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Occurrence of marine molluscan along the Chorwad Coast, Gujarat-India

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ABSTRACT

Among the eight maritime States of India, Gujarat, situated on the western coast of India, with the coastline about 1650 km long shore which comprises about 22 % coastal stretch of the total coastline of India. Gujarat coastline consist 28 % sandy beach, 21 % rocky coast, 29 % muddy flats, 22 % marshy coast. Gujarat coast could be broadly described into four regions viz., the Gulf of Kuchchh, the Saurashtra Coast, the Gulf of Cambay and the South Gujarat Coast. The marine biodiversity of Gujarat coast of India is rich and much of the world's wealth of biodiversity is found in highly diverse coastal habitats. A present study was carried out on marine molluscan accessibility among Chorwad coast of Gujarat coastline to identify the shell resources potential for development of a small-scale shell industry. A large collection of marine molluscan was made among the coastal line of Chorwad found 69 species (31 families) of marine molluscan over a 9 months period from July - 2013 to March - 2014. Most of the species were common like Babylonia spirata, Bulla ampulla, Chiton peregrines, Chiton spp., Conus cumnigii, Mitra ambigua, Mitra guttata, Mitra scutulata, Murex brunneus, Purpura panama, Tibia curta, Turbo brunneus were available in Chorwad coast. The present study revealed that the occurrence of marine molluscan species along the Chorwad coast of Gujarat.

Key words: Intertidal Molluscan Diversity, Chorwad coast.

INTRODUCTION

Marine biodiversity is the variety of life in the sea; the coastal zone is also endowed with a very wide range of coastal ecosystems like mangroves, coral reefs, sea grasses, salt marshes, sand dunes, estuaries, lagoons, etc. The Saurashtra coast, which is the Northern part of Indian coastline, is characterized by its rocky, sandy and muddy Intertidal zones, harbouring rich and varied flora and fauna. In the Gulf of Kachchh, the Mineralogical and petrological studies of the submerged intertidal rocks have indicated that they are calcareous sand stones. The Intertidal zone is considered as the most productive with the greatest diversity of plant and animal life. Many intertidal animals, especially the Molluscan, Bryozoans and other coelenterates, among others inhabit the intertidal zone of these coastline and many of them are collected for food, or industrial purposes. [1] Therefore, the present study was undertaken to carry out a detailed baseline database of the intertidal mollusc of Chorwad coast. Molluscs in general had a tremendous impact on Indian tradition and economy and were popular among common man as ornaments and currency. This has the increasing global demand. The various taxonomic groups have received attention, resulting in a considerable growth of information. Molluscan species are efficient indicators taken as whole ecosystem health and species diversity. Hence the present study is documented the occurrence of marine molluscan among the Chorwad region, Gujarat coast of India.

MATERIALS AND METHODS

The present investigation was carried out at Rocky and Sandy intertidal area at Chorwad. Total 2.38 km long stretch between 21°00'46.93''N & 70°12'37.87''E and 21°01'29.43''N & 70°11'45.99''E. from July 2013 to March 2014. The intertidal zone of each sampling sites was surveyed regularly on monthly basis and all the marine molluscan encountered were recorded. All intertidal marine molluscan observed were recorded properly and later classified

systematically. Thus animals under various families were recorded and checklist was prepared. Extensive photography was employed for the identification of the animal species with the identification keys, literature available in the form of books, journals, reports and with extensive use of internet. The complete study was conducted in a non-destructive manner in which the organisms were not at all disturbed. However, few dead molluscan samples were collected and stored immediately in 10 % formaldehyde or 70% ethanol. They were then brought to the laboratory and washed in running tap water, and the few samples have been transferred to menthol and will be painstakingly sorted. They were then brought to the laboratory for further study. [2], [3]

RESULTS AND DISCUSSION

The present study was conducted to know the status of Intertidal Molluscan biodiversity of Chorwad coast. I have visited these site nine times during July'13 to March'14. We have tried to carefully observe all the three seasons' i.e. monsoon, winter, and summer so as the seasonally occurring species should not skip from the checkist. Total 69 species of molluscans belonging to 31 families were documented in the present study from the Chorwad of Gujarat.

During July'13, Total 33 species of 18 families of Mollusca were recorded.
During August'13, Total 42 species of 19 families of Mollusca were recorded.
During September'13, Total 51 species of 22 families of Mollusca were recorded.
During Octomber'13, Total 56 species of 26 families of Mollusca were recorded.
During November'13, Total 55 species of 26 families of Mollusca were recorded.
During December'13, Total 54 species of 27 families of Mollusca were recorded.
During January'14, Total 46 species of 24 families of Mollusca were recorded.
During February'14, Total 30 species of 16 families of Mollusca were recorded.
During March'14, Total 16 species of 10 families of Mollusca were recorded.

PHYLUM - MOLLUSCA

Tibia curta

Turbo brunneus

Murex brunneus

Babylonia spirata

Architectonica laevigata

Bursa granularis

Table: List of Molluscan species found along the Chorwad coast, Gujarat of India

FAMILY	SPICIES	JULY 2013	AUG 2013	SEP 2013	OCT 2013	NEV 2013	DEC 2013	JAN 2014	FEB 2014	MAR 2014
TROCHIDAE	*Isanda crenulifera*	+	+	+	+	+	-	-	-	-
	Monodonta australis	-	+	+	+	-	-	-	-	-
	Trochus radiatus	-	-	-	-	-	+	+	-	-
TURBINIDAE	*Astraea semicostata*	-	+	+	+	+	+	-	-	-
	Astraea stellata	-	+	+	+	+	+	-	-	-
	Lunella coronate	+	-	-	-	-	+	+	+	+
	Turbo brunneus	+	+	+	+	+	+	+	+	+
	Turbo intercostalis	+	+	+	+	+	+	+	-	-
NERITIDAE	*Nerita albicilla*	+	+	-	-	-	-	-	-	-
	Nerita chamaeleon	-	+	+	+	+	-	-	-	-
	Nerita textiles	-	-	+	+	+	+	-	-	-
ARCHITECTONIDAE	*Architectonica laevigata*	+	+	+	+	+	+	-	-	-
PATELLIDAE	*Clypidina notata*	-	-	-	-	+	+	+	+	+
CYPRAEIDAE	*Arestoides argus contrastriata*	+	+	+	+	+	-	-	-	-
	Cypraea Isabella	-	+	+	-	-	-	-	-	-
	Cypraea lynx	+	+	+	+	+	+	+	+	-
	Cypraea ocellata	-	-	-	-	-	+	+	+	-
	Erosaria ocellata	-	-	+	+	+	+	+	+	-
	Gratiadusta pallid	+	+	+	+	+	-	-	-	-
STROMBIDAE	*Tibia curta*	+	+	+	+	+	+	+	+	+
	Tibia insulaechorab	+	+	+	+	+	-	-	-	-
BURSIDAE	*Bursa granularis*	+	+	+	+	+	+	+	+	-
	Bursa tuberculata	-	-	+	+	+	+	+	+	-
NATICIDAE	*Natica pulcaria*	-	+	+	+	-	-	-	-	-
CERITHIIDAE	*Cerithium columna*	-	+	+	+	+	+	-	-	-
	Cerithium scabridum	-	+	+	+	+	-	-	-	-
	Rhinoclavis sinensis	+	-	-	-	-	+	+	-	-
MITRIDAE	*Mitra ambigua*	+	+	+	+	+	+	+	+	+
	Mitra guttata	+	+	+	+	+	+	+	+	+
	Mitra scutulata	+	+	+	+	+	+	+	+	+
MURICIDAE	*Cronia contracta*	-	+	+	+	+	-	-	-	-
	Cronia subnodulosa	-	+	+	+	+	-	-	-	-
	Murex brunneus	+	+	+	+	+	+	+	+	+
	Murex ternispina	+	+	+	+	-	-	+	-	-
	Purpura panama	+	+	+	+	+	+	+	+	+
	Thais bufo	+	+	+	+	+	+	+	+	-
	Thais lacera	-	+	+	+	+	+	-	-	-
	Thais rugosa	-	-	+	+	+	+	-	-	-
	Thais tissoti	-	-		+	+	+	+	-	-
CONIDAE	*Conus cumnigii*	+	+	+	+	+	+	+	+	+
TURRIDAE	*Clavus crassa*	-	-	-	+	+	+	+	-	-
BUCCINIDAE	*Babylonia spirata*	+	+	+	+	+	+	+	+	+
	Cantharus spiralis	+	+	+	+	+	+	+	+	-
	Cantharus undosus	+	+	+	+	+	+	+	-	-
	Engina zea	-	+	+	+	+	+	+	-	-
	Polia rubigenosa	-	-	+	+	+	+	-	-	-
OLIVIDAE	*Oliva olive*	-	-	-	-	-	+	+	-	-
NASSARIIDAE	*Nassarius canaliculata*	-	-	-	+	+	+	+	-	-
	Nassarius distortus	-	-	-	-	-	+	+	-	-
	Nassarius olivacea	-	-	-	-	+	+	+	-	-
PYRENIDAE	*Pyrene marquessa*	+	-	-	-	-	+	+	+	-
	Pyrene terpsichore	+	-	-	-	-	+	+	-	-
VOLEMIDAE	*Hemifusus cochlidium*	+	+	+	+	-	-	-	-	+
BULLIDAE	*Bulla ampulla*	+	+	+	+	+	+	+	+	+
HYDATINIDAE	*Hydatina physis*	-	-	-	-	+	+	+	+	-
CARDITIIDAE	*Beguina variegata*	+	+	+	-	-	-	-	-	-
CARDIIDAE	*Cardium setosum*	-	+	+	+	+	-	-	-	-
VENERIDAE	*Gafrarium divaricata*	-	-	-	+	+	+	+	-	-
APLYSIIDAE	*Aplysia oculifera*	-	-	+	+	+	+	+	+	-
CHITONIDAE	*Chiton peregrines*	+	+	+	+	+	+	+	+	+
	Chiton spp.	+	+	+	+	+	+	+	+	+
JANTHINIDAE	*Janthina globosa*	-	-	+	+	+	+	-	-	-
LOLIGINIDAE	*Loligo duvauceli*	-	-	-	+	+	+	+	-	-
	Loligo spp.	-	-	-	+	+	+	+	-	-
OCTOPODIDAE	*Octopus indicus*	-	-	+	+	+	+	+	-	-
	Octopus spp.	-	-	+	+	+	+	+	-	-
	Octopus vulgaris	-	-	+	+	+	+	+	+	-
ONCHIDIIDAE	*Onchidium verruculatum*	+	+	+	+	+	+	+	+	-
SEPIIDAE	*Sepia spp.*	-	-	-	+	+	+	+	-	-

Threats:
Main threat is probably unsustainable harvesting of seaweed by local people in the area. Mollusca shells are collected for preparation of ornaments by the local people. The harvesting of seaweed start from January 2014. Probably for the purpose of making Bio fertilizer. They may be earning money from this harvesting. Resulting from this harvesting the intertidal Molluscan may suffer shortage of food and shelter.

CONCLUSION

The present study deals with the Molluscan diversity on the intertidal area of Chorwad coast of Gujarat. The present investigation was also intended to study the human intervention and its effect on natural system. The selected area was not properly studied earlier for its biodiversity study probably due to its small size and isolated location. Chorwad is located on the coast of Arabian Sea. The rocky and sandy beach of intertidal area provides excellent habitat for Porifera, Coelenterata, Annelida, Arthropoda, Mollusca, Echinodermata, Fishes, Reptilia, Aves and other costal animals. Winter season found to be the best for the Molluscan diversity probably because the availability of food is ample as the sea weed flourished during winter and the increase in moluscan diversity coincides.

During present study from July'13 to March'14 total of 69 Molluscan species (31 Family) were recorded. During July'13 to September'13 a number of species was less because this time is not favourable for some intertidal Molluscan due to high temperature and heavy wave splash on starting of winter (Poonam Bhadja, 2010). During Oct'13 to Jan'14 the total number of Molluscan species was higher due to low temperature. (Poonam Bhadja, 2010). [4]
This is an indication of the ability of the organisms to survive, adapt, migrate or die under favourable or unfavourable environmental conditions. The presence of such a good diverse life forms indicates the higher productivity and healthy ecosystem of Chorwad coast.

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