Fish Catch and Bio-diversity Monitoring Report (First Round)

HFMLIP-LGED

WorldFish
Bangladesh and South Asia Office
Dhaka - 2018

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Abbreviations

BUG	Beel User Group
BCC	Behavior Change Communication
BMC	Beel Management Committee
CE	Community Enumerator
CBO	Community Based Organization
CBFM	Community Based Fisheries Management
CBFM-SSEA	Community Based Fisheries Management-Small Scale
CBRMP	Community Based Resource Management Project
CR	Critically Endangered
CRMC	Community Resource Management Coordinator
DoF	Department of Fisheries
DPC	District Project Coordinator
EN	Endangered
HFMLIP	Haor Flood Management and Livelihood Improvement Project
HILIP	Haor Infrastructure and Livelihood Improvement Project
IFAD	International Fund for Agricultural Development
IUCN	International Union for Conservation of Nature
LGED	Local Government Engineering Department
NGO	Non-Government Organization
Spp	Species
SIS	Small Indigenous Species
UPC	Upazila Project Coordinator
NWB	New Water body

Executive Summary

The Haor Flood Management and Livelihood Improvement Project (HFMLIP) has been implementing by LGED in five haor basin districts namely Kishoreganj, Netrokona, Sunamganj, Habiganj and Brahmanbaria. The project is implementing under two components: Component 1: Rural Infrastructure Development; Component 2: Fisheries promotions. Since capture fishery is one of the key income sources of the haor people and LGED and WorldFish has proven experience of community based fisheries management (CBFM), it is effective to implement activities which contribute to increasing productivity together with infrastructure improvement so that living standard of the people in the target areas would be improved. WorldFish is undertaking fish catch, biodiversity and livelihood impact monitoring study under fisheries promotions component. Haors are endowed with enormous fisheries resources in the project area, as a source of income, employment and consumption for the rural poor can hardly be emphasized enough. Fishing is a key livelihood opportunity for most of the households in haor areas and plays an important part in food security and poverty alleviation. In the past as well as in current practices, the management of haor fishery has often excluded poor fishers and encouraged leaseholders to effectively 'mine' resources at non-sustainable levels of exploitation.

The objective of the partnership is to assess the impact on fish catch (by volume and value) and biodiversity of HFMLIP interventions in forming Beel User Groups (BUG). This assessment should be made in the context of environmental conditions (including but not necessarily limited to hydrology, connectivity and size of beel), fishery management practices.

Fish catch-biodiversity monitoring studies have been carried out in 25 project and 5 control waterbodies in five districts from 2016 (Table 1 & 2). This report presents a consolidated result of the analysis carried out in 2016 to 2017. The report captures following findings:

- Fish catch – by waterbody and species
- Distribution of production at waterbody level
- Production variation between open and organized catch
- Gear efficiency and gear based catch
- Catch composition and major contributing species
- Biodiversity status at waterbody level (beel basin level)

- Abundance of Critically Endangered (CE) and Endangered (EN) species in HFMLIP sites

Fish catch was measured in terms of organized catch (bulk catches made by BUG) and open catch monitoring (individual catches during flooding season) to validate the total catch at each waterbody. The main effective factors that positively influence catch from open catch may be (i) habitat type (e.g., river, haor beel), (ii) inundation during monsoon, (iii) observing fishing ban periods, (iv) establishing fish sanctuaries, (v) controlling & removing destructive fishing gears, (vi) controlling fisher access & fishing effort, (vii) higher species diversity, (viii) presence of professional fishers around waterbodies and fisher's density.

Total fish catch was obtained 218 kg/hac by combining estimated catch from open and organized catch in 25 project beels, on the other hand 366 kg/hac was estimated from open and organized catch in 5 control beels. It was also found that 52.75% catch was obtained from open catch and 47.25% from organized catch in project beels.

A total of 105 species of fish and prawn were recorded. The main species caught by all types of gears were Jatputi *(Puntius sophore)*, Boal *(Wallago attu)*, Bojuri Tengra *(Mystus tengara)*, Guchi Baim *(Mastacembelus pancalus)*, Goinna *(Labeo gonius)*, Kalibaus *(Labeo calbasu),* Tengra/Guinga *(Mystus vittatus)* and contributed to 11.01%, 7.84%, 4.08%, 3.88%, 3.52%, 3.51% and 3.49% of overall catches in the base year 2017 respectively. Annual catch shows that 20 main species contributed to the maximum proportion of the catch, all together contributing 66.68%. However, all other 85 species were contributed 33.32% in total catch.

A total of 105 species was recorded in open catch and 90 species was recorded in major catch. A total of 96 species of fish and prawn (87 species from open catch and 70 species from major catch) were recorded in Sunamganj, 77 species in Netrokona (66 species in open catch and 51 species in major catch), 83 species (63 species in open catch and 64 species in major catch) in Kishoreganj, 53 species (31 species in open catch and 37 species in major catch) in Brahmanbaria and 95 species (94 species in open catch and 66 species in major catch) were found in Habiganj.

According to IUCN status 2015, in the 25 sampling waterbodies in HFMLIP, a total of five Critically Endangered (CR) fish species (*Bagarius bagarius, Schistura corica, Tor tor, Labeo*

nandina and *Ompok pabo*) of fish were recorded. Three CR fish species were found in Sunamganj, four in Habiganj, one in Netrokona and Kishoreganj respectively. No CR fish species was found in Brahmanbaria.

12 Endangered (EN) species were recorded (*Botia dario, Botia dayi, Crossocheilus latius, Oreichthys cosuatis, Chitala chitala, Channa marulius, Rita rita, Clupisoma garua, Ompak bimaculatus, Ompok pabda, Pangasius pangasius and Mastacembelus armatus*) in project sites.

The highest value (Tk. 260/kg) of harvested fish observed in organized catch data of Kalni beel of Itna was found whilst Shimul Tola Chikon Dair beel at Dharmapasha in Sunamganj had the lowest value (Tk. 131 per kg). The average fish value from all sampled waterbodies was Tk. 166/kg.Study shown that most of the fish was sold in the landing sites from major catches. On the other hand, in the control beels, from organized catch, observed that Buriya River and Kasto Chapra Beel in Sunamganj found to have the highest and lowest value of harvested fish Tk. 254/kg and Tk 142/kg respectively. Total sale depended on activities like marketing linkage, size of species, grading, sorting and distance from markets etc. Survey data shown that average value (Tk. 166 per kg) and by combining catches from project sites production over 95 tons was worth Tk 15.75 million.

Chapter 1.
Background and Introduction

International Center for Living Aquatic Resources Management (ICLARM) known as WorldFish has its Headquarters Office at Penang, Malaysia was established in Manila, in the Republic of Philippines in March 1977 as an international, non-profit, scientific research organization. WorldFish is harnesses the potential of fisheries and aquaculture to reduce hunger and poverty. WorldFish is a member of Consultative Group of International Agriculture Research (CGIAR), a global agriculture research partnership for a food secure future. WorldFish's mission is to reduce poverty and hunger by improving fisheries and aquaculture.

In Bangladesh, WorldFish has been working for more than 30 years on research and development on aquaculture and open water small scale fisheries management, funded by donors like IFAD, DFID, EU and USAID.

WorldFish has successfully implemented IFAD-funded regional CBFM-SSEA project to demonstrate an effective fisheries management approach in the *Haor* basin in Bangladesh and Mekong basin in Vietnam from 2002 to 2007 as a pilot phase of Community Based Resource Management Project (CBRMP). WorldFish has completed successful impact monitoring partnership with the CBRMP in Sunamganj from 2008 to 2013 and continuing partnership to provide research and technical support on impact monitoring and assessment of the fish biodiversity and livelihoods of the fisheries component of the IFAD funded Haor Infrastructure and Livelihood Improvement Project (HILIP) in five haor districts from 2014.

WorldFish is the pioneer institution in working in wetlands resources management globally using Community Based Fisheries Management (CBFM) approaches, securing improved livelihoods, nutrition and access to openwater resources of the poor. With it's current capacity WorldFish has been well-placed as a research partner to undertake fish catch bio-diversity and livelihoods impact monitoring activities of the Haor Flood Management and Livelihood Improvement Project (HFMLIP).

Project has been implementing CBFM for ensuring sustainable fisheries resources, through developing local institutions (CBOs) involving fisher and poor communities dependent on beel resources, CBOs took initiatives to restore fish habitats, set conservation rules and build networking among different local institutions to ensure equitable distribution of benefits. These co-management initiatives undertaken to reduce fishing pressure, create alternative income

opportunities and access to other services through local institutes (CBO) established through project activities.

HFMLIP has assigned WorldFish to undertaking impact monitoring activities on fish catch bio-diversity and livelihoods in project working area. The HFMLIP has been intervening fisheries resources management through group approach called a Beel User Group (BUG). The BUG constitutes with fishers living around the waterbodies and has been using the resources. It is expected to cover 150 waterbodies under fisheries co-management within the project period. In order to present impact of the fisheries component of HFMLIP need to provide information on average fish catch and biodiversity situation of respective waterbody.

WorldFish has been assigned to accomplish following objectives:

- Assessment of the impact of HFMLIP intervention on fish catch and biodiversity through regular monitoring and surveys and modeling the relationship between productivity and biodiversity to provide waterbody specific management recommendations based on ecological conditions in 25 project waterbodies and 5 control waterbodies.
- Assessment of the impact of fish sanctuaries on fish biodiversity and productivity at the third year of contract period depending on the availability of sufficient number of sanctuaries.
- Analysis of livelihood impacts, including fish consumption and household food security status, for project and control participation in project waterbodies and non-project waterbodies.
- Implementation of fish consumption in the first 1000 days for increased protein intake and improved nutrition for pregnant and lactating participating women in the project through enhancing consumption of nutrient rich small indigenous fish.

- Dissemination of research findings and institutional learning to local, national and international audiences through production of innovative high quality communication products and peer reviewed research publications.

This report covers first round fish catch and fish diversity status in HFMLIP waterbodies (25) and Control waterbodies (5) over the period of 2016-17. This results also trated as baseline status of fish catch and biodiversity level.

Chapter 2: Methodology

2.1. Site Selection and Waterbody Sampling

From HFMLIP working area WorldFish sampled 25 project waterbodies and 5 control waterbodies in five districts (Sunamganj, Netrokona, Kishoreganj, Brahmanbaria and Habiganj) under “Fisheries Promotion Component”. WorldFish as project partner, conducted impact monitoring of “Fish Catch, Biodiversity, households’ livelihoods and nutritional support by providing fish based product to pregnant and lactating women”. In order to selecting monitoring waterbodies, formal & informal meetings were held with HFMLIP staffs to finalize selection criteria and sampling methodology. In order to include all types waterbodies under the HFMLIP, all waterbodies were distributed into 5 categories are *haor beel,* single *beel/beel*s, river, *khal* (canal) and confined/closed/pond. In addition, sample categories done in accordance with the proportion of waterbodies existence in each district. To understand about physical condition of sample waterbodies WorldFish and LGED staffs visited sample sites and finalized 25 sample waterbodies (Table-1) hence, approved by the Project Director. Control 5 waterbodies also identified in consultation with project staffs (Table-2). To ensure quality of monitoring activities Program Officers were assigned to a certain number of waterbodies to supervise.

Table 1: List of sample project waterbodies for HFMLIP monitoring

Sl no.	Name of waterbody	Area (hac)	Upazila	District
01	Satbila Fishery	30.61	Bancharampur	Brahmanbaria
02	Noniala Beel	7.05	Itna	Kishoreganj
03	Chapra Beel	5.34	Itna	Kishoreganj
04	Kalni Beel	8.06	Itna	Kishoreganj
05	Dhoniar Kona Beel	2.06	Itna	Kishoreganj
06	Korgaon- ½ Gazipur	7.55	Austogram	Kishoreganj
07	Goza Beel	2.06	Bajitpur	Kishoreganj
08	Rangadair Jolmohal	15.09	Barhatta	Netrokona
09	Boradia Beel	6.54	Atpara	Netrokona
10	Hogla	56.89	Purbadhola	Netrokona
11	Dattakhila	7.91	Mohonganj	Netrokona
12	Choto Beri Beel	7.79	Baniachong	Habiganj
13	Andaura Beel	34.72	Baniachong	Habiganj
14	Kutiara Beel, Udgar Khal O Kutiarar Khal	14.38	Baniachong	Habiganj
15	Boro Paikka Beel	5.07	Bahubal	Habiganj
16	Silarag Group Fishery	17.88	Azmiriganj	Habiganj
17	Chat of Sunbari	30.50	Dharmapasha	Sunamganj
18	Kal Dora Nak Dora Beel	29.22	South Sunamganj	Sunamganj
19	Kumaria Beel	18.59	Dharmapasha	Sunamganj
20	Shimul Tola Chikon Dair	41.45	Dharmapasha	Sunamganj
21	Kirton Khola	7.94	Dharmapasha	Sunamganj
22	Pakhimara Ram Ghuta Jolokorpunjo	47.38	South Sunamganj	Sunamganj
23	Suraiya Beel	5.38	South Sunamganj	Sunamganj
24	Kala Sunda Beel	7.61	Chatok	Sunamganj
25	Chto Nainda Boro Nainda Beel	17.12	Derai	Sunamganj

Table 2: List of control waterbodies

Sl no.	Name of waterbody	Area (hac)	Upazila	District
26	Patuajuri Beel	1.70	Itna	Kishoreganj
27	Rouha Beel	10.12	Barhatta	Netrokona
28	Mourra Beel	1.21	Baniachong	Habiganj
29	Buriya River	8.70	Dharmapasha	Sunamganj
30	Kasko Chapra Beel	6.88	South Sunamganj	Sunamganj

2.2. Catch Monitoring and Biodiversity

2.2.1. Open Catch

Two types of fish catch and bio-diversity monitoring conducted during the reporting period (Open catch from June 2017 to November 2017 and Major fishing from December 2016 to February 2017): Catch and effort were monitored to estimate the annual total catch and fishing

effort through a catch assessment and a frame survey. The daily catch of every individual fisherman and his/her gear (CPUE-catch per unit effort) was monitored for 8 days in a month. Fish species wise numbers and weight were recorded from day catch. Furthermore, the gear-type, its mesh size, its owner status and the number of units used per fisherman were recorded through a standardized counting of the number of gears to estimate gear wise fishing effort (f-fishing days) as well.

2.2.2. Organized Catch or Major Harvest

Normally major or organized fishing activities started when appear the waterbody surrounding dykes, which usually occur at the advent of winter. In the *haor* habitat, organized fishing generally starts in late November and continues up to mid March of the following year.

Community Enumerators (CE) were involved in data collection process at each waterbody level. One CE was responsible for open catch monitoring and organized catch data collection for each waterbody. In addition to catch monitoring, CEs also collected information on the gear types used by each fisherman during fishing and landing from fishing. Program Officer, individually assigned to each waterbody provided the CEs with logistical and technical support.

2.3. Data Analysis

Survey sampling covered gear census and catch monitoring. Catch monitoring is an observational process on fishing effort that was done for the duration of eight days per month per site. It recorded species wise catch statistics of each gear type.

Gear survey involved a regular spot survey for a sample of gears in operation and their total catch. In this case, gear census covered all the gears (types and numbers) operating in the study sites.

The total monthly catch for each waterbody was calculated as follows:

$$Monthly\ \ Catch\ \ per\ \ site = N * \sum_{i,j=1}^{n} \bar{f}_{i,j} * \bar{cpue}_{i,j}$$

Where;

N : number of days per month when fishing was monitored

f : average number of gears used per day (for each gear type)

CPUE : average daily catch per gear type (calculated yield/no of gears).

Average number of gear per day was used to estimate total number of gear-wise fishing effort for that month as well as for the whole year. Simultaneously, mean gear-wise catch rate was used to estimate total catch for that month, as well as for the whole year.

Overall species distributions by gear were calculated using annual catch statistics data from catch monitoring. Year wise as well as overall species distribution were calculated using catch statistics data from catch monitoring. Overall production was estimated by summing all estimated catch of different gear types in each year.

2.4. Biodiversity - Shannon-Wiener Bio-diversity Index

The Shannon-Wiener Index (H') is one of several diversity indices used to measure biodiversity. In this study, species wise production rates were used to estimate the Shannon-Wiener diversity index (H'). The function was originally devised to determine the amount of information in a code or signal, and is defined as:

$$H = -\sum_{i=1}^{S_{obs}} pi \log_e p$$

Where,

H: Information content of sample (Index of diversity or Degree of uncertainty),

S: number of species

pi: the proportion of individuals in the i^{th} species.

(Species Diversity & Richness calculates the index using the natural logarithm).

2.5. Monitoring Fishing Activities

According to the activity plan, organized and catch monitoring data had been collected by CEs. The organized catch records reflect quantity of fish catches (kg), price of fish sales (Tk), management costs, species diversity, income from fish sales and consumption during harvesting. These records were also shared with Beel User Groups (BUGs) members and respective HFMLIP staff.

Chapter 3: Results and Discussion

3.1. Fisheries Production

Total fish catch was obtained 218 kg/hac by combining estimated catch from open and organized catches in 25 project beels of which 115 Kg/hac from open catch and 103 Kg/hac from major fishing, on the other hand 366 kg/hac was estimated from open and organized catches in 5 control *beels* (open catch 181 Kg/hac and major catch 185 Kg/hac). It was also found that 52.75% catch was obtained from open catch and 47.25% from organized catch in project beels. The highest catch from both catches was recorded from Goza Beel (1,154 kg/hac) in Kishoreganj followed by Silarag Group Fishery (1,047 kg/hac) in Habiganj. On the other hand,

lowest catch was recorded from Hogla Beel (36 kg/hac) in Netrokona followed by Shimul Tola Chikon Dair Beel (49 kg/hac) in Sunamganj (figure 1 & 2).

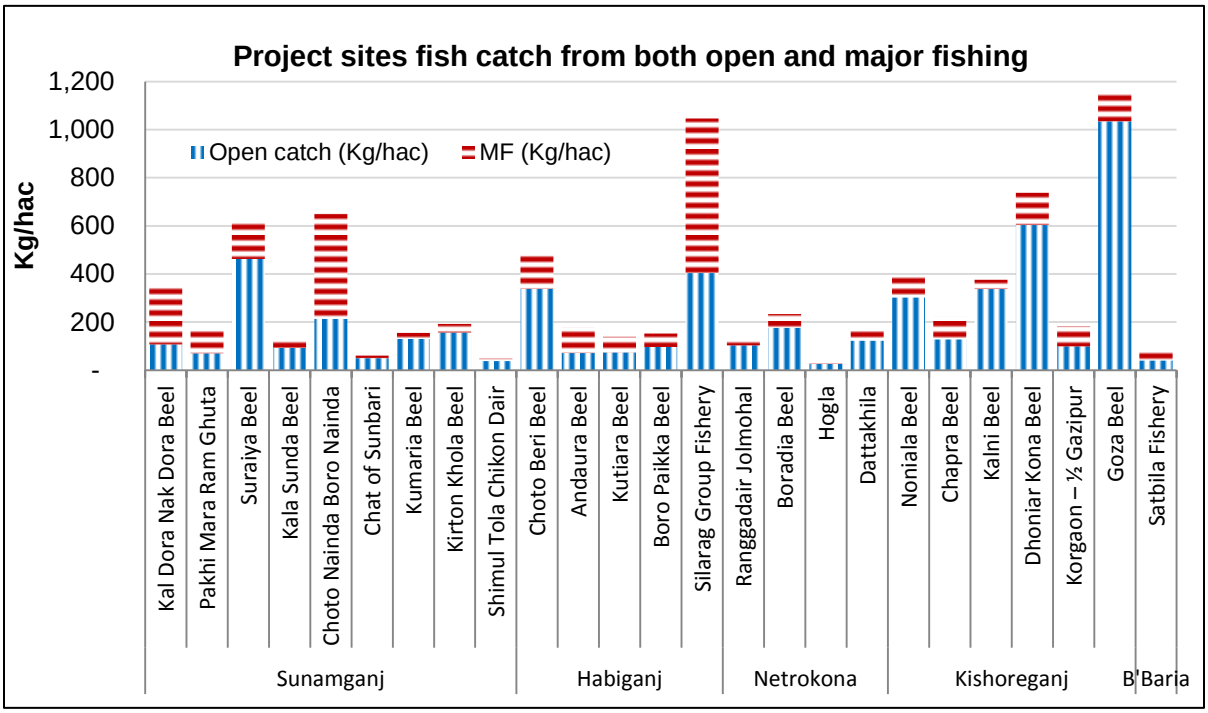

Figure 1. Total catch (Kg/hac) from both open and major fishing from 25 *beels* in 2016-17

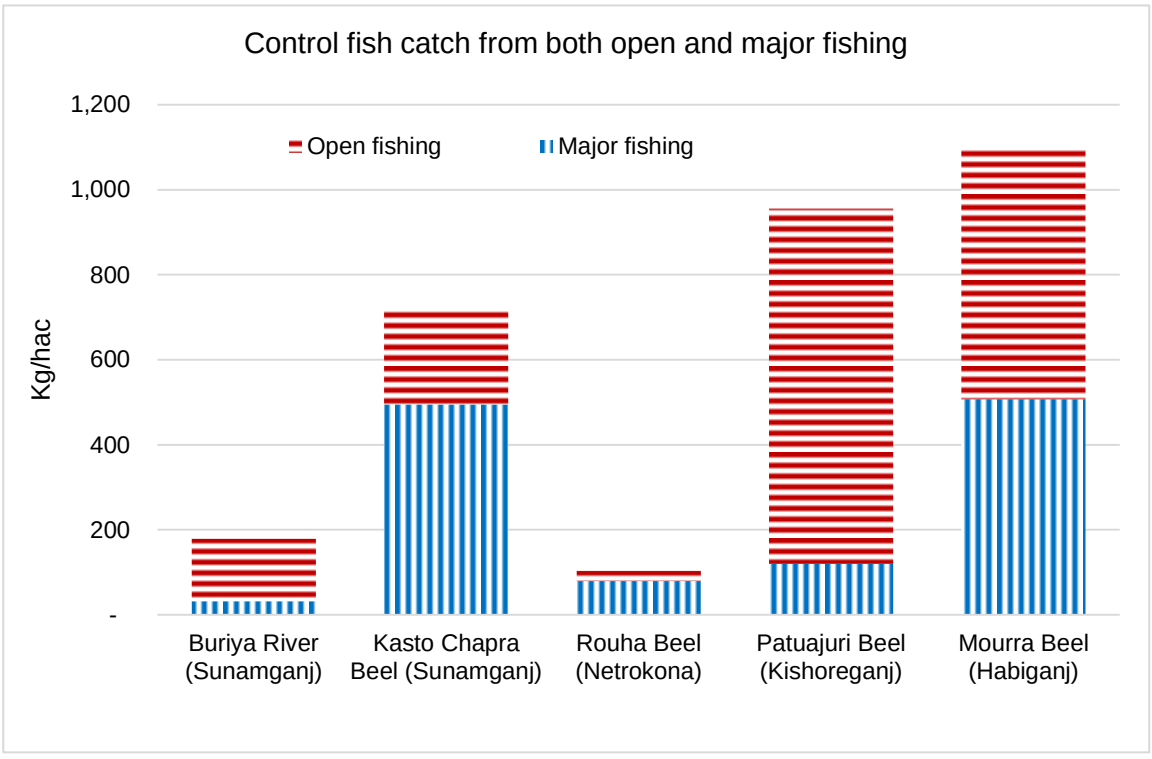

Figure 2. Total catch (kg/hac) from both catches in 2016-17 as base line year

3.1.1 Fish Catch Based on Open Catch and Major Fishing in Sunamganj

Average fish catch 205 Kg/hac was recorded by combining estimated catch from open catch and major fishing in Sunamganj. Separately average fish catch was estimated 98 kg/hac from open catch in June-2017 to December, 2017 considering as base line year. In 2017 the maximum production (462 kg/hac) was found in Suraiya Beel of South Sunamganj Upazila, Choto Nainda Boro Nainda (214 kg/hac) of Derai Upazila, Kirton Khola Beel (156 kg/hac) of Dharmapasha Upazila and Kumaria Beel (130 kg/hac) of Dharmapasha. On the other hand minimum fish production (38 kg/hac) was found in Shimul Tola Chikon Dair Beel of Dharmapasha Upazila, Chat of Sunbari Beel (50 kg/hac) of Dharmapasha Upazila and Pakhi Mara Ram Ghuta (70 kg/hac) of South Sunamganj Upazila. The present study reveals that fish production was varies from 38 kg/hac to 462 kg/hac at Sunamganj (Table-3).

The fish production in the control sites in 2017 reveales that the highest production (221 kg/hac) was found in Kasto Chapra Beel and the lowest production was recorded in Buriya River (147 kg/hac).

On the other hand, average 107 kg/hac fish production was recorded from major fishing/organized catch in 2016-17 as base line year. In 2016-17 the maximum production (436 kg/hac) was found in Choto Nainda Boro Nainda Beel of Derai Upazila, Kal Dora Nak Dora Beel (241 kg/hac) of South Sunamganj Upazila, Suraiya Beel (157 kg/hac) of South Sunamganj Upazila and Pakhi Mara Ram Ghuta Beel (99 kg/hac) of South Sunamganj. On the other hand minimum fish production (10 kg/hac) was found in Chat of Sunbari, Shimul Tola Chikon Dair (11 kg/hac) and Kirton Khola Beel (37 kg/hac) of Dharmapasha Upazila. The present study reveals that fish production was varies from 10 kg/hac to 436 kg/hac at Sunamganj.

The fish production in the control sites in 2017 reveales that the highest production (494 kg/hac) was found in Kasto Chapra Beel and the lowest production was recorded in Buriya River (31 kg/hac).

Table 3: Average fish catch both from open catch and major fishing from Sunamganj in 2016-17.

Upazila	Waterbody name	Open catch (Kg/hac)	Major catch (Kg/hac)
South Sunamganj	Kal Dora Nak Dora Beel	107	241
	Pakhi Mara Ram Ghuta	70	99
	Suraiya Beel	462	157
Chatak	Kala-sunda Beel	92	39
Derai	Choto Nainda Boro Nainda	214	436
Dharmapasha	Chat of Sunbari	50	10
	Kumaria Beel	130	25
	Kirton Khola Beel	156	37
	Shimul Tola Chikon Dair	38	11
	All total	**98**	**107**
Control	Buriya River	147	31
	Kasto Chapra Beel	221	494
	All total	**180**	**236**

3.1.2 Fish Catch Based on Open Catch and Major Fishing in Habiganj

Average 393 Kg/hac fish catch was recorded by combining estimated catch from open catch and major fishing in Habiganj site. Average 174 kg/hac fish catch were recorded from Open catch in 2017 as baseline year. In 2017 the maximum production (404 kg/hac) was found in Silarag Group Fishery of Azmiriganj Upazila, Choto Beri Beel (339 kg/hac) of Baniachang Upazila, Boro Paikka Beel (96 kg/hac) of Bahubal. On the other hand minimum fish production (71 kg/hac) was found in Andaura Beel and Kutiara Beel (74 kg/hac) of Baniachang. The present study reveals that fish production was varies from 71 kg/hac to 404 kg/hac at the study sites.

In Habiganj district project is working with one control beel named Moura Beel. The fish production in the control site in 2017 recorded 588 kg/hac. Table 4 shows the comparative status of production.

On the other hand, average 219 kg/hac fish production were recorded from organized catch in 2016-17 as base year. In 2016-17 the maximum production (643 kg/hac) was found in Silarag

Group Fishery of Azmiriganj, Choto Beri Beel (138 kg/hac) and Andhaura Beel (107 kg/hac) of Baniachang Upazila. On the other hand minimum fish production (56 kg/hac) was found in Boro Paikka Beel of Bahubal Upazila the present study reveals that fish production was varies from 56 kg/hac to 643 kg/hac at the study sites.

The fish production in the control site in 2017 recorded 508 kg/hac from organized catch.

Table 4: Average fish catch both from open catch and major fishing from Habiganj in 2016-17.

Upazila	Waterbody name	Open catch (Kg/hac)	Major harvest (Kg/hac)
Baniachang	Choto Beri Beel	339	138
	Andaura Beel	71	107
	Kutiara Beel	74	65
Bahubal	Boro Paikka Beel	96	56
Azmiriganj	Silarag Group Fishery	404	643
	All total	**174**	**219**
Control	Moura Beel	588	508

3.1.3 Fish Catch Based on Open Catch and Major Fishing in Netrokona

Average 80 Kg/hac fish catch was recorded by incorporating estimated catch from open catch and major fishing in Netrokona site. An average 60 kg/hac fish catch were recorded from Open catch in 2017 as base year. In 2017 the maximum production (177 kg/hac) was found in Boradia Beel of Atpara Upazila, Dattakhila (123 kg/hac) of Mohangonj Upazila and Ranggadair Jolmohal (103 kg/hac) of Barhatta Upazila. On the other hand, minimum fish production (26 kg/hac) was found in Hogla Beel of Purbadhola Upazila. The present study reveals that fish production was varies from 26 kg/hac to 177 kg/hac at the study sites.

In Netrokona district project is working with one control beel named Rouha Beel. The fish production in the control site in 2017 was recorded 24 kg/hac. Table 5 shows the comparative status of production in Netrokona.

On the other hand, an average 20 kg/hac fish production were recorded from organized catch in 2017 as base year. In 2017 the maximum production (56 kg/hac) was found in Boradia Beel of Atpara Upazila, Dattakhila (41 kg/hac) of Mohangonj and Ranggadair Jolmohal (28 kg/hac) of Barhatta. On the other hand, minimum fish production (10 kg/hac) was found in Hogla Beel of

Purbadhola. The present study reveals that fish production was varies from 10 kg/hac to 56 kg/hac at the study sites.

The fish production in the control site in 2017 recorded 79 kg/hac from major catch.

Table 5: Average fish catch both from open catch and major fishing from Netrokona in 2016-17.

Upazila	Waterbody name	Open catch (Kg/hac)	Major harvest (Kg/hac)
Barhatta	Ranggadair Jolmohal	103	28
Atpara	Boradia Beel	177	56
Purbadhola	Hogla	26	10
Mohangonj	Dattakhila	123	41
	All total	**60**	**20**
Control	Rouha Beel	24	79

3.1.4 Fish Catch Based on Open Catch and Major Fishing in Kishoreganj

In Kishoreganj site, average 382 Kg/hac fish catch was recorded by incorporating estimated catch from open catch and major fishing. Average 301 kg/hac fish catch were recorded from Open catch in 2017 as base year. In 2017 the maximum production (1035 kg/hac) was found in Goza Beel of Bajitpur Upazila, Dhoniar Kona Beel (603 kg/hac) of Itna Upazila, Kalni Beel (337 kg/hac) of Itna Upazila and Noniala Beel (303 kg/hac) of Itna Upazila. On the other hand, minimum fish production (99 kg/hac) was found in Korgaon-½ Gazipur Beel of Austogram Upazila. The present study reveals that fish production was varies from 99 kg/hac to 1035 kg/hac at the study sites.

In Kishoreganj district project is working with one control beel named Patuajuri Beel. The fish production in this control site in 2017 was recorded 836 kg/hac. Table 6 shows the comparative status of production.

On the other hand, average 81 kg/hac fish production were recorded from organized catch in 2016-17 as base year. In 2017 the maximum production (135 kg/hac) was found in Dhoniar Kona Beel of Itna Upazila, Goza Beel (119 kg/hac) of Bajitpur Upazila, Chapra Beel (93 kg/hac) and Noniala Beel (88 kg/hac) of Itna Upazila. On the other hand minimum fish production (39

kg/hac) was found in Kalni Beel of Itna Upazila. The present study reveals that fish production was varies from 39 kg/hac to 135 kg/hac at the study sites.

The fish production in this control site in 2016-17 recorded 119 kg/hac from major catch.

Table 6: Average fish catch both from open catch and major fishing from Kishoreganj in 2016-17.

Upazila	Waterbody name	Open catch (Kg/hac)	Major harvest (Kg/hac)
Itna	Noniala Beel	303	88
	Chapra Beel	129	93
	Kalni Beel	337	39
	Dhoniar Kona Beel	603	135
Austogram	Korgaon – ½ Gazipur	99	84
Bajitpur	Goza Beel	1,035	119
	All total	**301**	**81**
Control	Patuajuri Beel	836	119

3.1.5 Fish Catch Based on Open Catch and Major Fishing in Brahmanbaria

The Project is working with only one waterbody in Brahmanbaria District. The name of the project waterbody is Satbila Fishery. In this site, a total of 76 Kg/hac fish catch was recorded by incorporating estimated catch from open catch and major fishing. A total of 40 kg/hac fish production were recorded from open catch and 36 Kg/hac were recorded from organized catch in 2016-17 as base line year.

3.1.6 Average fish catch both from open catch and major fishing in Control Sites

Average 366 Kg/hac fish catch were recorded from estimated catch from open catch and organized catch in 2016-17 from all control monitoring sites. Average 181 kg/hac fish production were recorded from Open catch from five control waterbodies in 2017 as base line year. In 2017 the maximum production (836 kg/hac) was found in Patuajuri Beel of Kishoreganj district, Moura Beel (588 kg/hac) of Habiganj district, Kasto Chapra Beel (221 kg/hac) of Sunamganj district, Buriya River (37 kg/hac) of Sunamganj district. The least production was found in Rouha Beel (24 kg/hac) of Netrokona district. The present study reveals that fish production from control sites were varies from 24 kg/hac to 836 kg/hac at the study sites (Table 7).

On the other hand, average 185 kg/hac fish production were recorded from organized catch from five control waterbodies in 2016-17 as base year. In 2016-17 the maximum production (508 kg/hac) was found in Moura Beel of Habiganj district, Kasto Chapra Beel (494 kg/hac) of Sunamganj district, Patuajuri Beel (119 kg/hac) of Kishorganj district, Rouha Beel (79 kg/hac) of Netrokona district. The least production was found in Buriya River (31 kg/hac) of Sunamganj. The present study reveals that fish production from control sites were varies from 31 kg/hac to 508 kg/hac.

Table 7: Catch from open catch and major fishing from control sites in 2016-17.

Waterbody name	District	Open Catch (Kg/hac)	Major harvest (Kg/hac)
Buriya River	Sunamganj	147	31
Kasto Chapra Beel	Sunamganj	221	494
Rouha Beel	Netrokona	24	79
Patuajuri Beel	Kishoreganj	836	119
Mourra Beel	Habiganj	588	508
	All total	**181**	**185**

3.2 Total Catch

3.2.1 Total catch from organized and open catch

Total fish catch was obtained by combining estimated catch from open and organized catch in 25 project beels. The total fish catch was found over 95 tons over the period of 2016-17 of which 45 tons from open catch and 50 tons from major catch (Table 8).

Table 8: Total fish catch from both open catch and major fishing in 2016-17

District	Waterbody name	Organized catch (Kg)	Open catch (Kg)	Total catch (Kg)
Sunamganj	Kal Dora Nak Dora Beel	7,048	3,123	10,171.31
	Pakhi Mara Ram Ghuta	4,687	3,306	7,993.00
	Suraiya Beel	847	2,490	3,337.50
	Kala-sunda Beel	300	703	1,003.00
	Choto Nainda Boro Nainda	7,465	3,671	11,135.58

District	Waterbody name	Organized catch (Kg)	Open catch (Kg)	Total catch (Kg)
	Chat of Sunbari	299	1,536	1,835.00
	Kumaria Beel	473	2,421	2,893.57
	Kirton Khola Beel	295	1,236	1,530.92
	Shimul Tola Chikon Dair	470	1,593	2,063.00
Habiganj	Choto Beri Beel	1,077	2,639	3,716.11
	Andaura Beel	3,719	2,452	6,171.20
	Kutiara Beel	938	1,065	2,003.12
	Boro Paikka Beel	282	486	767.88
	Silarag Group Fishery	11,494	7,216	18,709.50
Netrokona	Ranggadair Jolmohal	427	1,562	1,989.00
	Boradia Beel	366	1,158	1,524.27
	Hogla	587	1,493	2,080.48
	Dattakhila	326	970	1,295.50
Kishoreganj	Noniala Beel	623	2,136	2,759.63
	Chapra Beel	499	692	1,191.10
	Kalni Beel	311	2,718	3,028.50
	Dhoniar Kona Beel	278	1,245	1,523.00
	Korgaon – ½ Gazipur	632	746	1,378.28
	Goza Beel	246	2,132	2,377.72
B'Baria	Satbila Fishery	1,117	1,235	2,352.15
	All total	**44,806**	**50,024**	**94,830.32**

3.2.2 Total fish catch from open catch and major fishing of 5 control sites in 2016-17

Total fish catch was obtained over 10.5 tons from both catches (open and organized catches) in 5 control beels of which 5.2 tons fron open catch and 5.3 from organized catch. It was found that 49.42% from open catch and 50.58% from organized catch. The highest fish catch was recorded from organized catch in Kasto Chapra Beel and Rouha Beel compare to open catch. On the other hand, the highest percentage of fish catch was recorded from open catch also in Kasto Chapra Beel and Patuajuri Beel (Table 9).

Table 9: Total fish catch from both open catch and major fishing in five control sites in 2016-17.

Waterbody name	District	Organized catch (Kg)	Open catch (Kg)	Total catch (Kg)
Buriya River	Sunamganj	272	1,281	1,553
Kasto Chapra Beel	Sunamganj	3,403	1,520	4,923
Rouha Beel	Netrokona	800	238	1,038
Patuajuri Beel	Kishoreganj	203	1,421	1,624
Moura Beel	Habiganj	615	712	1,327
Total production		**5,293**	**5,172**	**10,465**

3.2.3 Production (catch) by fish group

Following ecological behavior and biological character of species all recorded species were grouped as i) Eel fish, ii) Exotic fish, iii) Large catfish, iv) Major carp, v) Minor carp, vi) Small beel species, vii) Migratory species, viii) Prawn, ix) Small catfish, and x) Snake head. Appendix-2 presents details on species group i.e., fish species linked with group. Percentage composition of fishes by group reveals that 'Small beel species', 'Small catfish', 'Minor carp', 'Prawn' and 'Eel' contributed highest proportion in the annual catch in 2017 based on open catch monitoring (Figure 3).

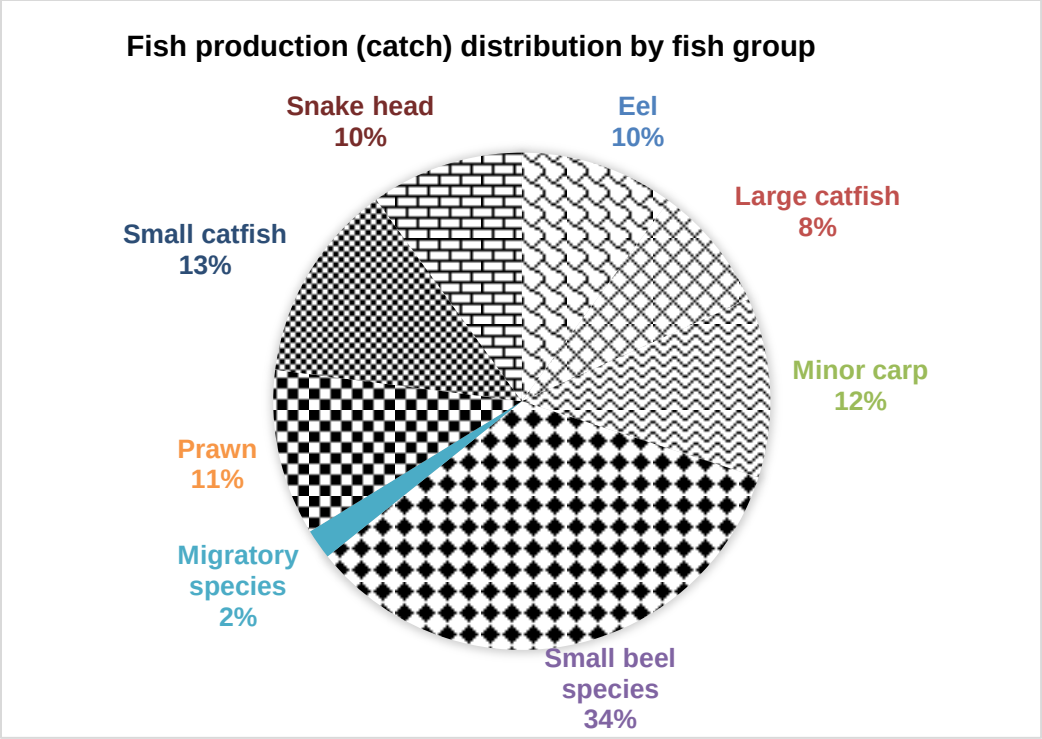

Figure 3. Annual fish production (%) by fish group from catch monitoring in project waterbodies

3.3. Catch Composition

3.3.1. Catch Composition Based on Open Catch

A total of 105 species of fish and prawn were recorded in all study sites during 2017. The main species caught by all types of gear used in all project sites were Jatputi *(Puntius sophore)*, Boal *(Wallago attu)*, Bojuri Tengra *(Mystus tengara)*, Guchi Baim *(Mastacembelus pancalus)*, Goinna *(Labeo gonius)*, Kalibaus *(Labeo calbasu)* and Tengra/Guinga *(Mystus vittatus)* and contributed to 11.01%, 7.84%, 4.08%, 3.88%, 3.52%, 3.51% and 3.49% of overall catches in the base line year 2017. Annual catch shows that 20 main species contributed to the maximum proportion of the catch, all together contributing 66.68% in 2017 (Figure-4). However, annual contribution of all other 85 species was 33.32%. Besides percentage composition of 20 dominant species contributed 85.52%, 82.99%, 71.15%, 98.65% and 69.94% from open catches in Kishoreganj, Netrokona, Habiganj, B'baria and Sunamganj respectively and are presented in appendix-1.

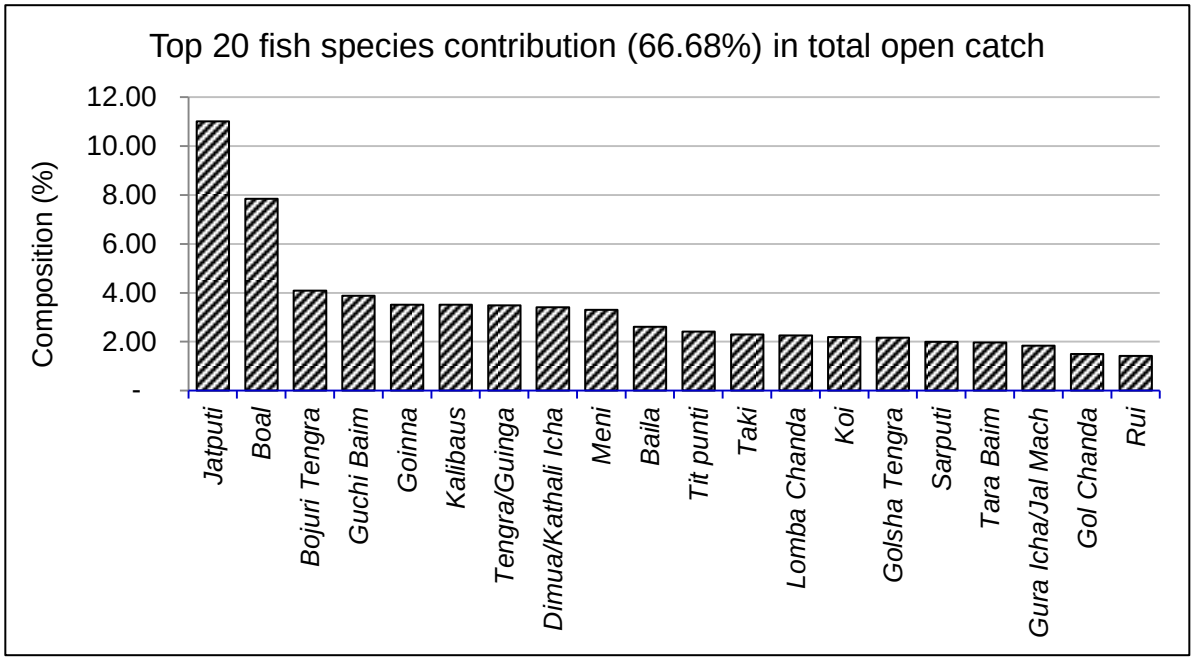

Figure 4. Top 20 fish species contribution in the catch (66.68%) from open fishing in 2017.

3.3.2. Catch Composition Based on Open Catch in Control Site

A total of 71 species of fish and prawn were recorded in all study control sites during 2017. The main species caught by all types of gear used in all project sites were Boal *(Wallago attu),* Jatputi *(Puntius sophore)*, Guchi Baim *(Mastacembelus pancalus)*, *Taki (Channa punctatus)*, and *Meni (Nandus nandus)* contributed to 14.49%, 10.15%, 7.84%, 7.35% and 5.66% of overall catches in the base line year 2017 from control sites. Annual catch shows that 20 main species contributed to the maximum proportion of the catch, all together contributing 86.44% in 2017 (Figure-5).

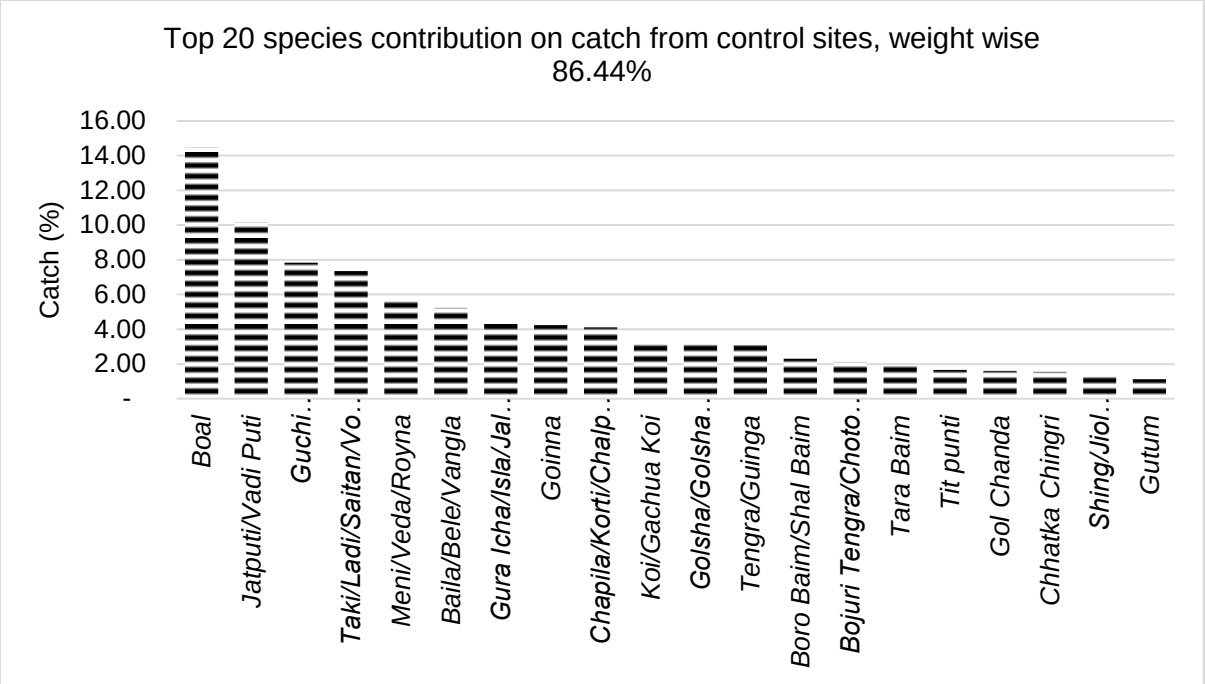

Figure 5. Top 20 fish species contribution in the catch (86.44%) from open catch in control sites in 2017.

3.3.3. Catch Composition Based on Organized Catch (Major fishing)

The main species caught by all types of gear used in all project sites were Jatputi *(Puntius sophore)*, Gura Icha/Jal Mach *(Nematopalaemon tenuipes*), Meni *(Nandus nandus)*, Tengra/Guinga *(Mystus vittatus)*, Shol *(Channa striatus)* and Boal *(Wallago attu); and* contributed to 18.42%, 6.49%, 6.47%, 5.73%, 5.71%, 5.38% and 4.21% of overall catches in the base year 2016-17. Annual catch shows that 20 main species contributed to the maximum proportion of the catch, all together contributing 83.59% in 2017 (figure 6 and appendix-2). However, annual contribution of all other 70 species was 16.41%. Annual contribution of main 20 species of Kishoreganj, Netrokona, Habiganj, B'baria and Sunamganj are 80.79%, 82,01%, 94.20%, 86.36% and 83.71% respectively. Percentage compositions of 20 main species from organized catches in Kishoreganj, Netrokona, Habiganj, B'baria and Sunamganj are presented in (appendix-2).

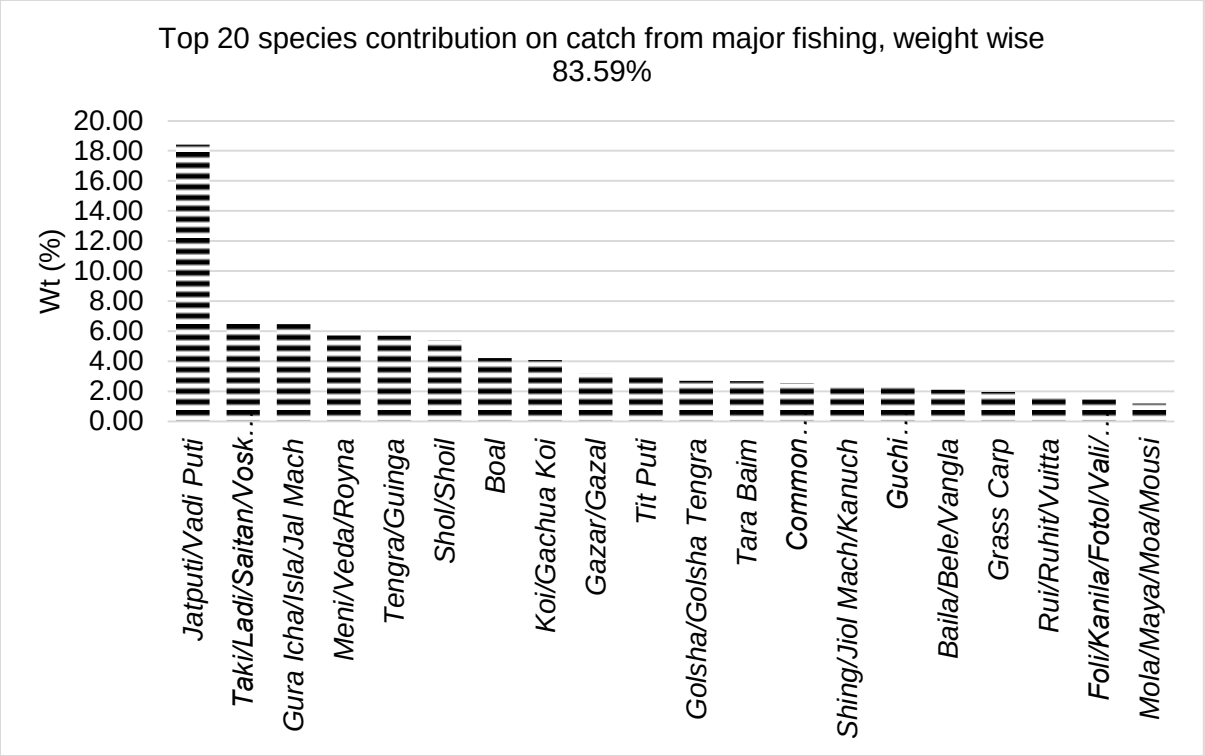

Figure 6. Top 20 fish species contribution in the catch (83.59%) from major fishing in 2017.

3.4. Gear Efficiency and Production

Fisheries in Bangladesh use an extensive range of fishing gears (Alam *et al*., 1997; Chakraborty *et al*., 1995; Hoggarth *et al*., 1999). Their specifications vary according to target species, types of water body, labor intensity, fabrication, cost, materials available and profit. There are more than 100 types of fishing gears used by professional fishing communities. Gears operated in haor areas can be broadly classified into: gill net, seine net, lift net, cast net, push net, trap, hook and line, long line and spear. Cast nets, spears, lift nets and gill nets are operated both day and night. The trap units, long-lines and hooks and lines are operated only at night, while push nets and seine nets are operated only during the daytime. Operation of spears and lift nets are mostly seasonal. FAD have been using in project waterbodies in post monsoon to catch bulk amount by the BUG members in a group. In study sites, the most commonly used gear types were seine net, set bag net and pen/others. The annual average catch proportion were 17%, 11%, 10%, 9%, 8% and 7% by seine net, set bag, pen, larg lift, long line/katha and gill net/trap unit from all study sites respectively in the base year 2017.

Figure 7 presents the annual average proportion of catches by different gears in all study sites from catch monitoring in 2017

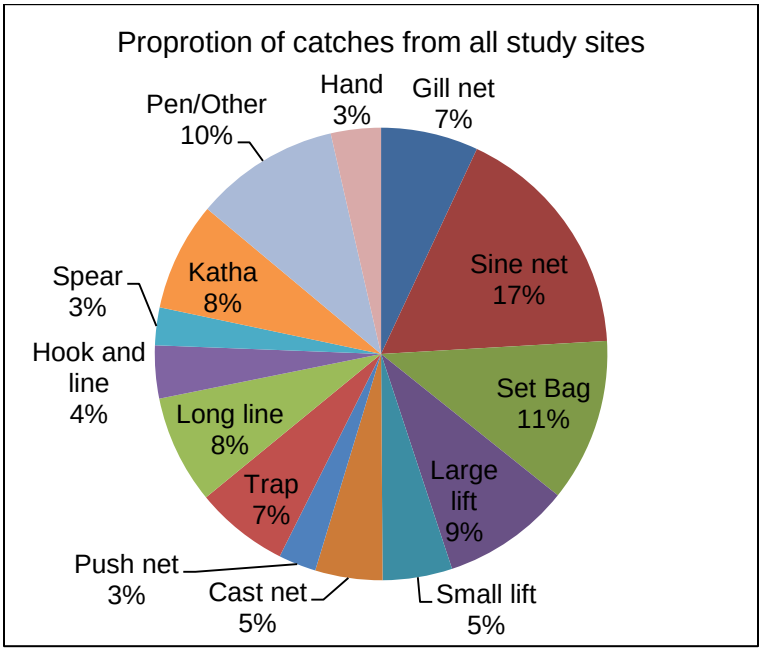

Figure 7. Proportion of catches from catch monitoring by different gears in all study sites in 2017.

3.4.1. Catch Per Unit Effort (CPUE)

Project success highly related with daily catch rates by gear, such as catch per unit of effort (CPUE). The annual average catch rates by major gear were found 4.60 kg in the base year 2017 in all study sites. The annual average catch rates by major gear types were found 11.03 kg, 7.51 kg, 6.67 kg, 5.92 kg, 5.0 kg and 4.48 kg in seine net, set bag, pen/others, large lift, long line, katha and gill net from all study sites respectively in the base year 2017. Annual highest average CPUE was recorded by seine net on the other hand lowest annual average CPUE was recorded by push net and spear. Figure 8 shows the comparison of catch per unit of effort (CPUE) by different gears from all study sites and figure 9 shows the CPUE in different districts.

Among the five study sites highest CPUE 18.93 kg by seine net was recorded in B'baria site, CPUE 16.77 kg by large lift net was recorded in Kishorganj sites and CPUE 11.87 kg by seine net was recorded in Netrokona site during 2017.

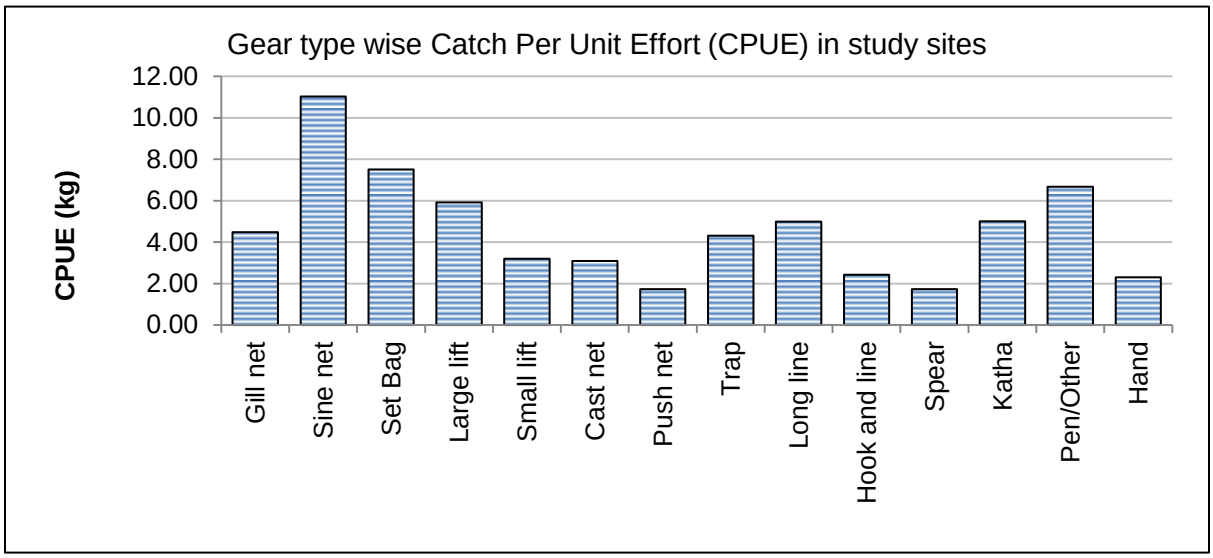

Figure 8. Comparison of catch per unit of effort (CPUE) from catch monitoring by different gears from all study sites in 2017

Figure 9. Some picture of major fishing and catch monitoring (Open catch)

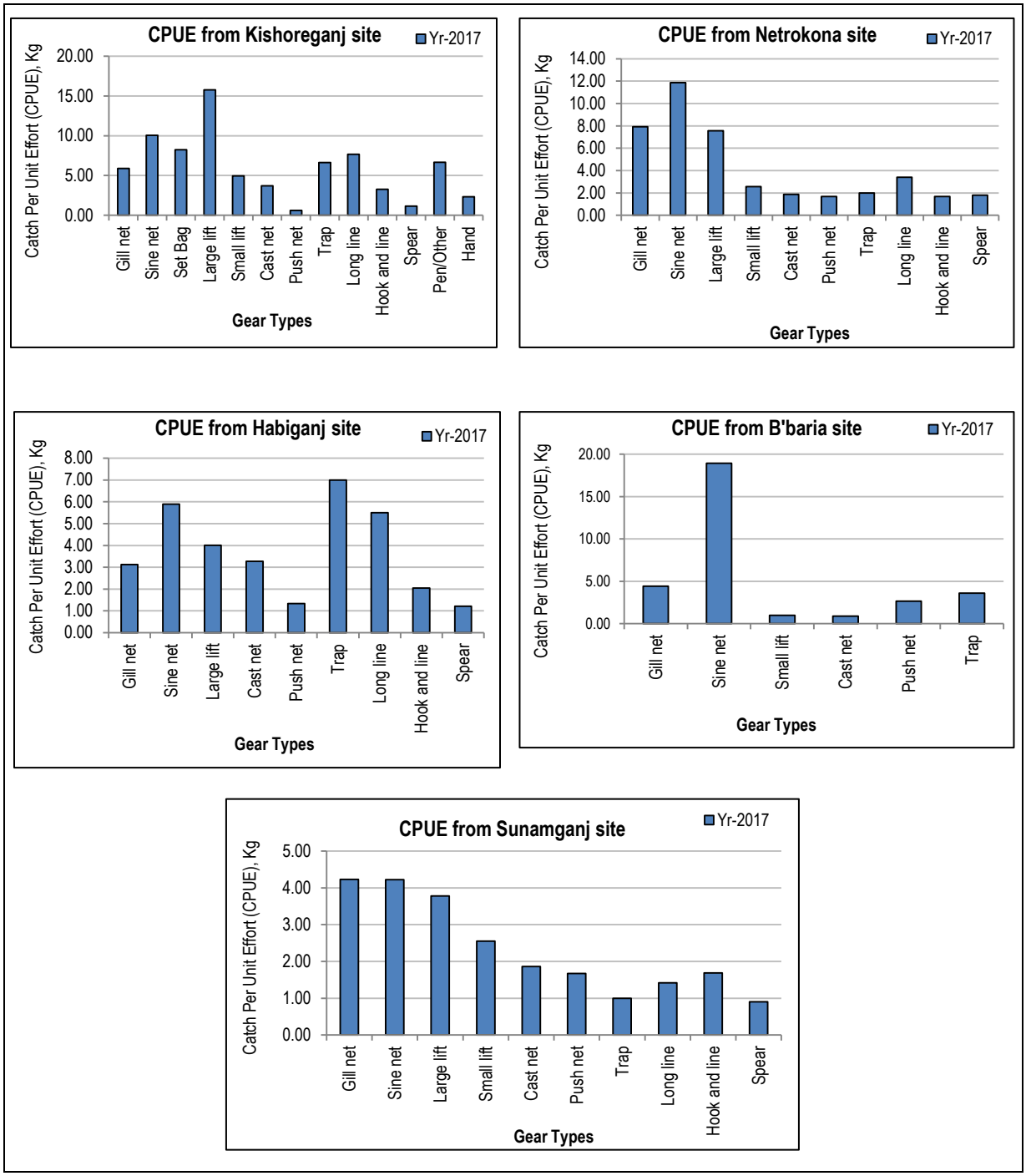

Figure 10. CPUE in different districts in 2017

3.4.2. Catch Per Person Per Day

Project success is highly linked with income from fishing activities, such as catch per person per day. The annual average daily catch rates by fishers by gear was found 2.18 kg in 2017 in project sites (figure 10). 2.74kg, 2.33kg, 2.36kg, 4.14kg and 1.66kg were found in Kishoreganj,

Netrokona, Habiganj, B'baria and Sunamganj site respectively (figure 11). This daily catch rate is an indicator of fish abundance and shows a considerably higher average daily catch with the large lift net in haor areas.

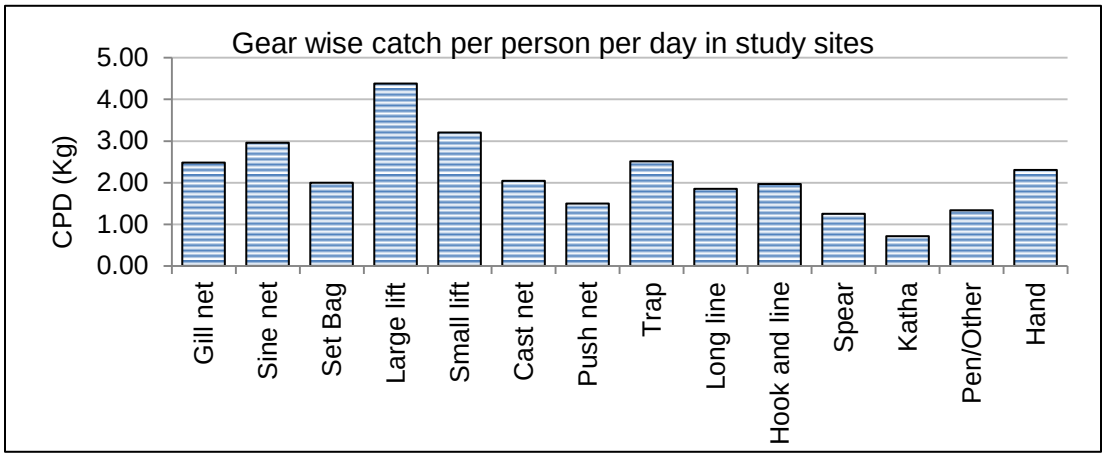

Figure 11. Catch per person per day from open catch by different gears in all study sites

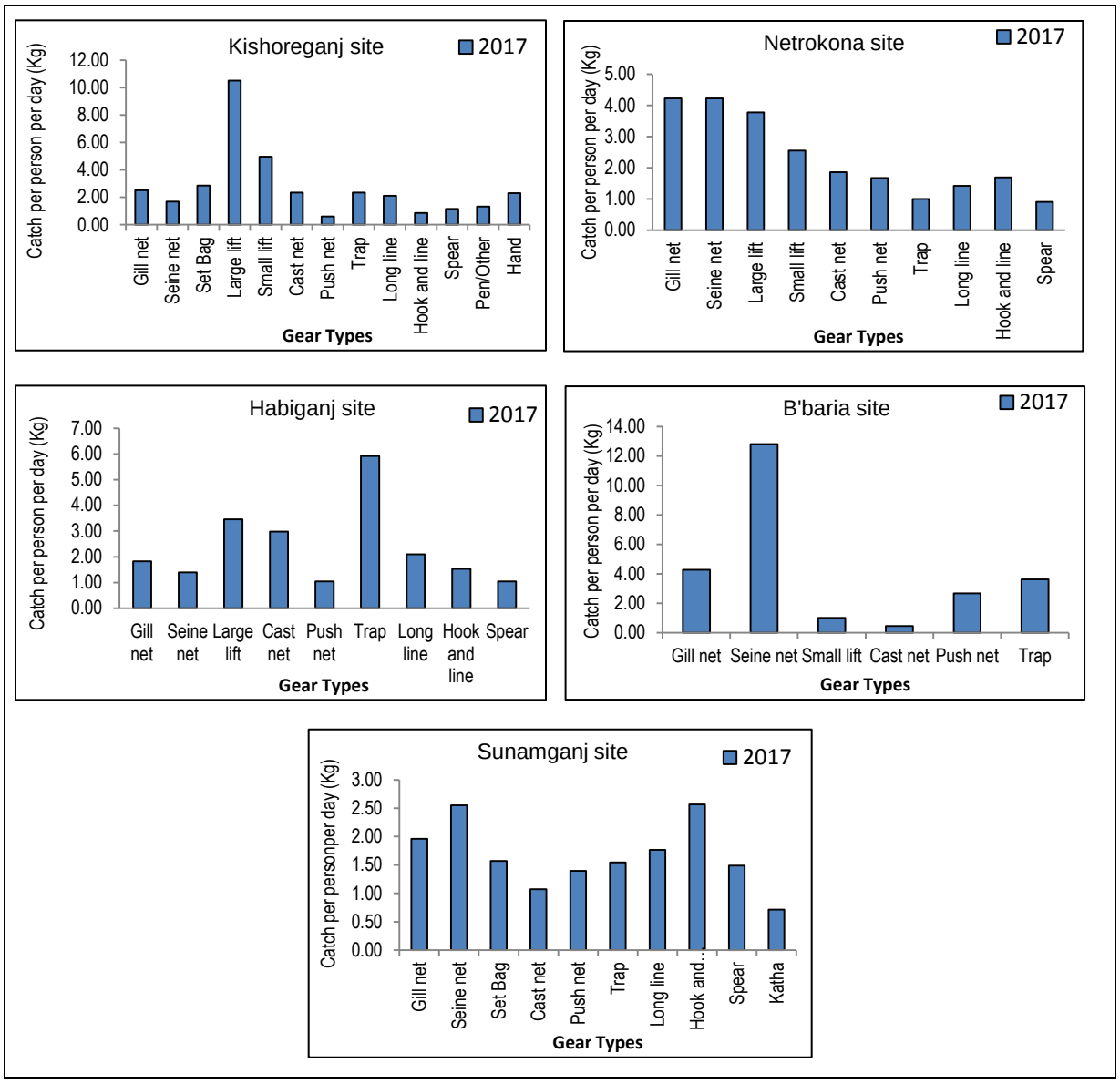

Figure 12. Catch per person per day from Kishoreganj, Netrokona, Habiganj, B'baria and Sunamganj sites from catch monitoring by different gears in 2017.

Chapter 4: Fish Biodiversity

A total of 105 species of fish and prawn were recorded from both open and major catches in 2016-17 of which 105 species was recorded in open catch and 90 species was recorded in major catch from all project districts.

In Sunamganj site, a total of 96 species of fish and prawn were recorded from both open and major catches in 2016-17 of which 87 species was recorded in open catch and 70 species was recorded in major catch.

In Netrokona site, 77 species of fish and prawn were recorded from both open and major catches in base year 2016-2017 of which 66 species were recorded in open catch and 51 species were recorded in major catch.

In Kishoreganj site, a total of 83 species of fish and prawn were recorded from both open and major catches in 2016-2017 of which 63 species were recorded in open catch and 64 species were recorded in major catch.

In Brahmanbaria site, a total of 53 species of fish and prawn were recorded from both open and major catches in 2016-2017 of which 31 species were recorded in open catch and 37 species were recorded in major catch.

In Habiganj site, a total of 95 species of fish and prawn were recorded from both open and major catches in 2016-2017 of which 94 species were recorded in open catch and 66 species were recorded in major catch.

4.1. Biodiversity Based on Open Catch Monitoring Data

A total of 105 species of fish and prawn were recorded from Open catch in 2017 as base line year. In 2017 the maximum numbers of species (58) were found in the Silarag Group Fishery, Pakhi Mara Ram Ghuta (57), Kal Dora Nak Dora Beel and Andaura Beel (56), Choto Nainda Boro Nainda and Choto Beri Beel (49). On the other hand minimum numbers of species (22) were found Noniala Beel, Goza Beel (27) and Suraiya Beel (28). The present study reveals that total number of species varies from 22 to 58 at the study sites. Figure 12 shows the status of species.

Number of species found in the control sites in 2017 reveales that the maximum numbers of species (45) were found in Kasto Chapra Beel, Buriya River (41), Mourra Beel (37), Rouha Beel

(26) and Patuajuri Beel (22). Analysis shows that species from project waterbodies are enriched as compared with control waterbodies.

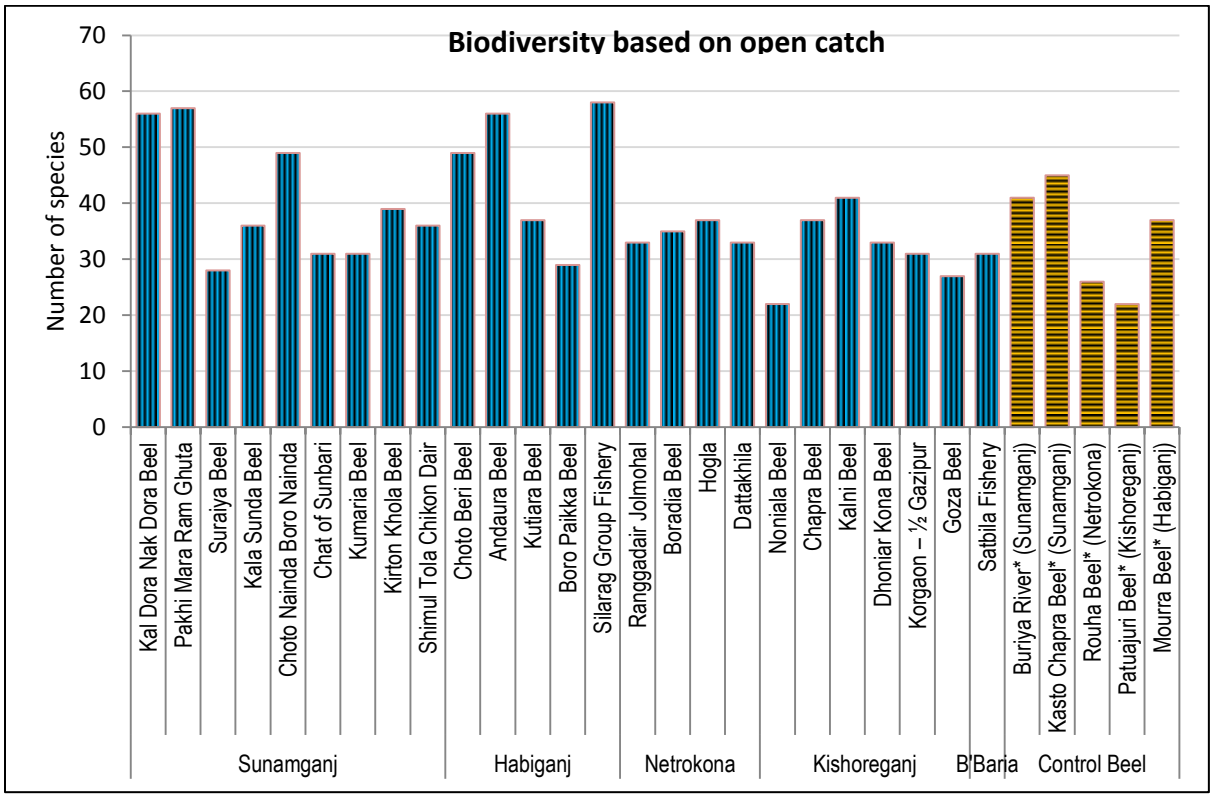

Figure 13. Bidiversity based on open catch in all study sites in 2017.

4.1.1. Biodiversity Based on Open Catch Monitoring Data in Sunamganj Site

A total of 87 species of fish and prawn were recorded from Open catch in 2017 as base year. In 2017 the maximum numbers of species (57) were found in the Pakhi Mara Ram Ghuta, Kal Dora Nak Dora Beel (56) and Choto Nainda Boro Nainda (49). On the other hand minimum numbers of species (28) were found in Suraiya Beel and (31) species were found in Chat of Sunbari and Kumaria Beel. The present study reveals that total number of species varies from 28 to 57 at the study sites (Figure 13). In the base line year (2017) a total of 45 species were found in the control waterbody Kasto Chapra Beel and 41 species in Buriya River.

4.1.2. Biodiversity Based on Open Catch Monitoring Data in Habiganj Site

A total of 94 species of fish and prawn were recorded from Open catch in 2017. In 2017 the maximum numbers of species (58) were found in the Silarag Group Fishery, Andaura Beel (56) and Choto Beri Beel (49). On the other hand minimum numbers of species (29) were found in Boro Paikka Beel and (37) species were found in Kutiara Beel. The present study reveals that

total number of species varies from 29 to 58 at the study sites (Figure 13). In the base year (2017) a total of 37 species were recorded in the control waterbody named Mourra Beel.

4.1.3. Biodiversity Based on Open Catch Monitoring Data in Netrokona Site

A total of 66 species of fish and prawn were recorded from Open catch in 2017. In 2017 the maximum numbers of species (37) were found in the Hogla, Boradia Beel (35) and in Ranggadair Jolmohal & Dattakhila (33). The present study reveals that total number of species varies from 33 to 37 at the study sites (Figure 13). In the base year (2017) a total of 26 species were recorded in the control waterbody named Rouha Beel.

4.1.4. Biodiversity Based on Open Catch Monitoring Data in Kishoreganj Site

A total of 63 species of fish and prawn were recorded from Open catch in 2017. In 2017 the maximum numbers of species (41) were found in the Kalni Beel, Chapra Beel (37) and in Dhoniar Kona Beel (33). On the other hand minimum numbers of species (22) were found in Noniala Beel and (27) species were found in Goza Beel. The present study reveals that total number of species varies from 22 to 41 at the study sites (Figure 13). In the base year (2017) a total of 22 fish species were recorded in the control waterbody named Patuajuri Beel.

4.1.5. Biodiversity Based on Open Catch Monitoring Data in B. BariaSite

A total of 31 species of fish and prawn were recorded from Open catch in 2017 (Figure 13). There is only one project waterbody named Satbila Fishery in this district.

4.2. Biodiversity Based on Major Catch Data

A total of 90 species of fish and prawn were recorded from Major catch in the base line year (2016-17) of which 70 in Sunamganj, 66 in Habiganj, 64 in Kishoreganj, 51 in Netrokona and 37 in Bahmanbaria sites; and number of species caught in the harvesting sites in 2016-17 revealed that the maximum numbers of species (49) were found in the Silarag Group Fishery in Habiganj, Pakhi Mara Ram Ghuta (47) in Sunamganj, Kal Dora Nak Dora Beel (44) in Sunamganj, Andaura Beel (42) in Sunamganj, Choto Beri Beel (40) in Habiganj, Shimul Tola Chikon Dair (38) in Sunamganj, Kirton Khola Beel (37) in Sunamganj, Satbila Fishery (37) in Brahmanbaria, Kalni Beel (36) and Chapra Beel (35) in Kishoreganj respectively. The present study reveals that total number of species varies from 25 to 49 at the HFMLIP study sites. Figure 14 presents number of species recorded from organized catches at 30 monitored sites (i.e. project WB 25 and control WB 5) from five districts of HFMLIP in 2016-17.

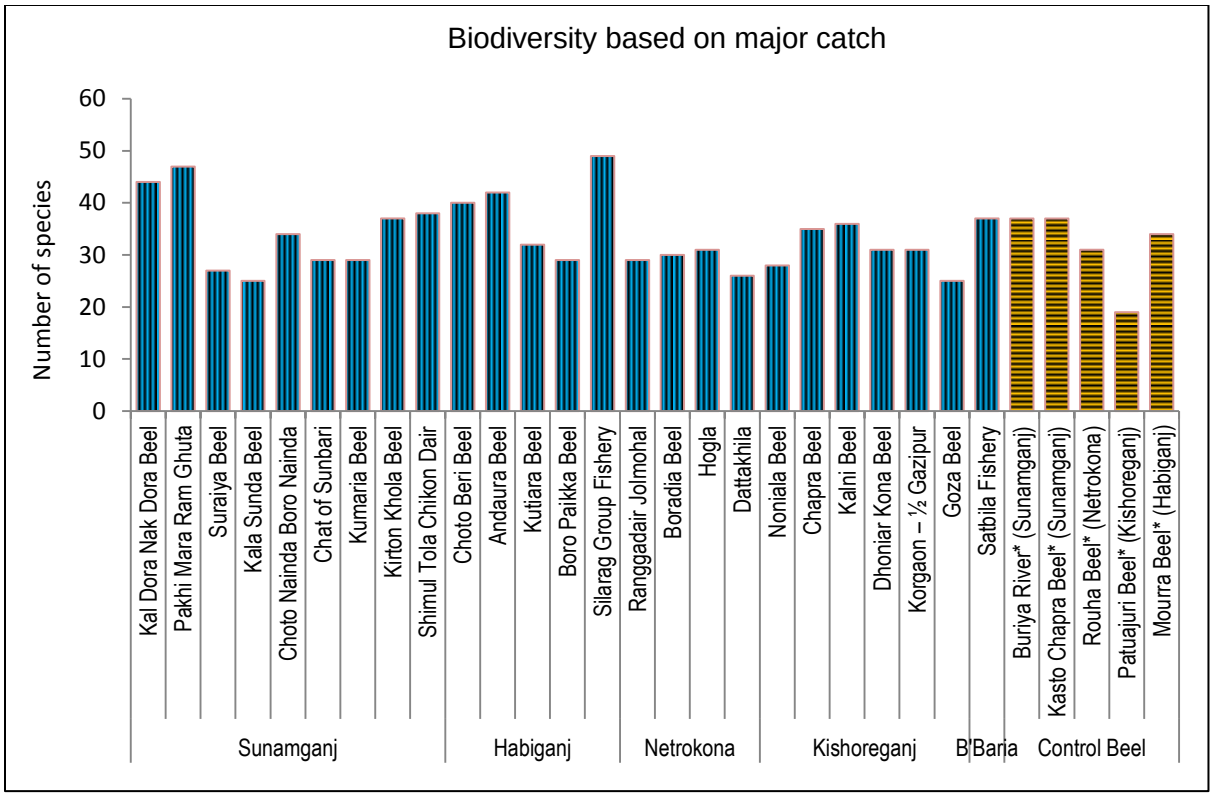

Figure 14. Biodiversity based on major catch in all monitoring sites in 2017.

In contrast, a total of 37, 37, 31, 19 and 34 species were found at five control sites in Sunamganj, Netrokona, Kishoreganj and Habiganj respectively in 2016-17.

4.3. Biodiversity at Waterbody Level

Present study revealed that from open catch data, 16% waterbodies had 10 to 30 fish species, 68% waterbodies had 31 to 50 fish species and 16% waterbodies had 51 to 80 fish species in 2017 as base line year respetively. Table 10 presents the status of species range against number of waterbodies for both open and organized catch during study periods, 2016-17.

Table 10: Number of waterbodies (WB) according to fish species number (range) found both from open catch and major fishing

No of beels Organized fishing	No of beels Open catch	Species number consisting in WB
10	4	10 to 30
15	17	31 to 50
0	4	51 to 80

4.4. Biodiversity (Shannon-Weiner Index (H'))

In biodiversity measured using Shannon-Weiner Index (H') through time (2017) as base line year shows that Pakhi Mara Ram Ghuta Jolokorpunjo in Sunamganj site had the highest biodiversity followed by Choto Beri Beel, Silarag Group Fishery in Habiganj site. Table 11 presents the value of Index in 2017 as base line year.

Table 11: Shannon Index (H') computed based on species data of Open catch.

District	Upazila	Name of Water body	Shannon Index (H')
Sunamganj	South Sunamganj	Kal Dora Nak Dora Beel	3.270
		Pakhi Mara Ram Ghuta Jolkorpunjo	3.524
		Suraiya Beel	2.691
	Chatak	Kala Sunda Beel	2.764
	Derai	Choto Nainda Boro Nainda	3.321
	Dharmapasha	Chat of Sunbari	2.021
		Kumaria Beel	2.630
		Kirton Khola Beel	3.001
		Shimul Tola Chikon Dair Beel	2.809
Habiganj	Baniachang	Choto Beri Beel	3.466
		Andaura Beel	3.008
		Kutiara Beel, Udgar Khal O Kutiarar Khal	2.925
	Bahubal	Boro Paikka Beel	2.097
	Azmiriganj	Silarag Group Fishery	3.389
Netrokona	Barhatta	Ranggadair Jolmohal	2.440
	Atpara	Boradia Beel	2.346
	Purbadhola	Hogla	2.825
	Mohonganj	Dattakhila	2.832
Kishoreganj	Itna	Noniala Beel	2.142
		Chapra Beel	3.013
		Kalni Beel	3.198
		Dhoniar Kona Beel	2.756
	Austogram	Korgaon – ½ Gazipur	2.425
	Bajitpur	Goza Beel	2.929
Brahmanbaria	Bancharampur	Satbila Fishery	2.775

4.5. Biodiversity Linked to National Red Lists - Threatened Fishes of Bangladesh.

4.5.1. Status on Critically Endangered, Endangered & Vulnerable Species (IUCN status-2015)

According to IUCN current assessment [IUCN status at Red List of Bangladesh (Volume 5: Freshwater Fishes) 2015], a total of 253 fish species were assessed, of which, 64 species have been found as Threatened, which is 25.3% of the total species assessed. Threatened fishes comprise nine species as Critically Endangered (CR), 30 species Endangered (EN) and 25 species as Vulnerable (VU). According to the Red List report 2015 the habitat preference of the threatened freshwater fishes of Bangladesh is reverine 52%, floodplain 22%, estuarine 9% and hillstream 17%.

Status of Critically Endangered (CR) Species

According to IUCN status 2015, in the 25 sampling waterbodies in HFMLIP sites, a total of five CR species (Baghair: *Bagarius bagarius,* Khorka: *Schistura corica,* Mahashol: *Tor tor,* Nandina: *Labeo nandina* and Pabda: *Ompok pabo*) of fish were recorded during the study period 2017. Three CR species were found in Sunamganj site, four CR species were found in Habiganj, one CR species were found in Netrokona and Kishoreganj respectively. No CR were found in Brahmanbaria site, Distribution of these five CR species in HFMLIP sites during the study period 2017 is given in table 12.

Table 12: Waterbody wise Critically Endangered (CR) fish species identified

Project sites	Note: 'y' indicates presence in waterbody					
	Local name of fish =>	Khorka	Nandina	Mohashol	Pabda	Baghair
District	Scientific name =>> Water body v	*Schistura corica*	*Labeo nandina*	*Tor tor*	*Ompok pabo*	*Bagarius bagarius*
Sunamganj	Chat of Sunbari				y	
	Kal Dora Nak Dora Beel					y
	Pakhimara Ram Ghuta Jolokorpunjo				y	y
	Kumaria Beel				y	
	Choto Nainda Boro Nainda			y	y	
Netrokona	Ranggadair Jolmohal				y	
	Hogla				y	
Kishoreganj	Noniala Beel				y	

Project sites	Note: 'y' indicates presence in waterbody					
	Local name of fish =>	Khorka	Nandina	Mohashol	Pabda	Baghair
District	Scientific name =>> Water body v	*Schistura corica*	*Labeo nandina*	*Tor tor*	*Ompok pabo*	*Bagarius bagarius*
	Chapra Beel				y	
	Kalni Beel				y	
	Goza Beel				y	
Habiganj	Choto Beri Beel		y	y	y	
	Andaura Beel	y			y	
	Kutiara Beel, Udgar Khal O Kutiarar Khal				y	
	Silarag Group Fishery				y	
	Total water body count	1	1	2	14	2
Control sites						
Sunamganj	Buriya River				y	
	Kasto Chapra Beel				y	
Netrokona	Rouha Beel				y	
Kishoreganj	Patuajuri Beel				y	
Habiganj	Mourra Beel				y	
	Total water body count				5	

Status of Endangered (EN) Species

According to IUCN status-2015, 12 Endangered (EN) species were recorded during the study period 2017 (*Botia dario, Botia dayi, Crossocheilus latius, Oreichthys cosuatis, Chitala chitala, Channa marulius, Rita rita, Clupisoma garua, Ompak bimaculatus, Ompok pabda, Pangasius pangasius and Mastacembelus armatus*). Among 12 EN species, *Mastacembelus armatus* were found in 20 waterbodies and *Pangasius pangasius* were found at one waterbodies. Nine EN species were found in Sunamganj site, five EN species were found in Netrokona, six EN species were found in Kishoreganj, two were found in Brahmanbaria and Ten EN species were found in Habiganj. Distribution of these 12 EN species in HFMLIP sites during the study period 2016 is given in Table 13.

Table 13: Distribution of Endangered (EN) species found at monitored sites during study periods (IUCN status-2015).

Project sites	Note: 'Y' indicates presence in waterbody												
	Local name of fish ==========>	Bou, Rani	Rani. Betangi	Tatkini	Kosua punti	Chitol	Gazar	Rita	Ghaura	Kani pabda	Madhu pabda	Pungus	Boro Baim
District	Scientific name => Water body v	*Botia dario*	*Botia dayi*	*Crossochelius latius*	*Oreichthys cosuatis*	*Chitala chitala*	*Channa marulius*	*Rita rita*	*Clupisoma garua*	*Ompok bimaculatus*	*Ompok pabda*	*Pangasius pangasius*	*Mastacembelus armatus*
Sunamganj	Chat of Sunbari												Y
	Kal Dora Nak Dora Beel		Y					Y	Y				Y
	Pakhimara Ram Ghuta Jolokorpunjo		Y				Y			Y			
	Kumaria Beel				Y								Y
	Shimul Tola Chikon Dair				Y								Y
	Kirton Khola	Y			Y								Y
	Suraiya Beel						Y				Y		Y
	Kala-sunda Beel		Y				Y						
	Choto Nainda Boro Nainda		Y				Y						Y
Netrokona	Ranggadair Jolmohal								Y				Y
	Baradia Beel	Y											Y
	Hogla												Y
	Dattakhila					Y	Y						Y
Kishoreganj	Noniala Beel												Y
	Chapra Beel							Y					Y
	Kalni Beel								Y				Y
	Dhoniar Kona Beel						Y						Y
	Korgaon -1/2 Gazipur												Y
	Goza Beel				Y				Y				
B' baria	Satbila Fishery			Y									Y
Habiganj	Choto Beri Beel			Y			Y						
	Andaura Beel		Y				Y						Y
	Kutiara Beel, Udgar Khal O Kutiarar Khal						Y			Y			Y
	Boro Paikka Beel												Y
	Silarag Group Fishery		Y			Y		Y	Y		Y	Y	
	Total water body count	2	6	2	4	2	9	3	5	2	2	1	20

Control sites											
District	Scientific name =>> Water body v	*Botia dario*	*Botia dayi*	*Oreichthys cosuatis*	*Channa marulius*	*Rita rita*	Chaca chaca	*Clupisoma garua*	*Ompok bimaculatus*	*Ompok pabda*	*Mastacembelus armatus*
Sunamganj	Buriya River		Y			Y		Y			Y
	Kasto Chapra Beel	Y			Y				Y		Y
Netrokona	Rouha Beel		Y	Y			Y				
Kishoreganj	Patuajuri Beel										Y
Habiganj	Mourra Beel		Y							Y	
	Total water body count	1	3	1	1	1	1	1	1	1	3

Chapter 5: Fish Sale Prices

5.1. Sale Prices Based on Major Catch

Major catch data of 2016-17 observed that Kalni beel in Itna upazila was found to have the highest per kilogram value of harvested fish (Tk. 260 per kg), whilst Shimul Tola Chikon Dair beel at Dharmapasha in Sunamganj had the lowest per kilogram value (Tk. 131 per kg). The average value from all sampled waterbodies from 5 monitoring districts was Tk. 166 per kg of fish.

In Sunamganj site, in the base line year (2016-17), it was observed that Kirton Khola beel in Dharmapasha upazila was found to have the highest per kilogram value of harvested fish (Tk. 204 per kg); whilst Shimul Tola Chikon Dair beel at Dharmapasha had the lowest per kilogram value (Tk. 131 per kg). The average value from all sampled waterbodies from Sunamganj site was found Tk. 164 per kg of fish.

In Netrokona site, in the base year (2016-17), it was observed that Rangadair Jolmohal in Barhatta upazila was found to have the highest per kilogram value of harvested fish (Tk. 190 per kg); whilst Hogla beel in Purbadhola upazila had the lowest per kilogram value (Tk. 166 per kg),

the average value from all sampled waterbodies from this district was found Tk. 179 per kg of fish.

In Kishoreganj, from organized fishing data of 2016-17, it was observed that Kalni beel in Itna upazila was found to have the highest per kilogram value of harvested fish (Tk.260 per kg); whilst Chapra beel in Itna upazila had the lowest per kilogram value (Tk. 146 per kg). The average value from all sampled waterbodies from this district was found Tk. 219 per kg.

In Brahmanbaria, from organized fishing data of 2016-17, it was observed that Satbila Group Fishery in Bancharampur was found to have the per kilogram fish Tk. 171.

In Habiganj site, from organized fishing data of 2016-17 showed that Tk. 160 was found to have the highest per kilogram value of harvested fish from four beels (Andaura Beel, Kutiara Beel Udgar Khal, Boro Paikka Beel and Silarag Group Fishery) of Baniachong, Baniachong, Bahubal and Azmiriganj upazila respectively; whilst Choto Beri Beel in Baniachang upazila had the lowest per kilogram value (Tk. 150 per kg), the average value from all sampled waterbodies from this district was found Tk. 159 per kilogram of fish.

On the other hand, in the control beels, from organized fishing data of 2016-17, it was observed that Buriya River and Kasto Chapra Beel in Sunamganj district was found to have the highest and lowest per kilogram value of harvested fish Tk. 254 and Tk 142 respectively. The average value from all sampled waterbodies (project) from all monitoring districts was Tk. 166 per kg of fish.

Total sale depends on activities like marketing linkage, size of species, grading, sorting and distance from markets etc. Survey data shows that average value (Tk. 166 per kg) in 2016-17, and by combining catches from project monitored sites (25 project waterbodies) production over 95 tons was worth Tk 15.75 million in 2016-17. Table 14 & 15 present the production with sale value status from project and control sites in 2016-17.

Table 14: Total production (Kg) and sale value (Tk) during 2016-17 at all sampled waterbodies

District	Upazila	Name of Waterbody	Quantity Sale (Kg)	Total Value (Taka)	Sale (Tk/Kg)
Sunamganj	South Sunamganj	Kal Dora Nak Dora Beel	7,048	1,091,960	155
		Pakhi Mara Ram Ghuta Jolokorpunjo	4,687	750,000	160
		Suraiya Beel	847	134,950	159
	Chatak	Kala-sunda Beel	300	47,688	159
	Derai	Choto Nainda Boro Nainda	7,465	1,296,701	174
	Dharmapasha	Chat of Sunbari	299	58,739	196
		Kumaria Beel	473	88,063	186
		Kirton Khola Beel	295	60,194	204
		Shimul Tola Chikon Dair Beel	470	61,708	131
Habiganj	Baniachang	Choto Beri Beel	1,077	161,520	150
		Andaura Beel	3,719	595,000	160
		Kutiara Beel, Udgar Khal O Kutiarar Khal	938	150,093	160
	Bahubal	Boro Paikka Beel	282	45,013	160
	Azmiriganj	Silarag Group Fishery	11,494	1,837,355	160
Netrokona	Barhatta	Ranggadair Jolmohal	427	81,220	190
	Atpara	Boradia Beel	366	65,601	179
	Purbadhola	Hogla	587	97,364	166
	Mohonganj	Dattakhila	326	60,444	186
Kishoreganj	Itna	Noniala Beel	623	140,786	226
		Chapra Beel	499	72,989	146
		Kalni Beel	311	80,716	260
		Dhoniar Kona Beel	278	68,080	245
	Austogram	Korgaon – ½ Gazipur	632	147,393	233
	Bajitpur	Goza Beel	246	58,051	236
Brahmanbaria	Bancharampur	Satbila Fishery	1,117	190,745	171

Table 15: Total production (Kg) and sale value (Tk) during 2016-17 at control waterbodies

District/Upazila	Name of Waterbody	Quantity Sale (Kg)	Total Value (Taka)	Sale (Tk/Kg)
Sunamganj	Buriya River	272	69,200	254
	Kasto Chapra Beel	3,403	483,823	142
Netrokona	Rouha Beel	800	143,834	180
Kishoreganj	Patuajuri Beel	203	33,983	167
Habiganj	Mourra Beel	1,784	300,000	168

5.2. Nutrition Fact of Some Common Small Fish found in Catch

In Bangladesh, undernutrition continues to be a serious public-health problem. Undernutrition encompasses protein-energy malnutrition and deficiency of micronutrients, including essential vitamins and minerals. Rates of malnutrition in Bangladesh are among the highest in the world. More than 54% of preschool-age children, equivalent to more than 9.5 million children, are stunted, 56% are underweight and more than 17% are wasted. The prevalence of underweight 64.0% in Sylhet. Despite the high levels, rates of stunting have declined steadily over the past 10 years (FAO, 2010). Specific nutrients considered are iron, zinc, calcium, iodine, vitamin A and vitamin B12, which are of known public health concern in Bangladesh (Craviari et al., 2008; Fischer et al., 1999; ICDDRB et al., 2013). Fish plays an important role in fighting malnutrition. Fish is not only a source of proteins and healthy fats, but also a unique source of essential nutrients, including long-chain omega-3 fatty acids, iodine, vitamin D, and calcium. The multiple benefits of fatty fish high in omega-3s and small fish eaten whole containing nutrients in the skin and bones clearly irreplaceable nutritional value. In table 16 nutrient composition, minerals and vitamins of some fishes in top 20 catch furnished below that contributing to reducing malnutrition in the project area.

Table 16: Nutrition composition of some fishes in top 20 catch

Nutrient content per 100 g raw edible parts

Fish	Energy	Protein	Fat	Moisture	Ash	Iron	Zinc	Calcium	Iodine	Selenium	Phosphorus	Magnesium	Sodium	Potassium	Manganese	Sulphur	Copper
Local name	kJ	g	g	g	g	mg	mg	mg	´g	´g	mg	mg	mg	mg	mg	mg	mg
Baim	381	17.9	1.7	78.6	1.0	1.9	1.1	449	13	12	–	35	47	322	–	–	–
Bele	292	16.6	0.4	80.3	3.1	2.3	2.1	790	25	31	520	38	56	210	2.3	200	0.03
Chanda	400	15.5	3.8	76.2	4.7	2.1	2.6	1153	24	22	–	45	61	206	–	–	–
Guchi	394	17.9	2.6	77.7	2.2	2.7	1.3	491	19	45	–	34	52	294	–	–	–
Jat Punti	541	15.7	7.2	73.2	3.5	2.2	2.9	1042	20	9.5	–	39	53	203	–	–	–
Koi	737	15.5	12.8	70.5	1.0	0.87	0.6	85	nd	19	160	21	31	260	0.052	190	0.052
Meni	338	16.7	1.7	78.5	3.6	0.84	1.6	1300	13	29	810	44	68	250	1.4	210	0.029
Taki	306	18.3	0.6	80.7	2.1	1.8	1.5	766	18	15	–	35	47	260	–	–	–
Tara Baim	387	17.2	2.6	79.4	2.3	2.5	1.2	457	13	15	–	34	46	290	–	–	–
Tengra	428	15.1	4.6	76.6	3.7	4.0	3.1	1093	28	24	–	36	57	203	–	–	–
Tit Punti	385	15.4	3.4	77.5	3.8	3.4	3.8	1480	19	10	–	47	61	187	–	–	–
Rui	422	18.2	3.0	77.7	1.0	0.98	1	51	20	29	210	28	61	330	0.051	200	0.038

	Vitamin					Vitamin A					
	B12	D3	D2	E (α-tocopherol)	Folate	β-carotene	13-cisretinol	13-cisdehydroretinol	All-transretinol	All-transdehydroretinol	RAE Total Vitamin A
	´g	´g	´g	mg	´g	´g	´g	´g	´g	´g	´g
Baim	1.72	1.3	0.76	nd	nd	5	1	5	1	51	27
Bele, Bailla	2.1	1.6	–	0.17	6.7	–	nd	nd	18	nd	18
Chanda	6.42	11.9	nd	0.18	nd	43	14	51	128	433	336
Guchi	2.47	2.29	nd	0.11	nd	110	1	14	9	133	78
Jat Punti	4.01	1.29	nd	0.15	nd	13	4	9	27	49	54
Koi	2.38	1.19	nd	nd	11.4	74	61	30	163	171	295
Meni, Bheda	0.9	0.78	–	0.36	3.5	–	nd	nd	36	61	60
Taki	1.6	nd	nd	0.14	nd	22	9	13	84	104	139
Tara Baim	5.2	nd	nd	0.17	nd	135	2	15	16	120	83
Tengra	3.5	0.19	–	0.23	10	–	nd	nd	nd	29	12
Tit Punti	6.74	0.995	nd	0.16	nd	25	4	5	11	8	21
Rui	5.05	1.17	nd	0.12	nd	6	2	1	9	4	13

Note: nd = not detected, - No data available, ´g RAE = retinol activity equivalent
Adapted from (Jessica R. Bogard et al, 2015)

Chapter 6: Environmental Parameters

6.1. Water Quality Parameters – Surface Water Temperature, Water depth,

Water quality parameters-surface water temperature, water depth and transparency (water clarity) record has been continuing in 25 project & 5 control waterbodies. These informations are very important for further improvement of aquatic resource. Water level and water transparency fluctuated over the period due to heavy rainfall and flash flood in 2017. Data of these parameters were collected fortnightly in each monitoring waterbodies.

Temperature is defined as the degree of hotness or coldness in the body of a living organism either in water or on land (Lucinda and Martin, 1999). As fish is a cold blooded animal, its body temperature changes according to that of environment affecting its metabolism and physiology, which ultimately affecting the overall production. Higher temperature increases the rate of bio-chemical activity of the micro biota, plant respiratory rate, and so increase in oxygen demand. Temperature influences several other parameters and can alter the physical and chemical properties of water. It further cause decreased solubility of oxygen and also increased level of ammonia in water.

Water temperature, may not be as important in pure water because of the wide range of temperature tolerance in aquatic life, but in polluted water, temperature can have profound effects on dissolved oxygen (DO) and biological oxygen demand (BOD). The fluctuation in river water temperature usually depends on the season, geographic location, sampling time and temperature of effluents entering the stream (Ahipathy, 1995).

According to Delince (1992) 30-35^{0}C is tolerable to fish, Bhatnagar et al. (2004) suggested the levels of temperature as 28-32^{0}C good for tropical major carps; <12^{0}C – lethal but good for cold water species; 25-30^{0}C – ideal for *Penaeous monodon* culture; < 20^{0}C – sub lethal for growth and survival for fishes and > 35^{0}C – lethal to maximum number of fish species and according to Santhosh and Singh (2007) suitable water temperature for carp culture is between 24 and 30^{0}C. Anita Bhatnagar, Pooja Devi (2013) suggested acceptable range 15- 35^{0}C, desirable range 20-30^{0}C and stress <12, >35^{0}C. Temperatures above 35°C can begin to denature, or breakdown, enzymes, reducing metabolic function.

Fluctuation of water temperature was recorded to investigate the status of the water quality in the HFMLIP waterbodies through the year round. The highest value of water temperature of project waterbdies varied from 22-34^{0}C which was acceptable range for fisheries management. Highest temperature was recorded at Choto Nainda Boro Nainda beel at Derai Upazila in Sunamganj and lowest temperature was recorded at Ranggadair Jolmohal at Barhatta in Netrokona, Kasto Chapra Beel, Chat of Sunbari, Kal Dora Nak Dora Beel in Sunamganj.

Water clarity, a direct measure of visible distance through water is another important measure related to the presence of sediment in the water column. Visual water clarity describes the distance that an organism can see underwater. Water clarity is affected by suspended and dissolved materials (Davies-Colley and Smith 2000).

Changes in water clarity alter the balance between predators and prey and may have a strong effect on individual behaviours (A. Steel, pers. commun.). Historically, water clarity has been measured with a Secchi disk, a black and white disk submerged vertically into the water until it can no longer be seen (Davies-Colley and Smith 2000).

Fluctuation of water clarity was recorded to investigate the status of the water quality. The water clarity of project waterbodies varied from 150 cm to 28 cm. Highest and lowest water transparencies were recorded at Ranggadair Jolmohal in Netrokona and at Dhoniar Kona Beel & Goza Beel in Kishoreganj in 2017.

Water depth, fluctuation of water level was also recorded to investigate the status of the water depth. In the report water depth was analyzed for a period of one year from January-December 2017. The maximum value of water depth of project WB was 6.8 meter at Pakhi Mara Ram Ghuta Jolkorpunjo in Sunamganj and minimum was 0.9 meter at Choto Beri Beel in Habiganj.

Table 17 shows the changes of water quality

Figure 15.Testing water quality by Community Enumerator

and temperature information fluctuations (maximum & minimum) of 25 project and 5 control waterbodies (January-December 2017).

Table 17: Detail information of Water temperature, transparency and level of Sample waterbodies

District/Upazila	Name of Waterbody	Water temperature (°C)		Water transparency (cm)		Water level (m)	
		Max	Min	Max	Min	Max	Min
District: Sunamganj							
South Sunamganj	Kal Dora Nak Dora Beel	30	22	90	60	6.0	2.0
	Pakhi Mara Ram Ghuta Jolokorpunjo	33	23	77	42	6.8	2.1
	Suraiya Beel	30	23	130	127	3.3	1.7
Chatak	Kala-sunda Beel	30	27	105	57	5.8	2.4
Derai	Choto Nainda Boro Nainda	34	28	125	82	4.0	2.2
	Kasto Chapra Beel*	28	22	150	90	6.0	2.2
Dharmapasha	Chat of Sunbari	30	22	90	60	6.0	2.0
	Kumaria Beel	32	28	65	40	6.2	2.0
	Kirton Khola Beel	31	24	67	51	5.5	1.9
	Shimul Tola Chikon Dair Beel	32	28	64	50	6.0	2.0
	Buriya River*	30	23	125	70	6.0	2.1
District: Habiganj							
Baniachang	Choto Beri Beel	33	29	80	35	2.3	0.9
	Andaura Beel	32	28	107	75	6.5	2.0
	Kutiara Beel, Udgar Khal O Kutiarar Khal	30	27	101	60	3.9	1.2
	Mourra Beel*	32	25	100	53	3.1	1.0
Bahubal	Boro Paikka Beel	31	24	80	50	3.5	1.2
Azmiriganj	Silarag Group Fishery	31	25	84	52	2.8	1.3
District: Netrokona							
Barhatta	Ranggadair Jolmohal	28	22	150	90	6.8	2.2
	Rouha Beel*	31	26	102	35	6.1	2.6
Atpara	Boradia Beel	31	23	100	60	6.2	2.0
Purbadhola	Hogla	30	24	95	45	6.3	2.1
Mohonganj	Dattakhila	30	25	96	30	6.4	2.5
District: Kishoreganj							
Itna	Noniala Beel	31	26	99	31	5.9	2.0
	Chapra Beel	32	27	98	30	5.7	2.0
	Kalni Beel	32	26	97	32	5.8	1.5
	Dhoniar Kona Beel	32	27	100	28	6.0	1.6
	Patuajuri Beel*	31	37	97	36	6.2	1.0
Austogram	Korgaon – ½ Gazipur	31	26	101	29	6.1	1.3
Bajitpur	Goza Beel	31	27	99	28	6.0	1.2
District: Brahmanbaria							
Bancharampur	Satbila Fishery	32	26	98	35	5.9	1.1

Water Temperature (°C): Max-34, Min-22 *Water Transparency (cm): Max-150, Min- 28 *Water Level (m): Max-6.8, Min-0.9

* Control Waterbody, Max- Maximum, Min- Minimum

Chapter 7: Recommendations

The following recommendations are made based on the analysis of monitoring data:

- The study clearly shows Kal Dora Nak Dora beel, Pakhimara Ram Ghuta, Andhaura bell, Choto Nainda Boro Nainda and Choto Beri beel are suitable habitat for Critically Endangered (CR) species so special attention need to be taken for conserving endanger species.

- Overall fish production baseline report is 218 kg/ha which is far below than the national average (424kg/ha) production of the haor region. Project need to support BUG to take management measures to enhance productivity and bio-diversity.

- More awareness program should undertake in order to restrict harmful fishing practice with identifying harmful fishing gears by BUG members.

- Construction and management of sanctuary is essential for enhance open water fisheries resources, reintroduction of some valuable species by BUG can enhance bio-diversity with income of the participants.

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Appendix-1: District wise top 20 fish species contribution from open catch

Main species caught by all types of gear from Kishoreganj in 2017

Sl	Species	Percentage composition
1	Jatputi *(Puntius sophore)*	13.36 %
2	Guchi Baim *(Mastacembelus pancalus)*	10.98 %
3	Boal *(Wallago attu)*	8.30 %
4	Kalibaus *(Labeo calbasu)*	5.89 %
5	Bojuri Tengra *(Mystus tengara)*	5.84 %
6	Golsha Tengra *(Mystus seenghala)*	5.67 %
7	Baila *(Glossogobius giuris)*	4.06 %
8	Gura Icha/Jal Mach *(Nematopalaemon tenuipes)*	3.87 %
9	Goinna *(Labeo gonius)*	3.31 %
10	Sarputi *(Puntius sarana)*	3.04 %
11	Dimua/Kathali Icha *(Macrobarchium villosimanus)*	2.86 %
12	Golda Icha Machrobrachium rosenbergii	2.58 %
13	Chhatka Chingri *(Macrobrachium malcolmsonii)*	2.26 %
14	Bata *(Labeo bata)*	2.21 %
15	Tit punti *(Puntius ticto)*	2.17 %
16	Ghaura Clupisoma garua	2.08 %
17	Pabda *(Ompok pabo)*	1.87 %
18	Tengra/Guinga *(Mystus vittatus)*	1.78 %
19	Tara Baim *(Macrognathus aculeatus)*	1.74 %
20	Mrigal *(Cirrhinus mrigala)*	1.64 %

Main species caught by all types of gear from Netrokona in 2017

Sl	Species	Percentage composition
1	Jatputi (*Puntius sophore*)	17.40 %
2	Boal *(Wallago attu)*	8.32 %
3	Rui *(Labeo rohita)*	7.86 %
4	Mola *(Amblypharyngodon mola)*	4.36 %
5	Guchi Baim *(Mastacembelus pancalus)*	4.23 %
6	Koi *(Anabas testudineous)*	4.06 %
7	Pata Kholisha *(Colisa fasciatus*)	3.76 %
8	Goinna *(Labeo gonius)*	3.54 %
9	Meni *(Nandus nandus)*	3.26 %
10	Bojuri Tengra *(Mystus tengara)*	2.86 %
11	Lomba Chanda *(Chanda nama)*	2.84 %
12	Silver Carp *(Hypophthalmichthys molitrix)*	2.82 %
13	Gura Icha/Jal Mach *(Nematopalaemon tenuipes)*	2.72 %
14	Carfu *(Cyprinus carpio)*	2.48 %
15	Boro Baim *(Mastacembelus armatus)*	2.43 %
16	Baila *(Glossogobius giuris)*	2.38 %
17	Sarputi *(Puntius sarana)*	2.19 %
18	Tengra/Guinga *(Mystus vittatus)*	1.90 %
19	Kalibaus *(Labeo calbasu)*	1.80 %
20	Grass Carp *(Ctenopharyngodon idellus)*	1.72 %

Main species caught by all types of gear from Habiganj in 2017

Sl	Species	Percentage composition
1	Boal *(Wallago attu)*	11.32 %
2	Jatputi *(Puntius sophore)*	8.27 %
3	Bojuri Tengra *(Mystus tengara)*	5.06 %
4	Tengra/Guinga *(Mystus vittatus)*	4.51 %
5	Baila *(Glossogobius giuris)*	3.52 %
6	Tara Baim *(Macrognathus aculeatus)*	3.43 %
7	Taki *(Channa punctatus)*	3.27 %
8	Batashi/Aluni *(Pseudeutropius atherinoides)*	3.25 %
9	Gutum/Pia *(Lepidocephalus guntea)*	3.11 %
10	Gol Chanda *(Chanda lala)*	2.87 %
11	Goinna *(Labeo gonius)*	2.82 %
12	Tit punti *(Puntius ticto)*	2.56 %
13	Kalibaus *(Labeo calbasu)*	2.50 %
14	Golsha/Golsha Tengra *(Mystus seenghala)*	2.37 %
15	Lomba Chanda *(Chanda nama)*	2.33 %
16	Guchi Baim *(Mastacembelus pancalus)*	2.29 %
17	Kuichcha *(Monopterus cuchia)*	2.06 %
18	Koi *(Anabas testudineus)*	2.03 %
19	Shing *(Heteropneustes fossilis*)	1.96 %
20	Grass Carp *(Ctenopharyngodon idellus)*	1.62 %

Main species caught by all types of gear from B'baria in 2017

Sl	Species	Percentage composition
1	Jatputi *(Puntius sophore)*	12.43 %
2	Baila *(Glossogobius giuris)*	10.36 %
3	Meni *(Nandus nandus)*	9.46 %
4	Mrigal *(Cirrhinus cirrhosus)*	8.74 %
5	Sarputi *(Puntius sarana)*	7.44 %
6	Goinna *(Labeo gonius)*	7.44 %
7	Bojuri Tengra *(Mystus tengara)*	6.90 %
8	Boal*(Wallago attu)*	6.22 %
9	Kalibaus*(Labeo calbasu)*	4.98 %
10	Pata Kholisha *(Colisa fasciatus)*	4.76 %
11	Guchi Baim *(Mastacembelus pancalus)*	4.43 %
12	Shing *(Heteropneustes fossilis)*	4.16 %
13	Tara Baim *(Macrognathus aculeatus)*	2.85 %
14	Telapia/Telapata *(Oreochromis mossambica)*	2.80 %
15	Lal Kholisha *(Colisa lalius)*	2.75 %
16	Gura Icha/Jal Mach *(Nematopalaemon tenuipes)*	1.28 %
17	Futani Puti *(Puntius phutunio)*	0.66 %
18	Kakila *(Xenentodon cancila)*	0.43 %
19	Gutum/Pia (*Lepidocephalus guntea)*	0.33 %
20	Tatkini *(Crossochelius latius)*	0.24 %

Main species caught by all types of gear from Sunamganj in 2017

Sl	Species	Percentage composition
1	Jatputi *(Puntius sophore)*	10.04%
2	Dimua/Kathali Icha *(Macrobarchium villosimanus)*	6.57%
3	Meni *(Nandus nandus)*	5.55%
4	Boal *(Wallago attu)*	5.19%
5	Tengra/Guinga *(Mystus vittatus)*	4.23%
6	Goinna *(Labeo gonius)*	3.85%
7	Kalibaus *(Labeo calbasu)*	3.42%
8	Tit punti *(Puntius ticto)*	2.98 %
9	Taki/Ladi *(Channa punctatus)*	2.92 %
10	Koi *(Anabas testudineus)*	2.82 %
11	Gura Icha/Kuncho Icha *(Nematopalaemon tenuipes)*	2.75 %
12	Bojuri Tengra *(Mystus tengara)*	2.71 %
13	Lomba Chanda *(Chanda nama)*	2.54 %
14	Sarputi *(Puntius sarana)*	2.35 %
15	Ful Chela *(Salmostoma phulo)*	2.25 %
16	Thengua/Shul Icha *(Macrobrachium birmanicum)*	2.19 %
17	Narkeli Chela *(Salmostoma bacaila)*	1.96 %
18	Shol *(Channa striatus)*	1.90 %
19	Chapila *(Gudusias chapra)*	1.87 %
20	Kakila *(Xenentodon cancila)*	1.84 %

Appendix-2: District wise top 20 fish species contribution from major fishing

Main species caught by all types of gear in 2016-17 from all sites

Sl	Species	Percentage Composition
1	Jatputi *(Puntius sophore)*	18.42 %
2	Taki *(Channa punctatus)*	6.49 %
3	Gura Icha/Jal Mach *(Nematopalaemon tenuipes)*	6.47 %
4	Meni *(Nandus nandus)*	5.73 %
5	Tengra/Guinga *(Mystus vittatus)*	5.71 %
6	Shol/Shoil *(Channa striatus)*	5.38 %
7	Boal *(Wallago attu)*	4.21 %
8	Koi *(Anabas testudineus)*	4.08 %
9	Gazar *(Channa marulius)*	3.19 %
10	Tit Puti *(Puntius ticto)*	2.95 %
11	Golsha/Golsha Tengra *(Mystus seenghala)*	2.70 %
12	Tara Baim *(Macrognathus aculeatus)*	2.67 %
13	Carfu *(Cyprinus carpio)*	2.54 %
14	Shing *(Heteropneustes fossilis)*	2.38 %
15	Guchi Baim *(Mastacembelus pancalus)*	2.29 %
16	Baila/Bele *(Glossogobius giuris)*	2.10 %
17	Grass Carp *(Ctenopharyngodon idellus)*	1.95 %
18	Rui *(Labeo rohita)*	1.66 %
19	Foli *(Notopterus notopterus)*	1.46 %
20	Mola *(Amblypharyngodon mola)*	1.19 %

Main species caught by all types of gear from Kishoreganj in 2016-17

Sl	Species	Percentage composition
1	Guchi Baim *(Mastacembelus pancalus)*	13.54 %
2	Boal *(Wallago attu)*	10.82 %
3	Tara Baim *(Macrognathus aculeatus)*	7.37 %
4	Jatputi *(Puntius sophore)*	6.84 %
5	Baila *(Glossogobius giuris)*	6.21 %
6	Meni *(Nandus nandus)*	4.97 %
7	Taki *(Channa punctatus)*	4.04 %
8	Shol *(Channa striatus)*	3.21 %
9	Bojuri Tengra *(Mystus tengara)*	2.84 %
10	Tit Puti *(Puntius ticto)*	2.47 %
11	Gazar *(Channa marulius)*	2.47 %
12	Carfu *(Cyprinus carpio)*	2.38 %
13	Shing *(Heteropneustes fossilis)*	1.92 %
14	Foli *(Notopterus notopterus)*	1.92 %
15	Kholisha/Pata Kholisha *(Colisa fasciatus)*	1.82 %
16	Golsha/Golsha Tengra *(Mystus seenghala)*	1.80 %
17	Tengra/Guinga *(Mystus vittatus)*	1.63 %
18	Kalibaus *(Labeo calbasu)*	1.56 %
19	Gutum/Pia *(Lepidocephalus guntea)*	1.52 %
20	Gura Icha/Jal Mach *(Nematopalaemon tenuipes)*	1.46 %

Main species caught by all types of gear from Netrokona in 2016-17

Sl	Species	Percentage composition
1	Jatputi *(Puntius sophore)*	11.03 %
2	Tit puti *(Puntius ticti)*	9.03 %
3	Taki *(Channa punctatus)*	8.34 %,
4	Meni *(Nandus nandus)*	7.59 %
5	Guchi Baim *(Mastacembelus pancalus)*	5.98 %
6	Boal *(Wallago attu)*	5.04 %
7	Tara Baim *(Macrognathus aculeatus)*	4.85 %
8	Gura Icha/Jal Mach *(Nematopalaemon tenuipes)*	3.94 %
9	Shol *(Channa striatus)*	3.39 %
10	Baila *(Glossogobius giuris)*	3.13 %
11	Bojuri Tengra *(Mystus tengara)*	2.64 %
12	Golsha/Golsha Tengra *(Mystus seenghala)*	2.53 %
13	Kholisha/Pata Kholisha *(Colisa fasciatus)*	2.52 %
14	Teri Puti *(Puntius terio)*	2.52 %
15	Shing *(Heteropneustes fossilis)*	2.12 %
16	Rui *(Labeo rohita)*	2.08 %
17	Gutum/Pia *(Lepidocephalus guntea)*	1.66 %
18	Darkina *(Esomus danricus)*	1.36 %
19	Dimua/Kathali Icha *(Macrobarchium villosimanus)*	1.18 %
20	Foli *(Notopterus notopterus)*	1.10 %

Main species caught by all types of gear from Habiganj in 2016-17

Sl	Species	Percentage composition
1	Jatputi *(Puntius sophore)*	18.30 %
2	Gura Icha/Jal Mach *(Nematopalaemon tenuipes)*	15.99 %
3	Taki *(Channa punctatus)*	8.35 %
4	Meni *(Nandus nandus)*	7.27 %
5	Tengra/Guinga *(Mystus vittatus*)	7.20 %
6	Shol *(Channa striatus)*	6.68 %
7	Koi *(Anabas testudineus)*	5.01 %
8	Gazar *(Channa marulius)*	4.78 %
9	Golsha/Golsha Tengra *(Mystus seenghala)*	4.58 %
10	Shing *(Heteropneustes fossilis)*	3.38 %
11	Foli *(Notopterus notopterus)*	2.48 %
12	Magur/Mojgur *(Clarias batrachus)*	1.73 %
13	Tit Puti *(Puntius ticto)*	1.60 %
14	Boro Baim/Shal Baim *(Mastacembelus armatus)*	1.36 %
15	Rui *(Labeo rohita)*	1.28 %
16	Tara Baim *(Macrognathus aculeatus)*	1.03 %
17	Carfu *(Cyprinus carpio)*	0.93 %
18	Kalibaus *(Labeo calbasu)*	0.83 %
19	Boal *(Wallago attu)*	0.75 %
20	Silver Carp *(Hypophthalmichthys molitrix)*	0.69 %

Main species caught by all types of gear from B'baria in 2016-17

Sl	Species	Percentage composition
1	Meni *(Nandus nandus)*	11.22 %
2	Guchi Baim *(Mastacembelus pancalus)*	11.19 %
3	Jatputi *(Puntius sophore)*	8.39 %
4	Tara Baim *(Macrognathus aculeatus)*	7.61 %
5	Taki *(Channa punctatus)*	5.73 %
6	Boal *(Wallago attu)*	4.48 %
7	Baila *(Glossogobius giuris)*	4.03 %
8	Gutum/Pia *(Lepidocephalus guntea)*	3.49 %
9	Bamus *(Anguilla bengalensis)*	3.42 %
10	Bojuri Tengra *(Mystus tengara)*	3.40 %
11	Pangus *(Pangasius pangasius)*	3.40 %
12	Katla *(Catla catla)*	2.69 %
13	Shol *(Channa striatus)*	2.60 %
14	Foli *(Notopterus notopterus)*	2.51 %
15	Kani Pabda/Boali Pabda *(Ompak bimaculatus)*	2.44 %
16	Golsha/Golsha Tengra *(Mystus seenghala)*	2.42 %
17	Bighead Carp *(Aristichthys nobilis)*	1.97 %
18	Telapia/Telapata *(Oreochromis mossambica)*	1.81 %
19	Darkina *(Esomus danricus)*	1.79 %
20	Rui *(Labeo rohita)*	1.78 %

Main species caught by all types of gear from Sunamganj in 2016-17

Sl	Species	Percentage composition
1	Jatputi *(Puntius sophore)*	21.14 %
2	Boal *(Wallago attu)*	6.11 %
3	Tengra/Guinga *(Mystus vittatus)*	5.67 %
4	Taki *(Channa punctatus)*	5.19 %
5	Shol *(Channa striatus)*	4.90 %
6	Meni *(Nandus nandus)*	4.16 %
7	Koi *(Anabas testudineus)*	4.16 %
8	Carfu *(Cyprinus carpio)*	4.12 %
9	Grass Carp *(Ctenopharyngodon idellus)*	3.91 %
10	Tit Puti *(Puntius ticto)*	3.54 %
11	Tara Baim *(Macrognathus aculeatus)*	3.00 %
12	Baila *(Glossogobius giuris)*	2.90 %
13	Gazar *(Channa marulius)*	2.28 %
14	Rui *(Labeo rohita)*	2.04 %
15	Mola *(Amblypharyngodon mola)*	2.03 %
16	Guji Ayre *(Mystus bleekeri)*	1.99 %
17	Shing *(Heteropneustes fossilis)*	1.75 %
18	Guchi Baim *(Mastacembelus pancalus)*	1.75 %
19	Lomba Chanda *(Chanda nama)*	1.70 %
20	Gutum/Pia *(Lepidocephalus guntea)*	1.37 %

Appendix-3: Fish production by species from both organized catch (MH) and open catch (CM) in all monitored water bodies in 2016-17

Name of waterbody	Sl. No.	Name of species	Open catch wt. (kg)	Major harvest wt. (kg)
Chat of Sunbari	1	Ayre	15.00	-
	2	Baila/Bele	1.12	15.00
	3	Batashi/Aluni	0.37	-
	4	Boal	25.09	-
	5	Bojuri Tengra	20.77	15.00
	6	Boro Baim/Shal Baim	17.63	-
	7	Chaika/Choukka	3.10	-
	8	Chela/Narkeli Chela	83.56	-
	9	Darkina	-	6.60
	10	Dimua/Kathali Icha	770.38	-
	11	Gang Tengra/Gongra	1.94	-
	12	Gazar/Gazal	-	3.10
	13	Goinna	90.80	-
	14	Gol Chanda	0.50	10.40
	15	Golda Icha	6.89	-
	16	Golsha/Golsha Tengra	11.63	25.00
	17	Gon mach/Gang tengra	3.38	-
	18	Guchi Baim	-	20.20
	19	Gura Icha/Jal Mach	14.47	8.00
	20	Gutum/Butkuni/Pia	0.74	1.90
	21	Jatputi/Vadi Puti	58.92	18.00
	22	Kakila	11.63	4.30
	23	Kalibaus	96.79	6.00
	24	Kanchon Puti	5.43	-
	25	Kani Pabda/Boali Pabda	-	7.00
	26	Katla/Katol/Fega	-	8.70
	27	Kholisha/Pata Kholisha	-	21.00
	28	Kuichcha	-	2.20
	29	Lomba Chanda	0.66	-
	30	Magur/Mojgur	-	2.50
	31	Meni/Veda	39.06	11.96
	32	Modhu Pabda	-	10.00
	33	Mola	-	4.00
	34	Pabda	106.13	-
	35	Pangus	-	8.50
	36	Rui	7.75	10.84
	37	Sarputi	5.63	13.00
	38	Shing	-	8.20
	39	Shol/Shoil	-	9.90
	40	Taki/Ladi	99.41	13.00
	41	Tara Baim	24.16	7.20
	42	Tengra/Guinga	1.49	-
	43	Teri Puti	11.25	18.00
	44	Tit punti	0.78	9.50
	-	**Total (kg)**	**1536.41**	**299.00**
Kal Dora Nak Dora Beel	1	Ayre	1.16	10.00
	2	Bagha Ayre/Bagair	27.63	1.00
	3	Baila/Bele	70.91	315.10
	4	Batashi/Aluni	15.89	10.00
	5	Boal	181.88	400.00
	6	Bojuri Tengra	95.03	50.00
	7	Boro Baim/Shal Baim	50.18	5.00
	8	Chapila	19.09	200.00
	9	Chela/Narkeli Chela	61.21	160.00
	10	Chhatka Chingri	2.04	-
	11	Chuna Kholisha/Chata	1.81	-
	12	Darkina	0.78	1.00
	13	Ekthota/Subol	1.11	3.00
	14	Foli	14.60	80.00
	15	Ful Chela	0.93	5.00
	16	Futani Puti	12.47	5.00
	17	Gagor	1.05	-

Name of waterbody	Sl. No.	Name of species	Open catch wt. (kg)	Major harvest wt. (kg)
	18	Gang Magur	12.67	-
	19	Gazar/Gazal	-	160.00
	20	Goinna	66.49	0.50
	21	Gol Chanda	83.39	87.59
	22	Golda Icha	36.54	-
	23	Golsha/Golsha Tengra	65.90	1.00
	24	Goni Chapila/Bori	7.38	0.50
	25	Grass Carp	-	560.00
	26	Guchi Baim	53.10	-
	27	Guji Ayre	-	160.00
	28	Gura Icha/Kuncho Icha	-	183.80
	29	Gutum/Butkuni/Pia	12.52	157.50
	30	Jatputi/Vadi Puti	194.10	960.00
	31	Jhili Puti/Gini Puti	11.60	0.50
	32	Kabashi Tengra	2.70	-
	33	Kakila	22.90	112.00
	34	Kali Koi/Napit	9.72	0.20
	35	Kalibaus	28.40	0.50
	36	Katla/Katol/Fega	-	0.01
	37	Kholisha/Pata Kholisha	50.07	-
	38	Kholoi muchuri/Gutea	1.40	-
	39	Koi/Gachua Koi	42.33	80.00
	40	Kuichcha	243.43	
	41	Lal Kholisha/Boicha	26.44	1.00
	42	Lomba Chanda	134.10	175.00
	43	Magur/Mojgur	0.93	40.00
	44	Meni/Veda	173.55	208.00
	45	Mola Puti	15.00	-
	46	Mola	83.67	160.00
	47	Ranga Chanda/Lal Chanda	11.53	-
	48	Rani/Cheka/Bou	0.60	-
	49	Rita/Ritha	25.53	-
	50	Rui	-	120.00
	51	Sarputi	13.20	-
	52	Shing	63.87	40.00
	53	Shol/Shoil	17.07	500.00
	54	Taki/Ladi	165.94	358.90
	55	Tara Baim	33.09	490.10
	56	Tengra (Batashi)/Aluni	1.90	-
	57	Tengra/Guinga	291.67	600.00
	58	Tepa/Potka	21.28	3.80
	59	Teri Puti	7.48	2.00
	60	Thai Sarputi/Raj Puti	7.93	-
	61	Thengua/Shul Icha	408.29	-
	62	Tit punti	117.84	640.00
	-	**Total (kg)**	**3,123.31**	**7,048.00**
Pakhimara Ram Ghuta	1	Bagha Ayre/Bagair	1.55	-
	2	Baila/Bele	21.76	18.80
	3	Batashi/Aluni	3.90	0.90
	4	Boal	111.96	80.00
	5	Bojuri Tengra	55.53	10.50
	6	Boro Baim/Shal Baim	-	60.00
	7	Chapila	97.97	5.90
	8	Chela/Narkeli Chela	5.42	-
	9	Carfu	-	20.00
	10	Chhatka Chingri	12.28	-
	11	Darkina	6.10	-
	12	Darkina/Chukkuni	0.54	-
	13	Dimua/Kathali Icha	29.57	0.50
	14	Ekthota/Subol	8.07	2.00
	15	Foli	7.56	35.00
	16	Ful Chela	189.73	-
	17	Ful Dhela	-	50.00
	18	Futani Puti	155.76	20.00
	19	Gagor	44.20	-
	20	Gang Magur	67.77	-
	21	Gazar/Gazal	10.36	60.00
	22	Ghora Dhela	29.90	-
	23	Goinna	145.18	-
	24	Goinna	-	50.00
	25	Gol Chanda	10.02	5.30
	26	Golsha/Golsha Tengra	43.42	25.00
	27	Grass Carp	17.05	5.00
	28	Guchi Baim	25.46	13.50
	29	Guji Ayre	0.00	60.50
	30	Gura Icha/Jal Mach	31.12	-
	31	Gura Icha/Kuncho Icha	-	1.00
	32	Gutum/Butkuni/Pia	0.74	-
	33	Jatputi/Vadi Puti	301.34	2,300.70
	34	Jhili Puti/Gini Puti	1.69	5.00
	35	Kakila	25.60	2.90
	36	Kalibaus	116.23	25.00
	37	Kanchon Puti	80.62	-
	38	Kani Pabda/Boali Pabda	3.41	-
	39	Kash Khoira/Lobuka	24.44	0.10
	40	Katla/Katol/Fega	-	50.80
	41	Kholisha/Pata Kholisha	82.60	3.50
	42	Koi/Gachua Koi	111.87	300.50
	43	Lal Kholisha/Boicha	30.66	0.50
	44	Lomba Chanda	49.43	2.00
	45	Magur/Mojgur	10.42	40.00
	46	Meni/Veda	145.94	275.50
	47	Mola Puti	95.05	-
	48	Mola	180.32	20.00
	49	Pabda	55.66	37.00
	50	Puia/Goru Puia	0.37	-
	51	Raek/Lachchu	9.24	-
	52	Ranga Chanda/Lal Chanda	7.02	-
	53	Rani/Cheka/Bou	3.87	-
	54	Rui	-	46.00
	55	Sarputi	54.28	24.00
	56	Shing	62.24	90.00
	57	Shol/Shoil	22.45	170.00
	58	Taki/Ladi	69.83	310.00
	59	Tara Baim	80.91	14.10
	60	Tengra/Guinga	106.95	420.00
	61	Tepa/Potka	7.52	2.00
	62	Teri Puti	161.74	20.00
	63	Thai Sarputi/Raj Puti	66.97	-
	64	Thengua/Shul Icha	32.29	-
	65	Tit punti	171.95	3.50
	-	**Total (kg)**	**3306**	**4687**
Kumaria Beel	1	Batashi/Aluni	89.63	-
	2	Baus/Bamus/Bonehara	-	1.30
	3	Boal	1.55	35.00
	4	Bojuri Tengra	9.00	10.00
	5	Boro Baim/Shal Baim	41.14	13.00
	6	Chapila	131.14	8.90
	7	Chela/Narkeli Chela	72.01	-
	8	Chola Puti	77.80	-
	9	Chuna Kholisha/Chata	-	35.20
	10	Carfu	-	7.50
	11	Dimua/Kathali Icha	256.48	-
	12	Darkina	-	9.10
	13	Ful Chela	84.00	-
	14	Gazar/Gazal	-	10.00
	15	Gol Chanda	3.93	-
	16	Golsha/Golsha Tengra	0.66	8.00
	17	Guchi Baim	-	18.10
	18	Guji Ayre	-	6.60
	19	Gura Icha/Jal Mach	111.56	-
	20	Gura Icha/Kuncho Icha	420.06	-
	21	Gutum	7.75	-
	22	Jatputi/Vadi Puti	419.32	68.00
	23	Jhili Puti/Gini Puti	75.60	-
	24	Kakila	-	3.30
	25	Kalibaus	20.67	-
	26	Kosua punti/ Kosuati punti	157.21	-
	27	Kani Pabda/Boali Pabda	-	5.00
	28	Kholisha/Pata Kholisha	-	28.00
	29	Kholisha/Pata Kholisha	-	4.50
	30	Lomba Chanda	186.40	-
	31	Magur/Mojgur	5.54	-

Name of waterbody	Sl. No.	Name of species	Open catch wt. (kg)	Major harvest wt. (kg)
	32	Meni/Veda	-	21.90
	33	Pabda	3.88	
	34	Pangus	-	10.20
	35	Raek/Lachchu	43.20	-
	36	Rani/Cheka/Bou	-	0.80
	37	Rui	-	2.60
	38	Sarputi	-	23.00
	39	Shing	3.96	10.50
	40	Shol/Shoil	3.62	13.00
	41	Taki/Ladi	17.54	29.00
	42	Tara Baim	2.52	4.90
	43	Tengra (Batashi)/Aluni	156.66	-
	44	Tengra/Guinga	2.58	33.00
	45	Tepa/Potka	5.17	-
	46	Teri Puti	5.17	-
	47	Tinchokha/Kanpona	-	2.30
	48	Tit punti	5.14	50.00
	-	**Total (kg)**	**2420.87**	**472.70**
Shimul Tola Chikon Dair	1	Baila/Bele	7.13	8.80
	2	Bata	-	6.00
	3	Boal	21.00	16.00
	4	Bojuri Tengra	63.32	4.40
	5	Boro Baim/Shal Baim	90.00	-
	6	Chaika/Choukka	0.38	-
	7	Chela/Narkeli Chela	33.97	13.00
	8	Chuna Kholisha/Chata	-	8.00
	9	Carfu	-	13.70
	10	Dimua/Kathali Icha	167.91	-
	11	Ekthota/Subol	0.78	-
	12	Foli	-	3.40
	13	Gang Magur	2.71	0
	14	Gazar/Gazal		10.40
	15	Goinna	162.29	-
	16	Gol Chanda	48.00	5.10
	17	Golda Icha	12.06	-
	18	Golsha/Golsha Tengra	17.44	14.00
	19	Guchi Baim	-	90.00
	20	Guji Ayre	-	7.50
	21	Gura Icha/Jal Mach	15.83	4.50
	22	Gura Icha/Kuncho Icha	7.41	-
	23	Gutum/Butkuni/Pia	-	4.90
	24	Jatputi/Vadi Puti	222.04	30.00
	25	Jhili Puti/Gini Puti	1.94	27.00
	26	Kabashi Tengra	9.00	-
	27	Kajoli	1.94	2.60
	28	Kakila	3.88	2.10
	29	Kalibaus	169.58	5.00
	30	Kanchon Puti	48.00	-
	31	Kani Pabda/Boali Pabda		3.60
	32	Kholisha/Pata Kholisha	1.94	7.50
	33	Koi/Gachua Koi	1.94	13.00
	34	Kosua punti/ Kosuati punti	3.90	-
	35	Lal Kholisha/Boicha	0.78	6.70
	36	Meni/Veda	113.47	10.00
	37	Nilotica	-	3.50
	38	Pangus	-	9.50
	39	Rui	9.38	17.00
	40	Sarputi	180.00	5.50
	41	Shing	-	4.00
	42	Shol/Shoil	32.74	15.00
	43	Silver Carp	-	13.00
	44	Taki/Ladi	55.85	16.00
	45	Tara Baim	9.69	21.50
	46	Telapia/Telapata	-	15.00
	47	Tengra/Guinga	46.57	3.50
	48	Tepa/Potka	12.00	-
	49	Teri Puti	12.08	-
	50	Thai Sarputi/Raj Puti	5.81	-
	51	Tinchokha/Kanpona	-	1.30
	52	Tit Puti	-	28.00
	-	**Total (kg)**	**1593**	**470**
Kirton Khola	1	Bacha	-	4.50
	2	Baila/Bele	1.37	16.50
	3	Batashi/Aluni	2.44	1.00
	4	Boal	132.32	6.70
	5	Bojuri Tengra	31.75	7.40
	6	Boro Baim/Shal Baim	15.08	1.00
	7	Chapila	-	10.30
	8	Cheka/Bou	5.81	-
	9	Chela/Narkeli Chela	49.60	-
	10	Chhatka Chingri	31.63	-
	11	Chola Puti	7.00	-
	12	Darkina	-	4.10
	13	Dimua/Kathali Icha	94.63	11.50
	14	Foli	-	3.00
	15	Ful Chela	2.18	2.00
	16	Goinna	77.69	1.00
	17	Gol Chanda	33.40	-
	18	Golsha/Golsha Tengra	23.25	7.70
	19	Guchi Baim	6.00	8.00
	20	Gura Icha/Jal Mach	88.01	0.50
	21	Gura Icha/Kuncho Icha	125.37	1.00
	22	Gutum	1.24	-
	23	Gutum/Butkuni/Pia	1.37	3.40
	24	Jatputi/Vadi Puti	130.24	24.00
	25	Kabashi Tengra	2.33	-
	26	Kakila	-	5.20
	27	Kalibaus	94.67	0.20
	28	Katla/Katol/Fega	18.60	-
	29	Kholisha/Pata Kholisha	4.34	31.00
	30	Koi/Gachua Koi	38.13	10.60
	31	Kosua punti/ Kosuati punti	26.93	-
	32	Lal Kholisha/Boicha	7.75	2.10
	33	Lomba Chanda	11.24	1.00
	34	Meni/Veda	7.84	30.00
	35	Mola	2.15	1.60
	36	Rani/Cheka/Bou	-	0.50
	37	Rui	35.36	-
	38	Sarputi	70.74	5.60
	39	Shing	-	5.50
	40	Shol/Shoil	3.57	6.60
	41	Taki/Ladi	2.75	19.00
	42	Tara Baim	3.23	28.80
	43	Tengra/Guinga	32.37	0.20
	44	Tepa/Potka	2.95	3.00
	45	Teri Puti	1.55	30.00
	46	Tit punti	9.04	0.50
	-	**Total (kg)**	**1235.92**	**295.00**
Suraiya Beel	1	Baila/Bele	34.39	4.70
	2	Boal	65.68	-
	3	Bojuri Tengra	177.49	6.20
	4	Boro Baim/Shal Baim	31.14	12.50
	5	Chaika/Choukka	5.81	2.10
	6	Chuna Kholisha/Chata	5.43	-
	7	Darkina/Chukkuni	2.56	-
	8	Ful Chela	169.85	-
	9	Ful Dhela	-	0.30
	10	Gazar/Gazal	36.80	10.00
	11	Gol Chanda	-	3.40
	12	Golsha/Golsha Tengra	-	1.00
	13	Guchi Baim	129.89	15.00
	14	Guji Ayre	34.00	-
	15	Gura Icha/Jal Mach	5.90	-
	16	Gura Icha/Kuncho Icha	-	1.70
	17	Gutum/Butkuni/Pia	-	1.40
	18	Jatputi/Vadi Puti	319.00	220.00
	19	Kakila	-	2.60
	20	Kalibaus	10.00	-
	21	Kholisha/Pata Kholisha	43.04	4.10
	22	Koi/Gachua Koi	293.55	100.00
	23	Lal Kholisha/Boicha	-	0.30
	24	Lomba Chanda	-	2.40
	25	Magur/Mojgur	16.09	20.00
	26	Meni/Veda	389.47	100.00
	27	Modhu Pabda	14.88	-

Name of waterbody	Sl. No.	Name of species	Open catch wt. (kg)	Major harvest wt. (kg)
	28	Mola	1.94	3.70
	29	Raek/Lachchu	16.00	-
	30	Shing	36.34	70.00
	31	Shol/Shoil	46.38	40.00
	32	Taki/Ladi	69.81	190.00
	33	Tara Baim	67.82	10.00
	34	Tengra (Batashi)/Aluni	3.00	-
	35	Tengra/Guinga	222.44	20.00
	36	Tepa/Potka	-	1.00
	37	Tit punti	241.65	5.10
	-	**Total (kg)**	**2490.34**	**847.50**
Kala-sunda Beel	1	Baila/Bele	1.69	10.35
	2	Boal	45.12	-
	3	Bojuri Tengra	13.06	20.00
	4	Chapila	0.70	20.00
	5	Chela/Narkeli Chela	2.64	1.85
	6	Chuna Kholisha/Chata	1.21	-
	7	Darkina	7.24	-
	8	Foli	10.71	2.96
	9	Gachua/Cheng	35.18	-
	10	Gagor	-	3.33
	11	Gazar/Gazal	2.58	5.91
	12	Goinna	43.90	7.02
	13	Gol Chanda	1.23	11.08
	14	Golda Icha	1.55	-
	15	Golsha/Golsha Tengra	3.00	2.96
	16	Guchi Baim	8.39	-
	17	Gura Icha/Jal Mach	8.48	-
	18	Gutum/Butkuni/Pia	10.19	-
	19	Jatputi/Vadi Puti	170.13	45.00
	20	Kakila	5.16	3.33
	21	Kali Koi/Napit	0.64	-
	22	Kalibaus	12.32	5.00
	23	Kholisha/Pata Kholisha	0.60	15.00
	24	Koi/Gachua Koi	44.03	6.65
	25	Kuichcha	31.81	-
	26	Lomba Chanda	0.39	2.22
	27	Magur/Mojgur	63.46	-
	28	Meni/Veda	7.25	3.69
	29	Mola	60.42	85.00
	30	Mrigal/Mirka	-	5.00
	31	Rani/Cheka/Bou	0.43	-
	32	Sarputi	10.04	-
	33	Shing	9.44	3.69
	34	Shol/Shoil	52.37	18.48
	35	Telapia/Telapata	8.14	-
	36	Tengra (Batashi)/Aluni	5.69	-
	37	Tengra/Guinga	20.23	15.00
	38	Tepa/Potka	-	0.74
	39	Thai Sarputi/Raj Puti	-	5.00
	40	Tinchokha/Kanpona	-	0.74
	41	Tit punti	3.23	-
	-	**Total (kg)**	**703**	**300**
Choto Nainda Boro Nainda	1	Bacha	5.26	-
	2	Baila/Bele	36.39	244.40
	3	Batashi/Aluni	92.81	65.20
	4	Boal	457.99	800.00
	5	Bojuri Tengra	77.91	150.00
	6	Boro Baim/Shal Baim	77.39	90.00
	7	Chapila	126.71	-
	8	Chela/Narkeli Chela	85.47	-
	9	Chhatka Chingri	107.18	-
	10	Chuna Kholisha/Chata	2.39	-
	11	Carfu	-	700.00
	12	Dhela/Lohasur	2.91	-
	13	Ekthota/Subol	5.45	-
	14	Foli	2.67	-
	15	Ful Chela	5.70	-
	16	Gang Magur	14.95	-
	17	Gazar/Gazal	41.15	240.00
	18	Goinna	187.43	200.00
	19	Gol Chanda	82.05	97.80
	20	Golsha/Golsha Tengra	12.61	210.00
	21	Grass Carp	-	290.00
	22	Guchi Baim	66.34	217.20
	23	Guji Ayre	-	200.00
	24	Gura Icha/Jal Mach	29.33	90.00
	25	Gutum	3.77	-
	26	Gutum/Butkuni/Pia	19.94	130.30
	27	Jatputi/Vadi Puti	200.08	960.00
	28	Jhili Puti/Gini Puti	35.34	-
	29	Kabashi Tengra	1.09	-
	30	Kakila	300.40	50.00
	31	Kalibaus	138.20	-
	32	Katla/Katol/Fega	-	110.00
	33	Kholisha/Pata Kholisha	49.21	120.00
	34	Koi/Gachua Koi	34.25	400.00
	35	Lal Kholisha/Boicha	18.01	-
	36	Lomba Chanda	128.00	190.10
	37	Magur/Mojgur	3.72	60.00
	38	Meni/Veda	237.59	250.00
	39	Mohashol/Mohal	43.87	-
	40	Mola	38.93	170.00
	41	Mrigal/Mirka	-	50.00
	42	Pabda	119.99	80.00
	43	Ranga Chanda/Lal Chanda	8.08	-
	44	Rani/Cheka/Bou	4.15	-
	45	Rui	-	250.00
	46	Sarputi	137.61	-
	47	Shing	15.36	152.00
	48	Shol/Shoil	203.25	300.00
	49	Silver Carp	-	130.00
	50	Taki/Ladi	105.31	200.00
	51	Tara Baim	80.18	80.00
	52	Tengra (Batashi)/Aluni	9.54	-
	53	Tengra/Guinga	124.76	150.00
	54	Tepa/Potka	34.52	-
	55	Teri Puti	6.85	-
	56	Tit punti	48.49	38.00
	-	**Total (kg)**	**3671**	**7465**
Buriya River*	1	Ayre	9.13	20.00
	2	Bacha	5.25	3.90
	3	Baila/Bele	74.03	-
	4	Bagha Ayre/Bagair	-	8.00
	5	Baila/Bele	-	3.40
	6	Baus/Bamus/Bonehara	9.75	1.00
	7	Boal	284.17	49.00
	8	Bojuri Tengra	56.75	3.30
	9	Bori/Goni chapila	4.65	-
	10	Boro Baim/Shal Baim	29.82	-
	11	Chaika/Choukka	49.53	-
	12	Chapila	12.88	-
	13	Chela/Narkeli Chela	5.36	-
	14	Chitol	-	3.10
	15	Chhatka Chingri	79.19	-
	16	Darkina	-	3.70
	17	Dimua/Kathali Icha	-	15.00
	18	Foli	-	1.40
	19	Ful Chela	8.00	-
	20	Gachua/Telo Taki	-	1.10
	21	Gagor	-	1.20
	22	Gang Tengra/Gongra	8.16	2.00
	23	Gazar/Gazal	-	3.00
	24	Ghaura	15.50	-
	25	Goinna	3.29	-
	26	Gol Chanda	24.74	-
	27	Golda Icha	-	7.60
	28	Golsha/Golsha Tengra	6.59	15.30
	29	Gon mach/Gang tengra	47.87	-
	30	Goni Chapila/Bori	12.43	-
	31	Guchi Baim	22.65	5.90
	32	Gura Icha/Jal Mach	16.06	3.60
	33	Gutum	41.05	-

Name of waterbody	Sl. No.	Name of species	Open catch wt. (kg)	Major harvest wt. (kg)
	34	Gutum/Butkuni/Pia	19.50	-
	35	Jatputi/Vadi Puti	282.98	-
	36	Kabashi Tengra	0.06	-
	37	Kachki/Kechki/Suborna	-	8.40
	38	Kajoli	-	2.50
	39	Kakila	18.08	2.00
	40	Kalibaus	10.85	-
	41	Kanchon Puti	-	10.20
	42	Kani Pabda/Boali Pabda	-	13.00
	43	Kholisha/Pata Kholisha	-	3.20
	44	Khorshola	-	20.20
	45	Koi/Gachua Koi	-	2.60
	46	Lomba Chanda	16.88	-
	47	Magur/Mojgur	1.55	-
	48	Meni/Veda	13.11	-
	49	Mola	19.25	1.30
	50	Raek/Lachchu	0.38	-
	51	Ranga Chanda/Lal Chanda	2.48	-
	52	Rani/Cheka/Bou	3.50	-
	53	Rita/Ritha	1.09	4.60
	54	Rui	-	4.10
	55	Sarputi	10.99	8.90
	56	Shilong/Shilon	-	8.50
	57	Shing	-	5.50
	58	Shol/Shoil	2.71	10.13
	59	Taki/Ladi	0.78	5.00
	60	Tara Baim	9.58	8.20
	61	Tengra/Guinga	37.32	-
	62	Tit punti	3.19	-
	-	**Total (kg)**	**1281.10**	**269.83**
Kasto Chapra Beel*	1	Baila/Bele	43.81	0.10
	2	Balitora	4.65	-
	3	Batashi/Aluni	0.62	-
	4	Boal	95.76	145.10
	5	Bojuri Tengra	20.06	0.21
	6	Boro Baim/Shal Baim	24.54	0.70
	7	Chapila	185.95	900.30
	8	Cheka/Bou	0.47	-
	9	Chela/Narkeli Chela	5.11	-
	10	Carfu	-	78.60
	11	Foli	0.16	-
	12	Ful Chela	12.08	-
	13	Ful Dhela	-	0.18
	14	Gachua/Cheng	0.26	-
	15	Gagor	0.19	-
	16	Gazar/Gazal	0.62	0.80
	17	Goinna	17.51	80.00
	18	Gol Chanda	31.95	0.10
	19	Golsha/Golsha Tengra	79.39	90.30
	20	Guchi Baim	31.00	0.05
	21	Guji Ayre	0.41	63.50
	22	Gura Icha/Jal Mach	31.03	0.02
	23	Gutum/Butkuni/Pia	2.85	0.01
	24	Jatputi/Vadi Puti	204.34	1,100.00
	25	Kabashi Tengra	5.54	72.10
	26	Kakila	10.58	310.40
	27	Kalibaus	2.08	90.50
	28	Katla/Katol/Fega	-	50.30
	29	Kani Pabda/Boali Pabda	1.15	-
	30	Kholisha/Pata Kholisha	6.30	0.03
	31	Koi/Gachua Koi	84.40	0.33
	32	Lal Kholisha/Boicha	-	0.01
	33	Lomba Chanda	6.80	0.09
	34	Magur/Mojgur	6.59	22.30
	35	Meni/Veda	142.04	70.20
	36	Mola	12.52	0.32
	37	Mrigal/Mirka	-	40.70
	38	Pabda	7.17	38.40
	39	Raek/Lachchu	8.52	20.10
	40	Ranga Chanda/Lal Chanda	1.35	-
	41	Rani/Cheka/Bou	-	0.01
	42	Rui	-	110.50
	43	Shing	48.73	-
	44	Shol/Shoil	0.73	1.80
	45	Taki/Ladi	222.55	0.21
	46	Tara Baim	41.31	0.22
	47	Tengra/Guinga	94.25	114.20
	48	Tepa/Potka	2.04	-
	49	Teri Puti	0.16	-
	50	Thai Sarputi/Raj Puti	0.85	-
	51	Tinchokha/Kanpona	0.02	-
	52	Tit punti	21.97	0.06
	-	**Total (kg)**	**1520.36**	**3402.75**
Ranggadair Jolmohal	1	Ayre	47.94	4.50
	2	Baila/Bele	3.15	-
	3	Batashi/Aluni	0.34	-
	4	Boal	346.59	35.00
	5	Bojuri Tengra	1.41	15.00
	6	Boro Baim/Shal Baim	50.33	-
	7	Chela/Narkeli Chela	19.55	-
	8	Chuna Kholisha/Chata	-	4.00
	9	Darkina	-	3.10
	10	Dimua/Kathali Icha	-	14.50
	11	Foli	-	2.50
	12	Gachua/Telo Taki	5.63	-
	13	Gang Magur	32.63	-
	14	Gang Tengra/Gongra	3.10	-
	15	Gazar/Gazal	-	8.50
	16	Ghaura	8.86	-
	17	Goinna	168.64	-
	18	Gol Chanda	3.14	-
	19	Golsha/Golsha Tengra	3.75	18.00
	20	Gon mach/Gang tengra	9.00	-
	21	Grass Carp	89.28	-
	22	Guchi Baim	4.31	20.00
	23	Gura Icha/Jal Mach	3.38	-
	24	Gutum/Butkuni/Pia	0.68	-
	25	Jatputi/Vadi Puti	177.76	39.00
	26	Kachki/Kechki/Suborna	-	3.00
	27	Kakila	-	1.50
	28	Kalibaus	73.71	-
	29	Kanchon Puti	1.34	-
	30	Katla/Katol/Fega	18.60	12.00
	31	Kholisha/Pata Kholisha	-	7.00
	32	Kuichcha	-	4.50
	33	Lomba Chanda	-	13.50
	34	Meni/Veda	31.20	9.50
	35	Mola	-	2.10
	36	Mrigal/Mirka	-	7.90
	37	Pabda	32.60	4.00
	38	Raek/Lachchu	9.00	-
	39	Rui	335.52	13.00
	40	Sarputi	15.06	12.00
	41	Shing	-	8.80
	42	Shol/Shoil	-	16.00
	43	Silver Carp	48.38	-
	44	Taki/Ladi	13.78	20.00
	45	Tara Baim	-	9.00
		Tengra/Guinga	1.35	13.00
	47	Tit punti	1.62	106.10
	-	**Total (kg)**	**1561.58**	**427.00**
Baradia Beel	1	Bacha	0.91	0.30
	2	Baila/Bele	-	30.00
	3	Boal	-	22.00
	4	Bojuri Tengra	-	15.00
	5	Boro Baim/Shal Baim	0.50	0.50
	6	Chapila	3.31	2.90
	7	Cheka/Bou	11.04	4.00
	8	Chhatka Chingri	25.44	-
	9	Darkina	10.47	6.30
	10	Darkina/Chukkuni	11.63	-
	11	Ful Chela	4.50	-

Name of waterbody	Sl. No.	Name of species	Open catch wt. (kg)	Major harvest wt. (kg)
	12	Ful Dhela	-	10.00
	13	Gazar/Gazal	-	2.00
	14	Gol Chanda	0.72	5.50
	15	Golsha/Golsha Tengra	-	25.10
	16	Guchi Baim	33.94	18.00
	17	Gura Icha/Jal Mach	1.74	14.00
	18	Gura Icha/Kuncho Icha	4.39	-
	19	Gutum	3.38	-
	20	Gutum/Butkuni/Pia	0.72	7.00
	21	Jatputi/Vadi Puti	281.48	33.00
	22	Jhili Puti/Gini Puti	5.93	-
	23	Kabashi Tengra	1.58	5.00
	24	Kakila	-	2.90
	25	Kanchon Puti	1.55	
	26	Katla/Katol/Fega	1.71	5.00
	27	Kholisha/Pata Kholisha	189.59	9.00
	28	Koi/Gachua Koi	207.18	3.40
	29	Lal Kholisha/Boicha	0.53	13.00
	30	Lomba Chanda	49.50	-
	31	Magur/Mojgur	3.19	-
	32	Meni/Veda	138.02	13.00
	33	Mola	35.30	-
	34	Rui	2.63	4.90
	35	Sarputi	2.58	-
	36	Shing	7.88	6.50
	37	Shol/Shoil	33.95	16.80
	38	Taki/Ladi	67.73	17.50
	39	Tara Baim	0.60	34.00
	40	Tengra/Guinga	6.64	-
	41	Tepa/Potka	3.72	-
	42	Teri Puti	-	9.20
	43	Tit punti	4.50	30.00
	-	**Total (kg)**	**1,158.47**	**365.80**
Hogla	1	Ayre	-	11.20
	2	Baila/Bele	25.10	5.20
	3	Baus/Bamus/Bonehara	-	5.70
	4	Boal	-	14.70
	5	Bojuri Tengra	97.49	-
	6	Chapila	4.65	-
	7	Chitol	-	6.60
	8	Chuna Kholisha/Chata	-	5.00
	9	Carfu	128.65	-
	10	Darkina	-	13.50
	11	Dimua/Kathali Icha	0.85	-
	12	Fesha/Fefri/Fasha	2.33	-
	13	Foli	-	7.20
	14	Ful Chela	2.83	-
	15	Goinna	4.50	-
	16	Gol Chanda	35.65	5.80
	17	Golsha/Golsha Tengra	19.11	-
	18	Guchi Baim	92.69	32.00
	19	Gura Icha/Jal Mach	131.30	29.00
	20	Gutum/Butkuni/Pia	-	20.10
	21	Gura Icha/Kuncho Icha	1.29	-
	22	Gutum/Butkuni/Pia	62.29	-
	23	Jatputi/Vadi Puti	298.02	28.00
	24	Jhili Puti/Gini Puti	2.74	-
	25	Kabashi Tengra	2.40	-
	26	Kakila	-	5.00
	27	Kalibaus	19.66	3.20
	28	Katla/Katol/Fega	3.10	-
	29	Kani Pabda/Boali Pabda	-	12.30
	30	Kholisha/Pata Kholisha	3.10	14.00
	31	Kuichcha	-	4.00
	32	Lal Kholisha/Boicha	1.03	-
	33	Lomba Chanda	89.58	4.40
	34	Meni/Veda	-	95.00
	35	Mola	110.70	1.90
	36	Mrigal/Mirka	38.84	-
	37	Naftani/Naptani	1.03	-
	38	Pabda	26.29	-
	39	Pangus	-	9.80
	40	Raek/Lachchu	9.21	-
	41	Rui	20.67	13.00
	42	Sarputi	88.02	6.00
	43	Shing	-	8.80
	44	Silver Carp	69.79	-
	45	Shol/Shoil	-	10.00
	46	Taki/Ladi	-	84.00
	47	Tara Baim	29.07	19.00
	48	Telapia/Telapata	46.50	16.00
	49	Tengra/Guinga	2.33	-
	50	Tepa/Potka	2.02	-
	51	Teri Puti	2.71	45.00
	52	Tit punti	17.56	52.00
	-	**Total (kg)**	**1493.08**	**587.40**
Dattakhila	1	Ayre	24.50	-
	2	Baila/Bele	95.19	18.20
	3	Boal	84.75	14.30
	4	Bojuri Tengra	49.54	15.00
	5	Boro Baim/Shal Baim	75.20	-
	6	Chaika/Choukka	3.88	-
	7	Chapila	10.43	-
	8	Chela/Narkeli Chela	1.94	-
	9	Chitol	9.00	-
	10	Chola Puti	3.88	-
	11	Chuna Kholisha/Chata	-	9.08
	12	Carfu	-	13.00
	13	Darkina	-	0.30
	14	Dimua/Kathali Icha	-	5.70
	15	Foli	-	9.00
	16	Futani Puti	18.99	-
	17	Gachua/Telo Taki	2.81	-
	18	Gazar/Gazal	3.38	4.90
	19	Goinna	10.33	-
	20	Gol Chanda	-	3.11
	21	Golsha/Golsha Tengra	6.98	-
	22	Guchi Baim	88.06	32.00
	23	Gura Icha/Jal Mach	4.65	-
	24	Gutum/Butkuni/Pia	-	1.30
	25	Jatputi/Vadi Puti	145.89	54.00
	26	Kabashi Tengra	-	10.00
	27	Kajoli	-	2.00
	28	Kakila	-	5.01
	29	Kholisha/Pata Kholisha	2.39	20.00
	30	Koi/Gachua Koi	3.49	7.70
	31	Lal Kholisha/Boicha	3.23	-
	32	Lomba Chanda	7.50	-
	33	Meni/Veda	-	12.00
	34	Mola	79.92	2.90
	35	Mrigal/Mirka	7.50	-
	36	Rui	48.38	4.50
	37	Sarputi	7.75	-
	38	Shing	-	12.00
	39	Shol/Shoil	27.86	15.00
	40	Silver Carp	27.86	-
	41	Taki/Ladi	3.88	20.70
	42	Tara Baim	4.65	20.80
	43	Tengra/Guinga	88.03	-
	44	Tepa/Potka	2.33	-
	45	Teri Puti	-	13.00
	46	Tit punti	15.63	-
	-	**Total (kg)**	**969.74**	**325.50**
Rouha Beel*	1	Ayre	-	40.00
	2	Baila/Bele	13.58	-
	3	Bata	-	11.00
	4	Boal	8.13	85.00
	5	Bojuri Tengra	5.81	27.00
	6	Boro Baim/Shal Baim	-	10.50
	7	Chela/Narkeli Chela	4.65	3.00
	8	Chuna Kholisha/Chata	-	5.00
	9	Carfu	-	27.00
	10	Darkina	-	2.50
	11	Dimua/Kathali Icha	12.28	-
	12	Foli	-	4.00
	13	Goinna	10.92	-

Name of waterbody	Sl. No.	Name of species	Open catch wt. (kg)	Major harvest wt. (kg)
	14	Gol Chanda	3.47	-
	15	Golda Icha	9.75	-
	16	Golsha/Golsha Tengra	14.60	38.00
	17	Gon mach/Gang tengra	4.50	-
	18	Guchi Baim	-	105.00
	19	Gura Icha/Jal Mach	13.36	7.00
	20	Gutum/Butkuni/Pia	-	17.00
	21	Jatputi/Vadi Puti	15.03	60.00
	22	Kajoli	-	2.90
	23	Kakila	-	2.00
	24	Kalibaus	28.20	-
	25	Kani Pabda/Boali Pabda	-	8.00
	26	Katla/Katol/Fega	-	33.00
	27	Kholisha/Pata Kholisha	15.53	-
	28	Koi/Gachua Koi	14.92	12.00
	29	Kosua punti/ Kosuati punti	6.09	-
	30	Lal Kholisha/Boicha	1.16	-
	31	Lomba Chanda	1.69	1.50
	32	Meni/Veda	3.68	13.10
	33	Mola	-	4.50
	34	Ranga Chanda/Lal Chanda	2.63	-
	35	Rui	-	22.00
	36	Sarputi	5.25	25.00
	37	Shing	-	3.00
	38	Shol/Shoil	5.04	28.00
	39	Taki/Ladi	10.85	53.00
	40	Tara Baim	-	55.00
	41	Telapia/Telapata	-	5.00
	42	Tengra/Guinga	11.59	-
	43	Teri Puti	8.10	-
	44	Tit punti	7.20	90.00
	-	**Total (kg)**	**237.97**	**800.00**
Noniala Beel	1	Bagha Ayre/Bagair	-	12.00
	2	Baila/Bele	69.35	22.00
	3	Boal	50.26	85.00
	4	Bojuri Tengra	213.12	-
	5	Boro Baim/Shal Baim	44.27	-
	6	Chapila	-	4.00
	7	Carfu	-	20.00
	8	Darkina/Chukkuni	-	10.20
	9	Foli	-	1.00
	10	Gagor	-	1.70
	11	Goinna	10.17	-
	12	Golsha/Golsha Tengra	224.55	3.00
	13	Guchi Baim	737.82	133.00
	14	Gura Icha/Jal Mach	8.07	3.50
	15	Gura Icha/Kuncho Icha	8.34	-
	16	Gutum/Butkuni/Pia	16.41	2.50
	17	Jatputi/Vadi Puti	314.42	68.00
	18	Jhili Puti/Gini Puti	1.03	-
	19	Kalibaus	200.69	0.20
	20	Kani Pabda/Boali Pabda	-	12.00
	21	Katla/Katol/Fega	-	13.20
	22	Kholisha/Pata Kholisha	3.75	-
	23	Lal Kholisha/Boicha	8.34	8.00
	24	Lomba Chanda	16.07	-
	25	Magur/Mojgur	-	1.30
	26	Mola	-	3.00
	27	Pabda	17.40	-
	28	Rui	-	10.00
	29	Sarputi	-	21.50
	30	Shilong/Shilon	-	13.00
	31	Shing	-	3.50
	32	Shol/Shoil	-	19.90
	33	Taki/Ladi	-	38.00
	34	Tara Baim	27.25	97.00
	35	Tatkini	-	5.00
	36	Tengra/Guinga	37.99	-
	37	Telapia/Telapata	-	11.90
	38	Tepa/Potka	3.86	-
	39	Teri Puti	2.07	-
	40	Tit punti	121.02	-
	-	**Total (kg)**	**2136**	**623**
Chapra Beel	1	Ayre	5.95	1.00
	2	Baila/Bele	14.16	27.10
	3	Boal	40.83	104.00
	4	Bojuri Tengra	61.62	2.20
	5	Boro Baim/Shal Baim	4.40	-
	6	Chapila	15.50	15.90
	7	Darkina	-	8.00
	8	Dimua/Kathali Icha	7.21	8.20
	9	Foli	-	8.10
	10	Ful Chela	0.39	-
	11	Ful Dhela	-	6.10
	12	Gazar/Gazal	-	55.00
	13	Goinna	0.78	4.00
	14	Gol Chanda	11.11	10.00
	15	Golsha/Golsha Tengra	1.34	1.00
	16	Guchi Baim	42.32	6.20
	17	Guji Ayre	-	15.00
	18	Gura Icha/Jal Mach	49.49	-
	19	Gura Icha/Kuncho Icha	7.23	6.30
	20	Gutum/Butkuni/Pia	11.35	3.00
	21	Jatputi/Vadi Puti	104.70	20.00
	22	Jhili Puti/Gini Puti	3.21	-
	23	Kalibaus	69.46	12.50
	24	Kholisha/Pata Kholisha	9.40	4.00
	25	Koi/Gachua Koi	2.70	10.00
	26	Lal Kholisha/Boicha	3.00	15.00
	27	Lomba Chanda	15.50	15.00
	28	Meni/Veda	0.72	60.00
	29	Mola	20.00	7.50
	30	Mrigal/Mirka	8.50	0.50
	31	Pabda	12.83	0.90
	32	Raek/Lachchu	1.24	-
	33	Rita/Ritha	7.75	-
	34	Rui	18.21	-
	35	Sarputi	44.55	-
	36	Shing	-	22.00
	37	Shol/Shoil	12.86	10.50
	38	Taki/Ladi	10.73	2.60
	39	Tara Baim	17.88	12.00
	40	Tengra/Guinga	2.56	8.00
	41	Tepa/Potka	4.70	0.50
	42	Teri Puti	2.17	2.00
	43	Tit punti	46.15	15.00
	-	**Total (kg)**	**692**	**499**
Kalni Beel	1	Bacha	-	2.50
	2	Baila/Bele	85.59	34.20
	3	Bata	189.60	0.30
	4	Baus/Bamus/Bonehara	10.00	1.00
	5	Boal	178.46	8.50
	6	Bojuri Tengra	143.83	1.30
	7	Boro Baim/Shal Baim	58.45	2.30
	8	Chapila	16.65	2.50
	9	Chhatka Chingri	166.81	-
	10	Dimua/Kathali Icha	135.93	-
	11	Dimua/Kathali Icha	-	2.50
	12	Fesha/Fefri/Fasha	8.13	-
	13	Foli	-	5.67
	14	Futani Puti	2.36	-
	15	Gagor	20.00	-
	16	Goinna	-	1.00
	17	Gang Tengra/Gongra/Ghagot	54.19	-
	18	Ghaura	79.53	-
	19	Ghora Mach/Longu/Ghora Mukh	12.03	-
	20	Goinna	103.20	-
	21	Gol Chanda	34.80	-
	22	Golda Icha	164.16	2.00
	23	Golsha/Golsha Tengra	161.68	0.50
	24	Grass Carp	20.00	-
	25	Guchi Baim	74.34	39.00
	26	Gura Icha/Jal Mach	186.96	0.50

Name of waterbody	Sl. No.	Name of species	Open catch wt. (kg)	Major harvest wt. (kg)
	27	Gura Icha/Kuncho Icha	-	3.20
	28	Gutum	9.31	
	29	Gutum/Butkuni/Pia	8.14	22.40
	30	Jatputi/Vadi Puti	236.30	16.20
	31	Jhili Puti/Gini Puti	-	2.50
	32	Kabashi Tengra	-	12.20
	33	Kachki/Kechki/Suborna	3.57	0.30
	34	Kajoli	3.88	-
	35	Kakila	4.46	9.20
	36	Kalibaus	139.78	0.30
	37	Kholisha/Pata Kholisha	-	7.50
	38	Koi/Gachua Koi	27.34	1.80
	39	Lomba Chanda	16.39	6.90
	40	Meni/Veda	0.59	6.70
	41	Mola	5.30	0.40
	42	Mrigal/Mirka	14.88	-
	43	Nilotica	-	0.50
	44	Pabda	132.83	0.40
	45	Raek/Lachchu	52.60	-
	46	Sarputi	74.86	-
	47	Shing	-	4.20
	48	Shol/Shoil	-	11.80
	49	Taki/Ladi	3.30	50.80
	50	Tara Baim	27.84	16.60
	51	Tengra/Guinga	43.89	-
	52	Teri Puti	-	32.83
	53	Tit punti	6.16	-
	-	**Total (kg)**	**2,718.11**	**310.50**
Dhoniar Kona Beel	1	Ayre	-	12.00
	2	Bacha	11.50	0.50
	3	Baila/Bele	19.32	19.00
	4	Bata	10.98	-
	5	Boal	185.29	30.00
	6	Bojuri Tengra	26.12	4.90
	7	Boro Baim/Shal Baim	20.60	1.50
	8	Carfu	-	11.00
	9	Darkina	-	5.00
	10	Dhela/Lohasur	6.72	-
	11	Dimua/Kathali Icha	133.28	6.00
	12	Foli	-	6.00
	13	Gagor	6.00	-
	14	Gazar/Gazal	11.63	5.50
	15	Goinna	59.64	0.50
	16	Golda Icha	85.05	-
	17	Golsha/Golsha Tengra	53.18	7.00
	18	Guchi Baim	82.53	5.00
	19	Gura Icha/Jal Mach	10.85	10.00
	20	Gura Icha/Kuncho Icha	21.18	-
	21	Gutum/Butkuni/Pia	-	6.00
	22	Jatputi/Vadi Puti	243.16	15.00
	23	Jhili Puti/Gini Puti	2.25	-
	24	Kabashi Tengra	2.75	-
	25	Kakila	-	10.00
	26	Kalibaus	43.72	-
	27	Kholisha/Pata Kholisha	4.13	-
	28	Koi/Gachua Koi	1.50	-
	29	Lal Kholisha/Boicha	3.00	-
	30	Lomba Chanda	-	10.00
	31	Magur/Mojgur	-	5.00
	32	Meni/Veda	72.48	15.00
	33	Mola	-	10.00
	34	Rui	10.92	-
	35	Pangus	-	5.50
	36	Sarputi	60.40	-
	37	Shing	-	9.00
	38	Shol/Shoil	10.52	15.00
	39	Taki/Ladi	6.20	10.00
	40	Tara Baim	11.70	6.00
	41	Tengra/Guinga	12.85	22.00
	42	Tepa/Potka	7.91	-
	43	Teri Puti	-	0.60
	44	Thai Sarputi/Raj Puti	4.80	-
	45	Tit punti	2.58	15.00
	-	**Total (kg)**	**1244.73**	**278.00**
Korgaon -1/2 Gazipur	1	Baila/Bele	64.77	49.00
	2	Batashi/Aluni	3.88	4.00
	3	Boal	-	35.00
	4	Bojuri Tengra	119.95	30.00
	5	Boro Baim/Shal Baim	3.73	5.00
	6	Chapila	28.42	7.00
	7	Chela/Narkeli Chela	-	6.90
	8	Chuna Kholisha/Chata	-	7.10
	9	Carfu	-	18.00
	10	Dimua/Kathali Icha	-	8.00
	11	Foli	-	21.00
	12	Ful Chela	0.54	-
	13	Ful Dhela	-	1.00
	14	Gachua/Telo Taki	-	1.50
	15	Goinna	6.20	-
	16	Gol Chanda	2.37	2.50
	17	Golsha/Golsha Tengra	39.25	12.00
	18	Guchi Baim	111.44	155.00
	19	Gura Icha/Jal Mach	53.48	19.30
	20	Gura Icha/Kuncho Icha	18.42	-
	21	Gutum/Butkuni/Pia	22.94	5.50
	22	Jatputi/Vadi Puti	185.44	55.00
	23	Jhili Puti/Gini Puti	0.55	-
	24	Kabashi Tengra	2.58	-
	25	Kakila	0.00	2.30
	26	Kalibaus	6.20	20.00
	27	Kanchon Puti	1.24	-
	28	Kholisha/Pata Kholisha	0.32	18.60
	29	Koi/Gachua Koi	2.95	10.00
	30	Lal Kholisha/Boicha	1.86	-
	31	Lomba Chanda	0.27	3.50
	32	Meni/Veda	0.00	38.00
	33	Naftani/Naptani	2.58	-
	34	Raek/Lachchu	5.17	-
	35	Sarputi	5.17	-
	36	Shing	0.00	9.00
	37	Shol/Shoil	1.64	20.00
	38	Taki/Ladi	4.50	3.20
	39	Tara Baim	34.92	50.00
	40	Tengra/Guinga	0.05	-
	41	Tepa/Potka	4.50	0.50
	42	Tit punti	11.08	14.00
	-	**Total (kg)**	**746**	**632**
Goza Beel	1	Bacha	51.25	-
	2	Baila/Bele	139.59	9.50
	3	Bata	13.13	6.60
	4	Boal	347.34	17.70
	5	Bojuri Tengra	-	35.00
	6	Chapila	1.88	-
	7	Chela/Narkeli Chela	20.00	-
	8	Chhatka Chingri	51.93	-
	9	Chuna Kholisha/Chata	-	4.00
	10	Carfu	-	12.60
	11	Darkina	-	3.70
	12	Fesha/Fefri/Fasha	36.43	-
	13	Foli	-	8.00
	14	Gang Tengra/Gongra/Ghagot	21.94	-
	15	Gazar/Gazal	-	3.40
	16	Ghaura	121.68	
	17	Goinna	139.81	
	18	Golsha/Golsha Tengra	68.17	23.00
	19	Guchi Baim	13.50	12.30
	20	Gura Icha/Jal Mach	65.85	4.60
	21	Jatputi/Vadi Puti	207.72	3.00
	22	Kachki/Kechki/Suborna	86.87	-
	23	Kakila	-	0.90
	24	Kalibaus	110.08	7.50
	25	Kanchon Puti	33.75	-
	26	Lomba Chanda	101.93	17.00

Name of waterbody	Sl. No.	Name of species	Open catch wt. (kg)	Major harvest wt. (kg)
	27	Magur/Mojgur	-	1.90
	28	Meni/Veda	-	9.00
	29	Mirror Carp	85.67	-
	30	Mrigal/Mirka	135.18	-
	31	Pabda	18.21	-
	32	Rui	-	9.40
	33	Sarputi	108.63	-
	34	Shing	-	2.10
	35	Shol/Shoil	-	5.80
	36	Silver Carp	-	7.20
	37	Tara Baim	49.06	9.10
	38	Tengra (Batashi)/Aluni	4.38	-
	39	Tengra/Guinga	74.89	12.30
	40	Tit punti	23.28	20.00
	-	**Total (kg)**	**2132.12**	**245.60**
Patuajuri Beel*	1	Baila/Bele	99.15	-
	2	Bighead Carp	-	15.00
	3	Boal	302.87	12.00
	4	Bojuri Tengra	19.85	9.00
	5	Boro Baim/Shal Baim	64.85	-
	6	Chapila	-	0.60
	7	Foli	-	6.00
	8	Futani Puti	-	23.00
	9	Gang Magur	6.00	-
	10	Goinna	173.14	-
	11	Gol Chanda	-	0.50
	12	Golda Icha	9.82	-
	13	Golsha/Golsha Tengra	25.52	20.00
	14	Guchi Baim	329.46	30.00
	15	Gura Icha/Jal Mach	91.73	1.70
	16	Gutum/Butkuni/Pia	-	3.00
	17	Jatputi/Vadi Puti	1.55	-
	18	Kakila	-	2.00
	19	Kalibaus	8.21	-
	20	Kanchon Puti	22.07	-
	21	Lomba Chanda	4.08	1.50
	22	Meni/Veda	111.08	9.70
	23	Mola	10.22	17.00
	24	Pabda	15.57	-
	25	Rui	-	2.00
	26	Sarputi	24.69	-
	27	Shol/Shoil	9.00	7.30
	28	Taki/Ladi	74.88	-
	29	Tara Baim	-	32.00
	30	Tepa/Potka	0.52	-
	31	Tit punti	16.58	11.00
	-	**Total (kg)**	**1420.82**	**203.30**
Satbila Fishery	1	Ayre	-	15.20
	2	Baila/Bele	127.97	45.00
	3	Bali chata/Buth Koi/Bilturi/Natoa	35.16	-
	4	Baus/Bamus/Bonehara	-	38.20
	5	Bighead Carp	-	22.00
	6	Boal	76.79	50.00
	7	Bojuri Tengra	85.26	38.00
	8	Boro Baim/Shal Baim	1.30	8.50
	9	Chapila	1.97	-
	10	Chekbeka/Cheka/Gangina/Kotkoti	-	2.20
	11	Darkina	-	20.00
	12	Dimua/Kathali Icha	-	5.60
	13	Foli	-	28.00
	14	Ful Chela	1.05	-
	15	Futani Puti	8.18	-
	16	Gachua/Telo Taki	-	9.50
	17	Gazar/Gazal	-	15.00
	18	Goinna	91.88	-
	19	Gol Chanda	0.52	10.10
	20	Guchi Baim	-	27.00
	21	Guchi Baim	54.70	125.00
	22	Gura Icha/Jal Mach	15.78	2.15
	23	Gura Icha/Kuncho Icha	2.30	-
	24	Gutum/Butkuni/Pia	4.05	39.00
	25	Jatputi/Vadi Puti	153.48	93.75
	26	Kabashi Tengra	0.75	-
	27	Kakila	5.33	8.40
	28	Kalibaus	61.52	-
	29	Kani Pabda/Boali Pabda	-	27.30
	30	Katla/Katol/Fega	-	30.00
	31	Kholisha/Pata Kholisha	58.77	-
	32	Koi/Gachua Koi	0.93	-
	33	Kuichcha	-	9.10
	34	Lal Kholisha/Boicha	34.00	
	35	Lomba Chanda	-	12.30
	36	Magur/Mojgur	0.77	5.90
	37	Meni/Veda	116.85	125.30
	38	Mola	-	13.50
	39	Mrigal/Mirka	108.00	-
	40	Naftani/Naptani	0.70	-
	41	Pangus	-	38.00
	42	Ranga Chanda/Lal Chanda	-	1.00
	43	Rui	-	19.90
	44	Sarputi	91.90	12.00
	45	Shing	51.41	6.80
	46	Shol/Shoil	-	29.00
	47	Tara Baim	-	64.00
	48	Tara Baim	2.48	85.00
	49	Tatkini	2.99	-
	50	Telapia/Telapata	34.53	20.20
	51	Tengra/Guinga	1.25	-
	52	Tepa/Potka	0.47	-
	53	Tit punti	2.23	15.00
	-	**Total (kg)**	**1235.25**	**1116.90**
Choto Beri Beel	1	Bacha	30.23	-
	2	Baila/Bele	73.88	16.10
	3	Batashi/Aluni	-	1.00
	4	Bata	50.19	-
	5	Batashi/Aluni	2.79	-
	6	Bighead Carp	25.69	-
	7	Boal	336.43	3.00
	8	Bojuri Tengra	75.10	14.30
	9	Boro Baim/Shal Baim	-	15.60
	10	Chapila	57.72	7.10
	11	Chuna Kholisha/Chata	84.51	2.00
	12	Darkina	27.89	1.00
	13	Darkina/Chukkuni	4.33	-
	14	Foli	81.57	17.30
	15	Gazar/Gazal	49.28	20.10
	16	Goinna	76.72	3.00
	17	Gol Chanda	60.94	12.50
	18	Golsha/Golsha Tengra	-	0.02
	19	Grass Carp	121.67	3.00
	20	Guchi Baim	9.52	10.70
	21	Guji Ayre	-	20.20
	22	Gura Icha/Jal Mach	25.90	-
	23	Gura Icha/Kuncho Icha	-	1.80
	24	Gutum/Butkuni/Pia	48.63	3.50
	25	Jatputi/Vadi Puti	145.05	300.50
	26	Jhili Puti/Gini Puti	5.98	-
	27	Kakila	-	8.90
	28	Kalibaus	13.39	3.00
	29	Katla/Katol/Fega	4.45	2.00
	30	Kholisha/Pata Kholisha	10.41	17.80
	31	Koi/Gachua Koi	110.44	80.30
	32	Lal Kholisha/Boicha	0.99	1.80
	33	Lomba Chanda	52.61	7.10
	34	Magur/Mojgur	96.24	10.60
	35	Meni/Veda	91.60	90.30
	36	Mohashol/Mohal	79.64	-
	37	Mola Puti	4.11	-
	38	Mola	44.03	16.10
	39	Mrigal/Mirka	74.77	-
	40	Nandil/Nandina	2.83	-

Name of waterbody	Sl. No.	Name of species	Open catch wt. (kg)	Major harvest wt. (kg)
	41	Nilotica	8.62	-
	42	Pabda	39.76	0.02
	43	Raek/Lachchu	-	0.07
	44	Ranga Chanda/Lal Chanda	3.26	
	45	Rui	103.41	20.90
	46	Sarputi	13.22	-
	47	Shing	-	55.50
	48	Shol/Shoil	6.06	42.50
	49	Silver Carp	35.03	-
	50	Taki/Ladi	-	150.00
	51	Tara Baim	64.92	30.20
	52	Tatkini	58.70	
	53	Tengra/Guinga	98.00	72.80
	54	Tepa/Potka	-	1.00
	55	Teri Puti	25.46	1.00
	56	Thai Pangas/Bedeshi Pangas	32.76	-
	57	Thai Sarputi/Raj Puti	82.39	-
	58	Thengua/Shul Icha	4.50	-
	59	Tit punti	83.58	12.50
	-	**Total (kg)**	**2639.18**	**1077.11**
Andaura Beel	1	Bacha	2.89	2.00
	2	Baila/Bele	12.19	0.19
	3	Bashpata/Chhebri/Dibari	4.43	3.00
	4	Bata	18.23	-
	5	Bichi Guinga/Jol Guinga	2.00	10.00
	6	Bichi/Kanpona	20.58	-
	7	Black Carp	55.08	-
	8	Boal	579.55	120.80
	9	Bojuri Tengra	191.35	0.07
	10	Boro Baim/Shal Baim	2.88	40.90
	11	Chapila	33.35	0.07
	12	Chela/Narkeli Chela	15.63	-
	13	Chhep Chela	20.71	1.00
	14	Chola Puti	7.50	-
	15	Chuna Kholisha/Chata	1.85	-
	16	Carfu	-	73.30
	17	Foli	-	20.70
	18	Ful Chela	8.86	-
	19	Ful Dhela	-	17.50
	20	Gachua/Cheng	9.30	3.00
	21	Gachua/Telo Taki	30.14	-
	22	Gazar/Gazal	26.36	82.50
	23	Goinna	3.88	38.30
	24	Gol Chanda	12.61	0.01
	25	Golda Icha	0.97	3.00
	26	Golsha/Golsha Tengra	278.92	101.30
	27	Grass Carp	44.22	-
	28	Guchi Baim	8.41	0.15
	29	Guji Ayre	-	38.90
	30	Gura Icha/Jal Mach	3.45	-
	31	Gura Icha/Kuncho Icha	-	0.18
	32	Gutum	-	10.00
	33	Gutum/Butkuni/Pia	13.04	-
	34	Jatputi/Vadi Puti	166.19	1,381.50
	35	Jhili Puti/Gini Puti	6.93	-
	36	Kakila	29.45	40.00
	37	Kali Koi/Napit	-	0.50
	38	Kalibaus	9.13	52.10
	39	Karka/Khorika/Koirka	3.39	-
	40	Katla/Katol/Fega	28.65	60.50
	41	Kholisha/Pata Kholisha	6.86	-
	42	Kholoi muchuri/Gutea	3.19	-
	43	Koi/Gachua Koi	49.85	270.80
	44	Kuichcha	23.25	-
	45	Lal Kholisha/Boicha	29.68	-
	46	Lomba Chanda	41.15	0.24
	47	Magur/Mojgur	-	32.50
	48	Meni/Veda	58.05	280.65
	49	Mola	13.07	-
	50	Mrigal/Mirka	-	43.70
	51	Pabda	10.41	30.50
	52	Puti tor/Mohasher	25.84	-
	53	Ranga Chanda/Lal Chanda	10.02	-
	54	Rani/Cheka/Bou	1.00	-
	55	Rui	44.82	90.50
	56	Sarputi	-	70.50
	57	Shing	0.97	70.30
	58	Shol/Shoil	67.84	140.40
	59	Taki/Ladi	155.10	300.40
	60	Tara Baim	72.13	101.30
	61	Telapia/Telapata	31.00	-
	62	Tengra/Guinga	1.00	185.50
	63	Tepa/Potka	-	0.02
	64	Teri Puti	15.05	-
	65	Thengua/Shul Icha	1.10	-
	66	Tit punti	138.80	0.16
	-	**Total (kg)**	**2452.26**	**3718.94**
Kutiara Beel, Udgar Khal O Kutiarar Khal	1	Bacha	10.22	-
	2	Baila/Bele	10.08	13.20
	3	Bata	52.69	-
	4	Batashi/Aluni	-	0.02
	5	Bighead Carp	9.00	-
	6	Boal	10.33	-
	7	Bojuri Tengra	108.26	21.90
	8	Boro Baim/Shal Baim	86.87	-
	9	Chapila	-	5.90
	10	Chela/Narkeli Chela	1.35	0.01
	11	Chhep Chela	32.89	-
	12	Carfu	7.50	-
	13	Darkina/Chukkuni	-	0.01
	14	Dhela/Lohasur	-	0.01
	15	Fesha/Fefri/Fasha	4.96	-
	16	Foli	1.94	-
	17	Foli	-	25.70
	18	Ful Dhela	-	0.01
	19	Gazar/Gazal	2.25	35.30
	20	Ghora Dhela	-	0.03
	21	Gol Chanda	106.53	27.80
	22	Grass Carp	9.75	-
	23	Guchi Baim	-	20.50
	24	Gura Icha/Jal Mach	-	0.01
	25	Gura Icha/Kuncho Icha	-	5.90
	26	Gutum/Butkuni/Pia	-	0.02
	27	Illish	5.26	-
	28	Jatputi/Vadi Puti	138.77	230.20
	29	Kakila	92.95	16.20
	30	Kani Pabda/Boali Pabda	3.10	-
	31	Katla/Katol/Fega	9.18	-
	32	Kholisha/Pata Kholisha	1.20	35.20
	33	Koi/Gachua Koi	107.05	-
	34	Lal Kholisha/Boicha	0.90	2.90
	35	Lomba Chanda	46.75	8.80
	36	Magur/Mojgur	-	45.50
	37	Meni/Veda	30.61	-
	38	Mola	1.50	10.30
	39	Pabda	13.80	-
	40	Puti tor/Mohasher	2.14	-
	41	Raek/Lachchu	-	0.04
	42	Rui	17.43	-
	43	Sarputi	9.87	-
	44	Shing	48.97	70.00
	45	Shol/Shoil	1.55	90.00
	46	Silver Carp	6.75	-
	47	Taki/Ladi	25.91	150.30
	48	Tara Baim	10.25	16.10
	49	Tengra/Guinga	15.43	80.00
	50	Tepa/Potka	-	4.40
	51	Tinchokha/Kanpona	-	0.01
	52	Tit punti	21.00	21.90
	-	**Total (kg)**	**1065**	**938.17**
Boro Paikka	1	Bacha	1.55	-

Name of waterbody	Sl. No.	Name of species	Open catch wt. (kg)	Major harvest wt. (kg)
Beel				
	2	Baila/Bele	-	1.00
	3	Boal	-	2.50
	4	Bojuri Tengra	11.14	6.50
	5	Boro Baim/Shal Baim	24.41	-
	6	Chapila	0.56	1.00
	7	Chela/Narkeli Chela	-	0.01
	8	Chuna Kholisha/Chata	0.63	-
	9	Darkina	7.34	-
	10	Darkina/Chukkuni	-	0.01
	11	Ful Chela	1.20	-
	12	Ful Dhela	-	0.01
	13	Gazar/Gazal	-	9.50
	14	Goinna	3.43	-
	15	Gol Chanda	3.03	2.20
	16	Golsha/Golsha Tengra	-	0.02
	17	Grass Carp	15.93	-
	18	Guchi Baim	0.78	2.40
	19	Gura Icha/Jal Mach	52.42	-
	20	Gura Icha/Kuncho Icha	3.45	0.70
	21	Gutum	3.22	-
	22	Gutum/Butkuni/Pia	10.65	0.50
	23	Jatputi/Vadi Puti	203.45	90.70
	24	Jhili Puti/Gini Puti	3.00	-
	25	Kakila	-	1.40
	26	Kholisha/Pata Kholisha	1.97	2.60
	27	Koi/Gachua Koi	12.66	25.30
	28	Lal Kholisha/Boicha	1.31	0.00
	29	Lomba Chanda	-	0.01
	30	Magur/Mojgur	0.54	3.50
	31	Meni/Veda	-	27.20
	32	Mola	4.90	10.00
	33	Rui	3.75	-
	34	Silver Carp	9.89	-
	35	Shing	-	5.40
	36	Shol/Shoil	-	17.00
	37	Taki/Ladi	9.41	50.20
	38	Tara Baim	-	2.20
	39	Tengra (Batashi)/Aluni	1.32	-
	40	Tepa/Potka	2.33	0.01
	41	Tengra/Guinga	-	20.00
	42	Thai Sarputi/Raj Puti	3.88	-
	43	Tinchokha/Kanpona	-	0.00
	44	Tit punti	87.88	-
	-	**Total (kg)**	**486.04**	**281.88**
Silarag Group Fishery	1	Ayre	37.07	5.50
	2	Bacha	64.10	3.00
	3	Baila/Bele	392.00	18.45
	4	Bata	62.00	-
	5	Batashi/Aluni	447.16	2.00
	6	Batashi/Aluni	-	5.00
	7	Bighead Carp	84.68	5.00
	8	Boal	642.72	5.00
	9	Bojuri Tengra	315.25	6.15
	10	Boro Baim/Shal Baim	-	180.80
	11	Chapila	15.94	18.45
	12	Chitol	15.94	-
	13	Carfu	11.69	88.70
	14	Dimua/Kathali Icha	105.09	5.00
	15	Foli	-	370.70
	16	Futani Puti	66.45	-
	17	Gachua/Telo Taki	1.12	-
	18	Gazar/Gazal	-	690.40
	19	Ghaura	165.77	-
	20	Goinna	306.49	70.80
	21	Gol Chanda	214.47	12.30
	22	Golsha/Golsha Tengra	50.09	700.00
	23	Grass Carp	32.89	15.00
	24	Guchi Baim	299.25	30.75
	25	Guji Ayre	5.03	6.00
	26	Gura Icha/Jal Mach	-	2,800.00
	27	Gura Icha/Kuncho Icha	42.86	-
	28	Gutum	0.00	14.00
	29	Gutum/Butkuni/Pia	359.34	-
	30	Illish	8.50	-
	31	Jatputi/Vadi Puti	492.92	1,200.80
	32	Kajoli	56.51	-
	33	Kakila	56.08	20.00
	34	Kalibaus	323.36	90.30
	35	Kanchon Puti	0.11	-
	36	Katla/Katol/Fega	56.19	-
	37	Kholisha/Pata Kholisha	41.11	12.30
	38	Koi/Gachua Koi	1.74	500.30
	39	Kuichcha	262.59	-
	40	Lomba Chanda	181.96	6.15
	41	Magur/Mojgur	86.65	210.60
	42	Meni/Veda	0.42	875.10
	43	Modhu Pabda	3.72	2.00
	44	Mola	-	12.30
	45	Mola Puti	30.45	-
	46	Mrigal/Mirka	46.84	1.00
	47	Pabda	13.18	0.50
	48	Panga/Sindure gutum	8.57	-
	49	Pangus	0.86	-
	50	Raek/Lachchu	15.50	1.00
	51	Ranga Chanda/Lal Chanda	0.88	5.50
	52	Rani/Cheka/Bou	94.96	0.50
	53	Rita/Ritha	38.26	-
	54	Rui	49.93	112.50
	55	Sarputi	3.40	4.00
	56	Shilong/Shilon	16.39	390.50
	57	Shing	221.98	879.80
	58	Shol/Shoil	12.28	120.30
	59	Silver Carp	137.65	810.60
	60	Taki/Ladi	262.18	30.75
	61	Tara Baim	327.72	-
	62	Tengra/Guinga	510.16	902.20
	63	Tepa/Potka	-	0.50
	64	Teri Puti	-	5.00
	65	Thai Pangas/Bedeshi Pangas	32.15	-
	66	Thai Sarputi/Raj Puti	60.06	-
	67	Tit punti	23.25	246.00
	-	**Total (kg)**	**7215.92**	**11493.50**
Mourra Beel*	1	Baila/Bele	40.28	7.80
	2	Bashpata/Kajoli	0.45	-
	3	Batashi/Aluni	3.21	-
	4	Boal	58.22	48.20
	5	Bojuri Tengra	7.49	9.40
	6	Boro Baim/Shal Baim	-	32.80
	7	Chapila	13.33	-
	8	Chela/Narkeli Chela	2.64	-
	9	Chhatka Chingri	0.50	-
	10	Carfu	-	38.20
	11	Darkina/Chukkuni	-	0.01
	12	Dhela/Lohasur	-	0.03
	13	Dimua/Kathali Icha	0.75	-
	14	Foli	-	0.02
	15	Ful Dhela	-	0.00
	16	Gazar/Gazal	-	67.20
	17	Ghora Mach/Longu/Ghora Mukh	1.17	-
	18	Goinna	14.61	35.00
	19	Gol Chanda	22.53	13.80
	20	Golsha/Golsha Tengra	36.35	70.20
	21	Guchi Baim	22.16	25.50
	22	Gura Icha/Jal Mach	72.28	3.20
	23	Gura Icha/Kuncho Icha	2.50	-
	24	Gutum	17.43	-
	25	Gutum/Butkuni/Pia	17.81	-
	26	Jatputi/Vadi Puti	21.27	530.80
	27	Kachki/Kechki/Suborna	0.60	-
	28	Kakila	27.12	16.50
	29	Kalibaus	-	30.00

Name of waterbody	Sl. No.	Name of species	Open catch wt. (kg)	Major harvest wt. (kg)
	30	Kholisha/Pata Kholisha	13.73	11.80
	31	Koi/Gachua Koi	65.37	102.30
	32	Lomba Chanda	15.47	6.30
	33	Magur/Mojgur	-	35.50
	34	Meni/Veda	22.69	130.10
	35	Modhu Pabda	5.93	-
	36	Mola	3.82	40.30
	37	Pabda	3.33	-
	38	Ranga Chanda/Lal Chanda	1.00	-
	39	Raek/Lachchu	-	0.01
	40	Rani/Cheka/Bou	0.74	0.00
	41	Rui	-	19.50
	42	Shing	18.78	70.00
	43	Shol/Shoil	-	95.80
	44	Taki/Ladi	70.82	200.90
	45	Tara Baim	49.56	36.70
	46	Tengra/Guinga	17.15	87.80
	47	Thengua/Shul Icha	0.75	-
	48	Tinchokha/Kanpona	2.38	0.00
	49	Tit punti	37.32	18.80
	-	**Total (kg)**	**711.51**	**1784.48**

Appendix 4. Fish species group code & name, local name and scientific name

Group code	Group name	Local name	Scientific name
1	Major carp	Rui/Ruhit/Vuitta	*Labeo rohita*
		Katla/Katol/Fega	*Catla catla*
		Mrigal/Mirka	*Cirrhinus cirrhosus*
		Kalibaus/Baus/Kalla Mach	*Labeo calbasu*
		Mohashol/Mohal/Mohasher	*Tor tor*
		Puti tor/Mohasher	*Tor putitora*
2	Minor carp	Goinna	*Labeo gonius*
		Bata	*Labeo bata*
		Vangra/Vangla/Vangol Bata	*Labeo boga*
		Tatkini	*Crossochelius latius*
		Raek/Nora/Lachchu/Taita/Bogna	*Cirrhinus reba*
		Nandil/Nandina	*Labeo nandina*
		Sarputi/Sheron Puti/Puti tor	*Puntius sarana*
		Vala/Vol	*Barilius bola*
		Ghora Mach/Longu/Ghora Mukh	*Labeo pangusia*
		Joia/Tila/Hiralu/Koksha	*Barilius bendelesis*
		Joia	*Barilius sp.*
		Vagna/Vangol Bata	*Labeo boggut*
		Kachki Bata	*Mugil cascasis*
		Agun chokha/Angrot/karsha	*Labeo angra*
		Ghora mukh/Kating/Longu	*Labeo pangusia*
		Jatputi/Vadi Puti	*Puntius sophore*
		Kanchon Puti/Taka Puti	*Puntius conchonius*
		Tit Puti	*Puntius ticto*
		Jhili Puti/Gini Puti	*Puntius gelius*
		Futani Puti	*Puntius phutunio*
		Teri Puti	*Puntius terio*
		Mola Puti	*Puntius guganio*

Group code	Group name	Local name	Scientific name
		Chola Puti	*Puntius chola*
		Mola/Maya/Moa/Mousi	*Amblypharyngodon mola*
		Dhela/Lohasur	*Rohtee cotio*
		Chela/Katari/Narkeli Chela	*Salmostoma bacaila*
		Bashpata/Chhebri/Dibari	*Danio devario*
		Darkina/Dakkan/Chukkuni	*Esomus danricus*
		Piali/Morar/Morari	*Aspidoparia morar*
		Tinchokha/Kanpona/Chokhpona	*Aplocheilus panchax*
		Boiragi/Boirali	*Salmostoma argentea*
		Onju	*Danio rerio*
		Kash Khoira/Lobuka	*Chela laubuca*
		Nipati/Jhia/Darakona	*Danio dangila*
		Darkina	*Rasbora daniconius*
		Elong	*Rasbora elanga*
		Leujja Darkina	*Rasbora Rasbora*
		Ful Dhela	*Salmostoma phulo*
		Ghora Dhela	*Oxygaster gora*
		Chhep Chela	*Chela cachius*
		Bichi/Kanpona	*Oryzius melastigma*
		Kosua punti/ Kosuati punti	*Puntius cosuatis*
		Pathar chata/Tila koksha	*Barilius tileo*
		Koksa/Nun chora/Joia/Tila/Hiralu	*Barilius bendlisis*
3	Large catfish	Ayre	*Mystus aor*
		Guji Ayre/Guji Kata/Guji Aol/Guija	*Mystus bleekeri*
		Bagha Ayre/Bagair	*Bagarius bagarius*
		Boal	*Wallago attu*
		Rita/Ritha	*Rita rita*
		Pangus	*Pangasius pangasius*
4	Small catfish	Gang Magur	*Plotosus canius*
		Kani Pabda/Boali Pabda	*Ompak bimaculatus*
		Golsha/Golsha Tengra	*Mystus seenghala*
		Bojuri Tengra/Choto Tengra	*Mystus tengara*
		Kabashi Tengra	*Mystus cavasius*
		Modhu Pabda/Paiva/Pabda	*Ompak pabda*
		Shing/Jiol Mach/Kanuch	*Heteropneustes fossilis*
		Magur/Mojgur	*Clarias batrachus*
		Gang Tengra/Ghagot	*Gagata gagata*
		Tengra (Batashi)/Aluni	*Batasio batasio*
		Tengra/Guinga	*Mystus vittatus*
		Gagor	*Mystus menoda*
		Bichi Guinga/Jol Guinga	*Chandramara chandramara*
		Pabda	*Ompok pabo*
		Gang Tengra/Gongra	*Gagata youssoufi*
		Gon mach/Gaara/Gang tengra	*Goganra viridescens*
		Harkata/Hera/Kutakanti	*Erethistes hara*
		Hera/Kutakanti	*Hara jerdoni*
		Kanoch	*Amblyceps mangois*
		Olyrakempi (no Bengali name)	*Olyrakempi*
		Shilong/Shilon	*Silonia silondia*
		Dhal magur/Telechita/Telechata	*Glypothorax telchitta*
		Bacha	*Eutropiichthys vacha*
		Kajoli	*Ailia coila*
		Ghaura	*Clupisoma garua*
		Chekbeka/Cheka/Gangina/Kotkoti	*Chaca chaca*
		Kaua/Jongla/Telia	*Gagata cenia*
		Kutakandi	*Erethistes pussilus*
		Mure bacha/Bacha/Nagor bacha	*Utropiichthys murius*

Group code	Group name	Local name	Scientific name
		Batashi/Batai/Aluni/Gilakani	*Pseudeutropius atherinoides*
		Bashpata/Kajoli	*Aillichthys punctata*
5	Snake head	Taki/Ladi/Saitan/Voskol/Sati	*Channa punctatus*
		Shol/Shoil	*Channa striatus*
		Gazar/Gazal	*Channa marulius*
		Gachua/Cheng/Raga/Laua	*Channa orientalis*
		Gachua/Telo Taki	*Channa gachua*
6	Eel	Boro Baim/Shal Baim	*Mastacembelus armatus*
		Guchi Baim/Chikra/Chirpa/Chipra	*Mastacembelus pancalus*
		Tara Baim	*Macrognathus aculeatus*
		Kuichcha/Kuichcha Baim	*Monopterus cuchia*
		Baus/Bamus/Bonehara	*Anguilla bengalensis*
		Hizra/Hizme/Bamas/Boro	*Pisodinophis boro*
		Sada Cheua	*Trypauchen vagina*
		Lal Cheua	*Odontamblyopus rubicundus*
7	Exotic fish	African Magur/Rakhkhushe Magur	*Clarias garipinas*
		Thai Magur	*Clarias macrocephalus*
		Thai Pangas/Bedeshi Pangas	*Pangasianodon hypophthalmus*
		Telapia/Telapata	*Oreochromis mossambica*
		Nilotica	*Oreochromis niloticus*
		Silver Carp	*Hypophthalmichthys molitrix*
		Grass Carp	*Ctenopharyngodon idellus*
		Mirror Carp	*Cyprinus carpio (communis)*
		Common Carp/Carfu/Japani Rui	*Cyprinus carpio (specularis)*
		Bighead Carp	*Aristichthys nobilis*
		Thai Sarputi/Raj Puti	*Puntius gonionotus*
		Black Carp	*Mylpharyngodon pisceus*
8	Other migratory species	Illish	*Hilsa ilisa*
		Poa	*Pama pama*
		Khorshola/Kholla/Khorshuna	*Rhinomugil corsula*
		Fesha/Fefri/Fasha	*Setipinna phasa*
		Chaika/Choukka	*Pellona ditchela*
		Chhuri Mach	*Trichiurus savala*
		Teli Fesha/Orchona	*Setipinna taty*
		Tular Dati/Takra/Chuler Dati	*Sillaginopsis panijus*
		Chhuri/Badar Chhuri/Badarsri	*Trichiurus muticus*
		Sura/Suraia/Soria/Toposhi/Muni	*Polynemus paradiseus*
		Ghagra/Medh/Maita	*Cybium guttatum*
		Loitta/Lutta/Nehari	*Harpodon nehereus*
		Koral/Vetki	*Lates calcarifer*
		Rup Chanda	*Pampus chinensis*
		Koitor Poa/Koitor/Dekri Poa	*Johnius coitor*
		Foli Chanda	*Pampus argenteus*
		Kalo Chanda	*Parastromateus niger*
		Nona Bele	*Brachygobius nunus*
		Chapila/Korti/Chalpa/Chopra	*Gudusias chapra*
		Kachki/Kechki/Suborna	*Corica soborna*
		Tak Chanda	*Leiognathus equulus*
		Goni Chapila/Bori	*Gonialosa manminna*
		Bori/Goni chapila/Chapila	*Gonialosa manmina*
		Kathal pata/Bat pata/Pan pata	*Brachirus oriestalis*
9	Other beel species	Koi/Gachua Koi	*Anabas testudineus*
		Bali chata/Buth Koi/Bilturi	*Nemacheilus botia*
		Kali Koi/Napit/Koi Bandi	*Badis badis*
		Dari	*Nemacheilus zonatus*
		Karka/Khorika/Koirka	*Nemacheilus corica / Gutum*
		Foli/Kanila/Fotol/Vali/Foloi	*Notopterus notopterus*

Group code	Group name	Local name	Scientific name
		Chitol	*Notopterus chitala*
		Kakila/Kaikla/Kakla/Kaikka	*Xenentodon cancila*
		Ekthota/Subol	*Hemiramphas gaimardi*
		Ekthota/Subol	*Dermogenys pussilus*
		Baila/Bele/Vangla	*Glossogobius giuris*
		Ranga Chanda/Gol Chanda	*Chanda ranga*
		Lomba Chanda/Nama Chanda	*Chanda nama*
		Kholisha/Pata Kholisha	*Colisa fasciatus*
		Lal Kholisha/Boicha	*Colisa lalius*
		Chuna Kholisha/Chata	*Colisa sota*
		Meni/Veda/Royna	*Nandus nandus*
		Cheka/Bou	*Botia dario*
		Gutum/Gutumi/Butkuni/Pia	*Lepidocephalus guntea*
		Balitora	*Psilorhynchus balitora*
		Naftani/Naptani	*Ctenops nobilis*
		Tepa/Potka	*Tetraodon cutcutia*
		Ptul/Beti/Bet	*Botia lohachata*
		Gol Chanda	*Chanda lala*
		Chanda	*Chanda beculis*
		Rani/Cheka/Bou	*Botia dayii*
		Bou	*Botia sp.*
		Puia/Goru Puia/Puia/Goru Puia	*Lepidocephalus annandalei*
		Puia/Goru Puia/Goru Puia/Puia	*Lepidocephalus irrorata*
		Puia/Goru Puia/Goru Puia/Puia	*Lepidocephalus berdmorei*
		Gutum	*Nemacheilus savona*
		Gutum	*Nemacheilus spp.*
		Gutum	*Nemacheilus zonanternans*
		Gutum	*Somileptes gongota*
		Balitora/Titari	*Psilorhynchus sucatio*
		Kholisha/Pata Kholisha	*Colisa labiosus*
		Pnaga/Sindure gutum	*Pangio pangia*
		Kholoi muchuri/Gutea	*Acanthocobitis botia*
		Kumirer Khil/Kota Kumirer Khil	*Microphis decota*
10	Prawn	Golda Icha	*Machrobrachium rosenbergii*
		Gura Icha/Isla/Jal Mach	*Nematopalaemon tenuipes*
		Dimua/Kathali Icha	*Macrobarchium villosimanus*
		Thengua/Shul Icha	*Macrobrachium birmanicum*
		Chhatka Chingri	*Macrobrachium malcolmsonii*
		Nona Chingri	
		Gura Icha/Kuncho Icha	*Macrobrachium lamarrei*
		Kakra	*Stylla sp.*