

More on Florida's Coquina Rocks at Washington Oaks

It is believed that the coquina outcrop here was formed from either a submerged offshore bar or from a beach ridge similar to the present barrier beach at Washington Oaks.

It is believed that the offshore bar was formed approximately 100,000 years ago during the last interglacial period of the Ice Age. At that time the sea level was about 25 to 30 feet higher than at the present. When sea level dropped during the following glacial period (more water in ice less in ocean) the bar was exposed to the air and weather.

The rain water percolates through the layer of sediment, dissolving calcium carbonate from the shell material. It was reprecipitated to form a matrix or cement; binding the loose sediment into a hard material we now call coquina rock. The dip of the rock layers about 10 degrees from the crest of the outcrop down to the Shore was measured with a Brunton compass. Those seaward dipping rocks would represent one side of the bar. It is presumed, the rocks would dip the other way under the beach to form the landward side of the bar.

Once raised from the ocean, the bar stood above sea level for many thousands of years. It was not until about 5,000 years ago that the rising sea would have started wearing away the rocks to produce the formations we see today.

The outcrop at Washington Oaks is one of sever scattered outcroppings that occur between Marineland and Palm Beach County (a distance of about 350 miles) It is not thought that the rocks called, the Anastasia Formation by geologist, are continuous over the length of the coast. It is probably absent from some areas, which would be expected if the rock originated as segmented offshore bars.

The rocks here differ in some interesting ways from that further south. The abundant amount of coquina shell in itself is unique, as are the numerous potholes in the outcrop. Layers of what appears to be red (iron) stained sands bedded between layers of shell and sand. It has been suggested that these bedded sands might be layers of weaknesses that when weathered and eroded from waves cause the coquina layers to collapse. This would partially explain the tumbled appearance of some of the rocks.

Some of the other things to note are the lithified "infillings"; these are produced when potholes fill up with sediment. The sediment then hardens and becomes more resistant to erosion than the surrounding rock. Over time these infillings are left as raised rims and knobs above the general surface of the coquina.



Another interesting feature is the calcified worm like tubes: or perhaps they represent lithified (hardened into stone) roots or root channels: maybe from palm trees.

The potholes however, are definitely not formed around palm trunks, as many of the holes are too small or shallow to have been shaped that way.



Also in some of the potholes we observed rounded rocks, the "Grind Stones" which over time have deepened and smothered the walls of the circular potholes.

The rocks at Washington Oaks appear to be more weathered than most of the other Anastasia outcroppings along the coast. It is not believed that this was due to longer exposure or higher wave energy in this area. It may be due to structural weakness and types of sediment layers in the rock, as was mentioned in the comments on the red sand layers.

This rock shore supports several distinct life zones

Black Zone ~ Closest to the dunes are never exposed to the sea except during occasional storm tides and then usually just splashed. The black color of the rocks is actually due to colonies of blue ~green algae which form a mat across them. It is also the habitat of the sea roach.



Yellow Zone ~ Covered and uncovered by daily tides. The rocks here are more sand scoured and bare. Species tend to be few but numbers are high where conditions are favorable. The most common animal found in this zone is the tortoise shell ~ limpet. Also found are common oyster, blue mussel,

striped barnacle and the little gray barnacle.

Green Zone ~ It is exposed at low tides only and tends to be covered by sand during the summer months, this dominated by green algae. The most common green algae are the hollow green weed and sea lettuce. Barnacles, mussels, common oyster and limpets are also in this zone. The predacious rock shell may be seen along with skeleton shrimp, hard tube worms and sand builder worms.



Red Zone ~ It is exposed at very low tide only. It is dominated by red and brown algae forms, and as the green zone it is usually covered by sand during the summer. Wire weed, rough tangle weed and graceful red weeds are the abundant plant forms. The Florida rock shell, little gray barnacle, little striped barnacle, blue and hooked mussels, skeleton shrimp and sea anemones are also numerous.