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# DENSITY AND DISTRIBUTION OF MEIOFAUNA OF TAMILNADU COAST

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## INTRODUCTION

The meiofauna inhabiting the different sediment habitat of Tamilnadu was studied. A brief description of the density, sediment characters, total organic carbon and vertical distribution in different sediment habitats.diversity and cluster analysis is given. All the typical meiofauna groups are present. A quantitative estimate of the diverse taxonomic groups encountered is given.The density of total meiofauna individuals in these intertidal sediements ranged from 26 animals/10 $cm^2$ to 1440 animals/ 10 $cm^2$ . A list of 101 species identified from Tamilnadu Coast is given.several genera and species regarded as widespread and cosmopolitan were recorded. The evidence that several meiofauna species are widely distributed and any future investigations of the unexplored areas are likely to indicate a closer meiofaunal relationship is supported.The distribution of meiofauna is discussed in relation to the nature of the substratum.

## ENVIRONMENTAL VARIABLES

### SEDIMENT CHARACTERISTICS

The median particle size at all stations ranged between 2ø (0.250 mm) and 3ø (0.125 mm) thereby indicating that it contained median sand (Table 1a, b). The median particle size of sandy sediment fluctuated between 2.25 and 2.5 Mdø, muddy sediment between 2.3 and 2.75 Mdø, muddy sediment with seagrass bed between 2.7 and 2.75 Mdø and sandy sediment with rocky environment between 2.0 and 2.25 Mdø (Table 1a, b).

**Table 1a.** Percentage composition of sediment texture (%) and mean densities of meiofauna (n/10 cm2) of Tamil Nadu coast during 2006.

| Sediment types & Fauna | Stations | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| **Sediment types** | | | | | | | | | | | | |
| Sand (%) | 96.4 | 92.2 | 91.1 | 86.9 | 81.7 | 84.6 | 83.0 | 88.0 | 87.2 | 89.8 | 90.1 | 97.2 |
| Silt & clay (%) | 3.6 | 7.8 | 8.9 | 13.1 | 18.4 | 15.4 | 17.0 | 12.0 | 12.8 | 10.2 | 9.9 | 2.8 |
| Md ø | 2.3 | 2.3 | 2.5 | 2.65 | 2.75 | 2.7 | 2.7 | 2.5 | 2.55 | 2.6 | 2.4 | 2.0 |
| **Fauna** | | | | | | | | | | | | |
| Nematodes | 244 | 326 | 304 | 580 | 269 | 708 | 824 | 217 | 502 | 536 | 210 | 238 |
| Harpacticoids | 109 | 238 | 223 | 166 | 110 | 298 | 212 | 78 | 201 | 193 | 116 | 120 |
| Foraminiferans | 116 | 152 | 144 | 107 | 92 | 124 | 160 | 67 | 135 | 146 | 119 | 85 |
| Polychaetes | 49 | 45 | 77 | 47 | 29 | 24 | 32 | 48 | 45 | 56 | 51 | 36 |
| Oligochaetes | 190 | 80 | 45 | - | 70 | 314 | 340 | 50 | - | - | - | 12 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ostracods | 26 | 40 | 30 | 12 | 20 | 20 | 22 | 24 | 24 | 16 | 30 | 42 |
| Gastrotrichs | - | 4 | 15 | - | - | - | - | - | - | - | 4 | 8 |
| Turbellarians | - | 15 | 45 | - | - | - | - | - | - | - | - | 25 |
| Isopods | - | 116 | 122 | - | - | - | 15 | - | - | - | - | 22 |
| **Total** | **734** | **1016** | **1005** | **912** | **590** | **1488** | **1605** | **484** | **907** | **947** | **530** | **588** |

The Mdø values showed a greater fluctuation in sandy sediments than in muddy sediments. It was also observed that the sediment in stations 4-8, 10-11 had finer sediments than in stations 1-3, 9 and 12 (Table 1a, b).

All stations of sandy environment had little silt and clay content (3.6-8.9%), except station 9 (Mandapam), where high silt and clay content (12.8-13.1%) was observed (Table 1a, b).

Areas with muddy (9.1-18.4%) and muddy with seagrass bed (15.4-18.0%) cover had a higher silt and clay content compared to sandy environment (Table 1a, b). Station 12 which was sandy with rocky environment had very less silt and clay content.

**Table 1b.** Percentage composition of sediment texture (%) and mean densities of meiofauna (n/10 $cm^2$) of Tamil Nadu coast during 2007.

| **Sediment types & Fauna** | **Stations** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| **Sediment types** | | | | | | | | | | | | |
| Sand (%) | 96.4 | 92.2 | 91.1 | 86.9 | 81.7 | 84.6 | 83.0 | 88.0 | 87.2 | 89.8 | 90.1 | 97.2 |
| Silt & clay (%) | 3.6 | 7.8 | 8.9 | 13.1 | 18.4 | 15.4 | 17.0 | 12.0 | 12.8 | 10.2 | 9.9 | 2.8 |
| Md ø | 2.3 | 2.3 | 2.5 | 2.65 | 2.75 | 2.7 | 2.7 | 2.5 | 2.55 | 2.6 | 2.4 | 2.0 |
| **Fauna** | | | | | | | | | | | | |
| Nematodes | 244 | 326 | 304 | 580 | 269 | 708 | 824 | 217 | 502 | 536 | 210 | 238 |
| Harpacticoids | 109 | 238 | 223 | 166 | 110 | 298 | 212 | 78 | 201 | 193 | 116 | 120 |
| Foraminiferans | 116 | 152 | 144 | 107 | 92 | 124 | 160 | 67 | 135 | 146 | 119 | 85 |
| Polychaetes | 49 | 45 | 77 | 47 | 29 | 24 | 32 | 48 | 45 | 56 | 51 | 36 |
| Oligochaetes | 190 | 80 | 45 | - | 70 | 314 | 340 | 50 | - | - | - | 12 |
| Ostracods | 26 | 40 | 30 | 12 | 20 | 20 | 22 | 24 | 24 | 16 | 30 | 42 |
| Gastrotrichs | - | 4 | 15 | - | - | - | - | - | - | - | 4 | 8 |
| Turbellarians | - | 15 | 45 | - | - | - | - | - | - | - | - | 25 |
| Isopods | - | 116 | 122 | - | - | - | 15 | - | - | - | - | 22 |
| **Total** | **734** | **1016** | **1005** | **912** | **590** | **1488** | **1605** | **484** | **907** | **947** | **530** | **588** |

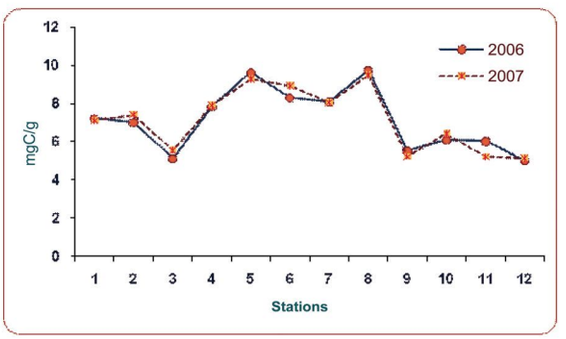
The composition of meiofauna in Tamil Nadu coast is mostly related to grain size. The sediment characteristic of muddy sediments with seagrass bed cover had a high silt and clay content with a corresponding higher density of meiofauna. Sediment with higher silt and clay content is mainly inhabited by burrowers such as nematodes and oligochaetes (Table 1a, b).

## TOTAL ORGANIC CARBON CONTENT

The variation in the sediment organic carbon values in the present study, showed considerable similarity at stations 4 to 8, 10 and 11, which had a muddy sediment (Fig. 1), while stations 1 to 3, 9 and 12 (sandy environment) differed from muddy (stations 4 to 8 and 10 to 11) environment (Fig. 1).

The minimum sediment organic carbon content (5.02-7.42 mg C/g) was observed at sandy sediments and maximum (5.21-9.73 mg C/g) in muddy sediments (Fig. 1).

**Fig. 1.** Variations in total organic carbon content of Tamil Nadu coast during 2006 and 2007.




The highest value of organic content (9.73 mg C/g and 9.51 mg C/g during 2006 and 2007 respectively) was recorded at station 8 in Tuticorin Port (Fig. 1). In general, the total organic carbon content increased with increasing silt and clay content.

## MEIOFAUNAL TAXA

## TOTAL DENSITY OF MEIOFAUN

Nine major meiofaunal taxa were identified, namely nematodes, harpacticoid copepods, foraminiferans, polychaetes, oligochaetes, ostracods, gastrotrichs, turbellarians and isopods from intertidal areas of Tamil Nadu coasts. Among the twelve stations studied, minimum (155 individuals/10 cm-2) meiofaunal density was observed at station 4 (Appendix II, Table 5) and maximum (3128 individuals/10 cm-2) at station 6. The values are an average of five replicates in each station (Appendix II, Tables 2 to 13).

## Appendix II

**Table 2.** Density of meiofauna communities (individuals/10 $cm^{-2}$) at Station 1 during 2006 and 2007.

**2006**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 220 | 145 | 225 | 450 | 180 | 1220 | 244 | 119.66 |
| 2 | Harpacticoid copepods | 120 | 145 | 90 | 85 | 105 | 545 | 109 | 24.34 |
| 3 | Foraminiferans | 24 | 105 | 56 | 285 | 110 | 580 | 116 | 100.97 |
| 4 | Polychaetes | 139 | 25 | 45 | 4 | 32 | 245 | 49 | 52.45 |
| 5 | Oligochaetes | 259 | 90 | 178 | 345 | 78 | 950 | 190 | 113.44 |
| 6 | Ostracods | 12 | 50 | 64 | - | 4 | 130 | 26 | 29.05 |
| | **Total** | **774** | **560** | **658** | **1169** | **509** | **3670** | **734** | **263.39** |

**2007**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 360 | 130 | 470 | 250 | 90 | 1300 | 260 | 158.11 |
| 2 | Harpacticoid copepods | 60 | 80 | 215 | 85 | 105 | 545 | 109 | 61.38 |
| 3 | Foraminiferans | 24 | 105 | 45 | 151 | 110 | 435 | 87 | 51.68 |
| 4 | Polychaetes | 139 | 25 | 75 | 4 | 32 | 275 | 55 | 53.59 |
| 5 | Oligochaetes | 310 | 110 | 462 | 240 | 78 | 1200 | 240 | 155.99 |
| 6 | Ostracods | 12 | - | 59 | - | 4 | 75 | 15 | 25.08 |
| | **Total** | **905** | **450** | **1326** | **730** | **419** | **3830** | **766** | **372.32** |

**Table 3.** Density of meiofauna communities (individuals/10 $cm^{-2}$) at Station 2 during 2006 and 2007.

**2006**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 425 | 199 | 135 | 326 | 545 | 1630 | 326 | 166.11 |
| 2 | Harpacticoid copepods | 310 | 157 | 98 | 228 | 397 | 1190 | 238 | 119.09 |
| 3 | Foraminiferans | 150 | 72 | 98 | 220 | 220 | 760 | 152 | 68.13 |
| 4 | Polychaetes | 19 | 45 | 59 | 12 | 90 | 225 | 45 | 31.57 |
| 5 | Oligochaetes | 170 | 23 | 16 | 140 | 51 | 400 | 80 | 70.51 |
| 6 | Ostracods | 64 | 20 | 10 | 32 | 74 | 200 | 40 | 27.82 |
| 7 | Gastrotriches | 12 | 8 | - | - | - | 20 | 4 | 5.66 |
| 8 | Turbellarians | 45 | 24 | - | 2 | 4 | 75 | 15 | 19.34 |
| 9 | Isopods | 130 | 20 | 48 | 180 | 202 | 580 | 116 | 79.89 |
| | **Total** | **1325** | **568** | **464** | **1140** | **1583** | **5080** | **1016** | **484.19** |

**2007**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 650 | 750 | 210 | 175 | 325 | 2110 | 422 | 262.17 |
| 2 | Harpacticoid copepods | 120 | 190 | 96 | 45 | 239 | 690 | 138 | 76.88 |
| 3 | Foraminiferans | 175 | 160 | 95 | 120 | 110 | 660 | 132 | 34.02 |
| 4 | Polychaetes | 68 | 12 | 45 | - | 75 | 200 | 40 | 33.23 |
| 5 | Oligochaetes | 475 | 385 | 150 | 45 | 175 | 1230 | 246 | 177.78 |
| 6 | Ostracods | 40 | - | 32 | 12 | 41 | 125 | 25 | 18.19 |
| 7 | Gastrotriches | 12 | 43 | - | 5 | - | 60 | 12 | 18.01 |
| 8 | Isopods | 45 | 175 | 120 | - | 135 | 475 | 95 | 70.98 |
| | **Total** | **1585** | **1715** | **748** | **402** | **1100** | **5550** | **1110** | **553.19** |

**Table 4.** Density of meiofauna communities (individuals/10 $cm^{-2}$) at Station 3 during 2006 and 2007.

**2006**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 605 | 245 | 95 | 125 | 450 | 1520 | 304 | 218.59 |
| 2 | Harpacticoid copepods | 475 | 180 | 80 | 120 | 260 | 1115 | 223 | 156.35 |
| 3 | Foraminiferans | 340 | 110 | 65 | 90 | 115 | 720 | 144 | 111.32 |
| 4 | Polychaetes | 165 | 20 | 40 | 55 | 105 | 385 | 77 | 58.37 |
| 5 | Oligochaetes | 75 | 45 | - | 45 | 60 | 225 | 45 | 28.06 |
| 6 | Ostracods | 63 | 45 | - | 8 | 34 | 150 | 30 | 26.05 |
| 7 | Gastrotriches | 4 | 12 | - | 34 | 25 | 75 | 15 | 14.28 |
| 8 | Turbellarians | 72 | 33 | - | - | 120 | 225 | 45 | 51.35 |
| 9 | Isopods | 220 | 145 | 45 | 55 | 145 | 610 | 122 | 72.59 |
| | **Total** | **2019** | **835** | **325** | **532** | **1314** | **5025** | **1005** | **677.99** |

**2007**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 120 | 440 | 850 | 175 | 585 | 2170 | 434 | 300.65 |
| 2 | Harpacticoid copepods | 105 | 220 | 520 | 120 | 285 | 1250 | 250 | 168.04 |
| 3 | Foraminiferans | 87 | 180 | 168 | 45 | 120 | 600 | 120 | 56.16 |
| 4 | Polychaetes | 25 | 40 | 130 | - | 80 | 275 | 55 | 50.99 |
| 5 | Oligochaetes | 28 | 35 | 75 | - | 32 | 170 | 34 | 26.82 |
| 6 | Ostracods | 50 | 55 | 90 | 10 | 20 | 225 | 45 | 31.62 |
| 7 | Gastrotriches | 4 | 8 | 63 | - | - | 75 | 15 | 27.04 |
| 8 | Turbellarians | - | 20 | 6 | - | 4 | 30 | 6 | 8.25 |
| 9 | Isopods | 40 | 75 | 420 | 45 | 195 | 775 | 155 | 160.90 |
| | **Total** | **459** | **1073** | **2322** | **395** | **1321** | **5570** | **1114** | **782.59** |

**Table 5.** Density of meiofauna communities (individuals/10 $cm^{-2}$) at Station 4 during 2006 and 2007.

**2006**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 1200 | 175 | 585 | 90 | 850 | 2900 | 580 | 464.07 |
| 2 | Harpacticoid copepods | 285 | 90 | 190 | 45 | 220 | 830 | 166 | 97.56 |
| 3 | Foraminiferans | 210 | 55 | 115 | 20 | 135 | 535 | 107 | 73.71 |
| 4 | Polychaetes | 90 | 12 | 23 | - | 110 | 235 | 47 | 49.57 |
| 5 | Ostracods | 28 | - | 12 | - | 20 | 60 | 12 | 12.33 |
| | **Total** | **1813** | **332** | **925** | **155** | **1335** | **4560** | **912** | **689.27** |

**2007**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 210 | 330 | 210 | 450 | 850 | 2050 | 410 | 265.33 |
| 2 | Harpacticoid copepods | 105 | 120 | 70 | 170 | 310 | 775 | 155 | 93.81 |
| 3 | Foraminiferans | 80 | 65 | 50 | 75 | 330 | 600 | 120 | 117.95 |
| 4 | Polychaetes | 70 | 90 | - | 55 | 120 | 335 | 67 | 44.67 |
| 5 | Oligochaetes | 40 | 25 | - | - | 10 | 75 | 15 | 17.32 |
| 6 | Ostracods | 40 | 35 | 20 | 30 | 85 | 210 | 42 | 25.15 |
| 7 | Isopods | - | 20 | - | 20 | 60 | 100 | 20 | 24.49 |
| | **Total** | **545** | **685** | **350** | **800** | **1765** | **4145** | **829** | **549.49** |

**Table 6.** Density of meiofauna communities (individuals/10 $cm^{-2}$) at Station 5 during 2006 and 2007.

**2006**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 120 | 145 | 445 | 545 | 90 | 1345 | 269 | 210.22 |
| 2 | Harpacticoid copepods | 80 | 90 | 155 | 180 | 45 | 550 | 110 | 55.79 |
| 3 | Foraminiferans | 40 | 60 | 210 | 110 | 40 | 460 | 92 | 71.90 |
| 4 | Polychaetes | 25 | 30 | - | 90 | - | 145 | 29 | 36.81 |
| 5 | Oligochaetes | 55 | 20 | 10 | 250 | 15 | 350 | 70 | 102.16 |
| 6 | Ostracods | 10 | 10 | 20 | 60 | - | 100 | 20 | 23.45 |
| | **Total** | **330** | **355** | **840** | **1235** | **190** | **2950** | **590** | **436.28** |

**2007**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 110 | 120 | 90 | 310 | 120 | 750 | 150 | 90.28 |
| 2 | Harpacticoid copepods | 20 | 80 | 10 | 90 | 25 | 225 | 45 | 37.08 |
| 3 | Foraminiferans | 35 | 20 | 5 | 90 | 10 | 160 | 32 | 34.39 |
| 4 | Polychaetes | 60 | 55 | 40 | 90 | 45 | 290 | 58 | 19.56 |
| 5 | Oligochaetes | 45 | 50 | 60 | 220 | 75 | 450 | 90 | 73.57 |
| 6 | Ostracods | 5 | 30 | - | 50 | 15 | 100 | 20 | 20.31 |
| | **Total** | **275** | **355** | **205** | **850** | **290** | **1975** | **395** | **259.88** |

**Table 7.** Density of meiofauna communities (individuals/10 $cm^{-2}$) at Station 6 during 2006 and 2007.

**2006**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 450 | 650 | 445 | 870 | 1125 | 3540 | 708 | 291.22 |
| 2 | Harpacticoid copepods | 320 | 175 | 210 | 255 | 530 | 1490 | 298 | 140.56 |
| 3 | Foraminiferans | 90 | 110 | 120 | 110 | 190 | 620 | 124 | 38.47 |
| 4 | Polychaetes | - | 50 | 10 | 20 | 40 | 120 | 24 | 20.74 |
| 5 | Oligochaetes | 390 | 280 | 410 | 370 | 120 | 1570 | 314 | 119.29 |
| 6 | Ostracods | 23 | 17 | 10 | 10 | 40 | 100 | 20 | 12.43 |
| | **Total** | **1273** | **1282** | **1205** | **1635** | **2045** | **7440** | **1488** | **353.77** |

**2007**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 1200 | 850 | 1450 | 1005 | 535 | 5040 | 1008 | 346.75 |
| 2 | Harpacticoid copepods | 735 | 345 | 950 | 440 | 230 | 2700 | 540 | 295.91 |
| 3 | Foraminiferans | 275 | 120 | 395 | 300 | 80 | 1170 | 234 | 131.02 |
| 4 | Polychaetes | 40 | 120 | 125 | 90 | 15 | 390 | 78 | 48.81 |
| 5 | Oligochaetes | 40 | 120 | 90 | 155 | 320 | 725 | 145 | 106.54 |
| 6 | Ostracods | 35 | 40 | 93 | 32 | 10 | 210 | 42 | 30.73 |
| 7 | Isopods | - | - | 25 | - | - | 25 | 5 | 11.18 |
| | **Total** | **2325** | **1595** | **3128** | **2022** | **1190** | **10260** | **2052** | **739.10** |

**Table 8.** Density of meiofauna communities (individuals/10 $cm^{-2}$) at Station 7 during 2006 and 2007.

**2006**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 1125 | 1200 | 794 | 445 | 556 | 4120 | 824 | 334.79 |
| 2 | Harpacticoid copepods | 320 | 145 | 230 | 120 | 245 | 1060 | 212 | 80.67 |
| 3 | Foraminiferans | 210 | 120 | 235 | 145 | 90 | 800 | 160 | 60.93 |
| 4 | Polychaetes | - | 10 | 40 | 75 | 35 | 160 | 32 | 29.28 |
| 5 | Oligochaetes | 50 | 40 | 540 | 420 | 650 | 1700 | 340 | 281.34 |
| 6 | Ostracods | 40 | 55 | 15 | - | - | 110 | 22 | 24.65 |
| 7 | Isopods | 50 | 25 | - | - | - | 75 | 15 | 22.36 |
| | **Total** | **1795** | **1595** | **1854** | **1205** | **1576** | **8025** | **1605** | **254.48** |

**2007**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 770 | 850 | 1100 | 410 | 870 | 4000 | 800 | 250.20 |
| 2 | Harpacticoid copepods | 290 | 440 | 680 | 150 | 215 | 1775 | 355 | 211.36 |
| 3 | Foraminiferans | 250 | 320 | 495 | 120 | 190 | 1375 | 275 | 143.44 |
| 4 | Polychaetes | 50 | 20 | 75 | 110 | 20 | 275 | 55 | 38.41 |
| 5 | Oligochaetes | 90 | 140 | 50 | 280 | 40 | 600 | 120 | 97.72 |
| 6 | Ostracods | 180 | 40 | 100 | 35 | 120 | 475 | 95 | 60.21 |
| 7 | Isopods | 50 | 150 | 225 | - | 200 | 625 | 125 | 96.82 |
| | **Total** | **1680** | **1960** | **2725** | **1105** | **1655** | **9125** | **1825** | **590.88** |

**Table 9.** Density of meiofauna communities (individuals/10 $cm^{-2}$) at Station 8 during 2006 and 2007.

**2006**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 340 | 75 | 245 | 175 | 250 | 1085 | 217 | 98.65 |
| 2 | Harpacticoid copepods | 120 | 25 | 90 | 70 | 85 | 390 | 78 | 34.75 |
| 3 | Foraminiferans | 140 | 15 | 105 | 40 | 35 | 335 | 67 | 52.99 |
| 4 | Polychaetes | 40 | 60 | 40 | 40 | 60 | 240 | 48 | 10.95 |
| 5 | Oligochaetes | 50 | 90 | 30 | 35 | 45 | 250 | 50 | 23.72 |
| 6 | Ostracods | 30 | - | 40 | - | 50 | 120 | 24 | 23.02 |
| | **Total** | **720** | **265** | **550** | **360** | **525** | **2420** | **484** | **176.83** |

**2007**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 195 | 440 | 170 | 330 | 90 | 1225 | 245 | 139.10 |
| 2 | Harpacticoid copepods | 45 | 90 | 50 | 70 | 20 | 275 | 55 | 26.46 |
| 3 | Foraminiferans | 40 | 20 | 50 | 45 | 70 | 225 | 45 | 18.03 |
| 4 | Polychaetes | 90 | 30 | 70 | 50 | 110 | 350 | 70 | 31.62 |
| 5 | Oligochaetes | 140 | 80 | 125 | 30 | 75 | 450 | 90 | 43.73 |
| 6 | Ostracods | - | 20 | - | 20 | - | 40 | 8 | 10.95 |
| | **Total** | **510** | **680** | **465** | **545** | **365** | **2565** | **513** | **115.25** |

**Table 10. Density of meiofauna communities (individuals/10 $cm^{-2}$) at Station 9 during 2006 and 2007.**

**2006**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 515 | 425 | 600 | 450 | 520 | 2510 | 502 | 68.43 |
| 2 | Harpacticoid copepods | 205 | 235 | 195 | 215 | 155 | 1005 | 201 | 29.66 |
| 3 | Foraminiferans | 125 | 110 | 130 | 160 | 150 | 675 | 135 | 20.00 |
| 4 | Polychaetes | 45 | 40 | 40 | 80 | 20 | 225 | 45 | 21.79 |
| 5 | Ostracods | 60 | 20 | 10 | 10 | 20 | 120 | 24 | 20.74 |
| | **Total** | **950** | **830** | **975** | **915** | **865** | **4535** | **907** | **59.64** |

**2007**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 700 | 645 | 550 | 790 | 690 | 3375 | 675 | 87.46 |
| 2 | Harpacticoid copepods | 220 | 180 | 265 | 330 | 205 | 1200 | 240 | 59.06 |
| 3 | Foraminiferans | 105 | 90 | 110 | 140 | 155 | 600 | 120 | 26.69 |
| 4 | Polychaetes | 10 | 15 | 45 | 35 | 20 | 125 | 25 | 14.58 |
| 5 | Oligochaetes | 30 | 10 | 15 | - | 20 | 75 | 15 | 11.18 |
| 6 | Ostracods | 40 | 40 | 20 | 20 | 40 | 160 | 32 | 10.95 |
| 7 | Isopods | 40 | 10 | - | 10 | - | 60 | 12 | 16.43 |
| | **Total** | **1145** | **990** | **1005** | **1325** | **1130** | **5595** | **1119** | **134.97** |

**Table 11.** Density of meiofauna communities (individuals/10 $cm^{-2}$) at Station 10 during 2006 and 2007.

**2006**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 450 | 345 | 475 | 670 | 740 | 2680 | 536 | 163.68 |
| 2 | Harpacticoid copepods | 125 | 140 | 170 | 225 | 305 | 965 | 193 | 73.37 |
| 3 | Foraminiferans | 90 | 130 | 90 | 180 | 240 | 730 | 146 | 64.27 |
| 4 | Polychaetes | 30 | 90 | 60 | 78 | 22 | 280 | 56 | 29.53 |
| 5 | Ostracods | 20 | 20 | 10 | - | 30 | 80 | 16 | 11.40 |
| | **Total** | **715** | **725** | **805** | **1153** | **1337** | **4735** | **947** | **281.87** |

**2007**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 745 | 225 | 550 | 370 | 985 | 2875 | 575 | 300.89 |
| 2 | Harpacticoid copepods | 160 | 120 | 220 | 270 | 380 | 1150 | 230 | 101.49 |
| 3 | Foraminiferans | 110 | 90 | 110 | 150 | 290 | 750 | 150 | 81.24 |
| 4 | Polychaetes | 20 | 130 | 40 | 110 | 40 | 340 | 68 | 48.68 |
| 5 | Oligochaetes | - | 80 | - | 45 | - | 125 | 25 | 36.40 |
| 6 | Ostracods | 10 | 20 | 20 | 10 | 40 | 100 | 20 | 12.25 |
| 7 | Isopods | 35 | - | 40 | - | - | 75 | 15 | 20.62 |
| | **Total** | **1080** | **665** | **980** | **955** | **1735** | **5415** | **1083** | **395.86** |

**Table 12.** Density of meiofauna communities (individuals/10 $cm^{-2}$) at Station 11 during 2006 and 2007.

**2006**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 225 | 110 | 340 | 270 | 105 | 1050 | 210 | 102.16 |
| 2 | Harpacticoid copepods | 120 | 80 | 230 | 110 | 40 | 580 | 116 | 70.92 |
| 3 | Foraminiferans | 110 | 85 | 190 | 90 | 120 | 595 | 119 | 42.19 |
| 4 | Polychaetes | 40 | 75 | 20 | 40 | 80 | 255 | 51 | 25.59 |
| 5 | Ostracods | 20 | - | 80 | 50 | - | 150 | 30 | 34.64 |
| 6 | Gastrotriches | - | - | 10 | 10 | - | 20 | 4 | 5.48 |
| | **Total** | **515** | **350** | **870** | **570** | **345** | **2650** | **530** | **214.51** |

**2007**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 120 | 230 | 420 | 120 | 510 | 1400 | 280 | 177.62 |
| 2 | Harpacticoid copepods | 60 | 105 | 155 | 60 | 245 | 625 | 125 | 77.70 |
| 3 | Foraminiferans | 40 | 90 | 110 | 120 | 180 | 540 | 108 | 50.70 |
| 4 | Polychaetes | 90 | 80 | 55 | 100 | 50 | 375 | 75 | 21.79 |
| 5 | Oligochaetes | 78 | 45 | 10 | 80 | 12 | 225 | 45 | 34.01 |
| 6 | Ostracods | 18 | 12 | 40 | 40 | 10 | 120 | 24 | 14.90 |
| 7 | Isopods | - | - | 12 | - | 8 | 20 | 4 | 5.66 |
| | **Total** | **406** | **562** | **802** | **520** | **1015** | **3305** | **661** | **244.90** |

**Table 13.** Density of meiofauna communities (individuals/10 $cm^{-2}$) at Station 12 during 2006 and 2007.

**2006**

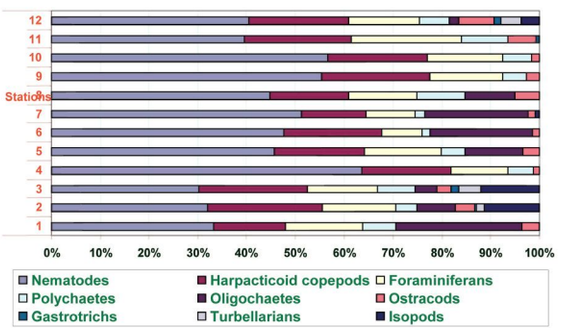
| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 125 | 320 | 145 | 205 | 395 | 1190 | 238 | 116.06 |
| 2 | Harpacticoid copepods | 90 | 120 | 95 | 100 | 195 | 600 | 120 | 43.45 |
| 3 | Foraminiferans | 50 | 90 | 60 | 75 | 150 | 425 | 85 | 39.37 |
| 4 | Polychaetes | 75 | 30 | 60 | - | 15 | 180 | 36 | 31.10 |
| 5 | Oligochaetes | 30 | - | 20 | 10 | - | 60 | 12 | 13.04 |
| 6 | Ostracods | 30 | 60 | 20 | 60 | 40 | 210 | 42 | 17.89 |
| 7 | Gastrotriches | 10 | 5 | - | - | 25 | 40 | 8 | 10.37 |
| 8 | Turbellarians | 10 | 60 | - | - | 55 | 125 | 25 | 30.00 |
| 9 | Isopods | 25 | - | 25 | 20 | 40 | 110 | 22 | 14.40 |
| | **Total** | **445** | **685** | **425** | **470** | **915** | **2940** | **588** | **210.52** |

**2007**

| S. No. | Fauna | Samples | | | | | Total | Mean | SD (±) |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | | | |
| 1 | Nematodes | 423 | 345 | 110 | 256 | 356 | 1490 | 298 | 120.73 |
| 2 | Harpacticoid copepods | 180 | 157 | 133 | 75 | 125 | 670 | 134 | 39.40 |
| 3 | Foraminiferans | 150 | 72 | 98 | 60 | 110 | 490 | 98 | 35.24 |
| 4 | Polychaetes | 19 | 45 | 59 | 12 | 90 | 225 | 45 | 31.57 |
| 5 | Oligochaetes | 70 | 23 | 16 | 10 | 51 | 170 | 34 | 25.52 |
| 6 | Ostracods | 64 | 20 | 10 | 32 | 34 | 160 | 32 | 20.35 |
| 7 | Turbellarians | 4 | 12 | - | - | 4 | 20 | 4 | 4.90 |
| 8 | Isopods | 30 | - | 12 | 14 | 4 | 60 | 12 | 11.58 |
| | **Total** | **940** | **674** | **438** | **459** | **774** | **3285** | **657** | **212.86** |

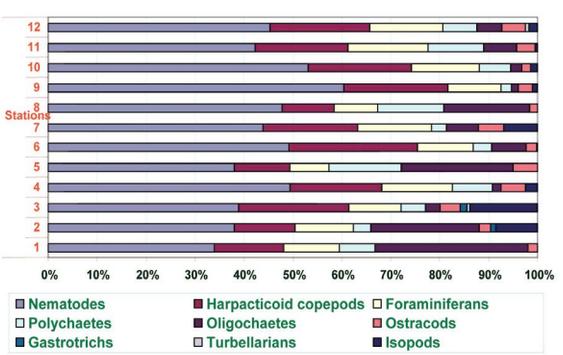
Nematodes were the most dominant group of meiofauna at all the sampling stations of Tamil Nadu coast, constituting from 30.25% to 63.60% of total abundance (Figs. 2 a, b). The next important faunal group was the harpacticoid copepods which contributes 10.72 to 26.32% of the total meiofauna. Nematodes and harpacticoid copepods together comprised about 80% of the meiofauna (Figs. 2 a, b).

**Fig. 2a** Mean percentage composition of meiofauna communities from intertidal sediments of Tamil Nadu coast during 2006.




The foraminiferans ranked third, with a percentage contribution of 8.1 to 22.45 % of the total meiofauna. However, at station 11 (Rameswaram) alone they ranked second. Polychaetes formed the fourth largest group, with a percentage occurrence of 1.61 to 14.69% of the total fauna. Oligochaetes were observed at all the stations during 2007; nonetheless, it was totally absent at stations 3, 9-11 during 2006. Their percentage was high (31.33 % of the total meiofauna) at station 1 (Chennai) during 2007 (Figs. 2 a, b).

**Fig. 2b** Mean percentage of meiofauna communities from intertidal sediments of Tamil Nadu coast during 2007.




Ostracods were recorded at all the twelve stations, but their population density was considerably low (1.34 % to 7.14 % at of the total abundance).

The other taxa found were gastrotrichs, turbellarians and isopods which made up only less than 5 % of the total meiofauna. However, at station 3 (Cuddalore) isopods constituted the maximum percentage (13.91 %) during 2007 (Figs. 2 a, b).

## DISTRIBUTION OF MEIOFAUNA

### Sandy sediment

The meiofauna density ranged between 509 and 1169 individuals/10 $cm^{-2}$ (Appendix II, Table 2), 464 and 1583 individuals/10 $cm^{-2}$ (Appendix II, Table 3), 325 and 2019 individuals/10 $cm^{-2}$ (Appendix II, Table 4) and 830 and 975 individuals/10 $cm^{-2}$ (Appendix II, Table 10) at stations 1, 2, 3 and 9 respectively during 2006.

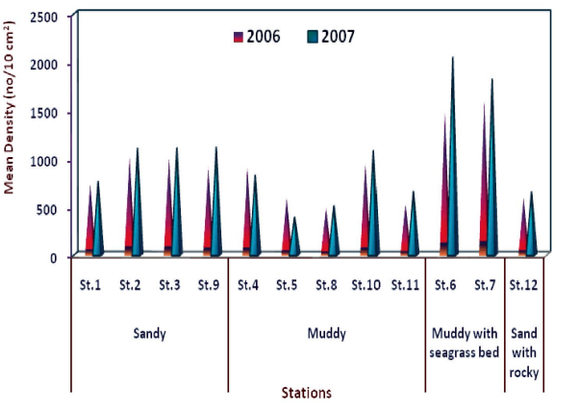
During 2007, ranges of 419 to 1326 individuals/10 $cm^{-2}$ (Appendix II, Table 1), 402-1715 individuals/10 $cm^{-2}$ (Appendix II, Table 3), 395-2322 individuals/10 $cm^{-2}$ (Appendix II, Table 4) and 990-1325 individuals/10 $cm^{-2}$ (Appendix II, Table 10) were encountered at stations 1, 2, 3 and 9 respectively.

### Muddy sediment

The meiofaunal density ranged from 155 to 1813 individuals/10 $cm^{-2}$ (Appendix II, Table 5), 190 to 1235 individuals/10 $cm^{-2}$ (Appendix II, Table 6), 265 to 720 individuals/10 $cm^{-2}$ (Appendix II, Table 9), 715 to 1337 individuals/10 $cm^{-2}$ (Appendix II, Table 11) and 345 to 870 individuals/10 $cm^{-2}$ (Appendix II, Table 12) at stations 4, 5, 8, 10 and 11 respectively during 2006.

During 2007, a ranges of 350-1765 individuals/10 $cm^{-2}$ (Appendix II, Table 5), 205-850 individuals/10 $cm^{-2}$ (Appendix II, Table 6), 365 to 680 individuals/10 $cm^{-2}$ (Appendix II, Table 9), 665-1735 individuals/10 $cm^{-2}$ (Appendix II, Table 11) and 406-1015 individuals/10 $cm^{-2}$ (Appendix II, Table 12) were recorded at stations 4, 5, 8, 10 and 11 respectively.

**Fig. 3** Mean total density of meiofauna in relation to substratum from intertidal sediments




**Muddy sediment with seagrass bed**

The meiofaunal density ranged between 1205 and 2045 individuals/10 $cm^{-2}$ (Appendix II, Table 7) and between 1205 and 1854 individuals/10 $cm^{-2}$ (Appendix II, Table 8) at stations 6 and 7 respectively during 2006. During 2007, a range of 1190-3128 individuals/10 $cm^{-2}$ (Appendix II, Table 7) and 1105-2725 individuals/10 $cm^{-2}$ (Appendix II, Table 8) were recorded at stations 6 and 7 respectively.

**Sandy sediment with rocky environment**

The meiofaunal density varied from 425 to 915 individuals/10 $cm^{-2}$ (Appendix II, Table 13) and from 438 to 940 individuals/10 $cm^{-2}$ at station 12 during 2006 and 2007 respectively (Appendix II, Table 13). In general, muddy sediments with seagrass bed had relatively higher densities of meiofauna than those with other sediment types (Fig. 3). The gastrotrichs and turbellarians were totally absent in muddy environment.

**DIVERSITY INDEX**

The diversity indices were lowest at stations 5 (Nagapattinam) and 8 (Tuticorin), which can be considered as indications of the stress at these sites. These sites were very close to the harbor. Station 7, showed higher diversity in addition to a high density of meiofauna. It must be stated that the sediment here was muddy with seagrass (Table 14).

**Table 14.** Diversity of meiofauna at various stations in Tamil Nadu coast during 2006 and 2007 (*S = Number of species; N = Number of animals; d = Margalef Richness; J' Evenness; H = Shannon - Wiener diversity, l- Lambda – Simson richness*).

| Stations | S | N | d | j' | H'(log2) |
|---|---|---|---|---|---|
| 1 | 61 | 734 | 9.09296 | 0.89801 | 5.32584 |
| 2 | 67 | 1016 | 9.53257 | 0.87700 | 5.31996 |
| 3 | 64 | 1005 | 9.11360 | 0.88939 | 5.33635 |
| 4 | 49 | 912 | 7.04263 | 0.91500 | 5.13748 |
| 5 | 40 | 590 | 6.11274 | 0.91232 | **4.85530**** |
| 6 | 58 | 488 | 7.80267 | 0.89486 | 5.24206 |
| 7 | 70 | 1605 | 9.34848 | 0.89436 | **5.48180*** |
| 8 | 43 | 484 | 6.79382 | 0.84802 | **4.60156**** |
| 9 | 42 | 907 | 6.02043 | 0.93143 | 5.02259 |
| 10 | 44 | 947 | 6.27435 | 0.91300 | 4.98444 |
| 11 | 40 | 530 | 6.21724 | 0.95418 | 5.07810 |
| 12 | 45 | 588 | 6.90009 | 0.93887 | 5.15612 |

(*- higher diversity indices; **- lowest diversity indices)

It could also be seen from the similarity matrix (Fig. 4) and the MDS plot (Fig. 5) that the muddy and seagrass bed environment, muddy environment and sandy environment harboured distinct populations. Few sites of muddy stations are closer to those in other zones of sandy sediment stations. Nonetheless in some stations of muddy environment no such distinctness could be recognized, probably because of the impact of pollution (stations 5 (NAG), 8 (TUT) and 11 (RAM)).

**Fig. 4.** Cluster analysis for meiofauna from intertidal sediments of Tamil Nadu coast during 2006 and 2007.

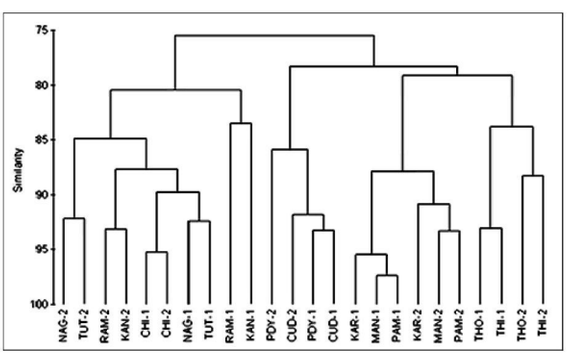
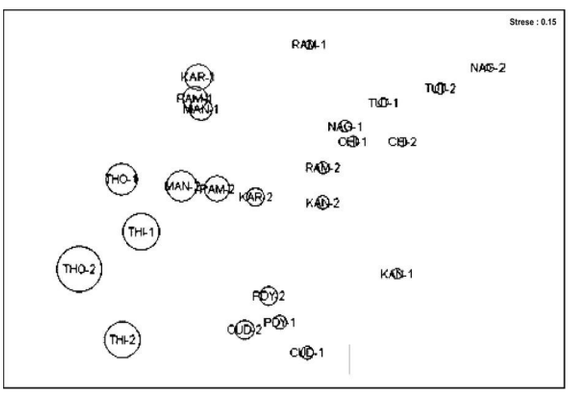



**Fig. 5.** MDS of meiofauna from intertidal sediments of Tamil Nadu coast during 2006 and 2007.




**CHI**-Chennai; **PDY**-Puducherry; **CUD**-Cuddalore; **KAR**-Karaikal; **NAG**-Nagapattinam; **THO**-Thondi; **THI**-Thiruchendur; **TUT**-Tuticorin; **MAN**-Mandabam; **PAM**-Pamban; **RAM**-Rameswaram; **KAN**-Kanyakumari; **1**-2006: **2**-2007

The densities of meiofauna varied significantly ($F = 4.895$; $P < 0.001$) between the stations (Table 15), probably due to the variation in environmental parameters like nature of sediment.

**Table 15.** ANOVA for meiofauna density within stations.

| *Factor* | *SS* | *Df* | *Ms* | *F(cal)* | | *P(F<=F(cal))* | *F(0.05)* |
|---|---|---|---|---|---|---|---|
| A (Between Groups) | 13867.38 | 11 | 1260.67 | 4.895 | *** (P<=0.001) | 1.90E-07 | 1.797 |
| R(A) (Within Groups) | 309048.04 | 1200 | 257.54 | | | | |
| AR (Total) | 322915.42 | 1211 | | | | | |

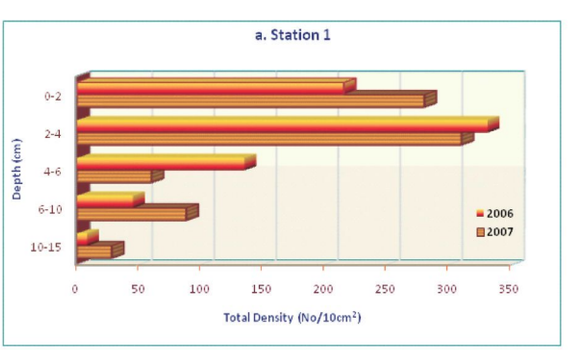
***** (P<=0.001)**

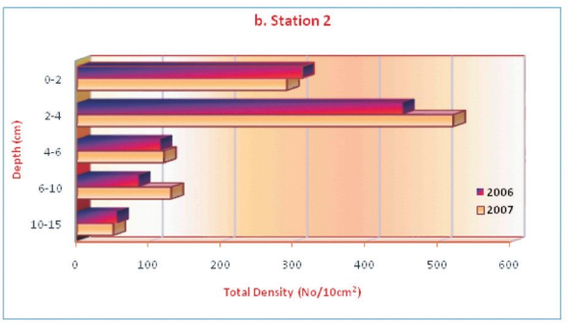
## VERTICAL DISTRIBUTION OF MEIOFAUNA

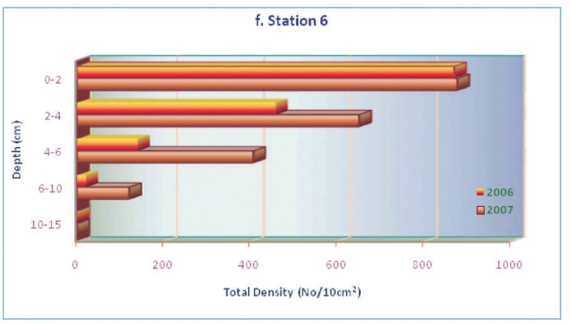
The vertical distribution of meiofauna was quite similar in all the twelve stations. Densities were highest near the sediment surface and especially in muddy sediments, where the upper sediment had up 50% of the total fauna (Fig. 6 d, e, h, i, k).

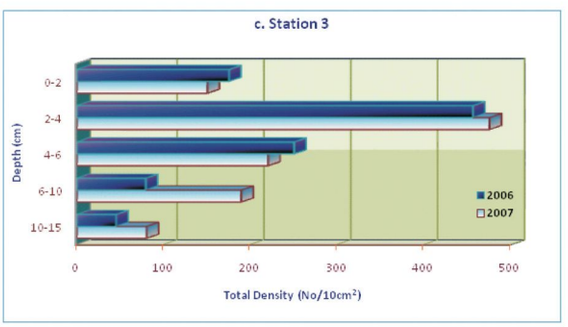
In sandy sediments, total meiofauna fluctuated with depth, and the maximum was found at 2-6 cm. (Fig. 6 a, b, c, l). In muddy sediment with seagrass bed, again, higher densities occurred in the top portion (Fig. 6f, g).

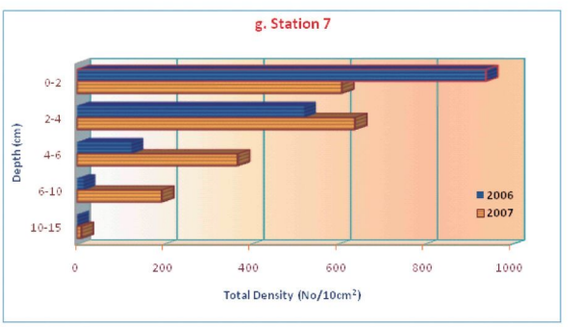
**Fig. 6.** Vertical distribution of meiofauna (n/10cm$^2$) at stations1-12 during 2006 and 2007.

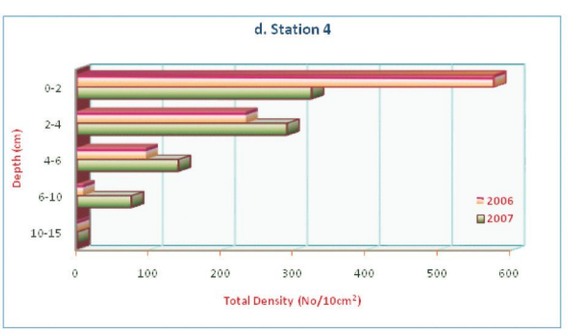


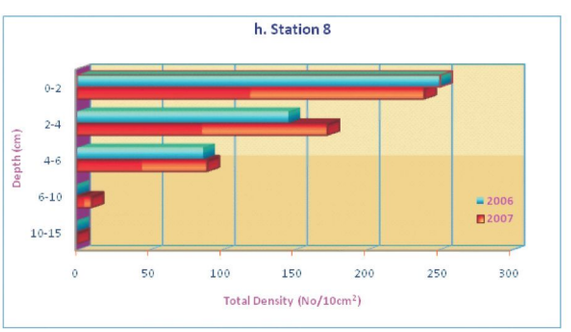

b. Station 2
Depth (cm)
0-2
2-4
4-6
6-10
10-15
2006
2007
0
100
200
300
400
500
600
Total Density (No/10cm²)

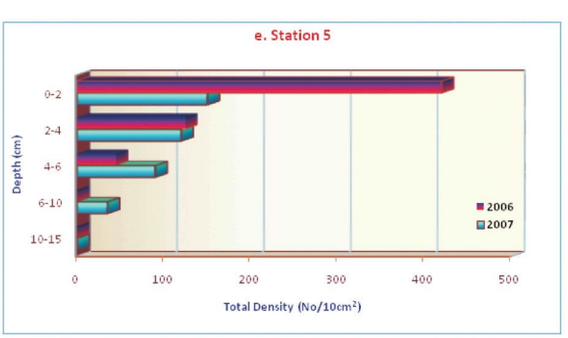

f. Station 6
Depth (cm)
0-2
2-4
4-6
6-10
10-15
2006
2007
0
200
400
600
800
1000
Total Density (No/10cm²)

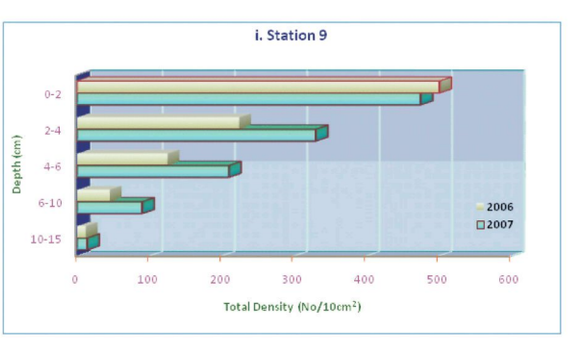

c. Station 3
Depth (cm)
0-2
2-4
4-6
6-10
10-15
2006
2007
0
100
200
300
400
500
Total Density (No/10cm²)

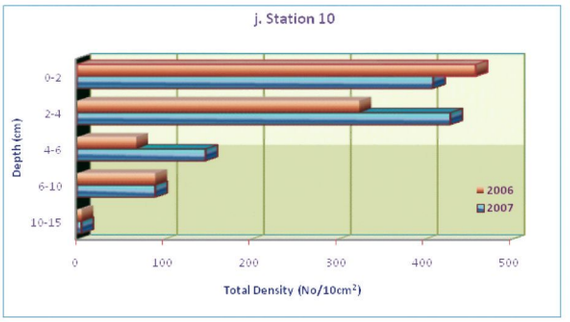

g. Station 7
Depth (cm)
0-2
2-4
4-6
6-10
10-15
2006
2007
0
200
400
600
800
1000
Total Density (No/10cm²)

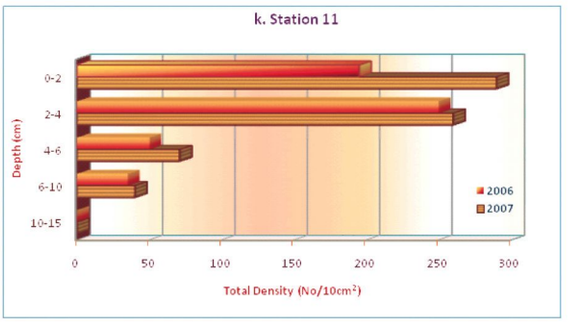

d. Station 4
Depth (cm)
0-2
2-4
4-6
6-10
10-15
2006
2007
0
100
200
300
400
500
600
Total Density (No/10cm²)

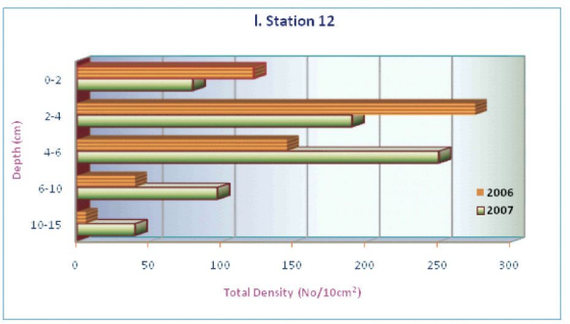

h. Station 8
Depth (cm)
0-2
2-4
4-6
6-10
10-15
2006
2007
0
50
100
150
200
250
300
Total Density (No/10cm²)


e. Station 5
Depth (cm)
0-2
2-4
4-6
6-10
10-15
2006
2007
0
100
200
300
400
500
Total Density (No/10cm²)


i. Station 9
Depth (cm)
0-2
2-4
4-6
6-10
10-15
2006
2007
0
100
200
300
400
500
600
Total Density (No/10cm²)




## COMPOSITION OF MEIOFAUNA

A total of 101 species of meiofauna belonging to 63 families were identified, of which 34 species were nematodes, nine were harpacticoid copepods, 38 were foraminiferans, six each were polychaetes, ostracods and oligochates, one was an isopod and one each of unidentified species of gastrotrichs and turbellarians (Table 16).

**Table 16.** Occurrence and distribution of meiofaunal community in the intertidal region of Tamil Nadu coast during 2006 and 2007.

| S. No | Name of the Family & Species | Stations | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| **NEMATODES** | | | | | | | | | | | | | |
| **Family: Thoracostomopsidae** | | | | | | | | | | | | | |
| 1 | *Enoploides* sp. | + | + | + | - | - | + | + | - | + | + | + | + |
| **Family: Anoplostomatidae** | | | | | | | | | | | | | |
| 2 | *Anoplostoma* sp. | - | - | - | - | - | + | + | - | - | - | - | - |
| **Family: Ironidae** | | | | | | | | | | | | | |
| 3 | *Trissonchulus oceanus* | + | + | + | - | + | - | + | - | + | + | + | + |
| **Family: Oxystominidae** | | | | | | | | | | | | | |
| 4 | *Halalaimus filum* | + | - | - | + | - | - | + | - | - | - | - | - |
| 5 | *Halalaimus gracilis* | + | + | + | + | - | + | + | + | + | + | + | - |
| **Family: Oncholaimidae** | | | | | | | | | | | | | |
| 6 | *Viscosia viscose* | + | + | + | + | + | + | + | + | + | + | + | + |
| 7 | *Adoncholaimus fuscus* | + | + | + | - | - | + | + | - | + | + | - | + |
| 8 | *Onclolaimus* sp. | + | + | + | - | + | + | + | + | + | - | + | + |

| S. No | Name of the Family & Species | Stations | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| **Family: Enchelidiidae** | | | | | | | | | | | | | |
| 9 | *Polygastrophora septembulba* | - | - | - | + | - | + | + | - | - | - | - | - |
| **Family: Tripyloididae** | | | | | | | | | | | | | |
| 10 | *Tripyloides gracilis* | - | + | + | + | - | + | + | - | - | - | - | - |
| **Family: Chromadoridae** | | | | | | | | | | | | | |
| 11 | *Ptycholaimellus ponticus* | - | - | + | - | - | - | + | - | - | - | - | - |
| **Family: Comesomatidae** | | | | | | | | | | | | | |
| 12 | *Hopperia* sp. | - | - | - | + | - | + | + | - | + | - | - | - |
| 13 | *Dorilaimopsis timmi* | - | - | - | + | - | + | + | - | - | - | - | - |
| 14 | *Paracomesoma dubium* | - | - | - | + | - | - | + | - | - | - | - | - |
| 15 | *Sabatieria falcifera* | + | - | + | + | + | + | + | - | - | - | - | - |
| **Family: Cyatholaimidae** | | | | | | | | | | | | | |
| 16 | *Paracanthonchus elongatus* | + | - | - | + | - | + | + | + | - | - | - | - |
| **Family: Selachnematidae** | | | | | | | | | | | | | |
| 17 | *Halichoanolaimus dolichurus* | + | + | + | + | - | + | + | - | + | + | + | + |
| **Family: Desmodoridae** | | | | | | | | | | | | | |
| 18 | *Metachromadora remanei* | + | + | + | + | + | + | + | + | + | + | + | + |
| 19 | *Desmodora (D.) sanguinea* | + | - | + | + | - | - | - | - | - | + | - | - |
| 20 | *Desmodora (D.) tenuispiculum* | + | + | + | - | - | + | + | + | - | + | - | + |
| 21 | *Spirinia (S.) parasitifera* | + | + | - | + | + | + | + | - | - | - | - | - |
| **Family: Microlaimidae** | | | | | | | | | | | | | |
| 22 | *Microlaimus* sp. | + | + | - | - | - | - | + | - | - | - | - | - |
| **Family: Ceramononematidae** | | | | | | | | | | | | | |
| 23 | *Pselionema* sp. | + | + | + | - | + | + | + | + | + | + | + | + |
| **Family: Leptolaimidae** | | | | | | | | | | | | | |
| 24 | *Camacolaimus barbatus* | - | - | - | + | - | + | + | - | - | - | - | - |
| **Family: Desmoscolecidae** | | | | | | | | | | | | | |
| 25 | *Desmoscolex falcatus* | + | + | + | + | - | + | + | - | - | - | - | - |
| **Family: Xyalidae** | | | | | | | | | | | | | |
| 26 | *Daptonema conicum* | + | + | + | + | + | + | + | + | + | + | + | + |
| 27 | *Daptonema oxycerca* | + | + | - | + | + | + | + | + | + | + | + | + |
| 28 | *Theristus pertenuis* | + | + | + | - | + | + | + | + | + | + | + | + |
| 29 | *Theristus clax* | + | + | + | + | + | + | + | - | + | + | + | + |

| S. No | Name of the Family & Species | Stations | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| **Family: Linhomoeidae** | | | | | | | | | | | | | |
| 30 | *Paralinhomoeus brevibucca* | - | - | - | + | - | + | + | - | - | - | - | - |
| 31 | *Metalinhomoeus typicus* | + | - | + | + | - | - | + | - | - | - | - | - |
| 32 | *Terschellingia longicaudata* | - | - | - | + | - | + | + | - | - | - | - | - |
| **Family: Axonolaimidae** | | | | | | | | | | | | | |
| 33 | *Paradontophora breviseta* | - | - | - | + | - | + | + | - | - | - | - | - |
| **Family: Diplopeltidae** | | | | | | | | | | | | | |
| 34 | *Araeolaimus longicauda* | - | - | - | + | - | + | - | - | - | - | - | - |
| **HARPACTICOID COPEPODS** | | | | | | | | | | | | | |
| **Family: Canullidae** | | | | | | | | | | | | | |
| 35 | *Canuella* sp. | - | + | + | - | - | - | - | - | + | - | + | - |
| **Family: Tachidiidae** | | | | | | | | | | | | | |
| 36 | *Euterpina acutifrons* | + | + | + | - | + | + | + | - | + | + | + | + |
| **Family: Thalestridae** | | | | | | | | | | | | | |
| 37 | *Diathrodes sp* | + | + | + | + | + | + | + | + | + | + | + | + |
| **Family: Diosaccidae** | | | | | | | | | | | | | |
| 38 | *Stenhelia sp* | - | + | + | - | + | + | - | + | + | + | + | - |
| **Family: Cylindropsyllidae** | | | | | | | | | | | | | |
| 39 | *Leptastacus* sp. | + | + | + | + | + | + | + | + | + | + | + | + |
| 40 | *Cylindropsyllus* sp. | - | + | + | - | - | - | - | - | + | + | + | - |
| **Family: Metidae** | | | | | | | | | | | | | |
| 41 | *Metis* sp. | + | + | - | + | + | - | - | - | + | + | - | - |
| **Family: Tisbidae** | | | | | | | | | | | | | |
| 42 | *Tisbe furcata* | + | + | + | + | + | + | + | + | + | + | + | + |
| **Family: Tetragonicipitidae** | | | | | | | | | | | | | |
| 43 | *Pyllopodosyllys* sp. | + | + | + | - | + | + | + | + | + | + | + | + |
| **FORAMINIFERANS** | | | | | | | | | | | | | |
| **Family: Ameridae** | | | | | | | | | | | | | |
| 44 | *America* sp. | - | - | - | + | - | - | + | - | - | - | + | - |
| **Family: Soritidae** | | | | | | | | | | | | | |
| 45 | *Amphisorus* sp. | + | - | - | - | + | - | + | + | + | + | + | + |
| **Family: Bolivinidae** | | | | | | | | | | | | | |
| 46 | *Bolivina abbreviata* | + | + | + | + | - | + | + | + | + | + | - | - |

| S. No | Name of the Family & Species | Stations | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| **Family: Cibicidae** | | | | | | | | | | | | | |
| 47 | *Cibicides lobotulus* | + | + | + | - | - | + | - | - | - | - | - | - |
| 48 | *C. refulegens* | - | - | - | - | - | - | - | - | - | - | - | + |
| **Family: Cyclamminidae** | | | | | | | | | | | | | |
| 49 | *Cyclammina* sp. | - | - | - | - | - | + | - | + | - | - | - | - |
| **Family: Discorbidae** | | | | | | | | | | | | | |
| 50 | *Discorbis* sp. | + | + | + | + | - | + | + | + | + | + | + | - |
| 51 | *Rotalia pulchella* | + | + | + | + | + | - | + | - | - | - | - | - |
| 52 | *R. translucens* | - | + | + | - | + | - | - | - | - | - | - | - |
| **Family: Elphidiidae** | | | | | | | | | | | | | |
| 53 | *Elphidium* sp. | + | + | + | - | - | - | - | + | - | + | - | + |
| **Family: Eponididae** | | | | | | | | | | | | | |
| 54 | *Eponides repandus* | + | + | + | + | + | + | + | + | + | + | + | + |
| **Family: Candeinidae** | | | | | | | | | | | | | |
| 55 | *Globigerina* sp. | + | + | + | - | - | - | + | - | + | - | + | + |
| 56 | *Globigerinita* sp. | - | + | + | - | - | - | - | - | - | - | - | - |
| **Family: Vaginulinidae** | | | | | | | | | | | | | |
| 57 | *Legena* sp. | + | + | + | - | + | - | + | - | - | + | - | - |
| **Family: Neoconorbinidae** | | | | | | | | | | | | | |
| 58 | *Neoconorbina* sp. | - | - | - | - | + | - | - | + | - | - | + | + |
| **Family: Nonionidae** | | | | | | | | | | | | | |
| 59 | *Nonion depressulum* | - | + | + | - | - | - | + | + | - | - | - | - |
| **Family: Heterolepidae** | | | | | | | | | | | | | |
| 60 | *Oridosalis umbonatus* | - | - | - | + | + | - | - | - | - | - | - | - |
| **Family: Planulinidae** | | | | | | | | | | | | | |
| 61 | *Planulina* sp. | - | - | - | - | - | - | - | + | - | - | - | - |
| 62 | *Planorbullina* sp. | - | - | - | - | - | - | - | + | - | - | - | - |
| **Family: Hauerinidae** | | | | | | | | | | | | | |
| 63 | *Quinqueloculina bradyana* | + | + | + | + | + | + | + | + | + | + | + | + |
| 64 | *Q. laevigata* | + | + | + | - | - | - | + | - | - | - | - | - |
| 65 | *Q. agglutianans* | + | + | + | - | - | + | - | - | - | - | - | - |
| 66 | *Q. oblanga* | + | + | + | - | - | + | - | - | - | - | - | - |
| 67 | *Q. lamarkiana* | - | - | - | - | - | + | - | - | - | - | - | - |

| S. No | Name of the Family & Species | Stations | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| **Family: Rosalinidae** | | | | | | | | | | | | | |
| 68 | *Rosalina agglutinans* | + | + | + | + | + | + | + | + | + | + | + | + |
| 69 | *R. floridana* | - | + | - | - | - | - | + | - | - | + | - | - |
| 70 | *R. globularis* | + | + | + | + | + | + | + | + | + | + | + | + |
| 71 | *R. vilardeboana* | + | - | + | - | - | - | - | + | - | - | - | - |
| 72 | *R. bradyi* | + | + | + | + | + | + | + | + | + | + | + | + |
| **Family: Rotaliidae** | | | | | | | | | | | | | |
| 73 | *Ammonia beccarii* | - | + | + | + | - | + | + | + | + | + | + | + |
| **Family: Spirillinidae** | | | | | | | | | | | | | |
| 74 | *Spirillina lateseptata* | - | - | - | - | - | - | + | + | - | + | - | + |
| 75 | *S. limbata* | + | + | + | + | + | + | + | + | + | + | + | + |
| **Family: Nubeculariidae** | | | | | | | | | | | | | |
| 76 | *Spiroloculina antillarum* | - | + | - | - | - | - | - | - | - | - | - | - |
| **Family: Textulariidae** | | | | | | | | | | | | | |
| 77 | *Textularia cuneiformis* | + | - | - | - | - | - | - | - | - | + | - | - |
| 78 | *T. candiana* | - | - | - | - | - | - | - | - | - | - | - | + |
| 79 | *T. agglutinans* | - | + | - | + | - | - | - | + | - | + | - | + |
| **Family: Miliolidae** | | | | | | | | | | | | | |
| 80 | *Triloculina* sp. | + | + | + | + | + | + | + | + | + | + | + | + |
| **POLYCHAETES** | | | | | | | | | | | | | |
| **Family: Pisionidae** | | | | | | | | | | | | | |
| 81 | *Pisione* sp. | + | + | + | + | - | - | + | - | + | - | + | + |
| **Family: Capitellidae** | | | | | | | | | | | | | |
| 82 | *Capitella* sp. | + | + | + | + | + | + | + | + | + | + | + | + |
| **Family: Nephtyidae** | | | | | | | | | | | | | |
| 83 | *Nephtys* sp. | + | + | + | + | + | - | - | + | + | + | + | + |
| **Family: Nerillidae** | | | | | | | | | | | | | |
| 84 | *Nerillidium* | + | + | + | - | - | - | - | - | - | - | + | + |
| 85 | *Nerilla* | + | + | + | + | - | - | + | - | + | - | - | - |
| **Family: Protodrilidae** | | | | | | | | | | | | | |
| 86 | *Protodrilus* sp. | - | + | + | + | - | - | + | - | + | + | - | - |

| S. No | Name of the Family & Species | Stations | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| **OLIGOCHAETES** | | | | | | | | | | | | | |
| **Family: Tubificidae** | | | | | | | | | | | | | |
| 87 | *Limnodriloides* sp. | + | + | + | - | + | + | + | - | - | - | - | - |
| 88 | *Aktedrilus* sp. | + | + | + | - | + | + | + | + | - | - | - | - |
| 89 | *Heterodrilus* sp. | - | + | - | - | + | + | + | - | - | - | - | - |
| 90 | *Olavius* sp. | + | - | - | - | + | + | + | - | - | - | - | - |
| 91 | *Phallodrilus* sp. | + | - | - | - | - | + | + | - | - | - | - | - |
| **Family: Enchytracidae** | | | | | | | | | | | | | |
| 92 | *Grania* sp. | + | + | + | - | + | + | + | + | - | - | - | + |
| **OSTRACODS** | | | | | | | | | | | | | |
| **Family: Cypridae** | | | | | | | | | | | | | |
| 93 | *Cyprideis* sp. | + | + | + | + | - | - | - | + | - | - | - | - |
| **Family: Cytherideidae** | | | | | | | | | | | | | |
| 94 | *Cytheridea* sp. | - | - | - | - | + | + | + | - | - | - | - | - |
| **Family: Paracytherideidae** | | | | | | | | | | | | | |
| 95 | *Paracytheridea* sp. | - | - | - | - | - | - | - | - | - | - | - | + |
| **Family: Cyprididae** | | | | | | | | | | | | | |
| 96 | *Herpetocypris* sp. | + | + | + | - | - | + | + | + | + | + | + | + |
| **Family: Cytheruridae** | | | | | | | | | | | | | |
| 97 | *Cytheromorpha* sp. | + | + | + | + | + | + | + | + | + | + | + | + |
| **Family: Paracythermidae** | | | | | | | | | | | | | |
| 98 | *Paracythroma sp* | - | - | - | - | - | - | - | + | - | - | - | - |
| **ISOPODS** | | | | | | | | | | | | | |
| **Family: Microcerberidae** | | | | | | | | | | | | | |
| 99 | *Microcerberus* sp. | - | + | + | - | - | - | + | - | - | - | - | + |

+ Presence of nematode distribution

- Absence of nematode distribution

Nine major meiofaunal taxa i.e. nematodes, harpacticoid copepods, foraminiferans, polychaetes, ostracods, oligochaetes, gastrotrichs, turbellarians and isopod were recorded at different sediment nature of Tamil Nadu coast. Nematodes were the most abundant group of meiofauna at all the sampling sites. This is generally the case in marine sediments. The abundance of polychaetes was less, which may be due to predominance of sand fraction in sediments at most of the stations. Oligochaetes were second in abundance to nematodes only at stations 1, 6 and 7 (Chennai, Thondi and Thiruchendur), probably because at station 1, situated near the sewage mixing area and sediment here was very fine. In general, oligochaetes are mainly found in the polluted areas. Among the different sampling sites, areas with seagrass bed cover (stations 6 and 7) sediment contained highest density of meiofauna and also mainly inhabited by burrowers such as nematodes and oligochaetes. Nematodes were the most dominant group in the finer sediments. Meiofauna densities in the seagrass bed were significantly related, with a time log, to change in bacterial standing stock, indicating that microbes may be an important resource. The increase of detritus, which provides the main food for the meiofauna, is suggested to be the reason for the high meiofauna densities observed in the seagrass bed. A lowest density of meiofauna was observed in sandy sediments especially at stations 1 (Chennai), 5 (Nagapattinam), 8 (Tuticorin), 11 (Rameswaram) and 12 (Kanyakumari). Probably because at station 1, situated near the sewage mixing area.

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