

Economics of Gill Netting and Two Boat Midwater Trawling

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The paper deals with the economic aspects of operation of gill netting and two boat midwater trawling conducted off Cochin. The data collected on two boat midwater trawling and gill netting during 1979 and 1980-81 are presented. Gill netting was profitable at the range of 17.5 and 25.2% while two midwater trawling was profitable at the rate of 18.5%.

Low yield and the consequent decrease in returns in bottom trawling demanded the adoption of diversified methods of fishing. Eventhough gill netting is practised, so far no systematic study has been carried out to assess the economic feasibility of mechanised gill netting. Therefore an attempt is made to study the cost and earning of mechanised gill netting and the results are presented in the paper.

Due to the addition of large number of mechanised vessels every year, the catch

per unit effort has come down considerably. To tide over the situation two boat midwater trawling has been suggested as an alternate method and its economic aspects are also presented in the paper.

Materials and Methods

The data pertaining to two wooden gill netters of size 7.62 m (25') OAL fitted with 18 BHP (boat I) and 28 BHP (boat II) engines operated off Cochin during 1980-81 were collected. Each boat used modified

Table 1. *Details of gill net operation and species-wise composition of catch*

	Boat I		Boat II	
	1980	1981	1980	1981
No. of fishing days	161	146	173	155
Fuel consumption, litres	4,333	3,723	4,941	4,249
Cost of fuel, Rs.	10,328	12,736	13,127	14,711
Fuel consumption per day, litres	26.90	25.5	28.5	27.4
<i>Species-wise catch composition</i>				
	Weight kg	%	Weight kg	%
Tuna	18,347	31.71	19,520	32.71
Cat fish	15,580	26.93	14,360	24.06
Shark	10,550	18.20	12,300	20.61
Chorinemus	5,220	9.02	8,300	13.90
Cybiurn	4,840	8.36	3,520	5.89
Pomfret	2,150	3.77	1,120	1.87
Other fishes	1,165	2.01	550	0.96
Total catch	57,852	100.00	59,670	100.00
Average catch per day	188.40		181.92	
Total returns in 1980	Rs. 88,970		Rs. 79,390	
Total returns in 1981	Rs. 1,02,030		Rs. 98,010	
Total	Rs. 1,91,000		Rs. 1,77,400	
Average receipt per day	Rs. 662.15		Rs. 540.85	

type of gill net units of 30 m hung length and 8 m hung depth having uniform mesh size of 75 mm bar fabricated with nylon 210/8/3. On each day 30 such units were operated from each boat at depth ranging from 20 – 50 m.

Two boat midwater trawling was carried out from the identical trawlers of size 9.6 m (31.5') OAL fitted with 60 BHP Leyland engines. The experimental fishing gear was a four unequal panel type of 18.5 m head rope length made exclusively with 0.75 mm dia HDPE monofilament twine. Fishing operations were carried out off Cochin during monsoon months of June and July, 1979.

Results and Discussion

Details of gill net operations and species-wise composition of catch are presented in Table 1. It can be seen from the Table that the major variety of fish landed are tuna, cat fish, shark, chorinemus, cybium and pomfret. Further, it is found that the catch and return per day is more or less the same for the two boats.

For working out the economics of operation the model developed by Iyer *et al.*

(1985) was used. The data on capital investment including cost of hull and engine, gear and accessories, total catch, sale proceeds, fuel cost, wages and commission, cost of repair and maintenance, insurance charges prevailed during 1980–81 for each boat are taken separately into account in calculating the economics of fishing operations. Accordingly the capital investment for boat and gear have been worked out as shown in Table 2. The fixed and variable cost incurred for operation so as to ascertain the profit/loss margin are presented in Table 3. The depreciation cost of boat and nylon gill nets has been worked out on the basis of total life of boat as 10 years and net as 7 years.

Table 2. Capital investment on boat and gear (Gill net)

	Boat I	Boat II
	(Rs.)	(Rs.)
Cost of boat with engine	55,648	58,462
Cost of gear	33,000	35,000
Total	88,648	93,462

Table 3. Statement showing profit/loss on gill net operation

Fixed cost (Rs.)	Boat I		Boat II	
	1980	1981	1980	1981
Repairs and maintenance of boat and engine	2,113	5,972	2,089	4,337
Depreciation (@ 10%),				
Interest (12%) and Insurance (2%)	16,232	16,232	16,858	16,858
Repairs of gear	600	800	500	700
Depreciation of gear	5,000	5,000	5,000	5,000
Total	23,945	28,004	24,447	26,895
Variable cost (Rs.)				
Oil expenditure	10,329	12,736	13,128	14,711
Agent's commission	2,063	3,336	2,254	3,245
Batta for crew	6,665	7,639	7,705	8,030
Toll and miscellaneous charges	734	1,045	1,112	1,035
Share for crew	23,060	25,760	18,400	23,660
Total	42,841	50,516	42,599	50,681
Total receipt	88,970	120,030	79,390	98,010
Profit	22,184	23,510	12,344	20,434
	(23.5%)	(25.9%)	(13.2%)	(21.9%)

It can be seen from Table 3 that a profit of Rs. 22,184 (22.5%), Rs. 23,510 (25.9%) and Rs. 12,344 (13.2%), Rs. 20,484 (21.9%) were obtained respectively for boat I and II for the years 1980 and 1981. Among the two boats, average profit margin for boat I is 25.2% and that for boat II is 17.5%, the difference is probably due to the increase in the rate of fuel consumption and in the initial investment of installing a higher BHP engine in boat II.

Species-wise composition of catch along with parameters of fishing operations are presented in Table 4. The Table indicates that the major species of fish landed are silver bellies followed by cat fish, squid and anchovies. The average catch per hour, per day and returns per day have also been found to be respectively 489.21 kg, 1651kg and Rs. 2400.

Table 4. Details of fishing operation and species-wise composition of catch

Depth of operation, m	5-35	
No. of fishing days	32	
Total fishing hours	108 + 48 + 2	
Expenditure on fuel, Rs.	4,450	
Species	Catch	%
	kg	
Cat fish	13,556	24.68
Squid	10,970	20.24
Anchovies	6,080	11.76
Silver bellies	13,659	26.60
Miscellaneous fish	8,570	16.72
Total	52,831	
Total returns, Rs.	76,803	
Catch per hour, kg	489.21	
Catch per day, kg	1,651.10	
Returns per day, Rs.	1,400.00	

Table 5. Capital investment on boat and gear

	Rs.
9.6 m wooden boat fitted with 60 BHP engine, 2 Nos.	1,93,400
18.5 m Midwater trawl 1 No.	5,000
Total	1,98,400

The capital investment for two 9.6 m boats and gear are calculated and shown in Table 5 on the basis of cost then prevailing. The depreciation cost of two wooden boats

was estimated in the same manner as mentioned above. Since the net used in this case is made of HDPE monofilament twine its total life is calculated as 3 years.

The economics of two boat midwater trawling is worked out and presented in Table 6. It is clear that a profit margin

Table 6. Statement showing profit/loss

<i>Fixed cost</i>	Rs.
Repairs and maintenance of boat and engine	730
Depreciation, interest and insurance	7700
Repairs of gear	150
Depreciation of gear	280
Total	8,860
<i>Variable cost</i>	
Oil expenditure	4,450
Agent's commission	1,536
Batta for crew	1,920
Miscellaneous charges	320
Share for crew	22,860
Total	41,090
Total receipt	76,803
Profit	36,853
Profit, %	18.5

of Rs. 36,853 (18.5%) could be obtained for the two months of fishing operation (June and July). From the foregoing account it can be observed that two boat midwater trawling seems to be a promising fishing technique for small mechanised wooden trawlers.

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