

MACROBENTHOS OF THE COCHIN BACKWATER

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ABSTRACT

A survey of the benthic macrofauna was carried out in Cochin Backwater. Differences in the qualitative and quantitative distribution of the fauna as compared to those reported earlier indicated the influence of man-made changes in the environment including pollution on the fauna of the backwaters.

Earlier studies on macrobenthos in Cochin Backwater have indicated certain trends (Desai and Krishnan Kutty, 1967; Kurian, 1972). Since considerable amount of changes have been occurring in the Cochin Backwater due to pollution, it was felt desirable to study further macrofauna to discover any changes in the fauna reported earlier.

Benthic samples were taken at monthly intervals from four fixed stations during March 1973 to February 1974 with the help of grab of 0.04 m² area. The analysis of the samples followed the method described earlier (Ansari, 1974). The area of study is shown in Fig. 1.

The faunal composition from four different stations showed wide variation (Table I). Molluscs, polychaetes and crustaceans formed the bulk of the fauna and constituted about 85% of the total number of macrobenthic organisms at all the stations. The average number of animals in the present study varied from 481 to 1100/m². The average biomass (dry weight) varied from 37.33 to 106.32 g/m². The maximum and minimum number of organisms were recorded in the barmouth region and in the upper estuarine region respectively of the Cochin Backwater.

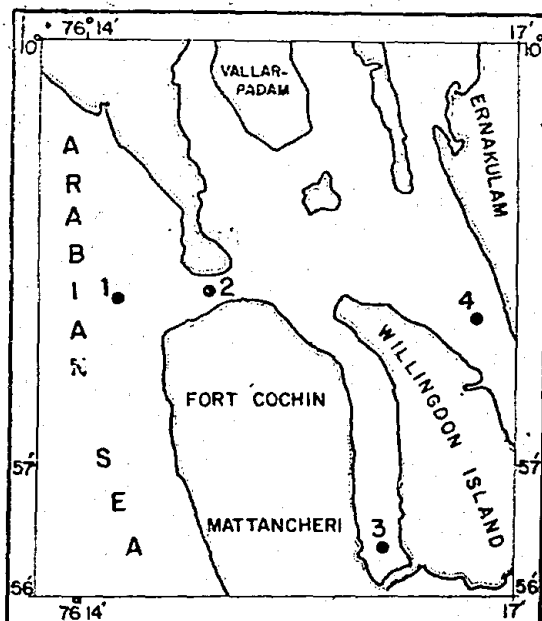


Fig. 1. Map of Cochin Backwater showing location of stations.

Among the polychaetes, only *Prionospio* sp. was found at all the stations throughout the year. *Diopatra neapolitana*, although restricted to the barmouth region was also found throughout the year. In the estuarine part, *Nephtys* sp., *Perinereis* sp. and *Marphysa* sp. were observed frequently in the samples. Molluscs were represented mainly by *Meretrix casta* and *Modiolus striatulus*

Table I. Comparison of fauna from different stations showing percentage of total number of macrobenthos.

St. No.	Polychaeta %	Mollusca %	Crustacea %	Others %	Total average No./m ²	Total average biomass g/m ²
1	28.3	59.2	6.3	6.2	927	94.06
2	44.6	33.3	19.5	2.6	1100	106.32
3	33.9	26.4	37.6	2.1	669	48.27
4	41.4	29.7	24.8	4.1	486	37.33

near the barmouth region. In the estuarine region *Nuculana* sp. and some gastropods occurred in few samples. Among crustaceans the amphipods were found in large numbers at the barmouth region while the decapods were abundant at all the stations. The isopods occurred in poor quantity near the barmouth. The crabs, *Viaderiana* sp. and *Halicarnicus* sp. were found more frequently in the estuarine region than near the barmouth.

Changes in the abundance and distribution of fauna was observed at almost all the stations. The average total number of animals was maximum at station 2, i.e., at the barmouth and minimum at the station 4 in the upper estuarine region. Wide fluctuation in the physical parameters especially salinity have been reported during the monsoon (Sankaranarayanan and Qasim,

1969). This had a strong bearing on the distribution of benthic fauna in the Cochin Backwater (Desai and Krishnan Kutty, 1967). The polychaetes, specially *Prionospio* sp., showed no marked change in their density at all the stations and indicate their capability to tolerate changes in the physical environment including pollution. Molluscs, however underwent changes in abundance specially at station 3 and 4 where some of the bivalves like *Nuculana* sp. reported in abundance earlier, occurred sparsely in the present study. The crustaceans though showed changes in the distribution were more abundant near the barmouth region. The abundance of fauna near the barmouth region may be attributed to the favourable conditions for the marine and estuarine life as observed by Desai and Krishnan Kutty (1967 a).

Table II. Comparison of quantitative data on macrobenthos of the Cochin Backwater.

Maximum Density No./m ²	Dominant Group	Reference
8137	Polychaetes, Bivalves, Gastropods	Desai and Krishnan Kutty, 1967
35,000	Polychaetes, Bivalves, Amphipods, Isopods, Decapods, Gastropods	Kurian, 1972
1100	Polychaetes, Bivalves, Amphipods, Decapods	Present study

A comparison of the data in the present study with the earlier work indicates that the macrobenthos which were not very similar qualitatively differed in population density and biomass in the Cochin Backwater (Table II). Some of the dominant groups like Gastropoda and Isopoda, observed earlier (Desai and Krishnan Kutty 1967; Kurian, 1972) were either absent or occurred sparsely. While it is possible that changes in the physical environment are responsible for low densities and biomass, the effect

of man-made changes including pollution occurring in the backwaters since earlier studies seems to be the main cause for decline in the benthic fauna.

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