



# *Kachhapa*

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Issue No. 2

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*A newsletter for the Indian subcontinent on sea turtle conservation and management*

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## **Mortality of turtles on the Orissa coast, March 1999**

Editorial: Operation Kachhapa: new problems, new solutions?

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## Call for Papers

Kachhapa, the newsletter, was initiated to provide a forum for exchange of information on sea turtle biology and conservation, management and education and awareness activities in the Indian subcontinent. The newsletter also intends to cover related aspects such as fisheries and marine biology. In the first issue, Kachhapa provided a compilation of organisations working on sea turtles in the subcontinent. From this issue on, Kachhapa will include articles on the above subjects. While the Editors have done all the 'editing' for this issue, we hope to initiate a review process for articles and reviews in upcoming issues. For the moment, Kachhapa will come out twice a year, once at the beginning (December/January) and once at the end of the nesting season (June/July). We request all our contributors to continue to send us information from their part of the subcontinent, including notes, letters and announcements.

All material should be sent to:

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Or by email to:

***kachhapa@vsnl.com***

**Email attachments should be sent as text files or MS Word 97 documents (or any older version of Word).**

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### **Cover Photographs:**

Nesting Olive Ridley: Kartik Shanker

Mass mortality: Kartik Shanker

Mass nesting: Bivash Pandav

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**The cover is printed on recycled paper.**

## **Editorial: Operation Kachhapa: new problems, new solutions ?**

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It has become our annual pastime to bemoan the state of the sea turtles in Orissa each December. Operation Kachhapa was initiated last season with some successes and some failures. The mortality was not very encouraging since another 10,000 dead turtles were counted on the Orissa coast. However, this was offset by the mass nesting of 250,000 turtles at Nasi off the Gahirmatha coast. Also, 64 trawlers and gill netters were seized for illegal fishing and their trial cases are being contested by lawyers engaged by Operation Kachhapa on behalf of the Forest Department.

Operation Kachhapa and the Forest Department had planned even more extensive patrolling this year. Unfortunately, much of the careful planning that went into this year's campaign has been swept away in the aftermath of the cyclone. The state's resources are simply inadequate to deal with a catastrophe of this magnitude and the administrative machinery is faltering. Operation Kachhapa's efforts have been diverted to relief operations till such time as turtle conservation work becomes possible. Meanwhile, turtles have arrived in the offshore waters. A few have already fallen victim to trawlers from Andhra Pradesh and Orissa, which have been operating in these waters.

One of the principal nesting beaches at Gahirmatha (Nasi 1, where about 50,000 turtles nested in 1999) has been fragmented again, while the other one (Nasi 2, where 200,000 turtles nested in 1999), appears to have become even narrower. In 1999, more than 90% of the eggs laid on Nasi 2 were exposed and lost due to inundation.

Other problems are appearing on the horizon. A major cargo port at Dhamra, 10 km from Gahirmatha, which has long been in the

pipeline, is reported to have obtained government clearance. The construction of this port is likely to have long term consequences for the Olive Ridleys and also for the mangrove forests of Bhitarkanika which adjoin this area. Already, there is a growing belief that the widespread destruction of mangroves may have contributed substantially to the impact of the cyclone.

Recent research has also indicated that Olive Ridleys in Orissa may use more than one nesting beach during a season and may in fact nest at entirely new sites. In March and April, 1999, mass nesting (8000 and 20000 turtles) occurred at Barunei, 30 km south of Gahirmatha. This implies that current conservation strategies may not be adequate; declaring a particular stretch of coastline as protected will not help if the turtles nest at different areas along the coast. It would be necessary to assess turtle congregations at the beginning of each season, and monitor critical areas of the coast throughout the season. It is clear that the challenges ahead are numerous and the solutions are complex.

As we move into a new season and a new millennium, we find ourselves looking for fresh ideas to help deal with the unending wave of environmental problems. Undoubtedly, the long term solutions lie in education and awareness and in involving the local people in the conservation effort. However, the short term success of conservation initiatives will also depend on the ability of different organisations playing very different roles to cooperate and coordinate efforts. Given the scale of current and potential destruction in the immediate future, this may be critical for the survival of sea turtles in India. It is clear that the challenges ahead are numerous and the solutions complex.

## **Operation Kachhapa: First Work Report For 1999-2000 Turtle Season Reporting Period : 1<sup>st</sup> November,1999 to 24<sup>th</sup> November,1999.**

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The Super cyclone, which hit Orissa on October 29, 1999, devastated vast areas of coastal areas including the main towns of Cuttack and Bhubaneswar. Most of the roads to the district towns and villages were cut off for more than a week and the interior coastal villages were only accessible by boat more than fifteen days after the cyclone had hit. The roads were completely destroyed, having been washed away by the strong tidal waters. Operation Kachhapa's office at Cuttack was without electricity or piped water supply till November 12, 1999. Many parts of Cuttack were under 8 to 10 feet of water and thousands of trees had fallen on the roads and the electric poles were also broken. The telephones started working only from November 7, 1999.

Mr. S.K. Pani, our Project Officer, left for his village on the November 2 to find out about his family members. Ersama town, which is 15 kms from the coast, was under 12 feet of water during the cyclone. When he returned on 6<sup>th</sup>, we learnt that he had to take a army boat to come to the main road (Cuttack-Paradeep road) from where he hitched a ride on a truck to reach Cuttack. Harrowing reports were heard from him about hundreds of dead bodies which had washed up at the villages once the tidal waters receded. He said it was dangerous to take any food and go back to family at his village since hungry villagers were looting food on the way. He reported that entire villages of mostly Bangladeshi fishermen had been wiped out from the coast when the huge tidal wave surged inland for more than 20 kms

We then attempted to visit areas where Operation Kachhapa works during the turtle season. An attempt was made on 6<sup>th</sup> November to visit Bandar fishing base on the left bank of

Devi river but the roads were not accessible after Balikuda since flood and tidal waters were flowing over the road. An attempt was made on 7<sup>th</sup> November to visit Nuagarh fishing base and also Gundalba and Sahana villages on the right bank of Devi river mouth but the roads were found to be still inaccessible after Astaranga due to fallen trees and houses. Besides, vast areas which had been inundated with tide still had accumulated water and could not be crossed. On 8<sup>th</sup> November, the third foray was made towards Kujang and onwards to Jatadhar mouth area. However, similar obstacles were met with at Kujang. The Cuttack Paradeep road was open but the road leading from Kujang to Nuagaon where Jatadhar mouth is situated was closed and under water at many places. There were signs of devastation everywhere since with dead bodies and cattle carcasses lying all along these routes.

On 12<sup>th</sup> November, I contacted the Chief Wildlife Warden's office to ascertain the position of the Gahirmatha nesting areas and the Operation Kachhapa personnel who used to stay at Satbhaya village. It was reported to us that all the personnel were safe since the village of Satbahaya had been evacuated. Further, the nesting beaches are Ekakula Nasi were intact. Though tidal waves had come till Rajnagar, the office of the DFO was intact. There was extensive damages to the guard beat houses in the forest areas of the Division. Kujang Range Office had collapsed and there was wireless system was damaged.

On 18<sup>th</sup> November, a survey trip was launched to identify beneficiaries in Gundalba and Sahana villages. Since the roads to these two villages were partially washed away by the tidal waters, it was with great difficulty that

we reached the villages. It was learnt that the two villages were under four to five feet of water during the cyclone. Extensive discussions were held and proper lists of beneficiaries of these two villages were identified. Some fishing families had lost their fibre boats and engines and depended entirely upon the relief supply of rice from the government. All the hatched houses in the two villages had collapsed. It was reported to us that a new mouth of river Devi had opened up south of the main mouth. It was also learnt that out of the 52 trawlers of Nuagarh base, only 4 trawlers were intact and the rest were heavily damaged. The first dead turtle of the season in this stretch of the coast was found. Andhra trawlers were fishing very close to the shore (within 1 km). The local fishermen reported that due to the absence of trawlers from Paradeep and Nuagarh, the Andhra trawlers were coming in large numbers to fish in these waters.



On 20<sup>th</sup> November, we visited Gundalba and Sahana villages to distribute relief materials. 240 blankets were distributed to the families of fishermen and others of both villages. We visited Astaranga on 24<sup>th</sup> November, 1999 to distribute baby food and biscuits to the villagers of Gundalba. A boat trip was also made to the mouth of river Devi and we saw the two new mouths which had opened up south of the original mouth and south of Nadia Khia island where the turtle camps are set up. The coastal shelter belt comprising of casuarina trees was completely destroyed.

The local fishermen reported the sighting of corpses on the river mouth. Fishing operations by trawlers of Nuagarh had not commenced so far. The Andhra trawlers had moved to deeper waters and we could not see any trawler within 5 kms of the coast.

*(Reports of mortality have started coming in and several hundred dead turtles have already been counted on the coast. Operation Kachhapa and the Forest Department are attempting start patrolling operations – Eds.)*

## Indian Fisheries Over the Past 50 Years

### Part 1: The impact of mechanisation on the coastal fisheries

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India, with her 6000 km coastal line and innumerable rivers, lagoons, lakes, reservoirs

and ponds, has one of the largest population of fisher people in the world. The total

population of fisher people in India is over 12 million with two third depending on marine fishing and the remaining one third depending on fishing in a variety of inland water bodies. Despite having had greater importance in ancient times, fisher folks were relegated to the status of lower castes during the medieval period. Still, the community always enjoyed a certain autonomy and dignity. Fisher people, though highly skilled in their profession, had no access to formal education and they hardly entered into other areas of human life. The fishing community consists of peoples of all religions; 56 percent of them are Tribals, Animists, Dalits and Hindus, 23 percent are Christian and 21 percent are Muslims.

### **Mechanization and its Impact**

In 1953, the first real modernization of the Indian fisheries started with the introduction of the Indo-Norwegian Project. The project consisted of a fishing port and using mechanized boats to venture deeper into the sea. The fishing gear remained the same, namely gillnets, though now they were made of superior quality material. The intentions of this project were good, namely to increase the fish harvest in order to provide more food for the masses. This was achieved in that the quantum of fish catch increased considerably. Starting with the initiative of the Norwegians, spurred by the stronger and more compelling market forces that unleashed themselves from the early 1960s, and combined with the state patronage, the economy underwent a marked technological polarization. A schism developed between the traditional fishworkers and the mechanized boat owners who were mostly from outside the fishing community. The increased catch, due to mechanization, had to compete against the high cost of investment in gear and the fuel. That meant the price of fish had to be increased and that in turn meant the poor for whose nutrition the project was intended could not benefit from it. Moreover, there was no infrastructure for marketing the large amount of fish caught.

In the beginning of the 60s, prawns became very dear in Japan and the USA. Hence the Norwegians introduced bottom trawling in Neendakara to harvest the prawns. It has been found that bottom trawling causes much destruction affecting the whole of fisheries sector. This project did not take into account the controls in trawling that existed in Norway since 1936. This quick profit attracted more capitalists into the scene. Soon such trawlers were introduced in the other maritime states. By 1975, Kerala alone had 3500 trawlers. In 1997, the bottom trawlers in India totalled 23000.

The 1960s and 70s saw a gradual build up of the infrastructure for marketing and this helped the growth of the private mechanized sector. The government had set apart the inshore waters up to a depth of 20 meters exclusively for the traditional fishworkers. However, the trawlers did not follow the rule. As a result they were eating into the livelihood of the already impoverished artisan fishworkers. The mechanized boats used trawler nets which scrape the bottom of the sea destroying the larvae and the juveniles which were thrown away as waste.

The Government of India has been facilitating this process of mechanization of the fishing boats through programmes such as the scheme for Motorization of Traditional Fishing Crafts, sponsored by the Ministry of Agriculture since 1986-87. About 13 per cent of all artisanal crafts in the country have reportedly been fitted with inboard or outboard engines by 1993. The mechanization of the traditional crafts by the use of outboard engines, produced by such multinationals as Yamaha, Johnson, Lombardi, Suzuki, etc., has resulted in the total dependence of the hitherto independent fishermen on multinationals. According to the officials who played a role in the introduction of trawlers, there was an implicit assumption within the Fisheries Department that all fishermen would in due course leave their artisanal craft and shift to boat fishing. Today it is evident that such a

massive transformation has not taken place. It has only brought in tension and conflicts among fishermen.

The conflicts between the trawler crews and the *kattumaram* fishermen grew in intensity in the 1960s and 1970s. The operations of trawlers potentially cause two kinds of harm to traditional gear users.

- Trawler crews actively seek out fishing grounds using mobile fishing gear. *Kattumaram* fishermen on the other hand generally make use of passive (fixed or floating) gear types. If trawling is carried out in the same area as *kattumaram*, fishing there is a real risk of damage to the latter fishermen's gear as well as to their lives.
- Trawlers and *kattumarams* exploit identical fishing grounds and target similar species, the most important of which is shrimp. If trawler operations are dense, their superior catching capacity naturally affect the catch of *kattumaram* fishermen.

This situation is very well summarized by the Supreme Court in its land mark Judgement by Justices S.C.Agarwal and Jeevan Reddy on June 23, 1993:

*"Over the years while the population of the traditional fishermen has increased by more than 20.8%, the average production of each fishermen declined by more than half. which resulted in 98.5% of the fishermen population descending below the poverty line. While the traditional fishermen who constitute 89% of the total fishermen-household caught a negligible quantity of fish, the mechanized fish gear operators who are very small in number have been taking away the bulk of the catch, viz., more than 92%. This is having a fatal effect upon the lives and economy of the traditional fishermen giving rise to*

*several incidents of breach of law and order."*

The last approach which was followed throughout India as well as in other countries of Asia was to introduce geographical zones to separate the antagonists. This was introduced first as a clause in the hire purchase agreement between the fisheries department and recipients of small trawlers (1971), and later in a Central Govt. order (G.O. 991 of 1979). This regulation was enshrined in Law in the Tamil Nadu Marine Fisheries Regulation Act 1983. Due to a lack of political will as well as severe difficulties in implementation, this rule has basically remained unenforced. As a result, at least along the Coromandel coast, the Government does not subject fishing to serious regulatory efforts.

### **Emergence of Fishworkers Organizations**

The threat to their very livelihood has forced the fisherpeople to forge new linkages and organize themselves to face the threats. The growth of the All Goa Fish workers' Union, The Kerala Swathanthra Malsya Thozhilali Federation (KSMTF), and the Tamil Nadu Fishworkers' Union (TFU) are the result of such trends. These organizations cut across castes, religions and creeds and are registered as Trade Unions without political affiliations.

### **National Fishworkers Forum (NFF)**

The NFF, founded in 1979, is a federation of state level trade unions for traditional fishworkers. Fishworkers, both men and women, of both the marine and inland sectors, working in traditional or mechanized crafts, fish venders, those who are working in processing plants, are entitled to become members of the Forum. Fishworkers unions from all the maritime states of India are represented in the NFF.

Through a long chain of hunger strikes, sit-ins, rallies, picketing National High Ways, Railways, Airports, Government offices,

blocking harbours etc, the NFF has been able to obtain Marine Fishing Regulations in most of the coastal states in India. Through on going struggles, the NFF has forced the governments to bring about zonal regulations for the mechanized boats, night trawling ban, purse-seine ban, monsoon trawl ban etc. Trawling during monsoon is banned in Kerala, Karnataka, Goa and Maharashtra. Women have played an important role in all the fish workers struggles. The NFF is more a community based trade union than membership based trade union. It's major victory was in 1993 when the Supreme Court upheld Purse-seine Ban and Monsoon Trawl Ban. It was a victory of the traditional fisher people and the need for a sustained fishery in India.

### **National Fisheries Action Committee Against Joint Ventures (NFACAJV)**

The National Fishworkers Forum (NFF) brought together all sections of fisheries in India under the banner of National Fisheries Action Committee Against Joint Venture (NFACAJV) and began to protest. It organised the first All India Fisheries Strike on 4th February 1994.

### **The Struggle Continues**

Even as this paper is being written (June 1998) the struggles are going on. While the fisher people are involved in a nation-wide agitation against the Government's anti-people policies, scientists, economists, researchers legal experts and others who are committed to sustainable development are contributing towards a better future for all.

The demands of the present agitation (from July 1, 1998) of the fisher people include:

- That the Aquaculture Authority Bill of 1997 pending before the Lok Sabha be withdrawn.

- That the Notification dated 9th July 1997 issued by the Ministry of Environment & Forest amending the CRZ notification of 10th February 1991 be withdrawn.
- That steps to implement in total the Supreme Court judgement of 11th December 1996 on Aquaculture be taken.
- That all the existing Joint / Lease licenses be cancelled and that the Government should continue holding meeting with the National Fisheries Action Committee Against Joint Ventures (NFACAJV) for the implementation of all the recommendations of the Murari High Power Committee.
- That there should be a monsoon trawl ban in all the coastal states at the same time for the conservation of fish resources.

### **World Forum of Fish-harvesters and Fishworkers (WFF)**

The problems of the fisher people all over the world are similar. The United Nation's Food and Agricultural Organization's reports of 1995 and 1996 have found unequivocally that the fisheries of the world are undergoing the most serious crisis ever recorded. At least seventy-five percent are on the verge of a collapse due to the ravages of over-fishing, destructive fishing gears - most particularly by factory trawlers - and the effects of coastal industrial aquaculture, industrial and domestic pollution, and the myriad consequences of global warming. The fisher people's organizations from 35 countries came together in New Delhi from 17-21 November 1997 and formed the World Forum of Fish-harvesters and Fishworkers (WFF). The objectives of the Forum is to protect the fish resources and the fishing communities by promoting sustainable development of fisheries through eco-friendly gears and methods and to work for a global ban against all destructive fishing (particularly factory trawlers), coastal industrial aquaculture and coastal industrial

pollution. India has been chosen as the co-ordinator. The WWF has declared November 21, its foundation day, as World Fisheries Day. On this day, every year, all over the

world actions, campaigns will be organized with the view to protecting the fish resources and the fishing communities through a sustainable small fisheries.

*(“Part 2: The impact of aquaculture on coastal management and fisheries” will be published in the next issue)*

## **Indigenising The Turtle Excluder Device For Indian Waters**

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### **Introduction**

The Turtle Excluder Device, which was first tested out in US waters and then extended to the Wider Caribbean/Western Atlantic Region, is now used in as many as 43 countries. As a result, wild caught shrimp does no longer threatens the survival of sea turtles or other endangered marine species. The prototype of TED which originated in the 1960s was then known as Trawling Efficiency Device, whose sole function was to prevent/reduce the unwanted by-catch and thereby ensure a trouble-free and more profitable shrimp fishing. The TED is a metal grate of inter-spaced bars through which the shrimp can pass whereas turtles or other large by-catch escape through the opening. The TED has been found effective in saving endangered sea turtles and other marine animals by 97 percent. The Government of India have both international and national obligations to protect endangered sea turtles on its coasts. The technology transfer of TED has been effected through a Workshop-cum-Demonstration on the Georgia Jumper model from the NMFS, USA to the local artisans and trawl crew in 1996 in Orissa. However, the trawlers of Orissa coast still resist the idea of TED in the apprehension that many commercial fish species would also escape along with the turtles. In view of this, an imperative need exists for indigenising the

TED to suit the mixed catch of Indian trawlers.

### **Background**

In the 1960s, some shrimpers of USA designed a device, called "Trawling Efficiency Device", which when fitted to the trawl-net enabled unwanted by-catch to escape through an opening while the shrimp catch was retained. When the Endangered Species Act was passed in 1973 enjoining the Federal Government of USA *inter alia* to protect the endangered sea turtles, necessary research was commissioned to study the feasibility of TED as a turtle saving device. In 1987, the National Marine Fisheries Service (NMFS), USA, introduced regulations requiring the use of TED for all mechanised shrimp trawlers in domestic warm waters. However, since sea turtles were a migratory species, it was felt that protecting them in U.S. waters alone would not be enough to protect them. As a result, in 1989, the United States passed a complementary law to the Endangered Species Act, US Public Law 101-162, Section 609, which stated that “all nations exporting shrimp to this country (US) must be certified by the US Government for protecting sea turtles from incidental death in shrimp trawl nets. Certification requires that levels of protection be comparable to those in the United States. Shrimp harvested using TEDs, manually hauled nets, or aquaculture

qualifies for certification. Shrimp from states not complying is subject to embargo.” In 1989, the Section 609 was applied only to countries where US sea turtles traveled, in the Wider Caribbean/Western Atlantic region. But a group of environmental organisations led by Earth Island Institute petitioned for applying the same regulation to all the shrimp exporting countries of the world with whom USA had a trade relation. In December 1995, a US Court of International Trade decreed in favour of the petition. As a result, as of May 1996, the embargo was extended to over 70 countries including India. The decree stated that those trading countries who do not use TEDs in their trawl nets can not export shrimp to US market. However, the US decree was challenged by four countries namely Malaysia, Thailand, Pakistan and India before WTO in October 1996 saying that the US ban on shrimp imports was against the rules of free trade under GATT. In February 1997, the WTO panel gave its interim judgement declaring the US ban illegal. The final report of the WTO in October 1998 further reinforced its interim judgement. However, the US Government have filed the formal notice of intent to appeal the WTO panel's decision. Thus, the issue may crop up again in the near future at WTO with the latter supporting the US position and thereby forcing shrimp-exporting countries to use TEDs.

### **Status of the Olive Ridley in India**

India has international obligations to conserving sea turtles arising out 3 global agreements, Conference on International Trade in Endangered Species, Washington 1973, Convention on Conservation of Migratory Species, Bonn 1979 and Convention on Biodiversity, Rio 1992. In India the olive ridley sea turtle is listed under the Schedule 1 of the Wildlife Protection Act (1972). The Government of India have in fact taken several measures in the last two decades towards this end, including the seasonal ban of fishing along Orissa coast under Orissa Marine Fishing Regulations Act (1982) and Rules

(1983), the recent declaration of Gahirmatha as a Marine Sanctuary in October 1997, and deployment of the Coast Guard to check the illegal fishing. Despite these measures, there has been a sudden spurt in the mass mortality of sea turtles all along the Orissa coast and non-occurrence of mass nesting in the Gahirmatha consecutively for two years in 1997 and 1998.

### **Designs of TED**

There are basically two kinds of TED, Hard TED and Soft TED. It has been observed that though the Soft TED is useful in certain conditions, it was not a foolproof device for the exclusion of turtles in most conditions. Therefore, the general preference is for Hard TEDs. There are six basic designs of Hard TED depending upon the grid size, bar spacing and construction materials, the simplest and most widely used being the Georgia Jumper model. It is an oval grid made from steel rods (or fibre glass or aluminium) and features a horizontal cross brace for added strength. The turtle escape hole can be positioned either at the top or bottom of the TED frame. Bottom opening TEDs exclude unwanted debris, shell, sponge, jelly fish, sharks and rays from the trawl, in addition to turtles. However in areas relatively clear of debris, a top opening TED is more suitable. The TED works best for turtle exclusion and shrimp retention when installed at angles between 30° to 55° from the horizontal. However, the ideal angle is 45° which can be slightly changed according to requirement. The bottom opening TEDs are attached with floats which are made of aluminum, PVC or hard plastics.

### **Transfer of TED Technology**

The Government of USA are committed to a programme of free transfer of TED technology to the people of the countries covered under the shrimp embargo. A team of experts from NMFS, USA visited Orissa twice in 1996, first in February to Dhamra mouth and Bhitarkanika to study the area suitability, and

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)**

**P.D.K.D. Amarasooriya**

*Research Officer, NARA, Crow Island, Mattakkuliya, Colombo 15. Sri Lanka.  
(email: amara@nara.ac.lk)*

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

and Bundala - are still being regularly visited by all the five species of turtles inhabiting Sri Lankan waters and the average number of nesting per month at these sites were 140, 14, 53, 13 and 12 respectively. Around 53% and

43% were green turtles and Olive Ridley turtles while 2%, 1% and 1% were Leatherbacks, Hawksbill and the Loggerheads respectively.

## **The importance of mangroves on the Orissa coast**

**Biswajit Mohanty**

*Wildlife Society of Orissa, TULEC Building, Link Road, Cuttack 753012. India.*

Most of Orissa's 480 kms of coastline used to be covered with mangroves a few decades ago. Immigrants from Bangladesh settled in 1971 in the coastal areas which were thickly forested with mangrove jungles, soon converting the land into paddy fields. Subsequently, prawn farming became popular in the eighties, since these areas are ideal for setting up prawn farms. Paradeep port was set up in 1965 and was responsible for the cutting down of the mangroves of the Mahanadi mouth area. A devastating cyclone hit the coast in 1971 near Paradeep and Mahakalapada and was responsible for the loss of more than 10,000 human lives. Experts agreed upon the need for mangroves and coastal shelter belt and plantations were undertaken in Mahanadi delta and Bhitarkanika areas to plant mangroves. The latest satellite mapping done by Orissa Remote Sensing Applications Centre (ORSAC) in 1989 has estimated a total of 218 sq. km. of mangroves. However, it is now felt that the mangrove cover has fallen to less than 150 sq. km since substantial areas have been cleared in the Mahanadi Delta area for prawn farming. The biodiversity of Bhitarkanika mangroves is rich with 62 species. Currently, mangroves are currently found in Bhitarkanika, Mahanadi Delta; degraded patches are found at Devi river mouth areas as well as the Balasore coast near Subarnarekha and Budha Balanga mouths. Some mangroves are also noticed at the mouth of the Dhamra river in Bhadrak district.

The present cyclone which hit the state on October 29, 1999 has proved the immense

importance of mangrove forests in protecting the coastal areas of the state from tidal inundation and high velocity winds. Ersama and Balikuda blocks of Jagatsinghpur district were the two worst hit blocks where tidal waters came in to at least 20 kms from the coastline. These tidal waves washed away as many as 14 villages completely wiping out their resident population. Besides, at least 35 villages lost about 50 % of their population. The death toll in these areas is at least 20,000. The coastline at Ersama and Balikuda blocks had been completely denuded. Another factor for the continued accumulation of the tidal waters for as many as two weeks in many of these low lying fields and villages were the numerous embankments of the prawn farms. These acted as barriers to the return of the tidal waters and effectively marooned the villages for weeks together. It is noteworthy that the Bhitarkanika areas which still have dense mangroves escaped from serious cyclonic damage. The areas under Rajnagar Block of Kendrapada district had minimum loss to human life and property, while in immediately adjacent areas of Kendrapada district, there was substantial loss of human lives.

It must be realised that only mangroves can survive and flourish in these deltaic coastal tracts where salinity is high both in the soil and water. The tangles of stilt roots helps in sedimentation of particulate matter. Networks of mangroves roots provide firm anchorage to the tidal river and creek banks and also the coastline. It effectively arrests river erosion and coastal erosion and ultimately helps in

controlling flood and tidal wave inundation damage. Detritus (fallen leaves and litter of mangrove trees) is the principal energy source in the mangrove ecosystem and detritivores are food for larger fish. The coastal waters off mangrove forests also benefit through the outwelling of nutrient rich detritus. Mangroves act as shelters for the breeding of crabs, shrimps which though spend their early lives

in mangrove waters. Mangrove ecosystems thus have great economic value through their contribution to the food web in supporting rich estuarine and marine fisheries. It has been estimated that more than one lakh people of the districts of Bhadrak, Kendrapada and Jagatsinghpur depend upon fishing, which can only be sustained if mangroves are present.

## **An Update on Turtle Conservation Activities in Keralam.**

**C. Jayakumar**

*Marine Turtle Conservation Action, PB 815, Kawdiar, Thiruvananthapuram, 695003.  
(email: thanal@md4.vsnl.net.in)*

The Kerala Forest Department launched a project to map the nesting sites and monitor them for a period of 20 months. The project will also interact with the local communities and develop a management plan involving the communities. In addition the project team will assess the illegal trade of turtle meat and turtle mortality. Sri. V.K. Sinha, Chief Wildlife Warden and Chief Conservator of Forests (Wildlife) and I are the Principal Investigators. The project was initiated in March 1999 and will cover two breeding seasons. The project is the first effort to develop a conservation plan for sea turtles in Kerala. Three hatcheries have been established to monitor nesting and to involve the community in maintaining them.

THEERAM Nature Conservation Society, Kolavippalam started the turtle conservation effort by fishermen and local people in 1996. The effort was prompted by a news clipping in 'The Hindu' on the marine turtle conservation and also curiosity to know whether they could hatch turtle eggs normally consumed by locals. The result was good and the whole village supported the efforts. The initiative got very good media coverage. The site became well known and the then DFO of Kozhikode developed a plan to involve this effort under the World Bank supported 'Kerala Forestry Project'. Ms. Pragathi Srivasthava, DFO Kozhikode supported the project by helping

the local people to maintain two hatcheries and employing four assistants to maintain them.

Sand mining was resulting in loss of sand bar and coast; in six months about 20 meters of beach was lost. In January, 1999, the local people started an agitation lead by the Shore protection Council. The high court of Keralam banned sand mining and the order was in place for two months. Then the ban was violated and the Council took up the matter with various levels of the government. The result was an attack on the Theeram activists and local people, resulting in a loss of about a lakh worth of fishing equipment

Marine Turtle Conservation Action is launching a fund raising to compensate the loss and also to support future work. This fund should take care of urgent need of community groups who are involved in turtle conservation like support to maintain the hatchery, reimbursements of expenses in collecting the eggs, urgent veterinary support etc. There are about four other groups who are starting similar work inspired by the Theeram initiative with technical support from Theeram and Marine Turtle Conservation Action.

Nesting has started in 1999-2000, but about 25 dead turtles have been reported so far, including eight Green Turtles, two Hawksbills and fifteen Olive Ridelys.

## News from the states

### Andhra Pradesh

#### *In situ conservation at Vishakapatnam*

“In situ” conservation of Olive Ridleys was carried out at Vishakapatnam, Gangavaram and Pudimaka coast. A total of 389 nests were counted over 112 km of coast, mostly in February and March, 1999. The hatching success was 70 %. The main problems continue to be poaching of eggs by humans and dogs. Also, 35 adults were poached this season. The poaching of adults, which is a major problem, has been reduced due to monitoring by the VSPCA. Trawling mortality of male and female adults continues to be high.

(A complete report is available from the VSPCA)

*Source: Pradeep Kumar Nath*

*Vishaka Society for Prevention of Cruelty to Animals*

*26-25-200, Main Road, Vishakapatnam 530001. India*

#### *Operation Angel*

Operation Angel is being launched at Sacramento, mouth of the Godavari, Gangavaram, Pudimuka, and Ayalachettu Dibba. Operation Angel is part of a community based sea turtle restoration effort on this coast.

*Source: Dr. Nasreen Banu & Pradeep Kumar  
Marine Turtle Preservation Group  
M3/281-3RT, Sanjeeva Reddy Nagar,  
Hyderabad 500038. India.  
(email: pradeep1@hd2.dot.net.in)*

### Goa

The Forest Department has been monitoring Morjim beach on the Goa coast with forest

personnel and labourers. 8 nests were monitored and the hatchlings released. Two dead Olive Ridleys were found on Morjim beach.

*Source: C.A. Reddy*

*Deputy Conservator of Forests (Wildlife)*

*Forest Department, Government of Goa, Junta House, Panaji, Goa. India.*

### Joint Wildlife Management in Goa

The villagers in Tembawado, a small coastal settlement located 13 kms from Mapuca, along with the state forest department, are helping to protect the Olive Ridley turtle from rampant poaching of its eggs. Morjim beach which forms the beach front for Tembawado witnesses a sizeable number of these turtles coming to nest during October to February. During the nesting period 30-40 village youth along with two forest guards patrol the beach and nab those who try to poach turtle eggs. Capt. Gerard Fernandes, a retired Army officer who has now settled down at Tembawado has had a big role to play in this conservation movement that was started in 1994.

*Roshni Kutty, Kalpavriksh*

*Apartment 5, Shree Dutta Krupa, 908 Deccan Gymkhana, Pune 411 004, India.  
(email: kvriksh@vsnl.com)*

### Gujarat

There is widespread concern over the oil slick at the Marine National Park near Jamnagar. It is believed that the leak emanated from a sub sea pipeline connecting the Single Buoy Mooring installed by the Indian Oil Corporation (IOC) in the deep sea to unload imported crude oil. The slick threatens the mangrove forests and corals, as well as the marine life which includes sea turtles and dolphins.

Source: E.K. Nareshwar  
Helpin' Herps  
B-201, Alaukik Apts, Bodakdev, Satellite,  
Ahmedabad 380015. India.

### Tamil Nadu

The Students' Sea Turtle Conservation Network (SSTCN) monitored 7 km of coast in Chennai in 1998 – 99. 25 dead turtles were enumerated. 69 nests were translocated to the hatchery at Nilankarai, Chennai and

approximately 6000 hatchlings were released. 15 wild nests were also monitored. Education and awareness programmes were conducted for city schools and colleges. In 1999/ 2000, 4 dead turtles have already been counted till Jan 1, 2000.

Sanjiv Gopal, R. Arun Kumar, Vikram Anand  
Students' Sea Turtle Conservation Network (SSTCN)  
30/1, Flat 12, Sundar Enclave, Valmiki Street,  
Thiruvanmiyur, Chennai 600041. India.

## Research News

- Bivash Pandav, who has been working on Olive Ridleys in Orissa for the past five years, has been appointed as Scientist 'SC' at the Wildlife Institute of India, Dehradun. The WII's research team, led by Pandav and BC Choudhury, have tagged 3000 mating pairs and 5000 nesting females on the Orissa coast over the past three years. They have been estimating nesting and mortality along the coast. Bivash Pandav will continue his tagging studies and the monitoring of nesting and mortality. He will also be initiating a study on the quantitative analysis of incidental sea turtle captures and mortalities during commercial shrimp trawling in the coastal waters off Orissa.
- Karthik Ram, a student of Pondicherry University, will be working with Operation Kachappa as a researcher. He will study the mating behaviour and movement patterns of Olive Ridleys off the Orissa coast. The densities, movement patterns and distribution will be determined, enabling enforcement agencies to monitor and protect the turtles.
- Dr. M. Rajagopalan, along with P. Kannan and S. Venkatesan of Central Marine Fisheries Research Institute (CMFRI) are initiating a study of Green turtles and Olive Ridleys on the Gujarat coast. The study will begin with a survey off the coast during the early part of 2000.
- A population genetics study was carried out by Dr. Kartik Shanker and B.C. Choudhury (Wildlife Institute of India, Dehradun) in collaboration with Dr. Ramesh Aggarwal and Dr. Lalji Singh of the Centre for Cellular and Molecular Biology, Hyderabad. 38 samples from principal sites at Orissa and Chennai were analysed using Multilocus DNA fingerprinting, mitochondrial DNA sequencing, RAPD analysis and microsatellite analysis. Preliminary results suggest that population structure along the coast is weak.

## **A new port at Dhamra**

*(Based on news reports and a note from Banka Behary Das, Orissa Krushak Mahasangh, Parivesh Bhavan, 14, Ashok Nagar, Bhubaneswar 751009. India)*

The Dhamra port project in Orissa is on the verge of getting environmental clearance from the Union Government. The clearance will be granted by the Empowered Committee for Environmental Clearance of the Ministry of Surface Transport. In a recent amendment to the CRZ rules, the MoST can grant clearance for coastal development projects if (1) the port is within existing port limits (2) the coastal zone is not CRZ 1, and (3) it is the expansion of existing port. In this instance, the government have taken advantage of the fact that a port existed at Dhamra in the 19<sup>th</sup> century and early part of the 20<sup>th</sup> century. Currently, the 'port' at Dhamra is little more than a fishing jetty. It is absurd that this proposal involving a highly sensitive area has not been passed through the Ministry of Environment and Forests.

The all weather, deep water, modern bulk terminal port is being built by the International Seaports Private Limited, a joint venture of between Precious Shipping Company Ltd of Thailand, Stevedoring Services of USA, and Larson & Toubro Ltd. The port area will occupy 900 acres, and will have a total berth length of 550 metres. The 62.5 km rail corridor to Bhadrak will be 200 metres wide, and include a railway, a highway and land development, occupying 3000 acres. The facility will cater to bulk cargo like coking coal and iron ore and the ultimate capacity will be 25,000 tons per annum. The 1200 crore project is being developed and operated on a Build, Own, Operate, Share and Transfer Basis (BOOST) and the Concession

Agreement has been signed with the Government of Orissa.

The port area and the rail corridor adjoin the Bhitarkanika National Park and the port site is part of the proposed extension of the Park. Needless to say, increased shipping activity in this area would be extremely damaging to the mangrove forests, which are the last of the remaining mangroves on the Orissa coast. While it may be true that coastal development in Orissa indeed calls for the construction of such a port, it is not at all clear that it needs to be at this particular site. In fact, there are studies which indicate that other sites along the coast may be suitable for the construction of the port. It is quite evident that ecological costs have not been factored into the equation. The developers and the Government have also taken advantage of the fact that the area in question is economically backward and the port would have the support of the local people.

Apart from the ecological importance of Bhitarkanika, the sea turtle rookery at Gahirmatha is a part of India's natural heritage that deserves every consideration possible. As it is the largest rookery in the world, conservationists and ecologists the world over would call for any effort or measure required to protect this population. There is an urgent need for the port construction to be reviewed with detailed environmental impact assessment studies. Neither Bhitarkanika nor the Olive Ridleys can be compromised. The port must simply stop or go elsewhere.

**Those who wish to voice their concern can write to:**  
**Ministry of Environment and Forests, Government of India,**  
**Paryavaran Bhavan, CGO Complex, Lodhi Road, New Delhi 110003**  
*(email: [mosef@envfor.delhi.nic.in](mailto:mosef@envfor.delhi.nic.in))*

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