

3. Results and Discussion

The analysis of surface sediments confirmed the presence of 15 planktonic species belonging to 9 genera, 4 families, and 2 superfamilies in the order Globigerinida (Plate I). The relative abundance of planktons is considered for this study as their number increased from the shore to the offshore side [5]. The overall percentage of these forms as estimated from the surface sediments off Mahabalipuram- Cuddalore segment ranged from 0 to 69%. Sums of 2,924 individuals were picked from 45 surface sediments. The presence and absence of the identified species in the sample locations is given in Table 1. In all the samples collected below 40 m, the plankton population is only 3%. Their contribution is as low as 1.3% in the samples below 10 m, 1.5% in between 10 to 20 m and 5% in the samples obtained below 40 m depth. Yet a steady increase in the average planktonic percent is observed from 40 m to 300 m in the study area. Half of the counted tests is typified largely by *Globigerinoides sacculifer* and *Globigerina calida*. Associated species in the order of decreasing abundance include *Globigerinoides ruber*, *Neogloboquadrina dutertrei*, *Globigerina bulloides* and *Globigerina aequilateralis*. The individuals of *Orbulina universa*, *Globorotalia menardii*, *Globorotalia tumida*, *Globigerinoides conglobatus*, *Globorotalia inflata*, *Candeina nitida*, *Sphaeroidinella dehiscentes*, *Pulleniatina obliquiloculata* and *Beella digitata* varied from 10 to 100 making up 11% of the total population of planktonic foraminifera.

The spinose forms are predominantly composed of shallow water dwelling, tropical species – *G.sacculifer* and *G.calida* followed by *G.ruber*, *G.bulloides*, *G.aequilateralis*. The non-spinose forms namely *C.nitida*, *P.obliquiloculata*, *N.dutertrei*, *G.menardii*, *G.tumida* and *G.inflata* found in the outer shelf and slope contribute only one- fourth of the total number of planktonic forms altogether. Living forms are rare and only few numbers were found in sample no.21, 25, 26, 27 and 42. Higher percent of juveniles along with few adults is witnessed in the middle shelf region whereas very low diversity and abundance is pronounced in the inner shelf. The presence of adults along with juvenile forms in the upper slope suggests low current activity [10]. Relict specimens of *G.sacculifer*, *G.ruber*, *G.inflata*, *G.calida* and *G.bulloides*, were also identified in the shallow region and below 100 m depth.

The abundance and distribution seems to have better correlation with depth, grain size and salinity than with other ecological parameters. Relative increase in species abundance from the shore is indicative of depth as a controlling factor for

Table 1: Table displaying the presence / absence of planktonic foraminifera as encountered in the study site

Sample ID	Depth (m)	<i>G.sacculifer</i>	<i>N.dutertrei</i>	<i>G.calida</i>	<i>G.bulloides</i>	<i>G.ruber</i>	<i>G.menardii</i>	<i>G.tumida</i>	<i>G.aequilateralis</i>	<i>G.conglobatus</i>	<i>O.universa</i>	<i>G.inflata</i>	<i>C.nitida</i>	<i>S.dehiscentes</i>	<i>P.obliquiloculata</i>	<i>B.digitata</i>
1	20	X														
2	32	X	X	X	X	X			X							
3	63	X		X		X	X			X						
4	8															
5	21	X			X						X					
6	35	X	X		X											
7	63	X		X		X			X							
8	8	X		X					X			X				
9	28	X	X	X	X	X	X		X			X	X			
10	46	X	X		X	X			X							
11	71	X	X	X		X	X	X	X	X	X	X	X	X		
12	86	X		X		X		X		X				X		
13	156	X	X	X		X	X		X					X	X	
14	205	X	X	X		X	X	X	X	X				X		
15	6															
16	25			X												
17	53	X			X	X			X				X	X		
18	79	X	X	X	X	X	X	X	X	X		X			X	X
19	100	X	X	X	X	X	X	X	X	X		X			X	X
20	167	X	X	X	X	X	X	X	X	X	X	X			X	
21	176	X	X	X	X	X	X	X	X		X	X	X			X
22	9	X					X									
23	26	X		X		X							X			
24	51	X	X	X	X	X	X	X	X	X		X				
25	91	X	X	X	X	X	X	X	X	X		X	X		X	
26	138	X	X	X	X	X	X		X	X	X				X	
27	176	X	X	X	X	X	X	X	X			X			X	X
28	308	X	X	X	X	X	X	X	X			X				
29	8	X		X	X	X										
30	25															
31	45	X	X	X	X	X	X	X	X		X					
32	95	X	X	X	X	X	X	X	X							
33	130	X	X	X	X	X	X	X	X			X			X	
34	149	X	X	X	X	X	X	X	X			X				X
35	229	X	X	X	X	X	X		X			X				X
36	11	X														
37	32	X	X		X					X						
38	74	X	X		X	X	X	X				X		X		
39	9	X														
40	15	X		X					X							
41	26	X	X			X										
42	75	X	X			X	X		X							
43	119	X	X	X		X	X		X	X						
44	161	X	X	X		X	X	X	X	X				X		
45	282	X	X	X	X	X	X	X	X	X	X	X	X			X

the horizontal distribution. The increase in the size of planktons is correlated with finer sediments. Well-preserved, bigger sized adults (>90%) were observed in the stations with muddy substrate while medium- small sized forms prevailed in sandy sediments. *G.ruber* (white)

occurring in higher proportion in stations exhibiting salinity >36 - 42 psu suggests that salinity has more influence than temperature [3]. *G.sacculifer* is found in large numbers between 50 and 100 m where the optimum temperature is 28° [15]. The significant rise in the abundance especially in the upper slope suggests the higher availability of organic carbon.

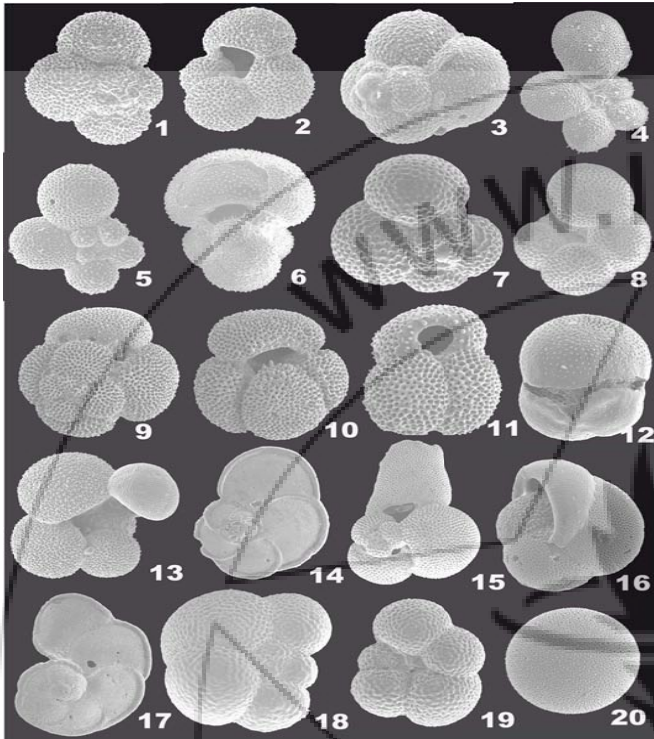


Plate I: 1) *Globigerina bulloides*, dorsal view X250 2) *G.bulloides*, ventral view X270 3) *Candeina nitida*, dorsal view X420 4) *Beella digitata*, dorsal view X160 5) *Globigerina aequilateralis*, dorsal view X230 6) *G. aequilateralis*, apertural view X130 7) *Globigerina calida*, dorsal view X300 8) *G. calida*, ventral view X250 9) *Globigerinoides conglobatus*, dorsal view X120 10) *G. conglobatus*, apertural view X130 11) *Globigerinoides ruber*, ventral view X250 12) *Sphaeroidinella dehiscens*, ventral view X120 13) *Globorotalia inflata*, ventral view X190 14) *Globorotalia menardii*, dorsal view X120 15) *Globigerinoides sacculifer*, dorsal view X95 16) *Pulleniatina obliquiloculata*, ventral view X210 17) *Globorotalia tumida*, dorsal view X60 18) *Neogloboquadrina dutertrei*, dorsal view X230 19) *N. dutertrei*, ventral view X210 20) *Orbulina universa* X130

4. Conclusions

Altogether 15 planktonic foraminifera is reported from the substrate sediments of the offshore region between Mahabalipuram and Cuddalore. Depth, salinity, grain size and temperature are the factors influencing their distribution. The study area exhibits an assemblage of tropical to subtropical dwelling species dominated by *G.sacculifer* and *G.calida*.

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