



BARRIER ISLANDS

Barrier islands are elongated islands of unconsolidated sediments (usually sand) trending parallel to the shore. They are found along coast with gently sloping coastal plains and a moderate tidal range. Barrier islands are generally backed by estuaries and wetlands, which may range in size from narrow lagoons to extensive sounds over 27 miles wide. Barrier islands are cut by one or more tidal inlets.

Here in the United States, barrier islands are found from New England down the Atlantic Coast, around the Gulf of Mexico to Texas. There are no true barrier islands on the Pacific coast; however there are barrier beaches.

Barrier islands are not static structures. They are extremely dynamic systems that are constantly changing and moving. Wave, wind and tidal energies are the primary factors that shape and regulate the barrier island ecosystem. For barrier islands to form you need a large sand supply to build the island with and moderate wave energy to shape the island. Barrier islands form in three ways. They can form from spits, from drowned dune ridges or from sand bars.

Longshore drift is the movement of sand parallel to the shore caused by the angle of the waves breaking on the beach. Longshore drift can cause the beach to build out from the mainland, across the mouth of a shoreline indentation such as a bay or estuary. These fingers of beach are called spits. When a storm such as a hurricane digs an inlet through the spit a barrier island is formed.

During the last ice age, when the sea level was lower, beaches formed along the low coastal plains. Beach sand was piled up in large dune ridges parallel to the shore. As the ice caps melted, the sea level rise flooded the coastal plains. The now offshore drowned dune ridges became the nucleus for an island. Wave action and longshore drift reworked and enlarged the dune ridge into a barrier island.

Other barrier islands formed from sandbars. Wave action moved sandbars shoreward by removing sand from the seaward side of the bar and depositing it on the shoreward side. When the sandbar reaches shallow water it rises out of the water. In areas with moderate wave action and a bountiful sand supply this bar can then turn into a barrier island.

Barrier islands buffer the coastline they front from the wave and storm energies of the open ocean. The beaches on barrier islands offer little resistance to storm waves, allowing them to effectively absorb and dissipate the immense forces that confront them. Most discussions of barrier islands focus on the beaches, dunes and inlets; however, the most important feature of a barrier island can be found on its landward side. The chain of barrier islands along the coast allows estuarine conditions; bays, lagoons and marshes to form behind them. These estuaries are very productive areas which are important in the life cycle of many open ocean species.

Barrier islands have always held a strong attraction to humans. Unfortunately, the nature of barrier islands is incompatible with our uses. As we build houses on the islands and use the inlets for navigation, we want the beaches and inlets to stay put, but the island moves. Our efforts to stabilize the islands have caused the loss of some of their natural defensive capabilities. So just remember, when dealing with a barrier island you must be as flexible as the land you are standing on.