ABUNDANCE OF FISH AND SHELLFISH SPECIES IN SOME MYMENSINGH MARKETS

A THESIS

BY

MD.FARUK HOSSAIN

EXAMINATION ROLL NO. 08 FishAquaJJ-07M
SEMESTER: JANUARY-JUNE, 2009
REGISTRATION NO. 29956
SESSION: 2002-2003

MASTER OF SCIENCE (M. S.)
IN
AQUACULTURE

DEPARTMENT OF AQUACULTURE
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বাংলাদেশ কৃষি বিশ্ববিদ্যালয়
গ্রন্থাগার
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Submitted to the Department of Aquaculture
Faculty of Fisheries
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ABSTRACT

The study of available fish species and marketing system in different markets in Mymensingh town and its nearby area, consumers participation and retailers livelihoods were studied for the period of three months from January to March, 2009. In the study data were collected in three ways through questionnaire interviews, focus groups discussion and qualitative and quantitative data were collected randomly with cross-check interview. The daily supply of fish in Mechua bazaar, Natun bazaar, Railway market and Pourashova bazaar were estimated as 7-8, 5-6, 2-3, and 4-5 tons respectively. While in nearby fish markets like Kewatkhali bazaar, K.R market, Shesmor bazaar and Sutiakhali bazaar daily supply of fish were estimated as 0.50-1.5, 0.50-1.5, 1-2 and 0.50-1.5 tons respectively. It was estimated that 29% of fish supplied in the market were carps, 28% small indigenous species, 2% hilsa, 24% catfish, 4% prawn/shrimp, 3% tilapia, 2% Thaikoi/koi and 8% others. About 90% of fishes have been transported from the rural areas of the district and adjacent districts like Netrokona, Jamalpur and Kishorganj the rest 10% comes from external sources in Mechua bazaar, Natun bazaar, Railway market and Pourashova bazaar. Whereas (100%) of the fish species are brought from different areas of the district and adjacent district in Kewatkhali bazaar, K.R market, Shesmor bazaar and Sutiakhali bazaar. It was also estimated that number of available fish species in Mechua bazaar, Natun bazaar, Railway Market and Pourashova bazaar were 50, 39, 41 and 33 respectively. On the other hand nearby fish markets of Mymensingh town like Kewatkhali bazaar, K.R market, Shesmor bazaar and Sutiakhali bazaar the number of available fish species were 26, 27, 30 and 24 respectively. The highest number of species (50) was found in Mechua bazaar and the lowest number of species (24) found in Sutiakhali bazaar. On an average the number of species that occurred in these eight fish markets ranged from 24-50. Fish price depends on fish size, weight and quality. It was noticed that the price per kilogram of carp increased in size. The average price of catla was 135-175 Tk./kg, rohu 130-160 Tk/kg, mrigal 100-130 Tk./kg, ilish 250-280 Tk./kg, Thai pangus 50-70 Tk./kg , thai koi 185-235 Tk./kg and Small Indigenous Species (mola, taki, bele, puti) of fish 125-150 Tk./kg, during the study period. The retailers in eight markets made a considerable amount of profit. About 62.5% of the retailers have improved their livelihood status through fish selling and some 37.5% of retailers have not obtained any specific benefits due to taking loan from moneylenders and banks. Adequate supply of ice, improvement of fish transportation system and quality control of fish might help increasing the profit of retailers.

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The Author

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CHAPTER 1
INTRODUCTION

Markets have become a major issue for aquaculture sector, where consumer's demand, international competitiveness, healthy and quality product are important (Muir *et al.*, 1996). The consumer's acceptance and price levels in the market place are two of the major factors that determine economic viability in many situations (Sadanandan *et al.*, 1992).

High rate of population growth resulted in growing gap between supply and demand of fish and fisheries product of Bangladesh. Government of Bangladesh as well as many local and international NGOs are working in fisheries sector of Bangladesh, have been taken many steps and programmes to increase fish production. However, very few steps have been taken by any organization either GOs or NGOs to improve the fish marketing system, which is a major part of fisheries sector.

In Bangladesh, fish marketing is almost exclusively a preserve of the private sector where the livelihoods of a large number of people are associated with fish production and marketing systems. However the most serious marketing difficulties seem to occur in remote communities, due to lack of transport, ice and poor road facilities and where the farmers are in particularly weak position in relation to intermediaries (DFID, 1997).

Mymensingh town is situated on the bank of the Old Brahmaputra river and about 120 km from the capital city of Dhaka. The adjacent districts are Gazipur,Tangail, Kishorganj, Netrokona, Jamalpur and Sherpur. Among these districts Kishorganj and Netrokona districts are important for haors and beels are the prime source of open water fisheries resources. Every year especially during the winter season a large amount of Small Indigenous Species (SIS) and other Indian major carps are transported to Mymensingh town from these areas. Mymensingh town is interconnected with the capital and other adjacent districts by rails roads and highways and different river channels. Communications with the 11 upazilas of Mymensingh district are well developed with some exception. The 11 upazilas of Mymensingh district are Sadar, Bhaluka, Trisal, Muktagacha, Phulpur, Gouripur, Gafargaon, Phulbaria,. Ishwargonj, Nandail and Haluaghat all are prominent for different types of natural water resources especially flood plain areas where many types of Small Indigenous Species (SIS) are found round the year with other local and exotic fishes. From all sorts of aspects Mymensingh town is an

important area for fish marketing because different kinds of aquaculture species are caught in the open water of these areas.

High prices of fishes encouraged the peoples in the rural and semi-urban areas-to convert the crop land into fish farms. Young people in the rural areas after making a group raise the fund and then convert the crop lands into small ponds after taking lease those lands from the owners. They culture exotic fishes in the pond applying modern technique of fish production. They usually send their fishes to local as well as distant markets for sale. Initially, they earned profit to a large extent. But currently, the situation has been changed. Sometimes, they incur loss by selling fishes at prices below their production costs. They only give emphasis on production without assessing the demand in the market. Moreover, poor management system and unplanned production cause loss to them. Study about the species availability will help to show the real picture of species at present time in fish market of Mymensingh town and its nearby area.

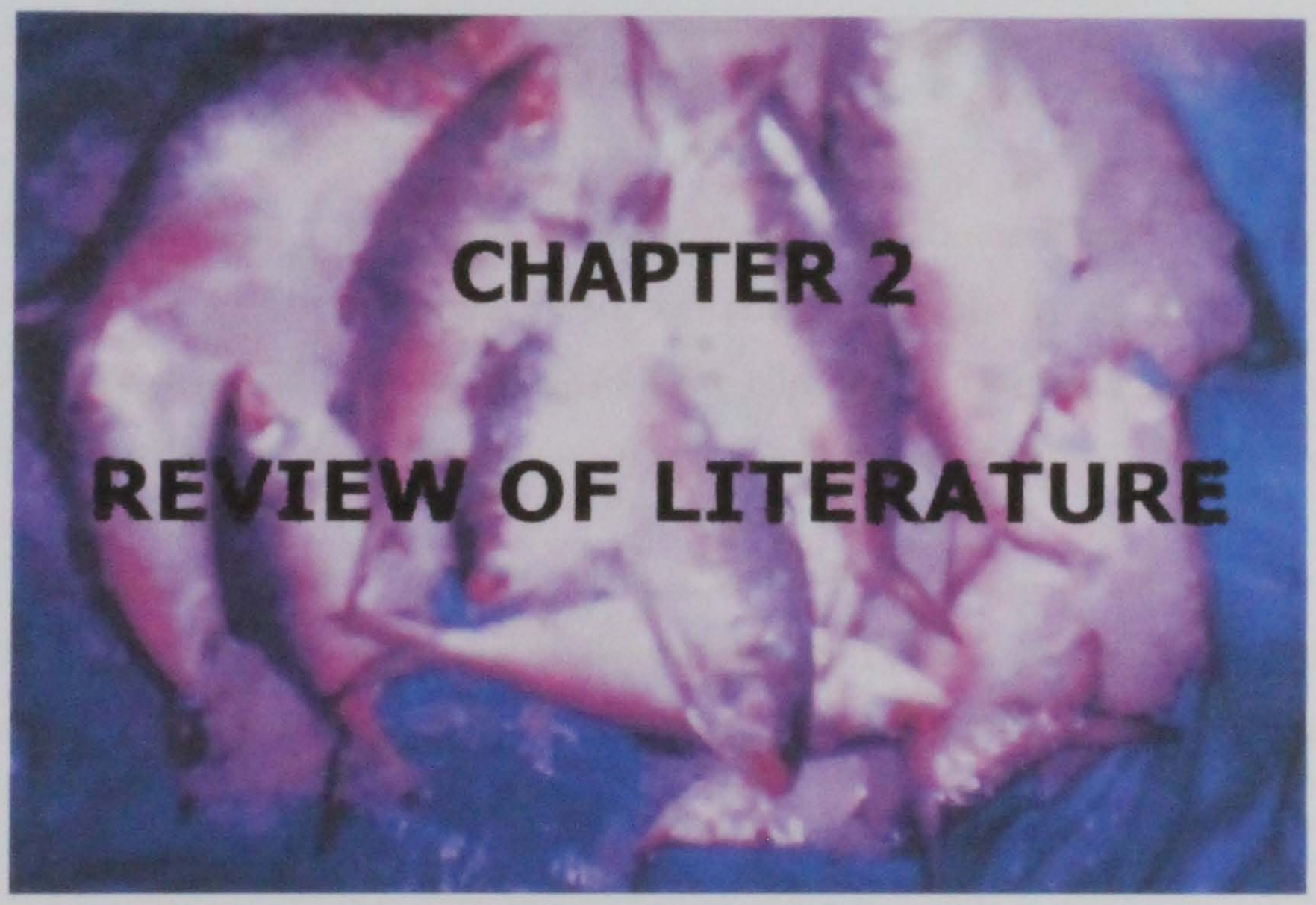
Therefore an attempt was made to investigate the present aspect of the study to achieve the following objectives:

i) To know the availability of different fish species in the fish markets in Mymensingh town and its nearby area through fish market survey;

ii) To determine the variation of species availability in each fish market in Mymensingh town and its nearby area in three months study;

iii) To identify marketing problems and to suggest some remedial measures;

iv) To understand livelihood changes of fish retailers.



CHAPTER 2

REVIEW OF LITERATURE

CHAPTER 2

REVIEW OF LITERATURE

Several studies on fish marketing and its related activities have been undertaken in Bangladesh. The reviewed literatures are mentioned below.

Biswas (1990) noted that fishermen usually brought their fish to Netrokona Mechua bazaar, and sold them to aratdars, a small number of fishermen sold to retailers directly. Study showed that fishermen sold 60.35% fish to aratdars, 29.16% fish to retailers and only 10.49% fish directly to consumers. Aratdars sold 88.38% fish to retailers and only 11.62% fish to consumers directly. Retailers collected 75.20% fish from aratdars and 24.80% fish from fishermen for selling to consumers.

Quddus (1991) concluded that price during harvesting season comes down to the minimum and starts rising up to the maximum in the off-season. Seasonality of demand is also evident in fish product and is related to factors like climate and natural hazards in the five markets in Mymensingh. The lowest fish price was found in December and January and the highest prices in June.

Moyle and Leidy (1992) with respect to the conservation status; have estimated that in recent decades, more than 20% of the world's 10,000 described freshwater fish species have become extinct, threatened or endangered

Sadanandan *et al*. (1992) noted that the consumer acceptance and price levels in the market place were two of the major factors that determine economic viability in many situations.

Subasinghe (1995) suggested for the developments in fish marketing and trade, both in national and global level, pointed to the need for a fresh evaluation of the investment needs of the industry. Investment in the fisheries sector has a strong relationship to product quality and the subsequent marketability of the product and its profitability.

Shrivastava and Ranadhir (1995) concluded that the fish prices was highest in case of longest marketing channel as it involved high marketing cost in relation to gross margin in Bhubaneshwar, Orissa, India.

Khan (1995) described that fishermen and intermediaries of Mymensingh faced a number of problems such as poor transportation, lower price of fish, lack of marketing facilities as well as political instability

Mia (1996) identified three marketing channels in Mymensingh district, the first one was fish grower– bepary – retailer – consumer and second one was fish grower – bepary – retailer – consumer and third one was bepary – aratdar – retailer –consumer. The average marketing cost per quintal of fish incurred by the intermediaries of Muktagacha and Mymensingh were Tk. 555.14 and Tk. 660.53 respectively. Profit of aratdar was highest (12.34%) while the profit for retailers was 9.70%.

According to Muir *et al*. (1996), markets have become major issues for aquaculture sectors, where consumer demand, international competitiveness, healthy and quality products attributes have assumed for greater importance than in early stages where production levels were lower.

Parween *et al*. (1996) found that farmers normally sell their harvest to middlemen or wholesale agents. Much wastage of the commodity occurs due to the poor methods of packaging and transportation in Natore and Nawabganj districts.

Rokeya *et al*. (1997) observed that enough storage facilities were absent, only short-term preservstion with ice was done during long transportation in Rajshahi. Poor transportation, lack of ice, poor landing, wholesale and retail marketing facilities and lack of awarness of quality needs of fish were the main problems.

Hasan and Middendrop (1999) surveyed two fish markets in south-west Bangladesh, found that the price per kg of carp increased with size for both Indian major carps and exotic carps. Of the six carps species surveyed, rohu was found to be the most expensive followed by catla, mrigal, grass carp, common carp and silver carp.

Sarker (1999) examined the marketing channels, costs, margins and price spreads, marketing problems and also suggested some measures for improvement of the fish marketing system. In the study area, three marketing channels were identified. As a whole the retailer of Chandpur town earned more profit than all other traders. He identified the efficient marketing channels in the study area, the study revealed that farmers' share of consumers' price was reasonable. Fish farmers and intermediaries faced a number of

problems such as lack of input in proper time, lack of capital, high interest rate on credit, lack of fishery equipment, price fluctuation and low price, political instability, lack of physical facilities, inadequate storage facilities, inadequate transportation facilities etc.

Siddique (2001) studied that Indian major carps were sold at higher price than exotic carps. The reasons for the lower price of exotic carps were explained by the demand and taste that consumer or local traders were not willing to pay price for exotic fish. There are seasonal variation in fish price in Mymensingh region with the highest in summer (March to May) and the lowest in winter (November to December).

Mollah (2002) conducted a study on marketing system and price behaviour of pond fish in some selected areas of Rajshahi district. In that study the researcher observed the existing marketing system by estimating marketing costs and margins for various intermediaries. The findings of the study revealed that the marketing cost per quintal of fish for aratdars, beparies and retailers as calculated as Tk. 12.45, Tk. 61.32 and Tk. 26.32 respectively. The net marketing margins or profit per quintal of fish was calculated at Tk. 157.04, Tk. 204.21 and Tk. 724.49 respectively for aratder, paiker and retailer. The study showed that all the selected fish markets were either not integrated or poorly integrated in the short run but they were integrated in the long run.

According to Rahman (2003), in Gazipur, fish marketing was found almost exclusively a preserve of the private sector where livelihoods of a large number of people were found to be associated with fish distribution and marketing systems. The market chain from producers to consumers passes through a number of intermediaries: local retailers, agents/ suppliers, wholesalers and retailers. Based on a sample of 40 traders from the two different markets in Gazipur district, the daily supply of fish market in Gazipur Sadar and Sripur markets were estimated at 2-3 tones and 1-1.5 tones respectively. Virtually most of the fish (80%) was imported from outside, the local supply amounted only 20%. It was estimated that 48% of fish supplied in markets was of carps 13% hilsa, 9% catfish, 7% small indigenous fish, 6% prawns and shrimps, 5% tilapia and 12% others including marine fish. The price of fish depends on market structure, species quality, size and weight and it was found that the price per kilogram of carp increased with size.

Bahadur (2004) expressed concern with the production and marketing of cultured fish in selected areas of Bangladesh. In the study area, seven marketing channels were identified

in fish marketing. Marketing margin per 100 kg of fishes for retailers were calculated as Tk. 640.24, Tk. 707.77, Tk. 716.32, and Tk. 635.06 at Trisal, Fulbaria in Mymensingh town and in Dhaka city respectively. Lack of capital, high interest rate on credit, price fluctuation and inadequate transportation and storage facilities were found as main problems in the marketing system.

Gupta (2004) conducted a study on the status of fish marketing in Fulpur upazila, Mymensingh. A total of 45 retailers, 60 consumers were interviewed at the market centre. Survey of three fish markets showed that the price per kg of carp increases with size for both Indian Major carps and exotic carps. There are generally seasonal variations in prices with highest in summer (March to May) and the lowest in winter (November to January). These types of marketing channels were identified. A number of constraints for fish marketing were reported by retailers including higher transport cost, poor road and transport facilities, inadequate supply of ice, inadequate drainage system, poor water supply, poor sanitary facilities, unhygienic condition etc. In spite of socio-economic constraints, most of the retailers (80%) have improved their economic status through fish marketing activities.

Majib (2004) conducted a study on pond fish marketing in selected areas of Mymensingh district. In that study the existing marketing system and costs and margins of market intermediaries were estimated. Five types of marketing channels were found in this study. The average marketing margin per quintal of fishes for retailers were calculated as Tk. 696.54, Tk. 684.04 and Tk. 696.14 Bhaluka, Muktagacha and Dhaka city respectively. The study also identified some problems and constraints of marketing and also provided some suggestions for solution of the problems.

Rashid (2006) studied on the fish marketing systems in Noakhali area and economic features of marketing activities. The market chain passes through a number of intermediaries: local retailers, agent/suppliers, wholesalers and retailers. The daily supply of fish market in Municipal market and Maijdee bazaar were estimated at 3-3.2 tonnes and 1-1.1 tonnes respectively. The price of fish depends on market structure, species, quality, size and weight and it was found that the price per kg of carp increases with size. The average marketing cost and net margin of retailers of two markets was Tk. 181.99 and Tk. 691.83 per quintal respectively. Income of retailer and day labour was estimated Tk. 300 and Tk. 90 respectively. It was found that 77% of the household of retailers have improved

their status through fish marketing. Higher transport costs, poor and road and transport facilities, poor supply of ice and lack of capital were found as the main constrains of fish marketing.

Afroz (2007) conducted a study on availability and marketing of fishes in three different markets in Mymensingh town. The market chain from producer to consumers passes through a number of intermediaries: local retailers, agents/supplies, wholesalers and retailers. Based on a simple of 60 retailers from the three different markets, the daily supply of fish in Mechua bazaar, Natun bazaar and Railway market were estimated as 5-6, 2-3 and 1-2 tons respectively. Most of the fishes (85%) have been transported from the rural areas of the district and the remaining part from external sources (15%). It is estimated that 48% of fish supplied in the markets were carps, 8% hilsa, 13% catfish, 7% small indigenous fish, 4.33% Thai koi, 3.66% prawns and shrimps, 6% tilapia and 10% others including marine fish. The price of fish depends on market structure, species quality, size and weight. It was found that the price per kilogram of carp increases with size. The price of catla varied from Tk. 110-140/kg, rohu Tk. 95-120/kg, mrigal Tk. 88-110/kg, ilish Tk. 240-270/kg, pangus Tk. 38-50/kg, tilapia Tk. 60-80/kg and Thai koi Tk. 175-225/kg during the study period.

CHAPTER 3

MATERIALS AND METHODS

The study was based on different kinds of aquaculture species and obtaining marketing information through a sample survey among fish traders and consumers in the fish market in Mymensingh town and its nearby area. This chapter deals with the selection of study area, identification of target groups and selection of analytical methods that have been used in the study (Fig. 1).

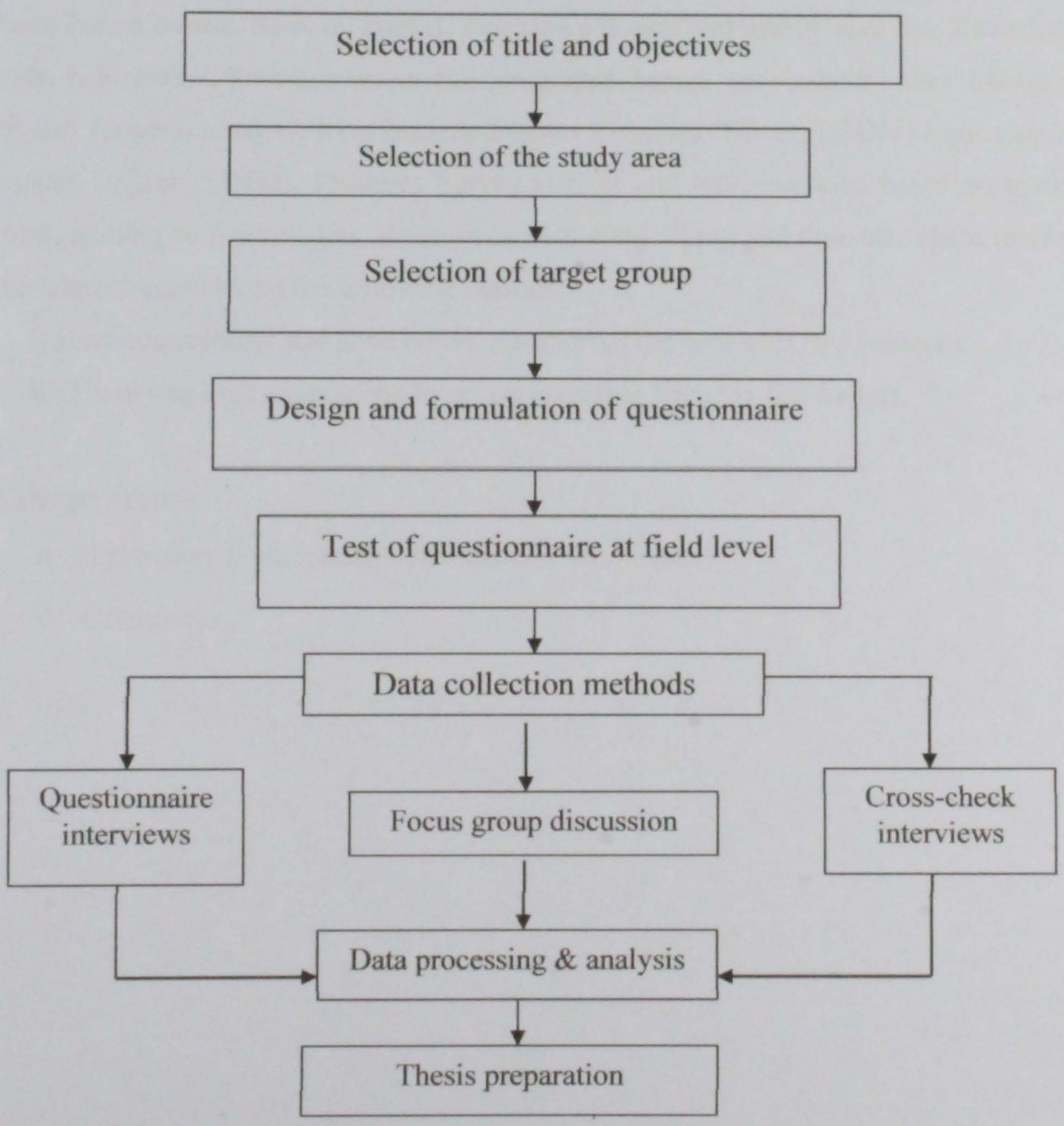


Fig. 1. Survey design for data collection.

3.1 Site Selection: Mymensingh town and its nearby area

Mymensingh is a moderate district for fish culture and production. Closed water has been increased in recent year due to presence of Bangladesh Fisheries Research Institute (BFRI) and Faculty of Fisheries, Bangladesh Agricultural University (BAU); both organizations play a vital role for technology invention, dissemination and giving logistic supports to the farmers in the fisheries sector. Considering these scenarios, Mymensingh town fish markets and its nearby areas were selected for the study.

There are 19 fish markets in Mymensingh town among them only 8 fish markets; Mechua bazaar, Natun bazaar, Railway market, Pourosova bazaar and nearby area like Kewatkhali bazaar, K.R market, Shesmur bazaar and Shutiakhali bazaar were selected after discussion with fish farmers, retailers, local leaders, District Fisheries Officer (DFO), Senior Upazila Fisheries Officer (SUFO), Fisheries Survey Officer and NGO workers based on market history, number of fish retailers, duration of marketing season and time etc. These markets were selected considering the following reasons:

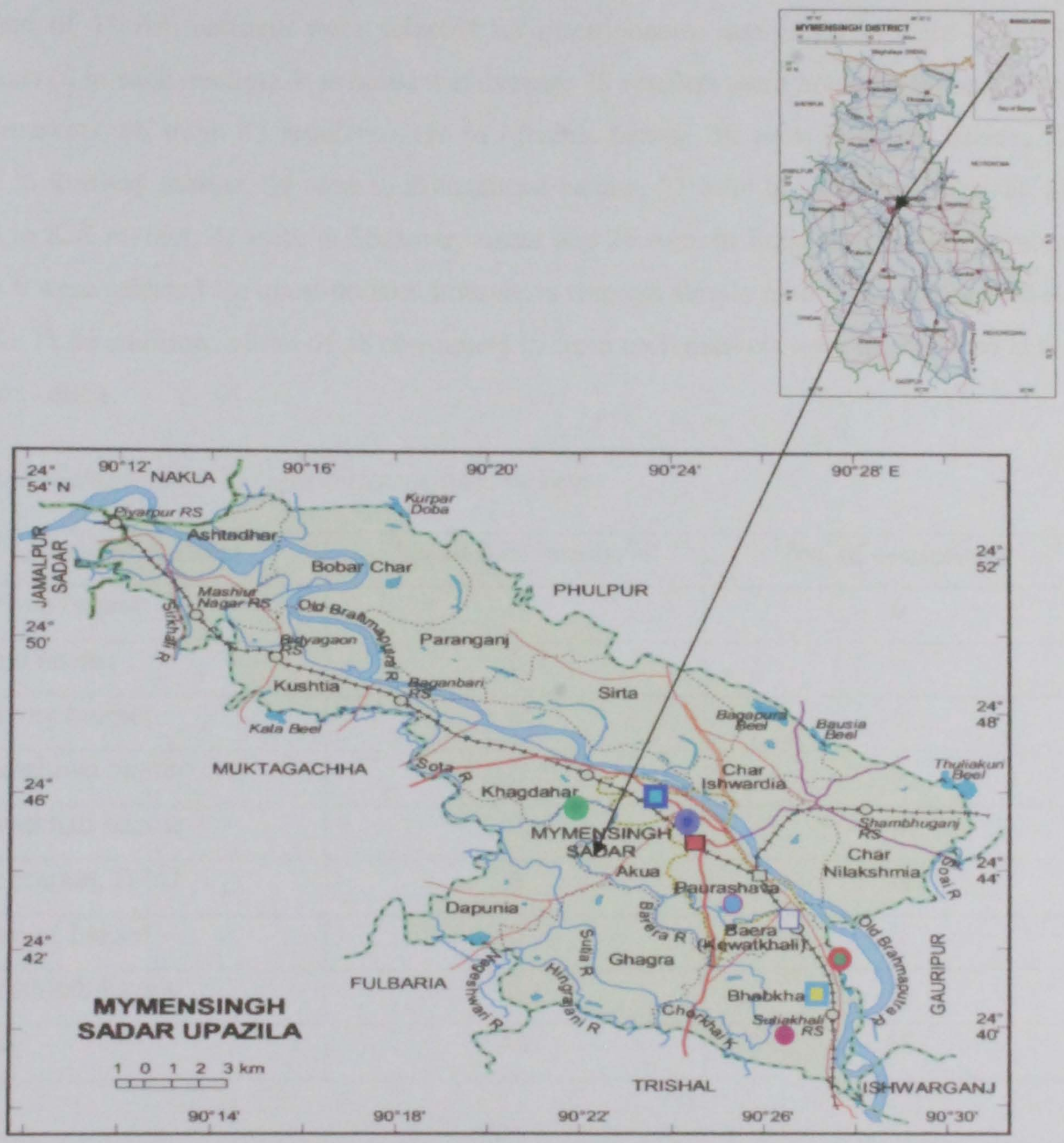
I) Easy accessibility and good communication of the area with BAU campus.

II) There was high expectation to get co-operation from the fish traders.

3.2 Target groups

» Fish traders (Fish retailers, Aratdar and Wholesaler)

» Consumers



● **Mechua bazaar**

□ **Kewatkhali bazaar**

● **Natun bazaar**

● **K.R Market, BAU**

■ **Railway Market**

□ **Shesmur bazaar,BAU**

● **Pourashova bazaar**

● **Sutiakhali bazaar**

Fig. 2. Map of Mymensingh town indicating study site.

3.3 Sample size

A total of 48 fish retailers were selected for questionnaire interviews in eight different markets (6 in each market). It is noted that average 39 retailers were involved in these eight fish markets. Of them 85 retailers were in Mechua bazaar, 50 were in Natun bazaar, 32 were in Railway market, 54 were in Pourashova bazaar, 17 were in Kewatkhali bazaar, 21 were in K.R market, 27 were in Shesmur bazaar and 26 were in Sutiakhali bazaar. Among them 6 were selected for questionnaire interviews through simple random sampling method (Table 1). In addition, a total of 48 consumers (6 from each market) were interviewed at the market centre.

Table 1. Sample sizes in eight different fish markets

Name of market	No. of fish retailers	No. of consumers
Mechua bazaar	6	6
Natun bazaar	6	6
Railway market	6	6
Pourashova bazaar	6	6
Kewatkhali bazaar	6	6
K.R market, BAU	6	6
Shesmur bazaar	6	6
Shutiakhali bazaar	6	6
Total	48	48

3.4 Design and test of questionnaire

Both closed and open form of questions was used in the questionnaire. The draft questionnaire was used for pre-testing in five retailers by the researcher himself. In this pilot survey, much attention was given to any new information, which was not designed to be asked but was important and informative towards the objectives. Thus, the final questionnaire was prepared on the basis of pilot survey.

3.5 Data collection

The data collection as well as field survey was undertaken for three months from January to March 2009. Data collection methods can be divided into 3 steps; these are:

questionnaire interviews with fish retailers, focus group discussion with intermediaries and cross-check interviews with key informants (Fig. 3).

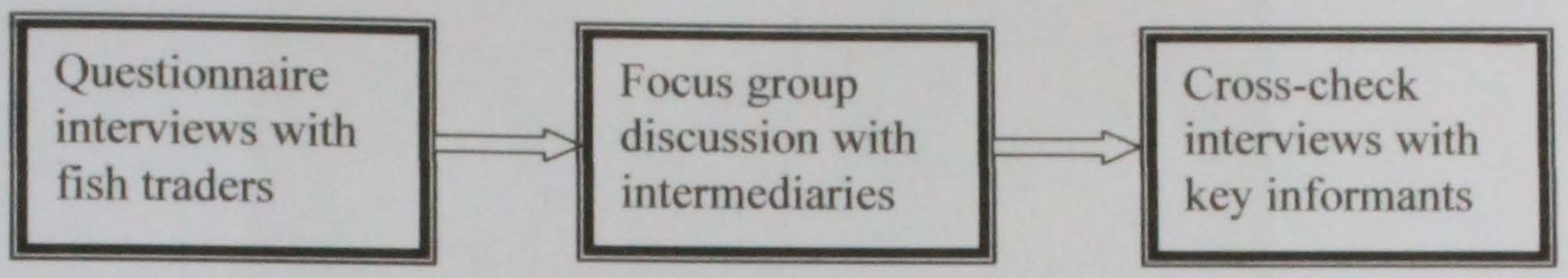


Fig. 3. Steps of data collection methods.

Plate 3.1 Questionnaire interview with fish retailers at Mechua bazaar in Mymensingh town.

Plate 3.2 Questionnaire interview with fish retailers at Natun bazaar in Mymensingh town.

Plate 3.3 Questionnaire interview with fish retailers at Natun bazaar in Mymensingh town.

Plate 3.4 Questionnaire interview with fish retailers at Railway market in Mymensingh town.

Plate 3.5 Cross-check interview with key informatant Senior Upazila Fisheries Officer (SUFO) at DFO Office, Maskanda, Mymensingh.

Plate 3.6 Cross-check interview with key informatant Fisheries Survey Officer at DFO Office, Maskanda, Mymensingh.

3.5.1 Questionnaire interviews with fish retailers

Interviews were conducted at the market centre during marketing time. Retailers took part in interview together with their fish selling activities as a result there was a scope to

observe the marketing activities (Plate 3.1, 3.2, 3.3 and 3.4). The questionnaire was simple and focusing only marketing information like questions related to the species availability, composition of different species , abundance, variation of species availability, peak marketing times and the disappearances of fishes that were predominantly available in Mymensingh town and its nearby area. Time required for each interview was about an hour.

3.5.2 Focus group discussion with intermediaries

Focus group discussion (FGD) was conducted with intermediaries in Mechua bazaar, Natun bazaar, Railway market, Pourasova bazaar and nearby fish markets like Kewatkhali bazaar, K.R market, Shesmur bazaar and Shutiakhali bazaar to get an overview of fish availability, fish distribution and marketing systems, constraints of fish marketing etc. A total of 16 FGD sessions (2 in each area) were conducted where each group size of FGD was 5 to 10 intermediaries.

3.5.3 Cross-check interviews with key informants

Cross-check interviews were conducted with key informants such as District Fisheries Officer, Senior Upazila Fisheries Officer and Fisheries Survey Officer, Mymensingh where information was contradictory or requested for further assessment (Plate 3.5 & 3.6).

3.6 Problems encountered during data collection

Some problems were confessed during interview such as: retailers were busy in trading and unwilling to talk, they thought the researchers to be the government official of tax or other department and feared to talk, language problems or use of local terminologies, data in local units. The problems were overcome by the researcher through given extra attention and more discussion. Clarification of local terminologies and local units were obtained from key informants during cross-check interviews.

3.7 Data processing and analysis

Some of the collected data were in local units due to respondents familiarity with those units. These data of local units were converted into international units before transferring to the computer. Preliminary data sheets (in computer) were compared with the original questionnaire and result sheets to ensure the accuracy of the data entry. Data were processed and finally analyzed using Microsoft Excel and SPSS (Statistical Package for Social Science).

CHAPTER 4
RESULTS

The present report describes the present status of availability and marketing systems of some important fish species in eight different markets in Mymensingh town and its nearby area and the livelihoods of the fish retailers. This description is based on the results of primary data collected in eight markets in Mymensingh town and its nearby area.

4.1 Fish distribution and marketing system

A number of middlemen are involved between farmers and consumers in fish marketing system in Mymensingh town. The market chain from farmers to consumers passes through a number of intermediaries, such as: local fish traders (paikers), wholesalers and retailers (Fig. 4).

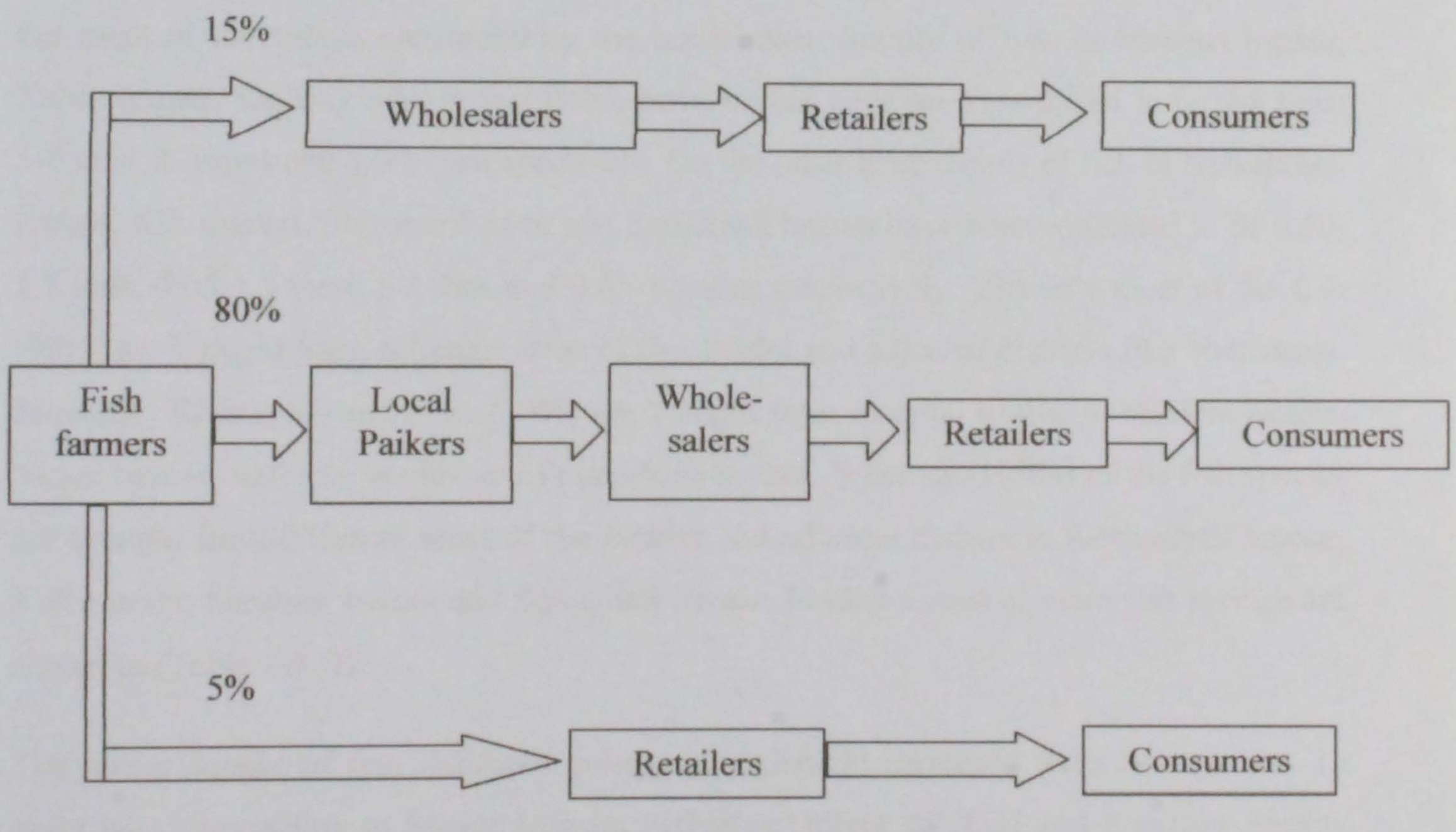


Fig. 4. Fish marketing chain from farmers to consumers in Mymensingh town.

Channel I: Fish farmers → Paikers → Wholesalers → Retailers → Consumers

Channel II: Fish farmers → Wholesalers → Retailers → Consumers

Channel III: Fish farmers → Retailers → Consumers

17 to 85 retailers are involved in each market (Plates 4.1, 4.2 and 4.3). A number of people were also found to work with the retailers as day labours. Retailers typically operate with capital of around Tk. 15,000 to 35,000 per day. The wholesalers possess more capital (around Tk. 20,000 to 100,000 per day) than retailers and have the means to control agents and retailers. Some wholesalers 10% also work as retailers and have stall in markets. From the survey it was found that around 62.5% retailers used their own money for fish trading, while the rest 37.5% received loans. Among the loan receivers, 55.55% obtained loan from moneylenders (wholesalers also play role as moneylenders), 27.78% from banks and (16.67%) from NGOs.

4.2 Supply of fish in markets

Fish seems to be accepted by all religious and social groups in Mymensingh town. In general the high income groups buy large fish and the lower and middle-class group are able to afford medium-sized and small fishes. Smaller restaurants and hotel also buy fish but most of the fish is consumed by the households. Supply of fish in Mechua bazaar, Natun bazaar, Railway market and Pourashova bazaar have been estimated to be 7-8 tons, 5-6 tons, 2-3 tons and 4-5 tons respectively. On the other hand supply of fish in Kewatkhali bazaar, K.R market, Shesmur bazaar and Sutiakhali bazaar have been estimated to be 0.50-1.5 tons, 0.05-1.5 tons, 1-2 tons and 0.05-1.5 tons respectively. Virtually most of the fish (90%) are brought form different areas of the district and adjacent districts like Netrokona, Jamalpur, Kishorganj and other (10%) are brought from external source in Mechua bazaar, Natun bazaar, Railway market and Pourashova bazaar. Whereas (100%) of the fish species are brought from different areas of the district and adjacent district in Kewatkhali bazaar, K.R market, Shesmur bazaar and Sutiakhali bazaar. Market shares of main fish species are shown in (Table 2 & 3).

The recent supply of fish indicated quite a considerable increased from what it was 15 years back. According to Senior Upazila Fisheries Officer (SUFO) and Fisheries Survey Officer, fish supplies to the markets were not satisfactory during 1996s. Nevertheless, it is probably safe to say that compared to some 10 years age, the market volume has increased and the consumers are slowly used to including more fish in their menu. It was estimated that (29%) fish regularly sold in markets are carps (Fig. 5).

Plate 4.1 Fish marketing activities at Natun bazaar in Mymensingh town.

Plate 4.2 Fish marketing activities at Railway market in Mymensingh town.

Plate 4.3 Fish marketing activities at Mechua bazaar in Mymensingh town.

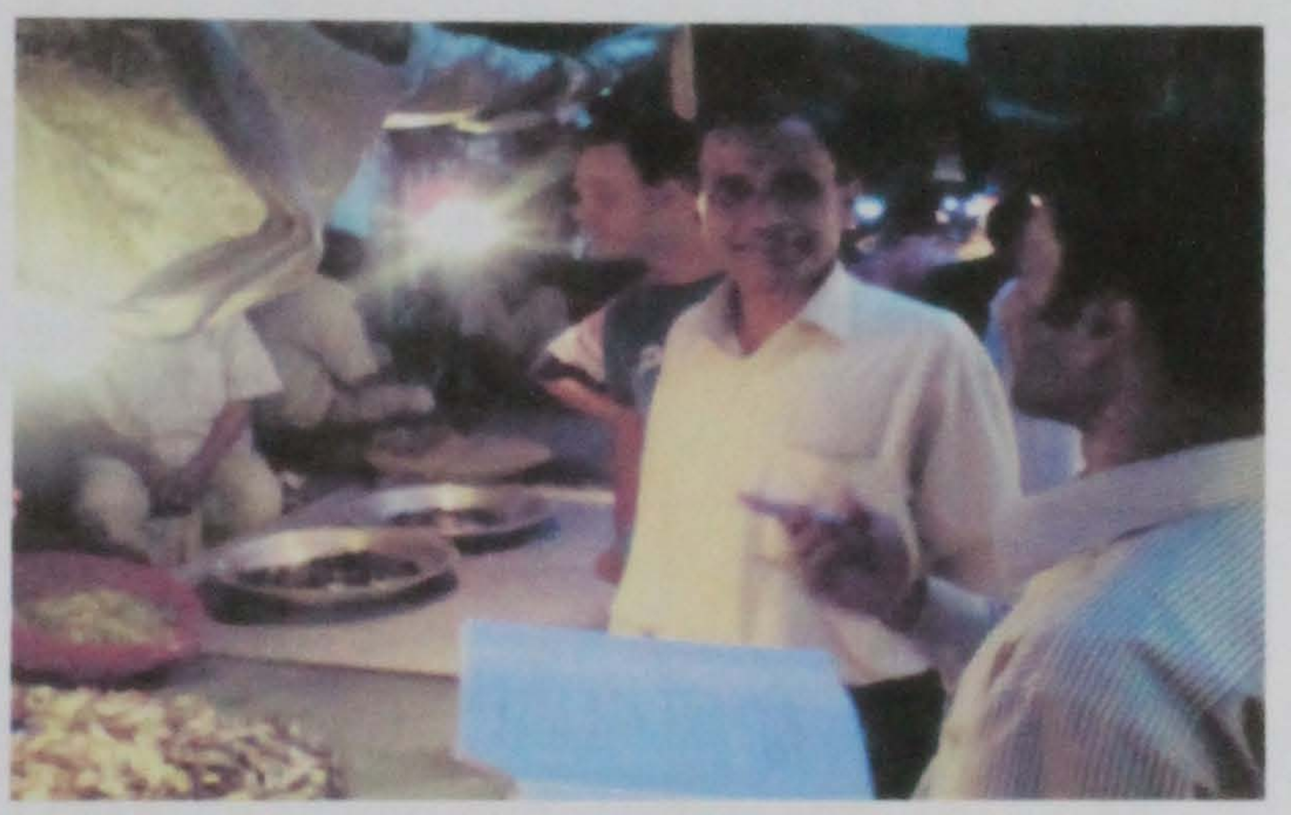


Plate 4.4 Questionnaire interview with consumer in Natun bazaar Mymensingh town.

Besides the carps, small quantities of other fish, e.g. hilsa, catfish, tilapia, small indigenous species (SIS) of fish, prawn and shrimp and other fish species were sold in the markets. Buses, trucks and pickups are used for transport of fish to the markets from inside and outside of the district. During the survey some consumers claimed that they do not prefer imported fish because they think that these fishes are preserved with formalin, a highly toxic substance and hazardous to human health.

Table 2. Market shares of main fish species in four fish markets in Mymensingh town

Source of fish in markets	Fish species	Mechua bazaar (%)	Natun bazaar (%)	Railway market (%)	Pouras -hova bazaar (%)	Average (%)
Mymensingh region (90%) (Sadar upazila, Trisal, Bhaluka, Muktagacha bazaar, Phulpur, Gouripur, Netrokona, Jamalpur, Kishorganj, Mohanganj)	Carps (Indian major carps, exotic carps and minor carps	18	23.07	17.07	27	21.29
	Small indigenous species (Mola, sharputi, chapila, bele, taki, puti)	30	23.07	34.14	20	27.05
	Catfishes (Pangus, shing, tengra, air, boal, magur)	24	25.64	26.83	27	25.87
	Thaikoi/koi	4	2.56	2.44	3	3
	Prawn	4	5.12	2.44	3	3.64
	Tilapia	2	2.56	2.44	3	2.5
	Others	8	7.69	4.88	7	6.89
Outside of Mymensingh (10%) (Chittagong, Cox's bazaar, India, Myanmar)	Carps (Indian and exotic)	6	7.44	7.44	7	6.93
	Hilsa and Other (Including marine shrimp)	4	2.56	2.56	3	3
Total		100	100	100	100	100

Source: Present survey

Table 3. Market shares of main fish species in nearby fish markets in Mymensingh town

Source of fish in markets	Fish species	Kewatkhali bazaar (%)	K.R market (%)	Shesmur bazaar (%)	Sutiakhali bazaar (%)	Average (%)
Mymensingh region (100%) (Sadar upazila, Trisal, Bhaluka, Muktagacha bazaar, Phulpur, Gouripur, Netrokona, Jamalpur, Kishorganj, Mohanganj)	Carps (Indian major carps, exotic carps and minor carps	34.62	33.33	26.67	33.33	31.98
	Small indigenous fish (Mola, sharputi, chapila, bele, taki, puti)	23.07	14.81	36.67	37.5	28.07
	Catfishes (Pangus, shing, tengra, air, boal, magur)	19.23	25.93	20	16.67	20.45
	Thaikoi/koi	3.85	0	0	0	0.96
	Prawn	3.85	7.40	3.33	4.17	4.68
	Tilapia	3.85	3.70	3.33	4.17	3.76
	Hilsa	0	3.70	0	0	0.93
	Others	11.54	11.11	10	4.17	9.20
Total		100	100	100	100	100

Source: Present survey

4.3 Composition of different fishes

In the study area different kinds of fish species were recorded during the survey period. Among them 29% were carps (Indian major carps, exotic carps and minor carps), 28% were Small Indigenous Species (SIS), 24% were catfishes, 8% were other fish species, 4% were prawn/shrimp, 3% were tilapia, 2% were Thai koi/koi and rests 2% were hilsa (Fig. 5). From the above composition of different fishes it can be concluded that carps species were abundant than other species.

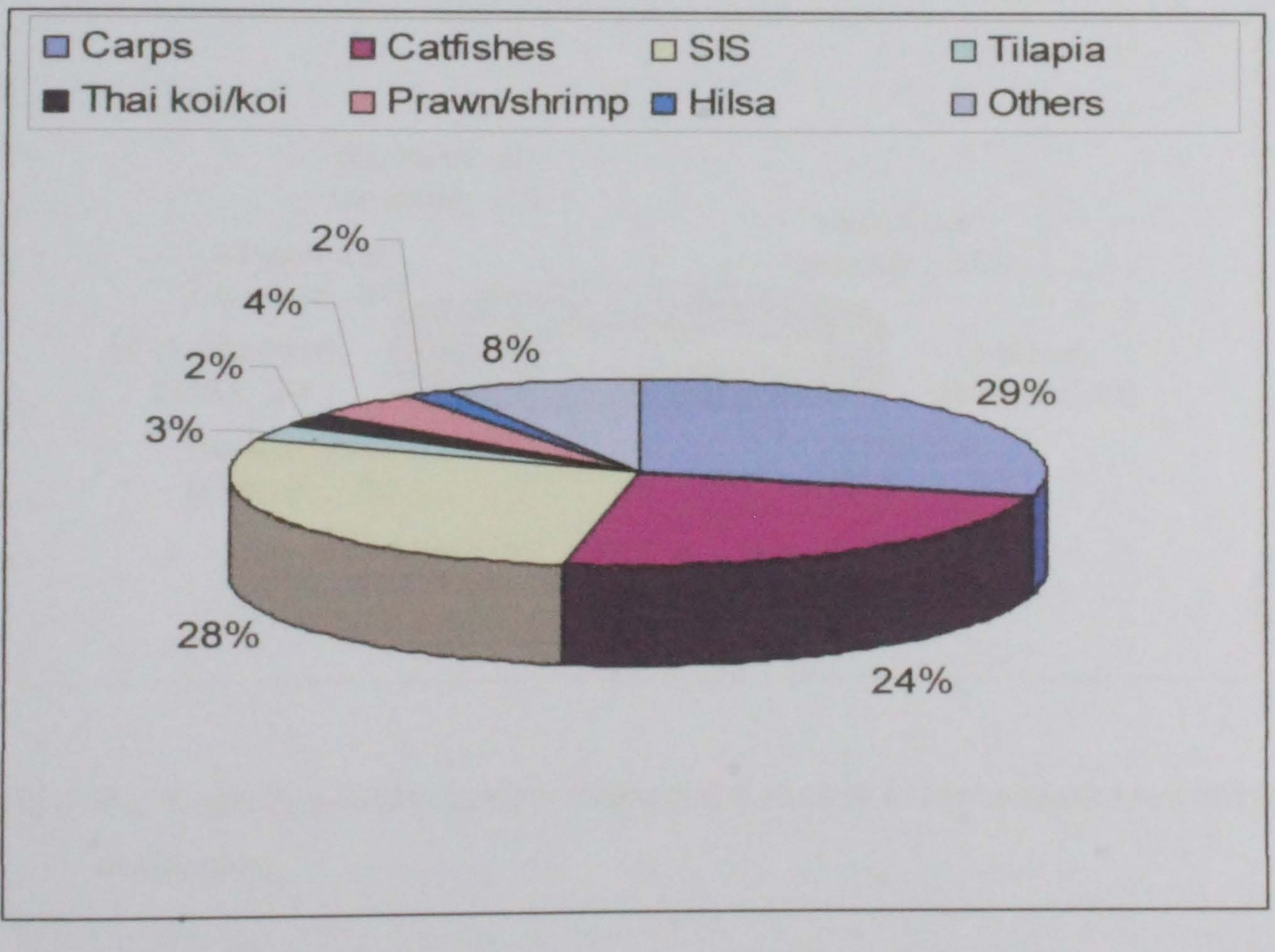


Fig. 5. Percent composition of different fishes in eight different fish markets in Mymensingh town and its nearby area.

4.4 Variation of species availability

About 260 freshwater and 475 marine fish species are available in our country. Among them 54 freshwater species have already been declared as threatened (Hussain and Mazid, 2001). Mymensingh region is prominent for aquaculture. A good number of rivers, canals and haors are present in this area, so the availability and supply of fish in local markets are satisfactory than the other areas of Bangladesh. The average number of species that occurred in these eight markets ranged from 24-50. Among these 50 were in Mechua bazaar, 39 were in Natun bazaar, 41 in Railway market, 33 were in Pourashova bazaar, 26 were in Kewatkhali bazaar, 27 were in K.R market, 30 were in Shesmur bazaar and 24 were in Sutiakhali bazaar (Fig. 6). The highest number of species (50) were found in Mechua bazaar and lowest number (24) were found in Sutiakhali bazaar.

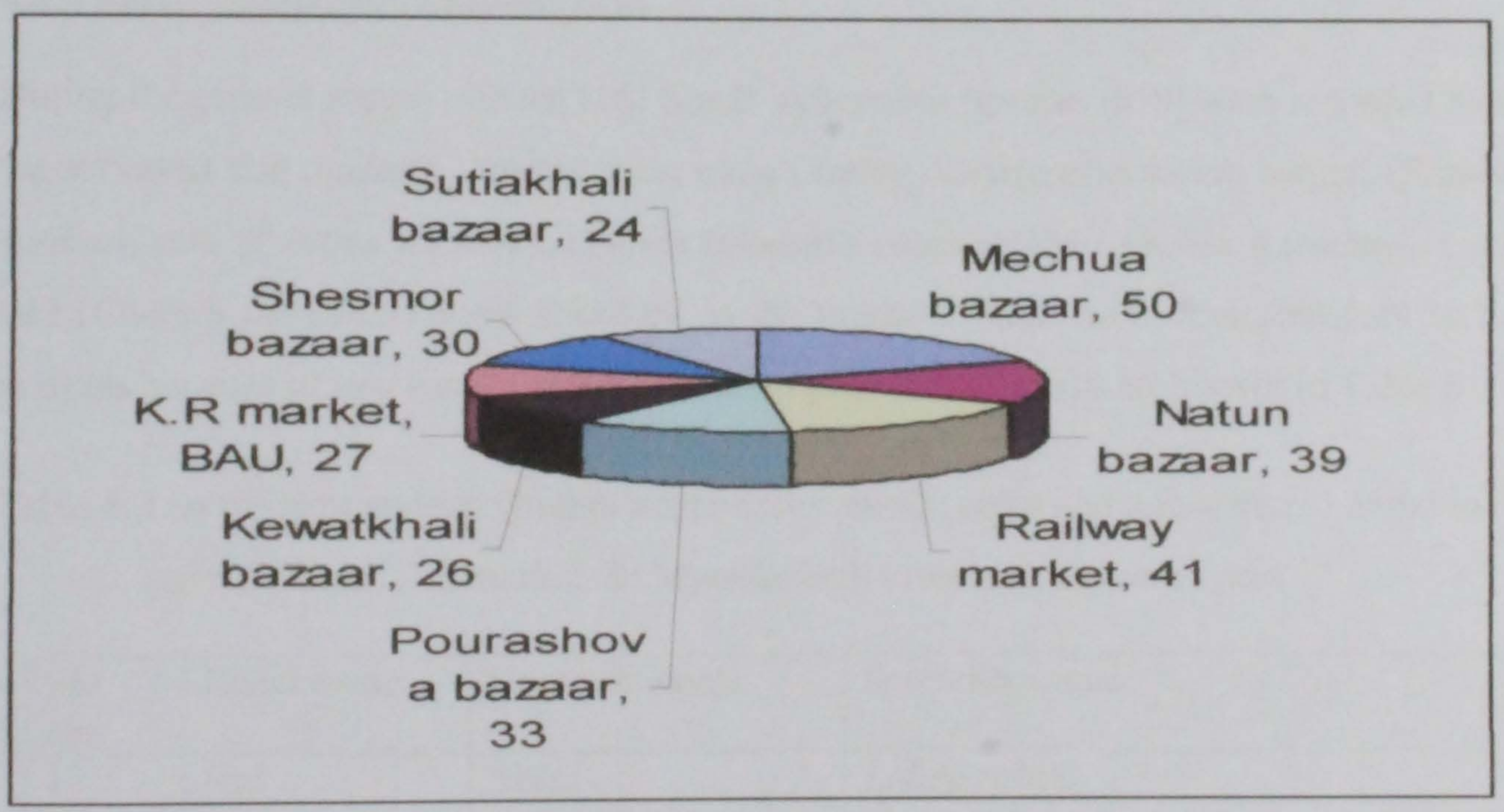


Fig 6. No. of species available in eight different fish markets in Mymensingh town and its nearby area.

4.4.1 Carps

During the period of present survey, 12 species of carps (Indian major carps, exotic carps and minor carps) were recorded in the study site, among them Indian major carps and exotic carps were dominant. Rest of them were minor carps. List of carps are shown in Table 4.

4.4.2 Catfishes

Twelve (12) species of catfishes were found during the survey period, among them tengra (*Mystus vitatus*), bojuri (*Mystus tengra*), magur (*Clarias batrachus*), gulsha (*Mystus cavasius*) and thai pangus (*Pangasius hypophthalmus*) were dominant in the market. Lists of catfishes are shown in Table 5.

4.4.3 Small Indigenous Species (SIS)

During the present survey sixteen (16) Small Indigenous Species (SIS) were recorded from the surveyed fish markets. Among them mola (*Amblypharyngodon mola*), sarputi (*Puntius sarana*), puti (*Puntius sophore*), chapila (*Gudusia chapra*), koi (*Anabas testudineus*) and taki (*Channa punctatus*) were abundant in the markets. Rests were less dominant in the markets because of low supply and high market price. Lists of SIS are shown in Table 6.

Table 4. List of carps species (Indian major carps, exotic carps and minor carps) found in eight different fish markets in Mymensingh town and its nearby area

SL. No.	Local name	Common name	Scientific name
1	Rui	Rohu	*Labeo rohita*
2	Catla	Catla	*Cata catla*
3	Mirka	Mrigal	*Cirrhinus cirrhosus*
4	Kalibasu	Orange fin Labeo	*Labeo calbasu*
5	Silver carp	Silver carp	*Hypophthalmichthys molitrix*
6	Grass carp	Grass carp	*Ctenopharyngodon idella*
7	Bighead carp	Bighead carp	*Aristichthys nobilis*
8	Carpio	Common carp	*Cyprinus carpio* var communis
9	Minnar carp	Mirror carp	*Cyprinus carpio* var spacularis
10	Thai sarputi	Thai sarputi	*Puntius gonionotus*
11	Bata	Bata	*Labeo bata*
12	Gunia	Karia Labeo	*Labeo gonius*

Table 5. List of catfishes found in eight different fish markets in Mymensingh town and its nearby area

SL. No.	Local name	Common name	Scientific name
1	Tengra	Striped dwarf catfish	*Mystus vitatus*
2	Bujuri	Long bled catfish	*Mystus tengra*
3	Kajuli	Gangetic ailia	*Ailichthys punctata*
4	Air	Long whiskered catfish	*Mystus aor*
5	Rita	Rita	*Rita rita*
6	Modhu pabda	Butter catfish	*Ompok pabda*
7	Boal	Freshwater shark	*Wallago attu*
8	Magur	Walking catfish	*Clarias batrachus*
9	Shing	Stinging catfish	*Heteropneustes fossilis*
10	Gulsha	Long whiskered catfish	*Mystus cavasius*
11	Thai pangus	Exotic catfish	*Pangasius hypophthalmus*
12	Batasi	River catfish	*Batasio batasio*

Table 6. List of Small Indigenous Species (SIS) found in eight different fish markets in Mymensingh town and its nearby area

SL. No.	Local name	Common name	Scientific name
1	Mola	Barb	*Amblypharyngodon mola*
2	Sarputi	Barb	*Puntius sarana*
3	Puti	Spot fin swamp barb	*Puntius sophore*
4	Chapila	Indian river shad	*Gudusia chapra*
5	Kakila	Freshwater gar fish	*Xenentodon cancila*
6	Chanda	Elongated glass perchlet	*Chanda nama*
7	Dhela	Barb	*Rohtee cotio*
8	Meni	Mud perch	*Nandus nandus*
9	Koi	Climbing perch	*Anabas testudineus*
10	Khalisa	Banded gourami	*Colisa fasciatus*
11	Baila	Bar-eyed goby	*Glossogobius giuris*
12	Taki	Spotted snakehead	*Channa punctatus*
13	Tara baim	One Striped spiny eel	*Macrognathus aculeatus*
14	Guchi	Striped spiny eel	*Mastacembelus pancalus*
15	Gutum	Guntea loach	*Lepidocephalus guntea*
16	Baim	Zig-zag eel	*Mastacembelus armatus*

4.4.4 Prwan/shrimp, Hilsa and Other Fish Species

In the present study it was found that ilish (*Tenualosa ilisha*) was identified in Mechua bazaar, Natun bazaar, Railway market, Pourashova bazaar and K.R market (BAU) but not in Kewatkhali bazaar, Shesmor bazaar and Sutiakhali bazaar. Bagda chingri (*Penaeus* sp.) was identified only in Mechua bazaar but not in other fish markets. Golda chingri

(*Macrobrachium rosenbergii*) was found in Machua bazar, Natun bazar, Railway market, Pourashova bazar and K.R market (BAU) but not in rests three markets. Only chatka chingri (*Macrobrachium malcomsonii*) was identified in all the fish markets. Besides chitol (*Notopterus chitala*) and foli (*Notopterus notopterus*) were recorded only in Machua bazar, Natun bazar and Railway market. Lists of prawn/shrimp, hilsa and other species are shown in Table 7.

Table 7. List of prwan/shrimp, hilsa and other fish species found in eight different fish markets in Mymensingh town and its nearby area

SL. No.	Local name	Common name	Scientific name
1	Ilish	Indian river shad	*Tenualosa ilisha*
2	Golda chingri	Freshwater prawn	*Macrobrachium rosenbergii*
3	Chatka chingri	Monsoon river prawn	*Macrobrachium malcomsonii*
4	Bagda chingri	Marine water shrimp	*Penaeus* sp.
5	Chitol	Clown knife fish	*Notopterus chitala*
6	Foli	Bronge feather back	*Notopterus notopterus*
7	Shol	Snakehead murrel	*Channa striatas*

4.4.5 Species increased in the fish markets

During the study period it was recorded that most of the retailers mentioned some species which have increased during last three years these are rui (*Labeo rohita*), catla (*Cata catla*), mrigal (*Cirrhinus cirrhosus*), Thai pangus (*Pangasius hypophthalmus*), silver carp (*Hypophthalmichthys molitrix*), bighead carp (*Aristichthys nobilis*), common carp (*Cyprinus carpio*), Thai sarputi (*Puntius gonionotus*), grass carp (*Ctenopharyngodon idella*) and tilapia (*Oreochromis* spp.) (GIFT). The main cause of increasing these species are high supply in the market, high market demand and consumers acceptance.

4.4.6 Species decreased in the fish markets

Most of the retailers 87.5% in the surveyed fish markets mentioned that rani (*Botia dario*), nandina (*Labeo nandina*), Mohashol (*Tor tor*), baghair (*Bagarius bagariua*), ghaura (*Clupisoma garua*) and silone (*Silonia silondia*) have decreased in the market during the last three years. On the other hand 12.5% of the retailers mentioned that pabda (*Ompok pabda*), kajuli (*Ailichthys punctata*), batasi (*Batasio batasio*), bhagna (*Labeo ariza*), magur (*Clarias batrachus*) and shing (*Heteropneustes fossilis*) have also decreased. The main causes of decreasing these species are low supply in the market, high market price etc.

Table 8. Decreased fish species in the fish market in Mymensingh town and its nearby area

Species decreased	Number of mentioned retailers (N=48)	(%) Percent	Reasons
Rani, nandina, mohashol, baghair, ghaura and silone	42	87.5	Extinct
Pabda, kajuli, batasi, bhagna, magur and shing	6	12.5	Low supply in the market High market price
Total	48	100	

N=Total sample size

4.5 Comparative markets survey

In the study area, four important fish markets were chosen to carry out comparative market survey, namely: Mechua bazaar, Natun bazaar, Railway market and Pourashova bazaar and another four fish markets of nearby area of Mymensingh town namely: Kewatkhali bazaar, K.R market, Shesmur bazaar and Sutiakhali bazaar were chosen.

4.5.1 Peak marketing season

Peak marketing season is an important factor for any fish trader. During the survey time 35.42% retailers mentioned that their peak marketing season is all the year round, 31.25% retailers mentioned that their peak season is from October-February, November-March is the peak marketing season mentioned by 14.58% retailers and May- August is the peak season mentioned by rest 18.58% retailers (Table 9).

Table 9. Peak Marketing Season of the fish traders

Peak marketing season	Number of retailers N=48	(%) Percent
October-February	15	31.25
November-March	7	14.58
May-August	9	18.75
All the year round	17	35.42
Total	48	100

N= Total sample size

4.5.2 Time of fish trading

Different fish markets have different marketing time, in Mechua bazaar retailers were engaged in fish trading from 7 am to 11 pm, while in Natun bazaar, Railway market and Pourashova bazaar retailers were engaged from 5 pm to 12 am, 6 pm to 12 am and 7 am to 2 pm respectively. Whereas in Kewatkhali bazaar, retailers were engaged in fish trading from 7 am to 2 pm, in K.R market, Shesmur bazaar and Sutiakhali bazaar were engaged from 9 am to 2 pm, 8 am to 1 pm and 3 pm to 10 pm respectively. Retailers in Mechua bazaar and Natun bazaar spend more time due to higher amount of fish supply large number of consumers bought fishes from these markets.

4.5.3 Number of retailers

The number of retailers in the eight different fish markets varied from one another. The average number of retailers in Mechua bazaar were 85, where 50, 32 and 54 retailers were in Natun bazaar, Railway market and Pourashova bazaar respectively (Fig. 7). While nearby fish markets of Mymensingh town like Kewatkhali bazaar, K.R market, Shesmur bazaar and Sutiakhali bazaar the average number of retailers were 17, 21, 27 and 26 respectively.

4.5.4 Amount of fish landing

It was found that total fish landing in the markets varied from time to time. During winter season quantity of fish landed was higher than other seasons. During the last three month January, February and March higher quantities of fish was landed. Quantity of fish landed in Mechua bazaar, Natun bazaar, Railway market and Pourashova bazaar market were found to be 7-8 tons, 5-6 tons, 2-3 tons and 4-5 tons per day respectively. On the other hand nearby fish markets in Mymensingh town like Kewatkhali bazaar, K.R market, Shesmur bazaar and Sutiakhali bazaar daily supply of fish was estimated to be 0.50-1.5 tons, 0.50-1.5 tons, 1-2 tons and 0.50-1.5 tons respectively (Fig. 8).

4.5.5 Amount of fish sold

It was found that a fish retailer of Mechua bazaar, Natun bazaar, Railway market and Pourashova bazaar sold an average of 95 kg, 65, 55 and 55 kg fish daily respectively. While nearby fish markets like Kewatkhali bazaar, K.R market, Shesmor bazaar and Sutiakhali bazaar average sale of fish was 35, 40, 45 and 30 kg per day respectively per retailers. From the above figures, it was indicated that the amount of fish sold by a retailers at Mechua bazaar was higher than Natun bazaar and the amount of fish sold in Railway market and Pourashova bazaar was higher than nearby fish markets.

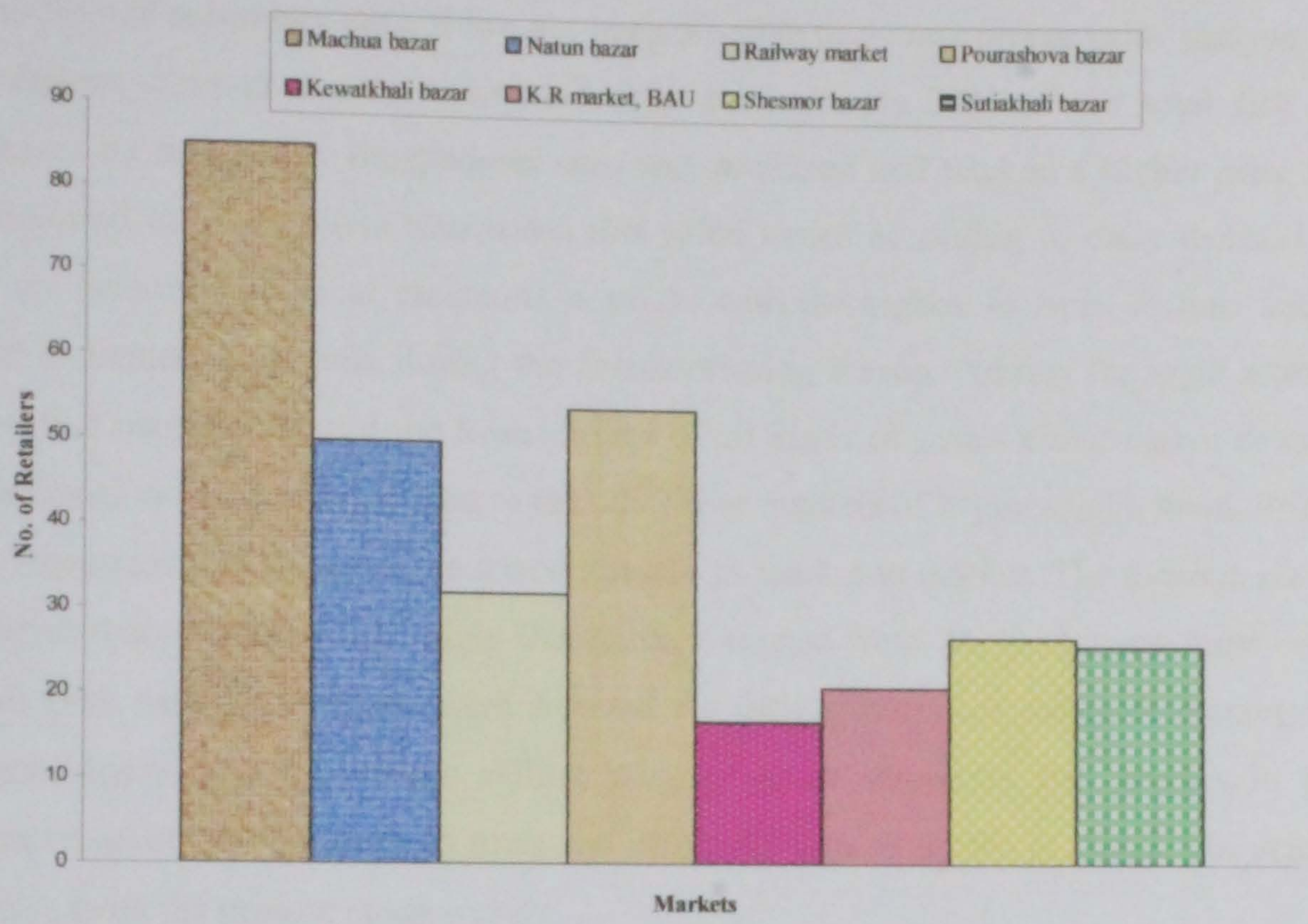


Fig. 7. No. of retailers engaged in eight different fish markets in Mymensingh town and its nearby area.

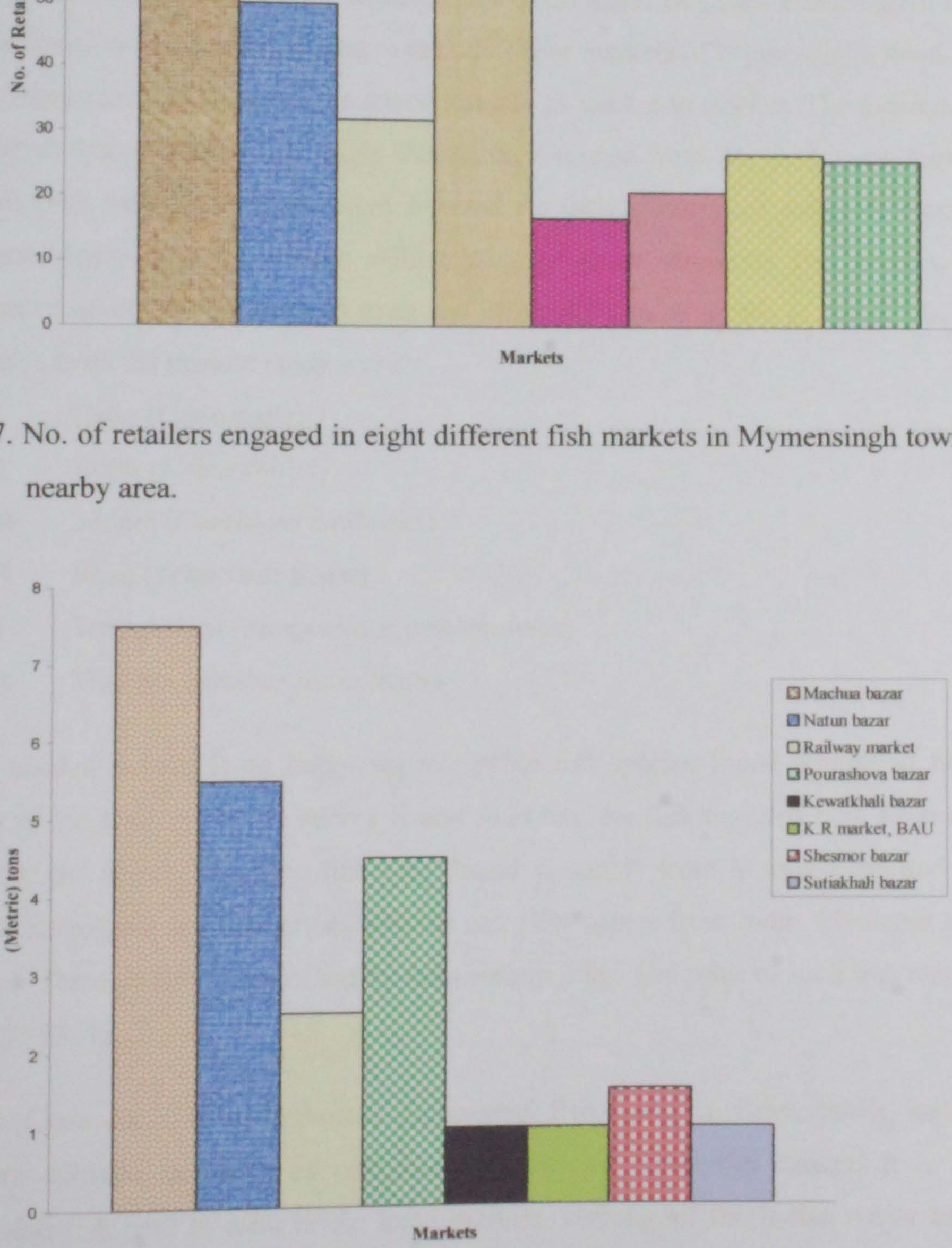


Fig. 8. Amount of fish landing in eight different markets in Mymensingh town and its nearby area.

4.5.6 Price of fish

Due to limited secondary data, it has not been possible to do any proper price analysis but, nevertheless, a trend can be calculated only for carps as 29% of the total fish was comprised by this group. Bangladeshi carp was preferred and fetched a higher price than the imported ones. Retailers also noted that price varies according to daily demand and there are generally seasonal variations in prices with the highest in April to June and the lowest in January to March, during the fish-harvesting season. Among the eight markets, nearby fish markets showed the lower prices of all kinds of fishes either native or exotic and captured or cultured compared to the other four markets of Mymensingh town. Price of some important fish species were found flexible in market to market. The average number of species that occurred in the eight fish markets ranged from 24-50. Among these only 6 species both native and exotic were selected for their availability, demand, market price and consumers choice. Average selling price of some important fish species in eight different markets in Mymensingh town and its nearby area as shown in Fig. 9. The selected 6 species from the present study were:

i) Catla (*Catla catla*)
ii) Rohu (*Labeo rohita*)
iii) Mrigal (*Currhinus cirrhosus*)
iv) Illish (*Tenualosa ilisha*)
v) Thai pangus (*Pangasius hypophthalmus*)
vi) Thai koi (*Anabas testudineus*)

Rohu (*Labeo rohita*) is an important culturable fish species found almost all freshwater basins of the country. In the survey it was fond that the fish supplied both from domestic and foreign. About 90% rohu fish were found to supply from Mymensingh and adjacent district Netrokona and Kishorganj and the rest 10% comes from India, Myanmar and other sources. The maximum size of native rohu weight 1 kg. The price of such fish ranged from 130-160 Tk./kg.

Cattla (*Catla catla*) is an important commercial fish found in rivers, canals, haors, baors and are cultured in ponds as component species of composite culture. It is a highly demanded fish next to rohu in the local markets. Among all the Indian major and minor carps this fish bears high price. In the present survey it was considered only the native catla which weighed about 1 kg. The price of such fish ranged from 135-175 Tk/kg.

Mrigal (*Cirrhinus cirrhosus*) is an important commercial fish mainly found in rivers, canals, haors, boars and ponds. During the survey period, the supply, demand and price of this species were found lower than rohu and catla. The average price ranged from 100-130 Tk./kg

Ilish (*Tenualosa ilisha*) is an important diadromus species found both in marine and fresh water. Due to its extra ordinary flavour and taste it fetches high market value. From the survey it was found that supply of this fish was not satisfactory. During the entire study period undersized fish of this species (Jhatka) were found to be sold. The average price of this fish ranged from 250 to 280 Tk./kg.

Thai pangus (*Pangasius hypophthamus*) is an important exotic fish playing a vital role in the aquaculture sector of Bangladesh. Among the 12 exotic fish Thai pangus can reared in high density. Fishes of about 1 kg was taken into consideration for comparing price variation in different fish markets in Mymensingh town. The average price ranged from 50-70 Tk./kg.

Thai koi (*Anabas testudineus*) is similar to our native koi as it maintains same hierarchy. Due to its higher growth compared to the native one it is able to draw attention of the farmer as well as customers. The market price of this fish was higher than the other exotic fish species and it ranged from 185 to 235 Tk./kg.

4.5.7 Daily average profit of the fish retailers

The average net profit of fish retailers was higher in Mechua bazaar and Natun bazaar than Railway market and Pourashova bazaar because supply was higher. The average gross profit earned by a fish retailer in Mechua bazaar and Natun bazaar was estimated at Tk. 580/day and at Tk. 450/day while in Railway market and Pourashova bazaar was at Tk. 350 day^{-1} and Tk. 330/day respectively. On the other hand nearby fish markets like Kewatkhali bazaar, K.R market, Shesmur bazaar and Sutiakhali bazaar the average gross profit of a fish retailer was estimated at Tk. 260, 310, 325 and 270 per day respectively. Although fish retailers can earn considerable amount of money in their business. Average daily profit of retailers in eight different markets in Mymensingh town and its nearby area as shown in Fig.10.

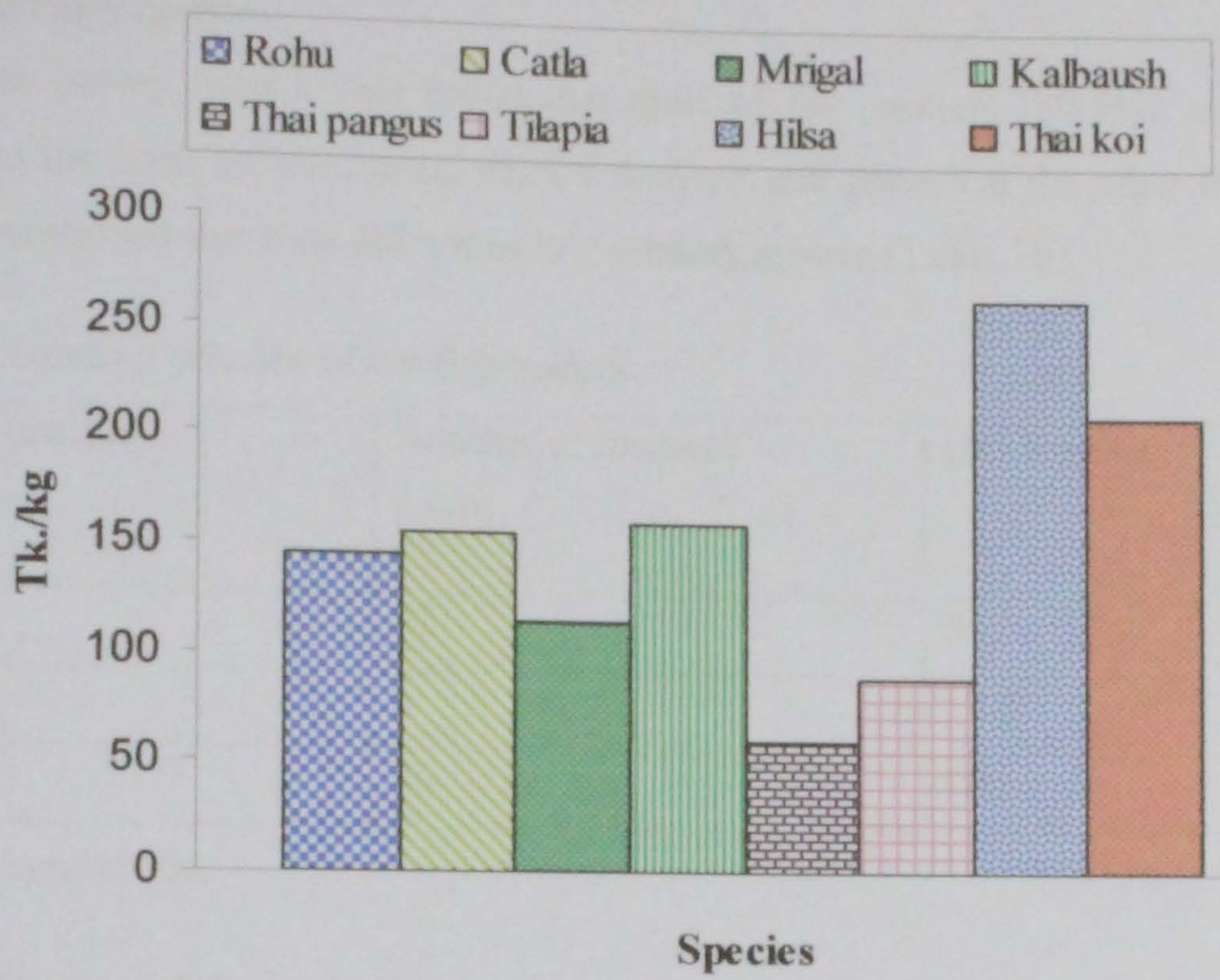


Fig. 9. Average selling price of some important fish species in eight different markets in Mymensingh town and its nearby area.

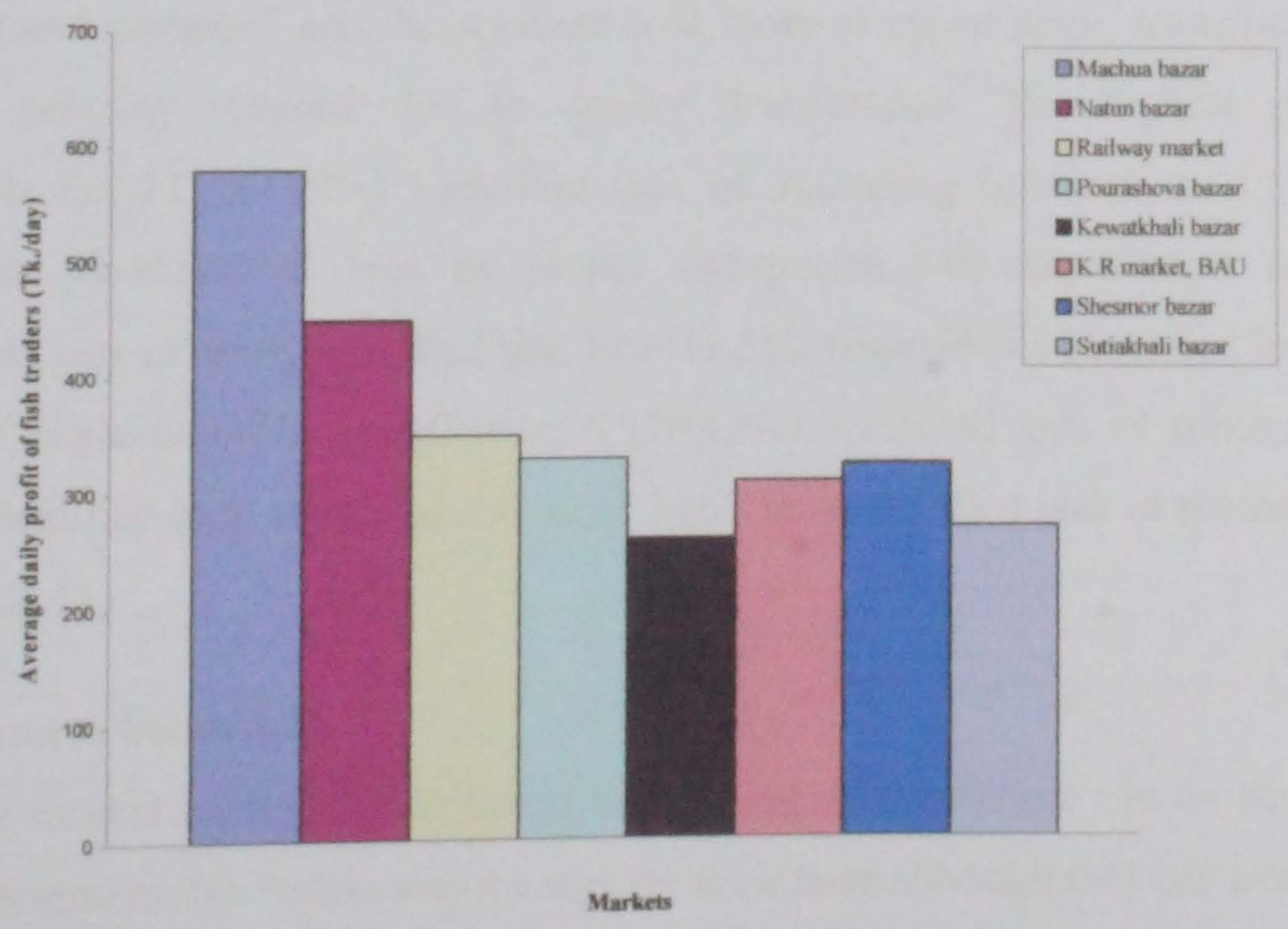


Fig. 10. Average daily profit of retailers in eight different markets in Mymensingh town and its nearby area.

4.5.8 Grading practice

During the survey time it was found that most of the retailers (87.5%) were practiced grading on the basis of size, taste, market demand and price. On the other hand (12.5%) retailers mentioned that they did not follow grading system (Table 10).

Table 10. Grading practice of the fish traders

Grading practice	Number of retailers N=48	(%) Percent
Yes	42	87.5
No	6	12.5
Total	48	100

N= Total sample size

4.5.9 *Problems of fish marketing*

A number of problems for fish marketing were reported by retailers, lack of capital, lack of storage facilities, lack of proper transportation/communication, lack of marketing facilities, lack of market information, lack of reasonable price of input and dominance of intermediaries. According to the retailers, if all fish are not sold in a day these become perishable and damaged and the retailers sold those at cheap price, sometimes they even failed to get any revenue due to quality deterioration. The highest proportion of respondents i.e. 11 (22.92%) identified lack of marketing information, 10 (20.83%) of respondents identified as lack of proper transportation/communication and other 10 (20.83%) as lack of marketing facilities. Six (12.5%) respondents identified lower prices as a result of exploitation by middlemen, 5 (10.42%) identified lack of storage facilities, 3 (6.25%) identified lack of capital and other 3 (6.25%) identified lack of reasonable price of input (Table 11).

4.6 Consumers behaviour

During the market survey, it was found that almost all consumers age lie between 15 and 65 yrs. Consumers like Indian major carps for their taste although they are expensive. Even poor consumers like Indian major carps for its better taste than exotic carps. Indian major carps are more expensive than broiler Chicken (Tk. 100-110/kg) but much cheaper than mutton (Tk 240-250/kg). Of the total 48 consumers interviewed, 39 (81.25%) mentioned that they spent more money for buying fish than meat, while the remainder 9 (18.75%)

spent more money for meat. Almost all consumers mentioned that level of fish price increased over the last 5 years and level of fish supply decreased over the last 5 years. Indian major carps, Small Indigenous species (SIS) and catfishes are the prominent types of fishes get from these markets were mentioned by most of the consumers (Plate 4.4).

Table 11. Problems of fish trading in the fish markets in Mymensingh town and its nearby area

Problems of fish trading	Number of retailers N=48	(%) Percent
Lack of capital	3	6.25
Lack of storage facilities	5	10.42
Lack of proper transportation	10	20.83
Lack of marketing facility	10	20.83
Lack of market information	11	22.92
Lack of reasonable price of input	3	6.25
Dominance of intermediaries	6	12.5
Total	48	100

N= Total sample size

4.7 Socio-economic conditions of fish trader

The social and economic conditions of the households of retailers are of much significance in planning of development activities. The aim of this section is to describe the social and economic conditions of fish retailers.

4.7.1 Age structure

The knowledge of age structure of traders is necessary for estimating potential and active human resources. In the study area, most retailers were 26-35 years age range. From the market survey it was found that, maximum traders (39.58%) were between 26 and 35 years, (31.25%) followed by above 45 years, (18.75%) between 36 and 45 years and (10.42%) between 15 and 25 years age group (Table 12).

Table 12. Distribution of fish traders age group

Age group	Number of retailers N=48	(%) Percent
15-25 years	5	10.42
26-35 years	19	39.58
36-45 years	9	18.75
Above 45 years	15	31.25
Total	48	100

N= Total sample size

4.7.2 Education

Six categories were used to define education level: 1) None- had no education, 2) Sign- can only sign, 3) Primary level – 1 to 5 class education, 4) Lower secondary – 6 to 10 class education, 5) Secondary School Certificate (S.S.C) – class 10 pass, 6) Higher Secondary Certificate (H.S.C) – class 12 pass. From the total (48) interviewed, 47.91% of retailers had primary level of education, 25% had no education, 14.58% had lower secondary education, 8.33% can only sign and rest 4.17% had S.S.C level and none had H.S.C level of education (Table 13).

Table 13. Distribution of fish traders education level

Educational level	Number of retailers N=48	(%) Percent
None	12	25
Sign	4	8.33
Primary	23	47.92
Lower secondary	7	14.58
SSC	2	4.17
HSC	0	0
Total	48	100

N= Total sample size

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4.7.3 Religious status

In the study area, 79.17% of interviewed retailers were Muslims and the remainders (20.83%) were Hindus, with no Buddhists or Christians. Muslim retailers dominated in all markets (Table 14).

Table 14. Religious status of retailers in the fish markets in Mymensingh town and its nearby area

Religious status	Number of retailers N=48	(%) Percent
Muslims	38	79.17
Hindus	10	20.83
Others	0	0
Total	48	100

N= Total sample size

4.7.4 Family size

The family size of retailers was found to be 56.25% in joint family and 43.75% was found to be in a single family, which was slightly lower than national household size of 5.6 (BBS, 2000). The family members were found higher 60.42% between 6-10 and 39.58% were found between 1 and 5 members.

4.7.5 Length of experience

During the survey time in different fish markets in Mymensingh town and its nearby area, 18 (37.5%) retailers mentioned that they had 1-10 years length of experience, other 18 (37.5%) retailers mentioned that they had 11-20 years length of experience, 8 (16.67%) retailers mentioned that they had 21-30 years length of experience and rest 4 (8.33%) had above 30 years length of experience (Table 15).

Table 15. Length of experience of the fish traders

Length of experience	Number of retailers N=48	(%) Percent
1-10 years	18	37.5
11-20 years	18	37.5
21-30 years	8	16.67
Above 30 years	4	8.33
Total	48	100

N= Total sample size

4.7.6 Improved socio-economic conditions

Though retailers' living conditions are poor, the survey suggests that they have improved their socio-economic conditions through fish trading, as confirmed by 62.5% of fish retailers. Such improved conditions may be described further on the basis of qualitative indicators. These could include increased food consumption, increased social status and improved their standards of living, purchasing power, choice, and ability as an economic sector. Some 37.5% of retailers have not obtained any specific benefits due to taking loan from moneylenders and banks (Table 16).

Table 16. Improved socio-economic conditions through fish trading in the fish market in Mymensingh town and its nearby area

Improved socio-economic condition	Number of retailers N=48	(%) Percent
Yes	30	62.5
No	18	37.5
Total	48	100

N= Total sample size

CHAPTER 5
DISCUSSION

5.1 Fish distribution and marketing system

The fish market chain passes through a number of intermediaries such as, local fish trader, beparies, aratdar, wholesalers and retailers. In our present study three types of marketing channels were observed. These channels were: (a) fish farmers-paikers-wholesalers-retailers- consumer (b) fish farmers-wholesalers- retailers-consumers and (c) fish farmers-retailers-consumers. Mia (1996) and Rahman (2003) identified several types of marketing channels in Netrokona, Mymensingh and Gazipur district, respectively, all of which involve the active participation of aratdar and beparies as a strong link in the existing marketing system.

The fish producers in the surveyed areas usually contact with the local agent/fish supplier before harvesting of fish, and the local agents purchase the fish at the pond side and carry them to the fish markets. Here they make a small profit in the tune of 5-10% of the farm price. On the other hand, some of the local agents do not invest any capital rather they act as a commission agent at 2-5% commission for sending the fish to the markets. The role of local agents/suppliers in the present study are very much in line with the observation of Rokeya et al. (1997) reported that local agents collect and purchase fish from the farmers on commission basis in Rajshahi fish market.

Retailers typically operate with capital of around Tk. 15,000 to 35,000 per day. This finding is similar to that of the investigation made in Gazipur district where traders typically operate with capital of about Tk. 10,000 to 25,000 per day (Rahman, 2003). The wholesalers possess more capital (about Tk. 20,000 to 100,000 per day) compared to the retailers and have the means to control the agents and the retailers and earn more profit. Sarker (1999) mentioned that profit of bepary was the highest in Chandpur.

5.2 Supply of fish in markets

According to the market survey the daily supply of fish in Mechua bazaar, Natun bazaar, Railway market and Pourashova bazaar was estimated to be 7-8, 5-6 , 2-3 and 4-5 tons, respectively. On the other hand nearby fish markets in Mymensingh town like Kewatkhali bazaar, K.R market, Shesmur bazaar and Sutiakhali bazaar the daily supply of fish was estimated to be 0.50-1.5, 0.50-1.5, 1-2 and 0.50-1.5 tons respectively. Rahman (2003)

found the daily supply of fish in Gazipur Sadar and Sripur markets was estimated at 2-3 tons and 1-2 tons respectively.

Virtually most of the fish (90%) are brought form different areas of the district and adjacent districts like Netrokona, Jamalpur, Kishorganj and the rest (10%) are brought from external source in Mechua bazar, Natun bazaar, Railway market and Pourashova bazaar. Whereas (100%) of the fish species are brought from different areas of the district and adjacent district in Kewatkhali bazaar, K.R market, Shesmur bazaar and Sutiakhali bazaar. A significant amount of carps were also imported from outside the country mainly from India and Myanmar has also been reported. Rahman (2003) found about similar result, in Gazipur district. Siddique (2001) also found that in Mymensingh markets, fish are imported from Myanmar and India especially large sized Indian major carps. Afroz (2007) reported that 85% of the fish are brought from different areas of the district and adjacent districts in Mymensingh town.

5.3 Composition of different fishes

It was estimated that 29% fish supplied in the markets was Indian major carps, minor carps and exotic carps. Besides the carps, small quantities of other fish, e.g. catfish (24%), hilsa 2%, tilapia 3%, small indigenous fish 28%, prawn and shrimp 4%, Thai koi/koi 2% and other fish (about 8%) were found in the markets. Rahman (2003) found about similar result, in Gazipur district. Shrivastava and Ranadhir (1995) observed that the demand for rohu fish and its local contribution to sale was highest in India. The most commonly sold fish species in the market were rohu, catla, mrigal and grass carp.

5.4 Species decreased in the fish markets

Most of the retailers 87.5% in the surveyed fish markets mentioned that rani, nandina, mohashol, baghair, ghaura and silone have decreased in the market during the last three years. On the other hand 12.5% of the retailers mentioned that the availability of pabda, kajoli, batasi, bhagna, magur and shing were also decreased over the years. The main cause of decreasing these species are low supply in the market, high market price etc. Moyle and Leidy (1992) estimated that more than 20% of the worlds 10,000 described freshwater fish species have become extinct, threatened or endangered.

5.5 Price of fish

Among the Indian major carps catla was found to be the most valuable while among exotic fishes, Thai koi was found to be most valuable. Thai koi was introduced very recently in the culture system of Bangladesh so there was no relevant previous marketing information of this species in the country. Rahman (2003) found rohu as the most valuable among the Indian major carps and grass carp among exotic carps in Gazipur district. Hasan and Middendrop (1999) mentioned that rohu was found to be the most expensive followed by catla, mrigal, grass carp, common carp and silver carp in southwest Bangladesh. Siddique (2001) also found that Indian major carps were sold at higher price than exotic carps in Mymensingh markets.

In the present study the price of carp was found to fluctuate with the variation of market structure, species, quality, size and weight. According to Rahman (2003), naturally the price of carp depends on market structure, species, quality, size and weight. Traders also noted that price varies according to daily demand and there are generally seasonal variations in prices with the highest in summer (April to June) and the lowest in winter (January to March). Quddus (1991) also found similar seasonality for the price of fish market in Mymensingh.

5.6 Daily average profit of the fish retailers

The fish retailers average profit in Mechua bazaar, Natun bazaar, Railway market and Pourashova bazaar in Mymensingh town was estimated at Tk 580, 450, 350 and 330 per day respectively and nearby fish markets like Kewatkhali bazaar, K.R market, Shesmur bazaar and Sutiakhali bazaar was estimated at Tk. 260, 310, 325 and 270 per day respectively. Rahman (2003) found the average net profit of a fish retailer in Gazipur Sadar market as Tk. 325 per day, while for Sripur market it was Tk. 175 per day. However Siddique (2001) reported the average gross profit of fish retailers in Natun bazaar, Mymensingh as Tk. 540 per day.

5.7 Problems of fish marketing

In the present study the fish market and marketing environment were found to be manifested with a large number of problems. These were higher transport cost, poor road communication, absence of icing facilities, inadequate water supply, poor hygienic and sanitation condition etc. Of course this is the common scenario of fish markets in rural Bangladesh which calls for immediate improvement.

The above problems regarding fish marketing were also reported by Quddus (1991); Khan (1995); Subasinghe (1995); Mia (1996); Rokeya *et al.* (1997); Parween *et al.* (1996) and Afroz (2007).

5.8 Religious status

It is noteworthy that most of the fish traders in all level of marketing chain have educations at some level. Young people particularly the Muslims are coming to the fish marketing business in increasing number. Active participation of the young educated people in fish marketing network was also observed by other researchers. About 79.17% of the fish retailers were Muslims and 20.83% were Hindus. Siddque (2001) reported that Muslim fish traders were dominating the fish traders community in Mymensingh district. Rahman (2003) found increased number of Muslim fish traders in Gazipur and Sripur fish markets.

5.9 Age structure

Most traders were quite young, with an average age estimated to be 26-30 yrs. with a range from 15 to 65 yrs. The age structure of the retailers did not differ significantly among the three markets. Among the retailers 39.58% were between 26 and 30 yrs, 31.25% were above 45 yrs., 18.75% were between 36 and 45 yrs., and 10.42% between 15 and 25 yrs. Rahman (2003), in Gazipur district found 37.5% retailers within 30 yrs. of age, 27.5% between 31 and 40 yrs., 22.5% between 41 and 50 yrs., and 12.5% more than 50 yrs. Siddique (2001) mentioned that Muslim fish retailers were predominant in Natun bazaar (90%) and Mechua Bazaar (70%) with average age of 34.5 yrs.

Among the 48 respondent about 62.5% retailers improved their socioeconomic conditions, while the remaining 37.5% did not improve their previous socio economics conditions.

Improvement of the existing physical infra-structures in terms of drainage, water supply, icing facilities etc. in fish markets are required to ensure hygienic condition and availability of good quality fishes to the consumers at a reasonable price.

CHAPTER 6
SUMMARY AND CONCLUSION

The present study was conducted in eight fish markets in Mymensingh town and its nearby area namely, Mechua bazaar, Natun bazaar, Railway market, Pourashova bazaar, Kewatkhali bazaar, K.R market, Shesmur bazaar and Sutiakhali bazaar during the period of January to March, 2009. Mymensingh district is now pioneer for closed water fish culture and a good number of GO and NGO hatcheries and different fisheries organization are situated in this district.

A total of 48 fish retailers were selected for questionnaire interview in eight different markets (6 in each market). It is noted that in each market around 17-85 retailers are selling fish everyday for their livelihoods. Among them 6 were selected for questionnaire interviews through simple random sampling method. A total of 48 consumers (6 from each market) were interviewed at the market centres. Information from intermediaries was collected through focus group discussion (FGD). FGD was conducted with intermediaries to get an overview of fish distribution and marketing systems and constraints of fish marketing etc. Collected data were processed and finally analyzed using Microsoft Excel and SPSS (Statistical Package for Social Science).

It was found that 29% fish supplied in the markets was Indian major carps, minor carps and exotic carps. Besides the carps, small quantities of other fish, e.g. catfish (24%), hilsa (2%), tilapia (3%), small indigenous fish (28%), prawn and shrimp (4%), Thai koi/koi (2%) and other fish (about 8%) were also found in the markets.

It was estimated that number of available fish species in Mechua bazaar, Natun bazaar, Railway Market and Pourashova bazaar were 50, 39, 41 and 33 respectively. On the other hand nearby fish markets of Mymensingh town like Kewatkhali bazaar, K.R market, Shesmur bazaar and Sutiakhali bazaar the number of available fish species were 26, 27, 30 and 24 respectively. The average number of species that occurred in these eight fish markets ranged from 24-50. The highest number of species (50) were found in Mechua bazaar and lowest number (24) were found in Sutiakhali bazaar.

A number of problems encountered by retailers including lack of capital, lack of storage facilities, lack of proper transportation/communication, lack of marketing facilities, lack of

market information, lack of reasonable price of input and dominance of intermediaries. According to the retailers, if all fish are not sold in a day these become perishable and damaged and the retailers sold those at cheap price.

In fish marketing grading was done based on size, taste and consumers acceptance. Fishes were sold on the basis of eye estimation only.

In spite of socio-economic constraints, most of the households traders (62.5%) have improved their status through fish marketing activities. However, concerns arise about the long-term sustainability of their livelihoods.

Marketing of fish is a profitable business. People may earn substantial cash income all the year round from production and marketing of fish, which may improve their economic condition. Fish production increased through scientific culture and management. The net margin or profit depends mainly on demand for fishes. Moreover, a large number of people are involved in this business to make the business more profitable. Efficient marketing system should be developed by reducing marketing cost and increasing marketing services. The problems confronting by the traders of fish farm can be solved to a great extent by increasing efficiency in the marketing system through research and experiments.

On the basis of findings of the study the following recommendations are made for the improvement of existing production as well as marketing of fish farms product.

- Cold storage should be constructed so that the producers and intermediaries can save their products from perish.
- Modern communication system and availability of adequate market information should be introduced to remove unreliable price information.
- Water and electricity supply as well as drainage facilities should be improved at the market place to keep a healthy atmosphere for fish trading.
- Fixing the rate of charges on a reasonable basis should check the discriminatory charges for market toll and donations from the intermediaries.
- Institutional credit should provided on easy terms for the farm owners and the traders at their crisis moment.
- Government may fix the commission of Aratdars so that they cannot charge unreasonable commission for their service.

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