

RESULTS FROM AN 8-YEAR SATURATION TAGGING OF LOGGERHEADS NESTING AT PRAIA DO FORTE, BRAZIL

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Monitor trends in populations is important for the managements of endangered species. In sea turtles, the number of clutches laid on a nesting beach in a particular season is commonly used as a relative index of population density. However, it is recognized that long-term mark-recapture studies on nesting beaches should be undertaken whenever possible to ensure that valuable abundance and demographic data are being generated to inform conservation management strategies. To do this more assertively is necessary to use own population's parameters to be inserted in population models.

Praia do Forte beach in Bahia stretches along 14 km and encompasses one of the major loggerhead rookeries in Brazil, monitored since 1982 by Projeto Tamar. The nesting season for loggerheads in Praia do Forte lasts from September to April; however the period between October and February concentrates 90% of nesting activity. The most significant loggerhead nesting (60 % of the total) occurs along a 5 km segment where 88% of the females exhibit intra-seasonal high-site fidelity.

In 2008 we started a saturation tagging program of loggerheads nesting at the Praia do Forte beach to obtain site-specific demographic parameters for this population. During the first nesting season we conducted a preliminary study from October 15 to December 15. Nightly patrols were performed from 8pm to 5am. As a result we determined that 75% of the female encounters occurred between 8pm and 2am. According to this we conducted a tagging saturation effort from 2009/10 to 2015/16 (7 nesting seasons). Each season from October 1 to February 28 we patrolled the 5 km stretch from 8pm to 2am. Early morning surveys also identified any missed nesting activity in order to assess the efficiency of the methodology. We calculated: (1) the observed clutch frequency (OCF), (2) the estimated clutch frequency (ECF) corrected by taking into account missed nests based on inter-nesting intervals and (3) the remigration interval (RI). To increase the chances that the first and last nests laid by a female were counted, females included in the estimates of clutch frequency were those that initiated nesting between October 1 and January 1 and completed their nesting by the end of February when beach monitoring ceased. Females that were observed nesting only once in the season were eliminated from the estimation of clutch frequency.

Mean inter-nesting interval of females loggerheads was 14.9 ± 1.4 days ($n=666$), all seasons (2008 to 2015) combined. The OCF minimum was 6, and maximum was 8, mean 2.1 ± 1.4 ($n=775$) and the ECF varied from 6 to 10, mean was 4.1 ± 1.5 clutches ($n = 344$ females). Although remigration intervals of individual females vary (range: 1 to 7) the 2 yr remigration interval was the most common, followed by 3 yr remigrations. Only one turtle came to nest every year.

Because sea turtles are long-lived animals, the trends observed on the beach today depend on many factors that may have occurred over decades. In this way, systematic long-term mark-recapture studies to estimate population parameters are essential in order to establish metrics for species recovery.