



A SIGNIFICANT NESTING POPULATION OF LOGGERHEAD TURTLES ON THE NATURE RESERVE OF SANTA LUZIA, CAPE VERDE

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Introduction

The second largest nesting aggregation of the Endangered loggerhead turtle in the Atlantic Ocean is found at the Cape Verde Islands, an archipelago situated in the eastern Atlantic, ca. 500 km West of Senegal¹. Hence, Cape Verde is an area of special interest for the global conservation of this species, and particularly so in an African context, given that other nesting aggregations in this continent are considerable smaller. This population has a degree of genetic distinctiveness that further justifies the recognition of its importance as a key unit for the conservation of loggerhead turtles².

Research on sea turtles in Cape Verde has traditionally been centered on the Island of Boavista. This island holds the majority of the Cape Verdean nesting population, but recent work at other sites is slowly revealing that other important nesting sites exist which merit special attention for monitoring and conservation. Here, we report on the monitoring and conservation efforts on the Island of Santa Luzia and show that this nature reserve receives significant numbers of nesting females and has a role to play in loggerhead conservation.

Methods

The main nesting beaches of the island of Santa Luzia, Francisca Beach (4.6 km) and Achados Beach (2.1 km) were patrolled each morning by foot during the breeding period of the two consecutive years (2012 and 2013; 1st July until 15th October). With the aid of GPS, coordinates were taken from all the nests and they were marked with a PVC pipe and inscriptions for individual identification (Fig.1).

About 25 to 30 nests were selected randomly throughout the length of the two main beaches and monitored in the wild. Twenty five nests considered to be at risk (high tides, ghost crabs, vegetation roots) were translocated to a hatchery (Fig.2).

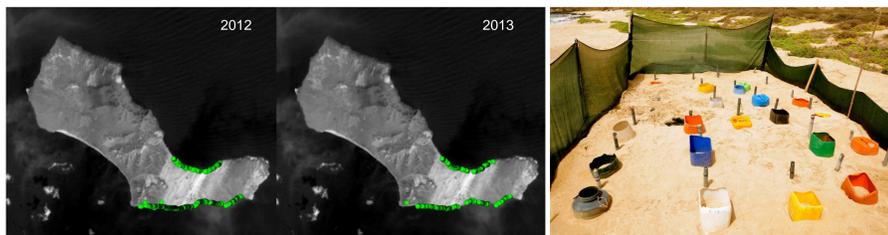


Figure 1: Map of the island of Santa Luzia with the distribution of nests monitored in the two seasons of study (2012-2013) for Francisca and Achados beaches.

Figure 2: Hatchery on Santa Luzia island.



Results

Most nesting activities took place in August and September (Fig. 3). In total, we directly observed **5793 nesting activities in 2012 and 1707 nesting activities in 2013**. Nesting success was 30.5% in 2012 and 30.8% in 2013, giving a total number of 1817 nests in the year of 2012, and 563 nests in 2013. Occasional surveys on the other beaches on Santa Luzia showed that they only receive a reduced number of clutches.

Using the theoretical value of 3 clutches per female in a nesting season¹, the total number of nesting females for the 2 seasons was estimated at 363 in 2012 and 113 in 2013. The mean number of eggs per nest (clutch size) was 89 ± 15 SD (range 51-126), (N = 64).

Incubation times ranged from 49 to 61 days. The estimated proportion of females was highest for the Francisca nests ($79.5 \pm 5.5\%$) and lowest for the hatchery ($73.1 \pm 7.9\%$), with an intermediate value for Achados ($77.7 \pm 8.1\%$).

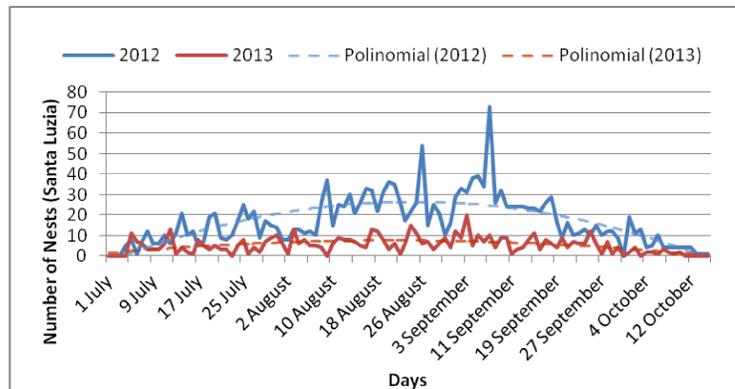


Figure 3: The temporal pattern of the number of nests of the two main beaches (Francisca and Achados) in the two nesting seasons 2012-2013.

Discussion

By comparing our data with information from other islands in Cape Verde for 2012 (provided by the General Directorate of Environment (DGA) ⁵ we conclude that the island of Santa Luzia is of a similar importance to the islands of Maio, São Nicolau and Sal (each with over than 1000 nests identified).

The sex-ratio of turtle hatchlings currently being produced on Santa Luzia is apparently female-biased, but there is still a good production of males.

The population in the Nature Reserve of Santa Luzia currently benefits from a very good protection, thanks to the surveillance and awareness-raising provided by the NGO Biosfera I. During these three years of study we noticed a change of attitude of fishing communities that use the Reserve. The long relationship of mutual aid between NGO Biosfera 1 and fishermen established a strong environmental awareness that resulted in the protection of sea turtles and other species present in the Reserve from the harmful effects of sporadic visitors and other fishermen. Virtually no incidents of poaching are known to have take place in the last few years.

However, the largest Marine Reserve in the country with a **management plan still under discussion** for the change of status of integral Reserve to another that allows the performance of legal fishing activities and development of eco-tourism activities makes clear the need for effective measures supervision and development of conservation plans to protect the species after the implementation of the plan and ensure the success of key unit of breeding females of Santa Luzia.

In conclusion, the island of Santa Luzia (as well as its neighbour Branco) represents an important nesting area for loggerhead sea turtles. The fact that it is a nature reserve not permanently inhabited means that, unlike other important nesting grounds in Cape Verde, this area is currently not exposed to threats related to tourist developments on nesting beaches. Conservation activities are being successfully implemented mean that this nature reserve has a considerable potential as a key conservation unit of this mega-marine vertebrate in the archipelago.

The nests data collected on the island of Santa Luzia reconfirm and increase the importance of the loggerhead population of Cape Verde in the world scene, however, these data should be confirmed by more detailed studies.

Santa Luzia may host around 1% of the nesting population in the Atlantic.*

*By comparing the data with Marco *et al.*, 2012 (Table 4)

Literature cited:

¹ Marco, A., Abella, E., Liria-Loza, A., Martins, S., López, O., Jiménez-Bordón, S., Medina, M., Oujo, C., Gaona, P., Godley, B.J. & López-Jurado, L.F. 2012. Abundance and exploitation of loggerhead turtles nesting in Boavista island, Cape Verde: the only substantial rookery in the eastern Atlantic. *Animal Conservation* 15: 351-360.

² Monzón-Argüello, C., López-Jurado, L. F., Rico, C., Marco, A., López, P., Hays, G. & Lee, P. L. M. 2010. Genetic characterization of eastern Atlantic hawksbill turtles at a foraging group indicates major undiscovered nesting populations in the region. *J. Exp. Mar. Biol. Ecol.* 387: 9-14.

³ DGA. 2012. Relatório Nacional da Campanha TM 2012. (unpublished data).

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