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FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1976 RESEARCH VESSEL PROGRAMME

REPORT: RV CORELLA: CRUISE 2b

(PROVISIONAL: Not to be quoted without prior reference to the author)

STAFF

D Harding
J Nichols
J Horwood
B Mumford
S Stevens

DURATION

Left Lowestoft 07.00 h 28 January
Arrived Lowestoft 15.00 h 11 February
All times are Greenwich Mean 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 phytoplankton using the Lowestoft Multipurpose plankton sampler.
2. Monitor the sub-surface water continuously 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 phytoplankton contribution to chlorophyll 'a' fluorescence, including the preparation of slides for electron microscope examination of micro flagellates.
4. Carry out replicate hauls with the Multipurpose plankton sampler near a parachute drogue to estimate sampling errors.
5. Test the possibility of carrying out alternate hauls with the high speed plankton sampler and the Boothbay Net.
6. Collect samples with the changing net sampler to investigate vertical distribution of fish eggs and larvae and zooplankton; alternating with water bottle casts for phytoplankton, chlorophyll 'a' and phaeophytin in relation to temperature and light penetration into the water column over a 26 hours period.
7. Collect samples of fish for stomach content analysis using the young gadoid trawl in mid-water.
8. Collect live plankton and fish eggs as required.

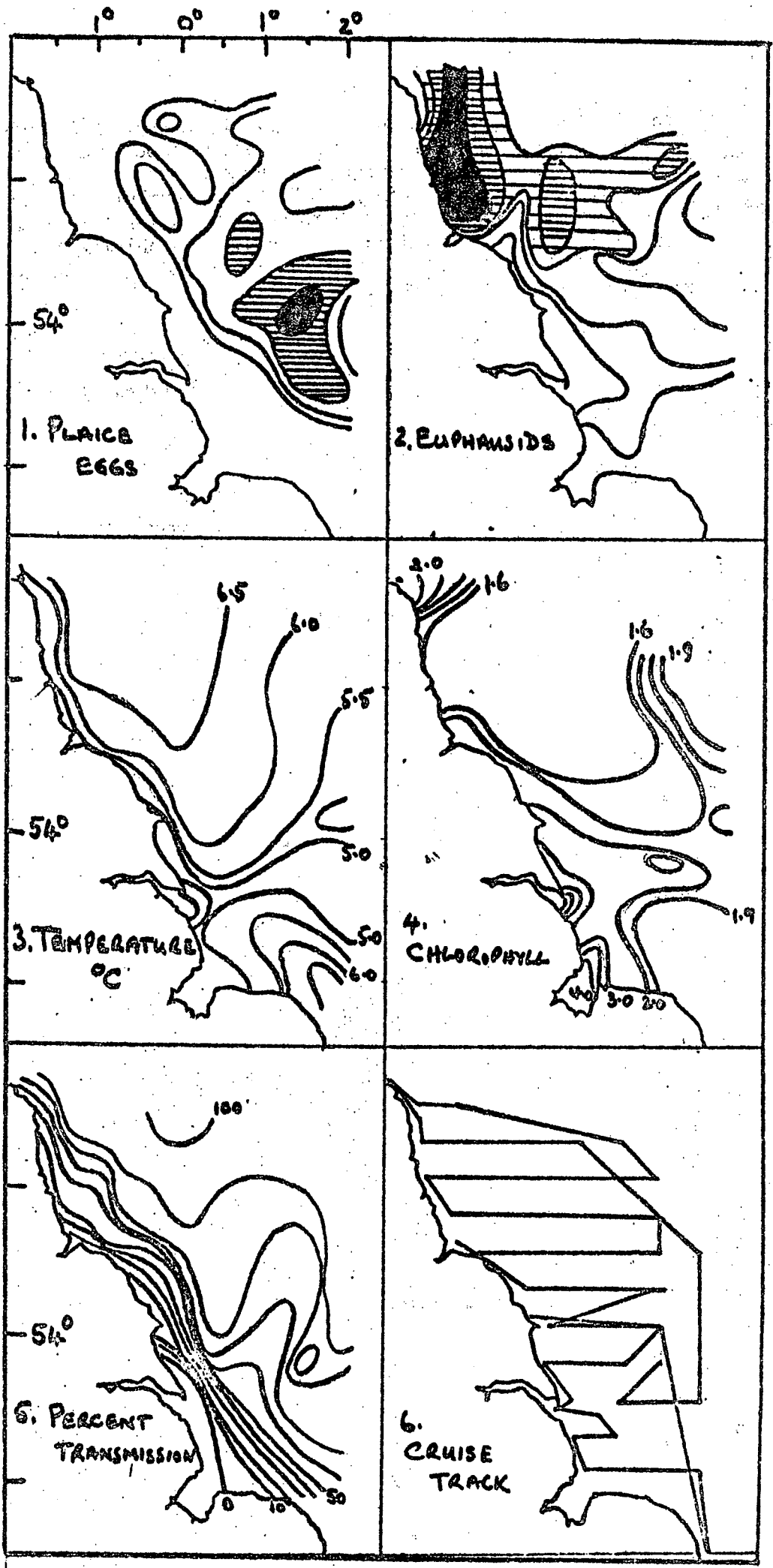
NARRATIVE

RV CORELLA sailed at 0700 h 28 January. Once clear of Lowestoft all the environmental monitoring instruments were calibrated, linked to their recorders and continuous recording commenced. The plankton sampler was calibrated as soon as CORELLA reached deep water and work started on the grid of plankton stations at 1330 h. Sampling was discontinued in gale force winds at 2250 h and CORELLA ran for shelter in the Humber. Sea bed drifters were released on the Humber sludge dumping ground at 2340 h on the way to the anchorage. CORELLA remained at anchor in the Humber until the gales abated on the morning of 1 February and work recommenced on the survey at 0835 h and continued in marginal conditions until 0330 h 4 February when the ship ran in to Newcastle to land a member of the crew for medical treatment, repairs to the automatic steering, and to take on water. CORELLA sailed at 0700 h 5 February and recommenced work on the survey. At 0240 h 6 February gale force winds and a heavy swell prevented further work offshore and CORELLA ran for shelter again in Berwick Bay working inshore stations and releasing sea bed drifters en route. The Boothbay net was rigged overnight while anchored at Berwick and test runs made in the bay on the morning of 7 February. Work resumed on the grid at 1030 h and continued without interruption until 70 stations had been sampled at 2000 h 8 February. Replicate hauls with the standard sampler were then made until 0040 h 9 February. The changing net was rigged by 0200 h and sampling started again at 0220 h in the centre of the plaice egg patch. Only one series of measurements was made with the spectral radiometer between 1130 h and 1230 h. The weather deteriorated in the late afternoon and the work with the changing net was discontinued at 1800 h and the ship headed for shelter in Filey Bay to rig for trawling. CORELLA returned to the centre of the egg patch and commenced fishing with the young gadoid midwater trawl at 1400 h 10 February. Three hauls were made; in full daylight; at dusk and in complete darkness. CORELLA sailed for Lowestoft at 2230 h. A sample of live and preserved plankton was collected at 0430 h 11 February off the North Norfolk Coast.

RESULTS

All aims were carried out. But not all the stations could be worked because of bad weather. Most of the electronic equipment worked throughout the cruise, but salinometer and oxygen records are suspect due to faults in these instruments. We also found it impossible to work both water bottles and the cumbersome frame with the submarine light measuring instruments on the same hydrographic wire. 700 sea bed drifters were released at 10 stations on the grid.

A cursory examination of the plankton samples showed a centre of plaice spawning at approximately $54^{\circ}N$ $1^{\circ}30'E$, due east of Flamborough Head (Fig. 1). There was also a dense patch of Euphausiids (Fig. 2) stretching along the coast from the Tyne to Holy Island and eastwards at $55^{\circ}N$ to approximately $1^{\circ}30'E$. The heaviest traces on the echo sounder seemed to correlate with the euphausiid patch and on many of the stations in this area, 0-group sprats were often taken in the high speed plankton nets. Chlorophyll values were low throughout, the highest values recorded being near Holy Island, the mouth of



the Tyne, in the Wash and the Humber Estuary; the higher values extended to 2° E from the Humber (Fig. 3). Charts of water temperature (Fig. 4) and transparency (Fig. 5) show a tongue of warmer water of high transparency extending along the N.E. coast from 55° 40' N to the Humber and a second patch lying offshore along the North Norfolk coast below the Humber seems to have been intruding from the Southern Bight. The chlorophyll values correlate well with temperature and transparency; lowest values lie in the warmer highly transparent water.

D Harding

20 February 1976

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