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R. V. CLIONE

Report for Cruise 2/1969

Staff: J. W. Talbot Duration: 23 January -
 G. C. Baxter 8 February
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 Konink. Ned. Meteorol. Inst. (1)(part-time)

Aims

To measure diffusion rates and associated hydrographic features with particular reference to the distribution of plaice ova and larvae in the southern North Sea. It was intended to obtain measurements of the following:

- (a) Rates of diffusion from a release of Rhodamine-B dye in the vicinity of 52°N 2°45'E.
- (b) The distribution of plaice ova and larvae in this area just before and at the end of the diffusion measurements.
- (c) Water movement using two moored current meters at each of seven stations in the area of the dye release.
- (d) Water movement using a Direct Reading Current Meter from the ship.
- (e) The salinity and temperature distributions.

Narrative

The departure from Lowestoft was delayed by one day in order to provide sufficient preparation time for the hydrographic equipment. After leaving Lowestoft at 1500 hours, 24 January CLIONE proceeded to the area in which the current meters were to be laid. The first current meter rig was laid by 2230 hours and other rigs, making six in all, were laid at intervals throughout the night. At 1010 hours, 25 January, when the sixth rig was in position, CLIONE set a course to the southwesterly end of the plankton sampling grid.

Plankton sampling commenced at 1600 hours and continued until 0630 hours, 26 January. CLIONE then returned to the area of the current meter rigs where a visual check indicated that all rigs were in order. Having completed this check by 1310 hours CLIONE returned to the plankton grid and plankton sampling was resumed at 1500 hours, continuing throughout the night. On each occasion that the plankton grid passed close to a meter rig the buoy was seen in position apparently all in order. At 0900 hours, 27 January CLIONE met CORELLA who had worked the northeasterly part of the plankton grid. CLIONE completed her part of the grid at 1045 hours, and then proceeded to the seventh current meter station. This was laid at 1540 hours and completed the current meter network. CLIONE then steamed to the region of the Rhodamine-B dye patch that had been released during the afternoon by CORELLA.

On 28 January a survey of the dye patch was worked with CORELLA from 0940 until 1350 hours. CLIONE then proceeded to the position of the most northerly of the current meter rigs whose light had failed. After replacing the light the ship proceeded to inspect the other moored buoys.

29 January was occupied with surveying the Rhodamine patch and this work continued on the 30th. Since CORELLA had to leave the survey area for Ostend by 0500 hours, 31 January a joint Rhodamine survey was arranged commencing 0001 hours that day. During this survey the southwesterly wind was 35-40 knots gusting to 50 knots. CLIONE could not usefully work on her own in these conditions and she therefore left the dye patch after completing the survey at 0600 hours and proceeded to Ostend, where she docked at 1115 hours.

The Dutch observer left the ship at Ostend and returned to K.N.M.I.

After leaving Ostend at 0830 hours 1 February, CLIONE proceeded direct to a buoy which had been sighted upside down during the storm in the early morning of the previous day. When next sighted the buoy was the right way up. The next buoy sighted had no lamp housing, this having apparently broken since the base was still bolted to the frame. In the conditions of wind and tide it was impossible to replace the lamp and the ship therefore proceeded to commence a survey of the dye patch. CORELLA had already gone to the northeastern end of the patch and was working her way in a southwesterly direction.

The two ships completed a survey of the dye patch by 1900 hours and during this survey two more of the current meter buoys were sighted with their lights flashing. By this time the weather had deteriorated, the wind having increased to a gale and the forecast was for a further increase in wind from the northwest. In these conditions the ship steamed towards the Suffolk coast for shelter. CLIONE sheltered at anchor off Southwold until 1600 hours, 3 February. The gale was then beginning to abate and the ship returned to the area of the dye patch and current meters. A long heavy northerly swell prevented any attempt to approach the current meter buoys to repair the damaged lights but a survey of the dye patch was carried out in the rather adverse conditions from 2025 to 2359 hours. On completion of this survey which was carried out jointly with CORELLA, CLIONE dodged for the rest of the night. On 4 February CLIONE recovered three current meter rigs intact at 0900, 1300 and 2200 hours respectively and also surveyed the rhodamine patch from 1400 to 2100 hours. The remaining four current meter rigs were recovered by 1500 hours the next day and the ship then steamed towards the southwest to begin a plankton survey by 1900 hours. The survey continued until 1550 hours on 6 February. Further work was then considered to be dangerous, in the southwesterly gale that had quickly sprung up. The ship therefore set course for Lowestoft where she docked at 1515 hours, 7 February.

Results

The results of the first plaice ova survey indicate clearly the distribution of early stage ova. This distribution can be contoured with closed contours over a range of egg counts of sixteen to one. Examination of the samples collected showed a significant number of deformed ova. Numerous cod ova were noticed, particularly in samples collected near the Dutch coast. No evaluation of the second survey has yet been made.

The dye patch produced in the rhodamine diffusion experiment was remarkable for its regular approximately elliptical shape, for the comparatively high concentration gradients observed near its boundaries, even late in the experiment, and for the slower than expected decay of concentration in the centre parts of the patch. The final survey, carried out after nine days, showed the patch to be about seven miles long by two and a half miles wide.

No useful comment on the current meter results can be made at this stage.

The surface temperatures was monitored and recorded continuously during both plankton and rhodamine surveys. No salinity measurements were made from CLIONE but a section across the plankton patch was worked for salinity and temperature by CORELLA. No opportunity was found to make measurements using a Direct Reading Current Meter from the ship.

(J. W. Talbot)

7.2.69.

Seen in draft: M. R. S.
A. J. L.

Distribution:

Basic list, plus the following:

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