

RPT
MDA → 3158

10 NOV 1998

AMK/MR/NS/TB



Member

Planning Commission

From the desk of
Malik Mohammad Saeed Khan

I discussed this
with Abeer. Pl send
her a copy + get
your views prepared.
We could discuss
at a later date.

Dr Arif Zaidi
3/24
ECON.

TURTLE ENTRAPMENT AND SHRIMP FISHERIES IN PAKISTAN

Mohammed Moazzam
Marine Fisheries Department
Government of Pakistan
Karachi

Introduction:

Turtles are marine reptiles which are found to inhabit shallow coastal waters of Pakistan. Five species of marine turtles are known from Pakistan including loggerhead turtle (*Caretta caretta*), green turtle (*Chelonia mydas*), olive ridley turtle (*Lepidochelys olivacea*), hawksbill turtle (*Trachemys imbricata*) and leatherback turtle (*Dermochelys coriacea*) though only green turtle and olive ridley seems to be common (Butler, 1877, Firdous, 1986, Ghalib and Zaidi, 1976; Groombridge, 1982, 1983; 1987a, 1987b, 1989; Groombridge et al, 1988; Kabraji and Firdous, 1984; Khan and Mirza, 1976; Minton, 1962, 1966, Pernetta, 1993 and Shockley, 1949). Out of these species, green turtle and olive ridley turtle are found commonly whereas other species are known to have rare occurrence. Very little work has been done on the population of turtle in coastal waters of Pakistan except Kabraji and Firdous (1984) who calculated the population of green turtle to be about 24,000 to 36,000 and that of olive ridley turtle to be 800 to 1,200. The figures for green turtles are seemingly overestimated because even visual and casual observations of the coastal area do not verify such high

concentrations of green turtle in waters of Sindh. Along the coast of Balochistan, major turtle populations are observed in Taq (Ormara), Sakoni, Astola Island and Jiwani

Trawling for shrimp is a common fishing activity along the coast of Sindh. Trawling is not allowed in waters of Balochistan although recurrent poaching by Karachi based trawlers in Balochistan waters is reported. In addition to target species i.e. shrimp a number of non target species are caught in the shrimp trawl nets. It has been reported that turtles are indiscriminately caught by shrimp trawlers. This presumption seems to be not based on facts. It has been advocated to install turtle excluder device (TED) in shrimp trawl nets. Present paper discusses rationale for installation of such a device in trawl net being used in Pakistan

Shrimp Trawl Net

Shrimp trawl net used in Pakistan was designed in 1958 when shrimping was introduced for the first time in Pakistan (FAO, 1955; Jaleel, 1978, Qureshi, 1961) No change in the design of the shrimp trawl net has been made since then. A typical shrimp trawl (Fig. 1) has a circumference of 860 meshes by 50 mm stretched mesh and a cod end of 25 mm stretched mesh, lined with a second layer of 10 mm stretched mesh (van Zalinge et al, 1994; Khan, 1994). Wooden trawlers of about 15 m is used for shrimp purposes. There

is no mechanical device used on the shrimp trawler and all operation of deployment and retrieval is done manually. The crew consist of about 8 to 16 fishermen. Duration of trawl operation is about 30 minutes to one hour depending upon the catch rate.

In addition to target species i.e. shrimp, a variety of fish and invertebrates are caught as bycatch. Marine Fisheries Department started a programme of analysis of shrimp bycatch which indicated preponderance of juveniles of food fishes, small fishes, invertebrates and flotsam. The study revealed that turtle or its juveniles are not represented in bycatch. A creel survey was conducted by Marine Fisheries Department in June and July 1997 in which about 146 fishermen were interviewed to find out the frequency of turtle entrapment in shrimp trawl nets. The results revealed that turtles are very rarely entrapped in shrimp trawl nets. In almost all cases where turtle was accidentally entrapped, it was released immediately. The fishermen reported any case of mortality owing to drowning of turtle while entrapped in net.

Turtle Excludor Devices

With the growing concern about entrapment of non target species in fishing gears, methods and devices have been developed. In Southeastern USA devices have been developed to minimize entrapment of marine turtle in the shrimp trawl nets. The devices are commonly known as turtle excludor

devices or TED. Use of TED have reported to have substantially reduced massive entrapment of turtles in the nets of the fishermen of the area. It has now been compelled that fishermen in other parts of the world should also use TED in their nets. It has been advocated that the fishermen of Pakistan may also use TED in their nets. This seems to be not rationale because:

- Although Pakistan has a substantially large shrimping fleet consisting of about 2000 medium sized trawlers. The net used on these trawlers is comparatively much smaller. Its opening during operation is about 2 m x 15 meters. In addition, the net is towed at a very slow speed usually less than 2 Knots. Because of small size of the opening and slow speed of the trawler turtle can easily avoid these nets. The entrapment of turtle is seldom noticed in the shrimp trawlers.
- Major shrimping grounds are located on the Sindh coast in the areas east of Karachi (Zupanovic (1973) Indus estuarine creek and adjoining areas of the mouth of the creeks are main area of concentration of shrimp catching activity. The bottom in these area are muddy cum sandy, therefore, these habitats of these area is not suitable for turtles. No turtle nesting is reported from Indus estuary, associated creeks and adjoining areas.
- Major turtle nesting, feeding and breeding areas are located between Sandspits, Hawks Bay upto Cape Monz. These area

have sandy and sandy cum rocky bottom which is ideally suited for turtle. Shrimp trawling is not carried out in these areas because of non suitability of the bottom. Shrimp are also not reported from these areas.

- Turtle are regarded as sacred animals and its killing is considered to be a bad omen. Fishermen, therefore, do not kill any turtle if accidentally entrapped in the net and get it released immediately. In addition, there is no turtle fisheries in the country. Similarly it is not eaten and also there is a ban on the export of any products derived from turtle. Turtle mortality because of shrimp trawling is therefore insignificant.
- By-catch studies carried out by research organizations in Pakistan have not reported a single case of turtle entrapment even no juvenile or hatchling was reported in the shrimp by-catch.
- Population of turtle, according to the studies carried out by the Sindh Wildlife indicates that their population is static rather there is an increase in turtle nesting owing to their breeding programme.

Even if it is presumed that mortality of turtle occurs due to shrimp trawl operation, then there must be stranding of turtle carcass on the beaches especially during peak strutting period i.e. July and October. In such instances, the stranding should have been occurring on the beaches east of Karachi especially Clifton, Bundal Island and islands on Indus creeks because shrimp trawling operations during this period is carried out in the nearshore areas off Karachi and Indus delta. However, no stranding of dead turtles was observe in the area.

In the light of the facts mentioned herein it is not justified to advocate the case for use of TED in shrimp trawl nets in Pakistan.

References

- Butler, E. A., 1877. Astola, a summer cruise in the Gulf of Oman. *Stray Feathers* (Calcutta) 5: 293-304
- FAO, 1955. Report to the Government of Pakistan on mechanization of West Pakistan fishing boats. UNDP/FAO, TA.
- Firdous, F., 1986. Marine turtle. Proceedings of International Conference on Marine Science of the Arabian sea. Institute of Marine Sciences, University of Karachi.
- Ghalib, S. A., and Zaidi, S. S. H., 1976. Observations on the survey and breeding of marine turtles of Karachi coast. *Agric. Pak.* 27(1):87-96.

- Groombridge, B., 1982 The IUCN Amphibia-Reptilia Red Data Book, Part-I : Testudines, Crocodylia, Rhynchocephalia. IUCN, Gland, Switzerland.
- Groombridge, B., 1983 A preliminary environmental profile of the India-Pakistan Borderlands in the Sind-Kutch region. IUCN Conservation Monitoring Center Report for the World Bank
- Groombridge, B., 1987a A preliminary marine turtle survey on the Makran coast, Baluchistan, Pakistan with notes on birds and mammals. Unpublished report IUCN Conservation Monitoring Centre, Cambridge.
- Groombridge, B., 1987b Makran coast: a newly explored habitat for marine turtle. WWF-Pakistan Newsletter 6(2):1-5.
- Groombridge, B., 1989 Marine turtles in Baluchistan: report of an aerial survey, 9-11 September, 1988. World Conservation Monitoring Centre, Cambridge, U.K.
- Groombridge, B., A. M. Kabraji and A. L. Rao, 1988 Marine turtle in Baluchistan (Pakistan). Marine Turtle Newsletter 42:1-3.

- Jaleel, S. A., 1978. Fish resources of Pakistan. UNESCO/IOC Advanced Regional Training Course in Biological Oceanography, Karachi, Pakistan (4-30 November, 1978) 21p.
- Kabraji, A. M., and F. Firdous, 1984. Conservation of turtle, Hawkesbay and Sandspit Pakistan World Wildlife Fund Project 1451. Unpublished report WWF International and Sind Wildlife management board. 52 p
- Khan, M. S. and M. R. Mirza 1976. An annotated checklist and key to the reptiles of Pakistan. Part I: Chelonia and Crocodylia. *Biologia (Lahore)* 22(2):211-219.
- Khan, M. Y., 1994. Fishing techniques in coastal waters of Pakistan. In: Proceedings of national Seminar on Fisheries Policy and Planning Marine Fisheries Department, Government of Pakistan, Karachi 345-364.
- Minton, S. A., 1962. An annotated key to the amphibians and reptiles of Sind and Las Bela, West Pakistan. *Bull. Am. Mus. Nat. Hist.* 134.
- Minton, S. A., 1966. A contribution to the herpetology of West Pakistan. *Bull. Am. Mus. Nat. Hist.* 142 (2).
- Pernetta, J. C., (ed.), 1993. Marine Protected Area Needs in the South Asian Seas Region. Volume 4. Pakistan. A marine conservation and Development Report. IUCN, Gland, Switzerland 42 p

Qureshi, M. r., 1961. Pakistan's Fisheries. Central Fisheries Department,
Karachi, Pakistan, Government of Pakistan Press, Karachi.

Shockley, C. H., 1949. Herpetological notes from Ras Jhurri, Baluchistan.
Herpetologica 5: 121

Van Zalinge, M. Khaliluddin and W. Khan, Pakistan's Shrimp Fishery. In
Proceedings of national Seminar on Fisheries Policy and Planning.
Marine Fisheries Department, Government of Pakistan, Karachi 130
-177.

Zuparovic, S., 1973. The Pakistan Shrimp resources. FAO TA-3218. FAO
Rome. 76p.