Management of Scombroid Fisheries

Editors

N.G.K. Pillai
N.G. Menon
P.P. Pillai
U. Ganga

ICAR

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
(Indian Council of Agricultural Research)
Post Box No. 1603, Tatapuram P.O.
Kochi-682 014, India

Utilisation of tuna resources of Indian EEZ : Trend in the recent past and as at present

J.V.H.Dixitulu

Editor, Fishing Chimes 12/176, M.V.P. Colony,Visakhapatnam

ABSTRACT

Four stages in the trend of utilisation of tuna fishery resources of Indian EEZ in the recent past and as at present have been identified. The first stage was one of transition from surveys to commercial fishing, through introduction of three used Japanese tuna vessels. The commercial fishing activities of these vessels were disappointing. The second stage consisted of introduction of a commercial tuna purse seiner by an Indian company and also introduction of foreign longliners (Taiwanese) by Indian companies under charter, lease or joint venture conditions. While purse seine operations aborted, the longline operations were successful. However the operations were discontinued from 1996 because of a change in government's policy. In the third stage, five longliners were imported by three Indian companies new to the fisheries sector but they closed down operations in 1994.The latest stage now is related to the initiative of MPEDA (Ministry of Commerce)/AIFFI/IFP and FSI (Ministry of Agriculture) to implement a pilot project that envisages the installation of monofilament longlining system on two fishing trawlers of 23 m OAL offered by committed private fishing companies well entrenched in the industry, and also one of the trawlers of a similar OAL range of the Integrated Fisheries Project . In addition, one of the existing longliners of the Fishery Survey of India would also be brought under the purview of the pilot project.

INTRODUCTION

The historical background and trend of tuna longlining of India is covered briefly in this paper. As it will be good to present the positive aspects first, it may be mentioned here that the latest trend in respect of the utilisation of tuna fishery resources of Indian EEZ may soon prove to be path-breaking and one of promise.

The Beginning : Tuna lining in India was introduced in 1963 for the first time by Kawaguchi of FAO. The activity was continued later by Chin-Yun Pao from 1967-'70 under a UNDP project. Tuna exploratory surveys were subsequently taken up by the Fishery Survey of India in 1976, supplemented by longlining operations by training-cum-survey longliners of CIFNET, coinciding with the declaration of India's EEZ during that year.

Transition to the first stage: The transition from surveys to commercial tuna operations took place in early eighties when three companies imported a tuna vessel each. M/s Dev Fisheries Ltd., Bangalore imported

a second hand pole and line vessel from Japan but the vessel soon became non-functional. M/s Clarion Fisheries Ltd., Bangalore, bought a used longliner from Japan but it was rigged and used for shrimp trawling for a short duration and later disappeared from Indian scene. The third one was introduced by M/s Souza & Lewis Fisheries Ltd., Mangalore. It was engaged in multifilament longlining operations for tuna for a long time and, although the operations became very weak as time went by, the vessel continued to operate for catching sharks. The first stage of efforts at commercial tuna longlining ended in this manner.

Second Stage : The second stage started in late eighties with M/s Indus Fisheries Ltd., acquiring a tuna purse seiner of 68 m OAL, from Van Camp Co. of USA, for operation in Indian EEZ. A few voyages in Indian EEZ were conducted but owing to operational problems the vessel was sold back to the same American company from whom she was purchased. The second stage would have also ended on a disappointing note but for the onset of the charter / lease / joint venture schemes, which formed a significant part of the recent history / trend of tuna fishing in Indian EEZ. During the period 1985-'96, Taiwanese longliners of Japanese design (36-57 m OAL range) equipped for operating multifilament longline dominated the Indian seas, through charter / lease / joint venture permissions secured by Indian enterprises under these schemes. Altogether 189 Taiwanese longliners operated in the Indian EEZ (23,323 voyage days and 17,301 fishing days with 50,587 hooks) during the period. However, charter / lease schemes were closed down by the government in 1996, and this policy trend engulfed joint venture scheme too eventually. The only exception was the ten Chinese built longliners of medium size, stated to be under continuing operation in the Indian EEZ under Indian ownership, but many believe the vessels are in actual fact run by the Chinese owners with their own crew and with the needed clearances and adjustments. Although all the foreign vessels had 20% of the total number of crew as the Indian component for the purpose of providing training to them, it is stated that no such training was actually imparted, although the Indian crew members were onboard.

Third stage : The third stage of tuna longlining operations in Indian EEZ, truely Indian in nature, emerged in 1992, even while charter/lease/ joint venture operations were on. Five longliners of 42-55 m OAL, (two Korean and three of Japanese construction) were imported and operated by three companies. Fishing Falcon Ltd., operated two new Korean built longliners and also one Japanese built used longliner, while Sumura Maritime Ltd., and Bay Liners Ltd., operated one Japanese longliner each. Promising results of operation were indicated. Quite a few consignments of *Sashimi* grade tuna were also exported by one or

more of the companies until 1994. Then, as an anticlimax, all the three companies wound up operations. One of the reasons for this is stated to be some measure of constraint in having supplies of needed quantities of bait. As the loans were not repaid, all the three longliners of Fishing Falcon Ltd., (two of Korean and one of Japanese construction) were sold in auction by ICICI. The remaining two longliners (Japanese built), one each owned by Sumura Maritime Ltd. and Bayliner Ltd. now lie berthed at Chennai harbour awaiting disposal by ICICI.

Resources and utilisation : Tuna resources of Indian EEZ were estimated at various levels, but what is believed to be at a conservative level was 250,000 t (James and Pillai, 1989). Against this the annual catch level in the EEZ, including the catches around Andamans was placed at around 34,000 t as in 1994. The latest statistics of FAO however indicate the annual tuna catches of India are 51,000 t, of which about 6,000 t were accounted for by skipjack catches around Lakshadweep islands. The balance of the catches were probably partly accounted for by the catches of 10 Chinese longliners stated to be of Indian ownership and partly by the catches of coastal tunas taken by trawl and gill nets of Indian vessels.

Multipurpose concept : In order to augment the production, particularly for exports, the latest trend set in motion is to implement a pilot project to equip the existing fleet of shrimp trawlers of 23-27 m OAL for undertaking tuna longlining too (Dixitulu,1999).

Status of Tuna resource : There has been a consensus on the availability of adequate tuna resources in the Indian EEZ. This has emerged mainly from a review of the tuna resource estimates of Indian EEZ made by CMFRI on the one hand and the results of operations of Taiwanese longliners over a period of nine years from 1985, as analysed by Fishery Survey of India. The conclusion was that Taiwanese would not have continued operations for so long and until they were asked to leave, unless the operations were profitable. Further, ten Chinese longliners of 'Indian' ownership with Chinese crew continue to fish in the Indian EEZ. Apparently the operations are profitable. Further, as was reported at the INFOFISH International Tuna Trade Conference (Tuna 2000), 30 Taiwanese tuna longliners continue to illegally fish in Indian EEZ. This activity lends further credence to the existence of adequate resources (Anon., 2000).

Large longliners uneconomical for operation exclusively in Indian EEZ: Besides fishing in Indian EEZ, Taiwanese longliners operated for tuna in Pakistan's EEZ too. They were also probably fishing in the EEZs of other countries as well. As the vessels are designed for long distance fishing for tuna with endurance to stay out at sea for months

together, these vessels are necessarily of a longer OAL and GRT / NRT. It is known that they also conduct fishing in the EEZs of a few Pacific island nations, a few African nations, and probably off some of the South-American countries too , for the reason that these are the areas available to them to fish for tuna, either with permissions or following other strategies. The global reach that they have as outlined above seems to make Taiwanese operations economical. If such operations with large liners, are restricted to a single EEZ such as the Indian EEZ, they may prove to be uneconomical in the long run as experienced by the three Indian Companies which operated their big longliners with foreign crew.

Taiwan's tuna fishing industry exploits the tuna resources of its EEZ through medium-sized domestic tuna longlining fleet. The same strategy is followed by Chinese too and this they seem to have extended to Indian EEZ through the operation of ten of their longliners of medium size, through Indian ownership, as already stated. Having crossed the stage of exploitation of tuna in their own EEZ, Taiwanese set their eyes on going global, and have built up a sizeable long distance tuna longlining fleet. (Now further expansion of the fleet has been stopped and no replacement of old vessels is done). In contrast, Indian planning unwittingly went in the direction of acquiring tuna longliners meant for long distance fishing instead of first planning to have the much more economical medium-sized longliners for fishing in its EEZ. A hind sight at the third stage of developmental trend would force one to conclude that the investment on large sized longliners must have been on the higher side to such an extent that the companies concerned could not generate adequate returns for repayment of loan installments and interest on loan taken. The other conclusion can be that the investors, new to fishing business, either wanted to come out of the activity which is hazardous or were unable to be equal to management problems or had other compelling reasons. In any case, heavy investments as they would have made for the acquisition of long liners could have been avoided. The intention while acquiring the vessels would not have been to fish in international waters or in the EEZs of other nations, as both these alternatives are very difficult to achieve.

Another aspect was the huge expenditure the companies incurred on foreign crew. Had the Indian crewmen put as counterparts on Taiwanese chartered longliners picked up the art of longlining, they would have been available for full-scale employment as crew on longliners introduced in the third stage but unfortunately it was not so. Multifilament longlining system (as practised on these longliners) demands substantial deck space for storage of mainline and branchlines, for the installation of winches or reels for release of line and haulers for their

retrieval, and considerable working space. At the Round Table Conference (Dixitulu, 1999), the disadvantages of multifilament longline system came up for a discussion and these culminated in a consensus that monofilament longlining system would have to be preferred. The reasons for this were that vessels of 14 m to 27 m OAL could be equipped for operation of monofilament longline of 3 to 4 mm diameter and ranging from 20 km (350 hooks) to 90 km length (1650 hooks). So far as 23-25 m OAL range vessels are concerned it was noted that 60 km of monofilament longline with 1100 hooks can be operated, with viable profit margins. Further, the Conference noted that monofilament longlining system which originated in USA, has now spread to a large number of countries including Australia and New Zealand because of lower investments and good returns. The latest information is that China has recently equipped around 100 medium sized vessels for monofilament tuna longlining.

The Round Table Conference also noted the recommendation of Capt. Guidicelli of FAO to instal tuna longlining equipment on shrimp trawlers of 23-27 m OAL of India which were operating at zero percent profit level, for improving the economics. Having considered these aspects, the Conference recommended the installation of monofilament tuna longlining system on the existing trawlers 23-27 m OAL of India in order to avoid heavy investments that would otherwise be necessary even for acquiring new medium-sized monofilament longliners. The de-

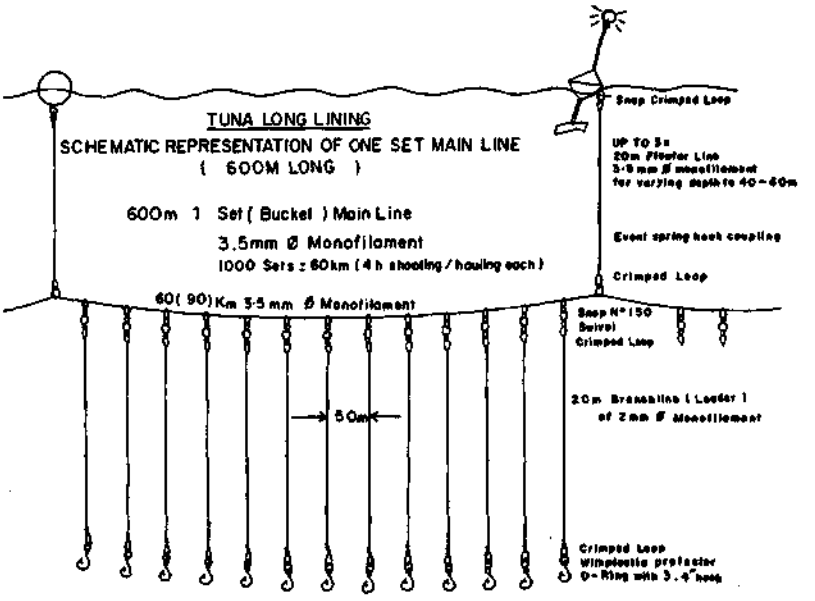

Fig. 1. Schematic representation of a a tuna longline set

sign of a monofilament longline (Fig. 1) and broad economics (Tables 1 to 3) are given.

As training and commercially-oriented demonstrations are important inputs for promoting the activity, it was recommended that a pilot project be taken up first. Under this project, it was suggested that steps may be taken to equip a few trawlers of 23 m OAL range for undertaking monofilament longlining linked to an arrangement for providing training to crew and conducting a commercially-oriented demonstration voyage. Keeping this in view and the dimension of tuna export promotion involved, it was recommended by the Conference to launch a pilot project covering the above mentioned aspects, with the participation of Ministry of Commerce (MPEDA), Ministry of Agriculture (IFP and FSI) and the Association of Indian Fishery Industries.

Approval of pilot project : Accepting the recommendation, a pilot project has since been approved by the government (Ministry of Commerce) with the following components.

a) The Association of Indian Fishery Industries, would be the nodal agency for implementing the project with the needed support and supervision by MPEDA and Fisheries Division of MoA. It would offer two trawlers of its members for conversion to undertake monofilament longlining. Half the cost of machinery and equipments needed in this regard (full cost estimated at Rs. 35 lakhs per vessel), will be provided by MPEDA as subsidy. The rest of the cost would be met by the Association / Company concerned.

b) In addition, it is stated that Rs. 10 lakhs will be provided per vessel by the government (Ministry of Commerce) towards foreign expertise needed for installation of machinery and equipment, training to crew and for demonstration of longlining operations in a commercial voyage.

The Ministry of Agriculture is understood to have sanctioned the following additionalities.

c) The Union Department of Animal Husbandry and Dairying would invest on conversion of a trawler of medium size range of Integrated Fisheries Project for tuna monofilament longlining on the same lines as the two trawlers of the private sector as part of the pilot project, and

d) The Union Department of Animal Husbandry and Fisheries would also make available one longliner of Fishery Survey of India to be part of the project.

The support under c) and d) is provided for a comparative as-

sessment of the operations. The Association of Indian Fishery Industries, IFP and FSI are now engaged in instituting the needed follow-up measures. The eventual upgradation of around 30 trawlers in the range of 23 m OAL for monofilament longlining with appropriate financing support and implementation of formulated post-harvest strategies is expected to follow, once the pilot project proves to be successful.

Impact on exports: Discussions with M/s Lindgren-Pitman of USA held on 8th - 9th of September 2000 in Visakhapatnam have confirmed that the shrimp trawlers of 23.5 to 27 m OAL can be equipped for monofilament long lining with 55 nautical miles or 88 km of monofilament line of 3 mm diameter. For this much of length, there will be around 1600 branch lines with hooks. A hooking rate of 1.5 kg per hook is estimated. On this basis, in one round of operation (per day) a catch of around 2.4 t per day has been visualised. In operations extended over 200 days in a year, the tuna catches are accordingly estimated at around 480 t.

The proposal put forth is to market the tuna in *Sashimi* quality, through export in fresh chilled condition to the Japanese market by air, following the Indonesian pattern, after working out the logistics. Based on the lowest estimated return of US $ 5 per kg, the gross earnings in a year are expected to be around US $ 2.4 millions or Rs. 10.8 crores per vessel. For 30 such vessels the earnings from export of tuna can be estimated at around US $ 72 million or Rs. 324 crores.

To sum up, the future of utilisation of tuna resources of Indian EEZ, by Indian entrepreneurship hinges on the trend of success of the pilot project now on the anvil. It is to be hoped that the project would be successful and would lead eventually to the acquisition of a place for India as one of the progressive tuna fishing nations of the world.

REFERENCES

Anon. 2000. Report on 6th Infofish World Tuna Trade Conference 25-27 May 2000, Bangkok, Thailand, *Fishing Chimes* Vol. **20** (3): 47-59.

Dixitulu,J.V.H. 1999. Conversion of Indian trawlers of 23-27 m OAL for tuna longlining. Paper presented at *Round Table Conference on Tuna* 14 June,1999 ,Visakhapatnam.

James, P.S.B.R. and P.P. Pillai. 1989. Tuna resources and fishing in the Indian EEZ - An Update. *Proc. National Conference on Tunas,* CMFRI,Cochin, p.19-43.

Table 1. Indicative capital cost (additional investment) per vessel (in US$)

	Item	23-25m OAL	28m OAL
1.	Cost of conversion drawings	12,000	12,000
2.	Hydraulic driven monofil mainline reel of aluminium heavy duty construction, line tension 50 to 550 kg. With level winder and remote control from hoisting position.	15,000	15,000
3.	4" hauling blocks, a set of four (US$200 each)	800	800
4.	Three hookline (branchline) tubs (US$600 each)	1,800	1,800
5.	Float line (buoyline) tub	600	600
6.	Hydraulic driven mainline setter	5,000	5,000
7.	Speed read out plus adjustment timer	1,500	1,500
8.	Spare parts kit for reel setter blocks etc.	2,700	2,700
9A.	60 km long (equal 100 sets) longlining tackles and gear consisting of		
a.	60 km monofilament mainline of 4mm dia. (coiled on spool)		
b.	100 x 11 = 1100 leaders(=hooklines) of 13m length, 2mm dia. with snap no. 148 swivel and ring with size 8/0 tuna hook		
c.	101 x 3 = 303 float lines (=buoylines) of 20 m length, 3.5 mm dia. with snap including assembly of tackles.	22,000	
9B.	60 km long (equal 150 sets) longlining tackles and gear consisting of		
a.	95 km monofil mainline of 4mm dia. (coiled on spool)		
b.	150 x 11 = 1650 leaders(=hooklines) of 13m length, 2mm dia. with snap no. 148 swivel and ring with size 8/0 tuna hook		
c.	151 x 3 = 453 float lines (=buoylines) of 20 m length, 3.5 mm dia. with snap including assembly of tackles		25,000
10.	Set of assembled tools (saws, gafts	1,300	1,300

cutters,hooks etc.)		
11. a. Set of 90 + 10 spare floats	5,500	
b. Set of 150 + 20 spare floats		9,350
12. a. Set of 12 + 4 light buoys	3,520	
b. Set of 18 + 6 light buoys		5,280
13. a. Set of 5 SEL-CALL type beeper buoys	8,000	
b. Set of 8 SEL-CALL type beeper buoys		12,800
14. a. Set of 5 SEL-CALL signal generators	3,000	
b. Set of 8 SEL-CALL signal generators		4,800
15. Water temperature guage unit	1,800	1,800
16. Packing and transportation (surface)	16,000	18,000
OPTIONALS		
1. Installation supervision in Visakhapatnam for 6-10 days	11,000	11,000
2. Master fishermen for monofilament longlining for a 30 day stay at US$ 500 per day + US $ 6000 for travelling	21,000	21,000

Table 2. Indicative economics of operations per vessel (Rs. in lakhs) at 1%, 1.5% and 2% hooking rates (270 fishing days)

	23-25 m OAL (60 km line)	27 m OAL (90 km line)
a) At 1% hooking rate		
i) Income	178	266
ii) Expenditure	158	207
iii) Net income before tax	20	59
b) At 5% hooking rate		
i) Income	266	390
ii) Expenditure	158	207
iii) Net income before tax	108	183
c) At 2% hooking rate		
i) Income	356	532
ii) Expenditure	158	207
iii) Net income before tax	198	325

Table 3. Indicative expenditure per vessel (Rs. in lakhs) (270 days of operation)

Item	23-25 m OAL (60 km line)	27 m OAL (90 km line)
a. Fuel lubricants and other oils	35.00	45.00
b. Freshwater	1.00	1.20
c. Repairs and maintenance	15.00	20.00
d. Foreign master fisherman contract	5.00	5.00
e. Bait	18.00	27.00
f. Ice	2.00	3.00
g. Crew salaries, incentives and allowances	15.00	18.00
h. Port charges	2.00	2.00
i. Gear maintenance and replacements	2.00	3.00
j. Export transportation expenses	38.00	56.00
k. Establishment charges (rent, vehicle maintenance, travel etc.)	12.00	12.00
l. Interest on investment and working capital loan	4.50	5.50
m. Depreciation @ 10 %	5.90	7.00
n. Insurance	2.00	2.00
TOTAL	160.00	210.00