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Short Communication

A Note on Marine and Estuary Fish Habitat, Prices and Supply in Different Markets of Dhaka City

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Abstract

This paper analyses the available marine fish of Bay of Bengal and other coastal areas of Bangladesh and its supply in Dhaka city. The data is collected from fish wholesalers of three big markets of the city: Jatrabari, Gabtoli and Kawran Bazar. The collected data was analyzed using MATHEMATICA to determine the numbers of ocean species, their size, price and source of the coastal areas in Bangladesh. The results are presented both graphically and in tabular form.

Keywords: Marine and estuary fishes, coastal areas, Bay of Bengal, Data analysis, Dhaka city.

Marine biology is the scientific study of marine life, organisms in the sea. Saltwater fish, also called marine fish, are fish that live in ocean water. Saltwater fish can swim and live alone or live in a large group together, called a school of fish (Chesley, 2018). Saltwater fish are very popular among deep sea fishermen and aquariums all over the country and in global village as well. Saltwater fish are very commonly kept in aquariums for entertainment. Many saltwater fish are also caught to be eaten (Bale, 2018; Actman, 2018).

Coastal fish, also called inshore fish or neritic fish, inhabit the sea between the shoreline and the edge of the continental shelf. Since the continental shelf is usually less than 200 meters deep, it follows that pelagic coastal fish are generally epipelagic fish, inhabiting the sunlit epipelagic zone. Coastal fish can be contrasted with oceanic fish or offshore fish, which inhabit the deep seas beyond the continental shelves. Bangladesh is one of the resourceful countries with its wide range of marine aquatic bio-diversities. A large proportion of all life on Earth lives in the ocean. The exact size of this large proportion is unknown, since many ocean species are still to be discovered.

There are about 1093 marine aquatic organisms where 44.35% are finfish, 32.23% shellfish, 15.10% seaweeds and only 8.32% are other organisms including shrimps. The marine fisheries sector has been recognized as an important part of the economy of Bangladesh. Fish production from the Bay of Bengal (BoB) has increased marginally over the last 10 years

but its relative share in total fish production has declined as studied by Hossain et al. in Bangladesh coastal waters contain diverse fisheries resources, with 475 species of finfish including the cartilaginous fishes - sharks, skates and rays (Mazid, 2005). Fishing, in the absence of proper information on the status of stock, is leading to over-exploitation of inshore and under exploitation of offshore fishery resources and micronutrients for the poor (Minkin et al., 1997; Roos et al., 2007). On July, 2014 Bangladesh has gained more maritime area (Rashid, 2014). It is important to know that marine resources have become a crucial. If the growth of this sector is hindered, it is not only going to affect the livelihoods of a large number of rural populations but it also affects the nutrition of many poor households (Rabbani et al., 2017).

In this study, we discuss about the marine fish supply, their costs and some other issues in Dhaka city. This paper is designed to investigate the present status of marine fish marketing aiming to determine numbers of species, their size, price, source etc. It is found that a lot of marine species are available in the local market. The study is connected with three big market places in the Dhaka city due to the supply of marine fish. To the best of our knowledge, still there is no proper study about the marine fish and other sea/river food resources in the coastal areas of Bangladesh.

The main and important objectives of this paper are designed as follows:

- To figure out the number of available marine fish in the coastal areas of Bangladesh,
- The available supply of marine and Estuary fish in the Capital, and
- The collected data analysis of the marine and estuary fish.

It is noted that throughout the paper, we consider Tk. instead of Taka for local currency.

In the following section, we will consider the solution methodology to analyze the sampling data.

The study was based on both primary and secondary data. Primary data on marine/estuary fish marketing were collected through questionnaire survey. The data was collected in May-June 2018 by Field survey. A purposive sampling technique was used for sample selection. There was a questionnaire and around 100 traders (including aratdars, beparies and retailers) were selected from the primary and consumer market at different location of Dhaka city in Bangladesh. The primary markets were the three big markets of Dhaka: Gabtoli, Kawran Bazar and Jatrabari fish markets. Secondary markets were Cox's Bazar, Chittagong, Barisal, Chandpur and Khulna

The collected data and information were coded using the renowned software MATHEMATICA, tabulated, compiled and analyzed considering the objectives of the study. Tables were prepared using the field survey data.

In this section, we analyze the data which are collected from local fish wholesalers in different big markets of Dhaka city. These data's are presented in several Tables. We collect data of how much marine fishes are transected weekly, their price and their types. It is important to remark that these data's were collected during May-June 2018, part of rainy season and expected to get the maximum fish supply in the market.

Table 1 represents local name, English name and Scientific name of the fish which is available in coastal areas and Bay of Bengal in Bangladesh. During the sample data collection, we found all these fish species in different fish markets in Dhaka. It is remarked that in Tables 2 and 3, the retail price of the fish can vary seasonally. Weekly supply of fish is another important factor to change the amount of fish from location to location.

In Table A (see Appendix), we have estimated the weekly transferred quantity of available marine and estuary fishes with their local name, scientific name, common name, source and habitat, respectively. These data's were collected from local fish sellers in three big and main Wholesale markets in Dhaka.

Table 2 contains the local name of marine fish as found in Gabtoli fish market with their average size, weight and estimated price in local currency. Table 3 shows different types of estuary/marine fishes available in Kawran Bazaar fish market and their relevant estimation.

Table 1. Marine/ Estuary Fishes Local Name, English Name And Scientific Name

Local Name	English name	Scientific Name
Ilish	Hilsa shad	*Tenualosa ilisha*
Chapila	Ganges river gizzard shad	*Gonialos amanmina*
Ritha (Cat fish)	Rita	*Rita rita*
Mackerel	The Indian mackerel	*Rastrelliger kanagurta*
Nanchil Coral	Indo-Pacific tarpon	*Megalops cyprinoides*
Black pomfret	Black pomfret	*Parastromateus niger*
Loitta	Bombay-duck	*Harpadon nehereus*
Churi	Savalai Hairtail	*Lepturacanthus savala*
Tiger Shrimp	Giant Tiger Shrimp	*Penaeus monodon*
Lakkha	Indian threadfin	*Leptomelanosoma indicum*
Sada Datina	Grunter Fish	*Pomadasys hasta*
ChandanIlish	Toli shad	*Tenualosa toil*
Rup Chada	Silver pomfret	*Pampus argenteus*
Rup Chada	Chinese silver pomfret	*Pampus chinensis*
Tuna	Tuna	*Thunnus albacores*
Colombo	Salmon	*Oncorhynchus sp.*
Baila	Scribbled Gobi	*Awaous guamensis*
Chewa	Elongate mudskipper	*Pseudapocryptes elongates*
Chitol	Clown knifefish	*Chitala chitala*
Guraicha	Shrimp	*Palaemon karnafuliensis*
Gurjali	Indian salmon	*Eleutheronema tetradactylum*
Kaikka	Garfish	*Belone belone*
Keti	-	*Osteobramakotio*
Kaoa	-	*Cuplea bentincki*
Maitta surma	Frigate tuna/ Frigate mackerel	*Auxis thazard*
Poa	Pama croaker	*Otolithoids pama*
Sadaicha	Indian prawn	*Penaeus indicus*
Saplapata	Pale edged stingray	*Dasyatis zugei*
Surma	Barramundi	*Lates calcarifer*

Table 2. Gabtoli Fish Landing Station

Local Name	Size (Average)	Weight	Wholesale Price (Tk./kg)	Retail Price (Tk./kg)
Ilish	13.5inch	1-3kg	400	450-500
Chapila	5inch		50-60	80
Ritha (Cat fish)	3.9-5.2ft 8.2ft (max.)	100kg (max.)	120	150
Colombo (salmon)			95	110
Mackerel	11inch	1.5kg	70	90-120
Poa	5-6inch		150-170	200-220
Coral	4-5ft (max.)	500-1000 g/piece (average)	400-500	500-550
Black pomfret	4-8 inch (average) 10-30 inch (max.)	1-3kg(big size)	250-300	300-350
Loitta	12-13inch		40-50 (seasonal) 70-100 (non-seasonal)	150
Surma	5inch		125	150-175
Churi	12-13inch 39.4inch (max.)	11kg (big size)	110-160	170
Tiger Shrimp	8-12inch	100-320g	1500-2000	2050-2100
Lakkha			120-150	250
SadaDatina	31cm (max.)	250-300g (min.) 1kg (max.)	350-400	450

Table 3. Kawran Bazar Fish Market

Local Name	Source	Size(Average)	Weight	Wholesale Price (Tk./ kg)	Retail Price (Tk./kg)
Coral	Cox's Bazar	18inch		300	350-400
Chapila	Chittagong	5 inch 7 inch (max.)		50-70	80
Loitta	Chittagong	10 inch		65	70-80
Tuna	Cox's Bazar	22 inch	2.5kg (average)	250	300-350
Rup Chada	Cox's Bazar	11.5 inch		800	850-1000
Kaikka	Cox's Bazar	42.5 inch		220	250
Surma	Cox's Bazar			200	320-400 (seasonal)
Poa	Cox's Bazar	5.5 inch		280	320-350

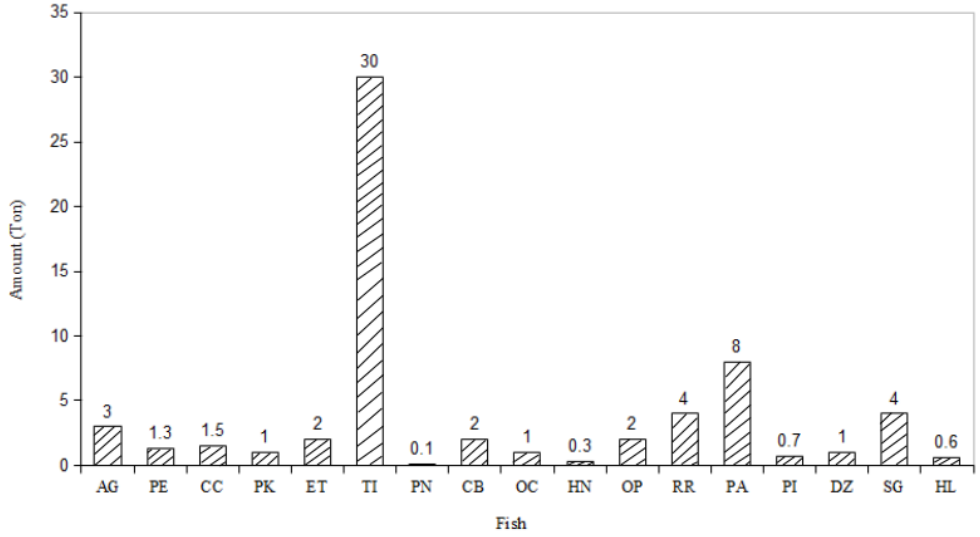

Figure 1. Analysis in terms of amount of various marine fish species traded weekly in the Jatrabari fish market

In the following section, we explore the results graphically using the data as presented in the previous Tables.

In this section we have presented several results graphically by analyzing the Tables 2-3 and Table A from Appendix. For simplicity and better understanding to the readers, we have used short name of reserved fishes by using their first letters of genus and species, respectively.

For examples,
AG= *Awaous guamensis*
CC= *Chitala chitala*
ET= *Eleutheronema tetradactylum*
PN= *Parastromateus niger*
OC= *Osteobrama cotio*
OP= *Otolithoides pama*
PA= *Pampus argenteus*
DZ= *Dazvatis zugei*
HL= *Hyporhamphus limbatus*
GA= *Gonialos amanmina*
LC= *Lates calcarifer*
RK= *Rastrelliger kanagurta*
PM= *Penaeus monodon*
PH= *Pomadasys hasta*
PE= *Pseudapocryptes elongates*
LI= *Leptomelanosoma indicum*
TI= *Tenualosa ilisha*
CB= *Cuplea bentincki*
HN= *Herpadon nehereus*
RR= *Rita rita*
PI= *Penaeus indicus*
SG= *Scomberomorus guttatus*
MC= *Megalpos cyprinoides*
TA= *Thunnus albacores*
OS= *Oncorhynchus sp*
LS= *Lepturacanthus savala*
PK= *Palaemon karnafuliensis*

We have drawn Figure 1 by analyzing the data in Table A, showing the amount of marine fishes in the vertical direction (Y-axis) and name of fishes in the horizontal axis (X-axis). It is easily seen that the rapid production is of 'Hilsha' fish due to show the seasonal effects.

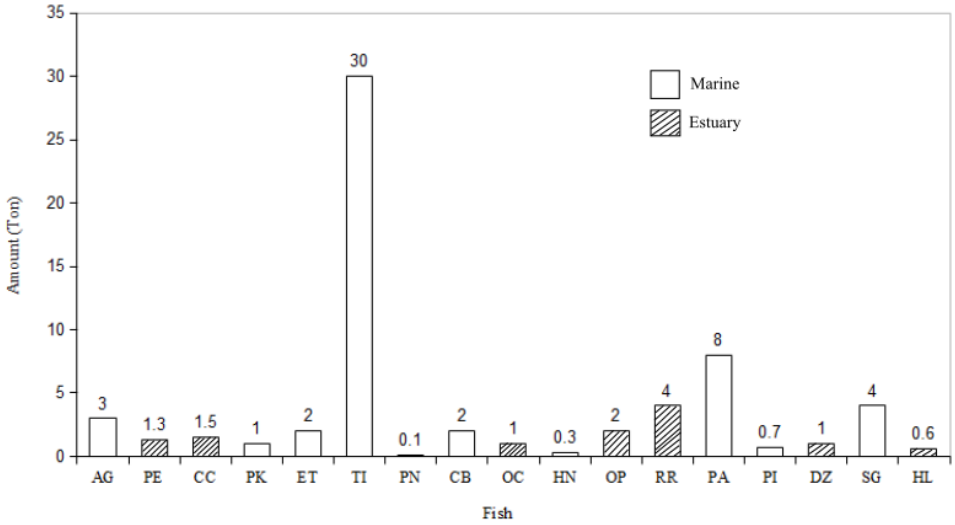

Figure 2. Analysis of Habitat of various marine fishes and their amounts traded weekly in the Jatrabari fish market

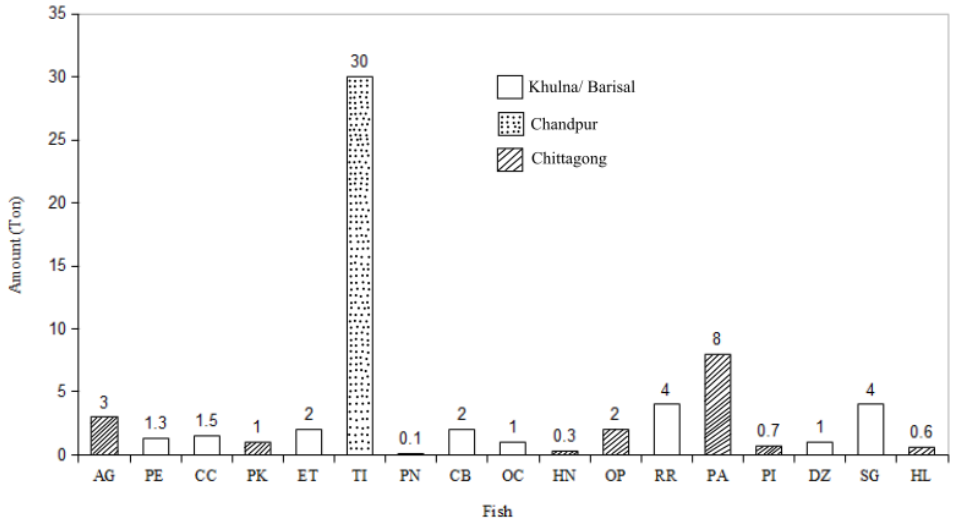

Figure 3. Analysis of source of various marine fishes with their weekly traded amount in the Jatrabari fish market

Figure 2 is designed by studying the available data in Table A. The amounts of marine fishes in tons are shown in the vertical direction while their respective fishes are given along the horizontal axis. The black colored columns signifies fish species that are caught in marine environment and the dotted structures present the fish that are collected in estuary environment, respectively.

Once again, the Table A produces Figure 3 under the statistical analysis of available data. The

amount of marine fishes in tons is shown in the Y-axis and names of fishes are given in the X-axis. The black, dotted and slash lines signify the species that are transported from Chittagong, Khulna/Barisal and Chandpur region, respectively.

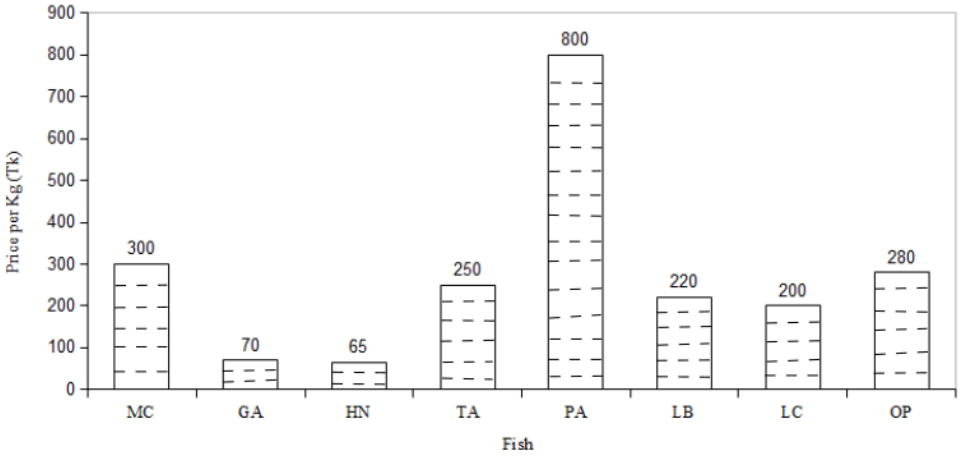

Figure 4. Analysis in terms of price in Tk. per kg of various marine fish species in the Kawran bazar fish market

Finally, we draw the Figure 4 by analyzing the data as prescribed in Table 3. The price of fish per kg in Tk. is shown in along the vertical direction and fishes are displayed in the direction of horizontal axis. The price mainly depends on the availability of fish. It is observed that the price difference also defined the demand in market.

From different diagrams, it is interesting to observe that there is a very high abundance of 'Hilsha'. This high production is seasonal. So we cannot use this amount of 'Hilsha' for any calculation for its high variation property. But it does give us an exceptional view of its seasonal abundance. Most of these sea water fishes from either Chittagong or Khulna. From the collected data, one can estimate that almost 50 tons of salt water fishes are transected weekly throughout the year. This means it is a budget of more than 100 million per week. But this production is not enough since the ratio of our land (147,570 sq. km) (*Health* Bulletin 2016) to sea area (118,813 sq. km) (Bhuiyan et al., 2015) is almost 1. Now if we study all other fishes we can see that most of them are estuary species. We do not get many deep water fishes like 'Tuna', 'Sardine' or 'Salmon' because of technological inadequacy. If we can develop our IT sector to create new opportunities in fishing, we can increase this budget by tenfold. We know fish is the main source of protein in our country and for global village as well. Marine fishes also contain minerals with protein; they are important factor for children growth connected with health science. By establishing methods of fishing in deep sea, we can venture more fish resource. It will also increase our GDP a lot, which in return will make our country more prosperous.

In this study, we investigated the marine fish supply, their cost, size, habitat and weight in Dhaka city. The data analyses estimated the numbers of species, their size, source etc. It is found that a lot of marine and estuary fish organisms are available in the local market in the Capital of Bangladesh. Marine fish species are a great source for food and nutrition. From this study, it is seen that we still need to put more

emphasis on getting deep water fishes. If we only take from estuary than these species will be endangered which in turn will affect our environment and economy. So we need to devise new ways to fish with accordance. For further study, one can think to consider all the Big Fish market over Bangladesh and it will help us to estimate an approximate amount of marine/estuary fish caught from the coastal areas of Bangladesh.

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Appendix

Table A. Fish supply in Jatrabari Fish Market (weekly)

Local name	*Scientific name*	Habitat	Source	Amount (ton)
Baila	*Awaous guamensis*	Marine/ Estuary	Chittagong	2 – 3
Chewa	*Pseudapocryptes elongates*	Estuary	Chittagong, Khulna, Barisal	0.5 - 1.3
Chitol	*Chitala chitala*	Estuary	Chittagong, Khulna, Barisal	0.5 – 1.5
Guraicha	*Palaemon karnafuliensis*	Marine/ Estuary	Chittagong	0.3 – 1
Gurjali	*Eleutheronema tetradactylum*	Marine/ Estuary	Chittagong, Khulna, Barisal	1 – 2
Ilish	*Tenualosa ilisha*	Marine	Khulna, Barisal, Chandpur	20 – 30

Continued

Local name	*Scientific name*	Habitat	Source	Amount (ton)
Kala chanda	*Parastromateus niger*	Marine	Chittagong, Khulna, Barisal	0.05 – 0.1
Kaoa	*Cuplea bentincki*	Marine	Chittagong, Khulna, Barisal	1 – 2
Keti	*Osteobrama cotio*	Estuary	Khulna, Barisal	0.5 – 1
Latey	*Harpadon nehereus*	Marine	Chittagong	0.1 – 0.3
Poya	*Otolithoides pama*	Estuary	Chittagong, Khulna	1 – 2
Rita	*Rita rita*	Estuary	Khulna, Barisal	2 – 4
Rup Chanda	*Pampus argenteus*	Marine	Chittagong	5 – 8
Sadaicha	*Penaeus indicus*	Marine	Chittagong	0.3 – 0.7
Saplapata	*Dasyatis zugei*	Estuary	Chittagong	0.5 – 1
Surma	*Scomberomorus guttatus*	Marine	Chittagong, Khulna, Barisal	2 – 4
Thuitta	*Hyporhamphus limbatus*	Estuary	Khulna, Barisal	0.2 – 0.6