CHAPTER 8
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CONCLUSIONS

The study of the distribution of foraminifera were carried out on 76 surface sediment samples off Central (Vengurla-Mangalore) west coast of India. The aim of this investigation was to study the fundamental as well as applied aspects of foraminifera and its paleoenvironmental significance. The main findings are summarised below:

1. A total of 219 foraminiferal species (195 benthic and 24 planktonic) comprising 108 Genera, 54 Families, 31 Superfamilies and 7 Suborders are encountered.

2. Out of the 195 benthic species the following 30 species have been reported for the first time from the Arabian Sea: Siphonaperta minuta, Pyrgo fornasinii, Pyrgoella dokici, Triloculina cf. T. affinis, Pseudohauerina orientalis, Dentalina aff. D. protumida, Laevidentalina aff. L. aphelis, Laevidentalina aff. L. subemaciata, Nodosaria ambigua, Nodosaria intercellularis, Mesolenticulina partidiana, Neolenticulina chathamensis, Hyalinonetrion sahulense, Procerolagena gracilis, Pygmaeoseistron hispidula, Fissurina lucida, Lagenosolenia aff. L. soulei, Bolivina spinescens, Ehrenbergina serrata, Sagrinella aff. S. guinai, Globobulimina pervesa, Uvigerina asperula, Uvigerina mediterranea, Eponides regularis, Eponides tenerus, Epistominella naraensis, Nonionella hantkeni, Nonionella pulchella, Elphidium selyense, Valtobifarina sp. All the specimens are systematically catalogued and illustrated.

3. In order to explore the applied aspects of this study and to highlight the environmental significance, conclusions are drawn separately or collectively on the basis of relict, benthic and planktonic foraminifera.
a) Relict foraminifera:
   i) The surface distribution reveals the presence of relict foraminifera occurring in a zone between 60—90 m, signifying the presence of a paleoshoreline at around 10,000 years B.P. (\(^{14}C\) dates).
   ii) In view of the fact that intertidal barnacle species *Tetraclita squamosa* is found attached to relict benthic foraminifera only, but not on modern benthic foraminifera in sediments at 60—90 m water depth along the west coast of India, it is concluded that these forms lived when the sea level was low and conditions suitable for their survival. The rapid rise of sea level (along with change in the salinity pattern) and their inability to keep pace, hampered their survival, leading to their extinction. Therefore, relict foraminiferal test encrusted with *T. squamosa* could be used as a new marker for paleoshoreline.

b) Benthic foraminifera:
   i) A number of depth linked patterns have been observed in the spatial distribution of various common benthic genera. The data permitted a successful presentation of a generalised picture of bathymetric profile, sediment nature, oxygen content of overlying water and presence of dominant genera at various depth in the study area.
   ii) With the help of R-mode cluster analysis and Q-mode factor analysis foraminiferal fauna of the study area can be divided in shallow, deep and transitional assemblages.

These observations are of use if one wants to reconstruct the paleoshoreline by using fluctuations in abundance of any above assemblage in subsurface sediments of the same region.
c) Planktonic foraminifera:

i) Distribution of 24 species of planktonic foraminifera showed association with characteristics of ambient water.

ii) The increased abundance of few species, like *G. vivans* (in contrast to previous published abundance), indicate the utility of using +63 \( \mu \text{m} \) fraction as against +125 \( \mu \text{m} \) fraction.

iii) The abundance of planktonic foraminifera increases with depth.

iv) Based on the percentage of planktonic foraminifera, a regional model for paleodepth determination for the Arabian Sea has been developed. This model has a potential for being useful in the preparation of sea level fluctuation curves as it can provide quantitative estimates of paleodepths.

The applicability of this model increases due to the fact that no species level identification is needed. Secondly, computer aided image analyser can also be used to distinguish the benthic and planktonic assemblages resulting in a lot of time being saved in handling the data.