

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

1990 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 7

STAFF: C T Macer  
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DURATION:

Left Lowestoft 1400 h 1 June  
Arrived Lowestoft 0022 h 14 June  
All times are Greenwich Mean Time

LOCALITY:

North Sea

AIMS:

1. To compare the feeding ecology and size structure of 0-group gadoids in different areas of the North Sea.
2. To compare catches of 0-group gadoids in the large MIK net with those in the international young gadoid trawl (IYGT) both by day and by night.
3. To investigate the effect of time of preservation on stomach content identification.

NARRATIVE:

CORYSTES proceeded to rectangle 48F1 east of The Shetlands, where work started at 0715 h on 3 June. A grid of 9 rectangles to the north and west was then worked over the next 3 days, in each of which a CTD and Nansen bottle cast was made, and samples taken with the IYGT and high-speed plankton sampler (HSPS). This was completed at 1000 h on 5 June, and the ship then steamed to rectangle 48F1, where the highest concentration of 0-group gadoids had been detected.

A comparison between catches in the MIK net and IYGT was started at 0036 h on 6 June, and completed at 0845 h, four hauls having been made. This showed that catches in the MIK net were higher, due to the small size of the 0-group fish. A 24 h sampling station to investigate the diurnal feeding cycle was started at 1500 h on 6 June, using the HSTN and MIK net every 4 hours. However, this had to be terminated at 0400 h on 7 June, due to a SE'ly gale. The ship dodged until 1200 h, when she steamed towards the Danish coast.

Work recommenced in rectangle 42F4 at 0450 h on 8 June, with a further comparison between the IYGT and the MIK net. Information was then received from RV TRIDENS that high concentrations of 0-group cod had been found by a Danish research vessel further west, and it was decided to steam to rectangle 42F3 to continue the gear comparison. Work started there at 1500 h on 8 June and high concentrations of 0-group gadoids (especially cod) were caught with

the IYGT, together with large numbers of sandeels. The gear comparison work in daylight and darkness was completed at 1330 h on 9 June. This indicated that the IYGT was superior, due to larger size of the 0-group gadoids.

The vertical distribution of 0-group gadoids was then investigated with the IYGT, towing for one hour at surface, bottom, and thermocline in daylight and darkness. This was completed at 0145 h on 10 June, after which a 24 h diurnal feeding cycle was commenced at 0700 h, using the IYGT and the HSPS. However, catches dropped to very low levels at 2000 h, and it was decided to move to rectangle 42F2, which was reached at 2330 h on 10 June. The diurnal cycle was completed at 0048 h on 12 June, after which a repeat investigation of vertical distribution, together with HSPS free-flow tests, were commenced. These were completed at 0110 h on 13 June, and the ship then steamed for Lowestoft.

#### RESULTS:

1. Good samples of 0-group gadoids were obtained from east of The Shetland Isles and off the Danish coast. Haddock and Norway pout predominated east of Shetland, and cod and Norway pout off Denmark. There was a considerable size difference between the two areas, with those in the north being smaller.
2. Sampling for diurnal feeding studies was hampered by bad weather in one case, or patchy samples in other cases. There was considerable variation in abundance and species composition throughout each 24 h cycle.
3. The vertical distribution sampling suggested that 0-group cod and Norway pout occur mainly in the lower half of the water column by day, and migrate towards the surface at night. 0-group saithe occurred near the surface at all times. Catches of haddock and whiting were too small to enable conclusions to be drawn.
4. The comparison between the IYGT and MIK net showed that the former gear was much the most efficient at catching 0-group gadoids, once they have reached a size (2-3 cm) which the liner will retain.
5. Samples were preserved, either in formalin of different strengths or frozen, at varying times after capture, to investigate the effect of digestion on stomach content identification.
6. The headline height of the IYGT with the standard doors was measured as 4 metres, and the wing-end spread was 7-9 metres. However, after some extra weight was added to the doors, the gape increased to 6 metres and the spread to 10.5 metres.

C T Macer  
20 June 1990

SEEN IN DRAFT: JRF (Master)  
Peter Mackay (Senior Fishing Mate)

INITIALLED: JGS

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