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Study of Molluscan Biodiversity in Mangrove Ecosystem of Bhatye, Ratnagiri

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Abstracts: *In the present studies, molluscs were recorded from station no. I and II which can be considered as estuarine zones. The most commonly occurring mollusks in the estuarine region were as follows – Katelysia katelysia, Katelysia opima, Meretrix meretrix, Geloina proxima, Crossostrea madrasensis, Dosinia prostrate, Turbo species, Arca granosa, Dosinia cretacea, Cardium asiaticum, Solen truncates and button shells. Ecological conditions like tidal amplitude, salinity and temperature are favourable (especially at the mouth of the Bhatye Estuary) for the bivalves to live, feed and multiply. At times some Sea hares were also encountered attached to small shrubs of mangrove associates.*

Keywords: *molluscs, Katelysia opima, Meretrix meretrix, Geloina proxima etc.*

1. INTRODUCTION

Mangroves are salt-tolerant plants inhabiting the tropical and subtropical estuarine regions. They are ranked among the most productive ecosystem of the earth [1]. Mangrove habitats harbour much of the world's tropical biodiversity and 50% of the world's mangrove forests have been lost as a result of clearing and alteration of coastlines [2]. Mangrove ecosystem provides an ideal nursery and breeding grounds to most of the marine and brackish water fish and shellfish. Indian mangroves represent a rich diversity of soil dwelling organisms which include micro, meio and macro forms [3]. Mangrove derived detritus is an important food source for benthic food webs [4, 5]. Knowledge on species diversity of an ecosystem would help maximizing resource utilization in a sustainable manner besides preserving biodiversity [6]. With continuing degradation and destruction of mangroves, there is a critical need to understand the biodiversity of the mangrove ecosystems [7].

Ratnagiri is located on the western coast of Maharashtra and seems to be economically backward area in Maharashtra. Hence, very little attention has been paid to the scientific studies along this coast. At Bhatye, river Kajali meets the Arabian Sea and forms an estuarine zone. Various mangrove species along with their associated flora form characteristic vegetation in Bhatye estuarine region. Bhatye Estuary happens to be one of the most important estuarine region (*extends to almost 25 Km inside the coast up to Hattis*) along the Ratnagiri Coast and is breeding ground for most of the commercially important fish species like elasmobranchs, eels, cat fishes, *Chirocentrus* species, sardines, clupeids, *Horpodon nehereus*, pomfrets, mackerels, seer fishes, tunas, prawns, lobsters and cuttle fishes. The fishery economics of Ratnagiri largely depends on Bhatye Estuary and the favorable area for carrying out fishing activities is 530 ha. Hence this particular area is important from the biodiversity and economics point of view. The present survey has been made to procure an inventory of molluscs in unexplored mangrove ecosystem of Bhatye, Ratnagiri.

2. MATERIAL AND METHODS

Bhatye estuary is situated at $73^{0}15^{'}$ East and $16^{0}51^{'}$ North near Ratnagiri and known for the mangroves on the mud flats and the clam fauna. Six stations were selected within a stretch of about 25 Km for sampling, considering the nature of study area. Sampling was done fortnightly covering intermediate phase of the tide to avoid tidal effect, if any. Diesel engine boat was used to reach different stations.

For the qualitative analysis of mangrove molluscs, hand picking of the specimens was carried out especially when the mud flats were exposed at low tides. The animals were the preserved in three

stages- narcotization by using Menthol Magnesium Chloride and then Alcohol or Chloral Hydrate was added drop by drop. In the next step fixation was carried out in 4 to 10% neutral formalin solution. The bivalves were mainly identified based on the shell morphology, hinge, interlocking dentition etc., The identification of gastropods was based on the shape, size, spire length and shape, mouth opening, opercular shape, umbilicus shape and size, colour and ornamentation of the shell were used for identification of gastropods and finally referred to standard literature available. The molluscs were identified by using standard literature (8, 9, 10, 11)

3. RESULTS AND DISCUSSION

Molluscs are more diverse than the crustaceans, fish and other kinds of organisms. In the present studies, mollusks were recorded from station no. I and II which can be considered as estuarine zones. The most commonly occurring molluscs in the estuarine region were as follows – *Katelysia katelysia, Katelysia opima, Meretrix meretrix, Geloina proxima, Crossostrea madrasensis, Dosinia prostrate, Turbo* species, *Arca granosa, Dosinia cretacea, Cardium asiaticum, Solen truncates* and button shells (9).

Among the molluscs, the bivalves are selectively rich in and around mangrove environment. The ecosystem provides an ideal niche for the animals due to less water motion, soft substratum and less stress from the predatory organisms, as compared to other environments. Ecological conditions like tidal amplitude, salinity and temperature are favourable (especially at the mouth of the Bhatye Estuary) for the bivalves to live, feed and multiply. At times some Sea hares were also encountered attached to small shrubs of mangrove associates and literature indicates that they are most common epifaunal species that exists in the mangrove ecosystems.

As far as molluscan fishery is concerned, *Geloina proxima* happens to be one the important species from fishery point of view. Ratnagiri Taluka stands first in the mangrove clam fishery of the district. Though it is having less brackish water area (462.83 hectare) (12), it posses high potential for the production of mangrove clams.

 ***Katelysia katelysia***	 ***Katelysia opima***	 ***Meretrix meretrix***	 ***Gelonia proxima***
 ***Crassostreamadrasensis***	 ***Dosinia prostrate***	 ***Arca granosa***	 ***Arca granosa***
 ***Turitella species***	 ***Umbonium vestiarium***	 ***Aplysia species***	 ***Natica pita***

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