CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
ERNAKULAM, COCHIN-682 031, INDIA

R & D SERIES FOR MARINE FISHERY RESOURCES MANAGEMENT

4. THE TUNA RESOURCES

As a part of the National policy for the judicious exploitation of the living resources of the Exclusive Economic Zone (EEZ) of India, greater emphasis is to be given for the development of tuna fisheries, both in the artisanal sector and high seas. Despite the fact that the past two decades have witnessed the augmentation of indegenous production of tunas in the small scale fishery sector, through mechanisation and increased effort through drift gillnetting, pole and line (live-bait) fishing and purse seining, tunas remain to be one of the least exploited scombroid resources of Indian Seas accounting for 2.11% of the total marine fish catch in India at the 1984 level, although there has been an appreciable increase in the landings of coastal species of tunas during the last 15 years. The impact of modern technology was mainly by way of introduction of synthetic fibres for the gear and mechanisation of the crafts which enabled the traditional fishermen to develop the fishing practices in a steady state condition, but the developments in the post-harvest technology, especially in the processing of products for internal markets and for export are still lagging behind.

Resource estimate

The current tuna production in India stands around 19,400 tonnes and of this, the total catch of skipjack tuna *Katsuwonus pelamis* accounts for about 3,360 tonnes, the rest being *Euthynnus affinis, Auxis thazard, A. rochei, Sarda orientalis, Thunnus albacares*

and bill fishes *Makaira indica* and *Istiophorus platypterus*. *Thunnus tonggol* taken from the coastal waters accounts for about 180 tonnes.

With the declaration of the EEZ, India has added about 2 million km² of the sea area under her jurisdiction. Available information indicate that tuna resources of the EEZ of India have been exploited by the longliners of Japan, Taiwan and Republic of Korea, and between 1975 and 1977 there has been a major input by Taiwan in this fishery and about 200 tonnes of major species of tunas have been taken from the EEZ of India in 1977. The average longline catch for the period 1972–1977 indicate that the major species taken from this area are the yellowfin tuna (42%), big-eye tuna (24%) and striped marlin (19%).

The data from the small scale fishery sector is collected by the Central Marine Fisheries Research Institute, analysed and the results made available to the maritime States and industry. Further, stock assessment studies on commercially important species of tunas have been made by the Institute and the results are being published. Using the 'Length-cohort Analysis', the average annual stock of *E. affinis* was estimated to be 2.17 lakh tonnes, standing stock being about 32,000 tonnes. In the case of *A. thazard*, the average annual stock was found to be 7,745 tonnes with a standing stock of about 925 tonnes. At present, the landing of *E. affinis* from the coastal fishery is about 11,000 tonnes and that of *A. thazard* about 850 tonnes. However, it was indicated from the recent studies that any increase in the fishing effort from the present level may not yield much higher catches from the present fishing grounds, unless expansion of fishery takes place to new grounds.

Following Beverton and Holt yield model, it was found that the present rate of exploitation of *K. pelamis* (skipjack tuna) is well below that of the MSY level indicating that there is scope of realising higher yields by increasing the rate of exploitation. As for as *T. albacares* (yellow fin tuna, young ones) are concerned, by using the above model it was observed that the present rate of exploitation is beyond the MSY level. At the present rate of exploitation increasing the $1 \propto$ up 90 cm may yield higher catches. Further expansion of the fishery of these two species is possible by employing deep longlining and by purse seining, and pole and line for skipjack.

It is felt that by encouraging further developments in the artisanal fishery using drift gillnets, pole and line and by the development of purse seining for the surface species such as skipjack tuna, and longlining for deep living yellowfin and bigeye tunas and marlins from our EEZ and contiguous seas, the commercial production of coastal and oceanic tunas could be increased

to a sustainable level of 115,000 tonnes as against the total production of about 20,000 tonnes of the present.

Currently existing constraints facing tuna fishery and industry are manyfold. Apart from the fact that tuna fishery is at present restricted to the small scale sector, a proper internal marketing system has not been developed in the country. Possibilities of export potential for the 'red meat tunas' is yet to be explored. Further, the entrepreneur should be fully educated as to the problems and advantages of venturing into tuna fishery since it is capital intensive and involve expertise both in the fishing operations and fish fleet management and in post-harvest technology.

Recommendations

The cardinal requirement in tuna fishery development in India should be the development of small scale fishery sector through improvements of crafts and gears combined with the active programme of post-harvest technology and marketing of tuna within the country and for export. Intensified fishing programmes will be necessary in the southeast and southwest coasts of India, Wadge Bank area, Lakshadweep Sea and Andaman Sea. Employment of vessels with quick chilling and storing facilities and with greater operational range to fish around insular regions should be encouraged. Adequate supply of suitable bait fishes are essential for any viable large scale pole and line fishery. In order to develop the tuna pole and line fishery (with live-baits), large scale culture of selected live-bait fishes should receive priority.

The prime steps in the high sea tuna fishery by India would be to utilise the technological capacity of the vessels, equipment and expertise of the developed nations through joint venture/ chartering arrangements. A crash training programme of personnel on the operational techniques of large purse seiners as well as deep longlining will be necessary. Further, efforts should be made to develop the operational facility for surface tuna fishery and intensified effort should be concentrated in areas such as the Andaman Sea and Lakshadweep Sea, which hold high potential for surface species of tunas.

One of the major requirements in the planning of tuna fishery development is the need to maintain and improve production targets with appropriate management measures.

Prepared by Dr. P. Parameswaran Pillai, edited by K. Rengarajan and published by Dr. P. S. B. R. James, Director, C.M.F.R.I., Cochin-682031.

The conclusions/recommendations made in this series are subject to revision with addition of further information on the resource.

February, 1986