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Wetland Loss and Barrier Shoreline Erosion along the Plaquemines Barrier Shoreline

Located within the Mississippi River Delta Plain along the coastal zone of Jefferson and Plaquemines Parish, Louisiana, the Plaquemines Barrier Shoreline Complex (also known as the Barataria Barrier Shoreline) spans approximately 48-kilometers from West Grand Terre Island to Sandy Point, and forms the eastern flank of the Barataria Bight (Figure 1). The barrier shoreline and back barrier marshes provide unique habitats for coastal fisheries and wildlife in Louisiana and the Northern Gulf of Mexico. The barrier shoreline also serves as a means of protection for wetlands and coastal communities against hurricane storm surge, tidal inundation, frontal passages, and wave action. Unfortunately, the Plaquemines Barrier Shoreline, and the associated wetlands, is one of the most rapidly eroding areas in Louisiana.

This study builds on a previous study of barrier shoreline loss that examined barrier shoreline loss between 1884 and 1988 (Williams et al., 1992). In 2000, the National Marine Fisheries Service, under the Coastal Wetlands Planning, Protection, and Restoration Act, developed a plan to restore from five to ten miles along the Plaquemines barrier shoreline. This study represents the current state of the shoreline as well as an update of shoreline loss rates from 1884-2000. Additionally, interior wetland changes have been determined between 1932 and 1990.

The rate of long-term (1884-2000) shoreline retreat along the Barataria shoreline ranges from 3.2 feet per year to 50.6 feet per year, averaging approximately 19.8 feet per year over the time period. The rate of short-term (1988-2000) shoreline retreat along the Barataria shoreline ranges from 4.8 feet per year to 115.4 feet per year, averaging approximately 29.5 feet per year over the time period. Approximately 37,402 acres of marsh have disappeared from the area immediately behind the barrier shoreline between 1932 and 1990. The remaining wetlands behind the barrier shoreline are projected to be lost within the next 20 years.