



Fish diversity in Bipail fish landing center, Savar, Dhaka, Bangladesh

Md. Romjan Ali and Md. Kamrujjaman*

Department of Zoology, Jahangirnagar University, Savar, Dhaka-1342, Bangladesh
kjaman@juniv.edu

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Abstract

An investigation was carried out in Bipail fish landing center, Savar, Dhaka, Bangladesh, to evaluate the fish diversity and their present status during June to December 2016. A total of 59 species of finfishes and shellfishes under 49 genera, 32 families and 11 orders were recorded. Out of 59, 55 species belonged to finfishes and only 4 species to crustacean shellfishes. Again, among the finfishes, only 2 species were marine, 8 species were exotic and rests of them were either freshwater or brackish water or both. Cypriniformes and Cyprinidae were the most dominated order and family respectively comprising 28.81% and 27.11% respectively of the recorded species. Regarding the relative abundance, very common, common and rare fish were 20 (33.89%), 16 (27.11%) and 23 (38.98%) respectively. On the other hand, 11 (18.64%) species were recorded as threatened fish during the study periods in which 5 (45.45%) and 6 (54.54%) species were endangered and vulnerable respectively. Landed fish were coming from different fish habitat of diversified areas of country. The maximum and minimum quantity of fish was estimated in the month of July and December respectively.

Keywords: Fish diversity, fish landing center, relative abundance and threatened fish.

Introduction

Bangladesh is blessed with numerous rivers and tributaries, canals, haors, baors and floodplains which offer plenty of fish and fisheries resources. These diverse aquatic resources of Bangladesh harbor diverse aquatic life more specially, 253 species of finfish; 64 species of prawn and shrimp; 38 species of crab^{1,2}. Again, the marine fishes of Bangladesh are also diversified contributing 475 finfish species³. On the other hand, people of our country get 60% of animal protein from fish. Not only that, fisheries sector also create employment opportunity for unemployed people, earning foreign currencies as well as socioeconomic improvement in Bangladesh⁴.

However, in a recent evaluation of IUCN Bangladesh, about 64 species of freshwater fishes were threatened and more 27 species were near threatened¹. Moreover, the habitat of fish gradually decreased as the population of the country increased dramatically.

Fish landing center is a place where different types of fish and fisheries resource are landed from different aquatic habitats such as river, estuaries, haor, baor, beel, gher, pond, and sea⁵. Fishes from this landing center reaches upto the consumer through various channels. A recognizable number of people are engaged with this fish landing centre. More importantly, these landing centers give a vivid picture of present status of fish and fisheries resource of the country.

Baipail fish landing station is one largest fish market in Savar Upazila of Dhaka district and also compared to the markets of the nearer Upazila of the district. It is located at a distance of

about 24 kilometres to the northwest of Dhaka city. Fishes come from different parts of the country and there are about 95 arats in the landing centre. Some works were done by Ali *et al.*⁶, Chandra *et al.*⁷, Samad *et al.*⁸, Ahsan *et al.*⁹ and Islam *et al.*¹⁰ on fish diversity in fish landing centre of different part of Bangladesh. But unfortunately no research has been done yet on the fish diversity of Bipail fish landing center of the Savar upazila. However, the study of available fish species in fish landing center assist to evaluate the present status of fish diversity and their relative abundance as well as how many number of landed fishes are threatened, near threatened and not threatened.

So, considering all these things keep in mind present study was conducted to assess the diversity of fish in Baipail fish landing centre of Savar upazila under Dhaka district.

Materials and methods

The study was conducted one of the largest fish landing center-Baipail fish market (23°56'13"N and 90°16'12"E) of Savar upazila under the district of Dhaka. This landing centre is located 24 km far way from Dhaka city and beside the Dhaka-Tangail highway. Fish from different corners of the country landed in this center.

The data were collected from June to December, 2016 at 6.00 am to 9.00 am at 1st and 4th week in every month. Availability of fish species and relevant data were recorded through direct observation of the landed fish and a appropriate questionnaire survey by interviewing aratdars (assembler) and other people

associated with fish landing centre as well as focus group discussion (FGD). All primary data were cross checked with the interviewed of upazila fisheries officers (UFO).

In each visit of fish landing center, some fishes were identified on the spot by books and some were collected and preserved in 10% formaldehyde and immediately brought to the fisheries laboratory for identification. Identification of fishes were carried out by following keys used by Bhuiyan¹¹, Talwar and Jhingaran¹², Shafi and Quddus¹³, Rahman¹⁴ and IUCN Bangladesh^{1,2}. The relative abundance of recorded fish was estimated as very common (71-100%), Common (36-70%) and rare (1-35%) according to Wani and Gupta¹⁵. National status of the recorded fish was determined as previously reported by IUCN Bangladesh¹².

Results and discussion

In present study, a total of 55 species of finfishes and 4 species of shellfishes under 49 genera, 32 families and 11 orders were observed (Table-1). Among the recorded species only 2 species were marine water and rests of the species were either freshwater or brackish water species. People lives in Savar are not habituated with the marine fish that's why number of landed marine fish species was very poor. On the other hand, 8 species were exotic and rests of the 51 species were indigenous fish species (Table-1).

The present observation is more or less similar to the findings of Chowdhury and Iqbal¹⁶ and Islam *et al.*¹⁰ in dhaka city and Pultakanda fish landing center respectively but, much lower to the observation recorded by Ali *et al.*⁶, Chandra *et al.*⁷ and Ahsan *et al.*⁹ in case of Khulna, Mymensingh and Patuakhali fish landing centre respectively.

The recorded 59 species belonged to the 11 orders in which cypriniformes comprised 28.81% followed by the Perciformes (27.11%), Siluriformes (18.64%), Decapoda (6.77%), Clupeiformes (5.08%), Osteoglossiformes and Channiformes of each 3.38%, Tetraodontiformes, Beloniformes, Synbranchiformes and Characiformes of each 1.69% (Figure-1). On the other hand, during the study period, number of recorded families were 32, reflected the diversified fish species in which the most dominant family was Cyprinidae composed of 27.11% of all the recorded species (Figure-2).

The present study coincide with the observation made by Cahandra *et al.*⁷ but higher than the observation reported by Chowdhury and Iqbal¹⁶ Islam *et al.*¹⁰ in Dhaka city and Pultakanda fish landing center respectively.

Among the recorded 59 species, number of species of very common, common and rare species were 20 (33.89%), 16 (27.11%) and 23(38.98%) respectively (Table-2). Maximum percentage (38.98%) of species were rare as their quantity was very poor as well as their availability was certain period of the

year. However, about one third of the recorded species were very common as maximum fishes were cultured commercially in different corners of the country and found to landed all the year round (Table-1). In Dhaka city fish landing centre, out of 52 freshwater fish species, 12 species were abundant, 10 species common, seven species were fairly common, 17 species few and six species very few¹⁶.

Regarding the national status of recorded fish, threatened and non-threatened fishes were 11(18.64%) and 48 (81.35%) respectively (Table-3). Again, among the threatened fishes no critically endangered fish was recorded during the present study but, endangered and vulnerable fish species were 5(45.45%) and 6(54.54%) respectively. In a recent study, IUCN Bangladesh has been reported 64 inland freshwater fish species as threatened species¹. On the other hand, among the non-threatened fishes, 6(10.16%), 31(52.54%), 1(1.69%) and 10(16.94%) were near threatened, least concern, data deficient and not evaluated respectively. The findings revealed that maximum number of fishes were non-threatened.

The present study showed that, the quantity of fish was highest in July and thereafter gradually decreased upto the October (Figure-3). Thereafter, the November showed increased quantity of fish as in the post monsoon period water level of any water bodies start to decreased and huge quantity of fish were harvested by the fishermen. This observation was more or less similar with the observation made by Jahan *et al.*¹⁷ (2014) and Galib *et al.*¹⁸.

Fish landing center contribute an important role in fish marketing sector of our country. As the Baipail fish landing center is located in the center of the country and nearby Dhaka city, wholesaler were more interested to landed a good number of fishes from diversified fish habitat (river, beel, haor, baor, pond and marine) of various areas of Bangladesh such as Dhaka, Gazipur, Norshingdi, Voirob, Kaptai, Rajshahi, Nator, Sirajganj, Manikganj, Jessor, Rajbari, Sylhet, Khulna, Sunamgonj, Cox'sbazar, Mymensingh, Naogaon, Satkhira, Barisal, Chandpur, and Patuakhali due to high market price.

Conclusion

An effective fish market or fish landing center is very much essential to make sure the availability of fishes to consumers. It is very much important to our daily life as they provide our daily protein demand and employment generation. Diversified of fish species are landed in Baipail fish landing centre from different areas of country reflecting the present status of fish diversity in Bangladesh.

In present observation, most of the very common species are cultured fish whereas, 23 and 11 species of rare and threatened fish respectively were recorded which is very much remarkable. Appropriate fish habitat and induced breeding techniques of threatened fish should be implemented.

Table-1: Recorded finfish and shelfishes during the study periods.

Sl. No.	Order	Family	Local name	Common name	Scientific name	Relative abundance	National status	
Finfishes								
1.	Osteoglossi- formes	Notopteridae	Chital	Humped feather back	<i>Notopterus chitala</i>	+	EN	
2.			Foli	Grey feather back	<i>Notopterus notopterus</i>	+	VU	
3.	Clupeiformes	Clupedae	Ilish	Hilsa shad	<i>Tenualosa ilisha</i>	+++	LC	
4.			Kachki	Ganges river sprat	<i>Corica soborna</i>	+++	LC	
5.		Engraulide	Chapila	Indian river shad	<i>Gudusia chapra</i>	+++	VU	
6.	Perciformes	Anabantidae	Koi	Climbing perch	<i>Anabas testudineus</i>	+++	LC	
7.		Badidae	Neftani	Dwarf Chameleonfish	<i>Badis badis</i>	+	DD	
8.		Osphronemidae	Khalisa	Stiped gourami	<i>Trichogaster fasciata</i>	++	LC	
9.				Lal khalisa	Thick-lipped Gourami	<i>Trichogaster labiosus</i>	+	LC
10.		Nandidae	Meni	Mud perch	<i>Nandus nandus</i>	+	NT	
11.		Ambassidae	Chanda	Asian glass fish	<i>Chanda nama</i>	+++	LC	
12.				Lal chanda	Indian glassy fish	<i>Parambasis ranga</i>	+++	LC
13.		Mastacembelidae	Sal Baim	Tire –track spiny eel	<i>Mastacembalus armatus</i>	+	EN	
14.				Tara baim	One-stripe spiny eel	<i>Macrognathus aculeatus</i>	+	NT
15.				Guchi	Striped spiny eel	<i>Macrognathus pancalus</i>	+	LC
16.		Gobiidae	Bele	Fresh water goby	<i>Glossogobius giuris</i>	++	LC	
17.		Cichlidae	Tilapia	Mossambique tilapia	<i>Oreochromis mossambicus*</i>	+++	NE	
18.				Nilotica	Nilotica	<i>Oreochromis niloticus*</i>	+++	NE
19.		Sillaginidae	Tular dandi	Gangetic sillago	<i>Sillaginopsis panijus</i>	+	LC	
20.		Sciaenidae	Poa	Pama Croaker	<i>Otolithoides pama</i>	++	LC	
21.		Scombridae	Surma	Indo-Pacific king mackerel	<i>Scomberomorus guttatus**</i>	++	NE	
22.		Channiformes	Channidae	Taki/lata	Spotted Snakehead	<i>Channa punctatus</i>	+++	LC
23.				Shol	Snakehead murrel	<i>Channa striatus</i>	+	LC
24.		Tetraodonti- formes	Tetraodontidae	Potka/tepa	Ocellated pufferfish	<i>Tetraodon cutcutia</i>	+	LC
25.		Beloniformes	Belonidae	kakila	Fresh water garfish	<i>Xenentodon cancila</i>	++	LC
26.		Cypriniformes	Cyprinidae	Mola	Mola carplet	<i>Amblypharyngodon mola</i>	++	LC
27.	Katol			Catla	<i>Catla catla</i>	+++	LC	
28.	Mrigel/ mirka			Mrigel carp	<i>Cirrhinus mrigala</i>	+++	NT	
29.	Bata			Bata labeo	<i>Cirrhinus reba</i>	++	NT	
30.	Rui			Rohu	<i>Labeo rohita</i>	+++	LC	

31.			Kalibaus	Orangefn Labeo	<i>Labeo calbasu</i>	+++	LC		
32.			Tit punti	Ticto barb	<i>Puntius ticto</i>	+	VU		
33.			Jat punti	Soften swamp barb	<i>Puntius sophore</i>	+++	LC		
34.			Darkina	Blackline Rasbora	<i>Rasbora daniconius</i>	+	LC		
35.			Sarpunti	Olive barb	<i>Systemus sarana</i>	+	NT		
36.			Thai Sarpunti	Olive barb	<i>Barbus gonionotus*</i>	+++	NE		
37.			Grass carp	Grass carp	<i>Ctenopharyngodon idella*</i>	++	NE		
38.			Carphu	Common carp	<i>Cyprinus carpio*</i>	+++	NE		
39.			Silver carp	Silver carp	<i>Hypophthalmichthys molitrix*</i>	++	NE		
40.			Narkeli Chela	Large Razorbelly Minnow	<i>Salmophasia bacaila</i>	+	LC		
41.			Bighead	Bighead carp	<i>Aristichthys nobilis*</i>	++	NE		
42.				Cobitidae	Rani	Bengal loach	<i>Botia dario</i>	+	EN
43.			Siluriformes	Bagridae	Rita	Rita	<i>Rita Rita</i>	+	EN
44.					Tengra	Striped Dwarf Catfish	<i>Mystus vittatus</i>	+++	LC
45.					Golsha-Tengra	Gangetic mystus	<i>Mystus cavasius</i>	+++	NT
46.	Ayre	Long whiskered catfish			<i>Sperata aor</i>	+	VU		
47.		Schilbeidae		Kajuli	Gangetic ailia	<i>Ailia coila</i>	++	LC	
48.	Batasi			Indian potasi	<i>Neotropius atherinoides</i>	+	LC		
49.		Siluridae		Boal	Freshwater shark	<i>Wallago attu</i>	++	VU	
50.	Pabda			Pabda catfish	<i>Ompok pabda</i>	+	EN		
51.		Clariidae		Magur	Walking Catfish	<i>Clarias batrachus</i>	++	LC	
52.		Heteropneustidae		Singi	Stinging catfish	<i>Heteropneustes fossilis</i>	++	LC	
53.		Pangasiidae		Thai pungus	Pungus	<i>Pangasius hypophthalmus*</i>	+++	NE	
54.	Synbranchi-formes	Synbranchidae		Kuicha	Gangetic Mudd Eel	<i>Monopterusuchia</i>	+	VU	
55.	Characiformes	Characidae		Rup chanda	Chinese pomfret	<i>Pampus chinensis**</i>	+	NE	
Shellfishes									
56.	Decapoda	Palaemonidae	Golda	Giant river prawn	<i>Macrobrachium resenbergii</i>	+++	LC		
57.			Kuncho chingri	Kuncho river prawn	<i>Macrobrachium lamarrei</i>	+	LC		
58.			Horina chingri	Yellow shrimp	<i>Metapenaeus brevicornis</i>	++	LC		
59.			Penaedae	Bagda	Giant tiger shrimp	<i>Penaeus mondodon</i>	++	LC	

*exotic fish, **marine fish, +++very common, ++common, +rare, EN=Endangered, VU=Vulnerable, NT=Near threatened, LC=Least concern, DD=Data deficient and NE=Not evaluated.

Table-2: Relative abundance of recorded fishes during the study periods.

Relative abundance	Number of species	Relative percentage
Very common (+++)	20	33.89%
Common (++)	16	27.11%
Rare (+)	23	38.98%

Table-3: Number and relative percentage of recorded threatened and non-threatened fishes during the study periods.

Total no. of species recorded	Threatened			Non-threatened			
	Critically Endangered (CR)	Endangered (EN)	Vulnerable (VU)	Near threatened (NT)	Least concern (LC)	Data deficient (DD)	Not evaluated (NE)
59	00(00%)	5(45.45%)	6(54.54%)	6(10.16%)	31(52.54%)	1(1.69%)	10(16.94%)
Total	11 (18.64%)			48 (81.35%)			

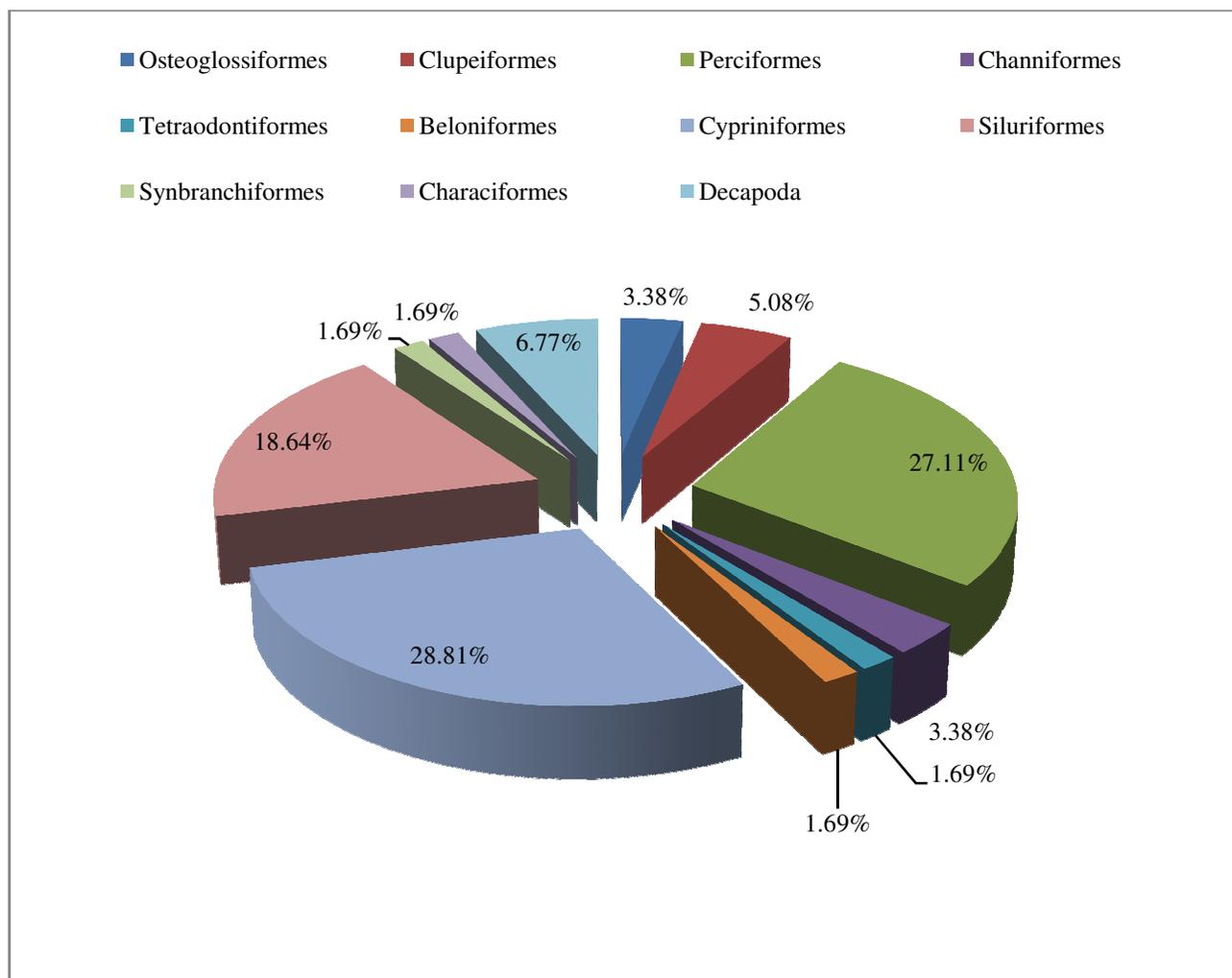


Figure-1: Relative percentage of recorded orders during the study periods.

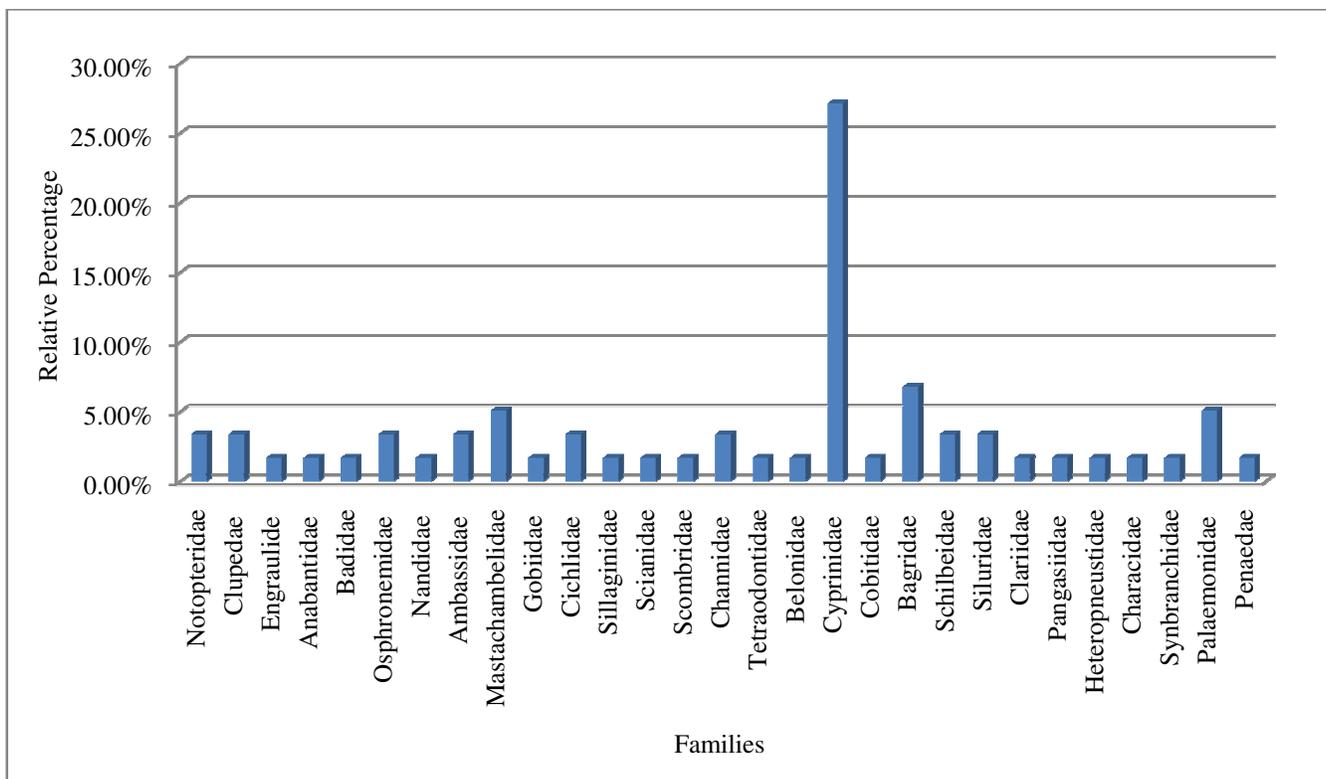


Figure-2: Relative percentage of recorded families during the study periods.

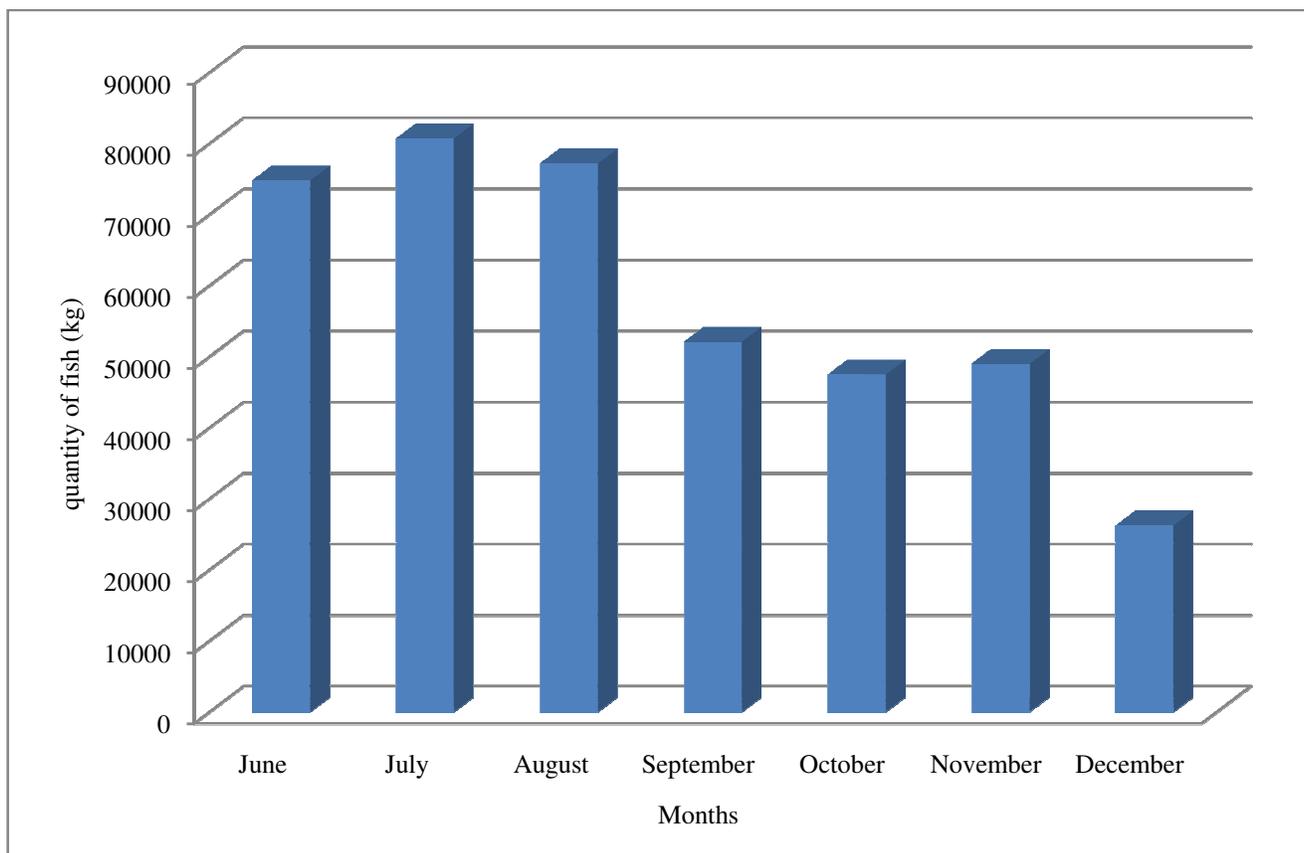


Figure-3: Monthly variation of quantity of fish (kg.) during the study periods.

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