

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

1995 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 4

STAFF: S Flatman
M R Vince (part 1)
S P Milligan
M J Boon
P R King (part 2)
R T Harrop (part 2)
A J Winpenny
B F M Harley (part 1)

DURATION: Left Lowestoft 0900 h 15 March
Arrived Lowestoft 0500 h 10 April
(All times are Greenwich Mean Time)

LOCALITY: Irish Sea, Bristol Channel

AIMS:

1. To carry out a beam trawl survey of groundfish in the Irish Sea.
2. To sample fish eggs on a grid of stations, throughout the Irish Sea and in Cardigan Bay, using the 76cm unencased high speed plankton sampler.
3. To determine the proportion mature by size and age group of the sole and plaice populations in the Irish Sea.
4. To obtain sole and plaice gonads for the determination of fecundity, atresia and spawning duration.
5. To carry out a beam trawl survey of groundfish in the Bristol Channel.

NARRATIVE:

After an uncomfortable passage to the west coast, CORYSTES commenced the Irish Sea beam trawl survey grid (Figure 1 : Station 2) at a position close inshore off Wicklow at 0832 h on 17 March. Strong to gale force WSW winds prevented occupation of the stations in St. George's Channel, so stations close to the Irish coast were worked during 17 and 18 March, moving to the offshore stations as the winds moderated. During the period 19 - 21 March stations in St George's Channel, Cardigan Bay and west of Anglesey were completed. Work in the northern Irish Sea continued uninterrupted until the afternoon of 28 March, when the final survey station was completed. CORYSTES docked at Workington at 2113 h for the mid-cruise break and staff changes.

CORYSTES sailed at 0925 h on 30 March, and proceeded to a position west of the first plankton survey station, where relatively deep water allowed trial hauls with the plankton sampler to be carried out. This familiarisation process was considered prudent due to the presence of new cable winch controls, and some deck crew members working the high speed tow net for the first time. The first station of the plankton survey grid (Figure 2 : Station 91) was commenced at 1416 h. Plankton sampling continued in favourable weather conditions until 1345 h on 31 March, when a problem occurred with the ship's Gyro system. Attempts to repair the system were unsuccessful, and CORYSTES steamed to Douglas, docking at 0836 h on 1 April. Repairs and Gyro tests were completed by 1800 h, and the ship left Douglas immediately afterwards. The plankton survey recommenced at station 107, and work continued uninterrupted until 2015 h 6 April, when the final station was completed. CORYSTES steamed overnight to the Bristol Channel, where a further eight beam trawl hauls were successfully carried out. At 1743 h the final station was completed, and the ship set course for Lowestoft.

RESULTS:

Aim 1. All 70 of the beam trawl survey stations were successfully completed. At each site the 4m beam trawl, fitted with chain mat, flip-up ropes and a 40mm codend liner, was towed for 30 minutes. All fish species caught were identified, weighed and measured, and length-stratified samples of otoliths were taken from selected species:

Species	VIIa	VIIb	VIIg
Brill	26	5	-
Cod	49	2	1
Lemon sole	61	-	-
Megrim	7	-	-
Angler	57	7	-
Plaice	1339	104	2
Sole	480	32	5
Turbot	-	3	-
Whiting	193	74	5

All individual otolithed fish were sexed and assigned a maturity stage, and (with the exception of whiting) weighed. These data were entered into the Fishing Survey Database on the VAX computer system. Photographs of the benthos were taken, and major animal groups were recorded. Data from the ROXANN ground discrimination system and the continuous temperature and salinity system were logged. In addition, salinity and temperature profiles were obtained for the first and last stations of each day using the shallow water Guildline. Water samples were collected three times per day throughout the grid for subsequent salinity analysis and calibration of the logged data.

A total of 58 fish species were recorded, the main ones being, by weight, lesser spotted dogfish (23%), plaice (16%), dab (14%) and whiting (10%) and, by number, dab (27%), plaice (18%), whiting (10%) and solenette (9%).

Aim 2. All 106 stations of the plankton survey grid were successfully completed. In general weather conditions were good, but at some of the stations carried out in moderate sea conditions, difficulties were experienced in obtaining smooth dive profiles for the 76cm unencased tow net. These were considered to be due to the difficulty of maintaining constant shooting and hauling rates using the new joystick controls on the cable winch (a separate report by the Chief Engineer is available), and to the problem of maintaining constant ship's speed through the water in the absence of the EM log. Despite these problems the survey went remarkably smoothly. One 40 cm nose cone was damaged beyond repair, one 60 mpi plankton net was torn, and some cable problems were experienced.

Concentrations of fish eggs were found off the Irish, Cumbrian and North Wales coasts; samples of eggs from these areas were collected and frozen for species identification studies using Iso-Electric Focusing.

Aim 3. All plaice and sole caught with the 4m beam trawl (aim 1) were separated into immature and mature categories, sampled for length distribution, and length-stratified samples of otoliths were taken for each category.

Aim 4. Stage IV ovaries of sole and cod were collected and preserved for fecundity determination, and samples of ovaries from other stages of plaice and sole were preserved for estimation of atresia levels (Table 1).

Aim 5. Eight stations of the Bristol Channel survey grid were completed and processed as in aim 1.

Supplementary aims:

- All rays (5 species) were measured, sexed and assigned a maturity stage (M. Vince).
- All anglerfish caught were weighed, measured, otolithed and assigned a maturity stage. Vertebrae were frozen for ageing studies, and the degree of infestation by the parasite *Spraguea lophii* was recorded (W. Dawson).
- Fifty live hermit crabs (*Eupagurus prideauxi*) were retained and off-loaded at Workington for transport to Conwy (K. Ramsay).
- Nine live berried edible crabs were returned to Lowestoft (D. Bennett).
- Four live spider crabs were returned to Lowestoft (R Turner).
- Twelve specimens of *Blennius ocellaris* were frozen (M. Kaiser).
- All lesser weevers caught in VIIa (>500) were frozen (R. Nash).
- Selected fish species were frozen for the fish ID course (T. Watson).
- Samples of cod, dab, flounder, plaice, sole and whiting from various NMP sites were frozen (A. Franklin).
- Selected fish species were frozen for AEP4 (A. Poole).
- Roxann calibration surveys were carried out over known rock and mud bottom types.
- Four separate calibration tests of the Chelsea Instruments sensors, including collection of salinity samples before and after the test, were carried out (K. Medler).

S Flatman (SIC)
9 April 1995

SEEN IN DRAFT: MJW (Master)
 RG (Senior Fishing Mate)

INITIALLED: CTM

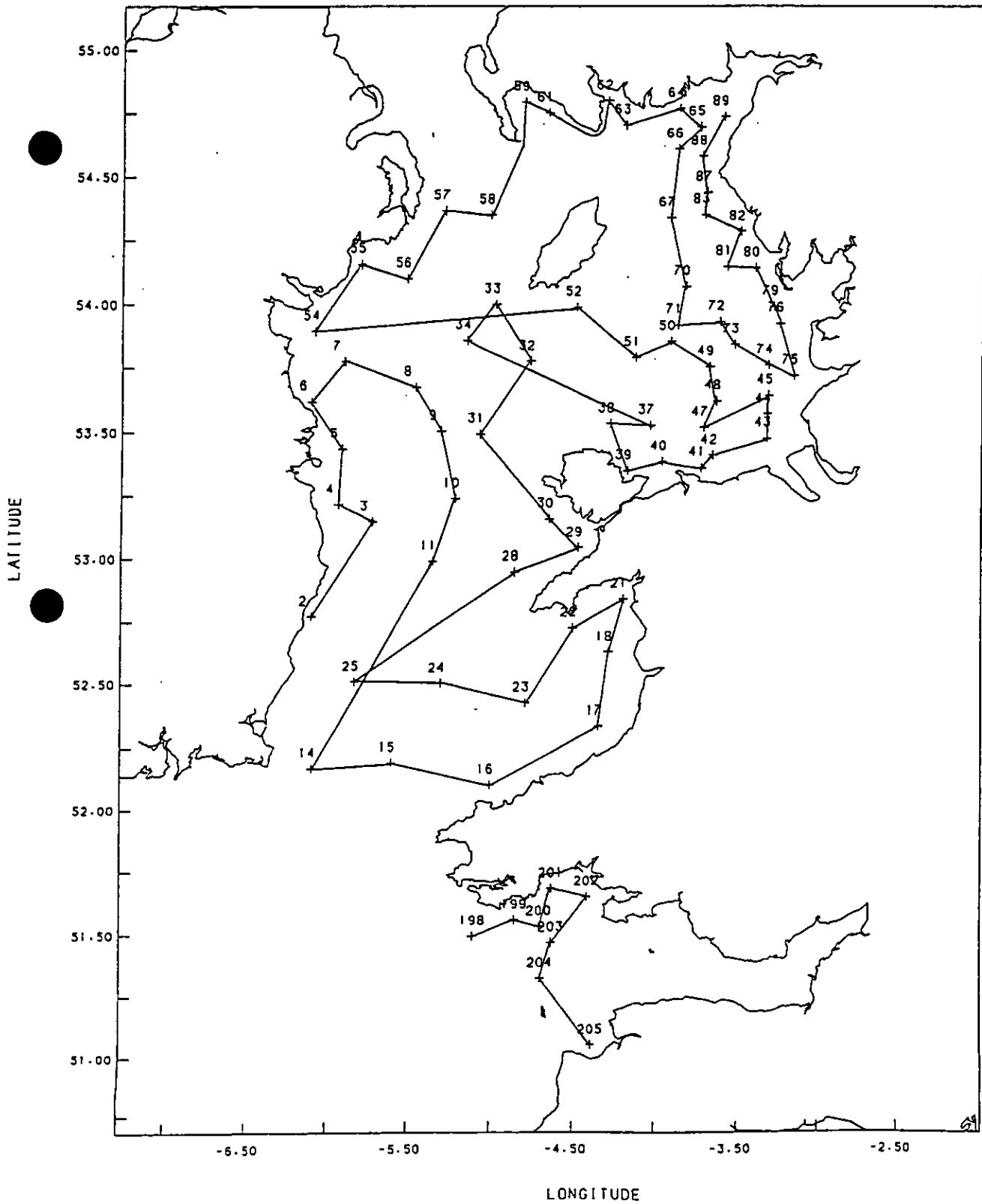
DISTRIBUTION:

Basic list +

S Flatman	P R King	M Armstrong (DANI)
M R Vince	R T Harrop	P Connolly (DOM)
S P Milligan	A J Winpenny	R Nash (PEML)
M J Boon	B F M Harley	Sea Fisheries Committees (5)

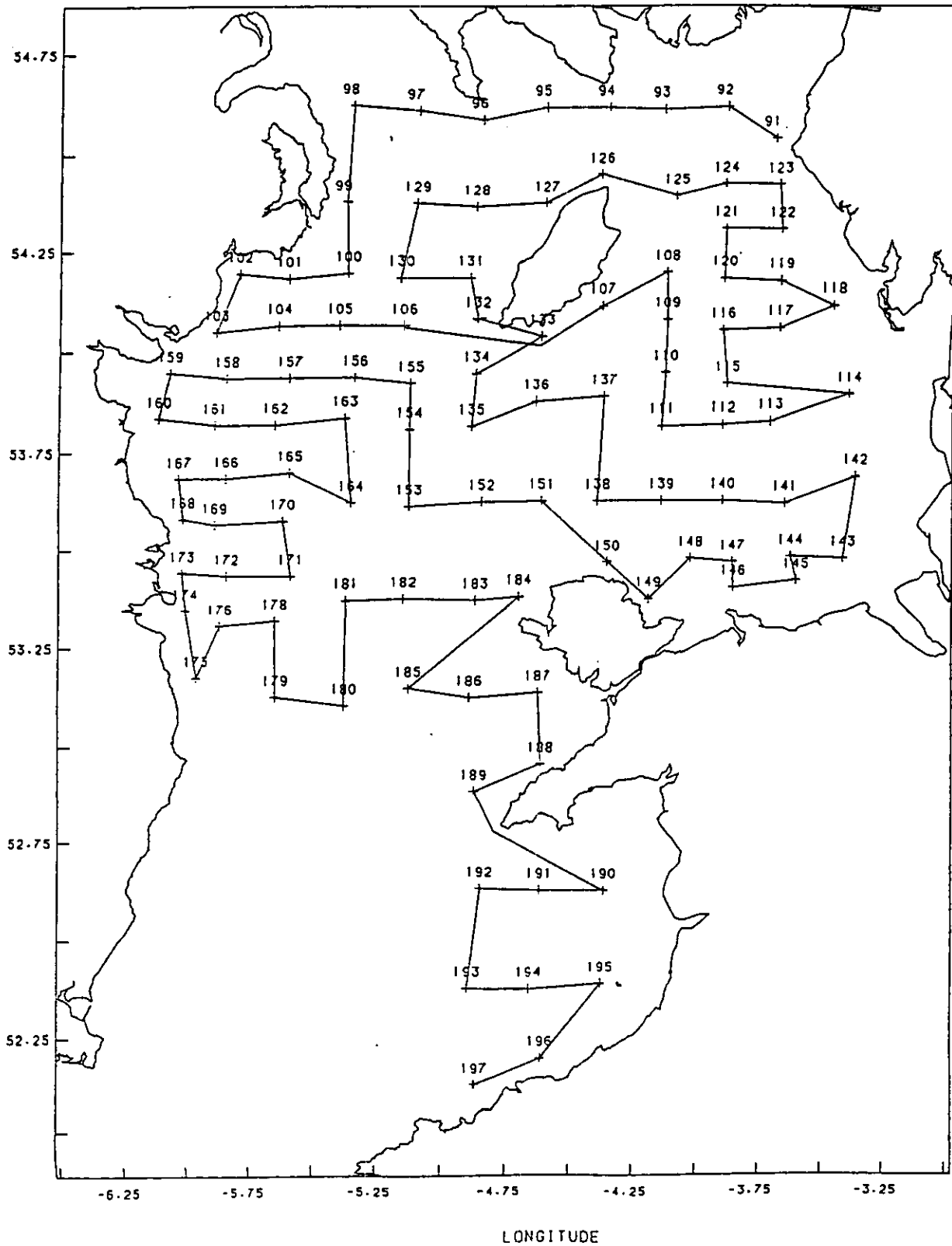
CORYSTES 4/95 BEAM TRAWL SURVEY

Figure 1



CORYSTES 4/95 TTN STATIONS

Figure 2



Corystes 4/95 - Plaice and sole atresia and fecundity samples per area

Length Group (cm)	Target per area	Cardigan Bay	Cumbrian Coast	Liverpool Bay	Western Irish Sea	Total
1. Plaice Atresia Tally						
total	50	21	39	50	26	136
2. Sole Atresia tally						
total	50	-	9	49	0	58
3. Sole Fecundity tally						
<26	15	-	1	13	0	14
27-31	10	-	4	22	2	28
32-36	10	-	13	9	3	25
>37	15	-	2	2	2	6
total	50	-	20	46	7	73

Table 1