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Interactions of Oceanographic Factors with Inter-Nesting and Post-Nesting Movements of East Pacific Green Turtles (Chelonia mydas agassizii) from Playa Cabuyal, Guanacaste, Costa Rica

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Inter-Nesting and Post-Nesting Movements of East Pacific Green Turtles (*Chelonia mydas agassizii)* from Playa Cabuyal, Guanacaste, Costa Rica

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INTRODUCTION

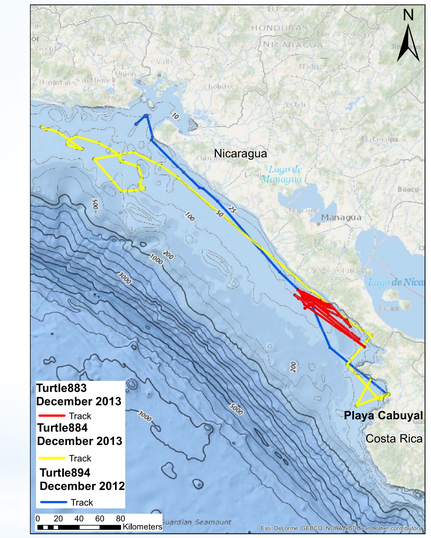
Green sea turtles (*Chelonia mydas*) are an endangered, long lived, migratory species that are found across the globe in tropical waters. In the Eastern Pacific, the green turtles (*Chelonia mydas agassizii)* remain along the coast and do not venture off the continental shelf. The purpose of this research was to use satellite telemetry to study a population of East Pacific green turtles that nest on Playa Cabuyal, Guanacaste, Costa Rica, and to:

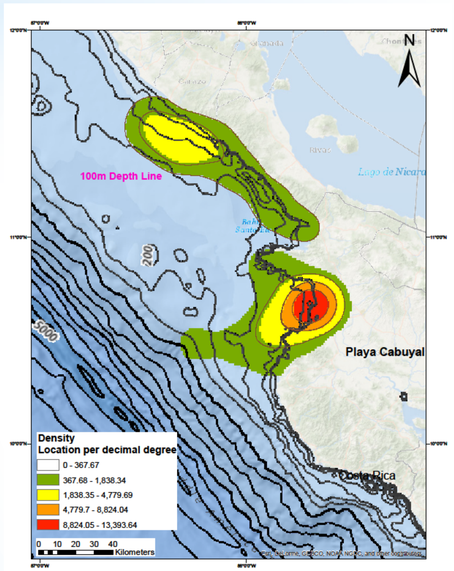
1. Quantify inter-nesting habitats and behavior,
2. Identify post-nesting corridors and foraging ground locations, and
3. Analyze these movements to determine overlap with neighboring populations and outline management recommendations

STUDY SITE/METHODS

Playa Cabuyal is located on the Gulf of Papagayo, which is partially protected under the Santa Rosa National Park. The nesting season for East Pacific green turtles at this site begins in August and continues through April. During a nesting season, each turtle will lay on average 4-6 clutches of eggs at two week intervals. At the end of the nesting season, the turtle will migrate to foraging grounds and remain there for 2-4 years before being ready to nest again.

Data collection took place during two seasons and consisted of attaching satellite transmitters to turtles during the camouflaging process, post-oviposition. Two types of transmitters were used; MK10 transmitters are attached by tethers and trail behind the turtle, while Spot5 transmitters are epoxied directly onto the shell (transmitters made by Wildlife Computers Inc). Both transmitter types communicate with overhead satellites every time the turtle surface to breathe, allowing us to track their movements over time.





RESULTS/DISCUSSION

Turtles (n=10) spent most of their time within the gulf of Papagayo, in water less than 50m deep (Figure 2). The only anomaly was one turtle that ventured into deeper water during the inter-nesting period. The density analysis (Figure 2) shows the highest density of turtles was within the gulf, remaining in shallow water. Of the approximately 1,000 km^2 area that makes up the Gulf of Papagayo, the top 20% of turtle density was 173.85km^2, none of which is protected under the Santa Rosa National Park.

Post-nesting migration behavior was similar among all migrating turtles (n=2). These turtles traveled 367 and 354km to the Gulf of Fonseca where Nicaragua, El Salvador and Guatemala meet (Figure 1). This is a foraging ground previously described for neighboring nesting populations of East Pacific green turtles (Blanco et al. 2012). This tells us that this foraging ground is very important and turtles here are mixing with conspecific turtles from other nesting cohorts.

In Figure 1, the turtle track signified by a red line remained localized off the coast of southern Nicaragua. It is unknown whether this turtle may be feeding there (which would be a new foraging location), nesting or showing novel migratory behavior. More data is needed to make an informed analysis.

This research emphasizes that the Gulf of Papagayo is very important for this population, as well as other populations. Four of the seven species of sea turtles have been found to nest here. Management recommendations could include extending the protection of the Santa Rosa National Park to encompass this inter-nesting location.

REFERENCES

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FIGURE 1: Top. Post-nesting migration tracks of two turtles that traveled from Playa Cabuyal to the known foraging ground in the Gulf of Fonseca. One post nesting turtle, red, has remained off the coast of southern Nicaragua since nesting.

FIGURE 2: Bottom. The density of turtle location points showing the importance of the Gulf of Papagayo for inter-nesting turtles.

Both maps show that green turtles are remaining in areas of shallow water, less than 50m deep.