

Short-Term Performance of Segmented Breakwaters along Raccoon Island, Louisiana

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Abstract

The Isles Dernieres barrier island chain along the Louisiana coast is experiencing some of the highest rates of erosion of any coastal region in the world. In order to protect the nesting habitat of the State Bird Brown Pelican, eight segmented breakwaters were constructed in June and July of 1997 off the southeastern shore of Raccoon Island, Louisiana, one of four barrier islands comprising Isles Dernieres. Beach surveys have been conducted at biannual intervals along the island from November 2000 to July 2004 to monitor the response of the barrier to post-breakwater construction. Since the November 2000 survey, sediment volume in the area landward of the breakwaters increased by 2.3% whereas seaward of the structures sediment volume decreased by 7.05%, and west of breakwaters sand volume decreased by 22.59%. During the high energy conditions associated with Hurricane Lili in October 2002, areas landward of the breakwaters lost 0.24% of sediment, areas seaward of the breakwaters lost 5.38% in volume, while areas west of the structures lost 26.88%. Over a one year period (June 2003 through July 2004), areas west of the breakwaters lost approximately 12.33% of its sediment volume, however, areas landward of the breakwaters a volume increase of 2.04% was measured. These data strongly suggest that during the period of study that the segmented breakwaters have resulted in a net sediment gain behind the structures.