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CRUISE REPORT: CRUISE LF2693 DEMERSAL FISH SURVEY

VESSEL: R.V. Lough Foyle (DANI)

DATES: 16 October - 28 October 1993

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

TYPE OF SURVEY: Otter trawl, ichthyoplankton

OBJECTIVES

1. Obtain information on spatial patterns of abundance of different size- and age-classes of demersal fish in the northern Irish Sea during autumn;
2. Obtain indices of abundance of juvenile fish for use in future stock assessments;
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 early-stage herring larvae in the western Irish Sea;
5. Collect dabs and squid for projects at the University College of Cork.

PERSONNEL (* embarked in Dublin)

M. Armstrong	(S.I.C.)	DANI	SSO
W. McCurdy		DANI	SSO
C. Burns		DANI	ASO
J. Peel		DANI	ASO
M. Collins		UCC	
A. Davison*		Portaferry Aquarium	
A.M. Hayes*		QUB	

METHODS

A commercial Rockhopper trawl fitted with a 20 mm (stretched mesh) 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.

For the purposes of analysis, the survey area was divided into seven strata defined by depth and substratum (see Table 1). Where possible, the same trawl positions are utilized in each survey.

CRUISE NARRATIVE

Friday 15 October

The vessel departed Belfast at 22h.00 and proceeded southwards during the night towards station 83. Shortly after departure, the fishing master gave a detailed safety demonstration.

Saturday 16 October

Trawl stations 83, 81, 101 and 17 were completed in light NW winds. The Scanmar door sensors were found to be inoperative. The vessel anchored in Dundrum Bay during the night.

Sunday 17 October

Trawl stations 100, 88, 71 and 70 were completed in fine conditions. Station 80 was not fished because of the presence of static fishing gear in the vicinity. During the night the vessel lay at anchor off Dundalk Bay.

Monday 18 October

Trawl stations 73, 79, 208 and 75 were completed in good conditions. During the morning an emergency drill took place. A fault in the crane necessitated the use of the A-frame to bring catches on board. During the night the vessel anchored at the Skerries.

Tuesday 19 October

Trawl stations 92, 90, 56 and 93 were completed in light SW winds. On completion of station 93 the vessel proceeded slowly during the night towards station 97 off the NW coast of the Isle of Man.

Wednesday 20 October

Stations 97, 46, 99 and 48 were completed in freshening west to northwest winds and deteriorating sea conditions. On completion of work the vessel spent the night in sheltered water off the east coast of the Isle of Man.

Thursday 21 October

Stations 51, 96, 216 and 50 were completed in 18-28 mph northerly winds. The vessel then proceeded to Dublin, berthing at the Sir John Rogerson's quay at 20h.45. The seized pin on the crane was freed up during the evening in preparation for repairs on the following day.

Friday 22 October

The day was spent in Dublin harbour whilst the crane was repaired and fuel, water and provisions taken aboard.

Saturday 23 October

The vessel departed Dublin at 08h.00. Trawl stations 94, 103 and 105 were then completed in calm conditions. The vessel then dodged in the vicinity of the first station to be trawled on Sunday (station 102).

Sunday 24 October

Stations 102, 77, 76 and 243 were completed in good conditions. The vessel then drifted north of Anglesey during the night.

Monday 25 October

Trawl stations 245, 246, 247 and 249 were fished in fine conditions. During the afternoon the Tikka crane was put out of action by a break in the extension drive-chain, with repairs not being possible on board. Station 246 was fished again after darkness (22h.00) to examine night-time feeding patterns in squid and whiting.

Tuesday 26 October

Stations 250, 259, 242 and 258 were fished in fine conditions. During the night the vessel lay at anchor near Haverigg Point to the north of Barrow in Furness.

Wednesday 27 October

Stations 257, 64, 256, 63 and 61 were fished in fine conditions. The vessel then lay during the night off Helens Bay at the mouth of Belfast Lough.

Thursday 28 October

Stations 86 and 35 were fished. The vessel then returned to Belfast, berthing in the early afternoon.

WORK COMPLETED

Forty seven valid hauls were completed (Fig. 1). The positions of the trawl stations and the total catches are given in Table 2. Catches of selected species are given in Table 3.

Length measures were carried out on approximately 41,000 fish. A variety of fish of different species were then transferred to aquaria. Where possible, other live individuals of hardy species such as dogfish, rays and conger eels were returned to the water after measuring. A total of 112 cod, 1200 whiting, 109 haddock and 54 hake were analysed for length, mass and maturity stage. Otoliths were taken from each fish for ageing. Approximately 1900 fish stomachs, mainly whiting, were examined or frozen for later analysis.

Stomach contents of squid (*Loligo*) were collected from each catch and specimens at selected stations were retained for ageing. Samples of dabs were preserved from selected stations for a project at the

University College of Cork. Twenty six vertical Bongo net hauls (300 micron net) were completed at stations in the western Irish Sea.

HEALTH AND SAFETY

Full safety procedures were demonstrated to all scientific personnel. An emergency drill was carried out, and the scientists were shown how to deploy the inflatable boat during an emergency.

ACKNOWLEDGEMENTS

The Master and personnel of the Lough Foyle are thanked for their enthusiastic cooperation and excellent service 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 large catches taken on this trip.

Signed:

Scientist - in charge: *M. J. Anthony* date... *2. Nov. 93*.

Ships master: *W. B. Todd* date... *28.X.1993*.

Division Head: *S. J. Hickey* date... *2.11.93*.

Table 1 Strata used for allocation of stations and analysis of data in cruise LF2693

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

TABLE 2. Details of trawls during survey LF2693 (October 1993)

Date	trawl	time GMT	shooting		hauling		mean depth (m)	dist. towed (m)	total fish catch (kg)
			lat	long	lat	long			
16 Oct.	83	06h.38	54 23.2	5 17.6	54 20.0	5 17.0	81	3.0	99
	81	09h.08	54 14.6	5 23.8	54 11.5	5 24.0	52	3.0	203
	101	11h.35	54 08.6	5 18.8	54 05.7	5 19.1	101	3.0	45
	17	14h.05	54 07.3	5 31.0	54 04.8	5 34.1	56	3.1	300
17 Oct.	100	06h.48	54 11.2	5 40.5	54 08.3	5 41.0	25	3.0	411
	88	09h.35	53 59.8	5 39.9	53 56.7	5 39.2	68	3.0	363
	71	12h.12	53 54.1	5 49.7	53 54.4	5 54.8	45	3.0	302
	70	15h.20	53 59.6	5 46.5	54 02.5	5 44.8	36	3.0	479
18 Oct.	73	06h.50	53 51.2	6 05.4	53 49.0	6 02.0	26	3.0	442
	79	09h.26	53 43.8	6 00.1	53 41.2	5 58.0	33	3.0	734
	208	12h.10	53 47.6	5 45.7	53 50.4	5 44.1	66	3.0	998
	75	13h.35	53 40.9	5 49.5	53 37.9	5 50.3	57	3.0	389
19 Oct.	92	06h.50	53 36.6	5 55.8	53 33.9	5 53.3	38	3.0	852
	90	09h.43	53 37.2	5 41.5	53 40.2	5 40.6	80	3.0	71
	56	12h.44	53 29.9	5 41.8	53 32.2	5 44.7	70	3.0	139
	93	15h.09	53 28.8	5 49.2	53 31.8	5 50.1	58	3.0	184
20 Oct.	97	07h.05	54 20.0	4 55.2	54 17.1	4 53.3	70	3.0	71
	46	09h.43	54 11.4	4 57.3	54 08.8	4 54.3	68	3.0	515
	99	12h.27	54 08.5	5 00.0	54 06.1	5 03.0	81	3.0	446
	48	15h.15	54 01.4	5 00.1	53 58.7	4 58.4	62	3.0	60
21 Oct.	51	07h.21	53 51.1	4 59.0	53 47.0	4 59.5	83	3.1	214
	96	09h.52	53 50.0	5 06.0	53 53.0	5 05.9	68	3.0	164
	216	12h.32	53 57.0	5 11.6	53 54.2	5 13.8	68	3.0	58
	50	14h.45	53 46.5	5 20.0	53 43.6	5 21.6	80	3.0	293
23 Oct.	94	09h.01	53 22.5	5 45.7	53 25.3	5 47.7	66	3.0	430
	103	12h.10	53 33.4	5 25.7	53 35.4	5 22.1	88	3.0	152
	105	14h.45	53 42.0	5 07.3	53 44.8	5 05.2	73	3.0	195
24 Oct.	102	07h.15	53 44.2	4 39.3	53 47.0	4 41.0	60	3.0	276
	77	09h.57	53 50.2	4 43.8	53 51.9	4 40.0	70	3.0	256
	76	12h.50	53 59.0	4 29.7	54 00.2	4 24.9	40	3.0	217
	243	15h.42	53 49.5	4 10.6	53 47.0	4 07.6	48	3.0	250
25 Oct.	245	07h.20	53 31.3	4 16.6	53 30.2	4 11.8	45	3.0	405
	246	10h.20	53 28.9	3 49.0	53 29.0	3 44.3	33	3.0	54
	247	13h.06	53 32.9	3 28.5	53 35.6	3 31.2	28	3.0	483
	249	15h.40	53 45.8	3 39.6	53 48.2	3 42.7	33	3.0	173
	246	22h.12	53 29.0	3 49.2	53 29.1	3 44.2	33	3.0	186

TABLE 2 (contd.). Details of trawls during survey LF2693

		shooting			hauling					

Date	trawl	time	lat	long	lat	long	mean depth (m)	dist. towed nm	total fish catch kg	

26 Oct.	250	07h.11	54 03.6	3 37.3	54 06.3	3 39.6	31	3.0	273	
	259	09h.26	54 15.2	3 40.8	54 18.0	3 43.1	37	3.0	783	
	242	12h.15	54 04.7	4 02.3	54 07.4	4 04.9	34	3.0	923	
	258	14h.47	54 18.2	3 55.2	54 21.2	3 56.2	34	3.0	679	
27 Oct.	257	07h.18	54 24.3	3 43.7	54 26.8	3 46.5	28	3.0	338	
	64	09h.34	54 35.5	3 43.7	54 38.3	3 45.5	22	3.0	655	
	256	11h.27	54 38.2	3 55.7	54 36.2	3 59.9	34	3.0	136	
	63	14h.15	54 37.3	4 12.4	54 36.1	4 17.2	54	3.0	260	
	61	14h.30	54 33.1	4 32.2	54 33.0	4 35.8	42	2.0	134	
28 Oct.	35	07h.21	54 43.8	5 39.2	54 45.9	5 37.2	30	3.0	669	
	83	10h.01	54 37.9	5 26.5	54 34.9	5 25.6	43	3.0	410	

Table 3. Cruise LF2693: catches of selected species
in kg per tow

STRATUM 1 Belfast Lough - Strangford Narrows

STN. dist. towed	COD	WHITING	HAKE	HADDOCK	POUTING	POOR COD	NORWAY POUT	HERRING	SPRAT	PLAICE	DAB GURNARDS	LESSER SP. DOG	SPUR- DOG	NEPHROPS	SQUID (Loliginidae)
35 3.00	1.8	578.0		15.0		27.3	1.3	1.8	17.6	1.0	1.6	3.0	11.3		5.2
86 3.00	16.8	759.0		2.7		24.6	.0	1.8	.1	.2	.0	.4	10.1		6.2
83 3.00	1.5	39.1	.3			5.2	51.6	.3	.0	.1		.0		.1	
MEAN	6.7	458.7	.1	5.9	.0	19.0	17.6	1.3	5.9	.4	.6	1.2	7.1	.0	5.2

STRATUM 2 Irish Coast: < 50 metres

STN. dist. towed	COD	WHITING	HAKE	HADDOCK	POUTING	POOR COD	NORWAY POUT	HERRING	SPRAT	PLAICE	DAB GURNARDS	LESSER SP. DOG	SPUR- DOG	NEPHROPS	SQUID (Loliginidae)
92 3.00	14.6	644.0	.7	25.3		22.6	61.6	20.7	2.3	16.9	13.9	4.1		3.4	7.8
79 3.00	5.0	573.0		17.8		4.8	4.9	5.3	75.1	9.1	6.2	3.7	8.9	.5	1.2
73 3.00	1.5	374.0	.4			3.8		1.1	33.0	1.0	6.3	.7	12.8	10.3	.0
71 3.00	2.1	160.0	.5	.4		7.9	11.7	45.5	65.9	.8	1.0	.1	1.5	8.2	3.0
70 3.00	.0	86.0	2.4	70.8		44.9		60.0	189.0	6.8	7.0	1.4	.9	.0	3.2
100 3.00	.3	278.0		16.8		.1		3.4	9.2	48.6	43.0	1.6	5.0	.2	2.2
81 3.00	.2	153.8	.0	.3		12.4	21.4	1.2	.8	.2	.4	.6		32.0	2.6
MEAN	3.4	324.1	.6	18.8	.0	13.8	14.2	19.6	53.6	11.9	11.1	1.7	4.2	.0	3.0

STRATUM 3 Irish Coast: 50 - 100 metres

STN. dist. towed	COD	WHITING	HAKE	HADDOCK	POUTING	POOR COD	NORWAY POUT	HERRING	SPRAT	PLAICE	DAB GURNARDS	LESSER SP. DOG	SPUR- DOG	NEPHROPS	SQUID (Loliginidae)
56 3.00	4.3	60.3		6.8		22.4	23.0	.7	.2	1.7		.4	10.0		1.1
93 3.00	3.9	82.6		1.6		25.0	27.0	1.0	.5		.2	.1	35.7		.6
94 3.00	15.1	230.0		11.1	.4	87.3	23.6	1.1	.6	16.1	2.6	6.0	15.8	.2	9.1
75 3.00	3.7	341.0	2.3	.1		4.6	24.6	1.9	.5	.1	.2	1.7	1.8	3.3	2.6
90 3.00	4.8	37.8		.6		4.6	15.2	.5	.3	.3	.1	.1	1.1	3.6	1.1
208 3.00	4.9	653.0		1.4		6.8	75.0	223.0	2.7			1.1			10.6
17 3.09	.2	204.0		1.1		11.2	21.4	39.7	18.2		.1				7.2
88 3.00	.1	265.0	.8	.8		12.1	63.3	14.1	1.5		.8	.0			10.1
191 3.00	.0	23.9	.3	.0		7.3	11.8	.4	.0			.0			2.3
MEAN	4.1	210.8	.4	2.6	.0	20.1	31.7	31.4	2.7	2.0	.4	1.1	7.2	.8	4.0

Table 3 (contd.) Cruise LF2693: catches of selected species
in kg per tow

STRATUM 4 West - Southwest Isle of Man : 50 - 100 metres

STN. dist. towed	COD	WHITING	HAKE	HADDOCK	POUTING	POOR COD	NORWAY POUT	HERRING	SPRAT	PLAICE	DAB GURNARDS	LESSER SP. DOG	SPUR- DOG	NEPHROPS	SQUID (Loliginids)
103 3.00	2.6	49.3	.7	4.8		13.6	30.6	.0	.0	4.2	.2	7.7	6.2	6.2	6.7
50 3.00		169.0	2.6	.1		27.0	53.3		.1		.0	7.2	19.5	5.4	2.4
96 3.02	3.3	116.0		.3		14.9	4.6	.0		7.2	.2	3.6	5.0	4.6	6.0
48 3.00		1.9	4.1	.2		4.0				.6		6.7	12.9	3.3	.5
51 3.09	6.2	138.0	.9	6.3		18.0	18.8	.0	.1	.3	.2	5.9	43.4	4.1	.3
216 3.00		6.8	2.1	.0		6.2	1.4	.0	.0	.3		3.2	10.5	8.0	14.9
99 3.00	.4	231.0	.3	.1		16.3	36.8	58.3				5.1	2.9		16.0
46 3.00	5.0	384.0	4.1			23.2	34.7	15.6		.2		1.9	.0	1.6	5.5
97 3.00		32.4		.1		9.9	15.6	1.4	3.1		.0	.6	4.3		1.7
MEAN	1.9	125.4	1.6	1.3	.0	14.8	21.8	8.4	.4	.6	.1	4.6	11.1	3.8	5.1

STRATUM 5 North Isle of Man

STN. dist. towed	COD	WHITING	HAKE	HADDOCK	POUTING	POOR COD	NORWAY POUT	HERRING	SPRAT	PLAICE	DAB GURNARDS	LESSER SP. DOG	SPUR- DOG	NEPHROPS	SQUID (Loliginids)
61 2.00	31.8	10.2				14.1	.1		.1			55.3	12.2		.5
63 3.00	7.5	68.8		11.6	5.3	44.5	2.2		.1	6.8	.2	2.2	99.3	.5	1.3
MEAN	19.6	39.5	.0	5.8	2.6	29.3	1.2	.0	.1	3.4	.1	1.1	77.3	6.4	1.1

STRATUM 6 Solway Firth - Liverpool Bay

STN. dist. towed	COD	WHITING	HAKE	HADDOCK	POUTING	POOR COD	NORWAY POUT	HERRING	SPRAT	PLAICE	DAB GURNARDS	LESSER SP. DOG	SPUR- DOG	NEPHROPS	SQUID (Loliginids)
256 3.00	8.1	78.4				10.3	.5	1.5	3.3	10.1	1.9	5.0	1.0		7.0
64 3.00	11.4	498.0			4.3	32.4		10.7	38.0	33.0	12.5	1.0	2.7	.0	
258 3.00	3.7	491.0			3.7	62.1	1.2	2.6	32.7		25.4	28.7	13.3	1.5	2.0
257 3.00	.3	225.0		.1	2.0	50.0	.3	10.2	17.4	10.4	12.6	1.8		2.3	2.1
259 3.00	.2	186.0			.7	30.9	.7	21.4	529.0	4.3	1.6	.2		.1	
250 3.00	2.2	189.0	1.3		.5	29.6	.2	1.0	.0	10.1	10.4	9.2	1.3	2.0	5.8
242 3.00	2.7	8.9				27.7	.0	.5	1.0	4.5	.7	41.9	60.3	732.0	1.0
249 3.00	1.1	78.6	.4	.0		27.4				16.8	3.1	23.3	6.3		9.1
247 3.00	1.3	436.0	.3			11.1				12.7	5.8	1.2	6.8		11.0
246(d) 3.00		20.7				.0		1.0		3.5		18.5	2.2		15.9
246(n) 3.00	27.5	41.5			21.2	16.3		.2		2.6	.2	38.7	1.7		16.9
MEAN	3.1	221.2	.2	.0	1.1	28.2	.3	4.9	62.2	10.5	7.4	13.1	9.4	73.4	5.4

Table 3 (contd.) Cruise LF2693: catches of selected species
in kg per tow

STRATUM 7 Anglesey - Isle of Man

STN.	dist. towed	COD	WHITING	HAKE	HADDOCK	POUTING	POOR COD	NORWAY POUT	HERRING	SPRAT	PLAICE	DAB	GURNARDS	LESSER SP. DOG	SPUR- DOG	NEPHEOPS	SQUI (Lobster)
245	3.00	66.7	40.4	1.4			34.5			.0			35.5	100.0	48.5		15.
243	3.00	24.6	13.3	2.5	.4		38.1				1.1		46.5	47.7	19.4		30.
102	3.00	7.6	405.0		5.9	.2	29.9	.5			10.5	1.4	17.6	26.6			5.
77	3.00	2.1	68.4	3.5	55.5		33.5	.2			1.0	.3	17.2	20.0	4.2		3.
76	3.00			.5	2.5	5.2	98.4			.1			10.6	72.5	7.4		15.
105	3.00	1.2	73.7		11.5		10.1	25.8			10.2	.3	11.5	23.5	13.8		4.
MEAN		17.0	100.1	1.3	12.6	.9	40.7	4.4	.0	.0	3.8	.3	23.2	48.4	15.5	.0	12.

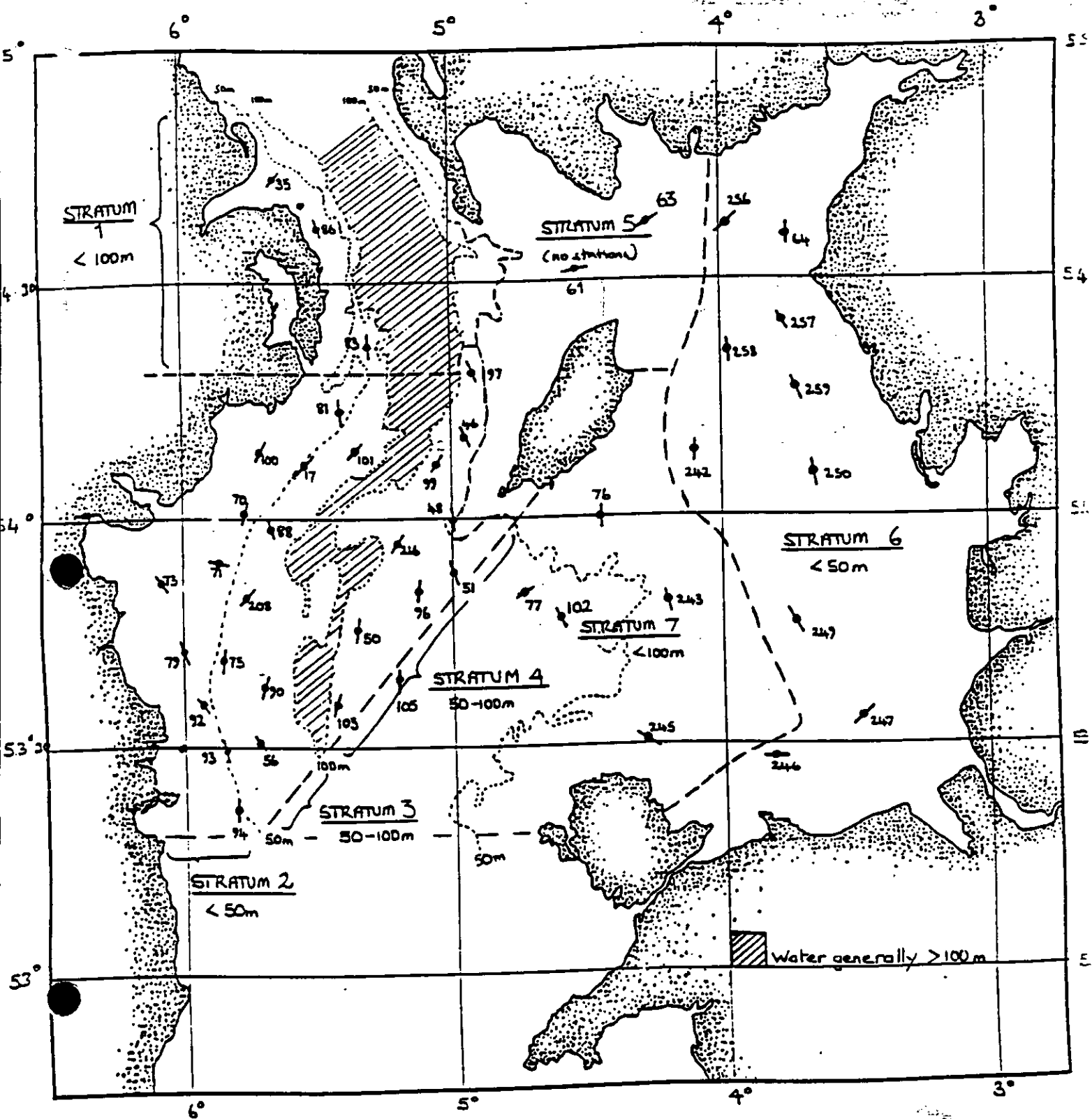


Figure 1. Trawl stations fished during the October 1993 groundfish survey.

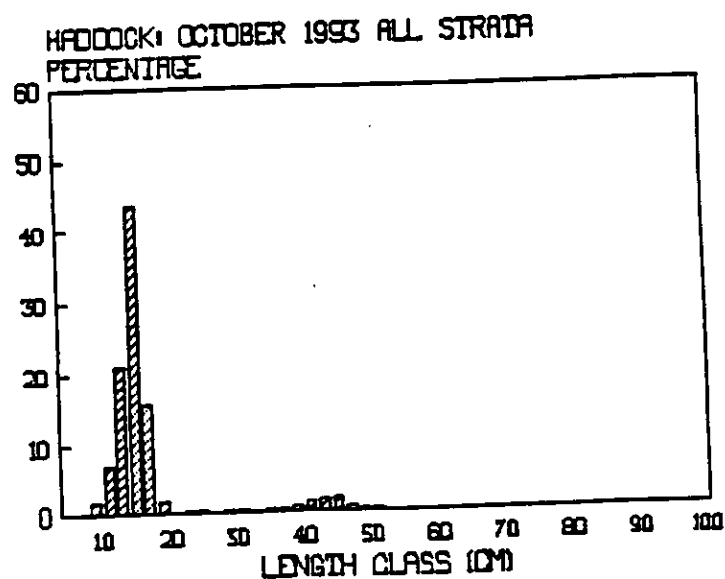
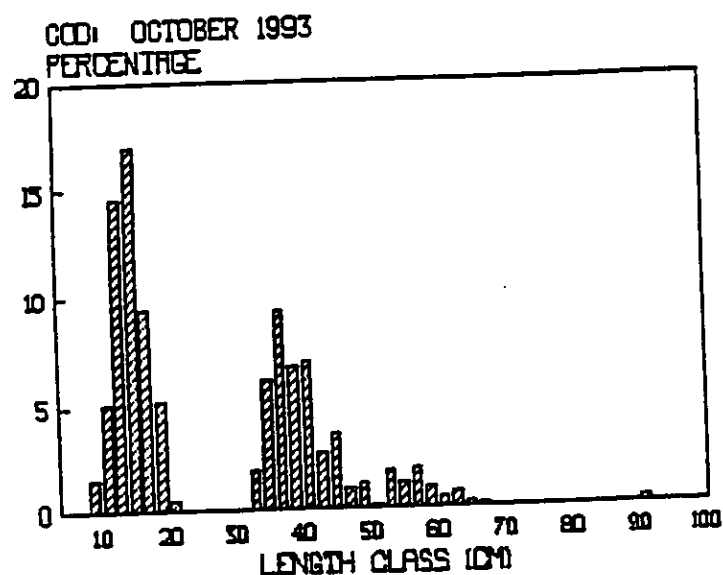
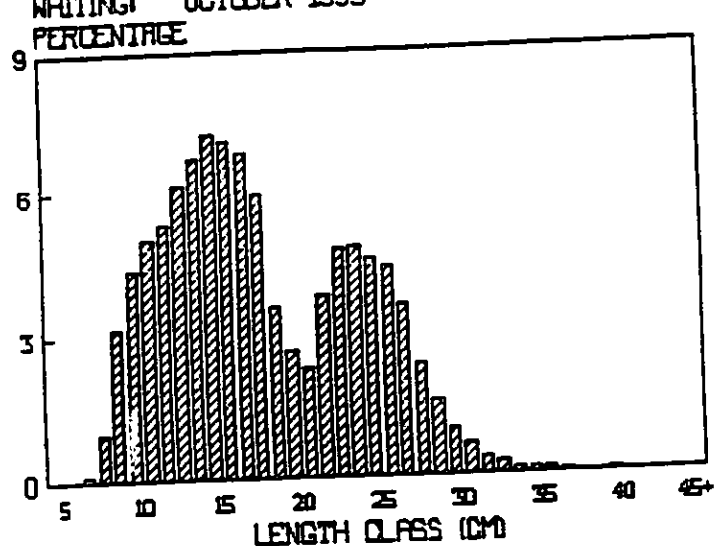
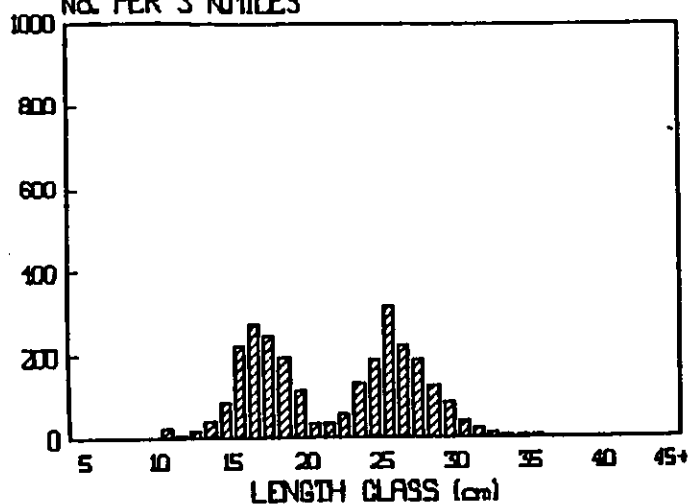
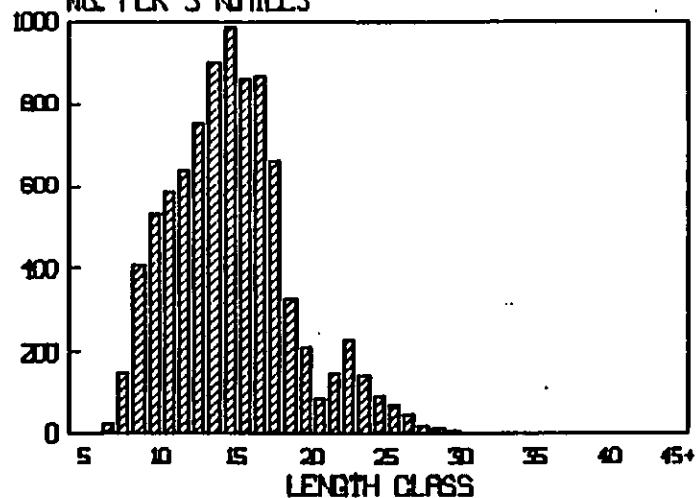


Figure 2. Weighted mean length frequencies of whiting, cod and haddock in survey strata 1, 2, 3, 4, 6 and 7 during cruise LF2693.

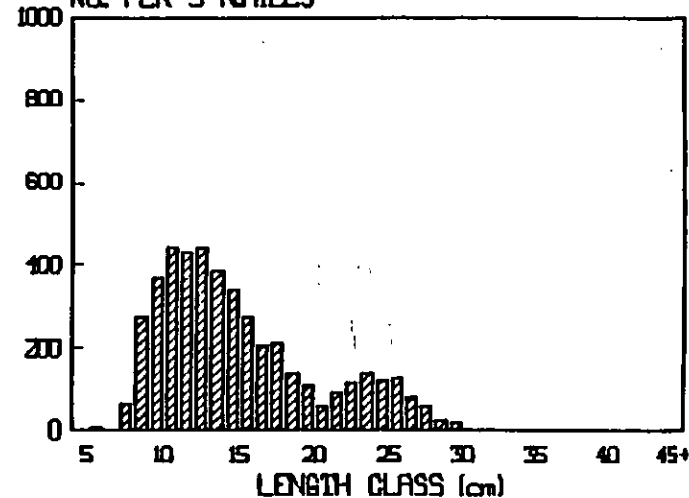
WHITING OCTOBER 1993 STRATUM 1
No. PER 3 NMILES



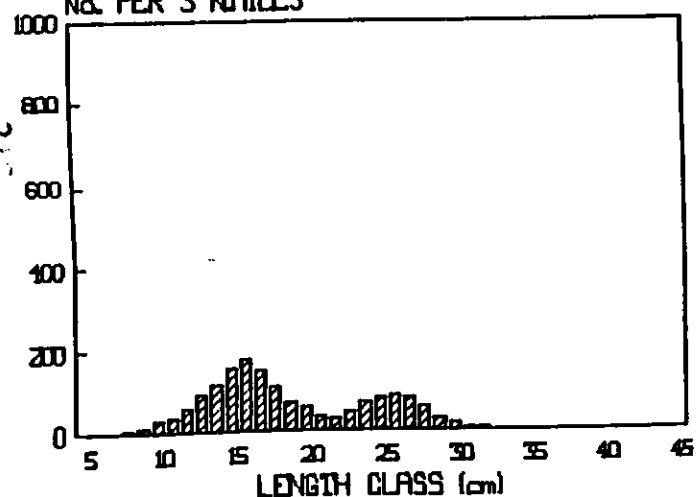
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No. PER 3 NMILES



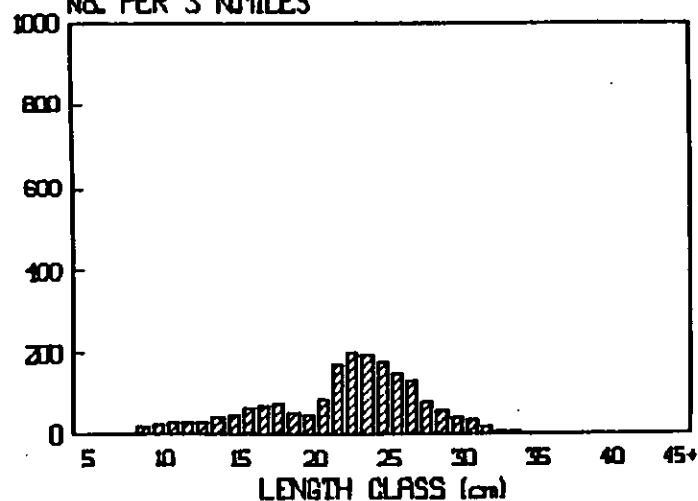
WHITING OCTOBER 1993 STRATUM 3
No. PER 3 NMILES



WHITING OCTOBER 1993 STRATUM 4
No. PER 3 NMILES



WHITING OCTOBER 1993 STRATUM 6
No. PER 3 NMILES



WHITING OCTOBER 1993 STRATUM 7
No. PER 3 NMILES

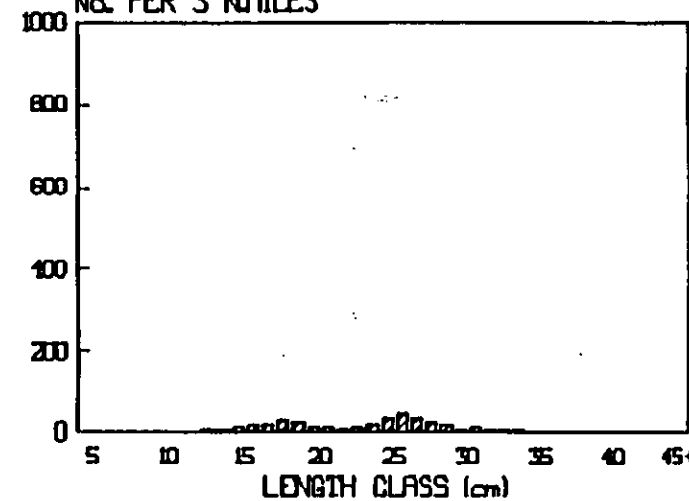


Figure 3. Length frequencies of whiting in each survey stratum (excluding stratum 5 which had only 2 stations) in cruise LF2693.