

R1/6

In Confidence: Not to be cited without prior reference to the Laboratory

FRV "Clupea"

12CR85

Cruise 12/85

Report

16 October - 5 November 1985

Personnel

- G Howard
- C Chapman
- C Shand
- K Ballantyne
- K MacKenzie (Jnr)

Objectives

1. To determine trawl catch rates and Nephrops size and sex composition on grounds in the Moray Firth, and North and South Minches.
2. To obtain underwater television and photographic records of Nephrops burrows in the same areas.
3. To study variations in Nephrops catch at different times of the day/night.
4. To study Nephrops distribution and population parameters in relation to sediment characteristics.

Narrative

With the exception of G Howard who joined on the 17 October, the scientific staff joined "Clupea" on 16 October at Buckie. Trawl survey work commenced at 1600 on 16 October and a series of 6 half-hour hauls were made on grounds off Lossiemouth finishing at 0900 on 17 October. "Clupea" returned to Buckie; sailed again at 2200 and proceeded to the North Minch.

A programme of trawl survey work, grab sampling and photographic survey work was started on grounds in the North Minch on 18 October and continued until 22 October. After the half-landing, "Clupea" left Stornoway on 24 October and proceeded to the Sound of Jura. Here a series of sediment samples were taken on 25 October, after which a trawl, photographic and sediment survey was undertaken on grounds in the South Minch.

C Chapman left the ship at Mallaig on 29 October and rejoined in Stornoway on 31 October. From Mallaig, "Clupea" proceeded north into the North Minch, and continued the survey started earlier in the cruise. This included a series of half-hour hauls off Stornoway made throughout a period of 24 hours.

"Clupea" left the North Minch on 1 November and steamed for Buckie. Severe N/W gales necessitated a diversion for shelter to Stromness. The Moray Firth was reached on 3 November, and the trawl and photographic survey re-commenced. "Clupea" left the area on 4 November, steaming for Aberdeen.

"Clupea" docked in Aberdeen at 1915 on 4 November. Equipment and samples were unloaded on 5 November.

Results

All trawl hauls were made using a 22 mm mesh Nephrops trawl (BT 118A). Catch rates of Nephrops in the Moray Firth averaged 35.7 kg/hr (range 0.2 to 129.0 kg/hr), in the North Minch 31.5 kg/hr (range 8.0 to 123.0 kg/hr), and in the South Minch 35.0 kg/hr (range 13.6 to 65 kg/hr). The sex and size composition of the Nephrops catches are given in Table 1. Berried females constituted 13% of all females in the Moray Firth, 12% and 11% in the North and South Minches respectively. Pleopods from a sample of Nephrops taken from each fishing ground were examined microscopically for evidence of moulting; the proportions of Nephrops in pre-moult stages are shown in Table 2. Female Nephrops were further examined to determine ovary stages, the proportion at each stage are shown in Table 3.

Catches of fish were variable with a range from 3-34 baskets per haul (mean 18 bsk/hr). Whiting and Norway pout predominated, dogfish were numerous in the Minches, while reasonable number of commercial size haddock were taken in the Moray firth.

Grab samples were made at 2 stations along the line of each trawl position using a Day grab. Samples were kept for particle size, organic carbon and faunal analysis. Water samples were taken off Buckie for radio-caesium analysis.

Live Calocaris were sent to the Marine Laboratory at Millport.

F G Howard

11 December 1985

Seen in Draft:

TABLE 1

Size and sex composition of Nephrops catches (raised totals)

Carapace length mm	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	TOTAL
Moray Firth:											
Hummel:											
Males	33		711	1924	1312	717	355	76	7		5135
Females	3		175	1644	1880	1008	410	116	16	5	5257
Males			156	424	460	180	36				1256
Females	12		324	392	376	84	40	12			1240
bit:											
Males				9	29	52	20	5	2		116
Females			1	4	14	2	2	3			26
North Minch:											
Square:											
Males			90	93	501	261	84	6			1035
Females			114	132	420	57	9				732
Shiants:											
Males	31	21	961	899	1334	453	62	31			3792
Females		63	1345	1492	1842	432	21				5195
Mona:											
Males	1	2	7	22	49	143	61	15	9		309
Females		6	10	25	74	75	16	4	1		211
W Mona:											
Males		2	2	24	126	280	162	62	22	8	688
Females		2	6	22	160	162	57	4	4		417
NNE Rhu:											
Males		1	19	38	206	257	88	21	4		634
Females		6	14	43	185	64	17				329
Homer:											
Males			5	48	142	104	60	20	6	4	389
Females			3	96	166	76	12	2			355
Burma:											
Males			12	551	1990	1179	392	72			4196
Females			24	883	1756	293	48	12			3016

(Table 1 continued)

	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	TOTAL
Stornoway:												
Males	5	32	258	694	2498	1856	596	158	53			6150
Females		43	389	912	2481	726	199	36				4786
South Minch:												
Lynn of Morven:												
Males			27	291	430	475	195	12	6	0	3	1469
Females			39	289	382	208	46	15				979
L Linnhe:												
Males			4	93	208	172	64	4	6	2		553
Females			9	127	252	118	27	14	4			551
Firth of Lorne:												
Males		11	121	251	237	65	29	8	2			724
Females		4	120	274	82	8	2					490
Tirree Passage:												
Males		6	123	768	501	147	15	15	3			1578
Females		15	195	708	162	15	9					1104
Eigg:												
Males	6	16	59	163	281	182	45	26	6			784
Females		19	59	151	131	29	4					393
L Hourn:												
Males			2	5	42	40	22	13	10	3	2	139
Females			2	8	38	14	14	5	1			82

TABLE 2

Proportions of Nephrops in pre-moult stages

Moray Firth:

Haul No	C85/203	228	229
Grounds	Hummel	Furlie bit	Mountain
Males	17.6%	25.9%	19.0%
Females	11.8	-	15.7

North Minch:

Haul No	C85/ 205	208	213	214	215	216	226	227
Grounds	Square	Stornoway	Shiants	Mona	W Mona	NNE Rhu	Burma	Homer
Males	10.0%	12.4%	12.1%	24.2%	17.8%	14.4%	9.5%	7.1%
Females	13.6	10.1	11.0	1.0	9.7	8.7	5.4	8.4

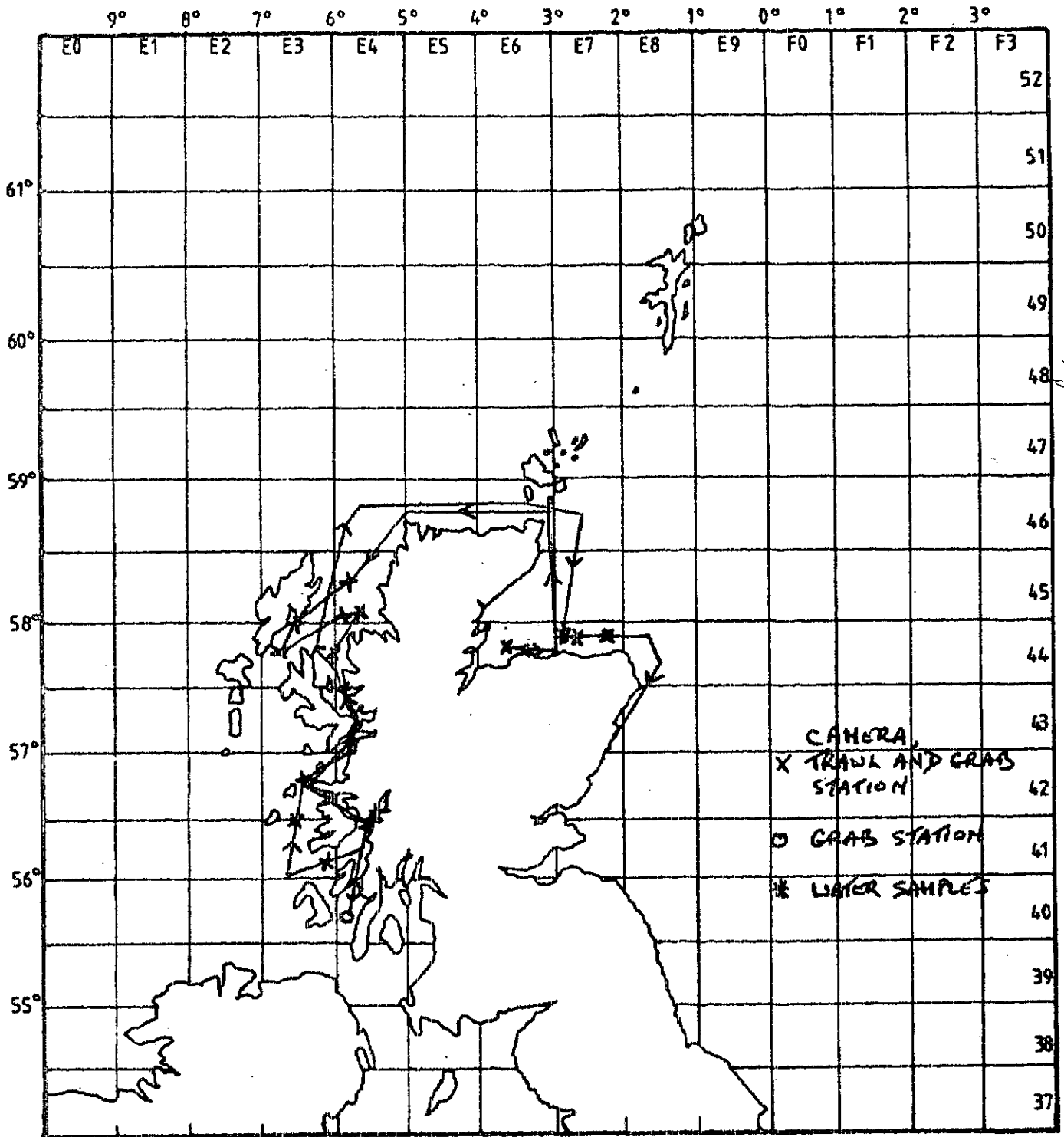
South Minch:

Haul No	C85/ 219	220	221	222	223	224
Grounds	Lynn of Morven	L Linnhe	Firth of Lorne	Tiree Passage	Eigg	L Hourne
Males	10.6%	13.0%	15.4%	9.8%	15.4%	16.1%
Females	5.2	5.6	15.8	9.1	10.1	8.5

TABLE 3

Females Nephrops: proportions at different ovary stages

Stage	0	1	2	3	4	D	No examined
Moray Firth	69.7%	18.5	2.8	2.8	0.7	5.5	542
North Minch	69.4%	13.7	3.0	6.4	2.9	4.6	1677
South Minch	72.4%	8.5	1.6	11.7	4.0	1.8	1137



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