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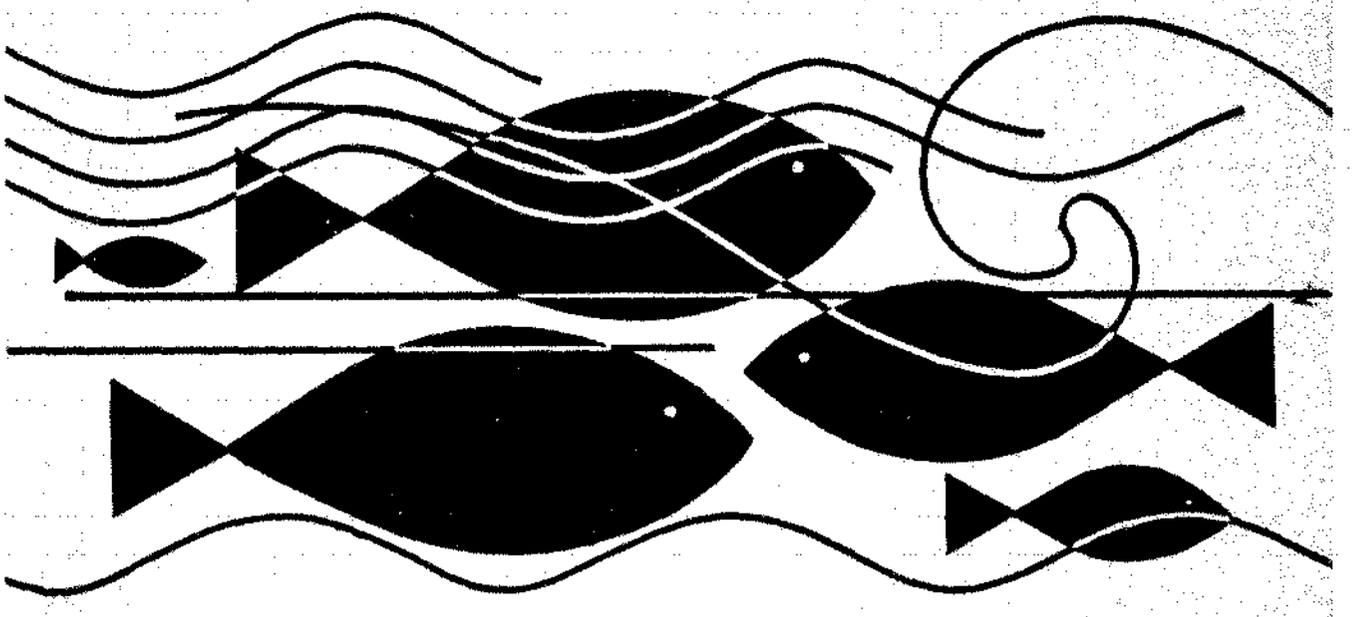

*Issued in connection with the 40th Anniversary Celebrations of*

**Central Marine Fisheries Research Institute**
P. B. No. 2704, E. R. G. Road, Cochin 682 031, India
*Indian Council of Agricultural Research*
September 16–18, 1987

# AN APPRAISAL OF THE MARINE FISHERIES OF WEST BENGAL

VARUGHESE PHILIPOSE, K. S. SCARIAH
G. VENKATARAMAN AND G. SUBBARAMAN

**CMFRI Special Publication**
**Number 31**

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## PREFACE

The Central Marine Fisheries Research Institute Cochin, is the premier organisation in the country conducting research in marine fisheries leading to rational exploitation, management, development and conservation of living marine resources. The Institute, ever since its early days of inception, has been collecting data on the catch and effort along with the biological information on the exploited marine fisheries resources of the country, through a standardised, stratified, multistage random-sampling method. In addition to making use for biological studies, including assessment of stocks, conducted by the Institute these data have been processed and utilised to furnish estimates of annual marine fish production in different States over the past 38 years.

With the changed objectives and functions of the Institute in recent times, greater emphasis has been laid on the assessment of stocks for better management of the exploited stocks and to indicate the possible sources of additional production in the context of modern technological innovations in fishing practices and consequent increase in the capability of fishing of both traditional and mechanised sectors.

With continued increase in fishing effort and intense exploitation of certain resources in different parts of the country, a need now arose to examine critically the present status of the exploited stocks, the fishing intensity, the number of boats and different types of gear, other infrastructural facilities for handling storage, transportation and marketing of the catches, the status of the under exploited resources, and new or additional resources available beyond the presently exploited areas

of each maritime state for providing necessary technical advice to the respective Governments to manage and conserve the resources.

It is with this in view that the data relating to each maritime state for the period 1975-84 are consolidated and processed and presented as a separate Special Publication. This Number gives the appraisal of the marine fisheries of West Bengal, highlighting the status of the exploited resources and the level of exploitation. It also gives guidelines for increasing the catches by proper development, management and conservation of resources.

I thank Shri Varughese Philipose, Dr. K. S. Scaria, and S/Shri G. Venkataraman and G. Subbaraman for the pains taken in the preparation of this report. My thanks are due to Shri S. S. Dan who was in charge of data collection. S/Shri Sapan Kumar Ghosh and Pulin Behari Dey collected the catch and other details which form the base of this report. I deeply appreciate the earnest efforts put by them in this regard.

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## INTRODUCTION

The state of West Bengal is situated between the latitudes 21.5°N and 24.5°N and the longitudes 86°E and 89°E. Its location is in the northern part of Bay of Bengal, between the state of Orissa in the south and Bangladesh in the east.

West Bengal, with an area of 87,853 sq. km accounts for 2.6% of the geographical area of India. For administrative purposes, the state is divided into 3 Divisions : Burdwam Division, Presidency Division and Jalpaiguri Division. Within each division the districts form administrative units. There are 16 districts of which two are coastal. The coastal districts are Midnapore and 24 Parganas. These together have a coastline of 650 km, forming 1.0% of the coastline of India.

The continental shelf upto 200 m depth covers an area of 20,000 sq.km, which is 3.6% of the total area of the Indian continental shelf. The continental shelf of West Bengal is wide (about 150 km) and shallow. The bottom is muddy and its configuration is affected by the large river systems and tidal currents.

By tradition fish is an important part of diet of the population of this state and the main role of the fisheries in West Bengal is therefore as

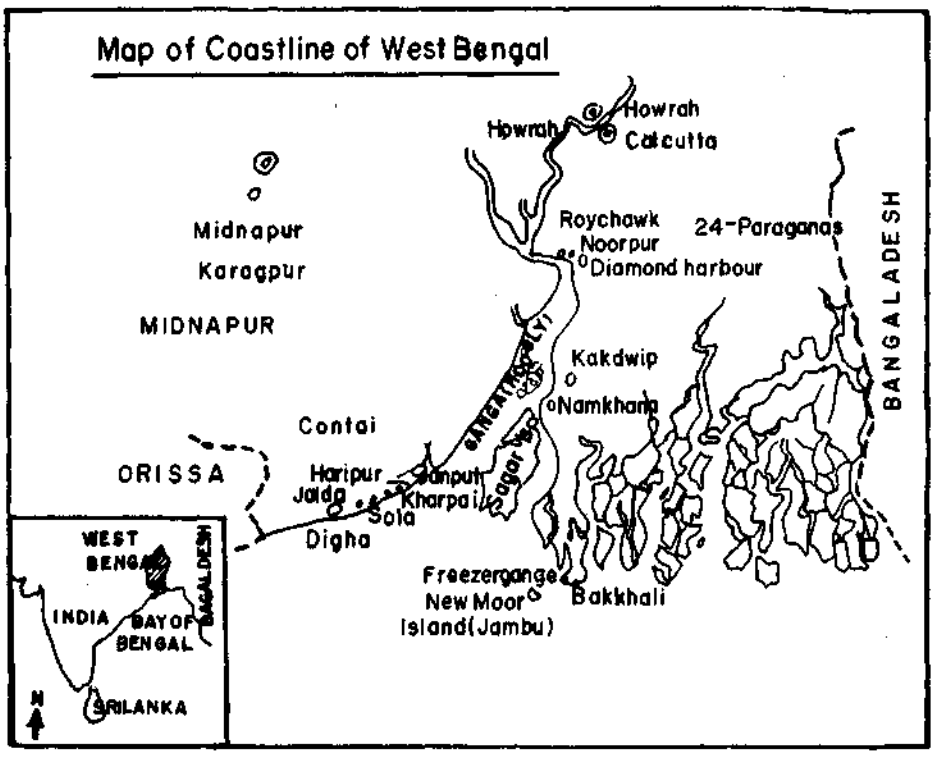


Fig 1. Coastal districts of W. Bengal.

provider of food. The consumer preference is for freshwater fish, but because of the high prices of this commodity the demand of marine fish, which is available at much lower prices, is steadily growing. There are good potentials for an expanded small-scale marine fishery industry because of the big gap between demand and supply of fish. The widening gap between supply and demand of fish has gradually increased the need for development of marine fisheries. Status of marine fisheries in the state of West Bengal during the past ten years (1975-84) is presented here, which may help in planning fishery development in the state.

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## MARINE FISHERMEN, CRAFT AND GEAR IN WEST BENGAL

Information on the number of fishing villages, landing centres, total fishermen, active fishermen and fishing craft and gear in a maritime state is essential for planning and executing developmental programmes in its marine fisheries sector. This information also provides the required frame for conducting sample survey for the estimation of marine fish production, effort expended etc. Further periodic frame surveys are needed to review the status of the traditional small-scale fisheries sector and the effect of mechanisation in the changing pattern of the fishing industry. In this pattern the Central Marine Fisheries Research Institute (CMFRI) has been conducting frame surveys at periodic intervals from 1948-49. The National Commission on Agriculture in its recommendation has emphasized that CMFRI should conduct quinquennial census in order to update the inventory on marine fishery resources available in different maritime states with the necessary help from state governments.

In the MFIS report No. 30 (August, 1981), an account of the all India census of marine fishermen, craft and gear collected by CMFRI in 1980 was published. This report contains the details on marine fishing villages, landing centres, fishermen population and their educational status, fishermen engaged in actual fishing, fishing craft and gear employed in different districts of the maritime states including West Bengal. In West Bengal, the fishermen census was carried out in six districts viz. Murshidabad, Nadia, Hooghly, Howrah, 24 Parganas and Midnapore, of which the last two are coastal districts (the other four districts were covered because of some fishermen settling there). Till 1980 catch statistics were collected from Midnapore district only. Collection of fishery statistics was extended to 24 Parganas district during 1981. Thus, in this report, 24 Parganas and Midnapore districts only were considered for catch statistics and other details, since marine fishing and allied activities in West Bengal are concentrated in these two districts.

*Fishing Villages and Landing Centres*

From the fishermen census conducted by CMFRI during the year 1980, the total number of fishing villages in West Bengal was estimated to be 303. Maximum contribution was from Midnapore (148) followed by

Howrah (79) and 24 Parganas (58). The remaining 18 village were distributed in the other three districts.

*Midnapore District :* In this district there were 6 blocks in which marine fishing villages are situated and they are Contai I, Contai II, Contai III, Ramnagar I, Ramnagar II and Egra II. The maximum number of marine fishing villages were found in Contai I and Ramnagar II blocks (35 each). The next highest was in Ramnagar I block (27) followed by Egra II block (24). The number of villages in Contai III and Contai II were 19 and 8 respectively.

*24 Parganas District :* There were totally 8 blocks viz Namkhana, Diamond Harbour I, Diamond Harbour II, Mandir Bazar, Kulpi, Sagar, Falta and Kakdwip in this district. The maximum number of marine fishing villages was in Namkhana (28) followed by Kulpi (8), Kakdwip (7), Sagar (6), Diamond Harbour II (4), Falta (3) and Diamond Harbour I and Mandir bazar (1 each).

*Households*

The total number of fishermen households in West Bengal were 14,169. From the districtwise analysis of fishermen families, it was found that the maximum household was in Midnapore district (35%) followed by 24-Parganas district (31%) and Howrah (28%). The remaining households were distributed in Murshidabad (4%) and Nadia and Hooghly districts (1% each.) In Midnapore district the maximum number of fishermen households was in Ramnagar II block (27%) followed by Contai I block (25%) and Egra II block (20%). The breakup of the remaining households were Ramnagar I block (13%), Contai III block (10%) and Contai II block (5%).

In Parganas district the maximum number of fishermen families were noticed in Namkhana block (33%) followed by Kakdwip block (20%), Kulpi block (15%) and Diamond Harbour II block (13%). The distribution of remaining households were Sagar block (9%), Mandir Bazar block (4%), Diamond Harbour I and Falta blocks 3% each.

The maximum number of households in Howrah district was noticed in Bagnan I and Shyampur II block (27% each). The breakup of the other blocks were Shyampur I block (19%) Uluberia I block (18%) and Bagnan II block (9%).

All the fishermen households in Hooghly district were situated in Chinsurahoonagra block (136). In Nadia district the total number of

households were 138, located in Ranaghat I block. All the fishermen families from Murshidabad district were situated in Lalgole block.

*Population*

The total fishermen population in the state was 0.84 lakhs. Adult males constituted 33%, adult females 28% and children 39%. On an average the number of person in a village was 276.

From the districtwise analysis of fishermen population it was found that the maximum number was in Midnapore district (41%) followed by 24-Parganas (30%), Howrah (24%), Murshidabad (3%), Nadia (1%) and Hooghly (1%).

*Midnapore District:* In Midnapur district the maximum number of fishermen population was noticed in Ramnagar II block (28%) followed by Contai I block (26%), Egra II block (19%), Ramnagar I block (13%), Contai III block (8%) and Contai II block (6%). In all the blocks, the average family size was 7, except Contai III block were the family size was 6. The maximum number of persons per fishing village was in Egra II block (274) and the minimum in Contai III block (149).

*24 Parganas District :* The maximum number of fishermen population was noticed in Namkhana block (40%) followed by Kakdwip block (16%), Diamond Harbour II block (13%), Sagar and Kulpi blocks (11% each) and Mandir Bazar, Falta and Diamond Harbour I blocks (3% each). In Namkhana and Sagar blocks the average family size was 7 each and the least was observed in Kulpi and Mandir Bazar blocks (4 each). The average number of persons per fishing village was the highest in Diamond Harbour II block (821) and the lowest in Falta block (232)

*Howrah District :* In Howrach district the maximum number of fishermen population was noticed in Bagnan I block (28%) followed by Shyampur II block (25%), Shyampur I block (21%), Uluberia I block (17%) and Bagnan II block (9%). The average family size was the highest in Shyampur I block (6). In all the other blocks, the average family size was 5.

In Hooghly district fishermen population were in Chinsurahoonagra block (648). The average family size in the block was 5 and the number of persons per fishing village was 324.

The fishermen population of Nadia district were from Ranaghat I block (764). The average number of persons per household was 6 and the number of persons per fishing village was 109.

All the fishermen in Murshidabad district (2642) were settled in Lalgola block. On an average, 5 fishermen per household were in this block, and the number of persons per fishing village was 293.

*Education*

In West Bengal the fishermen who possess primary standard of education form 19%, secondary standard 3% and above-secondary less than 1%.

*Midnapore District :* In Contai III block of this district 30% of the fishermen population passed primary standard, followed by Ramnagar II block (26%), Ramnagar I block and Contai I block (20% each), Egra II block (15%) and Contai II block (12%). Regarding fishermen who posses secondary standard, the highest was in Ramnagar II block (6%) and the least in Egra II block (1%).

*24 Parganas District :* With regard to primary education, Kulpi and Sagar blocks recorded the maximum (32% each), followed by Kakdwip block (28%), Namkhana block (15%), Diamond Harbour II block (13%) and Diamond Harbour I block (11%). The least number of fishermen possessing primary standard was noticed in Falta block (5%). While scrutinizing the number of fishermen who acquired secondary standard, Kulpi block stood first (8%) followed by Sagar block (5%). The lowest number was noted in Diamond Harbour II block (2%). Only 4% of the fishermen folk in Sagar block studied up to or above secondary standard and in all the other blocks they were not more than 1%.

*Howrah District :* The studies about the educational status of the fishermen in Howrah district revealed that 19% fishermen of Bagnan II block had primary education, followed by Uluberia I block (17%), Shyampur I block (15%), Shyampur II block (14%) and Bagnan I block (13%). Those who acquired secondary standard was the highest in Bagnan II block (3%) and the least in Bagnan I block (1%).

*Hooghly District :* Chinsurahoonagra block was the only block of the district in which migrating fishermen were settled. In this block 19% of the fishermen possessed primary education.

*Nadia District :* Only 3% of the fishermen of this district had the primary standard of education and they all belonged to Ranaghat I block.

*Murshidabad District :* Lalgola block was the only one block in this district where fishermen were settled. 8% of them had primary standard and 3% of them had acquired secondary level of education.

*Fishermen Engaged in Actual Fishing*

The number of fishermen engaged in actual fishing in West Bengal was estimated at 19756, forming 24% of the total fishermen population. Among these, the number of fishermen engaged in full-time and part-time occupation together constituted 94%. In Midnapore district about 72% of the fishermen engaged in actual fishing belonged to the full-time category and 25% came under the part-time category. But in 24 Parganas and Howrah districts the number of fishermen engaged in part-time fishery were more in number than those engaged in full-time fishing. Almost all the fishermen of Hooghly, Murshidabad and Nadia districts belonged to the part-time category. The higher percentage of fishermen engaged in full-time in Midnapore district may be attributed to the better opportunities for fishing in this district, which has got a long coast line.

*Midnapore District :* Among the fishermen population of Midnapore district, 28% of Ramnagar II block, 27% each of Contai I and Contai II block, 25% of Contai III block, 23% of Ramnagar I block and 18% of Egra II block were engaged in actual fishing. However, it was found that those under full-time category was highest in Ramnagar I block (97%), followed by Contai III block (90%), Contai II block (85%), Ramnagar II block (80%) and Contai I block (79%). In Egra II block part-time fishermen constituted the maximum (95%).

*24 Parganas District :* In Diamond Harbour II block, 27% of the fishermen population were found to be engaged in actual fishing while in Kakdwip block the fishermen engaged in actual fishing were 26%, followed by Kulpi, Sagar and Falta blocks (23% each). In Diamond Harbour I, Mandir Bazar and Namkhana blocks, the corresponding figures were 20%, 19% and 17% respectively. While 59% of the fishermen population engaged in actual fishing were in full-time category in Kulpi block, the same was 58% in Kakdwip block. The fishermen population engaged in actual fishing in

Diamond Harbour II, (96%) Mandir Bazar (92%) and Diamond Harbour I (81%) belonged to the part-time category.

*Howrah District:* The number of persons engaged in actual fishing were found to be the maximum in Bagnan II block (28%), followed by Bagnan I block (27%) Cluberia I block (26%) and Shyampur I block (22%). The least number was noted in Shyampur II block (20%). In all the blocks except Shyampur I block more fishermen belonged to the part-time category whereas in Shyampur I block 71% of the fishermen engaged in full-time fishing.

In Hooghly, Nadia and Murshidabad districts the number of fishermen engaged in actual fishery were very low.

*Fishing Craft*

The total number of mechanised boats operating in West Bengal were 1054, out of which 767 (73%) were gillnetters and the remaining 287 (27%) were carrier boats. The maximum number of gillnetters (51%) were found to be operating in 24 Parganas district followed by Midnapore district (45%). Murshidabad and Hooghly districts together contributed nearly 1% of the gillnetters. Out of carrier boats 52% were from 24 Parganas and the remaining were from Midnapore district. Among the gillnetters owned by fishermen, 74% were accounted for by 24 Parganas district and 23% by Midnapore district. The total number of non-mechanised craft in West Bengal were about 4100, out of which plank-built boat constituted 98% and the rest were dugout canoes.

*Fishing Gear*

The total number of fishing gear in West Bengal was 12811, out of which Midnapore district accounts for 5292 and 24 Parganas district 4691. The different types of gear in operation in this states were drift/gill nets, fixed bag nets, hooks and lines, shore seines, traps and scoop nets.

In Midnapore district the most important gear in operation was fixed bag net (52%). Drift/gill net's contribution in this district was only 8%.

In 24 Parganas district the maximum contribution was from fixed bag net (49%) followed by drift/gill net (19%) and hooks and lines (12%). Midnapore and 24 Parganas district together contributed 81% of the fixed bag nets in West Bengal.

*Infrastructure Facilities*

In all the fishing villages (58) of 24 Parganas district there were drinking water facilities whereas in Midnapore district 80% villages (148) only had drinking water facilities. More electrified villages were also observed in 24 Parganas district (22%). The number of electrified villages in Midnapore district was not appreciable (10%). In transport facilities also 24 Parganas district took the foremost place with 62% of the villages connected with roads. Only 45% of the fishing villages were connected by roads in Midnapore district. In other facilities such as medical, communicational and recreational facilities also there was much advancement in 24 Parganas district. None of the villages in Midnapore and 24 Parganas were connected by rail. The assistance from the co-operative societies and banks were also better in 24 Parganas district.

## MARINE FISH LANDINGS

Districtwise and gear-wise marine fish production of West Bengal is given below, hoping that this account will be of help to plan and formulate feasible and economically viable fishery developmental programmes of this state.

*Catch Estimate for the State*

The average marine fish catch in West Bengal during the period 1975–84 was estimated at 19850 tonnes. The maximum production was in the year 1984 (39910 tonnes). The quarterwise analysis of the fish production during this period showed that, on an average, the maximum landings was in fourth quarter (11595 tonnes) followed by first quarter (5678 tonnes) and third quarter (2007 tonnes). The least was during second quarter (570 tonnes). The reason for this may be attributed to the rainy season prevailing in this quarter.

The landings by mechanised units for the five-year period 1980-84 on an average was 12435 tonnes, constituting 53% of the total catch (Table 1). The contribution from mechanised sector was the highest (65%) during 1981. There was a declining trend from 1982 (62%) to 1984 (44%). The highest contribution from non-mechanised units (89%) was in 1980. However, a

Table 1 *Mechanised and Non-mechanised marine fish landings (tonnes) in West Bengal for different years*

| Units | YEARS | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | |
| Mechanised (a) | | | | | | 687 | 13057 | 17006 | 13948 | 17477 | 12435 |
| Effort (in units operation) | | | | | | 15726 | 35385 | 72522 | 69408 | 56112 | 49831 |
| Non-mechanised (b) | | | | | | 5395 | 7009 | 10619 | 9149 | 22433 | 10921 |
| Effort (in units operation) | | | | | | 98826 | 65392 | 114504 | 134269 | 94200 | 101438 |
| TOTAL (a + b) | 27590 | 25411 | 5266 | 12754 | 10694 | 6082 | 20066 | 27525 | 23097 | 39910 | 19850 |

change of pattern in the production of mechanised landings can be noticed from 1981 onwards. The catch per unit effort (CPUE) in the mechanised sector was the highest (369 kg) in 1981. During 1982 and 1983 there was a decline in CPUE (234 kg and 201 kg, respectively) and again in 1984 there was a considerable increase (311 kg). In non-mechanised sector the CPUE fluctuated from 55 kg in 1980 to 238 kg in 1984.

Gill net, seine net and bag net were the three types of major gear in operation in the mechanised sector during the period 1980-84. The average contribution from gill nets to the total catch for this period was 59%, followed by seine net (20%) and bag net (20%). The landings by gill net showed considerable fluctuations from 1981 (67%) to 1984 (46%), and landings in 1982 and 1983 were 40% and 88%, respectively. Though the contribution from bag net was only 8% and 11%, respectively in 1982 and 1983, a considerable increase was noticed in the year 1984 (44%). The better landings in the mechanised sector after 1981 clearly indicates the effect of mechanisation in this state. Considerable yield from seine net (Kochal Jal) was noticed during the year 1981 (33%) and 1982 (48%).

An analysis of the contribution from pelagic and demersal groups for the period from 1975-84 gave the following results (Table 2)

Table 2 *Groupwise total fish landings in West Bengal (tonnes) in different years*

| Groups | YEARS | | | | | | | | | | Average |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | |
| Pelagic | 12574 | 10393 | 3030 | 6769 | 6408 | 3135 | 8734 | 9162 | 10199 | 17059 | 8736 |
| Demersal | 15016 | 15118 | 2236 | 5985 | 4286 | 2947 | 11332 | 18463 | 12898 | 22851 | 11113 |
| TOTAL | 27590 | 25411 | 5266 | 12754 | 10694 | 6082 | 20066 | 27625 | 23097 | 39910 | 19848 |

The maximum contribution from pelagic group was during 1984, which accounted for 17059 tonnes (43%). The average contribution of pelagic and demersal groups, for the ten-year period, was 44% and 56% respectively. The lowest landing from pelagic group was observed during 1977 and the catch was 3030 tonnes. There was considerable fluctuations in the landings of pelagic group of fishes with an average of 8736 tonnes for the ten-year period 1975-84. The highest landings from demersal groups of fishes

during the period 1975-84 was during 1984 with 22851 tonnes and the least was observed during 1977 with [redacted] 2236 tonnes.

The overall specieswise analysis of the average catch for the 10-year period under review showed that the highest contribution was non-penaeid prawns (10.6%) followed by catfish (10.3%), pomfrets (9.8%), bombayduck (9.1%) croakers (8.7%), other clupeids (7.6%), anchovies (5.7%), hilsa shad (4.8%), ribbonfishes (4.7%) penaeid prawn (4.6%) and seer fishes (2.0%). Both penaeid prawn and non-penaeid prawn landings were the highest during the year 1984. Hilsa shad registered the highest catch during the year 1981 and bombayduck during the year 1983. The maximum contribution from pomfrets were also noticed during the year 1983.

## DISTRICTWISE CATCH ESTIMATES

*Midnapore District*

Of the two maritime districts of West Bengal covered in this report, viz. Midnapore and 24 Parganas, Midnapore came first in respect of average annual fish production for the period 1980-84, with an average of 13954 tonnes, accounting for about 50.4% of the average annual production in West Bengal. The maximum landings in Midnapore district was during 1984 (29713 tonnes) and the minimum was during 1982 (4984 tonnes). On an average, 41% of the fish landings in Midnapore district was constituted by pelagic groups of fishes. Maximum contribution (52%) was during 1980 and minimum (31%) during 1981.

Table 3. *Groupwise fish landings (in tonnes) in different years in Midnapore District*

| Years | Group | | |
|---|---|---|---|
| | Pelagic | Demersal | Total |
| 1980 | 3135 | 2947 | 6082 |
| 1981 | 3708 | 8342 | 12050 |
| 1982 | 2183 | 2801 | 4984 |
| 1983 | 4197 | 4872 | 9069 |
| 1984 | 12193 | 17520 | 29713 |
| Average | 5083 | 7296 | 12379 |

Landings by non-mechanised units for the five-year period (1980-84) were on an average 8355 tonnes, forming 67% of the total landings in this district. Even during 1984, the contribution of non-mechanised sector was 73%. Maximum contribution of mechanised sector was during 1981 (56%). The CPUE of non-machanised sector varied from 38 kg/day in 1982 to 245 kg/day in 1984 while the maximum CPUE in mechanised sector was 419 kg/day in 1984 and the minimum 44 kg/day in 1980.

Table 4 *Mechanised and non-mechanised marine fish landings (in tonnes) in different years in Midnapur District.*

| Years | Mechanised | Effort (In units operation) | Non-mechanised | Effort (In units operation) | Total |
|---|---|---|---|---|---|
| 1980 | 687 | 15728 | 5395 | 98826 | 6082 |
| 1981 | 6800 | 19967 | 5250 | 61651 | 12050 |
| 1982 | 2369 | 22976 | 2615 | 60686 | 4984 |
| 1983 | 2133 | 17006 | 6936 | 109721 | 9069 |
| 1984 | 8132 | 19385 | 21581 | 87976 | 29713 |
| Average | 4024 | 19012 | 8355 | 83772 | 12379 |

Four types of gear, viz, gill net, seine net (Kachalnet), hooks and lines and bag net, were in operation in mechanised sector in this district during the period 1980-84. Seine net was in operation only during 1981. During 1984 only gill net and bag net were in operation, contributing 33% and 67%, respectively, of the mechanised marine fish landings in this district. The CPUE of the gill net varied from 44 kg/day in 1980 to 162 kg/day in 1984. CPUE of bag net was 2104 kg/day during 1984.

Table 5 *Gearwise mechanised fish landings (in tonnes) in different years in Midnapur District.*

| Years | | Gear | | | |
|---|---|---|---|---|---|
| | | Gill Net | Seine Net (Kachal Net) | Bag Net | Hooks & Lines |
| 1980 | Catch | 687 | — | — | — |
| | Effort* | 15728 | — | — | — |
| 1981 | Catch | 2905 | 3866 | 29 | — |
| | Effort* | 18006 | 1860 | 101 | — |
| 1982 | Catch | 2363 | — | — | 6 |
| | Effort* | 22895 | — | — | 81 |
| 1983 | Catch | 2121 | — | — | 12 |
| | Effort* | 16853 | — | — | 153 |
| 1984 | Catch | 2717 | — | 5415 | — |
| | Effort* | 16812 | — | 2573 | — |
| Average | Catch | 2159 | 3866 | 2722 | 9 |
| | Effort* | 18059 | 1860 | 1337 | 117 |

* In units operation

Quarterwise analysis of marine fish landings in this district for the period 1980-84 showed that maximum landings were observed during the fourth quarter of every year followed by first quarter and third quarter. On an average 7526 tonnes landed during the fourth quarter and 3406 tonnes in the second.

Specieswise analysis of average catch for the five years during 1980-84 showed that non-penaeid prawns formed the highest constituent, forming 22%, followed by pomfrets (10%), anchovies (10%), catfishes (9%) and Bombayduck (6%). There were heavy landings of non-penaeid prawns (36%) and ribbonfish (18%) during 1984. Peak landings of penaeid prawns (7%), Bombayduck (4%), croakers (6%), pomfrets (4%) and anchovies (13%) were noticed during the above year. On an average the contribution of prawn was only 5%.

Table 6. *Groupwise fish landings (in tonnes) in different years in 24 Parganas District.* *

| Years | Groups | | |
|---|---|---|---|
| | Pelagic | Demersal | Total |
| 1981 | 5026 | 2990 | 8016 |
| 1982 | 6979 | 15662 | 22641 |
| 1983 | 6002 | 8026 | 14028 |
| 1984 | 4866 | 5331 | 10197 |
| Average | 5718 | 8002 | 13720 |

* This District has been included for data collection only from 1981 onwards.

*24 Parganas District*

This district has been included in the survey from 1981 onwards. The average annual production of marine fish in this district wae 13720 tonnes forming 49.6% of marine fish landings in West Bengal. Maximum landings was noticed during the year 1982 (22641 tonnes) and minmum 8016 tonnes during 1981. On an average 77% landings was from mechanised sector. Maximum landings in mechanised sector was during 1982 (14,637 tonnes). CPUE of mechanised sector showed a decreasing trend from 406 kg/day during 1981 to 225 kg/day during 1983. Same trend was noticed in the case of non-mechanised landings also. Gill net, seine net and Jangal net were in operation in this district in mechanised sector. On an average CPUE of different gears were as follows: gill net 227kg/day, seine net (kachalnet) 1609 kg/day, bag net 269kg/day, hooks and line 86 kg/day, stake net 456 kg/day and Jangal net 265 kg/day. 53% of the average annual

marine fish landing in 24 Parganas district was from the Demersal group of fishes.

Table 7. *Mechanised and non-mechanised marine fish landings (in tonnes) in different years in 24 Parganas District.**

| Years | Mechanised | Effort (in units operation) | Non-mechanised | Effort (in units operation) | Total |
|---|---|---|---|---|---|
| 1981 | 6257 | 15418 | 1759 | 3741 | 8016 |
| 1982 | 14637 | 49546 | 8004 | 53818 | 22641 |
| 1983 | 11815 | 52402 | 2213 | 24548 | 14028 |
| 1984 | 9345 | 36727 | 852 | 6224 | 10197 |
| Average | 10513 | 38523 | 3207 | 22083 | 13720 |

* This District has been included for data collection from 1981 onwards.

As in the case of Midnapore district, it was observed that maximum marine fish landings in 24 Parganas district were during the 4th quarter of every year followed by first and 3rd quarter. On an average 49% of the landings were during the 4th quarter. Specieswise analysis of average annual catch for four years during 1981-84 in 24 Parganas district showed that catfish formed the highest constitutent (22%) followed by pomfrets (19%), bombayduck (10%), other clupeids (10%), hilsa shad (9%), croakers (5%) and seer fish (4%).

Table 8. *Gearwise mechanised fish landings (in tonnes) in different years in 24 Parganas District* @

| Years | | Gears | | | | | |
|---|---|---|---|---|---|---|---|
| | | Gill Net | Seine Net (Kachal Net) | Bag Net | Hooks & Lines | Stake Net | Jangal Net |
| 1981 | Catch | 5848 | 409 | — | — | — | — |
| | Effort* | 15178 | 240 | — | — | — | — |
| 1982 | Catch | 4522 | 8177 | 1441 | 489 | 8 | — |
| | Effort* | 30757 | 5093 | 6819 | 6697 | 180 | — |
| 1983 | Catch | 10145 | — | 1508 | 162 | — | — |
| | Effort* | 46055 | — | 4962 | 1385 | — | — |
| 1984 | Catch | 5355 | 29 | 2198 | 186 | 85 | 1492 |
| | Effort* | 22063 | 21 | 7331 | 1652 | 26 | 5634 |
| Average | Catch | 6468 | 2872 | 1716 | 279 | 47 | 1492 |
| | Effort* | 28513 | 1785 | 6371 | 3245 | 103 | 5634 |

* In units operation

@ This District has been included for data collection from 1981 onwards.

Catfish, pomfrets, non-penaeid prawns, bombayduck, hilsa shad, other clupeids, croakers, in this order of abundance, form the major fisheries of West Bengal.

*Catfish*: Annual average landings of catfish during 1981-84 in West Bengal is 4308 tonnes forming 15% of annual marine fish landings in West Bengal during this period. Maximum landings was noticed during 1982 (9075 tonnes). Major landings of catfishes in West Bengal (71%) was in 24 Parganas district forming 22% of landings in that district. This group formed 9% of marine fish landings in Midnapur district. Catfishes were mainly landed by gill net forming 13% of gill net catch in West Bengal. Landings of this fish occurs through out the year, peak season being fourth quarter. 56% of the average annual landings were in the fourth quarter and 36% in the first quarter. Percentage contributions from 24 Parganas and Midnapore districts to the quarterwise landings of catfishes are given below.

Table 9. *Percentage contribution from different districts to the quarterwise landings of catfishes*

| District | Quarter | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 24 Parganas | 91 | 51 | 70 | 58 |
| Midnapur | 9 | 49 | 30 | 42 |

*Pomfrets*: Pomfrets contributed 14% (4025 tonnes) of average annual marine fish landings in West Bengal during 1981-84. Maximum landings of pomfrets was in 24 Parganas district (66%). Pomfrets formed 19% of marine fish landings in 24 Parganas district. Maximum catch of pomfrets was by gill net. During the period 1980-84 on an average 36% of gill net catch was pomfrets. Peak landings of pomfrets was during fourth quarter of

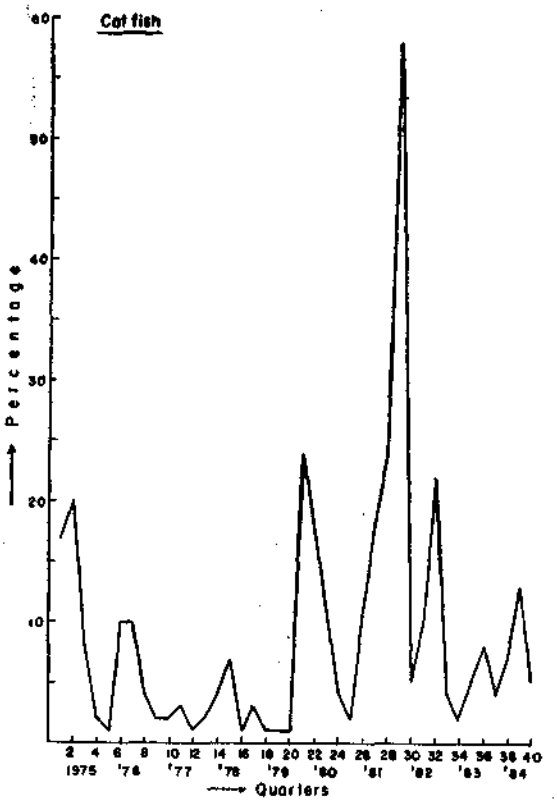


Fig. 2 Quarterwise percentage contribution of Catfishes during 1975-84

every year (69%), followed by first quarter (14.97%), third quarter (14.67%), and second quarter (1.36%) respectively. Contributions from different districts (%) to the quarterwise landings of pomfrets are given below.

Table 10. *Contribution (%) from different districts to the quarterwise landings of Pomfrets*

| District | Quarter | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 24 Parganas | 73 | 18 | 68 | 65 |
| Midnapore | 27 | 82 | 32 | 35 |

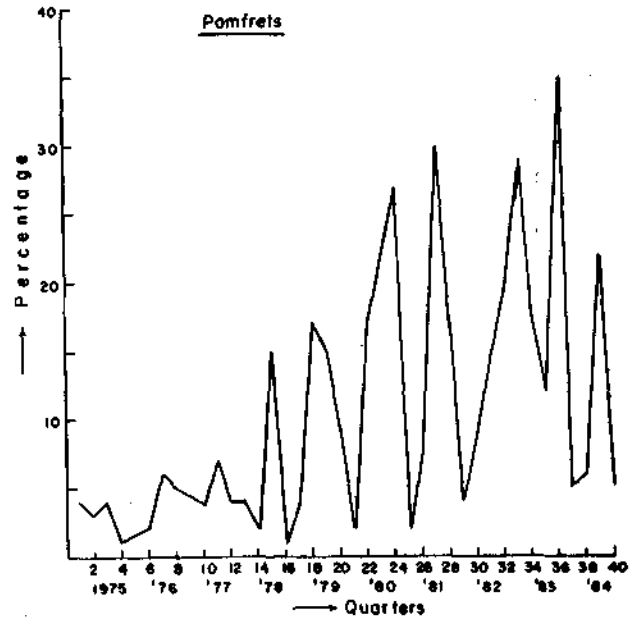


Fig. 3 Quarterwise percentage contribution of Pomfrets during 1975-84

*Non-penaeid prawns:* On an average 3642 tonnes of non-penaeid prawns landed in West Bengal during the period 1981-84, forming 13% of marine fish landings in this state. Maximum landings of non-penaeid prawns was in Midnapore district (94%). Non-penaeid prawns formed 24% marine fish landings in Midnapore district. Peak landings of non-penaeid prawns was during fourth quarter of every year (69%) followed by first quarter (29%). 93% of non-penaeid prawns landings in West Bengal was by non-mechanised units. Percentage contribution from different district to the quarterwise landings of non-penaeid prawns are given below.

Table 11. *Percentage contribution from different districts to the quarterwise landings of non-penaeid prawns*

| District | Quarter | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 24 Parganas | 5 | 36 | 38 | 5 |
| Midnapur | 95 | 64 | 62 | 95 |

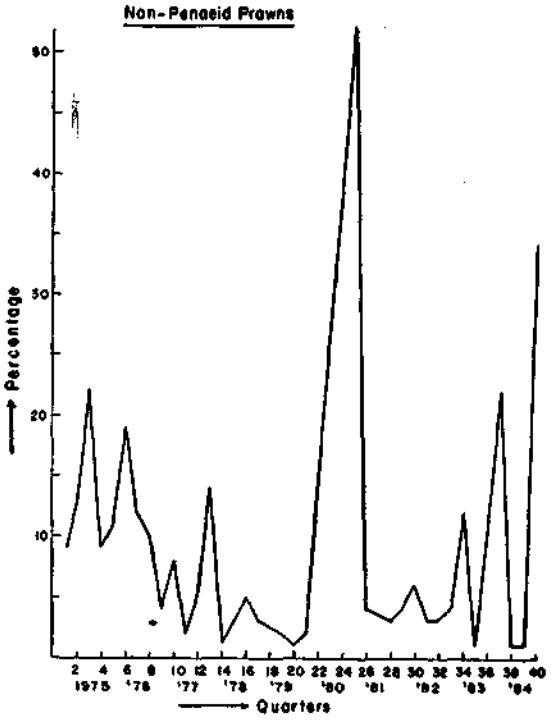


Fig. 4 Quarterwise percentage contribution of non-penaeid prawns during 1975-84

*Bombayduck:* Bombayduck formed 8% of average annual marine fish landings in West Bengal during 1981-84. On an average, 2252 tonnes of this fish landed in this state. Maximum landings of bombayduck was in 24 Parganas district (61%). Bombayduck formed 10% of marine fish landings in 24 Parganas district. In Midnapur district it formed 6% of marine fish landings. Maximum catch of bombayduck was by non-mechanised boats (62%). Bag nets contributed 38%. Peak landings of the bombayduck was during the fourth quarter (46%) followed by third quarter (43%). Percentage contribution from different districts to the quarterwise landings of bombayduck are given below.

Table - 12 *Percentage contribution from different districts to the quarterwise landings of bombayduck*

| District | Quarter | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 24 Parganas | 63 | 53 | 79 | 45 |
| Midnapur | 37 | 47 | 21 | 55 |

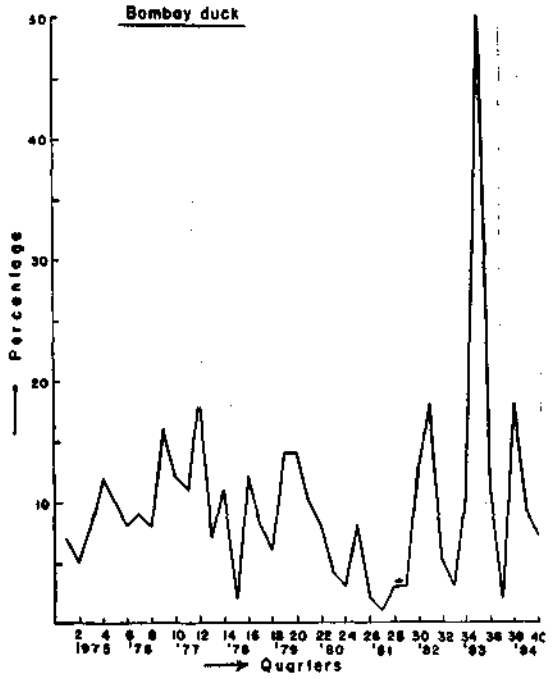


Fig. 5 Quarterwise percentage contribution of bombayduck during 1975-84

*Hilsa shad:* On an average 1715 tonnes of Hilsa shad landed in West Bengal during 1981-84 forming 6% of annual marine fish landings in the state. Maximum landings of hilsa shad was in 24 Parganas district (75%). Hilsa shad formed 25% of the annual marine fish landings in 24 Parganas district. Maximum catch of hilsa shad was by mechanised boats (65%). Gill net contributed 54%. Peak landings were during the 4th quarter (56%) followed by 3rd (36%), 2nd (6%) and 1st (20%). Contribution from different districts (%) to the quarterwise landings of hilsa shad is given below.

Table - 13 *Percentage contribution from different districts to the quarterwise landings of hilsa shad.*

| District | Quarter | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 24 Parganas | 84 | 14 | 76 | 75 |
| Midnapur | 16 | 86 | 24 | 25 |

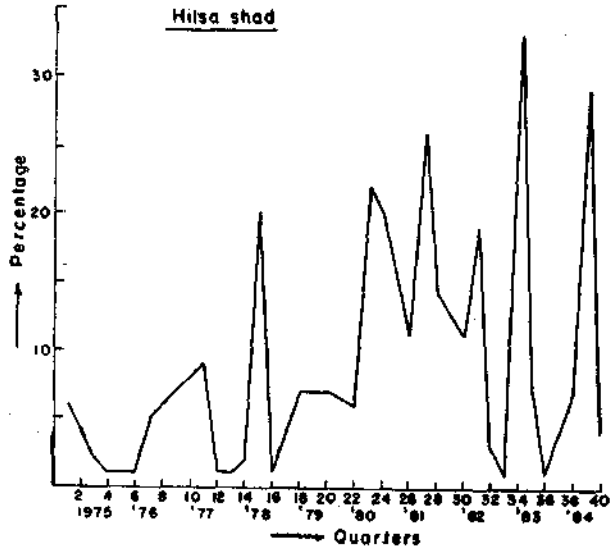


Fig 5 Quarterwise percentage contribution of hilsa shad during 1975-84

*Other clupeids:* These fishes formed 6% of the average annual marine fish landings in West Bengal. On an average 1701 tonnes of other clupeids landed in West Bengal. Maximum landings of these fishes was in 24 Parganas district (82%). Other clupeids formed 10% of annual marine-fish landings in this district. Peak landings of these fishes was during the fourth quarter (75%) followed by first quarter (21%). On an average 71% of these fishes were landed by mechanised units. Contribution from different districts (in %) to the quarterwise landings of other clupeids are given below.

Table 14: *Percentage contribution from different districts to the quarterwise landings of other clupeids.*

| District | Quarter | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 24 Parganas | 91 | 86 | 75 | 19 |
| Midnapur | 9 | 14 | 25 | 81 |

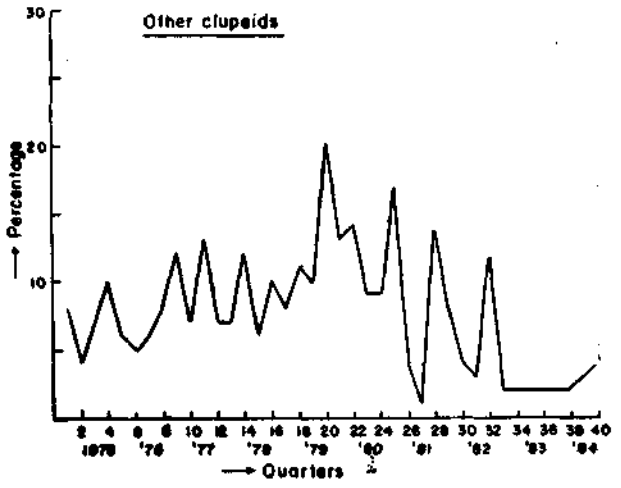


Fig 7 Quarterwise percentage contribution of other clupeids during 1975-84

*Croakers:* On an average 1416 tonnes of croakers were landed in West Bengal forming 5% of the annual marine fish landings in the state. 56% of landings of these fishes was in 24 Parganas district and remaining in

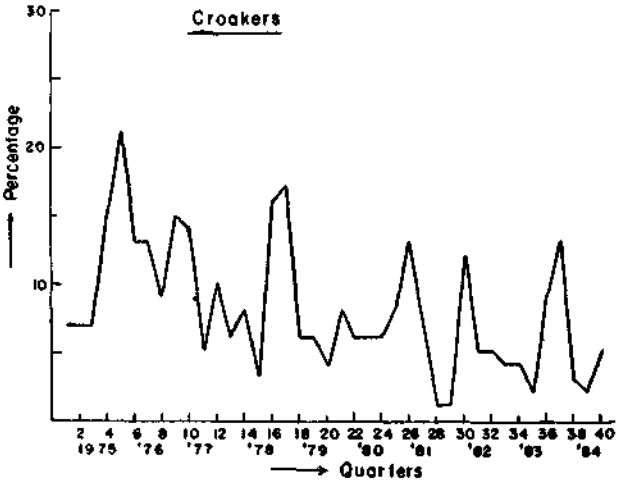


Fig. 8 Quarterwise percentage contribution of croakers during 1975-84

Midnapur. These fishes was mainly landed by non-mechanised gear (57%). Maximum landings of these fishes was noticed during 4th quarter of every year (57%) followed by first (34%), third (6%) and second (3%). Percentage contribution from different districts to the quarterwise landings of croakers are given below.

Table 15: *Percentage contribution from different districts to the quarterwise landings of croakers*

| District | Quarter | | | |
|---|---|---|---|---|
| | 1 | 2 | 3 | 4 |
| 24 Parganas | 42 | 43 | 66 | 64 |
| Midnapur | 58 | 57 | 34 | 36 |

## FISHERY RESOURCES

Very little is known about the fishery resoucres in the marine waters of West Bengal. Seasonal, climatic and oceanographic variations are determined by the two monsoon periods which influence the fisheries. The peak season is during the fair weather period i.e. from mid-October to end February. During the rest of the year, there is practically no fishing in the open sea. The weather during this period is too rough for the traditional craft to operate. Marine waters of West Bengal is poorly exploited when compared with the other region of the country.

The marine fishery resources could be categorised into exploited, underexploited and unexploited resources. Among the underexploited resources; perches, nemipterids, carangids, catfish, mackerel and lesser sardines along the upper east coast, of which West Bengal coast form a part, could be mentioned. Joseph and John (1986) have reported the findings of the major survey projects undertaken by Fishery Survey of India during 1980-85. The vessel Matsya Shikari was deployed along the upper east coast. The catch per unit effort of the major species/groups were as follows:

| *Species/groups* | *Catch per hour( kg.)* |
|---|---|
| Elasmobranches | 10.65 |
| Catfish | 40.22 |
| Pomfret | 11.50 |
| Sciaenids | 16.04 |
| Nemipterids | 10.92 |
| Other carangids | 26.65 |
| Mackerel | 28.26 |
| Clupeids | 10.87 |
| Other varieties | 25.62 |

Perches occured in fairly good concentration along the upper east coast where average catch rate of 13.09 kg/hr was recorded from areas upto 100 m depth. It was observed that highest yield of nemipterids was obtained from 50-100 m strata of this region (14.32 kg/hr). Carangids has

very wide distribution in the entire shelf area of this region up to 200 m depth. The distribution pattern of carangids as revealed from trawl survey is as follows:

| Depth range(m) | Catch (kg.) |
|---|---|
| Below 50 | 46.11 |
| 50-100 | 31.77 |
| 100-200 | 22.82 |

Catfishes formed 17.4% of catch in upper east coast. The catch per hour of catfish in different depth zone in this region is given below.

| Depth range (m) | Catch (kg.) |
|---|---|
| Below 50 | 24.22 |
| 50-100 | 53.21 |
| 100-200 | 15.77 |

Highest catch rate of 53.21 kg/hr was recorded in 50-100 m depth belt of this region when compared with 45.68 kg/hr from the inner coast belt of southwest coast. Though the resource within 50 m depth being tapped to some extent, the stock in deeper water extending up to 150 m remains largely unexploited.

In contrast to the dwindling catch trend in West coast, mackerel landings were steadily on the increase in east coast over the past several years. From the demersal survey it was observed that distribution of mackerel extends along the entire east coast inside the 100 m contour with increasing catch rate in the northern latitudes. The occurance of mackerel in considerable magnitude in trawl catches from deeper waters indicates the possibility for development of mackerel fishery along the upper east coast.

Productive areas of lesser sardines were identified in trawl surveys during 1983 and 1984 from the deeper waters of upper east coast. Though possibilities of higher production of this group from other sections of Indian coast is only marginal, it appears to have promising potential in the deeper waters of upper east coast.

The fish stocks in peripheral shelf area and continental slope along the upper east coast are totally unexploited. *Priacanthus spp* popularly known as "Big eye" or "Bull eye" is the major component of deep sea resource in upper east coast with peak concentration in 100-200 m, with an average catch rate of 44.23 kg/hr.

According to George *et al.* (1977), the areas which need our immediate attention are the upper east coast, particularly, for prawns and cephalopods.

## POTENTIAL YIELD

A recent summary of the findings of the EFP concludes that yearly potential yield of demersal species in the waters off West Bengal is about 50,000 tonnes. However, the estimates are based on exploratory fishing mainly undertaken off the Orissa coast and may not be valid for the shallow water area off West Bengal. According to George *et al.* (1977), the minimum demersal resources potential available in the shelf region of West Bengal could be about 133,000 tonnes besides a minimum yield of an equal amount from pelagic realm. According to them this amount 266,000 tonnes could come, by and large, from the inshore region itself. From the inshore belt, the major resources on the demersal side are prawns, perches, polynemids, sciaenids, pomfrets, catfishes, elasmobranchs and Bombayduck. From the pelagic side, sardines, hilsa, mackerel, carangids, squids and cuttle fishes are expected to make the bulk of contribution.

From the potential offshore harvest of 98,000 tonnes, the cephalopods are likely to dominate with additional contribution from catfishes, sciaenids, sharks and rays, pomfrets, carangids and tuna like fishes. The crustacean group is expected to yield about 7000 tonnes.

Based on the values of organic productivity and shelf area, Jones and Banerji (1973) have estimated the potential marine fishery resources including demersal, off West Bengal coast at about 1,60,000 tonnes. Out of this 1,05,000 tonnes was from the shelf area up to 50 m depth and the rest from beyond 50 m depth.

Another indicator of potential yield is given by considering the maximum catch over a period of time(Alagaraja, MS). The maximum catch that could be obtained under the conditions of exploitation during the period was obtained by considering the maximum catch of important components for the last 5 year period. Estimated total landings was 58,653 tonnes which may be taken as an indicator of potential harvestable yield of the state and it is on the lower side when compared with the estimates arrived at by Jones and Banerji (1973). We can safely assume that the potential harvestable yield of West Bengal will be of the order of 60,000 tonnes. It may be noted that this does not include the potential yield from Sand Heads, as no information is available from that area. Maximum exploited so far was 39,910 tonnes during 1984. There is an additional quantity of 20,000 tonnes which can be exploited in a phased manner. 50% of the additional resource

can be exploited in the next five years. After watching the condition of the stock, we can increase our effort to take the remaining resources.

At the present rate of exploitation, some more additional effort is needed in the next five years to get the additional 10,000 tonnes. The rate of exploitation in West Bengal during 1983-84 are given in Table-16.

Table-16: *Percentage contributions and CPUE of different fishing craft during 1983-84*

| Craft | % | CPUE (in kg) |
|---|---|---|
| (a) Mechanised | | |
| Gill net | 32 | 200 |
| Bag net | 14 | 613 |
| Jangal net | 4 | 265 |
| (b) Non-Mechanised | 50 | 138 |

Using the above table and assuming that there are 250 fishing days in an year, we can obtain the additional number of fishing craft needed in West Bengal during the next five year to tap the additional resource of 10,000 tonnes of marine fishes.

## PROSPECTS FOR FUTURE DEVELOPMENT

(i) There are indications of abundance of the demersal fish like catfish and priacanthus in the coastal areas of West Bengal. The stock in deeper water extending up to the 150 m remains largely unexploited.

(ii) Pelagic group of fishes have sufficient scope to be exploited intensively in West Bengal coast.

(iii) The following additional number of fishing craft can be introduced in West Bengal during the next five year period.

(a) Mechanised

| | |
|---|---|
| (i) Gill net | 60 |
| (ii) Bagnet | 10 |
| (iii) Jangal net | 10 |

(b) Non-mechanised boats 150

## PROSPECTS FOR FUTURE DEVELOPMENT

(i) There are indications of abundance of the demersal fish like catfish and priacanthus in the coastal areas of West Bengal. The stock in deeper water extending up to the 150 m remains largely unexploited.

(ii) Pelagic group of fishes have sufficient scope to be exploited intensively in West Bengal coast.

(iii) The following additional number of fishing craft can be introduced in West Bengal during the next five year period.

| | | |
|---|---|---|
| (a) | Mechanised | |
| | (i) Gill net | 60 |
| | (ii) Bagnet | 10 |
| | (iii) Jangal net | 10 |
| (b) | Non-mechanised boats | 150 |

# APPENDIX

## QUARTERWISE AND SPECIESWISE CONTRIBUTION OF MARINE

| Name of fish | 1975 | | | | | 1976 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | I | II | III | IV | Total | I | II | III | IV | Total |
| 1. ELASMOBRANCHS | 72 | 24 | 36 | 56 | 188 | 9 | 34 | 85 | 365 | 493 |
| 2. EELS | | | | | | — | 1 | — | — | 1 |
| 3. CATFISHES | 734 | 60 | 82 | 365 | 1241 | 204 | 65 | 139 | 377 | 785 |
| 4. CLUPEIDS | | | | | | | | | | |
| a. Wolf herring | 9 | 1 | 14 | 262 | 286 | 179 | 4 | 6 | 62 | 251 |
| b. Oil sardine | | | | | | | | | | |
| c. Other sardines | — | 1 | 4 | — | 5 | — | — | 12 | — | 12 |
| d. Hilsa shad | 233 | 11 | 18 | 124 | 386 | 194 | 8 | 72 | 525 | 799 |
| e. Other shads | 3 | 1 | — | 4 | 8 | | | | | |
| f. Anchovies | 166 | 10 | 73 | 1187 | 1436 | 993 | 10 | 26 | 374 | 1403 |
| g. Other clupeids | 319 | 11 | 71 | 2145 | 2546 | 912 | 36 | 93 | 749 | 1790 |
| 5. BOMBAY DUCK | 303 | 16 | 80 | 2583 | 2982 | 1380 | 51 | 133 | 689 | 2253 |
| 6. LIZARD FISHES | | | | | | | | | | |
| 7. HALFBEAKS & FULLBEAKS | | | | | | | | | | |
| 8. FLYING FISHES | | | | | | | | | | |
| 9. PERCHES | 14 | — | — | — | 14 | — | — | — | 1 | 1 |
| 10. GOATFISHES | | | | | | | | | | |
| 11. THREADFINS | 27 | 6 | 11 | 24 | 68 | — | — | 15 | 54 | 69 |
| 12. CROAKERS | 303 | 20 | 70 | 3353 | 3746 | 2949 | 86 | 186 | 845 | 4066 |
| 13. RIBBON FISHES | 163 | 1 | 24 | 949 | 1137 | 434 | 18 | 22 | 227 | 701 |
| 14. CARANGIDS | | | | | | | | | | |
| c. Leather-jackets | 4 | 2 | 1 | 12 | 19 | — | 1 | 5 | 31 | 37 |
| d. Other carangids | 21 | — | 4 | — | 25 | | | | | |

TABLE-1

# FISH LANDINGS (IN TONNES) IN WEST BENGAL

| 1977 | | | | | 1978 | | | | | 1979 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I | II | III | IV | Total | I | II | III | IV | Total | I | II | III | IV | Total |
| — | 11 | 16 | 1 | 28 | 21 | 19 | 65 | 20 | 125 | 22 | 40 | 19 | 146 | 227 |
| 62 | 7 | 14 | 4 | 87 | 16 | 19 | 44 | 72 | 151 | 88 | 6 | 6 | 36 | 136 |
| 69 | 2 | 13 | 4 | 88 | 25 | 30 | 40 | 122 | 217 | 122 | 73 | 76 | 136 | 407 |
| | | | | | 2 | — | 2 | — | 4 | | | | | |
| 3 | 1 | 41 | 4 | 49 | 4 | 8 | 135 | 46 | 193 | 118 | 72 | 94 | 376 | 660 |
| | | | | | — | — | 28 | — | 28 | — | 32 | — | 6 | 38 |
| 320 | 11 | 10 | 6 | 347 | 37 | 24 | 18 | 719 | 798 | 116 | 18 | 52 | 98 | 284 |
| 439 | 28 | 57 | 58 | 582 | 58 | 59 | 37 | 1020 | 1174 | 230 | 117 | 134 | 1036 | 1517 |
| 594 | 47 | 49 | 158 | 848 | 58 | 53 | 16 | 1238 | 1365 | 260 | 61 | 198 | 692 | 1211 |
| | | | | | 11 | — | — | — | 11 | | | | | |
| | | | | | | | | | | 160 | 26 | 21 | 16 | 223 |
| 3 | 6 | 5 | 3 | 16 | 11 | 6 | 23 | 47 | 87 | 4 | 51 | 7 | 110 | 172 |
| 555 | 55 | 20 | 82 | 712 | 54 | 38 | 20 | 1660 | 1772 | 544 | 66 | 86 | 218 | 914 |
| 135 | 29 | 16 | 64 | 234 | 95 | 22 | 16 | 548 | 681 | 130 | 46 | 61 | 55 | 291 |
| — | 1 | 5 | — | 6 | 8 | 4 | 16 | 10 | 38 | — | 43 | 20 | 4 | 67 |
| | | | | | 2 | — | — | — | 2 | 66 | 4 | — | — | 70 |

| Name of fish | 1975 | | | | | 1976 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | I | II | III | IV | Total | I | II | III | IV | Total |
| 15. SILVER BELLIES | 6 | — | 7 | 17 | 30 | 155 | — | 64 | — | 219 |
| 16. BIG-JAWED JUMPER | | | | | | | | | | |
| 17. POMFRETS | 182 | 8 | 45 | 296 | 531 | — | 15 | 88 | 483 | 586 |
| 18. INDIAN MACKEREL | | | | | | | | | | |
| 19. SEER FISHES | 10 | 4 | 4 | 30 | 48 | 131 | 2 | 8 | 146 | 287 |
| 20. TUNNIES | | | | | | | | | | |
| 21. BILL FISHES | | | | | | | | | | |
| 22. BARRACUDAS | | | | | | | | | | |
| 23. MULLETS | — | 5 | 10 | 4 | 19 | — | 1 | 1 | — | 2 |
| 24. UNICORN COD | | | | | | | | | | |
| 25. FLATFISHES | | | | | | | | | | |
| c. Soles | 1 | — | — | — | 1 | | | | | |
| 26. CRUSTACEANS | | | | | | | | | | |
| a. Penaeid prawns | 326 | 36 | 90 | 1628 | 2079 | 991 | 101 | 154 | 893 | 2139 |
| b. Non-penaeid prawns | 366 | 39 | 230 | 2092 | 2727 | 1511 | 127 | 172 | 898 | 2708 |
| 27. CEPHALOPODS | | | | | | | | | | |
| 28. MISCELLANEOUS | 970 | 44 | 156 | 6898 | 8068 | 4197 | 95 | 177 | 2340 | 6809 |
| TOTAL | 4231 | 300 | 1030 | 22029 | 27590 | 14239 | 655 | 1458 | 9059 | 25411 |

Table - 1 contd.

| 1977 | | | | | 1978 | | | | | 1979 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I | II | III | IV | Total | I | II | III | IV | Total | I | II | III | IV | Total |
| — | 4 | 3 | 2 | 9 | 29 | 22 | 18 | 228 | 297 | 4 | 18 | 28 | 46 | 96 |
| 1 | — | — | — | 1 | | | | | | | | | | |
| 2 | 15 | 30 | 31 | 78 | 38 | 10 | 100 | 134 | 282 | 116 | 171 | 205 | 430 | 922 |
| — | 6 | 11 | 1 | 18 | 8 | 12 | 20 | 14 | 54 | — | 69 | 50 | 212 | 331 |
| | | | | | 24 | — | — | — | 24 | | | | | |
| 267 | 45 | 58 | 84 | 454 | 108 | 70 | 19 | 408 | 605 | 124 | — | 26 | 260 | 410 |
| 134 | 31 | 10 | 43 | 218 | 121 | 6 | — | 536 | 663 | 102 | — | 25 | 34 | 161 |
| | | | | | 30 | — | — | — | 30 | | | | | |
| 1038 | 91 | 82 | 280 | 1491 | 123 | 99 | 45 | 3886 | 4153 | 1018 | 120 | 272 | 1147 | 2557 |
| 3622 | 389 | 440 | 815 | 5266 | 883 | 501 | 662 | 10708 | 12754 | 3224 | 1032 | 1380 | 5058 | 10694 |

## QUARTERWISE AND SPECIESWISE CONTRIBUTION OF MARINE FISH

| Name of fish | 1980 | | | | | 1981 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | I | II | III | IV | Total | I | II | III | IV | Total |
| 1. ELASMOBRANCHS | 2 | 14 | 17 | 76 | 109 | | | | | |
| a. Sharks | | | | | | 8 | — | 46 | 257 | 311 |
| b. Skates | | | | | | — | — | — | 167 | 167 |
| c. Rays | | | | | | 10 | 2 | 8 | 83 | 103 |
| 2. EELS | | | | | | | | | | |
| 3. CATFISHES | 542 | — | 109 | 70 | 721 | 30 | 10 | 237 | 4168 | 4445 |
| 4. CLUPEIDS | | | | | | | | | | |
| a. Wolf herring | 94 | 49 | 60 | 73 | 276 | 28 | 4 | 34 | 230 | 296 |
| b. Oil sardine | | | | | | | | | | |
| c. Other sardines | | | | | | | | | | |
| d. Hilsa shad | 2 | 54 | 214 | 374 | 644 | — | 10 | 337 | 2325 | 2672 |
| e. Other shads | — | 20 | — | — | 20 | 8 | — | 36 | — | 44 |
| f. Anchovies | 132 | 52 | 6 | 4 | 194 | | | | | |
| *Coilia* | | | | | | 86 | 7 | 12 | 140 | 245 |
| *Setipinna* | | | | | | 104 | 14 | 48 | 290 | 456 |
| *Stolephorus* | | | | | | — | — | — | 4 | 4 |
| *Thryssa* | | | | | | 6 | 6 | 6 | 48 | 66 |
| g. Other clupeids | 284 | 130 | 90 | 170 | 674 | 58 | 4 | 16 | 2329 | 2407 |
| 5. BOMBAY DUCK | 234 | 81 | 38 | 66 | 419 | 114 | 2 | 12 | 490 | 618 |
| 6. LIZARD FISHES | | | | | | | | | | |
| 7. HALFBEAKS & FULLBEAKS | | | | | | — | — | — | 1 | 1 |
| 8. FLYING FISHES | | | | | | | | | | |
| 9. PERCHES | — | 8 | 5 | — | 13 | | | | | |
| a. Rock cods | | | | | | | | | | |
| e. Other perches | | | | | | 12 | 2 | 8 | 15 | 37 |
| 10. GOATFISHES | | | | | | | | | | |
| 11. THREADFINS | 8 | 27 | 79 | 72 | 186 | 24 | 4 | 26 | 258 | 312 |
| 12. CROAKERS | 186 | 62 | 4 | 106 | 358 | 118 | 12 | 4 | 134 | 268 |
| 13. RIBBON FISHES | 46 | 59 | 11 | 26 | 142 | 39 | — | 4 | 118 | 161 |

TABLE-2

# LANDINGS (IN TONNES) IN WEST BENGAL DURING 1980-84

| 1982 | | | | | 1983 | | | | | 1984 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I | II | III | IV | Total | I | II | III | IV | Total | I | II | III | IV | Total |
| 211 | 7 | 11 | 294 | 523 | 57 | 10 | 36 | 119 | 222 | 175 | 3 | 23 | 64 | 265 |
| 199 | — | — | 11 | 210 | 31 | 2 | — | 64 | 97 | 22 | — | — | 12 | 34 |
| 88 | 3 | 2 | 406 | 499 | 84 | 5 | — | 176 | 265 | 60 | 2 | — | 80 | 142 |
| 21 | — | 3 | 12 | 36 | 7 | — | — | 4 | 11 | 25 | 3 | 14 | 6 | 48 |
| 5503 | 22 | 308 | 3242 | 9075 | 180 | 20 | 319 | 982 | 1501 | 499 | 13 | 481 | 1218 | 2211 |
| 92 | 1 | 42 | 476 | 611 | 538 | 1 | 55 | 316 | 910 | 108 | — | 44 | 200 | 352 |
| — | — | — | 4 | 4 | 20 | — | — | 21 | 41 | 12 | — | — | 12 | 24 |
| 11 | 46 | 612 | 414 | 1083 | 56 | 376 | 412 | 161 | 1005 | 62 | 13 | 1078 | 948 | 2101 |
| 1 | — | — | 78 | 79 | — | — | 25 | 17 | 42 | 6 | 4 | 100 | 182 | 292 |
| 18 | 19 | 90 | 116 | 243 | 87 | 48 | 140 | 306 | 581 | 967 | 35 | 145 | 268 | 1415 |
| 87 | 66 | 145 | 286 | 584 | 175 | 32 | 69 | 340 | 616 | 1897 | 16 | 84 | 439 | 2436 |
| 1 | — | 41 | 3 | 45 | 13 | 9 | 23 | 1 | 46 | 52 | — | 13 | — | 65 |
| 50 | 13 | 32 | 12 | 107 | 1 | 15 | 111 | 45 | 172 | 21 | — | 36 | — | 57 |
| 739 | 16 | 93 | 1715 | 2563 | 100 | 1 | 10 | 191 | 302 | 257 | 3 | 123 | 960 | 1343 |
| 305 | 60 | 565 | 742 | 1663 | 143 | 110 | 2996 | 1317 | 4566 | 222 | 35 | 322 | 1587 | 2166 |
| | | | | | | | | | | 2 | — | — | 1 | 3 |
| — | — | 11 | — | 11 | | | | | | | | | | |
| 3 | — | 7 | 31 | 41 | 2 | — | 3 | 15 | 20 | 24 | 2 | 7 | 55 | 88 |
| 35 | 2 | 50 | 46 | 133 | 6 | — | 13 | 22 | 41 | 5 | — | 8 | 58 | 71 |
| 73 | 53 | 147 | 799 | 1072 | 184 | 40 | 115 | 1009 | 1348 | 1642 | 6 | 74 | 1253 | 2975 |
| 80 | 2 | 6 | 93 | 181 | 12 | 7 | 15 | 165 | 199 | 924 | — | 13 | 4717 | 5654 |

| Name of fish | 1980 | | | | | 1981 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | I | II | III | IV | Total | I | II | III | IV | Total |
| 14. CARANGIDS | | | | | | | | | | |
| a. Horse mackerel | | | | | | | | | | |
| c. Leather-jackets | 32 | 26 | 14 | 58 | 130 | 4 | — | — | 58 | 62 |
| d. Other carangids | | | | | | | | | | |
| 15. SILVER BELLIES | 16 | 18 | — | — | 34 | | | | | |
| 16. BIG-JAWED JUMPER | | | | | | | | | | |
| 17. POMFRETS | 40 | 167 | 206 | 508 | 921 | | | | | |
| a. Black pomfret | | | | | | 4 | 2 | — | 2 | 8 |
| b. Silver pomfret | | | | | | 18 | 6 | 383 | 2363 | 2770 |
| c. Chinese pomfret | | | | | | — | — | 12 | 528 | 540 |
| 18. INDIAN MACKEREL | | | | | | | | | | |
| 19. SEER FISHES | 32 | 45 | 53 | 104 | 234 | | | | | |
| a. *S. commersoni* | | | | | | — | — | 19 | 1053 | 1072 |
| b. *S. guttatus* | | | | | | 19 | 4 | 34 | — | 57 |
| 20. TUNNIES | | | | | | | | | | |
| a. *E. affinis* | | | | | | | | | | |
| e. Other tunnies | | | | | | | | | | |
| 21. BILL FISHES | | | | | | | | | | |
| 22. BARRACUDAS | | | | | | | | | | |
| 23. MULLETS | | | | | | — | — | — | 1 | 1 |
| 24. UNICORN COD | | | | | | | | | | |
| 25. FLATFISHES | | | | | | | | | | |
| c. Soles | 22 | — | 1 | — | 23 | 4 | — | — | — | 4 |
| 26. CRUSTACEANS | | | | | | | | | | |
| a. Penaeid prawns | 152 | — | — | — | 152 | — | — | 6 | 238 | 244 |
| b. Non penaeid prawns | 48 | — | — | — | 48 | 772 | 4 | 2 | 473 | 1251 |
| d. Crabs | | | | | | | | | | |
| e. Stomatopods | | | | | | | | | | |
| 27. CEPHALOPODS | 4 | — | — | — | 4 | | | | | |
| 28. MISCELLANEOUS | 396 | 146 | 50 | 188 | 780 | 18 | 2 | 24 | 1400 | 1444 |
| TOTAL | 2272 | 958 | 957 | 1895 | 6082 | 1484 | 95 | 1314 | 17173 | 20066 |
| No. of operations of fishing units ('000) | 35 | 30 | 24 | 26 | 115 | 19 | 4 | 16 | 62 | 101 |

Table - 2 contd.

| 1982 | | | | | 1983 | | | | | 1984 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I | II | III | IV | Total | I | II | III | IV | Total | I | II | III | IV | Total |
| | | | | | | | | | | — | — | — | 51 | 51 |
| 2 | — | 22 | 55 | 79 | 331 | — | 56 | 21 | 408 | 11 | — | 4 | 24 | 39 |
| — | — | — | 4 | 4 | — | — | — | 6 | 6 | 1 | — | — | 10 | 11 |
| — | 1 | 15 | 8 | 24 | 53 | — | — | 21 | 74 | 69 | 4 | — | 22 | 95 |
| 50 | — | 4 | 200 | 254 | 214 | — | 3 | 256 | 473 | 77 | 2 | 16 | 183 | 278 |
| 363 | 39 | 474 | 2627 | 3503 | 1036 | 192 | 690 | 3857 | 5775 | 638 | 9 | 797 | 957 | 2396 |
| 4 | — | — | 61 | 65 | 10 | 8 | 2 | 20 | 40 | | | | | |
| | | | | | 2 | — | — | 5 | 7 | 1 | — | — | 31 | 32 |
| 114 | 4 | 70 | 476 | 664 | 268 | 22 | 103 | 115 | 508 | 95 | — | 4 | 10 | 109 |
| 64 | 2 | 5 | 94 | 165 | 170 | 1 | 29 | 92 | 292 | 39 | — | 27 | 74 | 140 |
| | | | | | | | | | | — | — | — | 2 | 2 |
| | | | | | | | | | | — | — | — | 29 | 29 |
| — | 2 | 71 | 2 | 75 | 11 | — | 5 | 1 | 17 | 1 | — | 5 | 5 | 11 |
| 2 | 1 | — | — | 3 | 3 | 2 | — | 32 | 37 | 4 | 1 | 2 | 31 | 38 |
| 55 | 24 | 76 | 144 | 299 | 44 | 42 | 124 | 200 | 410 | 1296 | 11 | 90 | 907 | 2304 |
| 369 | 27 | 84 | 404 | 884 | 167 | 139 | 80 | 1313 | 1699 | 2859 | 2 | 46 | 7828 | 10735 |
| 45 | 11 | 1 | 46 | 103 | 14 | 13 | 118 | 214 | 359 | 31 | 11 | 29 | 40 | 111 |
| — | 1 | 1 | 10 | 12 | 13 | 1 | — | 18 | 32 | 4 | 1 | — | 18 | 23 |
| — | — | — | 6 | 6 | 15 | — | — | 3 | 18 | 33 | 5 | 4 | — | 42 |
| 916 | 15 | 155 | 1636 | 2722 | 244 | 45 | 400 | 268 | 957 | 891 | 18 | 144 | 669 | 1722 |
| 9502 | 427 | 3143 | 14553 | 27625 | 4291 | 1141 | 5952 | 11713 | 23097 | 13027 | 199 | 3733 | 22951 | 39910 |
| 40 | 16 | 37 | 94 | 187 | 43 | 21 | 66 | 74 | 204 | 44 | 7 | 32 | 67 | 150 |

## SPECIESWISE AND GEARWISE CONTRIBUTION OF MECHANISED

| Name of fish | 1980 Mechanised GN | 1980 Mechanised Others | 1980 NM | 1980 Total | 1981 Mechanised GN | 1981 Mechanised Others | 1981 NM | 1981 Total |
|---|---|---|---|---|---|---|---|---|
| 1. ELASMOBRANCHS | ... | — | 109 | 109 | | | | |
| a. Sharks | | | | | 282 | — | 29 | 311 |
| b. Skates | | | | | 143 | — | 24 | 167 |
| c. Rays | | | | | 19 | — | 84 | 103 |
| 2. EELS | | | | | | | | |
| 3. CATFISHES | 105 | — | 616 | 721 | 1033 | 2654 | 758 | 4445 |
| 4. CLUPEIDS | | | | | | | | |
| a. Wolf herring | 42 | — | 234 | 276 | 160 | 1 | 135 | 296 |
| b. Oil sardine | | | | | | | | |
| c. Other sardines | | | | | | | | |
| d. Hilsa shad | 180 | — | 464 | 644 | 1726 | 328 | 618 | 2672 |
| e. Other shads | — | — | 20 | 20 | 20 | — | 24 | 44 |
| f. Anchovies | — | — | 194 | 194 | — | — | 771 | 771 |
| g. Other clupeids | 66 | — | 608 | 674 | 1472 | 2 | 933 | 2407 |
| 5. BOMBAYDUCK | — | — | 419 | 419 | 8 | — | 610 | 618 |
| 6. LIZARD FISHES | | | | | | | | |
| 7. HALFBEAKS & FULLBEAKS | | | | | — | — | 1 | 1 |
| 8. FLYING FISHES | | | | | | | | |
| 9. PERCHES | | | | | | | | |
| a. Rock cods | | | | | | | | |
| e. Other perches | — | — | 13 | 13 | 8 | — | 29 | 37 |
| 10. GOATFISHES | | | | | | | | |
| 11. THREADFINS | 69 | — | 117 | 186 | 197 | — | 115 | 312 |
| 12. CROAKERS | — | — | 358 | 358 | 45 | — | 223 | 268 |
| 13. RIBBON FISHES | — | — | 142 | 142 | 3 | — | 158 | 161 |
| 14. CARANGIDS | | | | | | | | |
| a. Horse Mackerel | | | | | | | | |
| b. Scads | | | | | | | | |
| c. Leather-jackets | — | — | 130 | 130 | 4 | — | 58 | 62 |
| d. Other carangids | | | | | | | | |

# AND NON-MECHANISED UNITS IN WEST BENGAL DURING 1980-84

| 1982 | | | | 1983 | | | | 1984 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mechanised | | | | Mechanised | | | | Mechanised | | | |
| GN | Others | NM | Total | GN | Others | NM | Total | GN | Others | NM | Total |
| 321 | 169 | 33 | 523 | 208 | 5 | 9 | 222 | 217 | 9 | 39 | 265 |
| 83 | 105 | 22 | 210 | 81 | 14 | 2 | 97 | 34 | — | — | 34 |
| 227 | 186 | 86 | 499 | 206 | 48 | 11 | 265 | 66 | 48 | 28 | 142 |
| 1 | 27 | 8 | 36 | 1 | 3 | 7 | 11 | 1 | 19 | 28 | 48 |
| 1099 | 4967 | 3009 | 9075 | 1083 | 122 | 296 | 1501 | 1406 | 495 | 310 | 2211 |
| 325 | 138 | 148 | 611 | 857 | 14 | 39 | 910 | 279 | 28 | 45 | 352 |
| 2 | — | 2 | 4 | 26 | — | 15 | 41 | 7 | — | 17 | 24 |
| 647 | 130 | 306 | 1083 | 444 | 7 | 554 | 1005 | 1693 | 365 | 43 | 2101 |
| 1 | — | 78 | 79 | 36 | — | 6 | 42 | 263 | 26 | 3 | 292 |
| 23 | 31 | 925 | 979 | 10 | 146 | 1259 | 1415 | 10 | 145 | 3818 | 3973 |
| 119 | 995 | 1449 | 2563 | 106 | 8 | 188 | 302 | 549 | 547 | 247 | 1343 |
| 255 | 328 | 1080 | 1663 | 1363 | 959 | 2244 | 4566 | 32 | 859 | 1275 | 2166 |
| | | | | | | | | 2 | — | 1 | 3 |
| 5 | — | 6 | 11 | | | | | | | | |
| 13 | 8 | 20 | 41 | 13 | — | 7 | 20 | 39 | 1 | 48 | 88 |
| 80 | 2 | 51 | 133 | 31 | — | 10 | 41 | 60 | 1 | 10 | 71 |
| 36 | 362 | 674 | 1072 | 72 | 52 | 1224 | 1348 | 325 | 925 | 1725 | 2975 |
| 4 | 1 | 176 | 181 | 1 | 8 | 190 | 199 | 75 | 4306 | 1273 | 5654 |
| | | | | | | | | 46 | — | 1 | 47 |
| | | | | | | | | 4 | — | — | 4 |
| 60 | 12 | 7 | 79 | 375 | — | 33 | 408 | 38 | 1 | — | 39 |
| — | — | 4 | 4 | 6 | — | — | 6 | 3 | 8 | — | 11 |

| Name of fish | 1980 | | | | 1981 | | | |
|---|---|---|---|---|---|---|---|---|
| | Mechanised | | | | Mechanised | | | |
| | GN | Others | NM | Total | GN | Others | NM | Total |
| 15. SILVER BELLIES | — | — | 34 | 34 | | | | |
| 16. BIG-JAWED JUMBER | | | | | | | | |
| 17. POMFRETS | | | | | | | | |
| a. Black pomfret | 170 | — | 751 | 921 | 6 | — | 2 | 8 |
| b. Silver pomfret | | | | | 1669 | 502 | 599 | 2770 |
| c. Chinese pomfret | | | | | 528 | — | 12 | 540 |
| 18. INDIAN MACKEREL | | | | | | | | |
| 19. SEER FISHES | | | | | | | | |
| a. *S. commersoni* | 39 | — | 195 | 234 | 887 | — | 185 | 1072 |
| b. *S. guttatus* | | | | | 43 | — | 14 | 57 |
| 20. TUNNIES | | | | | | | | |
| a. *E. affinis* | | | | | | | | |
| 21. BILL FISHES | | | | | | | | |
| 22. BARRACUDAS | | | | | | | | |
| 23. MULLETS | | | | | — | — | 1 | 1 |
| 24. UNICORN COD | | | | | | | | |
| 25. FLATFISHES | | | | | | | | |
| c. Soles | — | — | 23 | 23 | — | — | 4 | 4 |
| 26. CRUSTACEANS | | | | | | | | |
| a. Penaeid prawns | — | — | 152 | 152 | — | — | 244 | 244 |
| b. Non penaeid prawns | — | — | 48 | 48 | — | — | 1251 | 1251 |
| c. Lobsters | | | | | | | | |
| d. Crabs | | | | | | | | |
| e. Stomatopods | | | | | | | | |
| 27. CEPHALOPODS | — | — | 4 | 4 | | | | |
| 28. MISCELLANEOUS | 16 | — | 764 | 780 | 500 | 817 | 127 | 1444 |
| TOTAL | 687 | — | 5395 | 6082 | 8753 | 4304 | 7009 | 20066 |

GN — Gill net NM — Non-mechanised

Table - 4

# MEN POPULATION, FISHING CRAFT AND GEAR IN WEST BENGAL

| 24 PARGANAS DISTRICT | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Namkhana Block | Diamond Harbour I Block | Diamond Harbour II Block | Mondir Bazer B'ock | Kulpi Block | Sagar Block | Falta Block | Kakdwip Block | Total |
| 28 | 1 | 4 | 1 | 8 | 6 | 3 | 7 | 58 |
| 1440 | 137 | 568 | 168 | 645 | 400 | 142 | 841 | 4341 |
| 1906 | 107 | 498 | 68 | 1109 | 1188 | 43 | 1336 | 6255 |
| 1564 | 72 | 419 | 40 | 868 | 927 | 36 | 1145 | 5071 |
| 281 | 29 | 59 | 25 | 215 | 140 | — | 171 | 920 |
| 61 | 6 | 20 | 3 | 26 | 121 | 7 | 20 | 264 |
| 10144 | 653 | 3283 | 722 | 2707 | 2901 | 695 | 4024 | 25129 |
| 3333 | 238 | 1102 | 248 | 1001 | 879 | 243 | 1492 | 8536 |
| 2769 | 200 | 1021 | 214 | 896 | 712 | 211 | 1321 | 7344 |
| 4042 | 215 | 1160 | 260 | 810 | 1310 | 241 | 1211 | 9249 |
| 1774 | 132 | 901 | 138 | 633 | 678 | 159 | 1041 | 5456 |
| 606 | — | — | — | 372 | 93 | 32 | 600 | 1703 |
| 1072 | 107 | 864 | 127 | 145 | 439 | 119 | 417 | 3290 |
| 96 | 25 | 37 | 11 | 116 | 146 | 8 | 24 | 463 |
| 3503 | 91 | 1231 | 106 | 1517 | 1405 | 282 | 2165 | 10400 |
| 323 | 15 | 78 | 24 | 110 | 429 | 1 | 304 | 1284 |
| 1251 | 2 | 1074 | 18 | 1271 | 583 | 167 | 1068 | 5434 |
| 22 | 2 | 22 | — | — | 144 | — | 266 | 456 |
| 440 | 51 | — | 49 | — | — | 114 | 289 | 943 |
| 1567 | 21 | 57 | 15 | 136 | 249 | — | 238 | 2283 |

| | MIDNAPUR DISTRICT | | | | | | |
|---|---|---|---|---|---|---|---|
| | Contai | | | Ramnagar | | Egra | Total |
| | I Block | II Block | III Block | I Block | II Block | II Block | |
| Members in Co-operative Societies: Total | 209 | 60 | 23 | 195 | 466 | — | 953 |
| Fishermen Co-operative Societies | 85 | 60 | — | 146 | 446 | — | 737 |
| Others | 124 | — | 23 | 49 | 20 | — | 216 |
| Mechanised fishing craft: Total | 56 | 1 | 2 | 2 | 4 | 7 | 72 |
| Gill netters | 46 | 1 | 2 | 2 | 3 | 3 | 57 |
| Others | 10 | — | — | — | 1 | 4 | 15 |
| Non-mechanised fishing craft: Total | 274 | 90 | 230 | 102 | 344 | 92 | 1132 |
| Plank built boats | 274 | 90 | 230 | 102 | 342 | 92 | 1130 |
| Dugout canoes | — | — | — | — | 2 | — | 2 |
| Fishing gear: Total | 1568 | 385 | 922 | 336 | 1569 | 509 | 5289 |
| Drift/Set Gill nets | 218 | 44 | 28 | 46 | 81 | 20 | 437 |
| Fixed bagnets | 956 | 286 | 424 | 260 | 384 | 442 | 2752 |
| Hooks & lines | 13 | 46 | 1 | — | — | — | 60 |
| Shore seines | 41 | — | 3 | 13 | 37 | 3 | 97 |
| Traps | — | — | — | — | — | — | — |
| Scoopnets | 40 | — | 3 | — | 39 | — | 82 |
| Others | 300 | 9 | 463 | 17 | 1028 | 44 | 1861 |
| Aquaculture area (h.a): Total | 5.83 | — | 26.46 | — | 25.52 | — | 57.81 |
| Prawns | 1.03 | — | 2.96 | — | 0.40 | — | 4.39 |
| Fish | 3.40 | — | 23.50 | — | 0.43 | — | 27.33 |
| Prawns & Fish | 1.40 | — | — | — | 24.69 | — | 26.09 |

Table - 4 contd.

| 24 PARGANAS DISTRICT | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Namkhana Block | Diamond Harbour I Block | Diamond Harbour II Block | Mondir Bazar Block | Kulpi Block | Sagar Block | Falta Block | Kakdwip Block | Total |
| 182 | 126 | 88 | 49 | 160 | 15 | 25 | 37 | 682 |
| 108 | 126 | 88 | 49 | 160 | 14 | 25 | 36 | 606 |
| 74 | — | — | — | — | 1 | — | 1 | 76 |
| 135 | 4 | 8 | — | — | 8 | — | 76 | 231 |
| 131 | 2 | — | — | — | 8 | — | 43 | 184 |
| 4 | 2 | 8 | — | — | — | — | 33 | 47 |
| 566 | 61 | 163 | 13 | 122 | 116 | 75 | 610 | 1726 |
| 482 | 61 | 161 | 13 | 122 | 116 | 75 | 610 | 1640 |
| 84 | — | 2 | — | — | — | — | — | 86 |
| 1780 | 400 | 352 | 386 | 276 | 291 | 277 | 904 | 4408 |
| 351 | 42 | 138 | 18 | 92 | 40 | 79 | 150 | 910 |
| 503 | 283 | 111 | 234 | 184 | 169 | 132 | 620 | 2296 |
| 318 | — | — | 1 | — | 82 | 30 | 134 | 565 |
| 247 | 17 | — | 50 | — | — | — | — | 314 |
| 53 | 7 | — | — | — | — | — | — | 60 |
| 101 | 50 | — | 76 | — | — | 36 | — | 263 |
| 207 | 1 | 43 | 7 | — | — | — | — | 258 |
| 12 | — | — | — | — | — | — | — | 12 |
| 4 | — | — | — | — | — | — | — | 4 |
| 4 | — | — | — | — | — | — | — | 4 |
| 4 | — | — | — | — | — | — | — | 4 |

Table - 5

## BLOCKWISE NUMBERS OF MARINE FISHERMEN VILLAGES, FISHERMEN POPULATION, FISHING CRAFT AND GEAR IN WEST BENGAL

| Items | Howrah District | | | | | | Hooghly District Chinsura-hoonagre | Nadia District Rana-ghat | Murshi-dabad District Lalgola |
|---|---|---|---|---|---|---|---|---|---|
| | Begnam | | Shyampur | | Uluberia | Total | | | |
| | I Block | II Block | I Block | II Block | I Block | | | I Block | Block |
| Fishermen villages | 23 | 6 | 12 | 21 | 17 | 79 | 2 | 7 | 9 |
| Fishermen households | 1059 | 361 | 761 | 1061 | 720 | 3962 | 136 | 138 | 564 |
| Educational : Total | 840 | 393 | 729 | 880 | 666 | 3508 | 123 | 36 | 309 |
| Primary | 768 | 336 | 624 | 747 | 581 | 3056 | 121 | 22 | 224 |
| Secondary | 60 | 52 | 83 | 121 | 79 | 395 | 1 | 11 | 74 |
| Above secondary | 12 | 5 | 22 | 12 | 6 | 57 | 1 | 3 | 11 |
| Fishermen population: Total | 5701 | 1768 | 4244 | 5211 | 3528 | 20452 | 648 | 764 | 2641 |
| Adult male | 1375 | 617 | 1347 | 1556 | 1235 | 6130 | 200 | 273 | 966 |
| Adult female | 1238 | 527 | 1214 | 1367 | 1039 | 5385 | 179 | 212 | 989 |
| Children | 3088 | 624 | 1683 | 2288 | 1254 | 8937 | 269 | 279 | 686 |
| Fishermen engaged in actual fishing : Total | 1534 | 490 | 938 | 1043 | 920 | 4925 | 172 | 190 | 600 |
| Full time | 104 | 21 | 664 | 294 | 206 | 1289 | — | — | 202 |
| Part time | 1146 | 467 | 262 | 731 | 537 | 3143 | 171 | 190 | 387 |
| Occasional | 284 | 2 | 12 | 18 | 177 | 493 | 1 | — | 11 |

## BLOCKWISE NUMBERS OF MARINE FISHERMEN VILLAGES, FISHER-

| | MIDNAPUR DISTRICT | | | | | | |
|---|---|---|---|---|---|---|---|
| | Contai | | | Ramnagar | | Egra | Total |
| | I Block | II Block | III Block | I Block | II Block | II Block | |
| Fishermen villages | 35 | 8 | 19 | 27 | 35 | 24 | 148 |
| Fishermen households | 1264 | 266 | 470 | 670 | 1362 | 996 | 5028 |
| Educational : Total | 2094 | 296 | 954 | 1147 | 2990 | 1098 | 8579 |
| Primary | 1716 | 227 | 843 | 924 | 2405 | 997 | 7112 |
| Secondary | 339 | 62 | 107 | 208 | 550 | 85 | 1351 |
| Above Secondary | 39 | 7 | 4 | 15 | 35 | 16 | 116 |
| Fishermen population: Total | 8744 | 1876 | 2829 | 4522 | 9384 | 6572 | 33927 |
| Adults Male | 3095 | 601 | 971 | 1426 | 3257 | 2092 | 11442 |
| Adults Female | 2382 | 548 | 876 | 1266 | 2583 | 1860 | 9515 |
| Children | 3267 | 727 | 982 | 1830 | 3544 | 2620 | 12970 |
| Fishermen engaged in actual fishing: Total | 2385 | 499 | 700 | 1018 | 2620 | 1191 | 8413 |
| Full time | 1883 | 426 | 634 | 986 | 2105 | — | 6034 |
| Part time | 426 | 48 | 62 | 18 | 430 | 1130 | 2114 |
| Occasional | 76 | 25 | 4 | 14 | 85 | 61 | 265 |
| Fishermen engaged in associated fishing activities: Total | 3360 | 532 | 404 | 1171 | 2169 | 1950 | 9586 |
| Marketing | 753 | 166 | 65 | 470 | 565 | 79 | 2098 |
| Net making/repairing | 1504 | 272 | 67 | 544 | 853 | 550 | 3790 |
| Fish curing and processing | 352 | 29 | 29 | 2 | 36 | 116 | 564 |
| Labourer | 205 | 35 | — | 11 | 90 | 7 | 348 |
| Others | 546 | 30 | 243 | 144 | 625 | 1198 | 2786 |

Table - 3 contd.

| 1982 | | | | 1983 | | | | 1984 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mechanised | | | | Mechanised | | | | Mechanised | | | |
| GN | Others | NM | Total | GN | Others | NM | Total | GN | Others | NM | Total |
| — | — | 24 | 24 | 13 | — | 61 | 74 | — | 21 | 74 | 95 |
| 238 | 1 | 15 | 254 | 472 | — | 1 | 473 | 235 | 1 | 42 | 278 |
| 2098 | 930 | 475 | 3503 | 5411 | 52 | 312 | 5775 | 2206 | 77 | 113 | 2396 |
| 63 | 2 | — | 65 | 32 | — | 8 | 40 | | | | |
| | | | | 7 | — | — | 7 | 31 | — | 1 | 32 |
| 430 | 121 | 113 | 664 | 443 | 34 | 31 | 508 | 97 | — | 12 | 109 |
| 149 | 7 | 9 | 165 | 271 | — | 21 | 292 | 126 | — | 14 | 140 |
| | | | | | | | | 2 | — | — | 2 |
| | | | | | | | | 29 | — | — | 29 |
| — | 67 | 8 | 75 | — | — | 17 | 17 | — | 5 | 6 | 11 |
| — | — | 3 | 3 | — | — | 37 | 37 | — | 1 | 37 | 38 |
| 19 | 20 | 260 | 299 | 32 | 77 | 301 | 410 | — | 953 | 1351 | 2304 |
| 34 | 214 | 636 | 884 | — | 85 | 1614 | 1699 | — | 80 | 10655 | 10735 |
| — | — | 103 | 103 | — | 7 | 352 | 359 | — | 26 | 85 | 111 |
| — | — | 12 | 12 | — | — | 32 | 32 | — | — | 23 | 23 |
| — | — | 6 | 6 | 4 | — | 14 | 18 | — | 23 | 19 | 42 |
| 553 | 1298 | 871 | 2722 | 662 | 41 | 254 | 957 | 197 | 435 | 1090 | 1722 |
| 6885 | 10121 | 10619 | 27625 | 12266 | 1682 | 9149 | 23097 | 8072 | 9405 | 22433 | 39910 |

Table - 6

# DISTRICTWISE AND QUARTERWISE MARINE FISH LANDINGS (TONNES) IN WEST BENGAL DURING 1980-'84

| | 1980 | | | | | 1981 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Quarters | I | II | III | IV | Total | I | II | III | IV | Total |
| Midnapur | 2272 | 958 | 957 | 1895 | 6082 | 1484 | 95 | 872 | 9599 | 12050 |
| 24 Parganas* | — | — | — | — | — | — | — | 442 | 7674 | 8016 |
| TOTAL | 2272 | 958 | 957 | 1895 | 6082 | 1484 | 95 | 1314 | 17173 | 20066 |

| 1982 | | | | | 1983 | | | | | 1984 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I | II | III | IV | Total | I | II | III | IV | Total | I | II | III | IV | Total |
| 1433 | 247 | 536 | 2768 | 4984 | 1316 | 853 | 1745 | 5155 | 9069 | 10525 | 99 | 876 | 18213 | 29713 |
| 8069 | 180 | 2607 | 11785 | 22641 | 2975 | 288 | 4207 | 6558 | 14028 | 2502 | 100 | 2857 | 4738 | 10197 |
| 9502 | 427 | 3143 | 14553 | 27625 | 4291 | 1141 | 5952 | 11713 | 23097 | 13027 | 199 | 3733 | 22951 | 39910 |

* This district has been included for data collection from 1981 onwards.

## NAME OF THE LANDING CENTRES IN WEST BENGAL*

### I. 24 PARGANAS DISTRICT

1 Roychak
2 Diamond Harbour
3 Kakdwip (Ganeshpur)
4 Kakdwip (Akshayanagar)
5 Namkhana
6 Beguakhali
7 Kaylaghata
8 Gangasagar
9 Kalistan
10 Frazergange
11 Bakkhali (Canal)
12 Bakkhali (Bus-Stand)

### II. MIDNAPUR DISTRICT

1 Kaukhalighat
2 Panchuria
3 Wasilchack
4 Bhimeswari (Kalaghia)
5 Petuaghat (Dahasanamui)
6 Kadua
7 Junput
8 Saula
9 Purusottampur (Samity)
10 Kharpai
11 Mandarbani
12 Jaldah
13 Chanpur (Off Balisai)
14 Sankarpur
15 Digha Mohana
16 Digha
17 Paramanighat Dalvighat
18 Jenasahi Jatmati
19 Gadadharpur

*The centres are given from north to south.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Fishermen engaged in asssociated with fishing activities: Total | 1535 | 715 | 330 | 587 | 891 | 4058 | 2 | 246 | 962 |
| Marketing | 657 | 39 | 57 | 93 | 323 | 1169 | — | — | — |
| Net making / repairing | 549 | 397 | 120 | 346 | 479 | 1891 | — | 61 | 682 |
| Fish curing and processing | 280 | — | — | 7 | 72 | 359 | — | — | — |
| Labourer | 28 | 269 | 121 | 125 | 13 | 556 | — | — | — |
| Others | 21 | 10 | 22 | 16 | 4 | 83 | 2 | 185 | 274 |
| Members in Co-operative Societies: Total | — | 47 | 142 | 80 | 122 | 391 | 41 | 12 | 221 |
| Fishermen Co-operative Societies | — | 47 | 141 | 80 | 121 | 389 | 41 | 12 | 221 |
| Others | — | — | 1 | — | 1 | 2 | — | — | — |
| Mechanised fishing craft: Total | — | — | — | 1 | — | 1 | 2 | — | 4 |
| Gill netters | — | — | — | — | — | — | 2 | — | 4 |
| Others | — | — | — | 1 | — | 1 | — | — | — |
| Non-mechanised fishing craft: Total | 431 | 87 | 199 | 231 | 213 | 1161 | 10 | 7 | 25 |
| Plank built boats | 431 | 87 | 199 | 231 | 212 | 1160 | 10 | 7 | 25 |
| Dugout canoes | — | — | — | — | 1 | 1 | — | — | — |
| Fishing gear: Total | 1196 | 252 | 318 | 435 | 546 | 2747 | 28 | 33 | 20 |
| Drift / Set Gillnets | 422 | 99 | 144 | 199 | 211 | 1075 | 10 | 15 | 20 |
| Fixed bagnets | 684 | 114 | 135 | 186 | 15 | 1134 | 18 | — | — |
| Hooks & lines | 90 | 39 | 34 | 45 | 36 | 244 | — | — | — |
| Shore Seines | — | — | — | — | 25 | 25 | — | — | — |
| Traps | — | — | — | — | 1 | 1 | — | — | — |
| Others | — | — | 5 | 5 | 258 | 268 | — | 18 | — |