

**CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE -
LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK**

2000 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 2

STAFF: S Flatman
P J Bromley
B F Riches
L E Woolner
M Dunn
B F M Harley
M J Brown
M Etherton (part 1)
S P Milligan (part 2)

DURATION: Left Lowestoft 0745h 1 February
Arrived Lowestoft 0042h 24 February
(All times are Greenwich Mean Time)

LOCALITY: Irish Sea

AIMS:

1. To carry out an ichthyoplankton sampling grid (for cod and plaice eggs).
2. To carry out a plaice population sampling survey using a Granton trawl.
3. To collect biological information and samples of mature plaice and cod.
4. To visually inspect the Smartbuoy deployed to the NE of Lowestoft.

Aims 1 – 3 are in support of project C0798: Irish Sea egg production and estimation of biomass.

NARRATIVE:

CORYSTES sailed from Lowestoft at 0745h on 1 February, and steamed to the north-east to carry out a visual check on a recently-deployed Smartbuoy and Minipod. The buoy was found to be in position, although the radar reflector, light and battery were missing from one of the surface toroids. After reporting the situation, CORYSTES resumed passage for the Irish Sea. The Granton trawl survey commenced in the western sector of the Irish Sea at 0700h on 4 February. Scanmar readings, visual inspections of the gear and the experience of the fishing officers indicated that the gear was not fishing correctly. Various alternative configurations of towing position and back chain settings on the trawl doors were tried, along with a reduction of towing speed, until the gear was fishing satisfactorily. Strong westerly then southerly winds prevented work offshore, so during the period 4-5 February CORYSTES worked the set of stations close to the Northern Irish coast. Eight stations in the northern part of the western Irish Sea were successfully completed by 1500h on 5 February, including repeat tows at three stations where the gear was suspected to be fishing sub-optimally. At the end of the following tow the port warp parted when hauling

commenced, resulting in the loss of the port door and Scanmar unit, most of the net and over 200m of trawl warp. Repeated deployments of the large grapnel failed to recover the lost gear. With a severe gale forecast for the next day, and no prospect of further work until repairs could be made, CORYSTES steamed overnight to seek shelter in Red Wharf Bay.

Gear repairs were smoothly effected during the morning of 6 February, but the vessel was forced to remain at anchor for the rest of the day during a south-westerly severe gale. The wind eased early on the following day, and a further five stations off the North Wales coast were completed before the weather again deteriorated. Similar weather conditions on the 8 February allowed CORYSTES to snatch two more stations in Liverpool Bay before being forced to dodge. After an uncomfortable night dodging in winds up to storm force, CORYSTES moved to a position south-east of the Isle of Man, but was unable to work in the poor conditions prevailing. With no prospect of an early improvement in the weather, CORYSTES set course for Douglas for the mid-cruise staff changeover, docking at 1400h on 9 February.

A series of gale to storm force winds prevented CORYSTES from leaving Douglas until 0730h on 13 February, when the weather abated sufficiently for the ichthyoplankton survey to begin. Work continued until 1400h on 15 February, when CORYSTES took advantage of the proximity of the survey track to the port of Douglas in order to collect a microscope part and extra refrigerant gas. Westerly gales again forced an overnight stay in port. The survey recommenced at 0830h on 16 February, and the vessel worked back towards the Irish coast to complete the western stations of the grid in relatively sheltered waters.

During 16-20 February the remaining stations in the ichthyoplankton grid were completed. The fishing survey was resumed at 0600h on 20 February, using the 4m beam trawl rather than the Granton trawl, which could not be fished effectively at towing speeds in excess of 3.2 knots. At 1000h on 21 February fishing operations halted and CORYSTES set course for Lowestoft, docking at 0042h on 24 February.

RESULTS:

Aim 1: ichthyoplankton sampling.

CORYSTES successfully completed the ichthyoplankton survey grid, deploying the Gulf VII high-speed plankton sampler at 104 of the 105 stations planned. The sampler was fitted with a 280 μ m net, and a Pup net of 64 μ m was attached to the frame. Deployment followed the standard procedure of a double oblique haul from sea surface to 2m off the seabed, with the vessel steaming at approximately 5 knots. Collection and preservation of samples followed the project's sampling protocols. A chart showing the station positions is attached (Figure 1). Water samples were collected from even numbered stations, for later salinity analysis and calibration of the logged data. Data from the continuous salinity/temperature monitoring system for surface water were logged throughout the cruise. The new monitoring software, developed on board to aid deployment of the plankton sampler, was excellent. A useful new plankton station summary database was also trialled and completed during the cruise.

Sampling for Iso-Electric Focusing.

Samples of fish eggs in the size range 1.1 – 2.0 mm were to be sampled for positive identification using Iso-electric focusing. Unfortunately the weather conditions were not favourable for sorting fish eggs from plankton samples during most of the plankton grid, although sampling was attempted at the south-west corner of the grid off Dublin. Very few eggs were found in that area with small samples being collected from stations 81 and 82 (Figure 1). Preliminary examination of the samples indicated that plaice spawning had begun inshore in the western Irish Sea (stations 69 – 73) and close to the north Wales coast. Very few cod/haddock-sized eggs were observed.

Aim 2: plaice population sampling survey.

Poor weather conditions resulted in the loss of at least five days of survey work. The Granton trawl did not function as well as expected, as it could only be successfully towed at speeds below 3.3 knots. Given these factors, and the loss of the Scanmar door spread measurement capability, aim 3 was given higher priority following the plankton survey. The 4m beam trawl was therefore used for the collection of plaice ovary samples once the plankton survey had been completed. Despite these difficulties, 28 of the 52 planned tows were completed; 15 using the Granton trawl and 13 with the beam trawl.

At each site the Granton trawl or 4m beam trawl was towed for 30 minutes at a speed of 3+ knots (Granton) or 4 knots (beam). These gears were rigged as standard, except for the following modifications: Scanmar sensor pockets were fitted to one pair of the Nordtrawl type KB doors to provide spread measurements for the Granton trawl, and both gears were used without a fine mesh liner. A chart indicating the position of each station is attached (Figure 2).

The text table below shows the target number of stations by stratum, and the numbers achieved:

Stratum	1	2	3	4	5	6	7
Target	2	9	3	2	8	17	11
Achieved	0	6	2	0	3	11	6

At each station all plaice caught were sorted by sex, categorized as immature or mature, and measured. Preliminary examination of the length distributions of plaice taken by the two gears shows little difference in the overall length range:

	<u>Male</u>	<u>Female</u>
Granton:	12-35 cm (141)	12-43 cm (145)
Beam:	11-36 cm (108)	12-41 cm (94)

(Numbers of fish in parentheses).

Length-stratified samples of plaice otoliths were also collected:

VIIa Stratum Gear/Sex	2	3	5	6	7	Total
Granton trawl						
male	76	2	0	40	6	124
female	74	11	5	36	9	135
Beam trawl						
male	-	-	1	67	30	98
female	-	-	4	43	41	88

For the remainder of the catch:

Station details together with catch, length and biological data were input to the Fishing Survey database. All fish and selected commercial crustaceans were identified to species, weighed and measured. Samples of otoliths were also taken from other species of interest to the project:

VIIa Species	Cod male	Cod female	Haddock male	Haddock female
Granton trawl	4	1	1	2
Beam trawl	4	3	-	-
Total	8	4	1	2

All otolithed fish were weighed individually, sexed and assigned a maturity stage.

A total of 24 finfish species were recorded from Granton trawl hauls; the main ones by weight were plaice (37%), flounder (25%), cod (9%), dab (8%) and whiting (8%). Beam trawl hauls yielded 28 finfish species: mainly plaice (25%), lesser spotted dogfish (19%), sole (11%), cod (8%), whiting (7%), dab (6%) and flounder (6%).

Aim 3: biological samples from mature plaice and cod.

A total of 127 plaice ovary samples were collected and preserved according to the project protocols. The targets and samples taken by area were:

	Liverpool Bay	Cumbrian coast	Western Irish Sea
Target	50	50	75
Achieved	50	22	55

Maturity stages by length were recorded for a total of 201 female plaice captured during the survey. Ovary samples were taken from the only two mature female cod caught.

Aim 4: Smartbuoy inspection.

Completed as reported in the narrative.

Other samples taken.

24 sole and 31 whiting were otolithed to provide age determination material for VIIa market sampling augmentation and training purposes.

Specimens of 11 species of fish were frozen for fish identification courses (T. Watson).

S Flatman (SIC)
23 February 2000

SEEN IN DRAFT: R Williams (Master)
R Graham (Senior Fishing Mate)

INITIALLED: GPA

DISTRIBUTION:

Basic list +

S Flatman

F Bromley

B Riches

L E Woolner

S Milligan

M Dunn

B F M Harley

M J Brown

M Etherton

M G Pawson

M J Armstrong (DANI, Belfast)

R Nash (Port Erin)

P Witthames

M R Vince

P Connolly (FRC, Dublin)

FCO (for Republic of Ireland)

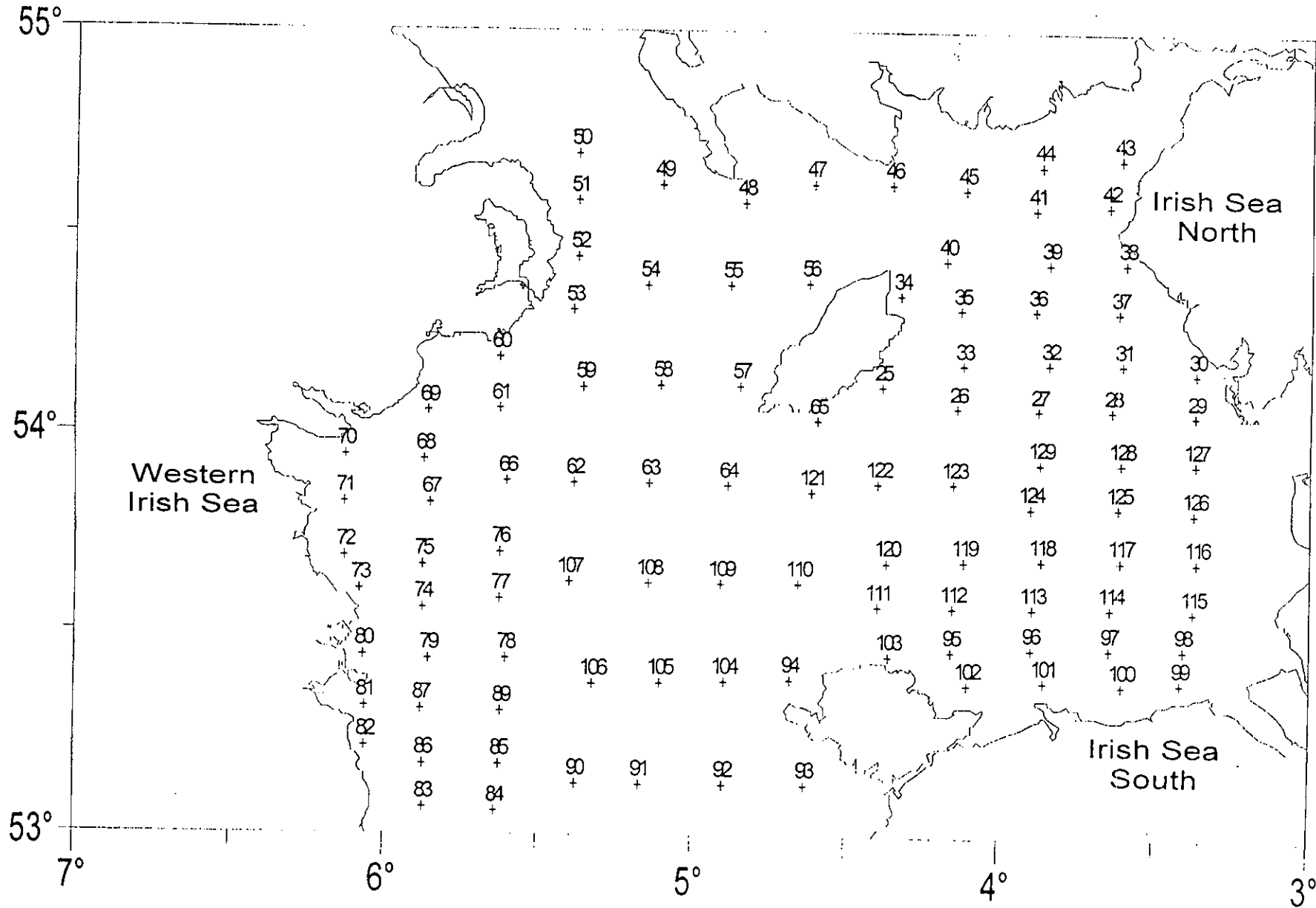
Sea Fisheries Committees:

Cumbria

North Western and North Wales

Figure 1.

Cozystes 2/2000: Plankton station positions.



Corystes 2/2000:
Granton trawl (▲) and beam trawl (●) survey stations.

