ASSESSMENT OF THE POPULATION OF GREEN TURTLES AT PULAU REDANG THROUGH LONG TERM TAGGING ANALYSIS

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Introduction

The turtles of Terengganu are in decline largely due to poor management policies resulting in commercial over exploitation of the eggs and insufficient protection. There is a need to better understand the population structure and dynamics of the sea turtles in Terengganu so that policies can be developed based on sound scientific principles. However, the life history and population structure of sea turtles is very complex and requires long-term studies. Hence, a long-term tagging and monitoring programme of the green turtles nesting at Chagar Hutang beach in Pulau Redang, Terengganu, Malaysia was initiated by SEATRU (Sea Turtle Research Unit) of UPMT in 1993.

Materials and Methods

The duration of monitoring was conducted through the peak-nesting season for each year spanning a period of between 6 to 8 months. Every green turtle that comes ashore will be tagged or checked for tags. Tags lost were recorded and replaced. The turtles were all double-tagged using titanium and inconel metal tags at each flipper. Measurements of curved carapace length and widths were also taken after each successful nesting. All nests were marked for later determination of number of eggs deposited and hatching success.

Results and Discussion

An assessment of tag loss showed titanium tags retained longer with a tag loss probability of 0.225 compared to 0.390 for inconel tags. From analysis of the six years data between 1993 and 1998, 490 nesting female green turtles were tagged. The number of females that nested each year averaged around 96 turtles ranging from 63 turtles in 1994 to 139 turtles in 1993. Tag results indicated clearly that the green turtles do not nest every year but at varied intervals from 2 to 4 or possibly more years with further monitoring. Within a reproductive season, each female may nest up to 11 times with an average of 4.91 times. These values showed significant under-estimation with shorter monitoring duration. Internesting intervals of 8 to 12 days accounted for 87.5% of the observations with the majority at 10 days (38.1%). A very small percentage (0.47%) of the females nested successfully again immediately the following night. The nesting turtles measured on average 99.67 cm (Curved Carapace Length) by 88.26 cm (Curved Carapace Width) each producing on average 98.59 eggs per clutch. Growth rates of the nesting females were variable and slow averaging 0.15 ± 0.54 cm yr^{-1}.

Conclusions

There were a total of 490 female green turtles that nested at Chagar Hutang, Pulau Redang as monitored over a period of 6 years. They do not nest every year but at varied intervals from 2 to 4 or possibly more years. Each female may nest up to 11 times with an average of 4.91 times in a season. Growth rates of nesting females were very slow and varied between individuals. Taking into consideration these factors, the estimated size of the population of adult nesting females would be about 10 times the average number of turtles that come to nest each year.

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