Mc. W. McCURDY

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CRUISE REPORT: CRUISE LF0794 DEMERSAL FISH SURVEY

VESSEL: R.V. Lough Foyle (DANI)

DATES: 28 February - 12 March 1994

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

TYPE OF SURVEY: Otter trawl, ichthyoplankton

PERSONNEL

M. Armstrong (S.I.C.)	DANI	SSO
W. McCurdy	DANI	SSO
M. Dickey-Collas	DANI	HSO
M. McAlliskey	DANI	SO
C. Burns	DANI	ASO
[redacted] Peel	DANI	ASO
P. Newton	Port Erin Marine Lab	CASE Student

OBJECTIVES

1. Obtain information on spatial patterns of abundance of different size- and age-classes of demersal fish in the northern Irish Sea during Spring;

2. Obtain indices of abundance of juvenile fish for use in future stock assessments, and to evaluate the utility of a Spring survey for providing indices of abundance of adult gadoids;

3. Determine the diet composition and feeding levels of predatory fish, and the spatial overlap of predators and their prey;

4. Map the distribution of eggs and larvae of cod and other species in the plankton;

5. Collect dabs for determination of levels of pollutants and contaminants at and near the National Monitoring Plan site off Dundrum Bay;

6. Collect squid for a project at the University College of Cork;

7. Collect tissue samples from whiting, cod and other demersal fish for DNA analysis at Queen's University/UCC.

WORK COMPLETED

A commercial Rockhopper trawl fitted with a 20 mm liner in the cod-end was towed for one hour or three nautical miles at the stations shown in Figure 1. Gear and towing procedures were those employed on all previous DANI groundfish surveys. Positions and times of trawls are given in Table 1.

The catch at each station was sorted to species. Length-frequencies were then recorded for each species. Hardy species were returned alive to the water after measuring, whenever possible. Catches of selected species are given in Table 2, for the survey strata given in Figure 1 and Table 3. The overall length frequencies of whiting, cod and haddock are given in Figure 2, and length frequencies for whiting are shown in Figure 3 for each survey stratum.

A total of 234 cod, 1014 whiting, 293 haddock and 44 hake were taken for biological analysis (length, age, mass, sex and maturity stage). Stomachs were taken from a wide variety of species at each station and frozen for later analysis. Samples of dabs were collected at selected stations for examination of levels of contaminants and pollutants. Small samples of muscle and gill tissue were taken from 200 whiting in the eastern and western Irish Sea and from selected samples of cod and other demersal fish, for DNA analysis. Few squid were collected due to the very low catches.

Immediately after each station, a Bongo net was deployed vertically to estimate the abundance of cod eggs in the plankton.

Six stations (61, 63, 64, 242, 76 and 105) were not fished due to lack of time resulting from poor weather conditions. A further station (80) could not be fished because of the presence of static fishing gear. Nonetheless, good coverage of each survey stratum (other than stratum 5) was attained. The results of the survey will be utilized in the stock assessments of cod and whiting carried out at the 1994 meeting of the ICES Northern Shelf Working Group, and in ongoing studies of fish distribution, ecology and population dynamics in the Irish Sea.

CRUISE NARRATIVE

Sunday 27 February
Lough Foyle departed Belfast at 22h.00 and proceeded towards station 83 off Portavogie. Prior to departure, scientific staff were given a safety demonstration.

Monday 28 February
Stations 83, 205, 81 and 101 were completed in 15-30 mph northerly winds, after which the vessel dodged overnight towards the next station off the Isle of Man. An emergency drill was held in the afternoon.

Tuesday 1 March

Stations 97, 46, 99 and 48 were fished in good conditions. During the night the vessel drifted in the vicinity of station 216.

Wednesday 2 March

Stations 216, 51, 96 and 50 were completed, after which the vessel was anchored for the night off Newcastle.

Thursday 3 March

Stations 100, 17, 88 and 71 were fished in strong westerly winds. Station 80 was not fished because of the presence of static fishing gear. The vessel lay at anchor at the Skerries during the night.

Friday 4 March

Only two stations were completed (79 and 73) owing to very strong southerly winds and rough sea conditions. The vessel then proceeded to Dublin, berthing at Sir John Rogersons Quay in the late afternoon.

Saturday 5 March

Cruise break in Dublin.

Sunday 6 March

Three stations (94, 93 and 92) were completed in fair to moderate conditions. The vessel was then anchored at the Skerries for the night.

Monday 7 March

Stations 75, 208, 90 and 56 were fished in good conditions. The vessel then drifted for the night to the southwest of station 103.

Tuesday 8 March

Only station 103 was fished due to strong south-westerly winds and a heavy swell. On completion of the tow the vessel was anchored for the night off the north Anglesey coast.

Wednesday 9 March

Stations 245, 243, 77 and 102 were completed in freshening SW winds. The vessel then returned to Anglesey to be anchored for the night.

Thursday 10 March

Stations 246, 247, 249 and 250 were fished in 15-18 mph westerly winds and choppy seas. The vessel was then anchored in Ramsey Bay.

Friday 11 March

Stations 258, 259, 257 and 256 were completed in moderate conditions. The vessel then proceeded to Belfast Lough during the night.

Saturday 12 March

The final two stations of the survey, 86 abd 35, were completed in the morning and the vessel was then returned to Belfast harbour.

ACKNOWLEDGEMENTS

The Master and personnel of the Lough Foyle are thanked for their enthusiastic cooperation and catering throughout the cruise. The Fishing Master is particularly acknowledged for ensuring efficient and consistent trawling operations. The scientific personnel are thanked for their hard work in sorting and measuring the catches.

Signed:

Scientist - in charge: W. J. Arkinson ..... date 22 March 1994

Ships master: ..... date 12 March 1994.

Division Head: S. J. Kennedy ..... date 12.4.94..

Table 3. Definition of survey strata in cruise LF0794

Stratum	Region	Depth	Substratum
1	Ards Peninsula-North Channel	< 100 m	Mixed
2	Co. Down - Dublin	< 50 m	Sand and finer
3	Co. Down - Dublin	50 - 100 m	Sand and finer
4	IOM west coast	50 - 100 m	Sand and finer
5	North IOM	< 50 m	Coarse sediments
6	Solway Firth-Liverpool Bay	< 50 m	Sand and finer
7	Anglesey - IOM	< 100 m	Coarse sediments

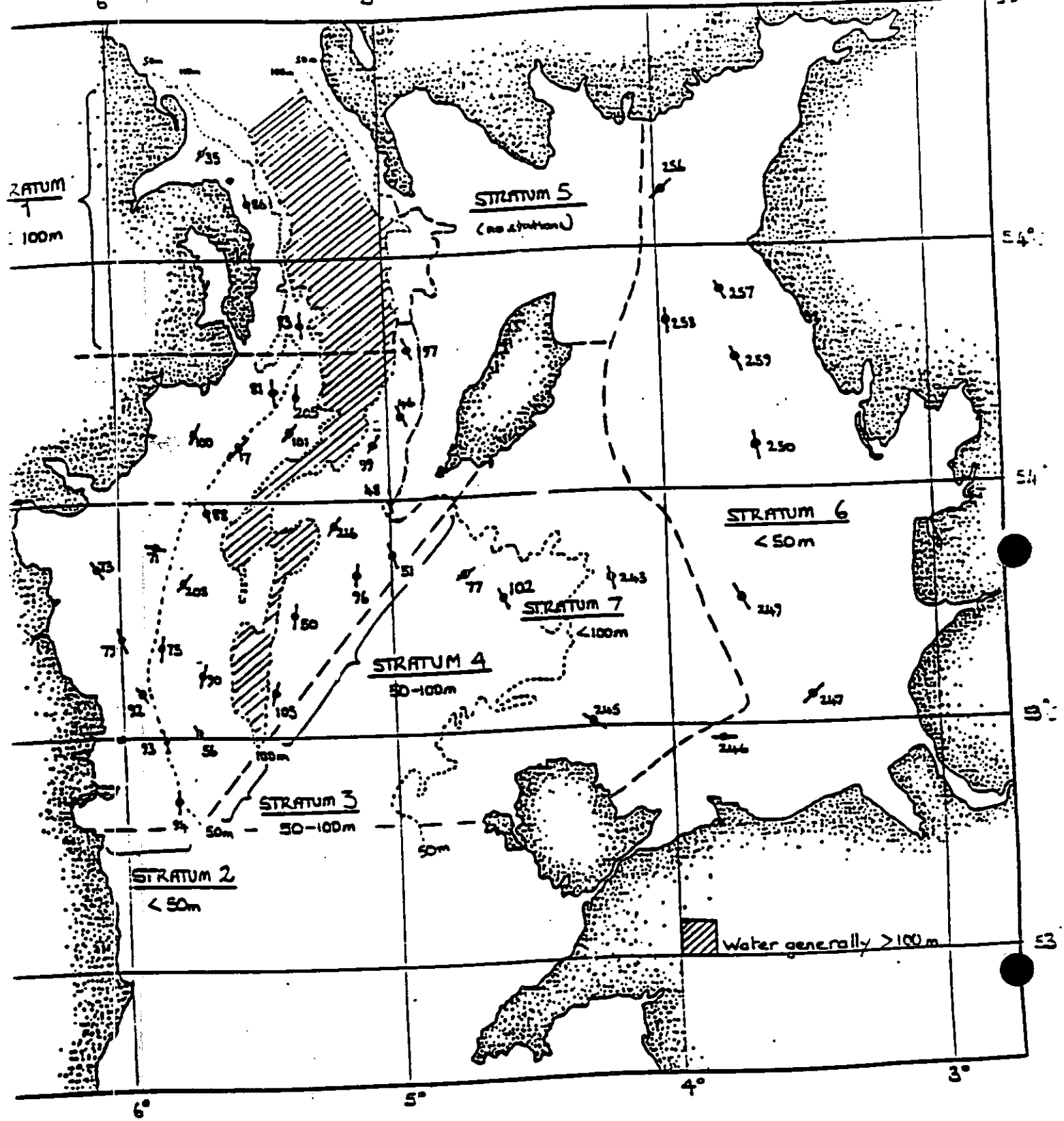

Figure 1. Trawl stations fished during the March 1994 groundfish survey.

TABLE .. Details of trawls during survey LF0794 (March 1994)

Date	trawl	shooting time	shooting lat	shooting long	hauling lat	hauling long	mean depth (m)	dist. towed nm	total fish catch kg
28 Feb	83	08h.44	54 23.2	5 17.8	54 20.0	5 17.2	88	3.1	61
	205	10h.33	54 11.5	5 20.7	54 14.4	5 19.8	68	3.0	236
	81	12h.51	54 14.4	5 24.7	54 11.3	5 24.1	53	3.0	426
	101	14h.58	54 08.6	5 19.2	54 05.6	5 18.4	95	3.0	82
1 March	97	07h.25	54 20.0	4 55.0	54 17.1	4 53.5	77	3.0	64
	46	09h.49	54 11.7	4 57.8	54 09.6	4 55.2	76	3.0	43
	99	12h.45	54 08.1	5 01.0	54 05.8	5 03.7	85	3.0	106
	48	15h.45	54 01.6	4 59.8	53 59.6	4 58.9	68	2.2	165
2 March	216	07h.19	53 54.2	5 14.3	53 56.4	5 11.6	75	2.9	69
	51	10h.26	53 54.2	4 58.7	53 52.7	4 55.4	66	2.0	151
	96	13h.27	53 49.8	5 08.0	53 52.6	5 05.8	68	3.0	72
	50	16h.13	53 46.3	5 19.7	53 43.5	5 21.9	80	3.0	165
3 March	100	07h.50	54 11.4	5 40.6	54 08.3	5 40.7	23	3.1	186
	17	10h.08	54 07.7	5 30.4	54 04.9	5 33.3	56	3.0	88
	88	13h.06	54 00.7	5 37.8	54 58.9	5 41.1	60	2.7	174
	71	15h.32	53 54.2	5 51.6	53 53.7	5 56.5	44	3.0	1122
4 March	79	07h.26	53 43.6	5 59.9	53 41.5	5 58.0	32	2.4	859
	73	10h.00	53 48.6	6 05.5	53 51.7	6 06.1	25	3.0	217
5 March	---------- in port ----------								
6 March	94	10h.15	53 21.4	5 46.7	53 24.2	5 46.3	66	2.8	130
	93	12h.43	53 28.6	5 49.8	53 31.4	5 49.2	62	3.0	110
	92	14h.46	53 34.6	5 53.9	53 37.7	5 55.1	43	3.0	236
7 March	75	07h.19	53 40.2	5 50.1	53 43.1	5 48.7	60	3.0	426
	208	09h.38	53 49.5	5 45.4	53 46.4	5 45.4	63	3.0	141
	90	12h.14	53 39.7	5 40.0	53 36.7	5 41.2	84	3.1	58
	56	14h.27	53 31.0	5 43.6	53 29.7	5 40.0	66	3.0	148
8 March	103	07h.30	53 33.6	5 22.5	53 36.1	5 22.5	85	3.0	261
9 March	245	07h.11	53 30.0	4 10.9	53 30.7	4 14.0	42	2.0	68
	243	10h.22	53 46.9	4 07.7	53 49.4	4 10.3	43	3.0	118
	77	13h.32	53 50.4	4 41.5	53 48.2	4 44.9	85	3.0	46
	102	15h.30	53 46.4	4 40.5	53 43.4	4 38.4	65	3.0	71
10 March	246	07h.18	53 28.9	3 48.3	53 29.0	3 43.2	35	3.0	1191
	247	09h.48	53 33.4	3 29.2	53 36.0	3 31.7	31	3.0	538
	249	12h.45	53 45.9	3 40.6	53 48.0	3 44.3	42	3.0	297
	250	16h.00	54 03.8	3 37.9	54 06.7	3 39.4	26	3.0	690

E 1 (contd.). Details of trawls during survey LF0794 (March 1994)

		shooting			hauling				
te	trawl	time	lat	long	lat	long	mean depth (m)	dist. towed nm	total fish catch kg
arch	258	08h.23	54 18.3	3 55.4	54 20.8	3 56.3	38	3.0	509
	259	11h.19	54 15.8	3 41.0	54 18.4	3 43.6	40	3.0	66
	257	13h.16	54 24.2	3 43.6	54 26.9	3 46.3	29	3.0	112
	256	16h.10	54 38.1	3 55.9	54 35.7	3 59.0	30	3.0	105
arch	35	07h.14	54 43.2	5 41.1	54 44.0	5 36.2	21	3.0	1146
	86	09h.26	54 37.7	5 26.5	54 34.8	5 25.5	44	3.0	56

Table 2. Cruise LF/07/94: catches of selected species (kg per tow)

STRATUM 1 Belfast Lough - Strangford Narrows

STN.	COD	WHITING	HAKE	HADDOCK	BIB	POOR COD	NORWAY POUT	HERRING	SPRAT	PLAICE	DAB	FLOUNDER	GURNARDS	LESSER SP. DOG	NEPHROPS
35	1.9	321		.9		.5	.0	794.0	10.1	8.7	3.1	5.2	.2		
86	21.3	14		.3		1.9	.1	2.5	.3	1.4	.3		.1	12.1	
83	.4	50	1.9			4.0	1.5		.0					2.5	.0
MEAN	7.9	128	.6	.4	.0	2.1	.5	265.5	3.5	3.4	1.1	1.7	.1	4.8	.0

STRATUM 2 Irish Coast: < 50 metres

STN.	COD	WHITING	HAKE	HADDOCK	BIB	POOR COD	NORWAY POUT	HERRING	SPRAT	PLAICE	DAB	FLOUNDER	GURNARDS	LESSER SP. DOG	NEPHROPS
81	2.5	393	.1	.3	.1	3.7	11.5	3.5	.0	.5	1.1		2.3	14.7	18.2
100		99		3.3		.1	.0	.5	10.4	56.0		11.2	.2	1.1	.1
71	2.6	353		.3		3.8	3.5	686.0	5.8	3.2	47.2				
73	8.6	27		.1		.5	.0	106.4	1.8	31.2	36.7	1.4	.2		4.0
79	.4	768		2.5		.3	.8	51.0	.1	7.3	15.5		2.9	2.2	29.3
92	1.2	141		36.3	.1	1.6	1.5	33.5	.0	12.5	1.7		1.3		1.1
MEAN	2.1	231	.0	7.1	.0	1.0	1.0	146.2	3.0	18.4	16.9	2.1	.8	.6	5.7

STRATUM 3 Irish Coast: 50 - 100 metres

STN.	COD	WHITING	HAKE	HADDOCK	BIB	POOR COD	NORWAY POUT	HERRING	SPRAT	PLAICE	DAB	FLOUNDER	GURNARDS	LESSER SP. DOG	NEPHROPS
2[illegible]	2.0	212	.8	.8		4.0	9.2	.1		.4	.3		.7	1.3	2.8
1[illegible]	2.1	56	2.2	.2	.6	4.2	6.6	.2	.5	.7	.3		2.0	2.2	8.5
17	.5	42	.2			1.9	9.6	17.0	1.2	1.2	5.8		1.7		4.9
88	2.5	126	.4	2.6		2.5	10.6	9.1	.5	.9	3.6	.8	.7		9.9
208	9.6	109	.0	4.2	1.0	1.8	8.0	1.2	.0	.3	.7		1.7	.3	5.7
75	.7	393	.0	9.9		.8	5.6	3.9	.0	2.1	.5		3.3	1.9	21.0
90		52		.6		.6	.7	.8	.1	.0	.3			.1	3.2
56	31.5	94		6.4		4.1	2.4	.4	.1	1.8	.1		1.5	2.6	22.0
93	12.4	73		1.6		6.5	4.2	.4	.0	4.4	.5		.8	.7	3.6
94	46.5	41		3.7		12.6	1.1	.5	.1	4.3	.1		.6		.0
MEAN	5.7	89	.1	2.5	.1	1.8	4.1	3.3	.2	1.1	1.2	.1	1.0	.6	7.0

:ble 2 (contd.) Cruise LF/07/94: catches of selected species (kg/tow)

'RATUM 4 West - Southwest Isle of Man : 50 - 100 metres

:N.	COD	WHITING	HAKE	HADDOCK	BIB	POOR COD	NORWAY POUT	HERRING	SPRAT	PLAICE	DAB	FLOUNDER	GURNARDS	LESSER SP. DOG	NEPHROPS
97	7.4	14	1.0	5.4	.4	5.0	4.2	.3	.2	1.9	1.3		6.8	12.7	4.9
46		16	.7	9.9		2.0	3.8	.5	.6	.5	.5		.5	3.9	.5
99	7.0	33	2.3	38.1		4.3	6.1	.1	.5	.4	.3		1.7	10.2	.7
48	7.7	75	.4	8.7		10.4	5.6	.6	.1	.8	.6		1.0	34.6	
216	16.7	28	.7	14.5	.6	.7	1.2	.6	.4	.0	.2		.8	3.8	1.4
51	1.7	4		3.2		4.3	.4	.0	.1	.5	.2		.1	132.1	.1
96	11.8	31		12.4		2.9	1.0	.1	.1	.1	.3		.2	9.4	.5
50	11.0	112		15.9		2.8	.6	.1	.0	.2	.6		1.8	1.5	
103	4.5	100		47.6	.2	3.8	4.9	.5	.1	4.5	.5		47.8		.5
EAN	7.5	46	.5	17.3	.1	4.0	3.1	.3	.2	1.0	.5	.0	6.7	23.1	1.0

:TRATUM 6 Solway Firth - Liverpool Bay

:TN.	COD	WHITING	HAKE	HADDOCK	BIB	POOR COD	NORWAY POUT	HERRING	SPRAT	PLAICE	DAB	FLOUNDER	GURNARDS	LESSER SP. DOG	NEPHROPS
256	17.2	18		.2	.0	1.3		.1	.6	44.0	3.2	4.8	.0	11.7	
257	14.3	13			.1	2.1	.0	1.9	3.9	65.2	1.2	4.7			.1
258	.6	415		.5	3.5	18.3	.4	13.4	.2	8.9	13.4	.7		25.2	10.4
259	1.2	40			.1	2.4	.1	5.8	.1	9.9	3.0	2.7			1.9
250	8.5	564			9.9	7.6		2.1	1.2	22.2	55.4	15.3			6.8
249	.4	233			.0	5.4	.2	9.7	.2	19.5	12.7	10.2	.3		
247	12.4	392			.4	14.9	.1	60.3	.2	3.3	43.6		.9	1.1	
246	17.5	912		.1	.2	35.4	.4	58.4		73.1	32.9	4.1	48.7		
MEAN	9.0	323	.0	.1	1.8	10.9	.1	19.0	.8	30.8	20.7	5.3	6.2	4.7	2.4

STRATUM 7 Anglesey - Isle of Man

STN.	COD	WHITING	HAKE	HADDOCK	BIB	POOR COD	NORWAY POUT	HERR-ING	SPRAT	PLAICE	DAB	FLOUN-DER	GURN-ARDS	LESSER SP. DOG	NEPHROPS
77	3.3	8		1.2	2.5	9.1	.2	.7	.0	2.5	.0	1.6	3.5	3.6	
243	7.0	0			7.1	4.2	.1		.1	.9		9.2	.7	77.7	
102	2.7	5		.1	1.0	3.7	.0	.2	.0	2.5	.0		.6	35.4	
245	6.0	5	.0	.2	6.9	5.3	.1	.2	.7	3.5	.1	5.3	.6	25.0	
MEAN	4.8	5	.0	.4	4.4	5.6	.1	.3	.2	2.3	.0	4.0	1.3	35.4	.0

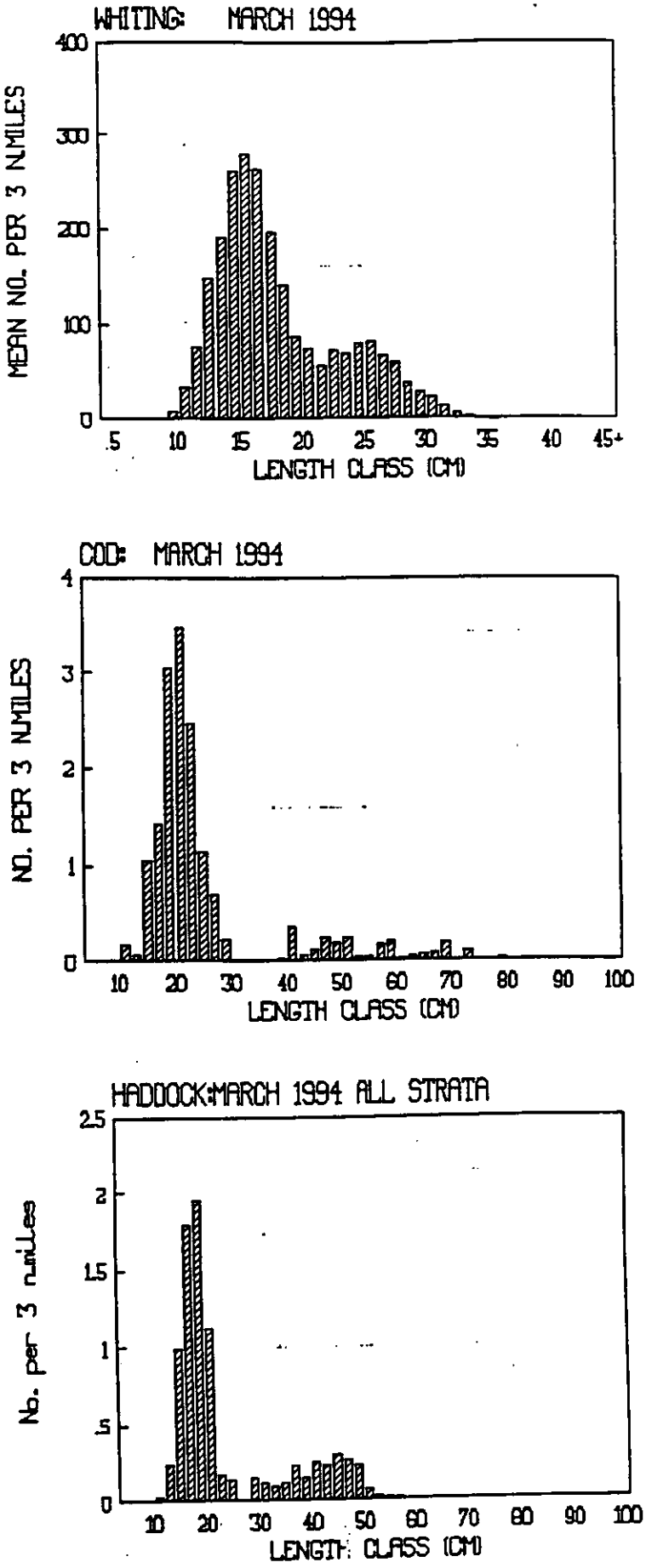

Figure 2. Average length frequency distributions of whiting, cod and haddock over all survey strata in the March 1994 groundfish survey.

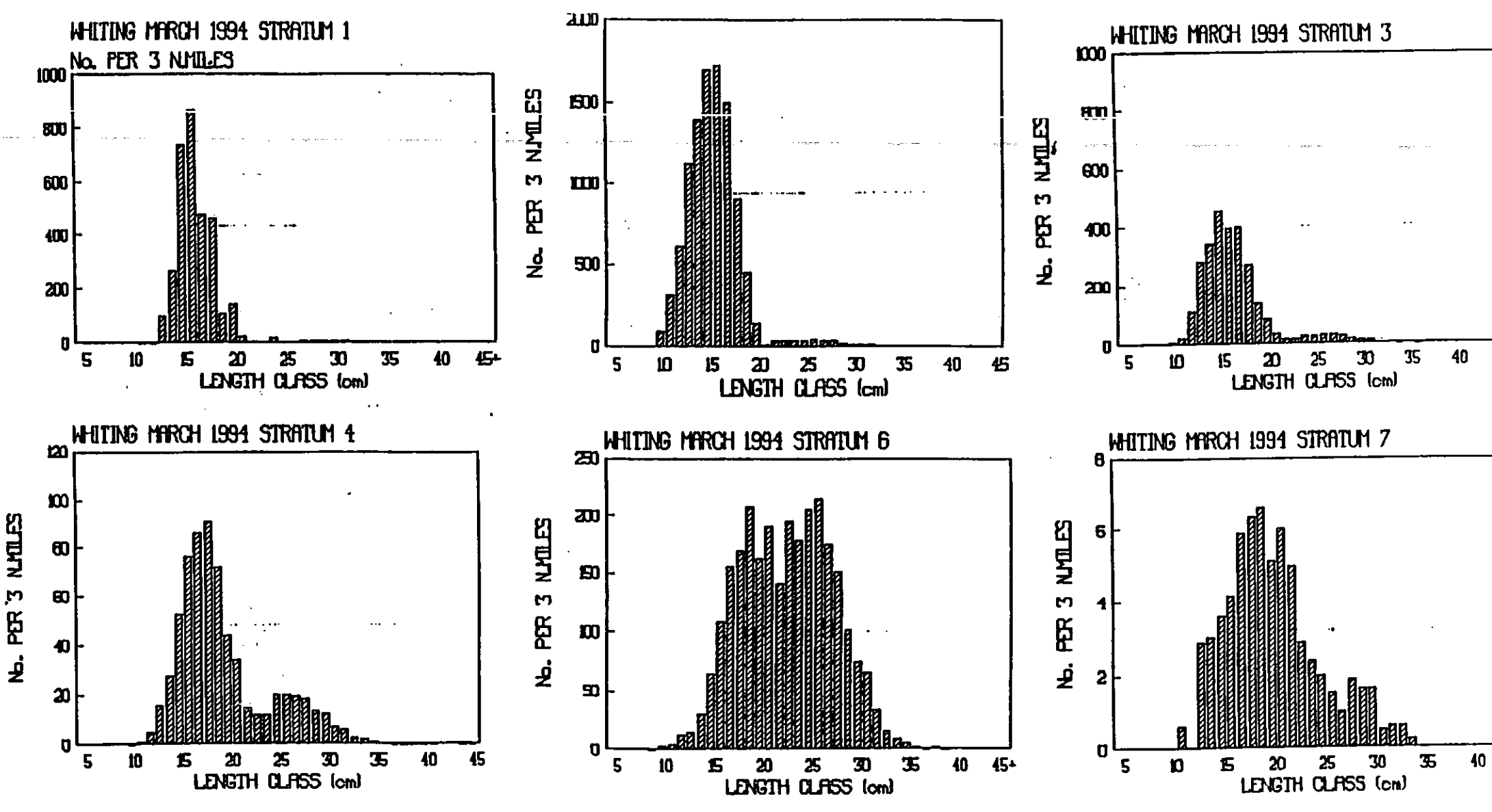

Figure 3. Length frequencies of whiting by survey stratum in March 1994. (NB. different y-axis scales on each).