

## Implementation of the TED in Andhra Pradesh

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Andhra Pradesh (AP) is one of the longest maritime states in India, with a coastline of 974 km and a continental shelf area of 33,227 sq km. There are about 508 fishing villages and several hundred thousand fisher folk are actively engaged in fishing. Marine fishing operations in Andhra Pradesh are conducted throughout the year except during the closed season, i.e. April–May.

Mechanised fishing with trawl nets is one of the major fishing activities in Andhra Pradesh and the main target of this fishery is shrimp. Apart from the targeted catch, bycatch accounts for 60–70 per cent of the catch. Trawlers operating at different depths in the sea take a large amount of non-commercial bycatch including low cost fish, juveniles, jellyfish, etc. Significantly, the bycatch includes the olive ridley turtle. Extensive incidental take of olive ridleys has been reported to occur along the east coast of India, particularly Orissa (Pandav 2001) as well as Andhra Pradesh (Rajasekhar and Subba Rao 1993, Tripathy et al 2003). The use of bycatch reduction devices (BRD), including turtle excluder devices (TED), should substantially reduce the bycatch of unwanted, endangered species and facilitate judicious exploitation of fisheries resources. A large number of sea turtles are also caught in gill nets along the east coast of India (Rajagopalan et al 2001).

Other threats to sea turtles along the AP coast include poaching of eggs, and of meat to a lesser extent. Developmental activities close to the beach, plantations, industries near the coast, aquaculture practice and other factors also contribute to the decline in turtle populations (Tripathy et al 2003).

Olive ridley turtles nest all along the AP coast (see Chapter 6 for a report on olive ridley nesting in AP). Unfortunately, the nesting season of the olive ridleys coincides with the

peak fishing season, and as a result, there is significant incidental mortality of these reptiles. Hence, there is an urgent need for a holistic approach to safeguard sea turtles and realistic measures have to be adopted for their conservation. TEDs have now been made compulsory in shrimp trawling in AP and the necessary amendment was made in the Andhra Pradesh Marine Fishing Regulations Act to this effect (Vide GO Ms No. 114 AH DD and Fisheries (Fish I) Dept, dt 8 September 2001). Violation results in a fine of Rs 2,500 and confiscation of entire catch.

The State Institute of Fisheries Technology (SIFT), Kakinada the apex training institution under the Department of Fisheries, Government of Andhra Pradesh, has been involved in organising training programmes and awareness camps for fisher folk and farmers in various aspects of fisheries and aquaculture as well as health, literacy and conservation. As part of the conservation and management of sea turtles, the fisheries department was entrusted with the propagation of turtle excluder devices among fisher folk to reduce the incidental mortality of sea turtles. In Orissa, fisher folk have been reluctant to use the TED as they believe that it leads to a significant loss of catch (Mishra and Behera 2001). This belief is held along the AP coast as well. In order to promote the use of TEDs in AP, awareness camps on sea turtle conservation through the use of TEDs were organised by SIFT, Kakinada at all fishing harbours along the AP coastline. Several onboard demonstrations with TEDs were also conducted.

#### SURVEY OF MORTALITY

**Table 1.** Documentation of olive ridley mortality along the AP coast.

Village	No of carapaces	Cause of death
<i>East Godavari district</i>		
Kakinada Harbour	7	Trawl gear
Subbamapeta	7	Trawl gear
Mayapatnam	7	Trawl gear
Christupuram	2	Trawl gear
Konapapeta	3	Trawl gear
Chodipallipeta	6	Trawl gear
Addaripeta	10	Trawl gear
Hope Island	19	Trawl gear
<i>Visakhapatnam district</i>		
Palman Peta	6	Ray net
Dibba palem	8	Ray net
Thikkavanipalem	6	Ray net
Visakhapatnam	2	Trawl net
<i>Vizianagaram district</i>		
Pedakancheru	18	Ray net
Chintapalli	4	Ray net
<i>Srikakulam district</i>		
Manchineellapeta	9	Ray net
K Matsyalesam	28	Ray net
Kapasakuddi	3	Ray net



Brief surveys were conducted in December 2001 and from December 2002–February 2003 in the districts of East Godavari, Visakhapatnam, Vizianagaram and Srikakulam, to document the occurrence and causes of incidental mortality of sea turtles (Table 1). Several deaths were caused by the operation of *teku vala* nets, commonly used in Vizianagaram and Srikakulam districts to catch rays. The use of these nets coincides with the peak nesting season of turtles in these areas.

#### AWARENESS CAMPS

Awareness camps were held between October–November 2001 in the coastal districts of AP to communicate the need to conserve sea turtles (Table 2). In the awareness camps, the necessity of TEDs was emphasised. It was also explained that the government had issued orders to use TEDs in trawl nets. During the nesting season, the fabrication, assembling and functioning of TED was demonstrated. In January and February 2003, SIFT conducted awareness camps exclusively in the coastal villages of northern Andhra Pradesh (Table 3).

A mass awareness programme was launched, canvassing the need for turtle protection in fishing villages where *teku vala* nets are in operation. The fisher folk willingly agreed to stop operation of these nets during the nesting season. An egg protection committee was formed involving the community in this area to protect turtle eggs from predators and other threats.

**Table 2.** Awareness camps, 2001–02.

District	No. of villages	No. of participants
Srikakulam	7	525
Vizianagaram	3	340
Visakhapatnam	5	615
East Godavari	7	720

**Table 3.** Awareness camps, 2002–03.

District	No. of villages	No. of participants
Srikakulam	2	1,980
Vizianagaram	9	690
Visakhapatnam	10	730
East Godavari	14	2,460

#### TED DEMONSTRATIONS

The TED designed by the Central Institute of Fisheries Technology (CIFT), Kochi was fitted in the nets of AP fishing trawlers to demonstrate its use. During the demonstrations, 270 free TEDs were distributed to fisher folk—162 in Visakhapatnam and 108 in Kakinada—by the MPEDA through the Department of Fisheries. These are currently in use. Fisher folk who were unaware of TEDs were encouraged to use this device and informed that it had been made compulsory in shrimp trawling. In the awareness camps, the fisher folk were informed of the necessity of TEDs, fabrication, functioning and assembling of the TED, as well as the penalty for default.

A two-day workshop on the operation of the TED was conducted by the Department of Fisheries at Kakinada from 24–25 January 2002. On the first day of the workshop, a demonstration was organised on the use of TED in trawl nets. After the workshop, several demonstrations have been conducted at all the important fishing harbours on the operation and efficiency of TED. From these demonstrations, it is observed that the percentage of escape of fish/shrimp ranges from 0.5–3.3 per cent (Table 4). On rare occasions, the escape rate is higher and may be due to large quantities of jellyfish that would have entered the net.

These demonstrations have, to some extent, helped allay the doubts of fisher folk with regard to the TED. Some of the fisher folk have expressed a need for some refinement in the TED. Some of these requirements are:

- \* the space between the spokes should be increased,
- \* weight of the TED should be reduced.

SIFT has been in touch with the concerned organisations to attend to these issues.

**Table 4.** TED demonstration results.

Boat No	KKD 1234	KKD 1219	KKD 1021	KKD 1030	NZM 343	MZM 12	MKKD 1030	KKD 1021	VSP 506	VSP 836	MRP 020	VDR NEW	KKD 1030	KKD 1030	KKD 1021
Depth of operation (m)	30	30	30	30	36	36	35	30	40	40	20	25	30	32	33
Towing speed (knots)	2	2	2	2	4	4	4	4	4	4	4	4	4	2	2
Towing period (h)	1.5	1.5	1.5	1.5	1	1	1	1	1.5	1.5	1	1	3	3	3
No of hauls	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Catch in cod-end (Kg)	35	30	15	25	20	15	18	10	6	7	15	10	60	18	21
Catch in cover net (Kg)	0.5	0.3	0.2	0.4	0.1	0.15	0.3	0.1	0.05	0.15	0.5	0.2	2	0.7	0.8
Per cent that escape	1.43	1	1.33	1.6	0.5	1	1.66	1	0.8	2.1	3.3	2	3.3	3.6	3.5
Per cent retention of target catch	98.6	99	98.7	98.4	99.5	99	98.3	99	99.2	97.8	96.7	98	96.7	96.4	96.5

#### WORKSHOP ON TEDS

In the Kakinada workshop on the operation of TEDs—conducted by the fisheries department from 24–25 January 2002—recommendations were formulated for the AP coast.

Recommendations on protection, enforcement and regulation

- \* Inter-departmental coordination among concerned state government departments—fisheries and forest departments in collaboration with Wildlife Institute of India, fisher folk and NGOs—is necessary, as strategies for the conservation of turtles will not be successful with isolated efforts.
- \* There has to be strict implementation of the use of TEDs in shrimp trawling, as prescribed in the AP Marine Fishing Regulation Act. The fisheries department and CIFT should formulate proper regulatory measures to mitigate incidental mortality in gill nets.
- \* Feedback from the fisheries department and fisher folk must be taken into consideration for future TED designs.



- \* Reclamation of beaches and protection of nesting beaches should be taken up by the AP forest department.
- \* Illumination of nesting beaches by aquaculture hatcheries should be lessened during nesting season.

Recommendations on monitoring, research and evaluation

- \* The use of TEDs by fishing trawlers has to be monitored at sea, using patrol boats.
- \* The AP coastline has to be monitored for nesting and reports of incidental mortality; on land by the AP forest department and at sea by the AP fisheries department.
- \* Research must continue on TED technology to suit the needs of local fisheries; TED designs should be explored by CIFT, Kochi. Periodic trials with new designs of TED should be conducted in order to check efficiency.
- \* The TED information centre of SIFT should act as the nodal monitoring and information centre. The faculty of SIFT should be trained in the conservation of sea turtles and on design of TEDs.

Recommendations on community-based conservation

SIFT should play a vital role in bringing about awareness and co-ordination among all the stakeholders including NGOs, fisher folk and forest department.

- \* To popularise TEDs at all the leading fishing harbours of AP, it is necessary to safeguard the interests of fisher folk.
- \* Regional-level workshops on a small scale may be organised for a better understanding of conservation of sea turtles.
- \* Forest department officials should ensure that volunteers of *Vana Samrakshana Samithi* (Forest Welfare Group) also cater to the interests of sea turtle conservation.
- \* Formation of turtle clubs at the local level should be encouraged.
- \* Awareness among fisher children regarding conservation can be initiated at the school level by arranging debates, painting and poster-making workshops, etc.

After the workshop was completed, the enthusiasm generated among the public has influenced the fisheries department to take up more demonstration programmes in various coastal districts.

#### TRAINING PROGRAMME

A special training programme on the Implementation and Extension of TED and Conservation of Sea Turtles in AP—the first of its kind in the Department of Fisheries—was conducted for fisheries development officers and other field level officers. Demonstrations of TED at sea; the design, construction and attachment of TEDs in trawl nets; nesting beach surveys; identification of various sea turtles; protection of nesting grounds; and people's participation in the conservation of sea turtles, particularly by the local fishing communities are some of the important topics covered in the training programme. The training programme included guest lectures and a field trip to Sacramento light house, Kothapalem, East Godavari district, which is a sea turtle nesting beach.

## CURRENT PROGRAMMES AND FUTURE PLANS

The fisher folk now appear to be more willing to use TEDs in their trawl nets. However, more education and awareness programmes are required. A TED Demonstration-cum-Information Centre has been established in SIFT where the fisher folk, officers of various allied departments and the general public will be made aware of the need to protect sea turtles. Local language leaflets have been prepared and distributed at various sites and for various occasions in coastal villages. Posters highlighting the urgency to save turtles have been affixed in the villages at important places, and at fishing harbours. The young fisher folk undergoing training at SIFT were also educated and trained on the use of TED. During pre-nesting periods, there are awareness camps in all coastal villages, with audio-visual aids and published results of earlier trawl experiments using TEDs. More demonstrations have been planned at all landing centres to create awareness on the use of TEDs. Apart from this, proposals are on to conduct refresher training programmes at SIFT for all coastal fisheries staff.

## Literature Cited

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