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MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1976 RESEARCH VESSEL PROGRAMME

REPORT: RV CORELLA: CRUISE 7

STAFF

D Harding (NIC)
D J Garrod
N Reynolds
E Shreeve
P Hall (Student)

DURATION

Left Lowestoft 1800h 10 May

Arrived Lowestoft 0200h 20 May

All times are British Summer Time

LOCALITY

West central North Sea: north coast of Norfolk to 56°N

AIMS

1. Investigate the distribution and abundance of planktonic fish eggs and larvae, zooplankton predators and competitors and the phytoplankton using the Lowestoft multi-purpose plankton sampler. Including replicate hauls for variance estimates.

2. Monitor sub-surface water continuously along the ship's track for temperature, salinity, transparency and chlorophyll 'a'.

3. Collect water samples from the pump for salinity and nutrient analyses; calibrate the fluorometer with chlorophyll 'a' extracts, measure phaeophytin, and identify the phytoplankton contribution to chlorophyll 'a' fluorescence, including the preparation of slides for electron microscope examination of the micro flagellates.

4. Carry out hauls with a frame net to sample young fish.

5. Use the changing net samplet to investigate the vertical distribution of fish larvae and other zooplankton, alternating with water bottle casts for phytoplankton, chlorophyll 'a' and phaeophytin in relation to temperature and light penetration in the water column over a 26-hour period.

6. Collect samples of fish for stomach content analysis, using the young gadoid midwater trawl.

7. Collect live plankton as required.

8. Collect fish samples (frozen) for metal analysis.

NARRATIVE

CORELLA sailed from Lowestoft on the late afternoon tide, at 1800h 10 May. On leaving the pier head the electric pump was started and sub-surface water pumped to the environmental monitors and the fluorometer.

All instruments were then calibrated and recordings of temperature, salinity, transparency, pH, oxygen saturation and chlorophyll 'a' commenced. At 2030h the Lowestoft multi-purpose plankton sampler was calibrated and new members of the sea-going team familiarised with its operation. Sampling on the standard grid started at 2340h and continued without interruption until 1730h 16 May. A grid of nine stations was then occupied off Tees Bay, south east of Baynans Hole, ten replicate hauls made near the centre of the patch where moderate densities of larvae had been observed, and the plankton sampler recalibrated. RV CORELLA steamed to Tees Bay at 1100h 17 May, rigged for trawling and returned to the same location off Tees Bay to fish in mid-water with the International Young Gadoid Trawl. The ship steamed to the Flamborough off ground at 1500h 18 May and started fishing at dusk on the same day. Work was completed at 1300h 19 May and the ship then sailed for Lowestoft.

During the fishing operations casts were made with water bottles and submarine light measurements made with the scanning radiometer.

The cruise concluded at 0200h 20 May when CORELLA docked at Lowestoft.

RESULTS

All aims were completed except 5 and 8. The vertical distribution samples were not collected since the changing net sampler damaged on cruise 6/76 was not repaired in time for this cruise. Too few fish were collected in the Humber and in Tees Bay to make up a good sample for metal analysis.

Plankton samples were collected at 93 stations on the standard grid using the Lowestoft multi-purpose sampler fitted with 60, 200 and 325 mpi nets and with a high speed water sampler.

Replicate hauls were then made using only the main net (60 mpi) on a grid of nine stations, followed by 10 hauls at a single station near the centre of the larval patch. All the samples contained moderate numbers of fish larvae. There was considerable clogging of all nets in the southern and eastern parts of the grid, particularly near the Dogger Bank: the main cause was Phaeocystis. In the northern part of the grid clogging occurred mainly in the 60 mpi net and in this case was due to dense patches of oikopleura. The plaice spawning had obviously ended since there were very few samples with plaice eggs. The samples of fish collected near Baymans Hole and on the Flamborough off ground were subsampled and preserved in formaline for stomach analysis.

The environmental package worked well throughout the cruise and charts illustrating the sub-surface temperature, transparency and salinity are appended to this report. In addition samples were collected from the overflow of the pump for nutrient analysis (N, P. and Si) and for salinity checks. Water bottle casts were also made at the location of the Tyne Buoy, 55°04.45'N, 01°15.7'W, and on four occasions during the fishing operations and samples collected for nutrients and salinity measurements.

Chlorophyll measurements were made continuously with a Turner Fluorometer and samples analysed at each station for chlorophyll 'a' and phaeophytin. The chlorophyll 'a' concentrations were generally in excess of 3μ gm/L over a wide area of the grid, and 9μg/L values were encountered in isolated patches. In general values were less than 1μg/L north of 55°N and east of 1°30'E. A chart of the chlorophyll 'a' concentrations is appended. Water samples from the hydro-casts were also analysed for chlorophyll 'a' and phaeophytin. Submarine daylight measurements were made immediately after the water bottle

casts. Material was preserved from the pump at each station and from the water bottles to identify the main organisms contributing to the fluorescence.

Samples of live zooplankton were collected at station 97 for Mrs Thompson and a sample of phytoplankton was collected off the North Norfolk Coast, at 53°11'N, 01°19'E for Dr Dodge.

800 sea bed drifters were released at standard stations on the grid.

D Harding
(Naturalist in Charge)
1 June 1976

SEEN IN DRAFT: Master J E M Balfour
Fishing Skipper - Not on board

INITIALLED: A J L

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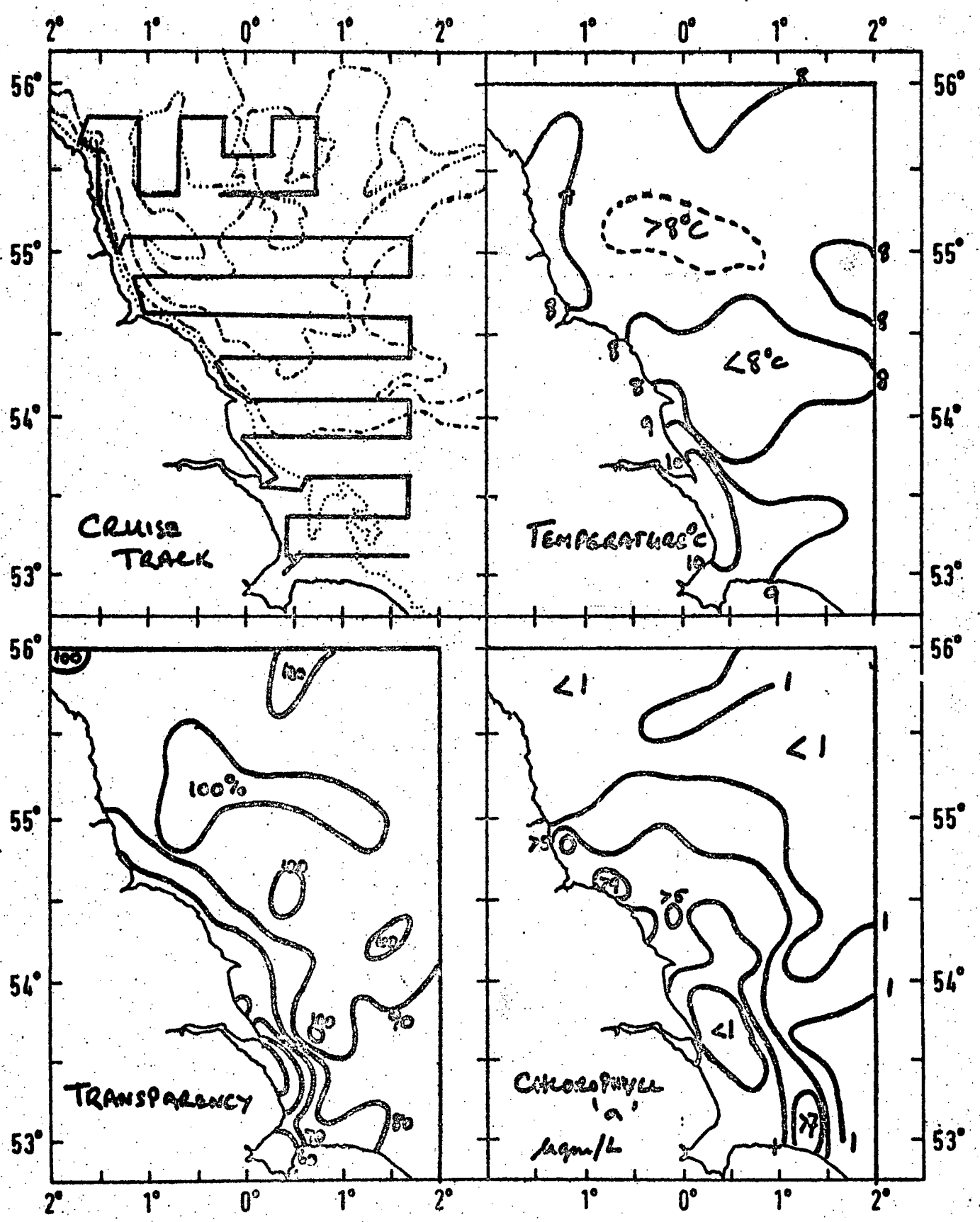
2° 1° 0° 1° 2°
56° 55° 54° 53°
CRUISE TRACK
TEMPERATURE °C
>8°C
<8°C
TRANSPARENCY
100%
CHLOROPHYLL 'a'
µgm/L
<1

CORELLA 7/76