



*Fig. 1, The Pine Crest Beds in Gainesville: A Miocene deposit of extremely coarse shell material, nearly 50 feet thick and almost completely devoid of matrix material with many species of gastropods, bivalves, and other marine organisms. Photo, Toni Simo.*

## FLORIDA CARBONATE SEDIMENTOLOGY TRIP

*Lauren Chetel with contributions from Ben Byemers, Steve Beyer, and Eric Hoffmann*

Last March during Spring Break, Professor Toni Simo took graduate students from the Sedpaleo group to Florida to study modern carbonate environments. After a long Wisconsin winter, the warmth and sunshine were a welcome change. Despite the mosquitoes in the Everglades, the trip went off without a hitch.

After driving from Madison to Tampa to collect Toni at the airport, we began the trip in earnest on the Gulf Coast, just North of Naples. We settled in at the Collier-Seminole State Park campground and organized ourselves for the next few days in the field.

The Naples area, probably best known for the Marco Island resort, is an area of geologic interest because of the large numbers of low-relief mangrove islands that lie along this low energy coast. This area is known as the Ten Thousand Islands (TTI). We spent the first field day in a small boat out among the islands examining the surficial facies patterns of the islands and taking shallow cores to look at transitions between facies. We also saw our first alligators of the trip, including one that must have been at least 12 feet long (photo). The TTI area is a very complex shoreline with hundreds, if not thousands, of channels to navigate (this area is apparently a conduit for smugglers because the Coast Guard cannot police it very well). Needless to say, we kept a very close eye on the map to ensure we could find our way back to the marina.

After a second good night of sleep, despite the threat of encounters with the campground's resident gator Stumpy, we packed up our tents and set off across the Everglades



*At Ten Thousand Islands Florida the Sedpaleo group spotted this 12-foot-long alligator. Photo, Toni Simo.*

toward Miami, making a few stops along the way to look at the geology and buy some absolutely humungous mangos for lunch. We drove a north-south transect across the Everglades (a modern analogue for ancient coal-forming environments) to look at the facies shifts that occur as water drains from Lake Okeechobee into the Gulf of Mexico and Florida Bay. We observed a second type of shoreline profile, different from that of the TTI and were able to witness the zonation of white, black, and red mangrove trees and their relationship with peat formation.

The end of our trek across the Everglades brought us close to Miami, and from there we turned south onto the Keys where we would spend the rest of our trip. During this time, President Bush declared war on Iraq and a dinnertime rainstorm forced us to take refuge in the van with our dinner. The Keys afforded us the opportunity to look at reef environments both modern and ancient as well as to observe the protected setting of Florida Bay.

We spent our first day in the Keys examining the various facies of the Pleistocene Key Largo Limestone which forms the bedrock of the Keys. We began on Key Largo examining the fossilized patch reefs on canal cuts, focusing on coral types and morphology, bioerosion, and matrix types. We then proceeded west, seeking out the elusive bryzoan facies, an example of a back reef environment, and Miami Oolite. Unable to stay out of the water entirely, we made an afternoon stop to examine the rocky shoreline and snorkel at Bahia Honda, a fine example of modern hard substrate deposition, comparable to the burial of an ancient exposure surface, a feature we would call a hardground in the Paleozoic of Wisconsin. Here we practiced our identification of calcareous algae and

Jim Freiheit hunted for the most exotic critters he could find. We managed to make it to Big Pine Key just before the sun set and were able to look at the Miami Oolite as well as the Key deer, native only to Big Pine Key.

Continuing to explore the modern geology of the Keys, we spent the day exploring Florida Bay with Harold Hudson, a retired reef expert affiliated with Florida Keys National Marine Sanctuary. We looked at the carbonate mud banks and bathed in the “sexy mud” (very fine grained mud found at a specific location), took 15 foot cores through the island to look at the parasequences preserved there and snorkeled in one of the areas of deeper water termed “lakes.”

We spent our final day in the Keys snorkeling on the Atlantic side. We saw fantastic corals and lots of sea life including a huge sting ray and several schools of barracudas that were quite interested in us. It was extremely helpful to see how the living reef is constructed, and the sediments that are associated with it. Some people had never snorkeled in big waves before and it is safe to say that all drank their fair share of saltwater. After two stops with breakers as much as four feet in height, we retreated to the calmer water near Rodriguez Key.

As we began to drive north again we were able to make one final and very special stop at the Pine Crest Beds. The Pine Crest Beds are a highly unusual deposit of extremely coarse

shell material, nearly 50 feet thick and almost completely devoid of matrix material (fig. 1). Our guide for this stop was Roger Portell of the Florida Museum of Natural History in Gainesville. The Pine Crest is owned by a gravel company that is actively mining it for aggregate material. As a result, Roger is only able to gain access a few times a year. We were quite fortunate to be able to come along on one of these trips. This Miocene deposit contains many species of gastropods, bivalves, and other marine organisms, and in the upper Tamiami Formation it is possible to find whale bones and sharks’ teeth. Even more impressive than the number of shell types is the sheer size of some specimens, for instance pectins nearly 20 centimeters across. It is hard to believe that this volume of shelly material of such a size could be preserved nearly intact with very little matrix material. We were given the opportunity to scavenge on our own throughout the quarry and we quickly filled the van with massive collections of new specimens.

Overall, the trip was a good opportunity to observe modern carbonate deposition and search for modern analogs for some of the ancient systems we study. We contemplated what we had seen on the long drive back to Madison that had us stuck in a ridiculous traffic jam at 2 o’clock in the morning in rural Georgia, and brought us through the Appalachians at sunrise.

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## LIBRARY OF THE FUTURE



*Marie Dvorzak examines newly-installed tracks for compact book shelving in the library addition of the West Wing. The shelves will contain approximately 50,000 volumes. Photo, Mary Diman.*