

TUNA FISHERY OF THE CALICUT AREA DURING THE SEASONS FROM 1981 TO '88

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ABSTRACT

Since 1982-'83 tuna catches are on the increase at Calicut. Effort has increased since 1984-'85 due to modernisation of craft, and simultaneously CPUE also showed increase, indicating scope for further development of the fishery. Situation in July, 1987, perhaps, indicates the abundance of tunas in the area during monsoon period.

The target species of the drift net fishery at Calicut are the seerfishes and the intensity of effort is mainly controlled by the availability of this fish. But recently, with the advent of out-board engines, tunas have become a major catch of this gear. From a total catch of 15.6 tonnes of tunas in 1982-'83 season the catches dramatically increased to 614.5 t by 1987-'88. The results of the study made on this development to know its implications on the future of tuna fishery here are presented in this note.

Apart from a paper by Balan and Yohannan (1985) there are no published accounts on the tuna fishery at Calicut.

Catch, effort and length-frequency data on tunas regularly collected from Vellayil, Calicut form the basis of this study. Data pertain to April - March seasons from 1981-'82 to 1987-'88.

Figure 1 shows the total tuna catch during different seasons. From the very low figure of 1982-'83, the catches show an upward trend with sharp increase from 1986-'87.

The total effort during different seasons (Fig. 1) shows a declining trend till 1984-'85 and then increases sharply in 1986-'87. The CPUE figures also show a marked improvement from 1986-'87. The effort, catch, and CPUE are at the maximum in 1987-'88.

Figure 2A shows the average monthly catch during all the seasons under study. The major peak is in October with secondary

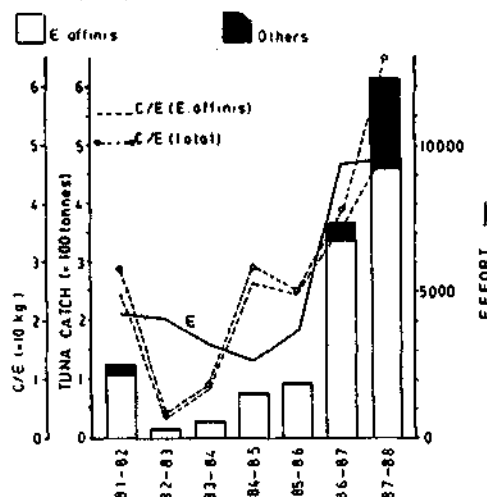


Fig. 1. Total tuna catch, effort and C/E during different seasons.

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ones in July and March-May. Figure 2B shows the monthly average tuna catch from 1981-'82 to 1986-'87. Here the pattern is different. July is the month in which the tuna landings are the minimum, but the peak is still in October. Figure 2C shows the monthly tuna catch in 1987-'88. Here the peak catches are made in July and not in October. The huge catch in July has influenced the averages for the whole period showing a minor peak in July. The effort data shown in these figures indicate that during July, 1987 the effort was extremely high when compared to other seasons.

Figure 3 shows the average rainfall for six 5-day periods in July for the period from 1981 to 1986 and the same for July, 1987. It can be seen that during the second half of July, 1987 the rainfall was very less. The calm sea conditions allowed the fishermen

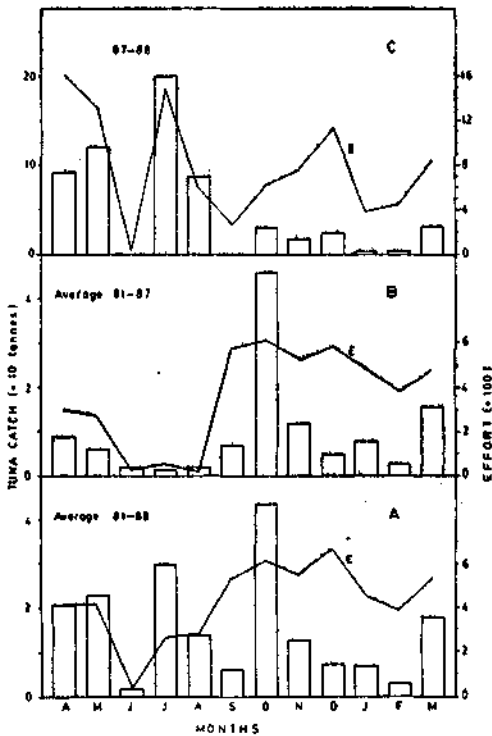


Fig. 2. Monthly average tuna catch and effort during different periods.

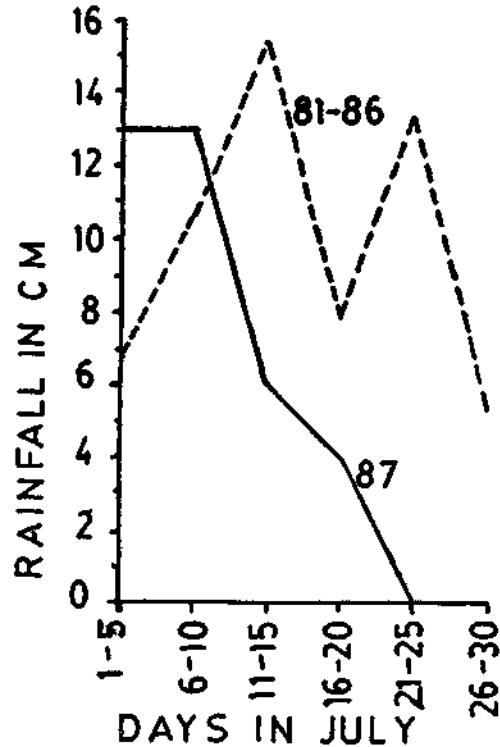


Fig. 3. Average rainfall during different 5-day period in July of the years from 1981 to '86 and rainfall of the same periods of July, 1987.

to operate drift net during the second half of July, 1987 and good catch rate encouraged them to make more drift net operations, increasing the effort and catch considerably during this month.

Figure 4 shows the relation between effort, catch and CPUE. Catch as well as CPUE can be found to have a positive regression on effort.

Table 1 shows the species composition during different years. On an average 83.56% of the total tuna catch was contributed by *Euthynnus affinis* and 6.5% by *Auxis thazard*. But, during July and August of 1987-'88 good quantities of *Thunnus obesus* were landed for the first time in Calicut. During 1987-'88 its contribution was 16.25%, which on an average for the whole seasons forms 7.56% of the catch.

TABLE 1. *Species composition and catches in kg*

Season	Effort C/E	Catch of <i>E. affinis</i>	<i>A. thazard</i>	<i>T. tonggol</i>	<i>T. obesus</i>	<i>S. orientalis</i>	Total C	C/E
81-82 (%)	4,248	1,04,315 (84.16)	14,943 (12.05)	4,693 (3.79)	—	—	1,23,951 (100.00)	29.18
82-83 (%)	4,034	14,496 (92.76)	1,131 (7.24)	—	—	—	15,627 (100.00)	3.87
83-84 (%)	3,157	27,455 (93.59)	1,880 (6.41)	—	—	—	29,335 (100.00)	9.29
84-85 %	2,610	68,534 (88.82)	8,399 (10.89)	—	—	224 (0.29)	77,157 (100.00)	29.56
85-86 %	3,673	90,702 (97.33)	1,008 (1.07)	1,488 (1.60)	—	—	93,198 (100.00)	25.37
86-87 (%)	9,383	3,37,665 (92.12)	13,917 (3.79)	14,978 (4.09)	—	—	3,66,560 (100.00)	39.07
87-88 (%)	9,460	4,60,094 (74.87)	45,528 (7.41)	8,782 (1.43)	99,863 (16.25)	254 (0.04)	6,14,521 (100.00)	64.96
Total (%)	36,565	11,03,261 (83.56)	86,806 (6.57)	29,941 (2.27)	99,863 (7.56)	478 (0.04)	13,20,349 (100.00)	36.11

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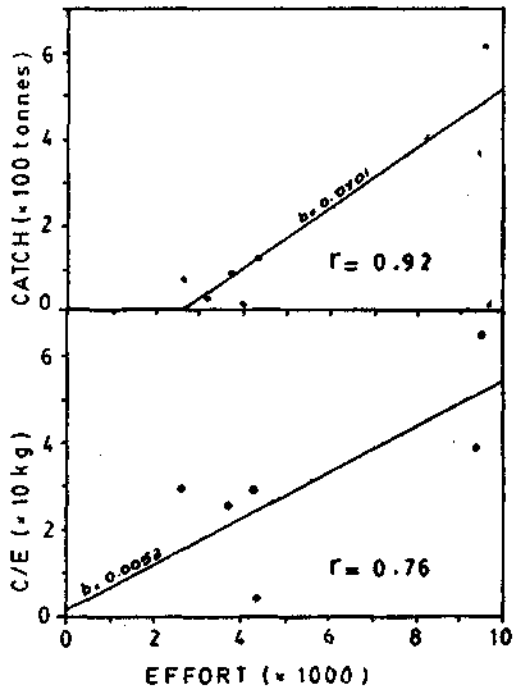


Fig. 4. The regression of catch and C/E on total effort of different seasons.

The average length-frequency distribution of *E. affinis* shows that 75.87% of the catch is in the length range of 35 to 59.9 cm. The mode is between 40 and 44.9 cm. A minor mode at 55-59.9 cm is also observed (Fig. 5).

Balan and Yohannan (1985) have given a brief account on the history of drift net fishing at Calicut. The migrant fishermen from Kanyakumari, who used to come to Calicut by September, to operate the drift nets till May-June period, stopped coming by 1983, consequent to the strong protest from local fishermen. The decline in the effort till 1984-'85 can be attributed to this development. Subsequently more local fishermen started operation of drift nets.

In 1984-'85 season, out-board engines came to be used for the propulsion of country crafts (Yohannan and Balasubramanian, MS). By 1985-'86 about 50% of the country

crafts employed in the drift net fishery were fitted with out-board engines and by 1986-'87 all of them were using out-board engines. This gave a new impetus to the drift net fishing. New, cheaper plank-built boats, locally known as "Kettuvallam", with transom stern suited to accommodate the out-board engines, came to be used widely instead of the old costly dug-out canoes. Compass is invariably used for finding direction. Because of these new conveniences, operations spread to beyond 35 m depth. The length of the net was standardised to 600 m and depth to 10 m, with 10-15 cm mesh size. The increase in effort in 1986-'87 is caused by these developments. Still the CPUE continued to increase and reached new peaks in 1987-'88.

Under these circumstances the tuna fishery in 1987-'88 showed a unique pattern. With the absence of the usual monsoon conditions in the second half of July, there was an unusual fishing activity with very good catch rate of tunas especially *T. obesus*. The effort continued to increase till 23 August, 1987, when sudden rough weather capsize many drift net boats.

In the past, the migrant fishermen from Kanyakumari used to come for fishing in September and leave by May-June. Intensive fishing was never tried in July in the past. The 1987-'88 experiment shows that July-August are the months in which, perhaps, the availability of tunas is at its maximum. Further investigations alone can throw light on this observation.

Figure 4 shows that the catch and CPUE are on the increase with effort. This indicates that the tuna fishery at Calicut is in a

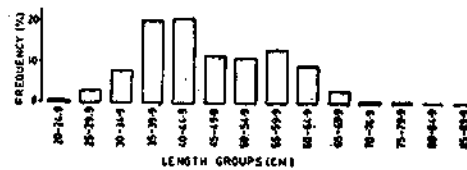


Fig. 5. Average length frequency distribution of *E. affinis* for all the seasons.

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developing stage. The present fishing is not at all affecting the stock and there is scope for further development of the fishery.

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REFERENCES

- BALAN, V. AND T.M. YOHANNAN 1985. *Bull. Cent. Mar. Fish. Res. Inst.*, **36**: 115-121. YOHANNAN, T. M. AND K. K. BALASUBRAMANIAN *Proc. Symp. Trop. Mar. Liv. Res.*, Mar., Biol. Assoc. India (in press).