

GOLDEN JUBILEE CELEBRATIONS

Souvenir

2000

**Issued at the National Symposium on
Eco - Friendly Mariculture Technology
Packages - An Update, held at
Mandapam Camp, 25 - 26 April 2000
to mark the Golden Jubilee Celebration of
Staff Recreation Clubs**

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Marine Turtles of Gulf of Mannar, Tamil Nadu

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Introduction

Marine turtles have very long geologic history. They were common in the Cretaceous, 130 million years ago and their fossil record extends back atleast 200 million years. They lived together with dinosaurs and have survived the giant plesiosaurus and Ichthyosaurus. All present day genera and species originated in the period from the early Eocene to the Pleistocene between 60 and 10 million years ago. Together with the marine snakes and iguanas, they are the only surviving seawater adopted reptiles. Their distribution is mostly tropical and subtropical and they depend on the land only during the reproduction period.

India has been playing a major role in the protection and conservation of endangered and vulnerable species of animals and plants. Wildlife ecology has received great attention in the terrestrial sanctuaries and parks. Great interest is now focussed on the study of marine turtle resources in our Exclusive Economic Zone to develop proper conservation and management measurers.

The turning point has been the promulgation of the Indian Wildlife (Protection) Act 1972 wherein all species of marine turtles have been included as endangered species in Schedule - I and are thereby completely protected. They are also been incorporated in Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES).

The marine turtle fauna of India

Marine turtles are known to inhabit all along the coast of India including the Gulf of Mannar, Lakshadweep and Andaman and Nicobar Islands. Five species inhabit the Indian

waters and are capable of taking long distance migration. In the order of abundance they are the olive ridley *Lepidochelys olivacea*, the green turtle *Chelonia mydas*, the hawksbill *Eretmochelys imbricata*, the loggerhead *Caretta caretta* and the leather back *Dermochelys coriacea*.

Lepidochelys olivacea (Olive ridley turtle)

This is the most common marine turtle in Indian waters. Very heavy concentration of this species occurs in Orissa Coast. Mass nesting occurs in a stretch of 15 km Gahirmatha beach during January - March every year. This species nests both in the east and west coasts of India, as well as in the Bay Island.

Chelonia mydas (Green turtle)

This is the largest species found in the Indian waters. It occurs in the west and east coasts of India, Lakshadweep and Andaman & Nicobar Islands. The name green turtle indicates the green colour of the fat. It is predominantly herbivorous and feeds on seagrass. This species was highly priced and there was a directed fishery for the green turtle in the 1970s in the Gulf of Mannar area.

Eretmochelys imbricata (Hawksbill turtle)

It is comparatively a small turtle and numerically less abundant in the Indian waters than the other species. It is reported from Lakshadweep, southeast coast, Tamilnadu and Andaman & Nicobar Islands. It feeds mainly on sponges, crabs and molluscs. As it frequently feeds on poisonous marine animals, the flesh of this species is often reported to be poisonous.

***Caretta caretta* (Loggerhead turtle)**

This species is reddish brown in colour and is characterised by a large head in relation to the body size. In India, it is recorded only from the Gulf of Mannar. It is a carnivore, feeding on crabs, fish and other benthic animals.

***Dermochelys coriacea* (Leatherback turtle)**

Individuals of this species attain a weight of 500 kg. A thick leathery tissue covers the bones of the shells and hence the common name. Indiscriminate poaching of eggs in the 1970s caused the disappearance of this species in the mainland coastal waters. However, they occur in pristine beaches and adjacent waters of Little Andamans and Nicobar Islands.

Marine turtle fishery in the past (Gulf of Mannar)

Turtles were caught from Gulf of Mannar and Palk Bay from very ancient time. An estimate by the CMFRI during sixties that an average about 3000 to 4000 turtles were landed every year between Pamban and Cape Comorin. In the Palk Bay the fishery was of a much lower level and about 1000 turtles were landed annually between Rameswaram and Mimisal. The main fishing centres in the Gulf of Mannar were Pamban, Kilakarai, Tuticorin, Ovari, Kuttankuli, Periathslai and Cape comorin while along the Palk Bay, the centres were Rameswaram, Tondi, Tirupallakudi, Devipattinam and Pamban. The green turtle constituted about three fourth of the total catch. Olive ridley and loggerhead formed about 20% of the catch. The catch was mainly sent to Tuticorin from different places of capture. The assembling centres for turtles in the Gulf of Mannar are Rameswaram, Kilakarai and Tuticorin and on the Palk Bay coast Tondi and Pamban. At these places special pens were constructed in the sea close to shore for keeping the turtles alive. Turtles were caught by special type of wall nets made of fibres of Acacia or of cotton

yarn. Two types of nets known as 'Pachu Valai' and 'Kattivalai' were used each requiring between 5 to 8 men for operation. There was a regular trade of olive turtles between India and Sri Lanka until recently. The meat and shell were exported for food and ornamental work. This large scale exploitation of this marine animals have resulted in their depletion in our waters and almost reached a state of endangered status. Thanks to legal measures recently adopted that this "living fossils" are getting relieved of exploitation pressure, though clandestine captures is still going on at certain places.

Present status

At present all the five species of turtles occurring in Indian seas are protected as they are placed in Schedule - I of the Indian wildwife (Protection) Act 1972 as per the Amendments made to the Schedule in September 1977. India abides by the Convention of International Trade in Endangered species of wild fauna and flora (CITES) which prohibits the trade in turtle products by member countries. In June 1981, India became a party to the Bonn Convention on the Conservation of Migratory Species of wild Animals. Some of the marine habitats such as coral reef areas in the Gulf of Mannar, form the feeding grounds for turtles, None of the five species are endemic and may undertake long migration to feeding and breeding grounds often across international boundaries.

The work of the marine turtle project of Central Marine Fisheries Research Institute has created awareness in Tamilnadu and adjacent maritime states in developing and enlarging conservation programmes for marine turtles.

Incidental catch

A major threat which still persists is the incidental catch of marine turtles in fishing gears like trawl net and gill net. In India the total number of mechanised craft has increased from 19, 210 in 1980 to 57, 706 in 1995. Almost, the entire fishing fleet exploit the inshore area <50 m depth exerting enormous pressure on the living resources.

The Central Marine Fisheries Research Institute besides its headquarters has 12 research centres and 30 field centers along the coast of India from where data on exploited marine fishery resources from artisanal and industrial sectors are being collected and evaluated. The National Marine Living Resources Data Centre (NMLRDC) also collects data on the incidental catch of marine turtles in all the fish landing centres by designating code number for the five species of marine turtles.

From the data thus collected on the incidental catch in all the maritime states in India during 1985-95, it could be observed that 335 marine turtles were incidentally caught all over the Indian coasts. It is estimated that 17.8% of the incidental catch was by the trawlers and 76.5% by the gill netters.

The incidental catch appears to have sharply decreased considering the large scale capture in earlier prior the enforcement of wildlife protection Act. The reasons for the decline despite increase in the number and efficiency of fishing craft are.

- i. Awareness of the fishermen to release the marine turtles.
- ii. Lack of demand for turtle meat even if brought to the shore due to vigilance by different agencies and
- iii. Implementation of a 31 km inshore fishing ban on mechanized trawlers to prevent massive annual incidental take.

Management strategies

The Central Marine Fisheries Research Institute (ICAR) in 1984 organized workshop jointly with the Department of Environment, Government of India, Madras Crocodile Bank and Marine Biological Association of India at Madras and a number of suggestions were made for effective conservation and management of marine turtles in India.

They are Habitat Preservation of the present critical areas, already identified vulnerable areas, new areas and the national sea shore system, species preservation through recovery programmes, translocation of nests and setting up of hatcheries, legislation and enforcement of prevalent laws and regulations and future requirements, research pertaining to biology, ecology, transportation of marine turtles. Appropriate legislations be formulated to prohibit use of mechanical or manual means, tools or any destructive instruments to kill marine turtles from the EEZ of the country.

Research

Directed research be undertaken of marine turtles. A planned survey be launched along the Indian coast to identify nesting beaches. Investigations on beach erosion and accretions particularly at the important nesting beaches be intensified. The unique phenomenon of congregation of world's largest population of marine turtles at the Gathimatha (Orissa State) and adjacent regions be immediately studied.

Turtle hatchery programmes be encouraged with adequate financial support. Trials with turtle excluder device in trawl nets may be initiated and the gear modified to suit Indian waters. For future conservation practices it is necessary to explore options of sustained exploitation.

A co-ordinated and centralised mark recovery programme for marine turtles may be initiated. A centralised data bank to facilitate collection and dissemination of information is needed. Research committee for marine turtles in India may be established by the Ministry of Environment & Forests, Government of India. A co-ordination committee be established for the maritime states to facilitate formulation of co-ordinated action plan and its implementation for the conservation and management of the marine turtles resources.

Education, training and extension

Concerted efforts be made on mass education of the public, fishermen and school children. Organised training courses be offered

to field officers and extension officers who are involved with marine turtle conservation programme. Extension programme relating to turtle conservation be strengthened and intensified.