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Research Article

STUDY OF FAUNAL DIVERSITY OF LAXMIPUR POND AT RAXAUL AREA OF
INDO-HIMALAYAN RANGE OF BIHAR

Mandip Kumar Roy^{1*}, Amaresh Kumar Deo² and Akriti Rani³

¹Industrial Fish and Fisheries, S.N.S. College, Motihari, Bihar, India.

²Department of Zoology, BRA Bihar University, Muzaffarpur, Bihar, India

³Department of Zoology, JP University, Chhapara, Bihar, India

*Corresponding author e-mail: drmandipkumarroy33@gmail.com

Abstract

North Bihar exhibits a wide range of wet lands and net of water bodies due to its geographical distribution and climatic condition and has become a good source of income through fish culture and variety of important cultivable crops. The fish collected from water body are represented by 8 orders and 12 families, 18 genera and 23 species. During the entire period of investigation, altogether 32 genera of phytoplankton consisting of chlorophyceae, cyanophyceae, euglenophyceae and bascellariophyceae, etc. In the present study, Zooplankton are represented by 05 genera of 7 copepoda, 06 genera of ostracoda.

The density of phytoplankton was found to be higher than Zooplankton. The population of plankton was observed to be low during rainy season.

Key words: Indo-Himalayan range, Raxaul, Laxmipur pond, Zooplankton, Fishes, Seasonal variations.

Introduction

Water is one of the important components of environmental resources. It is a renewable resource. Snow, rain hail and slect are the natural sources of water. It covers about 70% of the earth surface. There is some 1.4 billion cubic kilometers of water in the hydrosphere, of this about 97% is ocean water and only 3% is fresh water. About 77.2% of fresh water is locked in ice caps and glaciers, 22.4% occurs in underground pools and soil moisture and 0.36% is distributed in swamps, lakes, ponds, rivers and streams, etc. The fish species diversity reported in India is 331 in fresh water, where 88 species are endemic (Collen *et al.*, 2014).

North Bihar exhibits a wide range of wet lands and net of water bodies due to its geographical distribution and climatic condition and has become good source of income through fish culture and variety of important cultivable crops (Ahmad and Singh, 1987; 1988). Some of the area of this locality is a good source of medicinal plants and is called "Treasure house of medicinal plants." The water bodies of this area consist wide varieties of floral and faunal diversity. The present communiqué has been completely devoted to the faunal diversities of rain fed perennial government undertaking Laxmipur pond situated in Raxaul Anchal in North Bihar at Indo-Himalayan area.

Material and Methods

The Laxmipur pond has an area measuring about 15 acres, Benthic Fauna were collected with mushroom shaped scooping bottom sampler and were taken to the laboratory for identification.

Aquatic faunal insects were collected from four sites of this pond by using Ondez Dip net, Ondez Tow net and insects killing Tar were killed and preserved.

The fishes were also collected at the four different collection centre of this pond at the intervals with the help of the local skilled fishermen using Drag net, cast net and scoop net. All types of fishes of different size and different depth feeders were collected and first kept in 8% formalin for four hours. After that, they were transferred in 5% formalin and preserved for detailed study. The identification and classification of the collected fishes were made with the help of Day's fish fauna of "British-India" and the classification of the fishes present and extinct of Leo S. Berg respectively.

Results and Discussion

Periodic observation on the faunal community were made at the centre of the selected water body.

The Zooplankton has been represented by many genera which consists of copepoda followed with Cladocera,

Ostracoda, Rotifers and Protozoans. The lowest number of protozoans was observed in the present study might be due to their escape through the net during collection. Further among the Zooplankton, Rotifers and Copepods dominated in most of the months of the investing year. They had their highest population during summer seasons. Protozoans were recorded maximum in winter and minimum in rainy season. Almost direct relationship has been obtained between Rotifera, Copepoda and Cladocera and other groups of Zooplankton during the period of investigation. Their month wise seasonal variations during the period of investigation has been illustrated in Table 1.

The other group of animals observed in the pond during the different months of the investigating year included Copepoda, Ostracoda, Gastropoda, Bivalvia, insects including their larvae. Vertebrates were mainly represented by different species of fishes, frogs and some water snakes.

In the present pond the fishes that form the main fauna which were observed at the above mentioned water body during the year 2013 are listed as Table-2.

The aquatic ecosystem is one of the important ecosystem especially for aquaculture which sustain different types of organisms including protein-rich fishes. The maintenance of aquaculture may lead to the enhancement of fish production and interrelationship of aquatic flora and fauna of that particular water body.

The entire East Champaran belt is very rich in several water bodies whether it is lotic or lentic. Pandey (1988) have made attempts to explore the hydro-biological inter-relationship of different types of water bodies.

The Zooplankton constituted a moderate percentage of total plankton and was composed of mainly copepoda, Cladocera, rotifera, ostracoda and protozoa. In the present study, the Zooplankton was found to be abundance during the winter months when temperature went down significantly showing inverse relation between the two. This finding is quite agreement with the findings of Ahmed and Singh, 1988; Prasad and Singh, 2003; Sunkad, 2004; Prasad *et al.*, 2009), etc. while working in the different water bodies.

The pH range in the present investigation was found to be in normal range throughout the period of investigation which is quite related with the Zooplankton population. The pH range of 7.0 to 8.0 was characteristics of good water suitable for culture and growth of Zooplankton.

Ongoing through the papers of different workers, it was found that the peak months of Zooplankton collection differed considerably. This might be due to different nature of water bodies, difference in the composition of physical and abiotic factors, variation in the productivity of different water bodies which led to the plankton production in different rates.

The various fishes collected from this pond are found to be very common in respect of other water bodies of this area and are represented by 08 orders. Several limnologist not only from all over the India but also from abroad have done, survey work in the various water bodies regarding the abundance and distribution of fishes. Several other workers reported number of fishes while working on different water bodies such as Baniah et.al. (1988), Sunkad (2004) and Kadam et.al. (2005), etc.

Table 1: Month Wise Fluctuations in Zooplankton Population of Laxmipur Pond During Year-2013

Month	Copepoda	Ostracoda	Rotifera	Cladocera	Protozoa	Misc.	Total	%
Jan.	109	66	106	104	06	12	403	7.96
Feb.	111	65	108	105	06	12	408	8.06
Mar.	121	70	121	112	07	11	442	8.74
Apr.	130	70	143	126	09	12	490	9.68
May.	125	65	123	104	10	12	439	8.68
Jun.	111	66	112	109	05	11	414	8.18
Jul.	107	64	105	104	04	12	396	7.83
Aug.	108	67	105	104	02	21	407	8.04
Sep.	110	55	106	105	05	22	403	7.96
Oct.	113	73	119	108	06	11	430	8.50
Nov.	113	67	110	105	04	22	421	8.32
Dec.	108	68	108	107	02	11	404	7.98
Total	1366	796	1366	1293	68	168	5057	
%	27.01	15.74	27.01	25.56	1.34	3.32		

Table 2: List of Fishes Collected During Year-2013

Order	Sub-order	Family	Scientific name	Local name			
Clupriformes	Clupeoidei	Clupeidae	1. <i>Gudusia chapra</i> (ham.)	Suhia			
	Notopteroidei	Notopteridae	2. <i>Notopterus chitala</i> (ham.)	Moya			
			3. <i>N. notopterus</i> (ham.)	Moya			
Cypriniformes	Cyprinoidei	Cyprinidae	4. <i>Aspidoparia morar</i> (ham.)	Chilwa			
			5. <i>Catla catla</i>	Catla(Bhakur)			
			6. <i>Cirrhinus mrigala</i> (ham.)	Naini			
			7. <i>C. reba</i> (ham.)	Rewa			
			8. <i>Labeo rohita</i> (ham.)	Rohu			
			9. <i>Puntius sarana</i> (ham.)	Darhi			
			10. <i>Puntius sophore</i> (ham.)	Pothia			
			11. <i>Puntius ticto</i> (ham.)	Sidhri			
			Siluriformes		Siluridae	12. <i>Mystus vitatus</i> (B1)	Tengra
						13. <i>Wallago attu</i> (B1 & Schin)	Boyari
					Heteopneustidae	14. <i>Heteropneustes fossilis</i>	Singhi
15. <i>Clarias batrachus</i>	Mangur						
Beloniformes		Clariidae	16. <i>Channa punctatus</i> (ham.)	Garai			
			17. <i>Channa marulius</i> (ham.)	Souri			
Ophiocephaliformes		Ophiocephalidae	18. <i>Chanda ranga</i> (ham.)	Chanri			
			19. <i>Chanda nama</i> (ham.)	Chamwa			
Perciformes	Percoidei	Gobidae	20. <i>Macrogathus aria</i> (B1 & Sch.)	Pataya			
		Mastacombelidae	21. <i>Anabas testudineus</i> (B1)	Kawai			
		Anabantidae	22. <i>Amphipnous cuchia</i> (ham.)	Bami			
Symbranchiformes		Amphinoidei	23. <i>Tetradon cutcutia</i> (ham.)	Gulphulani			
Tetrodontiformes		Tetrodontidae					

During investigation altogether 32 genera of phytoplankton consisting of chlorophyceae, cyanophyceae, euglenophyceae and bascillariophyceae, etc. were also observed (data not shown).

Summary

The fishes collected from this water body are represented by 8 orders and 12 families, 18 genera and 23 species. During the entire period of investigation, altogether 32 genera of phytoplankton consisting of chlorophyceae, cyanophyceae, euglenophyceae and bascillariophyceae, etc. In the present study, Zooplankton was represented by 05 genera of copepoda, 06 genera of ostracoda. The low

number of protozoa species might be due to their escape through the net during collection. Plankton population was observed to be low during rainy season. The density of phytoplankton was found to be higher than Zooplankton.

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