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FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1970 RESEARCH VESSEL PROGRAMME

REPORT: RV CLIONE: CRUISE 11

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

STAFF

R C A Bannister  
S Flatman  
R N Tucker  
C Lee (Hong Kong)  
P Bryan (Grimsby)  
M J Rogers (Bath University)

DURATION

Left Lowestoft 1950 hours 27 August

Arrived Lowestoft 1300 hours 6 September

All times are British Standard Time

LOCALITY

North Sea

AIMS

1. To collect age/length key and stomach content material from North Sea plaice and dab populations and to deep freeze whole plaice for biochemical analysis.
2. To survey the benthos in selected areas using the underwater camera and the Petersen Grab.
3. To investigate the feeding chronology of plaice as an approach to estimating their rate of feeding in the wild.
4. To make a trawl and hydrographical survey in the areas where dead fish have been reported by Lowestoft vessels.
5. To tag dabs and spurdogs on selected grounds using Petersen Discs.
6. To collect cod heads for pineal gland studies (Mr Bye), whiting for eye parasite studies (Marine Laboratory, Aberdeen), and small gadoids for turbot food (Mr A Jones).
7. To collect plankton for the copepod rearing programme (Mrs Thompson).

NARRATIVE

CLIONE cast off at 1830 hours 27 August to adjust compasses before clearing harbour at 1950 hours and setting course for the Cleaver Bank, where work

began at 0845 hours, 28 August. The operations carried out on this ground on 28 and 29 August were typical of those on other days during the cruise. Thus the trawl was shot at regular intervals throughout the two days to follow the progress of the dab and plaice feeding cycle and this work was complemented by selected use of the Petersen Grab to sample benthos. On the Cleaver Bank observations were made using the underwater camera suspended from the headline of the trawl and from the grab wire. It was more satisfactory to use the camera from the grab wire since with the trawl the tickler chains necessary to maintain the plaice catch naturally cause turbidity and even with the camera angled forward the sea bed is generally obscured by clouds of mud.

On 31 August CLIONE worked on the Coffee Soil ground. After the two days of flat calm early in the cruise the weather gradually deteriorated during this period and heavy swell conditions generally persisted for the remainder of the cruise. Since these conditions made the use of the camera on the grab wire of dubious value, the available depth of focus being insufficient to cope with the amplitude of the swell, camera observations were then terminated. Grab work, though sometimes hazardous, continued. On 1 September CLIONE attempted to work the Tail End grounds where a number of Lowestoft vessels were assembled and from where one vessel had earlier reported a catch of dead plaice. After one haul giving excellent quality fish, nicely protected from mesh marks by the presence of some Alcyonidium, westerly gales halted operations until early the following morning, when a further haul was made before proceeding to a position south of the Outer and Middle Rough to search the main area from which dead plaice have been reported during this and previous summers. R.T. Communication with one Lowestoft vessel showed that dead fish had quite recently been found in the area, though none were being caught at that moment. Weather conditions remained inclement, with 30 knot winds, and only three hauls could be made in this area during 2 and 3 September. These gave good catches of plaice, all of which were in good condition and feeding on sand eels. Work here was concluded by the collection of a short series of surface and bottom water samples for oxygen, temperature, salinity and microbiological determination.

For the remainder of the cruise CLIONE proceeded to the western edge of the Dogger, working east and then south west of the North West Rough, and south west of the Southernmost Rough on 4 September, to look for Spurdogs, and in the Silver Pit on 5 September to tag dabs and collect live fish. High winds and a heavy swell again interrupted trawling on the afternoon of 5 September but the opportunity was taken to collect live plankton using vertical hauls made with the international net. A final haul in the Silver Pit was completed at 2100 hours, 5 September, with the weather once again deteriorating, and CLIONE proceeded overnight to Corton Roads before laying alongside at Lowestoft at 1300 hours 6 September.

## RESULTS

Aims 1 & 3. On most of the grounds visited catches of plaice and dab were sufficient to permit adequate age length key sampling and stomach analysis. Plaice catches varied between one and two kits per hour and most of the fish were in the categories best small and medium, with large fish appearing from time to time. Tail End plaice were rather larger than usual. There was a marked absence of fish in the 25-29 cm length group throughout the cruise a phenomenon also apparent on Lowestoft market just now. Dab catches varied up to a maximum of  $2\frac{1}{2}$  kits an hour and as usual the bulk of the population lay between 8 and 20 cm. Dabs appeared to be feeding more heavily than plaice, except when the latter were feeding on sand eels. The usual variety of

benthic organisms were present in plaice stomachs and in general the regional variations observed in 1969 were still distinguishable on this cruise. Results showed that from time to time plaice and dab are 'opportunistic' feeders, as in the case of plaice feeding on sand eels south of the Middle Rough, and dabs feeding on the freshly available gonads from Echinocardium and Spatangus tests shattered by the action of the trawl gear. The information obtained on the volume of food in the stomach and intestine of both plaice and dabs should lead to useful observations on the weights of food eaten by these species but from preliminary trials made during this cruise it seems that for plaice attempts to establish the rate of ingestion and elimination in the wild by keeping fish in tanks and bins on deck are unlikely to meet with early success, the trauma of capture effectively interrupting intestinal activity for periods of at least 15 to 24 hours in a majority of fish.

Aim 2. Sedentary benthos organisms were sampled satisfactorily by the Petersen grab while several rolls of black and white and colour film were exposed using the underwater camera.

Aim 4. The cause of recent reports of dead plaice remains a mystery. Research vessels have so far failed to find the necessary specimens and this cruise was no exception. Reports have referred to several grounds, but with the Middle Rough consistently prominent. On this cruise some plaice infected with Lymphocystis, and dabs bearing ectodermal ulcers, were caught south of this ground but since these phenomena can be observed elsewhere from time to time it is not clear whether any significance can be attached to this observation. The oxygen electrode showed that O<sub>2</sub> saturation was at least 85% throughout the water column in this area, and the bottom temperature, 15.2 °C, was not unusually high. Microbiological investigations on water samples taken from this area will be completed in due course. There is no direct proof to associate these occurrences with previous fishing activities.

Aim 5. Spurdog catches were disappointing. Catches were small both on the east Dogger grounds and round the N.W. Rough, where the major concentrations had been expected. Forty fish were tagged.

Dabs of sufficient quality for tagging occur only in the Silver Pit and 162 fish tagged with small Petersen Discs were released in this area before work was halted by the weather.

Aim 6. There proved to be little time available to carry out ad hoc requirements on this cruise. However a nearly complete series of samples of cod heads was collected in Bouins and Hollands fixatives and formal saline for Mr Bye, and some whiting and plaice were frozen for Dr Portman (Burnham). The bad weather in the Silver Spit prevented the collection of live fish.

Aim 7. This was completely satisfactory.

R C A Bannister  
16.9.70

SEEN IN DRAFT: M R Sutcliffe (Master)

INITIALLED: AJL

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