

## Juvenile hawksbill long-term mark-recapture analysis in Fernando de Noronha, northeastern Brazil

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Monitoring changes in abundance and demographic parameters over time are important for understanding population dynamics and assessing species' status. Capture-mark-recapture programs are used to assess a wide range of parameters (e.g., survival, residency, abundance, and recruitment) for many sea turtle populations. Nesting female data is the most common source of information on sea turtles population assessments; however, lack of long-term demographic parameters from other life stages may introduce biases in population and species assessments. For the hawksbill sea turtle (*Eretmochelys imbricata*), there is a large data gap for juveniles worldwide. To date, no data are available on juvenile hawksbill survival and abundance in the South Atlantic. We present the first estimates of apparent survival and abundance of juvenile hawksbills at the Fernando de Noronha archipelago in northeastern Brazil, an important foraging habitat for this species. Capture data for this analysis were collected between 1987 and 2016 in Fernando de Noronha by Projeto TAMAR during a long-term, standardized in-water capture program. Turtles were captured during free or SCUBA dives around the archipelago, and subsequently flipper tagged. A total of 512 individuals were captured during 2,446 different encounters. Individual curved carapace length ranged from 28.0 to 84.0 cm (mean 43.5, SD 12.0). Recapture interval ranged from 2 to 5,067 days (mean 1,449, SD 1,101). We used a Cormack-Jolly-Seber model with a two-age class structure (time-since-marking) to estimate survival, and area of the first capture and random effects estimate recapture rates. We estimated abundance using a Horwitz-Thompson type estimator, and used a nonparametric approach to estimate the confidence intervals. We evaluated the trend in abundance using a generalized least squares regression model with maximum likelihood estimation and log-transformed variance as weight to allow the slope of the regression to indicate the rate of change in abundance. Our results indicated an increase in abundance in juvenile hawksbill of more than 1% at each three-month period. This result is encouraging given the current decline in important nesting populations for this species around the world, and the decline in juvenile abundance in the northern Great Barrier Reef, in Australia (Bell et al. 2012). Results of this analysis fill an important data gap for this species in the region and provide key information to researchers and managers for future conservation plans.