

## A checklist of benthic foraminiferids from the inner shelf of Dabhol-Vengurla region, Arabian sea

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### Abstract

Sixty-four benthic foraminiferids are reported from Dabhol-Vengurla innershore neritic environment and they are listed in the order of their relative abundance. Small microenvironments or milieus created by the dominance of *Trochammina inflata* and *Ammobaculites agglutinens* on the one hand and the miliolid fauna on the other are noted.

### Introduction

As part of the general Oceanographic survey of west coast of India, several samples were collected, using gravity corer, Van veen grab and La Fond-Dietz snapper from the western continental shelf (Setty, 1977). In the region between Dabhol (Lat. 17°35'N, Long. 73°06'E) in the north to Vengurla (Lat. 15°50'N, Long. 73°23'E) in the south, twenty-seven grab samples (Nos. G17/1 to G17/27) were collected which are representative of a depth range of 15 to 50 m—a near shore neritic environment (Fig. 1). This area is characterised by the long shore currents passing along the

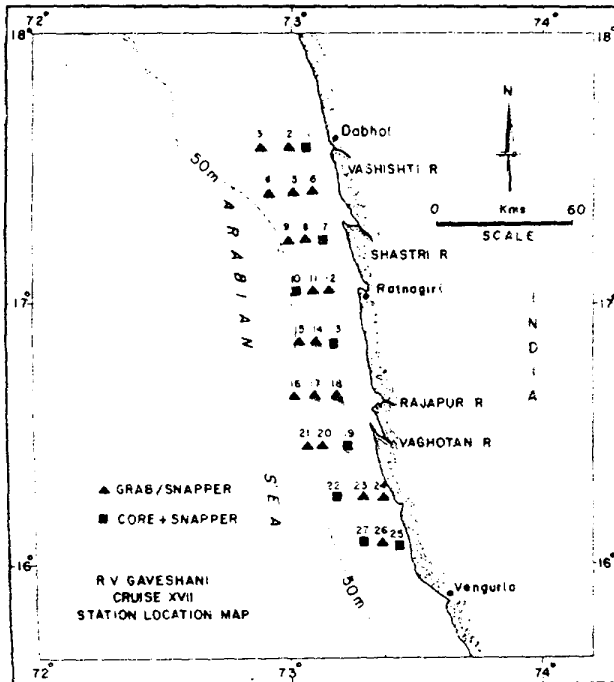


Figure 1. Station locations and sampled localities using gravity corer and Van veen grab on board *R/V Gaveshani*.

coast, high wave energy action, deposition of terrigenous material, being brought in through the small Vashishti and Shastri rivers in the north and Rajapur and Vaghota

rivers in the south (with several *nallahs* and streams in between), influx of fresh water and associated organic matter. These rivers and *nallahs* are subject to periodic tidal actions. Thus, wherever these rivers discharge their load into the sea, small milieus or microenvironments are sometimes created, which in turn, produce a distinct biota. More particularly, the benthic fauna of this biota becomes the sole representative of this microenvironment. The foraminiferal distribution pattern of this region has clearly shown that such groups do exist here along with other marginal-marine and open-marine faunal groups and associations.

Practically very little has been reported on occurrence and distribution of foraminifera from this region. A checklist of 64 species of benthonic foraminifera encountered is presented here showing their range in terms of relative abundance. A detailed distribution of the contained foraminifera with reference to their relationship or variation to depth, substrate character, organic matter content in the sediment, and its influence on the foraminiferids will be presented separately.

## Results

### Abundant species :

- Ammobaculites agglutinans* (d'Orbigny).
- A. dilatatus* Cushman and Bronnimann.
- Ammonia annectans* Parker and Jones.
- A. beccarii* (Linne)
- Bolivina subaenariensis* Cushman.
- B. striatula* Cushman
- Elphidium falunicum* (Allix)
- Florilus boueanum* (d'Orbigny)
- Nonion elongatum* (d'Orbigny)
- Trochammina pacifica* Cushman.
- T. inflata* (Montague)

### Common species :

- Ammonia dentata* (Parker and Jones)
- A. papillosus* (Brady)
- Bolivina attica* Parker
- Bulimina exilis* Brady
- B. marginata* d'Orbigny
- Elphidium indicum* Cushman
- E. minutum* (Ruess)
- E. simplex* Cushman
- Florilus grateloupi* (d'Orbigny)
- F. scaphum* (Fichtel and Moll)
- Fursenkoina pontoni* (Cushman)
- Nonionella basispinatus* (Cushman & Moyer)
- N. auris* (d'Orbigny)
- N. auricula* (Heron-Allen and Earland)
- N. turgida* (Williamson)
- Virgulina pertusa* (Reuss)

### Frequent species :

- Bolivina goesii* Cushman
- B. lanceolata* Parker
- Cancris auricula* (Fichtel and Moll)

*C. sagra* (d'Orbigny)  
*Eggerella advena* (Cushman)  
*E. bradyi* (Cushman)  
*Lagena laevis* (Montague)  
*L. perlucida* (Montague)  
*L. semistriata* Williamson  
*Nonionella* cf. *N. trinslucens* Cushman  
*Reussella pacifica* Cushman and McCulloch

Rare species :

*Amphistegina radiata* (Fichtel and Moll)  
*Bolivina punctata* d'Orbigny  
*Bolivina* cf. *B. translucens* Phleger and Parker  
*Cibicides depressus* Phleger and Parker  
*C. basiloba* (Cushman)  
*C. kullenbergi* Parker  
*C. lobatulus* (Walker and Jacob)  
*Elphidium advenum* Cushman  
*E. craticulatum* (Fichtel and Moll)  
*E. crispum* (Linne)  
*Eponides repandus* (Fichtel and Moll)  
*Fissurina marginata* (Walker and Boys)  
*Nonion perforatum* (d'Orbigny)  
*N. granosum* (d'Orbigny)  
*Nummulites ammonoides* (Gronovius)  
*Quinqueloculina seminulum* (Linne)  
*O. venusta* Karrar  
*O. vulgaris* d'Orbigny  
*Spiroloculina antillarum* d'Orbigny  
*S. communis* Cushman and Todd  
*S. corrugata* Cushman and Todd  
*S. depressa* var. *rotundata* Williamson  
*S. indica* Cushman and Todd  
*Textularia conica* d'Orbigny  
*Triloculina oblonga* (Montague)  
*T. tricarinata* d'Orbigny  
*Uvigerina senticosa* Cushman

These foraminiferids are distributed in this region whose range of dominance at each station is variable rather than uniformly similar at regular known intervals. But the faunal groups along marginal marine and open-marine conditions are known to be similar to each other and contain certain prominent, distinct groups; but certain discrete groups which represent only the local milieu are liable to be exceptions.

The temperature of the substrate (sample) ranged from 28.4 to 29.9°C at 15 to 51 m depth at the time of collection.

Some of the striking features of the assemblage of this study area are :

a) *Trochammina inflata* and *Ammobaculites agglutinans* which are typical of hyposaline conditions are dominant near the northern river mouths (Stn. Nos. 1 and 6 at 15-20 m depth) but not so markedly at stations near the other two rivers in the south. The fresh water run-off into the sea at the mouth causes a salinity decrease

from normal. As a consequence the diversity of species is considered to be very low at these stations.

b) The miliolid fauna here appears to be confined to one microenvironment (at Stn. No. 18) at 25 m depth, only as dominant fauna. It is very rare in other parts of the shelf of this region. This is very unusual because it is very commonly characterised by sandy sediment and vegetation, temperate to tropical, marine to hypersaline lagoons and 0-40 m depth range in inner shelf (Murray, 1973) and therefore, its non-abundance is somewhat intriguing.

c) *Ammonia* sp. is represented through *Ammonia beccarii* and its several variants in all stations but more abundantly at stations closer to the shore, as it is a typical near-shore hyposaline to hypersaline, lagoonal fauna. But *Ammonia annectans* is found to be mostly fragmented, worn, and destructed, which is possibly due to attrition, transport, and high wave energy action.

d) *Cibicides* sp. is a cosmopolitan species, which has a distribution range of 0-2000 m and a typical normal marine, sessile fauna preferring hard, rocky, and stony, firm sandy substrate, (Parker, 1952), is rare at Station No. 15 at 51 m even though the substrate here is sandy. It is very rare in clayey substrate (confined to Stn. Nos. 8-10 at depths of 37, 47 and 50 m). This is natural as the substrate here is clayey and so not conducive for a prolific growth.

e) A cursory review of the assemblage indicates that the fauna is Indo-Pacific in character.

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#### References

- MURRAY, J. W., (1973) *Distribution and ecology of living benthic foraminiferids*, Heinemann Educational Books, London, pp. 248-251.
- PARKER, F. P., (1952) Foraminiferal distribution in the Long Island sound-Buzzaras Bay area. *Bull. Mus. Comp. Zool.*, v. 106, pp. 427-473.
- SETTY, M. G. A., (1977) *R/V Gaveshani Cruise No. 17 Report*, 12 p., Appendix 18, Map 1.

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