

COASTAL LAND LOSS IN FLORIDA

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Abstract

Florida has approximately 593 miles of shoreline fronting on the Atlantic Ocean and Straits of Florida and approximately 673 miles of shoreline fronting on the Gulf of Mexico with an additional 5,000 miles of bay and estuary shoreline (U.S. Army Corps of Engineers, 1971). Of a statewide total of 818.9 miles of open coast sandy beaches, 337.2 miles or 41.2 percent of the beaches are identified as erosion problem areas. These erosion problem areas include those beaches with a high erosion rate or recent significant erosion conditions, those beaches with a moderate or low erosion rate, but with a narrow width fronting a highly developed area, and those restored beaches with an active maintenance nourishment program. Of these erosion problem areas, 217.8 miles or 26.6 percent of the statewide beach length, are areas of critical erosion, that is, segments of the shoreline where substantial development or recreation interests are threatened by the erosion processes.

On a shorewide basis the Atlantic Ocean beaches of Florida typically have historical erosion rates of between 0 and -3 feet per year, while the Gulf of Mexico beaches typically have historical erosion rates of between 0 and -2 feet per year. Many of the problem areas have shoreline erosion rates in the magnitude of between -3 and -5 feet per year. The most extreme erosion rates are occurring along the southern portion of St. Joseph Peninsula at Cape San Blas where the annual shoreline recession exceeds -20 feet.

Erosion conditions in Florida are most apparent as a result of storm tides and storm wave activity. Extreme meteorological events inflict significant erosion conditions in all beach areas of the state. Historical shoreline changes are often the cumulative effect of a number of storm events and their cycles of poststorm recovery. Erosion and damage from recent storms as well as efforts to mitigate storm damage have heightened the erosion problems and incited a public response through coastal construction regulation and beach management planning. To restore recreational beaches and provide storm protection for upland properties, beach restoration projects have been constructed at nineteen locations along the Atlantic coast and at eight locations along the Gulf coast of Florida.

Most of Florida's beach erosion problems, particularly much of the critical erosion, has resulted from the stabilization, construction, and development of barrier tidal inlets. Many of the natural undeveloped inlets, dynamic in their geomorphology, are also responsible for many of the erosion problems. Of the twenty-one barrier tidal inlets along the Atlantic coast and of the forty-six barrier tidal inlets along the Gulf coast, only twenty-seven are neither structured with jetties or terminal groins nor recently dredged. Thirty-eight of the inlets have been dredged to maintain navigation channels, to provide circulation to lagoon waters, or to obtain fill. Thirty-two of the inlets have been structured with jetties or terminal groins, and sixteen inlets have bridges crossing them. To mitigate shoreline erosion conditions, inlet sand transfer projects have been conducted at thirty-four of the inlets to nourish adjacent beaches.

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