

penetrometer. Two types of equipment were evaluated. The first was a root-rake attached to a front-end loader and was capable of penetrating to approximately 20 to 55 cm. The second type of equipment was a single tined ripper which penetrated from 90 to 120 cm. It was found that both of the methods were effective in reducing significantly the shearing resistance. Measurements six months after the initial tilling showed some increase in shearing resistance; however, the resistance was still lower than in areas where tilling had not been carried out. It was recommended that in areas where the shear resistance exceeds 500 pounds per square inch, tilling be conducted prior to the nesting season. Approximate costs of tilling are presented.

Nelson, D.A., K. Mauck, and J. Fletemeyer (1987) "Physical Effects of Beach Nourishment on Sea Turtle Nesting, Delray Beach, Florida", U.S. Army Waterways Experiment Station, Vicksburg, Mississippi.

This report commences with the important observation that "A large percentage of all sea turtle nests in the United States are located in beaches that have been nourished or renourished". Field tests were conducted before and after the 1984 Delray Beach renourishment project which entailed the placement of 630,000 cubic meters of sand on the beach.

A cone penetrometer was used to determine the shearing resistance at various depths in the vicinity of nests and false crawls before and after the 1984 project. The size and shape characteristics of the sand were also determined. In order to evaluate nest relocation effectiveness, the eggs in some nests were relocated to a fenced hatchery area. After an appropriate incubation period, the nests were excavated to determine a number of parameters including hatching success.

Within the hatchery, three equally-sized areas were established. The material in each of these areas was different and included aragonite sand, nourishment sand and natural beach sand.

Findings of the study included a significantly higher sediment shearing resistance in the project area following renourishment compared to pre-renourishment conditions. A scarp formed in the nourished beach which was somewhat higher than in a control beach located south of the project. There was no significant difference in the hatching success for the three sand types in the nursery area; however, the success of the hatchery areas nests was slightly