ISSN 0254-380 X

भाकृअनुप
ICAR

समुद्री मात्स्यिकी सूचना सेवा
MARINE FISHERIES INFORMATION SERVICE

No. 95

MAY 1989

तकनीकी एवं विस्तार अंकावली
TECHNICAL AND EXTENSION SERIES

केन्द्रीय समुद्री मात्स्यिकी अनुसंधान संस्थान
कोचिन, भारत
CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
COCHIN, INDIA

भारतीय कृषि अनुसंधान परिषद
INDIAN COUNCIL OF AGRICULTURAL RESEARCH

DRIFT NET FISHERY AT CALICUT WITH SPECIAL REFERENCE TO SCOMBROIDS*

Introduction

The drift net fishery at Vellayil, Calicut which is at a fast developing stage, is undergoing many changes too. With the advent of outboard engines and the decline of some of the traditional fisheries like oil sardine and mackerel, more and more fishermen are being attracted to this fishery. Prior to 1986–'87 season, during peak fishing months the average operations per day were below 20 and it never passed beyond 30 on any day. But, during 1986–'88 seasons the average drift net operations per day in peak months crossed 50 and on many days more than 80 units were operated. Under these circumstances an examination of the condition of this fishery is worthwhile. Scombroids, being the major component of the drift net catch, need special attention. Results of the studies made on this fishery, with special reference to scombroids, are presented in this report.

Regular data on catch and effort of drift net fishery as well as 'nethalvala' fishery collected from Vellayil during the seasons from 1981–'88 form the basis of this report.

Gear

Drift nets are made of nylon thread of different thickness (Nos. 5, 6, 8 and 9) with the mesh size varying from 10 to 15 cm. Normally a drift net is having a total length of around 600 m and a depth of 10 m. A plastic rope of about 8 mm thickness is used as head rope. Small round thermocol floats are attached to the head rope at 2.5 m intervals. After each eleventh float there will be a bigger float made of thermocol sheets. Sometimes at both ends of the net, sealed plastic cans are attached as floats (front cover photo). Below every bigger thermocol float at the bottom of the net is attached a granite sinker stone weighing around one kg. During operation a kerosene lamp is kept afloat in the sea using thermocol sheets tied to the head rope at about 40 m from the far end of the net using a rope of 10 m length. This is used mainly as a safety measure to keep other fishing boats away from the net. The head rope is tied to the boat with a plastic rope of about 50 m long and around 30 mm thickness.

Craft

The usual craft used in the drift net fishery are dugout canoes of 9 m length (Fig. 1). In 1984–'85 season the use of outboard engines came into vogue and the country crafts employed in the drift net fishery started using these engines (Fig. 2). Soon this became popular. This facilitated the use of much cheaper plank built flat bottom boats (Fig.3). A good dugout canoe costs about

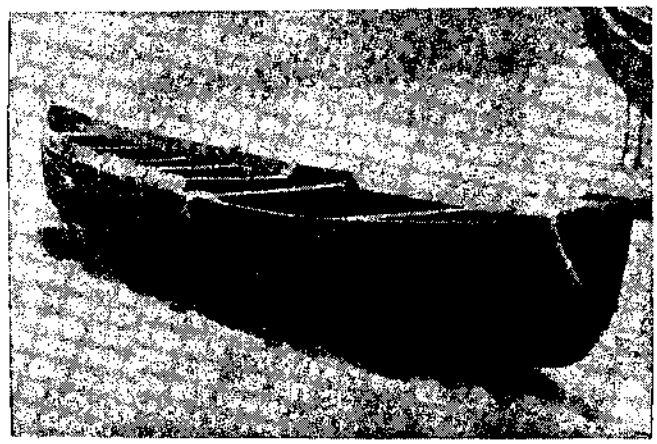

Fig. 1. A dug out canoe used in the drift net fishery.

Rs. 60,000/-, but a plank built boat, locally known as 'kettuvallam' costs about Rs. 15,000 only. The use of outboard engines reduced the man power needed in a drift net unit. Formerly 4–5 persons used to go in a unit. Now the number is reduced to 3.

Operation

Normally the units leave the landing centre by about 1500 hrs and reach the fishing ground at about 35 m depth by 1800 hrs. Prior to the introduction of outboard engines fishing was carried out at 20 – 30 m depth. Concentration of seer fishes and tunas are often spotted visually and the net is spread within 45 minutes. The head rope is tied to the boat with the help of a rope which is about 50 m long. Normally about 25 m only

* Prepared by T.M. Yohannan and K.K. Balasubramanian, Calicut Research Centre of CMFRI, Calicut.

will be released. During rough weather more length of rope is released. The net is then allowed to drift for about 6 hours. The operations are made at the surface during the beginning of the season. As the season advances and the temperature of the water increases, the net is operated below the surface and by April–May the operations take place 15 m below the surface. Landings start by 0600 hrs. Now-a-days, since the fishing is made during night time and at greater depths fishermen invariably use compass for finding direction (Fig. 4).

Catch and effort

On an average at Vellayil 5,224 units of drift nets brought 628 tonnes of fishes annually during the 1981-'88 period. Of this 54.65% of the catch was comprised of scombroid fishes namely tunas (30.03%), seer fishes (23.39%) and mackerel (1.23%). The rest of the catch included cat fishes, pomfrets, sharks and rays, carangids, *etc.*

Fig. 2. An outboard engine fitted to a canoe used for different fishing.

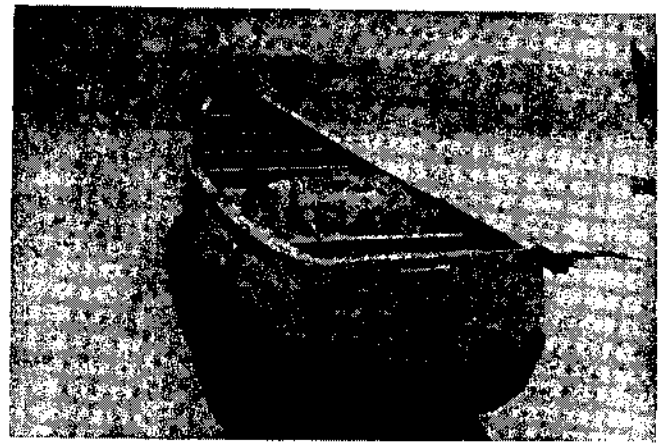

Fig. 3. Plank built canoes which are much cheaper are conveniently used for fitting outboard engines.

Fig. 5 shows the seasonal variation in catch and effort during the period under study. The total drift net catch decreased steadily from 459 t in 1981–'82 to 329 t in 1983-'84. Thereafter fishery showed improvement and in 1986–'87 there was a sharp increase in the catches netting 1,333 t of fishes. The effort was at minimum during 1984–'85 (2,610). In 1986–'87 there was a dramatic increase in effort, reaching a figure of 9,393 operations. The increase in effort and catch can be attributed to the introduction of outboard engines. Though the use of outboard engines began by 1984–'85, cent per cent of the units was mechanised by 1986–'87 only. Prior to 1985–'86 season seer fishes were the dominant species in the catch, but during 1986–'88 tunas became the most dominant species in the drift net catches.

When the relation between seasonal effort and catch was worked out, it was found that total catch had a direct relationship with effort. Tuna catch also showed a direct relationship to effort. Mackerel catch showed an inverse relationship with effort. A study was made on the relationship between seasonal effort and catch per effort. The catch per effort of all the fishes was found to have direct relation. When, only the first five seasons were taken into consideration, the relationship was inverse. This indicated a major change in the characteristics of the fishery with the advent of outboard engines. The relation between catch and effort of tuna was also direct. These indicate that with the increase in effort, tuna catches are bound to increase than that of seer fishes. Mackerel is loosing its relevance in the drift net fishery. On the whole, in the drift net fishery, an increase in effort can result in better returns.

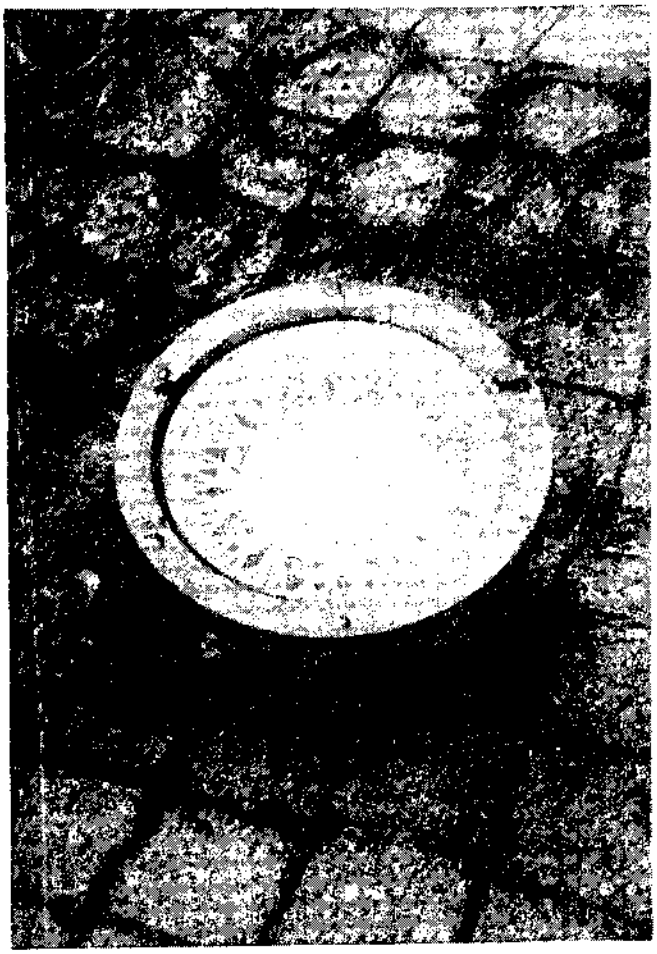

Fig. 4. A compass usually used by the fishermen. Smaller and cheaper types are also available.

Seasonal variations in catch and effort

Fig. 6B shows the average catch and effort in different months from 1981–'87. The figure shows the peak period of drift net fishery as October, when catch and effort were at the peak. The maximum catches of tunas and seer fishes came in this month. The secondary peak was in April. Fig. 6A shows the average monthly catch during the 1981–'88 period. Here the picture is slightly different and the secondary peak in catches is in July. This change was effected by the peculiarity of the fishery in 1987–'88 as shown in Fig. 6C. In this season the highest effort and catches were made in July. During the second half of July the weather was good without the usual monsoon conditions. This was the reason for the unusual increase in effort. In general it can be seen that tunas dominated the catch from April to July, October and March. In other months seer fishes dominated the catch.

The relation between catch and effort during July was direct. The indication was that July might perhaps be the month when the availability of different fishes contributing to drift net fishery, especially tunas, is better. But, generally bad weather conditions due to monsoon restrict the increase of effort in July.

The relationship between drift net and 'nethalvala' catches

The drift net catches mainly include carnivorous fishes. Their main food items are small fishes like anchovies and young ones of fishes like sardine, mackerel *etc*. These small fishes are caught here by 'nethalvala', which is a boat seine like 'pattenkolli' but with smaller meshes. An attempt is made to study the relation between the abundance of these small fishes and drift net catches. A study on the relation between catch and effort of 'nethalvala' and drift net indicated a direct relation except during the year 1986–'87.

Fig. 7 shows the monthly average each in drift net and 'nethalvala' during different periods such as 1981-'88 and 1981-'87. From the figure it can be seen

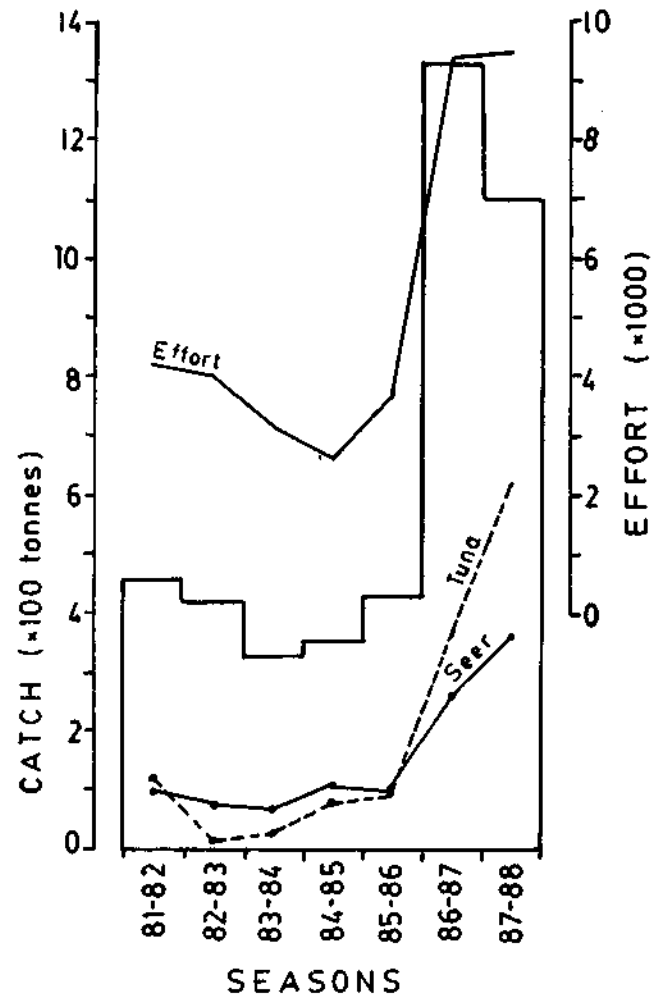

Fig. 5A. Seasonal catch and effort.

that peak catches of 'nethalvala' as well as drift net came in October. The secondary peak in 'nethalvala' catch was in July. The average monthly drift net catch during the period from 1981–'88 showed a secondary peak in July. But this peak disappeared when the averages from 1981–'87 were plotted. This is due to the peculiar situation in July, 1987 as described earlier. Hence, the availability of small fishes, perhaps, played an important role in the success of drift net fishery. The peak catches of small fishes in July again indicated the possibility of better availability of fishes, coming in drift net. The peak drift net catches during July '87 was an indication of this possibility.

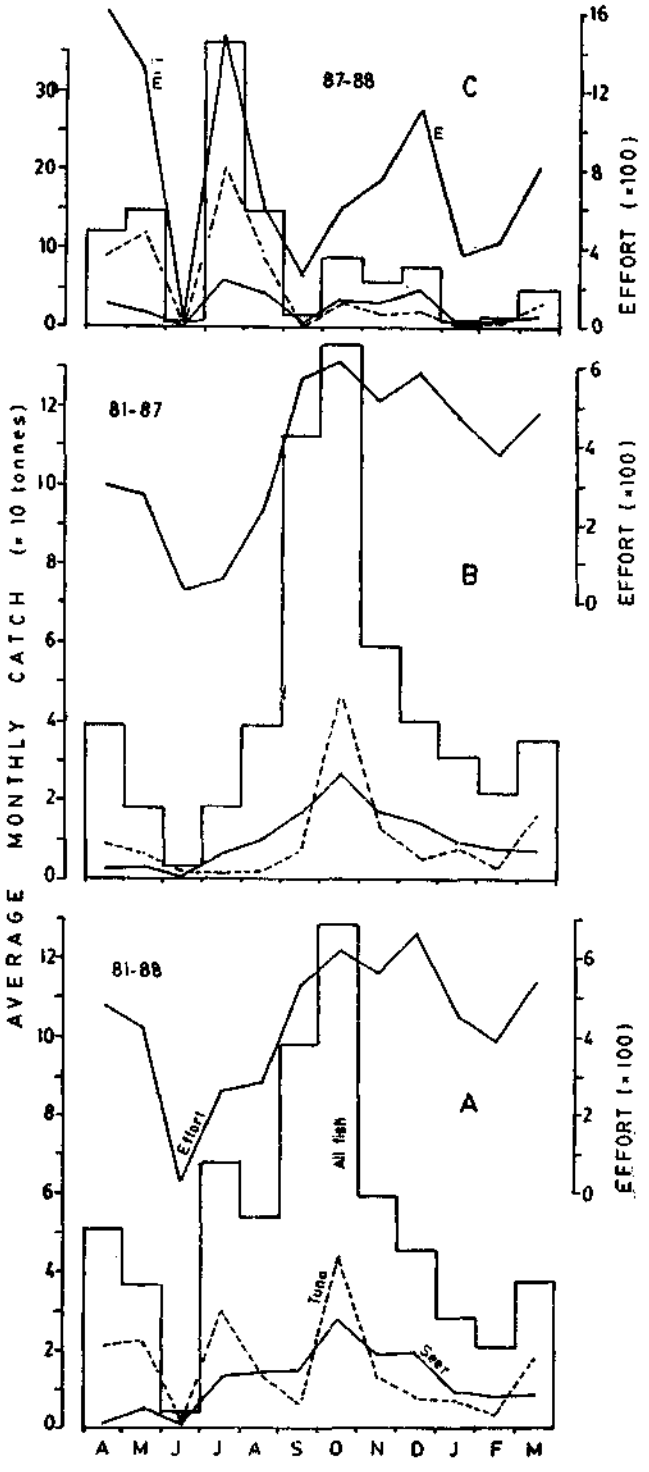

Fig. 6. Average monthly catch and effort during different periods.

General remarks

The study has indicated a general increase in the efficiency of drift net with reduced man power. With

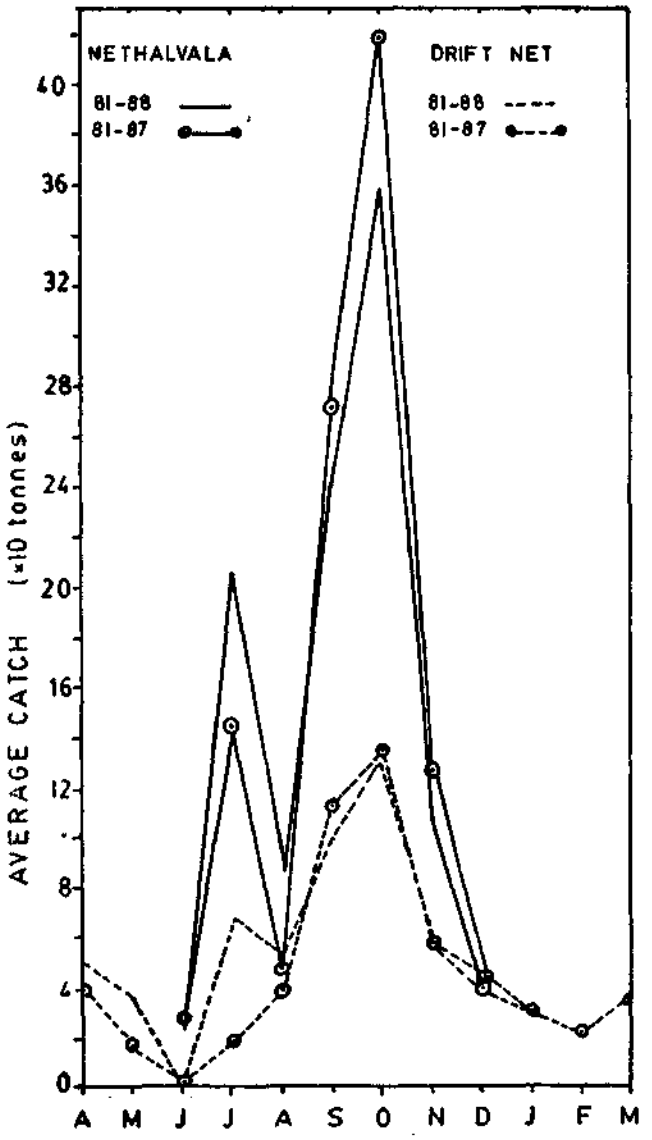

Fig. 7. Average monthly catch of drift net and 'nethalvala'.

the introduction of cheaper plank built boats the capital needed for purchasing an outboard engine has been neutralised as the plank built boat plus an outboard engine will cost less than a good dug-out canoe. Reduction in the manpower needed and physical labour involved have increased the availability of labour. The use of compass (Fig. 4) and safer 'kettuvallams' (Fig. 3) have made the fishermen more confident to go to deeper areas for fishing in the night even in rough weather. All these developments with recent increase in C/E are sure to take the drift net effort to new heights in the coming years. Further, the general decline of the major traditional pelagic fisheries like oil sardine and mackerel will attract more effort into drift net fishery.

At present there are no indications of any adverse effects on the fishery due to an increase in the effort. The total catch and tuna catch are bound to increase with increase in effort. Only in the seer fish catches a stagnation is felt. This can perhaps, be due to change in the area of fishing. Anyhow, the future of drift net fishery at Calicut will mainly depend on the demand for tunas.

But, of late the local fishermen are becoming aware of the ill effects caused by the use of outboard engines. According to them these engines create tremendous noise pollution in the water. The mussel pickers who dive underwater for picking mussels support this view. Fishermen say that the pelagic fishes, especially oil sardine, are very sensitive to underwater noise. This observations has to be investigated in detail.

Unlike dug-out canoes the longevity of the plank built 'kettuvallams' is limited and constant repairs are necessary to keep it in good condition. The repairs of the outboard engines are also costly. These are some of the aspects which may perhaps control the increase in effort. The drift net fishery at Calicut demands a close watch in the coming years.