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ON THE TRADITIONAL SMALL-SCALE FISHERIES AT PUDUMANIKUPPAM, MADRAS DURING 1979-'88*

The Madras district of Tamil Nadu with a coastline of nearly 30 km and twelve landing centres has contributed an annual average of 18,712 tonnes of fishes during the period 1985-'89 of which 18% has been accounted by the traditional fisheries sector. Pudumanikuppam near Madras is the only major fish landing place of the district where both mechanised and indigenous fishing units land their catches.

The present report deals with the traditional fishery exploited by a multiplicity of gear operated by non mechanised units in the shallow coastal waters off Madras and landed at this centre during the period, 1979-'88 (Fig. 1 - 4). The Fishery survey data collected during the period from eight gears viz., *Kavala valai*, *Thatta-kavala valai*, *Valavalai*, *Ara valai*, *Pannu valai*, *Eda valai*, *Malha valai*, *Thuri valai* and hooks and line have been analysed and the results of the studies on the average catch, effort and catch per unit effort (Table 1), percentages of the gearwise catch (Table 2), quarterwise and gearwise seasonal abundance of landings (Fig. 2) and the groupwise abundance of the catches (Table 3) are presented.

Kavala valai and *Thatta-kavala valai*

These are the conventional sardine gill nets

which were operated during the period 1979-'88 and landed an annual average of 64 t with a catch per unit effort of 21 kg contributing to 41% of the total fish production of non mechanised units during the period. Seasonal abundance of catch indicates a productive third quarter and 79% of the catches was constituted mainly by *Sardinella gibbosa*, *S. albella* and *S. fimbriata*.

Vala valai

This is a drift net which was operated during the period 1979-'81 and 1984-'86 and landed an annual average of 12 t with a catch per unit effort of 6 kg. The third quarter followed by the first quarter were the periods when maximum landings were obtained and the catch comprised of carangids, lesser sardines, mackerel, seer fishes and prawns.

Ara valai

Contributing an annual average of about 23 t, this gill net was operated during the period, 1981-'86 and the average catch per unit effort was 10 kg. The landings of this gear have considerably decreased in catch and effort after 1981-'83. Seasonal abundance of catch indicated a productive first quarter and nearly 42% of the landings comprised mostly of lesser sardines.



Fig. 1. Pudumanikuppam fish landing centre, northern Madras.



Fig. 2. The scads and *Decapterus russelli* landed by 'Eda valai' unit.

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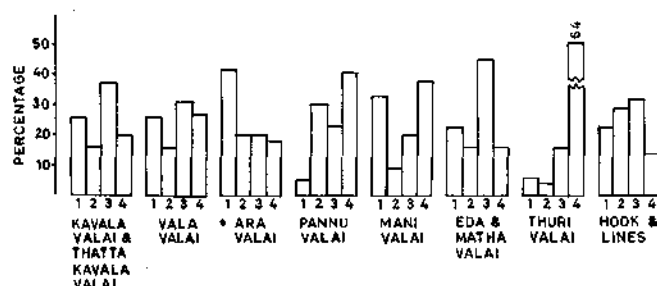


Fig. 3. Quarterwise percentage composition of fish production of different types of traditional gear operated off Madras coast during 1979-'88.

Pannu valai

This is a modified type of *Ara valai* made of specialised monofilament and was operated along the coast during 1986-'88. With an annual average catch of 20 t and the catch per unit effort of 11 kg, this gear was found most effective for netting a large number of pelagic species and the productive season extended over a prolonged period, say, from second to fourth quarters of the years. Mackerel and carangids are the most common fishes caught in this net.

Mani valai

This is a triple walled entangling net recently introduced along the Madras coast. An annual average of 4 t of all fish were landed during the period, 1986-'87 with a catch per unit effort of 10 kg. Though operated mainly for the prawns along the coast, many pelagic fishes are also caught in this gear. Seasonal abundance of landings indicates productive first and fourth

TABLE 1. Average catch, number of unit operations and catch per unit effort to various gear landed at Pudumankuppam, Madras during the period, 1979-'88

Gear	Period of operation	Average catch (kg)	Number of unit operations	Catch per unit effort (kg)
Kavala valai and Thatta-kavala valai	1971-'88	63,727	3,067	21
Vala valai	1979-'81 & 1984-'86	11,707	1,882	6
Ara valai	1981-'86	22,771	2,237	10
Pannu valai	1986-'88	20,438	1,835	11
Mani valai	1986-'87	3,770	370	10
Eda valai and Matha valai	1979-'83	29,278	185	158
Thuri valai	1979-'83 & 1986-'87	7,820	500	16
Hooks and line	1979-'88	16,236	1364	12

quarters of the period and nearly 15% of the catch comprised of prawns, mostly *Penaeus indicus*.

Eda valai and Matha valai

The catch and effort details of these two types of bag nets operated for the pelagic shoaling species are combined due to their similar mode of operation and catch composition. Landings from these nets recorded during the period 1979-'83 indicate an annual average of 29 t with a catch per unit effort of 158 kg. A sizable share of 45% of the catch was recorded in the third quarter and the predominant constituents of the

TABLE 2. Percentages of the catch landed by various gear in the annual fish production at Pudumankuppam, Madras during the period, 1979-'88

Gears	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Kavala valai & Thatta-kavala valai	—	—	6.9	17.5	39.3	3.0	5.0	18.7	5.9	3.7
Valai valai	30.7	51.8	8.5	—	—	0.2	—	8.8	—	—
Ara valai	—	—	51.8	17.0	17.9	4.9	2.2	6.2	—	—
Pannu valai	—	—	—	—	—	—	—	30.9	31.6	37.5
Mani valai	—	—	—	—	—	—	—	33.2	66.8	—
Eda valai & Matha valai	24.1	5.0	3.2	2.8	0.4	3.5	13.9	16.2	30.9	—
Thuri valai	1.8	36.8	54.3	—	3.6	—	—	2.5	1.0	—
Hooks and line	6.0	9.6	2.4	5.3	10.4	4.6	10.8	28.6	12.3	10.0

catch included the scads, *Decapterus* sp. and the oil sardine, *Sardinella longiceps* besides other clupeoid fishes to a lesser extent.

Thuri valai

This is a typical boat seine operated seasonally in the shallow coastal waters off Madras and it landed an annual average of 8 t of fishes with a catch per unit effort of 16 kg, indicating a productive fourth quarter and 80% of the catch comprised of the ribbonfish, *Trichiurus lepturus*.

Hooks and line

The hooks and line contributed annually 16 t of all fish at this centre with an average catch per unit effort of 12 kg. This is the only gear

which has been consistently operated during the entire period, 1979-'88 and increased catches have been observed in recent years. Study of seasonal abundance of the landings has shown third and fourth quarters as the productive periods when 29% and 32% of the catch were obtained. Contributing to 37% of the catch, the seer fishes *Scomberomorus commerson* predominated in the landings followed by the queenfishes, *Scomberoides commersonianus* and *S. lysan* besides other carangids, perches, catfishes, eels and barracudas.

Remarks

The estimated catch data collected during the 10 year period, 1979-'88 in the artisanal small scale fishery landed at Pudumanikuppam, Madras, indicate maximum production from

TABLE 3. Percentages of different groups of fishes caught in various gear landed at Pudumanikuppam, Madras during the period, 1979-'88

Groups	Kavala valai & Thatta- kavala valai	Vala valai	Ara valai	Pannu valai	Mari valai	Eda valai & Matha valai	Thuri valai	Hooks and line	Percentages to total fish production
Lesser sardines	78.7	22.0	71.4	—	—	—	—	—	35.9
Oil sardine	—	—	—	—	—	31.2	—	—	5.7
Scads	—	—	—	—	—	39.8	—	—	7.4
Queenfishes	—	—	—	—	—	—	—	13.4	1.5
Other carangids	—	24.9	5.8	25.0	26.0	13.8	—	23.1	20.8
Anchovies	6.8	—	2.1	—	—	1.2	—	—	3.0
Rainbow sardines	6.7	—	3.8	—	—	4.0	—	—	3.5
Silverbellies	4.1	3.6	—	4.6	—	—	—	—	1.7
Mackerel	—	9.2	3.3	62.6	4.0	10.0	—	—	5.3
Ribbonfishes	—	—	—	—	—	—	79.5	—	3.1
Croakers	—	—	—	1.1	22.3	—	—	2.6	0.5
Barracudas	—	—	—	2.1	6.0	—	—	2.0	0.4
Seerfishes	—	4.2	1.6	2.4	—	—	—	36.6	4.6
Catfishes	—	—	—	—	—	—	—	4.0	0.5
Little tuna	—	—	—	—	—	—	—	2.3	0.3
Pomfrets	—	—	—	—	—	—	—	2.1	0.2
Eels	—	—	—	—	—	—	—	3.6	0.4
Rock cods	—	—	—	—	—	—	—	2.5	0.3
Other perches	—	—	—	—	—	—	—	6.2	0.7
Sharks	—	—	—	—	—	—	—	1.4	0.2
Prawns	—	3.4	1.5	—	14.7	—	—	—	0.3
Others	3.7	32.7	10.5	2.2	27.0	—	20.5	—	3.7

different types of gill nets viz., *Kavala valai*, *Thatta-kavala valai*, *Vala valai*, *Ara valai* and *Pannu valai* which together constituted about 62% of the total fish landed during the period followed by 25% of the catch recorded from the bag nets *Eda valai*, *Matha valai* and *Thuri valai*. Among the gill nets, the sardine gill nets appear to have retained their efficiency as indicated from the continuous operation during the period. The drift gill net *Vala valai* is not operated in recent years due to the poor catches obtained. Though the *Ara valai* netted appreciable quantities of fishes, it has been replaced since 1988 by the *Pannu valai* which is bringing higher catches. The triple walled entangling net, *Mani valai* which has been introduced along the coast very recently has become much popular due to its effectiveness for catching prawns.

With maximum catch per unit of effort, *Matha valai* and *Eda valai* are in operation for a longer period and is the most suitable gear for

the pelagic shoaling fishes especially scads and oil sardine. The boat seine *Thuri valai* though seasonal in operation are at present employed on a much restricted scale in most of the centres along the Madras coast. The traditional hooks and line fishery continues to retain its importance as the main gear to catch larger fishes like seerfishes, perches, carangids etc.

Seasonal abundance of the fish landings at the centre by various indigenous gear clearly indicates that the third quarter is the most productive followed by the first quarter. Of the annual average of 1,254 t of all fish landed at Pudumanikuppam by the artisanal gears, the predominant groups are pelagic fishes forming nearly 96%. The bulk of the pelagic fishes caught are lesser sardine (36%), other carangid fishes (21%), scads (7%), oil sardine (6%), seer fishes (5%), rainbow sardine (4%), anchovies (3%) besides miscellaneous fishes.