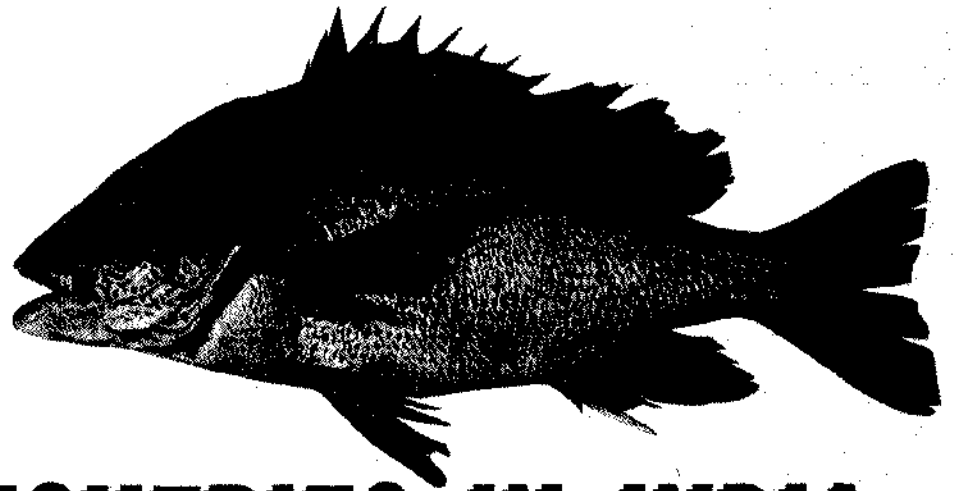
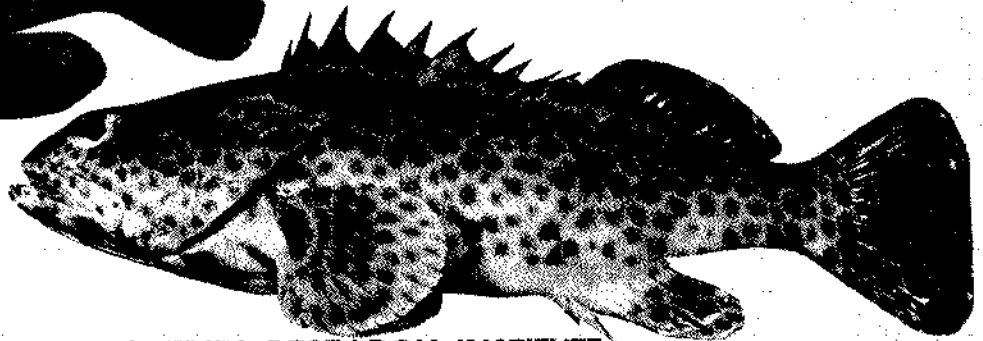


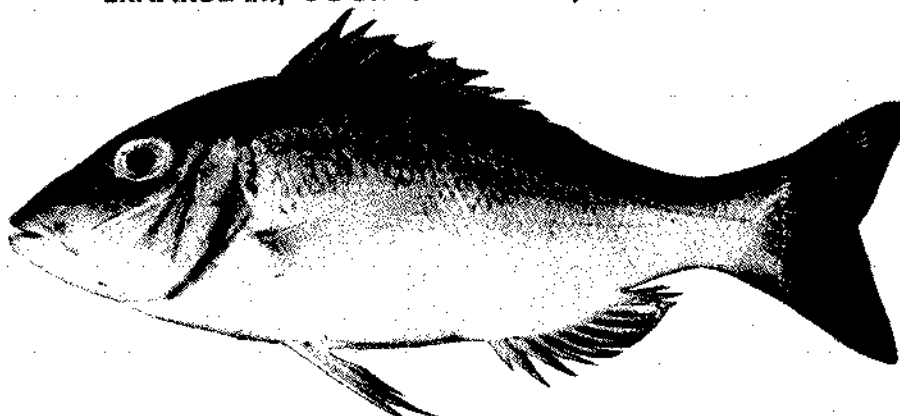
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# **PERCH FISHERIES IN INDIA**



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## PERCH FISHERY BY TRADITIONAL METHODS AT TUTICORIN

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### ABSTRACT

The perch fishery at Tuticorin by traditional fishing units are dealt with. Rocky areas upto 50 m depth support many species of perches falling under ten broad families. On an average perches contribute 10.9% in the total fish landings by traditional gears. Lethrinids, Serranids and Nemipterids form the bulk of perch landings with Lethrinids alone contributing 38.1%. Drift nets, hook and lines and bottom set gill nets are the important gears in the fishery. Perch fishery by motorised as well as non-motorised units are described in detail.

### INTRODUCTION

Perches form about 10% in the total marine fish landings by traditional methods and contribute annually over 500 tonnes to the total fish catch at Tuticorin. The present study gives a detailed account of the exploitation of perch resources by indigenous craft and gear, analysing the data for the ten year period from 1979 to 1988. On an average perches contribute 31.0 to 88.5 t every month to the fishery. Lowest monthly landing of 31.3 t was in 1982 and the highest recorded landing of 88.6 t was in 1985. Traditional fishermen have, with long experience handed down for generations, evolved special skill to capture the perch resources scattered sparsely among reefs and rocky crevices. Main gear used by them in deeper waters is the hook and line operated from "Tuticorin type" boats and Catamaran. In shallower waters and around islands indigenous drift nets and bottom set gill nets are being used in the perch fishery. Recent technological innovations include the addition of out-board motors (motorisation) to the sail boats.

### FISHING GROUNDS

Tuticorin is a major fishing centre in the Gulf of Mannar, southeast coast of India. Main perch grounds are the rocky areas called "paars" situated beyond 15 m limit. Description of the

rocky areas around Tuticorin is given by Chacko and Rajendran (1955). The rocks and reefs support variety of corals, sponges and sea grass (Mahadevan and Nayar, 1967). Perches are scattered along the Paars and are seldom known to occur in dense schools in the reef and rocky areas which extend upto 50 m depth. The area is not much affected directly by the great Indian Ocean Currents. Only currents prevalent in the region are the monsoon drifts connected with Southwest and Northeast Monsoons. Seasonal distribution of salinity in this region show important connection between salinity and prevalent water currents (Sewell, 1925).

### PERCHES

Fishes falling under ten families are recorded among the perches at Tuticorin. The families and constituent species are given below following the classification adopted by Munro (1955).

#### FAMILY LATIDAE

*Lates calcarifer*  
*Psammoperca waigiensis*

#### FAMILY SERRANIDAE

*Epinephelus malabaricus*  
*E. tauvina*  
*E. undulosus*  
*E. areolatus*  
*E. fasciatus*

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*E. merra*  
*Enneacentrus sonnerati*  
*Plectropomus maculatus*

## FAMILY PRIACANTHIDAE

*Priacanthus hamrur*

## FAMILY LUTJANIDAE

*Lutjanus rivulatus*  
*L. malabaricus*  
*L. fulviflamma*  
*L. argentimaculatus*  
*L. kasmira*  
*L. vaigiensis*  
*L. gibbus*  
*L. lineolatus*  
*L. decussatus*  
*L. sanguineus*  
*Aprion virescens*

## FAMILY NEMIPTERIDAE

*Nemipterus delagoae*

## FAMILY LOBOTIDAE

*Lobotes surinamensis*

## FAMILY SCOLOPSIDAE

*Scolopsis bimaculatus*

## FAMILY PLECTORHYNCHIDAE

*Gaterin schotaf* (*Diagramma griseum* Day)

## FAMILY LETHRINIDAE

*Lethrinus nebulosus*  
*Lethrinella miniata*  
*L. mahsenoides*  
*L. ramak*

## FAMILY SIGANIDAE

*Siganus javus*  
*S. oramin*

## TREND OF PERCH FISHERY AT TUTICORIN

Annual and monthly trends of relative abundance of perches in the fishery, and groupwise and gearwise importance are examined. Records of perch landings are mostly

in the form of periodical reports and Chacko and Rajendran (1955) analysed the catches in detail. They recorded 220 t of perch landings at Tuticorin. Fishing techniques and catch trends improved since then. Estimated total perch landings by indigenous units during 1979 to 1988 came to 6509.3 t.

**Annual fishery**

Lowest annual landings was during 1982 with 375.4 t. Highest recorded landing of 1062.7 t was in 1985. In between the extremes, fluctuations in catch were noticed. Annual landings were higher than average during 1980 and 1984 to 1987. During other years annual fishery was lower than the ten year average. Continuous higher landings were noticed from 1984 to '87. Similarly three years of continuous low catch was seen from 1981-'83 (Table 1 and 2).

TABLE 1. Monthly landing (t) of perch at Tuticorin by indigenous gear

Year	Monthly average	Months which recorded higher landings than the average
1979	39.2	February, March, January, September, October.
1980	66.4	January, March, February, September, May.
1981	42.8	March, January, April, February, November.
1982	31.3	September, November, August, January, October.
1983	48.4	September, May, January, February, July.
1984	67.1	October, September, August, June, May.
1985	88.6	March, April May, July, September.
1986	62.9	January, August, September, May, February.
1987	63.7	July, September, March, April, May.
1988	32.0	June, July, August, April, May.

**Monthwise fishery**

Average monthly perch landings fluctuated between 31.3 t in 1982 and 88.6 t in 1985

(Table 1.) Good catches were recorded during January, February, March and September. During other months catches were moderate. General observations do not clearly indicate any

perches contributed 6509.3 t. During 1979 total contribution of perch was 7.3% in total fish landings. Percentage contribution increased to 10.7% in 1980. There was gradual decrease to

TABLE 2. Annual landings in tonnes of perch at Tuticorin (monthwise) by indigenous gear during 1979 - 1988

Months	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	Total
January	63.075	159.240	73.101	40.743	61.134	48.450	75.667	108.747	54.794	18.931	703.882
February	78.506	102.588	62.629	29.702	58.463	45.221	59.809	64.856	48.072	25.942	575.788
March	68.382	111.698	126.152	20.915	47.949	61.097	137.646	33.926	93.912	33.491	735.168
April	25.282	39.375	71.374	31.396	41.506	30.028	124.339	61.503	88.712	39.663	553.178
May	27.774	68.900	Nil	18.878	63.078	65.274	106.463	73.304	68.615	38.066	530.352
June	14.087	42.773	26.593	10.980	50.011	71.633	75.570	42.037	50.456	64.105	448.245
July	16.242	13.921	13.374	24.512	55.915	70.360	100.434	63.639	118.747	59.908	537.052
August	46.275	52.022	260.223	45.102	37.809	89.016	69.436	81.756	59.968	42.527	549.934
September	56.458	99.171	21.816	48.836	75.930	121.604	89.149	74.763	101.577	15.152	704.456
October	47.323	48.578	21.433	39.536	31.726	135.025	81.011	54.555	49.552	19.164	527.903
November	6.933	28.868	51.122	46.604	33.215	43.004	73.126	57.073	23.363	16.061	379.369
December	20.600	29.513	19.931	18.249	24.525	24.192	70.118	39.206	6.344	11.298	263.976
Total	470.937	796.647	513.548	375.453	581.261	804.904	1062.768	755.365	764.112	384.308	6509.303

seasonal preponderance of perches at Tuticorin, though perches may be caught in increased quantities during some months.

TABLE 2 A. Percentage of perch in total fish landings

Year	Total fish landings (t)	Total perch landings (t)	%
1979	6464.4	470.9	7.3
1980	7457.4	796.6	10.7
1981	5470.6	513.6	9.4
1982	4512.0	375.4	8.3
1983	6712.6	581.3	8.7
1984	6602.6	804.9	12.2
1985	7438.8	1062.8	14.3
1986	5503.4	755.4	13.7
1987	5807.0	764.1	13.2
1988	3491.1	384.3	11.0
Total	59459.9	6509.3	10.9

### Percentage of perch fishery

Perches contributed 10.9% in the total fish landings by traditional fishing gears during the period. Of the 59459.9 t of estimated fish caught during the ten years by traditional fishermen,

9.4% in 1981 and 8.3% in 1982 (Table 2 A). Gradual increase in contribution of perches to the total fish catch was recorded during the next three years to the extent of 8.7% in 1983, 12.2% in 1984 and 14.3% in 1985. Next three years witnessed a decline in perch fishery in comparison with total fish landings with 13.7% in 1986, 13.2% in 1987 and 11.0% in 1988 (Table 3).

TABLE 3. Groupwise perch landings at Tuticorin (1979 - 1988)

Perch groups	Landings (t)	%	Rank
Latidae	83.031	1.28	6
Serranidae	1714.918	26.35	2
Priacanthidae	45.719	0.70	8
Lutjanidae	714.768	10.98	4
Nemipteridae	998.397	15.34	3
Lobatidae	41.443	0.64	9
Scolopsidae	78.414	1.20	7
Plectorhynchidae	317.161	4.87	5
Lethrinidae	2481.374	38.1	1
Siganidae	34.078	0.52	10

### Groupwise fishery

Of the ten groups of perches recorded in the fishery, Lethrinids ranked foremost

contributing 38.1% in total perch landings. During the ten year period total contribution of Lethrinids came to 2481.3 t. Next in importance was Serranids, which contributed 26.3% in total perch landings. Nemipterids came third in importance with 15.3% catch. Other groups according to the level of contribution to the total perch fishery by traditional gears are in Table 3.

### Gearwise fishery

Five gears were regularly employed in perch fishery at Tuticorin eventhough, perches in stray numbers occurred in all gears (Table 4). Details of craft and gear operated by traditional fishermen with mesh size of nets and hook numbers are given by Bennet and Arumugham (1989). An important development during the period was the introduction of motors to the crafts employed in the traditional fishery. This not only enhanced the catch of boats by allowing more fishing time, but also brought the catches earlier for the market to get improved prices. The irony of it was that in the perch fishery no appreciable improvement in total landings was noticed due to motorization from that of non-motorised boat landings (Table 5).

TABLE 4. Gearwise perch landings at Tuticorin (1979 - 1988)

Name of gear	Landings (t)	%	Rank
Drift net : Paru valai			
<i>motorised</i>	40.908	0.63	10
<i>non-motorised</i>	672.981	10.33	4
Drift net : Podi valai			
<i>motorised</i>	72.222	1.12	9
<i>non-motorised</i>	116.578	1.79	7
Handline : <i>motorised</i>	167.864	2.58	6
<i>non-motorised</i>	1948.965	29.94	1
Longline : <i>motorised</i>	1079.812	16.59	3
<i>non-motorised</i>	1903.432	29.24	2
Gill net : Sinki valai			
<i>motorised</i>	76.678	1.18	8
<i>non-motorised</i>	429.863	6.60	5

**Line fishery** : By far major portion of perch landings in the traditional sector was by

Longline and Handlines. Hooks and lines were ideally suited for fishing the perches distributed over wide areas and are not concentrated in large shoals. Over 45.8% of perch caught during the ten years of study were by Longline units. Next important gear for perch was the Handline. Perches formed an important component in Handline catch contributing 32.5% in total perch landings. Hook No. 5 to 14 were used by Handline units.

TABLE 5. Motorised and non-motorised boats Average (t) of perches at Tuticorin (1979 - 1988)

Groups	non-motorised 1979-1988	motorised 1986-1988
Latids	7.17	3.77
Serranids	124.84	155.52
Priacanthids	4.01	1.89
Lutjanids	46.91	81.89
Nemipterids	93.61	20.77
Lobatids	3.80	1.15
Scolopsids	7.19	2.18
Plectorhynchid	27.68	13.44
Lethrinids	188.74	198.00
Siganids	3.24	0.57
Total	507.18	479.18
	(For 1986-88) 634.59	

**Drift net fishery** : Drift nets of different sizes are the next important gear used in the fishery. Large meshed drift nets called *Paru valai* were used in deeper waters and over rocky Paars where larger perches were scattered. *Paru valai* caught 10.9% total perch caught in the traditional sector. Other fishes caught in *Paru valai* include seerfish, tuna, carangids, barracuda, sharks, *Rachycentron* and rays. Smaller perches were caught by smaller meshed drift nets called *Podi valai* operated at the fringe of Paars or at adjoining sandy stretches. *Podi valai* were operated during all the months to catch medium sized fishes including perches. Only 2.9% of the total perch caught were landed by *Podi valai*. Remaining portion comprised of tuna, seerfish, *Chirocentrus* sp., *Hilsa toli*, barracuda, sharks and carangids.

**Gill net fishery** : Bottom set gill net called *Sinki valai* (lobster net) were operated near coral and shingle bottom areas for crabs and

lobsters. Perches formed major portion in Sinki valai landings. Of the total perch landings 7.8% were by Sinki valai. Other fishes like rays, soles, parrotfish and catfish as well as crabs and lobsters formed the Sinki valai landings.

### **Seasonwise fishery**

Analysis was made on the total perch fishery by different gears during different months. The fishery was carried on all round the year and no definite periods of high catch was noticed from fishery data. From pooled gearwise fishery data highest aggregate landing was recorded during March with 735.1 t. Lowest catch for the ten year period with 263.9 t was recorded during December. The Northeast monsoon with turbulent months of October to December seems to be unfavourable for perch fishery in the Gulf of Mannar in general and especially off Tuticorin where major perch grounds are located. Boats seldom venture into deep water perch grounds during the period.

When landing data for various gears were treated separately, Paru valai units reported good landings during January to May with highest catch of 114.1 t in January. July recorded lowest aggregate catch of 22.6 t. Podi valai units showed improved landings from March to August with the peak at 25.0 t in June. Handlines which landed about 32.5% of total perch catch reported January to March and November as good season for perches by this gear with the peak in January. Longline units popularly called *Ayiramkal thoondil* accounted for over 45.8% of perches mostly larger ones. Except for November and December all the months recorded good landings. Peak perch fishery by Longline was noticed during March and September. By bottom set gill nets good quantity of perch was caught between June and September with high catch during September.

### **Group - gear relationship**

Perch groups Serranids, Lutjanids and Lethrinids were caught by all the gears. Handline (non-motorised) units landed nine groups of perches and Podi valai non-motorised units recorded eight groups. *Diagramma* sp. was

landed by all gears except motorised Handline units. Likewise, *Lates calcarifer* was fished by all units operated except motorised units of Handline and Longline. Handline units were alone used to catch *Nemipterus* spp. *Priacanthus hamrur* was caught by Handlines and Longlines.

### **Paru valai (motorised)**

Six groups of perches mostly larger forms were landed by motorised Paru valai units. Most common group was Lethrinids forming 40.56% of perch caught by the gear. Other groups were Serranids, Lutjanids, Latids, Plectorhynchid and Lobatids.

### **Paru valai (non-motorised)**

This gear also was commonly operated for larger perches and landed seven groups. As in the case of motorised units, *Lethrinus* ranked first in the catches with 37.89% in total perch caught by the gear. Perch groups with lesser percentage were Serranids, Lutjanids, Plectorhynchid, Latids, Labotid and Siganids.

### **Podi valai (motorised)**

A total of 72.2 t of perches were landed by this gear contributed by six groups. Lethrinids formed the important group with 48.55%. Other groups according to their contribution were Lutjanids, Serranids, Scolopsid, Plectorhynchid and Latids.

### **Podi valai (non-motorised)**

Landings by non-motorised units were considerably more than of motorised units. Total landings came to 116.578 t. Lethrinids formed 47.32% followed by Serranids, Latids, Siganids, Lobatid, Lutjanids, Plectorhynchid and Scolopsid.

### **Handline (motorised)**

Selected groups of perches were dominant by this gear which was an important one in perch fishery. *Lethrinus* spp. ranked foremost in total catch by the gear closely followed by Nemipterids. During particular seasons large quantities of *Nemipterus* spp. were caught by Handline. Serranids, Lutjanids and Scolopsid were also landed by this gear.

**Handline (non-motorised)**

Good quantities of Nemipterids and Lethrinids were landed by this gear which was very popular around Tuticorin for Nemipterids fishery. Nemipterids formed 48.0% in the total perch catch by this gear. Other groups caught include Lethrinids, Serranids, Lutjanids, Scolopsid and Plectorhynchid.

*Group - gear relationship of perches at Tuticorin (1979 - 1988)*

Gear	Groups of perches										Total number of groups in each gear
	1	2	3	4	5	6	7	8	9	10	
Paru valai											
motorised	x	x	-	x	-	x	-	x	x	-	6
non-motorised	x	x	-	x	-	x	-	x	x	x	7
Podi valai											
motorised	x	x	-	x	-	-	x	x	x	-	6
non-motorised	x	x	-	x	x	x	x	x	x	x	8
Handline											
motorised	-	x	-	x	x	-	x	-	x	-	5
non-motorised	x	x	x	x	x	-	x	x	x	x	9
Longline											
motorised	-	x	x	x	-	-	-	x	x	x	6
non-motorised	x	x	x	x	-	-	-	x	x	x	7
Sinki valai											
motorised	x	x	-	x	-	x	-	x	x	x	7
non-motorised	x	x	-	x	-	x	-	x	x	x	7
Total	8	10	3	10	2	5	4	9	10	7	

1 - Latids, 2 - Serranids, 3 - Priacanthid, 4 - Lutjanids, 5 - Nemipterids, 6 - lobatid, 7 - Scolopsid, 8 - Plectorhynchid, 9 - Lethrinids, 10 - Siganiids.

**Longline (motorised)**

Operation of this gear covers large areas over rocky Paars and deeper waters and is important in the perch fishery. Lethrinids formed 41.75%. Serranids, Lutjanids and small quantities of other groups also were landed by this gear.

**Longline (non-motorised)**

As in the case of motorised Longline units Lethrinids and Serranids were important groups of perches landed contributing 48.0% and 35.62% respectively in total perch catch.

*Different groups of perches landed by different nets*

Groups	Motorised unit			Non motorised unit		
	Landings (t)	%	Rank	Landings (t)	%	Rank
<i>Paru valai</i>						
Latids	3.532	8.63	4	36.668	5.45	6
Serranids	13.942	34.08	2	196.149	29.15	2
Lutjanids	5.494	13.43	3	113.000	16.79	3
Lobatid	0.377	0.92	6	25.335	3.76	5
Plectorhynchid	0.975	2.38	5	41.104	6.11	4
Lethrinids	16.588	40.56	1	254.990	37.89	1
Siganiids	--	--	-	5.735	0.85	7
Total	40.908			672.980		
<i>Podi valai</i>						
Latids	1.950	2.70	6	11.971	10.27	3
Serranids	11.194	15.50	3	19.697	16.90	2
Lutjanids	13.538	18.74	2	6.652	5.71	6
Lobatid	--	--	-	9.350	8.02	5
Scolopsid	5.512	7.63	4	0.270	0.23	8
Plectorhynchid	4.968	6.88	5	1.999	1.71	7
Lethrinids	35.060	48.55	1	55.169	47.32	1
Siganiids	--	--	-	11.470	9.84	4
Total	72.222			116.578		
<i>Hand-line</i>						
Latids	--	--	-	10.598	0.54	9
Serranids	35.756	21.30	3	249.298	12.79	3
Priacanthids	--	--	-	26.385	1.35	7
Lutjanids	2.302	1.37	4	81.437	4.18	4
Nemipterids	62.317	37.12	2	936.080	48.03	1
Scolopsid	1.038	0.62	5	71.594	3.66	5
Plectorhynchid	--	--	-	51.239	2.63	6
Lethrinids	66.451	39.59	1	511.039	26.23	2
Siganiids	--	--	-	11.295	0.59	8
Total	167.864			1948.965		
<i>Long-line</i>						
Latids	--	--	-	11.835	0.62	6
Serranids	396.205	36.70	2	678.076	35.62	2
Priacanthids	5.662	0.52	5	13.672	0.72	5
Lutjanids	216.836	20.08	3	246.223	12.93	3
Plectorhynchid	9.224	0.85	4	36.532	1.92	4
Lethrinids	450.783	41.75	1	914.324	48.04	1
Siganiids	1.100	0.10	6	2.770	0.15	7
Total	1079.812			1903.432		
<i>Sinki valai</i>						
Latids	5.833	7.61	5	0.644	0.15	7
Serranids	9.461	12.34	3	105.140	24.46	3
Lutjanids	7.483	9.76	4	21.801	5.07	4
Lobatid	3.063	3.99	6	3.318	0.77	5
Plectorhynchid	25.150	32.80	1	145.970	33.96	2
Lethrinids	25.084	32.71	2	151.886	35.33	1
Siganiids	0.604	0.79	7	1.104	0.26	6
Total	76.678			429.863		

Lutjanids, Plectorhynchid, Latids, Priacanthid and Siganids were also represented in motorised Longline catches.

#### **Bottom set gill net (motorised)**

Though operated for crabs and lobsters, many groups of perches were landed by the bottom set gill nets commonly called Sinki valai (lobster net). Plectorhynchid formed the important group forming 32.8% of perch landed by this gear followed by Lethrinids, Serranids, Lutjanids, Latids and Siganids in addition to lobsters and crabs.

#### **Bottom set gill net (non-motorised)**

Among the seven groups of perches landed by this gill net Lethrinids formed the major group contributing 35.3%. Other groups of perches landed include Plectorhynchid, Serranids, Lutjanids, Lobatid, Siganids and Latids.

### **SPECIESWISE LANDING PATTERN**

Occurrence of various species of fish in different larger perch groups during various months (Table 6) reflects the quantity of various species caught according to their availability for fishing by different gears.

#### **Latidae (Koduwa)**

Two well known species of Latidae were caught at Tuticorin. In small number *Lates calcarifer* commonly called "Koduwa" occurred in Paru valai catches throughout the year. The period from November to January and June landed good quantities of *L. calcarifer* by Paru valai units. Handline units recorded good *L. calcarifer* fishery in February. Other units landed sporadic catches of this species. Estimated catch for the ten year period came to 40.2 t. "Koduwa" is a much sought after fish in the fresh fish trade. *Psammoperca waigiensis* locally called "Senkanni" was landed by small meshed Podi valai units in insignificant quantities especially during March. Other gears did not record this species.

#### **Serranidae (Kalawa, Rock-cods)**

Large and medium sized Serranids were caught by all the gears. *Epinephelus malabaricus*

was the common species in the group and was caught in good quantities throughout the year by Paru valai, Handline, Longline and Sinki valai. No season of abundance could be recorded for this species. Among many other Serranids landed *E. tauvina*, *E. undulosus* and *E. aerolatus* recorded good fishery. All the species of Serranidae represented in the area were caught one time or other in various gears operated for perches, though some species in small numbers.

#### **Lutjanidae (Snappers)**

Many species of Lutjanidae were landed by drift nets, hook and lines, and gill nets. *Lutjanus rivulatus* and *L. malabaricus* formed the important species in perch fishery during all the months. Good landings were reported by Paru valai and Longline units. Other important species include *L. fulviflamma*, *L. argentimaculatus* and *L. kasmira*. Many other species of Lutjanidae landed at Tuticorin and their estimated total landings are given in Table 6.

#### **Priacanthidae (Bulls-eyes)**

Only one species of Priacanthidae, *P. hamrur* was reported from traditional fisheries at Tuticorin. All the catch of this species came from Handline and Longline units. January to May period was considered to be good for *Priacanthus* sp. though, some other months also recorded good landings.

#### **Nemipteridae (Threadfin bream)**

Handline units accounted for all the Nemipterid landings. *Nemipterus delagoae* was caught during all the months and an estimated 998.3 t was caught during the ten year period. Fairly good fishery for this species was reported during January, March, July and November.

#### **Scolopsidae (Monocle bream)**

Only *Scolopsis bimaculatus* was reported from the fishery. Podi valai and Handline units landed all the catch with greater share of the fishery by Handline units. Varying quantities of Scolopsid were caught during all the months with no particular important season.



**Lobotidae (Triple tail)**

Drift nets and gill nets landed Lobotid throughout the year in small numbers. Conventional species landed by Paru valai, Podi valai and Sinki valai was *L. surinamensis*. The species was landed in small numbers without

**Plectorhynchidae (Sweet-lips)**

All the gears operated for perches at one time or other landed *Diagramma griseum* the common representative of the group. The species was most common in Sinki valai landings. Larger specimens were caught in Paru valai and

TABLE 6. Specieswise and gearwise average landing (t) of perches (1979 to 1988)

Species	Paruvalai	Podivalai	Handline	Longline	Sinkivalai
<i>Lates calcarifer</i>	40.200	5.941	10.598	11.835	6.477
<i>Psammoperca waigiensis</i>	---	7.980	---	---	---
<i>Epinephelus malabaricus</i>	110.638	19.684	169.067	548.232	57.530
<i>E. tauvina</i>	28.719	4.916	32.336	162.185	22.828
<i>E. undulosus</i>	24.030	1.655	23.822	96.338	11.416
<i>E. areolatus</i>	18.996	1.192	14.742	85.597	10.273
<i>Enneacentrus sonnerati</i>	11.294	1.754	17.018	69.654	6.846
<i>Epinephelus fasciatus</i>	8.724	0.887	7.091	53.365	5.708
<i>E. merra</i>	5.126	0.531	13.039	37.426	---
<i>Plectropomus maculatus</i>	2.564	0.272	7.939	21.484	---
<i>Priacanthus hamrur</i>	---	---	26.385	19.334	---
<i>Lutjanus rivulatus</i>	51.815	11.293	36.613	181.749	14.823
<i>L. malabaricus</i>	20.075	3.045	8.817	65.453	4.715
<i>L. fulviflamma</i>	11.815	1.476	6.923	51.729	3.064
<i>L. argentimaculatus</i>	9.224	1.212	6.899	43.510	2.506
<i>L. kasmira</i>	7.379	1.075	6.605	31.732	1.948
<i>Aprion virescens</i>	5.918	0.715	2.046	24.489	2.228
<i>L. waigiensis</i>	2.648	0.392	2.795	19.955	---
<i>L. gibbus</i>	4.328	---	2.237	15.420	---
<i>L. lineolatus</i>	---	0.982	8.010	---	---
<i>L. decussatus</i>	3.610	---	1.117	16.312	---
<i>L. sanguineus</i>	1.682	---	1.677	12.712	---
<i>Nemipterus delagoae</i>	---	---	998.397	---	---
<i>Lobotes surinamensis</i>	25.712	9.350	---	---	6.381
<i>Scolopsis bimaculatus</i>	---	5.782	72.632	---	---
<i>Diagramma griseum</i>	42.079	6.967	51.239	45.756	171.120
<i>Lethrinus nebulosus</i>	199.658	67.268	446.295	1019.202	126.665
<i>Lethrinella miniata</i>	44.763	11.481	65.598	209.394	32.612
<i>Lethrinus mahsenoides</i>	17.100	6.395	37.789	87.605	11.831
<i>L. ramak</i>	10.057	5.085	27.808	48.906	5.862
<i>Siganus javus</i>	4.638	6.882	7.907	2.902	1.111
<i>S. oramin</i>	1.097	4.588	3.388	0.968	0.597
Total	713.889	188.800	2116.829	2983.244	506.541

any important season and formed 3.6% in Paru valai, 4.9% in Podi valai and 1.2% in Sinki valai landings.

Longline units. Other units landed medium sized and smaller fish. Small quantities of the species were reported throughout the year.

### **Lethrinidae (Pig-face bream)**

Lethrinids formed one of the major groups of perches accounting for 38.1% of total perch landings and were much sought after by trade and local consumers. Common species of the group *L. nebulosus* formed 74.9% of the group and was caught by all gears throughout the year. Good fishery by Paru valai, Handline and Longline units was reported during January. *L. nebulosus* alone contributed 28.6% in all group perch landings during the period. Next important species in the group was *L. miniatus* accounting for 14.6% in the total fishery of the group. Many other species contributed the rest of the landings.

### **Siganidae (Spine-foot)**

Two species *Siganus javus* and *S. oramin* were represented in the fishery. They were never abundant in any of the gears and their contribution to perch fishery was also marginal.

### **IMPACT OF MOTORISATION**

Motorization has picked up very fast among traditional fisheries at Tuticorin as elsewhere along the coasts (Balan *et al.*, 1989). Started on a small scale in 1986, many indigenous crafts have been fitted with inboard type propellers (Bennet and Arumugham, 1991). Consequently reduction in non-motorised crafts was noticed.

Total average catch per units have given rosy picture for motorised units when compared to that of non-motorised units (Bennet and Arumugham, 1991). On the other hand, average all group perch catch for 1986 - 1988 did not give any advantage for motorised units. Average perch catch for non-motorised units came to 637.59 t as against 479.18 t for motorised units. Certain perch groups such as Serranids, Lutjanids and lethrinids recorded increased landings in motorised units. All other groups showed distinctly higher landings by non-motorised units.

Quality fishes such as tuna, seerfish, sharks, barracuda, polynemids and *Rachycentron* over took the total perch landings by motorised Paru valai catches. Conventional important

fishes like barracuda and carangids were also landed in good quantity motorised Podi valai units schooling fishes like tuna, seerfish, carangids, barracuda and ribbonfish were landed more than perches. By Handlines, Nemipterids, Belonids and seerfish were landed in good quantity. Eventhough, perches were in abundance by motorised and non-motorised Longline units sharks, carangids, seerfish and rays were also landed in increased numbers. Bottom set gill nets also landed good quantity of rays, carangids, catfish, soles and Parrotfish giving second place to perches in both motorised and non-motorised units.

Perhaps the widely and sparcely distributed perches could not be taken in large quantities during the operational period of motorised units than other schooling fishes. Non-motorised units very often stay overnight at fishing grounds and catch increased quantity of perches that move to different depths during the night.

### **REMARKS**

Perches are one of the most important groups in the fisheries at Tuticorin contributing many conventional forms to the trade and local consumers. The foregoing observations have dealt exclusively with the fishery of perches by indigenous gears spreading over a ten year period from 1979 to 1988. Annual average landings came to 650.9 t with lowest catch of 375.4 t during 1982 and highest in 1985 of 1062.7 t. Fishery experienced fluctuations of four years of higher catch above annual average and equal number of years of lower catch. Apart from November and December when turbulent sea conditions prevail in the fishing grounds, due to Northeast monsoon, all other months recorded fairly good perch fishery. In total fish landings, perches constitute 7.3% to 14.3% (average 10.9%) by all indigenous gear combined.

Quality fishes of great commercial importance such as Lethrinids, Serranids, Latids and Lutjanids constituted about 76.7% in perch fishery, Lethrinidae alone formed 38.1%. Commercially less important perches formed 23.3% in total perch fishery with Nemipterids alone forming 15.3%.

It may be assumed that various species of perches are encountered independently and catches are obtained by effect of gear saturation over the fishing grounds of rocks and adjacent sandy stretches. Large concentrations in accessible areas give rise to better catch rates by particular gears. The most important example is the fishery for Lethrinids by Longline units and the fishery for Nemipterids by Handline units. Occurrence of dominating species as well as lesser important species month after month in fairly reasonable quantities, gives an indication of the extension of the range of stock and limited nature of fishing operations. Only a portion of the underlying population of perches is accessible to the fishery. Density of fish in core area of the range is not diminished and catch rates can be maintained at present level of fishing.

Motorisation of existing indigenous crafts was thought to be a boon to get better catch rates. No doubt, the legendary transformation of simple Tuticorin type boats into motorised units have recorded increased catch rates in many groups of fishes especially pelagic shoaling ones. On the other hand, results of observations indicate that perches are better caught by non-motorised units than motorised units. After all, the whole point about motorisation is to see what is better for the fisherman irrespective of the fish groups of caught.

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