

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

1989 RESEARCH VESSEL PROGRAMME REPORT

PROGRAMME: RV CIROLANA: CRUISE 1

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F Dunbar, UEA (6-13 January)

DURATION: 6-20 January

LOCALITY: Central and southern North Sea, eastern English Channel.

AIMS:

1. To participate in the ICES coordinated herring larvae survey in regions IVC and VIID.
2. To monitor continuously sub-surface temperature, salinity and chlorophyll 'a', with sampler profiles at each larvae survey station.
3. To compare herring larvae habitats in different areas including 'autumn larvae' in the central North Sea, as part of the larvae ecology programme. Sampling will include:
 - (a) herring larvae for condition analysis and growth rates (otoliths);
 - (b) abundance of potential food organisms on the standard survey;
 - (c) midwater trawling for potential predators.
4. To do a MK trawl survey in the central and eastern North Sea to sample autumn spawned larvae.
5. To conduct further trials and some sampling with the MAFF/LHPR system.

NARRATIVE:

RV CIROLANA sailed from Lowestoft at 2030h 6 January and started the herring larvae survey grid at 2315h. The survey progressed without interruption until 1030h 9 January when one haul was made with the Engel trawl after locating a heavy midwater trace along the eastern edge of the South Falls. The larvae survey was then continued into the eastern English Channel and was completed at 2155h 12 January (Figure 1).

On the way northwards to start a TTN/Methot Isaacs Kidd net survey in the central North Sea, RV CIROLANA anchored for two hours off Gorton (0900-1100h 13 January) to disembark one member of staff. The survey was started in the Wash at 1600h 13 January, but in increasing south-westerly winds work stopped at

0300h 14 January. The vessel remained hove to in the vicinity of the Indefatigable Bank until 1800h, when progress was made towards the stations closer inshore off the English coast. Two further stations were completed between 0845h and 1145h 15 January before a series of trial hauls was made with the modified LHPR. The survey was restarted at 1645h on the same day and progressed in excellent weather to its completion at 1840h 18 January at Lat: 54°15'N 02°30'E (Figure 2). After a 70nm steam to the south, to an area of high larvae abundance, a series of MK net and Lowestoft frame net hauls was begun at 0030h 19 January, to examine vertical distribution and diurnal differences in catch rates of larvae. Five series of two MK net tows and one Lowestoft frame trawl haul were sampled at 0030h, 0430h, 0830h, 1400h and 1730h. Further trial hauls with the LHPR were made between 1030h and 1330h and one TTN trial at 1600h. On completion of the work programme at 1840h course was set for Lowestoft, arriving there at 0745h 20 January.

RESULTS:

1. A total of 93 stations was worked with the 53cm plankton sampler. Five stations along the French coast between 0°10'E and 01°40'E were not sampled because permission was refused by the coastal state. Herring larvae were scarce in the southern North Sea with only a few found in the vicinity of the Fairy Bank and Sandettie. This contrasts sharply with the picture in recent years when larvae up to 15mm have been abundant in the southern North Sea at this time. In contrast herring larvae were found on all but one of the stations in the eastern Channel. Although abundances were not high, up to 50 larvae.m⁻² were found in the Bay of the Seine, 140 larvae.m⁻² in the Vergoyer/Bassurelle area and 160 larvae.m⁻² off Cap Gris-Nez (Figure 3).

The larvae distribution was similar to that found on the Netherlands survey before Christmas when no larvae were found north of 51° and up to 2000 larvae per haul taken in the Bay of the Seine.

- ~~2. Sub-surface temperature and salinity was monitored continuously throughout the cruise and salinity samples taken for calibration four times per day. Temperature, salinity and chlorophyll 'a' profiles were taken at each standard sampler station together with a surface salinity calibration sample. There were discrepancies between the standard sampler salinity and the continuous monitoring unit in spite of satisfactory pre-cruise calibrations. The bottle samples should identify the problem area and then a solution can be sought before the next cruise.~~
3. Larvae collection tows were made in the Bay of the Seine and Vergoyer areas. Samples were taken from these tows for subsequent analysis of larvae condition (RNA/DNA; length/dry weight) and growth rates (otoliths) (see 4. also). A 30 micron mesh auxiliary sampler was used on all the standard sampler tows in the southern North Sea and eastern Channel to provide an estimate of the standing crop of prey items available to herring larvae.
4. Catches of autumn spawned herring larvae in the MK net were generally small compared with similar stations sampled in January 1988. The highest abundance was 22 per 10m² compared with 255 per 10m² in 1988. They ranged in size from 18mm to 45mm with the mean size significantly bigger east of 4°E. Samples of herring larvae were taken at every station, measured fresh and fixed in IMS for otolith analysis. When numbers of larvae and their condition permitted, samples of up to 30 were fixed in liquid nitrogen for subsequent RNA/DNA and L/DW analysis.

No problems were experienced with Scanmar depth monitoring and an otherwise smooth MK net operation was spoilt only by major problems with the winch control. This required the constant attendance of an engineer and the problem must be satisfactorily resolved before the next cruise.

The vertical distribution and diurnal variation hauls were inconclusive based on larvae numbers. Horizontal patchiness appeared to be a major factor in haul to haul differences with densities ranging from 1.2 to 0.01 per $10m^{-3}$ at the same geographical position.

The Lowestoft frame trawl worked well with the Scanmar depth sensor and could be fished on the bottom with ease at 4 knots. However, this trawl needs a finer mesh to sample larvae close to the bottom.

5. Trials with the LHPR revealed problems with the drive wheel on the new codend unit. This needs strengthening and will be returned to the manufacturer under guarantee. The MAFF deck control system, now fitted with audible gauze wind alarm, operated successfully and gave an immediate indication of the gauze wind failures which occurred. The MAFF codend unit, modified by RSG2, failed to give a satisfactory gauze wind signal when deployed. The rubber sensor wheel must be replaced in favour of the PML magnet sensor system.
6. The one Engel trawl haul, which was taken east of the South Falls on 9 January, yielded a catch of approximately 4.5 tonnes of herring. A random sample was taken for length measurement and a length stratified sample was deep frozen and returned to the laboratory for further analysis. All the fish examined on board were spent.

J H Nichols
3 February 1989

SEEN IN DRAFT: M J Willcock

INITIALLED: DJG

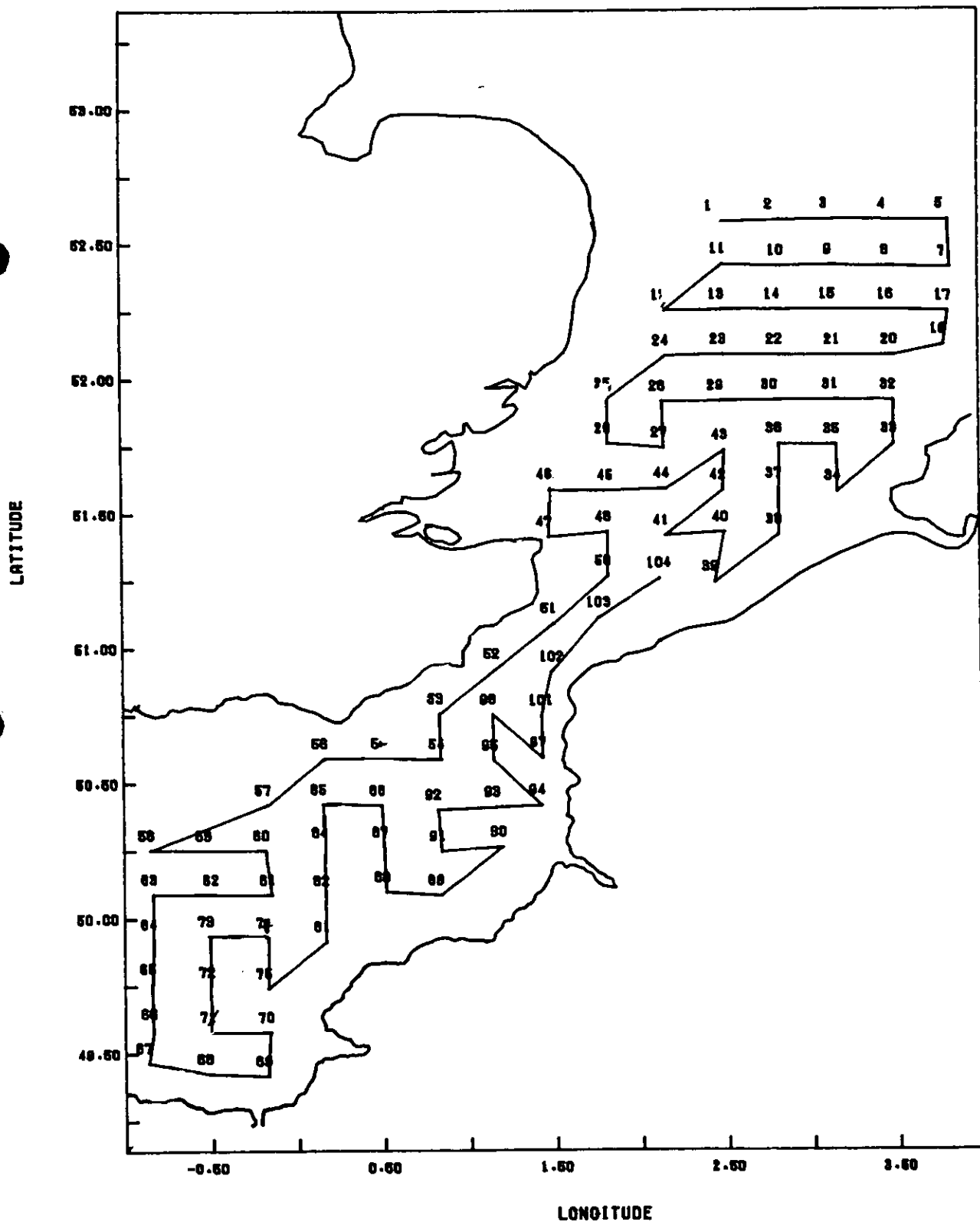
DISTRIBUTION:

Basic list +
Staff on cruise

CIROLANA 1/89 JANUARY 6-12

Fig. 1

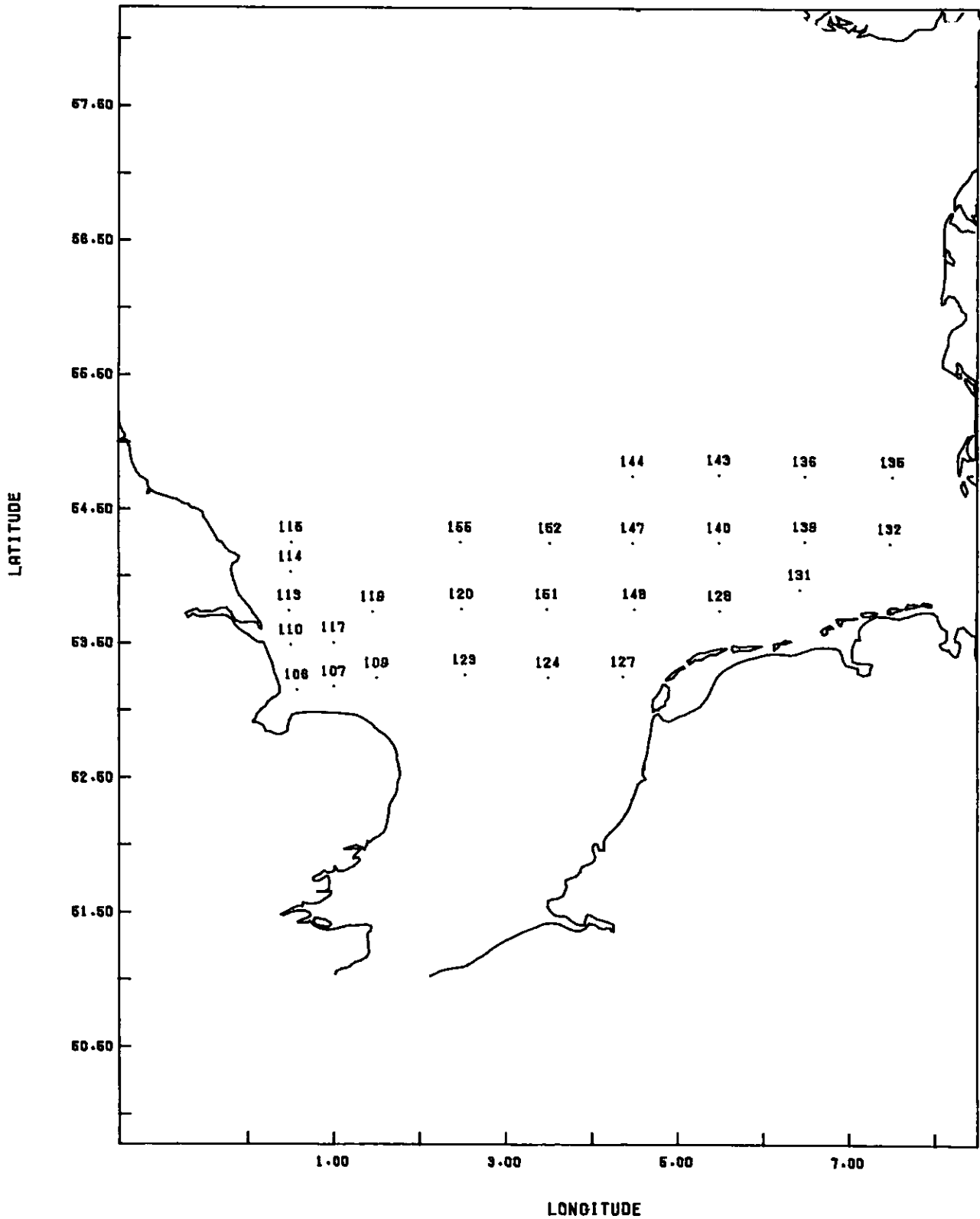
SHOWING :
 CRUISE TRACK
 STATION NUMBER
 COASTLINE



CIROLANA 1/89 JANUARY 13 - 19

Fig. 2

SHOWING :
STATION NUMBER
COASTLINE



CIROLANA 1/89 JANUARY 6-12

Fig. 3

SHOWING :
 STATION POSITION
 DATA VALUES REPRESENTING : LARVAL PROV NOS/M²
 COASTLINE

