

Documented Effects of Coastal Armoring Structures on Sea Turtle Nesting Behavior

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As do other sandy beaches around the world, the ocean beaches of Florida erode and accrete. During the erosion phase of this cycle, man-made structures built close to the beach become threatened. In response to this threat many property owners in Florida have built coastal armoring structures to protect their upland property from erosion. The number of these armoring structures in Florida is increasing (Schmahl and Conklin, 1991). Superimposed upon the value of Florida's beaches to coastal property owners is the importance of Florida beaches to nesting sea turtles. Florida beaches host approximately 95% of all the sea turtle nesting in the continental United States (Turtle Expert Working Group, 1998).

In a study of the impact of coastal armoring structures on sea turtle nesting behavior, seawalls were shown to have had detrimental effects on sea turtle nesting (Mosier, 1998). Results showed that fewer turtles emerged onto beaches in front of seawalls than onto adjacent, non-walled beaches, and of those that did emerge in front of seawalls, more turtles returned to the water without nesting. The threat for nesting sea turtles posed by seawalls may lie in a reduction of nesting habitat, in an elevation of the physiological cost of nesting, and in displacement of turtles into nesting habitat that is sub-optimal (e.g., a lower beach elevation where eggs would drown; Murphy, 1985).

There are few data available that examine potential effects from beach armoring on nest site choice in sea turtles. Consequently, coastal resource managers are left with few details on how differently constructed and positioned armoring structures affect sea turtle nesting. This means that there are no appropriate definitions for coastal armoring from a nesting sea turtle perspective.

In response to the need for such a definition, a follow-up study was conducted during the 1999 nesting season comparing the effects of different types of armoring structures, placed on various parts of the beach. A central goal of the analysis was to define coastal armoring from the perspective of effects on sea turtle nesting. Our objectives were to map and characterize the dune (vegetation, armoring structures, topography)

on a two-mile stretch of nesting beach in order to analyze the nesting attempts by loggerhead turtles. These data were used to test the hypotheses that predict nest-site choice and nesting behavior dependence upon dune character (e.g., the presence of armoring).