

R1/10

In confidence - Not to be quoted without prior reference to the Laboratory
Cruise Report

FRV 'Goldseeker'

6 - 24 June 1977

Objectives

- Part I To continue diving work on the survival of Nephrops returned to the sea.
- Part II 1) To compare diel variations in catches of Nephrops by trawl and baited creels.
- 2) To measure selection of Nephrops through 50, 70, and 80 mm cod-ends and escape from creels.

Narrative

Part I was successfully completed during the first week of cruise, the vessel working with the diving team on a day to day basis out of Invergordon. The cages of Nephrops were lifted at the end of the week and 'Goldseeker' returned to Buckie.

The following week, 13 June, 'Goldseeker' returned to Invergordon for Part II.

Three fleets of 25 Nephrops creels baited with salt herring were used. The fleets were shot and hauled continually during an eight hour period, each fleet being on bottom for 1½-2 hours. The periods of fishing were varied each day so that a complete 24 hr period was covered.

A 70 mm Nephrops trawl fitted with an 80 mm cod-end and small mesh whole cover was used for the trawling sequence, and again fishing was organised so that a 24 hr period was covered.

Objective II 2) was omitted through lack of time.

The cruise ended at Buckie on 23 June.

ResultsSurvival of Nephrops

Three cages remained on the sea bed after the previous cruise (5GR77) containing the following categories of Nephrops:

(using the same identification letter as previously)

c) creel caught and maintained in cold sea water (8-9°C) before transfer to the cage

d) creel caught but maintained in sea water at sea surface temperatures (13-14°C) before transfer

e) trawl caught at night by commercial vessel and maintained in cold water on deck before transfer.

Table I shows better survival rates in groups c) and e) maintained in cold water on deck.

Comparison of trawl and creel catches

Both creel and trawl catches followed the same general pattern, with relatively few Nephrops being caught during daylight hours, and most being taken during the hours of darkness. Of the total catch by each method 58% (creel) and 53% (trawl) was caught between 0001 and 0500.

The catch composition of each method, the times of capture, and the mean carapace lengths of the Nephrops caught are given in Tables 2, 3 and 4.

C J Chapman F G Howard
31 August 1977

Seen in Draft: W B Reid

Table 1

Survival of Nephrops in cages as percentage of original number after different times. Results from previous cruise included (in brackets) for completeness.

Category	Original number	Days							
		$\frac{1}{2}$	1	2	$5\frac{1}{2}$	6	7	8	9
c	33		(100)	(100)			97		97
d	31		(77)			77		68	
e	64	(97)			81			75	

Table 2

Comparison of catches in baited creels and in a trawl

a) Creel: catches per 8 hour period

Size range (mm)		15-9	20-4	25-9	30-4	35-9	40-4	45-9	50-4	55-9	60-4	Total
0820-1530	♂					3	2	1	2	4		12
	♀					1	1					2
1600-2400	♂			1	4	9	15	14	7	4	2	56
	♀				4	4	4	4	1			17
	♀ Berried					1						1
0040-0730	♂			4	12	11	21	19	8	3		78
	♀			2	5	6	5	6				24
♀ Berried				4	9	7	2					22

b) Trawl: catches per 6 hour period

0600-0830 (Fishing period shortened because of damage to net)

80 mm cod-end	♂					1	1	1	-	2		5
	♀					1	1	-	1			3
Small mesh cover												0
1200-1800	♀							1				1
	♀				1							1
2020-2400	♂	6	65	92	97	53	29	36	14	4	2	398
	♀	2	47	178	126	16	16	7	4			396
	♀ Berried				5	1						6
Small mesh cover	♂	4	25	25	12	2	-	2				70
	♀	2	7	11	11	1						32
0000-0530	♂	2	74	117	102	88	61	53	28	4	2	531
	♀	2	53	91	105	24	12	6	2			295
♀ Berried				4	18	7	2					31
Small mesh cover	♂	1	24	39	25	6	4	-	1			100
	♀		22	18	21	1						62

Table 3

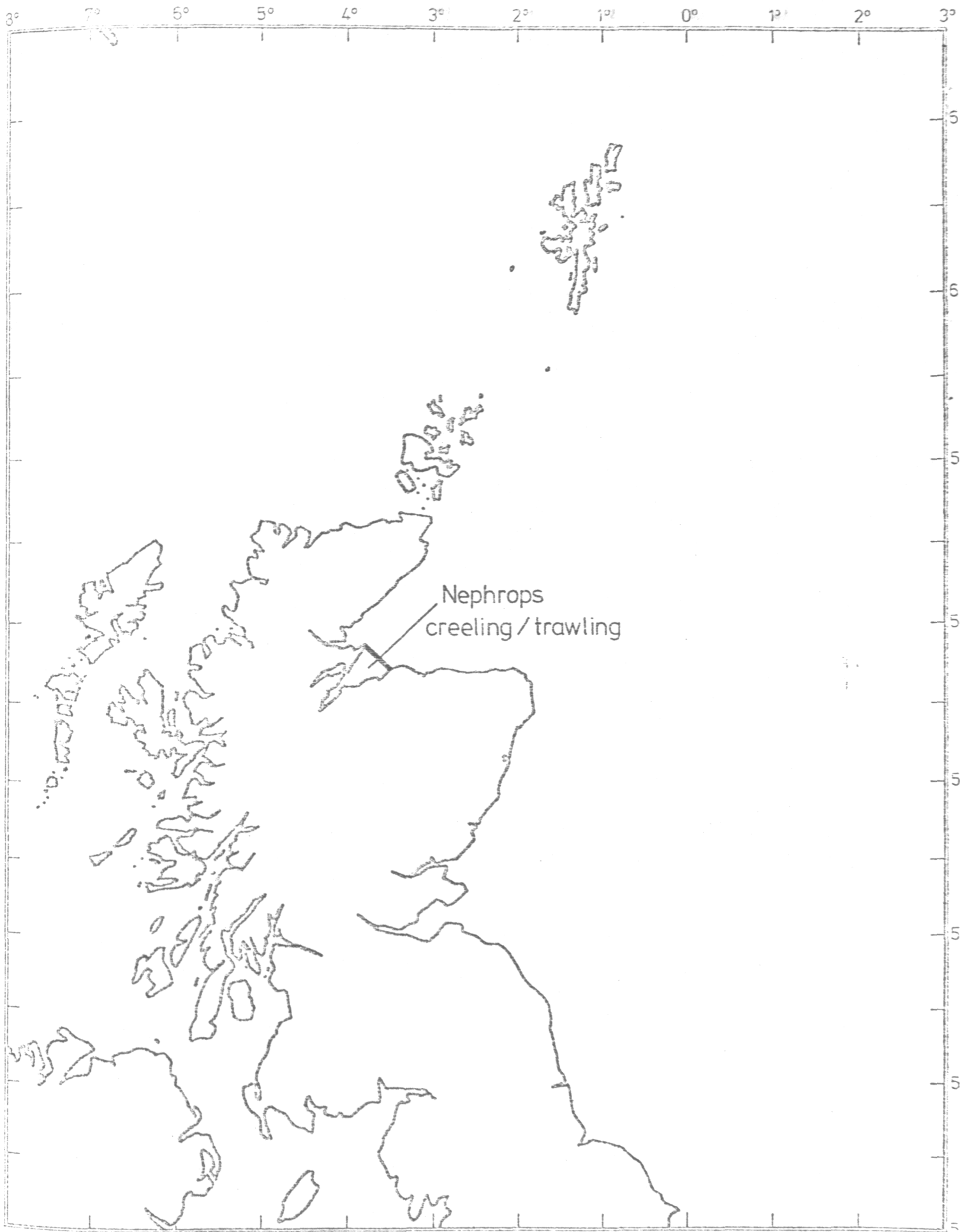
Creel catches in fishing periods longer than 8 hours

Size range (mm)		15-9	20-4	25-9	30-4	35-9	40-4	45-9	50-4	55-9	60-4	Total
0615-2140	♂									1		1
	♀								2	2		4
♀ Berried									1			1
2300-1700	♂				8	19	25	19	8	3		82
	♀			1	5	21	13	4				44
♀ Berried				3	7	15	7	7				39
1340-0215	♂			5	7	17	19	12	8	1		69
	♀			1	5	4	7	-	2			19
♀ Berried					4	1	8	1				14
"Weekend" 9/6/77 - 14/6/77 (2 fleets)	♂				2	5	21	17	21	12	9	87
	♀				3	8	14	7	3			35
♀ Berried					1	3	1	5				10
"Weekend" 17/6/77 - 20/6/77 (1 fleet)	♂						1	-	1			2
	♀							1	2			3
♀ Berried								1	1			2

Table 4

Catch composition and size ranges of creel and trawl caught Nephrops

Size range mm	15-9	20-4	25-9	30-4	35-9	40-4	45-9	50-4	55-9	60-4	65-9	Total	Mean Carapace Length
<u>Creel caught Nephrops</u>													
♂			10	44	94	167	170	127	68	23	1	704	46.1
♀			5	31	65	92	38	11	4			246	41.1
♀ Berried			3	23	45	42	33	5				151	40.6
Total			18	98	204	301	241	143	72	23	1	1101	44.3
<u>Trawl caught Nephrops</u>													
80 mm cod-end													
♂	8	139	209	199	142	91	90	42	10	4		934	34.2
♀	4	100	269	231	41	29	14	7				695	30.5
♀ Berried			4	23	8	2						37	33.6
Total	12	239	482	453	191	122	104	49	10	4		1666	32.7
Small mesh cover													
♂	5	49	64	37	8	4	2	1				170	28.1
♀	2	29	29	33	2							95	27.7
♀ Berried												0	
Total	7	78	93	70	10	4	2	1				265	27.9



F.R.V. Goldseeker 6-24/6/77

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