

Indexed ✓

16

NS

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

1984 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE: CRUISE 12

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

STAFF:

- J H Nichols
- Mrs B M Thompson
- T J Hulme (to 26 October)
- A M Watson (" " " )
- P M Hudson
- R Ayers (" " " )
- R B Mitson (from 26 October)
- B C Mumford (" " " )
- D W Mummery (" " " )

DURATION:

Left Lowestoft 0845h 9 October  
 Arrived Lowestoft 1030h 29 October  
 All times are Greenwich Mean time

LOCALITY:

West Central North Sea

AIMS:

1. To participate in the ICES coordinated herring larval surveys of region IVB during two of the standard sampling periods 1-15 October and 16-31 October.
2. To locate, track and sample a patch of herring larvae in an attempt to measure drift and mortality.
3. To sample potential food organisms in a study of herring larvae diet.
4. To collect samples of herring larvae for analysis of growth increments on the sagittal otolith.
5. To test the new multi-layer plankton sampler.

NARRATIVE:

RV CLIONE sailed from Lowestoft at 0845h, 9 October and after a six hour steam started the herring larvae survey at latitude 53 25'N; longitude 01 30'E. Using the MAFF/Guildline 53 cm sampling system, the survey progressed in excellent weather and without interruption or incident, until its completion at 0400h, 16 October at latitude 54 45'N; longitude 00 30'W (Figure 1a). During the survey on

13 October at 1510h the Argos satellite tracked drifting buoy was released in the centre of a patch of small herring larvae ( 15 mm length) at latitude  $54^{\circ} 14'N$  longitude  $00^{\circ} 12'E$ .

On completion of the larvae survey, RV CLIONE returned to the area where the buoy was released and carried out a grid of thirteen sampling stations in an attempt to define the herring larvae distribution in more detail. These stations were completed by 2100 h, 16 October. Between 0800h and 2100h, 17 October the same grid of stations was worked using the 30 cm sampler fitted with a 30 micron operation net, and a profiling 'Aquatracker', measuring chlorophyll 'a' fluorescence. These samples and data will be used to examine primary and secondary production in relation to the larvae distribution. At 2145h, 17 October a second, more concentrated survey of twelve stations over the centre of the herring larvae 'patch' was begun using the 53 cm sampler. After nine of these stations had been completed the weather intervened and the survey was abandoned in sixty knot south-easterly winds. As the wind veered south-westerly force 8-9, RV CLIONE sought the shelter of the coast off Scarborough and steamed northwards, anchoring off Skinningrove at 1330h, 18 October. At 0500h on the following day, RV CLIONE left the anchorage and proceeded to Sunderland, docking there at 0900h, to take on water and stores.

After sailing from Sunderland at 1030h, 20 October in a SW gale, four inshore stations of the final larvae survey grid were completed before anchoring in Bridlington Bay at 1915h. RV CLIONE left Bridlington Bay at 0630h, 21 October but a heavy swell prevented further work until 1650h, when sampling on the third herring larvae mini-grid began. After a further interruption for bad weather on the morning of 22 October, the mini-grid and larvae collection hauls were completed by 1600h. The final larvae survey grid (Figure 1c) was re-started at 1810h and continued until suspended in a SE gale at 1900h, 24 October. RV CLIONE remained hove to off Hornsea until 0600h, 26 October, after which eight more sampling stations were completed before docking in Grimsby at 1715h, 26 October.

After taking the prototype multi-net on board, RV CLIONE sailed from Grimsby at 0715h, 27 October. Passage was made in fine weather to the vicinity of the last Argos buoy position to test the multi-net. The trials began at 0955h with test runs at 3 knots. During the afternoon trials were suspended while a search was made for the Argos buoy. This was located at latitude  $53^{\circ} 44.1'N$ , longitude  $00^{\circ} 51.4'E$ , aground in 28 metres water depth. On retrieval of the buoy and drogue, it was found that the original rig had been set too deep. This was modified on board with the addition of a further float in the correct position and the buoy re-launched at latitude  $53^{\circ} 45.4'N$  longitude  $00^{\circ} 51.1'E$  at 1410h.

After further trials with the prototype multi-net until 2200h, the final eight sampling stations of the larvae survey grid were completed off the north Norfolk coast at 1000h, 28 October. The last series of multi-net trials were completed in sheltered water off Cromer between 1430h and 2030h before passage was made for Gorleston roads anchoring there at 2245h. RV CLIONE docked in Lowestoft at 1030h, 29 October.

## RESULTS:

Aim 1. The first survey was completed within the sampling period designated by ICES. Herring larvae were abundant at many of the survey stations, with provisional numbers up to 1000 per square metre (total larvae), north east of Flamboro Head. Larvae were present in most of the stations sampled with the exception of those stations at the south eastern corner of the survey area, (Figure 1b). Larvae greater than 12 mm dominated the distributions, but larvae less than 10 mm were found off the North Yorkshire coast and in the vicinity of the Inner Dowsing. The presence of large numbers of larvae between 10 mm and 15 mm suggests that there had been a hatching off Whitby and possibly further north also, towards the end of September. It is unlikely that these larvae were sampled in the less than 10 mm length group used for the larvae working group abundance index, by the Dutch survey of the area in mid-September.

There was no evidence of herring spawning along the western edge of the Dogger Bank, either from the larvae distributions or from the MS44 echo sounder records, run throughout the larvae survey.

Aim 2. An Argos satellite tracked drifting buoy and drogue was released on 13 October during the first larvae survey, at a station where high numbers of <10 mm herring larvae were found. The position of this buoy was relayed to the ship each day via the SMBA laboratory at Oban. Three mini-grids (Figure 1d), using the 53 cm plankton sampler were subsequently completed in the vicinity of the buoy in an attempt to test whether contact with a 'patch' of larvae could be maintained in this way. Some additional stations, close to the buoy, were also sampled during the second larvae survey. The buoy drifted approximately 45 n ml in a SSE direction before grounding 30 n ml off Spurn Point on 23 October. Preliminary examination of the plankton samples suggests that the herring larvae were also drifting south at a similar rate. However a final conclusion on the effectiveness of this method of maintaining contact with a larvae patch, must await the full analysis of the plankton samples.

Aim 3. Only one grid of ten sampling stations using the 30 cm high speed sampler with 30 micron aperture net, was completed. A vertical profile of chlorophyll 'a' fluorescence, temperature and salinity was taken at each station. These data and the fine mesh plankton samples, will be examined in relation to herring larvae feeding in the area.

Aim 4. A total of five hauls with the 53 cm sampler towed at 3 knots, were done to collect herring larvae for subsequent age determination in the laboratory. These samples were sorted on board and the herring larvae fixed in 70% alcohol. Some additional specimens of large herring larvae were collected during the multi net trials at the end of the cruise.

Aim 5. Trials with the multi-net sampler revealed a problem with the net operating mechanism. This was due to the cams turning on the drive shaft and despite several attempts to reset and tighten them, the fault persisted. It can be overcome by pinning the cams to the shaft but this was not practicable during the trials period.

During the hauls when it was possible to operate the nets the effect of opening one was to lift the sampler by about 10 metres. Fitting an additional kite depressor at the rear of the frame made no apparent difference.

#### Additional Aims

Nine 10 litre samples of unfiltered seawater were collected at selected stations over the survey area. These samples were fixed in a mixture of gluteraldehyde and formaldehyde suitable for electron microscopy. They will be examined at the Weymouth laboratory in relation to viral infections of nanoplankton and picoplankton.

J H Nichols  
23 November 1984

#### Seen in draft:

Master G Sinclair  
Fishing Skipper P MacKay  
D J G

#### Distribution

Basic list +  
J H Nichols  
Mrs B M Thompson  
T J Hulme  
A M Watson  
P M Hudson  
R Ayers  
R B Mitson  
B C Mumford  
D W Mummery

Dr A Saville - DAFS Aberdeen

148

16

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

1984 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE: CRUISE 12

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

Attached are the figures showing the survey tracks and provisional results from the above cruise.

I apologise for their omission from the original cruise report.

J H Nichols  
10 December 1984



