

Assessment of Molluscan Diversity of Dativare Coast of Vaitarna Estuary, Dist.-Palghar, Maharashtra (India).

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Abstract: The present communication is aimed at assessing the molluscan diversity at Dativare Coast of Vaitarna Estuary in Palghar District of Maharashtra for two years i.e. from January 2013 to January 2015. About 30 different species from 20 different families were observed. About 7 different orders observed. There were 6 subclasses and 3 Classes. Gastropod forms the major class and constitutes about 56.6%, whereas 40% were bivalves. Subclasses Heterodonta and Caenogastropoda constitute about 36.66% each. Order Veneroida was the largest order observed which about 33.33%. Family Veneridae has been the largest family observed at the Dativare coast. About 7 species are belonging to this family. Veneridae makes 23.33% of the total families observed at the site under study.

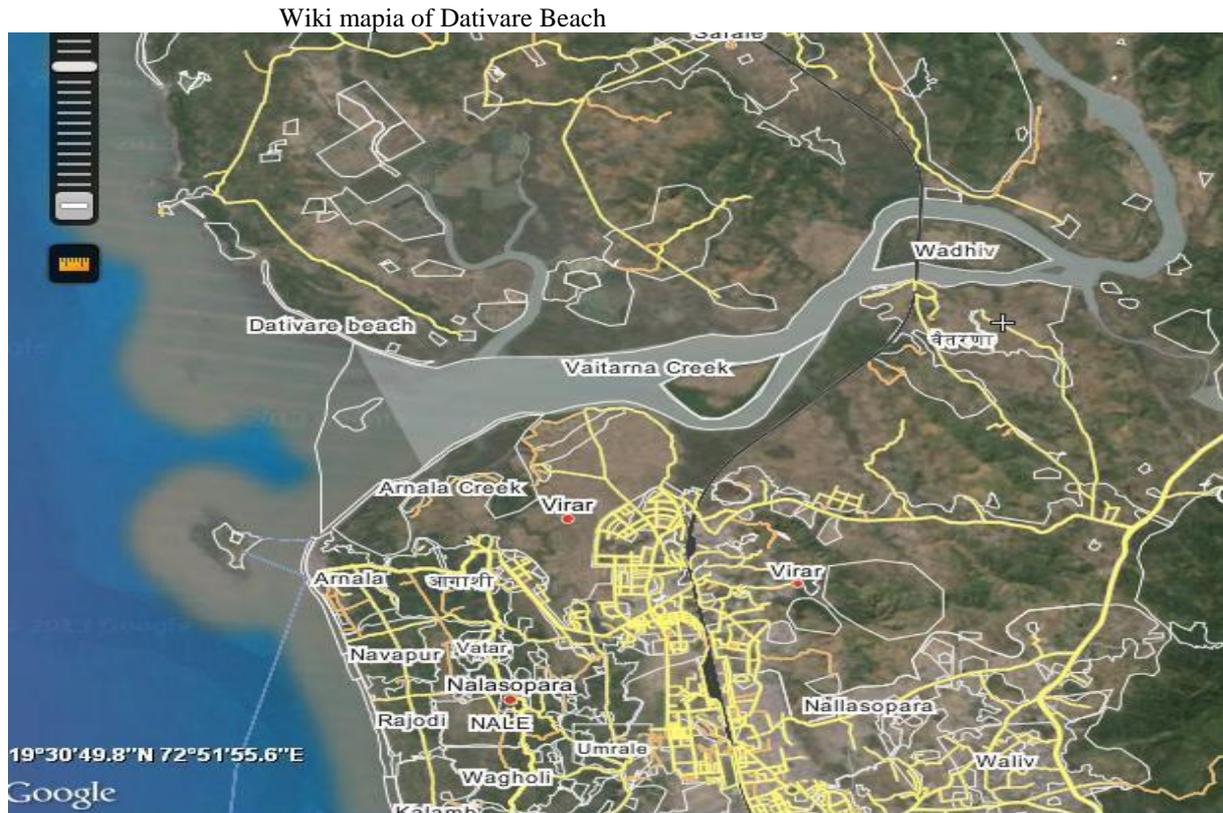
Key Words - Mollusca, Bivalves, Caenogastropoda, Dativare, Diversity.

I. Introduction

The largest and the most diverse phylum in the tropical seas is mollusca. The molluscs are soft bodied heterogeneous group of animals with great antiquity and diversity. Molluscs are highly successful invertebrates in terms of ecology and adaptation and are found nearly in all habits ranging from deepest ocean trenches to intertidal zones and freshwater to land occupying a wide range of habitats. Much of the molluscan diversity occurs in the tropical world. Despite this great diversity very few studies on mollusks have been carried out in the tropical world [1]. Molluscs are extremely important factors of many ecological communities. They prove immensely beneficial both economically and medicinally [2]. They have been important to humans throughout history as a source of food, jewellery, tools and even pets. Molluscs are one of nutritive and ornamental phylum of invertebrate group. Mollusca form a major group which is not only an important link in food chain from primary to tertiary level leading to fish production but an edible source for coastal population. Beside they are used for ornamental trade, pharmacological products and in manufacture of lime and cement [3]. In India the marine molluscs are recorded from the diverse habitats. They occur in different habitats such as mangroves, coral reef, rocky coasts, sandy beaches, sea grass beds and also at greater depth in the sea. They are more diverse and abundant in the rocky intertidal zone along the coast, sandy stones, intertidal flats and mangrove areas [4]. The number of marine molluscs recorded from various parts of the world vary from 80,000 to 1,00,000 species. In India till today 5070 species of molluscs have been recorded of which 3,370 are from marine habitats [5]. 8 species of oysters, 2 species of mussels, 17 species of clams, 6 species of pearl oysters, 4 species of giant clams, 1 species of window pane oysters and other gastropods such as Sacred Chank, Trochus, Turbo as well as 15 species of Cephalopods are exploited from the Indian marine region [6]. An oysters, mussels and clams serve the nutritional needs of the coastal population, they are good source of minerals, protein and glycogen and easily digestible compared to the other animal food [7]. Extensive scientific research on ecological aspects of molluscan fauna has been carried out in India, by various researchers. The present study will investigate the diversity of molluscs present at sandy beach of Dativare Coast of Vaitarna Estuary of Palghar District (Maharashtra).

II. Study Area

Vaitarna estuary is an important estuary located very near to Virar city Palghar District of Maharashtra. Dativare coast (Latitude 19°30'49.8"N and Longitude 72°51'55.6"E) is sandy shore. Its intertidal zone has remarkable molluscan diversity. Till now no assessment of mollusk diversity has been done of this coast. Hence, this area has been chosen to study the diversity of molluscs from sandy shore and intertidal zone.



III. Materials and Methods:

The study area was visited at low tide time in the morning for collection of molluscs from sandy beach and intertidal zone of Dativare beach from January 2013 to January 2015. The molluscans were collected by hand picking using gloves. The molluscan shells were collected and brought to laboratory in clean polythene bag. The shells were washed with water to remove sand and mud without damaging or altering the color of the shells which were then dried. Once dried shells were separated and kept in the separate plastic bags. The collected molluscan specimens were identified by observing the morphological characters and special features with reference to available keys for identification of molluscs. The bivalves were mainly identified based on the shell morphology, hinge, interlocking dentition etc., and the gastropods on the shape, size, spire length and shape, with referred to standard literature available [8] [9] [10] [11].

IV. Results and Discussions

The molluscan diversity at Dativare Coast of Vaitarna Estuary was studied from January 2013 to January 2015. The study revealed 30 molluscan species observed. These species were belonging to three major classes Bivalvia, Gastropoda and Cephalopoda. Gastropoda found to be a major class (Fig.1). Out of 30 species identified 17 species belonging to class Gastropoda which constitute 56.6% of total class diversity observed at Dativare coast of Vaitarna Estuary (Fig.2). Class Bivalvia was found to be the second largest imparting 40% to the total class diversity. 12 species were belonging to Class Bivalvia. Only one species i.e *Sepia aculeata* was observed from the class Cephalopoda which was forming 3.33% of total class diversity (Fig.2).

About 6 six different subclasses were observed out of which two subclasses i.e. Heterodonta and Pterimorphia were belong to class Bivalvia and 3 subclasses i.e. Caenogastropoda, Vetigastropoda and Neritimorpha were belong to class Gastropoda. Subclass Coleoidea was the only class belonging to class Cephalopoda. 11 species each were belonging to subclass Heterodonta and Caenogastropoda which constitutes about 36.66% each of total subclass diversity (Fig.3). Subclass Vetigastropoda includes 4 species which is about 13.33% of total subclass diversity. There were about 7 orders observed during the span of two years. Order Veneroida was the most commonly observed order during the span of assessment about 10 species observed belonging to order Veneroida comprising about 33.3% of total % diversity (Fig.4). 20 different families were observed. Veneridae is the largest family observed during the span of time. About 7 out of 30 species belong to the family Veneridae constitutes about 23.33% of the family diversity (Fig.5).

The study revealed that there is a good diversity of molluscs. Most of these species were indigenous. Some of the recorded species have greater commercial value and biodiversity importance. Molluscan species are good

indicators of localized conditions [12]. Gastropods and bivalves are generally benthos organisms and they are regularly used as bio indicators of aquatic health. Similar study was carried out at some of the localities from Raigad district, Maharashtra West Coast of India [13]. According to their study about 22% bivalves and 78% gastropods were recorded during October 2010 to September 2011. Total 55 species of mollusca representing 13 orders, 30 families and 39 genera were recorded from the mangroves of Uran, Maharashtra [14]. Similar kind of study carried out at Dadar and Juhu beach in Mumbai revealed the availability of 19 genera and 14 families collectively on both the coast lines. Of the recorded species 7 were Bivalves and 12 were Gastropods. Most number of Bivalves belonged to the Cardidae while maximum Gastropods were from Trochidae family [15]. The most commonly occurring mollusks in the mangrove environment of Bhatye estuary, Ratnagiri [16].

Some of the species observed are edible. However no information is available about the molluscan diversity of Dativare coast of Vaitarna Estuary. Hence it is necessary to document the biodiversity of molluscs in the study area. There is urgent need of conservation and sustainable utilization of molluscan species.

Sl.No.	Class	Subclass	Order	Family	Genus Species
1.	Bivalvia	Heterodonta	Veneroida	Veneridae	<i>Dosinia crenata</i> <i>Dosinia gibba</i> <i>Dosinia prostrata</i> <i>Callista erycina</i> <i>Venus reticulata</i> <i>Meretrix meretrix</i> <i>Gafrarium divaricatum</i> <i>Venus divaricatum</i>
2.	Bivalvia	Heterodonta	Veneroida	Tellinoidea	<i>Angulus sinuata</i>
3.	Bivalvia	Heterodonta	Veneroida	Cardidae	<i>Cardium asiaticum</i>
4.	Bivalvia	Heterodonta	Solanoida	Pharidae	<i>Silqua radiata</i>
5.	Bivalvia	Heterodonta	Veneroida	Mactridae	<i>Spizula Vovi</i>
6.	Bivalvia	Pterimorphia	Ostreoida	Ostreidae	<i>Crassostrea cucullata</i>
7.	Gastropoda	Caenogastropoda	Neogastropoda	Conidae	<i>Conus mutabilis</i>
				Olividae	<i>Oliva gibbosa</i>
				Olividae	<i>Oliva caerulea</i>
				Mitridae	<i>Mitra cucumerina</i>
				Muricidae	<i>Thais nixon</i>
8.	Gastropoda	Caenogastropoda	Littorinimorpha	Cypraeidae	<i>Pustularia globules</i>
9.	Gastropoda	Caenogastropoda	Littorinimorpha	Cypraeidae	<i>Gratidusm pallid</i>
10.	Gastropoda	Caenogastropoda	Littorinimorpha	Bursidae	<i>Bursa elegans</i>
11.	Gastropoda	Caenogastropoda	Littorinimorpha	Naticidae	<i>Natica pin</i>
12.	Gastropoda	Caenogastropoda	Littorinimorpha	Littorinidae	<i>Littorina scabra</i>
13.	Gastropoda	Vetigastropoda	-----	Turbinadae	<i>Turbo brunus</i>
14.	Gastropoda	Vetigastropoda	-----	Trochidae	<i>Trochus radiates</i>
15.	Gastropoda	Vetigastropoda	-----	Chilodontidae	<i>Euchelus tricarina</i>
16.	Gastropoda	Vetigastropoda	-----	Trochidae	<i>Umbonium vestiarum</i>
17.	Gastropoda	Caenogastropoda	-----	Potamididae	<i>Potamides cingulatus</i>
18.	Gastropoda	Neritimorpha	Cycloneritomorph a	Neritidae	<i>Nerita albicilla</i>
19.	Gastropoda	Neritimorpha	Cycloneritomorph a	Neritidae	<i>Nerita oryarum</i>
20.	Cephalopoda	Coleoidea	Sepiida	Sepiidae	<i>Sepia aculeata</i>

Fig. 1 Diversity of Mollusca at Dativare coast of Vaitarna Estuary

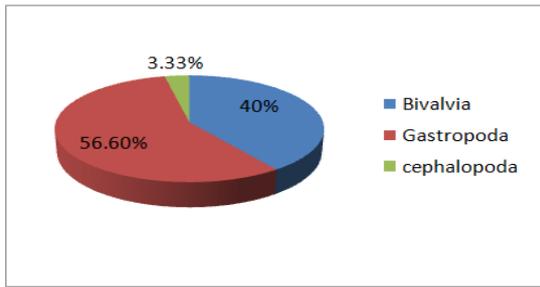


Fig.2 % Class diversity of Molluscs at Dativare coast

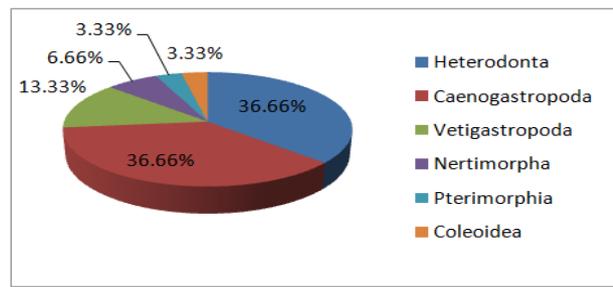


Fig.3 % Sub-Class diversity of Molluscs at Dativare coast

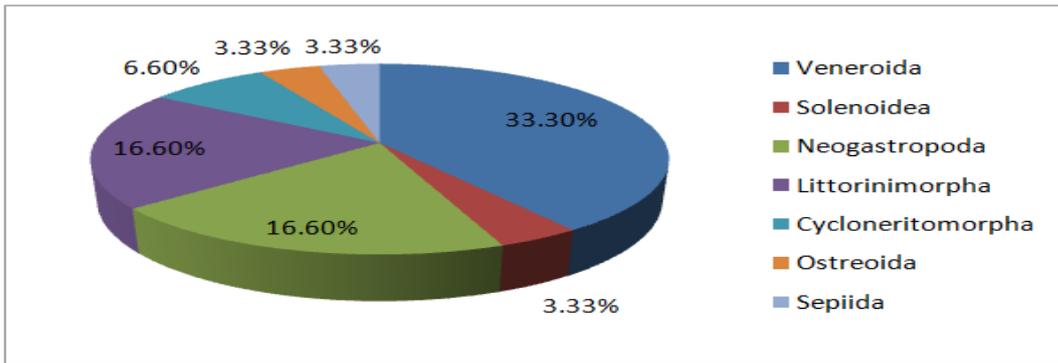


Fig.4 % Order diversity of Molluscs at Dativare coast

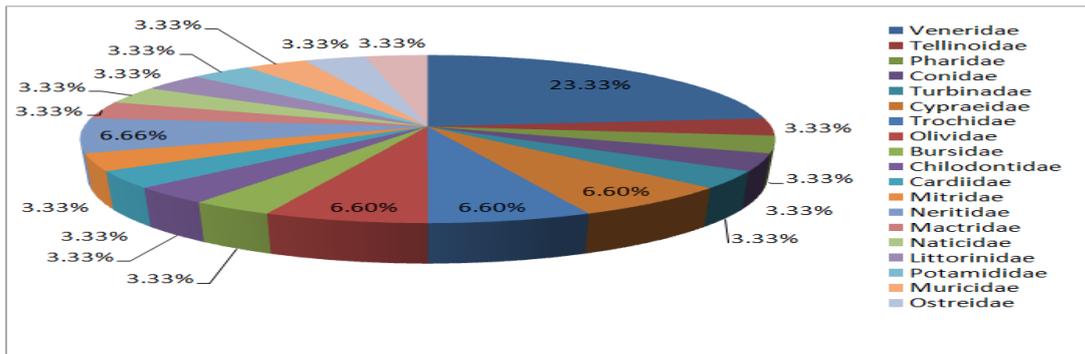


Fig.5 % Order diversity of Molluscs at Dativare coast

Plate 1.



Angulus sinuata



Bursa elegans



Cardium asiaticum



Conus mutabilis



Crassostrea cucullata



Dosinia cretacea

Plate.2.



Dosinia gibba



Dosinia prostrata



Euchelus tricarinata



Gratiadusta pallida



Littorina scabra



Mitra cucumerina



Natica picta



Gafrarium divericata



Nerita albicilla



Nerita oryzarum



Pitar erycina



Olivia gibbosa



Olivia caerulea



Potamides cingulatus

plate.3.



Pustularia globulus



Pyrene terpsichore



Squilla radiata



Thais tissoti



Trochus radiatus



Turbo brunneus



Umbonium vestiarium



Venus reticulata

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