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The Soviet Plankton Investigations in the Norwegian and Greenland Seas in June 1962

by

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In the first half of June 1962, the Soviet scientists have completed the oceanographic survey of the Norwegian and Greenland Seas on board the research ships of the PINRO and BALTNIRO. A total of 327 plankton stations were worked at the standard sections. 962 samples of zooplankton were taken.

At every station plankton was sampled with a Henson net (gauze No.23(3))at the level 0-50 m and, in addition, with a Judary net of No. 38 gauze, which has a diameter of 37 cm. All the zooplankton samples were studied aboard the vessels by means of binoculars. The qualitative composition of zooplankton was noted; the quantity of phytoplankton was determined visually according to the scale adopted in these two Institutes. The volume of the deposit was measured by the method of water removing.

Some data on the plankton biomass at the standard sections over the period 1958-1962 were used.

Plankton Development in June 1962

The month of June 1962 was characterised by the retarded development of plankton and the later onset of the biological seasons in comparison with the relatively warm year of 1959.

Due to these facts, less quantities of the warmth-loving organisms penetrated to the north (Collozoum, Limacina retroversa, Tomopteris, Physophora hydrostatica), and the Arctic species (young Calanus hyperboreus and Themisto libellula) were distributed over a greater area in the southern direction.

At the same time, the Arctic species were not found in the southern part of the Norwegian Sea (south of 65°45'N).

In view of the increased inflow of Arctic waters, an intensive "water blooming" was observed in the area of cold waters as a result of the development of Phaeocystis and Chaetoceros sp. The weak stratification of waters in the zone of intermixture caused a relatively weak development of "diatom blooming" (Chaetoceros sp. and Thalassiosira sp.). The summer outburst of "blooming", caused by the development of Rhizosolenia styliformis and Rhizosolenia alata, was observed only in the most southern areas of the Norwegian Sea. The zone of the Peridinea development was very limited.

The locations of the main zones of "blooming" in June 1962 were analogous to those found in May 1959.

The distribution of the plankton biomass in 1962 was almost the same as in the preceding years. As to the quantity, the following regularity was revealed:- the plankton biomass at the most northerly sections in June 1962 was considerably lower than in the previous years. More southerly (at the sections from 72°50'N to 69°20'N), the plankton biomass was practically the same as in the preceding years. On the average, the biomass of plankton in the whole northern part of the area investigated remained in June 1962 at the level of that of 1960-61 (See Table 1). The biomass at the more southern sections was considerably higher. The average biomass in the whole southern part of the Norwegian Sea was considerably higher than it had been in 1958, 1960 and 1961 and approached the biomass of 1959. In the distribution of the plankton biomass in 1962, an interchange of the poor and rich zones in accordance with thermic regime of the Sea. The increased biomass was found in the polar and mixed waters. In the polar waters, the main mass of plankton was represented by the young of Calanus hyperboreus, Metridia longa, Themisto juv., Eukrohnia hamata. In the mixed waters, the amount of plankton consisted mainly of Calanus finmarchicus of the II-IV stages and of a great number of Pseudocalanus and Oncaea borealis.

In the south-western area of the Norwegian Sea, the more abundant organisms were Temora and the young of Euphausiacea. The increase of the biomass, caused by the development of Calanus finmarchicus of the IV-V stages, occurred also in the eastern part of the Norwegian Sea. Small biomass was registered in the central areas (less than 10 ml).

As regards other peculiarities of the plankton development in June 1962, it is necessary to note the extremely weak development of the young Aglantha digitale and the large concentrations of Calanus finmarchicus in the southern part of the Norwegian Sea.

Table 1. Average biomass of plankton in different years in mg/m^3 (the 0-50 m layer, a Juday net No.38).

Sections	1958	1959	1960	1961	1962
The Atlantic waters					
76°30'					1122
74°30'			1247	735	369
72°50'			1211	1512	1269
71°10'			1464	1240	1154
69°20'			1160	1230	1528
67°30'			1256	735	818
Average biomass at all northern sections			1267	1088	1060
65°45' (in mixed and polar waters only)				540	1346
The EIC section		1160			1328
63°00'		1070	980	552	1204
60°44'	440	1406	940		636
Faroe-Shetland Channel	480	672	440		1604
Average biomass at all southern sections	460	1076	766	546	1224