3. Description of the Study Area

Arabian Sea is one of the world’s most productive regions of the ocean and during summer monsoon (June-September) this is brought about through a range of physical processes. For example, the coastal upwelling along Somalia, Arabia and southern part of the west coast of India turns the coastal waters into a region of high biological productivity.

The Bay of Bengal in the eastern part of the north Indian Ocean is a tropical basin. Like its western counterpart, the Arabian Sea, it is land locked in the north and forced by seasonally reversing monsoon winds. Accordingly, the surface circulation of both the basins undergoes seasonal reversal.

Fig.1. Sampling stations in Arabian Sea and Bay of Bengal
In contrast, the Bay of Bengal has much lower salinity due to the large influx of fresh water from river discharge and high amount of rainfall. Winds over the Indian Ocean, which is the main forcing function, reverse twice during the year. They blow from the southwest during May–September and from the northeast during November –January with the transition taking place during the months in between. Forced by these winds, circulation in the Indian Ocean has a general eastward direction during summer and westward during winter. These reversing currents carry high salinity Arabian Sea water into the Bay of Bengal and vice versa playing a crucial role in maintaining the freshwater and salt balance of the North Indian Ocean.

Bay of Bengal is traditionally considered to be a region of lesser biological productivity and recent measurements using clean techniques for phytoplankton 14°C uptake also corroborate this fact. Although, this has been variedly attributed to the light inhibition due to turbidity and/or cloud cover, narrow shelf etc, the exact physical process is unclear.

In the present study, total samples were taken from 97 stations and 23 transects, first Cruise No# 290 where 7 transects from east coast of Karaikal to Singarayankonda, during 2011; second Cruise No# 293 which had 5 transects from Thiruvananthapuram to Mangalore, during 2012; third Cruise No# 310 which had 5 transects from west coast of Arabian Sea, Cape to Kozhikode, during 2012; fourth Cruise No# 328 which had 6 transects from Vaizag to Kalpakkam, during 2014.

During the study period, sampling hauls were made in 23 transects including 97 stations (Fig.1) representing various depths range covered, which extended between latitudes 8-22°N and longitudes 66- 85°E. Sampling was conducted at 50, 100, 200, 500, 1000 m depth. The vertical water column samples were collected in each station with five different depth strata like 0-50, 50-100, 100-200, 200-500 and
500-1000 m depths. The vertical water column samples were collected in each station with five different depth strata like 0-50, 50-100, 100-200, 200-500 and 500-1000 m depth. In addition, the quarterly water samples were collected in parangipettai coastal waters (Lat. 11°32.36’N Long. 79°49.11’E) Southeast coast of tamilnadu, India for seasonal variations of gelatinous zooplankton studies.