ASSESSMENT OF MOLLUSCAN DIVERSITY IN BOR RIVER DAM FROM AMRAVATI DISTRICT OF MAHARASHTRA (INDIA)

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Abstract
The present study entitled "Assessment of Molluscan Diversity in Bor River Dam from Amravati District of Maharashtra (India)" was conducted during February 2024 to January 2026 to evaluate seasonal variations in malacofaunal diversity. Seasonal fluctuations in species richness were observed, with maximum diversity recorded during the monsoon season and comparatively lower diversity during summer and winter. Out of total 24 species, during 2024–2025, 16, 22, and 17 species were recorded during summer, monsoon, and winter respectively, while during 2025–2026, 15, 23, and 17 species were observed. Higher diversity during monsoon may be associated with favourable environmental conditions including increased water availability, nutrient enrichment, and suitable habitat conditions. The observed diversity pattern indicates that seasonal and hydrographical factors significantly influence molluscan distribution. The study revealed that Bor River Dam supports rich malacofaunal diversity and provides baseline information for biodiversity conservation and ecological assessment.
Keywords: *Malacofauna, Molluscan diversity, Bor River Dam, Seasonal variation, Freshwater ecosystem.*

Introduction

Freshwater ecosystems are among the most productive and ecologically significant natural systems on Earth, supporting rich biodiversity and providing essential ecological services. Lakes, rivers, reservoirs, ponds, and wetlands serve as habitats for diverse aquatic organisms and contribute substantially to nutrient cycling, food web dynamics, water purification, fisheries productivity, and maintenance of ecological balance. The ecological structure and functioning of these freshwater habitats are strongly influenced by environmental variables such as temperature, dissolved oxygen, pH, conductivity, nutrient concentrations, and habitat characteristics. Increasing anthropogenic pressures including urbanization, agricultural runoff, domestic waste discharge, industrial activities, and habitat modifications have significantly altered freshwater ecosystems and adversely affected their biological communities (Grabowski *et al.,* 2012).

Among aquatic organisms, molluscs constitute one of the most diverse and ecologically important groups of invertebrates. Members of the phylum Mollusca include gastropods and bivalves inhabiting marine, freshwater, and terrestrial environments. Freshwater molluscs play important ecological roles in aquatic ecosystems through nutrient recycling, organic matter decomposition, sediment stabilization, and water filtration processes. Many molluscan species function as detritivores, grazers, and filter feeders, thereby contributing significantly to ecosystem functioning and energy transfer within aquatic food webs. Additionally, they serve as food resources for fishes, birds, amphibians, reptiles, and mammals, thus maintaining trophic interactions and ecosystem stability (Clarke, 1996).

Molluscs are also considered valuable biological indicators because of their sensitivity to environmental changes and habitat disturbances (Chaudhary *et al.,* 2025). Variations in molluscan abundance, diversity, and community structure often reflect changes in water quality, habitat conditions, pollution levels, and ecological status of aquatic ecosystems. Consequently, studies on molluscan diversity provide useful information regarding ecosystem health and environmental quality. Freshwater molluscs are increasingly threatened by habitat degradation, eutrophication, sedimentation, invasive species, pollution, and climate change, leading to considerable declines in their populations worldwide (Wagh *et al.*, 2019).

Reservoir ecosystems are important freshwater habitats that support diverse aquatic biota and provide multiple socioeconomic benefits. Bor River Dam located in Amravati district of Maharashtra is an important freshwater reservoir serving irrigation, fisheries, and ecological functions. The reservoir provides suitable habitats for various aquatic organisms including molluscan communities. However, environmental changes and increasing anthropogenic influences may affect the composition and diversity of these organisms. Information regarding molluscan diversity of Bor River Dam remains limited, creating the need for systematic biodiversity assessment (Orr *et al.,* 2005).

Therefore, the present study entitled "Assessment of Molluscan Diversity in Bor River Dam from Amravati District of Maharashtra (India)" was undertaken to document the molluscan fauna of the reservoir and evaluate their diversity patterns. The study will contribute baseline information on molluscan biodiversity and may aid in ecological monitoring, conservation planning, and sustainable management of freshwater ecosystems in the region.

Materials And Methods

An investigation was conducted during February 2024 to January 2026 to study the diversity of molluscan fauna at Bor River dam from Amravati district of Maharashtra (India). An effective protocol was adopted. Popatkhed Dam is an earthen type of reservoir that is located between located between 21°02'1" N and 77°80'04" E.. It is an earth fill dam on river near Nandgaon Peth , Amravati district in the state of Maharashtra in India.

The climate of this district is characterized by a hot summer, well-distributed rainfall during the south-west monsoon season and generally dry weather during the rest of the year. The cold season is from December to February. This is followed by the hot season from March to May. The southwest monsoon season is from June to September while October and November constitute the post-monsoon season (Falling Rain Genomics 2024-2026).

The survey was performed at a weekly interval in all collection sites. 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) and other available literature.

Results And Discussion

The seasonal variation in malacofaunal diversity at Bor River Dam during February 2024 to January 2026 demonstrated distinct fluctuations in species richness across different seasons. During the study period, a comparatively higher number of species was observed during the monsoon season, while relatively lower diversity was recorded during summer and winter seasons.

During 2024–25, a total of 16 species were recorded in summer, which increased considerably to 22 species during the monsoon season, followed by a decline to 17 species in winter. Similarly, during 2025–26, 15 species were observed during summer, increasing markedly to 23 species in monsoon, and subsequently decreasing to 17 species during winter.

The findings revealed that monsoon season supported maximum malacofaunal diversity in both study years. Increased species richness during monsoon may be attributed to favourable environmental conditions such as increased water availability, nutrient enrichment, suitable temperature, enhanced habitat heterogeneity, and abundant food resources. The influx of rainwater and organic matter during monsoon may have created suitable ecological conditions supporting growth and proliferation of molluscan communities (Rosenberg and Langer, 2008).

Table.1: Checklist of Malacofaunal species observed at Bor River Dam during February 2024 – January 2026

A] Bivalvia	5. *Cryptozona semirugata (Beck, 1837)*
1. *Corbicula striatella (Deshayes, 1854)*	6. *Gyraulus rotula (Benson, 1850)*
2. *Lamellidens consobrinus (Lea, 1856)*	7. *Indoplanorbis exustus (Deshayes, 1834)*
3. *Lamellidens corrianus (Lea, 1819)*	8. *Laevicaulis alte (Férussac, 1821)*
4. *Lamellidens marginalis (Lamarck, 1819)*	9. *Lymnaea acuminata (Lamarck, 1822)*
5. *Parreysia caerulea (Lea, 1856)*	10. *Lymnaea luteola (Lamarck, 1822)*
6. *Parreysia corrugata (Müller, 1774)*	11. *Macrochlamys indica (Benson, 1832)*
7. *Parreysia favidens (Benson, 1862)*	12. *Pila globosa (Swainson, 1822)*
B] Gastropoda	13. *Pila virens (Lamarck, 1822)*
1. *Achatina fulica (Bowdich, 1822)*	14. *Rachis punctatus (Anton, 1838)*
2. *Bellamya bengalensis (Lamarck, 1822)*	15. *Thiara lineata (Gray, 1822)*
3. *Bellamya dissimilis (Müller, 1774)*	16. *Thiara scabra (Müller, 1774)*
4. *Bellamya eburnea (Annandale, 1921)*	17. *Thiara tuberculata (Müller, 1774)*

Conversely, comparatively lower species diversity during summer may be associated with elevated temperature, reduced water level, habitat shrinkage, and increased environmental stress (Cummings and Graf, 2010). Winter exhibited intermediate diversity values indicating relatively stable ecological conditions within the reservoir. The observed seasonal pattern suggested that

environmental and hydrographical variations considerably influenced the occurrence and distribution of malacofaunal communities in Bor River Dam.

Overall, the seasonal fluctuations indicated that the reservoir ecosystem supports rich molluscan diversity and that species composition was strongly influenced by seasonal environmental changes. The consistent dominance of monsoon diversity across both years reflects the ecological suitability of the Bor River Dam ecosystem for malacofaunal assemblages.

The observed species composition and diversity pattern was found to be in well agreement with many of previous studies that mainly deals with molluscan diversity of lake ecosystem. These recent studies mainly included Aravind *et al.* (2011), Upadhye *et al.* (2011), Waghmare *et al.* (2012), Sharma et al. (2013), Karthick *et al.* (2014), Chavan and Pawar (2015), Sarwade *et al.* (2015), Jadhav and Patil (2016), Shinde *et al.* (2016), Kadam et al. (2017), Padghane *et al.* (2017), Patel *et al.* (2017), Bhuban et al. (2018), Singh and Mishra. (2019), Wagh *et al.* (2019), Parikh *et al.* (2020), Rehanuma *et al.* (2020), Chutia *et al.* (2021), Ahire *et al.* (2022), Premalatha *et al.* (2022), Dahegaonkar *et al.* (2023), Sonule *et al.* (2023), Dwivedi *et al.* (2024), Priyadarsini (2024), Chhandaprajnadarsini *et al.,* (2025) and name a few.

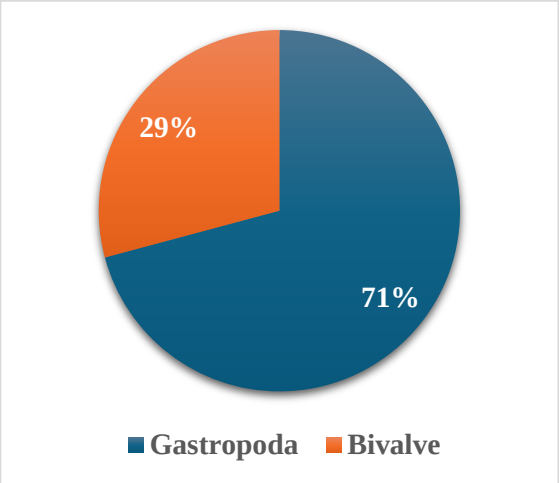

Figure 4.4.1. Community composition of Malacofauna in Bor River Dam

Conclusion

The present study revealed that Bor River Dam supports rich malacofaunal diversity, with noticeable seasonal variations in species richness. Maximum diversity was recorded during the monsoon season, while comparatively lower diversity was observed during summer and winter. The findings indicate that seasonal environmental and hydrographical conditions significantly influence the occurrence and distribution of molluscan communities. Overall, the reservoir ecosystem provides favourable habitat conditions for sustaining diverse malacofaunal assemblages and serves as an important freshwater habitat requiring continuous ecological monitoring and conservation efforts.

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