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Occurrence of Sea Anemone Larvae in the Estuarine Area of Vasai Creek, Maharashtra, India

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A B S T R A C T

The present study was carried out in the estuarine area of Vasai creek in Maharastra during the year 2016, the larvae and juveniles of sea anemone were found in the zoolplankton sample which was first time observation in this area. The larvae were found more abundant towards the mouth of estuary where salinity ranges from 30-35 ppt.

Introduction

Sea anemones are brightly coloured species under the phylum Cnidaria, marine in origin with many of the burrowing, sedentary and pelagic habitat. Many species of actiniarian sea anemone have successfully adapted to unpredictable salinity condition of brackish water, as also to the extreme condition of desiccation within the tide marks. They are distributed in intertidal to deep oceans and live attached with rocks, sea floor, shells and some forms burrow in the mud or sand. They are radial symmetric with columnar body have a single body opening, mouth which is surrounded by tentacles. However, body shape of the sea anemones is often related to the habitat in which they live (Christian 2010). Sea anemones are solitary polyps and are considerably larger and heavier than the polyps of hydrozoans. The challenges these organisms face in this dynamic environment include desiccation, lack of oxygen, increased salinity, and extreme temperatures. There are over 1000 species of sea anemones reported worldwide. In India 56 species of sea anemones belonging to 40 genera under 20 families have been reported (Raghunathan *et al.*, 2014). Earlier Parulekar (1990) reported 40 species Out of which 24 species inhabits in marine, 13 species in estuarine, while 3 species are common to both the habitats. They reproduce both sexually by external fertilization followed by the development of planktonic planula larva and settled down as single polyp. They also reproduce asexually

by budding, binary fission and pedal laceration. Inadequacy of knowledge about the magnitude and diversity of sea anemone is reflection on lack of exploration along and within the extensive marine and estuarine ecosystem of India (Parulekar, 1990).

Vasai creek is an estuarine creek located in Thane district of Maharashtra state forms the northern boundary of Salsette Island, and empties west into the Arabian Sea. This study was carried out from January 2016 to march 2017. Sampling was done between latitude 19^0.32' to 19^0.28'N and longitude 72^0.87' to 72^0.93'E during High tide period from a local FRP boat and samples were collected from different location with the help of plankton net. Samples were preserved immediately in 5% formaline and kept in the icebox. Samples were analyzed under Hund company Inverted microscope with the help of sedgwick rafter cell.

In present study first time a sea anemone larvae were recorded from the estuarine water of Mumbai coast. The larvae were in planktonic form and it was identified as sea anemone. Many authors reported occurrence of sea anemone in pools in marshes in estuaries and bays in different parts of the world (Bailey *et al.,* 1966).

In present study the species was found more towards the mouth of estuary in the month of January to March 2016. In starting phase of study larvae were found in a flower shape Plate 1 and the tentacles were attached. After that period juvenile species were found in large shape with tentacles which were free from one another Plate 2.

As sea anemones are solitary hexacoral polyps which, in contrast to the majority of colonial forms, have no skeleton. They are diploblastic animals, with the body wall consisting of two cell layers, epidermis and gastrodermis, separated by the extracellular matrix (mesoglea) containing amebocytes. In present investigation larvae were found in planktonic form with multiple layer of connective tentacles. The planktonic larval form allow these animals to disperses their young ones to other area as estuarine water has less tidal current so these larvae easily disperses and after that larvae settle on the solid surface where it grow and form colony (Karleskint, 2010).

The body of the sea anemone is mostly a thick column. At the oral end, the column flares slightly to form oral disc which bears eight to several hundred hollow tentacles. In the center of the oral disc is slit- shaped mouth, bearing a ciliated groove called siphonoglyph, which drives water into the gastrovascular cavity even when the mouth is closed. At the aboral end of the column, there is a flattened disc for attachment (Holley, 2016). Sea anemones are either hermaphroditic or dioecious, with fertilization occurring in either the gastrovascular cavity or in the outside seawater. Planulae that hatch from the fertilized eggs are either planktotrophic or lecithotrophic and have variable development times. Eventually the developed planulae settle, attach to a substrate and form tentacles (i.e., develop into adult form) (Barnes 1980).

Sea anemones are solitary polyps that are considerably larger and heavier than hydroids. The major part of the sea anemone body is comprised of a heavy column. A flattened pedal disc for attachment to the substrate is located at the aboral end of the column and at the oral end, the column flares slightly to form the oral disc which bears the tentacles. The mouth is located in the center of the oral disc (Barnes 1980). In present study we observed that the species were found in more towards the mouth of the estuary where the average salinity ranges from 30-35 ppt showed their marine nature.

Plate.1

Plate.2

The species was circular in middle portion with 10-12 numbers of tentacles around that. These tentacles are used for the capture of prey and it contain neurotoxin which kill the prey and also for defense from predators. The tentacles are triggered by the slightest touch, firing a harpoon-like filament into their victim and injecting a paralyzing neurotoxin. The helpless prey is then guided into the mouth by the tentacles (Purcell, 1977).

The sea anemones are widely distributed in the estuarine area of North America. Typically they are found in pool and drainage system in marshes where it burrow in fine sediment. There are also few record of sea anemone occurrence in estuaries in the world (Hand and Uhlinger, 1994). In India Parulekar (1990) described the habitat preference of sea anemone from upper littoral to abyssal depth of the Exclusive Economic Zone and found 13 species prefer brackish water, 24 marine and 3 cosmopolitan which shows wide distribution of sea anemone in the Indian water. As sea anemone are widely distributed in Indian water, Parulekar (1990) documented some sea anemone species like *Acontiophorum bombayensis, Gyractis sesere, Anthopleura asiatica, Anthopleura pacifica, Bunodosoma granulifera, Cribrinopsis, Paracondylactis sinensis, Aiptasia, Edwardsia tinctrix, Pelocoetes exul* and *Metapeachia tropica* from the intertidal and subtidal region of Mumabi water. He also reported that some species, which earlier were described only from intertidal water, were found to be distributed even in shallow depth of the subtidal region.

The present study shows that the larvae of sea anemone were found in the estuarine habitat also, as sea anemone is exclusively marine and prefer rocky and coral reef habitat. The possible reason for this may be tidal influence or the frequent movement of the boat in the area from sea to estuary. These finding revels that there may be adverse effect of anthropogenic activity on the sea anemone habitat of this area and some management measures should be taken for the conservation of this species. The survival of sea anemone in estuarine habitat and the relationship with estuarine biota need to be studied in future.

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