deposited, forminifera grow, coralline algae encrusts, and polychaetes secrete calcareous tubes. These trace structures when identified could provide clues in determining the paleo-environment and the organisms that lived in it.

Literature concerning the traces of modern organisms in carbonate environments is sparse. Modern organisms have been primarily studied by biologists, not geologists. I will describe the traces of organisms that I discovered and put forth tentative identifications.

I found four distinct serpulid worm tubes on my shells. The literature concerning polychaetes is focused upon their soft parts. The calcareous tube secreting worms are limited to the family Serpulidae and Spirorbidae. Spirobids have planispiral tubes while serpulid tubes are straight or sinuous.