



ISSN : 0973-7057

Int. Database Index: 616 [www.mjl.clarivate.com](http://www.mjl.clarivate.com)

## Studies on the diversity of crustaceans, molluscs and fishes of given sites at East Singhbhum, Jharkhand

Paulomi Dutta\* & S.B. Lal

University Department of Zoology, Kolhan University, Chaibasa, Jharkhand, India

Received : 10<sup>th</sup> June, 2022 ; Revised : 11<sup>th</sup> July, 2022

**Abstract-** During the course of study, the diversified specimens of molluscs, fishes and crustaceans were collected, observed and identified at the given three sites of lotic and lentic water bodies which include river Subarnarekha Mango, Jamshedpur and river Subarnarekha Galudih along with Patamda (ponds). The present study was meant to collect information about the species which are found at the given sites. Here, 4 family, 4 genus and 6 species of molluscs and in fishes 5 families, 5 order and 9 genus and 8 species were found. In crustaceans i.e macro benthic fauna, 1 family (Penaeidae) with 4 genus and 4 species were found according to the different taxonomic group of species were identified with the help of using keys from the following authors given below. No alien species came into observation during the course of study. All the observed specimen are native ones which were naturally available or cultivated at the given sites.

**Key words:** Diversification molluscs, fishes, crustaceans, ponds, penaeidae, microbenthic fauna.

### INTRODUCTION

East Singhbhum of Jharkhand is a belt of iron-ore and this area consists of industrial company like 'Tata Steel'. The district is covered by dense forests, range of mountains and many habitats of lotic and lentic reservoirs. Along with the many reservoirs, river Subarnarekha lies in between the heart of it. It is one of the major rivers that not only enhance the beauty to add but also acts as a source of many diversities of aquatic animals and also provide source of livelihood for the nearby local people. It is actually a rain fed river which contains many minerals within it and also include cultivation of variety of fishes, molluscs and crustaceans. Diversification is a word which explains that how organisms are diversified in a large areas of our planet. To specify them in an according manner is quite amazing

\*Corresponding author :

Phone : 6200095665

E-mail : paulomidutta24@gmail.com

and difficult. In that content, there would be always some limitations to go that beyond of any particular species for this study. Here, diversity is restricted by putting some specific sites through which the diversification of fishes, molluscs and crustaceans (macro benthic fauna) passes through. As it is a huge topic to conclude, so the identification and classification have been done. The collection of the species that are being cultivated or reared naturally occurs in the river water at the given sites of East Singhbhum.

### MATERIALS & METHODS

The study was conducted seasonally from August, 2020 to June, 2021. The study included three given sites of East Singhbhum, Jharkhand. The first site is at Mango, Jamshedpur positioned on latitude 21 15' to 23 34' N and longitude 85 8' to 87 32'. The second site is at Galudih

which is positioned on latitude 22.60 N and longitude 86.48 E. And the third site is at Patamda (Pond) which was positioned on the latitude of 22.31-47.22' N and longitude 85.47-34.84' E. The samples were collected randomly in the early hours of the morning by using glass bottles and jars. Data was collected from the local fisherman. They use casts nets, stake nets and gill nets for catching fishes.

The samples were mostly identified at the site of collection and the unidentified samples were preserved in 4%, 5% and 8% formalin respectively and brought them to the laboratory for species level identification.

**RESULT & DISCUSSION**

During the course of the study at the given sites of East Singhbhum, Jharkhand. The diversity was identified and found throughout the collection. The collection of the specimen was done season-wise. Subha Rao *et al.* (1980)<sup>1</sup> reported that the family Viviparidae is represented by a single species *Vivipara bengalensis* f typica (Lamarck) at Andaman and Nicobar islands.

Mohanta K and Mahata (1997,1998)<sup>2,3</sup> reported a total of 10 species of freshwater molluscs belonging to a 5 genera and 3 families of gastropods and bivalves in Chotanagpur plateau. Here molluscs were found with 4 family 4 genus and 6 species in the present study. Kurup *et al.* (1989 1993)<sup>4,5</sup> studied the fish and he recorded 115 species of fishes and 4 species of Palaemonid prawns along with 6 species of Penaeid prawns and 84 genus on the lake.

In the present study fishes were identified as 5 families 5 order 9 genus and 8 species of crustaceans (macro benthic fauna) included and identified as 1 family Penaeidae with 4 genus and 4 species, according to the different taxonomic group of species. Total 10 family, 19 genus and 18 species were collected and identified in the laboratory.

Chanda & Bhattacharya (2002,2003,2004)<sup>6-8</sup> gave brief of 3 new species of prawns from Indian waters. From Indian ocean /seas Palemoid Prawns were listed about 46 species by Jayachandran (2005)<sup>9</sup>. Through the season-wise collection of the specimen, it is found that these specimen which are mentioned on the Table are found throughout

**Table 1- Diversity of Crustaceans, Molluscs and Fishes**

	Class	Order	Family	Genus	Species
Fish	Actinopterygii	Cypriniformes	Cyprinidae	<i>Labeo</i>	<i>Labeo rohita</i> (Hamilton-Buchanan)
				<i>Cirrhinus</i>	<i>Cirrhinus mrigal</i> (Hamilton -Buchanan)
				<i>Cyprinus</i>	<i>Cyprinus carpio</i> (Linnaeus)
		Cyprinodontiformes	Poeciliidae	<i>Gambusia</i>	<i>Gambusia affinis</i> (S.F Baird & Giard)
		Cichliformes	Cichlidae	<i>Tilapia</i>	
		Siluriformes	Claridae	<i>Clarias</i>	<i>Clarias batrachus</i> (Linnaeus)
Molluscs	Gastropoda		Viviparide	<i>Bellamyia</i> (Jousseume)	<i>Bellamyia bengalensis</i> (Lamarck)
		Architaenioglossa	Pilidae	<i>Pila</i> (Bolten, Roding)	<i>Pila globose</i> (Swainson)
			Thiaridae	<i>Thiara</i> (Roding)	<i>Thiara tuberculata</i> (Miiller)
			Lymnacidiae	<i>Lymnae</i> (Lamarck)	<i>Lymnae ovalis</i>
Crustacean	Malcostraca	Decapoda	Penaeidae	<i>Penaeus</i>	<i>Penaeus indicus</i> (H.Milne Edwards)
					<i>Penaeus monodon</i> (Fabricus)
				<i>Litopenaeus</i> (Boone)	<i>Litopenaeus vannamei</i>
				<i>Machrobrachium</i>	<i>Machrobrachium lammarrei</i> (H.Milne Edward)

the year but depending on the season, variation took place in their shape and size. Moreover, it is seen that all the species are native species and more or less found in the local ponds or reservoirs along with the river Subarnarekha. Here, it was found that *Penaeus indicus* is directly found in the river Subarnarekha without any human interference. Apart from it all the species in molluscs and fishes were easily found and cultured both in lentic and lotic waterbodies. Karmakar *et al.* (2008)<sup>10</sup> have reported the presence of common carp *Cyprinus carpio* and mosquito fish *Gambusia affinis* was reported in the part of river Subarnarekha at Galudih and Namkum sites respectively, which was encountered in the present study as well. No new species encountered or came across in the study of the given sites.

## CONCLUSION

During the period of study, it was observed that all the species of fishes, molluscs and crustaceans are found with the total of 10 families, 19 genus and 18 species that were identified in the lab with the help of authors. Apart from it *Penaeus indicus* is found naturally without any human interference at both the sites of river Subarnarekha Mango Jamshedpur and Galudih and fishes like *Gambusia affinis* and common carp are found at Galudih sites. Other than that, no new species were encountered during the study of the given respective sites.

## IDENTIFICATION

### FISHES

Identification of the specific specimen were done or identified by following keys from the authors that they are used:-

Datta Munshi (1980)<sup>11</sup>, Talwar & Jhingram (1991)<sup>12</sup>, Tonapi (1992)<sup>13</sup>, Sen (1992)<sup>14</sup>, Karmakar *et al.* (2008)<sup>10</sup>.

### MOLLUSCS

Subha Rao (1980)<sup>1</sup>, Brinkhurst (1974)<sup>15</sup>, Mohanta & Mahata (1997, 1998)<sup>2,3</sup>

### CRUSTACEAN (Macro Benthic Fauna)

Chanda & Bhattacharya (2002, 2003, 2004)<sup>6,7,8</sup>, Jayachandran (2005)<sup>9</sup>.

## ACKNOWLEDGEMENT

I like to express my gratitude towards the local people and fisherman whose support and help with the valuable information provide to acquire knowledge in the study. I would also like to thank my guide Dr. S.B Lal for his

continuous support and advice and Department of Zoology, Kolhan University for providing me facilities and support for the study.

## REFERENCES

1. **Subha Rao N. V. 1980.** Collection and preservation of vector Mollusca: Proc. Workshop on Tech. Para. Zoo. Sum of India: 123-128.
2. **Mohanta K. and M. C. Mahata. 1997.** Studies on freshwater molluscs of Chotanagpur Plateau, Bihar, India. Family; Thiariidae; Proc 84<sup>th</sup> Sessions of Indian Se Cong. Part III (See. Of Zoo. Ento. & Fish) no. 145, H.99. Abstract only.
3. **Mohanta K. and M. C. Mahata. 1998.** Studies on Fresh water Molluscs of Chotanagpur Plateau, Bihar, Indian ; Family ; Lymneidae; Proc. 85<sup>th</sup> Session of Cong., Abst. no-6 p-4-5.
4. **Kurup B. M., Sebastian M. J., Sankaran T., Rabindranath P. 1989.** Exploited Fishery resources of Vembanad Lake. Final Report. Kuttanad Water Balance Study. 142.
5. **Kurup B. M., Sebastian M. J., Sankaran T., Rabindranath P. 1993.** Exploited Fishery resources of Vembanad Lake. *Indian Journal of Fisheries.* **40(4):** 199-206.
6. **Chanda A. & T. Bhattacharya. 2002.** *Melicertus similis*, A new species of prawn. Decapoda: Penaeidae from India. *J. Bombay Nat. Hist. Soc.* **99(3):** 495-498.
7. **Chanda A. & T. Bhattacharya. 2003.** Fennero *Penaeus konkani*, a new species of prawn (Decapoda: Penaeidae) from Indian coast. *Sci & Cult.*, **69:** 229-230.
8. **Chanda A. & T. Bhattacharya. 2004.** A new species of the genus. *Parapenaeopsis*. Alock, 1900 (Penaeoidea Penaeidae) from Orissa, India. *Proc. Zool. Soc., Calcutta.* **57:**23-27.
9. **Jayachandran K.V. 2005.** The biodiversity of Palamonid prawns from Indian seas (in Hindu). *Aspects of Aquatic Biodiversity. Special Publication.* no.84: CMFRI, Cochin 21-28.

**Biospectra : Vol. 17(2), September, 2022**

*An International Biannual Refereed Journal of Life Sciences*

- 10. Karmakar A. K., Das A. and Banerjee P. K. 2008.** Fish fauna of Subarnarekha river. *Occasional Paper No. 283, Zool. Surv. India, 57 p.*
- 11. Dutta H. M. 1980.** Comparative analysis of the hyomandibula during respiration in Anabantoid teleost fishes: *Macroodus opercularis* in relation to *Ctenophora acurostre* and *Anabas testudineus*. *Zoomorphologie. 94:* 185-202.
- 12. Talwar P. K. & Jhingram A. G. 1991.** Inland fishes of India and adjacent countries. Balkema, Rotterdam, 1991, 2.(vol 1, 2). Oxford and IBH Publishing co., Pv. Ltd. New Delhi, Bombay and Calcutta.
- 13. Tonapi G. T. 1971.** Studies on the freshwater and amphibious Mollusca of poona with notes on their distribution, Part II. *J. Bombay Nat. Hist. Soc. 68(1):* 115-126.
- 14. Sen, T.K 1992.** Freshwater Fish. State Fauna Series-3., Fauna of West Bengal, Part-2. *Zool. Surv. India,* pp.101-242.
- 15. Brinhurst R. O. 1974.** The benthos of lakes. Machilian London and Basingstoke.

\*\*\*