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 didemmins, 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.

Fish Cutting Centres of Karnataka: An ancillary small scale industry for Surimi production

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Fish processing plants/industries add value as well as shelf life to the harvested fish. Such plants have facilities for curing, drying, freezing, filleting, canning etc. Processing of fish includes the preparation of minced fish meat which forms the raw material for various ready-to-cook and ready-to-eat products. The minced fish and fish paste is used in the domestic markets for preparation of various culinary products and also has a very good export demand in the form of Surimi. This export market provides an opportunity for preparation of high quality fish paste, through utilization of small fishes with low or no value in the domestic markets. Surimi is prepared from small sized fishes of good quality having reasonably high gel strength. The threadfin breams (Nemipterus spp.), lizard fish, (Saurida spp.), croakers (Johnius spp.) ribbonfish (Trichiurus spp.), lesser sardines (Sardinella spp.) and goatfish (Upeneus spp.) are used for the preparation of Surimi which is a Japanese term that literally means “ground meat”.

As the Surimi produced is meant only for export, strict hygienic conditions are maintained in the plants with the fish being brought here in a partially pre-processed stage. This pre-processing includes beheading, removal of scales and viscera, washing etc. This activity is carried out in cutting sheds which have grown as an ancillary industry engaging a large work force dominated by women. Presently, in Karnataka there are 25 fish cutting sheds located in Mangaluru, Malpe, Kundapur and Karwar. These
centres procure raw fish directly from the fishing boats and send the pre-processed fishes to the *Surimi* plant while the waste generated is sent to fish meal plants, where it is converted to protein rich powder and used in the preparation of aqua feeds.

During peak fishing season, the Fish Cutting Centres have the capacity to produce 10-15 tonnes (t) of pre-processed fish daily. Availability of raw material used for the preparation of *Surimi* is maximum during September to December. The pre-processing centres generates enormous amount of waste, being approximately 20 - 30% of total fish weight, based on the species of fish being processed. The waste thus generated during the processing is transported to nearby fish meal plants. Majority of the fish cutting centres operate for about 6 - 8 months in a year, depending on raw material availability. Whenever there is no demand for the pre-processed fish from the *Surimi* plants or scarcity of a particular fish, these cutting centres procure oil sardine and process it for canning factories on request.

Each Fish Cutting Centre employs around 80-100 women and the 25 functional pre-processing sheds provide direct employment to around 2500 women living in the coastal area. They are initially trained in hygienic processing of the fish. The cutting tables and other equipments have been modified accordingly to facilitate a comfortable working environment for the women employees. While processing the fish the women squat down and cut fishes using sickles. To suit this method of cutting, the height of regular processing tables have been decreased and sickles mounted on the edges. Thereby the women can sit comfortably on special platforms above the wet floor and cut the fish with ease. The trained women can process around 100 - 150 kg of fish every day and are paid on a daily basis at the rate of ₹ 2 per kg of processed fish.

These centres thus provide direct employment to the fisherfolk by playing a crucial part during the pre-processing phase of *Surimi* production. These pre-processing centres are indirectly responsible for boosting the export earnings of the country from fisheries. *Surimi* is mainly exported to European countries, Japan and South-East Asian countries and annually about 10,000 to 12,000 t is being exported from India. In addition, oil sardine processed from these centres are being used along with other highly priced fishes for export.

On a small scale targeted fishery for White sardine and Goldspotted grenadier anchovy along the Maharashtra coast

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Marine fish landings of Maharashtra during 2014 were estimated at 3.44 lakh tonnes (t) with the pelagic resources contributing a major share (42%). Of this, more than 60 % were small pelagics namely, Bombay duck, clupeids and anchovies. These fish have been targeted by coastal fishermen using