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DEVELOPMENT OF MADRAS FISHERIES HARBOUR AND NEED FOR SHIFTING THE COMMERCIAL MECHANISED FISH LANDING SITE TO THE FISHERIES HARBOUR

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Establishment of fisheries harbours is an essential pre-requisite for the development, organisation and expansion of power fishing vessels and proper handling of catches landed. Facilities for servicing and berthing of fishing vessels at fisheries harbours having the required infrastructure pave the way for the development of fisheries and effective utilisation of fish catches.

Way back in 1951, the Indo-Pacific Fisheries Council has passed resolution to promote the progress of underdeveloped fishing industries in the Indo-Pacific region and recommended setting up of government bodies in every country of the region on permanent basis with proper authority, organisations and funds to ensure the navigability of approaches to fishing ports. Accepting the recommendations, the Government of India convened an All India Fisheries Conference in Madras in 1956 and the major point discussed was the construction of fisheries habours. Later, construction of fisheries harbours at selected centres along the Indian coasts was initiated by the Ministry of Food and Agriculture, Government of India as per the recommendation of National Harbour Board in 1964 according to which Royapuram at Madras was selected as one of the sites for the construction of a fisheries harbour. The present account discusses briefly the salient features of Madras Fisheries Harbour with a note on the marine fish landings taking place outside the harbour premises where proper amenities are absent for handling and transportation of fish catches which indicates the necessity for utilising the harbour for the convenience of fishing industry.

The construction of Madras Fisheries Harbour was started in 1973 and completed in 1985 at a cost of Rs.12.6 crores with a trawler wharf of 495 m. It affords berthing facility for 50 trawlers and nearly 50 pablo type boats and is capable of handling about, 40,000 t of fishes per annum (Photographs 1- 4). The harbour is enclosed by breakwaters on either side with a ground area of 60 hectares and the depth of water during the low tide is 6 m. The tidal amplitude is 1 m in the fisheries harbour area and regular dredging is done to keep the bar mouth open with a depth of 12 m. Detailed layout plan of the fisheries harbour is given in Fig.1. Particulars of the dimensions of the harbour and tariffs charged for berthing the vessels and the administrative authority of the fisheries harbour are as follows:

Salient feature of the harbour

1.	Eastern breakwater	: Full length 1085 m. Capping blocks have also been laid
2.	Northern breakwater	: Full length 830 m. Capping blocks have also been laid
3.	Trawler wharf	: Full length 495 m
4.	Dredging	: 65 acres out of 120 acres basin has been dredged to a depth of 6 m 60 acres of land has been reclaimed
5.	Auction and packing hall	: Length 90 m, breadth 18 m
6.	Electrical sub-station	: Built to supply the energy needs of the entire harbour complex and energised to 11 K.V.A.
7.	Administrative Office	: A double storeyed building has been constructed and is under use
8.	Water supply works	: Low level reservoir of 2 lakhs gallons capacity. Overhead tank of 75,000 gallons capacity with distribution lines
9.	Slipway and repair facilities	: 500 Te. capacity. Can accommodate 10 vessels at a time

6 Nos. Boat repair bay of 18 m long

4 Nos. Trawler repair bay of 23 m, 28 m, 35 m, and 42 m long

Tariff

Berth hire charges

Trawlers	:	Rs. 3,000 per quarter per trawler or Rs. 1,000 per month per trawler or part thereof
Mechanised boats	:	Rs. 300/- per quarter per boat (A tentative rate of Rs. 90/- per quarter per boat is fixed based on representation and is being collected)

Land

Lease rent	:	Rs.65/- per sq.m per annum

MADRAS FISHERIES HARBOUR

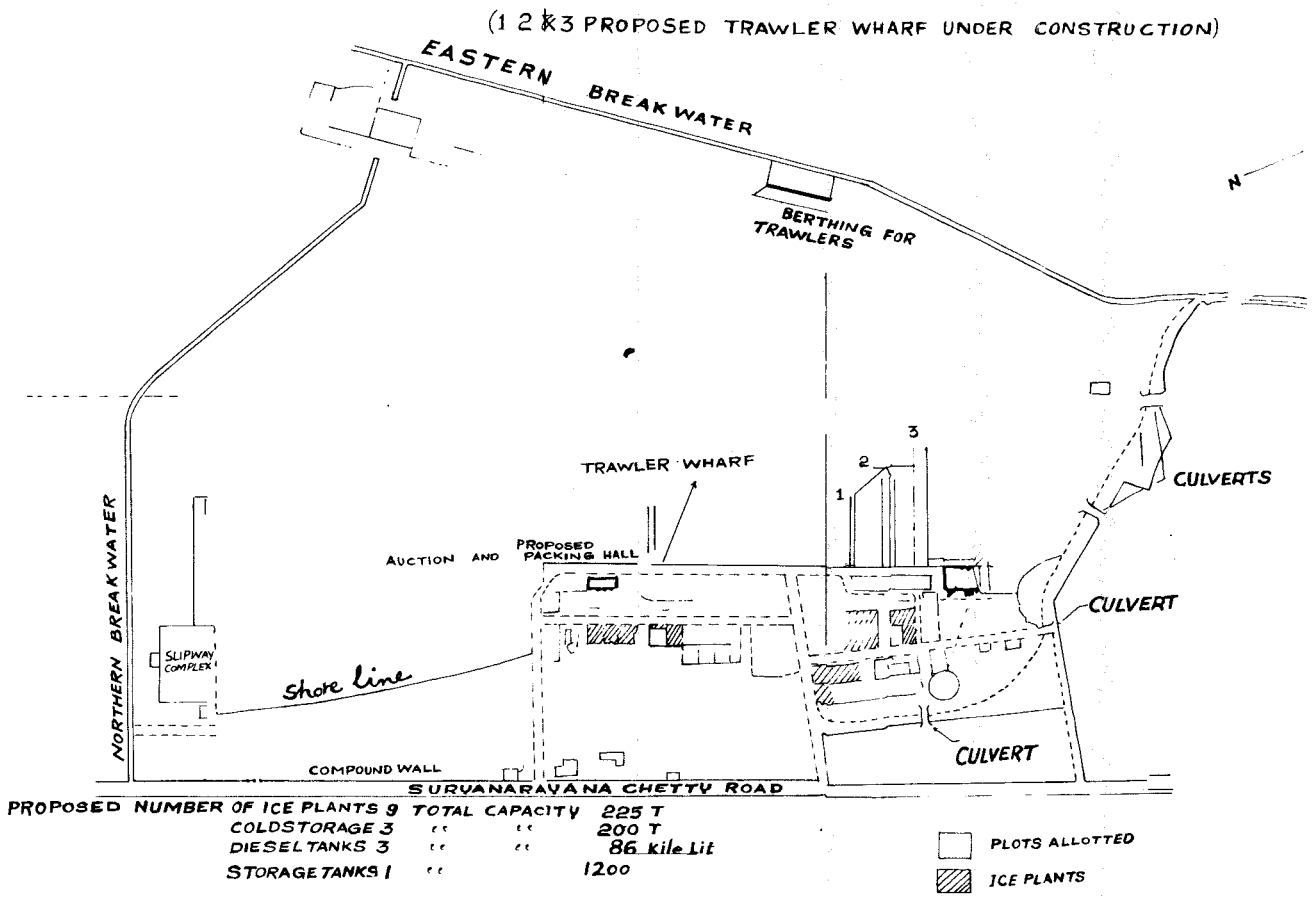

Fig. 1. Plan of Madras Fisheries Harbour.

SLIPWAY TARIFF

(a) Slipping in & slipping out charges of the vessels:

Tonnage GRT	Rates
0-15	Rs. 140 per tonne subject to a minimum of Rs. 2,100
Above 15 upto 25	Rs. 2,100 for first 15 tonnes and Rs. 140/- per tonne thereafter
Above 25 upto 50	Rs. 3,500 for first 25 tonnes and Rs. 90/- per tonne thereafter
Above 50 upto 80	Rs. 6,000 for first 50 tonnes and Rs. 70/- per tonne thereafter
Above 80 upto 125	Rs. 8,250 for first 80 tonnes and Rs. 50/- per tonne thereafter
Above 125	Rs. 10,000 for first 125 tonnes and Rs. 40/- per tonne thereafter

(b) Slipway Repair berth hire charges:

Tonnage GRT	Rates
0-50	First day Rs.1,100; 2nd to 10th day Rs. 550 per day; 11th to 15th day Rs.1,100 per day; 16th day onwards Rs.1,400 per day
Above 50 upto 80	First day Rs.1,200; 2nd to 10th day Rs. 600 per day;11th to 15th day Rs.1,200 per day; 16th day onwards Rs.1,600 per day
Above 80 upto 125	First day Rs. 1,300; 2nd to 10th day Rs. 650/- per day; 11th to 15th day Rs.1,300 per day; 16th day onwards Rs.1,800 per day
Above 125	First day Rs. 1,400; 2nd to 10th day Rs.700 per day; 11th to 15th day 1,400/- per day; 16th day onwards Rs. 2,000/- per day

Management of the Fisheries Harbour

Management is being done by a committee constituted by the Ministry of Agriculture, Government of India.

The committee comprises of The Chairman, Madras Port Trust, who is the Chairman of the commitee; The Deputy Chairman, Madras Port Trust; The Financial Advisor and Chief Accounts Officer, Madras Port Trust; The Chief Engineer, Madras Port Trust (Member Secretary); The Fishery Development Commissioner, Ministry of Agriculture; Government of India; The Commissioner & Secretary, Animal Husbandary & Fisheries, Tamilnadu; The Commissioner of Fisheries Government of Tamilnadu; The Commissioner, Corporation of Madras; The Commissioner of Police, Madras; The Executive Secretary, Association of Indian Fishing Industry, New Delhi and 2 members representing the Mechanical Boat Owners Association (Members).

Nearly 500 to 520 mechanised fishing vessels including 400 trawlers of different overall length and 15 pablo type drift gill netters are at present based at the fisheries harbour. (Table 1).

TABLE 1. *Particulars of mechanised boats based at the Madras Fisheries Harbour*

Sl. No.	Overall length range of boats (m)	HP	No. of boats	Type of boats
1.	7-8	72-80	15	Gill netters
2.	9.5-10	90-100	52	
3.	11		251	
4.	12	120	50	Trawlers
5.	12-14		150	
6.	24.9	452-500	2	Deep sea trawlers

In spite of the construction of a full fledged fisheries harbour with landing facilities as mentioned above, it has been not yet fully utilised by the mechanised fisheries sector. Excepting 10-15 numbers of pablo type drift gill-netters, all the remaining vessels operating along the Madras coast are landing their catches at Pudumanikuppam, a narrow stretch of sheltered beach adjacent to the fisheries harbour. On landing, these trawlers engage catamarans to transport their catches while anchoring off the centre with the result that the utility of the fisheries harbour is confined to only berthing of the fishing vessels. Pudumanikuppam was a traditional centre for one and half decades affording landing facilities for the mechanised trawlers. Even after the completion of the fisheries harbour in 1985, the mechanised fisheries sector utilises this centre for handling and transporting their catches due to some socio-economic problems.

Gradual expansion of mechanised trawlers during the past one and half decades has resulted in diversification of trawling operations. Thus among the trawlers, nearly 50% are daily trip shrimp trawlers while 40% are operating fish trawls in slightly deeper waters of 40-45 m NE off Madras. The remaining units engage in overnight fishing with shrimp trawls off Sri Harikota and Nellore waters at a depth range of 15-25 m.

Of the total estimated fish production of 96,797 t from the mechanised fisheries sector during the period 1985-'90, 98% of the catch was accounted by trawlers. Studies on the trend of effort and catch indicates gradual increase of catch per unit effort during the period. Earlier observations on the seasonal catch trend of commercial trawlers landed at Pudumanikuppam has confirmed that the third quarter of the year is most productive followed by the fourth quarters for trawl net fishery along the Madras coast (*Mar. Fish. Infor. Serv., T & E Ser.*, No.**115**: January to March - 1992)

Apart from the trawler units and an average number of 8 pablo type mechanised drift gill netters, the traditional fishery exploited by a multiplicity of artisanal fishing gears are also being landed at Pudumanikuppam centre. (Photograph 5).

Fig. 2. A few trawlers berthed at the Madras Fisheries Harbour jetty after unloading the fish catches at Pudumanikuppam centre.

Fig. 3. Another view of the Fisheries harbour where net mending work is in progress.

Fig. 4. One larger vessel berthed at the fisheries harbour.

Remarks

Pudumanikuppam, Madras is one of the important mechanised fish landing centres contributing to a sizable share in the total mechanised fish production landed along the Tamil Nadu coast. The present landing place at Pudumanikuppam where the catches from the mechanised vessels are auctioned has become so overcrowded that one side of it is occupied by the boat building entrepreneurs and the beached catamaran units, while on the other side is the muddy sheltered beach. Due to least care for sanitation by the local fishermen, the entire stretch of beach has become much polluted. It is

Fig. 5. One of the private ice plants at the harbour premises.

hightime that the mechanised landing place is shifted to fisheries harbour where sorting, auctioning and transportation of catches can be done more efficiently. Immense hardships are caused to all concerned with the fishing industry, due to the decision of the mechanised boat operators to land at the present landing site advocating some socio-economic problems.

It was observed that there was a three fold rise in annual all fish production during 1985-'89 as compared to the previous five year period mainly due to the introduction of long trip shrimp trawlers. It is likely that the numbers of these trawlers may increase in future which may result in more congestion in the present landing place. Prawns being the most sought after group in the trawler landings much care is needed in the proper handling and transportation of this item in most sanitary conditions which the present landing place lack.

With the further expansion of the mechanised fisheries sector in the coming years, urgent steps are necessary to shift the landing from the present site to the fisheries harbour. This is possible only by adopting to legal measures by the administrative body of the fisheries harbour by restricting the landing of mechanised boats to fisheries harbour only so that the amenities provided can be properly utilised by the fishing industry in general and the mechanised fisheries sector in particular.

SOME OBSERVATIONS ON A COPEPOD PARASITE FROM A FLYING FISH AND A BUNCH OF FLYING FISH EGGS ATTACHED TO A FLOTSAM

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Introduction

The cruise 87 of FORV *Sagar Sampada* from 16th to 26th March, 1991 was specially programmed for the investigation of the oil slick in the Gulf area on account of the war between the multinational forces and Iraq. In the course of the survey a floating thermocol piece adhered with thousands of fish eggs and a flying fish infested with a copepod parasite were obtained in the plankton net. Following is an account of the observations made in this regard.

1. Copepod parasite from a flying fish

In the early morning hours on 23-3-1991 the ship was passing through a very rich ground of flying fishes. As the ship passed by, hundreds of flying fishes were seen flying out of the water producing shrieking sounds. The fish popultion in the area was so dense that six adult fishes were caught in the zooplankton net operated at station 2231 (21°00'N 67°04'E). The fishes were identified as *Hirundichthys speculiger* (Valenciennes, 1840). One of the fish was found infested with a copepod parasite on the dorsal side, almost midway between the base of the skull and the beginning of the dorsal fin (Figs. 1&2). The parasite was identified as *Pennelia biloba* Kirtisinghe (1933).

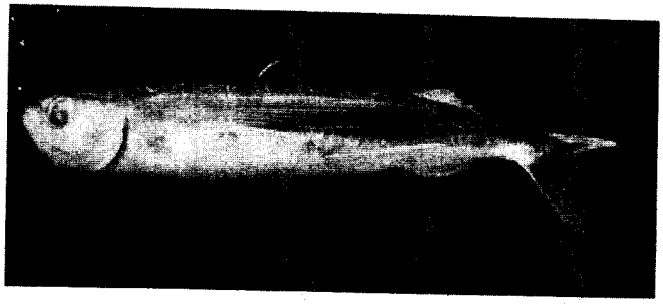

Fig. 1. The external part of the copepod parasite found on the dorsal side of a flying fish.

Externally the parasite had a long, cylindrical, backwardly curved, thick, greyish, fleshy abdomen (Fig. 3) which measured 11.2 mm in length and 2.4 mm across. It terminated in a 7.5 mm long feathery process which had on its lateral sides 17 pairs of fleshy finger like appendages of which one pair was unbranched, 13 pairs bifid and 3 pairs trifid, each branch measuring 4-5 mm. From the base of the feathery process arose 2 long, straight, white, fine, whip-like filamentous egg strings each having a length of 36.0 mm. From the point of insertion of the egg strings there arose three pairs of finger-like abdominal processes whose outer pair was unbranched while the inner two pairs were branched into two. Each of the outer unbranched pair measured 4.8 mm. The branched pairs measured 4mm for the outer branches and 2.99 mm for the inner branches.

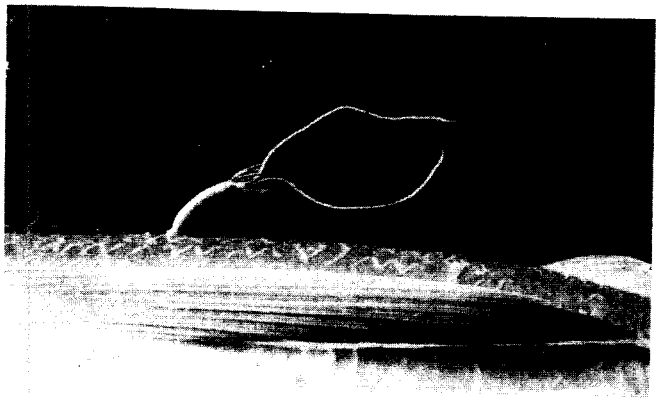

Fig. 2. An enlarged view of the copepod parasite found infecting a flying fish.

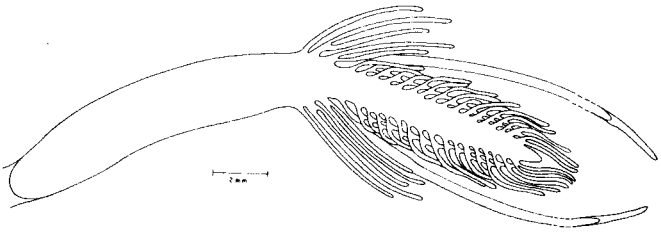

Fig. 3. A diagrammatic view of the extenal part of the copepod parasite *Pennella biloba* found on the flying fish *Hirundichthys speculiger*.

The fish was dissected to trace the parasite into the body. It was found that it penetrated deep into the muscular tissue as a tubular structure and moved down anteriorly in an angle of 45° and reached the cardiac sac. Since the fish was preserved in formalin, the tissues became hard and it was not possible to trace the parasite beyond the cardiac sac where it broke.

2. **Flying fish eggs attached to a flotsam**

On 18-3-1991 at station 2213 (19°18'N 66°58'E) a flotsam (a floating piece of thermocol of about 750 cc) entered the plankton net (Fig. 4). On closer examination it was found that the floating object was fully covered with some kind of elastic, gelatinous, thread-like material in which thousands of fish eggs were embedded. When examined under the microscope, it was seen that the eggs were in advanced stages of development with well developed embryos in majority of the eggs. The threads were, infact, outgrowths from the eggs. The eggs were identified to belong to the flying fish (Vijayaraghavan, 1973, *Indian J. Fish.*, **20** (1) : 108-137). The locality from where the flotsam was obtained was a rich ground for the flying fishes.

The eggs of the flying fishes have been reported to possess transparent filaments of varying lengths for adhesion (Vijayaraghavan, *op. cit.*). In the present case the float was wrapped with the filaments all around in such a way that it was laborious to break away a portion of the float. One interesting thing noticed was that three young fishes belonging to the species *Abalistes stellatus* (Lacepede, 1788) (*Fish Identification sheets, Fishing Area 71*, Vol. 2, FAO), were trapped within the filamentous cover (Figs. 4 & 5) and there was no way for their coming out. All the fishes were in dead condition but no decay had effected. It is obscure as to when and how the fishes happened to get wound to the floating thermocol piece by the sticky filaments or when they died in that condition. It is quite likely that these small fishes were swimming close to the flotsam for food, shelter or to hide from their predators, when they were suddenly trapped by the flying fishes in running condition which swam around the flosam from all directions winding the floating piece with the filamentous threads of the extruding eggs, giving no chance for the trapped fishes to escape. The fact that the eggs were in advanced stage of development indicates that the trapped fishes lived for some days in that

Fig. 4. Part of the thermocol piece found covered with eggs of flying fish. Seen below is one of the 3 balistid fishes got trapped in the gelatinous threads of the eggs.

Fig. 5. An enlarged view of one of the trapped fishes.