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Meiofauna of Some Sandy Beaches of Andaman Islands

Z A ANSARI & B S INGOLE
National Institute of Oceanography, Dona Paula, Goa 403 004

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Comparatively high meiofauna numbers were recorded from beaches having fine sand particles than those having coarse to medium sand particles. The fauna was dominated mainly by nematodes (53.7%), harpacticoids (13.7%) and polychaetes (12.8%). On all the beaches, meiofauna concentrated in the upper 4 cm layer of the sediment. Nematodes, polychaetes and oligochaetes were present throughout the column of 10 cm core.

Sandy beaches have stable and diverse fauna[1,2]. Investigations on the meiofauna of psammolittoral environment have been made including some from Indian coast[3-5]. Apart from the work of Rao[6], no work has been done on the intertidal fauna of Andaman and Nicobar group of islands. In this communication, occurrence and abundance of meiofauna from some sandy beaches of Andaman Islands are reported.

Andaman and Nicobar Islands (lat. 6° to 14°N and long. 92° to 94°E) in the Bay of Bengal are approximately 1200 km off the east coast of India. During a survey work (Feb. 1983) samples of meiofauna were collected from 6 beaches (South point, Rangat Bay, Bamboo flat, Maya Bandar, Panighat and Little Andaman) of Andaman Islands, where tidal amplitude ranged from 0.14 to 2.33 m. Duplicate samples were taken from low water mark using perspex tube (4.5 cm inner diam.). The tube was pushed into the sand to a depth of 10 cm with one end closed. The sediment thus obtained was divided into 5 sub-samples of 2 cm each and preserved separately in 5% buffered formalin containing Rose Bengal. Meiofauna was extracted following the procedure recommended by Gowing and Hulings[7]. Sediment was analysed[8] and mean grain size (MZ φ) and standard deviation ($\delta I\varphi$) were calculated.

Mean particle diameter of all beaches varied from 1.28 φ to 3.63 φ (Table 1). Most of the samples were sandy having coarse to fine sand grain particles with varying admixture of silt and clay and a small portion of broken shells. At Maya beach, Bamboo flat and

Table 1—Sediment Characteristics
(Values are in φ unit)

Site	South Point	Rangat Bay	Bamboo flat	Maya Bandar	Panighat	Little Andaman
Mz φ	1.28	1.94	2.12	2.12	3.63	2.40
$\delta I\varphi$	0.28	0.25	0.35	0.35	0.37	0.32
% < 62 μm	4.28	6.76	7.02	7.02	18.22	4.05

Table 2—Distribution of Meiofauna in the Intertidal Sand
(Numbers, average of 2 samples, per 10 cm^2 core sample)

	South Point	Rangat Bay	Bamboo flat	Maya Bandar	Little Andaman	Panighat	Total	%
Nematoda	1270	913	1598	2052	584	4597	11014	53.7
Polychaete	381	397	204	1191	152	279	2604	12.8
Harpacticoid	381	888	102	533	304	583	2791	13.7
Archiannalid	83	27	—	25	—	—	135	0.6
Turbellarian	43	145	457	153	76	203	1077	5.3
Oligochaete	25	—	127	67	381	279	879	4.3
Isopod	—	347	—	—	633	—	980	4.8
Gastrotrich	43	173	44	25	28	25	388	1.7
Tardigrada	25	—	25	—	36	25	111	0.5
Others	72	127	51	101	76	125	527	2.6
Total	2323	3017	2608	4147	2270	6116	20481	—

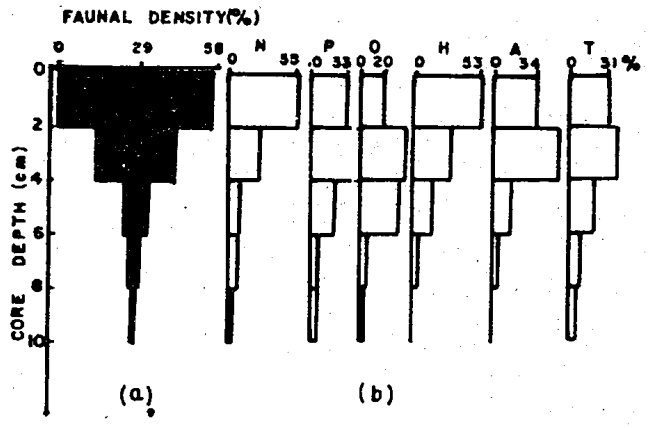

Fig. 1—Vertical distribution of meiofauna (a) and major faunal groups (b) [N, Nematoda; P, Polychaeta; O, Oligochaeta; H, Harpacticoida; A, Archiannelida; and T, Turbellaria]

Panighat the amount of silt and clay present was significant. Very low value of standard deviation indicated that the sediments at all beaches were well sorted. Variation in mean particle diameter indicated the effect of exposure.

Meiofauna was dominated by nematodes (53.7%) in the total population. Next in abundance were harpacticoids, followed by polychaetes, turbellarians, isopods and oligochaetes (Table 2). Other members which were not present consistently include archiannelids, tardigrada and nauplii of crustaceans. Nematodes are generally the dominant taxon in marine meiofauna[1], although the proportion of harpacticoid copepods increases in coarser sand on exposed beaches[6]. Present study also reports similar results (Table 2).

Fig. 1(a) shows vertical distribution of meiofauna in the sediment. Bulk of the fauna (> 70%) was concentrated in the upper 4 cm layer. The fauna progressively decreased in the deeper layer and only 2% of the total fauna was observed in 8-10 cm layer. The availability of oxygen, water table of the beach and food are the main factors responsible for the concentration of fauna in the top layer[1]. Ganapati and Rao[3], however, have reported interstitial fauna to be more concentrated below 5 cm layer on a tropical sandy beach.

Fig. 1(b) shows vertical distribution of some of the major faunal groups. Nematodes, polychaetes, oligochaetes and turbellarian were observed in the entire 10 cm core. Their distribution indicates the ability of these organisms to withstand critical conditions of oxygen tension at such depths in the sediment. It has been found that harpacticoids are very sensitive to the effect of decreasing oxygen in the substrate[9] and this could be the reason in the present study where they were found only in the top layers.

Quantitative estimates clearly indicate that the composition of the fauna do not differ significantly, despite variations in the nature of the habitat. The meiofauna in general appears to be rich and well distributed in the sandy beaches of Andaman and Nicobar group of islands.

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