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Species composition and gear used in fishing during pre-monsoon period in the Shitalakshya river at Siddirgonj area, Narayangonj

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Abstract: The present investigation was conducted on the fish species composition and gear used in pre-monsoon period in the Shitalakshya river at Siddirgonj area, Narayangonj District. Personal interview with the fishermen was carried out for a period of twelve weeks from 1 February to 30 April, 2009. A total of 20 species of fishes belonging to 18 genera, under 10 families were identified in the catches of different nets. The highest numbers (10) of species were recorded in the catches of seine net and the lowest numbers (3) of species were recorded in case of moiya net. A total of 6 fishing gear types such as seine net (*moshari ber jal*), lift net (khora jal), lift net (veshal jal), setbag net (dur jal), gill net (current jal) and moiya net (moiya jal) were recorded from the study area. Fishing gears, like seine nets (*moshari berjal*) and gill net (*current jal*) were identified as destructive to local fish population.
Key words: Species composition, fishing gear, pre-monsoon, Shitalakshya river

Introduction

Bangladesh is a tropical country of low lying and fertile land consist an area of 1, 47,570 sq. km. Fisheries sector plays an important role in providing income, employment, nutrition and foreign exchange earning and also plays a great role in improvement of the socio-economic condition of fishermen in Bangladesh. The area of water resource is about 4.9 million hectare, which is about 34% of our total area of Bangladesh. About 1.25 crore people directly or indirectly depend on fisheries sector for their livelihood. In our country about 13 lakh fishermen lives on fishing as their main occupation (DoF, 2008). Fish alone supplies about 58% of animal protein. Fisheries sector supplement not only the food and nutrition sector but also the job sector. The Shitalakshya river originates from the Old Brahmaputra and bifurcates into two courses at Toke in Gazipur district. One of the courses named the Banar flows South-West and at lakpur is renamed as the Shitalakshya. It then flows east of Narayanganj town. The Shitalakshya falls into the Dhaleswari near Kalagachhiya. The length of the river is about 110 km and the width near Narayangonj is about 300m but reduces to about 100m in the upper reach. Its highest discharge has been measured at 2600 cumec at Demra. The River is navigable throughout the year and shows little erosional tendency. The main problem of this area is toxicity of water due to increased numbers of garments companies and dying companies. As a result the diversity of fishes may be declined and also fishing activities. Since the inland fisheries, play an important role to the employment opportunities therefore, immediate efforts should be taken to the proper management of these resources (Banglapedia, 2003). The present research programmed was conducted to understand the types of different fishing gears used in fishing in pre-monsoon period in order to formulate an appropriate management measures for the riverine fisheries of Bangladesh, particularly the study area.

Materials and Methods

The study was conducted for a period of 12 weeks from 1st February to 30th April, 2009 in the Shitalakshya river adjacent to the Goadnile-Hazaribug of Siddirgonj thana in Narayangonj District. The study was based on catch assessment. The study area was about 2 km long. Fifty (50) fishermen were selected randomly from professional, seasonal and subsistence fishermen groups. The samples and relevant data were collected once weekly throughout the study period with the help of questionnaire. Primary data were collected directly from the different groups of fishermen. Sampling of catches and their assessment were done once per week during the study period. Mainly tabular analysis technique was used in this study. Data were presented mostly in the tabular form, because of their simple collection technique, widely used and easy to understand. Collected data were analyzed by Microsoft Excel through computer.

Results and Discussion

Fishing Gear Used in the Shitalakshya River at Siddirgonj area, Narayangonj: The fishery of the Shitalakshya river is multispecies and multigear in nature. Different types of fishing gears were used in different seasons for fishing of the study area. Type of nets, their lengths, depths and mesh sizes vary depending on choice and capital of the persons involved in commercial fishing as well as the abundance of fish. Most of the areas of the river were to remain dry from January to April. A total of six (6) types of fishing nets were recorded to be used by the fishermen of the study area. The numbers of fishermen according to gear user in the study are given in Table 1.

Table 1. Types of fishing gear used in the Shitalakshya river at Siddirgonj area, Narayangonj

Group Name	Local Name	English Name	No. of fishermen (n=50)
Nets (6)	Moshari ber jal / Ladi jal	Seine net	10
	Dur jal / Bindi jal	Bag / Setbag net	6
	Veshal jal	Lift net	6
	Khora jal / Khoda jal	Lift net	15
	Current jal	Gill jal	5
	Moiya jal	Moiya jal	8
Total			50

Weekly variation of gears used: It was found that February, March and April are dry season and therefore limited numbers of fishing gear are used here. Among this moshari ber jal and dur jal are used in maximum week by

fishermen but frequencies of use was highest in case of veshel jal (Table 2). In here mention that when the water level started to increase day by day due to heavy rain fall and creates flooded condition the number of nets used also increased.

Table 2. Weekly variation in the use of gears in the Shitalakshya river at Siddirgonj area, Narayangonj

Names of the gears	Weeks												Total
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	
Mosheri ber jal				12	10	13	14	12	12	14	15	15	117
Dur jal	2	3	3	4	4	3	4	3	5	5	4	5	45
Veshal jal	13	16	12		14	12	15	16	13	12			123
Khora jal				15	14	16	17	16	14		13		105
Current jal			3		2					2	2		09
Moiya jal	3		3	4				4	3		5	5	27
Total	18	19	21	35	44	44	50	51	47	33	39	25	426

Diurnal variations in the use of gears: From the data we found that most of gears are used during daytime mainly in morning and evening (Table 3). Some also found to operate at night. When the light intensity of day increases due to heavy sunshine and creates highest temperature and that time fishermen involved in different type of fishing activities.

Table 3. Diurnal variation in the use of gears in the Shitalakshya river at Siddirgonj area, Narayangonj

Types of the gears	Local Name	English Name	Duration and frequency of the gear use
Nets (n=6)	Moshari ber jal	Seine net	After half an hour interval in whole night
	Dur jal	Bag / Setbag net	4 hours intervals at afternoon to evening.
	Veshal jal	Lift net	15 minutes intervals in 24 hours.
	Khora jal	Lift net	10 minutes intervals in morning and night.
	Current jal	Gill jal	Use in 24 hours
	Moiya jal	Moiya jal	1 hour interval from 6:00 am to 9:00 am

Gear-wise Fish Catch Assessment Survey

Species composition: A total of 20 species of fishes belonging to 18 genera, 10 families were identified in the catches of different nets during the study period (Table 4). A total of 49 species of fishes were recorded from the Kolimar haor, itna, Kishoregonj by Hossain (2007). Hoque (2007) recorded 41species of fishes from the haor Nikli, Kishorgonj. A total of 25 species of fishes were recorded from Savar Khagorvaria Zolkor beel in Pabna district by Miah (2004).

Table 4. Fish Species composition in the study area of the Shitalakshya river, at Siddirgonj area, Narayangonj

Groups	Family	Scientific Name	Fishing methods
Carps	Cyprinidae	*Labeo rohita, Labeo calbasu*	Khora jal, Gill net
Minnows	Cyprinidae	*Amblypharyngodon mola, Oxygaster phulo*	Seine net, Setbag net
Barbs	Cyprinidae	*Puntius sarana, P. ticto*	Seine net, Setbag net
Air-breathing	Clariidae	*Clarias batrachus*	Gill net
Fresh water shark	Siluridae	*Wallago attu*	Lift net
Catfish	Schilbeidae	*Aorichthys aor, Mystus cavasius, Silonia silondia, Eutrophiichthys bacha, Clupisoma garua*	Setbag net, Seine net, Lift net, Khora jal
Feather back	Notopteridae	*Chitala chitala*	Lift net
Sardines	Clupeidae	*Gudusia chapra,*	Seine net, Setbag net
Small prawn	Palaemonidae	*Macrobrachium lamarrei*	Moiya net, Setbag net
Glass perch	Centropomidae	*Chanda nama*	Seine net, Moiya net
Gobies/Mud skipper	Gobiidae	*Glosogobius giuris*	Seine net
Loaches	Cobitidae	*Lepidocephalus guntea*	Gill net, Moiya net
Sardines	Clupeidae	*Tenualosa ilisha* (jatka)	Gill net

Ber jal (Seine net): In the catches of ber jal, a total of 10 species of fishes (*Aorichthys aor, Mystus cavasius, Silonia silondia, Eutrophiichthys bacha, Clupisoma garua, Gudusia chapra, Glosogobius giuris, Chanda nama, Puntius sarana* and *Amblypharyngodon mola*) were recorded during the study period. Rabbani (2007) recorded 22 species of fishes including chingri in the Karatoa river. Miah (2004) found 23 species of fishes in Zolkor beel where *A. mola* was the most dominant species which contribute about 24.09% and *L. calbasu, L. rohita* were the least dominant species contribution separately only 30% of the catch, respectively. BCAS (1994) recorded 19 species

of fish other than shrimp and small size fishes in Chanda beel. Shahjahan *et al.* (2001) recorded 25 species of fish including shrimp in the Jamuna river, whereas Hossain (1998) recorded 19 species of fish in the Old Brahmaputra river in the catches of this gear.

Dur jal (Setbag net): In the catches of Dur jal, a total of 6 species of fishes (*Aorichthys aor, Mystus cavasius, Gudusia chapra, Macrobrachium lamarri, Puntius ticto* and *Oxygaster phulo*) were recorded during the study period.

Veshal jal (Lift net): A total of 6 species of fishes (*Wallago attu, Chitala chitala, Aorichthys aor, Mystus cavasius, Silonia silondia* and *Eutrophiichthys bacha*) were recorded during the study period in the catches of veshal jal. Karim (2004) recorded 25 species of fishes in Dhamharail beel where *P. sophore* (11.40%) was the highest dominant species and *P. sarana, W. attu, N. chitala, M. armatus* and *H. fossilis* were the lowest abundant species to the catch.

Khora jal (Lift net): A total of 4 species of fishes (*Labeo rohita, Labeo calbasu, Silonia silondia* and *Eutrophiichthys bacha*) were recorded in the catches of Khora jal during the study period. Shahjahan (2000) reported 15 species of fishes in the catches of dharma jal during the study period in the Jamuna river. Paul *et al.* (1993) recorded 28 species of fishes in the catches of lift net in Halti beel.

Current jal (Gill net): In the present study, in case of current jal a total of 5 species of fishes (*Tenualosa ilisha, Labeo rohita, L. calbasu, Clarias batrachus* and *Lepidocephalus guntea*) were recorded during the study period. Miah (2004) recorded 13 species of fishes in Zolkor beel where *P. sophora* (38.53%) was the highest dominant species and *L. calbasu* (.9%) was the lowest dominant species. Karim (2004) recoreded 18 species of fishes in Dhamharail beel. Rabbani (2007) recoreded 12 species in the Karatoa river.

Moiya jal (Moiya net): In the present study, a total of 3 species of fishes (*Lepidocephalus guntea, Macrobrachium lamarrei* and *Chanda nama*) were recorded during the study period. Hossain (1998) recorded 12 species of fish in the catch of Moiya jal in the Old Brahmaputra River. He recorded chingri (87.86%), guchi baim (2.32%), baim (1.55%), golda chingri (1.42%), gutum (1.29%), baila (1.29%), tit punti (1.29%), and bhada (1.16%) in the Old Brahmaputra river.

The result of present study reveals that highest number of fishes (10) was caught by seine net and *Tenualosa ilisha* (jatka) was caught by current jal which has already been banded by Government. Among the studied fishes, 10 species viz., *Labeo calbasu, Aorichthys aor, Mystus cavasius, Silonia silondia, Eutrophiichthys bacha, Clupisoma garua, Chitala chitala, Puntius sarana, P. ticto* and *Chanda nama* are endangered (IUCN, 2000). Breeding activities of fishes begin during the pre-monsoon flood, depending on the rain and volume of water in the rivers, beels and floodplains (Ali, 1997). For the conservation of fishes diversity and ensure their successful natural breeding the following recommendations can be.

(i) Fishing should be done with out capturing gravid brood and fry during breeding season, (ii) Endangered species should be protected through proper management (iii) Ban on using the destructive gears (especially seine net and current jal) (iv) Establish the fish sanctuary (February to July)

References

Ali, M. Y. 1997. Book on Fish, Water and People, Reflections on Inland Openwater Fisheries Resources of Bangladesh. The University Press Limited, Red Crescent Building, 114 Motijheel, Dhaka-1000, 1-15.

Banglapedia. 2003. National Encyclopedia of Bangladesh. Dhaka: Asiatic Society of Bangladesh.Vol-9, 272pp.

BCAS (Bangladesh Centre for Advanced Studies). 1994. The Floodplain Production monitoring system. Third annual report, July,1993-June,1994. Bangladesh Centre for Advanced Studies, Dhaka, Bangladesh, 1-6.

DoF (Department of Fisheries). 2008. 'Matsha Shampad Unnayan Obhijan 2008'. Directorate of Fisheries, Ministry of Fisheries and Livestock, People Republic of Bangladesh, 79-81.

Hoque, M.M. 2007. Study on the some aspects of fisheries resources and socio-economic condition of fishermen of the haor Nikli, Kishorgonj. M.S. Thesis, Department of Fisheries Management, Bangladesh Agricultural University, Mymensingh, 71pp.

Hossain, M.M. 2007. Utilization of Mokash beel for livelihood management of local fishermen and their socio-economic conditions. M.S thesis, Department of Aquaculture, Bangladesh Agricultural University, Mymensingh, 87pp.

Hossain, M. 1998. A preliminary survey on the fisheries and socio-economic condition of fishermen of the Old Brahmaputra River. M.S. Thesis, Department of Fisheries Management, Bangladesh Agricultural University, Mymensingh, 95pp.

IUCN. 2000. Bangaldesh. Red Book of Threatened fishes of Bangladesh. IUCN-The World Conservation Union. xii+116p.

Karim, M.M. 2004. Community based fishing activities and socio-economic status offishermen in Dhamharail beel under Kapasia upazila of Gazipur District. M.S. Thesis, Department of Fisheries Management, Bangladesh Agricultural University, Mymensingh, 41-55.

Miah, M.A.R. 2004. Study on the community based fish catch assessment of Savar Khagorvaria Zolkor beel in Pabna district. M.S. Thesis, Department of Fisheries Management, Bangladesh Agricultural University, Mymensingh, 28-50.

Paul, S.K., Rahman, S., Razzaque, A. and Chakraborty, B. 1993. Gear selectivity of the floodplains. Progress Report (June-September, 1993). Fisheries research Institute, TFP. Sanataher, Bogra.

Rabbani, M.G. 2007. Study on the Fisheries and socio-economic condition of fishermen of Kareatoa river. M.S. Thesis, Department of Fisheries Management, Bangladesh Agricultural University, Mymensingh, 85pp.

Shahjahan, M., Miah, M.I. and Haque, M.M. 2001. Present status of fisheries in the Jamuna river. Pakistan J. Bio. Sci. 4(9): 1173-1176.

Shahjhan, M. 2000. Study on the fisheries and socio-economic conditions of the fisherman in the Jamuna river adjacent Dhunat upazilla under Bogra district. M.S. Thesis, Department of Fisheries Management, Bangladesh Agricultural University, Mymensingh, 95pp.