10. Summary and Conclusion

In Arabian sea maximum surface temperature, salinity and dissolved oxygen were recorded in northeast monsoon and also, above mentioned three parameters maximum value recorded at premonsoon in Bay of Bengal. Comparison of hydrographical parameters higher values of temperature and salinity in Bay of Bengal and dissolved was lower.

In Arabian sea, during the study period, the zooplankton species diversity (H’) varied from 3.226 to 4.453 with maximum in Thiruvananthapuram and minimum in Karwar and Bay of Bengal, zooplankton species diversity (H’) varied from 3.477 to 4.259 with maximum in Nagapattinam and minimum in Cheyyur. The species evenness minimum in Parangipettai and maximum in Nagapattinam.

The density of zooplankton in Bay of Bengal varied from 1186 to 220 (Unit) maximum were recorded in Parangipettai coastal waters and minimum were recorded in Ramayapattinam. Density of gelatinous zooplankton in Arabian sea varied from 124 to 538 (Unit) maximum were recorded in Kozhikode coastal waters and minimum were recorded in Mangalore. Percentage composition of zooplankton in Bay of Bengal Chaetognaths were found to be dominant group with 23%. Thaliacea came next in the order with 18%, followed by hydromedusae 16%, Siphonophora (15%), Scyphomedusae (13%) Cubomedusae (10%) and Ctenophora came last in the order (5%) in the total contributions.

In Arabian Sea the percentage composition of zooplankton of Chaetognaths were found to be dominant group with 24%. Followed by Thaliacea (19%) Siphonophora (16%), hydromedusae (14%), Cubomedusae (12%), Scyphomedusae (11%) and Ctenophora came last in the order (4%) in the total contributions.
Vertical distribution of Arabian Sea, during the study period, the gelatinous zooplankton species diversity (H’) varied from 2.162 to 4.174 with maximum in 0-50m depth and minimum in 500-1000m depth. Likewise the species richness (d) ranged between 1.412 and 3.469 with maximum in 0-50m depth and minimum in 500-1000m depth. Also, diversity (H’) maximum in 0-50m depth and minimum in 200-500m depth in Bay of Bengal. Likewise the species richness was maximum in 0-50m depth and minimum in 200-500m depth.

The population density of gelatinous zooplankton in Arabian Sea varied from 17 to 319 inds./m³) maximum were recorded in 0-50m depth and minimum were recorded in 500-1000m depth. In Bay of Bengal maximum were recorded in 0-50m depth and minimum were recorded in 500-1000m depth.

The surface water temperature and salinity maximum was summer season and minimum was recorded during monsoon season in Parangipettai coastal water. Dissolved oxygen was distributed maximum in monsoon season and minimum was recorded in summer season. The

The gelatinous zooplankton population density was increased from monsoon to summer season similarly the high values of temperature and salinity also observed during the study period. Low level population density was observed during monsoon season due to northeast monsoon period.

The seasonal variation of gelatinous zooplankton abundance was maximum recorded chaetognatha and the minimum was recorded ctenophore during the study period at all the seasons.

Totally, 33 gelatinous zooplankton including 7 groups viz., Chaetognaths (4), Thaliceans including Doliolids, Salps (10), Siphonophores (5), Scyphomedusae (3),
Cubomedusae (3), Hydromedusae (5) and Ctenophors (3) were identified to species levels during the study period in Parangipettai coastal water.

The percentage composition of seasonal variation in gelatinous zooplankton maximum was recorded during the summer season and minimum was recorded during the monsoon season in the study period.

The diversity, Richness and Evenness maximum were present in summer season and the minimum was monsoon season in the study period at Parangipettai coastal waters.

The present study of gelatinous zooplankton reported 7 genera and 7 species (Alatina mosrei, Aurelia aurita, Chiropsalmus quadrumanus, Chrysaora quinquecirrha, Crambionella sp., Nemopilema aff. Nomurai, Pelagia panopyra) were collected and identified through conventional and molecular methods (COI gene) from Parangipettai coastal waters. The identified sex species of gelatinous zooplankton Alatina Mosrei (KP187618), Aurelia aurita (KP033138), Chiropsalmus quadrumanus (KP03139), Chrysaora quinquecirrha (KP187616), Crambionella sp (KP187619), Nemopilema aff Nomurai (KP187617), and Pelagia panopyra (KM886247) sequences were deposited into the NCBI data base and received accession numbers.

The proximate compositions (%) such as protein, carbohydrate lipid and ash contents were analyzed from Porpita porpita. The results revealed that the protein composition were high (23.47%) followed by carbohydrate (11.64%), lipid (2.98%) and ash (10.51%), compositions of essential and non-essential amino acids (99.79%). Among the total amino acids, essential amino acids (45.84%) and non-essential amino acids (53.95 %) were present in Porpita porpita. Methionine. Ten different fatty acids and totally 90.96% were found; they are three saturated fatty acids (SFA), one
monounsaturated fatty acids (MUFA) and four polyunsaturated fatty acids (PUFA). Among the SFAs, C16:0 were the major acids in 23.4%. In PUFA alpha linolenic acid were the major acids found as 29.36%. The percentage availability of SFA, MUFA and PUFA content was 31.88, 7.36 & 51.72% in zooplankton. The analysis of vitamin A, C and B12 were found in higher levels 20.4 (IU), 45.4 & 13.4 mg/100g, whereas B6, E & K were noticed as lower levels 3.44, 2.04 and 0.17 mg/100g.

Totally, 5 macro minerals and 2 trace minerals were detected. Among the macro minerals, sodium 254.5 mg/100g, calcium 101.5 mg/100g, potassium 100.3 mg/100g and copper 1.33 mg/100g were observed at higher and lower levels, whereas other macro-minerals magnesium were in negligible level. The trace minerals such as iron 1.14 mg/100g and zinc 2.01 mg/100g were also detected in this species. Some species of large jellyfish are considered to be delicacies for Chinese cooking. Their medicinal value has also been recognized for a long time (South China Sea Institute of Oceanology, 1978; Hsieh & Rud-loe, 1994). For Jellyfish, with increasing demand from the Japanese market, jellyfish fishing has become popular in Southeast Asia. More recently, small-scale exploitation of jellyfish has also commenced in other countries such as Australia, India, Mexico, Turkey and the U.S.A.

The present study did not increase the previous total number of species so far identified in Indian waters. The gelatinous fauna of India is still poorly known in relation to many of the other regions of the world. This study revealed a strong distribution abundance of carnivorous gelatinous zooplankton between the Arabian Sea and Bay of Bengal. However, more frequent sampling, replication and covering all the season are necessary to satisfactorily analyze the distributions of epipelagic and mesopelagic gelatinous zooplankton with respect to the observed hydrological parameter and mesozooplankton biomass so; continuous monitoring would be
required to bring more gelatinous species as well as better idea for the exploration of new species in Indian waters.

The gelatinous zooplankton fauna of India is still poorly known in relation to many other regions of the world. To get a better understanding of the abundance and distribution of gelatinous zooplankton in Indian waters with covering all seasons, further studies are to be needed. Mid-water gelatinous zooplankton in Indian waters is nothing known, so further studies are needed in this aspects. Information on the life cycle patterns of medusae is also of vital importance to get a better understanding of the species.