

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

1981 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE; CRUISE 10

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

STAFF

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DURATION

12-26 August

LOCALITY

Central North Sea

AIMS

1. To aid CORELLA in the survey of spawning herring concentrations off the Yorkshire coast and in the vicinity of the Farne Islands.
2. To make in-situ target strength measurements and to identify the straces by fishing.
3. By use of the sector scanner, observe the behaviour of herring to the passage of CORELLA and the towed transducer.
4. To make comparative side-by-side measurements on fish concentrations using acoustic frequencies of 30 and 38 kHz in sequence.
5. To assess the performance of the Simrad QD echo-integrator and the Furumo colour display.

NARRATIVE

CLIONE left Lowestoft at 0730 h on 12 August and made for Flamborough Head. Equipment was prepared and tested en route in preparation for an acoustic survey and environmental sampling. The first survey started at 2000 h and was completed by 0730 h 13 August. One small area where fish shoals were found was later examined by scanning sonar and observations made on the shape and size of shoals. No shoals could be found when CORELLA's trawl was viewed by the same means. A survey grid was run until the early hours of 14 August when fishing took place, but no significant shoals were sampled by the trawl. In the following period whilst the dual transducer towed body was being prepared the ship's crew caught 4½ baskets of codling on rod and line.

An evening acoustic survey off the Scarborough-Robin Hood's Bay area confirmed that the few shoals were confined to an area of about 5km<sup>2</sup> and these showed little movement over the subsequent 3 days of observation.

CLIONE moved north on 15 August arriving off Blyth at 0730 h, where after comparing notes with CORELLA already north of the Farne Islands, an inshore survey grid was started with QM and QD integrators plus the environmental sampling system. A few shoals were seen in the late afternoon. On 16 August, a heavy swell and 35 knots of wind caused the survey to be suspended in mid-morning, CLIONE took shelter close to the Farne Islands where equipment checks and adjustments were made and sandeels caught in large numbers by rod and line. Conditions improved by early evening when CLIONE used the scanning sonar whilst CORELLA fished.

A box grid survey towards the northern end of the Farn Deeps during the next day showed a few discrete shoals and CORELLA's trawl was viewed by scanning sonar whilst fishing these.

On 18 August the towed transducer rig was changed to enable CLIONE to fish without hauling the towed body inboard, after which the two vessels started an interlaced north/south survey grid. CLIONE shot her trawl on a layer 15m above the seabed and caught a basket of herring. A later haul when fish appeared to be rising from the seabed produced a basket of mixed fish which contained only 12 herring. The survey continued until 1100 h on 19 August when CLIONE set course for Blyth to take on water and to replace the transducer towing cable.

Dense echo traces had been reported by fishermen when working NNE of Blyth, so after sailing at 0900 h on 20 August CLIONE proceeded towards the given positions but a swell of about 3m height prevented the transducer towed body from being launched until 1500 h when it had subsided sufficiently. Some echo traces were found and the trawl shot, but, during the tow the foot-rope failed to clear a pinnacle and was parted. Mostly whiting were caught with a few herring.

Overnight CLIONE moved to Bayman's Hole to commence an acoustic survey but this was delayed due to instability of the towed body, which on recovery, was found to be without its bottom 'window', evidently torn away during the heavy weather. A further delay occurred when acrid smoke issued from one of the integrators but the cause was located and repaired. Meanwhile a new 'window' was made for the towed body and later fitted. A new trawl was rigged and shot at 2100 h, it caught  $\frac{1}{3}$  of a basket of herring plus a few sprat.

On 22 August a survey 9 miles NE of Scarborough found some low intensity traces but a trawl haul through these yielded nothing. CORELLA reported concentrations of fish a few miles offshore from Robin Hood's Bay but despite a continuous search nothing was located during the day. After dusk two main concentrations were found and CORELLA fished these whilst CLIONE started a survey off the coast between Whitby and Skinningrove which was completed on 23 August. CLIONE then moved back to the area off Robin Hood's Bay where CORELLA had made a large catch of herring the previous night but about 40 trawlers were fishing on the bottom.

Later on 23 August the 30kHz narrow beam transducer was launched from the stern but a reaction, evidently to the noise of the ship, drove fish downwards thus increasing their density under the transducer and preventing measurements.

Intensive surveys around the positions where herring had been located, failed to reveal any further shoals so both vessels concentrated on these positions during the evening of 24 August. A damaged pipe prevented the use of sector scanning sonar for observing fish reaction to CORELLA, but anyway most of the fish seemed to have disappeared. CLIONE joined CORELLA in the Outer Silver Pit area during the early morning of 25 August where

surveys revealed a number of plume shaped shoals. A trawl haul resulted in  $\frac{1}{2}$  basket of sprat with a few young herring. After a calibration exercise involving both ships course was set for Lowestoft where CLIONE arrived at 0600 h on 26 August.

## RESULTS

1. A full assessment of the surveys has not yet been possible but there were no signs of herring in the expected abundance.
2. It was not possible to make in-situ measurements for target strength purposes because of a lack of fish at low density and the behavioural effect noted in the narrative. Traces were identified by fishing.
3. The scarcity of shoals gave a limited opportunity/<sup>to</sup> observe the behaviour of herring to the passage of CORELLA and the towed transducer but a few shoals were seen reacting to the trawl, many escaping, a few split up near the headline and some fish escaped, but only tiny shoals appeared to be completely captured.
4. A faulty transmitter at 38kHz which could not be repaired and the defect of the QD mentioned in 5 below, prevented any comparison at the two frequencies.
5. The Simrad QD integrator failed to discriminate between high intensity of signals from fish and the seabed so could not be used for survey purposes. Impressive results were obtained from the Furumo colour display. Used in conjunction with a precision time-varied-gain amplifier it gave much more information than could be obtained from a paper recorder. With further experience it seems likely that fish densities could be gauged in favourable circumstances.

R B Mitson  
17 September 1981

SEEN DRAFT: J R French - Master  
G F Lee - Fishing Skipper

INITIALLED: D G

DISTRIBUTION:

Basic List  
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