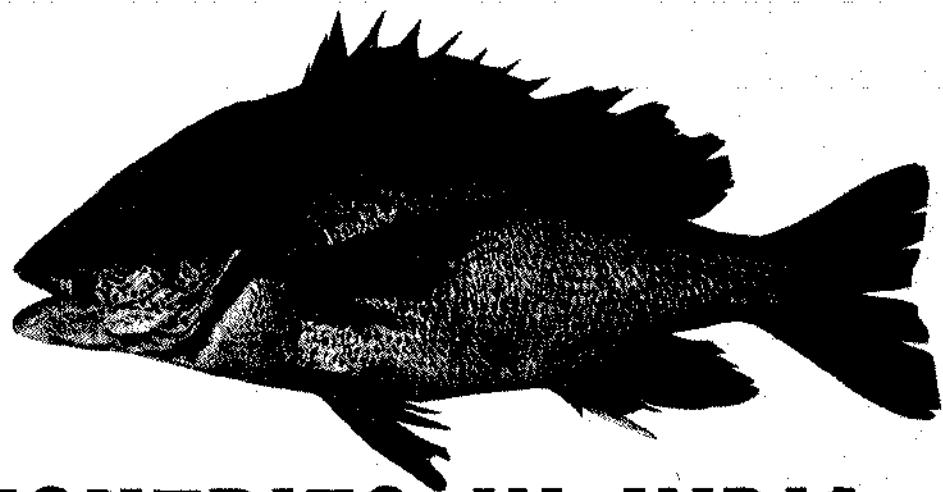
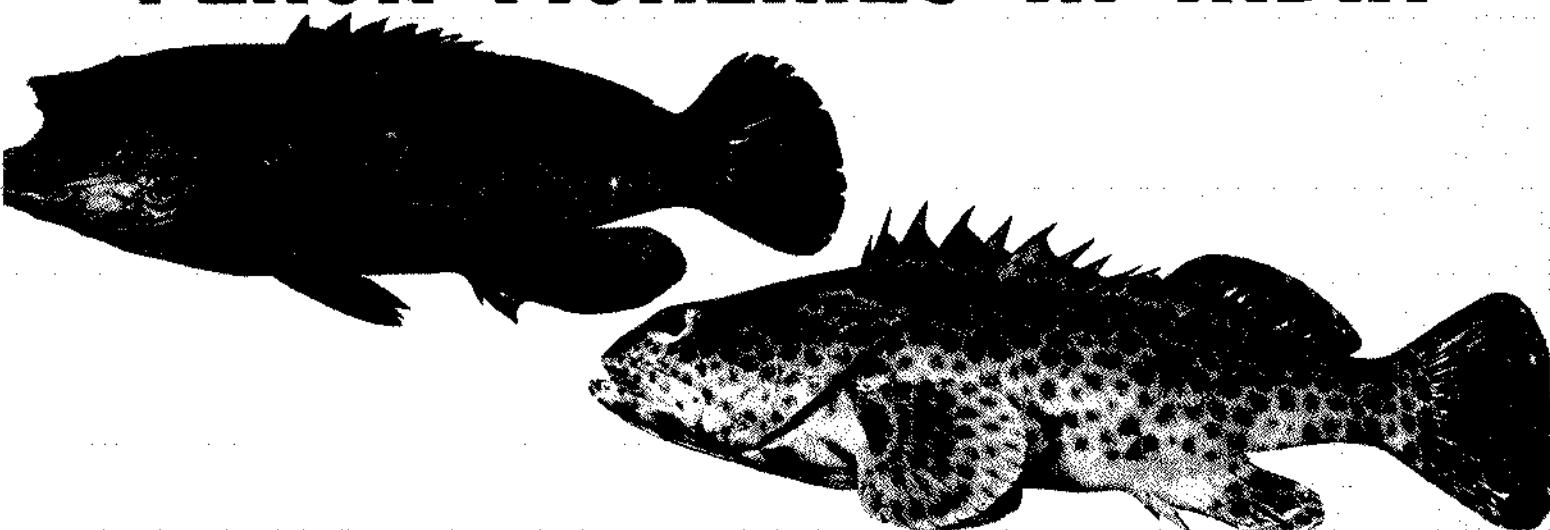


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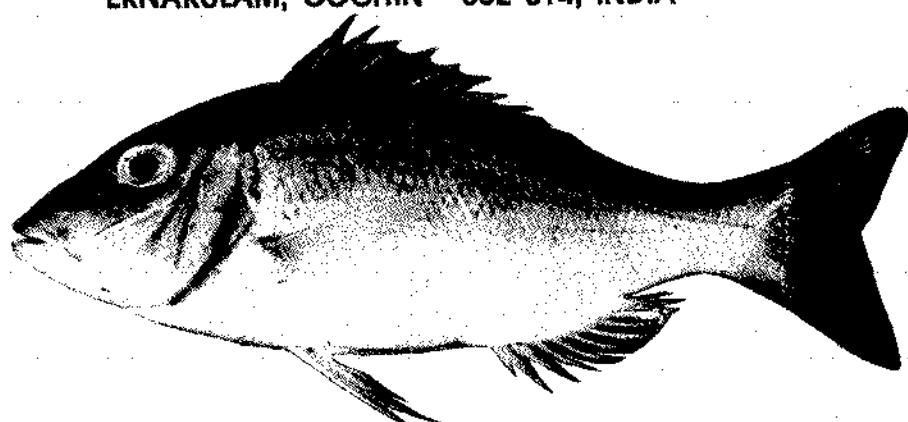
PERCH FISHERIES IN INDIA



CENTRAL MARINE FISHERIES RESEARCH INSTITUTE

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AN APPRAISAL OF THE PERCH FISHERY AT MUTTOM AREA IN TAMIL NADU

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ABSTRACT

The fishery of the perch fishes at Muttom has been studied and discussed based on the data collected during 1987 and 1988. Perches form 33.3% of the local fish catch amounting to an annual average of 222 tonnes. November to April is the best season for perch fishery at Muttom with peak in January. Lethrinids, Lutjanids and Nemipterids formed respectively 64.5%, 16.4% and 13.0% of the perch landings. The remaining quantity was constituted by Serranids, Sparids and Siganids. Hooks and line contributed to 86.0% of the catch which is followed by Traps (11.2%) and Gill nets (2.8%). Distribution of sizes of important species in the fishery are given along with suggestions for improving the catch.

INTRODUCTON

Muttom ($77^{\circ} 20' E$, $08^{\circ} 10' N$) is one of the important fish landing centres in the southwest coast of India for artisanal fisheries (Fig. 1). The Wadge Bank known for its perch fishery is at its close proximity. Inshore region of Muttom is sandy sterwn with rocky beds. Chain of rocks found on the shore as well as on the sea bottom harbour good concentration of rock dwelling demersal fishes mainly perch fishes. Hitherto there is no exclusive account available on this group from this area. Muttom fishing village may be divided into two regions - Keezhamuttom and Melamuttom. Since perches are landed only at Melamuttom landing centre the present observations are confined to this centre only.

Catch date collected by fortnightly observations spread over two years from January 1987 to December 1988 are utilised for the present study. The term 'Perches' given in this account relates to the percoid fishes of the families Lethrinidae, Lutjanidae, Serranidae, Nemipteridae, Siganidae and Sparidae. The method of raising the sample value to catch as described by Sekharan (1965) was followed for obtaining the monthly estimates of total catch of each species and for the number of fish in each length group. Catch per unit of effort was also calculated separately following the above author.

CRAFT AND GEAR

Catamarans numbering about 200 are the main craft at Melamuttom for the perch fishery.

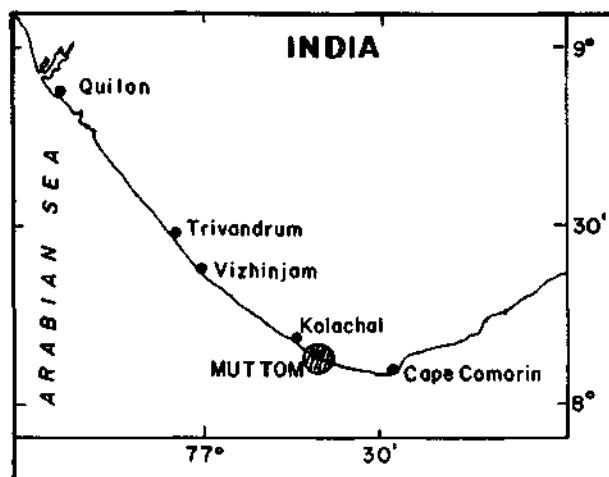


Fig. 1. Location of Muttom and its landing centres.

Out of this, 30 are now motorised (7 HP). Hooks and line and Traps, locally called Choonda and Koodu respectively are the main gears operated for perches here. While Traps are primarily intended to fish percoid fishes which abound in localities with hard bottom formed of rocks and corals, the Hooks and line are meant for fishing a variety of forms including perches. Handlines and longlines are the two types in use at

Muttom. At times perches are also caught by a variety of gill nets such as Thathu vala, Podi vala, Vali vala and Disco vala.

The perch Traps that are in use in the Palk Bay and the Gulf of Mannar (Pearson, 1922; Hornell, 1950; Prabhu, 1954) have one to five entrances. But the Trap used at Muttom has only one entrance and is made of the main rachis of wild palm locally known as Yeenthal. For lacing the joints and the entrance funnel fiber of palmyrah leaf stalk and nylon are used. The Trap is almost rectangular in shape with a concave entrance side and a convex posterior side (Fig. 2 A and B).

kept inside as bait. The Traps are placed at the bottom of the sea at places nearer to the rocks without any floats. Every time one of the fishermen dives down with the Trap and leaves it at the bottom. Similar diving is resorted to when the catches are removed. The entrapped fishes are removed in the morning. Like at Muttom, Traps are being used for perches at places like Kadiapattinam, Colachel, Kodimunai, Vaniakkudi, Kurumbanai and Enayam along this coast. Next to Muttom, Traps are more common at Kadiapattinam. Here, in addition to the above type, those made of metal frame, nylon netting and entrance funnel made of palmyrah leaf fibre also are used (Fig. 2 C and D).

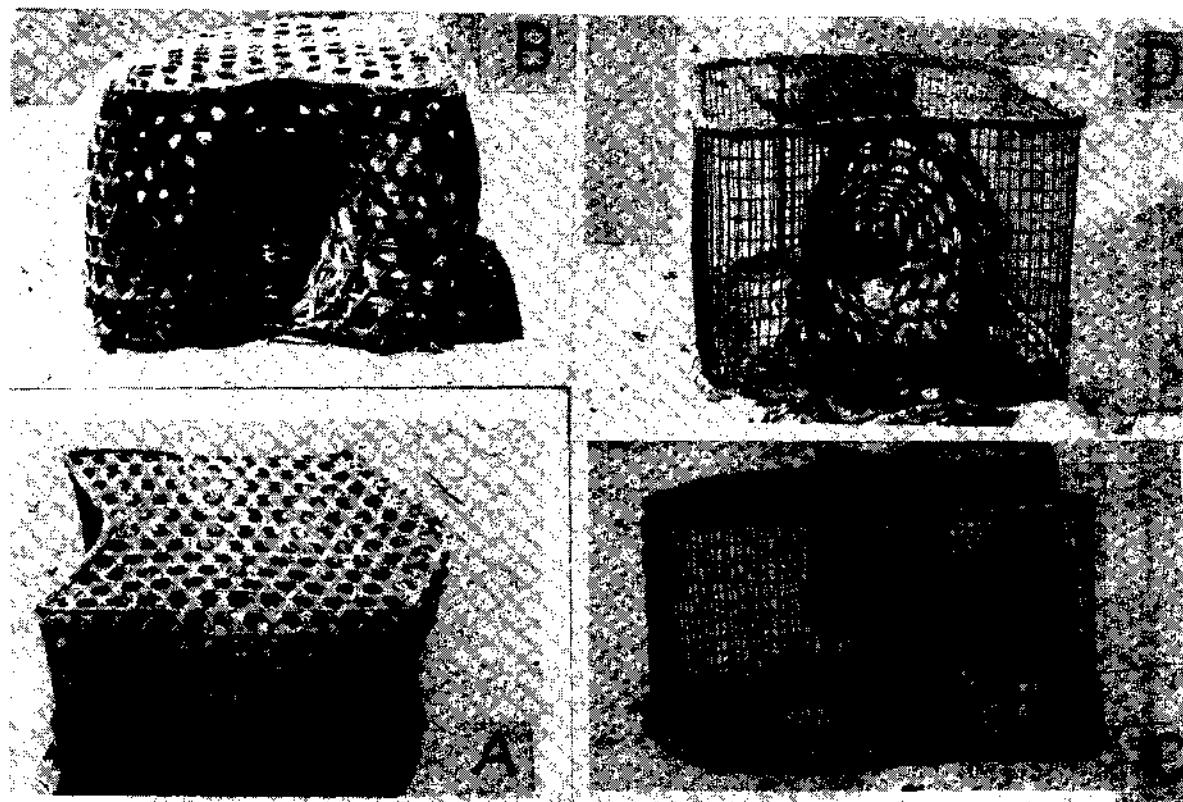


Fig. 2. Perch Traps used at Muttom and Kadiapattinam : A, B = Trap used at Muttom (A = Lateral view, B = Entrance view) and C, D = Trap used at Kadiapattinam (C = Lateral view, D = Entrance view).

The season for Trap fishing in this area is from December to April. Four to five fishermen jointly operate three to four Traps by using a Catamaran. Stone weights are kept inside at the corners of the Trap to enable it to sink easily. A bunch of brown mussel is also

FISHERY

Trend of the fishery

The annual perch landings at Muttom ranged from 78.3 t to 365.7 t during the two

years of observation with the average at 222.0 t (Fig. 3). The average monthly landings

April, when nearly 88% of the annual catch was landed. This group's representation to local

TABLE 1. Annual landings (kg) of different groups of perches at Muttom

Family	Species	1987	1988	Total	Average
Lethrinidae	<i>L. nebulosus</i>	107439	28406	135845	67922.5
	<i>L. Lentjan</i>	122037	21964	144001	72001.0
	<i>L. harak</i>	1750	3008	4758	2379.0
	<i>L. elongatus</i>	2000	-	2000	1000.0
Lutjanidae	<i>L. fulvus</i>	41113	2215	43328	21664.0
	<i>L. biguttatus</i>	22518	-	21518	112559.0
	<i>L. malabaricus</i>	6980	-	6980	3490.0
Nemipteridae	<i>N. bleekeri</i>	45931	6240	52171	26085.5
	<i>N. japonicus</i>	-	6435	6435	3217.5
Siganidae	<i>Siganus</i> sp.	1820	-	1820	910.0
Serranidae	<i>Epinephelus</i> sp.	14151	8680	22831	11415.5
Sparidae	<i>Rhabdosargus sarba</i>	-	1345	1345	672.5

varied between 1.0 t in August and 91.7 t in January with an overall monthly average of

fisheries touched a lower level of 0.7% during August in the lean season and 41.3% during

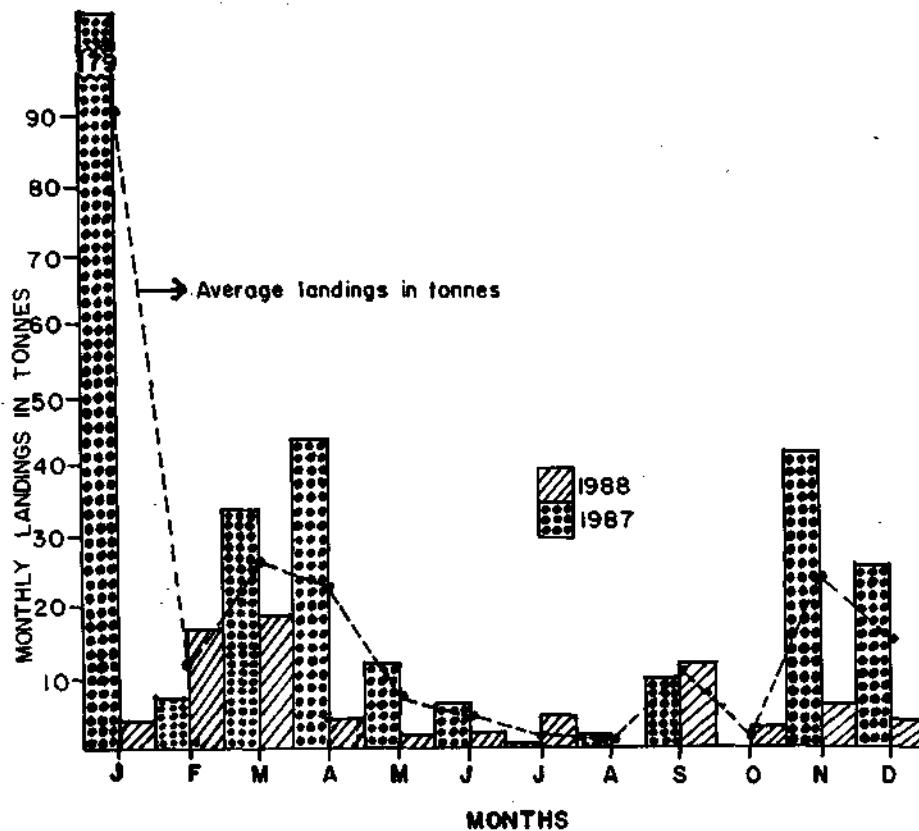


Fig. 3. Monthly landings of perches at Muttom during 1987 and 1988.

18.5 t. Landings higher than this monthly average were obtained during November to

January in the peak season (Fig. 4). In general it amounts to 33.3% of the local fish catch at

Muttom (Fig. 5 A). The highest landings of all fish as well as perches noted during January

for perches with best returns in January at the Muttom area. However, the general fishery

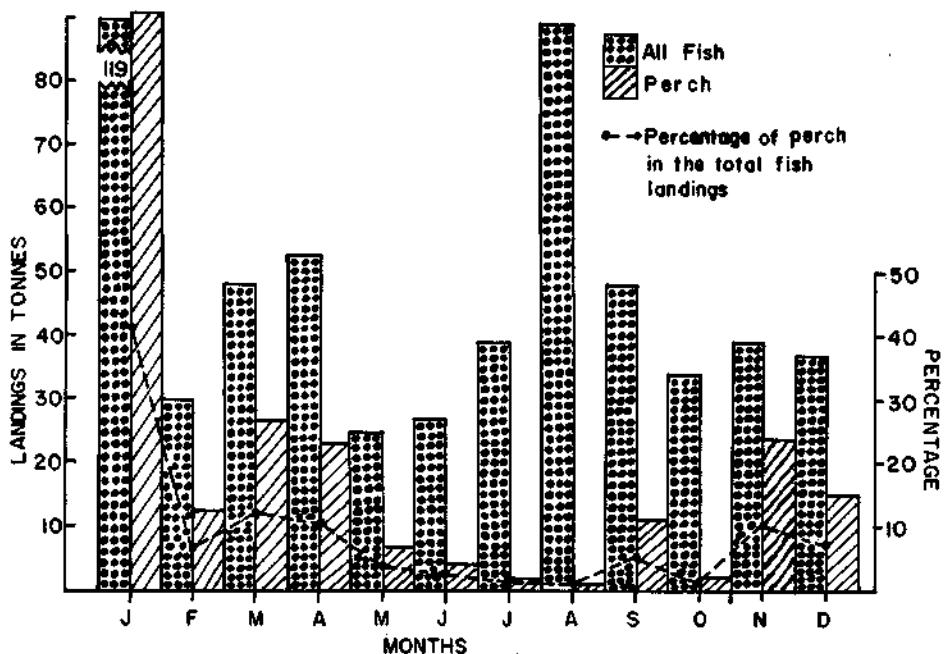


Fig. 4. Average monthly landings of perches and other fishes at Muttom.

was due to the highest number (8100) of Hooks and line units operated during January 1987.

extended throughout the year with two peaks, one in January fetching 20.2% of the annual

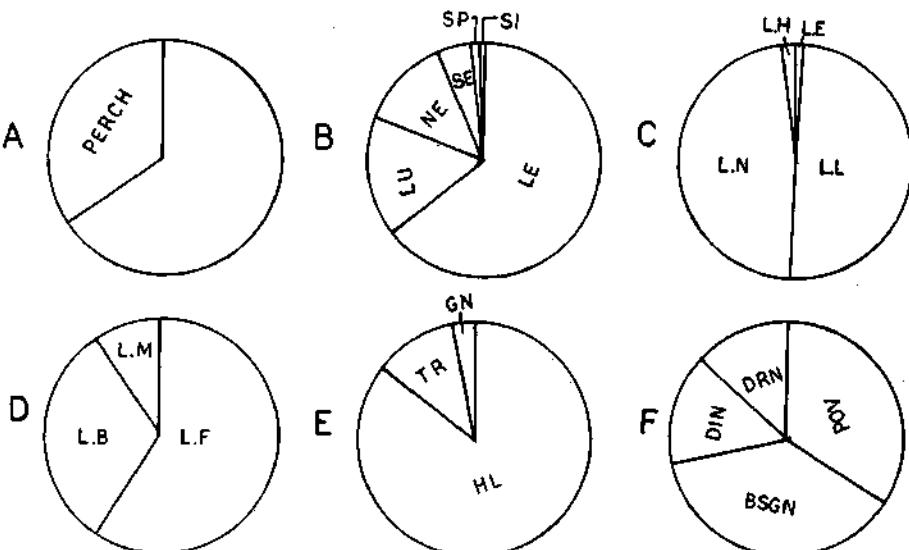


Fig. 5. A. Percentage of perches in the local landings at Muttom, B. Different groups of perches forming the fishery at Muttom (LU = Lutjanids, NE = Nemipterids, SE = Serranids, SP = Sparids, SI = Siganids, LE = Lethrinids), C. Species of the genus *Lethrinus* forming the fishery at Muttom (LN = *Lethrinus nebulosus*, LL = *L. lentjan*, LH = *L. harak*, LE = *L. elongatus*), D. Species of the genus *Lutjanus* forming the fishery at Muttom (LF = *Lutjanus fulvus*, LB = *L. biguttatus*, LM = *L. malabaricus*), E. Gearwise contribution of perches at Muttom (HL = Hooks and line, TR = Trap, GN = Gill net) and F. Contribution by the various types of gill nets to the perch fishery at Muttom (BSGN = Bottom set gill net, POV = Podi vala, DRN = Drift net, DIN = Disco net).

From the foregoing trend it may be stated that November to April represents the main season

catch and the other in August amounting to 15.2% of the annual catch (Fig. 4).

Species composition

Fishes of the families Lethrinidae, Lutjanidae, Nemipteridae, Serranidae, Sparidae and Siganidae formed the perch fishery at Muttom forming respectively 64.45%, 16.39%, 13.00 %, 5.14%, 0.61%, 0.41% of the total catch (Fig. 5 B). The annual landings of different species of perches are given in Table 1. Lethrinids ranked first among perches landed at Muttom. Bulk of Lethrinid catch was constituted by two species namely *Lethrinus lentjan* (50.2%) and *L. nebulosus* (47.4%). The other two species *L. harak* and *L. elongatus* formed respectively 1.7% and 0.7% of the catch (Fig. 5 C). The fishery for *L. lentjan* started by November and lasted upto June/July with a peak during January to April forming about 79% of the annual catch. Annual landings ranged between 22.0 t and 122.0 t with the average at 72.0 t. *L. nebulosus* appeared in the landings almost throughout the year except during August and October with a peak during November to April accounting to 90% of the total annual catch (Fig. 5 C). Annual landings for these two years ranged from 28.4 t to 107.4 t with the average at 67.9 t. Unlike the case of other two species the fishery for *L. harak* and *L. elongatus* lasted only for a shorter period : November to March for the former and November for the latter species contributing respectively 2.4 t and 1.0 t annually.

Three species of Lutjanids viz. *Lutjanus fulvus*, *L. biguttatus* and *L. malabaricus* contributed to the fishery. First one formed 59.5% while the other two formed respectively 30.9% and 9.6% of the Lutjanid catch (Fig. 5 D). Only *L. fulvus* under this group has a fishery of appreciable magnitude and its annual catch ranged between 2.2 t and 41.1 t with an average at 21.7 t. Fishery started by November and lasted upto July with peak in January accounting to 74% of the total annual catch. *Lutjanus biguttatus* and *L. malabaricus* recorded respectively a total of 11.3 t and 3.5 t annually forming a fishery during December - January period.

Nemipterus bleekeri and *N. japonicus* with a percentage composition of 89.0 and 11.0 were the two species recorded under Nemipterids from Muttom and their contribution could be

estimated at 26.0 t and 3.2 t respectively. *N. bleekeri* has two fishery seasons at Muttom, one from November to June and the other in September, while for *N. japonicus* there is only one season lasting for two months from September.

Serranids form the next important group with annual average landings of 11.4 t accounting to 5.1% of the total perch catch. *Epinephelus septemfasciatus* (50.0%), *E. malabaricus* (35.0%) and *E. tauvina* (15.0%) were the three species forming the perch fishery at Muttom. These fishes landed from April to December with fairly good quantities during April (20.5%) and November (22.0%).

Fishes of the families Sparidae and Siganidae were encountered rarely in the fishery and they accounted for about 0.6% and 0.4% respectively of the total perch catch. Siganids occurred during September and Sparids in January to March period.

Gearwise production

As mentioned already three main types of gears are in vogue at Muttom to exploit the perch resources. They are Hooks and line, Trap and Gill nets. Hooks and lines (Longline and Handline) contribute to the bulk (86.0%) of the total landings (Fig. 5 E) followed by Trap (11.2%) and Gill net (2.8%). Out of the total Gill net catch the Thathu vala and Podi vala have the major share, each contributing 38.0% and 33.8% respectively of the total (Fig. 5 F). The remaining quantity was shared by Disco vala (15.1%) and Vali vala (13.1%).

TABLE 2. Annual average CPUE (kg) of perch at Muttom by the different gears

Gear	CPUE (kg)
Hooks and line	10.4
Trap	12.9
Disco net	2.0
Thathu vala	0.6
Vali vala	0.9
Podi vala	10.8
Gill net	

Hooks and line was in operation in both the years of study. Annual effort ranged from

31,592 units in 1988 to 33,715 units in 1987 with the average at 32,654 units. Total catch ranged

vogue throughout the year, but is more intense during November to May period. Almost all

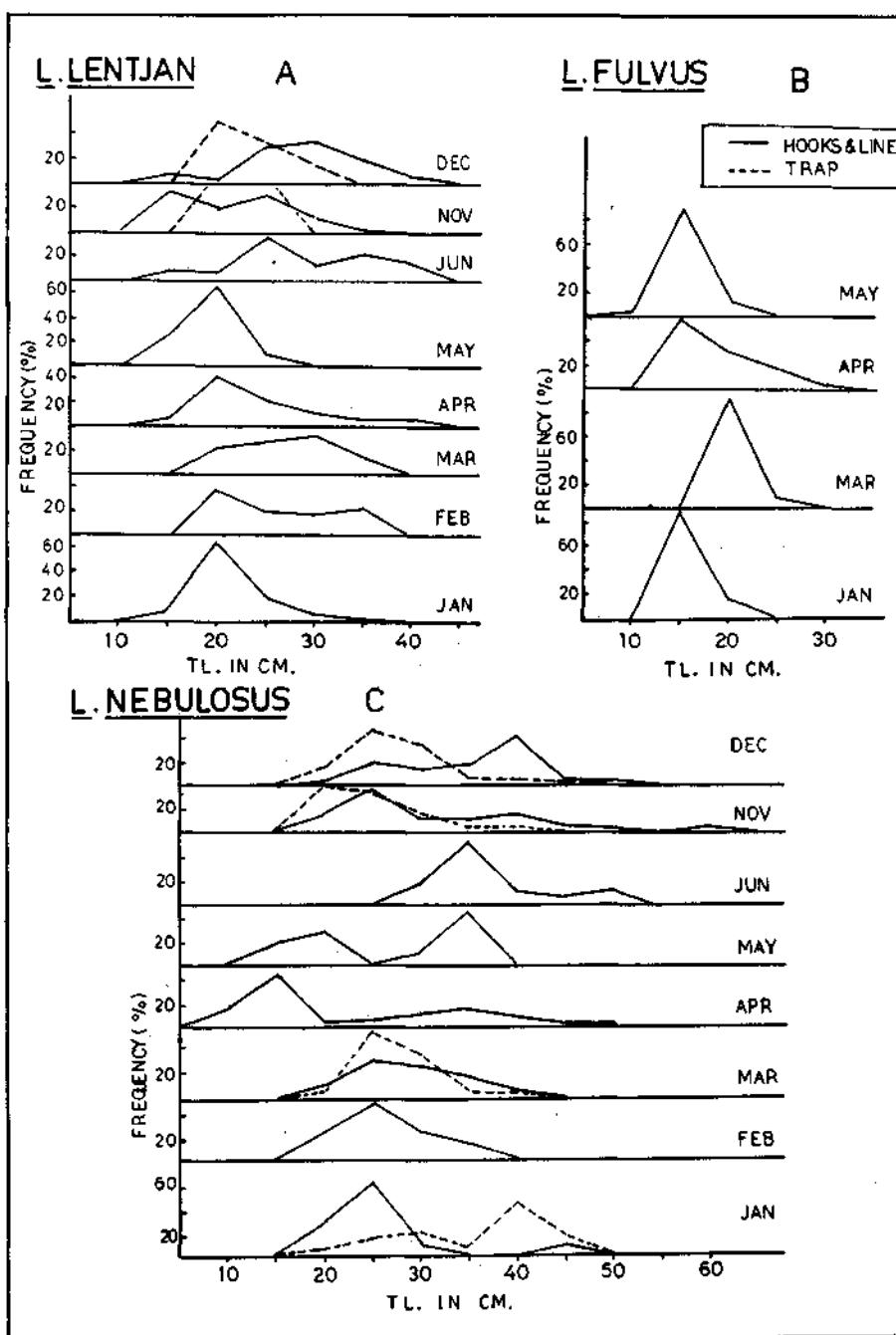


Fig. 6. Length frequency distribution of different species of perches (A = *Lethrinus lentjan*, B = *Lutjanus fulvus* and C. *Lethrinus nebulosus*).

from 59.8 t in 1988 to 349.7 t in 1987 with the average at 204.7 t. The annual catch per unit of effort varied from 1.9 kg in 1988 to 10.4 kg in 1987 (Table 2). Fishing by this gear is in

groups of perches are landed by this gear.

An estimated total of 273 Trap units were operated during 1987 and 1306 during 1988 and

they brought respectively 2.6 t and 16.9 t of perch at the rate of 9.6 kg and 12.9 kg per Trap respectively. This gear is operated for five months from November every year. Medium sized *Lethrinus nebulosus* and *L. lentjan* were the two main species caught by this gear. Occasionally small sized *Lethrinus harak* and *Lutjanus fulvus* were also landed in lesser quantities. It is mainly a selective gear and fish between 20 and 45 cm size were only caught.

Among gill nets only the bottom set ones (*Thathu vala*) were operated in both years of observation and they contributed 594 kg during 1987 (C/E 0.5 kg) and 1612 kg during 1988 (C/E 0.6 kg). The period of their operation was between May and July. Other types of gill nets such as *Disco vala*, *Podi vala* and *Vali vala* were operated only during 1987 and they brought respectively 3120 kg (C/E 2.0 kg), 2705 kg (C/E 0.9 kg) and 7020 kg (C/E 10.8 kg) of perches. These nets were operated from June to September months.

SIZE DISTRIBUTION OF IMPORTANT SPECIES

Lethrinus nebulosus : Fish landed by Traps had a narrow size range, normally from 20 cm to 45 cm with modes at 30 cm and 40 cm during January, at 25 cm during March, at 20 cm during November and at 25 cm during December. But in Hooks and line wider size ranges (from 10 cm to 60 cm) with two modes in most of the months were found (Fig. 6 C). The smaller size range observed for the Trap catches was due to the small size of the Trap opening.

Lethrinus lentjan : When compared to *L. nebulosus* only smaller specimens of this species dominated the catch by hooks and line at Muttom. The size ranged from 15 to 40 cm with modes at 20 cm during January, February, April and May. During March and December the prominent mode was found at 30 cm size group. During June and November, the distribution was bimodal (Fig. 6 A) with a common mode at 25 cm size group. The other modes were at 35 cm during June and 15 cm during November. This species caught by traps ranged in size from 20 to 30 cm with mode at 20 cm.

Lutjanus fulvus : Normally fish from 10 to 30 cm sizes occurred in the catches (mainly by Hooks

and lines) with prominent mode either at 15 cm size group or at 20 cm size group (Fig. 6 B).

MARKETING AND UTILIZATION

Perches are usually auctioned at Muttom on the beach itself soon after landing. They are transported to nearby markets by headloads and to interior markets by bicycles, buses and trucks. Transport buses specially designed to lift fresh fish to Nagercoil market are also in operation now. Quantities exceeding the local demand are iced and sent to distant markets in Kerala. Recently because of their good export demand, they are being weighed in the beach itself and sold to merchants on pre-fixed rate just like that for shellfish and cuttlefish. The rate varies from Rs.12 to Rs.18 per kg depending upon demand as well as quality of the fish. Fish caught by traps fetch higher rate than that caught by other gears. Frozen perches are exported to foreign countries.

REMARKS

There is vast scope for improving the perch fishery at Muttom. Now mostly non-motorised Catamarans are employed to exploit this resource. If outboard motors are provided to the Catamarans, they can cover distant beds and thereby catches could be increased. Motorisation of Catamaran was first introduced at Muttom on a trial basis in the sixties by the Indo-Belgium Project (Pelzer, 1971), but that did not attract the fishermen much, because there was no facility for repair or for replacement of parts (Lazarus and Joel, 1979). Now the situation has changed and these facilities are available in all important fishing centres, and the fishermen have developed a liking towards motorising the Catamaran because of its many advantages. An important point in favour of motorization is that it almost eliminates the physical strain of rowing and increases leisure time so that the fishermen will have better health and social life. With the introduction of outboard motors the younger generation in Kerala has showed an enthusiastic inclination towards the fishing profession (Balan et al., 1989).

Attempts should also be made to exploit the vast Kalava resource available in the Wadge Bank area from Muttom by introducing Dorry

fishing or Mothership operation (Gopinath, 1954). Accounts on the traditional Handline fishing for perches in the Wadge Bank appear in the works of Hornell (1916) and Gulland (1971). Silas (1969) during the cruises of R. V. VARUNA has observed line fishing by indigenous crafts on the Wadge Bank. He has also mentioned about the existence of a trawl ground for perches on the Wadge Bank itself. Thangal fishing for perches in the Wadge Bank area by fishermen from Kanyakumari District has been reported by Lazarus and Joel (1979).

Joseph and John (1986) have recorded a catch rate of 67 kg/hr for perches from Wadge Bank area. They have also located a highly productive perch ground yielding on an average 94.26 kg/hr southeast off Cape Comorin in

50 m depth. The catch rates of perches obtained by them from this area during July - September was 153.4 kg/hr and in April - June 130.7 kg/hr. This conspicuous seasonal variation in yield pattern was attributed to the presence of two stocks, *viz.* the resident stock which is present on the fishing ground throughout the year and the migrant stock that appears on the Bank during the southwest monsoon period (Sivalingam and Medcof, 1957; Silvalingam, 1969).

ACKNOWLEDGEMENTS

The authors wish to express their sincere thanks to Dr. P.S.B.R. James, Director, C.M.F.R Institute and to Shri P. Sam Bennet, Project Leader for their encouragement shown in this study.