

# Report on widespread occurrence of colonial epizoan ascidian *Didemnum* sp. in the seagrass beds of Gulf of Mannar

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The seagrass beds of Gulf of Mannar are one of the major habitats of the Sea cow *Dugong dugon*. This species is a herbivore that has become more vulnerable in the recent decades caused by habitat degradation due to anthropogenic activities. Ecologically, seagrass beds play several roles such as primary producers, food for herbivores, trapping sediments, preventing erosion and providing shelter for juvenile fishes. Seagrasses also serve as a substrate for fouling organisms, usually epiphytes such as barnacles, polychaetes, ascidians etc. Unlike fouling on hard non-biotic substrates like pipelines and cages, the fouling on seagrass blades is not intense.



Fig. 1. Colonies of *Didemnum* sp. (white colour) attached to the blades of seagrass

During an underwater survey for dugongs conducted in the Gulf of Mannar during November, 2014, unusual widespread occurrence of colonial ascidians were observed in the seagrass beds on the shoreward side of Vedhalai (9° 15' 38N; 79° 54' 24E) near Mandapam. Ascidians, commonly called sea squirts or tunicates are chordate filter feeders with wide distribution in most marine habitats. Two types of ascidians, namely solitary and colonial are present in the marine ecosystem. In this particular case the ascidian was identified as *Didemnum* sp. belonging to the family Didemnidae under Order Aplousobranchia. The *Didemnum* sp. colonies were found attached to the blades of the seagrass *Cymodocea serrulata* and *Syringodium isoetifolium* during the survey. All the colonies were white in colour and formed a thin encrusting sheet or mound on the seaweeds (Fig.1).

The Sea cow mainly feeds on *S. isoetifolium*. The shoot density of *C. serrulata* observed was 54 to 160 numbers and that of *S. isoetifolium* 40 to 96 numbers. It has been reported that colonial ascidians often occur in areas with high levels of suspended organic particles and pollution. During monsoon, heavy freshwater run-off from shore brings in lot of nutrients to the near shore seagrass beds which might be one of the reasons for the abundance of ascidians.

The environmental parameters were also

collected during the survey. The atmospheric temperature (27°C), Sea Surface Temperature or SST (26°C), salinity (24 PSU), pH (8.0) and sea bottom temperature (25.5°C) was recorded. Generally, the sea is very calm during the months of October to February in Gulf of Mannar. The SST of the area is very low during November and December while in the rest of the months it is 29 to 34°C. Low salinity observed during the study indicated land runoff due to rainfall. The low temperature coupled with nutrients may have favoured the growth of *Didemnum* sp. Also, overharvesting of fishes by shore seines may have caused the decline of predatory fishes which could be another reason for the proliferation of ascidians.

The occurrence of ascidians colony on the seagrass blades may not affect the ecological functioning of the seagrass beds. This could be a seasonal blooming and the colonies may wilt off

once the environmental conditions change. However, if they persist for a long period, they can inhibit photosynthesis. Increased biomass of ascidians can lead to wilting of sea grass blades and finally degradation of the seagrass beds leading to reduction of ecosystem services. Chances of a bloom of ascidians directly affecting the dugongs is negligible but needs further investigation. On the other hand, many bioactive compounds such as cytotoxic didemnins, lipids, aplidine, peptides, tamandarins etc. have been isolated from the species belonging to the genus *Didemnum*. Therefore, screening of the *Didemnum* sp. in the Vedhalai area may provide information on unique bioactive compounds present. After understanding the bloom triggering parameters, artificial substrates can be placed for large scale collection of ascidians from natural beds for utilization as a source of bioactive compounds.