



TAXONOMY AND DISTRIBUTION OF BENTHIC FORAMINIFERA FROM THE SEDIMENTS OFF PALK STRAIT, TAMIL NADU, EAST COAST OF INDIA

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ABSTRACT

A systematic study of benthic foraminifera has been made based on 42 sediment samples collected between Mandapam and Kodiyakkarai, off Palk Strait, Tamil Nadu. A total of 102 benthic foraminiferal species belonging to 52 genera, 38 families, 23 superfamilies and 5 suborders are identified. The above species were compared to inventories given by earlier workers on east and west coast faunas. The result shows the presence of 38 species for the first time in this Strait. All these 38 species are illustrated here and their taxonomical details are provided. The foraminiferal distribution shows the number of species to be higher in the south of Manalmelkudi as compared to the north.

Key words: Benthic Foraminifera, Systematic Palaeontology, Palk Strait, East Coast of India.

INTRODUCTION

The study of foraminiferal assemblages and assemblage variations, preserved within coastal and marine sediments, offers manifold opportunities for investigating the responses of coastal zones to changes during the Quaternary period. In Indian waters Chapman (1895), Hofker (1927, 1930) and Stubbings (1939) initiated the foraminiferal studies. Subsequently, foraminiferal distribution has been reported by many workers off Visakhapatnam (Vedantam and Rao 1970; Kaladhar *et al.*, 1990), off Pondicherry (Setty, 1978), off Portonovo (Ragothaman, 1974; Rasheed and Ragothaman 1978), off Rameshwaram (Ragothaman and Kumar, 1985, 1988), off Palk Bay (Kumar, 1988; Kumar *et al.*, 1996, 1998), and off Karikattukuppam (Rao, 1998) off Dhabol - Vengurla (Setty and Nigam, 1978) off Trivandrum (Rao *et al.* 1985), off Karwar (Nigam and Khare, 1992, 1994, 1995) off Vengurla-Mangalore (Henriques, 1993). off Mangalore-Cochin (Mayenkar, 1994), off Karwar (Khare, 1992). However, only few works are seen in the Palk Strait. Hamsa (1973) has reported 34 species from the beach sands of Palk Bay and Gulf of Mannar. Kumar (1988) have studied ecology and distribution of foraminifera at Rameshwaram, Palk Bay. Kumar *et al.* (1996) have explained the spatial and temporal

variations in foraminiferal abundances and their relation to substrate characteristics in the Palk Bay, off Rameshwaram, Tamil Nadu. Mohan *et al.* (2000) have attempted the rate of sedimentation in Palk Strait using grain size and textural study along the coast between Vedaranyam to Rameshwaram.

Palk Strait is endangered to get closed due to heavy siltation. The danger of closure was shown by recent studies using remote sensing techniques (Loveson *et al.*, 1990); using foraminifera (Gandhi and Rajamanickam, 1996; 1997, 1998). But, no systematic study has so far been undertaken in this region. In this paper, an attempt has been made to identify the foraminiferal distribution and their systematics in that region.

STUDY AREA AND METHODS

The investigated area is located in the central coast of Tamil Nadu extending from Rameshwaram to Point Calimere (fig.1). The drainage pattern is represented by perennial river such as Vaigai and ephemeral streams such as Ambulliar, Vellar, Kottakkarai, Versuliar, Valavanar, Uppar, Koluvan and Koraiyar. The study area enjoys tropical climate and the SW and NE monsoons bringing copious rainfall. From Vedaraniyam to Rameshwaram, waves propagating from south generally do not enter the

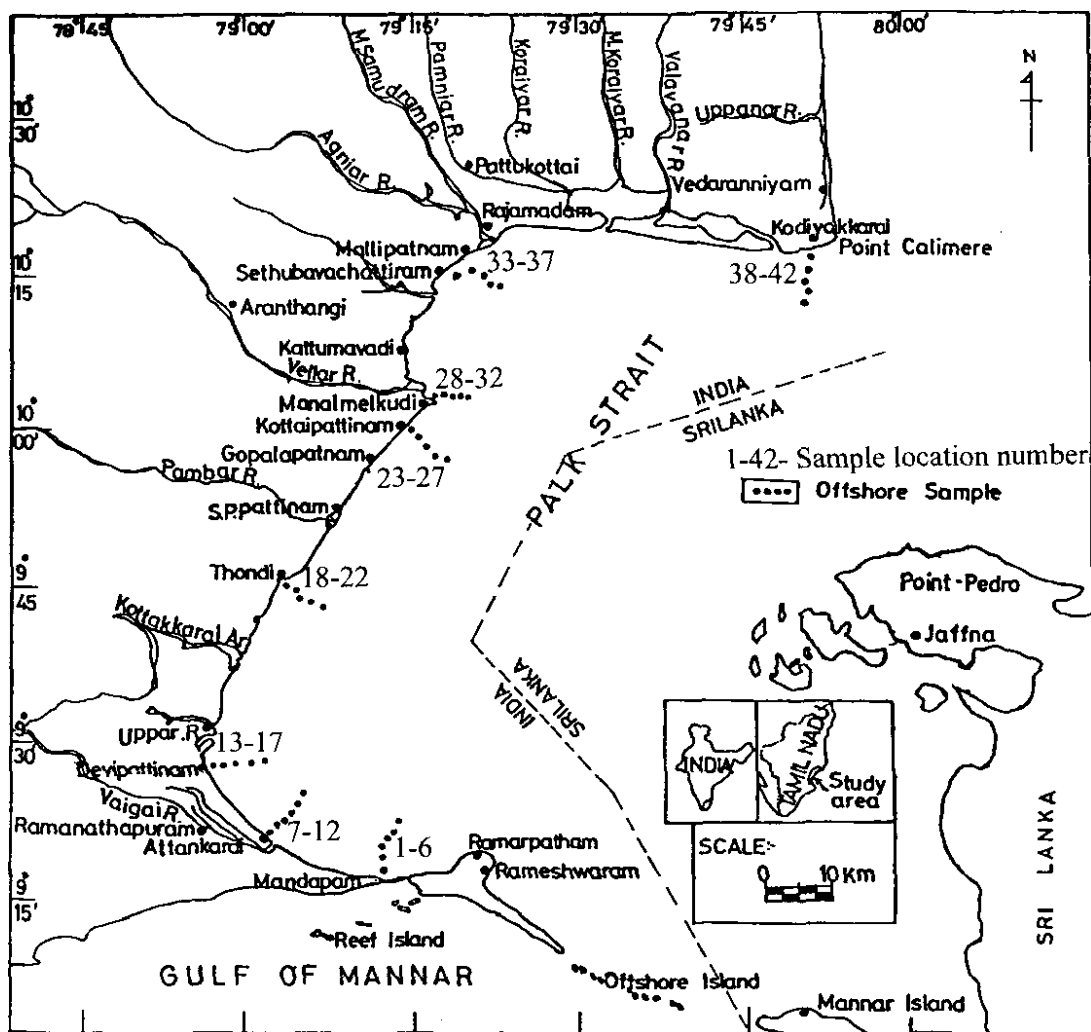


Fig. 1. Location map of the study area.

bay. But during NE monsoon, waves enter the bay through Pedro Channel and reach the coast between Puduvalasai and Gopalpattinam (Jena, 1997).

Fortytwo sediment samples were collected in the eight stations between Mandapam to Rameshwaram using a La fond Dietz snapper during April, 1996. The samples were preserved with 10% neutralised formalin. Simultaneously, rose bengal solution (1gm/lit) was applied to stain the tests (Walton, 1952) in the field itself. In the laboratory, the washed samples were passed through an 0.063 mm sieve and then dried. From the dried residues,

one gram sediment is taken out by cone and quartering. From that, foraminifera are hand picked, the remaining residues were again separated by CCl_4 method (Nigam, 1984). The picked out specimens were mounted and then counted.

In the study area, each station is divided into four depth zones for the convenience of sampling. The first depth zone is having a range of 0-2.5 m, while the second depth zone is in a depth range of 2.5-5 m, the third one of 5-7 m and the fourth is of more than 7 m. But, here in this paper as we are mainly dealing with only the taxonomy part, only

to record the presence or absence of species in the region, taking into account the occurrence in all depths the counting of species has been lumped to indicate the total number. The classification of foraminiferal genera proposed by Loeblich and Tappan (1988) has been followed in the present work. Scanning electron micrographs of different views of 38 foraminiferal species were obtained using a JEOL JM 350 Scanning Electron Microscope.

DISTRIBUTION

From the present study, 102 benthic foraminiferal species belonging to 52 genera, 38 families, 22 superfamilies and 5 suborders have been identified (table. 1). The living foraminiferal specimens are rare and the present study is based on total fauna (living+dead). The 102 identified species are listed in table.2.

Table 1. Species composition of foraminiferal Suborders.

SUBORDER	SUPERFAMILY	FAMILY	GENUS	SPECIES (in %)
Textulariina	4	4	4	4.90
Miliolina	3	8	15	47.06
Lagenina	1	2	2	2.94
Globigerinina	1	1	1	0.98
Rotaliina	13	23	30	44.12
	22	38	52	

Table 2. List of Species in Palk Strait.

1.	<i>Ammobaculites exiguus</i>	18.	<i>Q. costata</i>
2.	<i>Reophax</i> sp.	19.	<i>Q. elegans</i>
3.	<i>Textularia agglutinans</i>	20.	<i>Q. elongata</i>
4.	<i>T.porrecta</i>	21.	<i>Q. boschiana</i> var. <i>malayensis</i>
5.	<i>Ammopemphix</i> sp.	22.	<i>Q. granulocostata</i>
6.	<i>Vertebralina striata</i>	23.	<i>Q. intricata</i>
7.	<i>Edentostomina cultrata</i>	24.	<i>Q. lamarckiana</i>
8.	<i>Spiroloculina antillarum</i>	25.	<i>Q. parkeri</i>
9.	<i>S. communis</i>	26.	<i>Q. poeyana</i>
10.	<i>S. costifera</i>	27.	<i>Q. polygona</i>
11.	<i>S. henbesti</i>	28.	<i>Q. rhodionsis</i>
12.	<i>S. indica</i>	29.	<i>Q. seminulum</i>
13.	<i>S. nitida</i>	30.	<i>Q. sidebottomi</i>
14.	<i>S. orbis</i>	31.	<i>Q. transversistriata</i>
15.	<i>S. sp.</i>	32.	<i>Q. tropicalis</i>
16.	<i>Adelosina leavigata</i>	33.	<i>Q- sp.</i>
17.	<i>Quinqueloculina agglutinans</i>	34.	<i>Massilina secans tropicalis</i>
		35.	<i>Pseudomassilina australis</i>
		36.	<i>Pseudomassilina macilinata</i>
		37.	<i>Miliolinella australis</i>
		38.	<i>M. circularis</i>
		39.	<i>M. labiosa</i>
		40.	<i>M. perplexa</i>
		41.	<i>M. pyrgoformis</i>
		42.	<i>M. sp.</i>
		43.	<i>Triloculina insignis</i>
		44.	<i>T. schreiberiana</i>
		45.	<i>T. terquemiana</i>
		46.	<i>T. tricarinata</i>
		47.	<i>T. trigonula</i>
		48.	<i>Rupertianella rupertiana</i>
		49.	<i>Articulina mayori</i>
		50.	<i>Spirolina arietinus</i>
		51.	<i>Sorites orbiculus</i>
		52.	<i>Monalysidium politum</i>
		53.	<i>Peneroplis planatus</i>
		54.	<i>Lagena perlucida</i>
		55.	<i>L. striata</i>
		56.	<i>Fissurina marginata</i>
		57.	<i>Globigerina bulloides</i>
		58.	<i>Bolivina durandi</i>
		59.	<i>B. lobata</i>
		60.	<i>B. nobilis</i>
		61.	<i>B. ordinaria</i>
		62.	<i>B. spathulata</i>
		63.	<i>B. siriatala</i>

64. *Rectobolivina raphanus*
65. *Siphogenerina virgula*
66. *Hopkinsinella glabra*
67. *Loxostomina limbata*
68. *Bulimina* sp
69. *Uvigerina* sp
70. *Reussella simplex*
71. *Fursenkoina* sp
72. *Sigmavirgulina tortuosa*
73. *Cancris auricula*
74. *Rosalina globularis*
75. *Rotorboides granulorum*
76. *Glabratella patelliformis*
77. *Discorbinella bertheloti*
78. *Cibicides lobatulus*
79. *Cymbaloporetta bradi*
80. *Cymbaloporella* sp.
81. *Acervulina inharens*
82. *Amphistegina radiata*
83. *Nonionoides boueanum*
84. *Nonion elongatum*
85. *Nonion* sp.
86. *Hanzawaia* sp
87. *Ammonia beccarii*
88. *A. tepida*
89. *Asterorotalia dentata*
90. *A. trispinosa*
91. *A. inflata*
92. *Pseudorotalia schroeteriana*
93. *Pararotalia calcar*
94. *P. nipponica*
95. *Elphidium advenum*
96. *E. craticulatum*
97. *E. crispum*
98. *E. discoideale*
99. *E. incertum*
100. *Parrellina hispidula*
101. *Assilina ammonoides*
102. *Osangularia venusta*

The overall distribution of the foraminiferal species is shown in fig. 2 station by station within the depth of 10 m. Mandapam records the highest diversity of 74 species without showing any variation at different depths, whereas there are 46 species in Attankarai, 57 species at Devipattinam, 39 species at Thondi, 44 species at Kottaipattinam, 18 species

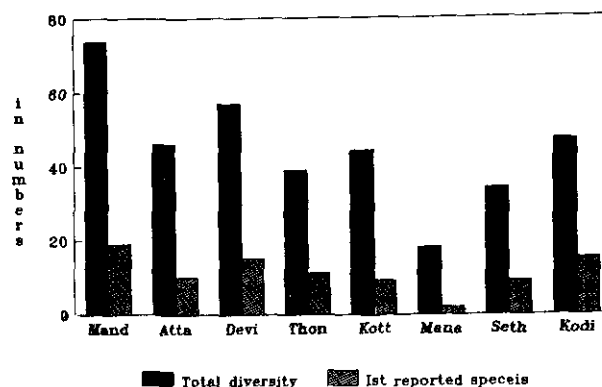


Fig. 2. Diversity of foraminiferal species in the study area.

at Manalmelkudi, 34 species at Sethubavachattiram and 47 species Kodyakkarai.

Out of 102 identified species from Strait, many species have already been reported from other areas by Nigam (1982) Khare (1992), Henriques (1993) and Mayankar (1994) in the west coast and Kumar (1988), Jayaraju (1993) and Rao (1998) in the east coast.

From a thorough review of the existing literature, it appears that the following six species have been recorded first time in the east coast of India namely, *T. porrecta*, *Q. bosciiana* var. *malayansis*, *Q. poeyana*, *Q. sidebottomi*, *Q. tranverse striata*, *Massilina secans tropicalis*. Among the species present, *A. beccarii*, *A. dentata*, *O. venusta*, *E. crispum*, *A. trispinosa*, *Q. seminulum* exhibit prolific abundance. Six species namely *S. communis*, *Q. lamarckiana*, *Q. seminulum*, *A. beccarii*, *E. crispum*, *E. discoideale* have shown an uniform distribution in more than six stations. Thirty eight species are recorded for the first time in this strait. Their distribution at eight different stations is given in table. 3. The identification is supported by illustrations (plates 1 and 2) and systematic inventory of species given below.'

SYSTEMATIC PALAEOLOGY

- Order* **Foraminiferida** Eichwald, 1830
Superfamily **Hormosinacea** Haeckel, 1894
Family **Textulariidae** Ehrenberg, 1838
Subfamily **Textulariinae** Ehrenberg, 1838
Genus **Textularia** de France, 1824

Table 3. Distribution of foraminiferal species in different stations.

Species Recorded for the first time in Palk Strait	MAN	ATT	DEV	THO	KOT	MMK	SBC	KOD
<i>Textularia porrecta</i>								X
<i>Spiroloculina antillarum</i>	X		X					
<i>S. henbesti</i>			X					
<i>S. indica</i>	X	X	X	X	X	X	X	X
<i>S. nitida</i>		X	X					
<i>Adelosina leavigata</i>		X						
<i>Quinqueloculina costata</i>		X						
<i>Q. elongata</i>			X					
<i>Q. elegans</i>							X	
<i>Q. bosciana</i> var. <i>malayensis</i>			X					
<i>Q. granulocostata</i>	X		X					
<i>Q. intricata</i>							X	
<i>Q. poeyana</i>	X				X			
<i>Q. rhodiensis</i>			X					
<i>Q. sidebottomi</i>	X							
<i>Q. transverse striata</i>	X							
<i>Q. tropicalis</i>	X	X	X	X	X		X	X
<i>Massilina secans tropicalis</i>			X	X	X			
<i>Miliolinella australis</i>				X			X	
<i>M. perplexa</i>				X				
<i>M. pyriformis</i>	X	X	X	X	X		X	X
<i>Lagena perlucida</i>	X		X	X				X
<i>Bolivina durandi</i>								X
<i>B. lobata</i>	X				X		X	X
<i>B. ordinaria</i>		X						X
<i>B. spathulata</i>								X
<i>Loxostomina limbata</i>					X		X	X
<i>Reussella simplex</i>	X							X
<i>Siphovigerina virgula</i>		X						X
<i>Hopkinsinella glabra</i>	X							
<i>Cancris auricula</i>	X							
<i>Glabratella patelliformis</i>			X					
<i>Discorbinella bertheloti</i>	X			X			X	
<i>Amphistegina radiata</i>	X			X	X			X
<i>Nonion elongatum</i>	X							X
<i>Elphidium craticulatum</i>	X	X		X				
<i>Parrellina hispidula</i>	X	X	X	X	X	X	X	X
<i>Assilina ammonoides</i>	X		X					
Total species	19	10	15	11	9	2	9	15

Man: Mandapam

Att : Attankarai

Dev : Devipattinam

Tho : Thondi

Kot: Kottaipattinam

Mmk : Manalmelkudi

Sbc : Sethubavachattiram

Kod : Kodiyakkarai

Textularia porrecta (Brady)

(PI-I fig. 1)

Textularia agglutinans d'Orbigny var. *porrecta* Brady, 1884, Challenger Expedition Reports, Zoology, v.9, pts.2, p.304, p.43, figs.4a-b.

Textularia porrecta (Brady, 1884) - Yassini and Jones, 1995, p.76, pl.7, figs.104 - 110. - Rao, 1998, p.GO, pl.6, figs.4-5.

Hypotype: Length - 0.25 mm Breadth - 0.12 mm

Remarks: This species is similar to those from Suddagudda estuary Rao and Rao (1974). Rare species (1.37%) occurring only at Kodyakkarai station.

Repository of Type Material: IES, TU, Cat. No. MSG.1.

Superfamily Miliolacea Ehrenberg, 1839

Family Spiroloculinidae Wiesner, 1920

Subfamily Spiroloculininae Wiesner, 1920

Genus Spiroloculina d'Orbigny, 1826

Spiroloculina antillarum d'Orbigny

(PI- I fig- 2)

Spiroloculina antillarum d'Orbigny, 1839, p. 166, pl.7, figs.3-4. - Rocha and Ubaldo, 1946b, .647, pl.2, fig.6. - Ganapati and Satyavati, 1958, p.114. pl.2, fig.34. - Sethulakshmi Amma, 1958, p.3, pl.1. fig.2. - Antony, 1968, pp. 34-35, pl.1, fig.7. -Bhalla, 1968, p.378, pl.1, figs.7a-b. - Rao, 1970a, p.592. pl.2, fig.20. - Setty and Nigam, 1984, p.432, pl.32, fig. 2. --Rao, et al., 1987, p.164, pl.1, figs.14-15. - Shareef and Venkatachalapathy, 1988, p.434, pl.1. fig.4. - Khare, 1992, pp.61-62, pl.2, fig.5. - Henriques, 1993, p.44, pl.2, figs.2a-b. - Mayankar, 1994, p.58, pl.1, figs.12a-b. - Rao, 1998, p.72, pl.9, fig.5.

Hypotype: Length - 0.29 mm Breadth - 0.15 mm.

Remarks: Out of total fauna it is 0.51 %, and 0.92 % respectively in Mandapam and Devipattinam.

Repository of Type Material: IES, TU, Cat. No. MSG.2.

Spiroloculina henbesti Petri

(PI. I, fig. 3)

Spiroloculina henbesti Petri, 1955, vol.6, no.2, p.82, figs.4-6. - Jayaraju, 1993, p.92, pl.1, fig.6. - Rao, 1998, pp.74-759, pl.9, fig.12.

Hypotype: Length - 0.98 mm Breadth - 0.75 mm

Remarks: *Spiroloculina henbesti* closely resembles *S.communis* but differs in having broader and relatively short and stout chambers with rectangular depressions on the later formed chambers which occupy a major portion of the test (Jayaraju, 1993). It is found only at Devipattinam.

Repository of Type Material: IES, TU, Cat. No. MSG.3

Spiroloculina indica Cushman & Todd

(PI. I, fig. 4)

Spiroloculina indica Cushman and Todd. 1944, p.71, pl.9. figs.32a-b. - Rocha and Ubaldo, 1964a, p.412, pl.2, fig.2; 1964b. p.647. pl.2, fig.9. -Bhatia, 1956, p.18, pl.2, fig.5. - Zobel, 1973, p. 14. pl.1, figs.17,24. - Khare, 1992, pp.65, pl.2, fig.10. - Henriques, 1993, p.46. pl.2, figs.5a-b. - Mayankar, 1994, p.60, pl.21, figs.1a-b. - Rao, 1998, p.75, pl.10, fig.1.

Hypotype: Length - 0.31 mm Breadth - 0.10 mm

Remarks: The present species was first described from the Recent shore sand of Karachi (Cushman and Todd, 1944). It is also known to occur near Bombay and Bhogat in Saurashtra (Bhatia, 1956); Gogola, off the Kathiawar coast (Rocha and Ubaldo, 1964a); and in the beach sediments near Mandvi, Kutch (Jain and Bhatia, 1978). From the Palk Strait, it is noticed in all stations.

Repository of Type Material: IES, TU, Cat. No. MSG.4.

Spiroloculina nitida d'Orbigny

(PI-I, fig. 5)

Spiroloculina nitida d'Orbigny, 1826. vol. 7, p.298. - Sidebottom, 1918,p.5, pl.1, fig.4. - Cushman and Todd, 1944, p.76. - Rasheed. 1967 - 68b. p.49, pl.16, figs.12-13.

Hypotype: Length - 0.90 mm Breadth - 0.75 mm

Remarks: Rare species, occurs (0.64 %) at Devipattinam. Ragothaman (1974) observed the presence of two teeth in the specimens from off Porto Novo.

Repository of Type Material: IES, TU, Cat. No. MSG.5.

Genus : *Adelosina* d'Orbigny, 1826

Adelosina leavigata d'Orbigny

(PI. I, fig- 6)

Adelosina leavigata d'Orbigny, 1826, p.303. - Barker. 1960, p.6. pl.3, figs.10-11. 12a-c. - Yassini and Jones, 1995, p.80. figs.135-136. *Adelosina leavigata* d'Orbigny. Rao, 1998, p.69. pl.8, figs.9-10.

Hypotype: Length - 0.54 mm Breadth - 0.50 mm

Remarks: This species is similar to *Quinqueloculina*. The test is rounded in shape without any striations and found only in Attankarai station.

Repository of Type Material: IES, TU, Cat. No. MSG.6.

Family **Hauerinidac** Schwager, 1876

Subfamily **Hauerininae** Schwager, 1876

Genus **Quinqueloculina** d'Orbigny, 1826

Quinqueloculina costata d'Orbigny

(Pl. I, fig. 7)

Quinqueloculina costata d'Orbigny, 1826, p.301, no.3. - Rao, 1974, p.63, fig. 14.- Khare, 1992. p.69, pl.3, figs.4a-b. - Rao, 1998, p.82, pl. 12, figs.3-4.

Hypotype: Length - 0.45 mm Breadth - 0.30 mm

Remarks: From *Q. bicostata*, the present species differs in shape and ornament around the periphery. The periphery in small specimen is seen with truncation and angular edges marked with one or two striations. It is seen only in Attankarai station.

Repository of Type Material: IES, TU, Cat. No.MSG.7.

Quinqueloculina elegans d'Orbigny

(Pl. I, fig. 8)

Quinqueloculina elegans d'Orbigny, 1826, p.301. -Daniels, 1970, p.73, pl.12, fig. 13. - Haake, 1975, p.33, pl.3, figs.51-57. - Setty and Nigam, 1984. p.431, pl.32, fig. 13. - Henriques, 1993, p.49, pl.3, figs.3a-c. - RAO, 1998. p.84, pl. 13, fig. 1.

Hypotype: Length - 0.40 mm Breadth - 0.28 mm

Remarks: Very rare species. It is 1.57% of total fauna at Sethubavachattiram only.

Repository of Type Material: IES, TU, Cat. No.MSG.8.

Quinqueloculina elongata Natland

(Pl. I, fig. 9)

Q. elongata Nalland, 1938, vol.4, no.5, p.141. pl.4, fig.5.

Q. elongata (Natland) Matoba. 1970, pl.2, figs.8a-b. - Rao, 1998, pp. 84-85, pl.13, figs.2-3.

Hypotype: Length -1.30 mm Breadth - 0.30 mm

Remarks: Only at Devipattinam station.

Repository of Type Material: IES, TU, Cat. No. MSG.9.

Quinqueloculina bosciana d'Orbigny var.

malayensis Rasheed

(Pl. I, fig. 10)

Quinqueloculina bosciana d'Orbigny var. *malayensis* nov.var. - Rasheed, 1968, v.37-38, p.65, pl.6, figs.3 a-c.

Hypotype: Length - 0.45 mm Breadth - 0.28 mm

Remarks: This species is similar to Rasheed's (1968) specimens. Rare species, occurs in Devipattinam station.

Repository of Type Material: IES, TU, Cat. No.MSG.10.

Quinqueloculina granulocostata Germeraad

(Pl. I, fig. 11)

Quinqueloculina granulocostata Germeraad, 1946, p.63, pl.7, fig.11, pl.8, fig.11. - Yassini and Jones, 1995, p.84. fig.155. -Germeraad, Rasheed, 1968, v.37-38, p.64, pl.3, figs.3a-c. - Haig, 1988, p.233, pl.6, figs.8-10.

Hypotype: Length - 0.55 mm Breadth - 0.35 mm

Remarks: Rare species occurs in Mandapam and Devipattinam stations. This species has been recorded from the inner and middle shelf of the southeast Australian coast (Yassini and Jones, 1995).

Repository of Type Material: IES, TU, Cat. No.MSG.11.

Quinqueloculina intricata Terquem

(Pl. I, fig. 12)

Quinqueloculina intricata Terquem, 1876, p.73, figs. 16-21, tab.13. - Boltovskoy, 1954, p. 201, pl.21, figs.1a-b. - Barker. 1960. p.12, pl.6, figs.11-12. - Khare, 1992. pp.70-71, pl.3, figs.6a-c.

Miliolina bicernis (Walkar and Jacob), Brady, 1884, p. 171, figs. 11-12, tab.6.

Hypotype: Length - 0.50 mm Breadth - 0.30 mm

Remarks: Rare species. At Sethubavachattiram, obtained to the tune of 0.65 % out of total fauna.

Repository of Type Material: IES, TU, Cat. No. MSG.12.

Quinqueloculina poeyana d'Orbigny

(Pl. I, fig- 13)

Quinqueloculina poeyana d'Orbigny, 1839, p. 191, pl.11, figs.25-27. - Sengupta and Schafer, 1973, p.360, pl. I, fig.7. - Haig, 1988, p 234, pl.7, figs.18-20. -Debenay, 1990, p. 255, pl. 2, fig. 6. - Yassini and Jones, 1995, p. 84, fig.158, 160, 163.

Hypotype: Length - 0.35 mm Breadth - 0.24 mm

Remarks: Occurs only at Mandapam station. It is most probably the first report of *Q. poeyana* from off the east coast.

Repository of Type Material: IES, TU, Cat. No.MSG.13.

Quinqueloculina rhodiensis Parker

(Pl. I, fig. 14)

Quinqueloculina rhodiensis Parker. Matoba. 1970, pl.2, figs. 11a-b.

Hypotype: Length - 0.30 mm Breadth - 0.20 mm

Remarks: Found at Mandapam and Kottaipattinam stations. It is similar to the species of Matoba (1970).

Repository of Type Material: IES, TU, Cat. No.MSG.14.

Quinqueloculina sidebottomi (Rasheed)

(Pl. I, f.g. 15)

Triloculina litorils Collins, 195X, p.369. pl.3, fig.12.

Triloculina sidebottomi Rasheed. 1971. p.38,39, pl.6, fig.4.

Quinqueloculina sidebottomi (Rasheed). Haig, 1988, p.234. pl.8, figs.10-14.

Hypotype: Length - 0.30 mm Breadth - 0.15 mm

Remarks: Rarely occurring at Mandapam and Devipattinam.

Repository of Type Material: IES, TU, Cat. No.MSG.15.

Quinqueloculina transversistriata Brady

(Pl. I, fig. 16-17)

Quinqueloculina transversistriata Brady, 1881. pl.8, figs. 22-24.

Miliolina transversistriata Brady, 1881. p.45, pl.4, fig.6.

Quinqueloculina transversistriata (Brady). Haig. 1988. p. 229, pl.8, figs.22-25.

Hypotype : Length - 0.20 mm Breadth - 0.14 mm

Remarks: Very rare only at Mandapam. So far it has not been recorded in the east coast of India. The striations are the typical characteristics of this species. This specimen is similar to the ones from Papuan lagoon, New Guinea, Haig (1988).

Repository of Type Material: IES. TU, Cut. No.MSG.16.

Quinqueloculina tropicalis Cushman

(Pl. I, fig. 18)

Miliolina gracilis (d'Orbigny), Brady. 1884. 1.5, fig 2.

Quinqueloculina tropicalis Cushman, 1924, p.63. - Bhatia and Bhalla. 1959, p. 78, pl. 1, figs. 2a-b. - Bhalla, 1968. p. 381, pl.1, figs 4a-b. - Khare, 1992, p. 79-80, pl. 5, figs. 5a-b. - Rao, 1998. pp. 91-92, pl.15, fig.2. Carneg Inst. Wasington publ. 342, p. 63, l. 23, figs. 9-10; pl 9. fig. 6. - Yassini and Jones, 1995, p.85, figs. 170-171, 174-175

Hypotype: Length - 0.28 mm Breadth - 0.26 mm

Remarks: Brady (1884) reported it from off Papua in the Pacific at a depth of 108 m. In Palk Strait, except Manalmelkudi it is found in all the stations.

Repository of Type Material: IES, TU. Cat. No.MSG.17.

Genus Massilina Schlumberger, 1893

Massilina secans tropicalis Collins

(Pl. I, fig. 19)

Massilina secans (d'Orbigny), Heron- Allen and Earland, 1915. .582, pl.44, figs.24-27.

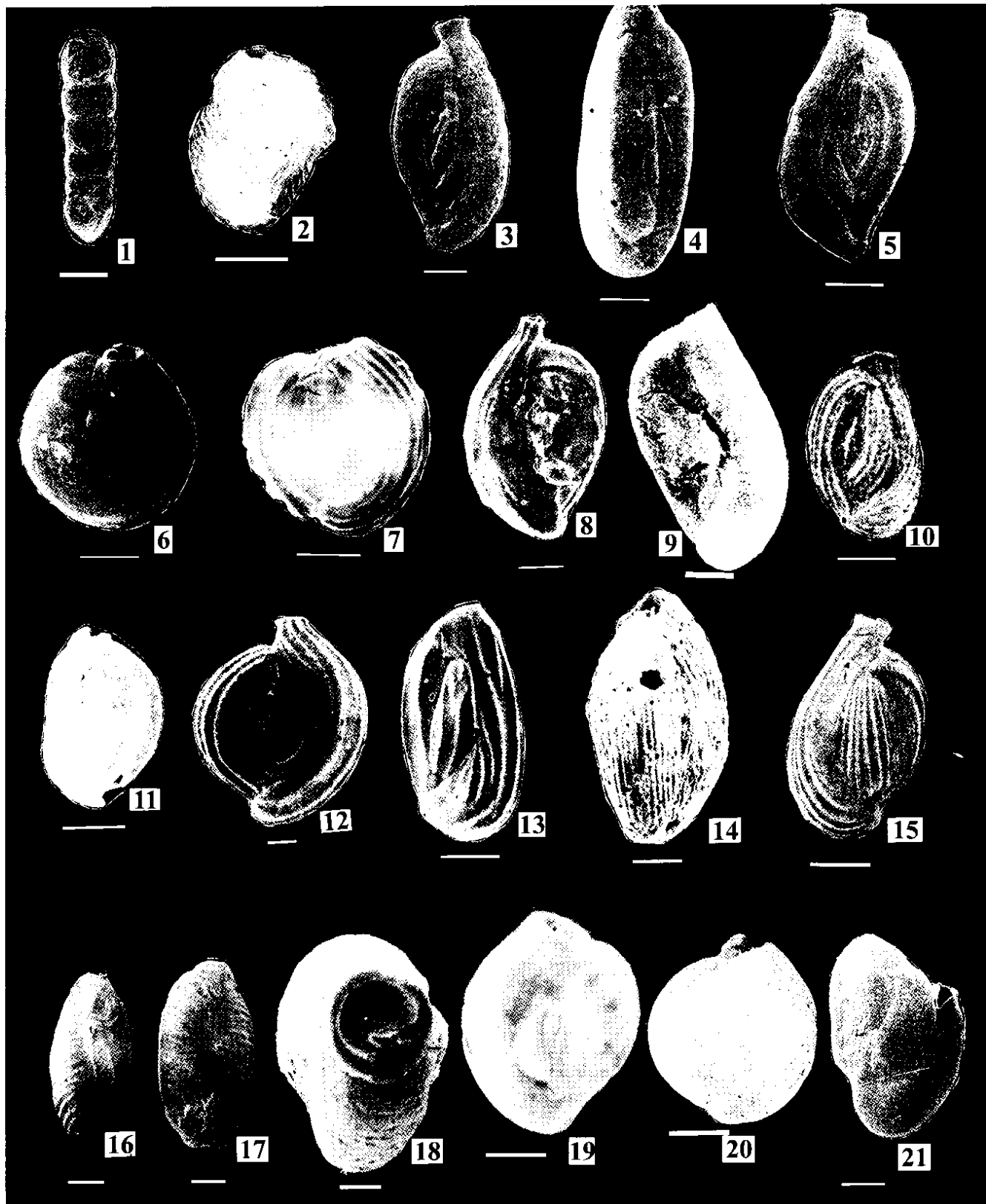
Massilina secans (d'Orbigny) var. *tropicalis* Collins. 1958. p.362, pl.2, figs. 10a-c.

Hypotype: Length - 0.28 mm Breadth - 0.26 mm

Remarks: This species has wide geographical distribution and having been reported from the

EXPLANATION OF PLATE I

1. <i>Textularia porrecta</i> (Brady)	15KvX150	11. <i>Quinqueloculina granulocostata</i> Germeraad	10KvX200
2. <i>Spiroloculina antillarum</i> d'Orbigny	10KvX50	12. <i>Quinqueloculina intricata</i> Terquem	10KvX200
3. <i>Spiroloqulina henbesti</i> Petri	10KvX150	13. <i>Quinqueloculina poeyana</i> d'Orbigny	10KvX200
4. <i>Spiroloculina indica</i> Cushman and Todd	10KvX100	14. <i>Quinqueloculina rhodiensis</i> Parker	10KvX150
5. <i>Spiroloculina nitida</i> d'Orbigny	10KvX150	15. <i>Quinqueloculina sidebottomi</i> (Rasheed)	10KvX200
6. <i>Adelosina leavigata</i> d'Orbigny	15KvX200	16,17 <i>Quinqueloculina transversistriata</i> Brady	15KvX150 15KvX200
7. <i>Quinqueloculina costata</i> d'Orbigny	10KvX200	18. <i>Quinqueloculina tropicalis</i> Cushman	15KvX350
8. <i>Quinqueloculina elegans</i> d'Orbigny	10KvX150	19. <i>Massilina secans tropicalis</i> Collins	10KvX100
9. <i>Quinqueloculina elongata</i> Natland	15KvX200	20. <i>Miliolinella australis</i> (Parr)	10KvX150
10. <i>Quinqueloculina bosciiana</i> d'Orbigny var. <i>malayensis</i> Rasheed	10KvX200	21. <i>Miliolinella perplexa</i> McCulloeh	15KvX150



African coast to New south Wales (Albani, 1968).

Repository of Type Material: IES, TU, Cat. No. MSG.18.

Subfamily Miliolinellinae Vella, 1957

Genus Miliolinella Wiesner, 1931

Miliolinella australis (Parr)

(Pl. I, fig. 20)

Quinqueloculina australis Parr, 1932, pl.1, fig.8.

Miliolinella australis (Parr), Barker, 1960, pl.5, figs.10-11. - Nigam, 1982, p.97, pl.4, fig.1. - Khare, 1992, p.84, pl.6, figs.5a-c. - Henriques, 1993, p.57, pl.5, figs.2a-b. - Mayankar, 1994, p.70, pl.5, figs.1a-b. - Rao, 1998, p.95, pl.16, fig.5.

Hypotype: Length - 0.22 mm Breadth - 0.16 mm

Remarks: Rare species, it occurs only at Thondi and Sethubavachattiram stations. Brady (1884) recorded this species (as *M. subrotunda*) from the Pacific at depths between 70 and 73 m.

Repository of Type Material: IES, TU, Cat. No. MSG.19.

Miliolinella perplexa McCulloch

(Pl. I, fig. 21)

Pippinoides perplexa McCulloch, 1977. p.571.

Miliolina perplexa Loeblich and Tappan, 1988, p.340, pl.350, figs. 13-15. - Rao, 1998. p.97. pl.17, fig.1.

Hypotype: Length - 0.32 mm Breadth - 0.42 mm

Remarks: It is a rare one, seen only in Thondi station. McCulloch (1977) considered *Pippinoides perplexa* as the type species for the genus *Pippinoides*, based on specimens from the outer Gorda Bank off Mexico in the east Pacific.

Repository of type material: IES, TU, Cat. No. MSG.20.

Miliolinella pyrgoformis Yassini & Jones

(Pl. II, figs. 1-2)

Miliolinella pyrgoformis Yassini and Jones, 1995. p.88, figs.240,243.

Hypotype: Length - 0.10 mm Breadth - 0.08 mm

Remarks: In this species the test is ovoid with inflated chambers, with a well rounded periphery. Its aperture is very narrow. It has a long opening at the end of the last chamber with a very narrow upper lip and very broad ventral flap. This species occurs

in all the stations, except Manalmelkudi.

Repository of Type Material: IES, TU, Cat. No. MSG.21.

Suborder Lagenina Delage & Herouard, 1896

Superfamily Nodosariacea Ehrenberg, 1838

Family Lagenidae Reuss, 1862

Genus Lagena Walker & Jacob, 1798

Lagena perlucida (Montagu)

(Pl. II, fig. 3)

Vermiculum perlucidum Montagu, 1803, p.525, pl.14, fig.3.

Lagena perlucida (Montagu) Cushman and Moccolloch, 1959, p.347, pl.46, figs.19-26. - Ganapati and Satyavati, 1958, p.108, pl.3. fig.74. - Sethulakshimi Amma, 1968, pp.55-56, pl.3, fig.22. - Rao, 1971b, p.158. fig.25. - Seibold, 1975, p.183. pl.1, fig.5. - Khare, 1992, p.98, pl.8. fig.12. - Rao. 1998. p.128. pl.25. fig.1.

Hypotype: Length- 1.16 mm Breadth -0.10 mm

Remarks: Rare species, occurs in four stations. Flask shape with elongated neck is the characteristic feature of this species.

Repository of Type Material: IES, TU, Cat. No. MSG.22

Suborder Rotaliina Delage and Herouard, 1896

Superfamily Bolivina Glaessner, 1937

Family Bolivinidae Glaessner, 1937

Genus Bolivina d'Orbigny, 1839

Bolivina durandi Millett

(Pl. II, fig. 4)

Bolivina durandi Millett. 1900, p.544, pl.4, figs.7a-b. - Seibold, 1975, p.184, pl.1, fig.15. - Khare, 1992, pp.120-121, pl.11, figs.3a-b. - Henriques, 1993, p.100, pl.12, figs.3a-b. - Mayankar, 1994, p.110, pl.12, figs.3a-b.

Hypotype: Length - 0.22 mm Breadth - 0.11 mm

Remarks: Rare species, found in only one station (Kodiyakkarai).

Repository of Type Material: IES, TU, Cat. No. MSG.23.

Bolivina lobata Brady

(Pl. II, fig. 5)

Bolivina lobata Brady 1884, p. 425, pl. 53, figs. 22-23. - Rao and Rao.

1974, p. 416, pl. 2, fig. 2.- Seibold, 1975, p.186, 1.1. fig. 18. - Khare, 1992, pp. 122-123, pl. 11, fig. 6.

Loxostomum lobatum (Brady), Sethulakshmi Amma, 1958, p. 47, pl. 2, fig.7. - Jayaraju, 1993, p. 131, pl. 5, fig. 15.

Patellina jugosa (Brady), Antony, 1968, p. 48, pl. 7, fig. 6.

Hypotype: Length - 0.20 mm Breadth - 0.10 mm

Remarks: This species seems to be very close to *Rectobolivina fimbriata* (Millet) (Hofker, 1951, p.91, figs.51a-h).

Repository of Type Material: IES, TU, Cat. No.MSG.24.

Bolivina ordinaria Phleger & Parker

(Pl. II, fig. 6)

Bolivina ordinaria Phleger and Parker, 1951, p. 14, pl. 2, fig. 3. - Khare, 1992, p.123-124, pl.11, figs.7a-c.

Hypotype: Length - 0.18 mm Breadth - 0.10 mm

Remarks: Rare species, occurring in Attankarai and Kodyakkarai stations only. Repository of type material : IES, TU, Cat. No.MSG.25.

Bolivina spathulata (Williamson)

(Pl. II, fig. 7)

Textularia variables var. *spathulata* Williamson, 1858, p.76, figs. 164-165, pl. 6.

Bolivina spathulata (Williamson) Cushman, 1937, p. 162, figs.20-24, tab. 15. - Khare, 1992, p.125, pl. 11, fig. 9. - Mayankar, 1994, p.113, pl.12, fig.7.

Hypotype : Length - 0.30 mm Breadth - 0.12 mm

Remarks: Rare species occurring only at Kodyakkarai station.

Repository of Type Material: IES, TU, Cat. No. MSG.26.

Superfamily **Buliminacea** Jones, 1875

Family **Loxostomidea** Loeblich & Tappan, 1964

Genus *Loxostomina* Sellier de Cirvieux, 1969

Loxostomina limbata (Brady)

(PL II, fig. 8)

Bolivina limbata var *costulata* Cushman, 1922, p. 26, pl. 3, fig. 8.

Loxostma limbatum (Brady) var *costulatum* Cushman, 1937, p.187, pl.21, figs.30-31. - Rasheed, 1969-70c, p. 184, pl. 6, figs. 23-24.

Loxostomum limbatum Brady, Rocha and Ubaldo, 1964a, p. 414, pl. 2, fig. 9.

Hypotype: Length - 0.80 mm Breadth - 0.20 mm

Remarks: The only difference between this variety and *L.limbatum* (Brady) is that the former is ornamented with a few longitudinal costae which run parallel to the periphery. The same species was reported by Khare (1992) in the west coast of India, and by Rao (1998) off Karikattukkuppam near Madras.

Repository of Type Material: IES, TU, Cat. No. MSG.27.

Family **Siphogenerinoididae** Saidova, 1981

Subfamily **Tubulogenerininae** Saidova, 1981

Genus ***Siphovigerina*** Schlemberger, 1882

Siphovigerina virgula (Brady)

(Pl. II, fig. 9)

Sagrina virgula Brady, 1879, p. 275, pl. 8, figs. 20-21.

Siphovigerina virgula (Brady), Hofker, 1951, p. 93, figs.52a-b. - Sethulakshmi Amma, 1958, p. 51, pl. 2, fig. 77. - Antony, 1968, p. 81, pl. 5, fig. 14. - Seibold, 1975, p. 189, 1. 2, figs. 2a-b. Khare, 1992, p.131, pl.12, fig.7. - Henriques, 1993, p.113, pl.15. figs.7a-b. - Mayankar, 1994, p. 124, pl. 13, figs.11a-b. - Rao, 1998, pp. 177-178, pl. 43, figs. 7-10.

Hypotype: Length - 0.36 mm Breadth - 0.04 mm

Remarks: Small-sized test, uniserially arranged chambers with rounded neck at the apertural are the characteristic features of this species. Same species was reported by Nigam and Khare (1994) in the west coast of India. It occurs only at Attankarai and Kodyakkarai stations.

Repository of Type Material: IES, TU, Cat. No.MSG.28

Genus ***Hopkinsinella*** Bermudez & Fuenmayor, 1966

Hopkinsinella glabra (Millet)

(Pl. II, fig. 10)

Uvigerina auberiana d'Orbigny var. *glabra* Millett, 1903, p. 268, pl. 5, figs. 8-9.

Uvigerina glabra (Millet), Matoba, 1970, p. 63, pl. 3, figs. 35a-b.

Hopkinsina glabra (Millet), Lutze, 1974, p.22, pl.6, fig. 107. - Seibold, 1975, p. 188, pl. 3, fig. 1.

Hopkinsinella glabra (Millet), Khare, 1992, pp.130-131, pl.12, fig.5.- Mayankar, 1994, p.123, pl. 13. fig.9. - Rao, 1998, p.172, pl.41, figs. 11-12.

Hypotype: Length - 1.10 mm Breadth - 0.16 mm

Remarks: It is found only at Mandapam Station. The test is covered by tiny tubercles which are irregularly distributed, but often arranged in fine striations which cannot be seen with smaller magnifications.

Repository of Type Material: IES, TU, Cat. No.MSG.29.

Family *Reussellidae* Cushman, 1933

Genus *Reussella* Galloway, 1933

Reussella simplex (Reuss)

(Pl. II, fig. 11)

Reussella simplex (Reuss), Cushman, 1942, p. 40, pl. 11, figs. 5-8. - Sethulakshmi Amma, 1958, p. 48, pl. 2, fig.73. - Antony, 1968, p. 83, pl. 5, fig.16. - Rao *et al*, 1987, p.167, pl. 4, fig. 21.

Trimosina simplex Cushman, 1929, p. 158, figs. 2a-b.

Reussella simplex (Cushman) Seibold, 1975, p.187, pl.4, figs. 6a-c. - Khare, 1992, pl. 141, p. 13, fig.4. - Henriques, 1993, p.123, pl.17, figs.4a-e. - Mayankar, 1994, p.134, pl. 15, fig. 8.

Hypotype : Length - 0.28 mm Breadth - 0.14 mm

Remarks: Rare species, occurs in extreme stations Mandapam in the south and Kodyiakkarai in the north.

Repository of Type Material: IES, TU, Cat. No.MSG.30.

Superfamily *Discorbacea* Ehrenberg, 1838

Family *Bagginidae* Cushman, 1927

Subfamily *Baggininae* Cushman, 1927

Genus *Cancris* de Montfort, 1808

Cancris auricula (Fichtel & Moll)

(Pl. II, fig. 12)

Nautilix auricula Fichtel and Moll, 1978, p. 108, 110, pl. 20, fig. a-f
Cancris auricula (Fichtel and Moll), Leroy, 1941, p. 117, pl. 3, figs.7-9. - Antony, 1968, pp. 97-98, pl. 7, figs. 5a-b. - Zobel, 1973, p.16, pl. 1, figs. 18-20.-Set(y and Nigam, 1984, p. 434, pl.33, fig.22. - Shareef and Venkatachalapathy, 1988, p.435, pl.3, figs.9a-b.

Cancris auricula (Fichtel and Moll, 1798). Cushman, 1927, pl.5, fig. 10. - Bhalla, 1956, p. 23, pl.5, figs.5a-b. - Rao, 1971, p. 161, fig. 52. - Seibold, 1975, p. 190, pl. 4, figs.1a-b. - Bhalla and Nigam, 1979, p.239, pl. 1.- Nigam and Theide, 1983, pp. 148-149, pl.13, figs.10a-b. - Mayankar, 1994, p.138, pl.15. - Rao, 1998, p.192, pl.47, figs 5-6.

Hypotype : Length - 0.40 mm Breadth - 0.24 mm

Remarks : The same species has also been reported as *C.oblonga* by several workers as reported by Murray (1971). Occurs in Mandapam station only.

Repository of Type Material : IES, TU, Cat. No.MSG.31.

Superfamily *Glabratellacea* Loeblich & Tappan, 1964

Family *Glabratellidae* Loeblich & Tappan, 1964

Genus *Glabratella* Dorreen, 1948

Glabratella patelliformis (Brady)

(Pl. II, figs. 13-14)

Glabratella patelliformis Brady, 1884, p.647, pl.88, figs.3a-c. pl.89, figs.1a-c.

Discorbis patelliformis (Brady), Cushman *et al.*, 1954, p. 359, pl. 89, fig.7. - Sethulakshmi Amma, 1958, p. 65, pl. 3, figs. 99a-b.

Neoconorbina patelliformis (Brady), Todd, 1965, p. 15, pl. I, fig.7-
Glabratella cf. *G. patelliformis* (Brady), Maioba, 1970, p.54, pl.5, figs.3a-c, - Shareef and Venkatachalapathy, 1988, p. 435, pl. 3, figs. 11a-b.

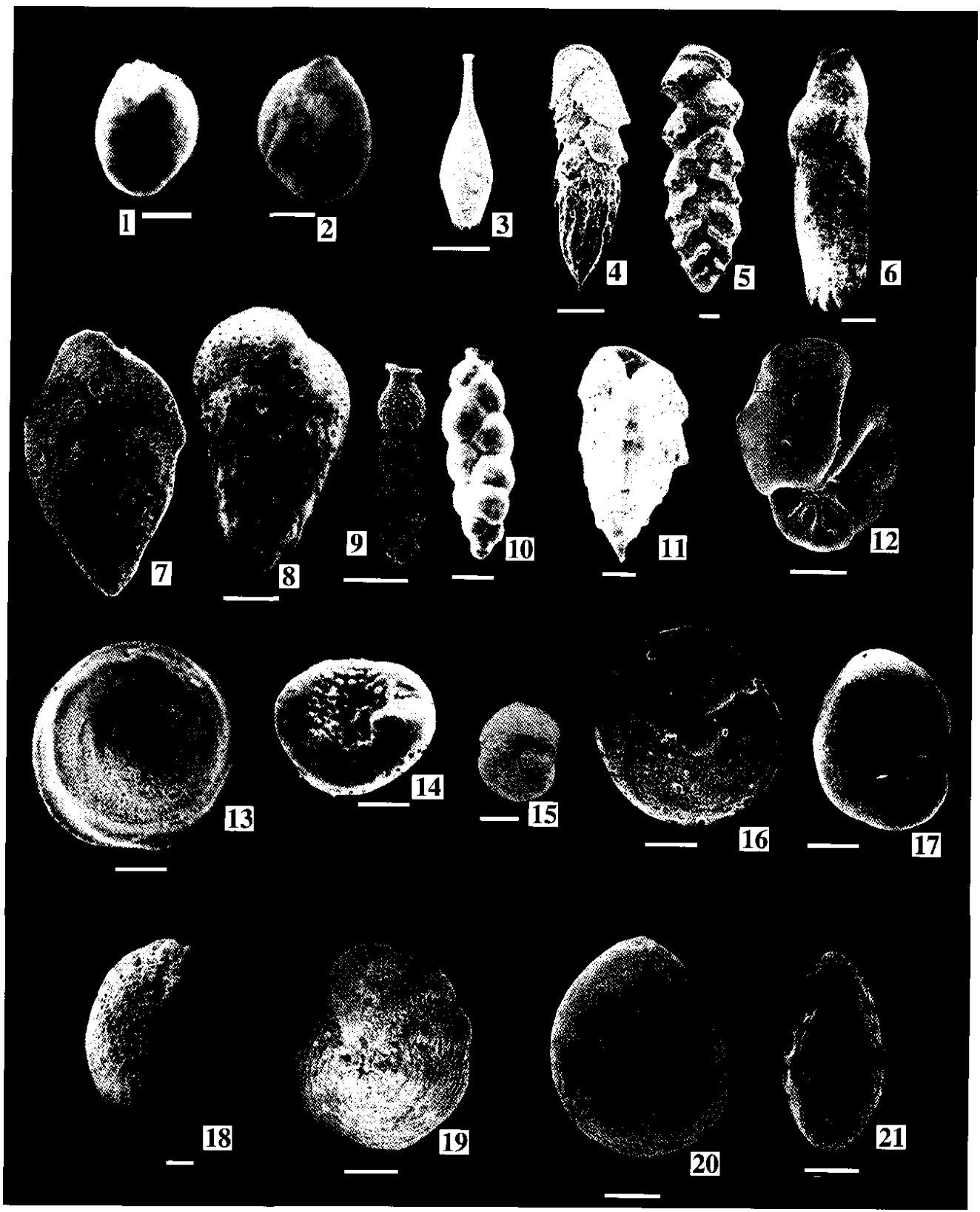
Glabratella. sp Bhalla, 1970, p. 157, pl.20, figs.7a-b. - Bhalla and Gaur, 1987, p.124, pl.2, figs.4a-b. - Khare, 1992, p.153, pl.14, figs.6a-c.

Hypotype: Length - 0.40 mm Breadth - 0.24 mm

Remarks: Bhalla (1970) and Bhalla and Gaur

EXPLANATION OF PLATE II

<i>Miliolinella pyrgoformis</i> Yassini and Jones	15KvX200. 15KvX200	11. <i>Reussella simplex</i> (Reuss)	10KvX200
<i>Lagena perlucida</i> (Montagu)	10KvX200	12. <i>Cancris auricula</i> (Fichtel and Moll)	15KvX200
<i>Bolivina durandi</i> Millett	15KvX350	13,14. <i>Glabratella patelliformis</i> (Brady)	15KvX500. 15KvX150
<i>Bolivina lobata</i> Brady	10KvX200	15. <i>Discorbinella bartheloti</i> (d'Orbigny)	15KvX150
<i>Bolivina ordinaria</i> Phleger and Parker	10KvX350	16. <i>Amphistegina radiata</i> (Fichtel and Moll)	10KvX350
<i>Bolivina spathulata</i> (Williamson)	10KvX350	17. <i>Nonion elongatum</i> (d'Orbigny)	10KvX200
<i>Loxostomina limbata</i> (Brady)	10KvX200	18. <i>Elphidium craticulatum</i> (Fichtel and Moll)	10KvX100
<i>Siphovigerina virgula</i> (Brady)	15KvX200	19. <i>Parrallina hispidula</i> (Cushman)	10KvX100
<i>Hopkinsinella glabra</i> (Millett)	10KvX350	20,21 <i>Assilina ammonoides</i> (Gronovius)	15KvX200 15KvX200



(1987) reported similar specimens as *Glabratella* sp. Our specimens are similar to Khare (1992) west coast of India. Found only at Devipattinam.

Repository of Type Material: IES, TU, Cat. No. MSG.32.

Superfamily **Discorbinellacea** Sigal, 1952

Family **Discorbinellidae** Sigal, 1952

Subfamily **Discorbinellinae** Sigal, 1952

Genus *Discorbinella* Cushman & Martin, 1935

Discorbinella bertheloti (d'Orbigny)

(Pl. II, fig. 15)

Rosalina bertheloti d'Orbigny, 1839, p. 135, pl.1, figs.28-30.

Discorbina bertheloti (d'Orbigny), Brady, 1884, p. 469, pl. 48, fig.10. - Rao, 1970b, p. 172, figs.66a-b.

Discorbinella bertheloti (d'Orbigny), Loeblich and Tappan, 1988, p.577, pl.630, figs. 4-6. - Mayankar, 1994, p. 143, 1.17, figs. 3a-b. - Rao, 1998, p.102, pl.50, figs. 6-7.

Hypotype: Diameter 0.26 mm

Remarks: Rare species, the spiral side is convex nearly involute. Last-formed chamber is irregular and large.

Repository of Type Material: IES, TU, Cat. No. MSG.33.

Superfamily **Asterigerinacea** d'Orbigny, 1839

Family **Amphisteginidae** Cushman, 1927

Genus *Amphistegina* d'Orbigny, 1826

Amphistegina radiata (Fichtel & Moll)

(Pl. II, fig. 16)

Nautilus radiatus Fichtel and Moll, 1798, p. 58, pl. 8, figs. 9 b-d.

Amphistegina radiata (Fichtel and Moll), Chapman, 1895, p. 45, pl. 1, figs. 8-10. - Rocha and Ubaldo, 1964a, p. 417, pl. 4, figs. 1a-b. - Rao *et al.*, 1987, p. 170, pl. 7, fig. 9. Bhalla and Gaur, 1987, p. 125, figs. 8a-b. - Khare, 1992, p. 159, pl.15, fig.6. - Mayankar, 1994, p. 148, pl. 18, fig. 5. - Rao, 1998, pp. 207-208, pl. 52, fig. 2.

Hypotype: Length - 0.20 mm Breadth - 0.08 mm

Remarks: In comparison with Rasheed's (1969-1970c) from the Coral sea, I have found my specimen are in close similarity to them.

Repository of Type Material: IES, TU, Cat. No. MSG.34.

Superfamily **Nonionacea** Schultze, 1854

Family **Nonionidae** Schultze, 1854

Subfamily **Nonioninae** Schultze, 1854

Genus **Nonion** de Montfort, 1808

Nonion elongatum (d'Orbigny)

(Pl. II, fig. 17)

Noniona elongata d'Orbigny, 1826, p. 294.

Nonion elongatum (d'Orbigny), Cushman, 1939, p. 11, pl. 3, figs. 4-6. - Setty and Nigam, 1984, p. 434, pl. 33, fig. 21; 1985, p. 286. - Nigam, 1986, p. 424, tab.1. - Khare, 1992, p. 164, pl. 15, fig.10. - Nigam *et al.*, 1992b, p. 536, pl. 1, - Mayankar, 1994, p. 152, pl. 20, figs.1a-b.

Florilus elongates (d'Orbigny), Bhalla and Gaur, 1987, p. 125, pl. 1, fig. 18.

Hypotype: Length - 0.18 mm Breadth - 0.06 mm

Remarks: Rare species, occurs only in two stations namely Mandapam and Kodyakkarai. Rao (1998) reported this species as *Nonionoides elongatum* at off Karikkattukuppam near Madras.

Repository of Type Material: IES, TU, Cat. No. MSG.35.

Family **Elphididae** Galloway, 1933

Subfamily **Elphidiinae** Galloway, 1933

Genus *Elphidium* de Montfort, 1808

Elphidium craticulatum (Fichtel & Moll)

(Pl. II, fig. 18)

Nautilus craticulus Fichtel and Moll, 1798, p. 51, pl.4, figs.h-k.

Elphidium craticulatum (Fichtel and Moll), Cushman, 1933b, p. 48, pl. II, figs.5a-b. - Bhatia, 1956, p. 20, pl. 5, fig.10. - Ganapati and Satyavati, 1958, p. 108, pl. 3, figs. 87-88. - Rocha and Ubaldo, 1964a, p. 416, pl. 3, fig. 7; 1964b, p. 647, pl.1, fig. 3. - Antony, 1968, p. 61, pl. 4, fig.3. - Rao *et al.*, 1987, p. 169, pl. 6, figs. 3-4. - Khare, 1992, p.187, pl. 17, fig. 7. - Henriques, 1993, p.155, p. 22, figs. 12. - Mayankar, 1994, p. 164, pl. 21, figs. 6. - Rao, 1998, p. 227, pl. 58, figs. 7-8.

Hypotype: Diameter 0.63 mm

Remarks: It is a typical Indo-Pacific species. Found in Mandapam, Attankarai and Thondi stations.

Repository of Type Material: IES, TU, Cat. No. MSG.36.

Subfamily **Notorotaliinae**, Hornibrook, 1961

Genus *Parrellina* Thalmann, 1951

Parrellina hispidula (Cushman)

(Pl. II, fig. 19)

Elphidium hispidulum Cushman, 1936. p.83. pl.14, fig 13 a-b

Parrellina hispidula (Cushman), Hotinger and Leutengger, 1980, pl.8, fig. 7-9.

Hypotype: Diameter 0.42 mm

Remarks: This species originally recorded from the Australian and Indonesian region.

Repository of Type Material: IES, TU, Cat. No. MSG.37.

Superfamily **Nummulitacea** de Blainville, 1827

Family **Nummulitidae** de Blainville, 1827

Genus *Assilina* d'Orbigny, 1839

Assilina ammonoides (Gronovius)

(Pl. II. figs. 20-21)

Nautilus ammonoides Gronovius, 1781, p. 282, pl. 19, figs. 5-6.

Operculina ammonoides (Gronovius). Carpenter *et al*, 1862, p. 318. - Antony. 1968, p. 65, p. 14, fig. 8. - Setty and Nigam, 1984, p. 434. pl. 33. figs. 1-2. 4-8.

Nummulites ammonoides (Gronovius) - Khare, 1992. pp. 196-197. pl. 19. fig.6.

Hypotype: Diameter 0.38 mm

Remarks: This species is similar to Rao (1998) off Karikkattukupam. Found in Mandapam and Devipattinam stations.

Repository of Type Material: IES, TU, Cat. No. MSG.38

SUMMARY

For the first time, a foraminiferal study has been undertaken in the offshore region of Palk Strait. The study of 42 samples highlights the presence of a cosmopolitan fauna of foraminifera. One hundred two benthic species (table 2) belonging to 38 families, 52 genera were identified from the 42 sediment samples. A comparison of the identified species with inventories made by earlier workers from this region reveals the presence of an additional 38 species, hitherto unknown, in this area. Out of these, six following taxa are recorded for the first time from the east coast of India: *Textularia porrecta*, *Quinqueloculina bosciiana* var. *malayensis*, *Q. poeyana*, *Q. sidebottami*, *Q. transversistriata*, *Massilina secans tropicalis*. Species richness in the samples from the stations Mandapam, Attankarai and Devipattinam closest to the Gulf of Mannar is higher than at the other stations which are more remote from

the Mannar Gulf.

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