

THREATS TO SEA TURTLES IN INDIA — EXPLOITATION AND HABITAT PERTURBATIONS

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INTRODUCTION

Contemporary sea turtle conservation programmes in India are limited to—in most cases atleast—the establishment of egg hatcheries. While these may be of great conservation value if scientifically managed, they will scarcely suffice if sea turtles are to be effectively conserved in the long run. And if we are to achieve our goal of long term conservation it is imperative that we develop a broad based strategy with habitat conservation as one of the top priority measures. Towards achieving this end, let us begin by enumerating and examining the various threats that confront our sea turtles today.



Even without supportive quantitative data we can assert empirically that sea turtle populations have declined drastically during the last few decades directly or indirectly as a result of human activities. Only the olive ridley (*Lepidochelys olivacea*), among India's five species of sea turtles can be considered still abundant. The loggerhead (*Caretta caretta*), leatherback (*Dermochelys coriacea*), hawksbill (*Eretmochelys imbricata*) and green (*Chelonia mydas*) are rare, in that order of importance and have all but succumbed completely to heavy hunting pressure/habitat destruction. Nesting populations of these latter four species are extremely small, fragmented or altogether non-existent on the Indian mainland.

and sizeable nesting populations (Speaking relatively) are at the present day restricted to remote/uninhabited islands in the Andaman and Nicobar and Lakshadweep groups.

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THREATS

Exploitation

Man has been exploiting sea turtles for several millenia, for eggs, meat, tortoiseshell, flipper hide, oil, fat or blood. He still does and will probably continue to do so as long as is possible. And there's no reason why he should not provided the resource remains plentiful and is judiciously utilised. This, unfortunately, is not the case today (Table 1). Hunting for subsistence (as defined by Frazier, 1981), that relatively innocuous form of exploitation has been largely replaced by commercial exploitation which demands the slaughtering of thousands of sea turtles, indiscriminately and year round and where retailers and middlemen stand to earn huge profits. The turtle markets of West Bengal perhaps illustrate this most clearly.

Elsewhere, egg poachers remove virtually every clutch of eggs laid for consumption and sale. The demand for turtle flesh and eggs is attributable to their relative low cost. In most parts of the country turtle meat sells at between Rs. 5 and 10/Kg as compared to Rs. 16-19/Kg of mutton. Turtle eggs at 5-10 paise each are 12-6 times cheaper than chicken eggs. Consequently thousands of turtles and tens of thousands of eggs are lost every year placing heavy strain on our already decimated turtle populations. Unless the turtle markets (which, of course, are absolutely illegal) are speedily put out of action, India's sea turtles may soon be eaten out of existence ; they already have been in many places.

Habitat perturbations

This term encompasses a variety of factors which adversely affect sea turtle habitats, often rendering them entirely unfit for

TABLE - 1. Exploitation

THREAT	SPECIES MOST AFFECTED				PLACE (S)	REMARKS
	OLIVE RIDLEY	GREEN	HAWKS BILL	LEATHER BACK		
Catching technique 1. Trawling	1	2	3	4	Orissa, West Bengal, Andhra Tamil Nadu, Orissa, A & N Islands	Deliberate catch
						Accidental catch
2. Set net fishing	1	2	3	4	1 Andamans, Tamil Nadu; 2 Andamans, Tamil Nadu; 3 Andamans, Tamil Nadu;	Slight
						Heavy
						Heavy
3. Spearing	1	2	3	4	1 Nicobars; 2. A & N Islands, Lakshadweep; 3. " " 4 A & N Islands,	Slight
						Heavy
						" "
						Slight
4. Motive for exploitation	1	2	3	4	1 West Bengal; 2 S. T. Nadu, A & N Islands; Lakshadweep, 3 As in 2	Heavy
						Heavy
						Slight
5. Meat	1	2	3	4	1 Lakshadweep, T. Nadu, 2 Lakshadweep, T Nadu; 3 Same as 2 4 T. Nadu, Lakshadweep;	Slight
						Heavy, Slight
						Slight
2. Oil (Boatseater)	1	2	3	4		Slight
3. Flipper leather	1	2	3	4	1 & 2 Saurashtra;	Slight (for footwear)
4. Tortoise shell	1	2	3	4	A & N Islands, S T. Nadu;	Slight
5. Eggs*	1	2	3	4	1. Mainland, Lakshadweep, A & N Islands; 2. Saurashtra & Nicobars; Andamans & Lakshadweep; 3 A & N Islands, Lakshadweep, 4 Nicobars, Andamans.	Heavy. Gujarat - Bullock feed
						Slight Nicobars - Pig feed
						Heavy Andamans - for dogs
						Slight (in addition to human consumption)
6. For blood and fat	1	2	3	4	1 Tamil Nadu, 2 T Nadu, Andamans; 3 T Nadu,	Slight
						Slight
						Slight



HEAVY



SLIGHT

* SOLD EVERY WHERE EXCEPT NICOBARS

nesting or feeding as the case may be. The rapid 'development' of beaches—previously inaccessible or untouched—for housing, resorts or other constructions is perhaps one of the most serious threats today and coupled with other forms of disturbance or habitat modifications such as erosion preventive embankments, jetties etc., sand mining and lights on the beaches, to name a few, has rapidly and seriously reduced the length of available suitable nesting habitat. Recently Satish Bhaskar, after a survey of the Kerala coast, reported that 200 km of that State's 590 Km coast has been 'fenced off' by granite blocks and embankments meant for protection against erosion, thereby excluding nesting sea turtles from the area. Scores of other examples can be cited all over coastal India (Table 2). The changes are not necessarily always as obvious or drastic and they don't necessarily have to be. Who would have known for instance that the beaching of boats on the Tangaserri beach would wipe out the nesting leatherback population from that area? (Smith, 1931). This should teach us that even seemingly trivial modifications of the habitat could have severely detrimental—indeed, disastrous—consequences and that even 'minor' development on beaches should be carefully assessed before they are actually carried out.

SUMMARY

1. Large numbers of breeding adults are caught annually and carted off to the markets for slaughter and several thousands more—hatchlings, juveniles and breeding adults—are killed accidentally by drowning in trawl and gill nets.

Result : Rapid depletion of numbers.

2. Simultaneously (in many areas), virtually every clutch of eggs laid—particularly on the mainland—is collected by humans or destroyed by domestic animals such as dogs and pigs.

Result : Recruitment is greatly reduced.

3. Increasing amounts of nesting habitat are being rendered unfit for this purpose as a result of human settlements, other constructions, erosion preventive embankments, other physical barriers and lights on beaches, to name a few uses.

TABLE 2. *Habitat Perturbations*

Nature of Threat	Place	Species Occuring in the Area (and likely to be affected) and Remarks
<i>General</i>		
Human settlements	Indian mainland and some islands in the Andaman and Nicobar and Lakshadweep groups	Depending on their distribution all species will be affected.
Beach resorts		
Other construction on shore (jetties etc.)		
Erosion preventive embankments		
Lights on beach		
Fishing activities		
Beached boats		
<i>Specific</i>		
Fencing of beaches (to protect a few saplings in Lakshadweep plantations from being inadvertently uprooted by nesting turtles)		Green, Hawksbill, Ridley and Leather- back.

Sand mining for cement	Saurashtra South Tamilnadu	Green and Ridley Green, Hawksbill and Ridley.
Sand mining for construction purposes	Most states on the mainland and the A & N Islands	Depending on their distribution all species will be affected.
Sand mining of black sand beaches for Titanium ore and I.R.E. (Indian Rare Earths)	Kerala, TamilNada and Andhra Pradesh	Mainly Ridley.

Potential

Rapid colonisation of coastal areas and beaches for human settlements or resorts, of areas hitherto inaccessible or untouched.	Indian mainland and many islands in the Andaman and Nicobar and Lakshadweep groups	All species will be affected depending on their distribution
Proliferation of mechanised fishing boats increas- ing the operational range and efficiency of turtle hunters and making beaches and feeding grounds once remote easily accessible.	“ “	“ “
Marine pollution	“ “	“ “
Coral mining	Gulfs of Mannar and Kutch and around the Islands.	Hawksbill and possibly loggerhead.

Result : Progressively fewer turtles will be able to nest successfully outside protected areas.

Admittedly, the outlook does appear pessimistic. But let us not forget that there is still a fair amount of good coastal habitat left in the country which is even now regularly used by nesting turtles. The identification and assessment of all such areas should be given priority attention now in order that we may safeguard our sea turtle resources for the future.

REFERENCES

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- SMITH, M. A. 1931. *Fauna of British India. Reptilia and Amphibia* Vol. 1.

DISCUSSION

- R. WHITAKER : There is destruction of coral due to trawl operations in the Gulf of Mannar area, which results in habitat destruction of sea turtles. Some urgent action should be taken towards habitat protection in this area.
- J. AZARIAH : MMDA (Madras Metropolitan Development Authority) has to be made aware of habitat protection while giving sanctions for beach resorts and other constructions near the beach. Public also should be made aware of this fact. NCERT should be contacted to include a lesson on sea turtle conservation in the school syllabus.
- V. J. RAJAN : There is need to educate the school children and this should have priority.
- K. SHANMUGANATHAN : In order to protect the beach we must recommend for an Act of Parliament to check building construction near the beach.
- A. N. KARVE : Already there is an existing law which prohibits building construction within 500 metres from high water mark.
- K. SHANMUGANATHAN : In Lakshadweep Islands, coconut palms are being planted all over the beach thereby restricting the nesting beaches. Also the fencing of the beach by defence department also has affected the nesting beach.

A. N. KARVE : In Lakshadweep the fencing is only in the western side to protect the beach which is being washed away. There is no fencing on the eastern side which is the nesting beach for turtles. Hence there is no change for nesting habitat in Lakshadweep due to fencing.

There is high level pollution in the turtle nesting beaches of Madras Coast from Ennore to Pondicherry. In Madras city the rivers Coovum and Adyar empty polluted water into the sea. The Madras Corporation should be asked to filter the water before releasing into the sea.

G. GURUMANI : Is there any data on population decline? If not how do you say that a species is really endangered or not. How many endangered species are there. Are we protecting one of the abundant species?

K. SHANMUGANATHAN : Circumstantial evidences indicate that sea turtle populations have declined. About 50 years ago there was a good population of sea turtles in the Gulf of Mannar. The intensity appears really low today. Same is the case of the leatherback turtle. A nesting beach existed for the leatherback turtle in Kerala, but at present we are not able to find even a single nest of the leatherback along the Kerala Coast.

S. BHASKAR : The number of nests in the Krusadai Island, Gulf of Mannar has considerably reduced now.

E. G. SILAS : There is no quantified data on the turtle populations in our seas. Some quantified data on the stranded turtles due to poaching and incidental fishing activities is all that is available.

A. N. KARVE : Matting pairs of olive ridley off Orissa Coast aggregate appearing like small islands and the matting pairs also produce noise.

PANNERSSELVAM : Hatchlings can be punched in the marginal scutes and released to find out whether they are coming back to the same beach.

E. G. SILAS : Importance should be given to non-consumptive utilisation of sea turtles so that the relationship between man and turtle could change from killing them to utilise them for educational, recreational and tourism and research purposes. Some sort of tourist attraction like whale watching can be planned. There is immediate need to study the problem of turtle poisoning. The effects of poison is known only after 24 hours of consumption. More information on the food of sea turtle is needed.

K. SHANMUGANATHAN : The predation by birds, crabs, etc. on the hatchlings can be avoided by releasing them into the sea by taking them in the boat.

World Wildlife volunteer : Industrial waste in the nesting beaches of Madras, especially in Neelankarai, 15 km south of Madras, from the cement pipe factory may affect the nesting beach. Neelankarai beach is well known for the nesting of olive ridley in the season from December to March. Some action has to be taken to prevent the pollution problem.

- S. K. MISRA :** Caustic Soda factory in Ganjam District, Orissa is releasing industrial wastes into the river which may affect the nesting beaches. This matter has been reported to Shri Digvijaya Singh, Minister of State Department of Environment.
- K. SHANMUGANATHAN :** Due to predation the survival of hatchling in the mass nesting beach must be extremely low. It is likely that one in thousand may reach the stage of maturity. The number of turtles coming to mass nesting area may be monitored systematically.