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Status of marine turtles in Maharashtra, India

Varad Giri and Naresh Chaturvedi

Bombay Natural History society
Hornbill House, Dr. Salim Ali Chowk, Shaheed Bhagat Singh Road, Mumbai 400 023. India.
Email: bnhs@bom4.vsnl.net.in

Introduction

Studies on sea turtles in India have mainly focused on the east coast and very little information is available on their occurrence and nesting sites for the west coast. The occurrence of three species of marine turtles viz., hawksbill, green Turtle and Loggerhead has been reported in Maharashtra waters (Daniel 1976). Later Shaikh (1983), Bhaskar (1984) and Das (1985) recorded the presence of olive ridleys. According to Gole (1997), olive ridleys are known to nest all along the coast, while green turtles nest sporadically in Maharashtra. The poaching of the eggs by humans, incidental drowning in the fishing nets and developmental activities are the main threat to marine turtles along this coast.

Study Area

The coastline of Maharashtra extends from the border with Gujarat to the north to the border with Goa to the south and stretches about 720 km. A total of five coastal districts viz., Sindhudurg, Ratnagiri, Raigad, Thane and the urban area of Mumbai share the coast line of Maharashtra (Gole 1997). The main occupation of majority of the coastal population is fishing.

Methods

In the present survey, 60 localities were surveyed to assess the status of marine turtles along the coast of Maharashtra covering all the five districts. The field survey was carried out from March 2000 to April 2001. In addition to the field survey, secondary information was also collected from different sources, such as local coastal villagers, fishers, trawler owners and workers, fisheries and forest Departments and local non-governmental organizations. Landing sites were also visited and information on incidental catch was recorded from trawler owners and workers. Additionally, press releases on sea turtles were given in local newspapers. Schools and colleges located in the coastal villages or towns were also visited. Information was collected by distributing reply-paid postcards in some areas, either during the survey or as a follow-up of the surveys. The surveys were carried out in two phases. A preliminary survey was carried out along the coast of Maharashtra from 13 – 31 May, 2000 and 29 localities were visited during this survey. The second survey was site specific, and the selection of sites was based on the data collected during the first survey. This survey was carried out from 4-22 December 2000. During this survey 43 localities were visited (Table 1).

Results & Discussion

The information received from 60 localities along the five coastal districts confirmed reports of the occurrence of olive ridley, green, leatherback and hawksbill turtles. The olive ridley is a common species, followed by green turtle, leatherback and hawksbill. Sporadic nesting is reported from all the sites (Table 1). On an average about two to three nests were reported from all the localities visited by us during the survey. The nesting season commences in December and extends till March. However, some locals of Thane and Raigad districts reported the nesting during the monsoon, i.e. from June to September but during this study no nesting was reported in monsoon. The details of the occurrence and nesting of marine turtles in Maharashtra is as follows.

Olive Ridley Turtle

The occurrence and sporadic nesting of olive ridleys is reported along the entire coat of Maharashtra (Table 1). This species is commonly seen along the entire coast. Local fishermen and workers on trawlers reported their presence, as the turtles get entangled in their fishing nets. According to them they are seen throughout the year in the sea and recent sightings were reported from most of the landing sites visited by us. During this survey five carapaces of olive ridley and three dead specimens of the same were seen in different localities (Table 2). In all the localities visited, there are reports of nesting of this species. Some confirmed and recent nesting of this species is reported on the beaches of Shiroda-Aravali, Mochemad, Neevati, Khavane, Tondavali, Achara, Vetye, Ambolgad, Hareshwar and Kashid Sarva. Most of these beaches are about 2 to 4 km. in length and are less populated.

The belt of about eight km. between Shiroda to Neevati and about 12 km. stretch between Malwan to Achara, in Sindhudurg district is a potentially good nesting ground for this species. In all the localities in this region, around four to five nests were reported during the breeding season. For some sites like Tondavali and Talashil, there were reports that ten years ago, seven to eight turtles nested in a single night during the breeding season. But in the entire breeding season of 2000-2001 only two nests were reported from these villages, which may indicated a decline in the breeding population in the recent past. Apart from this, the undisturbed beaches of Vetye, Ambolgad in Ratnagiri district, Hareshwar and Kashid-Sarva in Raigad district are also important nesting sites as five to six nests were reported on these beaches during each breeding season.

Green Turtle

The occurrence of this species is reported from the entire coast of Maharashtra but sporadic nesting is reported from only a few localities (Table 1). This species is seen along the entire coast but compared to olive ridleys, it is rare and restricted in distribution. Their sightings are mostly reported by fishers on trawlers and according to them it is associated with rocks and feeds on algae. Recent sightings are reported from some localities in Sindhudurg and Ratnagiri district. In two villages, Neevati and Khavane close to Malwan in Sindhudurg district, seven carapaces of green turtles were seen. According to the villagers these were killed due to incidental drowning in the fishing nets. Some villagers believe that every year, these species are seen in large numbers during November and December. These two villages were again visited in April 2001, but according to the locals the population of this species was less compared to November and December. In the first week of June 2001, a juvenile green turtle (SCL 9.0 cm) was collected from a fisherman who caught it in the fishing net in the Vashi creek near Mumbai. During the survey, nine carapaces of this species were seen, of which two were juveniles (Table 2).

The nesting of green turtles is comparatively lower than the olive ridley. Out of the 60 beaches surveyed and information gathered, nesting was reported from only 14 localities and of these nine were from Sindhudurg district and four from Ratnagiri district. The potential nesting beaches from which there are reports of nesting of this species are Kelus, Neevati, Khavane, Tondavali, Talashil and Achara in Sindhudurg district and Nevare, Varavade, Vetye and Ambolgad in Ratnagiri district.

Leatherback turtle

This is an uncommon species with sporadic sightings from the entire coast and old nesting

reports from two localities (Table 1). Their sightings in the deep sea are mostly reported by trawler fishermen. The recent and sporadic sightings of this species are reported from the entire coast. Some fishers from Kelus, Achara and Malwan reported recent sightings of this species in the sea. A fisherman at Achara in Sindhudurg district reported that a leatherback nested ten years ago. He remembered it by its large size and ridges. An old fisherman from Kashid in Raigad district claims to have seen nesting of this species about 15 years ago on this beach.

Hawksbill Turtle

This species appears to be rare. Some locals of Khavane in Sindhudurg district reported having seen this species on the beach ten years ago. They identified it from the photographs of marine turtles. A few workers of trawlers from Malavan and Ratnagiri say this species is seen in their waters.

Table 1: Records of nesting of sea turtles in Maharashtra and Goa

District	***Locality***	***Nesting Species***	***Poaching***
Thane	Bordi, Gholvad, Dahanu, Chinchner, Shirgaon, Arnala, Vasai	OR	Absent
Mumbai	Manori, Gorai, Versova, Worli, Vashi Creek	OR, GT	Absent
Raigad	Mandve, Kihim, Nagaon, Revdanda, Korlai, Kashid, Nandgaon, Murud, Nanvali, Borli, Srivardhan, Hareshwar	OR, LB	Present
Ratnagiri	Ade, Anjarla, Harne, Burondi, Dabhol, Guhagar, Velneshwar, Hedavi, Sakhareagar, Nandivade, Sandkhol, Nevare, Varavade, Ganapatipule, Ratnagiri, Gavkhadi, Poorngad, Vetye, Ambolgad, Vijaydurg, Devgad	OR, GT	Present
Sindhudurg	Kunakeshwar, Achara, Vayangani, Tondavali, Talashil, Kolamb, Malvan, Tarkarli, Neevati, Khavane, Kelus, Mochemad, Shiroda-Aravali, Shiroda-Kerwada, Redi	OR,GT,LB	Present

Threats

The major threats to the marine turtles of Maharashtra are from the poaching of eggs and adults, incidental catch in fishing nets and due to developmental activities along the coast.

Poaching of eggs is the main threat to sea turtles in all the localities surveyed in Maharashtra. Locals collect the eggs for consumption. Earlier, when nesting was abundant, eggs were even sold in the local markets.

Sea turtles are generally not killed by most of the fishermen of Maharashtra due to religious reasons, since they are believed to be an incarnation of God in Hindu mythology. Thus, if the turtles are caught in the fishing nets, they are immediately released. However, some killing of adults occurs and the extent of killing varies in different localities. Poaching was mainly reported from numerous localities in Ratnagiri district. In Velneshwar, a small village in this district, a freshly cut carapace of an olive ridley was seen. In most of the fish landing centres in this district, there are reports of trade in live turtles which are sold for Rs. 200 to 500 each, depending of their size. In other districts killing of the turtles is reported from very few localities.

Another major threat to the sea turtles is mortality due to incidental catch. According to information obtained from locals in different areas, on an average, five turtles were caught in the fishing net of each trawler per year. Around two to three dead

turtles were reported every year in all localities (beaches) visited. Local fishermen cited nearshore fishing by trawlers as the cause of turtle mortality. Though this information is very sketchy, it indicates the impact of trawl fishing on turtles of Maharashtra coast. According to the locals, about 25 green turtles were caught in the fishing nets in a period of two months in Neevati and Khavane near Malavan during October and November 2000. During the survey, five carapaces and three dead specimens of olive ridley and nine carapaces of green turtles were recorded along the entire coast (Table 2). The straight carapace length varied from 44.5 to 100.3 cm for green turtles and from 62.7 to 73.0 cm for olive ridleys. Most of the carapaces were encountered on the beaches of Neevati (3 olive ridley and 3 green turtles), Khavane (4 green turtles) and Achara (1 green turtle and one olive ridley) of Sindhudurg district (Table 2).

Table 2: Mean, Standard Deviation (in parenthesis) and size class distribution of dead turtles encountered during field survey. SCL is Straight Carapace Length

Mean SCL	Range	Number
Olive ridley		
67.9 (3.8)	62.7 – 73.0 cm	8
Green turtle	44.5 – 100.3 cm	9
	40 – 50 cm	2
	60 – 70 cm	2
94.1 (5.1)*	80 – 100 cm	5

* - mean within this size class

Conclusion and Recommendations

Even though four species of sea turtles are reported from the Maharashtra coast (Daniel 1976, Shaikh 1983, Bhaskar 1984, Das 1985), the present survey confirmed the presence of olive ridleys, green turtles and leatherbacks. Among these species, olive ridleys showed wider distribution, while green turtles were restricted to the coast of Sindhudurg district. leatherbacks were very rarely seen and recently reported at only three sites in Sindhudurg district. Poaching of eggs and killing of turtles for meat are the major threats along the entire coast. Due to low nesting, locals collect eggs for their consumption and not for commercial use. Secondary sources and encounter of carapaces and dead turtles showed that turtle mortality occurs due to incidental catch.

Monitoring of potential nesting sites, and offshore and beach surveys during the entire nesting season are crucial to assess and fully evaluate status and threats. Creation of public awareness among locals, fishers and trawl owners and workers will have a significant effect in reducing the threats. Creation of turtle conservation movements and involvement of the local community, NGOs, schools and college students are also suggested for the conservation of sea turtles in Maharashtra.

Acknowledgements

This survey was funded by the GOI – UNDP Sea Turtle Project, implemented by the Wildlife Institute of India, Dehradun. We are grateful to Mr. B.C. Choudhury, WII for sanctioning the project. Thanks are also due to Dr. Kartik Shanker for his guidance and encouragement. We thank Mr. R. B. Sule and Mr. B. Majumdar, Chief Conservators of Forests (Wildlife), Nagpur, Maharashtra for permissions to carry out the surveys. We are also thankful to Dr. Vivek Redkar, Dr. Simali Redkar, Mr. Ravikiran Toroskar, Mr. Sameer Kehimkar and Mr. Isaac Kehimkar for their help during the survey. At the BNHS, we are grateful to Mr. J.C. Daniel, Honorary Secretary and Dr. Asad Rahmani, Director for their encouragement and comments on the drafts of this chapter. We are thankful to Mr. Vithoba Hegde and Mr. Vinod Patil, Field Assistants, Collections Department, who accompanied us during the surveys and was a great help and companion. We are also helpful to Mr. Gopi Naidu and Mr. J.P.K. Menon for their help in preparing the maps.

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