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PRESENT STATUS OF THE DRIFT NET FISHERY AT VELLAYIL, CALICUT

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Introduction

The drift net fishery at Calicut is commercially important in that the quality fishes like seerfish and tuna are almost fully landed by this gear. The introduction of outboard engines and the consequent fishing in more deeper waters have resulted in noticeable changes in the overall catch composition. In order to understand this, the recent status of the fishery is studied based on the data for the period 1988-'89 to 1991-'92 from Vellayil, Calicut.

Craft and gear

These have already been described by Yohannan and Balasubramanian (*Mar. Fish. Infor. Serv. T&E Ser.*, No. 95, 1989). But of late, fibre glass coated plywood boats have become the main craft instead of dugout canoes and flat bottom plank built boats. Instead of 3-4 persons, most of the units are now employing only 2 persons.

Effort

Fluctuation in the annual effort is shown in Fig. 1. The effort varied from 5114 to 7961 with an average of 7015. After a drastic decrease in 1989-'90, the effort showed a steady increase till 1991-'92.

The average monthly effort is given in Fig. 3. The effort varied from 46 in June to 965 in October. Maximum effort was expended from October to January.

Catch and cpue

Annual variation in catch is given in Fig. 1. On an average 604.6 tonnes of fishes were landed of which 47.2% was comprised by tuna and 35.7% by seerfishes. Thus these two together form around 83%. As could be seen from the figure, there was a sharp increase in the landing of tuna and total catch in 1988-'89 when compared with other years. The bulk of the landing in this year came from October as this month alone accounted for 69% of the tuna and 48% of the total drift net catch. This was quite

unprecedented when compared with the same month of other years as shown below:-

Month & year :	October 1988	1989	1990	1991
Tuna catch in tonnes	371	57	71	81
Total catch	445	104	180	110

The landing in 1989-'90 showed a drastic reduction when compared with that of 1988-'89. Subsequently, it increased in 1990-'91 and then decreased.

Annual cpue is shown in Fig. 2. A drastic reduction in cpue from 1988-'89 to 1989-'90, and subsequently a gradual decrease till 1991-'92

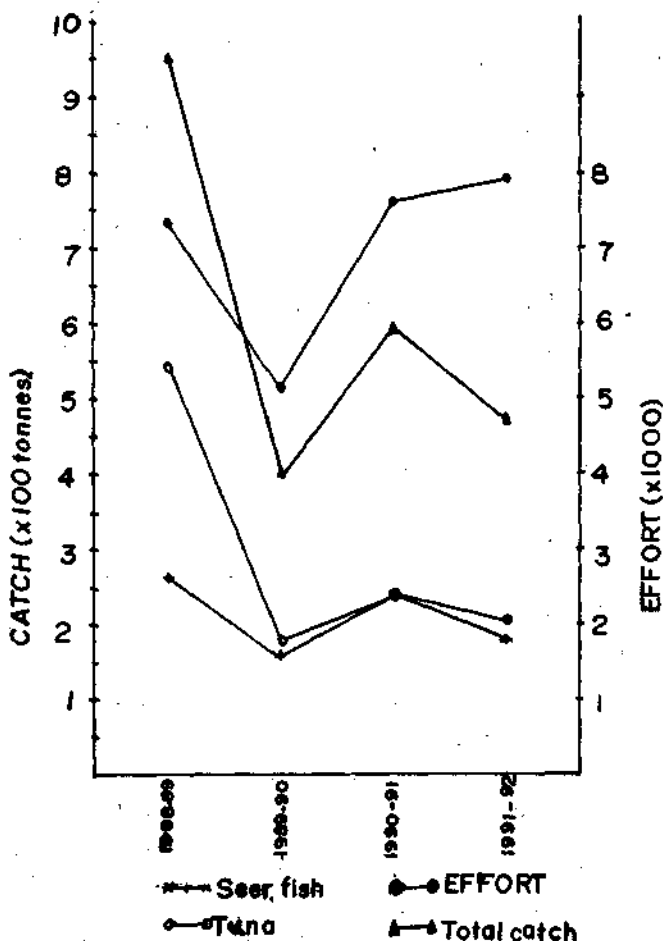


Fig. 1. Fluctuation in the total effort, total catch and seer fish and tuna catch at Calicut (1988-1992).

was observed in the case of total catch and tuna catch. But in the case of seerfish, a gradual decrease from 1988-'89 to 1991-'92 was observed.

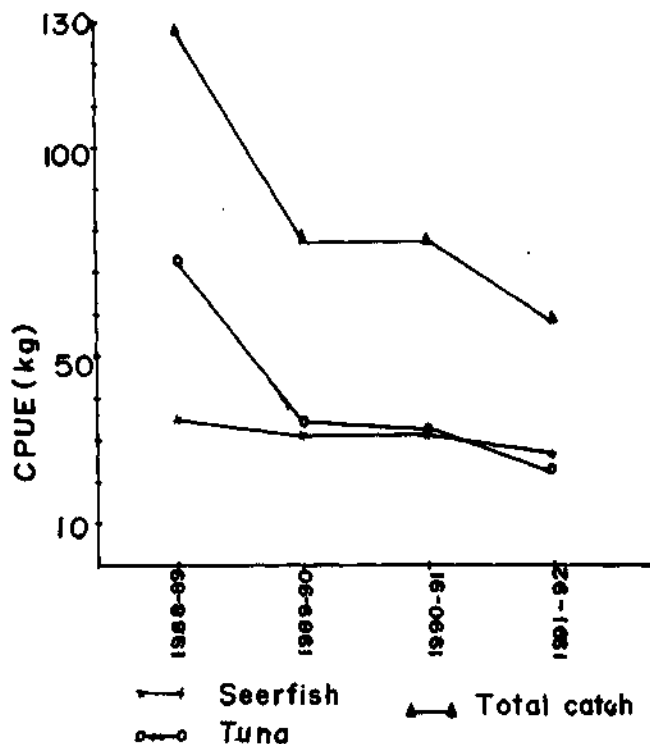


Fig. 2. Catch/unit effort (cpue-kg) in the total catch and seerfish and tuna catch at Calicut (1988-1992).

Seasonal variation in catch

Fig. 3 shows the average monthly landing of tuna, seerfish and total catch. The peak month of landing of total catch and tuna was October whereas November formed the peak month for seerfish. Moreover the drift net landing is dominated by tuna and seerfish. In general, tuna dominated the catch from April to October and in March, and Seerfish from November to February.

Species composition

Seerfish was represented by *Scomberomorus commerson*.

Among tunas, 6 species occurred in the fishery and the overall composition is shown in Fig. 4. *Euthynnus affinis* dominated forming 66% followed by *Auxis thazard* (28%). The other species in the order of abundance were *Thunnus tonggol* and *T. obesus* 2% each, *S. orientalis* 1.1% and *A. rochei* 0.9%. Seasonal species composition of tuna is shown in Fig. 5. *E. affinis* and

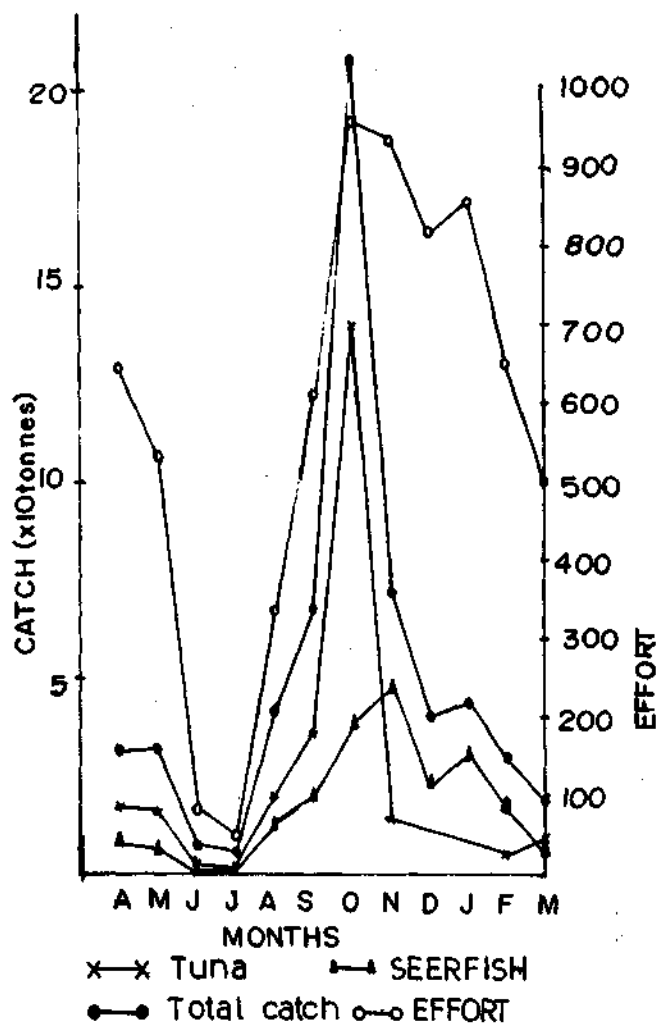


Fig. 3. Average monthly variation (1988-1992) in the effort, total catch and tuna and seerfish catch at Calicut.

A. thazard were occurring throughout the period. Others were quite seasonal. Two peaks were observed for *E. affinis* from April to June and November to March. July to October formed the peak season for *A. thazard*. December and January formed the main season for *T. tonggol* and September for *T. obesus* and *S. orientalis*.

Maximum Sustainable Yield (MSY) and Optimal effort (FMSY)

These were calculated using Schaefer model and is given in Fig.6. When the data for the period 1988-'89 to 1991-'92 were used, no correlation was found. But when the data of 1988-'89 was excluded, there was correlation. The failure in fitting the data of 1988-'89 may be due to the unusually heavy landing in that year. MSY and FMSY for seerfish were found to be 238.126 and 11835 tonnes respectively and for tuna they were 211.96 and 8268 tonnes. When

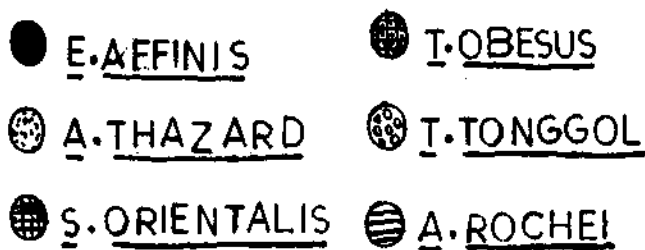
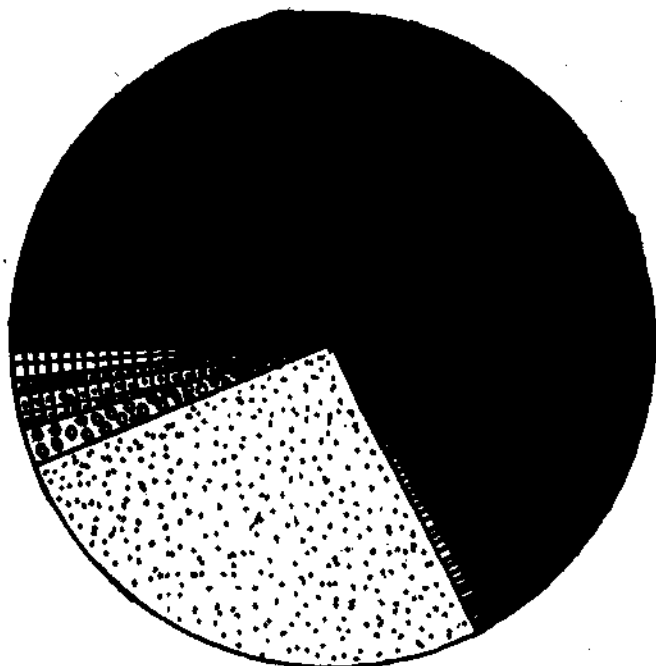


Fig. 4. Overall species composition of tunas in the drift gillnet fishery at Calicut (1988-1992).

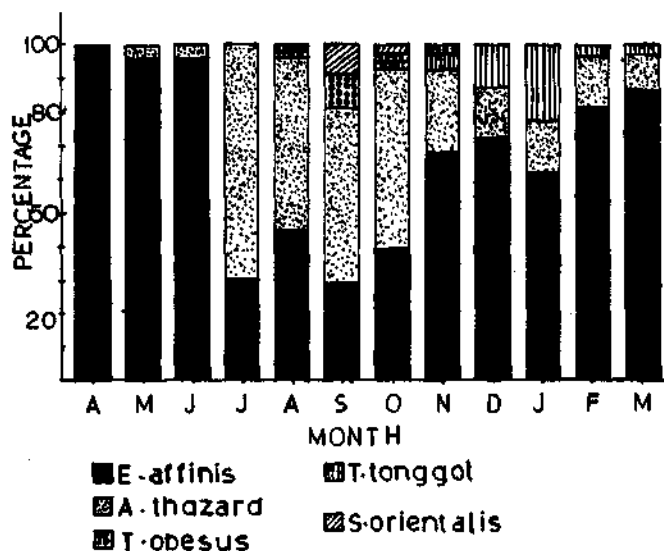


Fig. 5. Seasonal species composition of tunas in the drift gillnet fishery at Calicut (1988-1992).

the data of seerfish and tuna were pooled, the combined MSY was found to be 463.394 tonnes and the FMSY 10504 tonnes. It could be seen that at combined FMSY, though the tuna resource is slightly over fished, the seerfish are only nearing MSY.

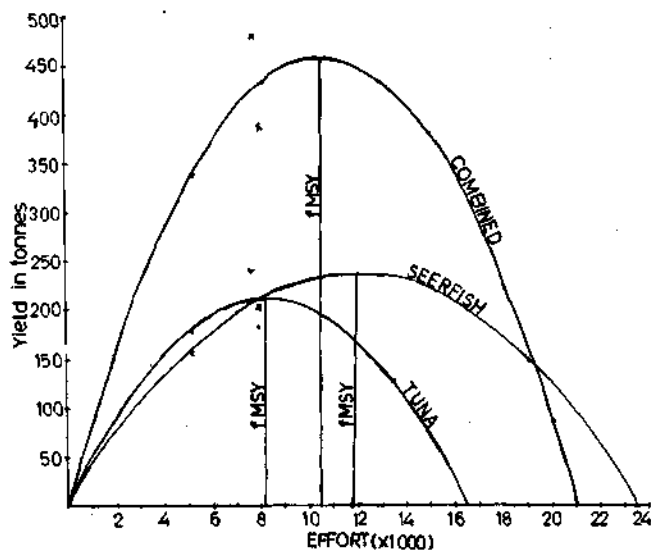


Fig. 6. Estimated Maximum Sustainable Yied (MSY) and Optimal Effort (f MSY) of tunas and seerfishes at Calicut in the drift gillnet fishery.

General remarks

The study shows that the drift net fishery at present fully depend on tuna and seerfish as they together constitute about 83% of the total drift net landings. Yohannan and Balasubramanian (*op. cit*) have found that they form around 55% only based on their study of the fishery of the period 1981-'88. Recently there is considerable increase in the landings of both tuna and seerfish when compared with the period 1981-'88. But the average total catch during the present period is less than that during 1981-'88 which indicate that the increase in the tuna and seerfish landings have simultaneously affected adversely the other fisheries like catfish, pomfret, shark etc. Among tuna and seerfish the former remains the dominant one. These infact are the notable developments after the motorisation of country craft.

As regards to the unusually heavy catch during 1988-'89, especially in October, it could be seen that the effort expended in October was higher than that of the same month in other years, and also was more than the preceding and succeeding months of the same year. A perusal

of the rainfall data shows the lowest rainfall in October 1988 when compared with the same month of other years. October being the peak month of tuna landing, the sudden calm condition following the turbulent monsoon would have become more conducive for intensive fishing as is evident from the increase in the effort used.

The drastic reduction in effort during 1989-90 was due to monsoon as during this year, the effect was felt intensely from April itself and continued till September. After 1989-'90, while

the effort was showing a gradual increase, the cpue was showing a corresponding decrease. Nevertheless, the catches did not decrease simultaneously except in 1991-'92. This may perhaps be due to yearly fluctuation.

It could be seen that the average catch of both tuna and seerfish for the period 1989-'90 to 1991-'92 was less than the MSY. This suggests that there is scope for further exploitation of the resources without affecting them adversely. The combined FMSY also indicate that there is scope for increasing the effort.