Workshop on
Turtle Excluder Device
11 - 14 November 1996, Paradip

Organised by
Dept. of Fisheries, Govt. of Orissa &
Project Swarajya, Cuttack

=A REPORT=

Technical Collaboration
National Marine Fisheries Service,
Department of Commerce, Govt of U.S.A.
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WORKSHOP ON TURTLE EXCLUDER DEVICE HELD AT PARADIP ORGANISED BY DEPT OF FISHERIES, GOVT OF ORISSA & PROJECT SWARAJYA, CUTTACK FROM 11 TO 14 NOV' 96 IN TECHNICAL COLLABORATION OF NMFS, GOVT OF USA

- A Brief Report -

An inexpensive simple grid-like structure called Turtle Excluder Device, otherwise known as Trawling Efficiency Device (TED) which can automatically exit the endangered sea turtles accidentally entangled or drowned in the trawl nets without affecting the fish catch is already proved to be an appropriate technology for Indian coasts, as has been conclusively demonstrated through a just concluded four-day workshop which attended among others by participants from various concerned Departments of Govt of Orissa, Central and State-level technical and scientific institutions, and Trawl owners/operators besides the TED experts from the National Marine Fisheries Service, Govt of U.S.A.

This Workshop on Turtle Excluder Device was held from 11th to 14th Nov' 1996 at Paradip under joint auspices of Dept. of Fisheries & Animal Resources Development Govt. of Orissa, and Project Swarajya a leading NGO of the State under the Technology Transfer Programme of National Marine Fisheries Service under Dept of Commerce, Govt of USA.

Inaugurated by Mr. Prakash Ch. Devata, Minister Fisheries, Orissa at 11 AM on 11th instant at Jaydev Sadan, Paradip the Workshop was addressed among others by Mr. W. R. Siedel of NMFS, Mr. H. S. Sarkar, Secretary-cum-Commissioner, Dept of Fisheries, Orissa, Dr. (Mrs.) P. Mohanty-Hejmadi, VC Sambalpur University, Mr. Herbert Lingham of U.N.D.P., Mr. K. C. Badu, Director Fisheries, Orissa, Mr. Chitta Behera, Director Project Swarajya and Mr. Tarun Pattanaik, President Orissa Marine Fish Producers Association. Vote of thanks was offered to the speakers of the inaugural session by Mr. T. K. Behera, Deputy Director, Fisheries (Marine), Cuttack.

The programme-packed 4 day workshop included a practical demonstration of TED operation at sea and also an on-duck training session in manufacture, installation and maintenance of TED besides the class-room coaching to the trawl owners, trawl operators, net makers, fabricators, Govt officers, scientific personnel and NGO activists.

In course of the demonstration of the TED operation at sea from a fishing vessel on 13th instant, it was found to an amazement of all present including the trawl owners, that an Olive ridley sea turtle which had accidentally got inside the net fitted with TED could at last escape through its exit hole while a similar turtle got entangled and ultimately killed in the fishing net having no TED that was being operated from another fishing vessel for the purpose of comparison. It was further observed that the attachment of the TED to the fishing net didn’t pose any problem for fishing in the sea. The participants of the demonstration could also notice quite a number of dead turtles floating on the sea on their way to and back from fishing in an area nearly 20 kms. off Paradip coast, a fact which indicated largescale turtle
mortality due to their incidental catch in trawl fishing. At the end of this practical demonstration the trawl owners and operators were fully convinced of the efficacy of TED in excluding the accidentally drowned sea turtles from the fishing net while not adversely affecting the fish catch.

Mr. D.S. Pattnaik, Chief Conservator of Forest (Wildlife) and Mr. S.K. Pattnaik, Director, Nandan Kanan along with Mr. B. N. Nayak, D.F.O. (Mangroves), Dr. Sudhakar Kar and Dr. C.S. Kar, Research Officers, and Mr. N.C. Mohanty, ACF - all hailing from the State Dept of Forests & Environment also participated in the Workshop. The scientists of such Central level institutions as National Institute of Oceanography; Central Institute of Fisheries Nautical and Engineering Technology; Fisheries Survey of India; NABARD, Central Institute of Fisheries Aquaculture; Marine Products Export Development Authority.

In the four noon of 14th Nov. the concluding session of the workshop was held under the chairmanship of Mr. H.S. Sarkar, IAS, Secretary-cum-Commissioner, Fisheries and ARD Dept., Govt. of Orissa. A draft resolution on the recommendations of the workshop was placed before the house as prepared by a Drafting Committee consisting of Dr. (Mrs.) Priyambada Mahanty- Hajmadi, VC Sambalpur University as its Chairperson and Mr. H.S. Sarkar, Secretary-cum-Commissioner F & ARD, Orissa; Wilber R. Seidel, Fishery Administrator, NMFS, Dept. of Commerce, USA; Herbert Lingham, National Co-ordinator UNDP/GEF Small Grant Programme, India; Dr. K.P. Philip, Zonal Director Fisheries Survey of India, Visakhapatnam; Chitta Behera, Director Project Swarajya, Cuttack; Rakhal Shyam Mishra, Asst. Director of Fisheries (Marine), Kujang; J. Ramsh, MPEDA-Cochin; Tarun Pattnaik, President OMFPA Paradip; and after necessary deliberations by the participants was unanimously passed. Those who participated in deliberations in the concluding session included Mr. Wilber R. Seidel, Mr. Jack Forester and Mr. Join F. Mitchell from NMFS, Govt. of USA; Mr. Pravakar Mishra, M.D. Orissa Fisheries Federation; Mr. B.C. Mishra, Asst. Director Fisheries (Marine) Balasore; Dr. C.S. Kar, Research Officer, Wildlife and Mr. P.K. Acharya, a local trawl owner.

Mr. K.C. Badu, Director Fisheries Orissa offered a vote of thanks to all the resource persons, guests and participants of the workshop for making the technology transfer programme on TED a grand success. In a special gesture Mr. Tarun Pattnaik, President Orissa Marine Fish Producers' Association, Paradip also extended on behalf of the trawling community of the State their heartfelt gratitude to the NMFS personnel from USA for having come over to Paradip coast and successfully demonstrating the technology on Turtle Excluder Device to our people.

A special feature of the concluding session was the video play of the shots taken by Project Swarajya on the entanglement and eventual escape of Olive ridley sea turtle from the exit hole of the TED fitted to the fishing net for experimental purposes.
RECOMMENDATIONS OF
THE TRAINING-CUM-DEMONSTRATION
WORKSHOP ON
TURTLE EXCLUDER DEVICE
(TED)

HELD AT PARADEEP, ORISSA NOVEMBER 11 - 14, 1996.

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A. BACKGROUND:

1. The Training-Cum-Demonstration Workshop on the need and method of installing and using the Turtle Excluder Device by shrimp fishing vessels was organised at Paradeep, Orissa from November 11 to 14, 1996 jointly by the Department of Fisheries & Animal Resources Development, Government of Orissa & Project Swarajya, a leading N.G.O. of Orissa, under the Technology Transfer Programme of the U.S. Department of Commerce, National Oceanic & Atmospheric Administration (NOAA), National Marine Fisheries Services (NMFS).

2. The Workshop was inaugurated by Hon’ble Minister for Fisheries & Animal Resources Development, Govt. of Orissa, Mr. Prakash Chandra Debta.

The Workshop was attended by 207 delegates, comprising Trawl Owners, Trawl Operators, Fishermen & Fisherwomen, Fishing Gear Fabricators and Government Officials. Other prominent persons included:

- Dr. Mrs. Priyambada Mohanty-Hejmad, Vice Chancellor, Sambalpur University & Member, Marine Turtle Specialist Group, International Union for Conservation of Nature (IUCN);
Mrs. Debjani Roychoudhury, Programme Officer, American Consulate General, Calcutta;

Mr. Herbert Lingham, National Coordinator, UNDP Global Environment Facility- Small Grants Programme in India, New Delhi;

Mr. G. Mohan Kumar, I.A.S, Managing Director, Marine Products Export Development Authority, Ministry of Commerce, Govt. of India.

Mr. K.C. Philip, Fisheries Survey of India, Vizagpatnam

Dr. Z.A. Ansari, Scientist, National Institute of Oceanography, Goa.

Senior Representatives of the following Organisations also participated:

- Marine Products Export Development Authority of India (MPEDA)
- Fisheries Survey of India (FSI)
- Central Institute of Fisheries & Nautical Engineering & Technology (CIFINET)
- Central Institute of Fishery Technology (CIFFT)
- Central Institute of Fishery Aquaculture (CIFFA)
- National Bank of Agriculture & Rural Development (NABARD)

B. ACKNOWLEDGEMENTS:

Special mention should be made of Dr. Mrs. Priyambada Mohanty-Hejmad, who was responsible for initiating the proposal for technology transfer from the National Marine Fisheries Services, USA through the Govt. of Orissa.

Mrs. Debjani Roychoudhury of the American Consulate General in Calcutta for her coordination efforts; and the UNDP/GEF Small Grants Programme in India which assisted Project Swarajya, and Fisheries Dept. of the Govt. of Orissa in organising this Workshop.

The Workshop gratefully recognizes the valuable technical inputs provided by the US team led by Mr. Wilber R. Seidel, Fisheries Administrator, NMFS/USA and his able colleagues namely - Mr. John F. Mitchell, Marine Biologist, Mr. Jack Forrester, Fishery Method Equipment Specialist, and Mr. James Barbour, Fishery Method Equipment Specialist for making the workshop a grand success.

Mr. K.C. Badu, Director of Fisheries, Orissa, and Mr. Pravakar Mishra of Orissa Fisheries Federation and Mr. Chitta Behera, Director, Project Swarajya, Cuttack deserve special kudos for their planning and coordination of Workshop.

The contributions of Mr. Tarun Pattnaik, President, United Bengal Orissa Marine Fish Producers' Association, Mr. Ajit Nayak, President, Utkal Marine Fish Production & Marketing Cooperative Society and Mr. Trilochan Bastia, General Secretary, Balasore Trawler Owners' Association are highly appreciated.
C. RECOMMENDATIONS:

After detailed discussions and deliberations, the following recommendations were adopted:

1. The Workshop recognizes the imperative need to protect and conserve the sea turtles in Indian waters and expresses its desire for appropriate action to be taken in this regard both by Government and Non-government sectors;

2. The Workshop recognizes the need to reduce the incidental catch of sea turtles in the trawl nets of shrimp fishing vessels operating in Indian waters;

3. The workshop recognizes the urgent need for policy retooling, policy implementation and policy enforcement and recommends that the concerned Ministries of the Government of India be requested by the Chairman of this Workshop to initiate a productive dialogue with other individuals, institutions and organizations concerned about sea turtles for formulating and expediting appropriate steps in this regard;

4. The Workshop recommends that coastal waters which are breeding grounds for turtles should be included in the Coastal Zone Management Plan (CZMP) of each Indian Maritime State & U.T. and that Coastal waters be properly classified into different zones such as (a) Protection (b) Conservation and (c) Utilisation, in so far as the use of TED is concerned.

The use of TED should be made mandatory and a proper and effective monitoring system be developed for all areas except (a) and (b) in joint consultation between Government and Non-Government sectors and prominent individuals.

5. Since sea turtles are global animals migrating in all Oceans irrespective of national and international boundaries, this Workshop recommends that a uniform policy for all the Indian Coastal waters including the Maritime States and Union Territories be formulated and implemented expeditiously;

6. The Workshop recommends early Government of India action in the formation of a Coordinating Body comprising turtle specialists, ecologists, environmentalists, economists, social scientists and representatives from Government and Non-government Organisations;

7. The Workshop recommends that the Chairman of this Workshop who is the Secretary-cum-Commissioner for Fisheries & Animal Resources Development, Government of Orissa be appointed by the Government of India to head the proposed Coordinating Body and to conduct similar workshops in other Coastal regions as a useful and important follow up action of this workshop. All such workshops shall be planned and implemented in collaboration with appropriate NGOs engaged in coastal water management and marine ecosystems.

8. The Workshop recommends that appropriate technologies interfacing with the existing Turtle Excluder Device be identified, developed and popularized for protecting and conserving the sea turtles, and that the concerned G.O.I Ministries be requested by the Chairman to take necessary steps in this regard.
9. The workshop recognizes the need and importance of undertaking collaborative studies, research and training & recommends action in the following areas:

(a) A cost-benefit analysis study of the shrimp fishing operation with and without the use of TED technology, preferably by the Indian Institute of Management, Ahmedabad, which has vast experience in undertaking such studies;

(b) A survey of incidental catches of sea turtles in different types of nets all around the coastal waters of India;

(c) Training, extension and information dissemination activities on TED technology which should be made the responsibility of the Coordinating Body;

10. The workshop recommends that the various G.O.I Departments/Agencies, the State Governments and the Union Territories introduce adequate schemes for enhanced extension activities to popularise the need to protect sea turtles and to earmark adequate budget allocation for such extension activities. Preferably such programmes should be treated as Central Sector Projects.

11. The Workshop recommends that the concerned Central Ministries in association with the maritime States and Union Territories immediately organize a brain storming session with the Private Sector for deciding their role and responsibilities in the protection and conservation of sea turtles;

12. The Workshop recommends that the Central and State Governments seriously consider providing incentives by way of sales tax concession, duty exemption, and tax holiday etc. to units investing in turtle protection and conservation measures including the use of TED throughout the coastal water region of India.

13. The Workshop expresses its deep concern at the ban imposed by the US Government of shrimp imports which is subject to the following:

(a) The foreign government has in place a regulatory programme for incidental catch of sea turtles in commercial shrimp trawl fisheries, comparable to the U.S. and;

(b) Shrimp harvest in a manner not harmful to sea turtles.

With due regard to the importance of Protection and Conservation of sea turtles and keeping in mind our need and interest to increase and not decrease our shrimp trade internationally, it is recommended that the Government of India, the State Governments and Union Territories should formulate appropriate and timely policies, ensure their implementation and enforcement so that India is not placed at a dis-advantageous position in relation to other shrimp exporting countries.

14. This workshop would appreciate Government of India assistance in supporting the to and fro travel costs of a representative delegation of ten persons concerned about and involved in the
protection and conservation of sea turtles to participate in a TED Technology Transfer Training Programme offered by the U.S. National Marine Fisheries Services in the U.S. in February 1977. The Chairman of this Workshop is requested to initiate necessary action for this purpose.

15. The Workshop recommends developing a model training programme with a core group of gear technicians under the technical assistance and guidance of the U.S. National Marine Fisheries Services at the earliest in India. This would also include training in monitoring and enforcement measures.

H.S. Sarkar, I.A.S.
Commissioner cum Secretary, Fisheries & A.R.D, Govt. of Orissa.

Dr. P. Mohanty-Hejmadi, Chairperson, Committee on Recommendations of the Workshop on TED Technology.

Wilber R. Seidel, Fishery Administrator, NMFS, Dept. of Commerce U.S.A. (TED Technology Transfer)

Herbert Lingham National Coordinator, U.N.D.P GEF Small Grants Programme New Delhi 110 016

Dr. K.P. Philip Zonal Director, Fishery Survey of India, Visakhapatnam.

Chitta Behera Director, Project Swarajya, Kesharpur, Cuttack - 1, Orissa.

Rakhal Shyama Mishra Asst. Director of Fisheries, (Marine) Cuttack, Kujang, Orissa.

J. Ramesh Marine Products Export Development Authority, Cochin - 36

Tarun Kumar Pattanaik, President, Orissa Marine Fish Producers Association, Paradeep, Orissa.
Workshop on
Turtle Excluder Device
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Technical Collaboration
National Marine Fisheries Service,
Department of Commerce,
Government of U.S.A.
WORKSHOP ON
TURTLE EXCLUDER DEVICE

PARADIP, ORISSA,
11 - 14 November 1996

Orgd. by Dept. of Fisheries, Govt. of Orissa
and
Project Swarajya, Cuttack.

=BACKGROUND=

Eight species of Sea turtles are seen in the world, such as Green turtle, Black turtle, Leatherback, Olive ridley, Hawkshill, Australian flatback, Loggerhead and Kemp's ridley, out of whom only five are seen in Indian seas, namely Olive ridley, Green turtle, Hawkshill, Loggerhead and Leatherback. In Orissa coast so far three species are noticed. These are Olive ridley, Leatherback and Hawkshill. Out of these the last two are seen rarely. The first one viz, Olive ridley sea turtle is not only seen plantily in Orissa coast but also they have the world's biggest nesting ground at Gahirmatha beach in Bhitaranjika. Next to Gahirmatha, that is, the second largest rookery of Olive ridleys lies in Mexico coast. In comparison to Gahirmatha the nesting ground at Mexico coast is considerably small. Every year more than 3 lakhs of female Olive ridleys on average use to come to Gahirmatha to lay eggs at a particular period, that is from Nov. to Feb. Generally they lay eggs at midnight. The number of eggs laid by a turtle varies from 60 to 100. These Olive ridley sea turtles come from far-off Pacific and Atlantic Oceans to do nesting at Gahirmatha. Besides Gahirmatha, Olive ridleys are also seen laying eggs in other places in Orissa coast viz, the Devi river mouth in Puri District, Hukitola in Kendrapara district, and
Keluni mouth of Konarka- Ratukhand marine drive. Needles to say that Orissa coast occupies a distinct position in the maritime map of the world on this account. Incidentally it is worth mentioning in addition that the Orissa coast is inhabited by some other rare and endangered marine animals, such as Horseshoe crab, Dolphin and Salt water Crocodile.

As is well known, Olive ridley sea turtles had appeared on the earth in pre-Jurassic age, much before the emergence of dinosaurs, and in spite of epoch-making geological changes since then they could survive unlike many of their contemporaries. For this reason Olive ridley is now the subject matter of advanced research by Zoologists, Marine Biologists and Geologists. However, excepting the mass nesting behaviour of Olive ridley sea turtles, no other aspect of this primitive animal has been studied in depth till now. We have no precise data about different important aspects of their life cycle such as their routes of migration, growth, nutrition, sex, nervous system etc. Scientists have opined that the universe has undergone lots of geomorphic and biological change in the past, and Olive ridley sea turtles can throw some light on different unsolved puzzles of such change.

The strange Olive ridley sea turtles which appeared on the earth nearly 200 million years ago have however become endangered in the recent years. It’s tasty meat and eggs are illegally sold in the markets. Besides people do not hesitate to kill Olive ridleys for making fancy toys and domestic articles from out of their shell, skin and bones. Jungle cats, wild pigs, dogs, and hyaena also destroy their nests in search of eggs. Similarly the hatchlings while moving from the beach to the sea are being preyed on by different birds, wildlife, sharks, and many other sea animals. Moreover, the imbalanced development work damages the coastal ecosystems and in the process the nesting places of sea turtles are also destroyed. The population of Olive ridleys and other sea turtles is fast diminishing. In addition, the Olive ridleys are facing another serious threat. During their to and fro journey to the nesting ground, Olive ridleys are being accidentally caught in the trawl nets and get killed in large numbers.
Due to various natural and manmade factors, the world famous nesting ground of Olive ridleys at Bhitarkanika of Orissa coast has become seriously threatened. Consequently, the Olive ridley sea turtles are seen in recent years changing their nesting ground from Bhitarkanika over to Rusikulya river mouth. If the adverse conditions continue, it may so happen that in near future their populations in Orissa coast may reach the point of near extinction.

For protection of Olive ridley and other rare & endangered wildlife there have been two significant International Conferences- one at Washington in the year 1973 and the other at Rio de Janero in 1992, and India along with most other developed & developing countries are the signatories to these Conferences. Accordingly Govt. of India have declared Bhitarkaanika of Orissa as a Wildlife Sanctuary in 1976. Besides the Marine Fishing Regulation Act 1982 and Rules 1984 are in force in Orissa. Again fishing has been prohibited in areas upto 20km sea ward from Gahirmatha beach for protection of Olive ridley sea turtles. Despite all this the mortality of Olive ridleys goes on unabated. In Orissa coast the Olive ridley sea turtles generally move in the area between Paradip and Dhamara fishing harbours, where more than 550 trawlers do operate to catch fish and shrimp almost throughout the year. Olive ridley sea turtles are accidentally caught in the trawl nets along with fish and shrimp. It is estimated that two turtles on an average are drowned in the trawl net per boat day. The turtles so drowned not only get killed but also damage the trawl nets, ultimately leading to a reduced catch for the fisherman.

To save the fishermen from the loss so caused by low catch, and to protect the trawl nets from damage, the National Marine Fisheries Services (NMFS) Govt. of USA have developed a device known as Turtle Excluder Device (TED) during the mid eighties to protect the rare and endangered sea turtles. This low cost device made up of steel or aluminium metal is fixed to the trawl net, and if any turtle accidentally comes inside the trawl net it escapes safely through the exit hole of the device. This device is so ingenuously made that only the turtles can escape but not the fish and shrimp. This device has been thoroughly tested out for about a decade at the Mexico Coast.
Above all, the USA have decided not to import shrimp from those countries which do not use Turtle Excluder Device in their trawl nets. This stipulation, a sequel to the verdict of US Court of International Trade has become effective from May 1, 1996. It is a known fact that from Orissa about 7,000 MT of processed shrimp and fish are exported which value nearly Rs.175 crores. If we do not go for TED in our trawl nets we can not export shrimp to USA and thereby shall lose a huge amount of foreign exchange. Under the circumstances there is no option vis-a-vis the use of TED in our trawl nets.

It is worth mentioning that the National Marine Fisheries Services (NMFS) of US Govt. have agreed to provide the technical know-how of TED construction and application to the trawler owners/operators of Orissa coast free of cost. Accordingly two Gear experts of NMFS have already paid a visit to Dhamara and Bhitarkanika of Orissa during February 1996. In the present workshop at Paradip from 11 to 14 Nov. 1996 which is being organised jointly by State Fisheries Dept., Orissa and Project Swaranjaya, a leading Non Govt. Organisation of the State, the concerned experts of NMFS, USA will provide detail technical know-how of TED including its operation at sea to the trawler owners/operators of Orissa coast. If we fully utilise the opportunity so provided through this Workshop we shall be able to acquire the TED technology ourselves, and it shall go a long way off in protecting the rare and endangered Olive ridleys in our coast. Simultaneously we can safely catch fish and shrimp, export them and ensure undisturbed flow of foreign exchange, making thereby our State ever more prosperous.
Basic Technical Information on Turtle Excluder Device (TED)

Since the Turtle Excluder Device (TED) was first introduced in USA during mid 1980's, research and development to improve TED performance has continued by the fishing community. Keeping in view the need to expel the turtles from and to retain fish/shrimp in trawl nets, by now TEDs of different shape and size have come up. There are generally two broad kinds of TED, one the Hard TED and the other Soft TED. It has been observed that though the Soft TED is useful in certain conditions, its installation & operation in the field are problematic. Besides as much as 20% of the fish catch escapes along with the turtles & in many cases the turtles do not escape through the Soft TED and ultimately get entangled in the net. Therefore, general preference is made for Hard TED in place of the Soft TED. Now there are six varieties of Hard TEDs depending upon the grid size, bar spacing and construction materials. These are Georgia Jumper, Hooped TED, Fixed Angle, Super Shooter, Anthony Weedless and Flounder TED.

The simplest and widely used Hard TED is Georgia Jumper. Its design is oval grid type made from steel rod and features a horizontal cross brace for added strength. It is seen that Georgia Jumper is best suited to our coast. This TED is made up of solid steel rod or fibre glass rod or aluminium rod. These stuff are used to withstand the rough conditions of the sea.

The turtle escape hole can be positioned either at the top or bottom of the TED frame. From experience it is observed that
the bottom opening TEDs can exclude unwanted things like debris, shell, sponge, jelly fish, sharks, rays etc. from the trawl in addition to turtle. If we want to catch fish and shrimp over an area that is relatively clear of debris then we can consider using a top opening TED.

The TED works best for turtle exclusion and shrimp retention when installed at angles between 30 to 55 from horizontal. However, the ideal angle is 45% which can be slightly changed according to requirement. TEDs having bottom openings are attached with floats which are made up of aluminium, PVC or hard plastics. The function of the float is to keep the TED in proper floating condition, otherwise it will be a problem for juvenile turtles to escape.

The size of the exit hole and its placement are important too. It can be fitted either at top or bottom as per requirement. The size of the exit hole depends on the size of TED.

The TED construction and application can also be modified depending upon the local fishing conditions. The experience gathered in course of repeated use of a particular variety of TED in the same coast can help us in suggesting certain modification in its design and operation.

The gear experts of National Marine Fisheries Service (NMFS) USA, basing on their experience have compiled their pool of knowledge on maintenance and trouble shooting of Turtle Excluder Device which we should bear in mind while operating the TED in our coast.
Female ridley on way to Gahiramatha rookery

Olive ridley

Slaughterhouse: turtle being prepared

Laying Turtle

Emergence of hatchling

turtle trapped in net
BASIC HARD TED DESIGNS

Georgia-Jumper

Hooped TED

Fixed Angle

Super Shooter

Anthony Weedless

Flounder TED
WELCOME SPEECH OF DIRECTOR, FISHERIES, ORISSA IN THE INAUGURAL SESSION OF TED WORKSHOP AT 11A.M. ON 11TH NOV. 1996

It is a rare & unique privilege on my part to extend at the outset a note of warm and hearty welcome to this august assembly comprising, among others, the esteemed officials from National Marine Fisheries Service, Govt. of USA; Consulate of US, Calcutta; United Nations Development Programme, New Delhi; Marine Products Export Development Authority, Govt. of India; and Central Institute of Fisheries Nautical & Engineering Technology, Govt. of India who have been kind enough to make their time for this 4 day Workshop-cum-Demonstration on Turtle Excluder Device at Paradip from 11th to 14th November 1996. This is being organised under joint auspices of Dept. of Fisheries, Govt. of Orissa and Project Swarajya, a Non-profit NGO active in the field of coastal ecology of the State. We extend them a hearty Welcome.

2. We are deeply obliged to Mr. H.S. Sarkar, our Secretary and Mr. Prakash Chandra Devata, our Hon'ble Minister Fisheries & Animal Resources Development, Govt. of Orissa for their kind presence in this Inaugural Session of the Workshop since they have all along been an unfailing source of inspiration and guidance behind our Department's efforts at transfer of TED technology to the trawling community of Orissa coast.

3. Our wholehearted thanks go to Dr. (Mrs.) Priyamabada Mohanty Hejmdadi, Vice-Chancellor, Sambalpur University, a noted Zoologist of outstanding calibre for her unceasing campaign at home and abroad for protection of Olive ridley sea turtles in our coast by the use of TED. We are greatly honoured by her august presence in this Workshop and look forward to her continued unstinted moral and intellectual support to the cause of popularising TED in our coast in the days to come.

4. The world's largest Olive ridley rookery at Gahirmatha and the trajectory of pre-nesting mass migration of sea turtles in Orissa coast fall essentially under the jurisdiction of two coast-line districts Kendrapara and Jagatsinghpur, the Collectors Contd...P/2.
of which have been duly invited to this workshop. While welcoming them into our midst we desire that they take a keen personal and abiding interest in the main object of the workshop, that is introduction of Turtle Excluder Device in Orissa coast.

5. As you know the real clientele of the TED technology is the trawling community of our coast which includes not only the trawl proprietors and crew, but also artisans engaged in net making and fabrication and agencies engaged in shrimp processing and export. We have therefore invited the representatives of fishermen cooperative societies, selected net makers and fabricators and also office bearers of selected associations of trawlers and shrimp exporters. They have responded positively to our invitation and turned up for active participation in the workshop. They are the real people who shall essentially benefit from the TED technology and on whose shoulders too depends the success of its operation in Orissa Coast henceforward.

6. We are pleased to see here a galaxy of esteemed mediamen representing Doordarshan, AIR, national & regional newspapers and also free-lancers who have turned up in response to our invitation. The Turtle Excluder Device being altogether a new technology in our setting, we expect them to cover in depth not only the story of this 4 day Workshop-cum-Demonstration on TED but also its application and impact in the aftermath in their respective media, print of electronic.

7. Above all, I must confess that without the whole-hearted involvement of the concerned officials and agencies under Directorate of Fisheries, this Workshop could not have materialised so successfully. Special mention among them may be made of MD, Fish P&D, DDF (Marine) South; & ADF (M) Kujang who is also the nodal officer for this workshop.

Contd...P/3.
8. Last but not the least, as you might be aware, this Workshop shall run for a duration of 4 days, the initial two days being meant for indoor training in design and construction of TED, while the last two days for installation, operation and maintenance of TED through a practical demonstration at open sea off Paradeep coast by the resource persons from U.S.A. To facilitate a smooth conduct of both theoretical and practical sessions during this entire period, our Department has made necessary logistic arrangements for the invitees and trainees. We have put in the best of our efforts to make this workshop a success. However, if there is any lapse on our part, I request to kindly bear with us.

With these few words, I do not want to stand any longer between you and the celebrated speakers of the inaugural session of the workshop just begun.

I once again welcome all of you for this workshop on TED.

JAI HIND
INAUGURAL SPEECH OF SHRI PRAKASH CHANDRA DEBTA, HON'BLE MINISTER, FISHERIES AND ANIMAL RESOURCES DEVELOPMENT, ORISSA ON "WORKSHOP ON TURTLE EXCLUDER DEVICE" SCHEDULED TO BE HELD AT PARADEEP FROM 11TH TO 14TH NOVEMBER, 1996

Chairman Mr. Sarkar

Wilber R. Seidel, Fishery Administrator, NMFS USA and his colleagues

Vice Chancellor, Sambalpur University
Dr. Priyambada Mohanty Hejmadi,

Mr. Behera, Managing Director,
Project Swarajya,

Director of Fisheries, Mr. Badu,

Deputy Chairman, Paradeep Port Trust,
Collector, Jagatsinghpur,

Delegates from UNDP, MPEDA

Delegates from Central Institute of Fisheries and Nautical Engineering Technology,

All other delegates,

All the participants, representatives of press, Door Darshan and friends.

1. It is a great privilege on my part to inaugurate the workshop on TED today.

2. Timing and venue of the workshop has a special significance as the workshop is being held on the eve of famous Baliaatra, the festival which commemorates the day on which the Sadhabas, ancient Oriya navigators, used to sail out their boats to far-east countries in the past.

Secondly, by choosing Orissa as the venue for training on TED, the importance of Orissa as a marine state has been recognised by our American friends and other delegates.

Thirdly, non-violence has been the hallmark of our Indian tradition, more particularly the land of Kalinga, the

Contd...P/2.
ancient name of Orissa which converted Chandashoka, the cruel to Dharmashoka, the kind, in the famous battlefield of Kalinga. This is also corroborated from the fact that turtle has been worshipped in India as one of the ten incarnations of God.

I am thankful to all the delegates from U.S.A. UNDP and other institutes having recognised the importance of Orissa on these accounts to organise the workshop on TED technology here in Paradeep of our State.

3. As all of you know, Orissa has a long stretch of 480 Kms. of coastline.

The Bay of Bengal, adjoining estuaries and the largest brackish water Chilka lagoon are important to Orissa on two major accounts.

Firstly, it is rich in fishery resources contributing more than 7,000 MT of sea food valued at 50 million US Dollars or nearly 175 crores of Rupees to the export basket of the country.

Secondly orissa is having one of the richest repositories of flora and fauna in the world.

We are proud to have relatively pollution free coastal waters in the state which sustain a unique home for rich biodiversity of the sea.

More than 50,000 fishermen depend on the off-shore and in-shore waters to produce about 1,24,000 MT fish with the help of 15,000 traditional and mechanised boats.

4. However, while exploiting the marine resources we cannot afford to harm the sea turtles and other rare species.

Contd...P/3.
species in the process of fishing operation. For ecological harmony, we have to see that they survive and live. Use of TED technology by fishermen will help us to protect the sea turtles.

5. I am extremely happy to say that the concerned U.S. experts have come on our request to impart the technology of TED in all its aspects to the trawl professionals of our coast. I am happy to learn that this four-day workshop which includes a practical demonstration of TED at sea is being organised.

6. I am sure that the participants from different training institutions, Departments of Government of Orissa, Government of India, people engaged in trawl operation and all officers would learn and acquire the technical know-how of TED and its application from the experts and thereby help our state to fulfil our national and international obligations for protection of endangered species like Olive Ridley sea turtles.

7. With these few words, I once again thank all the participants, all delegates and all officers and with the workshop a grand success.
Address by Chitta Behera, Director, Project Swarajya in the Inaugural Session of Workshop on Turtle Excluder Device at Jaydev Sadan, Pradip, Orissa from 11 to 14 Nov. 1996 organised under joint auspices of Dept of Fisheries, Govt of Orissa and Project Swarajya, Cuttack

It is indeed a unique opportunity for an NGO like us to be a part of the present workshop on TED which aims at protecting a primitive and endangered animal Olive Ridley Sea Turtle simultaneously with saving the trawling fishermen of our coast from their continuing headache due to accidental drowning of Olive ridleys inside the trawl nets during sea fishing.

As a matter of fact, our involvement in the transfer of TED technology from National Marine Fisheries Service, Govt. of U.S.A. to the fishermen community of our State is but a reflection of the avowed commitment of our organisation to the philosophy which believes in both possibility and desirability of man and nature, or more specifically speaking, development & environment to go together harmoniously albeit in a perpetual state of dynamic equilibrium. And as regards our intimate partnership with the Government in Centre and State, it is born out of our firm belief that the massive resources that are at the command of the Government, in terms of infrastructure, manpower, expertise and information can best be harnessed for the benefit of the people and society at large, if a genuinely committed NGO extend its hands of collaboration to the Govt. in the matter of proper implementation of the official policies & programmes which are generally well meaning and welfare oriented in nature.

Our involvement in the ongoing project on transfer of TED technology has its roots in our concern for conservation and sustainable management of rich bio-diversity of our coast, a goal which our organisation has been pursuing diligently since its inception in mid-88. As is well known, Orissa coast is endowed with lush green mangrove forests in Bhitaranika, nest in importance to Sunderbans of West Bengal in India alongwith world renowned sprawling bruckish water lagoon Chilka which shelters a wide variety of uniquely precious flora and fauna. Not withstanding the increasing scale of ecological degradation, one can still see many a rare and endangered species which include salt water crocodile, dolphin, horseshoe crab, water monitor lizard, python, transcontinental migratory birds & oyster besides Olive ridley sea turtles. Our special thanks are due to Mr. N.C. Mohanty, Asst Conservator of Forests, Govt. of Orissa who has meticulously surveyed and documented the coastal biodiversity of Orissa in a pioneer book entitled “Mangrove Forests and Wildlife of Orissa” on our behalf. As is well known, by now the horseshoe crab, a rare and endangered primitive marine amphibian is still abundant all along the Orissa Coast. The horseshoe crab which is a predecessor of Olive ridley and otherwise called a living fossil is endowed with rarely found blue blood, out of which is produced a highly expensive diagnostic reagent called LAL (Limulus Amoebocyte Lysate) already used in advanced countries for an accurate and quick detection of gram negative bacteria present in human beings or food and pharmaceutical products. We are greatly indebted to Dr. Anil Chatterjee of National Institute of Oceanography, Goa for having served as the Principal Investigator to our project which in course of its implementation
could bring forth to light many a new finding on the occurrence, species distinction, nesting, feeding, nutrition and moreover habitat of horseshoe crab in Orissa Coast. Mr. M.K. Ahmed formerly Director Fisheries, Orissa also deserves our special regards for extending his unstinted support to our organisation for carrying our very many innovative R&D projects in coastal areas including the one on horseshoe crab.

As matter of fact it is the people living in coast-line villages who are at one breath the principal beneficiaries of our marine resources and sufferers of environmental degradation, if there be any. They & their legitimate interest have therefore been the chief focus of our ecologically balanced developmental activities in Orissa coast, be it Fish Aggregating Device, Paddy cum Fish Integrated Farming in saline water logged areas, Scientific Drying of Fish in racks, Non-formal Education for fishermen children, Small Capital Assistance for income generation programmes, Development of Post Harvest Fisheries, or Training in Fish Pickle Making. We are indeed greatly obliged to CAPART New Delhi, SIDA New Delhi, NORAD New Delhi and ODA-BOBP Madras besides the esteemed officials of the Directorate of Fisheries Orissa, especially the Assistant Director Fisheries, Marine Kujang and Deputy Director (M) South, Cuttack for a result-oriented execution of such community development programmes.

Coming over to the theme proper of the present workshop, that is protection of Olive ridley sea turtles by the use of TED, we would like to reiterate here a scientific proposition 'no turtle, no prawn' just like 'no mangrove, no prawn'. As per the finding made by Mr. N.C. Mohanty Asst. Conservator Forests Orissa there was little catch of commercial prawn from our waters during the very years when mass migration and mass nesting of Olive ridleys did not take place for some reason or the other. Moreover, while surveying the Ekalukanasi Beach in Gharimala area, the nesting ground of Olive ridleys in the year 1994, I myself alongwith a few other colleagues could notice a huge number of dead shells of horseshoe crab and that of Olive ridleys on the beach, a fact which indicated the coexistence of these two species so far their habitat and nesting practice are concerned. It is more or less the same marine ecosystem which shelters the commercially valuable shrimp & ecologically precious horseshoe crab and Olive ridley, all of them being crustaceans and originating more or less in the same geological time scale. Under the circumstances, the trawling community along-with shrimp processors and exporters should realise that it is in the best interest of their prawn business that they should conserve the habitat and nesting grounds of primitive and endangered species like horseshoe crab and Olive ridley sea turtles in our coast. Unless & until this fundamental scientific lesson is drawn home to their heart, the application of Turtle Excluder Device or for that matter any amount of prohibitive legislation can not prove a full-proof deterrent to the depletion of sea turtle population or other endangered species in our coast.

An effective enforcement of TED regulations, which is in the offing can of course minimise the turtle mortality caused by its accidental drowning in trawl nets as has been observed in the Gulf of Mexico, where is situated world's second largest rookery of Olive ridleys next to Gahirmatha of our coast. We are indeed greatly indebted to the National Marine Fisheries Service, Govt. of U.S.A. for devising an inexpensive but otherwise a revolutionary equipment like TED and volunteering to provide free of cost its technical know-how to our people, by application of which we can largely preserve the world's by-far largest rookery of Olive ridleys situated in our coast. As I know further, the NMFS, USA is going to sponsor a week-long workshop on Olive ridleys in coming January 1997 in collaboration with the Dept. of Zoology, Utkal University at Bhubaneswar and Bhitarkanika, the chief aim of which is to identify the peculiar round-about trajectory of mass migration of Olive ridleys, say from far-off Pacific Ocean to Gahirmatha of Orissa through signalling transmitters fitted on their back. Once the route of movement of Olive ridleys in the sea is known, it will unfold very many long standing mysteries surrounding various aspects of life cycle of sea turtles hitherto unexplored, such as age, nutrition, habitat & sexual activity. Our State is highly obliged to Dr. (Mrs.) Priyamvada Mohanty Hejmadi the present VC of Sambhalpur University for having successfully liaisoned with the NMFS, USA not only for introduction of TED in Orissa coast but also for the proposed Workshop-cum-Demonstration of transmitters on ridley's back.
As per the admission of NMFS personnel themselves, there shall be no doubt some loss of prawn and fish insignificant though, through the exit hole of TED along with the turtle. However, considering the immense scientific stakes that lie in the survival of sea turtles at a global level and the importance of turtle population for the sake of commercial shrimp itself as mentioned earlier the trawling community have to bear with this small loss for a bigger and long term gain. Moreover our fishery officers and trawl professionals, we are confident, shall in due course bring about some modification of the other in the TED design so as to drastically minimize and even eliminate the present level of escape of fish through the exit hole of TED, just as you know, the Georgia Jumper model of TED which is universally replicable and also best suited to our coast didn’t evolve in a day, but out of a long drawn out experience of fishing with TED in several coasts of the world.

We can not but express our heartfelt gratitude to Mr. Wilber Seidel of NMFS, USA and Mrs. Debajani Raychoudhury of USA Consulate, Calcutta for having provided us with necessary communication material on TED for its popularisation among the trawling community and look forward to them for a similar kind of support in days to come to our organisation for protecting other endangered species of our coast like horseshoe crab, salt water crocodile, dolphin and migratory birds etc. besides olive ridley sea turtles. Mr. S.K. Pattnaik IFS, Director Nandan Kanan who is incidentally in charge of conservation of coastal ecosystems in our State and who has already been associated with our National Environment Awareness Campaign in the past is earnestly expected to continue to extend his unstinted support to our ongoing and proposed initiative at conservation of endangered flora and fauna in our coast.

No words are enough to convey our feeling of indebtedness to Mr. H.S. Sarakar IAS, Secretary cum Commissioner to Govt. of Orissa in the Dept. of Fisheries and Animal Resources Development who has pinned a deep faith in Project Swarajya although not only in the matter of this TED workshop but also on a whole range of issues concerning coastal and marine fisheries where a non-government organisation like us can play a role small or big. My brief association meanwhile with Mr. K.C. Badu, IAS Director Fisheries, Orissa who seems to be both a down-to-earth and forward looking officer has led us to visualise a more glorious and dynamic image of the Directorate which he heads, and simultaneously a more active and responsible role for NGOs as the hand-in-hand partners of the Government in the sustainable and participatory management of the coastal and marine resources of our State.

Last but not the least, it is Mr. Herbert Lingham, the National Co-ordinator, UNDP Global Environment Facility - Small Grants Programme for India who took keen interest in supporting forthwith our project on TED, whom we look forward to for a more appreciative attention for furthering the cause of conservation and sustainable management of wondrously rich bio-diversity of Orissa coast.
Address by Dr. (Mrs) Priyambada Mohanty-Hejmadi, Vice Chancellor, Sambalpur University in the Inaugural Session of the Workshop on TED held at Paradip during 11-14 November '96 under joint auspices of Department of Fisheries, Orissa and Project Swarajya, Cuttack.

It gives me a great pleasure to be here since this is equal to a dream-come-true for me. At the outset, let me give you a brief idea as to how it all happened. As you know a couple of years back Gahirmath turtles were very much in the international news centring round the controversy around fishing jettys that were being constructed in Bhitarkanika Sanctuary areas and growing anxiety about the possibility of killing of large number of sea turtles caused by their entanglement in the trawl nets. Dr. Pamela of U.S.A met me and since we had a collaborative relationship for sea turtle conservation, Dr. Pamela and myself on 14th November 1994 met the then Chief Minister of Orissa who having been convinced about the matter sent forthwith a letter of request to National Marine Fisheries Service, Govt. of USA for transferring their technology of Turtle Excluder Device to our fishermen in the interest of the better survival of sea turtles in Orissa coast. On another historic date, that is on 9th January 1995 Mr. Rolland Schmitten of NOAA, NMFS, USA replied that they were ready to transfer such technology through a Workshop to be organised for the purpose by the State Dept. of Fisheries, Orissa. However, in view of the ensuing election the programme could not materialise. However to my good luck I found that Mr. H.S. Sarkar, Fisheries Commissioner, Govt. of Orissa became interested in holding this programme as early as possible and made necessary correspondence with NMFS, USA to that end. This is how our past endeavour has resulted in the present event, thanks to Mr. Sarkar as the transfuser of TED technology.

I am happy to see that our trawl operators and fishermen have shown an unprecedented interest in TED, because I was not sure how they would respond to this proposal. As you might know there is a public law in USA which mandates that unless you provide a documentary evidence of harvesting shrimp without harming the sea turtles, the USA would not import shrimp from our country.

In this context we are very very fortunate that Orissa has become a pioneer State in the whole of South East Asia to have gone ahead for technology transfer programme on TED. And happier thing is that so many fishermen and fisherwomen have come forward to welcome the technology transfer of TED.

Now I shall switch over to Oriya for a few minutes so as to enable our fishermen and fisherwomen to understand what I am talking about.

The Sea turtles as you know are reptiles. They do come to the surface of waters for breathing, lest they shall die of suffo-
cation. But when they move in the sea bottom they are likely to be caught in the trawl nets and consequently killed. As you know there is a worldwide belief that now no form of life is useless. Every form of life is necessary for maintenance of its peculiar ecosystem. Similarly the survival of sea turtles is necessary for preservation of the marine ecosystem in which it lives. If the sea turtles get extincted, so many other species living in the same ecosystem would get extincted too. If you can protect the sea turtles the marine ecosystem shall be kept in tact.

The turtle Excluder Device is a protective device for sea turtles vis-a-vis the problem of growing turtle mortality caused by their accidental drowning in the trawl net. The TED if fitted to the trawl net can help the accidentally drowned sea turtles escape smoothly into the sea through its exit hole without affecting the fish catch. The apprehension that the fishes shall escape along with the turtle through the TED is unfounded.

The US experts on TED who have come here shall show the practical demonstration of TED to all of you. Moreover you can go on modifying the basic design of TED to suit your requirements as and when necessary. The present workshop is really of historic significance for which we the people of Orissa should feel proud. Till now we have given protection to the sea turtles in our coast and the present workshop for technology transfer of TED shall further reinforce our turtle conservation measures. For all this Orissa shall definitely be acclaimed by the world opinion.
Address by Mr. Herbert Lingham of UNDP in the Workshop on TED held at Paradip during 11-14 November '96 under joint auspices of Department of Fisheries, Orissa and Project Swarajya, Cuttack

Inaugural session on 11 November '96

I feel very privileged to be honoured here amongst very senior professionals and on a very scientific topic, that is for protecting Olive Ridley sea turtles. I would really tell you that I am very much impressed with this beautiful partnership of NGO, Government of Orissa and Govt. of USA, which I think is going to be the first and forerunner of future sort of participatory management in this country. I thank Project Swarajya which I think is a very dynamic organisation and one of the leading NGOs in the field of Coastal Ecology, a matter of great concern to UNDP. UNDP has a Small Grants Programme which is meant to assist the development efforts of NGOs and we are also assisting some NGOs for protection of various ecosystems in India. One major concentration of UNDP is going to be on the coastal ecology and we are struggling as a matter of fact to identify a very good NGO for the purpose, and I am happy to say that I have already found a good one, that is Project Swarajya and I hope they will lead this activity in the rest of the country. Thank you very much for your presence today and I hope you will have a good discussion.

Closing Session on 14th Nov '96

I come from an organisation which is very much concerned about development in all its aspects and in all spheres of environment including diverse eco-systems, human resource development, and moreover livelihood needs which are very important and which the President of Trawlers' Association Mr. Tarun Pattnaik has been very much concerned with, particularly the livelihood needs of his fisherfolk community. From my experiences and observations in the last three days I have a strong faith that this particular programme will not only enhance your livelihood needs but also your technical skills and your leadership qualities in the world spectrum too. I am very confident of that and hence just a word to say that the ball is in your court, the opportunity in your hands. Mr. Wilber R. Seidel has been a fisherman himself and has come through a long way. You have seen his experiment on TED. He is living off fishing even today, and he knows what it is. I would say don't leave anything half way. Make the best use of it. These 3 days have been very very useful for all of us here. I think everybody had a learning experience. Yesterday was a really good sharing of knowledge we had learnt, practically what the TED is all about. I am quite sure we will go together and discuss as a team once a problem arises. It is difficult to co-ordinate individually but if you can co-ordinate at your own level to solve the problem, may be through the Association, of which Mr. Tarun Pattnaik is the President. I am quite sure that there is no doubt that you will reach a very dizzy height so far as our exports are concerned. I wish all the best you are going to do in future. Thank you very much.
Sea Turtles of India - An Overview
(With special reference to Olive Ridleys of Orissa Coast)

"সিদ্ধিদেবী ভিক্ষুঃ কাঙ্ক্ষিণে ছুঁড়িয়ে
ঝাড়া লাগায় তাহ ফেন ফেলিয়ে
কুছ পুষ্প দুর্গা মৃত্যে লাগাতে চলে”
-রূপান্তর শিলায়-

Thus the second Avatar of Vishnu, KACHHAP or KURMA, the Lord of Turtles is very familiar to the Indians since ancient times.

Everyone can immediately recognise a turtle or a tortoise. But very few may find it easy to differentiate between main groups of these ancient animals.

There are three basic kinds :-

a) Marine Turtles
b) Terrapins or fresh water turtles
c) Land Tortoises

Marine turtles are as different from land tortoises as whales are from elephants.

a) Marine turtles - Live in the sea. About 6 to 7 different kinds in the world all attaining huge sizes. The largest may be half a ton in weight. The front legs in the form of flippers propel the animal with great speed in the sea. The head and legs are so large that they cannot be withdrawn inside the shell. 5 species of marine turtles are seen in Indian waters.

b) Terrapins or fresh water turtles - It is the most diverse group. There are about 200 different kinds. Most of them live in fresh water ponds, swamps and lakes. Some are terrestrial and few also live in estuaries. About 16 species of hard-shelled terrapins are found in India.

c) Land Tortoises - Are mostly terrestrial going to water to drink or take bath. Over 1 dozen species have been check-listed in India out of at least 39 species found all over the World.

MARINE TURTLES OF INDIA

All marine turtles have more or less similar body form. Only 5 species of marine turtles are found in India.

Family

Dermochelys - Leather back Turtle-(Dermochelys Coriacea)
   - Green Turtle (Chelonia mydas)

Cheloniidae
   - Hawks-bill Turtle (Eretmochelys imbricata)
   - Olive Ridley (Lepidochelys olivacea)
   - Loggerhead (Caretta Caretta)


Turtles sighted in Orissa coasts by the author while he was the Asst Conservator of Forests in Bhitaranika Wildlife Sanctuary during 1986-91:

1) Leatherback  
2) Hawksbill  
3) Olive Ridley

sighted near Dhamara mouth on UDABALI ISLAND, Carapace found seen all over Indian coasts.

Nine out of 10 turtles sighted in the Indian coast are Olive Ridleys. The Ridleys are smallest of sea turtles and may weigh 40 - 50 kgs. having 75 cm. x 55 cm. size on average, whereas a Leatherback may be 1.5 to 2.0 metre long and weigh about half a ton. Sporadic nesting of Olive Ridleys takes place throughout East and West coasts and Andaman and Niccober Islands. In Orissa, sporadic nesting takes place in good numbers over Hukitola Island as well as near Jatadhar mouth.

Neither Kemp's Ridley nor Black turtle is found in the Indian waters.

GAHIRMATHA - LARGEST MASS NESTING SITE IN THE WORLD

Gahirmatha beach of Orissa Coast forms the largest rookery of Olive Ridley sea turtles of the World. Since centuries, these turtles were visiting Gahirmatha beach, near Satavaya group of villages of Kendrapara District as per the information gathered from the oldmen of these villages. But this phenomenon of egg laying by marine turtles, though observed by local administration of Kanika ex-Zamindary and Forest Dept. of Orissa, local people were allowed to collect boat loads of turtle eggs at a nominal fee till 1975.

Dr. H.R. Bustard - An U.N. expert on turtles and crocodiles, who visited the beach, noticed the mass nesting. During 1975, Bhittarkanika was declared as a Sanctuary under Wildlife Protection Act - 1972 primarily for protection and propagation of salt water crocodiles and Olive Ridley turtles.

The isolated Gahirmatha beach was pegged from Habulikhati with peg no 0, where the Forest Deptt. of Orissa came up with infrastructure like buildings and watch towers apart from digging tubewells to get potable water. The pegs were one chain (66') apart and the beach was extending over 110 pegs. Random selection of quadrants was chosen depending upon high density, medium density and low density of breeding turtle population all over the beach during the night. Datewise data was collected for each such quadrant like number of turtles laying eggs inside. Number of quadrants in each category was noted down to compute numbers in each category depicting density of turtle population. Thus their numbers are deduced for the period of mass nesting. Mass Nesting takes place for a period of 7 - 10 days (from Nov. to March) and the mid-period shaws highest concentration of turtles visiting the beach.

Each turtle lays about 100-200 T.T. ball sized eggs and the eggs are deposited within one and half hours of the female turtle emerging out of sea. The nests are 45 cm. deep pits dug out by hind flippers alternately on loose and dry sandy beaches. After the eggs are laid out, the nest is filled with sand by the mother-turtle by means of flippers. The turtle leaves the nest in a zigzag way to sea.
creating a confusion as to where the nest is located even before
the very visitor who may be observing the process of egg laying.

The year-wise data on mass nesting of Olive Ridleys at Gahirmatha
beach is furnished herewith for the benefit of the readers-

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Year</th>
<th>Number of female turtles in lakhs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1977-78</td>
<td>2.300</td>
</tr>
<tr>
<td>2.</td>
<td>1978-79</td>
<td>1.300</td>
</tr>
<tr>
<td>3.</td>
<td>1979-80</td>
<td>2.000</td>
</tr>
<tr>
<td>4.</td>
<td>1980-81</td>
<td>2.000</td>
</tr>
<tr>
<td>5.</td>
<td>1981-82</td>
<td>No Mass Nesting (176 turtles only)</td>
</tr>
<tr>
<td>6.</td>
<td>1982-83</td>
<td>6.193</td>
</tr>
<tr>
<td>7.</td>
<td>1983-84</td>
<td>4.684</td>
</tr>
<tr>
<td>8.</td>
<td>1984-85</td>
<td>2.918</td>
</tr>
<tr>
<td>9.</td>
<td>1985-86</td>
<td>0.500</td>
</tr>
<tr>
<td>10.</td>
<td>1986-87</td>
<td>6.360</td>
</tr>
<tr>
<td>11.</td>
<td>1987-88</td>
<td>0.010</td>
</tr>
<tr>
<td>12.</td>
<td>1988-89</td>
<td>3.150</td>
</tr>
<tr>
<td>13.</td>
<td>1989-90</td>
<td>2.060</td>
</tr>
<tr>
<td>14.</td>
<td>1990-91</td>
<td>6.520</td>
</tr>
<tr>
<td>15.</td>
<td>1991-92</td>
<td>3.700</td>
</tr>
<tr>
<td>16.</td>
<td>1992-93</td>
<td>6.874</td>
</tr>
<tr>
<td>17.</td>
<td>1993-94</td>
<td>6.945</td>
</tr>
<tr>
<td>18.</td>
<td>1994-95</td>
<td>3.395</td>
</tr>
<tr>
<td>19.</td>
<td>1995-96</td>
<td>2.708</td>
</tr>
</tbody>
</table>

**Shifting of Mass Nesting Sites:**

It has been observed that mass nesting site has changed since the
configuration of the beach goes on altering. During 1975, it was
having high density zone near Habalikhati whereas it moved 5-7 kms
eastward upto F.R.H at Ekakula during 1983-85. During 1989, the
beach got bifurcated due to a cyclone and turtles congregated
mostly in the small island in the extreme east, known as
Ekakulanasi (Tip of the beach). It is difficult to reach
Ekakulanasi, except during high tide period.

Further the turtles have visited Wheelers Islands (Babubali and
Tentuliabali) near Gahirmatha and in recent years, the concentra-
tion is more on Wheeler group of islands. Due to Defence Base
established on Tentuliabali (Wheelers’ Island), the most calm and
quiet beach, the largest rookery of Olive Ridleys is finding it
difficult to provide the ideal habitat for the Ridleys. The
illuminating light posts in the Wheelers Island put by defence
servicemen have confused turtle hatchlings while they emerge from
nests as to where to go. Instead of moving straight to sea, they
are attracted towards light posts and estuaries.

In recent years, the beach adjoining Rusikulya mouth has been
identified as a mass nesting site of Olive Ridleys. The Arribada
(the Spanish word for mass nesting) near Rusikulya river mouth may
be 2nd largest in the World.

Excepting guarding the beach full of turtle nests for a period of
two months against predation, very little has been known regarding
the life-cycle of turtles in the sea. Apart from observing mating
pairs from Coast Guard ships and fishing trawlers in the sea, an indepth study on male and female Ridleys is lacking. During 1977, tagging of female Ridleys was done at Gahirmatha with monel tags carrying serial number and the words "REWARD RETURN FOREST DEPARTMENT ORISSA, INDIA". In the following nesting season, 5 tags were recovered showing evidence that female turtles do return to same nesting site every year.

PREDATION

Due to speeding fishing trawlers and gill netters, Ridleys (sea turtles) get entangled in the nets, and fishermen, out of their anxiety to keep their costly nylon nets in tact kill the turtle with the hammer blows on head of the turtle. After the innocent animal is killed, the carcass is thrown to sea to float and get stranded on the beach with the waves touching shore-line. The mating pairs are more prone to get inside nets. The casualty is pronounced when trawling is done within 5 kms. from shoreline.

Another decimating factor contributing to decline in turtle population is catching of mating pairs from sea by the trawlers operating from Digha for meeting the market demand of turtle meat at Calcutta which is an illegal practice.

It is said 2-3 attain adulthood per thousand eggs. Being virtually defenceless, turtles have a large number of enemies. Predators like wild pigs, jackals, paria kites, ferral dogs, monitor hazards and hyenas feast upon turtle egg. Predators like crabs and seagulls kill the hatchlings besides other sea animals.

NEED FOR CONSERVATION

There is a global realisation that the turtle population has declined drastically. This has encouraged many to take up numbers of studies on various aspects of turtle and to draw up effective conservation measures. It is interesting to note that National Marine Fisheries Services (NMFS) USA is providing technical know-how on Turtle Excluder Device in a workshop being held at Paradip from 11 to 14 Nov '96 under joint auspices of Deptt. of Fisheries, Orissa and Project Swarajya, a leading NGO of Orissa. This may go a long way in reducing casualties of turtles caused by trawling. However, deployment of Coast Guard Ships from November to March, and conducting sorties from Paradip to Baruneni mouth, declaration of Gahirmatha as a marine sanctuary, control of fishing under Orissa Marine Fishing Regulaion Rules 1980 i.e. banning mechanised fishing crafts within 5 km. zone off shore-line and allowing only traditinal fishing boats may provide necessary protection to sea turtles of Orissa. We have to remember that Olive Ridley is a Schedule- I animal under Wild Life Protection Act 1972.

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Vote of thanks by Mr. Tarun Pattnaik, President, Orissa Marine Fish Producers' Association in the Concluding Session of Workshop on TED held during 11-14 Nov'96 jointly orgd. by Dept. of Fisheries, Orissa and Project Swarajya, Cuttack

I on behalf of Orissa Marine Fish Producers' Association and its members wish to put it on record that from this workshop we have learnt in regard to conservation and protection of the species like tortoise and Olive ridley turtle. And in addition to this, the delegates from NMFS, U.S.A. have extensively trained our people, as a result of which we are convinced about how TED shall be manufactured, fitted with the cod-end, and operated. We have now to see ourselves how it exits the turtles during fishing itself. I thank the TED Workshop Chairman Mr. H.S. Sarkar. I also thank the Vice Chancellor, Sambalpur University Dr. Priyambada Mohanty-Hejmadi and Mr. Herbert Lingham of UNDP for their valuable views and Mr. Chitta Behera of Project Swarajya for his involvement in the organising of the TED Workshop.
TED Regulations Summary Card
Single Grid Hard TEDs

TED Angle

The angle of the deflector bars must be between 30 degrees and 55 degrees from the normal, horizontal flow through the interior of the trawl.

Note: Single grid TEDs may be used in top or bottom opening configuration.

Escape Opening Dimension

Gulf of Mexico
The escape opening must measure at least 32 inches (81.3 cm) in horizontal taut length (A) and, simultaneously, 10 inches (25.4 cm) in vertical taut height (B).

Atlantic Area
The escape opening must measure at least 35 inches (88.9 cm) in horizontal taut length (A) and, simultaneously, 12 inches (30.5 cm) in vertical taut height (B).

Note: The cut in the trawl webbing for the escape opening cannot be narrower than the outside width of the grid minus 8 inches (20.3 cm), when measured as a straight line width.

Flotation:
(Required on Bottom Opening Hard TEDs)

Allowable Floats
- expanded polyvinyl chloride (PVC),
- expanded ethylene vinyl acetate (EVA),
- aluminum (AL), or hard plastic (HP)

Minimum Number and Size of Floats Required

OPTION 1
TED circumference 120 inches (304.8 cm) or more
1. Two PVC or EVA floats 6.75 inches (17.2 cm) in diameter by 8.75 inches (22.2 cm) in length
2. One AL or HP float 9.8 inches (25 cm) in diameter
3. Manufacturer stamped certified flotation equal to or greater than 26 lbs (9.1 kg)

TED circumference less than 120 inches (304.8 cm)
1. One PVC or EVA float 6.75 inches (17.2 cm) in diameter by 8.75 inches (22.2 cm) in length
2. One AL or HP float 9.8 inches (25 cm) in diameter
3. Manufacturer stamped certified flotation equal to or greater than 10 lbs (4.5 kg)

OPTION 2
Manufacturer stamped certified TED weight and manufacturer stamped certified flotation
1. Manufacturer certified stamped flotation equal to or greater than manufacturer certified TED weight

Prepared by
National Marine Fisheries Service
Southeast Fisheries Science Center
Mississippi Laboratories
Harvesting Systems Division
Grid Dimensions and Material Specifications

Construction Materials
1. Solid steel rod, minimum outside diameter of 1/4-inch (6.4 cm)
2. Fiberglass or aluminum rod, minimum outside diameter of 1/2-inch (1.27 cm)
3. Steel or aluminum tubing, minimum outside diameter of 1/2-inch (1.27 cm) and minimum wall thickness of 1/8-inch (0.32 cm)

Grid Dimensions
Gulf of Mexico
1. Inside horizontal (A) and vertical (B) measurement of at least 28 inches (71.1 cm)
2. Space between deflector bars (C) and between deflector bars and frame (D) must not exceed 4 inches (10.2 cm)

Atlantic Area
1. Inside horizontal (A) and vertical (B) measurement of at least 30 inches (76.2 cm)
2. Space between deflector bars (C) and between deflector bars and frame (D) must not exceed 4 inches (10.2 cm)

Flap Specifications (allowable modification)
- Constructed of webbing no larger than 1 5/8-inch (4.1 cm) stretched mesh
- Attached along entire forward edge, forward of escape opening
- Must lie on outside of trawl
- Cannot be attached on the sides beyond the row of meshes which lies 6 inches (15.2 cm) behind the posterior edge of the grid (A)
- Cannot extend more than 24 inches (61.0 cm) beyond the posterior edge of the grid (B)

Other Allowable Modifications (See 50 CFR parts 217 & 227 for specifics)
- Accelerator funnel
- Chafing gear
- Roller gear

Other Requirements (See 50 CFR parts 217 & 227 for specifics)
- Float placement and method of attachment
- Position of the escape opening cut
- Method of grid attachment
- Direction of grid bars

This document was prepared for general informational purposes in February 1995 and has no legal force or effect. Please refer to the federal TED regulations, 50 CFR parts 217, 222, 227 and the Federal Register for specific and controlling TED requirements.

For additional information:
Enforcement: (813) 570-5344
Regulations: (813) 570-5742
Technical: (601) 762-4591
TED CONSTRUCTION AND INSTALLATION
"BENT-ROD TED (large)"

1. Construction of the Frame

A single oval frame is constructed measuring 51 inches high by 42 inches wide. The outer ring of the frame is constructed of 3/4 inch solid aluminum rod. The vertical grid bars are constructed of 5/8 inch solid aluminum rod which are welded to the inside of the frame 4 inches apart (4-5/16 inch centers). Each vertical grid bar has a 45 degree bend just above the bottom of the TED frame to help keep the device free of debris.
CONSTRUCTION OF THE TRAWL EXTENSION

The trawl extension is made from a single piece of 1-5/8 inch stretch mesh nylon, #24 twine 60 meshes x 160 meshes. Form a tube from the extension webbing by sewing the 60 mesh sides of the pieces together.
OBTAINING THE CORRECT GRID ANGLE

Slide the frame into the extension. Lace a metal hoop into each end of the extension. Using the metal hoops, stretch the extension tube so it is taught and so the extension seam is positioned along the top. Starting at the leading edge of the extension, count back 18 meshes along the seam and attach the top center of the frame to the webbing. In order to find the bottom center attachment point for the frame (opposite end of the center grid bar) count 37 meshes along the top seam from the leading edge of the extension. From this point count 80 meshes perpendicular from the seam to arrive at the bottom center attachment point. The sides of the device are then sewn evenly from the top attachment point to the bottom attachment point.
CUTTING THE EXIT HOLE

Begin the cut 1/2 mesh in front of the bottom center of the frame. Continue the cut along the frame, maintaining the 1/2 mesh distance until the distance from one side of the cut to the other as measured across the frame is 36 inches. Square the cut edge to leave 51 meshes straight from one end of the cut to the opposite end. Turn and cut forward 16 meshes on each side. Turn again and cut 51 meshes from one side to the opposite side. This should result in a rectangular opening in the extension of 51 meshes by 16 meshes.
CONSTRUCTION AND ATTACHMENT OF THE EXIT HOLE COVER

The exit hole cover (FIG. 5) is made by cutting a 37 x 36 mesh piece of depth-stretched and heat set POLYETHYLENE 1-1/2 inch #24 twine.

Attach the 57 mesh edge of the flap to the forward edge of the opening (51 mesh edge) by overlapping 3 meshes of the flap on each side (FIG. 6). Attach the side of the flap to the side of the opening by sewing 17 meshes of the flap to 16 meshes of the opening ahead of the TED frame and 9 meshes of the flap to 9 meshes of the extension behind the TED frame. The remaining 10 meshes of the flap behind the TED frame should be left unattached.

Figure 5
CONSTRUCTION OF THE FUNNEL

Cut a 106 mesh by 29-1/2 mesh piece of depth stretched and heat set POLYETHYLENE webbing 1-1/2 inch, #24 twine. Construct a funnel from the piece by sewing the 29-1/2 mesh edges together (FIG. 7).

From the leading edge of the funnel, count 24 meshes down the seam. From this point cut evenly 21-1/2 meshes to the left and right of the seam making a total cut of 43 meshes. At the end of the cut, on each side of the seam, turn and cut a 2 bar. 2 mesh taper toward the opposite edge. This should leave 36 meshes between each taper.

ATTACHMENT OF THE FUNNEL IN THE EXTENSION

Install the funnel inside the extension forward of the TED by matching the seam of the funnel with the seam at the top of the extension. The funnel is sewn to the third row of meshes behind the leading edge of the extension (FIG. 6). Attach the 106 mesh circumference of the funnel to the 160 mesh circumference of the extension by sewing 3 meshes of the extension to 2 meshes of the funnel.

Secure the narrow, tapered end of the funnel to the grid bars by attaching the top center mesh of the funnel (in the seam) to the center grid bar 4 inches from the top of the frame. Count 6 meshes to the left and right of the center attachment point and attach the funnel to the next grid bar 4 inches from the edge of the frame. Repeat this procedure and attach the funnel to the second grid bar from center. Do not attach the bottom of the funnel to the grid bars.

7. CHAFFING GEAR AND FLOATATION

To prevent chaffing of the webbing around the TED, a 30 ft section of 1/2 inch polypropylene rope is laced around the frame through every other mesh.

Attach two 7 x 9 inch grommeted floats (10 lb floatation each) to the outside top of the TED for weight compensation and stabilization of the device.

Note: Any substitution of materials, especially webbing size, will result in unsatisfactory performance of the TED.
FIGURE 6.
ATTACHMENT OF THE EXIT HOLE COVER

3 M

FUNNEL

17 M
9 M
10 M
(NOT ATTACHED)

3 MESH OVERLAP
(SOBREPUESTA)

FIGURE 4.
CUTTING THE EXIT HOLE
(CALIDN DE ESCAPE)

FIGURE 5.
EXIT HOLE COVER (FLAP)
(COBERTURA)

DEPTH STRETCHED AND HEAT SET POLYETHYLENE WEBBING
1-1/2" # 24

57 M

36 M
FIGURE 7.
FUNNEL DIAGRAM
(EMBUDO)

DEPTH STRETCHED AND HEAT SET
POLYETHYLENE WEBBING
1-1/2" # 24 TWINE
1. CONSTRUCTION OF THE FRAME (FIG.1)

A single oval frame is constructed of 1/2-inch cold rolled steel 45 inches in height by 32 inches in width. The grid bars are constructed of 3/8-inch cold rolled steel and are welded to the inside of the frame 3-3/4-inches apart (4-1/8-inch centers).

Across the center of the frame and attached to each vertical grid bar are scalloped brace bars constructed of 5/16-inch cold rolled steel. Each scalloped brace bar should extend behind the face of the grid 2-1/2 to 3-inches. The scalloped brace bars give added strength to the device and help prevent debris from collecting on the face of the grid.

A single length of 5/16-inch cold rolled steel is welded to the front of the grid bars 3-inches from the top center of the frame and curving to meet all other grid bars. This metal bar is used to attach the funnel to the grid.

All metal in the device should be hot dipped galvanized.

2. INSTALLATION OF THE FRAME IN THE WEBBING EXTENSION

A. CONSTRUCTING THE TRAWL EXTENSION (FIG.2)

The trawl extension is constructed from a single piece of 1-5/8 inch stretch mesh nylon webbing, No. 24 twine, 150 meshes wide by 50 meshes deep. Form a tube from the extension webbing by sewing the 50 mesh sides of the piece together.

B. OBTAINING THE CORRECT GRID ANGLE (FIG.3)

Slide the TED frame into the extension. Lace a metal hoop into each end of the extension. Using the metal hoops, stretch the extension tube so that it is taught and so that the extension seam is positioned along the top. Starting at the leading edge of the extension, count back 18 meshes along the seam and attach the top center of the TED frame to the webbing. In order to find the bottom center attachment point for the frame, (opposite end of the center grid bar) count 36 meshes along the top seam from the leading edge of the extension. From this point count 75 meshes perpendicular from the seam to arrive at the bottom center attachment point. The sides of the device are then sewn evenly from the top attachment point to the bottom attachment point.

3. CUTTING THE EXIT HOLE (FIG.4)

Begin the cut 1/2 mesh in front of the bottom center of the TED frame. Continue the cut along the frame, maintaining the 1/2
mesh distance, until the distance from one side of the cut to the other as measured across the frame is 26 inches. Square the cut edge to leave 45 meshes straight from one end of the cut to the opposite end. Turn and cut forward 16 meshes on each side. Turn again and cut 45 meshes from one side to the opposite side. This should result in a rectangular opening in the extension webbing measuring 45 meshes by 16 meshes.

4. CONSTRUCTION AND ATTACHMENT OF THE EXIT HOLE COVER (FLAP)

The exit hole cover or flap is made by cutting a 50 x 36 mesh piece of depth_stretched and heat_set POLYETHYLENE webbing, 1-1/2 inch, #24 twine. (FIG.5)

Attach the 50 mesh edge of the flap to the forward edge of the opening (45 mesh edge) by overlapping 2-1/2 meshes on each side (FIG. 6). Attach the side of the flap to the side of the opening by sewing 17 meshes of the flap to 16 meshes of the opening ahead of the TED frame and 9 meshes of the flap to 9 meshes of the extension webbing behind the TED frame. The remaining 10 meshes of the flap behind the TED frame should be left unattached.

5. CONSTRUCTION OF THE FUNNEL

Cut a 100 mesh by 29-1/2 mesh piece of depth_stretched and heat_set POLYETHYLENE 1-1/2-inch #24 twine. Construct a funnel from the piece by sewing the 29-1/2 mesh edges together.

From the leading edge of the funnel, count 24 meshes down the seam. From this point cut evenly 12-1/2 meshes to the left and right of the seam making a total cut of 25 meshes. At the end of the cut, on each side of the seam, turn and cut a 4 bar, 1 mesh taper toward the opposite edge. This should leave a total of 57 meshes between each taper.

6. ATTACHMENT OF THE FUNNEL IN THE EXTENSION

Install the funnel inside the extension forward of the TED by matching the seam of the funnel with the seam at the top of the funnel. The funnel is sewn to the third row of meshes behind the leading edge of the extension (FIG.6). Attach the 100 mesh circumference of the funnel to the 150 mesh circumference of the extension by doubling every other mesh on the extension webbing.

7. ATTACHMENT OF THE FUNNEL TO THE FUNNEL BAR

Secure the narrow, tapered end of the funnel to the funnel attachment bar by securing the top center mesh of the funnel (in the seam) to the point at which the funnel bar and the center grid bar join. Lace four meshes of the funnel to the funnel bar in each space between the grid bars. Pull the tapered edge down snug and lace to the remaining length of the funnel bar. The tapered edge should extend beyond the funnel bar. Do not attach the bottom of the funnel to the grid bars.
8. CHAFING GEAR AND FLOATATION

To prevent chafing of the webbing around the TED, a 30 ft. section of 1/2 inch polypropylene rope is laced around the frame through every other mesh.

Attach two 7 X 9 inch grommeted floats (10 lbs. flotation each) to the outside top of the TED for weight compensation and stabilization of the device.

NOTE: Any substitution of material specifications listed in these instructions may result in unsatisfactory performance of the TED.
FIGURE 2.
TRAWL EXTENSION

150 MESHES WIDE
50 MESHES DEEP
1-5/8" STRETCH MESH NYLON
#24 TWINE

FIGURE 3.
POSITIONING OF TED IN EXTENSION
AT THE PROPER ANGLE

TRAILING EDGE

TOP ATTACHMENT POINT

BOTTOM ATTACHMENT POINT

PERPENDICULAR

LEADING EDGE
FIGURE 6.
ATTACHMENT OF THE EXIT HOLE COVER

2-1/2 MESH OVERLAP (SOBREPUESTA)

10 M
17 M
9 M (NOT ATTACHED)

DEPTH STRETCHED AND HEAT SET
POLYETHYLENE WEBBING
1-1/2" # 24

FIGURE 4.
CUTTING THE EXIT HOLE
(SOBREPUESTA DE SALIDA)

FIGURE 5.
EXIT HOLE COVER (FLAP)
(COBERTURA)
FIGURE 7.
FUNNEL DIAGRAM
(EMBUDO)

DEPTH STRETCHED AND HEAT SET
POLYETHYLENE WEBBING

1-1/2' # 24 TWINE
National Marine Fisheries Service

TED TECHNOLOGY TRANSFER PROGRAM
PUBLIC LAW 101-162 SECTION 609

SEA TURTLE CONSERVATION
- SHRIMP EMBARGO BILL

- P.L. 101-162 Signed November 21, 1989

- Section 609 Requires the State Department, with Assistance from Commerce Department, to Undertake Specific Actions Relating to Sea Turtle Conservation

- Two Major Provisions of the Law:

1) State Department Must Initiate/Expand International Agreements for Sea Turtle Conservation for Those Species Covered by the 1987 U.S. TED Regulations (Kemp's ridley, Loggerhead, Green, Hawksbill & Leatherback)

2) Bans Shrimp Imports from Foreign Countries UNLESS, by May 1 of each year, the President Certifies that:

   a) the Foreign Government has in place a Regulatory Program for Incidental Catch in Commercial Shrimp Trawl Fisheries Comparable to the U.S. and

   b) the Average Rate of Incidental Take is Comparable to the U.S. and

   c) Shrimp Harvested in a Manner Not Harmful to Sea Turtles (see DSP 121)
HISTORY OF TED DEVELOPMENT

- 1978 - Gear Research Initiated to Solve Sea Turtle Problem in Shrimp Trawls

- 1978 - 1981 Initial NMFS Design Developed and TED Feasibility Established

- 1981 - 1986 Fishing Trials Conducted to Improve Operational Design for Commercial Use

- 1989 - TED Regulations in Effect

- 1989 - 1992 Additional Research/Modifications to Adapt TEDs to Small Trawls

- 1994 - TED Regulations Includes Small Trawls
TED TECHNOLOGY TRANSFER PROGRAM OBJECTIVE:

- Provide Training in TED Technology to Shrimp Industry and Government Agencies.

  **Technical Workshops**
  **Dockside Assistance**
  **Vessel Demonstrations**

  **Point Source for TED information**
  - TED Construction Manuals
  - Training Videos
  - TED Manufacturer Information
  - Information on Disc
NMFS TED TECHNOLOGY TRANSFER to CENTRAL & SOUTH AMERICA
1990 - 1996

Mexico
Belize
Honduras
Nicaragua
El Salvador
Costa Rica
Panama
Colombia
Venezuela
Trinidad / Tobago
Guyana
Surinam
Brazil
CURRENT TED TECHNOLOGY TRANSFER


- **Thailand** - Workshop, 7 October - 11 October, 1996.

- **India** - Workshop, 11 November - 16 November, 1996.
