

MOLLUSKS OF THE LATE PLEISTOCENE OOLITIC FACIES OF THE MIAMI LIMESTONE



D'ANTONIO, Heather and OLEINIK, Anton, Department of Geosciences, Florida Atlantic University, Boca Raton, Florida, 33431
hdanton@fau.edu, aoleinik@fau.edu

ABSTRACT

The oolitic limestone that makes up the bedrock of Miami-Dade and parts of Broward County is a highly studied formation, with poorly studied fossil content. No published systematic record of Pleistocene fossils in the Miami Limestone Formation is available. Besides the basic knowledge of taxonomy and biodiversity of the Miami Limestone mollusks, comparison with extant assemblages can yield important information about the biodiversity changes in southern Florida during the past ~130,000 years. This is important considering the environmental stresses the region has undergone during the past centuries. Preliminary survey of several localities, both previously described and new, within the Dade County yielded a record of diverse and well preserved mollusks from over 23 families, 27 genera and 37 species. Few of the species that have been found are either locally extinct to South Florida (*Cittarium pica*) or are a rare occurrence (i.e. *Terebra floridana* and *Lucina muricata*). The preliminary findings of molluscan fossils have led to a new, unstudied and unpublished fossil locality with the second discovery of a possible *Strombus costatus* in the Miami Limestone. These larger fossils of the Pleistocene are quickly being eroded away through colonization from algae and drilled by sponges and are not commonly preserved. The primary occurrences of the Miami Limestone mollusks are in the facies interpreted as proximal to the rocky shoreline, as indicated by taxa preferring attachment to hard substrate, such as *Cittarium pica* and *Diodora listeri*. Some current oriented bivalves were found in the active oolitic shoal facies at the Coral Gables Waterway, and few in the vegetated sand flats of Alice Wainwright Park and Miami Metro Zoo. Miami Limestone fossils are being compared to recent South Florida mollusks indicating patterns of local diversification and extinction related to the minor changes in sea level and disappearance of certain habitats such as the rocky island substrates that *Cittarium pica* once thrived on.



Figure 1. Miami Metro Zoo Moat, Oolitic Facies of the Miami Limestone



Figure 2. Possible *Strombus costatus* from Miami Metro Zoo Moat



Figure 3. Miami Metro Zoo Moat

Gastropods	
1	<i>Astraea (Lithopoma) tecta americana</i>
2	<i>Bulla striata</i>
3	<i>Cerithium eburneum</i>
4	<i>Cerithium litteratum</i>
5	<i>Cerithium lutosum</i>
6	<i>Cittarium pica</i>
7	<i>Columbella mercatoria</i>
8	<i>Diodora listeri</i>
9	<i>Hipponix sp.</i>
10	<i>Leucozonia nassa</i>
11	<i>Marginella hartleyanum</i>
12	<i>Marginella (Gibberula) lavalleana</i>
13	<i>Modulus modulus</i>
14	<i>Nassarius albus</i>
15	<i>Olivella adela</i>
16	<i>Olivella floralia</i>
17	<i>Olivella pusilla</i>
18	<i>Seila adamsi</i>
19	<i>Terebra dislocata</i>
20	<i>Terebra floridana</i>
21	<i>Thais deltoidea</i>
22	<i>Tricolia bella</i>
23	<i>Truncatella bahamensis</i>
24	<i>Vermicularia knorri</i>
25	<i>Vermicularia spriata</i>

Table 1 and 2. List of gastropods and bivalves identified in the Pleistocene oolitic facies of the Miami Limestone formation

Bivalves	
1	<i>Amygdalum politum</i>
2	<i>Brachidontes exustus</i>
3	<i>Brachidontes modiolus</i>
4	<i>Chione cancellata</i>
5	<i>Chione latilirata</i>
6	<i>Lucina (Callucina) muricata</i>
7	<i>Lucina (Callucina) radians</i>
8	<i>Macoma tenta</i>
9	<i>Semele bellastrata</i>
10	<i>Tellina tenella</i>
11	<i>Tranzenella conradina</i>



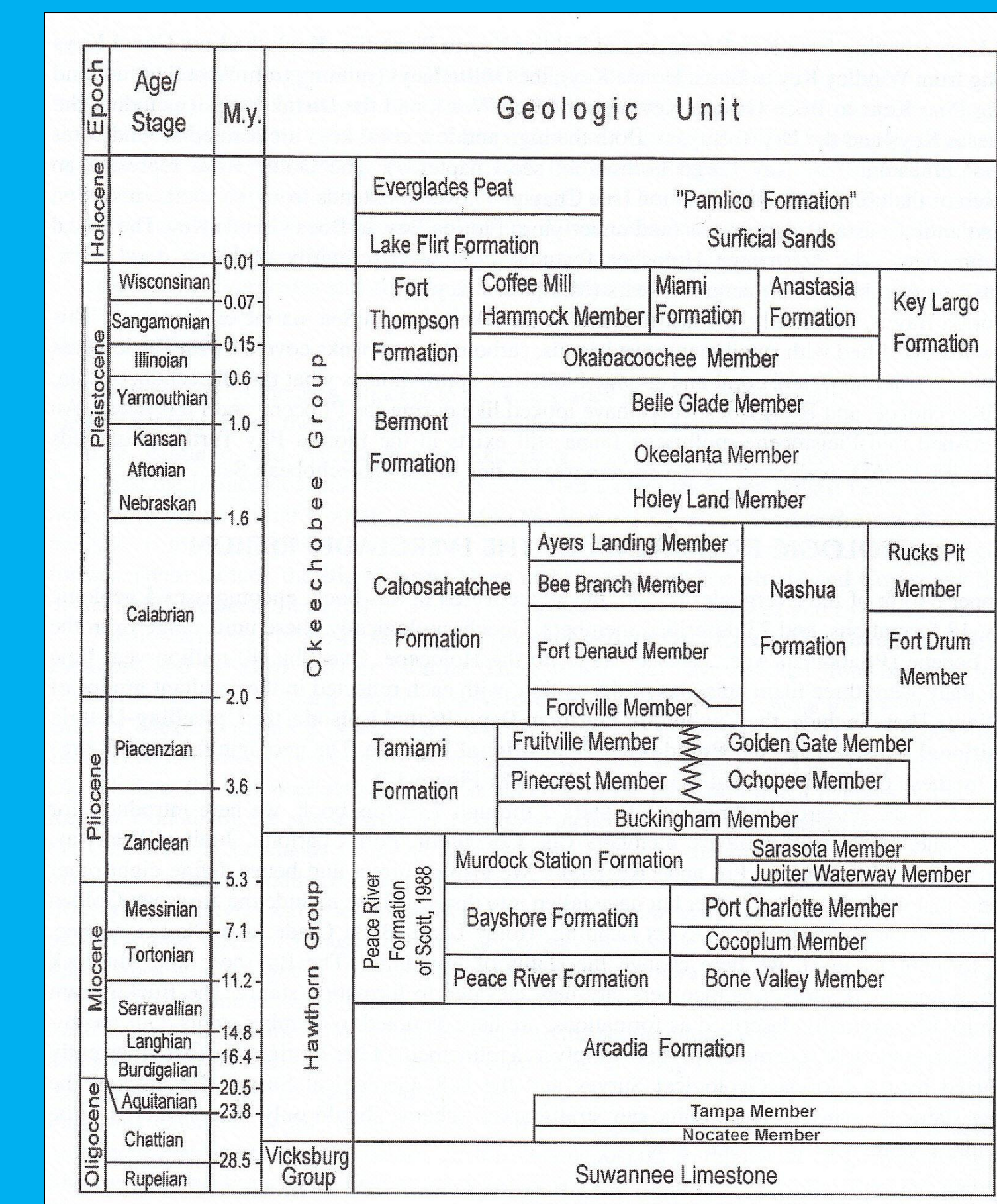
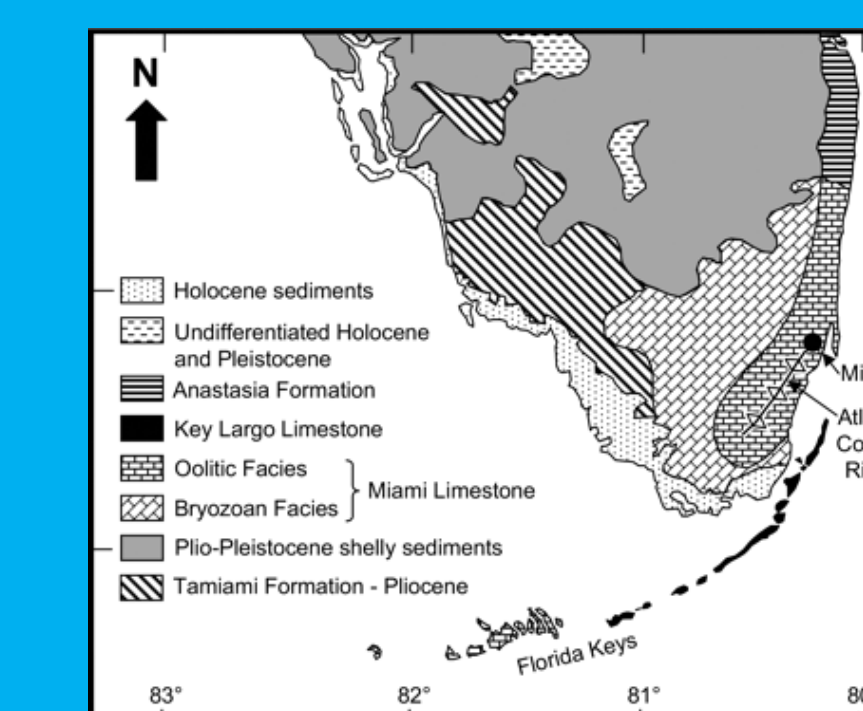
Figure 4. Photo of *Strombus gigas* at Alice Wainwright Park



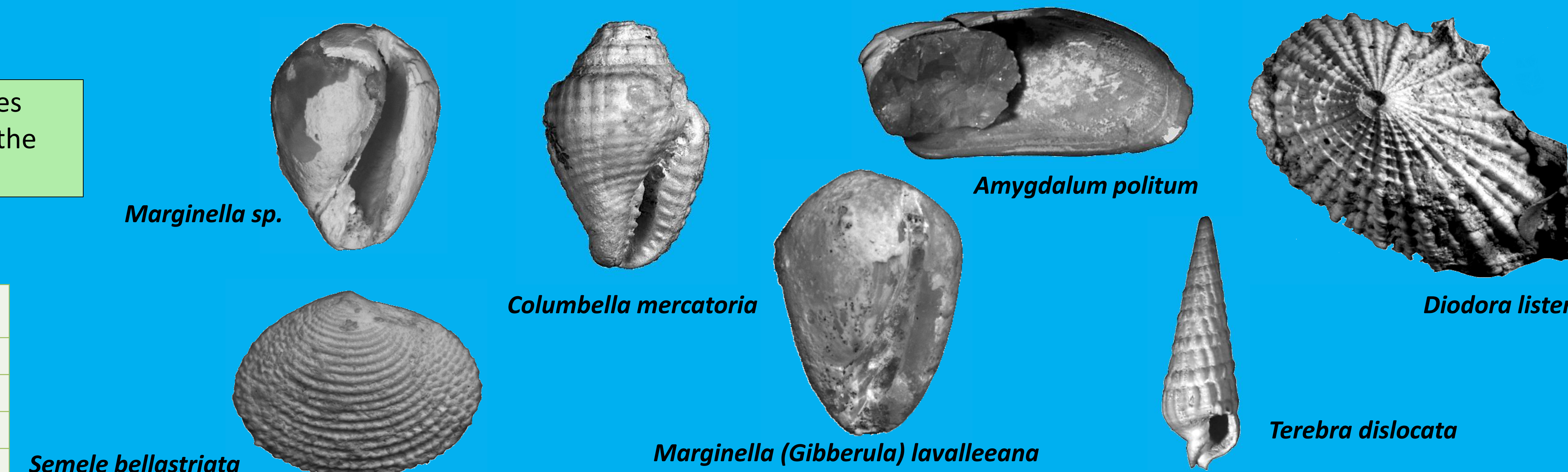
Figure 5. Photo of *Cittarium pica* in Miami Limestone



Diodora sp.



¹Left Image: Geologic setting of southern Florida.
²Above Image: Geologic time scale of South Florida



References:
¹Neal, A., Grasmueck, M., McNeill, D., Viggiano, D.A. and Ederli, G.P. 2008. Full Resolution 3D Radar stratigraphy of complex oolitic sedimentary architecture: Miami Limestone, Florida, U.S.A. *Journal of Sedimentary Research*. 78.638-53 pp.
²Petuch, Edward J., and Roberts, Charles E., 2007. *The geology of the Everglades and adjacent areas*. CRC Press, Boca Raton, 212 pp.