

ORIGINAL RESEARCH ARTICLE

**Biodiversity of Marine Mollusks in East Coastal Area of Thanjavur District, Tamil Nadu, India**

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**ABSTRACT**

Molluscan fauna of gastropoda and bivalvia were collected from different stations of coastal area in Thanjavur District, Tamil Nadu, India. In the present investigation, 20 species of gastropods fauna and 20 species of bivalvia fauna were recorded September 2011 to December 2011. Among the gastropod a fauna, *Bursa crumena* followed 15 species was not dominant and five species like *Chicoreus ramousus*, *Murex trapa*, *Natica tigrina*, *Olive gibbosa* and *Tonna dolium* was dominant and 11 species was not dominant. The gastropoda fauna maximum density was recorded in station – III and the bivalvia fauna maximum density was recorded in station – II.

**Key words:** Molluscan fauna, East coast, Diversity and Tamil Nadu.

**1. INTRODUCTION**

In the geological time scale, mollusks evolved about 600 million years ago during the Cambrian period. Structurally mollusks are a heterogenous group of animals with different structural form such as slugs, mussels, octopus and snails. Majority of the mollusks are known by their shell, but in some forms the shell is absent. India has a coastline of 7.516 km, adjoining the continental regions and the off shore islands and a very wide range of coastal ecosystems such as estuaries, lagoons, mangroves, back waters, salt marsh, rocky coast, sand stretches and coral reefs, which are unique and abiotic properties and process. Coastal ecosystem is the inter face between land and red and, at their broadest land of definition, covers approximately 8% of the earth. They exceptionally diverse and productive, particularly in shallow water tropical regions.

Molluscs are second only to Arthropod in numerical abundance. The number of species identified under phylum mollusca vary between 80,000 to 1,00,000. They are more abundant in the littoral zones of tropical seas. Fastropods and bivalves constitute 98% of the total population of mollusca.

The gastropods and bivalves have a significant ecological role to play in the marine eco system. *Oyster*, *Mussels*, *Clans*, *Pearl oysters* and *Chank* are the important mollusks, exploited in India from time immemorial. The gastropods and bivalve fisheries are of sustenance nature and used for edible purpose, source of lime, as decorative shells (or) for industrial purpose. The bivalia shell is made up of 2 valves joined to each other by a ligament and hinge. There are about 20,000 living species of bivalves. Most of these are marine and live on the sea bed or burrow in sand. Some of the bivalves have thread like structure called busses threads by which they anchor themselves to rocks. First account on marine gastropods of Gulf of Mannar was reported by Melvill and Stander (1878)<sup>[1]</sup>. Clarke (1979)<sup>[2]</sup> attempted to show the utility of mollusks in primary classification of the lakes in their various tropic status stages. So for about 484 species of mollusks were reported from east coastal region out of 260 species are gastropods<sup>[3]</sup>. In the present observations on the diversity of molluscan fauna were studied from easy coast region of Tamil Nadu, India.

## 2. MATERIALS AND METHODS

### Study area

The study areas and 3 sampling stations were selected namely station – I (Sedhubhavasatram), Station – II (Adirampattinam) and Station – III (Vedaranyam) located at East coast area of Thanjavur district, Tamil Nadu, India, during September – 2011 to December 2011.

### Sample Collection

The molluscan fauna of gastropods were collected by hand picking methods and the bivalves fauna like mussel and oyster were collected by scrapping using knives from a known unit area of a dual rate. Further the bivalves are generally collected by hand digging and large power dredging methods. The samples were rinsed, adhering debris removed and sorted out species, then transferred to 4% formalin and enumerated group wise and preserved organisms were identified standard keys provided by Adoni *et al.* (1985)<sup>[4]</sup>.

### Identification of Gastropods

The shell characters such as shape, spire length and shape, mouth opening, operculat shape, umbilicus shape and size, colour and

**Table 1: Distribution of gastropoda molluscan fauna at East coast area of Thanjavur District, Tamil Nadu, during September 2011 to December 2011**

S.No	Gastropoda Molluscan Fauna	Station-I (Sedubhavasatram)	Station-II (Asirampattinam)	Station-III (vedaranyam)
1	<i>Bursa crumena</i>	6	4	4
2	<i>B. rna</i>	3	4	5
3	<i>Chicoreus ramosus</i>	5	13	17
4	<i>Cyprace moneta</i>	3	4	13
5	<i>Ficus ficus</i>	4	4	3
6	<i>Hemifuslus pugilinus</i>	3	3	3
7	<i>Melo melo</i>	5	4	3
8	<i>Murex fribulus</i>	5	5	3
9	<i>M. trapa</i>	8	10	17
10	<i>M. tribulus</i>	4	4	5
11	<i>Nassurius nivea</i>	3	4	6
12	<i>Natica albula</i>	8	5	4
13	<i>N. eidyma</i>	5	7	4
14	<i>N. tigrina</i>	7	13	15
15	<i>Olive gibbosa</i>	8	14	13
16	<i>Pohia malabarrica</i>	5	3	6
17	<i>Stombus cenerium</i>	6	4	3
18	<i>Tonna dolium</i>	8	13	14
19	<i>T. fasciata</i>	5	4	5
20	<i>Turritella attenuate</i>	4	5	4
	Total no. of molluscan fauna	105	117	137

Total 20 species of molluscs belonging to class bivalvia were recorded during the study period (**Table 2**). The density of fauna bivalvia maximum was recorded in station - II (Adirampattinam coastal area) and minimum density was recorded in station - III (Vedaranyam coastal area). The most dominant fauna was identified and followed by *Astropecten indicus*, *Donax scortum*, *Katelysia opima*, *Mactra leavis*, *Pecten trandwebaricus*, *Pinctata margaritifera*, *Placenta placenta*, *Spondylus layarti* and *Sunetta scripta*. The density of bivalvia group fauna was not dominant followed by *Anadara gronosa*, *A.*

ornamentation of the shell are used mainly for the identification of gastropods.

### Identification of Bivalves

The bivalves were identified mainly based on the shell morphology. The shell comprises of two valves. The outer surface may be striated or ribbed. The two valves are help together by an elastic ligament, which leaves a scar on the hinge.

## 3. RESULTS AND DISCUSSION

In the present study, about 20 species of class gastropod and 20 species of class bivalves species were recorded from September 2011 to December 2011 (Table 1 & Table 2). The maximum density of gastropod was observed in station -I, (Sedhubhavasatram coastal area). Among the gastropod group of fauna *Chicoreus ramosus*, *Murex trapa*, *Natica trigrina*, *Olive gibbons* and *Tonna dolium* was dominant during the study period and other species followed by *Bursa crumene*, *B. rana*, *Cypraea moneta*, *Ficus ficus*, *Hemifusus pugilinus*, *Melo melo*, *Murex fribulus*, *M. tribulus*, *Nassurius hivea*, *Natica albula*, *N. didyma*, *Pahia malabarrica*, *Stombus cenerium*, *Tonna fasciata*, and *Turritella attenuata* was not dominant (**Table 1**).

*ineduivalivis*, *Cardium setosum*, *Circe scripta*, *Lovenia elongates*, *Meretrix casta*, *M. meretrix*, *Pholas orientalis*, *Pinna bicolor*, *Solan lamarkii*, and *Tellina angulated* were recorded during the study period. There is little know about the associate biota of pearl oyster beds their distributional abundance, and the structure of this community. In this study, findings from the Arabian gulf was reported <sup>[5]</sup>. Based on 1950s report, there were 450 species of *Gast roport*, from Gulf of Mannar region and the recent report indicated that only 354 species in the same region <sup>[6]</sup>.

The availability of maximum molluscs during summer months could be related to the increased water temperature activating the process of decomposition of these organic sediments<sup>[7]</sup>. The distribution of molluscan species in the coastal region of India was reported by earlier workers<sup>[8,9,10,11,12]</sup>. In the present investigation,

Gastropods and bivalves fauna were very important role to play the coastal ecosystem of biodiversity. The maximum densities of gastropods were recorded from Vedarangam coast and the maximum numbers of bivalves were observed from Adirmpattinam coast.

**Table 2: Distribution of bivalvia molluscan fauna at east coastal area of Thanjavur District, Tamil Nadu, during September 2011 to December 2011.**

S. No	Bivalvia Molluscan Fauna	Station-I (Sedubhavasatram)	Station-II (Asirampattinam)	Station-III (vedaranyam)
1	<i>Anadara gronosa</i>	6	4	3
2	<i>A. inequivalvis</i>	3	3	7
3	<i>Astropecter indicus</i>	4	15	3
4	<i>cardium setosum</i>	5	3	4
5	<i>Circe scripta</i>	4	3	13
6	<i>Donax scortum</i>	5	14	3
7	<i>Katelysia opima</i>	13	4	5
8	<i>Lovenia elongate</i>	7	4	6
9	<i>Mactra laevis</i>	3	16	3
10	<i>M.meretrix</i>	3	4	3
11	<i>Pecten tranquebaricus</i>	8	5	3
12	<i>Pholas orientalis</i>	4	14	4
13	<i>Pinctata margaritifera</i>	6	3	6
14	<i>Pinna bicolor</i>	7	11	4
15	<i>Placenta placenta</i>	8	3	5
16	<i>Solan lamarkii</i>	13	5	4
17	<i>Spondylus layarti</i>	4	3	13
18	<i>Sunetta scripta</i>	5	12	5
19	<i>Tellina angulata</i>	14	4	4
	Total no. of molluscan fauna	125	134	102

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