INTERNESTING INTERVALS OF HAWKSBILL TURTLES THROUGH SATELLITE TRACKING USING GPS REVEALS RESIDENCE FIDELITY

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Satellite tracking is revolutionizing our knowledge of the movements and behavior of sea turtles. The increasingly accurate locations obtained with technologies such as Fastloc-GPS are powerful tools for conservation purposes. However, receiving data through satellite telemetry is still a challenge in equatorial regions, mainly for reasons such as satellite coverage, the size of data messages, and rapid surface time frequently the received data arrives fragmented. The recapture of tracked individuals tagged with devices that allow data to be downloaded directly from the tag makes it possible to fill in the gaps of received messages. Such detailed data allow the detection of residence areas, where females spend the quiescence period, and the areas in the vicinity of the nesting beach where they usually stop prior to emerging, as well as movements in between. Here we present downloaded data during internesting intervals (INI) for eight individual hawksbill turtles within a season, and for one individual in two nesting seasons monitored by Projeto TAMAR inRio Grande do Nortestate in northeastern Brazil. The tags used were SPLASH10 with Fastloc GPS by Wildlife Computers, configured to detect events of emergence longer than 5 minutes (houled out), which were related to nesting attempts. Data was analyzed using Q-Gis, and the areas were delineated as Minimum Convex Polygon (MCP) using 95% of the points. For each segment it was estimated speed (km/h), and daily movement (km). A total of 22 complete INI was recorded; three females

were tracked for a single INI, one female for two INI, three females for three INI and two females for four INI. The average INI was 15.5 days (13.6 to 18 days, N=22). Eight INI presented one (5) or two (3) prior false crawls detected, with average INI at 16 days (14 to 18 days). Immediately after nesting, females moved to the quiescence areas with an average speed of travel of 0.71 km/h (0.04 to 1.4 km/h), lasting in this movement on average 1.42 days (0.08 to 4.83 days). The quiescence area has an average MCP area of 2,860 m^2(32 to 14640 m2). The offshore distance was in average 4.75 km (1.1 to 15.3 km), between the 20 and 50 m isobaths. The average residence time was 11.2 days (4.4 to 13.5 days). The movement to the vicinity of the nesting beach presented an average speed travel of 0.74 km/h (0.007 to 1.6 km/h), spending on average 1.4 days (0.08 to 4.8 days) in this pre-emergence movement. The pre-emergence area had an average offshore distance of 3 km (0.24 to 8 km) and 16,723 m2 (189.6 to 90,842 m^2) average MCP area, where the females stayed in average 1.9 days (0.09 to 5.3 days) prior nesting. The tag of the female detected nesting twice developed technical problems, losing data seven days before the second nest. From the three females tracked during three INI, the MCP of quiescence area usually diminished with each return; for one female all the MCPs overlapped, the other two resided first in a different spot from the other next two, which overlapped. It is interesting that, the last two spots almost overlapped with a previous MCP for the same individual turtle in its previous nesting season. For the two females with four INI available, all MCPs overlapped, and while the area diminished gradually with each return for one individual, it fluctuated for the other. These preliminary analyses show the importance of high-resolution location data to improve the identification of key areas and behavior changes during internesting and can further, help in the management and effective conservation.