
Gillnet Fishing by Mechanised Boats at Selected Centres in Maharashtra and its Profitability

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Maharashtra is an important maritime state with reference to marine fish production. The estimated annual marine fish production varies from 3 to 4 lakh tonnes. More than 6 thousand mechanised boats are in operation. There has been continuous increase in mechanised boats in the state since last one decade. But there is a report of downward trend in per unit landings of the mechanised units though about 90 per cent of total marine fish landings is through mechanised boats. The gillnet is one of the important nets operated mainly from September to May in Maharashtra. It is generally operated by mechanised boats and country crafts fitted with outboard engines (OBE). With the continuous influx of mechanised boats it is pertinent to know the economic feasibility of operation of gillnets which will help in policy decisions.

The present study was carried out by the Central Marine Fisheries Research Institute in two coastal districts of Maha-

raashtra with the main objectives i) to estimate the returns to capital and labour and ii) to compare employment pattern on mechanised boats and country crafts fitted with OBE. The present report mainly deals with the first objective of the study.

METHOD AND MATERIAL

In first stage of survey, preliminary information was collected from different gillnet operating centres in Maharashtra. The information mainly include the details of infrastructure available, type and number of craft and gears operating at the centre, catch pattern, duration of fishing season, status of marketing and credit facilities and population characteristics. Based on these particulars, two representative mechanised gillnet operating centres namely Khar-Danda in Greater-Bombay and Satpati in Thane District were selected for indepth study. Giving proper representation to the different sizes of boats a sample of 20 gillnet units was drawn at each centre. The data pertaining to the size and value

of boat and gear, make, power and value of engine, credit availability to procure the means of production, annual repairs and replacement, marketing of catch, curing etc were collected from the selected units through a schedule. Another schedule was used to collect information on catch, price and operating cost from sample units on systematically selected fishing days each month for a period of one year starting from September 1986. For data collection local educated persons from fishermen community were contracted and trained. The data collection work was regularly supervised by the Scientist and the Field Officer associated with the project to maintain accuracy of data.

Monthwise estimates of catch, revenue and operational cost per unit were arrived by taking averages of these parameters for sample units and pooled together to get the quarterly and yearly estimates. In Maharashtra, there is significant difference in fish landings between different quarters. Therefore, the fishing period was divided into 4 quarters, namely, post-monsoon quarter (Sept.-Nov.), winter (Dec.-Feb.), pre-monsoon (March-May) and Monsoon (June-Aug.) to observe the seasonal variation in catch, revenue and recurring costs.

GENERAL INFORMATION ABOUT THE SELECTED CENTRES:

1. *Khar-Danda*: Khar-Danda is a suburb of Bombay city. There are about 1,000 families belonging to Schedule Tribes of which about 120 families are engaged in fishing and fishery related activities. The village has current and water supply, small jetty facility and *pucca* roads. For transportation of catch to the market, public and private conveyances are available very conveniently at this centre. About 65 mechanised boats,

each of 8-15 tonnes capacity, are operating besides 15 small (tony) boats. Both the bottom set and the surface set gillnets are operated at the centre. For judicious fishing operation 70-100 pieces of gillnets are joined together. The boats vary from 8m to 13m in length, 2m to 3.5m in breadth and 0.8m to 1.6m in height. A gillnet piece measures about 55m in length and 8-9m in height. Ruston, Ashok Leyland and Kirloskar in-board engines of 2-4 cylinder are fitted to the boats at this centre. The gillnetters observe a fishing trip of 2-3 days and fish upto 30 fathoms of depth. The catch is transported to the Shivaji Fish Market, Bombay, generally by ladies and sold to wholesale and retail fish traders. Some of the low priced varieties are sundried. A fishermen Co-operative Society exists in the village but it is not involved in fresh fish marketing. The dry fish is sold through the society and it, in terms, charges 5% commission from the traders on the sale proceeds. It also provides twines and tax free diesel and oil to the fishermen.

2. *Satpati*: Satpati fishing village is about 10 km from Palghar, a Taluka headquarters in Thane District of Maharashtra. There are about 1,300 total families and about 90% are fishermen. It has got water and current supply system and an approach road upto landing centre. About 380 boats including 280 mechanised gillnetters, 60 mechanised dolnetters and 40 non-mechanised small boats operate at this centre. Both, the surface set and the bottom set gillnetters observe a fishing trip of 3-6 days. The gillnetters varying from 9m to 14m in length are fitted with 3-6 cylinder Ruston and Ashok Leyland in-board engines. A gillnet piece measures 63m x 5.5m and 70-100 pieces are joined together to form a net suitable for fishing. Generally, the bottom set

gillnets are used from Sept. to December and the surface set gillnets from December to the fagend of fishing season. The commercially important catch is sold to the traders through the fishermen co-operative societies which have contract deals with fish processing plants. Rest of the catch is either sold locally or taken to Bombay for sale. This centre is important for pomfret landings. The fishermen co-operative societies provide diesel, oil, twines and other fishing requisites to the member fishermen. The societies also give a loan amount of Rs. 50,000 to each mechanised boat owner as working capital every year and recovery of loan is made from the value of catch sold through the society in easy instalments so that the repayment of loan is over upto the end of the fishing season. The societies take loan from the Thane District Co-operative Bank Ltd. at the annual interest rate of 9% and supply to fishermen at the rate of 9.5% per annum. A boat building/repairing yard and 2 ice factories/cold storages are also run/managed by the societies. Though the fishing season starts in September and closes in May every year, some boats operate in August also for Ghol/Dara fishing. Only new and good conditioned boats take the risk of fishing during monsoon facing the rough sea.

RESULTS AND DISCUSSIONS

a) Catch composition.

The catch at both the centres mainly comprised pomfret, seerfish, catfish, shark, hilsa, croakers and silverbar (Table 1). At Khar-Danda, in total catch of 29,970 kg per unit during 1986-87, 12.1% was pomfret, 18.5% seer fish, 14.2% catfish and 11.9% sharks whereas other fishes individually were less than 10%. In post-monsoon quarter maximum catch

contribution was made by seerfish (19.8% followed by pomfret (13.1%) and cat fish (9.7%). In winter, important contributors towards catch were seer fish (18.5%), cat fish (21.9%) and aharks (16.3%). In pre-monsoon season, groups sharing more than 12% of quarterly catch were pomfret, seer fish, catfish and sharks.

The pomfret formed about 30% of annual catch at Satpati. Other important contributors towards the catch were catfish (16.0%) and croakers (9.9%). Pomfret had a maximum share of 35.2% in the catch of post-monsoon quarter. Another significant contribution was made by catfish (19.7%). In winter, the pomfret share came down to 29.9%. Catfish and tunnies contributed 11.8% and 11.2% towards the winter catch respectively. The fishes having significant share in pre-monsoon catch included pomfret (33.0%), catfish (15.5%), Hilsa (15.1%) and croakers (12.3%). Monsoon fishing was carried out for ghol and Dara only.

B. FISHING DAYS, CATCH AND REVENUE.

The number of annual days fished at Khar-Danda during the period of one year, starting from September '86 was 214 (Table 2). The fishing days numbered 68 in post-monsoon quarter, 74 in winter and 72 in pre-monsoon. The number of fishing days was minimum in the month of September (18 days) when fishing started after a break of monsoon, followed by May (21 days) when sea became rough in third week. There was no significant difference in the number of fishing days between the rest of the months barring monsoon months when fishing was not observed.

At Satpati, the number of annual fishing days was 222 for the referred

period. A minimum of 17 fishing days were observed in monsoon and a maximum of 72 fishing days in winter. Monthwise comparison of number of fishing days shows that there were only 16 fishing days in September whereas other months had 20-25 fishing days each. During monsoon, there were 17 fishing days in the month of August.

The annual catch of a gillnet unit at Khar-Danda was 29,970 kg. There was a good catch of about 13 toones a unit in post-monsoon quarter whereas other two quarters had almost equal landings (about 8.5 tonnes). Monthwise comparison of catch estimates reveals that the fish availability was maximum in October (5,538 kg per unit) and minimum in February (2,032 kg per unit).

The annual fish catch of a gillnet unit was calculated at 26,392 kg at Satpati. The total of the quarterly catch was worked out at 11,430 kg in post-monsoon, 7,803 kg in winter, 7,040 in pre-monsoon and only 119 kg in monsoon. Catch landing per boat during four fishing season was the highest in October (4,512 kg) and the lowest in May (2,000 kg). The catch availability per day was more in post-monsoon quarter (176 kg) as compared to winter (108 kg), pre-monsoon (104 kg) and monsoon (7 kg).

The total revenue received in a year through sale proceeds of fish at Khar-Danda was Rs. 2,32,419 per unit. There was no commercial fishing during monsoon at this centre. A maximum revenue of Rs. 97,970 was earned in post-monsoon quarter followed by Rs. 68,099 in pre-monsoon and a minimum of Rs. 65,350 in winter. Higher revenue in post-monsoon quarter is due to the higher contribution of two commercially important species namely pomfret and seerfish and the

better catch availability in post-monsoon quarter as compared to other quarters. Further, as the fish availability decreased, the price of the catch was noted to be increased. The change in catch composition and better price of fish in lean period resulted in more revenue in pre-monsoon quarter as compared to winter. Comparing fishery income over different months during fair season it was found that the income was the highest for October (Rs. 35,305) and the lowest for May (Rs. 21,093).

The annual income of a gillnetter at Satpati worked out at Rs. 2,67,592. In monsoon quarter average revenue per boat was calculated at Rs. 1,632. In rest of the quarters the highest revenue was obtained in post-monsoon (Rs. 1,09,051) and the lowest in pre-monsoon (Rs. 75,260). In fair season, maximum contribution towards the annual revenue was made by October (Rs. 45,552) followed by November (37,600) and minimum by May (Rs. 18,380). About 65% of the annual revenue at this centre was received through sale proceeds of pomfret. Other species individually contributed 2-5 per cent towards the annual revenue.

Thus, the first season, i. e. post-monsoon quarter was found to contribute maximum in terms of volume and value of annual catch at both the centres.

C. INVESTMENT AND COMPONENTS OF FIXED COST.

The average investment on a boat was worked out at Rs. 80,000/- at Khar-Danda (Table 3). Most of the boats are fitted with 3-4 cylinder in-board engines, the average value being one lakh rupees. The cost of gillnet in a unit averaged Rs. 36,000/-. Besides craft and gears there are several implements such as anchor, baskets, bucket, lamp, ropes,

wooden log and diesel carrying drums which are essential for a fishing unit. The cost of equipments along with the cost of installation of shed was worked out at Rs. 14,000/- at Khar-Danda. A sum of Rs. 90 was accounted for insurance, licence and other fees. All the boats were not insured. The boat owners having utilized institutional loan for procuring boat and engine insured their boats. Thus, the annual fixed cost totalled Rs. 47,090 for a gillnet unit taking annual depreciation of 10% for boats, 20% for engine, 33.3% for gillnets and 50% for other implements.

At an interest rate of 12 per cent per annum the opportunity cost of the capital investment was calculated at Rs. 27,600/-.

A Satpati, the boats are of bigger size as compared to Khar-Danda. The value averaged Rs. 85,000/- for a boat and Rs. 1.1 lakh for an engine. The average value of the nets in a unit worked out as Rs. 45,000/-. Other fishing implement valued at Rs. 17,000/-. The annual depreciation of a boat comes to Rs. 8,500/- whereas depreciation of an engine comes to Rs. 22,000/-. Gillnets and other fishing equipments have a tear and wear of Rs. 23,500 per year. Thus, the fixed cost of a gillnetter totalled Rs. 54,000/- per annum including Rs. 110 towards insurance, insurance and fees.

D. OPERATIONAL EXPENDITURE.

The operational expenditure was divided into five major heads i.e. expenditure on fuel, labour, preservation/marketing/transportation, repairs/maintenance and miscellaneous fishing items. The expenditure for all the items was calculated monthwise and presented in Table 4. At Khar-Danda the annual operational expenditure was worked out at Rs.

1,39,155. Fuel and labour formed the major expenditure accounting for 32.2 and 40.7 per cent of total annual expenditure respectively. About Rs. 19 thousand was spent on preservation, marketing and transportation, Rs. 12 thousand on repairs and maintenance and Rs. 7 thousand on miscellaneous items.

In post-monsoon quarter total expenditure was Rs. 45,300 averaging Rs. 666.2 per day of operation. Labour got a share of about 40 per cent of the quarterly expenditure, fuel about 30 per cent, marketing 16.1 per cent, repairs and maintenance 8.6 per cent and miscellaneous items 6.1 per cent. In winter quarter the variable cost totalled Rs. 47,435 and the fuel and labour shares also raised to 32.4 and 42.0 per cent of the quarterly expenditure respectively. For March-April and May the running expenses, totalled Rs. 46,420. The quarterly fuel expenditure was a maximum of Rs. 15,940 as the boats operated in deeper waters during this quarter. Labour charges accounted for 40.2 per cent of the amount incurred in pre-monsoon quarter.

The annual operational expenditure at Satpati was found to be Rs. 1,60,650. In one year of observation an amount of Rs. 49,150 was spent on fuel, Rs. 65,405 on labour, Rs. 21,980 on marketing, Rs. 16,155 on repairs and maintenance and Rs. 7,960 on other fishing items. In post-monsoon quarter, the recurring cost per unit averaged Rs. 50,725 of which major share accounted for labour (44.5) and fuel (27.5%). In winter quarter, an amount of about Rs. 17 thousand was spent on fuel, Rs. 21 thousand on labour, Rs. 6 thousand on marketing, Rs. 3 thousand on repairs and Rs. 2 thousand on other items, totalling Rs. 50,730 for the quarter. Like other

quarters, a maximum of about Rs. 21 thousand was spent on labour followed by Rs. 17.6 thousand on fuel. Of quarterly recurring expenditure (Rs. 54,665), marketing charges accounted for 14.2 per cent, repairs 10.7 per cent and other charges 4.5 per cent. Unlike Khar-Danda, there was monsoon fishing at Satpati earning a revenue of Rs. 4,530 per unit for an average fishing of 17 days. The major expenditure during this quarter incurred on repairs (Rs. 3,500). The expenditure incurred on fuel and labour was Rs. 400 and Rs. 480 respectively.

E. INCOME OVER OPERATING COST

Table 5 furnishes the details of operating income, quarterwise. At Khar-Danda, a maximum gross income of about Rs. 98 thousand was obtained in post-monsoon quarter and a minimum of about Rs. 65 thousand in winter. The gross return per fishing day was calculated at Rs. 1,081 whereas recurring expenditure was Rs. 650 per day resulting in a net operating income of about Rs. 431 per day. The net revenue fetched per day was maximum for post-monsoon quarter (Rs. 774.5) and minimum for winter (Rs. 242.1). The net operating income was 53.8 per cent of the gross income in post-monsoon quarter, 27.4 per cent in winter and 31.8 per cent in pre-monsoon. The recurring expenditure exceeded the net operating income during winter and pre-monsoon quarters whereas the income exceeded the cost in post-monsoon quarter. Overall, the net operating income was about 66 per cent of the recurring annual expenditure.

The gross income of a mechanised gillnetter at Satpati worked out at about Rs. 2.7 lakhs during the study period whereas post-monsoon quarter itself contributed more than Rs. 1 lakh. For

222 fishing days a year the recurring expenditure on fishing was calculated at Rs. 1.6 lakhs. The quarterwise analysis revealed the maximum amount of expenditure in pre-monsoon quarter (Rs. 54,665) and the minimum amount in monsoon (Rs. 4,530). The per day expenditure ranged from Rs. 266.5 during monsoon to Rs. 803.9 during pre-monsoon. The net operating income of a gillnetter in a year was to the tune of Rs. 1.07 lakhs out of which about Rs. 58 thousand was earned in post-monsoon quarter. In monsoon a boat owner spent on an average of Rs. 4,530 on recurring items including repairs, whereas the revenue earned was only Rs. 1,632. Overall, the annual net operating income accounted for 40 per cent of the gross income and 66.6 per cent of the operating expenditure.

F. ANNUAL PROFIT.

With the annual gross returns of Rs. 2,31,419 for 214 fishing days and with the total annual cost of Rs. 1,86,245 the residual income of a gillnetter at Khar-Danda was found to be Rs. 45,174 (Table 6). The opportunity cost of family labour and capital was assessed to be Rs. 41,739 a year. Thus, profit of Rs. 3,435 per annum or Rs. 16 per fishing day was recorded for the owner of the unit.

The annual gross returns at Satpati for 222 days of fishing amounted to Rs. 2,67,592. The annual fixed cost of a gillnetter (Rs. 2,14,760) was the sum total of variable cost (Rs. 1,60,650) and fixed cost (Rs. 54,110). The residual income worked out at Rs. 52,832. Deducting opportunity cost of capital (Rs. 30,820) and family labour (Rs. 14,539) from the residual income the net annual profit resulted at Rs. 7,473, the profit per day of fishing being Rs. 33.7.

G. EMPLOYMENT PATTERN.

On a mechanised gillnetter 6-9 persons form the crew including one or two persons from the family of the owner of the boat. The labourers are contracted for a period of 9 months (Sept.-May) and paid an advance amount of Rs. 1-2 thousand during monsoon period by the owner of the boat. Each labourer is paid a salary of Rs. 500-700 a month depending on his skill and experience in fishing. They are also provided with the food and paid for personal expenses on the boat, by the owner. The labourers help in loading/unloading of the catch besides fishing. On country craft fitted with OBE 3-4 persons go for fishing including the owner of the boat. The crew members contribute towards operational cost and have their share in fish catch. Sometimes they take their nets also for operation, along with the nets of the owner. The share of boat, net, engine and crew is decided in advance.

H. INDICATORS OF ECONOMIC EFFICIENCY.

As seen from Table 7, catch of a gillnetter per operating day averaged 140 kg at Khar-Danda Valued at Rs. 1,081 per day as against the recurring expenditure of Rs. 650 a day resulting in a net operating income of Rs. 431 and net profit of Rs. 16 per day to the owner of the boat. The returns per day to family labour and management totalled Rs. 82 whereas share of a labourer was Rs. 33 and residual income to the owner was Rs. 211. Operating cost ratio, fixed cost ratio and gross cost ratio was 60.1%, 20.4% and 80.5% respectively. The capital turnover which compares gross income with the investment was calculated at 100.6%. The rate of return to capital or a ratio of net profit plus opportunity cost of capital investment to the

initial capital investment was 13.5%. Pay back period (an indicator of recovery period of the capital investment) was found to be 4.6 years.

At Satpati though the average quantity of catch availability per day was only 118.9 kg, the revenue fetched was reasonably a good amount (Rs. 1205) because the quality fish, specially pomfret, had a good share in total catch at this centre. With the recurring expenses of Rs. 723 per day of fishing the net operating income was calculated at Rs. 482 and the residual income Rs. 238. Return to labour was found to be Rs. 33 a day whereas return to family labour and management was Rs. 99 a day to the owner. The gross cost ratio comes to 80.2% and the capital turnover ratio 104.1%. The pay back period and rate of return to capital was 4.2 years and 14.9 per cent respectively.

CONCLUSION

The data regarding costs and earnings of mechanised gillnetters were collected from selected units at two major centres in Maharashtra coast during September '86 to August '87 on sample days and analysed monthwise for different parameters like fishing days, catch composition, quantity and value of catch, operating cost and net returns. Difference in the fishing intensity was observed between different quarters so the parameters were compared between different quarters and pooled together to draw annual figures.

Pomfret was the main species contributing 12-30 per cent of annual catch. Among other major species, seerfish contributed 3-18 per cent, catfish 14-16 per cent, shark 6-12, Hilsa 7-9 per cent, croakers 4-10 per cent and silverbar 5-6 per cent. Of annual revenue, 40-65 per cent was obtained from sale proceeds of

pomfret alone. In post-monsoon quarter, pomfret contributed 13-35 per cent towards quarterly catch and 42-73 per cent towards the income. The fishing started in third week of September '86 and closed in third week of May '87. Except May and September there was not significant difference in number of fishing days between rest of the months. At one centre there was ghol/Dara fishing in August for an average of 17 days. The annual number of fishing days ranged from 214 to 222.

Of total annual landings 43-45 per cent was available in post-monsoon quarter 28-30 per cent in winter and about 27 per cent in pre-monsoon quarter. Similarly, 41-42 per cent of the revenue was obtained in post-monsoon quarter and 28-30 per cent each in winter and pre-monsoon quarters. Monsoon contributed less than 1 per cent of annual quantity and value of catch. The highest catch and the revenue were noted for the month of October. The value realised per kg of fish ranged from Rs. 7.7 to Rs. 10.1 at the selected centres.

The initial capital investment of a gillnetter was recorded at Rs. 2.3-2.6 lakhs resulting in an annual fixed cost of Rs. 47-54 thousand. The opportunity cost of the capital investment ranged from Rs. 28 thousand to Rs. 31 thousand. Most of the boats were in the range of 32-42 footers fitted with 3-6 cylinder engines and observing a fishing trip of 3-6 days in fair season and daily a trip in monsoon.

Under recurring expenditure labour was the biggest item followed by fuel and marketing. Of annual operational

expenditure, 31-32 per cent incurred on fuel, about 41 per cent on labour and 14 per cent on marketing. The consumption of fuel increased from post-monsoon quarter to pre-monsoon quarter whereas labour engagement maintained a status quo throughout the fishing season. Repairs and maintenance works of boat and engine were mainly attended during monsoon quarter when fishing was at low ebb. The annual fishing expenditure including repairs and marketing ranged from Rs. 1.4 lakhs to Rs. 1.6 lakhs. There was not any significant difference in the fishing expenditure between the quarters.

The net operating income ranged from Rs. 92 thousand to Rs. 107 thousand whereas the residual income ranged from Rs. 45 thousand to Rs. 53 thousand. The net annual profit was found to be Rs. 3-7 thousand. A crew consists of 6-9 members including 1-2 members from boat owners family. A labourer, on an average, was paid Rs.33 a day in gillnetters. The return to family labour and management was calculated at Rs. 82-99 a day. The rate of return to capital was 14-15 per cent and the pay back period 4-5 years. Overall, *the mechanised gillnet fishing was found to be profitable in Maharashtra during 1986-87.*

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TABLE—1
MAJOR COMPONENTS OF THE CATCH OF GILLNETTERS AND THEIR CONTRIBUTION TOWARDS
REVENUE (%) DURING 1986-87.

| Name of species/ groups | Post-monsoon quarter | | Winter quarter | | Pre-monsoon quarter | | Monsoon quarter | | Annual | |
|--|-------------------------|--------|-------------------|-------|------------------------|-------|--------------------|-------|--------|--------|
| | Catch | Value | Catch | Value | Catch | Value | Catch | Value | Catch | Value |
| Khar-Danda | | | | | | | | | | |
| Pomfret | 13.1 | 41.6 | 9.7 | 46.3 | 12.6 | 31.8 | — | — | 12.1 | 40.1 |
| Seer fish | 19.8 | 21.3 | 18.5 | 14.6 | 16.1 | 20.3 | — | — | 18.5 | 19.2 |
| Cat fish | 9.7 | 3.2 | 21.9 | 7.3 | 14.4 | 8.1 | — | — | 14.2 | 5.7 |
| Sharks | 8.0 | 2.5 | 16.3 | 6.4 | 14.5 | 7.9 | — | — | 11.9 | 5.2 |
| Hilsa | 8.0 | 5.3 | 9.8 | 8.5 | 9.4 | 8.4 | — | — | 8.9 | 7.1 |
| Croakers | 1.5 | 0.7 | 5.2 | 2.9 | 6.6 | 5.6 | — | — | 3.8 | 2.7 |
| Silverbar | 6.9 | 3.7 | 5.3 | 3.9 | 5.2 | 3.8 | — | — | 6.0 | 3.7 |
| Carangids | 9.4 | 6.3 | 3.4 | 2.9 | 2.7 | 3.2 | — | — | 6.0 | 4.5 |
| Other fish [tunnies, threadfin, perches etc.] | 23.6 | 15.4 | 9.9 | 7.2 | 18.5 | 10.9 | — | — | 18.6 | 11.8 |
| Total | 13408 | 97970 | 8349 | 65350 | 8213 | 68099 | | | 29970 | 231419 |
| [Quantity in kg. | [100] | [100] | [100] | [100] | [100] | [100] | | | [100] | [100] |
| Value in Rs.] | | | | | | | | | | |
| Satpati | | | | | | | | | | |
| Pomfret | 35.2 | 72.8 | 20.9 | 52.0 | 33.0 | 72.1 | | | 29.7 | 65.0 |
| Seerfish | 3.4 | 3.2 | 2.6 | 1.9 | 1.4 | 1.2 | | | 2.6 | 2.3 |
| Cat fish | 19.7 | 5.6 | 11.8 | 4.3 | 15.5 | 5.5 | | | 16.0 | 5.1 |
| Sharks | 7.3 | 2.6 | 3.9 | 1.5 | 8.3 | 3.3 | | | 6.4 | 2.4 |
| Hilsa | 3.3 | 2.1 | 8.6 | 2.3 | 15.1 | 4.2 | | | 7.8 | 2.7 |
| Croakers | 10.5 | 2.9 | 6.2 | 2.6 | 12.3 | 9.6 | 100 | 100 | 9.9 | 5.1 |
| Perches | 7.3 | 3.8 | 2.7 | 1.7 | 3.2 | 1.7 | | | 4.9 | 2.5 |
| Silverbar | 8.8 | 3.9 | 3.4 | 1.2 | 0.6 | 0.1 | | | 4.9 | 2.0 |
| Tunnies | 3.6 | 2.5 | 11.2 | 3.7 | 8.8 | 2.0 | | | 7.4 | 2.8 |
| Other fishes [threadfin, carangids etc.] | 0.9 | 0.6 | 28.7 | 28.8 | 1.8 | 0.3 | | | 10.4 | 10.1 |
| Total | 11430 | 109051 | 7803 | 81649 | 7040 | 75260 | 119 | 1632 | 26392 | 267592 |
| [Quantity in kg. | [100] | [100] | [100] | [100] | [100] | [100] | [100] | [100] | [100] | [100] |
| Value in Rs.] | | | | | | | | | | |

Table 2 MONTHWISE DISTRIBUTION OF FISHING DAYS, CATCH AND REVENUE OF MECHANISED GILLNET 1986-87

| Quarter/Months | | Khar-Danda | | | Satpati | | |
|--------------------|-------|---------------------|-----------------------|----------------------|---------------------|-----------------------|----------------------|
| | | No. of fishing days | Volume of catch (kg.) | Value of catch (Rs.) | No. of fishing days | Volume of catch (kg.) | Value of catch (Rs.) |
| Post-monsoon | Sept. | 18 | 4,036 | 28,804 | 16 | 3,168 | 25,899 |
| | Oct. | 26 | 5,538 | 35,305 | 24 | 4,512 | 45,552 |
| | Nov. | 24 | 3,834 | 33,861 | 25 | 3,750 | 37,600 |
| | Total | 68 | 13,408 | 97,970 | 65 | 11,430 | 1,09,051 |
| Winter | Dec. | 25 | 3,725 | 24,386 | 25 | 3,125 | 31,700 |
| | Jan. | 25 | 2,592 | 22,956 | 24 | 2,424 | 23,568 |
| | Feb. | 24 | 2,032 | 18,008 | 23 | 2,254 | 26,381 |
| | Total | 74 | 8,349 | 65,350 | 72 | 7,803 | 81,649 |
| Pre-monsoon | March | 27 | 2,964 | 21,722 | 24 | 2,448 | 28,320 |
| | April | 24 | 2,750 | 25,284 | 24 | 2,592 | 28,560 |
| | May | 21 | 2,499 | 21,093 | 20 | 2,000 | 18,380 |
| | Total | 72 | 8,213 | 68,099 | 68 | 7,040 | 75,260 |
| Moysoon [June-Aug] | Nil | — | — | 17 | 119 | 1,632 | |
| Annual | 214 | 29,970 | 2,31,419 | 222 | 26,392 | 2,67,592 | |

Table 3. INVESTMENT ON A MECHANISED GILLNET UNIT AND THE COMPONENTS OF FIXED COST

| I. Investment [Rs.] | Khar-Danda | Satpati |
|---|------------|----------|
| Boat | 80,000 | 85,000 |
| Engine | 1,00,000 | 1,10,000 |
| Gillnets | 36,000 | 45,000 |
| Other fishing equipments/implements | 14,000 | 17,000 |
| Total | 2,30,000 | 2,57,000 |
| II. Depreciation [Rs.] | | |
| Boat [10%] | 8,000 | 8,500 |
| Engine [20%] | 20,000 | 22,000 |
| Gillnets [33.3%] | 12,000 | 15,000 |
| Other fishing equipments [50%] | 7,000 | 8,500 |
| Total | 47,000 | 54,000 |
| III. Insurance, licence, fees etc. [Rs.] | 90 | 110 |
| IV. Total fixed cost [Rs] [II+III] | 47,090 | 54,110 |
| V. Opportunity cost of capital [Rs] [@ 12%] | 27,600 | 30,840 |

Table 4. DETAILS OF OPERATIONAL EXPENDITURE OF

| Operational expenditure (Rs) | Sept. | Oct. | Nov. | Post-mon- soon Qtr. | Dec. | Jan. |
|---|----------------|----------------|----------------|------------------------|----------------|----------------|
| Khar-Danda | | | | | | |
| a) Fuel | 3720 (29.6) | 5040 (29.6) | 4660 (29.7) | 13420 (29.6) | 5150 (32.0) | 5580 (33.1) |
| b) Labour | 4425 (35.3) | 7055 (41.4) | 6480 (41.2) | 17960 (39.6) | 6720 (41.8) | 6735 (39.9) |
| c) Preservation/ Marketing Transportation | 1940 (15.5) | 2990 (17.6) | 2350 (14.9) | 7280 (16.1) | 2070 (12.8) | 2105 (12.5) |
| d) Repairs/ maintenace | 1650 (13.1) | 880 (5.2) | 1350 (8.6) | 3880 (8.6) | 1400 (8.7) | 1775 (10.5) |
| e) Miscellaneous items | 810 (6.5) | 1070 (6.2) | 880 (5.6) | 2760 (6.1) | 750 (4.7) | 685 (4.0) |
| Total | 12545 (100) | 17035 (100) | 15720 (100) | 45300 (100) | 16090 (100) | 16880 (100) |
| Satpat | | | | | | |
| a) Fuel | 2985 (21.6) | 5420 (28.4) | 5535 (31.0) | 13940 (27.5) | 5180 (29.6) | 6100 (35.4) |
| b) Labour | 6850 (49.5) | 8230 (43.2) | 7505 (42.1) | 22585 (44.5) | 8070 (46.2) | 7055 (41.0) |
| c) Preservation/ Marketing Transportation | 2080 (15.0) | 3050 (16.0) | 2580 (14.5) | 7710 (15.2) | 2170 (12.4) | 2200 (12.8) |
| d) Repairs/ maintenance | 1050 (7.6) | 1200 (6.3) | 1205 (6.8) | 3455 (6.8) | 1170 (6.7) | 1070 (6.2) |
| d) Miscellaneous items | 870 (6.3) | 1150 (6.1) | 1015 (5.7) | 3035 (6.0) | 890 (5.1) | 800 (4.6) |
| Total | 13835 (100) | 19050 (100) | 17840 (100) | 50725 (100) | 17480 (100) | 17225 (100) |

Note: Percentages are given in paranthesis.

MECHANISED GILLNET UNITS

1986-87

| Feb. | Winter quarter | March | April | May | Pre-mon- soon Qtr. | Monsoon (June-Aug.) | Annual |
|----------------|-------------------|----------------|----------------|----------------|-----------------------|------------------------|-----------------|
| 4660 (32.2) | 15390 (32.4) | 5665 (36.6) | 5580 (34.2) | 4695 (32.2) | 15940 (34.3) | — | 44750 (32.2) |
| 6485 (44.8) | 19940 (42.0) | 6390 (41.2) | 6445 (39.4) | 5820 (39.9) | 18655 (40.2) | — | 56555 (40.7) |
| 1955 (13.5) | 6130 (12.9) | 1915 (12.4) | 2055 (12.6) | 1920 (13.2) | 5890 (12.7) | — | 19300 (13.9) |
| 775 (5.4) | 3950 (8.3) | 880 (5.7) | 1405 (8.6) | 1575 (10.8) | 3860 (8.3) | — | 11690 (8.4) |
| 590 (4.1) | 2025 (4.4) | 650 (4.1) | 850 (5.2) | 575 (3.9) | 2075 (4.5) | — | 6860 (4.8) |
| 14465 (100) | 47435 (100) | 15500 (100) | 16335 (100) | 14585 (100) | 46420 (100) | — | 139155 (100) |
| 5890 (36.8) | 17170 (33.8) | 6130 (33.5) | 6385 (32.8) | 5125 (30.3) | 17640 (32.3) | 400 (8.8) | 49150 (30.6) |
| 6270 (39.1) | 21395 (42.2) | 7280 (39.8) | 7305 (37.6) | 6360 (37.6) | 20945 (38.3) | 480 (10.6) | 65405 (40.7) |
| 2000 (12.5) | 6370 (12.6) | 2580 (14.1) | 3090 (15.9) | 2110 (12.5) | 7780 (14.2) | 120 (2.6) | 21980 (13.7) |
| 1115 (6.9) | 3355 (6.6) | 1500 (8.2) | 1775 (9.1) | 2570 (15.2) | 5845 (10.7) | 3500 (77.3) | 16155 (10.0) |
| 750 (4.7) | 2440 (4.8) | 815 (4.4) | 880 (4.6) | 760 (4.4) | 2455 (4.5) | 30 (0.7) | 7960 (5.0) |
| 16025 (100) | 50730 (100) | 18305 (100) | 19435 (100) | 16925 (100) | 54665 (100) | 4530 (100) | 160650 (100) |

Table 5. QUARTERWISE DETAILS OF OPERATING EXPENDITURE AND INCOME OF A MECHANISED GILLNETTER 1986-87

| Items | Post- monsoon quarter | Winter | Pre- monsoon quarter | Monsoon | Annual |
|---|-----------------------------|--------|----------------------------|---------|----------|
| Khar-Danda | | | | | |
| a] Gross income [Rs.] | 97,970 | 65,350 | 68,099 | — | 2,31,419 |
| b] No. of fishing days | 68 | 74 | 72 | — | 214 |
| c] G. I. per operating day [Rs] | 1,441 | 883 | 946 | — | 1,081 |
| d] Operating expenditure [Rs] | 45,300 | 47,435 | 46,420 | — | 1,39,155 |
| e] Operating expenditure per day [Rs] | 666 | 641 | 645 | — | 650 |
| f] Operating expenditure as % of gross income | 46.2 | 72.6 | 68.2 | — | 60.1 |
| g] Net operating income [Rs] | 52,670 | 17,915 | 21,679 | — | 92,264 |
| h] Net operating income per day [Rs] | 774.5 | 242.1 | 301.1 | — | 431.1 |
| i] Net operating income as % of gross income | 53.8 | 27.4 | 31.8 | — | 39.9 |
| j] Net operating income as % of operating expenditure | 116.3 | 37.8 | 46.7 | — | 66.3 |
| Satpati | | | | | |
| a] Gross income [Rs] | 1,09,051 | 81,649 | 75,260 | 1,632 | 2,67,592 |
| b] No. of fishing days | 65 | 72 | 68 | 17 | 222 |
| c] Gross income per operating day [Rs] | 1,677.7 | 1134 | 1106.8 | 96 | 1,205.4 |
| d] Operating expenditure [Rs] | 50,725 | 20,730 | 54,665 | 4,530 | 1,60,650 |
| e] Operating expenditure per day [Rs] | 780.4 | 704.6 | 803.9 | 266.5 | 723 |
| f] Operating expenditure as % of gross income | 46.5 | 62.1 | 72.6 | 277.6 | 60.0 |
| g] Net operating income [Rs] | 58326 | 30919 | 20,595 | -2898 | 1,06,942 |
| h] Net operating income per day [Rs] | 897.3 | 429.4 | 302.9 | -170.5 | 481.7 |
| i] Net operating income as % of gross income | 53.5 | 37.9 | 27.4 | -177.6 | 40.0 |
| j] Net operating income as % of operating expenditure | 115.0 | 61.0 | 37.7 | -64.0 | 66.6 |

Table 6. ANNUAL PROFIT OF A MECHANISED GILLNETTER

1986-87

| Items | Khar-Danda | Satpatj ⁱ |
|---|------------|----------------------|
| a] Annual gross returns of a unit [Rs] | 2,31,419 | 2,67,592 |
| b] No. of fishing days | 214 | 222 |
| c] Variable cost [Rs] | 1,39,155 | 1,60,650 |
| d] Fixed cost [Rs] | 47,090 | 54,110 |
| e] Total annual cost [Rs] [c+d] | 1,86,245 | 2,14,760 |
| f] Residual income [Rs] [a-e] | 45,174 | 52,832 |
| g] Opportunity cost of capital [Rs] | 27,600 | 30,820 |
| h] Opportunity cost of family labour [Rs] | 14,139 | 14,539 |
| i] Total opportunity cost [Rs] [g+h] | 41,739 | 45,359 |
| j] Annual profit [Rs] [f-i] | 3,435 | 7,473 |
| k] Per operating day profit [Rs] | 16.0 | 33.7 |

Table 7. INDICATORS OF ECONOMIC EFFICIENCY OF GILLNET OPERATION

| Items | Khar-Danda | Satpat |
|---|------------|--------|
| Catch per operating day [kg] | 140 | 118.9 |
| Gross revenue per day [Rs] | 1081 | 1205 |
| Operating expenditure per day [Rs] | 650 | 723 |
| Per day net operating income [Rs] | 431 | 481 |
| Net profit per day [Rs] | 16.0 | 33.7 |
| Per day returns to family labour and management of the owner [Rs] | 82 | 99 |
| Per day residual income [Rs] | 211 | 238 |
| Returns per labourer per operating day [Rs] | 33 | 33 |
| Operating cost ratio [%] | 60.1 | 60.0 |
| Fixed cost ratio [%] | 20.4 | 20.2 |
| Gross cost ratio [%] | 80.5 | 80.2 |
| Capital turnover ratio [%] | 100.6 | 104.1 |
| Rate of returns to capital [%] | 13.5 | 14.9 |
| Pay back period [yrs.] | 4.6 | 4.2 |