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DEPARTMENT OF AGRICULTURE [NI]  
AQUATIC SCIENCES RESEARCH DIVISION

Fisheries Research Laboratory

CRUISE REPORT - LF/13/91

NW IRISH SEA NEPHROPS STOCKS 26-31 May 1991

PERSONNEL

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OBJECTIVES

1. To test newly purchased underwater camera.
2. To trawl stations sampled during 1990 cruises and perform qualitative and quantitative analysis of catches.
3. Retain Nephrops samples for future analysis for body burdens of trace contaminants.
4. Sample benthic sediment for granulometric and chemical analysis.
5. To sample the plankton of Belfast Lough.
6. To carry out the annual ship stock-taking exercise

METHODS

Trawls of 30 to 60 minutes duration were performed at each station as shown in figure 1 using a custom made Nephrops net of 43.2( $\pm$ 1.25)mm mesh size with a cod-end of 48.7( $\pm$ 1.57)mm mesh size. Catch bulk was quantified by counting baskets filled from the catch. Sample baskets of catch were weighed and a sub-sample was sorted to provide an assessment of species composition. The Nephrops in each sub-sample were divided into male and female components and the

ovary maturity stage of the females noted. Carapace length frequency distributions of both male and female Nephrops were measured and the number of recently moulted (soft shelled) animals counted. The contribution of all fish species in catches was quantified and their length composition determined. Sediment samples for future granulometric and chemical analysis were taken using a Day grab at selected stations. The stomach contents of fish species was examined and prey indentified where digestion had not progressed too far. Otoliths were taken from subsamples of gadoid species and experimental work on the use of aniline blue stain to prepare fresh hake otoliths for reading was initiated.

The newly purchased underwater video camera was deployed, secured to the loaned SOAFD sledge, on the starboard trawl warp. The warp was passed over the 'A' frame of the vessel and hauling was successfully completed using the vessel's marine crane. A plankton sample was taken at buoys 1 and 4 in Belfast Lough using a vertical haul technique preserved with Lugols iodine.

Details of station position, water depth, temperature, trawling speed and length of tow were obtained from the instrumentation on the bridge.

#### **NARRATIVE**

MRV Lough Foyle sailed at 22.00 on Sunday 26 May with all personnel and equipment safely aboard. An overnight steam brought the vessel on station off the Co. Down coast at dawn where trawling commenced as indicated in Figure 1. Tows 1-4 were completed by late afternoon and the remainder of the day was spent deploying the underwater sledge and video camera. This task successfully completed the vessel spent the night dodging on station for the following days work. Day 2 commenced with further camera trials over the Nephrops grounds. The same ground was then trawled (tow 5) and the catch analysed. Tows 6-8 were then completed followed by another filming exercise using the low light black and white video camera. Following another night of dodging off the Co. Down coast day 3 commenced with more filming and the trawling of stations 9-12. An evening underwater filming session was completed in the vicinity of trawl station 13 which was trawled during the Thursday morning (day 4). The remainder of Thursday was spent trawling north with an evening filming tow being performed over the scallop grounds off Portavogie (Figure 1). The night was spent at anchor in Belfast Lough. Plankton samples were taken at navigation buoys 1 and 4 in Belfast Lough at 06.30 (bouy 1) and 06.45 (buoy 4) on the morning of Friday 31 May and the Lough Foyle docked in Belfast at 08.00. The vessel docked early from this cruise in order to provide the crew with maximum

time to secure depth markers on the trawl warps, essential for the young fish survey due to commence on Sunday 2 June.

## RESULTS

During the cruise 16 trawl stations were sampled and 8 filming tows were performed using the Division's new underwater video equipment (Figure 1). Table 1 shows the duration, length and depth of each trawl. Problems due to faulty warp meters meant that the fishing gear was not fishing as well as could be expected throughout the cruise. Despite this problem sample catch was obtained at each station with over 30 taxa being identified and quantified. Length compositions of all fish species and Nephrops present in catch samples were prepared and some details are given in table 2. Although Nephrops were less abundant than in the December cruise (LF1890) spatial variation was still evident in both catch rates and size composition. In hauls not containing Nephrops juvenile gadoids, clupeoids and small trash species made up the majority of catch bulk. These data should contribute usefully to the young fish survey database. The new underwater camera trials were highly successful with good quality film of both Nephrops grounds and scallop grounds being made. This equipment should prove to be a valuable research tool in the future. Resolution is such that individual scallops, crabs, echinoderms, Nephrops and their burrows can be identified and could readily be quantified using the camera frame as a quadrat.

Sediment and Nephrops meat samples were taken from a number of stations and will be subjected to future analysis.

R.P. Briggs

31 May 1991

SEEN IN DRAFT: Captain A. Niblock - Master

Table 1

## DETAILS OF TRAWL STATIONS SAMPLED

TOW	DURATION minutes	LENGTH n. miles	DEPTH metres	SEA TEMPERATURE surface
1	53	2.1	75	8.9
2	42	1.9	75	8.9
3	58	2.5	60	9.2
4	34	1.7	45	11.2
5	32	1.7	91	11.6
6	27	2.0	109	10.2
7	35	1.7	96	11.4
8	75	3.0	91	12.1
9	37	1.7	68	10.9
10	31	1.5	90	11.8
11	32	1.3	-	-
12	52	2.5	101	11.5
13	52	2.1	43	10.9
14	49	2.6	61	10.6
15	55	2.4	72	10.6
16	40	1.9	50	9.6

TABLE 2

MEAN CARAPACE LENGTH AND SEX RATIO OF NEPHROPS

TOW	MALES mm CL	FEMALES mm CL	PERCENT FEMALE	NEPHROPS CATCH kg/hr
1	26.6	23.9	40.0	2.2
2	22.7	23.9	50.0	3.0
3	-	-	-	0.2
4	-	-	-	0.1
5	26.1	23.3	44.6	30.7
6	26.0	23.2	47.5	66.9
7	24.8	23.0	57.7	164.3
8	23.5	22.6	52.6	150.8
9	-	-	-	0.7
10	21.8	21.0	59.5	42.7
11	24.7	23.2	54.5	56.3
12	26.2	23.2	58.4	32.3
13	29.6	27.4	59.1	1.2*
14	-	-	-	0.6
15	-	-	-	0.1
16	-	-	-	<0.1

\* very small sample

FIGURE 1

MAP OF WESTERN IRISH SEA SHOWING POSITION OF STATIONS TRAWLED DURING CRUISE

