

## **Molluscan Diversity and Spatial Distribution in Lower Anaicut Reservoir Tamil Nadu, India**

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### **ABSTRACT**

*The distribution of molluscs has been studied at Lower Anaicut Reservoir. During investigation carried out, 11 species of molluscs were recorded. Among them, 7 species were gastropods belonging 1 order, 3 families, 6 genera while 4 species were bivalves under 2 orders, 2 families and 1 genera. Amongst gastropoda Pila virens was most dominant species followed by Pila globosa Tarebia granifera, Bellamya bengalensis, Melanoids tuberculata, Thiara(Thiara)scabra and Cremanoconchus(Lissoconchus) carinatus, whereas, in pelecypoda the dominant species was Parreysia(Parreysia) corrugata followed by Lamellidens marginalis, Lamellidens consobrinus and Sphaerium indicum.*

**Keywords:** Distribution, Molluscan fauna, Fresh water, Lower Anaicut, India

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### **INTRODUCTION**

Molluscs contribute the second largest invertebrate group on earth next only to insects. Mollusca are a large assemblage of animals having diverse shape, size, and habits and occupy different habitats [1]. The estimated number of species of molluscs varies from 80,000 species [2] to 1,35,000 species [3]. Of which 31,000-1,00,000 are marine 14000-35,000 terrestrial and about 5000 freshwater species [3,4].

The available fauna reports on freshwater of mollusca in India reveal a total of 200 species of gastropods and bivalves of which only 47 species are reported as very common [1].

Freshwater molluscs are benthic invertebrates whose occurrence and distribution are influenced by various factors, including availability of dissolved salts, types of sediment, pH of the water, pollution and water velocity. Perusal literature shows that a few workers like Hora [5], Rao and Pennak [1], Patil and Talmale [6] have made contributions on freshwater molluscs.

In the present paper, basic observations on malacofaunal diversity of Lower Anaicut Reservoir have been presented.

#### **Study area**

Lower Anaicut reservoir, Thanjavur District, Tamil Nadu (11°15' N and 79°30'E) which is located in the Coleroon is selected for the present study. Lower Anaicut was constructed across the Coleroon river at mile 67/2-3 in Thanjavur district in the year 1836 (both branches) later 8+2 vents were added in south branch during 1927-1928. The total catchment area of the reservoir is 29,693 square miles and has the capacity to store 150.13 MCFT of water. This study area is located 29 km from Kumbakonam town on the Kumbakonam to Chennai high way. The Lower Anaicut is the main landing centre for fish fauna and varieties of fin and shell fisheries, where the Tamil Nadu Fishery Department has the sole authority for the landing and marketing of fish and shell fishes throughout the year (Figure 1).

### **MATERIALS AND METHODS**

The studies were carried out from November 2013-June 2014. The molluscs were mainly collected by hand picking

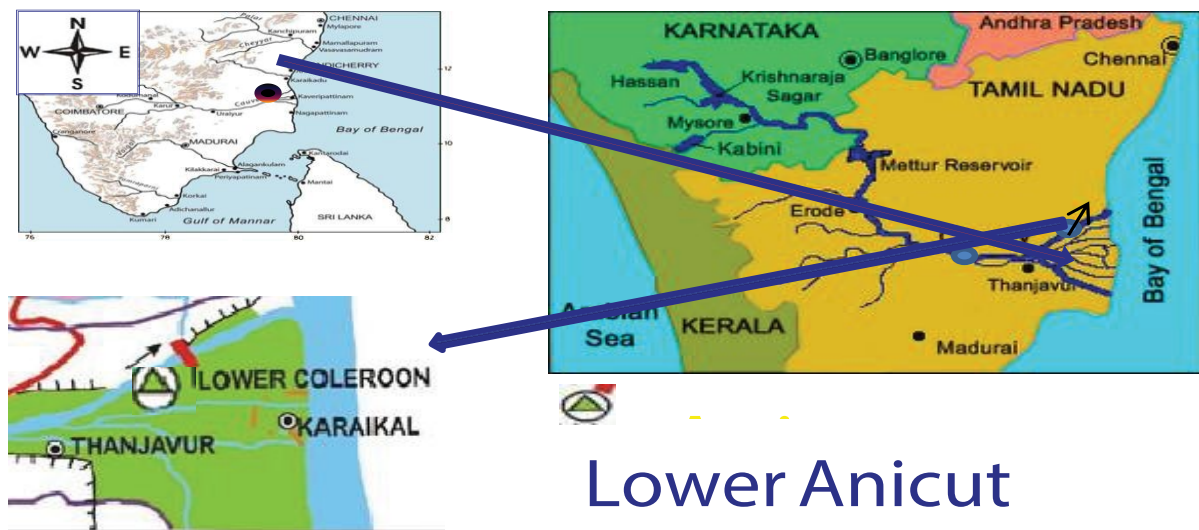


Figure 1: Study area of lower Anicut map

method and also with the nylon cloth net (40 meshes/cm<sup>2</sup>) nylon scoop, forceps etc. The molluscs were brought to the laboratory, cleaned with a brush and identified counted using the works of Rao and Pennak [1]. They were identified based on morphological characters, sufficient taxonomic tools. Data were collected fortnightly, pooled seasonally and this was repeated throughout the period.

## RESULTS

Altogether 11 species of molluscs belonging to 2 classes, 3 orders, 5 families and 9 genera were identified during the study period. Among 11 species, 7 species were gastropods belonging to 1 order, 3 families, 6 genera and 4 species were bivalves under 2 orders, 2 families and 1 genus. Their maximum density was recorded in April, May, June and minimum in October, November and December months. Among the gastropoda *Pila virens* was the most dominant species followed by *Pila globosa*, *Tarebia granifera*, *Bellamya bengalensis*, *Melanooides tuberculata*, *Thiara (Thiara) scabra* and *Cremnoconchus (Lissoconchus) carinatus*. Whereas in the pelecypoda the dominant species was *Parreysia (Parreysia) corrugata* followed by *Lamellidens marginalis*, *Lamellidens consobrinus* and *Sphaerium indicum* (Figure 2 and Figure 3).

## DISCUSSION

Molluscs are represented in freshwater ecosystem by only two classes, Gastropoda and Bivalvia and a group of most diverse and dominant fauna in water ecosystem. The present study reveals that the Lower Anicut Reservoir is rich in diversity of molluscan fauna.

The richness of molluscan diversity presently observed may be attributed to the cumulative effect of alkaline nature of water, high calcium contents and macrophytic vegetation which provide both food and shelter, because some of these forms are periphytic in nature as it has earlier been documented. Pennak [7] also supported this point of view by observing the greater molluscan population in alkaline lakes as compared to acidic lakes.

In the present study *P. virens* and *P. corrugata* dominated the molluscan fauna and are distributed from the shore line to 3 m depth in all types of sediments. The abundance of molluscs in terms of species diversity indicates a good life support system for fishes and birds.

Some other factors such as organic matter, food, vegetation and silt, might also play a significant role in the increase or decrease of molluscs population density and diversity in lentic fresh water bodies. From most of the physico-chemical parameters, that is rain fall, water temperature, hardness, alkalinity and calcium play a significant role in the growth and survival of molluscs population in Lower Anicut Reservoir.

It was also reported that the predominant molluscan fauna in a fish culture of Jammu is due to a higher concentration level of calcium. Johanpaul et al. identified 7 species of freshwater gastropods belonging to 4 families and six genera

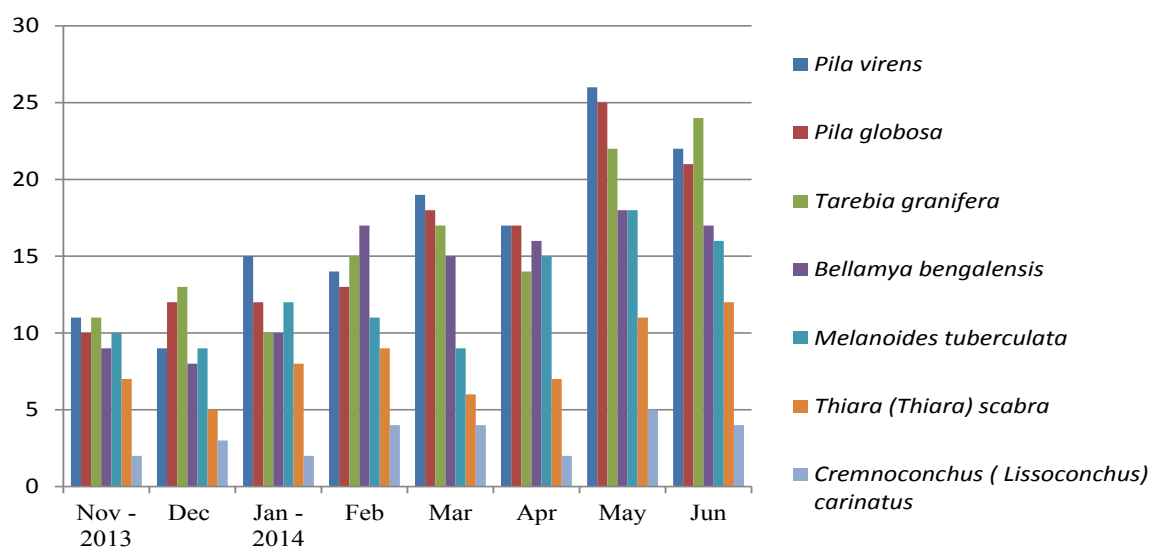


Figure 2: Monthly variation of molluscan fauna gastropods during November 2013-June 2014

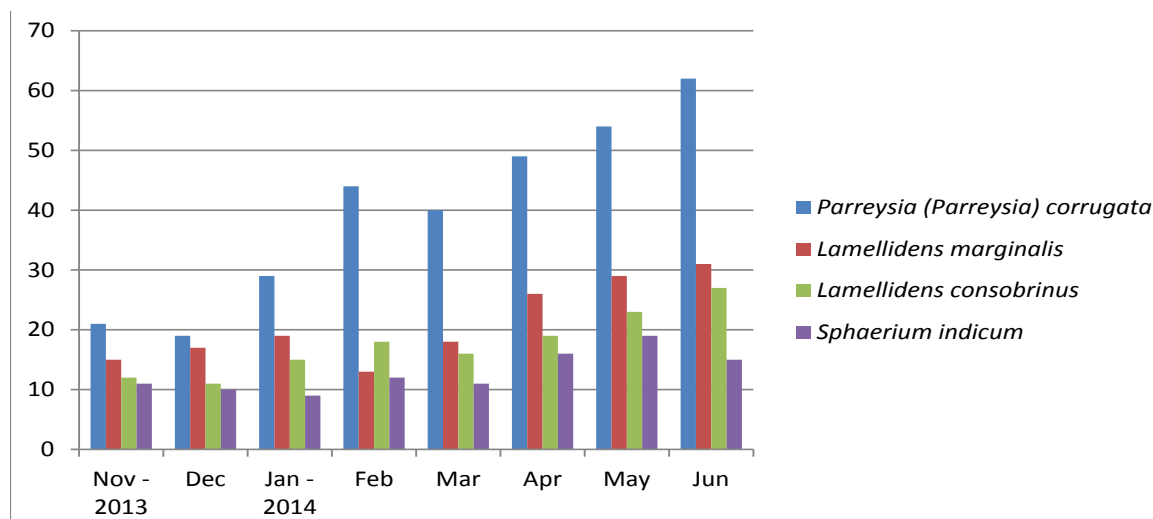


Figure 3: Monthly variation of molluscan fauna bivalves during November 2013-June 2014

in the lentic ecosystem in and around Chennai. Khan et al. identified 9 gastropods and 3 bivalves in Mouri River Khulna Bangladesh. Prabhakar and Roy [8] observed 20 species of Gastropoda and 10 species of Pelecypoda in Kosi region of North Bihar, India. 8 species of gastropods and 8 species of class pelecypoda were recorded in Narmada River, India.

This present study becomes important since all the molluscan species including snails have wide range of economic importance like food, medicine, money, ornamentation, useful dyes, lime manufacture and miscellaneous uses like manufacture of toothpaste, toothpowder, manure for gardens as well as coconut farms and fertilizers. Therefore the particular study was important to understand the species diversity of molluscan fauna in Lower Anicut Reservoir and the effect of habitat on their distributions.

## CONCLUSION

The freshwater molluscs play a massive role in nature and help in assessment of ecological status of the water bodies. Being herbivores, they form the lower strata of aquatic trophic linkages and perform many other ecological activities. Hence, studies pertaining to their diversity, distribution and ecology become imperative. The results of the present study 11 species of molluscs were recorded in the Lower Anicut reservoir, which includes 7 species of gastropods and 4 species of bivalves. 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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to nutrient inputs, discharge of sewage and excreta produced by animals and humans. A progressive increase in their number with increasing pollution load indicates that they possess great tolerance against the contaminants present in water and flourish well in their presence. Findings of the present work shall be utilized by future researchers and ecologists as supplementary information in public and veterinary health sciences, ecotoxicology, water quality assessment and river management studies.

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