

# CRUISE REPORT: CRUISE LF0696 DEMERSAL FISH SURVEY

VESSEL: R.V. *Lough Foyle* (DANI)

DATES: 11 - 24 March 1996

AREA OF OPERATION: Irish Sea (North); ICES Division VIIa

TYPE OF SURVEY: Otter trawl

## OBJECTIVES

1. To obtain information on spatial patterns of abundance of different size- and age-classes of demersal fish in the northern Irish Sea.
2. To obtain abundance indices of whiting, haddock and cod for use at ICES Working Groups.
3. To examine geographic patterns of infection of whiting and cod by external parasites.
4. To collect samples of dabs for contaminants analysis.
5. To record levels of marine litter in trawl catches.
6. To record seabed characteristics using RoxAnn.

## PERSONNEL

M. Armstrong	DANI	(SIC)
C. Burns	DANI	
M. Dickey-Collas	DANI	
M. McAliskey	DANI	
W. McCurdy	DANI	
J. Peel	DANI	

## METHODS

A commercial Rockhopper trawl fitted with a 20 mm (stretched mesh) liner in the cod-end was towed over three nautical miles where possible at the stations shown in Figure 1. Gear and towing procedures were those employed on all previous DANI groundfish surveys.

The species composition of the catch at each station was determined, and length-frequencies were recorded for each species. Subsamples of cod, whiting, haddock and hake were taken for recording length, mass, sex, maturity stage and for removal of otoliths for ageing. The level of infestation of whiting and cod by external parasites was estimated from each biological sample and also, in the case of whiting, from the length-frequency sample at each station.

For the purposes of analysis, the survey area was divided into seven strata defined by depth and substratum, as shown in Fig. 1. The RoxAnn ground discrimination system was operated at and between trawl stations.

## CRUISE NARRATIVE

### Sunday 10 March

*Lough Foyle* left Belfast Harbour at 22h.00 and proceeded overnight towards station 83. A comprehensive safety demonstration was given before departure by the Chief Officer.

### Monday 11 March

Four trawl stations were completed (83, 97, 46 and 99) in 20-30mph southerly winds. The vessel then proceeded towards Dundrum Bay in deteriorating sea conditions. However, due to worsening SE winds, shelter was sought off Peel on the Isle of Man. The vessel remained at Peel until Friday 15 March.

### Friday 15 March

Trawl stations 216, 51, 50 and 103 were completed in moderating SE winds. The vessel was then turned to Belfast to drop off an engineer who had been notified of an illness in the family.

### Saturday 16 March

The survey continued off the Co Down coast, where stations 81, 101, 17 and 100 were fished in rough seas and 30-40 mph SE winds. The vessel lay at anchor off Peel during the night.

### Sunday 17 March

Trawl stations 88, 70 and 71 were completed in rough seas and 30-40 mph SE winds. The survey was interrupted after station 71 because of the heavy swell. The vessel remained offshore during the night.

### Monday 18 March

Trawl stations 92, 79, 73, 208, and 90 were completed in moderate sea conditions. The vessel was then berthed in Dublin for the mid-cruise break, recommencing the survey on Wednesday 20 March.

### Wednesday 20 March

The vessel left Dublin in mid-morning and completed stations 94, 93 and 56 before proceeding overnight to the North Wales coast. An emergency drill was held during the morning. At station 93, the net could only be fully retrieved once a fault in the net drum had been rectified.

### Thursday 21 March

Trawls 76, 77 and 102 were completed. Shelter from strong NE winds was sought off the south coast of the Isle of Man for several hours after station 76. The vessel then lay at anchor off Holyhead.

### Friday 22 March

Trawls 245, 246, 249, 243 and 242 were completed in good conditions. The vessel was anchored overnight at St Bees Head.

### Saturday 23 March

Trawls 256, 64, 257, 258, 259 and 250 were completed in slight to calm conditions. The vessel then proceeded overnight towards Belfast Lough.

Sunday 24 March

Trawl stations 35 and 86 were completed. The vessel then returned to Belfast.

## WORK COMPLETED

A total of 39 valid hauls were completed (Fig. 1). Positions of trawl stations are given in Table 1.

Length measures were carried out on all fish species at each station. In addition, a total of 322 cod, 975 whiting, 457 haddock and 77 hake were analysed for length, mass and maturity stage. Otoliths were taken from each of these fish for ageing. Each cod and whiting sampled for age was inspected for external parasites. The whiting length frequency samples were also screened for parasites. Each catch of dabs was sampled for contaminant analysis. A record was kept of quantity and type of marine litter in each catch.

Trawl data and length frequencies were archived using the groundfish survey data base. RoxAnn data were collected at each trawl station and during transit between stations.

## PRELIMINARY RESULTS

The overall catch-rates of selected species are given in Table 2. Catch rates of whiting and haddock above the minimum landing size are shown in Table 3. The strong 1994 year-class of haddock recorded in previous surveys dominated the catches of this species. Catch-rates of haddock were highest in water less than 50m deep off the Irish coast, and off the west coast of the Isle of Man. Length distributions of whiting in selected survey strata are shown in Figure 2. Length compositions of whiting, cod and haddock averaged over survey strata are shown in Fig. 3.

Data collected during cruise LF0696 will be incorporated in the stock assessments of Irish Sea cod, whiting and haddock at the ICES Northern Shelf Working Group in June 1996.

## ACKNOWLEDGEMENTS

The Master and personnel of the *Lough Foyle* are thanked for their enthusiastic cooperation throughout the cruise. The Fishing Master is particularly acknowledged for ensuring efficient and consistent trawling operations. The scientific personnel are thanked for the very thorough work completed under the poor conditions that prevailed during most of the cruise.

Signed:

Scientist - in charge: M. J. Armstrong date 24-3-96

Ships master: Andrew W. J. 2 date 24.03.96

Head, AESD Aquatic Systems: S. J. Henry date 25.03.96

Table 1 Details of trawls during cruise LF0696

(Time in G.M.T.)

Date	Station	Time shot	Shooting position		Hauling position		Mean Depth (m)	Distance towed (nm)
			Latitude	Longitude	Latitude	Longitude		
11 March.	83	07h.20	54, 23..6	5, 18.1	54, 20.5	5, 17.0	88	3.0
	97	10h.12	54, 20.1	4, 54.9	54, 17.1	4, 53.6	70	3.0
	46	12h.59	54, 12.4	4, 58.8	54, 09.7	4, 58.1	85	3.0
	99	15h.03	54, 08.0	5, 01.1	54, 05.5	5, 03.7	83	3.0
15 March.	216	09h.00	53, 56.4	5, 11.8	53, 53.8	5, 15.2	82	3.0
	51	12h.18	53, 53.2	5, 01.9	53, 51.1	4, 58.0	79	3.0
	50	14h.56	53, 45.9	5, 19.8	53, 43.6	5, 22.8	80	3.0
	103	17h.10	53, 34.9	5, 23.9	53, 32.4	5, 26.2	88	3.0
16 March.	81	07h.18	54, 14.9	5, 24.7	54, 12.0	5, 24.4	48	3.0
	101	09h.44	54, 07.6	5, 19.6	54, 04.8	5, 21.0	100	3.0
	17	11h.37	54, 06.1	5, 31.2	54, 07.0	5, 36.1	51	3.0
	100	13h.37	54, 10.1	5, 41.3	54, 09.2	5, 36.4	24	3.0
17 March.	88	07h.59	53, 58.7	5, 37.9	53, 57.0	5, 42.0	73	3.0
	70	09h.55	53, 59.5	5, 46.1	53, 02.1	5, 43.9	47	3.0
	71	13h.04	53, 54.5	5, 55.3	53, 52.4	5, 51.6	41	3.0
18 March.	92	07h.04	53, 37.1	5, 55.3	53, 36.2	5, 50.8	51	3.0
	17	09h.05	53, 41.9	5, 57.3	53, 44.4	6, 00.1	37	3.0
	73	11h.07	53, 50.8	6, 05.6	53, 51.5	6, 00.8	32	3.0
	208	13h.37	53, 49.9	5, 46.3	53, 46.7	5, 46.8	58	3.0
	90	15h.52	53, 39.7	5, 39.8	53, 36.8	5, 41.7	82	3.0
20 March.	94	12h.24	53, 21.5	5, 46.0	53, 24.3	5, 46.8	72	3.0
	93	14h.30	53, 28.5	5, 48.3	53, 31.0	5, 50.5	66	3.0
	56	18h.09	53, 30.8	5, 42.1	53, 30.4	5, 37.0	78	3.0
21 March.	76	07h.53	54, 00.6	4, 24.4	53, 59.3	4, 28.9	42	3.0
	77	14h.08	53, 50.6	4, 41.3	53, 48.5	4, 44.9	85	3.0
	102	16h.08	53, 46.8	4, 41.2	53, 44.0	4, 38.8	59	3.0
22 March.	245	07h.10	53, 31.1	4, 16.9	53, 29.8	4, 11.9	41	3.0
	246	09h.36	53, 28.9	3, 47.5	53, 29.0	3, 42.5	35	3.0
	249	12h.10	53, 46.5	3, 40.6	53, 48.6	3, 44.5	40	3.0
	243	14h.29	53, 47.0	4, 07.4	53, 49.0	4, 11.2	50	3.0
	242	18h.04	54, 04.5	4, 01.5	54, 07.4	4, 02.8	31	3.0
23 March.	256	07h.05	54, 36.0	3, 59.1	54, 37.9	3, 55.2	30	3.0
	64	09h.03	54, 36.9	3, 43.4	54, 34.4	3, 46.3	20	3.0
	257	11h.05	54, 26.0	3, 46.4	54, 23.1	3, 44.8	31	3.0
	258	13h.10	54, 21.9	3, 56.9	54, 18.9	3, 56.7	41	3.0
	259	15h.19	54, 18.8	3, 44.1	54, 15.8	3, 42.4	38	3.0
	250	17h.43	54, 06.4	3, 39.3	54, 03.5	3, 37.3	30	3.0
24 March.	35	06h.53	54, 43.1	5, 41.6	54, 43.5	5, 36.6	15	3.0
	86	08h.59	54, 37.7	5, 26.4	54, 34.7	5, 25.8	38	3.0

Table 2 Catches of selected species during cruise LF0696 in kg per tow, by survey stratum.

STRATUM 1	Stn. 35	Stn. 86	Stn. 83						
Cod	0.00	16.47	5.46						
Whiting	40.74	17.25	51.11						
Hake	0.00	1.79	0.80						
Haddock	0.00	1.35	1.58						
Norway Pout	0.00	0.06	2.75						
Poor cod	0.02	3.69	4.15						
Herring	141.60	5.19	0.19						
Sprat	29.25	0.30	2.22						
Plaice	5.32	1.41	0.07						
Dab	2.35	0.24	0.10						
Flounder	2.73	0.00	0.00						
Anglerfish	1.00	0.00	1.18						
Gurnards	0.65	0.15	0.35						
Less. sp. dogfish	0.00	10.57	0.00						
Nephrops	0.01	0.00	1.80						
STRATUM 2	Stn. 81	Stn. 100	Stn. 70	Stn. 71	Stn. 73	Stn. 79	Stn. 92		
Cod	8.78	0.76	14.34	55.92	7.04	3.83	17.39		
Whiting	59.20	325.40	101.50	408.55	244.12	219.10	193.60		
Hake	0.52	0.00	0.00	0.00	0.00	0.00	0.00		
Haddock	53.22	185.62	41.25	134.50	49.54	34.40	7.67		
Norway Pout	2.08	0.12	0.08	1.32	0.00	0.00	2.96		
Poor cod	1.14	0.23	1.33	0.73	0.11	0.07	0.22		
Herring	148.53	3.46	43.94	265.29	2.15	33.35	15.70		
Sprat	0.61	3.86	11.24	2.70	2.78	0.36	0.39		
Plaice	2.51	37.42	132.11	71.57	58.48	8.96	2.14		
Dab	1.09	18.47	77.65	61.24	50.74	19.26	1.21		
Flounder	0.00	3.22	1.96	4.31	8.89	0.28	0.00		
Anglerfish	0.00	0.00	0.50	0.00	0.20	0.00	0.00		
Gurnards	0.50	0.27	1.33	0.50	0.07	0.77	0.01		
Less. sp. dogfish	4.95	3.77	0.00	0.00	0.89	2.03	1.42		
Nephrops	0.21	0.00	0.00	0.33	2.43	3.18	0.05		
STRATUM 3	Stn. 101	Stn. 17	Stn. 88	Stn. 208	Stn. 75	Stn. 90	Stn. 56	Stn. 93	Stn. 94
Cod	22.86	9.35	60.89	13.10	not	19.94	9.07	26.95	1.74
Whiting	172.32	93.37	60.44	227.59	fished	76.17	80.57	185.76	7.90
Hake	2.26	1.55	4.12	0.98		0.05	0.00	0.02	0.00
Haddock	28.75	69.89	12.11	3.63		2.77	35.42	23.65	1.05
Norway Pout	11.79	6.17	6.02	21.57		4.85	3.27	7.88	0.09
Poor cod	2.88	2.04	2.32	0.13		0.20	1.61	1.27	0.46
Herring	2.87	224.78	31.90	70.98		3.19	1.80	3.55	12.56
Sprat	0.31	0.70	0.37	0.04		0.41	0.24	0.00	0.09
Plaice	0.25	5.49	3.22	10.44		1.71	4.57	1.53	3.43
Dab	0.00	45.04	9.05	4.13		0.83	0.00	0.03	0.00
Flounder	0.00	0.00	0.16	2.38		0.44	0.00	0.00	0.00
Anglerfish	0.00	1.79	0.00	0.00		0.00	0.00	0.37	1.71
Gurnards	3.06	1.33	12.93	10.47		1.16	0.39	0.04	0.08
Less. sp. dogfish	0.00	1.91	0.00	0.00		0.00	10.80	12.25	15.49
Nephrops	6.74	0.16	0.48	1.93		0.39	0.09	0.00	0.00

Table 2 continued

STRATUM 4	Stn. 97	Stn. 46	Stn. 99	Stn. 216	Stn. 51	Stn. 96	Stn. 50	Stn. 48	Stn. 103
Cod	35.59	10.33	12.82	0.00	9.49	not	6.69	not	3.90
Whiting	1488.00	102.79	89.44	85.30	73.70	fished	63.87	fished	6.95
Hake	7.04	2.36	3.62	0.57	0.93		2.24		0.00
Haddock	190.00	4.75	33.26	3.72	29.27		15.25		0.08
Norway Pout	18.93	46.67	15.83	10.18	1.71		5.17		0.37
Poor cod	7.31	5.94	1.31	0.41	3.80		0.69		0.15
Herring	0.00	0.10	0.26	0.47	0.10		0.62		0.53
Sprat	0.00	0.10	0.29	2.73	1.98		1.54		0.37
Plaice	3.68	0.53	0.58	0.32	0.36		0.56		1.53
Dab	0.88	0.17	1.23	0.16	0.00		0.13		0.00
Flounder	0.00	0.00	0.00	0.00	0.00		0.00		0.00
Anglerfish	1.05	0.76	0.00	0.00	0.00		0.07		0.00
Gurnards	11.22	3.61	3.75	1.61	2.06		1.98		1.52
Less. sp. dogfish	0.52	0.93	6.19	0.75	46.98		5.27		3.30
Nephrops	7.68	10.16	8.53	0.67	0.15		0.00		0.11
STRATUM 6	Stn. 256	Stn. 64	Stn. 257	Stn. 258	Stn. 259	Stn. 242	Stn. 250	Stn. 249	Stn. 246
Cod	3.32	1.89	1.50	11.51	4.98	3.99	3.23	11.20	2.09
Whiting	76.70	184.30	270.90	128.60	363.30	355.00	111.40	159.20	506.50
Hake	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Haddock	0.00	0.00	0.00	0.64	0.11	0.07	0.00	2.76	0.18
Norway Pout	0.00	0.00	0.00	0.38	0.04	0.00	0.02	0.09	5.88
Poor cod	0.33	0.00	0.12	1.89	0.34	6.12	0.08	1.94	16.19
Herring	0.14	1.33	7.79	42.17	19.08	4.01	11.38	1.05	3.26
Sprat	3.36	7.09	1.21	2.86	1.33	0.36	0.42	0.99	0.04
Plaice	13.21	17.16	5.28	27.30	14.92	37.57	11.93	3.83	23.47
Dab	4.29	18.28	3.25	1.58	4.13	20.63	26.81	50.25	62.52
Flounder	10.00	2.47	1.26	4.97	4.96	21.72	5.20	7.11	1.93
Anglerfish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Gurnards	0.91	0.05	0.00	0.26	0.00	4.41	0.00	0.69	8.62
Less. sp. dogfish	2.01	0.35	0.00	0.00	0.00	2.75	0.00	0.00	0.00
Nephrops	0.00	0.00	0.13	1.97	3.70	0.00	1.07	0.00	0.00
STRATUM 7	Stn. 105	Stn. 77	Stn. 102	Stn. 76	Stn. 243	Stn. 245			
Cod	not	3.91	3.12	22.41	2.68	8.31			
Whiting	fished	10.06	9.77	79.39	1.98	15.66			
Hake		0.36	0.00	1.70	0.00	0.00			
Haddock		2.86	0.00	0.33	0.00	0.00			
Norway Pout		0.28	0.06	0.01	0.00	0.46			
Poor cod		5.19	2.34	16.79	3.23	1.95			
Herring		0.01	0.03	0.87	0.00	0.16			
Sprat		0.12	0.14	0.04	0.03	1.03			
Plaice		0.74	0.21	1.94	0.26	1.13			
Dab		0.18	0.00	0.08	2.00	2.27			
Flounder		0.00	0.00	0.00	4.11	0.00			
Anglerfish		0.00	0.00	0.86	0.00	0.00			
Gurnards		1.09	2.36	7.79	0.15	0.03			
Less. sp. dogfish		19.42	43.40	23.22	49.39	14.54			
Nephrops		0.00	0.00	0.00	0.00	0.00			

Table 3 Catches in kg per 3 nautical miles (approx 1 hour) towed, for fish below and at or above the minimum landing size of 27 cm (whiting) and 30 cm (haddock).

STRATUM	STATION	WHITING		HADDOCK	
		below MLS	above MLS	below MLS	above MLS
1	35	40.4	0.0	0.0	0.0
	86	14.3	3.0	1.1	0.3
	83	31.9	19.2	0.6	1.0
2	81	56.0	3.2	3.3	49.9
	100	249.2	76.2	122.3	63.3
	70	96.4	5.1	20.4	20.8
	71	376.6	31.9	46.2	88.3
	73	216.7	27.4	14.9	34.7
	79	201.9	17.1	12.8	21.6
	92	191.2	2.4	5.5	2.1
3	101	110.2	62.1	2.3	26.4
	17	85.3	8.0	18.0	51.9
	88	52.6	7.9	1.9	10.2
	208	223.5	4.1	1.9	1.7
	90	53.0	23.2	0.0	2.8
	56	63.3	17.2	0.5	34.9
	93	178.5	7.2	2.1	21.6
	94	7.1	0.8	0.5	0.6
4	97	555.5	932.3	12.0	178.0
	46	87.4	15.3	0.0	4.7
	99	64.5	25.0	1.3	31.9
	51	64.6	9.1	1.2	28.1
	103	6.8	0.2	0.1	0.0
	216	66.4	18.9	0.3	3.4
	50	54.3	9.6	0.0	15.3
7	77	7.4	2.7	0.9	1.9
	102	6.6	3.1	0.0	0.0
	76	16.4	63.0	0.3	0.0
	243	1.7	0.3	0.0	0.0
	245	11.9	3.7	0.0	0.0
6	246	198.5	308.0	0.2	0.0
	242	184.5	170.4	0.1	0.0
	249	128.7	30.5	0.1	2.7
	250	93.3	18.2	0.0	0.0
	258	115.6	13.0	0.3	0.3
	259	206.4	156.9	0.1	0.0
	257	132.9	138.0	0.0	0.0
	256	57.6	19.1	0.0	0.0
	64	78.3	106.0	0.0	0.0
Mean: Strata 2 - 4		139.1	59.3	12.2	31.5

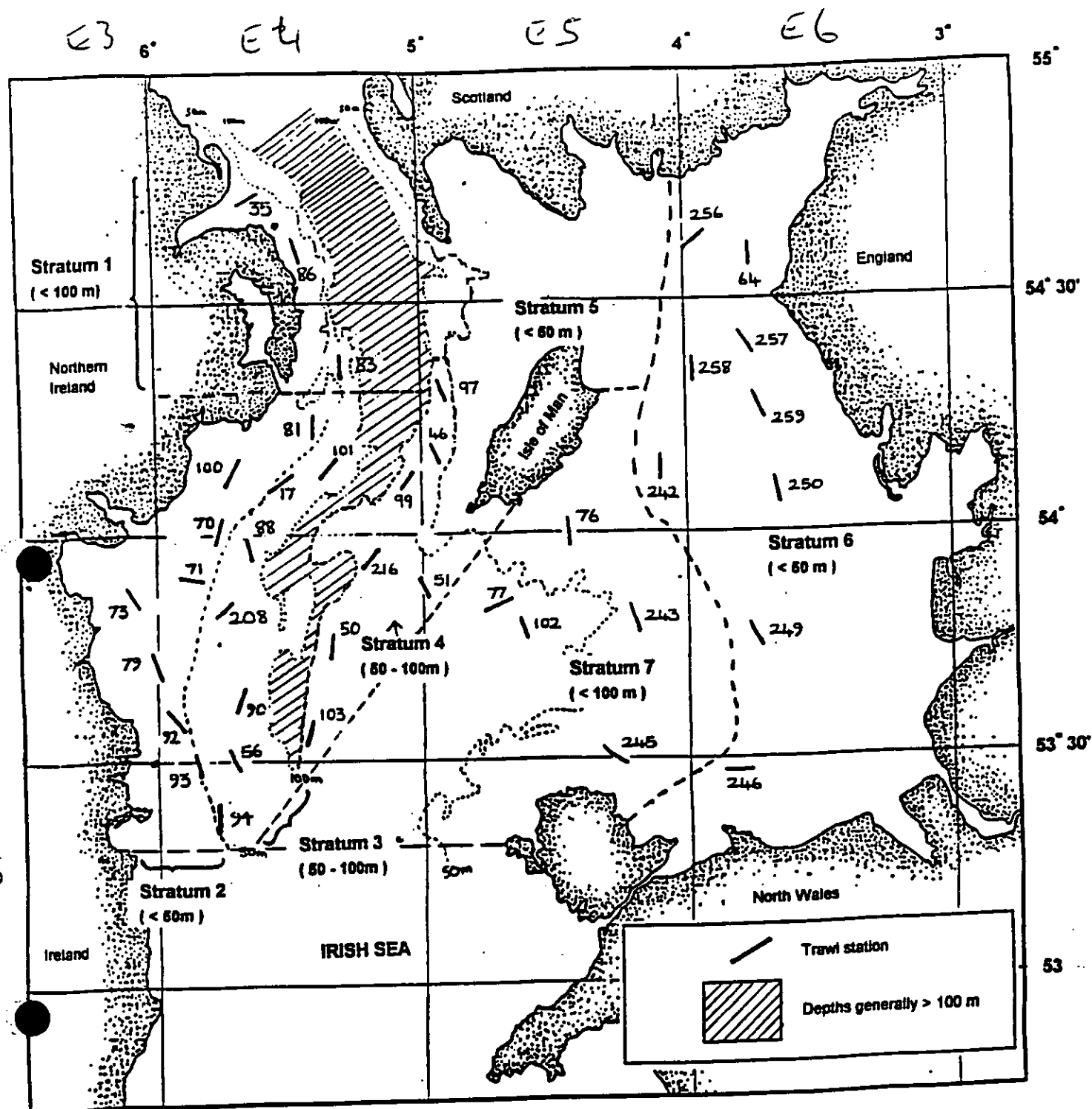


Fig. 1 Trawl stations fished during DANU R.V. Lough Foyle groundfish survey LF0696

Key to strata:

1. Irish coast (N), < 100m. Mixed sediments
2. Irish coast, < 50m. Sand and finer sediments
3. Irish coast, 50 - 100m. Muddy sediments
4. W and SW Isle of Man, 50 - 100m Mud and muddy sand sediments
5. N Isle of Man, < 50m. Gravel sediments.
6. Eastern Irish Sea, < 50m. Sand and finer sediments
7. S Isle of Man, < 100m. Gravelly sediments.



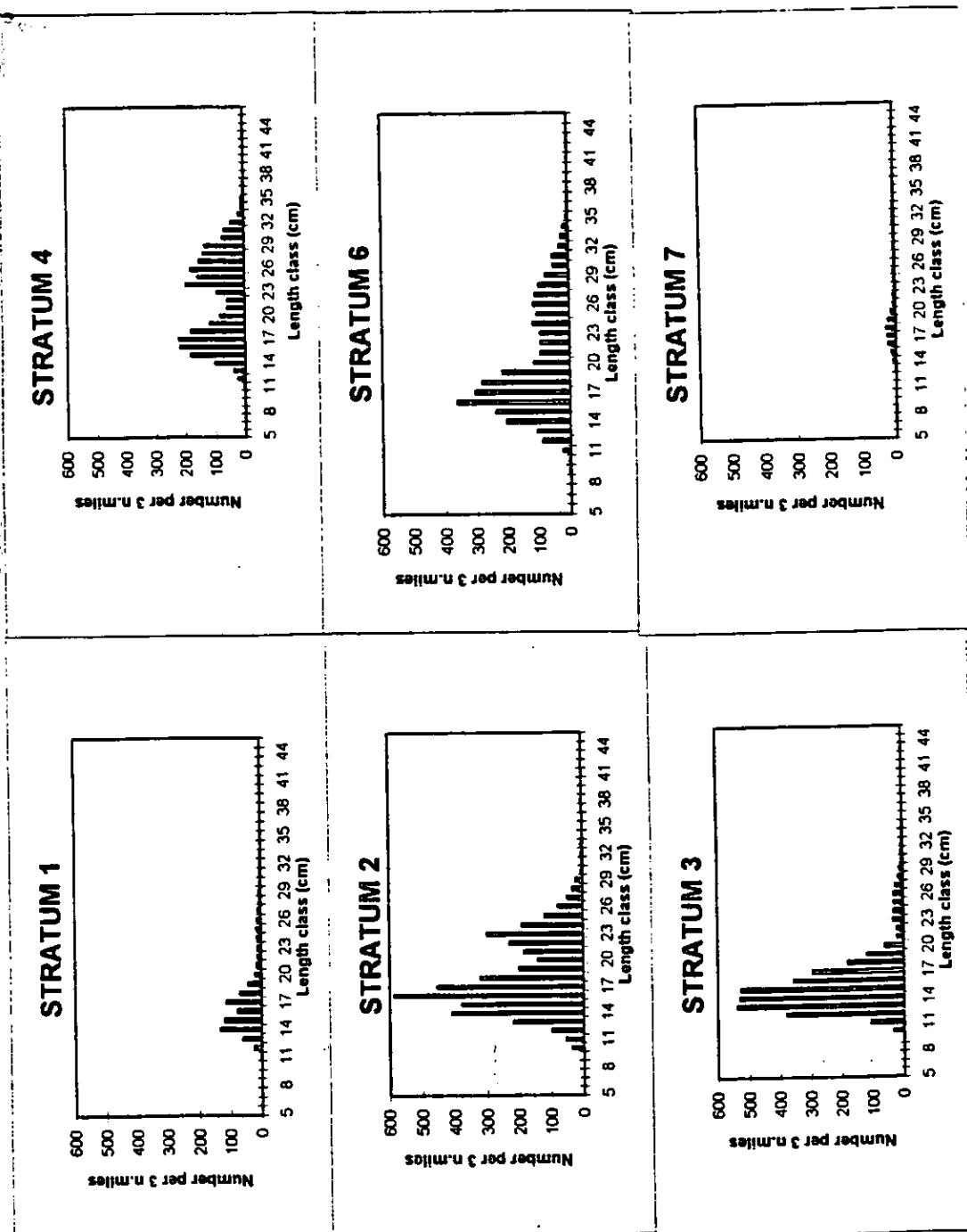


Fig. 2 Length distributions of whiting in strata 1 - 7 during LF0696

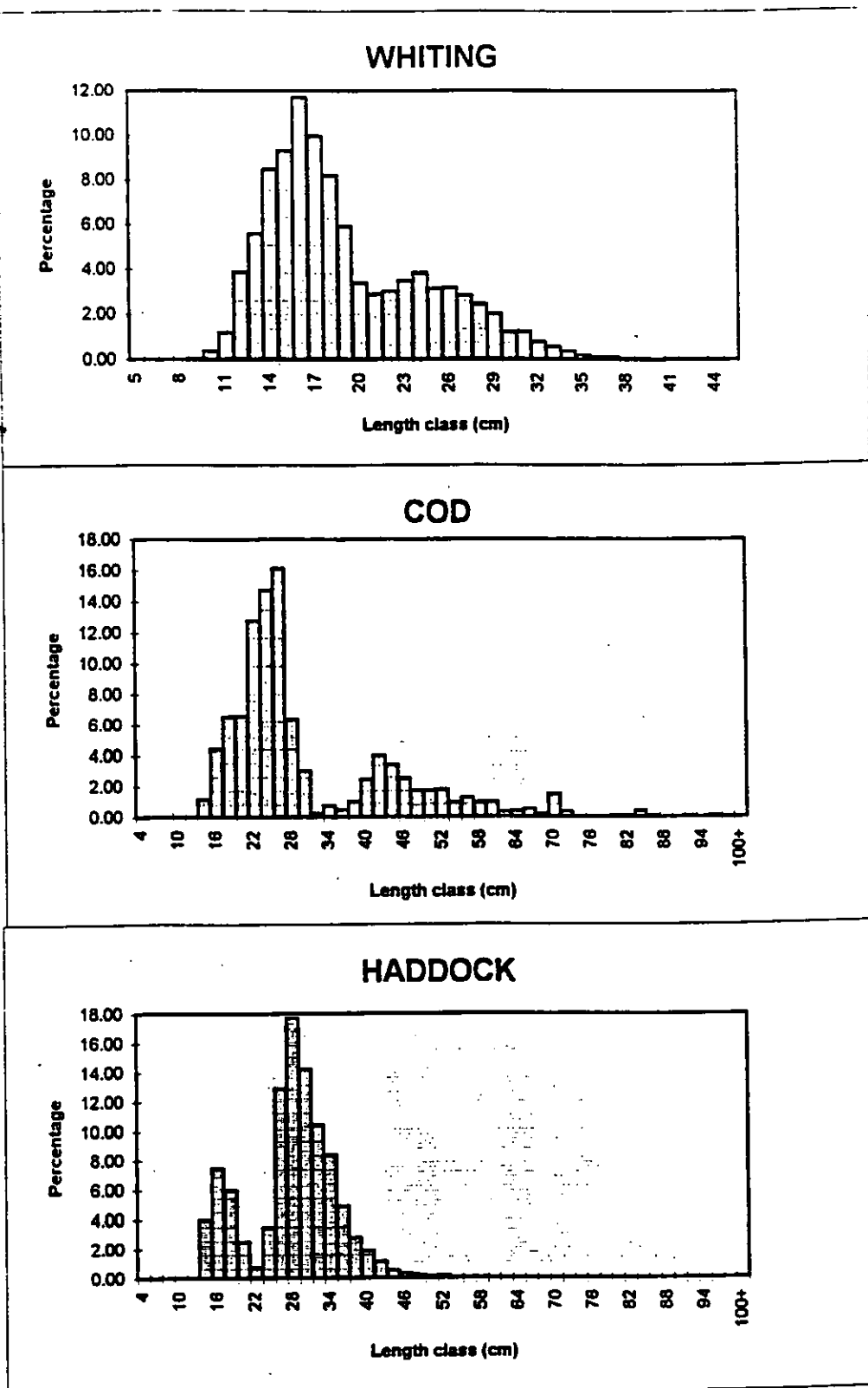


Fig. 3 Average percentage length compositions of whiting, cod and haddock during cruise LF0696.