Estimation of the number of leatherback (*Dermochelys coriacea*) nesting at the Godavaya turtle rookery in Southern Sri Lanka during the nesting season in the year 2001

E.M. Lalith Ekanayake*, Thushan Kapurusinghe, M.M.Saman and M.G.C. Premakumara

Turtle Conservation Project (TCP)
73, Hambantota Road, Tangalle, Sri Lanka.
Email: turtle@panlanka.net

Introduction

Sea turtles represent an ancient and distinctive part of the world's biological diversity. Sea turtles are reptiles and basically spend their entire lives in marine or estuarine habitats. They, like most other aquatic reptilians, are only tied to terrestrial habitats for nesting and restricted cases of basking. Physiological, anatomical and behavioural adaptations of sea turtles have evolved largely in response to selection in the aquatic environment. Sea turtles are unevenly distributed throughout the tropical and subtropical seas depending on their food and habitat requirements (Witzell, 1983; Dodd, 1988; Marquez, 1994; Hirth, 1997; Miller 1997). There are seven species of sea turtles living in the world and five of them come ashore to nest in Sri Lanka. On some of these beaches, turtle nesting is seasonal, while on others, nesting can be observed throughout the year with a peak season. The species composition is changing in the various beaches. The Turtle Conservation Project (TCP) surveys revealed that Godavaya in southern Sri Lanka is an important nesting beach for the leatherback turtle compared to the available data about turtle nesting in Sri Lanka (TCP, 1999). Therefore, the objective of this study was to estimate the number of nests of the leatherback turtle during the nesting season in 2001 at Godavaya.

Methodology

This is an unprotected beach and therefore, egg collection occurs every night throughout the nesting season. In the early morning we patrolled the 4 km long beach for the counting tracks. Using our past experience, we have identified the leatherback nesting crawls and also the false crawls. We have counted only the fresh crawls, which was made previous night. All the false crawls and nests were counted on an average of five days per month and, in the peak months about eight days per month. The survey was carried out from the 21st of March 2001 until 30th November 2001. The first leatherback nesting occurred on 16th April and the last nesting was observed on the 30th of August.

Result and Calculation

Number of leatherback nests counted = 70
Number of false crawls counted = 34
Number of surveyed days = 32
Total number of days between the leatherback nesting dates = 153
Average number of leatherback nests per day = 70/32
= **2.18**

Therefore, estimated total number of nests during the survey period = 2.18×153
= **333**

Average number of leatherback false crawls per day = 34/32
= 1.06

Therefore, estimated total number of false crawls during the survey period
= 1.06×153
= **162**

Estimated annual nesting population = 333/4.9
= **68**

Discussion

Surveys on turtle nesting beaches are the most widely used monitoring tool use by turtle conservationists around the world. This is an important component of a comprehensive program to assess and monitor the status of sea turtle populations. These assessments are necessary to evaluate the effects of recovery and conservation activities which are being implemented at all life history stages (Schroeder and Murphy, 1999). Daily

monitoring throughout the nesting season is required for a complete nest count. On the other hand daily monitoring is not always necessary or logistically possible and data from intermittent surveys can be used as an index to total nesting, provided there are baseline data available and provided the survey is appropriately designed to periodically sample throughout the nesting season (Schroeder and Murphy, 1999).

In our survey we have periodically sampled the leatherback nesting throughout the nesting season. According to the result there were 333 leatherback nests recorded during the nesting season in year 2001 on the Godavaya beach. The estimation of population size is important for several reasons. An estimation of population size is critical for science, conservation and management. Many threats to turtle population cannot be evaluated unless we have an estimate of population size (Gerrodette and Taylor, 1999). Leatherback turtles nest on average of **4.9** nests per season ranging from one to seven times depending on the female's reproductive status (Bhaskar, 1993). Therefore, we can estimate that the annual nesting population of leatherback turtles on the Godavaya beach is **68** individuals.* Earlier, there was no literature about the nesting population of leatherback turtles on this beach. The TCP survey in 1999 identified this beach as an important nesting place for the leatherback turtles. Hence this is the first proper survey done about leatherback nesting on this beach. Therefore, we recommend that surveys should continue at least few years to get a good estimate of the leatherback population on this beach.

References

BHASKER, S. (1993) The status and ecology of sea turtles in the Andaman and Nicobar Islands. ST 1/93. Centre for Herpetology, Madras Crocodile Bank Trust, Post Bag 4, Mamallapuram, Tamil Nadu 603104, India.

DODD, C.K., JR. (1988) Synopsis of the biological data on the Loggerhead Sea Turtle *Caretta caretta* (Linnaeus 1758). U.S.Fish Wildl. Serv., *Biol. Rep*. 88(14). 110 p.

GERRODETTE, T. & B.L. TAYLOR (1999) Estimating Population Size, in Eckert, K.L., K.A.Bjorndal, F.A.Abreu-Grobois, and M. Donnelly (Editors). Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group Publication 4: 67-71.

HIRTH, H.F. (1997) Synopsis of the Biological Data on the Green Turtle *Chelonia mydas* (Linnaeus 1758), Fish and Wildlife Service, U.S.Department of the Interior, Biological report 97 (1), 1997, 120p

MARQUEZ-M., R. (1994) Synopsis of Biological Data on the Kemp's Ridley Turtle, *Lepidochelys kempi* (Garman, 1880), NOAA Tech . Memo. NMFS-SEFSC-343, Miami, FL, 1994,91.

MILLER, J.D. (1997) Reproduction in Sea Turtles, in The biology of sea turtles, Peter L. Lutz and John A. Musick Ed, CRC Press, Washington DC.1997, 51-81.

SCHROEDER, B. & S. MURPHY (1999) Population Surveys (Ground and Aerial) on Nesting Beaches in Eckert, K.L., K.A.Bjorndal, F.A.Abreu-Grobois, and M. Donnelly (Editors). Research and Management Techniques for the Conservation of Sea Turtles. IUCN/SSC Marine Turtle Specialist Group Publication No; 4. 45-53.

TURTLE CONSERVATION PROJECT (1999) Ecological Assesment on Marine Turtles on Sri Lanka' s south coast between Rekawa and Godawaya. The Turtle Conservation Project (TCP),Unpublished report.

WITZELL, W.N. (1983) Synopsis of biological data on the hawksbill turtle, *Eretmochelys imbricata* (Linnaeus,1766). FAO Fish.Synop.,(137):78p.

***Editors note:** The remigration of leatherback turtles is estimated to be 2.5 years and hence, the total population may be estimate as **170 leatherback turtles**.*