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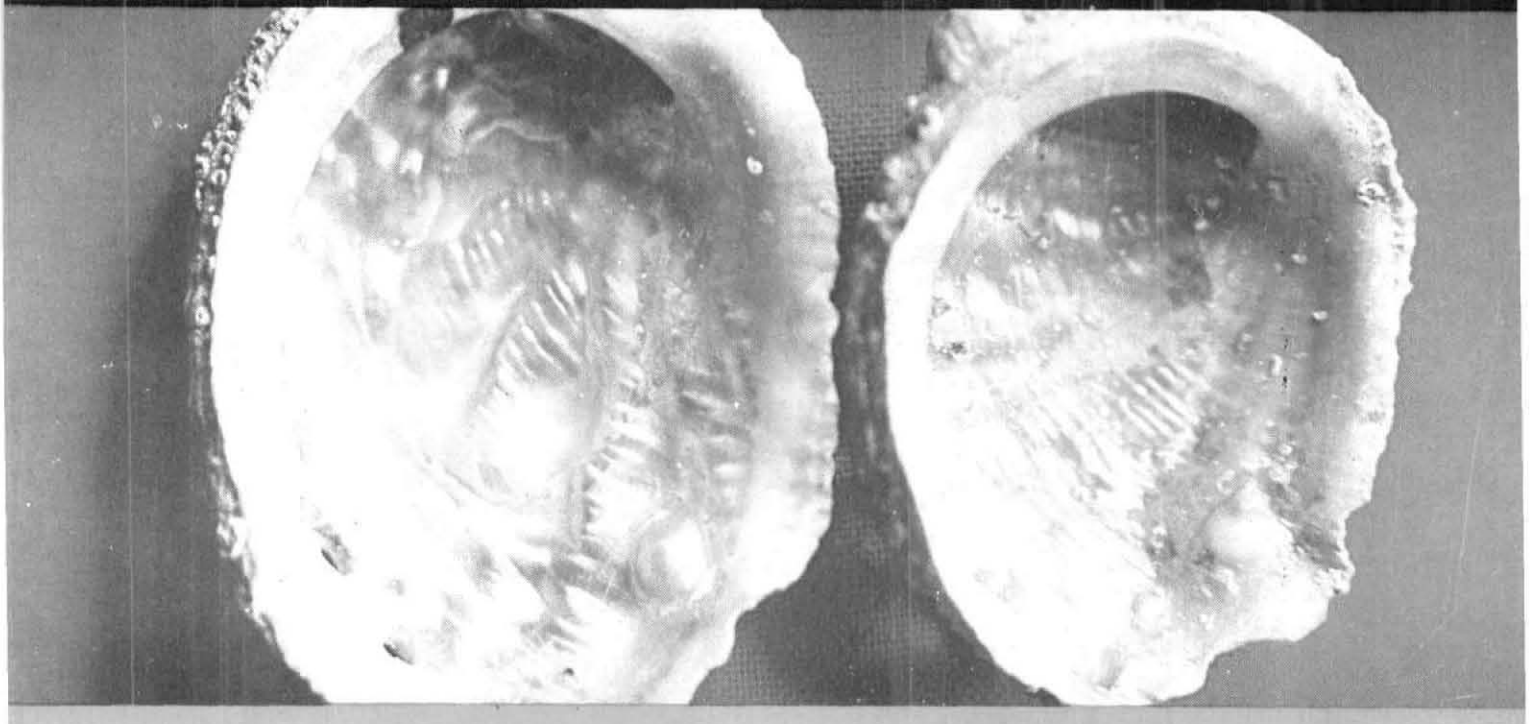

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979 Conservation of marine turtles and shrimp exports

Marine turtles are a group of harmless reptiles inhabiting every ocean basin, the distribution of some species ranging from Arctic Circle to Tasmania. The seven speceis of sea turles representing two families, Chelonidae and Dermochelyidae, are the only living members of a large and diverse marine radiation of Cryptodiran turtles which originated from early Eocene to Pleistocene period. Sea turtes surpasses all other living vertebrates in longevity, some of them living for more than 150 years. In the wild, they exhibit slow growth and take long periods (15 to 50 years or more) to attain maturity, depending on the species and geographical area.

The most striking feature of marine turtles is their sterotypic nesting behaviour. Year after year they visit selected beaches in all parts of the world to lay their eggs. This mass nesting behaviour is perhaps a survival mechanism to overcome the effect of predation and other adverse environmental conditions. However, this nesting behaviour has become the weakest aspect in the life cycle of turtles as man, the most powerful predator, enters the picture. Adult turtles are caught and slaughtered by the coastal population all over the world, apart from extensive poaching of the eggs and invasion of nesting beaches. This indiscriminate exploitation and habitat destruction has thinned down the turle population to such a level that if allowed to

TABLE.1 IUCN status of the seven species of marine turtles and their availability in fishing areas (FAO) in Indian Ocean

Sl. No.	Common name	Scientific name	IUCN status[1]	Available areas in Indian Ocean
1.	Loggerhood	Caretta caretta	EN	51 and 57
2.	Green	Chelonia mydas	EN	51 and 57
3.	Hawksbill	Eretmochelys imbricata	CR	51 and 57
4.	Kemp's ridley	Lepidochelys kempii	CR	Not present
5.	Olive ridley	Lepidochelys olivacea	EN	51 and 57
6.	Leatherback	Dermochelys coriacea	EN	51 and 57
7.	Flatback	Natator depressus	V	57*

* Only along the coast of Australia
EN - Endangered, CR - Critically Endangered, V - Vulnerable
Source : [1]IUCN/SSC Marine Turtle Specialist Group, [2]FAO (1990)

continue, the sea turtles would be pushed to the verge of extinction. Fortunately the international Union for Conservation of Nature and Natural Resources (IUCN) has classified all the seven species of the sea turtles as thereatened or endangered (Table-1). Quoted in the Red Data Book, their commerce is prohibited in those countries that have signed the Convention on International Trade in Endangered Species (CITES). All the five species of marine turtles available in Indian waters are placed in Schedule 1 of the Indian Wildlife (Protection) Act 1972.

Development of TED : While efforts are taken all over the world for conservation of the nesting population by protecting beaches and other measures, incidental capture of sea turtles in the fishing nets, especially shrimp trawls became a threat to the turtle population. Instead of swimming away from an approaching net, turtles try to outswim the trawl but get caught once they tire. Therefore, efforts were directed towards development of by-catch reduction devices. The US national Marine Fisheries Services developed Turtle Excluder Devices (TEDs) for use by commercial fishermen. TEDs are panels of large mesh webbing or metal grids inserted as barriers into the cod end of the funnel - shaped shrimp trawls. As the trawls are dragged along the bottom, shrimps and other small animals pass through the TED and into the cod end at the end of the trawlnet while sea turtles, sharks, and fish too large to get through the panel are deflected out. In the US, TED was reported to reduce by catch by upto 97 per cent. In the absence of TED, sea turles become trapped in the net for as long as it is towed underwater and sometimes drown or undergo physiological changes that result in death. Prior to the required used of TEDs in the US, tens of thousands of sea turtles were drowned in shrimp nets every year.

Different designs of TED were developed in the US and used in large shrimp trawlers in Gulf of Mexico and South Atlantic from eighties. Although shrimp fishermen feared TEDs would cost the shrimping industry millions of dollars in equipment and lost catch, TEDs were successfully implemented in the United States and elsewhere. TEDs were reported to reduce fuel costs by excluding non-shrimp species that often outweigh shrimps by ten to one and provide a better quality catch (the shrimps are not crushed by other species).

US Embargo on Shrimp Export : In early nineties when the US shrimp fishermen complained of shrimp losses and increasing cost of operation due to TEDs, the Congress enacted an embargo programme. The intention of this embargo was obviously to perpetuate the comparative disadvantage globally in order to 'level the playing ground'. However, the global application of the embargo became effective only after the order of the US Court of

TABLE. 2 Import of shrimp (all types) in thousand tonnes into the US from different countries during 1990-1999.

COUNTRY	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Thailand	25	45	54	67	81	78	73	73	92	115
Ecuador	38	49	55	49	48	52	44	64	65	50
Mexico	19	17	14	20	23	33	31	34	35	35
India	14	18	18	19	23	18	19	20	20	20
Indonesia	9	12	14	13	11	5	10	13	15	16
China	57	35	49	31	23	15	8	13	7	9
Rep. of Panama	5	6	6	6	7	9	9	11	10	8
Bangladesh	7	5	8	10	9	0	9	10	6	9
Brazil	4	4	6	4	5	2	1	0	1	
Others	44	48	40	44	47	61	60	56	55	70
Total	**222**	**239**	**264**	**263**	**277**	**273**	**264**	**294**	**306**	**332**

International Trade prohibiting import of shrimp and shrimp products into the United States, harvested by "citizens or vessels or nations not certified under public law 101-162". The effort of National Fisheries Institute, USA to challenge the verdict, became futile and the embargo came into effect on 1 May 1996.

More than 50 odd countries exporting shrimp to the US were left with somewhat 'do or die' option with regard to the adoption of TED. About three lakh tonnes of shrimp consumed in the US were imported, mainly from Ecuador, India, Indonesia, Thailand, Mexico and other countries (Table-II). Marine turltes were under serious threat in all these nations. India's stake was very high because the US was the second largest buyer of Indian shrimps accounting for nearly 18 percent of its shrimp exports (Table-III). After the embargo, while most of the countries geared up to implement TED programmes, the US officials "certified" those nations with only artisanal fisheries or having comparable TED regulatory programme. Though animal protection groups in the US exerted pressure for a total ban on shrimp import, an extra ordinary legal appeal and a subsequent order by the court exempted aquaculture products from the ban. Another legal appeal resulted in a ruling, which clarified that shrimp harvested with gear that did not harm sea turtle should not be banned. Thus according to Richard E Gutting Jr., the embargo of US$ 1 billion was reduced to less than 20 million. Ironically, shrimp from "non-certified" nations caught by mechanised trawlers is banned even if they are fitted with TEDs. This means that there is no incentive for voluntarily adopting conservation measures.

WTO Ruling : The US government's requirement for the use of TEDs became one of the most bitterly fought regulations in the history of fisheries management.Mexico and 13 other Central and South American nations took the lead, mainly because under a 1989 law the US Department of State banned the import of shrimps from any country not taking adequate measures to conserve sea turtles in commercial shrimp fisheries. Following the US embargo of 1996, in 1997 four Asian countries - Thailand, India, Malaysia and Pakistan - challenged the US decision to ban shrimp imports from countries with inadequate marine turtle conservation measures. The

TABLE.3 Value (in lakh rupees) realized from major markets for frozen shrimp from India during the period 1992-1999.

Country	1992	1993	1994	1995	1996	1997	1998	1999
Japan	61995	86382	150269	144053	165359	206491	221264	19331
USA	12150	16885	39299	28134	34416	46534	45684	54067
European Union	18447	25232	45660	46306	45503	29394	30484	45916
Others	13439	25173	16930	15271	17913	28534	40408	37924
Total	**106031**	**153672**	**252158**	**233764**	**263191**	**310953**	**337840**	**336238**
Total Quantity (t)	71237	83720	105395	92851	103427	106297	101112	103070

nations took the case to a WTO dispute panel, which interprets WTO rules. The Appellate Body of WTO gave a ruling against the US Embargo on shrimp imports.

Leading environmental organizations condemned the WTO ruling. While the WTO has the power to suspend free trade rules for conservation reasons, the panel allegedly ignored the relevant international conservation agreement including the General Agreement on Tariffs and Trade (GATT) and ruled that the US ban was illegal. After an appeal by the US, the WTO finally acknowledged the potential of such a trade restriction to protect the environment. However, it still judged the US action to be illegal, ruling in favour of free trade. The Worldwide Fund for nature (WWF) believed that the WTO is failing to fulfil the mandate contained in the preamble of its own charter. In a subsequent paper, the WWF demanded that the WTO integrate environmental concerns and sustainable development issues into any future trade agreement and promote trade that is environmentally responsible and that encourages sustainable development.

Many have not fully understood why the WTO ruled against the US measure for protecting an endangered species and have failed to recognise the importance of the Appellate Body's ruling in the so-called shrimp/turtle case. The ruling recognised that under WTO rules governments have every right to protect human, animal or plant life and health and to take measures to conserve exhaustible resources. GATT's Article XX allows governments to take "measures necessary to protect human, animal or plant life or health" (Art. XX (b)) and "measures related to the conservation of natural resources" (Art. XX (g)). The opening part of Article XX says that any environmental action must be applied without arbitrary or unjstifiable discrimination and must not constitute a disguised restriction on international trade. In other words if a government wants to take action to improve its environment or protect natural resources, such measures must be applied equally to domestic and foreign products without discrimination.

The US lost the case because it discriminated. It provided countries in the Western hemisphere mainly in the Caribbean, technical and financial assistance and longer transition periods for their fishermen to start using TEDs. It did not give the same advantages, to the four Southeast Asian countries (India, Malaysia, Pakistan and Thailand) that filed the complaint with the WTO. This was a violation of the most-favoured nation principle - treating one's trading partners equally.

Implementing TED in India : Large-scale mortalities (as high as 50,000 in the past five years), of Olive Ridleys by drowning in trawl nets on Orissa coast have been reported by *Operation Kachhapa**. A preliminary survey conducted earlier had shown that trawlers operating along the upper East Coast encounter on an average 2-10 turtles per year in their net and morality are very rare. Data on incidental capture and drowning of turtles elsewhere in the Indian waters are lacking. However, incidential capture of turltes in the trawl nets are likely elsewhere also but certainly not in such magnitude as Orissa coast, where world's second largest rookery for Olive Ridley is located.

Efforts to implement TED programme in India had not yielded satisfactory results even as the shrimp exports from the country to the US goes with mandatory certificate that no turtle has been harmed in the process of its capture. MPEDA has taken enough steps to popularize TEDs by distributing it freely to the fishermen all along the coast. The state

departments of fisheries, forest and wild life protection agencies are also involved in organizing workshops and demonstration programmes. However, there seems to be very little response from the fishing community.

Experimental trawling with TED in Indian waers has demonstrated its effectiveness in excluding turtles from entering the cod end of the net. However, loss of valuable fish catch has been reported by all. Trails with a Georgia super shooter TED, conducted by CIFNET recorded up to 43 percent loss in catch through the escapement chute. The operational economics of shrimp trawlers in India depend both on the shrimp and fish catch. In the larger vessels, the proceedings from the sale of fish catch are given as incentive for the crew. In such cases the crew would be reluctant to attach TED to their net and loose part of their incentive. Thus the resistance of fishermen in adopting TED could easily be understood.

Enforcement of TED or any regulation has its limitation since it is practically impossible to monitor its compliance by the fishermen at the sea. Moreover, the top down aproach in imposing conservation measures has its drawback and cannot be sustained. Any such measures without the active co-operation of the stakeholders at lower strata would not yield the anticipated results.Therefore, the most important aspect is educating and involving the crew of the fishing vessels, apart from the owners and managers of the vessel, in the TED implemenatation programmes. Even some incentive packages to their co-operation and in compensation of loss of the incentive foregone may be thought of in the initial stage.

Another factor to be taken care in TED implementation programme is the spatial and temporal aspect of enforcement. Having identified the area and seasons of mass nesting, special measures to protect the nesting population by declaring closed areas and season with suitable patrol has to be planned and implemented. While voluntary adoption of TED by fishermen is likely to take some more time, its use in the identified period and areas must be implemented on priority basis. The co-operation of Indian Navy and Coast Guard are to be used for this purpose. In the long run, the satellite tracking, remote sensing and other technologies coupled with modern communication systems, could be used for developing an early warning system, which could be implemented in the 'responsible fishing' framework. Conservation measures on the nesting beaches have to be evolved involving the local fishing communities. Participatory approaches for management of natural resources are the best way to achieve sustainable exploitation and management of resources. Educating the coastal communities and empowering them are a prerequisite for acheving success in any participatory approach in conservation and management of natural resources.

** Operation Kachhapa is collaborative effort between the state government (Orissa Forest Department), and NGOs (Wildlife Protectilon Society of India, New Delhi and Wildlife Society of Orissa, Cuttack) which aims to protect sea turtles through enforcement, monitoring and creating awareness)*

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