THE CENTRE FOR ENVIRONMENT, FISHERIES & AQUACULTURE SCIENCE,

LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK, NR33 0HT.

2003 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 10

STAFF:

J Dann (SIC)
S Warnes (2IC)
M Easey
S Shaw
M Brown
T Dinmore
M P-Humphreys
D J Brown (1st August)

DURATION: 26h July – 8th August

LOCALITY: North Sea (IVc), English Channel (VIId).

AIMS:

To undertake a beam trawl survey in the southern North Sea and eastern Channel as part of an ICES co-ordinated research programme.

(i) To obtain fisheries independent data on the distribution and abundance of commercial flatfish species.

(ii) To collect biological data, including maturity and weight at age, of commercial species.

(iii) To derive age compositions of commercial flatfish, whilst at sea, for use in stock assessment.

(iv) To carry out sampling to satisfy the requirements of the EU data regulations.

(v) To identify the epibenthos by-catch taken in the 4-metre beam trawl.

(vi) To carry out detailed survey of sole distribution in selected areas of VIId and IVc.

NARRATIVE:

Corystes sailed from Lowestoft at 18:30 on 26th July and proceeded to the French sector of the English Channel where work commenced in to the North of Boulogne on

the morning of the 27th. The new style micro CTD 7504 was fitted on the trawl, however the protective cage was damaged beyond repair after the first days fishing. It was decide not to risk the remaining cage, therefore the smaller SD204 mini CTD was used for the remainder of the survey. Problems developed with the brake on the starboard winch on 28th July. The 4-metre beam was then transferred over to work from the port winch. The vessel worked, westwards, along the French coast in moderate weather conditions finishing the stations in the French sector on the afternoon of the 31st July. The EDC measuring units developed faults that could not be fixed by the staff on board. D Brown joined the ship by sea-rider on the morning of the 1st August, from Chichester harbour, and rectified the faults in 2 of the 4 machines. A note on the faults was appended to the cruise defects list. The survey in the English sector was completed on 4th August without any gear damage. A survey grid of 12 stations in the vicinity of the dredging sites on the Shingle Bank was then carried out. After completion of this work the vessel proceeded to the Thames Estuary arriving there on the evening of 5th August. Work continued in the Thames Estuary and off the Suffolk coast during the following 3 days. Additional tows in the Thames were not attempted as the echo sounder was inoperable and it was considered an unacceptable risk to fish in new positions without it. The Corystes docked in Lowestoft at 16:55 on Friday 8th August.

RESULTS:

A total of 74 stations, including all primary stations used in calculating year class indices, were worked in the Eastern Channel and a further 20 in the southern North Sea, Figure 1.

Aim 1: The distributions of abundance for sole and plaice are shown in Figure 2. The main concentration of sole was in the Thames estuary off Margate. Other significant areas of abundance were in Rye Bay and off Boulogne. Plaice were also found in large numbers at the same locations.

Aim 2: Biological data for commercial species was collected from plaice (*Pleuronectes platessa*), sole (*Solea solea*), brill (*Scophthalmus rhombus*), turbot (*Scophthalmus maximus*), dab (*Limanda limanda*), flounder (*Platichthys flesus*), whiting (*Merlangius merlangus*), cod (*Gadus morhua*) and lemon sole (*Microstomus kitt*). A summary of the number of fish for which otolith and other biological data were collected is given in following table.

Species	VIId	IVc
Plaice	860	144
Sole	710	435
Common dab	232	92
Lemon sole	69	35
Brill	13	4
Turbot	21	1
Flounder	44	25
Whiting	14	79
Cod	1	2

Aim 3: A total of 860 plaice and 710 sole from VIId were aged during the voyage. The provisional index of abundance for both species was calculated and used to update the beam trawl survey tuning fleet file for the 2003 North Sea Working Group. The abundance of '1' group sole and plaice in the catches was lower than in recent years, whereas the abundance of '2' Group fish of both species was above the long-term average.

Aim 4: Additional biological data in support of the EU data collection regulation were taken for rays, mainly thornback (*Raja clavata*) in both VIId and IVc, as were measurements of spider crab (*Maia squinado*) and edible crab (*Cancer pagurus).*

Aim 5: The epibenthos was identified at each trawl station and recorded as "observed", no quantitative estimates of abundance were made.

Aim 6: A grid of 12 stations was worked in the vicinity of the dredging operations area on the Shingle Bank in order to determine the abundance of commercial flatfish in this area.

Additional Aims:

(i) Length weight samples were collected from various species in VIId and IVc, these are summarised in the following table.

Species	VIId	IVc
Bib	156	68
Poor cod	106	34
Black sea bream	18	
Solenette	58	
Thick back sole	85	
Scaldfish	56	
Lesser weever	54	16
Tub gurnard	74	
Red gurnard	95	
Streaked gurnard	21	
Sand sole	30	

(ii) Otolith samples from sand sole (*Pegusa (Solea) lascaris*), thick back sole (*Microhirus variegatus*), streaked gurnard (*Trigloporus lastoviza*), red gurnard (*Aspitrigla cuculus*), tub gurnard (*Trigla lucerna*) and grey gurnard (*Eutrigla gurnardus*) were collected from VIId for otolith studies.

Species	VIId
Grey gurnard	11
Streaked gurnard	21
Tub gurnard	56
Red gurnard	62
Thick back sole	45
Sand sole	30

(iii) Samples of sole and dab were preserved for J Ellis as were plaice for P Witthames.

(iv) A total of 150 tissue samples from Raja species, mainly thornback rays, were collected for J Ellis.

(v) Comparative environmental data was collected for the 2 types of mini CTD at 4 trawl stations.

(vi) Juvenile flatfish were preserved for fish ID course for new staff participating in the 2003 Young Fish Survey.

(vii) A total of 30 live spider crabs were collected for Stuart Hetherington.

(viii) Temperature and salinity data was collected at all stations.

SEEN IN DRAFT:

INITIALLED: R.M.

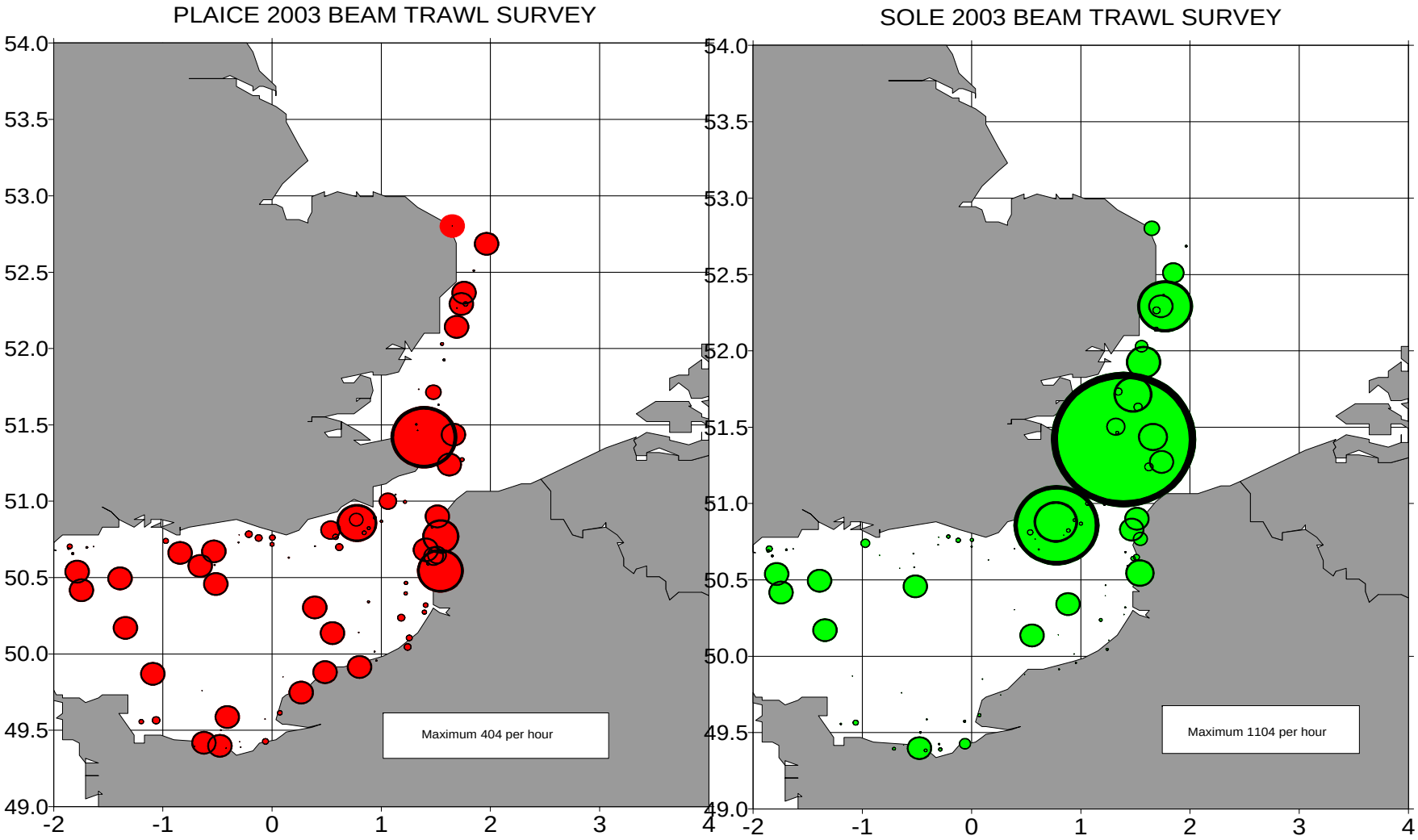
DISTRIBUTION:
Basic list +
J Dann
S Warnes (2IC)
M Easey
S Shaw
M Brown
T Dinmore
M P-Humphreys
W Vanhee, Belgium
Frans v Beek, Netherlands
A Tetard, France
Kent and Essex, Sussex, Sea Fisheries Committees

Appendix A: Emergency EDC maintenance

Two units required network cards enabling and connecting to the ships network. The main databases had to be copied to the NT server so that the problems could be located. The machines were crashing during the downloading of the otolith data so the investigation focused on the otolith tables. These were edited in MS Access. Duplicate THR records were found and this was put down to insufficient time to complete uploading between stations. The information from these records was recorded on paper and the offending records deleted. Downloading from the workstation to the Deckmaster (Mother) computer was retried and was successful.

Two other failed machines were identified as having hardware failures and could not be repaired on board, as parts were required. There appeared to be a disk failure on both machines and possibly a DC converter failure on one of them. The chief engineer checked the voltage leaving the DC box, and at the ends of the cables, joining the measuring machines. There were no problems with the voltages recorded however an intermittent fluctuation in the power supply could not be ruled out as a possible cause of the faults on these machines.

Figure 2 Distribution of plaice and sole catches (numbers per hour)



prm	sext	rect	divn	sector	shtlat	shtlong	hallat	hallong	PLE	SOL
78	5	31F1	4c	E	51.2725	1.739833	51.3092	1.754667	26	
79	6	31F1	4c	E	51.2402	1.623667	51.2677	1.6605		66
80	8	31F1	4c	E	51.0435	1.130667	51.0268	1.082	6	28
81	4	31F1	4c	E	51.4190	1.3915	51.4203	1.447167	404	1104
82	2	32F1	4c	E	51.7140	1.477333	51.6807	1.444167	96	292
83	1	32F1	4c	E	51.7332	1.343	51.7185	1.288167	4	60
93	3	32F1	4c	E	51.6320	1.5245	51.5977	1.498333	8	66
96	89	31F1	4c	E	51.4633	1.333333	51.4535	1.282	4	24
97	97	32F1	4c	E	51.5028	1.321	51.5077	1.3725	10	142
98	98	32F1	4c	E	51.9250	1.575	51.9550	1.586667	14	264
99	99	33F1	4c	E	52.0300	1.556667	52.0550	1.585	20	98
100	100	33F1	4c	E	52.1417	1.69	52.1700	1.71		34
102	102	33F1	4c	E	52.2650	1.693333	52.2350	1.675	4	58
103	103	33F1	4c	E	52.2917	1.733333	52.2583	1.72		
104	104	33F1	4c	E	52.2917	1.771667	52.2583	1.753333	30	422
105	105	33F1	4c	E	52.3650	1.758333	52.3283	1.728333		14
107	107	34F1	4c	E	52.5103	1.846833	52.4810	1.845	10	166
108	108	34F1	4c	E	52.6855	1.964667	52.7160	1.950333		16
118	118	34F1	4c	E	52.8020	1.65	52.8198	1.632	2	120
119	119	31F1	4c	E	51.4357	1.661	51.4652	1.6865		224
202	202	30F0	4c	E	50.89167	0.941667	50.875	0.89	18	22
203	203	30F0	4c	E	50.86833	1.001667	50.845	0.951667	16	26
1	23	27E9	7d	F	49.4272	-0.060333	49.4640	-0.058667	38	88
2	20	27E9	7d	F	49.3898	-0.2865	49.3860	-0.231667	4	28
3	19	27E9	7d	F	49.4250	-0.297333	49.4230	-0.347833	2	12
4	18	27E9	7d	F	49.3835	-0.421	49.3773	-0.366833	2	24
5	17	27E9	7d	F	49.3982	-0.477833	49.3812	-0.427667		
6	16	27E9	7d	F	49.4182	-0.6235	49.4163	-0.567667		2
7	15	27E9	7d	F	49.3945	-0.710667	49.3937	-0.766833	6	24
8	1	28E8	7d	F	49.5567	-1.1975	49.5347	-1.158167	29	12
9	13	28E8	7d	F	49.5653	-1.0615	49.5812	-1.110333	48	42
10	11	28E8	7d	F	49.8698	-1.091833	49.8578	-1.041167		2
11	24	28E9	7d	F	49.5738	-0.064167	49.5938	-0.012333	4	18
12	12	28E9	7d	F	49.7600	-0.640333	49.7610	-0.690167	2	4
14	22	28E9	7d	F	49.5867	-0.41	49.5887	-0.358833		8
15	21	28E9	7d	F	49.5012	-0.468667	49.5012	-0.4145	6	14
16	35	28F0	7d	F	49.9567	0.9555	49.9723	1.005333	8	10
17	34	28F0	7d	F	49.9147	0.801	49.9342	0.8455		8
18	33	28F0	7d	F	49.8807	0.485167	49.9025	0.537		2
19	27	28F0	7d	F	49.7468	0.266667	49.7727	0.326833		2
20	26	28F0	7d	F	49.8503	0.099667	49.8207	0.071167	2	4
21	25	28F0	7d	F	49.6142	0.071167	49.5843	0.039333	30	26
22	75	29E8	7d	E	50.4945	-1.392167	50.4880	-1.445167		
23	74	29E8	7d	E	50.4175	-1.744833	50.4062	-1.798833		
25	72	29E8	7d	E	50.1705	-1.342667	50.1598	-1.401		
27	67	29E9	7d	E	50.4577	-0.514833	50.4285	-0.548667		
29	39	29F0	7d	F	50.3417	0.883	50.3045	0.861667	14	
30	29	29F0	7d	F	50.3045	0.391	50.3060	0.448167		2
31	30	29F0	7d	F	50.1360	0.553167	50.1463	0.602167		
32	31	29F0	7d	F	50.1402	0.793833	50.1477	0.844333	4	2
33	32	29F0	7d	F	50.0150	0.9385	50.0027	0.890667	6	4
35	40	29F1	7d	F	50.4647	1.226333	50.4328	1.202	22	6
36	41	29F1	7d	F	50.3963	1.223667	50.3680	1.1785	22	2
37	42	29F1	7d	F	50.3197	1.406167	50.3572	1.396	30	10
38	43	29F1	7d	F	50.2738	1.395167	50.3130	1.403167	28	4

39	36	29F1	7d	F	50.0453	1.241333	50.0272	1.1945	44	18
40	37	29F1	7d	F	50.1048	1.256667	50.0732	1.250333	38	4
41	38	29F1	7d	F	50.2373	1.183	50.2047	1.158167	46	24
42	77	30E8	7d	E	50.5385	-1.784833	50.5412	-1.726667		
43	79	30E8	7d	E	50.6898	-1.8625	50.6912	-1.805	10	22
44	78	30E8	7d	E	50.6568	-1.825333	50.6693	-1.8745	14	16
45	80	30E8	7d	E	50.7040	-1.852833	50.7038	-1.796	32	48
46	81	30E8	7d	E	50.7028	-1.634333	50.7070	-1.684333	4	4
47	82	30E8	7d	E	50.6978	-1.695833	50.6862	-1.654	11.54	13.9
49	70	30E9	7d	E	50.7400	-0.973167	50.7443	-0.9135	34	70
50	69	30E9	7d	E	50.6613	-0.841667	50.6443	-0.889167		2
51	68	30E9	7d	E	50.5760	-0.658333	50.5622	-0.72		2
52	66	30E9	7d	E	50.5825	-0.525833	50.5963	-0.585167	8	6
53	65	30E9	7d	E	50.6715	-0.533167	50.6693	-0.593833		6
54	64	30E9	7d	E	50.7302	-0.306667	50.7203	-0.365333	6	6
55	63	30E9	7d	E	50.7798	-0.301	50.7878	-0.247	2	2
56	62	30E9	7d	E	50.7840	-0.212667	50.7725	-0.155	44	28
57	61	30E9	7d	E	50.7595	-0.1225	50.7523	-0.062667	44	36
58	59	30E9	7d	E	50.7180	0	50.7075	0.054667	26	10
59	60	30F0	7d	E	50.7620	0.002833	50.7523	0.057667	36	26
60	57	30F0	7d	E	50.6995	0.615167	50.6780	0.569833	46	10
61	56	30F0	7d	E	50.7672	0.5815	50.7542	0.530833	36	4
62	55	30F0	7d	E	50.8112	0.536667	50.8265	0.588833	122	44
63	52	30F0	7d	E	50.7932	0.843333	50.7895	0.789833	26	2
64	51	30F0	7d	E	50.8235	0.8855	50.8012	0.841333	20	30
65	54	30F0	7d	E	50.8792	0.771333	50.8755	0.8315	86	334
66	53	30F0	7d	E	50.8572	0.777333	50.8728	0.825	244	652
67	58	30F0	7d	E	50.6303	0.153667	50.6395	0.0955	8	4
68	50	30F1	7d	F	50.8295	1.466333	50.8618	1.477167	12	
69	46	30F1	7d	F	50.7687	1.5455	50.8007	1.567	222	110
70	49	30F1	7d	F	50.6813	1.4085	50.7115	1.435	156	10
71	45	30F1	7d	F	50.6480	1.509667	50.6838	1.5195	116	48
72	44	30F1	7d	F	50.5443	1.5415	50.5847	1.552	282	218
74	9	30F1	7d	E	51.0000	1.061	50.9722	1.029167	108	30
75	7	30F1	7d	E	50.9955	1.216833	50.9743	1.175833	20	18
76	48	30F1	7d	F	50.5903	1.428667	50.5608	1.405333	18	10
77	47	30F1	7d	F	50.6400	1.479333	50.6098	1.453167	122	36
94	93	30F0	7d	E	50.7055	0.392833	50.7052	0.345833	6	4
95	90	30F1	7d	F	50.9002	1.513667	50.9212	1.545667		

Figure 1a Eastern Channel ICES Division VIId. Positions of trawl stations using a 4 metre beam trawl

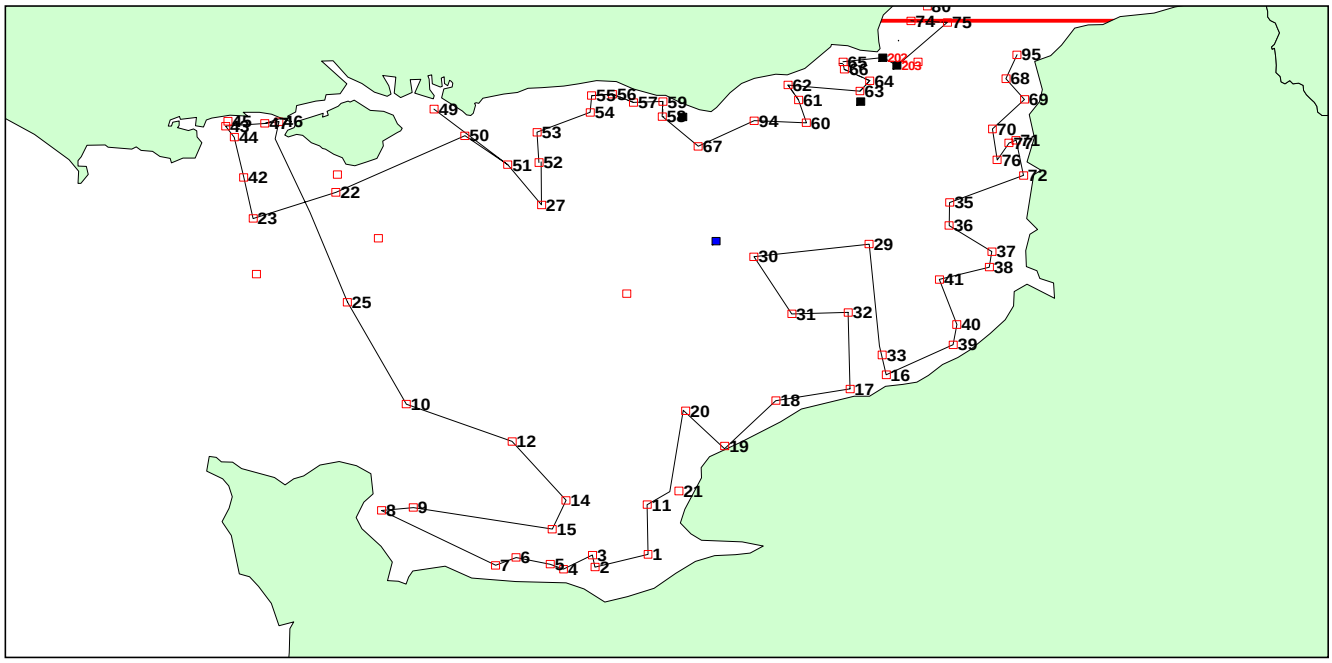


Figure 1b Southern North Sea ICES Division IVc. Positions of trawl stations using a 4 metre beam trawl