

## PRESENT STATE OF MARINE TURTLE CONSERVATION AND MANAGEMENT IN WEST BENGAL

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### ABSTRACT

Surveys on the catch of olive ridley turtle *Lepidochelys olivacea* (Eschscholtz) were made during 1983-84 season in West Bengal. A total of 19,636 turtles have been captured during November to February period from Digha and Jambudwip (Sundarbans). Of these, 5,180 and 3,266 were consumed by the local people of the Districts 24 Parganas and Midnapore respectively while the remaining 11,190 turtles were transported to Calcutta and other markets during the period. Since the West Bengal forest officials are keeping constant watch at almost all the active centres for this nefarious trade, the turtles were transported through the creeks to landing centres located in the interior. As the turtle trade provides additional support to the economy of fishermen the management programme should take this into account.

### INTRODUCTION

As has been written about the mass nesting of olive ridley *Lepidochelys olivacea* in the past. The focus has also been on the illegal trade in this species in the market of West Bengal. Ganguly (1978) made an attempt to save the olive ridley from mass mortality in West Bengal and Orissa, while Silas (1983 a, b, c) and Silas (1984) repeatedly wrote on this aspect and expressed their concern regarding conservation and management of sea turtles occurring in India. Though the government as well as state government authorities and other agencies are trying to stop turtle poaching and marketing, the present state of conservation and management of this species is far from adequate. In the present paper an attempt has been made to describe the state of turtle trade in West Bengal during 1983-84 season with some suggestions for meaningful conservation and successful management.

### Turtle fishers and sites of fishing

The olive ridley turtles are fished by the fishermen at Digha, Midnapore District and Jambudwip of Sundarbans, 24-Parganas District, West Bengal. The fishermen are used to operate over a hundred fishing units from these two Districts of coastal West Bengal. They are known to perform their traditional fishing of commercial fishes and prawns. But a few units sometimes arrange organised capture of marine turtles along West Bengal and Orissa Coasts. There are 206 villages comprising 59,056 fishermen in these two Districts. They belong to fishing (*Jalia Kaibarta*) as well as non-fishing castes, both scheduled (*Tanti, Dom, Hari, Suri, Muchi*) and general (*Raju, Mahesya, Kayastha*). The educational status of most of the fishermen is of primary standard and mostly they have no alternate source of income. Finding no other job, even those with secondary level of education have joined with the other members of their family/com-

munity in fishing pursuits. However, out of 59,056 fishermen, 13,869 are engaged in actual fishing, either full-time or part-time or occasionally as per estimate of the Central Marine Fisheries Research Institute (CMFRI), Cochin (Anon, 1981).

In West Bengal, though there is no vessel or boat exclusively meant for turtle fishing, the fishermen of the Midnapore and 24 Parganas Districts do not spare turtles from their trade. This is particularly pronounced during lean periods when the fish catch is low. At such times a switch-over from incidental catches in the gill net fishery to directed capture of turtles may occur. During mating, the olive ridley is extremely sluggish and can be hauled aboard easily by hand or nets. However, three nesting sites are located in the Sundarbans namely, Mechua, Sainmari and Kanak island between the Latitude 21°31' N-22°30' N and longitude 88°10'E-89°51'E (Sanyal, 1983 ; Saha, 1984) which are presumed to be free from human interference. Through inquiry and survey among fishermen and traders, it is estimated that a total of 19,636 turtles have been captured during November-February from Digha and Jambudwip in 1983-84 season. Of these, about 90% of the total catch was from Digha.

#### *Landing centres and trade network*

The turtle fishing is normally restricted to winter i.e. November-February and it reaches a peak at the end of December. Live turtles captured at fishing grounds are clandestinely despatched by mechanised boats through the creeks to landing centres located in the interior and away from the vigilance of Forest officials. Thus, from Jambudwip, turtles are brought directly to Ukilbazar and Kakdwip instead of Namkhana to avoid the watch of Namkhana Forest officials. The important landing centres from Digha source are Chouddamile, Bankshalghat, Samudrapur, Angariaghat, Jaldha, Junput and Rasulpur. From Digha turtles

are transported to south 24-Parganas via Kakdwip and Uttar Chandannagar 2 km west of Nischintapur on Digha Harbour-Namkhana Road. From these landing centres turtles are delivered by Rickshaws and Matador-van to the different rural markets since the police personnel are alerted about the imposition of the Wildlife (Protection) Act 1972 on ridley turtles.

Like fish trade, the turtle trade is also controlled by the middlemen known as Aratdars (Godown owners). But, the fishermen own fishing crafts and tackle in the Midnapore and 24 Parganas Districts form fishing units employing 50-150 unit members on 'contract basis' for the season. The remuneration beside the provision of food, is settled at the end of season as per their skill to a maximum of Rs. 5,000.00 for the Majhi (head crew of the vessel). The fishermen (unit owners) take loan from the Aratdars on hypothecation of their boats. The Aratdars also employ 20-50 persons on 4-8 boats and a launch or a trawler to catch turtles off-shore. The principal Aratdars are stationed at Digha and Kakdwip. They are known to instruct fishermen to catch sea turtles when the fish catch goes down. The Aratdars usually sell turtles to Paikers or Forest middlemen) who transport turtles to suburban and urban markets as well as to Howrah and other sale markets. The suburban market is located on the arterial routes from Digha to the Sundarbans to Calcutta. However, sometimes small fishing units of 6-8 persons on 1 or 2 boats resort to turtle fishing as and when they feel it is profitable.

#### *Turtle markets and turtle economics*

Although the turtle fishery is a supplementary one, the selling of turtle meat in the markets along coastal areas of West Bengal is now-a-days very common. Tables 1 and 2 represent the list of markets and other relevant information in connection with the selling of turtle meat and eggs in 24-Parganas

TABLE 1. *Sea turtle markets along Diamond Harbour—Namkhana Road, Data on sale proceeds (per week) from November to February*

Markets	No. of turtle sold/week	Price/kg	No. of seller
		Rs.	
Diamond Harbour	.. 10-20	3.00-6.00	1-2
Kulpi	.. 10-15	3.00-6.00	1-2
Karanjali	.. 10-15	3.00-6.00	1-2
Nischintapur	.. 40-50	3.00-5.00	5-6
5 No. Hat	.. 15-20	3.00-5.00	1-2
Kakdwip	.. 20-30	4.00-6.00	1-2
Ukilbazar	.. 35-40	3.00-6.00	3-4
Interior markets (Sagar, Pathar, Namkhana)	60-100	3.00-6.00	10-15

Eggs sold at Rs. 2.00-3.00 per kg. Of the total consumption 80% of the turtles comes from Digha landings and 20% from Jambudwip.

Total sale (per week) = 210-300 turtles

Total sale (November-February) = 4,500-5,000 turtles

TABLE 2. *Sea turtle markets in the coastal belt of Midnapore District*

Markets	No. of turtle sold/week	Price/kg	No. of seller
		Rs.	
Deuli	.. 6-8	4.00- 6.00	2
Depal	.. 3-4	4.00- 6.00	1-2
Sapua	.. 3-4	4.00- 5.00	1-2
Kanpoyrahat	.. 2-4	4.00- 6.00	2
Mirgodagunge	.. 2-5	5.00- 8.00	2
Mirzapur	.. 4-8	6.00- 9.00	2
Ramnagar	.. 2-5	3.00- 4.00	1-2
Kalinagar	.. 2-5	6.00- 8.00	1-2
Khejuri	.. 3-6	7.00- 9.00	1-2
Haldia	.. 10-15	10.00-12.00	2-4
Khakurda	.. 3-8	6.00- 8.00	1-2
Belda	.. 8-16	6.00- 8.00	2-4
Narayangarh	.. 5-9	6.00-10.00	1-2
Nayagarh	.. 4-7	6.00-10.00	1-2
Paniparul	.. 2-3	3.00- 6.00	1
Mohanpur	.. 1-2	3.00- 6.00	1
Keshiary	.. 4-6	6.00- 8.00	1
Khakurda	.. 6-16	6.00-10.00	2
Interior markets	.. 28-35	6.00-10.00	2-4

Eggs sold at Rs. 2.00-6.00 per kg.

Total sale (per week) = 98-166 turtles

Total sale (November-February) = 2,200-2,500 turtles,

Midnapore Districts respectively'. It is estimated that about 5,180 turtles have been consumed by the local people of 24-Parganas District. Of the total local consumption 80% comes from Digha source while only 20% is captured from Sundarbans at Jambudwip. However, apart from the listed markets, turtles are sent to certain parts of Purulia, Bankura and Midnapore Districts as per prior contract of the buyers. The remaining turtles were transported to Calcutta and sometimes to Jamshedpur markets.

The selling price of turtles varies from place to place. In the sea, the fishermen sell a turtle at Rs. 30.00 to Rs. 50.00 depending on the weight of the individual. The fishermen may earn about Rs. 10.00 or more if they bring it to the Aratdars ashore. The Aratdars sell it at Rs. 70.00 to Rs. 130.00 to Fores or Paikers. The fishermen though selling turtles at sea earn at least Rs. 800.00 to Rs. 1200.00 per season. The boat collecting turtles at sea earn about Rs. 10,000.00 in one season.

TABLE 3. Net income from a turtle of 30 kg weight at different stages of trade on its way to Calcutta market.

Stage	Income
	Rs.
Fishermen in the sea	.. 25.00
Boat owner	.. 5.00
Aratdar at shore or Collecting boat	.. 45.00
Labourer (for loading and unloading)	.. 3.00
Truck owner	.. 10.00
Paikers at Digha (by selling to Howrah Aratdar)	.. 20.00
Howrah Aratdar	.. 160.00
Tempo owner or Thelawala (for carrying the turtle to different markets)	.. 20.00
Salesman (in Calcutta market)	.. 85.00*

\* Sometimes this amount increases upto Rs. 150.00 depending on the market conditions and this is why the selling rate varies with the market in Calcutta.

The profit gained at various levels from a turtle of 30 kg in course of its transport to Calcutta market has been shown in Table 3. In Calcutta at Thakurpukur market the turtle meat is sold at Rs. 23.00 per kg these days while at Beliaghata market it is slightly less i.e. Rs. 18.00 per kg and at Sealdah it is still cheaper i.e. Rs. 15.00 per kg.

#### Turtle conservation and research

There are only two turtle rearing centres in West Bengal. Both the centres are located in the Sundarbans one at Bhagabatpur Cross-Creeper project and the other at Sajnakhali Field Office, 24-Parganas District. As a part of the conservation and management programme, these centres are used for collection of turtles from Mechua, Sainmari and Kanak Island in the Sundarbans. The eggs are incubated in beach hatcheries. Sanyal (1983) obtained 100% hatchling success from the Sajnakhali hatchery while Saha (1984) got 30 hatchlings out of 137 eggs incubated at the same hatchery. However, Banerjee (1984) obtained 117 hatchlings (19.5%) from 600 eggs collected from 4 nests at Kanak Island in 1983 of which 99 hatchlings were released at their original nesting sites (creeks). The rest has been retained for further scientific study. High egg and hatchling mortality have been reported in addition to skin infection among hatchlings of ridleys (Banerjee, 1984; Banerjee et al. in press). The following conservation strategy has already been adopted in West Bengal for better conservation and management.

- (i) Artificial rearing of turtle to keep population normal.
- (ii) Promulgation of Indian Wildlife Protection Act 1972.
- (iii) Training of turtle project staff in India and abroad.

The coastal West Bengal supports an extensive aquatic ecosystem along with luxuriant mangroves.

res. The Sundarban biosphere reserve is recently declared as a National Park which offer protection to ridley resources of West Bengal. A proper management programme has to be developed suitable for the areas including trained adequate field as well as scientific staff for implementing proper conservation and management measures.

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## NATIONAL USE OF ESTUARINE AND MARINE REPTILES

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### ABSTRACT

This paper briefly discusses the marine and estuarine reptiles of India, their status, exploitation and some of the prospects and limitations of reptile conservation in India.

### INTRODUCTION

In the Indian region, four groups of reptiles (including four species of sea turtles, two 'freshwater' turtles, twenty sea snakes, one crocodile and one lizard) live mostly or entirely in the sea or estuarine areas (see Table 1).

With the exception of live bearing sea all of these reptiles must lay their eggs a most vulnerable period of their ad Except in the case of the crocodile, n care is limited to choosing and excavat nest site, depositing, covering and the eggs to their fate.

TABLE 1. Marine and estuarine reptile resources in India

Scientific name	English name	Status	Distribution	Use
<i>Crocodylus porosus</i>	Saltwater crocodile	Endangered	Orissa, West Bengal, Andaman & Nicobar Islands	Skin, meat
<i>Lepidochelys olivacea</i>	Ridley sea turtle	Common	Main populations in Bay of Bengal	Meat, skin, calipee
<i>Chelonia mydas</i>	Green sea turtle	Uncommon	Kutch, Gulf of Mannar, Andaman & Nicobar Islands, Lakshadweep	Meat, skin, calipee, s
<i>Eretmochelys imbricata</i>	Hawksbill sea turtle	Uncommon	Gulf of Mannar, Andaman Nicobar, Lakshadweep	Meat, shell
<i>Dermochelys coriacea</i>	Leatherback sea turtle	Endangered	Andaman & Nicobar	Meat, oil
<i>Batagur baska</i>	Batagur turtle	Endangered	West Bengal	Meat
<i>Pelochelys bibroni</i>	Bibron's softshell turtle	Rare	West Bengal, Orissa	Meat
<i>Laticauda, Enhydrina, Hydrophis</i> etc.	Sea snakes (20 species)	Common	Seas	Skin, meat
<i>Varanus salvator</i>	Water monitor lizard	Uncommon	West Bengai, Orissa, Andaman & Nicobar	Skin, meat