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# Preliminary Satellite Telemetry of East Pacific Green Turtles Nesting on Playa Cabuyal, Costa Rica

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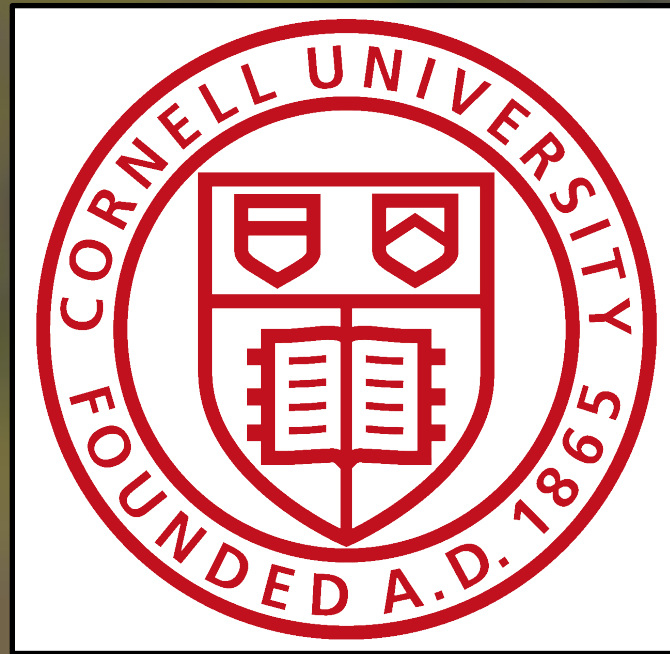
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# Preliminary Satellite Telemetry of East Pacific Green Turtles Nesting on Playa Cabuyal, Costa Rica

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## Introduction:

East Pacific Green Turtles (*Chelonia mydas agassizii*) use nest sites along the pacific coast of Costa Rica. They migrate to these sites every 2-4 years from foraging grounds located along the coast of Central America. They then spend several months depositing 4-6 clutches of eggs on to the beach at 14-16 day intervals. Once finished, they migrate back to their foraging grounds. Green Turtles are endangered (IUCN 2010); therefore research focused on better understanding the ecology of these animals is integral to ensuring that effective conservation strategies are implemented in oceanic habitats, particularly those that are vital to their preservation.

## Objectives:

Satellite telemetry was used to investigate how foraging populations are mixing with nesting populations to identify key ecological habitats and resource sites in order to better focus conservation efforts for populations of East Pacific Green Turtles nesting on Cabuyal beach, and other populations around the Eastern Pacific Ocean. Satellite transmitters attached to female turtles were used to track movement between nesting events and migrations to foraging grounds throughout the nesting cycle. This allowed us to:

1. Identify habitats that are utilized by inter-nesting turtle populations; and,
2. identify foraging grounds where nesting turtles migrate after nesting, and whether there is a trend within or between seasons.

## Methods:

Cabuyal beach is located in Northern Pacific Costa Rica on the Guanacaste peninsula. It has hosts a nesting population of East Pacific Green Turtles. From September to April, between the hours of 8pm and 4am the beach is patrolled to locate turtles. All female turtles with healthy carapaces were checked using ultrasound to determine if eggs are present, which allowed us to evenly distribute transmitters on turtles that we expect to exhibit inter-nesting or post-nesting behaviors. Spot5 Satellite Transmitters (Wildlife Computers inc. ), were attached to the second midline scute using Powers T-380 epoxy, after placement they were covered with anti-fouling paint. Transmitters are equipped with Argos systems satellite technology. They recorded location (longitude/latitude) each time a turtle comes to the surface. ArcGIS software will be used to analyze match turtle movements with over landscape ocean imagery.

## Results/Discussion:

These preliminary first season results were similar to those described in Blanco et al (2012a & b) for populations of Eastern Pacific Green Turtles nesting on Nombre de Jesús and Zapotillal beaches, Costa Rica. It was found that these turtles showed preferences for 5 different foraging grounds. Turtles migrated south to the Bay of Panama, north to Guatemala, north to the Gulf of Fonseca in northern Nicaragua, north to the Gulf of Santa Elena Costa Rica and several turtles remained in the Gulf of Papagayo, not migrating. Playa Cabuyal is located approximately 35km north of Nombre de Jesús and Zapotillal beaches, so we assumed that the green turtles nesting here would show similar migration patterns. Two turtles were tracked from Cabuyal in the 2012/2013 nesting season, figure 1. One turtle was tracked north leaving the beach showing a post nesting migration to the Gulf of Fonseca, the green track, approximately 400km. This is one of the possible migrations we expected to see based on Blanco et al (2012a) results. The red track shows the movements of an inter-nesting turtle that traveled approximately 50km south to a similar location as aforementioned in Blanco et al (2012b); however this turtles covered a greater distance to reach the inter-nesting habitat.

This preliminary work confirms that the nesting populations are mixing at foraging grounds. This behavior tends to help buffer the chance of extinction (Seminoff and Shanker, 2008), however it also means conservation efforts need to be more strategic. While it is not clear how to best protect inter-mixing migratory mega fauna it is clear that creating a network of conservation sites is a good start (Trembl et al, 2008).



Top: an east pacific green turtle returning to the ocean after being fitted with the Spot5 satellite transmitter.

Left: A close up of the transmitter on the carapace of the turtle. The blue color is the anti-fouling paint we put over the epoxy to keep invertebrates from attaching to the area.

Right: The spot5 transmitter.

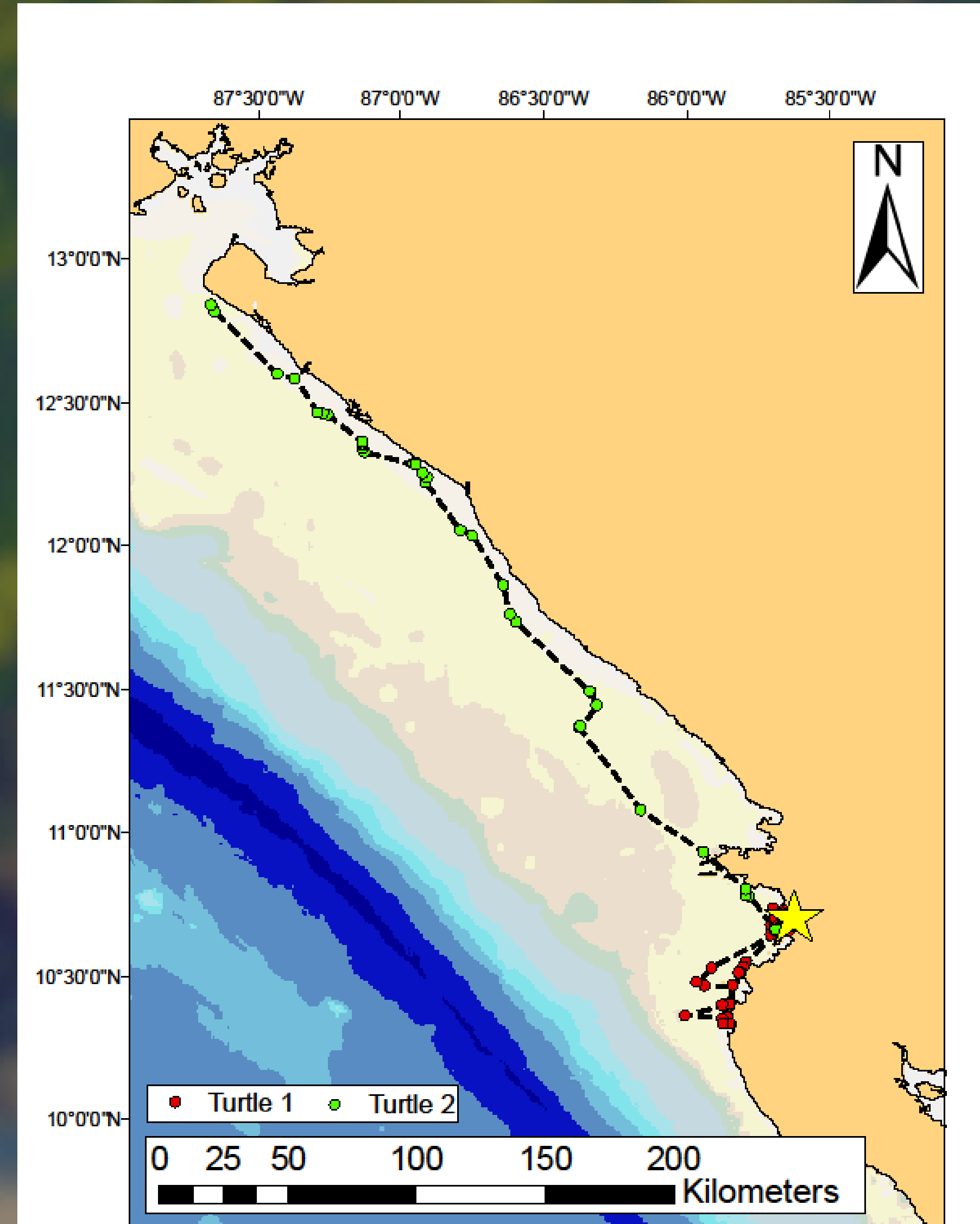


Fig 1: Here is a map of Pacific Costa Rica and Nicaragua showing the post nesting migration of one east pacific green turtle leaving Costa Rica and migrating to north Nicaragua, and an inter-nesting track from a second east pacific green turtle.

## References:

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