

not have come this far. Also to the teachers Cecilio Reyes, Paquita Alicea, Lizaida Peña, Noramid Peña, Luis González for your help with the project format. Also we must thank the pioneer students and technicians for your collaboration and for allowing us to interview you. Lastly, and most importantly, thank you to the students of Antonio R. Barcelo School of Culebra without whose unconditional support the turtle project would not function as well as it has; many thanks students; continue your belief in conservation and protection of endangered species who give satisfaction to you as well as to your town. Thank you.

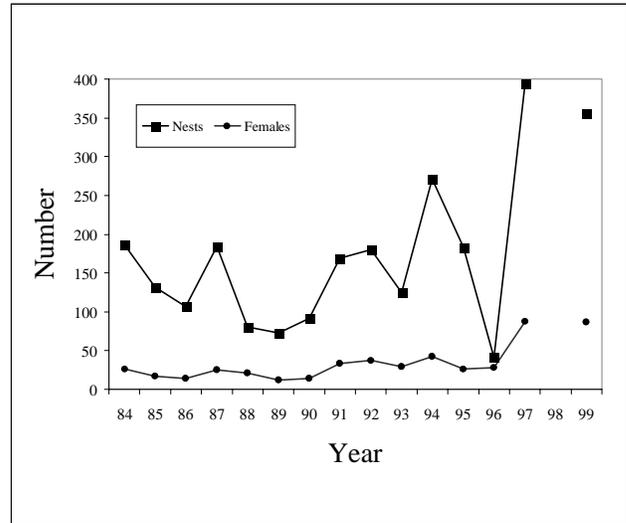
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Fig. 1. Annual numbers of females and nests, Culebra, P.R., 1984-1999 (Tucker 1988; Tallevast 1990; Soler 1999). There is no data for 1998.



Extension Programs for Conservation Measures to the Nesting Olive Ridley Sea Turtles at East Coast of Andhra Pradesh, India

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For the Conservation and Management of Olive Ridelys Sea Turtle Campaign Programme were conducted in the coastal areas of districts of Srikakulam, Vizianagaram, Visakhapatnam and East Godavari of North Andhra Pradesh, India (Fig. 1). Human inhabitation is a marked feature of this area. As a result, the presence of domestic dogs, pigs etc., is very high, whereas the human activity is meager. The presence of predators like foxes, jackals and hyaenas is also noticeable. These animals often prey upon the eggs of the olive ridley and nesting hatchling turtles. The major threat to the survival of the olive ridley and other species of sea turtles can be traced to the ignorance as well as subsistence pattern of the fishermen.

A pilot extension programme has been organized to create awareness among the fishermen with regard to the importance of sea turtles. The aim of this program is to avoid or at least to reduce the decimating impact of the human factor on the sea turtles. Extension programs are conducted at the village level to educate the importance of sea turtle conservation, with the cooperation of the Andhra

Pradesh State Forest Department (Wildlife Wing). Several posters and slides on the sea turtle conservation are displayed. Several extension lectures have been delivered in local ‘Telugu’ language at 28 colonies of fishermen to furnish them with sufficient information about the Sea turtles and their value and usefulness. They were educated on the various stages of the hatchlings of the sea turtle eggs in the nests and about their conservation. From those villages of the fishermen, some persons have been selected and placed in charge of guarding the nests on the coastline area during the breeding season of the Sea turtles. This aspect has also been explained to them through Audio–Visual aids, Pamphlets, TV, All India Radio and Press media.

The Coastline of Andhra Pradesh has 980 km and provides a major migratory route or pathway for the Olive ridelys to approach ‘Gahirmatha’ island in the adjoining Orissa state. It is here, that the largest ‘Arribada’ was reported by Bustard, 1976. It is more likely to locate a good number of turtles sporadically nesting along the coastline

of Northern Andhra Pradesh. 'Hope Island' near Kakinada, Andhra Pradesh is an important region to locate sea turtles, still exists in this region. Our extensive study of the Northern Andhra Pradesh coastline reveals that the Olive ridleys have been subjected to severe exploitation (Table 1). As a result, their nesting grounds are fast deteriorating. This makes their management for conservation purpose.

Frazier, 1980 has revealed that the different ways in which the marine turtles in the Indian Ocean are being exploited. He marked that the main motive behind their exploitation in the subsistence problem of the hunters who mainly live upon the gains of exporting the Sea turtles and their eggs which are traditionally exploited along the entire Indian coast. The same is supported by Kurian, 1950. The ever increasing trend of the turtle trade not only destroys them but also severely limits their reproduction.

In this context, an extension program, 'Save Sea turtles', was launched for turtle trade, turtle hunting and destruction of their nests has been reduced considerable from the first year to the last year of our study. This gradual decrease can be attributed to the awareness created in the minds of the people, greater protection given by hired people mostly fishermen which are also responsible for the above said programmes proved to be a success in protecting the sea turtles resources.

Based on the present study, the following recommendations are considered to be very important in conservation and management of the olive ridley sea turtles.

Stop subsistence hunting. Subsistence hunting can be avoided through intensive extension programmes in all 53 villages of our study area.

Establish beach hatcheries. Beach hatcheries can be started in all the zones with the technically trained

personnel supported by several poor fishermen and tribals.

Create a Central Sea Turtle Farm. This organisation will be fed with the newly born hatchlings from various beaches. Hatcheries should be setup to rear the hatchlings until they are one year old when they cross the most crucial period of their life cycle.

Strictly implement the Indian Wildlife (Protection) Act, 1972. Severe punishment should be impounded on the commercial exploitation of the sea turtles.

ACKNOWLEDGMENTS

We would like to take this opportunity to acknowledge Dr. P.S. Raja Sekhar and Dr. V.V. Subba Rao for their help in conducting field survey and awareness campaign in the coastal villages. We would also like to express our sincere gratitude to the organizers especially Dr. Blair Witherington, President of the Twentieth Sea Turtle Symposium during our stay at Orlando, Florida, USA for the hospitality and the travel grant.

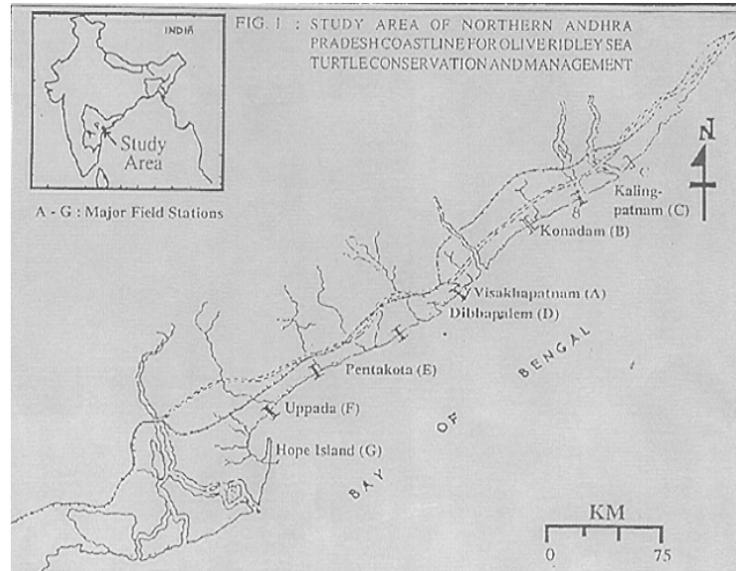
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Table 1. Factors threatening the survival of olive ridley sea turtles at different zones and divisions of the study area.

Zone	No. of Zones divided	False Crawls	Identified Nests	Human Disturbed nests	Turtle trade	Caught in fishing gear	Trapped in Drying nets	Turtles released into the Bay of Bengal	Caught while nesting	Turtles killed by Predators	Nests disturbed by Predators
A	5	47	27	78	25	128	3	19	32	0	49
B	4	32	12	54	32	68	2	12	23	1	42
C	3	40	14	51	30	92	1	10	20	1	56
D	3	51	18	75	78	101	4	23	36	1	28
E	5	51	16	53	37	93	2	11	18	1	65
F	3	78	12	52	53	55	1	17	25	1	58
G	2	68	25	79	63	111	2	11	16	4	65
TOTAL:	25	367	124	442	318	648	15	103	170	9	363

Fig. 1. Study area of Northern Andhra Pradesh Coastline for Oliver ridley Sea Turtle Conservation and Management.



Contributions by the South Carolina Department of Natural Resources to the History and Growth of the Sea Turtle Symposium

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INTRODUCTION

The South Carolina Department of Natural Resources (formerly the South Carolina Wildlife and Marine Resources Department) has hosted four of the 20 workshops/symposia. As the host agency for one-fifth of the meetings, we feel we have had an enduring influence on the direction the symposium has taken over the years. We present descriptions of the 3rd, 6th, 10th and 13th workshops/symposia, including events that were unique to each and innovations that are now an integral part of the meetings.

The Third - 1983

Place: The Marine Resources Center,
Charleston, South Carolina

Date: April 7-8

Co-Sponsors: SC Wildlife & Marine Resources Dept.
NMFS/Southeast Fisheries Center
Center for Environmental Education

Organizer: Sally Hopkins

Number attending: 108

Firsts: Invited, oral slide presentations
Poster presentations
Nighttime social - Oyster roast
Tours of the NMFS and Marine Resources Laboratories

The meeting consisted of two sessions on Thursday and one session on Friday. The oyster roast was on Thursday evening at the picnic grounds overlooking Charleston Harbor and the city.

The first session was a "Species update". The following invited presentations were given:

1. Leatherbacks-Peter C.H. Pritchard (Florida Audubon Society)
2. Green turtles-Ross Witham (Florida DNR)
3. Hawksbills-Larry Ogren (NMFS)
4. Kemp's ridley-David Bowman (FWS)

The second session was an "Agencies update". The presenters and topics were:

1. Chuck Oravetz (NMFS)-"TED Design and Usage"
2. Dan Odell (University of Miami)-"Stranding Network"
3. Jim Richardson (University of Georgia)-"Projects on National Parks"
4. Larry Ogren-"Research Projects under the Southeast Fisheries Center"
5. Bo Bricklemeyer and David McCollum-"Activities of Private Groups and Universities"

The session on Friday included talks on "Reproductive Strategies" by Whit Gibbons (Savannah River Ecology Laboratory) and Nat Frazer (University of Georgia), "Hatchling Behavior" by Sally Hopkins, and "Remote Sensing" by Richard Byles and Jack Musick. There was a Summary Session chaired by Tom Murphy and Llew Ehrhart