DEFINING THE INTER-NESTING AND POST-NESTING GEOGRAPHIC RANGE OF ENDANGERED GREEN SEA TURTLES IN THE MARIANA ISLANDS*

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Understanding the inter-nesting movement and reproductive migration of sea turtles is crucial for international and local conservation, especially for the data-deficient Central West Pacific (CWP) Distinct Population Segment (DPS) of green sea turtles (*Chelonia mydas*), which are listed as endangered under the U.S. Endangered Species Act. The Mariana Islands, which includes Guam and the Northern Mariana Islands (Saipan, Tinian, and Rota), are the only U.S. territory and commonwealth, respectively, where green turtle nesting occurs in the CWP region. Prior to this 10-year study, data on the spatial range of Mariana Islands nesting females did not exist. We equipped 33 turtles with Argos and Fastloc GPS satellite tags across 14 nesting beaches in the Marianas from 2014 to 2023 to elucidate their inter-nesting movements and post-nesting migrations. We applied a speed, distance, and angle filter and only used high quality locations separated by phase (i.e., inter-nesting, post-nesting migration, and foraging) to obtain biologically sound data. Autocorrelated kernel density estimation (AKDE) was performed using the ctmm package in R to calculate utilization distributions of core areas (50% AKDE) and home ranges (95% AKDE) during the inter-nesting phase. The same package was also used to model post-nesting migration tracks as a continuous-time stochastic process. We also examined migratory patterns across years, islands, and between the peaks and non-peaks of the nesting season. Turtles were tracked for 7,968 days from 2014 to 2023. Satellite tags had an average duration of 241 ± 116 days (range = 88–750; n = 33). Inter-nesting behavior, based on core area size, ranged from sedentary (≤3 km2; n = 17) to mobile (>3 km2; n = 4). Thirty turtles completed long-distance migrations (>150 km) to seven jurisdictions across the Western Pacific, from the Ryukyu Islands in Japan at the northern extent to Indonesia at the southern extent, while the remaining three migrated short distances (≤150 km) to feeding areas in the Marianas. The average cumulative post-nesting migration path length for turtles that migrated long distance was 3,305 ± 997 km (range = 1,526–6,293; n = 30). For the turtles that migrated within the Marianas, the average cumulative post-nesting migration path length was 31 ± 7 km (range = 26–36 km; n = 2). Our findings illustrate the importance of particular nearshore habitats around the archipelago, as well as the need for international collaboration for green turtle management and conservation in the Western Pacific. Overall, this study establishes the first baseline inter-nesting and foraging ground distribution of Mariana Islands nesting green turtles, providing a critical reference point for long-term monitoring to detect future population shifts caused by environmental and/or anthropogenic change.

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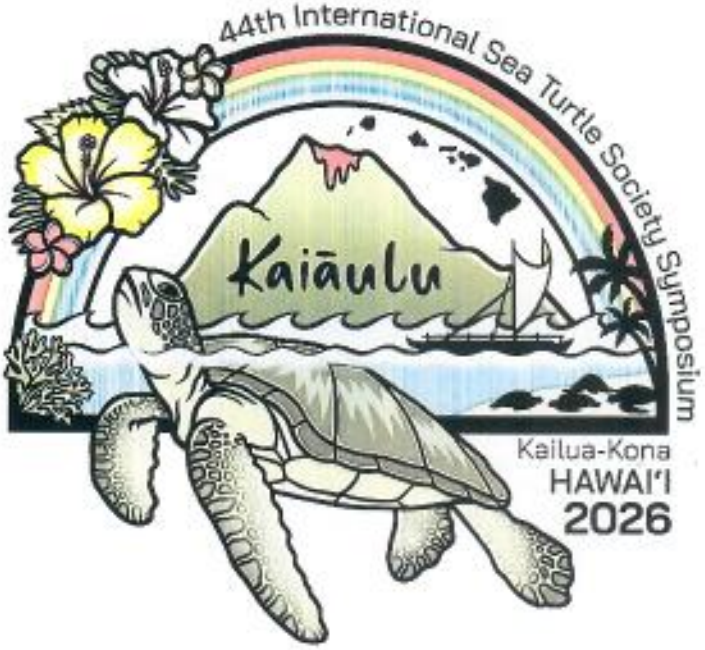

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