



## Status Of Olive Ridley Sea Turtles (*Lepidochelys Olivacea*) In Srikakulam District, Andhra Pradesh

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### Abstract:

Olive ridley turtles (*Lepidochelys olivacea*) exhibit more prominent nesting activity along the coast of India, with major mass nesting beaches in the state of Orissa. Increasing hunting and anthropogenic activities made these sea turtle group into IUCN vulnerable category. Conserving the population and diversity of these turtles has significant ecological role i.e., nourishing the dune vegetation, and help to prevent coastal erosion. The present study focused to evaluate the status of olive ridley turtles population and nesting activity in three hours interval of 4 study regions (namely Kapaskuddi, Battivanipalem, Donkuru and Kalingapatnam) of Srikakulam district, Indian state of Andhra Pradesh. This long term ecological study might provide future perspectives for the conservation of sea turtles population and diversity.

**Keywords:** Biodiversity, Olive ridley turtles, Srikakulam district, Nesting activity.

### Introduction :

Olive ridley turtles (*Lepidochelys olivacea*) nest along the east and west coasts of India, with major mass nesting beaches in the state of Orissa. The coast of Andhra Pradesh, the state immediately south of Orissa, has sporadic nesting of olive ridley turtles and is believed to form part of the migratory route of the turtles that nest in Orissa. Five species of marine turtles have been reported from Indian waters: the leatherback *Dermochelys coriacea*, hawksbill *Eretmochelys imbricata*, loggerhead *Caretta caretta*, green *Chelonia mydas* and olive ridley turtle *Lepidochelys olivacea* (Kar & Bhaskar, 1982). All except the loggerhead turtle have been reported from the State of Andhra Pradesh on the east coast of India (Dutt, 1976, 1979; Biswas, 1982; Kar & Bhaskar, 1982) but only olive ridley turtles have been reported to nest (Kar, 1983; Subba Rao *et al.*, 1987). All five species are included in Schedule I of the Indian Wild Life (Protection) Act 1972, and are thereby accorded the highest degree of protection under the law; hunting of the turtles or damaging the eggs is strictly prohibited.

Olive ridley turtles are worldwide distributed and categorized as Endangered on the IUCN Red List (IUCN, 2002). Because Rushikulya, the southernmost mass nesting rookery in Orissa, is only 50 km from the Orissa–Andhra Pradesh border, the Andhra Pradesh coast could be an important nesting habitat for olive ridley turtles. The species is known to nest on the northern Andhra Pradesh coast (Raja Sekhar & Subba Rao, 1993, Priyadarshini, 1998) and large numbers have been reported to travel through the offshore waters of the states of Tamil Nadu and Andhra Pradesh to and from the nesting beaches of Orissa (Kar, 1983; Raja Sekhar & Subba Rao, 1993). However, little is known about the distribution and density of offshore aggregations or nesting along the coast, and there has been growing concern that, due to a rapid increase in the intensity of mechanized fishing along the Andhra Pradesh coast, significant mortality of turtles may be occurring during their breeding migrations. Although fisheries related mortality of marine turtles has been reported along this coast (Rao, 1984; Subba Rao *et al.*, 1987; Raja Sekhar & Subba Rao, 1993; Priyadarshini, 1998), there have been no systematic surveys of the entire coast. In this context, a survey of the Andhra Pradesh coast was conducted to assess the status of marine turtles and their nesting habitats. In this paper, we report the results of nesting and offshore surveys, assess the threats to this population and to its nesting habitats, and suggest conservation strategies based on our findings.

### Review of Literature :

On the East coast of India, the status surveys of marine turtle in particular to Olive ridleys of Bay of Bengal were carried out by Valliappan and Whitaker (1974), Kar and Bhaskar (1982), Biswas (1982), Bhaskar (1979) on the Andaman & Nicobar Islands, Bhaskar (1980) on the status of sea turtles in the Eastern Indian Ocean, Bustard and Kar (1981) on intensive survey on Olive ridleys in Odisha.

Survey on the important sporadic nesting habitats of Olive ridley turtles in Andhra Pradesh coast were carried out by Tripathy *et al.* (2003). Studies on Conservation and Management of Olive ridleys for the past four decades along northern Andhra coast were carried out by Subba Rao *et al.*, (1983), Raja Sekhar (1987 and 1999), Tripathy (2003), Bharatha Lakshmi *et al.* (2008) and Raja Sekhar *et al.*, (2009).

Pandav(2000) and Tripathy (2004a) Tripathy *et al.*, (2003) have conducted a study on sporadic nesting habitats and nesting beaches of Olive ridley along the Andhra Pradesh coast as part of United National Development Programme

(UNDP) Sea Turtle Project. During this survey the entire Andhra Pradesh coast was divided into three zones, i.e., Northern, Central and Southern Andhra Pradesh, based on broad topographical differences. East zone was divided into sectors based on physiographic features such as river mouths, bays and estuaries.

**Study Area :**

Andhra Pradesh is one of the largest maritime states in India (Fig. 1). The 980 km coastline extends from the Bahuda River mouth at the border with Orissa in the north to Pulicat, a large brackish water lagoon, in the south. The northern coastline is rocky with some sandy beaches. the central coast has river deltas and mangrove swamps, and the southern coast is largely sandy.

The natural beach flora along this coastline comprises mostly psammophytes, particularly *Ipomea pes-caprae*, *Spinifex littoreus* and *Launea sarmentosa*. However the dominant flora along the coast are palmyra *Borassus flabellifer* and *Casuarina litorea* plantations on the beach, mostly established by the state Forest Department as barriers against cyclones. Cashew *Anacardium occidentale* and coconut *Cocos nucifera* in have also been planted some areas.

Kapaskuddi village of Kaviti mandal in Srikakulam district is selected for the study area since it is the nearest place to Odisha .This area is known for sporadic nesting area for Olive ridley sea turtles . Kapasukuddi is surrounded by Ichapuram Mandal towards North , Kanchili Mandal towards west , Sompeta Mandal towards west , Patrapur Mandal towards North. This Place is in the border of the Srikakulam District and Ganjam District,Odisha . Total area of Kapasukuddi is 712 hectares. The area has plantations of Casuarina, Coconuts and Paddy. The socio economic status of the fishermen in this zone is satisfactory. Approximately 6000 turtles nested during this year.

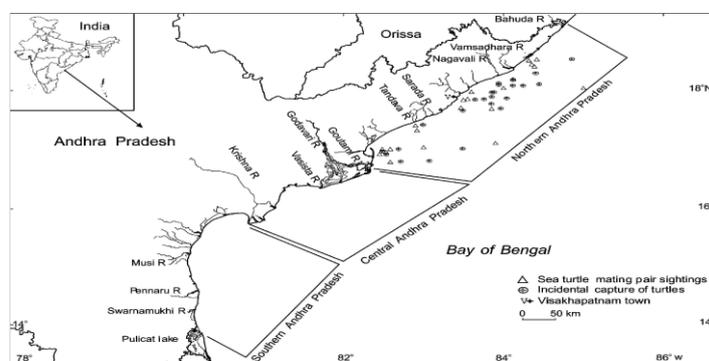


Figure 1: Study Area

**Material and methods**

The entire coast with fishing villages including hamlets and temporary dwellings were covered during the survey of Olive Ridley nesting season. Personal observations and data through various sources obtained. Secondary information was collected pertaining to sea turtles nesting and off-shore migration through interactions with local communities, Fisheries Department personnel, Coastal Forest Divisions, Central Marine Fisheries Department personnel and fishermen who were regularly fishing in the marine waters in the effective limits of 5-10 Km were also interviewed. Questionnaires were prepared for obtaining information such as the occurrence and seasonality of mating, egg-laying and predation of eggs and the major fauna inhabiting the surroundings by interviewing coastal residents mostly belonging to fishermen community. Nesting densities were higher at beaches near river mouths, at 60–100 nests km<sup>-1</sup> in northern and central Andhra Pradesh, and 15–20 nests km<sup>-1</sup> in southern in southern Andhra Pradesh.

The nesting survey was carried out in two parts: intensive surveys of seven beaches and monthly surveys of the rest of the coast. Nesting in Orissa to the north and Tamil Nadu to the south is primarily between January and March, with very low levels of nesting in December and April (Shanker, 1995; Pandav *et al.*, 1998). Nesting crawls and depredated nests were counted to evaluate nesting densities. Olive Ridley turtles are believed to prefer nesting sites near river mouths (Pritchard & Mortimer, 1999) and as mass nesting sites of ridley turtles in Orissa are known to be adjacent to river mouths (Pandav *et al.*, 1998).

The fishers identified the species from photographs and had local names for each species. Olive ridley turtles are known as *punuku tambelu* (*punuku*=hole, *tambelu*=turtle) for the small pore near the rear margin of each of the four infra-marginal scutes in their plastron.

In Hindu mythology marine turtles are worshipped as an incarnation (*kurma*) of one of the Hindu gods, and hence most fishing communities along the coast do not consume turtle meat.

**Results**

Table 1: Beach Characteristics of Ganjam with reference to sea turtle nesting .

S.No.	Area	Beach Composition
1	Kapaskuddi	Dry and sandy
2	Battivaniapalem	Dry and sandy
3	Donkuru	Dry and sandy
4	Kalingapatnam	Dry ,rocky and sandy

The beaches selected by the nesting Olive ridleys were fine sandy areas with a gradual slope and often edged with small patches of ground vegetation at the high beach platforms. The Government of Andhra Pradesh has planned a number of new harbours, which are likely to result in an increase in fishing craft, gear and operations, leading to increased fisheries related mortality along the coast.

The fauna consist of the mainly crabs like ghost crabs, *Ocypoda sps*, *Uca sps*, several other species of insects like mites, ants and insect larvae (maggots), birds like Seagulls *Larus brunnicephalus*; Cattle egrets, *Bubulicus ibis*, Cormorants, *Phalacrocorax sps*, Pond herons, *Ardeola grayii* and domestic Crows *Corvus splendens* Kites, *Milvus sps* and some wetland dependent raptors were most dominant.

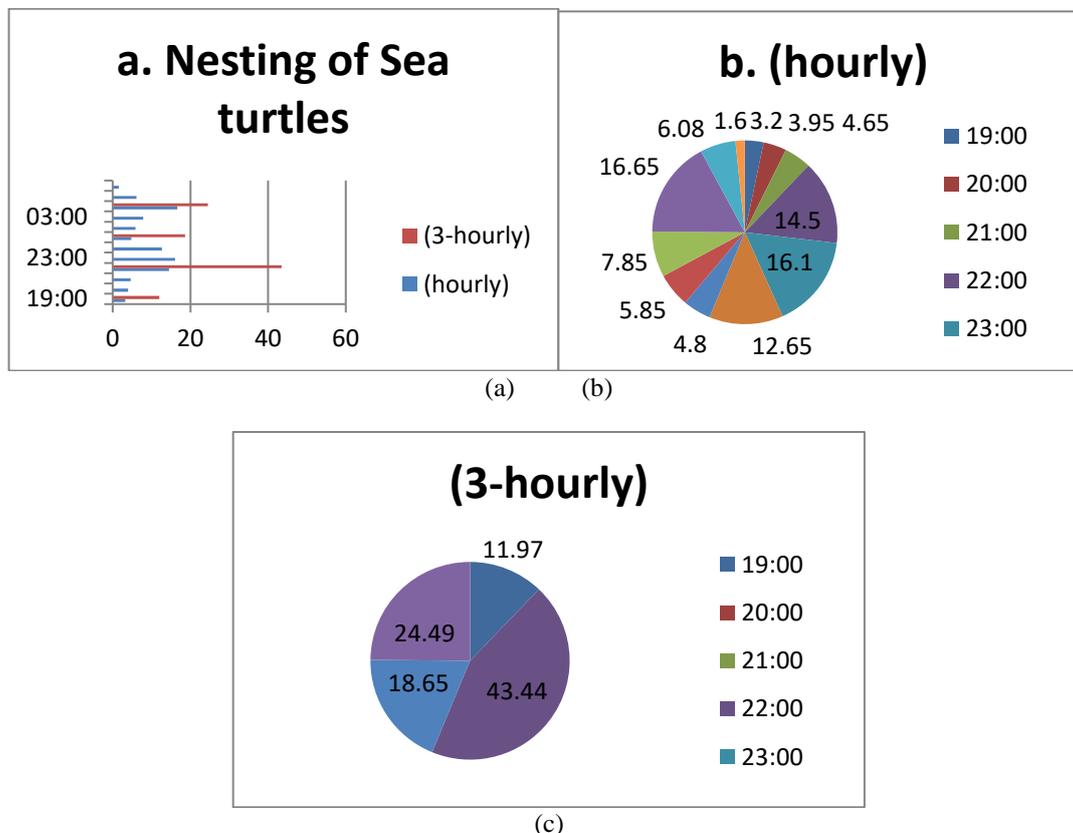
Of mammals, Jackals, Foxes, Rabbits, Wild Pigs, Hyaenas, Wild cats and domestic cats were most common in most of the areas edged with dense vegetation. The feral dogs and pigs were common in the areas where human habitation is more.

**Table 2: Frequency of nesting of the Olive ridley, sea turtles at hourly and three hourly intervals-Srikakulam District, Andhra Pradesh.**

Time (h)	% nesting of sea turtles	
	(hourly)	(3-hourly)
19:00	3.20	11.97
20:00	3.95	
21:00	4.65	
22:00	14.50	43.44
23:00	16.10	
24:00	12.65	
01:00	4.80	18.65
02:00	5.85	
03:00	7.85	
04:00	16.65	24.49
05:00	6.08	
06:00	1.60	

h=hour

% = Percentage



**Figure 2(a) Nesting of sea turtles (b) Hourly nesting (c) 3 hourly nesti**

**Discussion**

The migration of Olive ridleys to the coastal waters of Andhra Pradesh ,India from Indian Ocean begins in October and some of the breeding turtles are sporadically nesting all along the Srikakulam coast of Andhra Pradesh. Whereas

intensive sporadic nesting has been taken place at major river mouths of Godavari river, Vamsadhara and Nagavali rivers of northern part of Andhra Pradesh from February to April (Raja Sekhar, 1999 and Tripathy et al., 2003). In winter months (December to March) the Olive ridleys migrate from Indian Ocean along the coasts of Tamilnadu and Andhra Pradesh in order to reach their mass nesting (Arribada) sites in Odisha. During migration many of the turtles are selecting nearby suitable habitats for their nesting activity (Kar, 1983). This type of sporadic nesting has been gradually increasing in recent years.

**Conclusion :**

The Olive ridley sea turtles nest sporadically along the coast with comparatively higher nesting along the coasts. Fishing operation appears to be one of the major reasons for total mortality. Studies on the breeding biology of turtles along the coasts, and long term ecological investigations would provide further insights in evolving Sea Turtle Conservation Programme at National level.

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