CHAPTER 8

SUMMARY AND RECOMMENDATIONS

8.1 SUMMARY

Critical habitat information system for Gulf of Mannar is developed as a scientific database, which can be used as a baseline for all future long term monitoring programs to be undertaken in this area.

The classified seagrass and coral reef map gives an idea about their distribution. The seagrass bed covers an area of about 85.71 sq.km and the coral reefs covers an area of about 99.31 sq.km in the Gulf of Mannar area. While the Musal island shows maximum coverage of seagrass with 18.0 sq.km, Karaichalli shows the minimum coverage with 0.31 sq.km. The coral coverage was maximum in Anaipar island with 14.0 sq.km and minimum in Shingle island with 0.21 sq.km.

The water quality such as pH (8.0 to 8.4), Temperature (27° to 30°C), Dissolved Oxygen (3.69 to 6.98 mg/l), Salinity (30.34 to 35.89 ppt), Nitrate (0.17 to 9.02 mM), Nitrite (0.03 to 0,27 mM), Total Phosphate (0.08 to 3.1 mM) and Inorganic Phosphate (0.08 to 8.6 μM) during the study. There is not much influence in the water quality parameters of Gulf of Mannar.

In (1992) 12 species of seagrass were recorded in (1996) around 126 species of Phytoplankton, in (1998) 360 species of Zooplankton, 51 species of *Protozoa* in 1986 around 275 species of *Porifera* in (1998) 128 species of *Cnidarians*, 75 species of *Annelida*, 281 species of *Arthropoda*, 731 species of *Mollusca*, 264 species of *Echinodermata*, 5 species of *Turtles*, and 11 species of *Mammals* were recorded. In 1970 around 147 species of seaweeds in (1974) 9 species of *Nematodes* in (1987) 9 Mangroves and 7 Mangrove associated species.

During present study around 78 species of Phytoplankton, 62 species of Zooplankton, 11 species of *Protozoa,* 17 species of *Porifera,* 49 species of *Cnidarians,* 19 species of *Annelida,* 2 species *Plathyhelminthes,* 9 species of *Nematodes,* 46 *Arthropoda,* 33 species *Mollusca,* 16 species of *Echinodermata,* 5 species of *Turtles,* 5 species of *Mammals,* 12 species *Seagrass,* 147 species of *Seaweed,* 9 species of *Mangroves* and 7 Mangrove associated sp were recorded. Both the past and present data were compared to study the present biodiversity of the study area.

The quantitative distribution of phytoplankton, zooplankton, corals and other invertebrates were aptly represented in the form of charts or tables in the database.

The biodiversity information of the study area comprising of both past and present data is stored in the database. This comparative study was made to see the changes in biodiversity in Gulf of Mannar. Though the species recorded are much lower than that during the past years the change in number of species reported in the present study does not mean the disappearance or extinction of species in the region. The present study was carried out only for a period of

one year and random sampling methodology was adopted for data collection. However, if the observation is repeated annually for the next ten years, then a clear idea will emerge on the extent of species (biodiversity) loss in Gulf of Mannar. This information would be very useful for the decision-makers in making decisions necessary for the preservation of the valuable biological wealth of this region.

The critical habitat information system is very useful in retrieval of any type of information and provision of summary data. With the help of GIS it is possible to integrate the information derived from satellite data and environmental parameter from field and analyze the environmental conditions that causes the degradation of critical habitats. Further, the GIS can aid in the synthesis of management policies through the improvement in the quality of the database. Coastal resources survey, improved thematic maps and updating of the data could be easily implemented using the GIS. Thus, the GIS could be used to gather a wide range of information and to develop capacity for manipulation and comparison of data sets. A GIS based information system is now proposed as an integral part for successful environment management, but it should be regularly updated with newly acquired monitoring information based on well designed user interface and there should be appropriate provision for time varying nature of data in the system development.

Thus GIS, RS and RDBMS technologies together in the form of an information system will greatly help in management and analysis of large volumes of data allowing for better understanding and management of human activities to maintain environmental quality and sustainable development.

8.2 RECOMMENDATIONS

- The Gulf of Mannar Biosphere must be protected from the human interference in order to save the unique ecosystem.
- The mining of the coral should be banned in and around the reefs, which has already damaged the reefs in Tuticorin group of islands.
- Indiscriminate picking of budding seaweeds must be prevented for export purposes since it might lead to complete degradation of seaweed beds. Instead, the seaweed cultivation practice must be promoted.
- Export oriented indiscriminate large-scale fishing of rare marine living organisms such as gorgonians, sea cucumber, ornamental echinoderms and other molluscan forms must also be prevented.
- The effluents coming out from the industries should be completely treated before discharging into coastal waters in order to avoid pollution and its impacts.
- Use of GIS based information system for sensitive ecosystem is essential.
- Continuous updating of the database is recommended, in order to help the decision makers in effective monitoring and managing the biological wealth of the islands.