Title: Marine Transgression and Vegetation Environments in St. Catherines Island, Georgia

Introduction: The shoreline of St. Catherines Island in the Georgia Bight has been fluctuating as a result of rising sea levels and decreased sediment supply. These events have made this island one of the most erosional of the twelve barrier islands in the Georgia Bight. One adverse effect of this erosive coast is the harm to the future of sea turtles. This study will also analyze changes of vegetation environments that populate certain landforms, which are representative of the barrier island’s geomorphic past. What makes this study area particularly important is that its evolving shoreline, coastal environments, and ecological settings are a foreshadowing event to the changes southeastern barrier islands will undergo as sea level continues to rise.

Methods: ArcMap 10.1 software was used to evaluate and analyze the spatial components. Coastal areas of erosion and accretion were derived from historical shoreline data. Density of loggerhead nesting locations was derived from GPS data. Vegetation species data will be collected via GPS.

Results: After deriving the area values between the historical shorelines, an almost perfectly linear relationship between total area and time was found. This relationship confirms the hypothesis that the shoreline of St. Catherines Island is retreating at an increasing rate, as opposed to a constant or decreasing rate. After running a kernel density tool for the single points of the original locations of the vulnerable nests, it is found that the loggerhead mothers are laying their eggs in a dominantly erosional portion of the island.

Discussion/Conclusions: Shoreline retreat is one of the geomorphic changes St. Catherines Island continues to undergo. From the area change data, one can conclude that the shoreline of St. Catherines Island is retreating at an increasing rate. This increasing shoreline retreat exacerbates the endangerment of Georgia’s loggerhead sea turtle population. The locations of the vulnerable loggerhead sea turtle nests had shown high densities in dominantly erosional areas—thus in vulnerable areas to lay turtle eggs. This can result in the further endangerment of the loggerhead sea turtle population of Georgia.