

A Brief Note on Molluscan Diversity From Water Bodies of Amravati MS India

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ABSTRACT

Molluscs are the environment indicators and play a very important role in maintaining aquatic ecosystem by recycling nutrients and surviving as nutrition for certain aquatic organisms. Also they are an important source of food for other animals i.e. fishes, birds and mammals even for human being. In the age of global decline of biodiversity, it is necessary to study the present status of different biota and hence this attempt was made. The present paper deals with diversity of molluscan fauna from five freshwater bodies i.e. Chatri Lake, Kekatpur Lake, Tapi River, Sipna River and Pedhi River of Amravati district in the period Jan 2015 to April 2017. A rapid survey method was used for careful visual estimation, handpick collection and recorded photographic evidences of molluscan species from selected habitats of the study area. A total of 30 molluscan species were reported and identified in this paper. These listed species belonging to 02 classes, 06 orders, 12 families and 17 genera. Out of 30 molluscan species 20 species belonging to class Gastropoda and 10 species belonging to class Bivalvia. Amongst the recorded Gastropodes 16 freshwater molluscan species and 04 were terrestrial molluscan including 01 slug and 03 snails. A bivalve was represented with 02 orders, 02 families and 03 genera. *Bellamya bengalensis*, *Lamellidens marginalis* species were more common and widely distributed in all the waterbodies of study area. However, the few species *Lymnaea acuminata*, *Lymnaea leuteola* and *Indoplanorbis exustus* were found only in stagnant water, i.e. Lake Water. This study shows that the potential and importance of such habitats to diverse molluscan species and support many more species. It is a preliminary study on the molluscan diversity. Further studies are needed for detailed exploration of the molluscan fauna, its habitat and threats being experienced by these animals.

KEY WORDS: MOLLUSCS, DIVERSITY, AMRAVATI DISTRICT, MAHARASHTRA

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INTRODUCTION

The Phylum Mollusca is a second largest phylum in invertebrate. Molluscan are soft bodied animals with or without calcareous shell adapted to almost all habitats with varied ecology. Molluscs are divided into freshwater, marine and terrestrial forms. It includes snails, slugs, clams, oysters, mussels, scallops, cuttlefish, squid and octopus. All the molluscan comprises in three groups, Gastropods, Bivalves and Cephalopods. Gastropoda is extremely diverse group in Mollusca and adapted to all habitats, includes snails and slugs. Bivalves as a group have no head and it characterized by a shell that is divided from front to back into left and right valves. They include clams, oysters, mussels and number of families that live in freshwater (Subba Rao, 1989; Patil and Talmale, 2005; Kumar and Vyas 2012; Tripathy and Mukhopadhyay, 2015).

Molluscans are the environment as well as bio-indicators and they play a very important role in maintaining aquatic ecosystem by recycling nutrients and surviving as nutrition for certain aquatic organisms. Freshwater molluscs play a significant role in aquatic ecosystem, and some of them are edible. Also, they serve an important source of food for other animals i.e. fishes, birds and mammals even for human being. In the age of global decline of biodiversity, it is necessary to study the present status of different biota. The taxonomic study of Indian fresh water molluscs has been done by Zoological Survey of India, Subba Rao (1989), Also in Maharashtra, freshwater Mollusca reported by Rao (1925), Tonapi and Mulherkar (1963), Tonapi ((1971), (Subba Rao and Mitra (1975, 1979), Surya et al. (2002), Patil and Talmale (2003, 2005), Tripathy and Mukhopadhyay, (2015), Magare et al. (2016), Kambale, (2018), Kumar et al., (2019).

As is evident from the available published literature from Vidarbha region of Maharashtra, only few workers have made their contribution in study of Molluscan fauna in Vidarbha region. Occurrence of freshwater Bivalves in Pusad, Yavatmal district (Patil 2003), Freshwater Mollusca of Melghat Tiger Reserve studied (Patil 2005). Terrestrial snail diversity in Amravati city (Chavan *et al.*, 2015). But studies on diversity of molluscan from forest and water bodies are scarce, especially molluscan diversity in rivers and Lakes in Amravati district other than Melghat Tiger Reserve. Hence, the present study revealed that diversity of molluscan fauna from five freshwater bodies i.e. Chatri Lake, Kekatpur Lake, Pedhi River, Sipna River and Tapi River of Amravati district.

MATERIAL AND METHODS

Amravati district is a District of Maharashtra state in central India. The district is situated between 20°32' and

21°46' North latitudes and 76°37' and 78°27' East longitudes. The district occupies the geographical area of 12,235 km². There is Satpuda range towards the North of Amravati district. 75% of Amravati district area is covered by Daccan trap while 25% area covered by Purna alluvium. Out of the total land of the district 30% covered by forest while 70% utilized for cultivation and human habitation. The climate of the district is hot and dry. The year can be divided into three clear seasons, winter season is from October to January, summer season from February to May and the monsoon season is from June to September. The area receives rainfall during south-west monsoon. The average rainfall is 800-1000 mm. Average temperature of the district ranges from minimum of 15°C in winter to a maximum of 45°C in summer with the humidity ranges from 10-15% to 60-95%. Melghat region is a part of the Satpuda Range of Hills in the Amravati district. The crests of this range attain an average elevation about 1000 meter. Melghat has Southern Tropical Dry Deciduous type of forest (Champion & Seth (1968)). Tapi, Sipna, Khapra, Khandu, Dolar, Khandu Chandarabhaga are the major rivers and many seasonal streams flows through Melghat. It experiences tropical climate with temperatures ranging between 13°C and 22°C during winter and between 23°C and 42°C during summer. In Melghat the annual rainfall ranges between 1000mm and 2000mm.

Molluscan Collection sites: Chatri Lake-It lies (N 20° 53,684' and E 077° 46,617' elevation 340m, covers an area of 111.231934m²): it is the important water body for Local birds, migratory birds and Wildlife of Pohara-Malkhed Reserve Forest in Amravati district. It is one km away from Amravati city on Amravati-Malkhed Road. Kekatpur Lake-It lies (N 21 05,452' & E 077 57,193', elevation 360 m): It is small fresh water body, located in Amravati district and about 20 km away from Amravati city towards North. It is surrounded by grass land, shrub forest and agricultural lands. This lake is one of the important wetland for residential as well as migratory bird fauna in Amravati district.

Pedi River-It originates from hills near Rithpur in Morshi tehsil of Amravati district. The Pedhi flows in easterly direction, after crossing the district it turns westwards and north-westwards to join the Purna river, Rithpur, Walgaon and Bhatkuli are few important villages at banks of the river. It is one of the water-supply source to the villages and agricultural land in some tehsils of Amravati district. Specimens were collected from Pedhi River Near Kund Village. (N 2 57,29' & E 07 40,17)

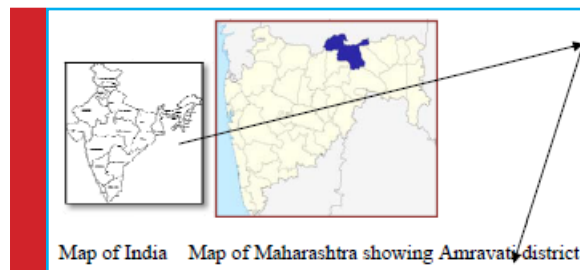
Sipana River in Melghat- It is one of the important river in Melghat. It originates from Melghat terrains and flows from central part of Melghat Tiger Reserve and finally joins to Tapi River. It serves lifeline to floral

and faunal diversity in Melghat tiger Reserve. Melghat Tiger Reserve (MTR) is one of the oldest tiger Reserve of Maharashtra and situated at the Northern part of Amravati district in Satpuda range. Specimens were collected from Sipana River Near Harisal Village. (21°31' 21" N 077° 07'39"E).

Tapi River in Melghat-Tapti River and the Gawilgad ridge of the Satpura Range forms the boundaries of the Melghat Tiger Reserve. The Tapi River flows through the Northern end of the Melghat Tiger Reserve, through a forest which lies within the catchment area of the river system and fed with other rivers like Sipna, Khandu and Gadga. Tapi is a major River in Central India, with a stretch of about 724 km, flowing from east to west; it is also one of the important rivers in Peninsular India. Specimens were collected from Tapi River near Rangubeli Village. (21° 43' 08" N 077° 08' 14"E).

Molluscan Sampling: Present study was carried out on the basis of previous photographic collection during various visits and extensive survey during rainy season from June to September 2017 in the study area. The survey was performed at a weekly interval in all collection sites and microhabitats such as open land, cultivated field and forest during the rainy seasons. Specimens were collected by hand picking method from selected sites during the study period. Collected Molluscan washed properly and preserved in 5% formalin first and then transferred in 70 % alcohol. Photographs of the specimens were taken by Nikon camera D7000 and lens 60 mm micro for documentation and identification purpose. The specimens are identified as per Subba Rao (1989). The identification was confirmed by ZSI, West-

ern Regional Center, Pune (Letter No.1548/MSI/2018/ Date 10-1-2018).



RESULT AND DISCUSSION

A total of 30 molluscan species were reported from the Amravati district. These listed species belonging to 02 classes, 06 orders, 12 families and 17 genera. Out of 30 molluscan species 20 species belonging to class Gastropoda and 10 species belonging to class Bivalvia. Among the recorded Gastropodes 16 freshwater molluscan species and 04 were terrestrial molluscan including 01 slug and 03 terrestrial snails. Bivalves was represented with 02 orders, 02 families, 03 genera and 10 species. (Table 1 and Fig. 3).

The highest number of species recorded belonging to family Thiariidae followed by Viviparidae, Lymnaeidae, Arioplantidae, Bullinidae, Achatinnidae, Veronicellidae, Cerastuidae from gastropods and nine species reported belonging to family unionidae and only one species from corbiculidae of bivalves. Amongst the freshwater gastropods *Bellamya bengalensis* and *Melanoides tuberculata* were found more dominant, widely distributed and survival in varied aquatic habitats. The *Lymnaea*

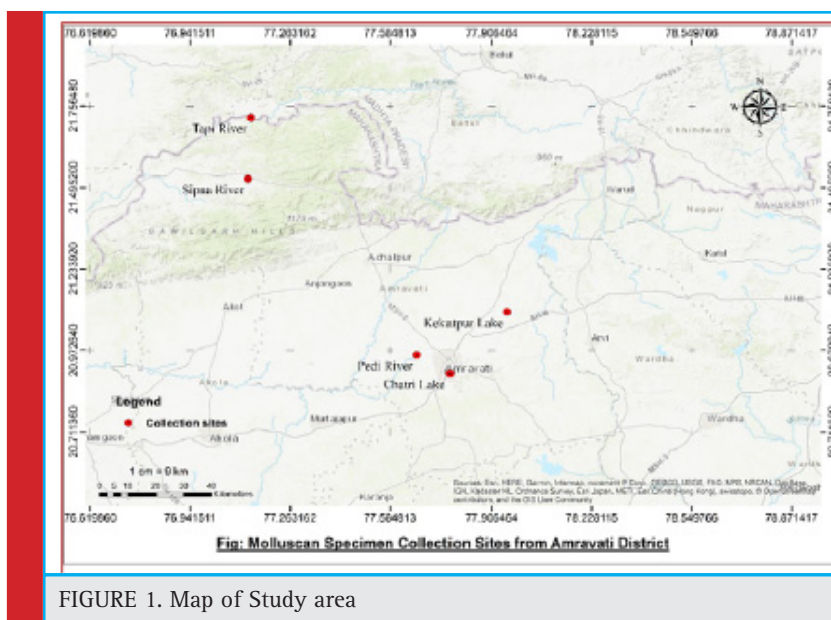


FIGURE 1. Map of Study area

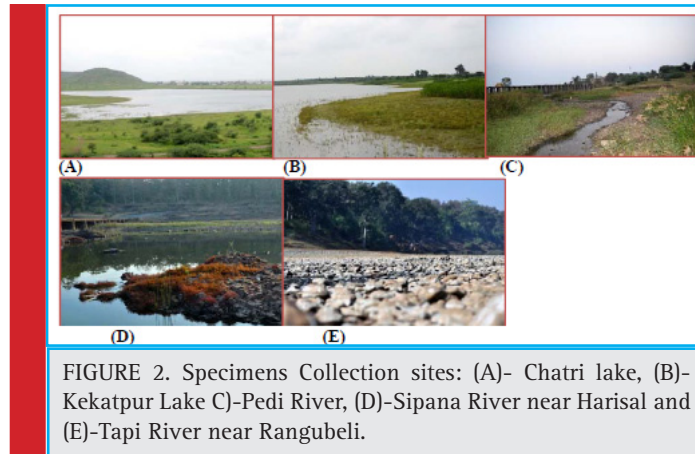


Table 1. List of Molluscan species reported from different ecological habitat in Amravati district.

Class	Family	Species	CL	KL	PR	SR	TR
Gastropoda	Viviparidae	<i>Bellamya bengalensis</i> (Lamark)	+	+	+	+	+
		<i>Bellamya bengalensis doliaris</i> (Gould)*	-	-	-	-	-
		<i>Bellamya dissimilis</i> (Mueller)	-	-	-	+	+
	Pilidae	<i>Pila globus</i> (Swainson)*	-	-	-	-	-
		<i>Pila viren</i> (Lamark)*	-	-	-	-	-
	Thiaridae	<i>Thiara scabra</i> (Mueller)	+	-	-	+	-
		<i>Thiara lineate</i> (Gray)	+	+	+	+	+
		<i>Melanoides tuberculata</i> (Mueller)	+	+	+	+	+
		<i>Paludomus obesus</i> (Philippi)*	-	-	-	-	-
	Lymnaeidae	<i>Lymnea acuminata</i> (Lamark)	+	-	-	-	-
		<i>Lymnea leuteola</i> (Lamark)	+	-	-	-	-
		<i>L.leuteola f.australis</i> Annandale & Rao*	-	-	-	-	-
	Bullinidae	<i>Indoplanorbis exustus</i> (Deshayes)	+	+	-	-	-
		<i>Gyraulus convexiusculus</i> (Hutton)*	-	-	-	-	-
	Ancylidae	<i>Ferrissia verruca</i> (Benson)*	-	-	-	-	-
	Cerastuidae	<i>Rachis punctatus</i> (Anton)	+	-	-	-	-
	Arioplantidae	<i>Macrochlamys indica</i> (Benson)	+	+	-	-	-
<i>Cryptozona semirugata</i> (Beck))		+	+	-	-	-	
Achatinnidae	<i>Achatina fulica</i> (Bowdich)	+	+	+	-	-	
Veronicellidae	<i>Laevicaulis altae</i> (Ferussac)	+	+	+	+	+	
Bivalvia	Unionidae	<i>Lamellidens marginalis</i> (Lamark)	+	+	+	+	+
		<i>Lamellidens corrianeus</i> (Lea)	-	-	+	-	-
		<i>Lamellidens consobrinus</i> (Lea)*	-	-	-	-	-
		<i>Parreysia caerulea</i> (Lea)	-	-	+	-	+
		<i>Parreysia fevidens</i> (Benson)*	-	-	-	-	-
		<i>Parreysia annadalei</i> (Preston)*	-	-	-	-	-
		<i>Parreysia corrugata</i> (Mueller)*	-	-	-	-	-
		<i>P. corrugate laevirostris</i> (Benson)*	-	-	-	-	-
		<i>P. cylindrical</i> Annandale & Prashad*	-	-	-	-	-
Corbiculidae	<i>Corbicula striatella</i> (Deshayes)	-	-	-	-	+	

CL-Chatri Lake, KL-Kekatpur Lake, PR-Pedi River, SR-Sipana River, TR-Tapi River

*Not actually collected, earlier reported by Zoological Survey of India (Patil ,2005)



FIGURE 3. Collected and Identified molluscan specimens from Amravati District.

acuminata, *Lymnaea leuteola*, *Tarebia lineate*, *Thiara scabra* and *Indoplanorbis exustus* were highly habitat specific they proved to bio-indicator of ecologically diverse aquatic habitat. *Laevicaulis altae* and *Macrochlamys indica* were found dominant from terrestrial gastropods. Only *L. altae* species reported as a tropical land slug and *Macrochlamys indica*, *Cryptozonia semirugata* and *Achatina fulica* reported as a terrestrial pulmonate snails. *Lamellidens marginalis* was found more common from bivalves in all selected sites, viz Lakes and Rivers. *Parreysia* species reported only from rivers of the Melghat.

Bellamya bengalensis doliaris (Gould), *Pila globus* (Swainson), *Pila viren* (Lamarck), *Paludomus obesus* (Philippi), *L. leuteola f. australis* Annandale & Rao, *Gyraulus convexiusculus* (Hutton), *Ferrissia verruca*

(Benson), *Lamellidens consobrinus* (Lea), *Parreysia fevidens* (Benson), *Parreysia annadalei* (Preston), *Parreysia corrugata* (Mueller), *P. corrugate laevirostris* (Benson) and *P. cylindrical Annandale & Prashad* were not reported during present study, but these species were earlier reported from Melghat and Purna river by ZSI scientist (Patil, 2005). Molluscan are good indicators of localized condition indicating water quality. Freshwater molluscs play a significant role in the aquatic ecosystem structure and biodiversity. Also, they serve an important source of food for other animals i.e. fishes, birds and mammals even for human being. The existence of molluscan is highly necessary because they constitute food for many aquatic organisms (Subha, 2003). This study shows that the potential and importance of such habitats to diverse molluscan species and support many

more species. It is a preliminary study on the molluscan diversity in Amravati district. Further studies are needed for detailed exploration of the molluscan fauna and its microhabitat and threats being experienced by these benthic macro fauna.

CONCLUSION

In this paper a total of 30 molluscan species were reported from the Amravati district. This paper shows the first list of freshwater and land molluscs from Lakes, Rivers, forests and agricultural lands of Amravati district. The present study provides the base line data for the molluscan diversity in Amravati district. Further long term research is needed to explore the diversity of molluscan, population estimation, its habitat, seasonal variations and threats being experienced by these animals.

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