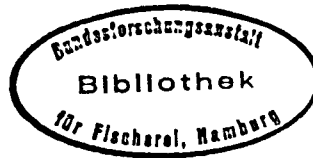


International Council for the
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 Plankton Committee



Microbiological Investigations in the northeast Atlantic

by

E. Ya. Rossova^{x)}

In 1968-1970 the scientists of the Polar Institute carried out microbiological investigations in the northeast Atlantic, aiming at a determination of the relationship between the quantitative distribution of the micro-organisms in the ocean and the hydrographical conditions, and also revealing the possibility of the use of micro-organisms as an index of productivity in poorly explored oceanic areas.

In April-July 1970, 35 microbiological stations were worked aboard the RV "Gemma" (Figure 1). Water samples were taken by Hansen bottles lowered to standard depths up to 2 000 m. The analysis of samples was made by cultivation on membranes (Kriss, 1952).

The data obtained show that the distribution of bacteria both over the area and by depths was fairly inhomogeneous. The abundance of heterotrophic micro-organisms fluctuated from several tens to hundreds of thousands per 1 litre, but in 70% of all samples the number of bacteria was of the order of $10^4/1$ l.

Zones with high and low abundance of bacteria are most clearly observed at 50 m. depth (Figure 2). As can be seen from Figure 2, the greatest number of bacteria was noted in the extreme northwest and south-east parts of the investigated area, in the waters adjacent to Ireland from the southwest and in the zone of the oceanic Polar front (see V.V. Rossov's paper in *Annales Biologiques*, 27). Concentrations of different fish species were observed in the same areas.

Very low abundance of bacteria was found in the waters adjacent to the Polar front from the north, in the Bay of Biscay and in waters west of that Bay. The ichthyological investigations carried out in the same areas showed that these were characterized by an extremely poor ichthyofauna.

A comparison with the results of determination of the total abundance of bacteria made by the author in the same areas in 1968 showed that the main "poor" and "productive" zones had not changed considerably. The ratio of the abundance of heterotrophic micro-organisms to the total bacteria number is of the order of 1:1 000. In 1968 the zones with a great number of micro-organisms and the zones of ichthyofauna development were also similar.

R e f e r e n c e s

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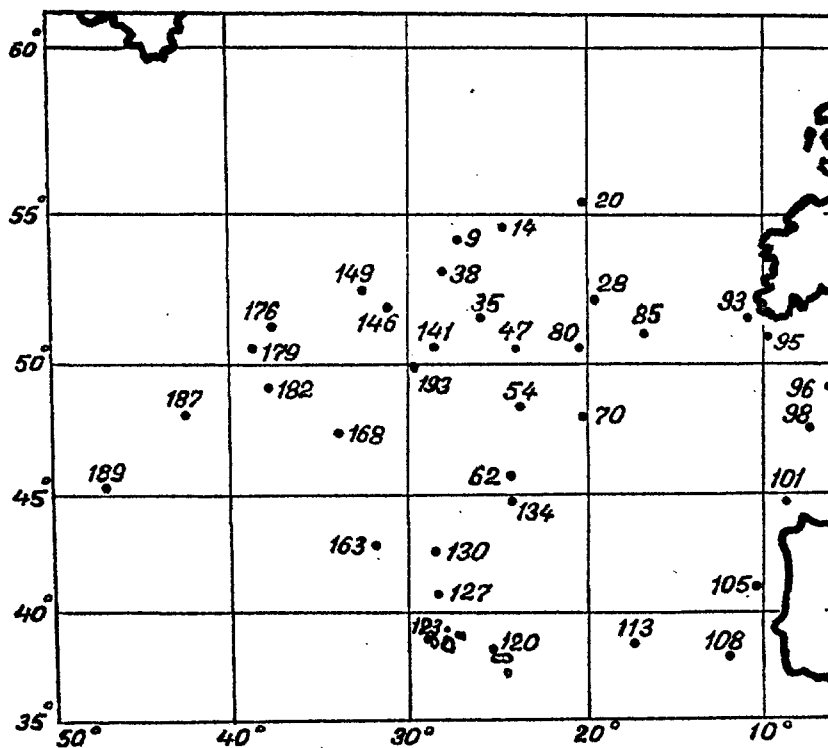


Figure 1. Location of microbiological stations worked by RV "Gemma" in April-July 1970.

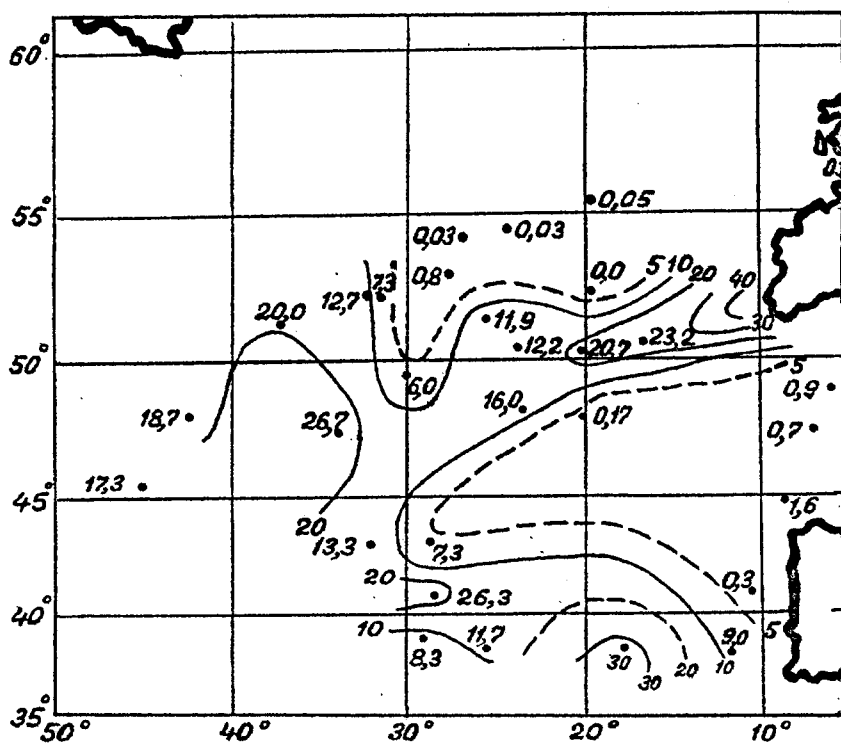


Figure 2. Distribution of heterotrophic microorganisms in summer 1970 at 50 m depth (thousands of cells per 1 litre of water).