

Nest-site Selection of Green turtle, *Chelonia mydas* Linneaus, 1758 on the Thameehla Island

Ko Myint¹ and Win Maung²

Abstract

The distribution of 295 nests of green turtle, *Chelonia mydas* Linneaus, 1758 on the beaches of the Thameehla Island, (15° 51'N, 94 °17'E) 88 hectare wide located in Ngaputtaw Township of Ayeyawady Region was quantified. Physical characteristics of beaches were recorded to determine the importance of nest-site selection. These characteristics included length, width and slopes of beach. In addition, the distances of the nests were taken by current water (tide) high line (CWHL), spring water (tide) high line (SWHL) and vegetation line (VL). Out of 295 nests, 55% of total nests above 5 metres (> 5m) of CWHL to VL, 20% of above 3m (>3m) of SWHL and 25% of above 3m (>3m) into vegetation zone were recorded on the island. The importance of nest density and distribution for breeding success were also discussed.

Key words: Green turtle, nest density, Thameehla Island

Introduction

Thameehla Island (15° 51'N, 94 ° 17'E), 88 ha wide and 26 m height, is situated in Ngaputtaw Township, Ayeyawady Region. It lies approximately 10 km away from Mawtin Pagoda point at the mouth of Patheingyi River. The island was declared as a wildlife sanctuary in 1970 by the Ministry of Agriculture and Forestry (Forestry Department, 2006) with Notification No. 289. The main protected fauna species are marine turtles. Nowadays, almost all sea turtles are considered threatened or endangered by the International Union for the Conservation of Nature and Natural Resources (IUCN), quoted in the Red Data Book, and their commerce is prohibited in those countries that have signed the convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (FAO, 1990). Sea turtles spend their adult lives in the sea but emerge onto the beaches to lay their eggs in nests which they excavate in the sand. As with many other oviparous animals, the position of the nest may strongly influence the probability of offspring survival (Hays & Speakman, 1993). Although this importance of nest placement in influencing the reproductive fitness of sea turtles, little is known regarding the factors that initiate nest excavation. This has led to the suggestion that nest-site selection may be a complicated process (Dodds, Jr., 1988). This study focused to examine nest-site selection of green turtles in the study area.

Method

This study was carried out during one year of 2006 on the beaches of Thameehla Island where nesting of green turtles occur throughout the year (Maxwell, 1911). Observation on nesting was made on two beaches, namely the Sathaphu beach (120m length) in north-side and Thanban beach (140m length) in east-side of the island since nesting activities mostly occurred on these beaches. During the study period, the patrol on foot along the beach was made simply to take measurements of beach physical characteristics such as beach length, width, current water (tide) high line (CWHL), spring water (tide) high line (SWHL) and vegetation line (VL) to determine the importance of nest-site. The patrol was also made

¹ Assistant Lecturer, Dr., Department of Zoology, Hinthada University

² Pro-Rector, Dr., Sittway University

at night to locate turtle attempting to nest. The spring tide generally occurs fullmoon days and waning days when the highest water line reaches the shore or land. Nests were identified by direct observation of laying turtles or by carefully digging for the eggs. And then nest sites were marked with the help of volunteers of Thameehla Island. The distance of nests was taken between CWHL and VL as well as SWHL and VL. The distance of some nests in the vegetation zone from the VL was also taken. The distribution and density of nests at different beaches on the island were recorded for nest-site selection.

Results

Green turtles nested on the beaches of Thameehla Island were recorded throughout but the four-month period from July to October, was found to be the peak time. A total of 295 successful nests were recorded during the study period (Figure 1). When doing observation on nest-site selection of these turtles, it was found that the turtles avoided any obstacles such as deep slopes, rubbishes, stones and selected clear spot area above high tide on the sandy beach (Figure 2).

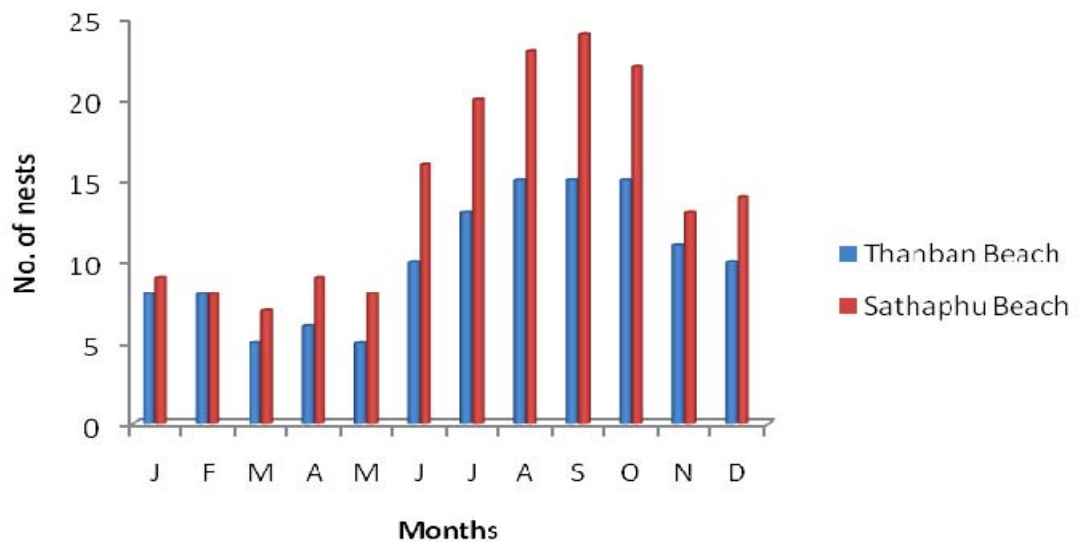


Figure 1. Nesting activities of green turtles on two beaches of Thameehla Island



Figure 2. Nesting of green turtles on Thameehla beach

The position and distribution of nests were recorded on two beaches and 121 nests were found on Thanban beach and 174 on Sathaphu beach. Nests were not uniformly distributed within two beaches. Green turtles attempted to nest more near vegetation line or in vegetation zone on the Sathaphu beach than those on the Thanban beach. Nests were constructed from 6.4m (SD-2.3m, n-20) of current water high line (CWHL) to the vegetation

line (VL), from 4m (SD-1.0m, n-15) of spring water high line (SWHL) to the vegetation line (VL) and 2m (SD-1.0m, n-15) into the vegetation zone on the Thanban beach while from 5m (SD- 2.0m, n-20) of CWHL to VL, from 2.6m (SD-1.2m , n-10) of SWHL to VL and 4.4m (SD-2.4m, n-10) into vegetation zone on the Sathaphu beach. Out of 295 nests, 55% of total nests above 5 metres (> 5m) of CWHL to VL, 20% of above 3m (>3m) of SWHL and 25% of above 3m (>3m) into vegetation zone were recorded on the island.

Discussion

It was found that green turtles (*Chelonia mydas* Linnaeus, 1758) nested throughout the year on the Thameehla Island that has been stated by Maxwell (1911). He assumed that egg laying may occur all year-round with seasonal peak, at nesting sites closer to the foraging area of the reefs which have abundant sea grass, seaweeds, algae and crustaceans. Similar results have also been proved by Marquez (1990). During the study period, green turtles made their nests mostly above high tide on the beach which has been reported previously for these turtle nesting in islands of Australia (Limpus, 1985). Regarding nest-site selection, there were 55% of total nests above 5 metres (> 5m) of CWHL to VL, 20% of above 3m (>3m) of SWHL and 25% of above 3m (>3m) into vegetation zone respectively on the island. It was assumed that nest in excavation of the turtles occurred close to the vegetation line (VL) and in the vegetation zone. It was also found that some nests were built in the vegetation and it may probably be due to beach degradation. Generally, the green turtles (*C. mydas*) prefer to nest on wide and open beaches, near the bases of low, rounded dunes, relatively far from the water for their hatching success (Limpus, 1985).

Conclusion

Green turtles (*Chelonia mydas* Linnaeus, 1758) nested throughout the year on the Thameehla Island with the peak time from July to October during the study period. They preferred to select mostly clear spot area above high tide on the sandy beach for their nests. The nesting activities occurred mostly during spring tide which makes a short crawling distance to nest-site area. The greatest number of nests were recorded above 5 metres (>5m) of CWHL to VL, which followed by above 3m (>3m) of SWHL and the least above 3m (>3m) in vegetation zone on the island. The present findings will provide some useful information for the study of nesting ecology of sea turtles which leads towards sea turtle conservation.

Acknowledgements

We would like to express our sincere thanks to Dr. Tin Tun Myint, Acting Rector and Dr. Si Si Hla Bu, Pro-Rector, Hinthada University for giving us permission to submit this paper. We are also grateful to Professor U Aung Kyaing, Head of Zoology Department, Hinthada University for his encouragement. We are indebted to U Cho Hla Aung and U Maung Maung Lwin, fisheries officers from Marine Turtle Conservation Unit, Fisheries Department for their encouragement and assistance throughout the study.

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