Insights from long-term in-water capture-mark-recapture on a green turtle foraging population in Brazil

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Using an example from Brazil, we highlight the insights that could be obtained from long-term capture-mark-recapture in foraging areas. We present the results of one of the longest ongoing capture-mark-recapture studies of juvenile green turtles (*Chelonia mydas*) worldwide. From 1988 to 2013, 1,279 individual turtles were tagged in Fernando de Noronha, Brazil (3°51′S, 32°25′W). The size distribution at first capture varied between 27 and 87 cm (mean ± SD 47.9 ± 11.3 cm) curved carapace length (CCL). Median residence time was 2.4 year (with long-term residence of up to 11.2 year), with individuals exhibiting some site fidelity within the Archipelago. Turtles at this site are slow growing (mean 2.6 ± 1.6 cm year−1; range −0.9 to 7.9 cm year−1; n = 1,022), with a non-monotonic expected growth rate function and a peak in growth rates occurring at 50–60 cm CCL. At these rates, turtles in Fernando de Noronha would need to spend ca. 22 years to grow from 30 to 87 cm CCL and even longer to reach minimum adult breeding size. A Cormack–Jolly–Seber model was used to estimate the apparent survival of the residents and recapture probabilities (2001–2012). The estimated annual abundance ranged from 420 to 1,148 individuals. Confidence around abundance estimates was low, and there was no significant trend over the period, despite steep recent increases at the major source rookery. Slow growth and stable stocking numbers may be suggestive of density-dependent regulation having taken place following initial population recovery that occurred prior to the current study.