

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

1983 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE : CRUISE 10

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

STAFF:

R J Wood

L Cox

I L Davies

W L Huggins

A M Watson

J Dann

DURATION:

Left Lowestoft 1555 h 18 August

Arrived Lowestoft 0950 h 31 August

(All times are Greenwich Mean Time)

LOCALITY:

West Central North Sea

AIMS:

1. To make acoustic surveys of spawning herring concentrations off the Yorkshire coast and elsewhere in the west central North Sea using a 38 kHz transducer mounted in a light-weight towed body, on loan from DAFS, in conjunction with both the QM and QD echo integrators.

2. To obtain samples of adult herring for age analysis.

3. To obtain comparative data using both 38 kHz and 29 kHz transducers.

NARRATIVE:

CLIONE sailed from Lowestoft 1555 h 18 August and steamed north overnight. An echo survey was carried out next morning 0620-0900 h to the north of Flamborough Head and a fault in the sonar rectified. A midwater trawl haul was made 0928-1032 h within a patch of plume type echo traces some 10 miles east of Robin Hood's Bay and a catch of 8 baskets of adult herring taken. The herring were in maturity stage V (full) and approximately one third appeared to be recruit 2 ringers. The DAFS towed body was prepared and launched 1215-1340 h. Afterwards the echo survey was continued at 1348 h and checks carried out on the acoustic survey equipment. CLIONE then laid 1730-2300 h in order to calibrate the equipment. Inconsistencies were, however, found in the outputs of the QM integrators which could not be rectified at that time. A series of surface drifter releases was therefore made during the night 19/20 August at distances between 2-23 miles off Whitby in conjunction with an echo survey. The echo survey was then extended to cover the area from Whitby to Skinningrove. The midwater trawl was shot on a patch of somewhat diffuse traces 6 1/2 miles NNE of Whitby at 0854 h 20 August and a catch of 16 baskets of adult herring taken in a tow of 1 hour duration. These herring were more advanced in maturity, 19% being in stage VI (ripe) and 4% in stage VII (newly spent). The echo survey was continued and surface drifters released at intervals of 2, 12, 22 and 32 miles along lines off Hartlepool (the Heugh) and the Coquet. This was completed at 0703 h 21 August. An echo search for spawning herring was then made off the Farne Islands 0738-1846 h. The area around the position where spawning shoals

were located 22 August 1982 was thoroughly covered but no echo traces of any significance were observed. The towed body was therefore recovered at 1900 h and course set for the Buchan Deep.

The towed body was launched at 0755 h 22 August, 15½ miles E x N of Peterhead and an acoustic survey commenced at 0805 h. This was continued until 2058 h 23 August, and covered most of the area between 57°00'N and 57°35'N from the coast to 00°50'W longitude. Most of the fish echo traces observed were within 20 miles of the coast, and appeared to be from mackerel, juvenile herring and sprat. No concentrations of adult herring were located. Work in this area was completed and course set southwards 2115 h 23 August.

An acoustic survey off the Farne Islands was begun 0808 h 24 August and completed by 0200 h 25 August. A concentration of fish echo traces covering approximately 4 square miles was located 9 miles NE of the Longstone Light. These were identified later in the morning as spawning herring. A midwater trawl haul produced a catch of about 30 baskets, almost all taken within a few minutes from one dense shoal. Most of the fish were in maturity stage VI with an admixture of spents. Course was set for the Whitby area 1100 h and a new acoustic survey commenced 14 miles north of Whitby at 1834 h 25 August. This survey covered the herring spawning areas off Whitby and Robin Hood's Bay. The centre of the main area of echo traces was located some 9 miles NE of Whitby High Light and an area of less importance approximately 11 miles east of Robin Hood's Bay. Herring taken in a trawl haul off Whitby were nearly all in maturity stage V. The acoustic survey was continued until 1500 h 26 August, after which two 29 kHz TVG units and some formaline were collected from Scarborough in the ship's boat. On the way assistance was given to Scarborough lifeboat in locating, by sonar an RAF aircraft which had crashed a short time previously in Scarborough North Bay. The acoustic survey was resumed at 1851 h and covered the areas where echo traces were most abundant. A trawl haul was made 9½ miles east of Robin Hood's Bay during the morning 27 August and a catch of approximately 30 tonnes of ripe and running herring was taken from a massive shoal, which extended from the seabed (57 metres) to the surface, within about 3 minutes. The acoustic survey was then continued over the Whitby/Skinningrove coastal area but CLIONE returned to survey the Whitby/Robin Hood's Bay herring concentrations after dark. This survey was completed by 0400 h 28 August. CLIONE then dodged 0400-0830 h because of a deterioration in the weather and then went to Bridlington Bay in order to change over the towed bodies and calibrate both the 29 kHz and 38 kHz equipment in sheltered conditions. "En route" 3 hauls were made with a 20 inch high-speed plankton sampler. CLIONE anchored off Bridlington at 1200 h. After completion of the calibrations and with the 38 kHz towed body recovered and the 29 kHz towed body deployed, CLIONE weighed anchor at 2000 h.

An acoustic survey with the 29 kHz equipment was started at 2215 h and completed at 1751 h next day 29 August. A trawl haul during this survey 8 miles east of Robin Hood's Bay produced a catch of 16 baskets of spawning herring. The 29 kHz towed body was recovered at 1815 h and the 38 kHz towed body redeployed. A plankton sample was collected while the performance of the 38 kHz equipment was checked. A new acoustic survey was then begun at 1951 h, this covered the Robin Hood's Bay/Whitby herring concentrations and was completed by 0300 h 30 August. The survey grid was then extended southwards and an area off Flamborough Head covered 0530-1500 h. After this two plankton samples were collected and the high-speed sampler calibrated in free flow, 1715-1730 h. The ship then laid while final checks and calibrations were made on the 38 kHz acoustic survey equipment. The towed body was recovered at 2037 h and course then set for Lowestoft where CLIONE docked 0950 h 31 August.

RESULTS:

Aim 1. Acoustic surveys were made in the 3 main spawning areas of the Bank stock of herring ie. off the Yorkshire coast, off the Farne Islands and in the Buchan area. Spawning herring concentrations were located and acoustically surveyed in the first 2 areas but none were found off the Buchan coast.

Aim 2. 7 trawl hauls produced good catches of adult herring and a total of 702 herring were examined biologically during the cruise. Recruitment to the Bank stock by the 1980 year-class appeared to be at a satisfactory level.

Aim 3. Extensive comparative data were obtained using both the 38 kHz and 29 kHz transducers mounted in the DAFS and MAFF towed bodies.

MISCELLANEOUS:

1200 surface drifters were released for Mr Riley at various positions off the English north east coast.

9 water samples from inshore positions were collected for the Burnham Laboratory.

7 plankton samples were collected off the Yorkshire coast and net clogging during each of the hauls monitored.

R J Wood
22 September 1983

SEEN IN DRAFT:

J R F
P C N

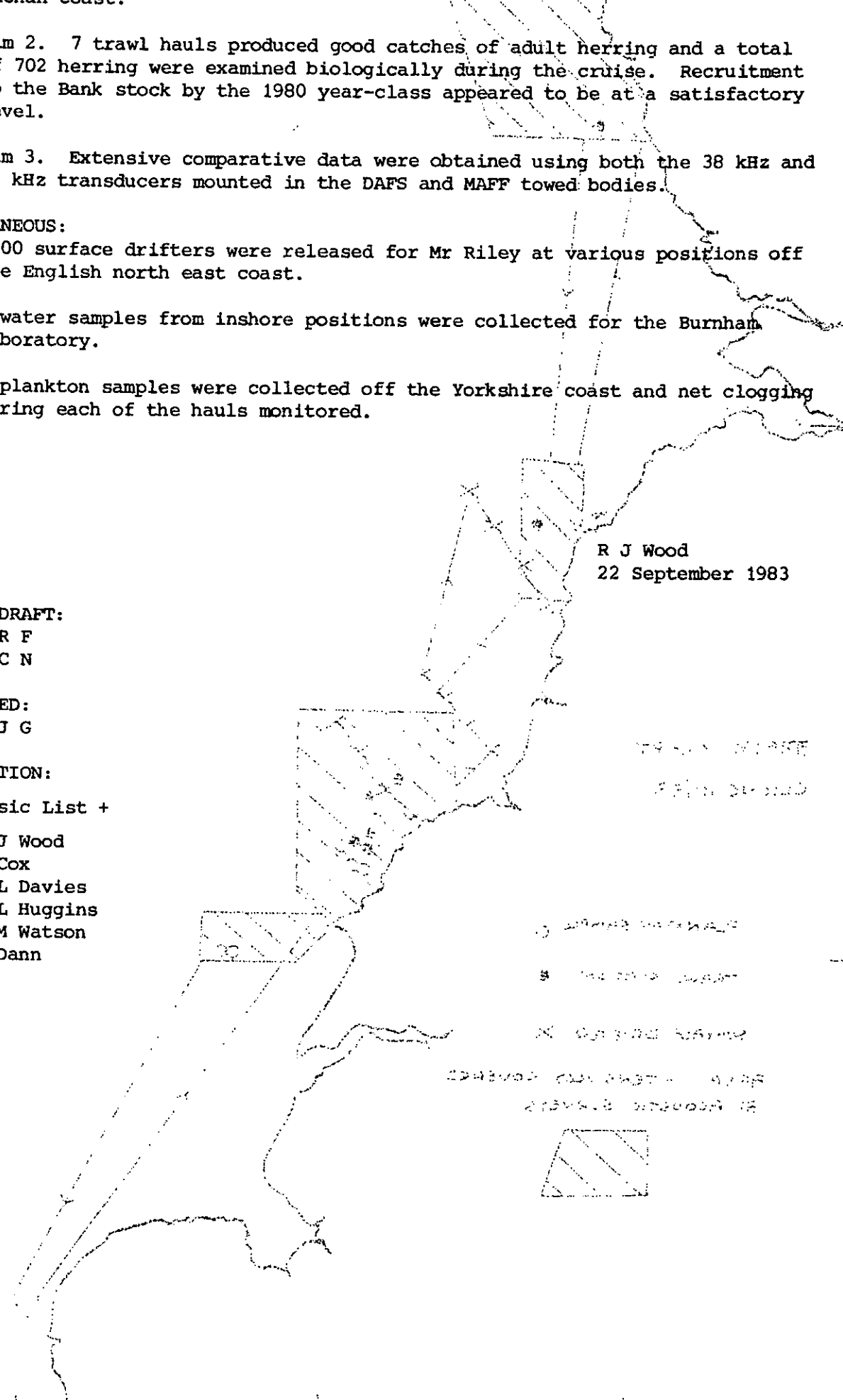
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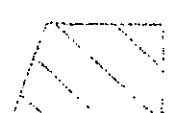
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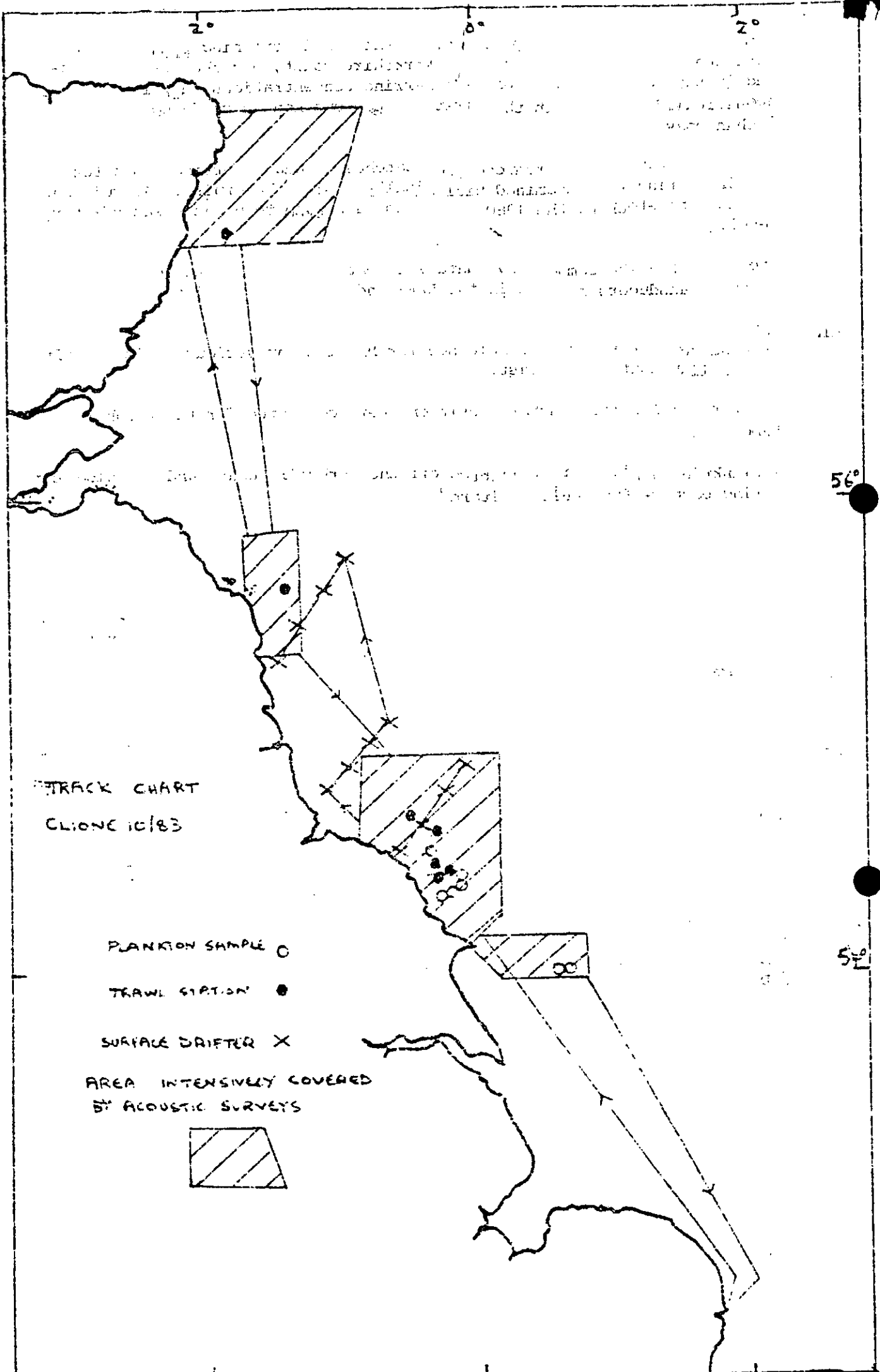
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1983-84 HERRING
SPAWNING SURVEY

- 38 kHz DAFS
- 29 kHz MAFF
- 38 kHz MAFF
- 29 kHz DAFS





56°

52°

TRACK CHART
CLIONE 10/83

- PLANKTON SAMPLE ○
- TRAWL STATION ●
- SURFACE DRIFTER X
- AREA INTENSIVELY COVERED
BY ACOUSTIC SURVEYS

