

R1/12

Not to be cited without prior reference to the Laboratory

FRV SCOTIA

Cruise 0892S

REPORT

26 June - 9 July 1992

Personnel

N Bailey	SSO
J A M Kinnear	HSO
C W Shand	HSO
D J Bova	SO
S E B Thain	ASO
A R Weetman	ASO
M Belchier	Visitor

Objectives

- a) To obtain estimates of distribution and abundance of *Nephrops* on the Fladen Ground and other offshore grounds using underwater television and trawling.
- b) To use the trawl caught samples to examine biological features of *Nephrops* at different sites throughout the survey area.
- c) To collect *Nephrops* and *Pandalus* for subsequent use in a) age determination investigations; and b) baseline monitoring of organic contamination (project BGA1).

Narrative

Scotia sailed at 1015 on Friday 26 June and proceeded to 57°53'N 00°23' E at the southern end of the survey area arriving 1800. Following successful trials using the towed sledge and underwater TV camera, *Scotia* commenced working the Fladen Ground stations. Nine TV stations were worked (including three at which trawling took place) before *Scotia* moved east of two degrees east to work three TV stations in the Norwegian sector on 28 June. A further 21 TV stations (seven with trawl hauls also) were worked in the next two days before deteriorating weather prevented further TV work. *Scotia* steamed north to an area east of Shetland and completed the two most northerly stations on 2 July. Returning south, work was completed at another 15 stations (four with trawl also) before the weather again affected operations at 0900 on the 4 July. At this point notification of a family bereavement was received and it was agreed that *Scotia* should return to Aberdeen to put ashore the crew member concerned; this operation was completed at 1800 on 4 July using the *Searider* (*Scotia* was not forced to dock). *Scotia* returned to 58°53'N 00°50' W (the position where work was earlier curtailed) and resumed the survey at 0800 on 5 July. The remaining 19 stations (seven with trawl also) were completed without further interruption and *Scotia* sailed to Aberdeen docking at 0600 on 9 July.

Data Collection and Results

The survey was restricted to areas of sea bed composed of muddy sediment within the statistical squares making up the Fladen Ground (as described by the ICES *Nephrops* WG - see cruise track). The overall survey area was divided into 11 strata within each of which between two and eight randomly positioned stations were worked. A total of 69 stations were visited in all.

Television sledge runs of 20 minutes duration were made at each station and camera observations were generally facilitated by good water clarity. *Nephrops* burrows were observed at 66 stations and preliminary counts (Table 1) suggested that density was very variable. Emergent *Nephrops* were observed at 47 stations although counts were generally low. Detailed analysis of video tape recordings will provide more reliable estimates of density at each station from which estimates of population size will be made.

Using a Scotnet 50 mm prawn trawl (headline 176'), 22 trawl hauls of 30 minutes duration were made at various stations throughout the survey area. Catch rates of *Nephrops* were generally low (Table 1) but of similar magnitude to commercial vessels working in the same areas. Size compositions, sex ratios and size at first maturity (from ovary stage examination) were determined for each haul; overall, 4,563 males and 1,620 females were measured. Morphometric measurements were made on samples of *Nephrops* from three hauls in order to provide additional information on size at first maturity. Sediment samples for size particle analysis were taken at each trawl station using a Day Grab.

Live animals were retained for measurement of lipofuchsins (ageing pigments) in fresh optic lobe material using a confocal microscope at Leicester University. For comparison, some animals were dissected on board and the optic lobes fixed in a variety of ways.

Samples of *Pandalus* and *Nephrops* were frozen, according to instructions, for subsequent organic contamination analysis by the Chemistry Section.

Water samples were taken at eight stations to meet a request by the environment team in connection with its PSP monitoring programme.

N Bailey
16 October 1992

TABLE 1

Station	TV counts		Trawl samples (30 mins)						
	Burrows	Nephrops	Haul No	Catch rate kg/hr	Male		Female		Sex ratio
					N	Mean size	N	Mean size	
1	NA	NA							
2	289	3	217	1.7	47	28.0	26	23.7	35.6
3	180	12							
4	171	3							
5	273	4							
6	328	10	218	48.0	748	33.0	281	27.4	27.3
7	370	1							
8	595	7							
9	299	10	219	17.6	257	33.9	60	28.5	18.9
10	0	0							
11	0	0							
12	0	0							
13	292	3							
14	564	0							
15	305	4							
16	435	1							
17	472	28	220	41.8	723	32.3	187	27.0	20.6
18	589	3							
19	159	0							
20	212	2							
21	302	1	221	6.0	96	31.4	49	27.2	33.8
22	554	3							
23	396	2							
24	737	2							
25	490	11							
26	313	6	222	34.0	492	34.7	53	27.0	9.7
27	768	1							
28	614	0							
29	525	1	223	1.4	17	37.8	2	32.5	10.5
30	605	1	224	5.6	64	36.2	12	28.8	15.8
31	184	5							
32	430	2							
33	303	0	225	0	0		0		
34	774	5	226	+	1	45.5	0		0
35	22	0							
36	66	3	227	0.48	5	35.3	0		0
37	7	0							
38	38	0	228	0.79	4	46.5	2	31.0	33.3
39	5	0							
40	147	0							
41	68	0							
42	392	3							
43	91	0	229	2.24	15	43.3	3	27.8	16.7
44	202	4							
45	463	0							
46	284	4							
47	602	5	230	11.2	156	35.1	29	25.9	15.7
48	549	2							
49	239	6							
50	415	3							
51	155	0	231	0.28	6	30.8	1	27.5	14.3
52	168	0							
53	102	1	232	8.0	67	36.1	44	33.2	39.6
54	324	3							
55	590	5							
56	267	5	233	58.0	518	33.3	478	33.7	48.0
57	273	8							
58	272	2							
59	74	0							
60	483	3	234	2.48	24	35.2	17	36.1	41.5
61	195	4							
62	28	0							
63	163	29	235	44.0	815	30.5	240	27.7	22.7
64	128	2	236	0.86	16	31.1	7	26.8	30.4
65	68	0							
66	303	3							
67	140	6	237	26.0	482	30.1	124	26.1	20.5
68	285	2	238	0.72	10	32.3	5	32.7	33.3
69	228	0							

TRACK CHART FOR 'SCOTIA' 26 JUNE - 9 JULY 0892S

