

ON THE PERCH FISHERY OF TUTICORIN DURING 1978-1980*

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ABSTRACT

The present paper deals with the studies on perch resources viz. the rock-cods, the snappers and the pigface breams mainly, which are abundant in the seas off Tuticorin. Perches are one of the most important groups of demersal fishes with immense developmental potentialities. The present study relates to the period 1978-'80. This fishery was fairly good in this area, during this period, employing both indigenous craft and gear as well as the mechanised units. At Tuticorin, during this period 73.3% of perches were landed by indigenous craft and gear whereas the remaining 26.7% were fished by the mechanised units including the large fishing trawlers of the Fishery Survey of India. This fishery, by and large was supported mainly by fishes of the family *Lethrinidae*, *Serranidae*, *Lutjanidae*, *Plectorhynchidae*. There is a well defined peak season for this fishery during July-October period followed by a smaller peak in April-May.

INTRODUCTION

PERCHES are one of the most significant group of demersal fishes with immense development potentials. The fishing grounds off Tuticorin are rich in resources of perches, especially the breams, the snappers and the rock cods. The nature of the terrain in this part of the Gulf of Mannar, which abounds in coral reefs and rocks is the most congenial ground for these groups of demersal fishes. Information on this resource is very scanty except for a few earlier reports. Hornell (1916) has pointed out, the possible existence of rich perch fishing grounds along the southwest coast of India. Menon and Joseph (1969) have reported on these grounds based on fishing conducted by the then Indo-Norwegian Project. The experimental and exploratory fishing conducted by vessels

S. T. Goschen during 1927-28, and by *Tongkol* (1928-29); *Bulbul* (1928-35), *Raglan Castle* (1945-47) and *Aringa* (1947) on the Wadge Bank yielded very good harvests of perches. Chidambaram and Rajendran (1951) have reported on the trawling survey on the Wadge Bank and the richness of the Bank for bottom fishes, mainly the perches. Pai and Pillai (1973) have reported on the abundance of perches in the exploratory trawl operations of the Govt. of India Exploratory Fisheries Project, in the Gulf of Mannar. Tyagarajan and Mahadevan (1962) have reported on a few trawling experiments on Punnakayal Madai. Rao (1967) has described the experimental trawling operations in the Gulf of Mannar. Of late, perch resources of this area have been exploited more and more, both by mechanised trawlers and indigenous methods. Results of the investigations conducted on the resources of Kalava off Tuticorin area during 1978-80 are dealt with here.

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MATERIAL AND METHODS

The fish landing centres at Tuticorin North and Tuticorin Fishing Harbour were visited twice a week regularly, for collecting catch statistics from indigenous and mechanised units respectively. On an average 20% of the units operated were observed for estimating the day's catch. The catch for the month was computed based on this. The species composition as well as the relative abundance by weight of different species were also observed. The landings of perches from the Exploratory Fisheries Project were also taken into account, from the log sheets maintained by the skippers of these vessels, made available to the CMFR Station.

Craft and gear

The indigenous crafts used in the perch or Kalava fishing are the Tuticorin type plank-built boats. The dimensions of the Tuticorin type boats are length, OAL 29' breadth 6' 3" and depth 2' 11" (Silas, 1967). During the peak season 250-300 such units are engaged in Kalava fishing. The mechanised crafts which land considerable quantity of perches are the Exploratory Fisheries Project trawlers. During 1978-80 three such large trawlers were operating from Tuticorin base. These mechanised trawlers employ 20 m, 24 m, and 42 m bottom trawls. Due to the rough, corally and uneven bottom nature of the grounds, the bottom trawls are attached to heavy ground ropes. The otter boards are elliptical in shape and has an area of 1.6 m², weighing 165 kg. The trawl nets have 70 mm mesh size at the wings and 20 mm mesh at the cod end. Perches are seldom landed by the smaller 32'-36' commercial mechanised trawlers which mainly go for prawn fishing. The reason for this could be, the substratum for prawns is usually muddy or sandy, whereas Kalava are often encountered in the corally or rocky areas.

The gears used in the indigenous crafts for Kalava fishing are mainly hooks and lines and the drift nets. The hooks and lines or the 'Aayiramkalthoondi' as they are locally called, each contains 1000 to 1300 numbers of No. 7 hooks; small lesser sardines and small pieces of chank meat are used as baits on these hooks. The drift nets are locally called 'Paruvalai', with 12.2 to 12.5 cm mesh size. About 25 to 30 such nets are joined together and set in the fishing grounds. These nets are allowed to remain in the water for about 6 hours and then hauled up.

More than 85% of the perches from indigenous gears are caught by hooks and lines, though a considerable number of drift nets are also employed. Perch traps are very rarely used in this part for Kalava fishing though they are in vogue along Kilakarai area.

Fishing grounds

The perch fishing grounds are mainly located about 25 to 50 miles off Tirunelveli coast between 8° and 9° N at depths of 35 to

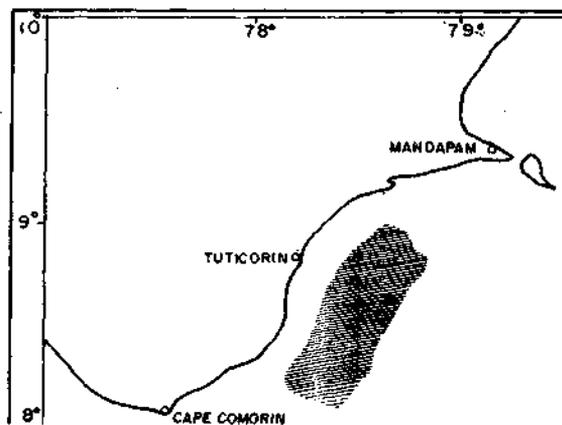


Fig. 1. Perch fishing ground along Tuticorin Coast.

60 metres (Fig. 1). The continental shelf off this coast is well known for corals, the substratum abounds in coral rocks and sand. Hooks and line fishing is the most suitable

method since trawling is not possible on these grounds except in certain areas. Perches are also caught in plenty using hooks from around the small coral islands which lie scattered in the Gulf, off Tuticorin.

FISHERY

The perch fishery at Tuticorin goes on unabated throughout the year, though definite peaks and slugs are noticed. The annual catch and percentage composition of species are given in Table 1. The average annual catch was estimated as 275.8 t (for the years 1978-80). The catch statistics show an increasing trend. In the year 1978, the estimated catch was 162.8 t, whereas in the year 1980, it reached 409.25 t. The catch has more than doubled during this two year span, but the catch per hour figures do not show a proportionate increase. It could also be noticed that best catches were obtained during July-October period, each year and another small peak was also discernible during March-May period. In the trawlers of the Exploratory Fisheries Project Tuticorin base, fishing off Tuticorin, 35 to 40% of the total fish catch was constituted by perches. In certain areas 08° N - 78° E percentage of perch was as high as 61%.

Seasonal abundance

During July - October, there is a conspicuous peak in the landings of perches; a smaller peak also observed during April-May. More than half of the total annual catch was recorded during these months. Seasonal variations are very conspicuously visible in the catches from hooks and lines and also in the catches of perches in the mechanised trawlers of the Govt. of India. In the hooks and lines, the maximum catch per hour of 15.74 kg/hr was obtained in October 1979 and also during the month of September 1980. During 1978 and 1979, the minimum catch per hour in the hooks and lines was noticed in February-March period *i.e.* 1.07 kg and 1.8 kg. In the drift nets, the maximum catch per hour was observed in September 1978, December 1979 and September 1980, the minimum was in March 1980. The catch per hour of 84.7 kg was the highest, noticed during September 1979, in the Govt. of India trawlers and the minimum catch was registered during the month of April 1979. The seasonal variations in the catch could be attributed to a great extent to the effect of the hydrographical conditions prevalent in the waters during the period. Another factor is the presence of favourable weather conditions and

TABLE 1. Species composition of perches at Tuticorin from all gears in the catch

Species	1978		1979		1980	
	kg	%	kg	%	kg	%
<i>Lethrinus nebulosus</i>	55,366.6	34.00	92,099.4	34.00	1,39,142.6	35.17
<i>L. lentjan</i>	3,256.9	2.00	5,417.6	2.00	8,184.9	2.10
<i>Lethrinella miniata</i>	6,513.7	3.39	10,835.2	4.00	16,396.7	4.21
<i>Lutjanus rivulatus</i>	9,770.2	6.00	16,252.8	8.00	24,554.6	6.03
<i>L. malabaricus</i>	4,885.3	3.00	8,126.4	3.20	12,277.3	3.00
<i>L. argentimaculatus</i>	6,513.7	3.39	10,835.2	3.98	14,323.5	
<i>Pristiponoides typus</i>	3,256.9	2.00			8,184.9	2.10
<i>Epinephelus diacanthus</i>	6,514.0	3.39	8,126.4	3.20	12,277.3	3.13
<i>E. malabaricus</i>	4,885.30	3.00	10,835.3	3.98	14,323.5	3.52
<i>E. undulosus</i>			5,417.6	2.00	6,138.6	1.51
<i>E. tauvina</i>	19,541.0	12.00	32,505.7	12.10	49,109.1	12.06
<i>E. chlorostigma</i>	4,885.2	3.00	8,126.4	3.20	8,184.8	2.10
<i>Diagramma pictum</i>	16,284.3	10.00	27,088.0	9.98	40,924.3	10.05
<i>Plectorhynchus griseum</i>	9,770.2	6.00	16,252.8	6.00	24,554.6	6.03
<i>P. schotaf</i>	11,399.0	7.00	18,961.6	7.10	28,647.0	7.04

favourable wind to facilitate the operation of sail boats of indigenous crafts during July-October period. The land to sea breeze which blows in the night to early morning helps the boats in reaching the fishing grounds. Similarly the winds which blow from south to north and from sea towards land from noon

leignathids, small pieces of chank meat, etc. are used as baits in the hooks. The fishes caught are split open and the viscera removed, after washing in sea water, the fish are well smeared with salt and stocked in layers, each layer being separated by a layer of salt. Generally this fish brought ashore is lateron

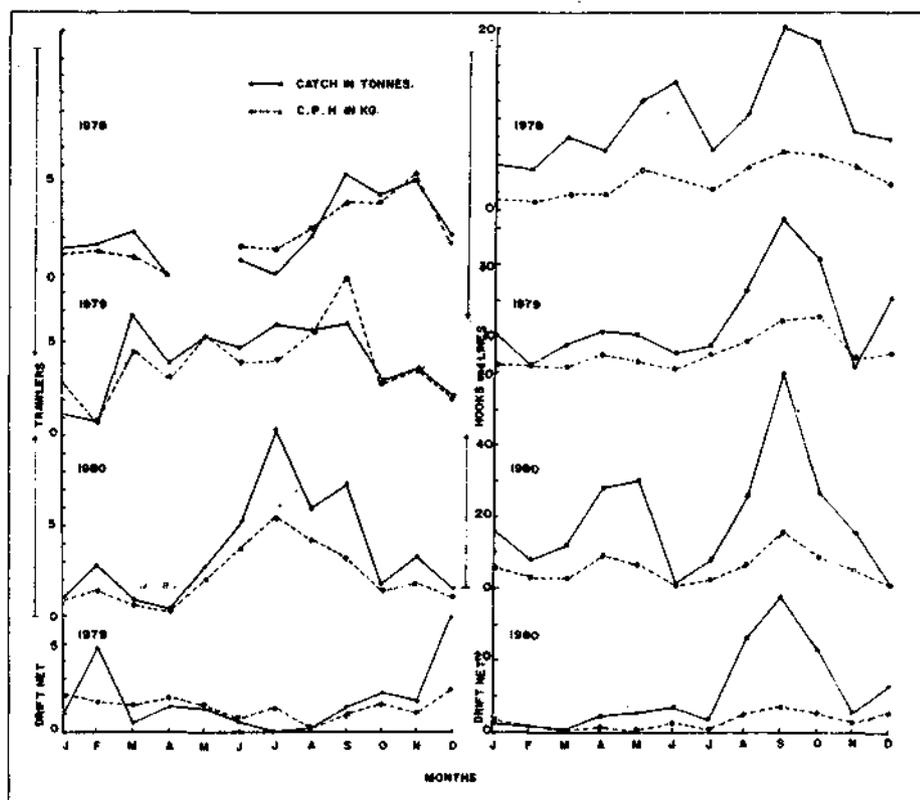


Fig. 2. Catch and catch per hour of perches in various gears during 1978-80.

to late evening enable speedy return of the boats after fishing.

The fishermen in and around Tuticorin go for hook and line fishing in a north easterly direction, to the small coral islands which lie scattered in the Gulf off Tuticorin. They carry with them sufficient quantities of salt and other provisions, halt on these islands and carry out fishing using hook. Small lesser sardines,

sundried and marketed. This type of fishing is locally called 'Thangal fishing'.

Species composition

The species of perches contributing to the Kalava fishery at Tuticorin, belong to the families Lethrinidae, Lutjanidae, Serranidae and Plectorhynchidae. The most commonly occurring species are listed below :

- a. *Family : Lethrinidae*
1. *Lethrinus nebulosus* (Forsskal)
 2. *Lethrinella miniata*
 3. *L. lentjan* (Lacépède)
- b. *Family : Lutjanidae*
1. *Lutjanus rivulatus* (Cuvier)
 2. *L. malabaricus* (Bloch and Schnieder)
 3. *L. argentimaculatus* (Forsskal)
- c. *Family : Serranidae*
1. *Epinephelus diacanthus* (Cuvier and Valenciennes)
 2. *E. malabaricus* (Bleeker)
 3. *E. undulosus* (Forsskal)
 4. *E. tauvina* (Forsskal)
 5. *E. chlorostigma* (Bleeker)
- d. *Family : Plectorhynchidae*
1. *Diagramma pictum* (Thunberg)
 2. *Plectorhynchus griseum* (Cuvier)
 3. *P. schotaf* (Forsskal)

The catches of different species and their percentage composition are given in Table 1. Around 35% of the total perches in the indigenous gear as well as in the large machanised trawlers landed at Tuticorin was constituted by the single species *Lethrinus nebulosus* locally called 'Velameen'.

DISCUSSION

Though the level of exploitation of the marine fishery resources of the country in general, is far below the optimum level, there seems to be too much concentration, in certain areas and also with respect to certain species. In recent years the industry has turned its attention to resources other than the

over-exploited resources such as the prawns, the oil sardine and the mackerel. Of late, the Kalava fishery hitherto an under-exploited resources is gaining importance. The offshore grounds in the Gulf of Mannar with its rocky and reefy nature abounds in this resource.

It could be observed from catch statistics, that in 1980, catch has more than doubled from that of 1978. In 1980, a total of 409.25 tonnes of perches have landed, while in 1978, it was only 162.8 tonnes. Though the catch has more than doubled, there is also a proportionate increase in the total number of units engaged in this fishery. In the Govt. of India trawlers of the EEP (17.5 metres long) which conduct trawling off Tuticorin and Punnakkayal, 35-40% of the catch was constituted by perches. From certain areas, the percentage of perches caught was as high as 61%.

Seasonal variations in the landings of perches are observed in all the gears employed. There is a significant peak during July-October period with a maximum catch per hour of 15.74 kgs in the hooks and lines, 84.7 kg per hour in the Govt. of India mechanised trawlers. In drift nets also the maximum catch per hour was noticed during this period. Similarly, there is a marked lean period during February-March. Such conspicuous seasonal variation in perch production was observed in the wadge Bank region also (Joseph and John, 1986). They have attributed this to the presence of two stocks viz. the resident stock which is already present in the fishing ground throughout the year and the migrant stock which appears in the region during the southwest monsoon. The presence of such migrant stocks along with the resident stocks, during the peak period, in the Gulf of Mannar also cannot be ruled out. This phenomenon of seasonal abundance is also noticed in the perch landings from the west coast, off Cochin. The Kalava fishery starts here during early November and lasts till middle of April when it ends abruptly.

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