

A Tale of Two Towns

It's been a dark and stormy year along the Gulf coast, and hurricane season still has more than a month to go. But the Alabama coast is always a stormy place. Starting with an early 20th century storm that cut a 5-mile wide break in Dauphin Island, the region has been hit by at least seven major hurricanes. In the past week alone, the Alabama coast experienced Tropical Storm Isidore and a near miss by Hurricane Lili. While scientists typically examine how shorelines respond to different storms, it is also interesting to observe how different parts of a shoreline respond to the same storm. As we witnessed along Dauphin Island and Gulf Shores after Isidore, such responses can be dramatically different.

The entire Alabama shoreline is eroding, as are 80-90% of the world's sandy shorelines, due in part to a rising sea level. Even though the rate of sea level rise is only 1 to 1½ (this should read "one to one-and-a-half") feet per century, a large amount of shoreline retreat can be generated along very flat coastal plains, such as in Alabama. Dauphin Island, for example, is migrating very slowly toward the mainland by eroding on the Gulf side and widening, through storm overwash, on the lagoon side. As storms overwash the island, sand is deposited and the elevation of the island increases. Thus, Dauphin Island, like most of the world's barrier islands, is slowly moving back and up.

Adding to the sea level rise problem are the activities of the US Army Corps of Engineers and engineering activities of other shoreline communities. The single biggest engineering problem is the dredging of the Mobile Ship Channel, during which the Corps dumps part of the sand that is removed out at sea. This is sand that belongs to Dauphin Island, at least that's how nature would have it, and although the loss of this sand leads to erosion, the Corps says it is required by law to dispose of the sand in the cheapest fashion, which is to dump it on the continental shelf. What kind of engineers are these that do so much damage to our beaches?

Tropical Storm Isidore removed the artificial sand berm built on Dauphin Island after Hurricane Georges in 1998, and plans are afoot to rebuild it once again. But rebuilding the berm will involve bulldozing of beach sand, as well as removal of sand that overwashed onto the island. But the removal of beach sand will (once again) kill the organisms that live in the beach. These organisms are an essential part of the nearshore ecosystem that supports the fish treasured by anglers and the birds that dance about in the surf zone. The sand that will be removed from the island is the same sand that the island needs to elevate itself.

Elevating the land is not only beneficial to the island's future, it also benefits development by reducing both the occurrence and impacts of future overwash episodes. The sand doesn't have to be removed. Roads could be elevated, and reconstructed of gravel or runway matting to save money. However, since the sea is rising and the island is not, overwash will become more and more frequent.

Dauphin Island, especially the eastern, $\frac{3}{4}$ (this should read “three quarters”) of it, should never have been developed. The island has proven to be breathtakingly dynamic and a dangerous place on which to build, by any sensible standard. The damage inflicted on the island by Hurricane Frederick in 1979 was immense and should have given the state pause regarding its coastal development practices. The causeway to the island was destroyed, and the state briefly contemplated not rebuilding it. But common sense failed and, as is usually the case, development interests won and the road was rebuilt. In our view, development here can only be classified as societal madness. Dauphin Island should have become a park.

The situation in Gulf Shores is strikingly different. The beach here was nourished in 2001, and it appears to have served its purpose well in protecting beachfront development. But appearances can be deceiving, as we see when taking a closer look at the other side of beach nourishment:

- The state has allowed the shoreline of Gulf Shores to be lined with high-rises, a situation that makes future responses to shoreline erosion very difficult. It's easy to remove a beach cottage. A high-rise is another matter. Beach nourishment almost always leads to more development and, as we have seen from observing other nourishment projects around the country, the density of buildings and people along the Gulf Shores beach is likely to skyrocket.
- Nationwide, we have observed that the public is frequently sold a bill of goods regarding the long-term cost of nourishment. Gulf Shores leaders, for example, have told residents that the nourished beach can be expected to last ten years. Although no one can accurately predict the lifespan of a nourished beach, long experience in the Gulf and elsewhere indicates that the beach is unlikely to last even five years.
- The Corps completed a \$12 million study in New Jersey indicating that the environmental impacts of beach nourishment are negligible. Only an agency as project-dependent as the Corps could spend \$12 million on a flawed study with flawed conclusions. Common sense, along with independent studies in Virginia and North Carolina, show that the ecological impacts of beach nourishment may be immense.
- Around the country, there are a number of examples of poor quality beach sand used for nourishment projects. In Gulf Shores, parts of the nourished beach were very difficult to walk on because of high shell content. A high shell contact can also create problems for nesting sea turtles.
- Most of the world's shorelines are eroding, but there is no erosion PROBLEM until buildings are in the way. A very small number of property owners are responsible for beach bulldozing, beach nourishment, seawall construction and all the other activities that are intended to save buildings. Why shouldn't beachfront property owners pay for beach nourishment? Shouldn't those who

- What about beach nourishment in the long-term? As sea level rises, we can expect the rate of erosion of nourished beaches to increase, causing nourishment to become ever more costly. Although both the Clinton and Bush administrations failed to make local governments pay a larger share of the costs of nourishment, this eventually will be the case. The bottom line is, 2-4 generations from now, there is a strong likelihood that beach nourishment will no longer be viable in Gulf Shores. Nourished beaches will be replaced by massive sea walls as the nation focuses on preserving Manhattan, Miami, Mobile and other major coastal cities. Recreational barrier island shorelines, like Gulf Shores, will become a low priority, and beaches will disappear as they always do in front of seawalls.

The sagas of Dauphin Island and Gulf Shores clearly show that a societal debate is needed about the future of the Alabama shoreline. Shoreline management here is now guided only by the needs of beachfront property owners. Florida Governor, now senator, Bob Graham once stated, "This generation does not have the right to destroy next generation's beaches." This is a good maxim to guide Alabama citizens in their management of the state's beaches.

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