Volume-4, Issue-4, April-2015 • ISSN No 2277 - 8160

Research Paper Zoology

A Study on Diversity Of Molluscs in Mayabunder Islands

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ABSTRACT

The Andaman sea Eco region is biologically rich in both diversity and abundance. The high diversity is encountered from genus to individual species, habitat and ecosystems. The coral reefs, mangroves, sea grass beds, marine lakes and deep sea valleys of the region form a constellation of diverse habitat that support a spectacular variety of fauna. Molluscs are highly successful invertebrates in terms of ecology and adaptation and are found nearly in all habitats ranging from deepest ocean trenches to the 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 molluscs have been carried out in the tropical world. An attempt was made to study the diversity and distribution of molluscs along the intertidal regions of mayabunder islands. During the survey three different beaches of mayabunder were selected, named, Aves Island, Sound Island and Karmatang beach. The study area lies in the northern part of the middle Andaman Island 12.93 N 92.93 E. A total of 45 molluscs (bivalves and gastropods) were investigated from these islands. Gastropods were more abundant than the bivalves. Maximum species were obtained from Karmatang beach as compared to Aves Island and Sound Island. The dominant gastropods species belong to order Neogastropoda in Aves Island and Karmatang beach and species under order Littorinimorpha were found rich in Sound Island. The community structure is stable around the study area; it seems that habitat type has a strong influence on the distribution and abundance of both phyla. The present study investigated rich diversity of molluscs which included gastropods and bivalves. The result of the present study will be discussed.

KEYWORDS : - Diversity, abundance, molluscs, mayabunder.

INTRODUCTION:

The mollusc faunal resource of world status is 66535 species and in India shows 7.62% (5070) of the world mollusc resources (Ramakrishna and Alfred, 2007). The history of malacological studies in India is immense and interesting. The studies on Indian molluscs were initiated by the Asiatic Society of Bengal and the Indian museum, Calcutta (Venkataraman and Wafar, 2005). The 20th century exhibits the most significant study on malacology by Zoological Survey of India, Central Marine Fisheries Research Institute and other marine science institutions of India. 3370 species of marine molluscs have been recorded in India, out of that 1282 species from Andaman and Nicobar Islands (SubbaRao and Dey, 2000).However, opisthobranch represent a morphologically diverse group and shows a worldwide distribution restricted exclusively to marine habitants. The present study aims to provide new inventory and information of fauna about molluscs species that have been recently collected and photographed alive in Andaman waters.

The molluscs constitute a natural resource of sizable magnitude in many parts of the world. They are an age‐old group represented among the early fossils, a group of great diversity in size, distribution, habitat and utility. The range of their distribution is as extensive in space as in time for it covers terrestrial, marine and freshwater habitats.Molluscs are soft bodied, heterogenous group of animals with great antiquity and diversity. The shells of molluscs are extremely diversified in shape and colour. They consist of a class of bilaterally symmetrical marine molluscs amphineura, a single piece spirally twisted shell gastropods, two valved bivalves, cephalopods comprising of squids, cuttlefishes, octopus and nautilus and the elephant tusk shells scaphopod. The majority of molluscs inhabit marine biotopes and they occur from thebackwater zone, mangrooves, intertidal, shelf and down to deeper waters. They include members from the tiny estuarine gastropod Bithynia and small garden snails to the Giant clam *Tridacna* or the Giant squid *Architeuthis*. Oysters, mussels, clams, pearl oysters and chank are the important molluscs, exploited in India from time immemorial. Except for chanks, pearl oysters and cephalopod, much attention was not paid for organized exploitation of molluscan resources from Indian waters till recently. Other gastropod and bivalve fisheries are of sustenance nature and are used for edible purpose, source of lime, as decorative shells or for industrial purpose. The molluscs sustain regular and very productive fisheries in our waters. Only a few of the mussels, clams and oysters are now generally eaten and even these are more a poorman's food.

STUDY AREA:

The study area lies in the northern part of the middle Andaman Island 12.93 N 92.93 E. Three different beaches of mayabunder were selected, named, Aves Island, Sound Island and Karmatang beach. The survey was carried out in these three islands.

MATERIALS AND METHODS

Fauna diversity assessment was carried out in rocky shore of mayabunder, namely Aves Island, Sound Island and Karmatang beach. The bivalves are generally collected by hand digging and large power dredging methods from a known unit area either using a quadrate or in terms of numbers collected per man per hour. Further the bivalves are generally collected by hand digging and large power dredging methods. In these, the hand digging is traditional, hard and man- oriented; whereas dredging involves a less man power and money worth but this technique destroys the substrate, where the bivalves live. Therefore, commercially, the hand digging is more preferable technique, without damaging the nearer area (Varshney and Ghosh, 1997). The collected molluscs samples were identified usingSubbaRao and Dey, 2000. Catalogue of Marine Molluscs of Andaman and Nicobar Islands, Occ. Paper No., 187: 1-323 and internet source (www.seaslugforum.net). The collected specimens were photographed and stored in container containing formalin for future records.

PRESERVATION OF THE SAMPLE

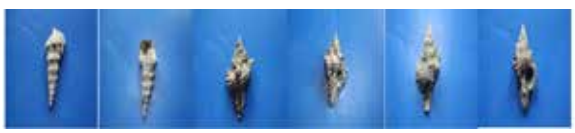
Preservation of sample is carried out in three stages namely, narcotization or anaesthetization, killing and fixation and permanent preservation. The process of narcotization ensures that organisms are expanded fully displaying their characteristic features. Menthol Magnesium chloride: The animals are kept in clean water in an enamel tray / Petri dish / bowl depending on the size of the sample. Powdered menthol or magnesium chloride is sprinkled over the water and covered with a lid. The sample is left undisturbed for at least 12 hours. Alcohol or Chloral hydrate: 70% Ethyl alcohol or 1 % Chloral hydrate is added drop by drop at frequent intervals to water in which animals are kept and ensuring that the sample is covered with a lid.

The next step is fixation. After ensuring that the animals are narcotized they are transferred to containers with fixatives. The common chemical used for fixation of animals in the field is 4 to 10% neutral formalin solution. For molluscs, ethyl alcohol is the best known killing and preserving medium. The animals are finally preserved either in 4% formalin or 90% alcohol or rectified spirit.

PLATE 1 – LIST OF IDENTIFIED SPECIMEN FROM AVES ISLAND

Astraliumrhodostomum Turbo bruneus Bursa granularis

CerithiumnodolosumChicoreusbrunneusChicoreusmicrophyllus



ClypeomorusbifasciatusLatiruscraticulatusLatiruspolygonus

MorulagranulataNeritaalbicillaNeritapolita

PyreneturturinaRhinoclavisasperaTrochusniloticus

PLATE 2 - LIST OF IDENTIFIED SPECIMENS FROM KARMATANG BEACH

CypreaarabicaPolinices mammillaStrombuscanarium

ClypemorusbifasciataMitralitterataNaquetiacapucinus

TerebraliapalustrisConuscoronatusEnginamendicaria

Latiruspolygonus Murex tribulusOlivaminiacea

VexillumtaeniatumNeritachamaeleonTrochusradiatus

GrafrariumpectinatumBarbatiabarbataTrachycardiumflavum

PLATE 3 - LIST OF IDENTIFIED SPECIMENS FROM SOUND ISLAND

LambislambisErrnoneserrones

Rissoinagigantean MitraaurantiaNassariusalbescens

NeritaalbicillaTrochusniloticusTrachycardiumflavum

RESULT:

A total of 45 species of macro benthos (molluscs) were investigated fromtheseislands. Aves Island reported 16 individuals under 4 orders and 8 family Karmatang beach reported 21 individual under 6order and 19 family and Sound Island reported 8 individuals under 4 order and 8 family. The gastropods were more abundant than the bivalves. Bivalves were only reported from karmatang beach. The dominant gastropods species belong to order Neogastropoda in Aves Island and Karmatang beach and species under order Littorinimorpha were found rich in Sound Island.The molluscs fauna are similar on the two sites, the community structure is stable along the study area; it seems that habitat type has a strong influence on the distribution and abundance of both phyla.

LIST OF IDENTIFIED SPECIMENS FROM AVES ISLAND

CLASS	ORDER	FAMILY	GENUS&SPECIES
GASTROPODA		Turbinidae	Astraliumrhodostomum
			Turbo bruneus
	Littorinimorpha	Bursidae	Bursa granularis
	Caenogastropoda	Cerithidae	Cerithiumnodolosum
			Clypeomorusbifasciata
			Rhinoclavisaspera
	Neogastropoda	Muricidae	Chicoreusbrunneus
			Chicoreusmicrophyllus
			Morulagranulata
		Fasciolariidae	Latiruscraticulatus
			Latiruspolygonus
		Columbellidae	Pyreneturturina
	Cycloneritimorpha	Neritidae	Neritaalbicilla
			Neritapolita
		Trochidae	Trochusniloticus

LIST OF IDENTIFIED SPECIMENS FROM KARMATANG BEACH

CLASS	ORDER	FAMILY	GENUS&SPECIES
GASTROPODA		Turbinidae	Astraliumrhodostomum
	Littorinimorpha	Bursidae	Bursa granularis
		Ranellidae	Cymatium muricinum
		Cypraeoidae	Cypreaarabica
		Naticidae	Polinices mammilla
		Strombidae	Strombuscanarium
	Caenogastropoda	Cerithiidae	Clypemorusbifasciata
			Rhinoclavissinensis
		Mitridae	Mitralitterata
		Muricidae	Naquetiacapucinus
		Potamididae	Terebraliapalustris
	Neogastropoda	Conidae	Conuscoronatus
		Buccinidae	Enginamendicaria
		Fasciolariidae	Latiruspolygonus
		Muricidae	Murex tribulus
		Olivoidea	Olivaminiaceatremulina
		Costellariidae	Vexillumtaeniatum
	Cycloneritimorpha	Neritidae	Neritachamaleon
		Trochidae	Trochusradiatus
BIVALVE	Veneroida	Veneridae	Gafrariumpectinatum
			Trachycardiumflavum
	Arcoida	Arcidae	Barbatiabarbata

LIST OF IDENTIFIED SPECIMENS FROM SOUND ISLAND

CLASS	ORDER	FAMILY	GENUS&SPECIES
GASTROPODA	Littorinimorpha	Cypraeidae	Erroneserrones
		Strombidae	Lambislambis
		Rissoinidae	Rissoinagigantea
	Neogastropoda	Mitridae	Mitraaurantia
		Nassariidae	Nassariusalbescens
	Cycloneritimorpha	Neritidae	Neritaalbicilla
		Trochidae	Trochusniloticus
BIVALVE	Veneroida	Veneridae	Trachycardiumflavum

CONCLUSION:

The present study searches the high diversity of molluscs in the northern part of the middle Andaman Island which needs to be protected and prevented by formulating effective management strategies like research and development activities such as ecology, qualitative studies of organic production, species inventory, periodical survey of the population and its seasonal abundance and changes.

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