

then in November to Paradip to impart hands-on training in manufacture, installation and operation of TED to the local artisans and fishermen. The workshop was held during 11-14 November, 1996 at Paradip in Orissa under the joint aegis of Department of Fisheries, Government of Orissa and Project Swarajya. It was attended by Marine Products Export Development Authority (MPEDA), Fishery Survey of India, National Institute of Oceanography, UNDP, and Chief Wildlife Warden, Forest Department, Orissa. In addition to the elaborate training in fabrication and fitting of TED, a practical on-sea demonstration of Georgia Jumper TED by the NMFS experts was held on 3<sup>rd</sup> day of the Workshop in the presence of the trawl owners and operators.

### **Reform of the TED Design**

Unlike the fishermen in USA and other advanced maritime countries who go for exclusive shrimp fishing, the fishermen in Indian coasts want a mixed catch of shrimp and fish in their trawl net. The Georgia Jumper TED is meant to exclude all the by-catches including fish and retain only shrimp in the net bag. Conventional design of the Georgia Jumper therefore needs to be modified to

comply with the Indian fishermen's desire for mixed catch. A simple reform can ensure the retention of mixed catch of shrimp and fish in the trawl net along with exclusion of turtles and other large size by-catch like Dolphins, Sharks etc. Firstly, enlarging the space between the bars would allow the fish to pass through into the cod end. Second, an upper opening would help turtles escape from the net while preventing the escape of small and big fish. This is suitable for Orissa, where the problem of bottom debris is minimal. The revised design will need to be subjected to repeated field testing in different parts of the country to arrive at an appropriate design for each particular coast. When a suitable design of TED is thus formulated for a particular coast, the next step would be to demonstrate it to the community of trawlers to elicit their voluntary compliance for the device.

### **Acknowledgments**

The Organisation sincerely thank the personnel of NMFS, USA and Mr. R.S. Mishra, Deputy Director of Fisheries, Government of Orissa for providing ungrudging exposure to the knitty-gritty of the TED design and operation.

## **A report on the Turtle Conservation Project, Sri Lanka**

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Five of the world's seven species of marine turtle come ashore to nest in Sri Lanka. All five species are listed as endangered by the International Union for the Conservation of Nature (IUCN) and protected under national law. Although government legislation has protected them since 1972, they are still being consistently exploited:

- TCP surveys have revealed that for the past 30 years almost 100% of turtle nests

occurring on the South and Southwest coasts of Sri Lanka have been robbed of their eggs by poachers. If this continues, TCP speculates that the nesting population of Sri Lanka will be eliminated within the next 20 years.

- Nesting females are slaughtered for their meat.
- Turtle rookeries are being disturbed and destroyed by tourist industry development.

- Feeding habitats, such as coral reefs, are being destroyed by pollution, coastal development, and unsustainable harvesting.
- Thousands of turtles are accidentally caught and drowned in fishing gear each year.
- The highly endangered Hawksbill turtle has been hunted almost to extinction for its shell to provide raw materials for the illegal tortoiseshell trade.

### **TCP Marine Turtle Conservation Program**

TCP was established in Colombo in 1993 to initiate a wide range of national and local marine turtle conservation programmes and is a registered, independent, Sri Lankan Non-Government Organisation (NGO).

### **Rekawa - model project site:**

In 1996, the TCP established its pioneering 'in situ' marine turtle conservation programme in Rekawa. Rekawa is a small village located on the South coast where five species of marine turtles nest in high densities, establishing it as Sri Lanka's most important nesting beach. Unfortunately, this resource, as well as other natural resources in Rekawa have been unsustainably exploited by the local community. The project aims to protect marine turtles in their natural habitat whilst providing an alternative source of income to local people formerly dependent on the illegal collection of turtle eggs. The TCP employs local people as 'Nest Protectors' and research assistants. The revenue from the 'Turtle Watch' and 'Turtle Adoption' schemes is used to fund the Nest Protectors salaries and other TCP environmental projects such as a mangrove nursery, model medicinal gardens, nature trail, and a rural medical clinic. All these programmes aim to improve environmental awareness, whilst also encouraging sustainable and non-destructive income generating activities in Rekawa. In early 1999, the TCP won the highly commended Southern Region, British Airways, Tourism for Tomorrow

Award for its community conservation, and eco-tourism programmes in Rekawa.

### **National Programmes:**

- In 1994 the TCP launched an extremely successful anti-tortoiseshell campaign to prevent the illegal trade of tortoiseshell products in Sri Lanka.
- In 1995 the TCP conducted a survey of illegal turtle hatcheries, leading to a report directed to the Department of Wildlife and Conservation on improving hatchery management and establishing a licensing scheme. An action plan is under discussion and pending implementation.
- A national school education programme began in 1997 to develop awareness about marine turtle conservation and instigate ongoing school projects in their areas.
- In 1999 the TCP began a 16 month survey on marine turtle by-catch and a tagging programme within local fisheries at 18 fish landing sites on the South and Southwest coasts. The survey will result in a published by-catch reduction action plan and improved understanding of local turtle foraging habitats and migration routes.
- The TCP is currently working with international and national conservation organisations to formulate a National Marine Turtle Conservation Action Plan.

### **TCP/CMS By-Catch Survey And Olive Ridley Tagging Programme**

Several thousand olive ridley turtles are caught and killed each year in the Gulf of Mannar as a result of by-catch by Sri Lankan fisherman. The quantity of ridleys caught in the Gulf of Mannar suggests that these turtles do not originate from the relatively small nesting population in Sri Lanka, but from elsewhere. There is a strong possibility that these turtles are migrating to and from the Orissa rookery in India, and that the Gulf of Mannar is an internationally important foraging area/migration route for this species.

In September 1999, the TCP initiated a 16 month survey of fishing by-catch at the 18 most significant fish-landing sites on Sri Lanka's accessible (West and South west) coasts. The survey is funded by the UNEP-CMS Secretariat and is designed to quantify the turtle by-catch incurred by Sri Lankan coastal fisheries. The survey also incorporates a programme of tagging and release of one thousand live, female ridleys entangled in nets. The tagging programme is projected to commence in early 2000.

Further to the tagging programme, research will be carried out on physiological characteristics of drowned turtles, such as: recording biometric data, examination of gonad reproductive status, and stomach

content analysis. The results of this programme will reveal new information regarding the feeding ecology and regional geographic range of olive ridley turtles and identify by-catch 'hot spots' in the Gulf of Mannar. The TCP will use these results to formulate a by-catch action plan for Sri Lanka. This research will be of obvious interest to marine turtle conservation organizations in the region. The TCP hopes to develop, in particular, co-operative links with the Indian groups concerned with ridley conservation. The TCP would also like marine turtle conservation organisations in the region to be aware of the tagging programme should any of these tags be recovered from fisherman, or at nesting beaches in the area. The tags are titanium with series numbers SL2000-3200 with TCP contact details on the reverse.

## **A report from National Aquatic Resources Agency (NARA)**

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Sri Lanka has prepared National Action Plan for Marine Turtle Conservation. The main parties involved in preparation were NARA, Department of Wild Life Conservation, TCP and IUCN. The final meeting was held on 16th July 1999. The national plan covers six main areas including in situ conservation, hatchery management, research and monitoring, law enforcement, public awareness and regional cooperation.

NARA has prepared a grading system for the sea turtle nesting beaches of the island, based on the findings of last six years. For this grading we used three criteria:

1. Nesting rate (no. of nesting/month)= R
2. Nesting density (no. of nests/km/year)= D

Using these two criteria all the nesting beaches were categorised into four main grades:

- Grade 1. - R >25 & D >300

- Grade 2. - R 15-25 & D 100-300
- Grade 3. - R 5-15 & D 50-100
- Grade 4. - R <5 & D 20-50

3. Nesting diversity (number of species nested) = d

This criteria used to sub grade each grade:  
sub grade a. - d=5; sub grade b. - d=4; sub grade c. - d=3; sub grade d. - d=2; sub grade e. - d=1

It was recommended that beaches of grade 1 & 2 be declared as protected areas as critical sea turtle nesting habitats. These beaches were Kosgoda, Rekawa and Welipatanwila. Studies revealed that the good nesting beaches are mainly located in the district of Galle and Hambantota. Kosgoda and Rekawa beaches have been identified as the major turtle rookeries of Sri Lanka. Five beaches - Kosgoda, Balapitiya, Rekawa, Welipatanwila