

Sea Rim Estates

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Introduction—On January 16, 2008 a faunal sample was retrieved from Sea Rim Estates west of Sabine Pass, Texas off Highway 87. This area is coastline for the Gulf of Mexico. GPS coordinates of actually sampling coastline are N29°40'57" by W93°57'24".

Figures 1 and 2 are topographical representations of the location. **Figures 3 and 4** are maps provided for location purposes. The sample was collected from a coastal deposition site. Continuous wave action gradually builds up and deposits the sediments at this locality. This wave action peaks with storms that strike the area. This storm action may lead to heavier sediments being deposited further from the coastline. The salinity of the Gulf at the time of sampling was 22 indicating that approximately 2/3rd of the water was Gulf saltwater and the remaining 1/3rd would be fresh water from rivers or streams flowing into the Gulf. The collection goal was to find a representative sample of all the fauna in the area. Collection was done by surveying and retrieving as many different looking samples as possible. Several bags of samples were retrieved and brought back for comparative analysis in the lab. After comparing and cataloging the remaining sample was recorded in the Faunal Analysis below.

Faunal Analysis—Only one Kingdom (Animalia) was represented in the collection from Sea Rim Estates. Five Phyla were represented, including Chordata, Mollusca, Arthropoda, Bryzoan, and Annelida. Four classes of Chordata were found with one representative of each specie: Osteichthyes, Chondrichthyes, Aves, and Mammalia. Two classes of Mollusca: Bivalvia had four species represented and Gastropoda had three. Arthropoda had only one representative of the class Maxillapoda. One unknown class of Bryzoan, was sampled, and one Annelida: Class Polychaeta was found as trace evidence. This evidence is collected comparatively in **Table 1**. **Figure 5** is a picture of all the representative samples collected and analyzed from the Sea Rim Estates Locality 1. (Note: the trace evidence of the polychaete is the small “v” shaped grooves in the Lightning Whelk shell).

Of the three bags of samples brought back to the lab nearly 75% was separated out as duplicate representatives of the same species. Such a high percentage of the same individuals would indicate that these are the most abundant forms of life on this beach. However, they are not the only organisms living there. To find the more rare forms of life a much larger sample would have to be taken. No soft parts were found, the trace polychaetes are only indicated by there groove tracks in another shell. The bryozoa were found only because they were living on the shell collected. The most commonly preserved materials are the hard shells of the Mollusca (aragonite). These are almost certainly not the only organisms that live in this environment but there is more evidence of them because their hard parts are less likely to be recycled by other organism, or broken in the surf. The method of retrieval may also have biased the sample. Only collecting things that look different may lead to dismissing things that are similar but are,

in fact, different representatives of the same Class. Also, broken pieces may look the same among many of the same Class, but may, again, be different representative species. Storm, or even high wave action may also break up the same species remains into pieces that are perceptibly different, but upon closer analysis reveal they are all the same. The organisms that best indicate the actual depositional environment sampled are the Mollusca. The Mollusca collected all live in bay areas in general and some representatives indicate the mixed salinity (the oysters). This would be an excellent indication of the water where the sample was collected. However, to prove the area was a coastline, more than shallow water creatures are necessary. The bird feather and the mammal bone would be important in reconstructing an environment were terrestrial specie remains could be found with that of marine life.

Conclusion—This sample of present organisms on the coastline indicate that only a small percentage of an entire local community will be preserved after death. This abundance of certain species may lead to false conclusions that these organisms thrived in this environment and no other organisms lived here. With so little evidence or remains surviving very long after death, the probability that they will survive long enough to be preserved as fossils is very low. This lack of survival to preservation may skew the results of a sample even further. Fewer fossil representatives make it very difficult to accurately interpret findings and reconstruct paleoecologic depositional environments. In a paleoecologic reconstruction it is very unlikely that any of the Chordata representatives would be preserved. This could lead to a misinterpretation that the area was completely marine and not coastline as there would not be any evidence of terrestrial organisms.

Works Cited

Google® Earth and Mapquest Inc. were used to generate their respected maps for this report.