

**RESEARCH AND MANAGEMENT OF PACIFIC RIDLEY SEATURTLES,
(*Lepidochelys olivacea*) -- MARINE TURTLE RESEARCH CENTRE, PURI, ORISSA**
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INTRODUCTION

Following the advice of Dr. H. R. Bustard (FAO, 1975), the Forest Department of Orissa became actively involved in conservation, research and management of endangered Pacific Ridley Sea Turtles (*Lepidochelys olivacea*) at Gahirmatha coast of Bhitarkanika Wildlife Sanctuary during the year 1976.

The aims of the Project were two-fold (Kanungo, B.C., Forest Deptt., Orissa, 1976):

1.(a) To conserve this endangered reptilian species by providing adequate protection to the sea turtles both on the shore and at off-shore areas, and (b) to conduct research on the ecology and biology of sea turtles.

2. Later, to exploit the species for earning the much needed foreign exchange.

Since then, sincere attempts have been made to accumulate more scientific data on nest/nesting, egg laying, incubation of eggs, hatching success, predation of eggs and hatchlings, tagging of nesting female turtle, tag recovery and other associated ecological studies on Pacific Ridley Sea turtles at Gahirmatha beach.

Due to several adverse factors such as location of the place, communication difficulty, the want of electricity facility, soil condition, tidal bore, etc. it became difficult to conduct a few important studies on turtle's biology at Gahirmatha. So an alternate site for the establishment of a research station was selected and the Seaturtle Research Project was broadly divided into two components :

1. In situ research on the ecology of Pacific Ridley Turtles at Gahirmatha rookery of Bhitarkanika Wildlife Sanctuary. (It is the largest sea turtle rookery of its kind in the world (Bustard, 1976). A minimum of 2.0 lakhs to a maximum of 6.5 lakhs with an average of 2.5 lakhs of nesting female turtles visit the beach every year for nesting and egg laying).

2. Off-shore research on the biology of the Pacific Ridley turtles.

OBJECTIVES

This off-shore Research Centre was established at Beleswarpatana on the bank of the river Nuanai, 10 km. away from Puri along the Puri-Konark marine-drive road within the Balukhand Wildlife Sanctuary during the year 1985 - 86.

The basic objectives of this Sea Turtle Research Centre are to study on the following important aspects:

- i. Environmental Sex Determination (ESD) of sea turtles by incubating the eggs at controlled temperature and moisture conditions. (This is most important aspect of study for future management of sea turtles).
- ii. Collection of eggs from "sporadic" nests from adjacent beaches, incubation of eggs under simulated conditions and study on incubation and hatching success, etc.
- iii. Food and feeding habits and food preference in captivity.
- iv. Food vis-a-vis growth of turtles in captivity to highlight food conversion.
- v. Behaviour of the turtles of various year classes with change of seasons.
- vi. Health problems and preventive measures in captive husbandry conditions.
- vii. Seasonal change of salinity in the river/sea water and its impact in the physiology of turtles.
- viii. Age of maturity, and captive breeding of sea turtles which is so far an intriguing aspect of study to the biologists.
- ix. To provide educative and recreational facilities to the public and tourists.

ACHIEVEMENTS

The Marine Turtle Research Centre was started with only 26 turtles of about two years old (1984 hatching), which were brought from Gahirmatha Marine Turtle Research Centre on 26.1.86. Those turtles are accommodated in plastic pools of different diameters and brackish water from the nearby Nuanai river is pumped into the pools on alternate days. Proper hygienic conditions are maintained in and around the pools and the pool water is being kept clean. Turtles are fed daily with marine fish and prawns (Table 1).

At the beginning there was casualty among the turtles. Several causes are being attributed for their sickness and death, the major being the want of clear saline water (clear sea water) in the rearing pools. The river water is remaining dirty/turbid during the entire rainy season (June to October) and salinity of the river water decreases to degree zero in the months of July and September. After rains, the salinity gradually increases (November onwards) and reaches the maximum in hot summer months (April and May).

It has been experienced/observed that the marine turtles need:

- i. Very clear water,
- ii. hyper-saline water (20 ppt. and above),
- iii. large volume of water (they are more aquatic than terrestrial, very rarely come to land and they like diving) and;
- iv. fresh food (fish, crustacea and other marine food).

During the entire rainy season, when the river water is most turbid and the water is almost fresh, the turtles are shifted to the sea beach (about 2.0 km away) and with much difficulty sea water is pumped into the rearing pools. By this process the casualty among turtles has been checked to a greater extent. Due to the want of a large rearing-cum-breeding pool with simulated natural conditions, it is becoming difficult to accommodate and rear the large size turtles in the existing plastic pools. Again, it is not possible to pump the water directly from the sea through pipe lines into the rearing pools at the Centre.

The sea turtles are almost matured and their growth is quite satisfactory. The growth rates of sea turtles at the Nuanal Marine Turtle Research Centre are given in Table 1.

During the last winter season (Dec. 1989 and Jan. 1990), courtship behaviour of one male with two female turtles in one of the rearing pools was observed for a couple of times. If better facilities are provided, these turtles may breed in near future and will provide a lot of valuable data on breeding biology of Pacific Ridley turtles.

CONCLUSION

Little is known about the ecology and biology of the Pacific Ridley Turtles and our knowledge on this species is only piecemeal. Although no significant achievements have been made either on research side or in the husbandry conditions of Sea turtle at the Research Centre, due to several constraints, but a lot of valuable baseline data has been collected on food and feeding, growth rate, behavioural aspects and above all the seasonal change of salinity in the river and its impact in the physiology of turtles which will be of immense help for large scale "rear and release" and also captive breeding of sea turtles in future.

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TABLE 1

Rates of daily feeding, and average growth (% given in parentheses) in total body length and body weight of *L. olivacea* in captivity.

Age of the turtles	Quantity of daily food (gm.)	Average length (cm) (n=12)	Average body weight (kg) (n = 12)
At hatching	...	6.0	0.016
1st year	005-100	30.0 (400%)	1.150 (708.7%)
2nd year	200-300	54.5 (81.6%)	8.600 (647.8%)
3rd year	300-400	73.1 (79.0)	18.250 (112.2%)
4th year	400-600	83.0 (13.5%)	26.000 (43.4%)
5th year	600-800	87.4 (5.3)	32.200 (23.0%)
6th year	1000	90.2	35.500