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Submitted By: Jaynie Gaskin

SEA TURTLE HABITAT AT RISK; LONGITUDINAL RECORD OF SEA TURTLE NESTING ON ST. CATHERINES ISLAND, GA. "WHAT THE PAST TELLS US ABOUT THE PRESENT AND THE FUTURE!"

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Geologists involved in sea turtle conservation on St. Catherines Island, Georgia, a "Sentinel Island" for barrier islands during the Modern Transgression, have documented sea turtle nesting for 25 years (1990-2014). During this time 3080 nests have been documented, including seven Leatherback, three Green Sea Turtle, and 3070 loggerhead nests (99.68%). Deterioration of adequate nesting habitat from 25% to 12% in the last decade has resulted in rapid erosion of backbeach nesting habitat at ~ 3.0 to 6.0 m per year, including fragmentation of three beaches in 1990 into eight beaches in 2013, formation of washover fans and wash-in fans onto backbeach marsh meadows and into maritime forest, formation of nearly continuous tree "boneyards," scarps, and relict marsh mud exposures along most of the beach. All these phenomena contribute to difficult nesting conditions for loggerhead sea turtles; forcing relocation of approximately 80% of "at risk" nests into nurseries in this Critical Habitat.

This initial study of the patterns of nesting on St. Catherines Island tracks the proportion of nests deposited on each of our initial three beaches as they fragment due to sea level rise. Overall proportions of nests by beach vary from year to year, with variance ascribed to differing cohorts of nesting loggerheads. As beach migration occurs on rising sea level, nesting habitat is dramatically changed over time, opening small nursery areas into which nests may be relocated and then, they subsequently erode away during succeeding years. Two major areas capable of hatching nests most years have been persistent over 25 years and remain intact. The North Beach Nursery (occupying 0.611 km of beach front) is currently the only accretional part of the Island, but is underlain by two bodies of ancient marsh mud, producing a perched water table capable of drowning eggs during wet years. The McQueen Dune Field Nursery (occupying 1.124 km of beach front) is now under significant erosional attack by the Atlantic Ocean and is rapidly deteriorating.

Dynamic modeling and observation of the changes occurring in St. Catherines Island's Critical Sea Turtle Nesting Habitat show a pervasive deterioration of habitat quality through time with historical average rates of beach migration of ~3.0 m/yr now accelerating to ~ 6.0 m/yr as sea level rise accelerates. All primary sea turtle nesting habitat on St. Catherines Island is now at risk and will be compromised as sea level continues to rise, potentially disappearing altogether and/or certainly being strongly modified within the next 25 to 50 years.

Conservation of sea turtles under these conditions consists of assessing the likelihood of the hatching of each nest deposited in this dynamic habitat, leaving as many nests in situ as seems wise; and relocating as many nests as is necessary to maintain a healthy hatch rate in as natural a manner as is feasible. This protocol is very labor intensive. Fragmentation of the beaches makes them increasingly difficult to monitor, so monitoring by drones is being introduced in 2015.

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Submitted By: Yusuf Katilmis

PROBLEMS FACING LOGGERHEAD SEA TURTLE IN FETHIYE BEACH AND MITIGATION MEASUREMENTS

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Fethiye beach is one of the most important nesting sites of Loggerhead sea turtles (*Caretta caretta*) in Turkey. Previous studies were showed a negative population trend of the loggerhead sea turtle population at Fethiye beach, Turkey based on nesting data. Tourism development in recent years has increased risks that may cause the loss of sea turtle nesting habitats. Our studies were identified that the problems in the area as intensive human activity, sun beds and parasols, light and noise pollution, traffic on the beach and night visitors. Also, human activity on nesting beaches may affect sea turtle eggs, hatchlings and adults. These problems that affect the development of eggs and therefore hatchling success and the usage of vehicles that also compress the sand. The mortality of adults and juveniles can be caused by speedboats. Meanwhile, conservation action plan was started in order to protect nesting females, nests and hatchlings on Fethiye beach. In these respect, training activities was started for tourists, local peoples, and restaurant and hotel owners regularly during and before the nesting season. We made a meeting with all stakeholders and manager of ÇALIŞ-DER (an NGO for environment and tourism located in ÇalışBeach) before the nesting season. All the visible lights of the hotels and restaurants from the beaches are removed, screened and/or painted as black. The light shows and/ or similar activities in front of the hotels, affecting the beach and turtles were stopped and these were accepted by the stakeholders at the beginning of the nesting season. Access of vehicles and ditch digging by municipality workers was stopped according to our suggestions. Drivers were also informed and warned. The car parks were designed by the Municipality at the back of ÇalışBeach. The fisherman and motorized water sports ownerships explained all code of conduct and they have a long list of rules they have to be obligated. Any illegal activities if it is found and seen by our project team, cost guards were immediately informed.