

# FIRST NESTING RECORD OF LEATHERBACK SEA TURTLES ON THE WEST COAST OF GALATHEA BAY, GREAT NICOBAR ISLAND, AFTER THE 2004 INDIAN OCEAN TSUNAMI WITH NOTES ON NEST PREDATION

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## INTRODUCTION

The leatherback sea turtle, *Dermochelys coriacea*, is rarely sighted in Indian waters and has few nesting records of on the mainland coast (Andrews *et al.*, 2002). However, nesting of leatherback turtles does occur in the Andaman and Nicobar islands (Andrews *et al.*, 2002), with Great Nicobar Island one of the three largest nesting grounds (Bhaskar, 1984; Andrews, 2000).

Galathea Bay in Great Nicobar Island (Figure 1) was an ideal nesting site for leatherback sea turtles prior to the 2004 Indian Ocean tsunami, with an increase in the number of nesting turtles every season. However, the nesting population was also under substantial pressure as a result of anthropogenic activities such as sand mining, bridge-port construction work, egg poaching and turtle meat consumption by indigenous peoples (Bhaskar, 1994; Namboothri *et al.*, 2012; Tiwari, 2012) and natural predation of nests by wild pigs, monitor lizards, and stray and feral dogs (Bhaskar, 1994; Choudhary, 2006; Namboothri *et al.*, 2012).

Galathea Bay bore the maximum impact of the 2004 tsunami, which destroyed all the nesting beaches (Andrews *et al.*, 2006; Hamann *et al.*, 2006). The last published leatherback nesting record is from November 2004, at which time 84 nesting leatherback turtles were observed in Galathea Bay (Andrews *et al.*, 2006). Post tsunami surveys indicated that the beaches were reforming (Andrews *et al.*, 2006) and it is now completely abandoned and free of any anthropological influence (Jadeja, pers.obs.). The present study looked for post-tsunami nesting on the west coast of Galathea Bay and potential threats to sea turtles and their nests.

## METHODS

Galathea Bay (06° 49' 05.99" N, 93° 51' 16.65" E) on Great Nicobar Island is only accessible via a forest camp on the east coast. The Forest Department monitors sea turtle nesting on the east coast regularly and maintains a hatchery. The west coast is comparatively less or negligibly monitored as one has to cross the Galathea River, populated by saltwater crocodiles (*Crocodylus porosus*). Our study site was the uninhabited west coast, which has an expanse of 3.8km and the area characterized by sandy beach and dense beach vegetation.

The beach was surveyed each night from 18<sup>th</sup> to 20<sup>th</sup> February 2015 by two groups every half an hour during the incoming tide. After nesting activity was completed, sand samples (approximately 500g) were collected at a depth of around 10cm from the nest sites, packed in tight sealed polythene bags and transported for analysis. Samples were air-dried then sieved using five different mesh sieves (0.125mm, 0.25mm, 0.5mm, 1mm, 2mm). The sand temperature for each nest was recorded during the nesting activity using a PROBE thermometer at a depth of 25cm. Nest predation was described after direct and indirect sightings of predation during the survey period.

## RESULTS

Four leatherback turtle tracks, probably 7-10 days old, indicating successful nesting were counted on the first day of the survey period. Three nesting leatherback turtles were observed on 20<sup>th</sup> February 2015. We also recorded three tracks for olive ridley turtles, including one false crawl, on the east coast of Galathea Bay. The sand grain size analysis and nest substrate temperature

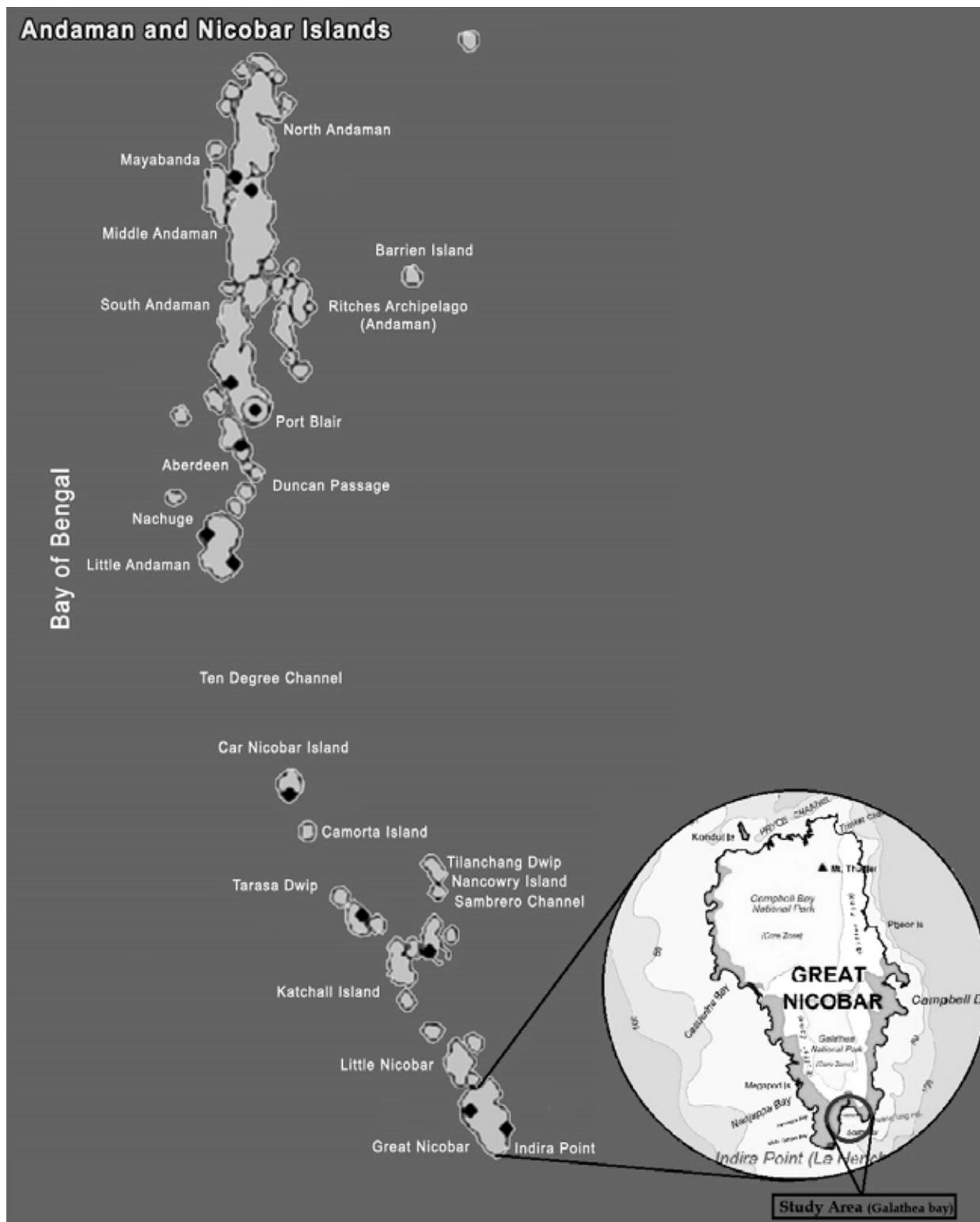


Figure 1. Galathea Bay at Great Nicobar Island in the Andaman and Nicobar Island Chain

**Table 1: Physical properties of leatherback sea turtle nest substrates at Galathea Bay, Great Nicobar Island, 20th February 2015**

Observation	Nest 1	Nest 2	Nest 3
Perpendicular distance from high tide line to nest site	~8.5m	~11.5m	~18.0m
Nest site temperature at 25cm	30.2°C	30.1°C	29.6°C
Sand grain size (sample weight 500gms)	2.0mm	0.11%	0.09%
	1.0mm	0.18%	0.15%
	0.5mm	0.09%	0.07%
	0.25mm	0.41%	0.38%
	0.12mm	0.13%	0.19%
Remainder	0.08%	0.12%	0.19%

(Table 1) show general consistency among nests. We suggest two potential predators for turtle eggs from the Galathea Bay based on our observations and published literature. The most aggressive forager is likely the Nicobari pig (*Sus scrofa nicobaricus*), observed actively searching the beach and digging out turtle nests to eat the eggs as the female turtle returned to the water after nesting (pers.obs.). We also observed hermit crabs feeding on exposed eggs after pig depredation of nests.

#### DISCUSSION AND RECOMMENDATIONS

The west coast of Galathea Bay, Great Nicobar Island, was previously a significant nesting site for leatherback turtles despite pressure from anthropogenic activities and natural predators. The nesting population has the potential to recover from disturbance resulting from the 2004 Indian Ocean tsunami, as human all settlements have gone and the region is, therefore, free of anthropogenic predation and light pollution which might affect nesting turtles. However, there is still predation of turtle nests by Nicobari pigs. Bhaskar (1994) also concluded that wild pigs were the chief predator of sea turtle eggs and hatchlings in this area, followed by the water monitor lizard (*Varanus salvator*), which was not sighted during the current survey. Predation by pigs may have increased since the tsunami, as human settlements may have deterred individual animals or controlled population numbers. A program to control pig numbers or protect turtle nests from pigs could help re-establish sea turtle populations at this site. There is no pre-tsunami substrate analysis from Galathea Bay with which to compare our results, but future substrate analysis may indicate changes as beaches re-stabilise.

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## A STORY FROM THE FIELD: REMOVING MARINE DEBRIS TO RESTORE NESTING BEACH HABITAT IN KIPUMBWI VILLAGE, TANZANIA

LINDSEY WEST, BONIVENTURE MCHOMVU & TEMU PASTORY

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The pristine sandy beaches of Pangani District in northern Tanzania (Figure 1) are used by nesting green sea turtles (*Chelonia mydas*), while hawksbill turtles (*Eretmochelys imbricata*) are regularly observed foraging on inshore reefs. In 2008, Sea Sense NGO established a community-based sea turtle nest monitoring and protection programme. Since then, 713 green turtle nests have been recorded by a team of community 'Conservation Officers' who conduct daily foot patrols of six nesting beaches in Pangani District.

One of the beaches is close to Kipumbwi, a small fishing village situated in central Pangani District. However, nesting activity is rare at Kipumbwi due to high levels

of human disturbance. There are 235 resident fishers in the village and an influx of as many as 800 migrant fishers during the main fishing season. Kipumbwi has the busiest fish landing site in Pangani District and it is an entry and exit point for goods (legal and illegal) from/to Pemba and Unguja (Zanzibar Archipelago).

With such high levels of human activity in Kipumbwi, a two-kilometre stretch of beach adjacent to the village had become severely degraded. The beach was used as a dumping ground for household rubbish and waste from fish processing (Figure 2). Many villagers were also using the beach as a public latrine. Rotting