

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

1991 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 2

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

STAFF

D J Symonds  
M R Vince  
B H Holford  
C L Whiting  
J G Shepherd (Part 1)  
L T Kell (Part 1)  
B D Rackham (Part 2)  
M M Carroll (Part 2)

DURATION

Left Lowestoft 0915h 12 February  
Arrived Lowestoft 1930h 26 February  
Left Lowestoft 0920h 28 February  
Arrived Lowestoft 0615h 11 March  
All times are Greenwich Mean Time

LOCALITY

North Sea

AIMS

1. To investigate the effect of noise generated by the ship's main propulsion units on catch rates of fish.
2. To make observations on other factors which may affect fish catch rates by trawls.

NARRATIVE

On leaving Lowestoft, CORYSTES proceeded to the north-east coast of England where the first Granton trawl station was started at 0435h on 13 February 12 miles east of the R Tyne. Catches of roundfish were small and a move was made overnight to grounds off Berwick. Further moves were made to Marr's Bank and Turbot Bank on the 15th and to Buchan Deep on the 16th. Reasonable catches of small haddock and whiting were found here in 90-100m of water and trawling continued in this area for the next five days.

A tow with the Granton trawl was made in Aberdeen Bay in the evening of the 20 February before proceeding to the Whitby Fine Ground. The gear was changed to the 4m beam trawl and good catches of plaice were taken in 65-70m of water. Apart from a short break due to a SW gale during the morning of the 21st fishing continued uninterrupted until the 25th. Exploratory tows were made with the Granton trawl in relatively shoal water (under 50m) at the Botney Ground, West Mud Hole, Tea Kettle Hole, south of Jim Howe Bank and Smith's Knoll before CORYSTES proceeded to Lowestoft in thick fog arriving at 1930h on the 26 February for the mid-cruise break and change of scientific staff.

CORYSTES left Lowestoft at 0920h on 28 February and fished with the Granton trawl off Dunwich, Kentish Knock, Brown Ridges and the Broad Fourteens throughout the next two days.

Concentrations of roundfish were difficult to locate and a return was made to the West Mud Hole on 1 March where the best catch of whiting (but mixed with large numbers of small dabs) had been made earlier. Sampling continued on these grounds until the 4 March. On the following day hauls made in the German Bight were unsuccessful in locating roundfish without dabs so after an overnight steam the gear was changed to the beam trawl and a search made in the Cleaver Bank and outer Silver Pit area for flatfish in shoal water. Reasonable catches of plaice and sole (with the ubiquitous dab) were located on the south side of the Outer Silver Pit in about 40m of water and the remaining three days of the cruise were spent on this ground. The last haul was completed at 1503h on the 10 March and CORYSTES steamed for Lowestoft.

A feature of this cruise was the exceptionally fine weather for the time of year. Although fog and poor visibility were problems on several days, only half a day's work was lost through strong winds.

## RESULTS

The main propulsion units on CORYSTES are fitted with chokes designed to dampen electrical noise. To determine the effect of this noise on catch rates of fish, paired hauls were made with either the chokes in place or out. Sampling was carried out using either the Granton trawl (primarily for roundfish) or the 4m beam trawl (for flatfish) on grounds in deep (more than 50m) and shallow (less than 50m) water.

To investigate other factors which may affect catch rates, these paired hauls were made in the light and dark, with and against the tide. Periods of dawn and dusk, as well as slackwaters, were generally avoided. When twilight and/or slackwaters did not intervene, two sets of paired tows, one with and one against the tide were completed as a sequence of four.

The main areas worked were the Buchan Deeps and West Mud Hole (with the Granton trawl) and the Whitby Fine Ground and the south side of the Outer Silver Pits (with the beam trawl). A total of 241 valid 30 minute tows, 143 with the Granton and 98 with the beam trawl, were completed. Of these, 19 were exploratory, searching for concentrations of suitable fish and 6 (3 pairs) were carried out over slackwater. The distribution of the remaining 216 tows as pairs and sequences were:

<u>Gear</u>	<u>Depth zone</u>	<u>Ground</u>	<u>Pairs</u>	<u>Sequences</u>
Granton	>50m	Buchan Deeps	26	9
		Other areas	12	5
	<50m	W Mud Hole	23	10
Beam	>50m	Whitby	21	8
		S Outer Silver Pits	25	10
	<50m	Other areas	1	0
Total			108	42

At each station, fish were identified, weighed and measured, subsampling as necessary. Station, catch and length records were input to the Ground Fish Survey suite using, at first, FORTRAN and, latterly, SAS after much effort had been put into its development to suit the requirements of the cruise.

Detailed statistical analyses will be carried out later in the laboratory but a limited preliminary analysis of one data set, the Buchan Deeps, suggests that for roundfish (whiting, small haddock and Norway pout) in deep water there is no significant effect of electrical noise on catch rates. However, other factors, such as illumination (ie, light or dark) may have much greater influence.

Little opportunity was available to complete subsidiary aims. However, ripe ovaries from long rough dabs were collected for R Turner and samples of commercial fish were deep frozen from a number of grounds for Torry Research Station. In addition, complete biological sampling (sex, maturity and otoliths) was carried out on all soles caught.

D J Symonds  
18 March 1991

SEEN IN DRAFT: Capt J French - Master  
Mr P Mackay - Fishing Skipper

INITIALLED: JGS

DISTRIBUTION:

Basic List +  
D J Symonds  
J G Shepherd  
M R Vince  
B H Holford  
L T Kell  
C L Whiting  
B D Rackham  
M M Carroll  
M D Nicholson

