

PROBLEMS OF SEA TURTLE CONSERVATION IN INDIA

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INTRODUCTION

In the brief remarks I made at the Inauguration of this Workshop I drew attention to some of the subjects which require our consideration. Basically the function of this Workshop will be to examine the state of the art. We shall not be presenting papers but discussing problems that face field officers in organising the conservation of marine turtles. To identify problems and their remedies, it is necessary to examine the limitations of our knowledge of the Sea Turtles, the species that occur and their ecology, primarily their breeding ecology. You will notice from the programme that has been drawn up for the Workshop, that different aspects of turtle ecology will be considered in some detail by the Workshop. It may be useful to consider briefly some of the basic aspects. I would appreciate if you could note points as I go along so that we can have a useful discussion.



PROBLEMS OF SEA TURTLE CONSERVATION

The first question that one seeks an answer is where and when do turtles nest in India? The first part of the question where do marine turtles nest in India is currently under investigation. One

must here draw attention to the commendable work done on this aspect by Satish Bhaskar who has been surveying the beaches along the Indian coast and whose report should provide us a large amount of original data.

The second part of the question is when do they nest? Fragmentary data is available on this aspect which, considering the vast coastline and the marginal interest in turtle biology, is to be expected. Co-ordinated procedures for the collection of data on nesting locations, time of breeding and density of nesting and the establishment of a data bank for this information is an aspect we should discuss and determine at this Workshop.

The second question that one should consider is the species that nest along our Indian coasts and here we should include also the species that are not strictly marine. I am drawing attention to the estuarine *Batagur basta* and *Pelochelys bibroni* both need urgent attention. It is now well established that the commonest, and most widespread and therefore presently the most exploited in spite of existing laws, is the Ridley Turtle (*Lepidochelys olivacea*). While conservation measures prepared for this species may be adequate for the other less common species, they are rare enough and exclusive in selection of nesting sites, particularly the leathery turtle, to deserve special attention for conservation.

The third question that requires our attention is the legal basis for turtle conservation. The only umbrella legislation now available is the Indian Wildlife (Protection) Act 1972. The species of marine turtle that occur along the Indian Coasts are included in Schedule I of the Act which covers completely protected species, whose destruction or capture draws severe penalty. Unfortunately the enforcing authority which is the forest department in most cases has their main focus of interest miles away from where turtles occur so that enforcement suffers. An additional factor for the failure of the act to be effective is that the people who are concerned with turtle exploitation, mainly the fisherfolk in the coastal villages are unaware of the existence of such a legislation. It is true that both the points I have made receive more attention now and it would be worthwhile having a discussion on the legal aspects of conservation.

The fourth question that we could consider is closely related to the third question, that is, why are turtles captured and the eggs taken and what are the methods used in the commercial utilisation of the groups traditionally.

Turtle flesh and the more easily procurable turtle eggs have been a protein source. The eggs particularly have been used in the past without apparently serious effect on the population. Destruction of adults, which are in the case of turtles, the breeding population, is probably the more damaging to the species. The legal status is that the species cannot be utilised. This is acceptable presently when we do not have adequate information on the populations of the species, the annual turnover, and how best this can be increased. However, once we have reasonably precise data it may be necessary to consider the grade of protection that each species may require and whether a blanket ban is necessary and more pragmatically, whether it is possible to enforce such a ban. It is certainly necessary for large scale commercial exploitation but should the odd specimen that is killed or the odd clutch of eggs that is excavated receive equally exemplary punishment is a point to be considered. To have an opinion on these points we must have information on the utilisation of turtles as a renewable natural resource. A beginning has been made by the Central Marine Fisheries Research Institute who have already conducted a time frame survey over a period of 2 months in 2300 coastal villages from Kutch to Calcutta gathering information on fishing gear, vessels used and turtle in incidental catches. The survey also covered 1800 fish landing sites, we should consider how best the resources of the CMFRI can be used to monitor turtle catches deliberate or accidental along the entire marine littoral of the country. We should also give some thought to the possible methods of assuring that trawlers have escape hatches built into their nets.

The fifth question that we should give attention to is the protected hatching programmes. The rationale behind these operations are (a) to provide protection so that the maximum number of clutches hatch and (b) that the maximum number of hatchlings have a chance of survival. It is well known that the period when a turtle is most vulnerable is when the young are concentrated and

therefore easily accessible to their predators. This is when these hatch and make their way to the sea. Predators occur both on land and in water. How best can the survival percentage be increased? Again is it necessary? If so can we determine the reasons why it is necessary to interfere in the natural weeding out which has been going on for millions of years as a built-in hazard in the life of the turtle. This leads us to the next question, research in turtle biology which would attempt to provide the answers.

Research should cover the whole panorama of turtle biology. There are a large number of questions for which we have to find answers. Some of them as they occur to me now are for instance what are the factors that underlie the selection of a nesting beach, is it the approach from the sea? the texture of the sand? the remoteness of the beach? the vegetation on and behind the beach or the lack of it? is selection visual or tactile or has selection been programmed into the animal and is an instinctive behaviour and therefore the animal does not show choice but will try and nest irrespective of existing conditions and the population disappears as conditions on the nesting beach deteriorate. Another aspect would be hatching success and the factors that influence them basically heat and humidity. The fact that temperature can drastically affect population structure is now well established and temperature manipulation is a matter that needs very serious consideration in protected nesting programmes. Another research programme that needs immediate attention if we are to collect worthwhile data is individual identification, that is, the tagging of turtles. This has to be organised on a large scale and on precisely determined methods. This requires fairly detailed discussion.

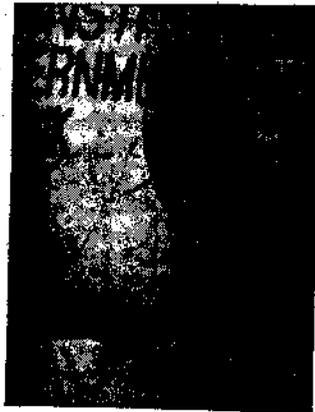
Finally some rather interrelated factors namely who is to do the research? who is to do the management? how should we interlink research and management, how best can we establish liaison between the researcher and the manager. We should also discuss methods of establishing interdepartmental, interstate and international linkages in turtle research and management problems concerned with conservation.

A vital need is education not only for drawing attention to the turtle and the need for its conservation but also as a communication link between the various groups involved in the life of the turtle. Education is perhaps the most urgent need.

I have, I am afraid rather sketchily drawn attention to the problems of turtle conservation in India. But I hope that what I have said will form a useful base for discussions.

DISCUSSION

- P. KANNAN :** In addition to the Wildlife (Protection) Act 1972, CITES deals exclusively with internal trade, but there is one provision in the Convention which infringes on illegal killing of turtles claimed to have been trapped in the high seas and landed in an Indian Port. This is the provision relating to 'introduction from sea'. When a protected species *eg.* turtle, is landed in an Indian Port and declared to the concerned Forest Officer or Police Officer within the prescribed time limit, the fisherman would have fulfilled his obligation by the Wildlife Act. The provision of the Wildlife Act pertaining to illegal killing of the turtle or interstate movement of a species listed in Schedule I of the Act cannot be applied to such a case. There is need for including a provision in the internal legislation to correspond with CITES. The drafting



of such a provision to strengthen the Act is underway.

- I. RAJENDRAN :** Along Tamil Nadu Coastline turtles are caught inadvertently. More extension work to enlighten the fishermen is necessary.
- W. P. DURAIRAJ :** The Tamil Nadu Forest Department should strengthen the personnel to patrol more areas during the nesting season of sea turtles.
- K. SHANMUGANATHAN :** During the 1983 season in Tamil Nadu only 150 km area was covered. More staff is needed for extending the coverage to other areas. The Fisheries Department personnel can also be empowered to enforce the regulation under the Indian Wildlife (Protection) Act. While enforcement of the Act throughout Tamil Nadu may take sometime, due to religious bias among some sections, there is no fishing for turtle. The Forest Department have to pay to local people Rs. 10 per 100 eggs brought to the hatchery.

- J. JOHINDRANATH : During the nesting season of the olive ridley along the Madras Coast, the Forest Officers are keeping a close watch on the markets where eggs are illegally sold. So also, a watch is kept on the hotels which may resort to the purchase of the eggs. Stricter enforcement of the Act is needed.
- K. R. RAMANATHAN : In Tanjore District the Forest Department is buying the eggs at the rate of 20 paise per egg for the hatchery. With the help of the Fisheries Department mass education and an extension programme among the coastal people, which is much needed could be taken up.
- J. FRAZIER : We must treat hatchery projects as well as other form of human manipulation as experiments. When we become involved in purchasing eggs for hatcheries, there is a danger of things getting out of hand. If we stimulate whole-time poachers to bring eggs to a hatchery by bidding the market value, there is a danger that the competition for eggs will drive the price up and the hatchery will become involved in a price hike with the market. Also, we create a paradox by telling them that the eggs are totally protected and not to be transferred and then telling them that we want to bring all the eggs and will pay more than the black market price.
- C. KONDAS : In natural nests we have no idea about the sex ratio in the hatchlings, nor the extent to which transfer of eggs will affect the sex in hatchlings. What will be the fate of eggs transferred after considerable delay or purchased from the market and used in the hatchery?
- J. FRAZIER : As regards sexing, the use of radio-immunoassay to detect relative androgen levels has been done on young turtles, but not on hatchlings. Four years is the minimum age that can be assayed accurately. The technique is expensive requiring very special equipments and have been tried in many places with considerable efforts. But the results are still not conclusive. We must be careful that even with the best intentions, our actions do not cause more harm than good. For example, holding hatchlings for a period of more than 12 hours may result in a release of animals too weak to feed for themselves.
- E. G. SILAS : Sea turtle hatcheries in India have been established where there has been heavy predation of eggs by human and non-human predators. Translocation of clutches to the new nests should be done within a few hours after laying. Collection of eggs through local help and on payment very often results in mixing of clutches and too much of disturbance of eggs which may result in low hatchability.
- R. WHITAKER : In about 10 to 15 days of incubation the sex is determined based on temperature. Higher temperature is said to lead to females and lower temperature to males.
- J. FRAZIER : A minimum of 6 animals is necessary to make the earliest determination of sex through examining the androgen levels.

J. C. DANIEL : How do we enhance and build up the species?

J. FRAZIER : The type of management involves the establishment of protected areas or sea shore sanctuaries of nesting beaches. In establishing sea shore sanctuaries such as in Sunderbans, Kodikkarai and in the Gulf of Mannar, the resource for local people has to be looked into. Their co-operation is essential for giving protection.

C. KONDAS : The Wildlife Act empowers declaring the area from the point of protection within the reserves. Declaring as a reserve, an area, subject to all provisions can be considered. Here, a sea shore strip will be more effective.

S. K. MISRA : I must mention about the nesting habitat of olive ridley in Bitarkanika Sanctuary in Orissa. Already drilling for oil in the Mahanadhi bed about 70 km southeast of Gahirmatha has been attempted. So far, they could not detect oil. In case oil is found, the chances of oil pollution affecting Gahirmatha is great. We have to protect Gahirmatha so that the nesting beach is not lost for ever. Still poaching is going on in Wheeler and Shortts Islands. The Forest Department is not having the vessels to control and monitor the area. The mass nesting of Olive ridley also coincides with peak fishing activities. From Paradeep Harbour larger trawlers belonging to different organisations including Chilka Development Corporation are operating. Some control or regulation through the Forest Department to declare an area of 48 km stretch from Wheeler and Shortts Island southwards between October and April upto the completion of the second mass nesting is needed. The mangrove forest in the area should also be given protection.



W. P. DURAIRAJ : As regards protecting any nesting beach, the need is also educating the fisherman through an extensive extension programme.

T. S. N. MOORTHY : Although we generally state that 5 species of sea turtles occur in Indian waters, only 2 viz. the olive ridley and the green turtle commonly nest on our beaches. As yet there are no published records of the estimated population of the loggerhead, hawksbill and the leatherback, there were some reports about trade on a small-scale of the hawksbill along the Visakhapatnam Coast. This incidentally also indicates the probable occurrence of the hawksbill in waters off Visakhapatnam, Andhra Pradesh.

K. SHANMUGANATHAN: From my knowledge of the Sunderbans, I learnt that fairly large numbers of the estuarine crocodile and the monitor lizard have a deterrent effect on sea turtle movements and the hatching of the eggs.

In concluding the Discussion, the Chairman Shri C. KONDAS remarked that :



- (i) From the point of conservation, to create an awareness among the public a very extensive programme is necessary.
- (ii) A very comprehensive programme of research on various aspects of the biology and the behaviour of sea turtle is needed so that, we can take up constructive steps in the protection and conservation of the resource.
- (iii) Monographs on sea turtle research and other specific projects may be planned identifying areas of lacunae which need priority attention.
- (iv) There is considerable variation in coastal ecological conditions and the need is for understanding local factors which will help in the conservation programme.