MARINE TURTLE RESOURCES OF INDIA

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Abstract

Sea turtles are ancient reptiles that have changed little over their 150 million year history on Earth. Turtles are the oldest living vertebrate animals. They may live to be 100 years old. They have been on Earth for 150 million years since even before the time of the dinosaurs. They are the largest reptiles in the world by weight. A giant leatherback that washed up along the coast of Wales weighed over 2,000 pounds and measured 9 1/2 feet from head to tail. They do not have teeth, but have powerful jaws with sharp edges, like birds. Turtles are adapted to living in the marine environment by having flippers instead of legs and a stream lined body shape, so they are fast and graceful in the water, but slow and clumsy on land. They breathe air like all reptiles and human, and can hold their breath for long periods of time and can dive very deep (Fugazzatto and Behera, 1999).

There are seven species of sea turtles found in the world's warm oceans. They are Chelonia mydas (Linnaeus, 1758) (Green Turtle), Chelonia depressa Garman, 1880 (Flatback sea turtle), Eretmochelys imbricata (Linnaeus, 1757) (Hawksbill Turtle), Caretta caretta (Linnaeus, 1758) (Loggerhead Turtle), Lepidochelys olivacea Eschschlotz, 1829 (Olive Ridley), Lepidochelys kempii Garman, 1880 (Kemps ridley sea turtle) and Dermochelys coriacea (Vandelli, 1761) (Leatherback Turtle) of which five species of marine turtles are reported from India. They are Chelonia mydas (Linnaeus, 1758) (Green turtle), Eretmochelys imbricata (Linnaeus, 1757) (Hawksbill Turtle), Caretta caretta (Linnaeus, 1758) (Loggerhead Turtle), Lepidochelys olivacea Eschschlotz, 1829 (Olive Ridley) and Dermochelys coriacea (Vandelli, 1761) (Leatherback Turtle).

INTRODUCTION

Sea turtles are ancient reptiles that have changed little over their 150 million year history on Earth. Turtles are the oldest living vertebrate animals. They may live to be 100 years old. They have been on Earth for 150 million years since, even before the time of the dinosaurs. They are the largest reptiles in the world by weight. A giant leatherback that washed up along the coast of Wales weighed over 2,000 pounds and measured 9 1/2 feet from head to tail. They do not have teeth, but have powerful jaws with sharp edges, like birds. Turtles are adapted to live in the marine environment by having flippers instead of legs and a stream lined body shape, so they are fast and graceful in the water, but slow and clumsy on land. They breathe air like all reptiles and human, and can hold their breath for long periods of time and can dive very deep (Fugazzatto and Behera, 1999).

Turtle is the term used for a group of reptiles of the order Testudinata whose members are recognized by their short wide bodies encased in a protective armour, the 'shell' which is composed of the dorsal carapace and the ventral plastron. They are devoid of teeth but are provided with the horny sheaths. The body is covered with polygonal scutes or scales or a leathery skin. The word "turtle" is generally used to denote semi aquatic and marine species, "terrapin" to the hard-shelled freshwater species that are edible and "tortoise" to the strictly terrestrial species (Murthy, 1981).

TURTLE RESOURCES OF INDIA

The following are the sea turtles represented from India;

Class : Reptilia

Sub-class	:	Anapsida
Super-order	:	Lepidosauria
Order	:	Testudina
Suborder	:	Cryptodira

Family: CHELONIDAE (Marine Turtles)

Chelonia mydas (Linnaeus, 1758) (Green Turtle)

Eretmochelys imbricata (Linnaeus, 1757) (Hawksbill Turtle)

Caretta caretta (Linnaeus, 1758) (Loggerhead Turtle)

Lepidochelys olivacea Eschschlotz, 1829 (Olive Ridley)

Family: DERMOCHELIDAE (Marine Turtles)

Dermochelys coriacea (Linnaeus, 1766) (Leatherback Turtle)

NESTING OF SEA TURTLES

A variety of qualitative terms have been used to describe occurrences of turtles beyond their breeding ranges, primary foraging areas and known migratory patterns (Wing and Hodge, 2002). Turtles migrate thousands of miles in the course of a year, moving between nesting and feeding grounds. An olive ridley tagged in Surinam, South America travelled 1,900 miles against the prevailing currents in 23 days. Most species mate singly, but the ridley species have a unique mass nesting strategy called the "*arribada*", which is the Spanish term for arrival. Anywhere, from 500 to 150,000 female ridleys, will appear on the beach at the same time (all of them within a couple of days) to lay their eggs. This makes it impossible for a natural predator to take all the eggs that are laid, and increases the odds of hatching survival. Leatherback, green, olive ridley and loggerhead turtles are the most widely distributed species and have the habit of

migrating long distances for feeding and breeding. Nesting takes place in a colonial fashion. Hawksbill turtle is not seen in large numbers, as it prefers an independent life. It nests individually in localities far apart. Temperature at the time of incubation determines the gender of the hatchlings. The hatchling will be male if the eggs incubate at a cool temperature and female if the eggs incubate at a warm temperature (Marquez, 1990).

The coast of Orissa, in the eastern part of India on the Bay of Bengal, is the most important sea turtle nesting area in India and possibly the most important olive ridley nesting site in the world due to the incredible numbers of sea turtles coming ashore. It is estimated that upto one million sea turtles have nested in Orissa during a single year during the mid 1980s. There are several major nesting beaches along the coast of Orissa, including Gahirmatha, Rushikulia in Ganjam, Konark – Balukhand and the Devi coast. Historically, Gahirmatha is the world's largest nesting site for olive ridley sea turtles. On this 35 kilometer long stretch of beach as many as 6,90,000 turtles nested in a single year. A 20 km radius of off shore habitat along the 35 km stretch has been declared a marine sanctuary where trawling is banned. At Ganjam, 200,000 turtles nested in a single year, making it the second largest nesting site in India (Pandav and Choudhury, 1999).

Table 1. Nesting areas and nesting seasons of marine turtles of India

Species	Nesting Area	Nesting Season	Intensity
Green turtle	Kutch, Sourashtra	-	Moderate
	Maharashtra	July - Jan	Sparse
	Tamil Nadu	July - Jan	Sparse
	Andaman and Nicobar	Nov. - Jan.	Moderate
	Lakshadweep	June - Sept.	Moderate
Hawksbill	Tamil Nadu, Andhra	-	Extremely low
	Orissa, Gujarat	-	Rare
	Andaman and Nicobar	April - Jan.	Moderate
	Lakshadweep	-	Rare
Leatherback	Tamil Nadu	-	Very rare
	Andaman and Nicobar	Dec. - April	Moderate
	Lakshadweep	-	Stray
Loggerhead	Tamil Nadu	-	-
Olive ridley	Gujarat	July - Sept.	Moderate
	Maharashtra, Goa	July - Sept.	Stray
	Karnataka, Kerala	July-Sept.	Stray
	Tamil Nadu	Dec. - Feb.	Moderate
	Andhra	Dec. - Feb.	Moderate
	Orissa	Dec. - Feb.	Mass Nesting
	West Bengal	Dec. - Feb.	Moderate
	Andaman and Nicobar	Dec. - Feb.	Stray
	Lakshadweep	June - Sept.	Stray

PRESENT STATUS

IUCN Red Data Book recognises seven categories such as Extinct (Ex); Endangered (E); Vulnerable (V); Rare (R); Indeterminate (I); Out of danger (O); and Insufficiently known (K) which can be assigned to any particular species of plants and animals for determining its status for conservation purposes. The recent edition of the IUCN Amphibia, Reptilia Red Data Book (1982) compiled by Groombridge has listed 6 of the 7 species of living sea turtles in their various categories, which are as follows:

Species Name	Status
FAMILY: CHELONIIDAE	
Caretta caretta	Vulnerable
Chelonia mydas	Endangered
Eretmochelys imbricata	Endangered
Lepidochelys kempii	Endangered
Lepidochelys olivacea	Endangered
FAMILY: DENNOCHELYIDAE	
Dermochelys coriacea	Endangered

Thus, five species of living sea turtles are at present endangered, one is vulnerable and another species, the flatback sea turtle, *Chelonia depressa* which was formerly listed as "Rare" in the IUCN Red Data Book (1975, 1979), has been excluded from the Red Data Book categories of the 1982 edition (Groombridge, 1982).

CONCLUSION

As the number of nesting sites are getting reduced in the recent past, the following measures can be adopted to conserve their population,

- Mandatory use of Turtle Excluder Devices (TEDs) in fish trawlers.
- Habitat Preservation by casuarina plantations.
- Strict enforcement of conservation laws and regulations.
- Further research on turtle biology.
- Mechanised fishing vessels should not be allowed in the protected areas during the nesting seasons of the turtles.
- Fishing jetties and harbours should be constructed far away from the protected areas.
- National policy on the conservation of sea turtles should be developed.
- National coordinated programme for studies on sea turtles.
- Conservation of nature and natural resources should be placed above economic gains.
- Awareness among youth and children should be developed with regard to the conservation of natural wealth of the country.
- Socioeconomic conditions of the people depending on the marine resources should be highlighted.

Conservation measures should always take this into account.

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