LEAVE BARRIER ISLANDS TO THE WIND AND TIDES

Residents of the Lone Star State and federal taxpayers should think twice before rebuilding the hundreds of homes that were swept away several weeks ago by Hurricane Ike. I realize that Texas pride includes the Alamo where - though greatly overpowered - every man fought to the last. I hope that this justifiable pride will not be extended to the unjustified defense of the state's barrier islands against the even greater power of the sea. I recommend a fast and orderly retreat.

My concern about barrier islands is not restricted to Texas, but to dozens along the Atlantic and Gulf coasts of the United States. All are wave-beaten, washed-over sand-heaps on the move, except for those parts stapled in place by concrete.

If you built a house on an active sand dune, you would probably not expect the sand to stay in place. Indeed, the classic form of a slip-face dune exists solely because the whole thing is slowly migrating. Sand eroded from the gentle windward slope is blown up to the brink, where it falls and flows down the steeper leeward face. If the dune stopped migrating, it would quickly be blown apart into a formless heap.

Something similar is true for all barrier islands, although the symmetry is reversed. Classic barrier islands have a moderately steep beach face leading up to a stair-step series of berms, then to the grass-covered spine of a dune. From there, the profile declines more gently across a sheet of blown sand, which gives way to "overwash" sediment deposited by storms of the not-so-distant past. Overwash fans begin where storm waves broke through a low spot of the barrier, coalesce as they broaden and continue beneath the lagoon.

Classic transverse dunes form only when the wind blows steadily over loose sand. Classic barrier islands form only when sea level rises steadily over a continental shelf capped by loose sand. Most of those along the Eastern and Gulf coasts began to form thousands of years ago when the mass of near shore sand being move forward by rising sea level became to big. In the barrier birth moment, some unnamed tropical storm left behind a narrow island ridge of sand, to which more sand accreted. During the next overtopping storm, sand eroded from the seaward face of what was now a narrow island was carried beyond the crest and deposited on the landward side, resulting in net migration toward the shore. The migration didn't reach the shoreline because the latter was moving away in response to the same gradual rise of the sea.

Characteristically, barrier islands migrate faster and become more narrow when sea level rises faster than usual, when the climate is in a stormy phase and when sand is being lost by island lengthening or through flood tide inlets. Barriers migrate more slowly and are typically broader when sea level rise slows, during phases when storms are less strong and when the system locally retains the sediment.

This was the situation when Europeans first began exploring the many barrier islands guarding the U.S. coastal plain from New York City to Mexico. Each was an unpopulated, energy-absorbing wall of sand protecting the mainland shore. Then came a phase of accelerating development during the 19th and 20th centuries: tents, shacks, boardwalks, roads, houses, apartment buildings, cities, freeways and whatnot.

No longer would the loss of land on the side facing the sea be tolerated, even if an equivalent amount of new land was created on the lagoon side. Invested residents developed a bunker mentality, especially in Galveston, Texas, after its famous hurricane of 1900. Sea walls went up, insurance policies were subsidized and local pride intensified.
But it's no use, at least not in the long haul. Sea level is now rising faster than average. Storms rolling in from the roulette wheel of the subtropical Atlantic appear to be intensifying.

The barrier wants to do what it is supposed to do. Migrate. Let's give it permission.