

Report on Survey of the
Irish Market Situation
in Madras State -



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REPORT ON A SURVEY OF THE FISH-MARKETING SITUATION IN MADRAS STATE.

By E. H. Barlind, F.A.O. Fish Marketing Economist.

INTRODUCTION.

At the instance of the Government of India I was on assignment to the Madras State for a brief period of one month from 16th May 1957 afternoon to 15th June 1957 afternoon. Mr. R. A. Bhote, Deputy Director (Fish Marketing), Ministry of Food and Agriculture, Government of India, and Mr. P. I. Chacko, Assistant Director of Fisheries (Marketing and Information), Madras State Fisheries Department, were attached to me during this period.

OBJECT OF THE SURVEY.

My programme of work as suggested by the Madras Government and subsequently approved by the Government of India and the F.A.O. was as follows :—

- (1) To suggest methods for increasing fish supply to the Madras City and for improving the fish markets in the City.
- (2) To suggest organization of marketing and distributing agencies at Mettur Dam.
- (3) To suggest utilization and marketing of catches at important centres of Tirunelveli and Kanyakumari district coasts.
- (4) To suggest methods for increasing fish supply to Madurai, Tiruchirappalli, Tanjore and Coimbatore towns.
- (5) To give general recommendations for improving the present conditions of fish markets.
- (6) To suggest improvements to the existing practices in the methods of handling, packing and storage of fish consignments.

As the period of my assignment was too short for a comprehensive survey, it was agreed by the Government of India and the F.A.O. to limit my programme primarily to the following :—

(1) Consider any apparent opportunities for the promotion of Pilot Fish-marketing Schemes which should be subject to further investigation.

(2) Observe the movement of the trade in dried fish.

(3) Observe any inter-State movement of fresh fish.

(4) Review the current and projected fish marketing-development programmes of the Government of Madras and make any necessary comments.

ITINERARY.

During the survey, I visited some of the important landing centres on the east coast like Madras, Tuticorin, Cape Comorin, Kolachel, Ennore, etc., and also important inland centres like Tirunelveli, Madurai, Tiruchirappalli, Tanjore, Salem, Coimbatore and Ootacamund. I also visited Government and private fish-curing yards at the coastal centres. At all the above centres I visited the fish markets and watched the arrivals of fish and its subsequent sales. At all the places I had discussions with Fisheries officials, Fishermen Co-operatives and Federations, fishermen retailers, brokers, transport agencies, Municipal and District Authorities and others interested in fish trade (vide Appendix I).

OBSERVATIONS.

The salient features of my observations are as under :—

(1) *Overall production and utilization.*—The Madras State has a coastline of 620 miles and about 4 lakhs acres of inland waters. The total production of sea fish as estimated by the Fisheries Department is about 60,000 tons and of inland fish 38,000 tons. About 30,000 tons of the sea fish catch are cured and mostly exported to Ceylon. About 60,000 tons of fresh fish are consumed by the general population.

(2) *Fish supply to Madras City.*—The City of Madras is 50 square miles in area and has a population of about 17 lakhs of which 65 per cent are said to be fish consumers.

The total supply of fresh fish to the City in 1956 was estimated to be about 9,120 tons by the Marketing staff of the Fisheries Department as detailed below :—

	TONS.
1 From 28 local coastal fishing villages within a radius of 20 miles	6,000
2 Transported by Fisheries Department vans from outlying places	632
3 Transported by one private-owned van from Mahabalipuram area	50
4 From Pulicat Lake	800
5 Catches of Fisheries Departmental boats.	20
6 From various centres along the East and West Coasts transported by rail ...	1,620
	9,122

There are 46 markets in the various parts of the City where fresh and cured fish are sold. Of these only five are owned by the Municipal Corporation and the rest are private owned. Wholesale fish is done in two markets only, namely, the Chintadripet Market

and the Zam Bazaar Market, in Triplicane. The auctioneer gets a commission of one anna per rupee of the gross amount. The average wholesale and retail prices of fish sold in the City Markets are as below :—

Kind of fish.	Wholesale price for 100 lb. RS.	Retail price per lb. NP.
Fresh-water varieties—		
Carp	30	34
Cat-fishes	38	41
Prawns	46	62
Sea-fishes—		
Cat-fishes	35	44
Prawns	46	75
Mackerel	30	34
Pommet	58	87
Sea	63	94
Perches	41	47
Indian Salmon	40	45

The conditions of the fish markets are fairly satisfactory but the overall cleanliness does not appear to be sufficient. The water-supply is not adequate and the drains are blocked with debris. The stalls and floorings require regular flushing and disinfection. Dogs, cats, hens and chickens which are found in large numbers in the markets should not be allowed inside the market premises. It will be better if there is roofing over the entire market area. I observed sale of stale and putrid fish in some of the markets. The municipal authorities should take more stringent steps to prevent sale of such fish which endanger health of the public and to maintain the markets in clean and hygienic conditions.

I visited the fish stall in the Moore Market managed by the Madras Fishermen Co-operative Federation. The condition of the stall is satisfactory. It has good flooring and display platforms, adequate water-supply and fly-proofing. But the turnover seems to be inadequate. From 1st July 1956 to 30th April 1957, fish was purchased for Rs. 2,187.65 and sold for Rs. 3,175.76. On an average the daily sale proceeds have been Rs. 14. The working of the stall is defective in several ways. Firstly, fish is not supplied to the stall by the member societies and consequently only small quantities of a few varieties of fish are offered for sale in the stall. The fish is sold at fixed rates. To increase the turnover of the stall I suggest that the Federation should buy good varieties of fish in auction from other markets or landing centres and sell them in the stall at competitive rates. My opinion is that it is not possible for the Federation to keep fixed prices as long as no other retailer is doing the same. A fixed price will either be above the market prices and the consumer will object and avoid buying or be below the market prices and the fishermen will not be inclined to supply fish regularly. It is therefore absolutely necessary to allow the Federation to vary the prices with regard to demand and supply. Only this will give the correct price to the fishermen as well as to the consumer.

The house-delivery of fish, recently undertaken by the Federation, may be enlarged by employing a small motor van instead of a bicycle as at present. Steps have also to be taken to obtain fish catches from the primary societies and through the Federation's own efforts by employing its own mechanised boats.

The main problem of the fish supply to Madras City is that of transport. As will be seen from Appendix II fresh fish is arriving by rail from 49 centres. The bulk is from the fishing centres in Kerala State. I watched the arrival and unloading of fish consignments reaching Madras Central Station in the Mangalore Express. The fish, chiefly prawns, packed with ice in deal-wood boxes and was found to be in good condition. There is however an urgent need to operate insulated vans to bring fish not only from the West Coast but also from the fishing centres on the East Coast. There is scope for running an insulated van between Nagapattinam and Madras for transporting fresh fish from centres like Nagapattinam, Porto-Novo and Cuddalore. To ensure an adequate load either the Fishermen Co-operatives or private fish traders at these centres could be made to pool the catches for despatch to Madras.

The supply of dried fish to the City is not considerable (vide Appendix III).

(3) *Conditions of Tirunelveli district.*—The Tirunelveli district is rich in sea fisheries. The average annual landing is estimated to be about 9,000 tons. The chief fishing centres are Tuticorin, Periatthalai, Ovari and Idinthakarai. The catches consist mostly of perches, sardines, anchovies, horse-mackerels, seer, barracuda, leather-jackets, sabre fish, sharks, skates and rays. The bulk of the catches (nearly 80 per cent) are cured for export to Ceylon where there is a good market for the product. Fish merchants and others with capital resources have a monopoly over this industry. The canoes, catamarans and nets are mostly owned by the above people. The catches are auctioned by recognized auctioneers on the shore on a commission of one anna in the rupee. The fishermen are paid on share-basis.

Tuticorin is the centre for assembly and export of cured fish to Ceylon. There are large godowns owned by merchants and forwarding agents in which the cured fish are stored for periodical shipping. The quantity of cured fish exported to Ceylon from Tuticorin Port is considerable, and the actual quantity exported in 1955-56 as furnished by the Collector of Customs, Madras to the Fisheries Department is as below :—

	Weight in cwt.	Value Rs.
Fish dry unsalted	1,26,443	1,24,47,612
Fish salted	1,75,023	1,68,48,937
Total ..	3,01,466	2,92,96,549

A portion of the above quantity consists of cured fish received from Kerala State.

There is a Federation of ten Fishermen Co-operative Societies for this district with Tuticorin as headquarters. The President Mr. C. Machado and other office-bearers appear to be much interested in the working of the Federation. The Federation has taken from the Fisheries Department four mechanized boats, which are being operated from 18th February 1957. From this date to 22nd May 1957, fishing was conducted on 77 days with the following results :—

	RS.	NP.
Total sale-proceeds of fish	11,009	15
Amount received by Federation as its share of 52 per cent.	5,725	12
Amount paid to boatmen as their share of 48 per cent.	5,283	75

A small part of the catches obtained by the mechanized boats is taken to markets of Melapalayam, Palayamkottai and Tirunelveli towns in a pick-up type motor van, supplied to the Federation by the Fisheries Department on hire-purchase system. The remaining portion is sold to merchants for curing and export to Ceylon.

There seems to be considerable scope for developing curing in this area on a co-operative basis. I suggest that a pilot scheme is drawn up for dry fish trade to Ceylon by the Federation. The Federation could for instance, procure fish from the fishermen at the daily market prices or by advancing fixed rates subject to final adjustment when the cured fish has been sold or by buying fish at open auction or from curers. It should have its own representatives in Ceylon for effecting distribution and sale. Even the auctioning of the fish landing on the shore should be taken up by the Federation and its primary societies so that the middlemen are eliminated. The Federation should ultimately undertake all stages of the trade including procurement of fresh fish, processing, assembling, packing, forwarding and distribution and sale in Ceylon. The Federation having covered its expenses and obtained a reasonable commission should share the remaining profit among the fishermen or suppliers. To outline the scheme and before implementation I wish to underline the absolute necessity of making a thorough study of the dry-fish trade in Ceylon and to this end I suggest that the Fisheries Marketing Officer together with one or two members of the Federation are deputed to the important marketing and consuming centres in Ceylon. The Federation will require sufficient capital to undertake this project and the capital necessary will be in relation to the expected turnover. I suggest that the application of the Federation for the grant of a loan for the dry-fish trade to Ceylon be considered favourably.

I visited the fish market belonging to the Tuticorin Municipality. Though the general condition of the market is comparatively satisfactory I noticed many hens, chickens and dogs straying about, gutting and filleting of fish in the open, the retailers selling fish from the passage instead of from the stalls, the drainage system being defective and the water-supply to be insufficient. Display platforms have not been provided in all the stalls. I was informed that the Municipality has a scheme for improving the markets on the lines suggested by the Fisheries Marketing Officer and that it has approached the Fisheries Department for financial assistance under a scheme for market improvements under the Second Five-Year Plan.

The machinery for a 5-ton ice plant with 10-ton cold storage facilities, received under the T.C.M. Aid about two years ago, has not yet been installed. I was informed that it will be erected before the end of this year. This will facilitate fresh fish trade to a considerable extent.

(4) *Conditions of Kanyakumari district.*—The Kanyakumari district is very productive in sea fisheries the estimated average annual production being about 12,000 tons. The important centres are at Cape Comorin, Muttom, Kadipatnam, Colachel and Thutthoor, where there are fish-curing yards managed by the Fisheries Department. As in Trunelveli district the bulk of the catches are cured and exported to Ceylon, and consequently the conditions of the fishing industry and the fisherfolk are similar. Lack of ice and cold storage facilities and transport facilities are the main factors limiting further development of the industry. At present about two hundred cyclists transport baskets of fresh fish to the interior parts without using ice. A Federation of fishermen co-operatives has been formed in the district quite recently and it may be given necessary encouragement.

(5) *Fish supply to Madurai town.*—Madurai is a large city with a population of about 6 lakhs. Its present fish supply is meagre as shown below:—

Season. (1)	Source. (2)	Daily supply. (3) LB.
April—June	Fresh water fish from irrigation channels and tanks with a radius of 20 miles.	3,600
Do.	Sea fish from Pamban area ..	400
		4,000
July—September	Fresh water fish	400
	Sea fish	400
		800
October—March	Fresh water fish	400
Do.	Sea fish	2,000
		2,400
Throughout the year ..	From Fisheries Departmental Tank (Mariamma Teppakulam).	80

I visited the two Municipal fish markets at East Veli street and Karimedu. Though certain improvements such as provision of water tubs have been carried out at the instance of the Fisheries Marketing Officer, the general condition was *not satisfactory*. The flooring is slushy, the drains do not function, there is not adequate cleaning, and there is considerable fly-nuisance. I was informed that the Municipality has drawn up plans for remodelling the markets. The execution of this project may have to be attended to early.

The main difficulty in augmenting the fish supply to this town is lack of adequate transport and storage facilities. I understand that the local municipal authorities propose to construct a cold storage for fish and other perishable commodities. This will ensure a larger and more regular availability of fish.

The wholesale and retail price now prevalent in the town is as follows:—

Kind of fish.	Wholesale price for 100 lb.	Retail price per lb.
	RS.	NP.
Murrels	60	75-87
Fresh water cat fishes	25	31-37
Major carps	30	37-41
Minor carps	20	25-31
Gobius	20	26-27
Miscellaneous fresh water fishes ..	25	31-33
Eels	25	31-34
Tilapia	37	44
Chanos	30	37-41
Pomfret	35	44-50
Seer	45	44-75
Marine cat fishes	30	51-37
Skates and Rays	13	19-25
Mackerel	25	31-37
Horse Mackerels	25	31-37

(6) *Fish supply to Tiruchirappalli town.*—This is an important town with a population about 1½ lakhs. It receives the bulk of its fish supply from the river and canal sections of the Cauvery River and connected tanks within a radius of 10 miles. It receives sea fish also from Nagapattinam. The average monthly supply of fish is as follows:—

Month.	Fresh water fish.	Sea fish.
	LB.	LB.
January	22,000	10,000
February	16,000	10,000
March	20,000	8,000
April	15,000	8,000
May	12,000	8,000
June	8,800	8,000
July	8,800	6,000
August	26,000	8,000
September	32,000	10,000
October	20,000	10,000
November	20,000	10,000
December	16,000	10,000

The fish market is well-designed and all concreted. It has platforms and vats for each vendor, but should be maintained in better sanitary condition. Heaps of entrails and refuses are allowed to remain in the premises. Water-supply is wholly inadequate, and proper cleaning does not appear to be made every day. The drains are choked and do not function properly. The price fluctuation is as shown below :—

Kind of fish.				Wholesale price for 100 lb.	Retail price per lb.
				RS.	NP.
Carps	..	..	..	40	37-50
Cat fishes	..	..	..	40	37-50
Murrels	..	..	..	43	50-56
Pomfret	..	..	..	60	62-87
Prawns	..	..	..	50	62-75
Shark	..	..	..	40	50-56
Ray ..	..	..	..	35	44-50

The problem of fish supply to this town is similar to that of Madurai. Adequate transport facilities have to be given for procurement of fresh fish both from the inland and coastal centres.

(7) *Fish supply to Tanjore town.*—Tanjore is a Municipal town with a population of 1 lakh. The annual supply of fish to the town is about 550 tons as detailed by the Fisheries Marketing Officer below :—

Season.	Kind of fish.		Source.	Total supply.
				LB.
January—March	..	Sea fish	Coastal areas of the district.	9,000
April—June ..	..	Do.	Do.	22,500
March—August	..	Fresh water fishes.	Tanks and canals.	450,000
Do.	..	Murrels	Do.	135,000
May—July ..	..	Prawns	Malabar	4,500
September—January.	..	Sardines	Do.	7,500
November—February.	..	Fresh water fishes.	Tanks and canals.	600,000
				<u>1,228,500</u>

The price structure is as follows :—

Kind of fish.				Wholesale price for 100 lb.	Retail price per lb.
				RS.	NP.
Carps	..	..	..	28	31-44
Murre's	..	..	..	32	44-59
Catfishes	..	..	..	30	41-44
Eels ..	..	..	..	22	25-31
Gobius	..	..	..	21	25-28
Prawns	..	..	..	23	25-28
Crabs	..	..	..	13	19-22
Seer ..	..	..	..	52	62-75
Pomfret	..	..	..	55	62-81
Bekti	..	..	..	50	56-75
Miscellaneous fishes	..	..	..	12	12-19

The fish market of the Municipality is in a comparatively satisfactory condition, as it was reported that some improvements have been carried out at the instance of the Fisheries Marketing Officer. The municipality has drawn up a scheme for further improvements and has requested the Fisheries Department for assistance under the Second Five-Year Plan. This may be considered favourably.

I had a discussion with the President of the local fishermen co-operative society which has a membership of 1,500 fishermen and which has taken on lease the fisheries of most of the 10,000 inland waters in the district. The catches of the member-fishermen are not marketed by the society. Usually the fishermen retail themselves or send to an agent. The total catches of the member-fishermen are about 1,50,000 lb. in a year and that of non-members 2,50,000 lb. The price of fish averages 4 annas a pound. The society has recently acquired a van from the Department for transporting fish. I have suggested to the President that the society should acquire the lease of the fish market and act as auctioning agent for the benefit of the members and thus gradually eliminating middlemen.

The Federation of Fishermen Co-operatives in the district may undertake the supply of sea fish to the Tanjore market from centres like Nagapattinam and Andirampattanam when the Tanjore Society takes the market on lease.

(8) *Fish marketing at Mettur Dam.*—I was at Mettur Dam on 5th and 6th of June 1957 and made a study of the fisheries of the Mettur Reservoir. This water-spread is 62 square miles in area and is formed by a dam which is about 6,350 feet in length and 130 feet in height. The dam serves the purpose of electric power generation and irrigation. The Madras State Fisheries Department has developed a very good fishery in the reservoir by attending to regular stocking of fry and fingerlings of carps like catla, rohu and mrigal from 1934, the year of completion of construction of the dam. The fishery is controlled by the department and allowed only to licencees. The Mettur Dam Fishermen Co-operative Marketing Society was formed in September 1956, and it started marketing of fish in April 1957, when the department decided to issue licences to the members of the society only. Every licencee has to give his catches to the society. At present there are 239 licencees. Each licencee engages a partner, who is usually a member of his own family, for assisting in the fishing operations. The fishermen use nylon nets for which nylon twine has been supplied by the department. The Fisheries Department has prescribed a minimum mesh of 2 inches.

The nets are set in the evening hours and hauled the following morning. The catches comprise mostly of cirrhina and catla. Other varieties like catfishes form about 20 per cent of the total

landings. At the time of my visit the catches were 4,500 lb. daily. There are six landing centres from where the catches are collected by the society and transported to Mettur Dam by small motor boats, belonging to the Fisheries Department and for which a hire charge of Rs. 10 per day is paid. At each landing centre the catches of the individual fishermen is quality controlled and weighed by one man and the details are recorded in their licence book. The society has made a verbal agreement with the fish merchants (one merchant taking 70 per cent and three taking 10 per cent each of the landings) to buy all fish landings at the fixed price of 21 nP. per lb. The society pays the fishermen 17 nP. per lb. The difference is used to cover the cost of establishment, transport, ice, etc. From 10th April to 31st May 1957 the society has procured 108,000 lb. of fish and gained a net profit of about Rs. 2,000. To safeguard the interest of the society I suggest that formal written agreement is concluded between the society and the merchants.

At the time of my visit the merchants represented to me their difficulties to market the large numbers of catla. I therefore suggest that it may be considered whether the price could vary with regard to daily quantity landed.

The catches brought by the motor boats to Mettur Dam are loaded into a motor van of the Fisheries Department and carried to the office premises about 1½ miles away. Usually the van makes three trips a day. The hire charge paid for the van is 37 nP. per mile with minimum of Rs. 5 per day. This would cost the society about Rs. 1,700 in a year. If the available ice plant and cold storage is erected at the Mettur Dam landing place, the cost of transportation and the time of handling are likely to be less.

To bring the catches from the landing centre at Pannavadi sometimes a van is engaged. The road beyond Kolathur is not fit for motor traffic and some improvements could be effected.

At present, delivery, handling, control and weighing take a long time. I suggest that:

(1) a time-limit is fixed for delivery of catches by the fishermen; fish arriving after this time-limit is received in the motor boat and weighed on reaching the office,

(2) two weighers are engaged at Pannavadi to expedite the operations.

The licencing of the fishermen should be worked out on a scientific basis with a purpose of giving a decent living to the fishermen engaged in Mettur Dam. The Fisheries Department estimates a maximum annual catch of 700 tons (about 4,500 lb. a day). To arrive at the maximum number of licencees the following formula could be adopted:—

$$\frac{\text{Maximum catch} \times \text{Price per unit}}{\text{Reasonable earning}} = \text{Maximum number of licencees.}$$

At present fish is transported from the various landing centres to Mettur Dam with insufficient ice which melts rapidly as the fish is exposed to sun. The boats have no hold. When a new boat is provided I suggest that it is equipped with an insulated hold. In the meantime the catches should be covered with canvass or mat.

The present activity of the society has brought about a remarkably good order to the fishing in Mettur Dam and is also appreciated by the fishermen. The society is planning to market the catches in the consuming centres. Such a development however cannot take place until the ice and cold storage plant has been erected. The present arrangements have been working very well and the society is gaining experience. Under these circumstances, I suggest that the society continues and perfects the present type of marketing for another one or two years. In the meantime it may be worked out how the catches could be marketed in the consuming centres.

(9) *Fish supply to Coimbatore town.*—Coimbatore has a population of 130,000. Its fish supply comes from Malabar, Pamban area and Dindigul. The total annual supply is said to be about 62 tons of fresh fish and 8 tons of dried fish.

The retail price of fresh fish in this town is as follows:—

					nP. PER LB.
Cat fish	..	..	..	..	37-62
Prawns	..	..	..	..	19-50
Horse mackerels	..	..	..	..	25-44
Sardines	..	..	..	..	12-37
Jew fishes	..	..	..	..	25-50
Sharks	..	..	..	..	37-50
Pomfret	..	..	..	..	37-62
Ribbon fish	..	..	..	..	37-50
Seer	..	..	..	..	50-87
White baits	..	..	..	..	19-31

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At the time of my visit, I found the municipal fish market is in a most unsatisfactory condition. The approach-road to the market was very dirty and congested that people are prevented from going to the market. The market-floor was full of cracks and holes, and was also muddy and slushy. Refuses and rubbish were heaped in various places, and there were swarms of flies. The stalls have only wooden display platforms which are not clean. The drains were not functioning properly and there was a foul odour in the area. I suggest that the municipality is forced to remodel the market as early as possible for that the sale of fish in such a market is prohibited.

(10) *Fish supply to Ootacamund.*—Ootacamund is a hill station situated at an elevation of 7,200 feet. It is an important tourist centre with salubrious climate. This town receives its supply of fish from Malabar, from where fish boxes and baskets arrive by train at about 12 noon. The annual supply is estimated to be about 100 tons of iced fish and 20 tons of cured fish. Small quantities of freshwater fishes like the German carp, Golden carp and Tench are also made available to the public by the Fisheries Department.

The municipal fish market located in the centre of the town is the best market I have seen in the State. It has thirteen stalls for sale of iced fish and eleven stalls for sale of dry fish. The stalls are independent rooms with their own display tables of glazed slabs, wash basins and taps, drainage, fly-proof screens and shaded verandahs. The entire premises are concreted and kept clean. I watched the arrival of fish consignments and their disposal. The fish were cleaned and sold by weight. I found here for the first time the upper class people buying fish for themselves. This is a piece of testimonial to this market.

Part of the prawn consignments received in the market on 10th June 1957 were spoiled probably for want of adequate ice in the packing cases.

The retail price of fresh fish sold in the market is given below :—

	NP. PER LB.
Cat fishes	62-75
Sharks	62-19
Mackerel	62-69
Prawns	50-62
Whiting	62-75
Sardines	50-56

The sale of fish in the town could no doubt be increased if insulated transport facilities were available to the fish trade.

(11). *Observations on trade in dried fish.*—The annual production of dried fish in the State is estimated to be about 20,000 tons. Fish-curing is done all along the coast particularly in Kanyakumari, Tirunelveli, Ramanathapuram and Tanjore districts. Dried fish is sold in all markets. Statistics of the internal consumption of this product are not available. However, in Appendix III particulars of dried fish transported to Madras City are given. It is seen from it that nearly 50 per cent of the supply are from Cochin and Tikotti in the Kerala State and from Mahe (former French). A small quantity is received from Bapatla in the Andhra State.

There is considerable export of dried fish from Madras State to Ceylon, and special products like dried prawns, fish maws and shark fins are exported to Burma, Malaya and Singapore. The chief ports of export are Tuticorin, Dhanushkodi, Madras, Nagapattinam, Kilakarai and Tondi. Statistics of quantity of dried fish exported from these parts in 1955-56 are given below :—

	Weight TONS.	Value RS.
Tuticorin	15,070	2,92,96,550
Dhanushkodi	400	7,31,670
Madras	1,430	33,20,000
Nagapatt nam	345	7,28,050
Kilakarai	9	25,370
Tondi	2	5,600
	17,256	3,41,07,240

As the quantity of dried fish exported is almost equal to the production in the State, it is apparent that a fair quantity of dried fish from other States chiefly Kerala is either consumed in the State or shipped abroad from the export centres. As is evident from Appendix III, it may be assumed that a substantial part of the internal consumption of dry fish is from the Kerala State, and that the State production of dried fish is mostly exported taking advantage of the good Ceylon markets.

I suggest that detailed study of the dried fish trade in the State is undertaken by the State Fisheries Department with special reference to production, internal consumption, export, inter-State movements, etc.

(12) *Observations on inter-State movement of fresh fish.*—

A considerable quantity of fresh fish from the Kerala State is marketed in the Madras State. During my brief survey, I found that fresh fish obtained from Kerala are sold in the fish markets in Tiruchirappalli, Tanjore, Coimbatore, Ootacamund and Madras City. I was informed that many other towns also received regular supplies of fresh fish from Kerala. It will be seen from Appendix II that Madras City secured by rail a total quantity of 1,520 tons of fresh fish of which nearly 1,100 tons (about 75 per cent) were from the Kerala State. The total supply of fresh fish to Madras City in 1956 was estimated to be about 9,120 tons.

During the off-season on the West Coast small quantities of varieties of marine fishes like pomfret and seer are sent to Bangalore in Mysore State from Madras by rail.

About 1,000—1,500 lb. of fish from Mettur Dam are supplied daily to the Bangalore markets by rail.

I suggest that the State Fisheries Department undertakes a detailed study of the fresh fish trade in the State with reference to sources of supply, production, varieties, demand, import, export, etc.

(13) *Comments on the fish marketing development programmes of Madras State Fisheries Department.*—The Madras Fisheries Department which is the oldest in India, seems to me to be well organized and has already achieved important and encouraging results especially with regard to development of inland fisheries. It is noteworthy that a special officer has been appointed to deal with marketing problems.

The department has a number of schemes under the Five-Year Plan for increasing production and for its utilization. The following are my comments on the schemes relating to marketing development programmes :—

(i) *Assistance to fishermen co-operative societies for marketing of fish.*—The chief purpose of this scheme is to grant long-term loans to the fishermen through fishermen co-operative societies for clearing their prior debts to money-lenders so that they are able to market their catches through the societies. To promote marketing, District Federations of fishermen co-operatives have also been organized. Under this scheme each society has been granted loans to 40 members not exceeding Rs. 500 per member or Rs. 2,000 per working unit and not exceeding Rs. 20,000 per society.

My comments are—

(1) A major portion of the loan is likely to be directed to the middlemen. Unless the co-operative societies or their federations are capable of undertaking all the activities from assembly to marketing of the catches of the fishermen so freed, the fishermen are likely to depend on the middlemen's assistance once again.

(2) The method adopted in granting loans appears defective in that loans have been granted to societies selected at random and to selected 40 members in such societies. In my opinion it would have been better if a concentrated attempt at redeeming indebtedness of all the members in few societies particularly in a contiguous area was made.

(ii) *Quick transport of fish from landing centres to marketing and consuming centres.*—(a) The Fisheries Department has a fleet of nine motor transport vans which are hired to fishermen co-operative societies on hire basis.

The hire charges are nominal being 5 annas per mile for small vans, 6 annas per medium-sized vans and 7 annas for large vans. Seven vans are used for supplying fresh fish to Madras City from outlying centres within a radius of 40 miles, and two vans hired by the society at Mettur. On an average about 500 tons of fish have been transported by these vehicles every year from 1951-52 onwards.

This scheme has been of great value for improving fish supply to the city. Similar facilities may be extended to other important landing centres for developing marketing.

In order to increase the fish supply to Madras City, I suggest that fish be transported from far off landing centres like Nagapattinam and Cuddalore by insulated vans preferably dieselized, after due investigations.

(b) Under the Second Five-Year Plan, the department has provided a sum of 2 lakhs of rupees for the purchase of new vans for supply to co-operative societies on hire-purchase system. In 1956-57 three vans have been supplied to the societies at Tuticorin, Tanjore and Porto Novo. The ultimate aim of the scheme is that the societies become the owners of the vans by making payments in instalments.

As societies get more and more organized, the demand for owning their own vehicles is likely to increase. The future policy of the Government should therefore be to encourage the societies to own their own vehicles rather than the department plying vehicles on hire-basis. From the economy thus effected on a long range policy, additional vehicles can be made available to the societies.

(iii) *Improvement of fish markets.*—This scheme envisages the improvement of selected municipal markets on model lines at a cost of 1½ lakh rupees during the Second Plan period.

The general conditions of the fish markets in the State are not very satisfactory and it is expedient that steps are taken to improve them both from the point of view of public health and of increasing demand for fish. The immediate needs of the markets are concreted approach and flooring, display platforms, adequate water-supply, proper drainage, and daily cleaning and disinfection.

In future the local bodies should not be allowed to construct new fish markets without consulting the Fisheries Department.

All important markets may be provided with a small cold-storage unit.

(iv) *Provision of ice plant and cold-storage facilities.*—Two plants, each with a daily output of 5 tons ice and with a storage capacity of 15 tons, are being erected at Mettur Dam and Tuticorin. Similar plants are contemplated for Cape Comorin and Nagapattinam.

The plants for Cape Comorin region and Nagapattinam are urgent and necessary as they are very important landing centres. The marketing of fresh fish from these places can be increased considerably. Similar facilities are necessary for important landing

centres such as Pamban, Porto Novo, Cuddalore, Kolachel, etc. The Corporation-owned cold storage near Moore Market in Madras City seems to be fully utilized for storing fresh fish. For the further development of marketing of fish, it appears to me that in the near future the Fisheries Department may find it necessary to erect an ice and cold-storage plant for fresh and frozen fish.

I understand that Army Disposals at Bangalore have a stock of cold-storage cabinets without the direct expansion unit. I would suggest that the Fisheries Department secure a number of these cabinets and fix them up at some of the important landing and consuming centres.

To develop marketing on right lines, I suggest that the cost of ice and the rate of cold-storage are kept at the minimum, and if necessary subsidized to the co-operative societies.

(v) *Salt Subsidy Scheme*.—Under this scheme good-quality salt is being issued at subsidized rates in the fish-curing yards to fishermen for curing fish at a cost of about 1,00,000 rupees annually.

Since over sixty per cent of the total landings of the Madras Coast (600 miles) are cured, the maintenance of only seventeen fish-curing yards by the Fisheries Department appears inadequate. A major part of the cured fish is therefore produced in private yards. I suggest that more Government fish-curing yards are established at landing centres. To improve the quality of the dried fish and to ensure a consistent demand for the dried fish, some kind of quality control may be introduced. I suggest that a start is made with the dried fish exported to Ceylon. To implement this quality control, the Fisheries Department may work out certain minimum quality control standards.

(vi) *Development of fishing harbours*.—Under this scheme, fishing harbours are proposed to be constructed at suitable places along the coast.

The construction of the fishing harbours leading to a concentration of landings is of great importance for developing fish trade. I therefore like to emphasize the early implementation of this scheme.

MARKETING SECTION OF THE FISHERIES DEPARTMENT.

This section is doing very valuable work with regard to improvements and development of fish marketing in the State. The section is collecting statistics of the fisheries with reference to production, landing centres, fishermen, crafts and tackles, fish movements, etc. To enable this section to cope with the increased work recommended by me I suggest that the Government may consider favourably some additional staff.

I am grateful for the assistance given to me by the Fisheries Department and its officers. The Government were kind to supply Mr. P. I. Chacko as my counterpart and his continuous presence has much facilitated my survey as he has been able to supply particulars and information about the fishing industry and the local conditions in the State and thus I have been able to make best possible use of the comparatively short time.

MAIN RECOMMENDATIONS.

I. INCREASING FISH SUPPLY TO MADRAS CITY.

1. The increasing of fish supply to Madras City is mainly a problem of making adequate transport facilities available and attractive to co-operatives and private traders.

2. Insulated rail and road transport is necessary to bring fish in a good condition from the more distant centres where fresh supply of fish can be obtained for Madras.

3. *I recommend a scheme for transport of fresh fish from Nagapattinam, Porto Novo and Cuddalore be worked out.*

II. MARKETING OF FISH FROM METTUR DAM.

I recommend that a contract in writing is concluded between the society and the merchants and that the society undertakes marketing when more experience from the present activity is gained.

III. DRIED FISH PILOT PROJECT.

I recommend that a pilot scheme for export of dried fish to Ceylon by the Tuticorin Federation of Fishermen Co-operative Societies is worked out as suggested.

IV. DRIED FISH TRADE.

I recommend that a detailed study of the trade is undertaken.

V. INTER-STATE MOVEMENT OF FRESH FISH.

I recommend that a detailed study of Inter-State movement of fresh fish is undertaken.

VI. IMPROVING FISH MARKETS.

Sufficient attention does not appear to have been made to the proper maintenance of fish markets as to attract the public. I recommend that the owners of the markets are compelled to maintain certain hygienically minimum standards as already suggested and that the Fisheries Department consider favourably any request for loans for construction of new markets on modern lines.

VII. HANDLING, PACKING AND STORAGE.

The existing practices of handling packing and storage cannot be improved until ice, cold storage and transport facilities are more frequently available. Pending construction of ice and cold storage plants, I recommend that the Fisheries Department acquires a number of cold storage cabinets from the Army Disposals and erect at important landing and consuming centres.

VIII. ROADS TO LANDING CENTRES.

In many cases important landing centres are not served by proper roads and fish has to be carried by headloads to the main road where cyclists, carts and vans take over. I recommend that special attention is given to the construction of roads from landing centres to the main roads.

MADRAS,
15th June 1957.

F. H. BARLIND,
F.A.O. Fish Marketing Economist

APPENDIX I.—Showing persons or organizations contacted during the survey.

Date. (1)	Place. (2)	Person or organization. (3)
17th May 1957 ..	Madras	.. Sri S. Aruldoss, I.A.S., Additional Director of Industries and Commerce in charge of Fisheries Department. Sri S. George, Statistical Assistant. Sri J. Shanmuganandam, Inspector of Fisheries. Sri Pakkiam Pillai, Co-operative Sub-Registrar.
18th May 1957 ..	Do	• .. Representative of Malabar Fish Merchants' Association. Secretary, Madras Fishermen's Co-operative Societies Federation Wholesale and retail fish merchants in Chintadripet Fish Market. Salesman, Fish stall, Moore Market. Engineer-in-charge, Corporation Cold-storage, Moore Market.
19th to 20th May 1957.	Do.	.. Wholesale and retail fish merchants in Zam Bazaar, Triplieane. Representatives of fishermen at landing centres.
21st May 1957 ..	Do.	.. Wholesale and Retail fish merchants.
22nd May 1957 ..	Tuticorin	.. Sri Machado, Jr. representing Sri C. Machado, President, Tirunelveli. District Fishermen Co-operative Societies Federation. Sri Kalingarayau, Vice-President of the Federation. Sri Poobalayar, one of the Directors of the Federation. Sri N. V. Choodamani, Assistant Director of Fisheries. Sri R. Venkataraman, Superintendent, Fisheries Technological Station. Sri S. Thyagarajan, Superintendent, Fisheries Training Centre. Representatives of Cured fish merchants. Retail Fish Merchants in Tuticorin Fish Market.

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APPENDICES

Date (1)	Place. (2)	Person or organization. (3)
23rd May 1957 ..	Tuticorin ..	Representative of auctioneers at Tuticorin landing centre.
	Nagercoil ..	Sri Nanuvaidyar, Inspector of Fisheries.
	Cape Comorin.	Sri Joseph, Research Assistant. Sri Jaganadan, Sub-Inspector of Fisheries.
24th May 1957 ..	Cape Comorin.	Parish Priest of Fishing village. Office-bearers of Fishermen Co-operative Society. Representatives of auctioneers, cycle carriers, fish merchants and curers.
25th May 1957 ..	Colachel ..	Srimathi Lourdammal Simon, Minister for Local Administration and Fisheries. Sri Thirumalai, Collector of Kanyakumari district. Representatives of Co-operative Society and Fish Merchants. Sub-Inspector in-charge of Government fish curing yard.
26th May 1957 ..	Madurai ..	Sri S. X. Arokiaswami, Assistant Director of Fisheries.
27th May 1957 ..	Do. ..	Representatives of wholesale and retail fish merchants.
28th May 1957 ..	Tiruchirappalli.	Sri Ramdas, Inspector of Fisheries. Representatives of Wholesale and retail fish merchants.
	Tanjore ..	Sri Ranganathan, Assistant Director of Fisheries.
29th to 30th May 1957.	Do. ..	Srimathi Lourdammal Simon, Minister for Local Administration and Fisheries. Sri S. Varadarajan, Deputy Director of Fisheries (Inland). Sri Mariappa Manigar, President, Fishermen Co-operative Society. Representatives of Wholesale and Retail Merchant.
31st May 1957 ..	Madras ..	Sri D. D. Peter Devadoss, Deputy Director of Fisheries (Marine). Representative of Mettur Dam fish merchant. Fish merchants of Zam Bazaar and Choolai Fish Markets. Sri Murugesu Mudaliar, Deputy Secretary to Government.

Date. (1)	Place. (2)	Person or organization. (4)
1st to 4th June 1957.	Madras ..	Representatives of fishermen at Royapuram and Triplicane landing centre. Representatives of fish merchants in fish markets.
5th June 1957 ..	Mettur Dam ..	Sri M. P. Sekharan, Inspector of Fisheries. Sri U. Chinnappa, Inspector of Fisheries. Sri K. Natarajan, Senior Inspector (Co-operative Society). Sri S. Ramadoss, Junior Inspector (Co-operative Society). Sri T. A. Meshack, Assistant Inspector. Sri P. K. Kailasam, Assistant Inspector. Directors of Mettur Dam Fisheries Co-operative Marketing Society. Sri I. Sheik Mohamed Hussain, Fish Merchant. Sri K. Kuppaswamy, Fish Merchant. Sri K. N. Ellappan Mudaliar, Fish Merchant. Sri U. S. Elumalai Chettiar, Fish Merchant.
6th June 1957 ..	Do. ..	Representatives of fishermen and licences at Pannawadi Centre.
7th June 1957 ..	Coimbatore ..	Sri K. Mathew, Inspector of Fisheries.
8th June 1957 ..	Do. ..	Representative of fish merchants in Coimbatore Market.
	Ootacamund ..	Sri Nelliander, Inspector of Fisheries. Sri T. M. Arumugam, Assistant Director of Fisheries (Fresh-water Biology).
9th to 10th June 1957.	Do. ..	Fish Merchants in Municipal Fish Market.
11th to 15th June 1957.	Madras ..	Sri K. Chidambaram, Assistant Fisheries Development Adviser, Government of India. Sri S. Aruldsos, I.A.S., Additional Director of Industries and Commerce. Sri D. D. Peter Devados, Deputy Director of Fisheries (Marine). Sri S. Varadarajan, Deputy Director of Fisheries (Inland). Representatives of Fish Merchants.

APPENDIX II.—Showing the quantity of fresh fish transported by rail to Madras City from 49 centres in 1956.
(Compiled and furnished by P. I. Chacko and S. George.)

Name of Railway Station.	(1)	(2)	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total.
		M. S.	M. S.	M. S.	M. S.	M. S.	M. S.	M. S.	M. S.	M. S.	M. S.	M. S.	M. S.	M. S.	M. S.
Kerala State—															
Cannanore	474	181 20	115 11	12 30	7 25	..	..	1 19	29 19	52 23	61 25	188 34	74 15	36 05	741 23
Tellicherry	401	99 37	..	..	..	..	..	..	640 28	441 20	164 38	214 25	180 30	98 00	1,840 18
Malabar	455	47 40	05	188 07	42 25	46 33	172 24	67 00	509 35	338 37	338 02	5 8 02	54 18	44 00	138 38
Badagara	433	55 39	306 27	56 30	9 10	38 20	38 20	38 34	237 30	304 28	177 20	152 23	361 35	130 25	2,773 30
Panayam	426	259 06	74 19	78 19	388 22	105 20	124 16	1,372 12	1,451 02	1,203 02	993 33	..	663 35	63 21	1,616 13
Calicut	418	..	..	..	..	..	..	..	..	..	..	..	..	..	1 35
Kadavundi	419	..	..	..	..	..	..	..	..	..	..	..	..	..	6,697 27
Vaikundu	403	137 33	179 15	143 10	130 00	91 25	72 25	518 26	241 35	289 37	259 30	233 25	14 30	76 36	16 30
Parappanangadi	393	323 07	115 15	347 00	183 08	274 02	459 5	1 02 5	782 36	667 27	821 02	475 25	475 11	6,112 10	2,375 17
Thiruvananthapuram	383	265 27	85 15	201 25	210 5	314 10	854 25	1,264 23	520 17	592 25	702 31	173 38	3 3	1 5,550 05	1,112 10
Thiruvananthapuram	383	60 11	28 14	247 35	1 25	52 10	46 30	99 05	121 28	91 10	63 00	..	64 00	48 30	734 38
Kudupuram	383	203 07	490 27	496 35	219 39	33 35	13 20	..	..	..	..	..	..	..	1,458 03
Ernakulam	431	113 01	133 03	116 32	54 5	18 20	..	..	..	..	..	..	..	..	474 13
Idappally	426	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Salem district—															
Metur Dam	233	271 19	377 24	478 13	641 39	827 36	807 36	530 16	430 26	438 23	532 29	260 30	364 00	5,941 05	..
Tirunelveli district—															
Pavurathuram	415	..	..	..	..	..	..	14 10	..	..	18 10	..	..	..	14 10
Tuticorin	405	72 08	..	..	..	..	..	..	..	..	..	..	..	..	18 10
Tirunelveli	404	..	..	..	..	..	..	..	..	..	..	..	..	..	72 08
Ramanathapuram district—															
Ibharuskodi	384	50 03	84 00	181 30	26 04	..	28 30	..	..	..	12 25	..	..	14 15	317 27
Ramehwaam	376	83 25	140 02	251 27	125 20	120 29	145 36	291 07	250 15	168 30	168 30	48 29	18 23	61 00	1,710 03
Thangachimadam	371	26 03	53 30	53 07	30 38	20 01	10 10	6 10	..	..	38 35	..	12 35	12 35	2 7 07
Pamban	368	..	..	..	..	..	..	..	..	..	..	..	..	..	4 15
Mandapam	362	..	..	..	..	..	..	..	..	..	..	..	..	..	76 24
Uchilpatti	355	56 24	10 00	29 11	29 08	..	..	..	..	..	..	..	..	..	71 14
Uchilpatti	341	13 00	13 00	29 11	29 08	..	..	..	..	..	..	..	..	..	12 30
Ramnad	341	86 20	29 16	17 14	39 26	18 00	16 31	..	..	..	..	..	..	..	220 17
Paramakudi	319	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Madurai district—															
Oddanchatram	289	..	..	..	..	..	..	..	56 29	..	18 39	..	..	..	15 29
Vellodu	271	..	..	..	..	..	..	..	..	..	..	..	..	..	56 29
Tiruchirappalli district—															
Podukottai	243	12 10	..	..	..	..	..	..	5 39	..	4 16	..	..	..	4 16
Srirangam	202	..	..	..	..	..	..	..	..	..	..	..	..	..	18 09
Tanjore district—															
Kivalar	267	..	..	..	..	..	..	..	1 39	8 05	..	..	..	..	6 39
Tirumathikunam	246	..	..	..	..	..	..	..	20 36	1 23	..	..	..	..	10 04
Adirampattinam	237	..	..	..	..	..	..	..	..	..	..	..	..	..	22 19
Tanjore district—															
Karipattanam	225	..	1 10	57 30	23 30	13 30	18 10	..	42 04	6 18	18 28	18 21	18 15	..	90 16
Thillaiyilagam	223	..	2 00	..	..	..	..	..	76 33	27 26	9 10	10 15	7 35	..	247 12
Melamarudur	221	..	..	..	..	..	..	..	3 30	..	..	..	..	..	3 30
Tanjore	218	..	12 25	52 23	19 25	21 10	15 00	..	118 12	25 36	8 16	20 19	19 18	..	17 23
Thuthuraiyandi	214	..	..	..	..	..	..	..	..	..	..	..	..	..	350 05
Manali	211	..	..	..	..	..	..	..	..	..	..	..	..	..	2 10
Tanjore	198	..	..	..	..	..	..	..	39 11	10 15	2 05	10 20	..	..	76 25
Vikar	194	1 37	6 29	11 27	9 30	..	..	..	35 34	..	..	..	..	..	65 17
Vikar	191	..	..	..	..	..	..	..	15 24	..	..	..	..	..	15 24
Mayavaram	174	..	..	..	..	..	..	..	..	..	..	..	..	..	38 09
South Arcot district—															
Coleroon	156	..	..	..	..	..	..	..	38 17	..	..	..	..	..	38 17
Porbo Novo	145	0 25	93 17	42 30	58 03	64 24	49 20	159 12	231 31	112 34	73 24	25 10	34 02	46 10	1,128 11
Puduchatram	140	142 04	67 06	90 21	33 38	58 13	47 05	205 36	114 11	120 13	25 10	..	37 38	44 15	869 23
Cuddalore	128	54 27	27 06	26 24	10 00	17 28	..	..	..	..	..	..	..	..	162 24
Pondicherry	123	27 06	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	..	2,607 07	2,657 27	2,764 35	2,313 16	2,299 29	2,872 22	7,537 38	5,409 13	4,561 00	4,776 23	2,880 05	1,961 34	42,540 09	..

Grand total 45,540 maunds, 09 seers. or 1,519 2/7 tons.

Kerala State: 30,547 maunds, 32 seers or 1,071 tons.

Madras State: 11,992 maunds, 17 seers or 423 2/7 tons.

APPENDIX III.—Showing the quantity of dried fish (maunds and seers)
transported by rail to Madras City from 21 centres in 1956.
(Compiled and furnished by P. I. Chacko and S. George.)

Name of the centre.	January.	February.	March.	April.	May.	June.	July
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Adirampatnam ..	2 20	..	8 00	..	2 00	..	6 08
Tudaialur ..	11 00	..	..	3 05	..	..	23 20
Uchipulli ..	..	3 25	..	1 10	..	..	5 00
Cuddalore ..	..	..	4 15	..	..	..	29 28
Puduchatram ..	9 25	2 10	6 05	1 05	3 35	..	13 03
Muthupet ..	..	..	..	..	..	..	3 17
Mannargudi ..	..	..	..	..	..	..	18 20
Tindivanam ..	..	..	..	..	..	..	28 06
Sirkali ..	..	4 00	1 15	2 10	1 00	..	2 00
Thilla vilagam ..	..	..	..	..	..	..	13 10
Tiruthuraiipundi ..	..	..	..	..	..	..	..
Tiruvarur ..	1 05	2 20	..	2 00	3 20	4 10	..
Tirunelveli ..	3 00	2 05	0 35	5 05	1 10	2 25	..
Mayuram ..	2 00	..	..	..	5 00	3 00	..
Mahe ..	..	..	3 00	4 00	..	6 00	..
Tikkotti ..	..	..	..	12 00	11 00	..	..
Cochin Harbour ..	8 00	..	..	2 00	..	..	..
Bapatla ..	..	3 00	4 00	1 00	2 05	4 30	..
Tuticorin ..	1 00	1 05	..	..	..	..	..
Thangachinadam ..	..	..	..	..	5 30	..	..
Paramakudi ..	..	..	..	..	..	..	..
Total ..	38 10	18 25	28 30	33 35	35 20	20 25	132 36

174968

	August.	September.	October.	November.	December.	Grand Total.
(9)	(10)	(11)	(12)	(13)	(14)	(14)
Adirampatnam ..	..	..	10 05	..	..	18 25
Tudaialur ..	..	..	3 00	4 00	..	34 08
Uchipulli ..	6 05	9 00	3 10	..	..	48 31
Cuddalore ..	..	..	..	..	..	6 10
Puduchatram ..	..	1 15	..	6 15	..	35 18
Muthupet ..	..	..	..	..	..	42 18
Mannargudi ..	..	..	..	..	..	3 17
Tindivanam ..	..	..	..	..	..	18 20
Sirkali ..	..	..	..	..	..	28 06
Thilla vilagam ..	3 10	5 00	8 10	2 05	..	29 10
Tiruthuraiipundi ..	..	..	2 00	..	..	13 10
Tiruvarur ..	8 38	..	..	..	..	10 33
Tirunelveli ..	7 10	2 00	3 15	5 05	..	20 25
Mayuram ..	7 35	..	12 00	..	3 00	33 15
Mahe ..	5 00	3 00	8 00	8 00	15 00	30 00
Tikkotti ..	2 00	42 00	26 00	13 00	..	49 00
Cochin Harbour ..	1 00	..	6 00	..	2 00	270 00
Bapatla ..	2 00	3 15	5 30	..	..	20 00
Tuticorin ..	..	..	..	..	..	24 00
Thangachinadam ..	..	..	..	..	..	2 05
Paramakudi ..	..	..	..	..	..	5 30
Total ..	208 18	65 30	93 30	38 25	20 00	744 04

or 26 4/7 tons.