

Status of the Freshwater Molluscs from Krishna River, Satara, (MS) India

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Abstract: *A total 18 freshwater mollusc species with all forms and varieties belonging to 04 orders, under 10 families. the maximum diversity was found in order Mesogastropoda and minimum was from Basommatophora. The dominant species among these total molluscs belonged to the Unionidae family. The abundance of freshwater molluscan species in the Krishna River is described in an assessed checklist. Molluscs are widely regarded as the most diverse and dominant benthic fauna in both the lentic and lotic zones. Regional populations of malacofauna, on the other hand, may be attributable to the quantity of planktonic mass at different river sites, which reflects molluscan species diversity.*

Keywords: Bivalves, Freshwater molluscs, Gastropods, Krishna River.

I. INTRODUCTION

An aquatic ecosystem is incomplete without benthic invertebrates, as they form the basis of the trophic level [1]. Freshwater molluscs are common, conspicuous, and commercially important group of animals. These animals are incredibly adaptable and can be found in all types of habitats [2]. Various environmental factors influence the distribution and structure of gastropod assemblages [3]. Climate-related factors such as water, temperature, and precipitation, as well as physiographical factors, have a great deal of influence over an area covering several basins [4]. Because gastropods are sessile and have very limited ability to avoid unfavourable environments, it is difficult to recover the heterogeneity of a freshwater ecosystem once it has been disrupted [5].

Molluscs play an important role in food chains and ecosystems. They have long been a source of valuable pearls, Tyrian dye, sea silk, and other materials [6]. Molluscs occur in various habitats and are divided into freshwater, marine and terrestrial forms. Freshwater molluscs play an important role in aquatic ecosystems, and some are edible. Many aquatic animals and humans have been proven to feed on species such as *Bellamyia bengalensis*, *Pila globose*, and *Lamellidens marginalis*. Some have also been used to produce pearls in some parts of India [7].

Freshwater ecosystems are among the most fragile and threatened ecosystems on the planet. Humans are constantly manipulating these environments to meet their needs, but without regard for the long-term consequences. Molluscs are an important group for freshwater biodiversity, so they play an important role in ecosystem functioning [8]. Bivalves can be used to monitor water quality since they accumulate toxic substances more than other organisms [9].

The information available on the ecology and systematics of land molluscs such as slugs and amphibian molluscs are woefully inadequate. Furthermore, extensive surveys of this area will almost certainly reveal the existence of many more species than are currently known. Among the molluscs, gastropods have the most ecological niches. Freshwater gastropods are found in nearly every aquatic habitat, including lakes, rivers, swamps, springs, ponds, drainage, and other seasonal water. Despite the ecological importance of molluscs, their systemic study receives less attention and discussion [10]. As a result, the current study was carried out to gain a more reliable understanding of the biodiversity of molluscs in the region.

II. MATERIAL AND METHODS

2.1 Study Area

The Krishna River originates in the western Ghats near Mahabaleshwar at an elevation of about 1,300 metres (4,300 feet), in the state of Maharashtra in length (282 kilometres (175 mi) in Maharashtra). The source of the river is in

Mahabaleshwar near the village of Jor in the far north of Wai Taluka, Satara district, Maharashtra in the west. From the discharge of the Krishna River, four monitoring stations were (Krishna -Venna Sangam Mauli (S1), Shri Krishna Dham (S2), Krishna Ghat (S3) & Shankhvalan Somnatha (S4)) selected for regular collection of the mollusca.

Molluscan species were collected using a simple hand-picking method and the Stratified Random Quadrant Sampling Method (Christian and Harris, 2005) from all along the Krishna river's marginal area sandy and muddy substratum. Samplings were taken up to a depth of 1 to 2 metres from the water's surface. Specimens were identified by using the standard methods [11], [12],[13]. Mollusca base website was used to confirm the most recent taxonomic nomenclature [14].

III. RESULT AND DISCUSSION

This paper lists altogether 18 freshwater mollusc species with all forms and varieties belonging to 04 orders, under 10 families. The checklist presented here describes the analysis of shellfish from the region (Table 01). Among the population structure of fresh water molluscs, the maximum diversity was found in order Mesogastropoda and minimum was from Basommatophora. The dominant species among these total molluscs belonged to the Unionidae family. The abundance of species is constantly linked to the habitat's favourable ecological circumstances. During the screening period, the S1 and S4 sites had the most species identified, followed by the rest of the sites.

Molluscs are considered to be the most diverse and dominant benthic fauna from both the lentic and lotic regions, and they are primarily represented by two major classes, Gastropods and Pelecypods [15]. Snails are the only mollusks that can be utilised for bioindication and biomonitoring in terrestrial ecosystems since gastropods are the only mollusks that can be found there., *L. marginalis*, *L. corrianus*, and *B. bengalensis* three molluscan species collected, were considered good biomonitoring agents [16], [17]. Patil and Talmale, produced a checklist of Maharashtra's land and fresh water mollusks, in which he included 142 species of mollusks in all forms, divided into 42 genera and 23 families [18]. Dutta and Malhotra also discovered the preponderance of molluscan fauna in the fishpond due to greater Calcium concentrations while studying the seasonal fluctuation in macro benthic fauna of Gadigarh stream from Jammu [19]. Verma and Saksena discovered 11 molluscan species in the Kalpi (Marar) river near the Ramaua reservoir in Gwalior, Madhya Pradesh [20].

From the study, it can be concluded that human activities pose a significant threat not just to the environment but also to human health, rivers, as well as the macro invertebrate fauna, which includes molluscs. A comprehensive study of freshwater Mollusca from the Krishna river is urgently needed. Furthermore, extensive surveys of this area will undoubtedly reveal the presence of many more species than are currently known.

Table 1: The occurrence of gastropod species at each studied locality.

Order	Family	Species	Study area			
			S1	S2	S3	S4
Mesogastropoda	Cyclophoridae	<i>Cyclophorus (Glossostylus) indicus</i> (Deshayes, 1832)	*	*	-	*
	Viviparidae	<i>Bellamya bengalensis</i> (Lamarck, 1822)	*	-	-	*
	Pilidae	<i>Pila globosa</i> (Swainson, 1822)	-	*	*	*
		<i>Pila virens</i> (Lamarck, 1822)	*	-	*	*
	Thiaridae	<i>Melanoidestuberculata tuberculata</i> (Müller, 1774)	-	-	*	*
		<i>Tarebia lineata</i> (Gray, 1828)	*	*	-	-
Littorinidae	<i>Cremonoconchussyhadrensis</i> (W. T. Blanford, 1863)	*	-	*	*	
Basommatophora	Lymnaeidae	<i>Lymnaea aluteola typica</i> (Lamarck, 1822)	*	*	-	*
		<i>Lymnaea acuminata typica</i> (Lamarck, 1822)	*	-	-	*
Eulamellibranchiata	Unionidae	<i>Lamellidens corrianus</i> (I. Lea, 1834)	*	-	*	-
		<i>Lamellidens lamellatus</i> (I. Lea, 1834)	*	-	-	*
		<i>Lamellidens marginalis</i> (Lamarck, 1889)	*	-	-	*

		<i>Parreysiacorrugata</i> (O. F. Müller, 1774)	-	*	*	*
		<i>Parreysiafavidens</i> (Benson, 1862)	*	-	-	*
	Corbiculidae	<i>Corbicula striatella</i> (Deshayes, 1855)	-	-	*	*
Basommatophora	Planorbidae	<i>Planorbescalaris</i> (Jay, 1839)	*	*	-	-
		<i>Indoplanorbisexustus</i> (Deshayes, 1833)	*	-	*	-
	Physidae	<i>Physa acuta</i> (Draparnaud, 1805)	*	*	-	-

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