



BAY OF BENGAL PROGRAMME
DEVELOPMENT OF SMALL-SCALE FISHERIES



PILOT SURVEY OF
DRIFTNET FISHERIES
IN BANGLADESH

BOBP/WP/15

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This document reports on the observations and findings of a pilot survey of marine driftnet fisheries in Bangladesh. It is intended as a first step towards an accurate and comprehensive account of this fishery.

The sample data yielded by this survey will allow a first approximation of some features of Bangladesh's marine driftnet fishery. It also provides practical experience which may be valuable for planning a more comprehensive survey. The survey was conducted during February and March 1981 and was planned and executed by a Fishery Biologist of the BOBP, assisted by a team of four fisheries officers from the Marine Fisheries Department in Chittagong. Some 280 questionnaires, each form recording one landing of fish by a fishing unit, were completed during this survey and later analysed.

The survey was an activity of the Bay of Bengal Programme for the Development of Small-Scale Fisheries, referred to in brief as the Bay of Bengal Programme. This is a regional FAO Programme that seeks to develop and demonstrate appropriate technologies in many areas of small-scale fisheries—such as craft, gear and methods, aquaculture, extension, and information. The Programme's main goal is to improve the quality of life of small-scale fisherfolk and increase the production of fish from the small-scale sector in five countries that border the Bay of Bengal—Bangladesh, India, Malaysia, Sri Lanka and Thailand.

This document is a working paper and has not been officially cleared either by the Bangladesh Government or by the FAO.

SUMMARY

Two hundred and eighty fishing units were interviewed for this survey. Conducted during February and March 1981, the interviews sought details about fishing operations and fish landings. The work covered the two main categories of drift-net— $3\frac{1}{2}$ - $4\frac{1}{2}$ inch and $7\frac{1}{2}$ - $8\frac{1}{2}$ inch stretched mesh respectively—at three major landing sites.

It was found that the productivity, expressed in terms of catch weight per fishing day or as catch value per day of trip duration at that time was considerably lower for large-mesh units than for small-mesh units. It was also found that the average length of net used by large-mesh boats (around 1300 m) was considerably less than that for small-mesh boats (1800-2200m). There was no difference in the number of crew on board: between 7 and 10 per boat, in both categories. Averages for times spent running to and from fishing grounds, and for times actually spent fishing, were established. In this respect the units may be considered very efficient—very little time was wasted. The catch weight per km net and fishing day may have varied more with the fishing area than with the category of net used. Differences in value of catch per km net resulted not so much from differences in catch composition between units and categories of units as from other factors such as length of net deployed, skill of crew etc.

The survey contains suggestions as to how similar surveys could be designed and carried out in the future.

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1 INTRODUCTION

Most of the marine fish catch in Bangladesh is landed by small-scale fishermen and it is believed that about one-third is taken by driftnet. This fishery has been undergoing changes as a result of the introduction of mechanised boats; also, various projects have been undertaken or have been proposed with a view to developing and introducing boats, fishing gears, and methods of capture, with better performance than those at present used by the fishermen, besides other putative improvements.

The Bay of Bengal Programme has in cooperation with the Directorate of Fisheries carried out experiments during the past two years on the improvement of large-mesh driftnets in Bangladesh. Experiments during the fishing season 1979-80 yielded promising results (See BOBP/WP/5). Further experiments during 1980-81 (described in the paper BOBP/WP/12) have been equally promising. They indicated that nets of thinner twine cost less money and, under experimental conditions, catch more fish than nets of thicker twine.

What impact would the introduction of new nets—if found superior to the existing nets—have on productivity? It was considered desirable to study to what extent fish landings and the fishery economy can possibly be improved by such introduction. The present paper is part of that effort. It may be useful since effective means of statistical collection have not yet been established for the marine fisheries of Bangladesh, and the accuracy of present estimates of size of fleet, landings etc., is difficult to assess.

As a first step towards acquiring a more accurate and comprehensive account of the marine driftnet fisheries needed for the above examination it was decided to conduct a pilot survey at selected fishing bases over a limited period of time. This was intended to provide sample data that would allow a useful first approximation of the true state of affairs in this fishery, It was also expected to provide practical experience valuable when planning a more comprehensive survey in the future.

2 CONDUCT OF PILOT SURVEY

2.1 Scope

The principal questions to which answers were sought were as follows:

- number of fishing units operating from the landing sites
- number of people employed
- characteristics of boats
- characteristics and quantities of fishing gears used
- quantities and values of catches landed
- details of voyage cycles : time in port, time running to and from grounds, time on fishing grounds.

Information relating to these questions was gathered by interview and by direct observation at three landing sites.

The data were subsequently analysed in various ways (see Chapter 4) in order to ascertain, where possible, figures for total catch, fishing effort and productivity during the period, and potential for improvement.

Three landing sites were chosen, believed to be the three where the biggest volume of fish is landed; Patherghata (Chittagong), Bridgeghata (Chittagong) and the Bangladesh Fisheries Development Corporation's market at Cox's Bazar.

2.2 Method

In consultation with national counterparts, the associate expert from BOBP responsible for the pilot survey devised a simple questionnaire (Appendix 5) which indicated the type of information to be sought by the survey teams. The techniques used were observation and interview: as many senior fishermen ("Maji") of boats found landing fish were interviewed, and questionnaire forms completed, as time and resources of manpower allowed.

The landing sites chosen for the pilot survey had different topographies and methods of operation:

At *Patherghata* the fish is often brought ashore by sampan; this is not easy to "overview" and it is difficult to ascertain how many fishing units actually landed fish on a particular day or whether any fishing unit landed only a part of its catch on some occasions. The fishing units at anchor were counted and a number of them were visited.

At *Bridgeghata* the fish is landed at a pontoon-key, so direct access was possible to boats and crews landing fish, hence all fishing units could easily be interviewed while landing.

At the *BFDC market, Cox's Bazal*, the catch is again mainly brought ashore by sampans. However, the entire anchorage is easily visible and all the fishing units landing on a particular day (5 to 15 in number) could be visited.

Catches are also collected at sea by carrier launches. The impression formed by the pilot survey team was that this activity was modest in scale and for the limited objective of the pilot survey it was neither necessary nor desirable to expend the considerable effort that would be needed in order to take it fully into account. Instead the catching units were asked to confine their answers to the fishing operations relating to the catches that they themselves landed.

2.3 Execution

The pilot survey was planned and executed jointly by staff of the Marine Fisheries Department of the Ministry of Fisheries and Livestock, based in Chittagong, and the BOBP. The work was carried out during the period January-March 1981, including three weeks of practical work in the field, from 15 February to 6 March.

The team leader was an Associate Expert Fishery Biologist from BOBP. He was assisted by four fisheries officers, alternating two-and-two. The team leader did not speak or understand Bengali.

Some 280 questionnaires were completed or partly completed, each form recording one landing of fish by one fishing unit. For each item about 200 of these were adjudged to be genuine records of actual landings and were analysed. The raw data are held at BOBP headquarters.

3 PRIMARY DATA

3.1 Boats

The fishing Units engaged in the driftnet fishery and observed during the survey are decked wooden motor boats ranging in length from 11.5 to 13 metres (38' to 42') LOA, propelled by inboard diesel engines of 12 to 33 hp. These boats are built by small private boatyards, by cooperatives and by the BFDC boatyard at Chittagong.

3.2 Fishing gear

Two main types of driftnet are used : the small-mesh net intended for catching *H/Isa* (3 to 5½ inches stretched mesh) ; and the large-mesh net for large pelagic and semi-pelagic species (7 to 9 inch mesh). A given fishing unit will employ only all small-mesh nets or all large-mesh nets at any one time.

Most large-mesh nets observed were in the size range 7½ to 8½ inches, most small-mesh nets observed were in the size range of 3½ to 4½ inches.

The nets are usually made of imported nylon twine, either by hand or by machine. Most small-mesh nets are made of 210 d 6 twine, with a few 210 d 9 and 210 d 12; only one boat was using 210 d 9 exclusively. Almost all large-mesh nets observed were of 210 d 45. (In a BOBP project, trials have been made of lighter large-mesh nets constructed of finer twine than customary. The indications are that these catch at least as much fish, suffer negligible additional damage and are much cheaper).

Fishermen were asked what length of net they deployed; their statements are shown graphically in Appendix 3, and can be summarised as follows:

- The statements of fishermen using large-mesh nets at Patherghata give a range of lengths of net in use from about 330 m to over 3600 m, with an average of about 1300 m.
- At Bridgeghata the shortest length of small-mesh net said to be deployed by any one fishing unit was 800-odd metres, the longest about 3100 metres, and the average was about 1800 metres.
- At BFDC's Cox's Bazar landing site, the stated figures for length of small-mesh net deployed were 1100-3300 m, with an average of 2200 m plus, significantly higher than those of the Chittagong units.

The rather shorter lengths of large-mesh net, as compared to small-mesh, can probably be explained by the greater weight and bulk of large-mesh netting; or possibly by some other reason connected with tactics of the fishing operations.

The fishermen were also asked what length of net they regarded as best, and gave answers ranging from what they were currently using, to twice that length. The survey team were careful to ask supplementary questions on this point, to elucidate what implications or inferences the fishermen were reading into the question, or whether they had any reservations as for example considerations of finance or the size of existing boat. The resolution of such doubts is not easy. The average *additional* length desired is in the order of 25% to 30% of what they now have. It is not clear what is the maximum length of net an individual fishing unit is physically capable of storing on board, shooting and hauling, and whether the ruling constraint is space, or physical power, or other operational factors. One reason given for not using longer nets was fear of theft.

3.3 Crews

The number of crew members in the boats observed varied between six and twelve, most boats having seven to ten. One of these is a driver (engine operator) ; another is a cook.

The average number of crew from all observations is just under nine. There was only a slight difference in the average between the boats using large-mesh and the boats using small-mesh nets, so this may not reflect a conscious choice or a practical difference in man-power requirements.

3.4 Fishing Operations

The time taken to run off to the grounds fished during the period of the survey were said to vary from 2-3 hours to 12-18 hours. Roughly the same time was taken to return to port. Most of the fishing by driftnet is said to take place in waters of 6 to 10 fathoms depth (11 to 18 metres).

Fishing takes place day and night in normal circumstances. Nets are shot and hauled twice a day, more or less at the time of slack water.

In what follows, the duration of a trip is defined as the number of days between successive landings by the same unit.

For the large-mesh units based at Patherghata, the duration of a trip thus defined, during the period of observation, was stated as usually being between 9 and 13 days, the average being 11.35 days. The number of days during the trip that the nets were said to have been actually fishing varied from about 5 to about 9½ days; the average number of fishing days, on the basis of these statements was 6.95 days per trip during the period in question. For small-mesh units see also Appendix 1.

Omitting day of departure and day of arrival, part or all of which were spent in running to or from the grounds and in harbour work, a little less than 2½ clear days were available, on average, for rest, repairs, servicing of the vessel and gear, and for taking in provisions.

Some units based on Cox's Bazar and using small-mesh nets were landing daily.

In such a short survey information could not be collected on how this pattern might be affected by season, and by other causes beyond the fishermen's control, such as weather: or suspension of fishing operations in order to celebrate festivals, carry out overhauls, etc.

The survey did not give priority to enquiries about the factors which are taken into consideration in making the decision to stop fishing and return to port. There is some prestige in coming back with a full hold; the most frequent causes of returning earlier are believed to be bad weather and insufficient ice to keep the catch in good condition any longer.

3.5 Catches

The weight of fish landed by each fishing unit investigated was estimated by the head fisherman ("Maji"), in maunds, and converted to kilograms.

During the survey period the estimated catches landed per trip were:

Units/Landing site	Average catch	Range (lowest-highest)	Median
Large-mesh/Patherghata	1340 kg	190-3800 kg	1120 kg
Small-mesh/Bridgeghata	2060 kg	370-4850 kg	1866 kg
Small-mesh/Cox's Bazar	1260 kg	300-2430 kg	1306 kg

The figures in the middle column describe the great variation (range) in size of landings but will not indicate differences in productivity since the variation is due also to differences in lengths of nets and in number of fishing days per trip for the individual units and for the groups of units.

3.6 Gross Earnings

The averages of the reported gross earnings from sale of catches at first sales during the period of the survey were as follows:

Units/Landing site	Take
Large-mesh/Patherghata	11,900
Small-mesh/Bridgeghata	21,000
Small-mesh/Cox's Bazar	11,100

Here again, the figures do not indicate productivity, for the same reasons as above, under 3.5.

3.7 Remuneration

Two systems of remuneration for crews prevail.

Share system : The income is divided so that the boat owner keeps 50%-60% and the crew share the rest. Among the crew the head fisherman usually has two shares, and cook and driver often only one half share, the others in the crew one share each.

Monthly pay plus pay bonus: The crew are offered from the total income, a monthly pay of TK 250-1200, the rate depending on (a) position on board (b) profitability of unit and (c) generosity of boat owner. This monthly pay is often supplemented with food and also with a cash bonus of TK 20-50 for each time a good catch is landed. A few extreme cases were recorded: (1) Monthly pay TK 2,000-4,500 (2) Bonus 20% of good catch (3) Bonus TK 150-200 per good catch.

4. DERIVATION OF RESULTS

Primary data such as those summarized in section 3 above can be analysed so as to derive estimates of total number of fishing units and fishermen, total catch over the period, average values at landing, and some indices of productivity. It may then be possible to make estimates of the impact, in such terms, of certain kinds of innovation or change.

What follows are a few simple examples of how raw data of the kind obtained in the pilot survey can be treated to yield these results. The reader should bear in mind that the pilot survey was short in duration; most of the information is based on statements made in the course of interview but some (weight of catch for example) on eye estimates by head fishermen. The significance of what follows lies not only in the numerical results but also in the way they illustrate what information can be derived from surveys of the kind herein described.

4.1 Number of Fishing Units

Two methods of estimating the size of the fleets were used. In cases where it was believed that all the vessels landing on a particular day had been counted, the average number of landings per day over the survey period was multiplied by the average of the (stated) trip duration.

Where only a fraction of the vessels landing on a particular day could be investigated, an estimate was made of the total number of vessels in port, and a sample was interviewed to ascertain whether or not they had landed that day; in this way, an estimate was made of the total number of vessels landing on that day. The average estimate of the number of landings per day during the period of the survey was then multiplied by the average of the stated duration of trip obtained by interviewing the sample.

At Patherghata, the first method—which is understood to be a clear underestimate here another 2-4 boats per day not seen and therefore not counted were said to land—gave an estimated total fleet of about 60 large-mesh boats ; the second, an estimate of at least 110 such boats. A correction for “boats said to land” would raise the first estimate to about 95.

Thus there is reason to suspect that as many as 100 to 150 large-mesh units may be operating from this base. (The small-mesh units at Patherghata have not been surveyed as they were seen as a minor group. However they were automatically counted when checking the proportion of large-mesh boats out of the total. The number of small-mesh units there is estimated at 40-50). A more extensive and thorough survey is required.

The tentative estimate for Bridgeghata is 210-250 small-mesh units; for Cox's Bazar 90-110 units.

The above estimates suggest that about one quarter of the fleet were using large-mesh nets for the season 1980/81.

4.2 Volume of Landings

If the number of large-mesh units based on Patherghata is taken as 125, if the average time between landings for these units is taken as 11.35 days and if the average catch (estimated) was 1340 kg. then the total catch landed by large-mesh units over one week during the survey period would be $(1.34/11.35) \times 7 \times 125$ i.e. about 100 tons. The same estimate for 45 small-mesh units landing there would with data for other factors applied from Bridgeghata be nearly 60 tons.

At Bridgeghata the same type of calculation gives an estimated total of landings by 230 small-mesh units of 290-300 tons; at Cox's Bazar 125-130 tons landed by 100 small-mesh units.

The landings at the three sites during one week of the survey period may therefore have been in the order of 500-600 tons.

4.3 Number of Fishermen

If the number of large-mesh units at Patherghata is assumed to be 125 and the average number of crew observed in the sample investigated was 8.9, then a total of around 1100 fishermen were engaged in large-mesh driftnetting based on Patherghata during the survey period. Similar calculations suggest about 400 fishermen engaged in small-mesh drift-netting from Patherghata during the period; about 2000 from Bridgeghata and about 880 from Cox's Bazar. In all, around 4400 fishermen may have been involved in the activities covered by the survey.

4.4 Value of Fish

The average value per kg of the landings during the survey period can be estimated from the total weight of the sample of the landings observed and the total stated value of those landings, as follows:

Unit & Landing site	Value of fish (Taka/kg)
—Large-mesh units, Patherghata	9.23
—Small-mesh units, Bridgeghata	10.13
—Small-mesh units, Cox's Bazar	8.82

Differences in earnings thus seem to be not so much due to the differences in catch composition between units and categories of units, as to other factors such as length of net deployed, skill of the crew etc.

4.5 Productivity

The average *catch per day* for a fishing unit, at the time of the survey, can be estimated from the landings of the observed sample and the stated durations of trips and numbers of days spent fishing

Unit & Landing Site	Catch rate in kg/day (rounded figures)	
	Per day of trip duration	Per day fishing
—Large-mesh units, Patherghata	120	190
—Small-mesh units, Bridgeghata	180	280
—Small-mesh units, Cox's Bazar	180	260

Average *gross earnings per day* during the survey period can be calculated from the total of stated earnings, and the total of days that had elapsed since the previous landings for the sample of boats interviewed, as follows

Unit & Landing Site	Gross Earnings (Taka per day of trip duration)
—Large-mesh units, Patherghata	1070
—Small-mesh units, Bridgeghata	1960
—Small-mesh units, Cox's Bazar	1610

The average *catch per unit effort* can be calculated on the basis of the statements about catches, lengths of nets deployed and corresponding numbers of days fished as

$$\text{Total catch} \frac{\sum \text{kg weight of landings}}{\sum (\text{km net} \times \text{fishing days})}$$

and was during the survey period:

Unit & Landing Site	kg weight of landing per km net and fishing day (rounded figures)
—Large-mesh, Patherghata	150
—Small-mesh, Bridgeghata	160
—Small-mesh, Cox's Bazar	110

Productivity in terms of *earnings per unit of fishing effort* can be calculated as

$$\frac{\text{Total value } \sum \text{values of landings}}{\text{Total effort } \sum (\text{km net} \times \text{fishing days})}$$

and was during the survey period as below

Unit & Landing Site	Taka value of landing per km net and fishing day (rounded figures)
—Large-mesh, Patherghata	1390
—Small-mesh, Bridgeghata	1590
—Small-mesh, Cox's Bazar	990

The small-mesh units operating from Cox's Bazar seem to have had a lower catch per effort during the survey period than the small-mesh units operating from Chittagong. This could possibly be explained by the fact that Cox's Bazar boats at the time of the survey did not operate as far off-shore as the Chittagong boats, and that probably the inshore stocks are more heavily exploited. The lower catch per effort for Cox's Bazar units seems "compensated" for by use of longer nets and by the shorter times on passage, so that small-mesh units at the two sites during the survey period show a similar efficiency measured as catch per trip day.

5 DISCUSSION

The foregoing describes the types of information about a fishery that a survey of this kind can produce, and some of the uses that can be made of the information. The pilot survey was (deliberately) of short duration and seasonal effects could not be taken into account. Its significance lies therefore not only in the numerical results, but also in the way it illustrates what information can be derived from such surveys.

Even if the data on variables presented cannot in all cases be extrapolated to give valid estimates for the complete season, data on the same variables collected during the same period over several years can be used to distinguish trends.

There seems to be potential for employing more nets on board the large-mesh fishing boats; since, at present these fishing units deploy significantly shorter lengths of net than small-mesh units, possibilities to increase catches through improved availability and use of nets seem to exist in the large-mesh fishery. If this is found technically and operationally possible, then data on catch per unit effort collected over the season can be used to predict the increase in total landings. As long as the level of exploitation of fish stocks concerned is not so high that the catch per unit effort is considerably affected by further increase of total fishing effort, then the increase will be near proportional. Factors that could counteract this could be for example inability by the least experienced fishermen to handle longer nets; also, better catches or insulation of the fish hold would make the hold full sooner for the best performing units and result in more days steaming and in port in a season and thus in fewer days fishing.

When the stocks of fish caught in large-mesh driftnet fishery are exploited to optimal level or close to it, then of course further increase of nets is of no use or can even have an adverse effect. The present levels of exploitation are not well enough known for Bangladesh waters, but can be learnt through regular monitoring by catch surveys.

Even if, for the reasons stated above, the *total* volume of landings cannot increase fully in simple proportion to the increase in catching performance of the net, it could still be possible to improve the average productivity of *individual* large-mesh boats. This can be achieved through *extension of lengths* of nets ; the results of other experiments by the Marine Fisheries Department and BOBP with large-mesh driftnets of lighter construction* suggest that *improvements in catching performance* of the net may also be possible, and that the netting under trials is considerably cheaper than, and has at least the same durability as, the netting now commonly in use. If this will prove to be conclusive, then it is desirable that any renewal, extension or increase of nets in use will be of this type.

For the individual fisherman optimum economy is of course more important than optimum catch. However, it was not within the survey's purview to consider other factors that affect optimum economy—such as cost of investment in nets, floats and sinkers, or running costs such as ice, fuel, etc.

The pilot survey gave valuable experience which can be used to design more comprehensive surveys in the future. To provide a more accurate picture of the Bangladesh marine driftnet fishery, a more extensive survey should be undertaken, along the lines recommended below.

The survey should be periodic, in order to produce an indefinite time series of statistical data for use by the various specialists that are or may be engaged in the organisation, regulation and development of the marine (driftnet) fisheries.

The scope of the survey could be made wide enough to produce all the data on the operations of the (driftnet) fleets likely to be required by experts working in the fields of fisheries resources, management, technical development, marketing, economics and statistics. It would then have to include, in addition to the data recorded in the pilot survey, data on inputs such as fuel, ice and food, and data on catch composition.

Methods of gathering and checking information should be discussed. For example, it should be decided whether, and how, at least some of the statements regarding lengths of net deployed, and grounds fished, can be checked. It is desirable to have staff enough to carry out some kind of physical checks on the accuracy of information on landings and length of net in use for at least a fraction of the sample.

A team carrying out a periodic survey of fishing operations cannot simultaneously carry out tasks that require special skills or use of special equipment, or that require much time and labour, as for example sampling and measuring catches for length, sex and other biological parameters; this should be done at another time, if necessary by specialists. Likewise, information on costs of repairs, maintenance and replacement of boats and fishing gear, which will be required for studies of costs and earnings, should not be collected in the course of surveys on fishing operations. Such data should be gathered separately, at perhaps yearly intervals.

To give a picture of fluctuations and of the whole season, the aim should be to carry out a sampling survey or complete survey at each of the main landing sites three times in each season until sufficient data and experience have been gathered to indicate otherwise. On each occasion the survey should last for the period of time necessary for the survey team to check by their own observation the trip duration of a significant proportion of the boats. The team should also physically check the lengths of nets and weight of catch of a fraction of the sample.

- See BOBP/WP/12: *Trials in Bangladesh of large-mesh driftnets of light construction.*

The surveys could be carried out by a team or teams each consisting of four people. For practical reasons, on alternate days and throughout the survey period at any one landing site, the team's pattern of activities could be as follows: first day—two officers recording landings for quantities and composition by varieties (species and sizes) and two officers recording quantities of fuel, ice and food taken aboard boats about to depart ; second day—interviews with head fishermen on the lines of the pilot survey.

Consideration should be given to some form of compensation to the survey team for working unsocial hours in uncomfortable conditions.

The questionnaire should be revised following discussions between those with experience in conducting such work, those who are familiar with the landing sites and operations of the driftnet fleets and representatives from the specialist fields likely to be main users of the data.

The survey team or teams should undergo training to equip them to conduct interviews, estimate quantities, record information and so on, and to inform them of the purposes of their work and how the records will be processed and analysed. The principal persons conducting interviews should be thoroughly familiar with the fishery (and should have made commercial fishing voyages), so that they will not only ask the right questions but also understand the answers and the implications thereof, and ask supplementary questions as may seem desirable. They should be fluent in the language and dialect of the fishermen, at least to the extent of being able to discern whether interpreter and fishermen understand the questions and answers, and that these are correctly translated.

Appendix 1

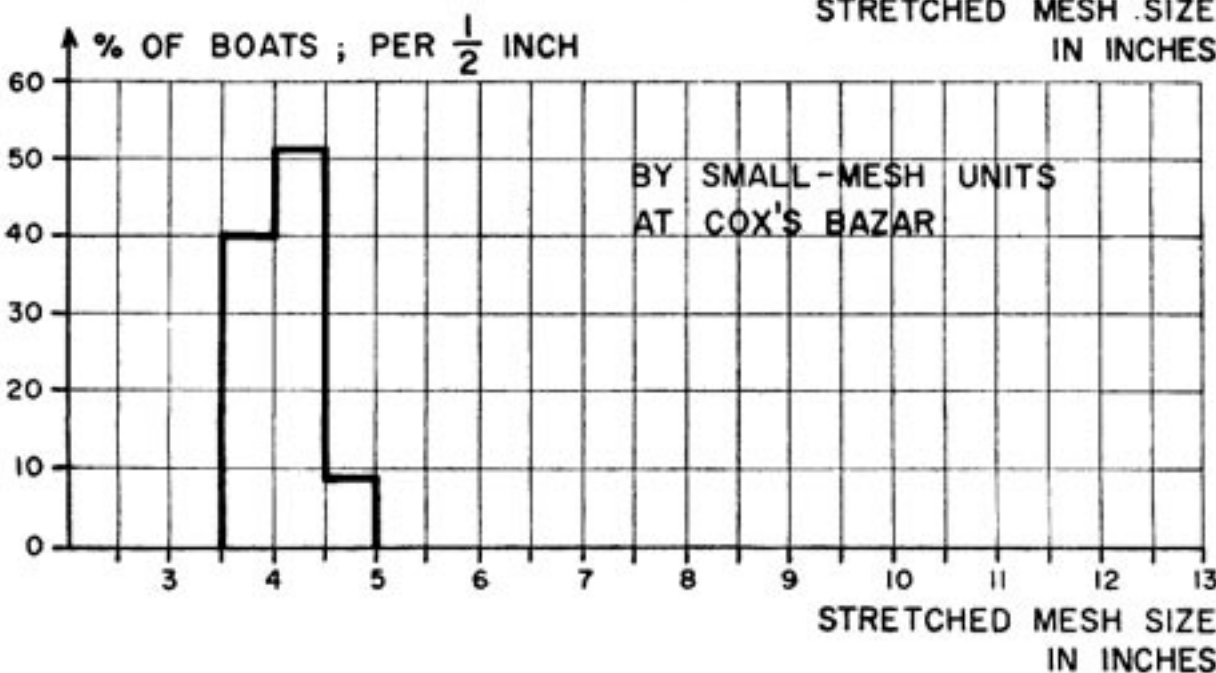
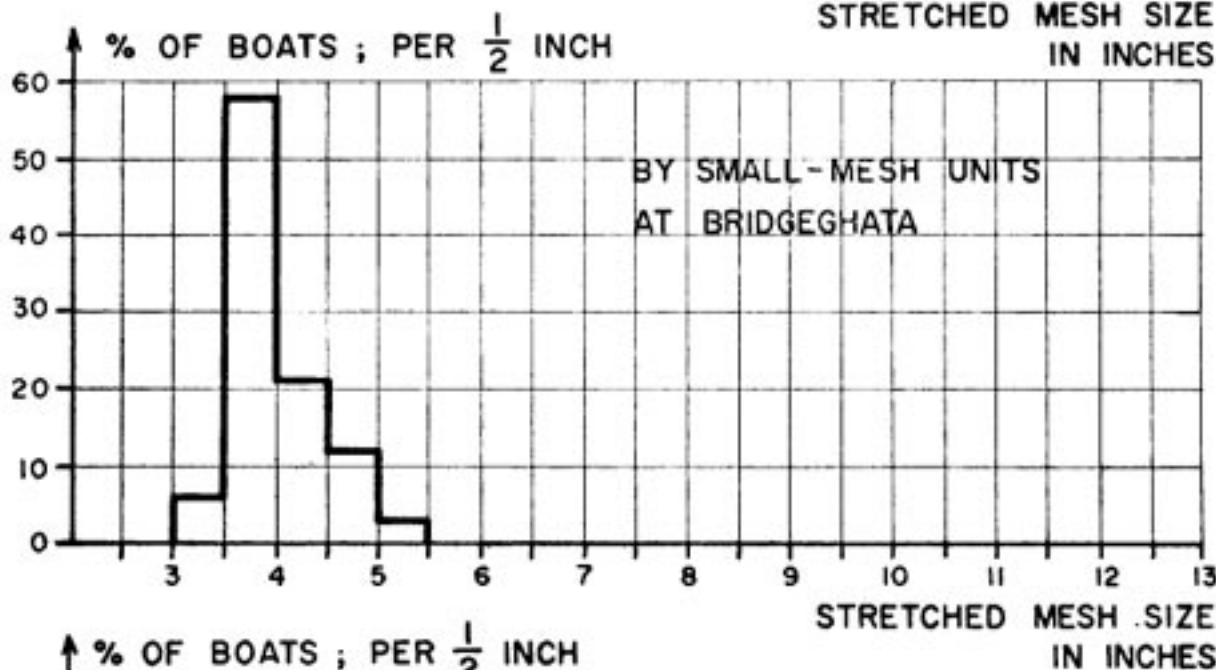
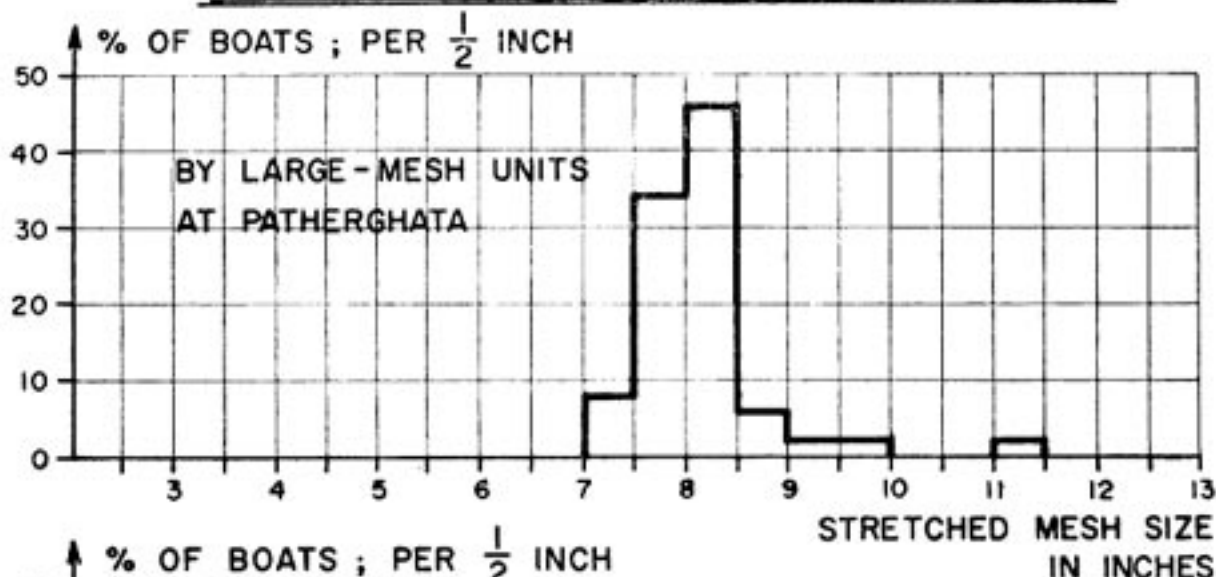
Pilot survey of driftnet fisheries in Bangladesh

SUMMARY OF FINDINGS, FEBRUARY 1981

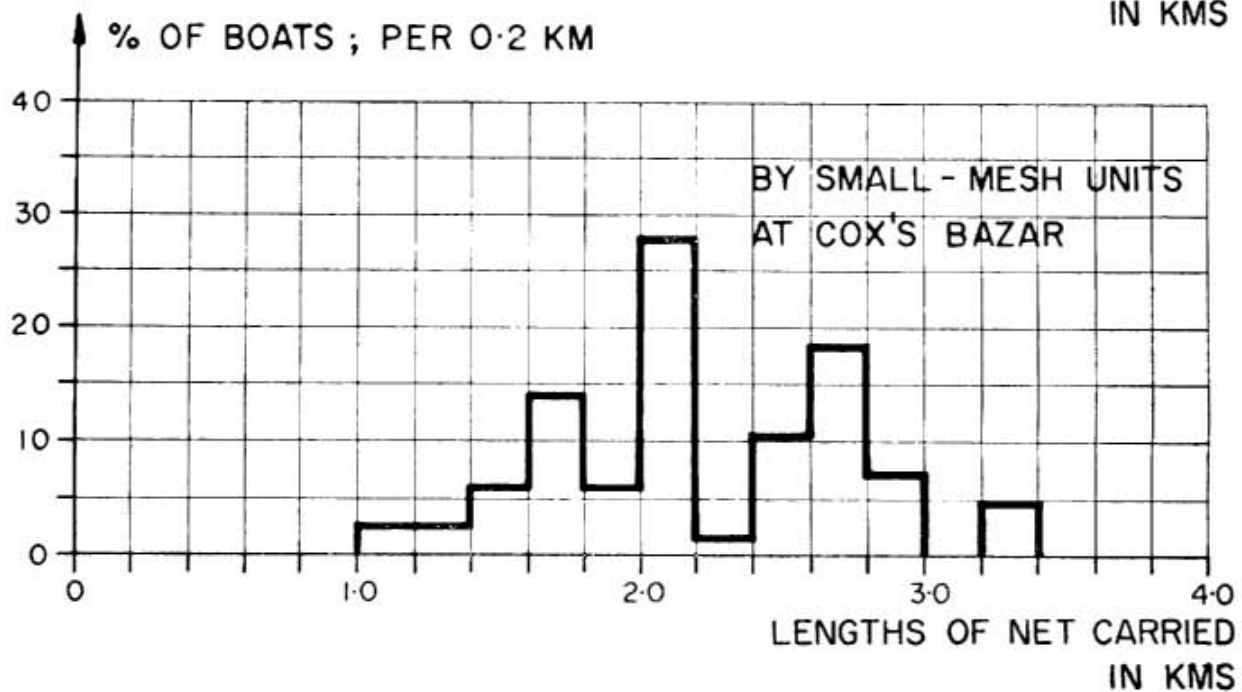
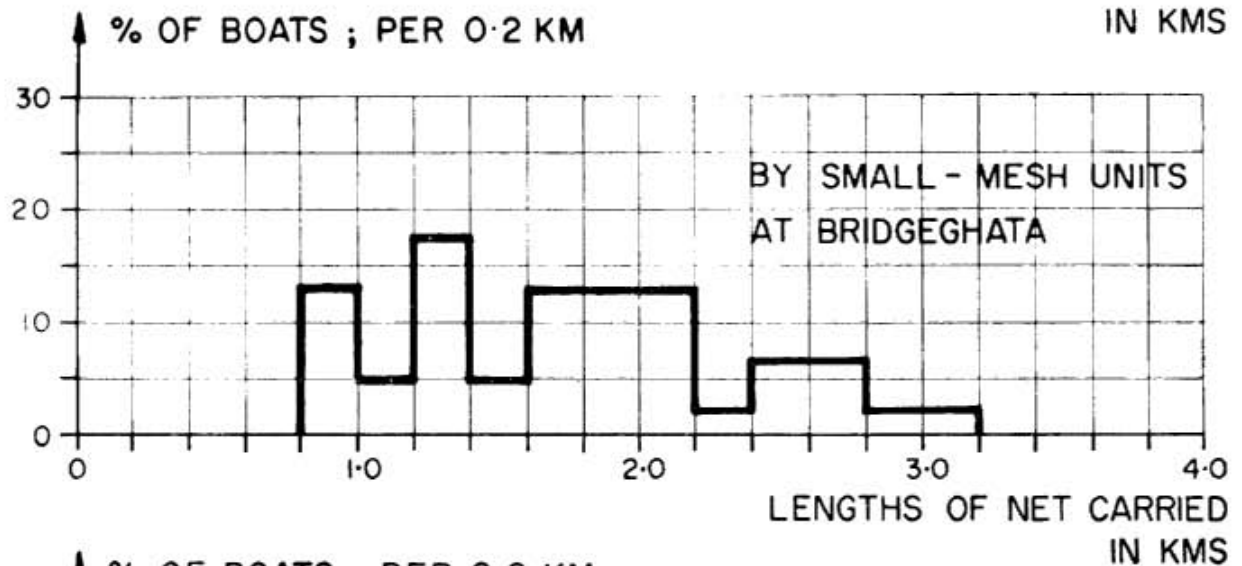
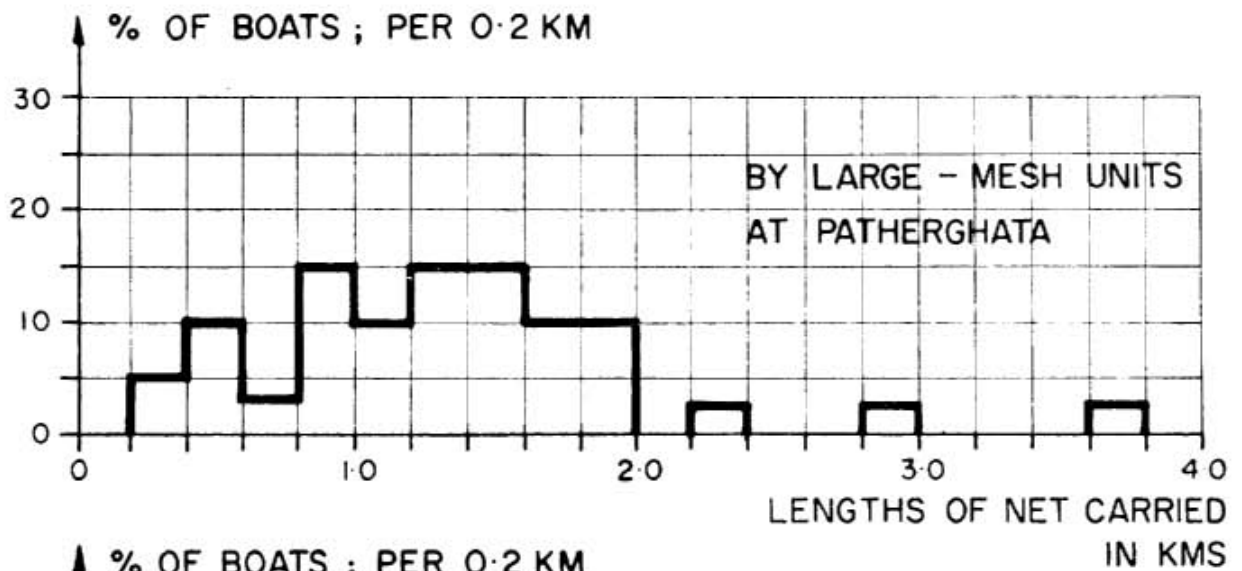
	Large-mesh (Patherghata)	Type of driftnet Small-mesh (B ridgeghata)	Small-mesh (Cox's Bazar)
Customary mesh size, stretched mesh	7½—8½ inch	3½—4½ inch	3½—4½ inch
Average lengths of net	1300 m	1800 m	2200 m
Average of additional lengths of net desired by fishermen	400 m	400m	500m
Average number of crew	8.9	8.8	8.8
Length of trip			
—fishing days	6.95 days	7.33 days	4.79 days
— total duration	11.35 days	11.35 days	6.90 days
Ratio : fishing days/trip duration	0.61	0.64	0.69
Fish landed per trip	1340 kg	2060 kg	1260 kg
Number of boats operating on site	100—150	210—250	90—110
Number of fishermen on board these boats	1100	2000	880
Catch rate — per fishing day	190 kg	280 kg	260 kg
— per day total trip duration	120 kg	180kg	180kg
Catch per unit effort (kg per km net and fishing day)	150 kg	160kg	110kg
Estimated landing per week of the fleet	100 tons	290-300 tons	125—130 tons
Average value of fish at first sales	TK 9.23/kg	TK 10.13/kg	TK 8.82/kg

APPENDIX - 2

FREQUENCIES OF DIFFERENT MESH SIZES USED

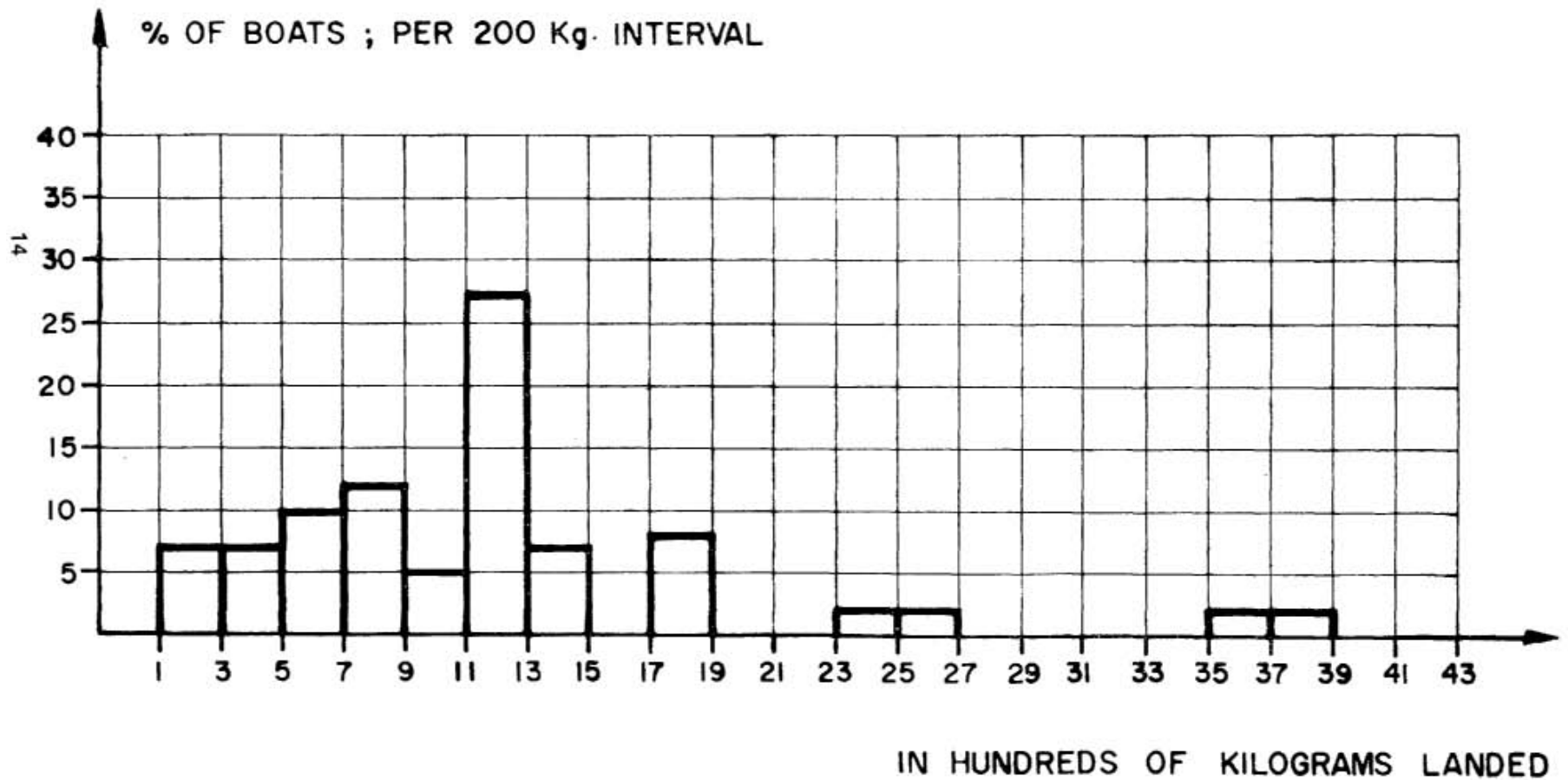


FREQUENCIES OF DIFFERENT LENGTHS OF NET CARRIED



APPENDIX - 4

FREQUENCIES OF DIFFERENT SIZES OF LANDINGS
BY LARGE-MESH UNITS AT PATHERGHATA
_DURING THE SURVEY PERIOD



Appendix 5

QUESTIONNAIRE USED FOR THE SURVEY

Fisheries Statistical Survey of Bangladesh
Marine Fisheries Pilot Survey

Record of Landings of Motorized Fishing Vessels

Landing site	Date
Total Number of landings Recorders	Number of landings recorded

Item	Information
1. Boat	1. Identification 2. Length 3. Crew 4. Home village, district & thana of boat & crew
2. Fishing operation	1. Number of fishing days on this trip 2. Number of days since the previous landing 3. Fishing area
3. Gear used	1. Mesh size(s) 2. Netting material 3. Size/count 4. Length 5. Depth
4. Gear owned	1. What other gear is owned by the fishermen but not used on this fishing operation ? 2. What is the best amount of gear for this way of fishing?
5. Catch	1. Total catch maunds + seers 2. Main species by weight 3. Total value of landing : Tk 4. Main species by value

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