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

1986 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE: CRUISE 10

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

STAFF: P. O. Johnson
C. R. Hood
J. Casey
A. M. Watson
S. Warnes
L. Goldsmith

DURATION: Left Lowestoft 0930 h, 20 August
Arrived Lowestoft 0900 h. 4 September
(All times are BST)

LOCALITY: West Central North Sea

AIMS:

1. To carry out an acoustic survey for spawning herring concentrations off the north east coast of England between the Longstone and Outer Dowsing, offshore to the western edge of the Dogger Bank. A towed body with 38 kHz transducer and echo-integration equipment will be used.

2. To obtain herring samples using mid-water trawl for age, maturity, fecundity and feeding studies.

3. To make CTD observations on herring spawning sites.

NARRATIVE:

After sailing on 20 August passage was made to the Flamborough area where the survey commenced at 2130 h following a test run, during which preliminary checks and calibrations were made on the acoustic equipment.

The first stage of the survey concentrated within an area from north of Whitby to Robin Hood's Bay, where herring fishing had taken place prior to the spawning ground closure (15 August). No major concentrations were found and the survey then continued to the Farne Islands area via Bayman's Hole. Very little was found and an overnight passage was made on 22-23 August to the North West Rough area of the Dogger Bank. The survey then covered the western edge of the Bank extending south to the Easternmost Rough. Scattered small and medium size 'plume' shoals were found in the southern half of this region and fishing suggested these were mainly immature herring with a modal length of 22 cm. The survey continued overnight (23-24 August) back to the Flamborough area where a grid between here and Robin Hood's Bay was completed on 24-25 August. This was interrupted by a spell of bad weather which resulted in overnight

anchorage in Bridlington Bay. Later on 25 August the weather deteriorated very rapidly with the development of a severe South-easterly gale, and course was thus set for Sunderland where CLIONE docked at 0200 h on 26 August. Two days of very severe weather followed, and conditions were still too bad for resumption of work on 28 August after sailing from Sunderland. After dodging for 24 h a run was made to Flamborough Head to seek shelter in Bridlington Bay where anchorage was made at 1605 h on 29 August. The vessel remained here until the morning of 31 August when conditions had moderated. The survey then resumed to concentrate on the Robin Hood's Bay-Whitby sector where large shoals of spawning fish were now in evidence. This grid was completed on 1 September, and the following stages covered the regions Robin Hood's Bay-Flamborough Head, and an area south of Flamborough Head up to 20 miles offshore. These were completed at midnight on 2 September and the final stage to cover the Outer Dowsing region commenced. However, on 3 September the weather rapidly deteriorated, with a severe North-westerly gale and heavy swell, and this forced an end to the survey at 1235 h. The towed body was brought aboard and CLIONE ran for Corton Roads where anchorage was made at 2010 h, finally docking at Lowestoft 0900 h on 4 September.

RESULTS:

1. In spite of about 5 days lost through bad weather and marginal working conditions on other days a total of 1522 nautical miles were acoustically integrated covering most of the originally planned areas. The QMII and QD integrator systems with Simrad EK400 sounder performed well and gave closely comparable outputs at most settings, (within 10%). A 6809 micro-computer was used as a QD controller and data store, and also interfaced with a RACAL DECCA LAT/LONG converter to provide positional data.

   Two APRICOT computers were used for spreadsheet preparation and data analysis.

   The modified 'bottom stop' system operated successfully under most conditions except in the case of very extensive high density shoals, but further development should overcome this remaining problem of discriminating bottom signal from high density fish signals.

2. Only two areas of herring spawning shoals were located. The major one (provisionally estimated in the range 120-140 thousand tonnes) was centered about 9-10 miles off the coast between Whitby and Robin Hoods Bay, and a relatively small one centered around 9-10 miles ENE from Flamborough Head. In other areas pelagic traces were generally at very low densities or entirely absent over large areas. The spawning fish showed a length range of mainly 25-30 cm, with mean lengths of 27.6-27.9 cm.

   Offshore an area of immature herring (modal length 22 cm) was found around the SW edge of the Dogger Bank between the 'Hills' and western end of Skate Hole.

   The distribution of fish off the Yorkshire coast was somewhat different to that the previous year, with just a single main spawning concentration and the opinion of local fishermen was that the herring had been very late in appearing this year. Another notable feature was the absence

of pronounced surface scattering layers, generally strongly evident at this time of year.

3. Samples of herring were deep frozen for further biological analysis and fecundity studies. A limited number of stomachs were preserved for food analysis, due to the fact that most of the fish caught were full or spawning fish and not feeding at these stages of maturity.

4. One CTD station was carried out within the main spawning area over a depth of 60 m. The surface temperature was 12.0°C and near bottom 10.8°C, with no thermocline in evidence. Salinity was fairly uniform between surface and bottom, at 34.0°/oo.

5. A working area chart is appended.

P. O. Johnson
29 September 1986

SEEN IN DRAFT: GS, RCN

INITIALLED: DJG

DISTRIBUTION:

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P. O. Johnson
C. R. Hood
J. Casey
A. M. Watson
S. Warnes
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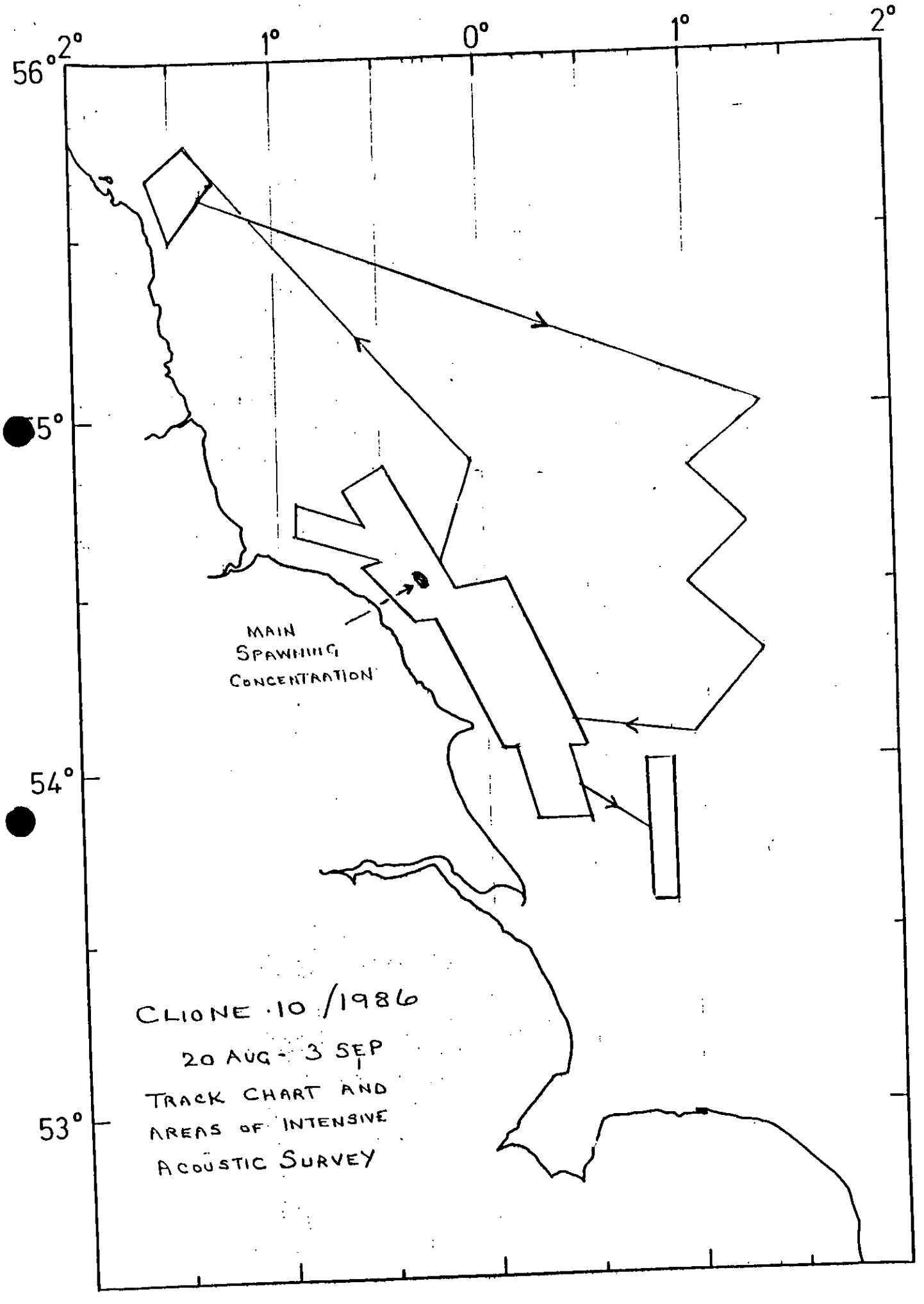
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MAIN
SPAWNING
CONCENTRATION
CLIONE 10/1986
20 AUG - 3 SEP
TRACK CHART AND
AREAS OF INTENSIVE
ACOUSTIC SURVEY