

# MOLLUSCAN DIVERSITY IN MAHAN RIVER, DISTRICT SINGRAULI (M.P.)

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**ABSTRACT:** The Mahan (Gulab Sagar) Project is a major project being constructed across river Mahan, a tributary of river Banas in Sone Basin near village Khaddi in Singrauli District of Madhya Pradesh. Water of this Semi-perennial river is used to perform various activities such as industrial, irrigation, fisheries and human activities. A total of 15 molluscs species were recorded of which 9 species are Bivalvia and 6 species are Gastropoda. Class Bivalvia was reported by two orders, viz., Unionida and Veneroida and class Gastropoda had 1 order, viz., Mesogastropoda. The abundance of the molluscan fauna indicates the rich productivity.

**Keywords:** Mollusc, Gastropoda, Bivalvia, Mahan River.

## INTRODUCTION

Molluscs are most important community for freshwater biodiversity, and where abundant play a major role in ecological functioning. These organism usually in habit benthic sediments for at the minimum part of their life cycle, and they are large enough to be retained by a mesh size of 0.2 mm to 0.5mm. After insects, Molluscan communities were the second largest invertebrate group on earth. The majority of molluscan species are also a standard biological indicator for paleoenvironments and pollution. According to their resistance power against utmost of Physico-chemical components of water. The freshwater ecosystem in India harbor a rich diversity of molluscs, representing 203 species belongs to 59 genera, 29 sub genera under 26 families. According to reports from 1902 to till date, majority of the molluscan studies accomplished were for a little purpose of therapeutic values than anything else. Apart from this inference, few research analyses have also worked on this aspect with reference to parasites. Compared to numerous studies carried out in United States of America on the use of macro invertebrates in the biological monitoring and evaluation of water quality, very little analysis has been executed in India. However, there are not any detailed taxonomic and spatial studies available to survey of species diversity, behavioral expression etc. that World highest the importance of preserving gastropod diversity. Freshwater molluscs have faced a serious decline in diversity, abundance and distribution caused by

manmade modification of habitats, deforestation, poor agricultural implementation, sand mining, pollution, the demolition of riparian area). Freshwater rivers and streams have been exposed to broad range of anthropogenic impacts. In the last 300 years, enormous numbers of land and freshwater molluscs' extinction have been taken place. Molluscs, a group of most diverse and dominant benthic fauna in water bodies, perform a key role in the functioning of aquatic ecosystem. Molluscans are of great significance because they form the food of fishes and their productivity play an important link in the food chain. Molluscans communities are good indicators of localised conditions, indicating the water quality. The freshwater ecosystems in India harbour a rich diversity of molluscs, representing 212 species belonging to 21 families. Of these, 164 species were recorded from rivers and streams (Subba Rao, 1993). The presence of thriving population of molluscan indicates the land is not acidic; hardly molluscs survive beyond a pH of 5 (Boycott, 1934). Biological monitoring of rivers using macro invertebrate is accepted as a useful tool for the assessment of water quality (Hellawell, 1986).

Several investigations were undertaken on major benthic animal groups of freshwater system. Notable contributions to our knowledge of molluscan fauna have been made by several authors. Amanullah and Hameed (1996) studied molluscan diversity in Kaveri river system. A total 13 species of molluscs were recorded, of which 8 species were gastropods and 5 species of bivalves. The gastropod species were grouped under 5 different families (Viviparidae, Thiaridae, Pilidae, Lymnaeidae and Planorbidae) and the family Thiaridae was the most dominant group representing 50% of the total gastropod population. Five species of bivalve were classed under 2 different families namely Unionidae and Corbiculidae. Roy and Gupta (2010) worked on Molluscan Diversity in river Barak and its Tributaries in Assam. A total of 16 molluscan taxa belonging to 2 classes viz., Gastropoda and Bivalvia 4 orders, 5 families and 9 genera were recorded from 12 different sites on River Barak and its tributaries like Chiri, Sonai, Rukni, Ghagra and Katakhal. The snail, *Brotia costula episcopalis* (Lea), and the bivalve *Lamellidens marginalis* (Lamarck) were the most ubiquitous species in

the river system. Dahegaonkar et.al., (2011) studied diversity of benthic macro invertebrates in two lotic ecosystem. Molluscan species showed their dominance by contributing six species from the Gastropods and two from Pelecypods.

Subramanian and Jaiswal (2012) worked on freshwater fauna of India. Indian wetlands are habitat for 287 species of molluscs. Species such as *Sulcospira hugelyi*, is common in streams of peninsular India. Kumar and Vyas (2012) revealed about distribution of molluscan community in the selected reach of river Narmada in central zone. A total of 19 species (13 gastropod and 6 bivalve species) were recorded during the study. Among gastropoda *Thiara tuberculata* (Muller) and *Tarebia granifera* (Lamarck) were most dominant species recorded. In bivalvia *Parreysia (Radiatula) occata* (Lea) and *Corbicula striatella* (Deshayes) were found nearly at all stations. Waghmare et.al., (2012) identified freshwater Molluscan diversity of Bhima river, near Pandharpur. Altogether 15 species of freshwater molluscs were identified viz. 7 species from Gastropoda and 8 species from Pelecypoda (Bivalvia) in this area. Suryawanshi et.al., (2012) studied biodiversity of molluscs from river Godavari, reservoir and pond and reported 24 species of fresh water molluscs. Maximum species were collected from Derla tank while minimum species were collected from Godavari river. Mahan

River flows in two district of Singrauli (M.P.), Surguja (CG). The aim of present research work revealed about distribution of molluscan community in the selected reach of River Mahan.

**MATERIAL & METHODS**

**Study Area:** For the study of molluscan diversity in river Mahan three sampling stations (S-I, S-II & S-III ) were selected on the right bank of river Mahan, out of them two stations are in Devsar and one station is in Khaddi, district Singrauli.

The Mahan (Gulab Sagar) Project is a major project being constructed across river Mahan, a tributary of river Banas in Sone Basin near village Khaddi in Sidhi District of Madhya Pradesh. It envisages construction of a 182.5 m long with a maximum height of 46.00 m masonry dam to impound 104.61 m.cum of gross storage to annually irrigate 19,740 ha (in a CCA of 14,000 ha) in Sidhi district. The length of main canal is 57.0 km.

**Collection, Preservation and Identification:** Molluscs were collected by hand picking method and preserved in 5% formalin for further study. Collected molluscs were washed, photographed with the help of digital camera and identified as per Tonapi (1980) and Subba Rao (1989).

**Table 1: Shows List of Molluscs identified at various stations of Mahan River**

Sr. No.	Classification	Station-I	Station-II	Station-III
I	<b>Class-Bivalvia</b>			
A	<b>Order-Unionida</b>			
I	<b>Family-Unionidae</b>			
A	<b>Subfamily-Unionacea</b>			
1	<i>Lamellidens corrianus</i> (Lea)	+	+	+
2	<i>Lamellidens marginalis</i> (Lamark)	+	+	+
B	<b>Subfamily-Parreysiinae</b>			
3	<i>Parreysia corrugate</i> (Mueller)	+	-	+
4	<i>Parreysia cylindrica</i> (Lea)	+	-	+
5	<i>Parreysia favidens</i> (Benson)	+	-	+
6	<i>Parreysia khadakvaslaensis</i>	-	-	+
7	<i>Parreysia shurtleffiana</i> (Lea)	-	+	-
B	<b>Order-Veneroida</b>			
II	<b>Family-Corbiculidae</b>			
8	<i>Corbicula peninsularis</i> (Prashad)	+	-	-
9	<i>Corbicula striatella</i> (Deshayes)	-	+	+
II	<b>Class-Gastropoda</b>			
C	<b>Order-Mesogastropoda</b>			
III	<b>Family-Bithyniidae</b>			
C	<b>Subfamily-Bithyniinae</b>			
10	<i>Gabbia orcula</i>	+	+	-
IV	<b>Family-Pilidae</b>			

11	<i>Pila globosa</i>	-	+	+
V	<b>Family-Viviparidae</b>			
D	<b>Subfamily-Bellamyinae</b>			
12	<i>Bellamyia bengalensis</i> (Lamarck)	+	-	+
VI	<b>Family-Thiaridae</b>			
E	<b>Subfamily-Thiarinae</b>			
13	<i>Thiara lineata</i> (Gray)	+	+	+
14	<i>Brotia costula</i> (Lea)	+	+	-
15	<i>Thiara tuberculata</i> (Mueller)	+	-	+

## RESULT AND DISCUSSION

A total of 15 (Fifteen) taxa were recorded from all sampling sites during the period of study from 2010-2012. The molluscan community was represented by two classes, viz., Bivalvia and Gastropoda of which 9 species are Bivalvia and 6 species are Gastropoda. Class Bivalvia was reported by two orders, viz., Unionida and Veneroida; two families; 3 genera; and 9 species. Class Gastropoda had 1 order, viz., Mesogastropoda; 4 families; and 5 genera with 6 species (Table No. 1). A similar study was conducted on molluscan community of the Bharathapuzha River in Kerala and thirteen species of molluscs belonging to five orders, eight families and ten genera were reported (Bijukumar et.al., 2001). Farida (1988) recorded 59 species from Layari river. Among them, 31 species belong to class Gastropoda, 27 species belong to Bivalvia and the class Scaphopoda contains only one species. Amanullah and Hameed (1996) studied Kaveri river and reported 13 species of molluscs of which 8 species were gastropods and 5 species bivalves. The gastropod species were grouped under 5 different families (Viviparidae, Thiaridae, Pillidae, Lymnaeidae and Planorbidae) and family Thiaridae was the most dominant group representing 50% of the total gastropod population. Five species of bivalve molluscs were classed under 2 different families namely Unionidae and Corbiculidae.

Durga Prasad et.al., (2001) recorded 48 species of molluscs from Gathani estuary of which 27 species were gastropods and 21 species were pelecypods. Dahegoankar et.al., (2011) studied mollusc from Wardha and Zarpur river and shown their dominance by contributing, six species from the Gastropods and two from Pelecypods. Suryawanshi et.al., (2012) studied biodiversity of molluscs from river Godavari, reservoir and pond, reported 24 species of fresh water molluscs. Maximum species were collected from Derla tank while minimum species were collected from Godavari river.

The abundance of the molluscan fauna indicates the rich productivity. The species inhabiting bottom of the river play an important role in converting organic matter together with the meiobenthos in to biomass which in turn is consumed by the fishes. Thus the molluscs help in

the secondary productivity and form an important component in the food web of the river ecosystem. Macro invertebrates of Lendi river rich in Molluscan diversity. Total 15 species of molluscs were identified from river & it indicates that productivity is rich. The species inhabiting at the bottom play an important role in converting organic matter together with the meiobenthos in to biomass which in turn is consumed by the fishes. Thus the molluscs help in the secondary productivity and form an important component in the food chain & web of the river ecosystem.

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