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Molluscan Diversity in River Purna near Jafrabad city, District Jalna

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Abstract

In present work the diversity survey of molluscs from Purna river, Near Jafrabad Dist. Jalna is carried out during the year 2020-2021. Molluscs are considered the most diverse and dominant benthic fauna both from lentic and lotic aquatic ecosystems. Seasonal data of freshwater molluscs were studied as gastropods and Bivalve molluscs from Purna River from Two different sampling stations. Riverine system is poorly studied till date and, mainly lack of information about the molluscan fauna in this particular water body. In present study, 13 species belong to 07 genera and 02 classes were recorded. 09 species belong to class gastropods and 04 species from class Bivalvia. The members of family Unionidae comprises maximum number of species of different mollusc.

Key words : Freshwater molluscs, Gastropods, Bivalves, Purna River.

Freshwater molluscs play significant role in public and veterinary health[16]. Some fresh water snails are vectors of diseases of humans and livestock, serve as the intermediate hosts for a number of infections such as helminth diseases caused by trematodes[1,4]. The Indian freshwater harbor a rich diversity of molluscs, representing 212 species belonging to 21 families, of these, 164 species were recorded from rivers and streams[15]. Molluscs are important component of aquatic ecosystem because they form the food for fishes and their productivity play an important role in food chain[19]. Their participation in aquatic ecosystem has made them significant partners in ecological communities. Many molluscan species are also good bioindicators for water quality or population on the basis of their tolerance power against extremes of physico-chemical component of water[10]. The present study reveals that the Purna river is rich in diversity of molluscan fauna.

Roy and Gupta[13] 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 (Lamark) were the most ubiquitous species in the river system. Dahegaonkar *et. al.*,[3] 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.

The main objective of the present study was to document the molluscan diversity of the freshwater from the bank of Purna River near Jafrabad. The identification, taxonomic account and distribution of molluscs found in freshwater body will serve to keep complete record for further study.

Study area: Study of molluscan fauna was carried out from Purna river during June 2020 to May 2021. The study comprised two sampling stations (ST-1 & ST-2). The exact location of study area is approximately between 20°11'04.4"N 76°00'24.9"E & 20°10'59.2"N 76°01'10.8"E

Sample collection : The collection of freshwater molluscs was made from two sampling stations of study area. The shelled specimens were collected manually by hand picking, using gloves to prevent any infection of parasites. From each site the molluscs were captured from a 04 meter transact from each site. The collected specimens were recorded and separately counted sampling station wise and species wise. Collected molluscs were washed, photographed with the help of digital camera and identified as per Tonapi[17] and Subba Rao[15].

The mean of total samples was calculated from the data. Total 450 different samples of molluscs were collected, observed, identified and again released them to their habitat. Only shells found in river were retained for further study.

In the present study considerable changes in molluscan diversity was observed in the two different sites of Purna River near Jafrabad, District Jalna. Total thirteen species of molluscs belonging to class Gastropoda and Bivalve were recorded during the study period. (Table-1). Amongst the Gastropoda group *Pila globosa* belonging to family Pilidae was dominant followed by other eight species as Thiara scabra belonging to family Thiaridae, *Physella acuta* belonging to family Physidae, *Melanoides tuberculata* belonging to family Thiaridae, *Lymnaea acuminata* belonging to family Lymnaeidae, *Bellamya bengalensis* belonging to family Viviparidae, *Tarebia lineate* belonging to family Thiaridae, *Tarebia granifera* belonging to family Lymnaeidae, *Lymnaea lutiola* belonging to family Lymnaeidae and one species *i.e. Lamellidens marginalis* belonging to family Unionidae, class bivalve was observed dominant over other three species.

The Molluscan populations are good indicators of localized condition, indicating water quality. They also play important roles in the ecosystem structure and biodiversity. Harman[10] has also pointed out that molluscs are bioindicators of freshwater pollution. Garg[9] studied a correlation between molluscan diversity with physicochemical parameter with affect of water from Ramsagar reserviour. Researchers haves studied sewage pollution impact on microzoobenthic from Kalpi river[18]. Among the three seasons the molluscan species shows lower diversity in mansoon

season as compared to summer and rainy season[6] .

The highest gastropod count recorded during April, 2021 from the stream corresponds with Diab[5] who reported higher snail abundance in spring and low in summer in Beheira Province. The presently recorded low count of gastropods agrees with El-Kady[7] *et al*. who also recorded lowest number of snails during winter (January and February) in Sinai Peninsula. Supian and Ikhwanuddin[16] reported that *M. tuberculata* is the commonest and most wide-ranging member of the family Thiaridae, found in almost any kind of freshwater. Peak in the population of *M. tuberculata* recorded during September, 2020 is in agreement with Hussein[11] *et al*. who reported that this species showed a maximum cohort of small-sized individuals in October, 2009. According to Pointier[12] *et al.* maximum reproduction of this species took place between June and November in France. Flores and Zaffaralla[8] also cited Thiaridae as the most persistent and abundant macroinvertebrate family. Contreras-Arquieta[2] reported that members of Thiaridae are quick colonizers, tolerant to habitat diversity and variability due to a very strong and thick shell; many forms are parthenogenetic females capable of multiplication in a short time, viviparous, operculate and have average longevity of five years. Highest count of P. acuta recorded in April, 2021 finds support from Hussein[11] *et al*. who also reported a March-May peak in their population.

Table-1. Systematic classification of molluscan species observed in bank of Purna River during June 2020-May 2021

Sr. No.	Class	Order	Family	Genus and Species
1	Gastropoda	Sorbeoconcha (Muller)	Thiaridae	*Thiara scabra*
		Pectinibranchiata	Pilidae	*Pila globosa*
		Hygrophila	Lymnaeidae	*Lymnaea acuminata*
		Hygrophila	Physidae	*Physella acuta*
		Architaeniogllossa	Viviparidae	*Bellamya bengalensis*
		Sorbeoconchia	Thiaridae	*Tarebia lineata*
		Heterobranchia	Lymnaeidae	*Lymnaea luteola*
		Sorbeoconchia	Thiaridae	*Tarebia granifera*
		Sorbeoconchia	Thiaridae	*Melanoides tuberculata*
2	Bivalvia	Unionida	Unionidae	*Lamellidens marginalis* (Lamarck-1891)
		Unionida	Unionidae	*Lamellidens corrianus* (Lea 1834)
		Unionida	Unionidae	*Indonaia caeruleus*
		Veneroida	Corbiculidae	*Corbicula striatella*

Molluscs can be used effectively for studies of both organic and inorganic contaminants. Two important advantages of snails and bivalves over most other freshwater organisms for biomonitoring research are their large size and limited mobility. In addition, they are abundant in many types of freshwater environments and are relatively easy to collect and identify. The results of the present study 13 species of molluscs were recorded in the Purna River, which includes 9 species of gastropods and 4 species of bivalves. Findings of the present work could be useful for better management and conservation of molluscan fauna from this region. Gastropods are typically one of the most dominant groups in freshwater ecosystems than the bivalves. These species can be considered as bio-indicators of pollution as they were found to respond prominently.

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