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# Molluscan diversity in Borda Dam at Wani Taluka of Yavatmal District, Maharashtra, India

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**Abstract**

As environmental indicators, molluscs recycle nutrients and provide sustenance for some aquatic creatures, which is a critical part of their role in maintaining the aquatic ecosystem, and their production is a crucial component in the aquatic fauna's food chain. The loss and degradation of aquatic habitats by human activity has put several species of freshwater molluscs at risk. Hence, it is imperative to study the ecology, diversity, abundance and distribution of molluscan species. The current study aims to explore diversity of molluscan fauna in Borda dam. The research was done between June 2022 and May 2023. A total of 16 molluscan species from 8 families and 6 orders have been identified. The family Thiaridae and Unionidae has the maximum number of species among all 8 families of 16 species. Sites I and II contained 56.25% each of the molluscan species, while sites III and IV had 50% and 62.50% of the species density, respectively. The results of this study may help conserve and manage the local molluscan fauna more effectively.

**Key words :** Borda dam, *Gastropoda, Mollusca, Pelecypoda, Viviparidae*.

Mollusca is the second largest phylum of invertebrates, is classified as a freshwater, marine, and terrestrial species, and can be found in a variety of habitats. There are many different kinds of animals in the phylum Mollusca that vary in size, form, behavior, and habitat[16], which inhabit freshwater environments; they include lentic environments like lakes, ponds, and ditches, as well as lotic environments like rivers, streams, canals, springs, and cave streams. In aquatic environments, molluscs are a prevalent fauna in groups that live on the bottom. In freshwater bodies, they can also be observed

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attached to floating vegetation. Their bodies are smooth, and they are coelomates that are bilaterally symmetrical, stratified, and shelled. The majority of species may be appropriately identified by the characteristics of their shells. Some of the freshwater molluscs are edible and contribute significantly to the aquatic ecosystem. They are also a vital source of food for humans and other species like fish, birds, and mammals. About 150 freshwater gastropod species have been documented from India[9], out of an estimated 4,000 species of freshwater gastropods worldwide[15]. There are roughly 1200 recognized species of freshwater bivalves globally[5], with 67 of those species being represented in India[9]. It is not well understood how important they are to the dynamics of the aquatic ecosystem and how they contribute to the production of biomass.

Molluscan abundance can be regarded as an indirect indicator of aquatic production because it contributes to the productivity of aquatic systems[10,20,21]. Freshwater molluscs are susceptible to several natural disturbances like floods, droughts, competition from invading alien fauna, habitat modification[1,14], and seasonal water level fluctuation in reservoirs[4]. According to Tyagi[19], freshwater gastropods can be either herbivorous or detrivorous, or they can passively eat tiny invertebrates connected to periphyton. In the aquatic ecosystem, freshwater bivalve are very important commercially, and some of them are edible. Bivalve shells have a variety of applications, including the paint and lime industries, as well as the creation of toys, buttons, and ornaments.

The primary goal of this study was to record the diversity of molluscs found in the freshwater of the Borda dam. The distribution, taxonomic classification, and identification of the molluscs found in this dam will serve to preserve a comprehensive record for future research.

The Borda dam is situated in the Wani Taluka of the Yavatmal District of Maharashtra, approximately 2 kilometres from Borda village. The study region is located at latitude 19.9805 N and longitude 78.8348 E. Borda Dam is 759 metres long and 12.41 metres high above the lowest foundation. (Figures 1, 2, and 3).

The study was carried out from June 2022 to May 2023. The primary goal of the current study is to look into the diversity of the fauna of mollusca in the Borda dam. During the study period, specimens were hand-picked from four different sites. Molluscan specimens were properly washed, cleaned, and preserved in 5% formalin. The identification of the specimens follows Subba Rao[16] and Ramakrishna and Day[13]. The latest taxonomic nomenclatures were verified by using the Molluscabase website[8].

Molluscs, the most varied and prevalent group of benthic fauna in water bodies, are essential to the health of the aquatic ecosystem. The molluscan diversity from Borda dam has been examined in this work and is represented in Table-1. The two classes of molluscs that make up the representative group are the Gastropoda and the Pelecypoda (Bivalvia). During the current investigation, there were 16 molluscan species found in all, including 11 gastropod species and 5 bivalvia species. In this study, the 11 Gastropodan species belonged to 4 orders, viz., Mesogastropoda, Littorinimorpha,

Table-1. Benthic Molluscan fauna in Borda dam, Taluka Wani, Dist. Yavatmal

| Class | Order | Family | Species | Site I | Site II | Site III | Site IV |
|---|---|---|---|---|---|---|---|
| Gastro-poda | Mesogastropoda | Thiaridae | *Melanoides tuberculata* | + | + | - | + |
| | | | *Thiara lineata* | - | + | - | + |
| | | | *Thiara scabra* | + | - | - | + |
| | | Viviparidae | *Bellamya bengalensis* | + | + | + | + |
| | | | *Bellamya dissimilis* | + | - | + | - |
| | Littorinimorpha | Bithyniidae | *Gabbia orcula* | - | + | + | - |
| | Architaenioglossa | Ampullariidae | *Pila globosa* | + | - | - | + |
| | Basommatophora | Lymnaeidae | *Lymnaea acuminate* | - | - | - | + |
| | | | *Lymnaea luteola* | - | - | + | - |
| | | Planorbidae | *Indoplanorbis exustus* | + | - | + | + |
| | | | *Gyraulus rotula* | + | + | - | + |
| Pelecy-poda | Eulamellbrachiata | Unionidae | *Lamellidens corrianus* | - | + | + | - |
| | | | *Lamellidens marginalis* | - | + | - | + |
| | | | *Parreysia corugata* | - | + | + | + |
| | Venerida | Cyrenidae | *Corbicula peninsularis* | + | + | - | - |
| | | | *Corbicula striatella* | + | - | + | - |
| | % of Mollusc species at the sampling sites (N= 16) | | | 56.25% | 56.25% | 50% | 62.50% |

Architaenioglossa, and Basommatophora, and 6 families, whereas 5 species of class Bivalvia belonged to 2 orders, viz., Eulamellbrachiata and Venerida, and 2 families. The collected species belonged to a total of 6 orders and the following 8 families: Thiaridae, Vivipiridae, Bithyniidae, Ampullariidae, Lymnaeidae, Planorbidae, Unionidae, and Cyrenidae. Among these 8 families, Thiaridae and Unionidae have the highest number of species, contributing 18.75% each of the total species, followed by Viviparidae, Lymnaeidae, Planorbidae, and Cyrenidae with 12.50% of species each, whereas family Bithyniidae and Ampullariidae contribute 6.25% each of the total species (Figure 4). There were differences in the percentage of species occurring at four different sites in the study area; 56.25% of molluscan species were found at sites I and II, respectively, whereas sites III and IV had


Figure 1. Satellite Map of Borda dam, Taluka Wani, District Yavatmal.

Figure 2. Overall view of Borda dam, Taluka Wani, District Yavatmal

50% and 62.50% of species density, respectively. A similar observation was recorded by Padghane *et al*.[10]. *Bellamya bengalensis* was found in all four sites of the present study area, whereas *Lamellidens marginalis* and *Parreysia corugata* were found in sites II, III, and IV. Misar *et al*.[7] observed that *Lamellidens marginalis* was the most prevalent of the 18 molluscan species in and around Junona lake. Kumar and Vyas[3] recorded 11 species of molluscs from Narmada Sagar. Harney[2] reported 14 species in Gilbili lake; Misar and Chavhan[7] observed 19 species of mollusca in and around Sakharwahi lake; Sulthana *et al*.[18] recorded 17 freshwater molluscan species from 7 families from Bastar Plateau Zone; and the results of these researchers are comparable with the present

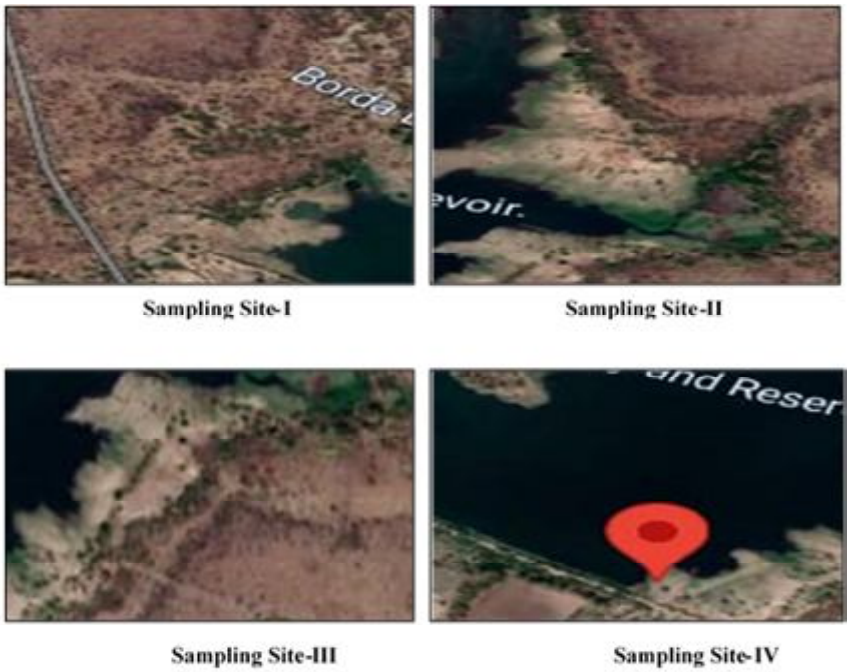


Figure 3. Sampling sites of Borda dam, Taluka Wani, District Yavatmal

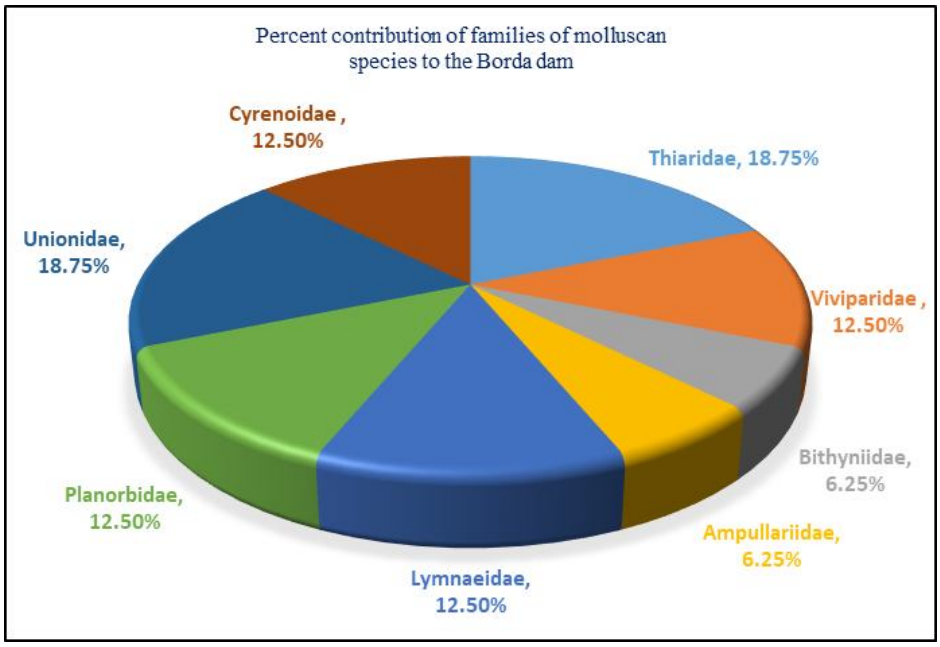


Figure 4. Percent contribution of families of Molluscan species of the Borda dam.

study.

Bivalves can be observed creeping through the sand or partially buried in it. In the present investigation, *Lamellidens corrianus, Lamellidens marginalis, Parreysia corugata, Corbicula peninsularis,* and *Corbicula striatella* were found in Borda dam but recorded prevalently at site II and III. Similar observations made by Pardeshi and Kalyankar[11] reported 4 freshwater bivalve species from Nathsagar dam.

According to Pir *et al*.,[12], one of the most significant factors that appears to influence mollusc habitat and behaviour is the concentration of salts dissolved in water, particularly calcium carbonate, which is a necessary component for shell development. Throughout the current investigation, there were variations in molluscan diversity at different sites. This might be caused by variations in calcium carbonate levels at different sites of the Borda dam.

In the current investigation, 16 molluscan species were identified, of which 11 are gastropods and 5 are bivalves. The gastropods and bivalves are abundantly found in Borda dam at selected sites. The reasonable water level, temperature, and availability of micro- and macro-vegetation, as well as decomposers, are the reasons behind Borda dam's extensive molluscan population. The abundance of molluscan fauna in the current research area is indicative of its robust production. The findings of this study indicate that the molluscan fauna under observation belongs to a group of native species with significant biodiversity potential, which must be preserved in order to sustain the natural equilibrium and provide for their survival.

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**Conflict of interest :**

The authors declare that there are no conflicts of interest.

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