Published with Open Access at Journal BiNET
Vol. 13, Issue 02: 1116-1121
Journal of Bioscience and Agriculture Research
Journal Home: www.journalbinet.com/jbar-journal.html

Biodiversity of shorupdah beel, Manirumpur, Jessore

L. Majumder[1], M. G. S. Riar[1], N. A. Raushon[1], Sonia, Sku[1] and R. P. Mondal[2]

[1]Freshwater Station, Bangladesh Fisheries Research Institute, Mymensingh, Bangladesh. Phone: +880 91 66559
[2]Faculty of Ag. Eng. , Bangladesh Agriculture University, Mymensingh, Bangladesh

✉ For any information: ask.author@journalbinet.com, Available online: 25 April 2017.

ABSTRACT

The study was conducted to observe the biodiversity of Shorupdah Beel, fish species, non-piscine animal species and the aquatic vegetation. This beel riches with its biodiversity and most of them are consume by the people of surrounding area. This water body not so deep compare with its biodiversity, highest 5-6 feet in rainy season. A total fifty two species belong to ninteen families under nine orders were identified non-piscine biodiversity of Shorupdah Beel comprises five species of prawns, four species of mollusks, three species of arthropods, two species of amphibians and two species of reptiles. Only fish and prawn are consumed by local people and the highest catch found just after rainy season that is during August and September. Ten species of aquatic vegetation found in this beel. Among these some are edible and some are not. Fishermen and local people said that biodiversity has been declining very fast over the last decades due to change of water depth, over fishing, temperature, use of chemicals in agriculture etc.

Key Words: *Shorupdah beel, Fish biodiversity, Non-Piscine diversity and Aquatic vegetation*

Cite Article: Majumder, L., Riar, M. G. S., Raushon, N. A., Sonia, Sku and Mondal, R. P. (2017). Biodiversity of shorupdah beel, Manirumpur, Jessore. Journal of Bioscience and Agriculture Research,13(02), 1116-1121. **Crossref:** https://doi.org/10.18801/jbar.130217.136

I. Introduction

The 'Beel' is a term, used for large surface water body that accumulates surface runoff water through internal drainage channel (Banglapedia, 2004). It is lake-like wetland with static water. Beel are formed by inundation of low lying lands during flooding, where some water gets trapped even after flood waters recede back from the flood plains. They mostly occur in between the rivers and canals. Monirampur Upazila is an upazila of Jessore district in the Division of Khulna, Bangladesh. It is bounded by Jessore sadar upazila on the north, Kolaroa and Jhikargacha upazilas on the west, Abhaynagar upazila on the east and Dumuria and Keshabpur upazila on the South. The main rivers of Monirampur are the Harihar and Vodra River. It is situated 19 km from the district town. Shorupdah Beel is situated at Monirampur upazila in Jessore District. Shorupdah Beel is a small Beel which is 16 km away from the Jessore town. Fishes and other aquatic resources are harvested by local people living in surrounding village named Khedapara, Rohita, Galda and Gangalia. Most dominant groups of fish in Shorupdah Beel are carps, catfish, barbs, minnows, eels, perch, snakehead, clupeids. Shorupdah

Published with open access at journalbinet.com
EISSN: 2312-7945, © 2017 The Authors, Research paper

Beel is very important wintering area for ducks, geese, shorebirds and heron. People living in villages around the Beel harvest fish almost round the year except the dry season. In the Shorupdah Beel, fish culture is being practiced irregular basis by stocking the Beel with fish fingerlings composed of catla, mrigal, rui, sarputi, silver carp, grass carp, and other fishes. The present study was undertaken to assess the present status of fish biodiversity of Shorupdah Beel and to identify the aquatic vegetation of the Beel.

II. Materials and Methods

Shorupdah Beel in Monirampur upazila under Jessore district. Shorupdah Beel is occupied an area of 65 acre (during rainy season) which is 16 km far from the district town. Main source of water in this Beel is rainfall. The Beel area usually flooded every year. During dry season, the Beel is also used for the production of paddy and other crops. The local people living in surrounding villages of the Beel (Khedapara, Rohita, Galda, Gangalia) harvest fishes and other aquatic resources.

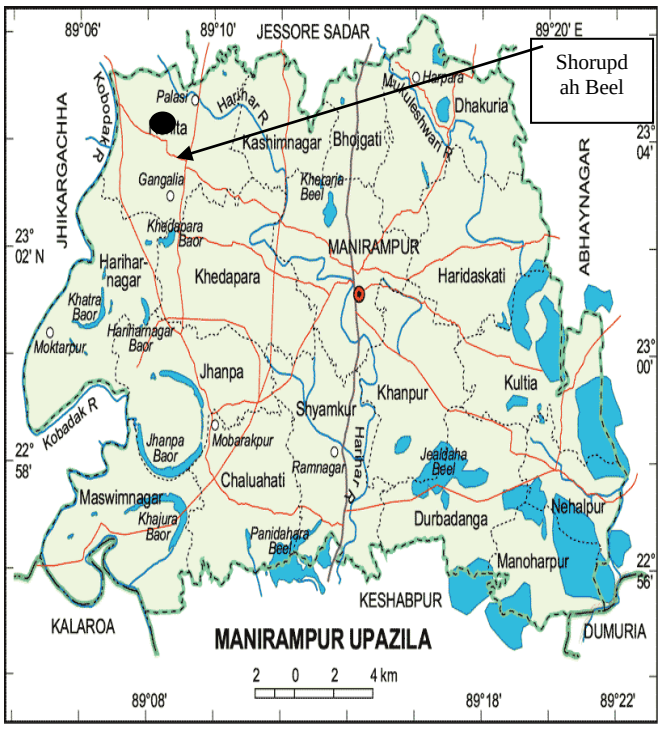

Figure 01. Map showing the location of the beel, black marked indicates the beel.

For observation of biodiversity of Shorupdah Beel, data were collected for seven months from April to October, 2014. Data were collected fortnightly during the period of study. To collect pertinent information, interview technique was as followed: one local person (respondent) was selected to look for fishermen's houses and to collect relevant data from fishermen. Participatory Rural Appraisal (PRA) tools such as Focus Group Discussion (FGD) and cross-check interviews with key informants were used for fishermen. To get data for questionnaire interview, simple random sampling method was followed for 40 fishermen in the Shorupdah Beel. The interview of fishermen was made at home or Beel sites during fishing. By observing the whole study area the author also accumulated some crucial information such as fish catch and aquatic vegetation of the beel. Participatory Rural Appraisal (PRA) was a group of method to collect information from target group. PRA tool such as Focus Group Discussion (FGD) was performed with fishermen. FGD was used to get an overview of particular issue such as existing fish catch composition. After collecting the data with the help of questionnaire interview and FGDs, it was crucial to check the information for justification of the collected data. Cross-check interviews were conducted with concerning person such as upazila fisheries officer (UFO), district fisheries officer (DFO), scientific officers of BFRI, School teachers, local leaders, NGOs worker etc. Data were coded, summarized and processed for analysis and interpretation.

Published with open access at journalbinet.com
EISSN: 2312-7945, © 2017 The Authors, Research paper

III. Results and Discussion

Physical structure of the beel: Shorupdah Beel is rich in bio-diversity of fish fauna and flora. The Beel is an irregular shaped waterbody having a water area of 65 acre (during rainy season). Most of the part of the Beel area is used as paddy field. The Beel inundates with rain water in the rainy season. During winter and summer season, maximum parts of the Beel goes to dry.

Water depth of shorupdah beel: Water depth of the Beel differs for different months and ranged from 0 to 5 ft. (according to UFO, Monirampur). The highest water depth was recorded in early July to October (during rainy season) and the Beel remains dry in December to March (during dry season).

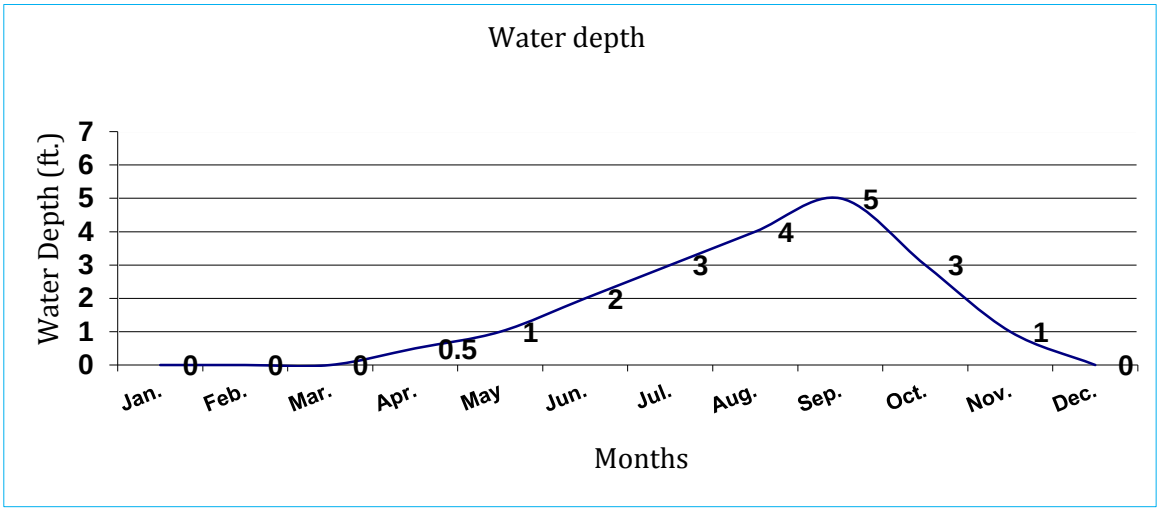

Figure 02. Monthly changes in water depth of the Beel.

Fish bio-diversity of shorupdah beel: The Beel consists of a good number of fish species, fresh water prawn, insects, mollusks, amphibians and reptiles.

Available Fish Species in Shorupdah beel: Species composition of fishes in the study area caught by different types of gears has been shown in Table 01. In the Beel, 52 species belonging to 19 Families under 9 Orders were found in different seasons. All the species were not reported in same magnitude. Among 54 species the maximum numbers of fish species were under Cyprinidae Family. The other Families were Bagridae, Anabantidae, Channidae, Mastacembelidae, Notopteridae, Siluridae, Belonidae, Tetradontidae, Clupeidae.

Table 01. Available fish species in Shorupdah beel

Order	Family	Scientific Name
Cypriniformes	*Cyprinidae*	*Labeo rohita*
		Catla catla
		Cirrhinus mrigala
		Cyprinus carpio
		Ctenopharyngodon idella
		Hypophthalmichthys molitrix
		Labeo calbasu
		Aristichthys nobilis
		Cyprinus carpio var. specularis
		Puntius sophore
		P. ticto
		P. stigma
		Barbodes gonionotus
		Amblypharyngodon mola
		Chela laubuca
		Chela cachius

Published with open access at journalbinet.com
EISSN: 2312-7945, © 2017 The Authors, Research paper

		Salmostoma bacaila
		Securicula gora
		Esomus danricus
	Cobitidae	*Lepidocephalus guntea*
Osteoglossiformes	*Notopteridae*	*Notopterus notopterus*
		N. chitala
Clupeiformes	*Clupeidae*	*Gudusia chapra*
Siluriformes	*Heteropneustidae*	*Heteropneustes fossilis*
	Siluridae	*Ompok pabda*
	Bagridae	*Seperata aor*
		Mystus vittatus
		Mystus tengara
		Mystus bleekeri
	Schilbeidae	*Pesudeutropius atherinoides*
	Clariidae	*Clarias batrachus*
Beloniformes	*Belonidae*	*Xenentodon cancila*
		Dermogeneys pussilus
Perciformes	*Ambassidae*	*Pseudambassis beculis*
		Pseudambassis lala
	Cichlidae	*Oreochromis niloticus*
	Channidae	*Channa orientalis*
		Channa striatus
		Channa marulius
		Channa punctatus
	Gobiidae	*Glossogobius giuris*
	Nandidae	*Nandus nandus*
	Anabantidae	*Anabas testudineus*
		Colisa fasciata
		Colisa lalius
		Colisa sota
Mastacembeliforms	*Mastacembelidae*	*Mastacembelus armatus*
		Macrognathus aculeatus
		Mastacembelus pancalus
Tetraodoniformes	*Tetraodontidae*	*Tetraodon cutcutia*
		T. potoca
Synbranchiformes	*Synbranchidae*	*Monopterus cuchia*

Table 02. The average catch composition (kg/day) of the highest ten species

Month	Rui	Catla	Mrigal	Silver carp	Grass Carp	Mola	Chela	Tengra	Puti	Chapila
June	16	15	18	40	12	10	08	04	12	13
July	20	15	22	51	13	09	06	04	14	19
August	32	25	34	50	28	16	13	10	20	15
September	28	20	32	45	30	10	10	12	15	11
October	20	15	23	38	20	07	06	05	10	08

Published with open access at journalbinet.com
EISSN: 2312-7945, © 2017 The Authors, Research paper

Fish catch composition of Shorupdah beel: The study period was April to October and the fish catch composition data was collected from June to Octobe.

Non-piscine diversity of shorupdah beel: A number of non-piscine species were also found in the Shorupdah Beel. Prawn, mollusks, arthropods, amphibians, reptiles were recorded during study period.

Table 03. Non-piscine diversity of Shorupdah Beel

Groups	Family	Scientific Name
Prawns	*Palaeomonidae*	*Macrobracium rosenbergii*
		Macrobracium lammarrei
		Macrobracium daganum
		Macrobracium malcomsonii
		Macrobracium villosimanus
Mollusks	*Ampullariidae*	*Pila globosa*
	Viviparidae	*Viviparus bengalensis*
	Melanoidae	*Melanoides tuberculatus*
	Eulamellibranchidae	*Lamellidens marginalis*
Arthropods	*Potamonidae*	*Potamon martensi*
	Belostomatidae	*Lethocerus indicus*
	Nepidae	*Nepa cinerea*
Amphibians	*Ranidae*	*Rana tigrina*
	Bufonidae	*Bufo melanostictus*
Reptiles	*Varanidae*	*Naja naja*
		Varanus bengalensis

Aquatic vegetation or plant biodiversity: A total of 10 (ten) species of aquatic vegetation were recorded during the study period.

Table 04. Aquatic vegetation or plant biodiversity

Family	Scientific Name
Nymphaeaceae	*Nymphaea nouchali*
Nymphacaceae	*Nymphaea lotus*
Pontederiaceae	*Eichornia crassipes*
Araceae	*Pistia stratiotes*
Araceae	*Colocasia esculenta*
Lamnaceae	*Lemna minor*
Nelumbonaceae	*Nelumbo nucifera*
Convolvulaceae	*Ipomoea aquatica*
Compositaceae	*Enhydra fluctuans*
Oxalidaceae	*Oxalis corniculata*

Rahman (1996) recorded and identified a total of 47 species of fish in the catches of different gears by the fishermen in BSKB Beel. Most of the species were found commercially important. Chakraborty and Mirza (2007) studied that a total number of 70 species of fishes were identified so far from the Gharia Beel and Ehshan *et al.* (2000) reported 40 species of fish including three exotic species from Chanda Beel. Family Cyprinidae comprise the largest family of freshwater fishes and contain 51 species (Rahman, 2005). In the recent study it exposed that among 52 species the highest number of fish was found under the family Cyprinidae. The non-piscine biodiversity of Eshulia Beel comprises 3 species of prawns, 5 species of mollusks, 6 species of arthropods (aquatic insects), 3 species of amphibians and 2 species of reptiles (Rahman *et al.,* 1999). So, Sorupdoh Beel has richer biodiversity compare with Eshulia Beel.

Published with open access at journalbinet.com
EISSN: 2312-7945, © 2017 The Authors, Research paper

IV. Conclusion

Aquatic population of Shorupdah Beel has been declining. Fishermen and local people said that many species of aquatic fauna and flora were less common due to change of water depth, over fishing, temperature, use of chemicals in agriculture etc. Fifty two species of fishes belonging to ninteen families under nine orders were found in different seasons. This Beel also enriched with sixteen others aquatic fauna and ten aquatic florae. Biodiversity of an area closely related with the local people livelihood, so the local authority related with Shorupdah Beel should take essential steps to protect the biodiversity of the Beel.

V. References

[1]. Banglapedia (2004). National Encyclopedia of Bangladesh. Asiatic Society of Bangladesh, 1st edition February, 2004, Dhaka, Bangladesh.
[2]. Chakrobarty, B. K. and Mirza, M. J. A. (2007). Study of aquatic biodiversity of Gharia Beel of Bangladesh, West Bengal India, West Bengal Science Society. Journal of Crop and Weed, 3, 23-24.
[3]. Ehasan, M. A., Hossain MS, Razzaque A, Alam MS 2000: A usual but important fishing of Chanda Beel. Bangladesh Journal of Zoology, 28, 69-74.
[4]. Rahman, A. K. A. (2005). Freshwater fishes of Bangladesh. Zoological Society of Bangladesh, Dhaka. p. 366.
[5]. Rahman, M. M., Uddin, A. K., Hill, M. T. and Deppert, D. (1999). Depth preference of fish species in seasonally inundated floodplain habitats: an attempt at habitat based assessment of fish yield and biodiversity. In: Sustainable Inland Fisheries Management in Bangladesh. Middendrop, H. A. J., Thompson, P. M. and Porneroy, R. S. (eds) Conf. Proc. ICLARM Pomeroy R.S. (eds.). Conf. Proc., ICLARM. Manila Philippines, 58, 245-253.
[6]. Rahman, S. (1996). Studies on the selectivity and effects of fishing gears on the fishes of BSKB beel. MS Thesis, Department of Fisheries Technology, Bangladesh Agricultural University, Mymensingh. p. 113.

HOW TO CITE THIS ARTICLE?

Crossref: https://doi.org/10.18801/jbar.130217.136

APA (American Psychological Association)

Majumder, L., Riar, M. G. S., Raushon, N. A., Sonia, Sku and Mondal, R. P. (2017). Biodiversity of shorupdah beel, Manirumpur, Jessore. Journal of Bioscience and Agriculture Research,13(02), 1116-1121.

MLA (Modern Language Association)

Majumder, L., Riar, M. G. S., Raushon, N. A., Sonia, Sku and Mondal, R. P. "Biodiversity of shorupdah beel, Manirumpur, Jessore". Journal of Bioscience and Agriculture Research, 13.02(2017): 1116-1121.

Chicago and or Turabian

Majumder, L., Riar, M. G. S., Raushon, N. A., Sonia, Sku and Mondal, R. P. "Biodiversity of shorupdah beel, Manirumpur, Jessore". Journal of Bioscience and Agriculture Research,13 no.02(2017): 1116-1121.

Published with open access at journalbinet.com
EISSN: 2312-7945, © 2017 The Authors, Research paper