Leatherback nesting in the Andaman & Nicobar Islands

Harry V. Andrews, Shreyas Krishnan & Paridosh Biswas
Andaman and Nicobar Islands Environmental Team/ Centre for Island Ecology, Madras Crocodile Bank Trust, Post Bag- 4, Tamil Nadu- 603 104, South India.

Introduction

The Andaman and Nicobar Islands situated in the Bay of Bengal spans latitude 6° 45' N to 13° 41' N, longitudinally 92° 12' E to 93° 57' E; and consists of over 345 islands, islets and rocky outcrops. The coastline stretch of 1,962 km and the many beaches around small isolated islands provides excellent nesting habitats for four species of marine turtles (Bhaskar, 1979b; Andrews, 2000). The extensive coral reefs, sea grass beds, large bays and mangrove ecosystems around the archipelago provide optimum feeding grounds for marine turtles, and occurence of feeding turtles in these waters has been confirmed (Bhaskar, 1993; Das, 1996). Management plans and conservation efforts by the Andaman & Nicobar Islands Forest Department and the Andaman & Nicobar Islands Environmental Team (ANET) has been carried out to an extent (Bhaskar & Andrews 1993; Andrews *et al*., 2001). Details of historical, references, citations and reports concerning marine turtles and the Andaman and Nicobar Islands from the 18 century has been previously discussed by Bhaskar (1993) and Andrews *et al*. (2001). Current local threats to leatherback in the Andaman and Nicobar Islands has been discussed by several authors (Bhaskar, 1993; Sivasunder, 1996; Andrews, 2001; Andrews, *et al*., 2001) and Spotila, *et al*., (1996) have discussed the global population decline of this species.

Up to the mid 1970's, only three species were reported for the islands and a fourth, *Caretta caretta*, which do not seem to occur around this archipelago. However indirect evidences from ongoing surveys indicate that there may be a possibility of a few loggerheads nesting on some small isolated islands in the Nicobar group (Chandi, *pers. comm*.) and this can only be confirmed with continued and more extensive surveys. In the late 1970's, Bhaskar, (1979 a; 1979 b; 1980), first reported leatherback (*Dermochelys coriacea*) nesting in the Andaman and Nicobar Islands. Status survey and studies since then, for both island groups, have recorded the best leatherback nesting beaches for India (Bhaskar, 1993; Andrews *et al*., 2001). Currently leatherbacks nest only in Sri Lanka and Andaman and Nicobar Islands in the southern Indian Ocean region, although there are records up to late 1960's of this species nesting on the western and eastern coasts of mainland India. Previously, the status of leatherbacks in the Andaman and Nicobar Islands have been under estimated, (Kar & Bhaskar, 1982; Bhaskar, 1993; Spotila, *et al*., 1996; Andrews, 2001). This was mainly due to data deficiency, because of the limited surveys and field studies, logistics, extent of the islands and the number of nesting beaches.

Methodology followed was the same as previously described (Fontaine *et al*., 1987; Parmenter, 1993; Bhaskar, 1993; Dutton & McDonald, 1994; McDonald & Dutton, 1996; Andrews *et al*., 2001).

Nesting Beaches

Sternberg (1981) listed 64 nesting sites worldwide including Andaman and Nicobars as two sites. Currently, 12 nesting beaches are known for the Andaman and Little Andaman Islands, of which nesting has ceased on two beaches on the east coast of North Andaman Island, one along the north east of Middle Andaman and on North Cinque Island, south east of South Andaman Island. On the west coast of Little Andaman Island, nesting on four beaches has been confirmed; high intensity nesting takes place at South Bay and West Bay beaches and sporadic nesting on two other beaches on the north western side (Bhaskar, 1993; Sivasundar, 1996; Andrews, 2000). Little Andaman is currently the only island in the Andaman group where high intensity nesting takes place. In the Nicobar group of islands, 17 nesting beaches have been confirmed, five along the west coast and five on the east coast of Great Nicobar Island. Three other beaches on the east coast of Great Nicobar were destroyed due to sand mining for construction. Little Nicobar Island has five nesting beaches on the western shores, and the other nesting beaches are in the Middle Nicobar group on the west coast of Teressa Island and West Bay of Katchal Island.

Most of the leatherback rookeries in the Nicobars were found only in 1979 and then 1990, two beaches for the Andamans in 1997, and three additional nesting beaches on the east coast of Great Nicobar Island during 2001 (Bhaskar, 1980, 1993; Tiwari, 1992; Andrews, 2000; Andrews, *et al*., 2001). Recent surveys also indicate that occasional nesting occurs on some of the other Nicobar Islands, where they were previously not known to nest (Chandi, *pers. comm*.). Currently there are a total of 25 leatherback nesting beaches in the Andaman and Nicobar Islands, not including the four beaches in the Andamans and three beaches in Great Nicobar Island where nesting has ceased. Most leatherback nesting beaches in the Nicobars and in Little Andaman Island occur on the west coast, whereas there are no leatherback nesting beaches on the west coast of the Andaman Islands and nesting occurs only on the eastern coast (Bhaskar, 1993; Andrews *et al*., 2001).

Nesting estimates

The nesting population of leatherbacks for the Andaman and Nicobar Islands has been discussed to by Bhaskar (1993) and Andrews (2000). However realistic figures only emerged in 2001 after intensive surveys and tagging.

During the 2000-01 season, 163 individuals laid a total of 462 nests at Galathea beach on the south east coast of Great Nicobar island. Intensive surveys and nest counts during the same season along the west coast of Great Nicobar Island confirmed that nesting intensity is much higher than previously estimated. 1228 nests were counted in two locations on the west coast (on the beaches north and south of Alexandria and Dagmar rivers), during the tail end of the nesting season during March and April 2001. During the 2000- 2001 the last six nests were laid on 7th July 2001 and there was no nesting during the months of August and September. Nesting commenced again on 10th October 2001 at the Galathea beach. Between October 2001 and 15th March 2002, 130 turtles accounted for 221 nests. The number of nests may have declined at Galathea due to the erosion of more than half the beach during heavy rains during May and November, 2001.

Tagging

As a part of the tagging program, leatherback turtles were injected with Passive Integrated Transponders (PIT) at the Galathea beach from November, 2000. During the 2000-01 season, 146 individuals were injected with PIT tags. Based on data from turtles that renested on Galathea beach, it was estimated that leatherbacks (n = 82) nested 3.96 times on an average during the 2000- 2001 season.; reproductive effort, renesting by individuals and remigration has been discussed by Andrews, *et al*. (2001).

During the 2001-02 season, 481 leatherback were encountered and 152 were tagged with PIT tags (also with monel metal tags as a part of the Turtle Genetics Project of the Wildlife Institute of India, Dehradun); 57 individuals nested more than once and one leatherback that was tagged during the 2000- 2001 season remigrated and nested on the same beach

Discussion

Based on nest counts and tagging studies, the total nesting population for the 2000- 2001 season on Great Nicobar Island was estimated as 483 individuals, excluding 10 others estimated to have nested on other small beaches; estimates for the Andamans, including Little Andaman Island for the same season was 100 females (Andrews *et al*., 2001). Further conservative estimates are of 25 individuals for Katchal, 25 for Teressa and 100 for Little Nicobar Islands; these estimates are derived from survey findings of Tiwari (1991) and from recent ongoing surveys. Hence, it would appear that 400-500 leatherback turtles nest on Great Nicobar island alone each year.

Continued monitoring and surveys of leatherback in the islands can definitely, in the next two to three years, result in the understanding of the status of the actual nesting populations, determine whether the two island groups support different populations, remigration patterns, yearly nesting trends and intensity on different beaches. Management and conservation measures need to be implemented more vigorously in this region.

Acknowledgements: We wish to thank the Andaman & Nicobar Islands Forest Department for their continued support and all the encouragement; particularly Mr. Khazan Singh, the Chief Wildlife Warden, Mr. Graham Durai, DCF, North Andamans, Mr. Yesuratnam Nalli, ACF, Nicobars and Saw Robert Pee, Range Officer, Nicobars.

References

ANDREWS, H.V. (2000) Current marine turtle situation in the Andaman and Nicobar Islands- A urgent need for conservation action. Kachhapa 3: 19-23.

ANDREWS, H.V. (2001) Threatened herpetofauna of the Andaman and Nicobar Islands. *In.* An overview of the threatened herpetofauna of South Asia. Bambaradeniya, C. N. B. & V. N. Samarasekara (Eds.). Pp. 39- 47. IUCN Sri Lanka and Asia Biodiversity Programme, Colombo, Sri Lanka.

ANDREWS, H.V., S. KRISHNAN & P. BISWAS (2001) The status and distribution of marine turtles around the Andaman and Nicobar Archipelago. GOI- UNDP Sea Turtle Project. Centre for Herpetology/ Madras Crocodile Bank Trust, Mamallapuram. India.

BHASKER, S. (1979a) Sea turtle in the South Andaman Islands. Hamadryad 4 (1): 3- 6.

BHASKER, S. (1979b) Sea turtle survey in the Andaman and Nicobars. Hamadryad. 4 (3): 2- 26.

BHASKER, S. (1980) Sea turtle survey of the Great Nicobar and Little Andaman Islands. Report. WWF-India.

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, Mamallapuram. India.

BHASKER, S. & H V. ANDREWS (1993) Action plan for sea turtles in the Andaman and Nicobar Islands. Marine Turtle Newsletter 60: 23.

DAS, H. S. (1996) Status of sea grass habitats in the Andaman and Nicobar coast. SACON, Techinical Report No. 4, Salim Ali Centre for Ornithology and Natural History, Coimbatore, India.

DUTTON, P. H. & D. L. McDONALD (1994) Use of PIT tags to identify adult leatherbacks. Marine Turtle Newsletter 67: 13- 14.

FONTAINE, C.T., T.D. WILLIAMS & J.D. CAMPER (1987) Ridleys tagged with passive integrated transponder (PIT). Marine Turtle Newsletter 41: 6.

KAR, C.S. & S. BHASKAR (1982) Status of sea turtles in the eastern Indian Ocean. In: Bjorndal, K. A. (Ed.). pp. 365- 372. Biology and conservation of sea Turtles. Washington, D C: Smithsonian Inst. Press.

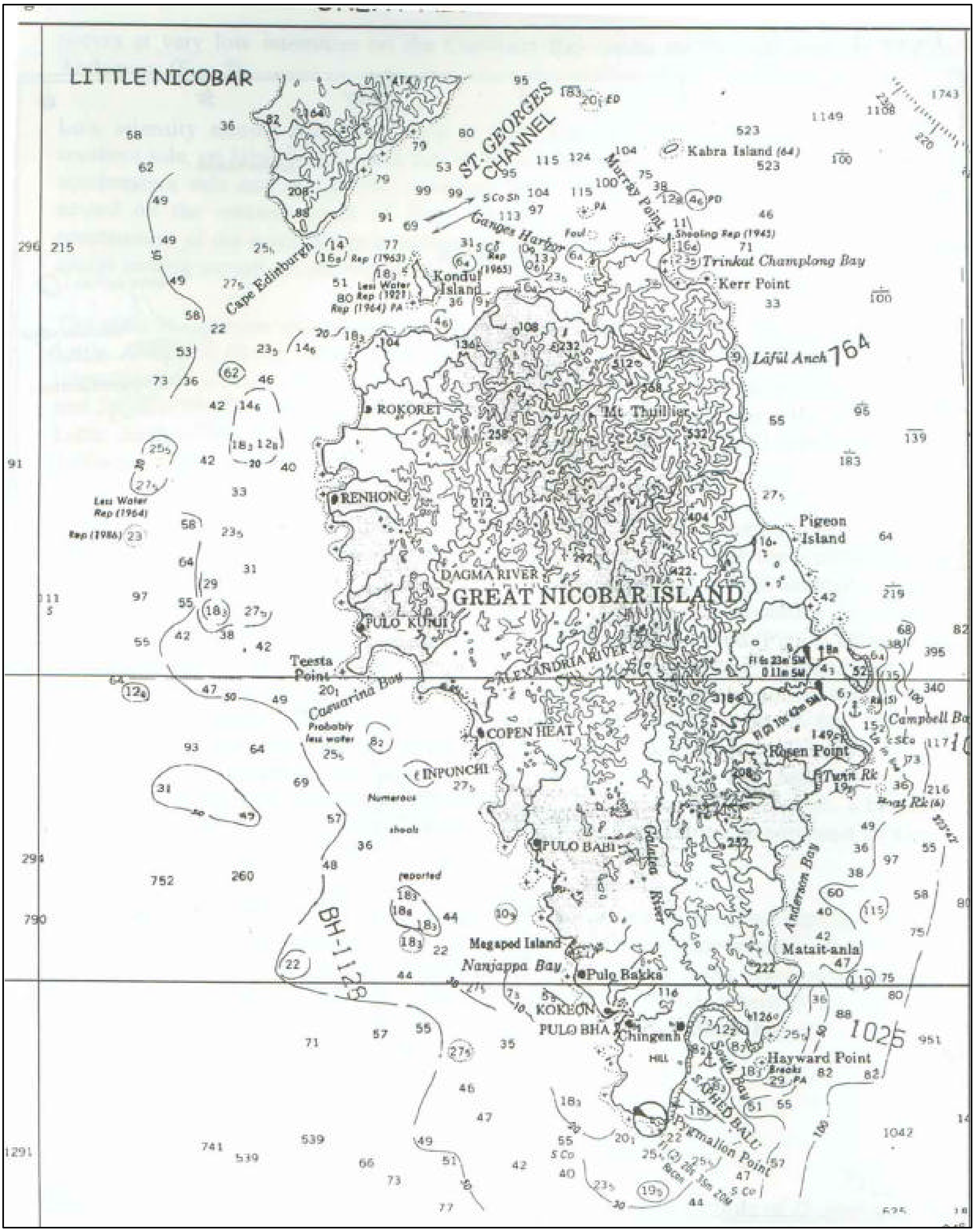
McDONALD, D L. & P H. DUTTON (1996) Use of PIT and photoidentification to revise remigration estimates of leatherback turtles (*Dermochelys coriacea*) nesting in St. Croix, U. S.; Virgin Islands, 1979- 1995. Chelonian Conservation & Biology 2 (2): 148- 152.

SIVASUNDAR, A. (1996) Studies on the nesting of leatherback turtles (*Dermochelys coriacea*) in the Andaman Islands. M. Sc. Dissertation., Pondicherry University, Pondichery, India.

SPOTILA, *ET AL.*(1996) Worldwide population decline of *Dermochelys coriacea*: Are leatherback turtles going extinct? Chelonian Conservation & Biology 2 (2): 209- 22.

STERNBERG, J. (1981) The worldwide distribution of sea turtle nesting beaches. Turtle Rescue Fund, Centre for Environmental Education, Washington D. C., U. S. A.

TIWARI, M. (1991) A follow up sea turtle survey in the southern Nicobars. Centre for Herpetology/ Madras Crocodile Bank Trust, Post Bag- 4, Mamallapuram- 603 104, Tamil Nadu, S. India.


LITTLE NICOBAR
ST. GEORGES CHANNEL
Cape Edinburgh
Kondul Island
Ganges Harbor
Murray Point
Kabra Island
Trinkat Champlong Bay
Kerr Point
Lâfûl Anch
Mt. Thuillier
ROKORET
RENHONG
Less Water Rep (1964)
Pigeon Island
DAGMA RIVER
GREAT NICOBAR ISLAND
PULO KUNJI
Teesta Point
ALEXANDRIA RIVER
Casuarina Bay
Probably less water
COPEN HEAT
INPUNCHI
Numerous shoals reported
Campbell Bay
Rosen Point
Twin Rk
PULO BABI
Galatea River
Anderson Bay
Megapod Island
Nanjappa Bay
Pulo Bakka
Matait-anla
KOKEON
PULO BHA
Chingenh
Hayward Point
South Bay
Pygmalion Point