DEPARTMENT OF AGRICULTURE [NI]
FISHERIES RESEARCH LABORATORY

CRUISE REPORT - LF/07/90

NW IRISH SEA NEPHROPS STOCKS 23-27 April 1990

PERSONNEL

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OBJECTIVES

1. To further test the newly purchased Nephrops fishing gear at sea.
2. To survey the Nephrops fishing grounds of the NW Irish Sea in order to identify suitable stations for future work on Nephrops.
3. To sample stations identified during the February Nephrops cruise.
4. To quantify fish by-catch species with particular reference to whiting.

NARRATIVE

MRV Lough Foyle left Belfast at 11.00 on Monday 23 April and steamed south to the Nephrops grounds off Portavogie where stations 1-3 were trawled (Figure 1). Weather conditions were calm and sunny. Continued calm conditions during Tuesday 24 April allowed stations 4-10 to be successfully sampled. With ideal weather conditions work continued during Wednesday 25 April and Thursday 26 April with a total of 26 stations being trawled and sampled. Completion of this number of stations by the Thursday evening enabled the vessel to set course for Belfast overnight, docking at 07.00 on Friday 27 April. This early docking allowed time for collation of results and packing of equipment ready for carriage to Coleraine later in the day.

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 commercial fish species in catches was quantified and the length composition of whiting and hake from selected sub-samples measured. Details of station position, water depth, temperature, trawling speed and length of tow were obtained from instrumentation on the bridge.

RESULTS

During the cruise 26 stations were trawled (Figure 1) and table 1 shows the duration, length, depth and surface water temperature of each trawl. The new trawl net performed well and a standardised quantitative summary of catches is given in table 2. Preliminary analysis of Nephrops size composition data indicated, as with those from the February cruise, polymodal carapace length frequency distributions at all stations, these will be used to study variability in Nephrops growth.

Spatial variation was observed in sex ratio, size composition and mean carapace length (Table 3) with a range of 23.4-28.3mm for males and 22.2-25.4mm for females respectively. The data collected demonstrated the sensitivity of some Nephrops populations to the tidal state. Certain stations (10,11,12,13) sampled from the February cruise during neap tides yielded very few Nephrops in April when tides were at their spring level. These data will be analysed in more detail later. As shown in table 2 whiting were caught at most stations and length frequency analysis (Figure 2) demonstrates that these were predominently juveniles. This information will be used to assist in the selection of stations during the forthcomming juvenile gadoid survey.

R.P.Briggs

31 April 1990

Table 1

DETAILS OF STATIONS SAMPLED

TOW	DURATION minutes	LENGTH miles	DEPTH fthms.	SURFACE TEMP. (°C)
1	32	1.50	84	8.8
2	42	1.80	74	9.0
3	32	1.75	73	9.2
4	57	2.8	67	8.5
5	25	?	109	9.3
6	56	2.82	95	9.4
7	32	1.60	108	9.7
8	55	2.62	102	10.4
9	59	2.15	84	9.6
10	43	2.04	42	10.1
11	32	1.55	25	9.7
12	53	2.40	39	9.4
13	48	2.52	41	9.3
14	47	2.40	89	9.2
15	60	2.65	97	9.1
16	45	2.31	92	9.1
17	25	0.75	108	9.1
18	48	2.20	40	9.1
19	63	3.20	91	8.8
20	45	2.30	87	8.9
21	40	1.72	67	8.6
22	43	2.10	51	8.6
23	45	1.88	47	8.4
24	45	2.15	56	8.4
25	40	1.92	45	8.6
26	35	2.01	77	8.8

TABLE 2

QUANTITATIVE ESTIMATE OF CATCH FROM EACH TOW STANDARDISED TO KG PER HOUR OF TRAWLING

	TOTAL CATCH (kg) AT EACH STATION					
SPECIES	1	2	3	4	5	6 .
Nephrops	76.7	47.0	18.9	-	48.7	173.9
Whiting	66.0	93.6	49.5	-	12.7	83.9
O.Fish	22.3	25.0	17.3	17.5	27.4	39.2

	TOTAL CATCH (kg) AT EACH STATION					
SPECIES	7	8	9	10	11	12.
Nephrops	101.6	44.6	5.1	-	-	-
Whiting	27.9	16.3	-)			15.0
O.Fish	20.4	43.5	-)	83.7	108.8	283.0

	TOTAL CATCH (kg) AT EACH STATION					
SPECIES	13	14	15	16	17	18.
Nephrops	-	57.6	24.3	28.9	4.1	34.0
Whiting	53.3	49.4	51.3	44.3	5.0)	
O.Fish	71.3	22.0	32.1	35.5	3.4)	10.4

	TOTAL CATCH (kg) AT EACH STATION					
SPECIES	19	20	21	22	23	24 .
Nephrops	140.5	72.5	47.4	56.2	13.9	13.6
Whiting	43.6	48.3	78.8	23.4)		
O.Fish	21.0	50.9	32.9	25.5)	64.8	26.7.

	TOTAL CATCH (kg) AT EACH STATION		
SPECIES	25	26	.
Nephrops		167.3	
Whiting)		73.0	
O.Fish)	41.0	56.7	.

TABLE 3

MEAN CARAPACE LENGTH AND SEX RATIO OF NEPHROPS

TOW	MALES mm CL	FEMALES mm CL	PERCENT FEMALE
1	23.4	22.2	54.0
2	25.3	23.0	46.0
3	25.5	23.0	54.1
4	--	--	--
5	27.1	23.3	35.6
6	25.5	23.4	45.5
7	27.6	24.2	35.0
8	27.5	23.8	47.1
9	--	--	--
10	--	--	--
11	--	--	--
12	--	--	--
13	--	--	--
14	26.9	24.7	42.6
15	28.3	25.4	40.8
16	27.4	24.4	45.7
17	26.2	24.5	45.9
18	26.2	23.8	49.5
19	27.4	24.0	46.8
20	27.4	24.0	46.8
21	25.8	24.3	55.9
22	25.0	24.1	47.7
23	26.7	24.1	48.4
24	24.3	23.1	48.5
25	--	--	--
26	25.4	23.4	56.8

FIGURE 1

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

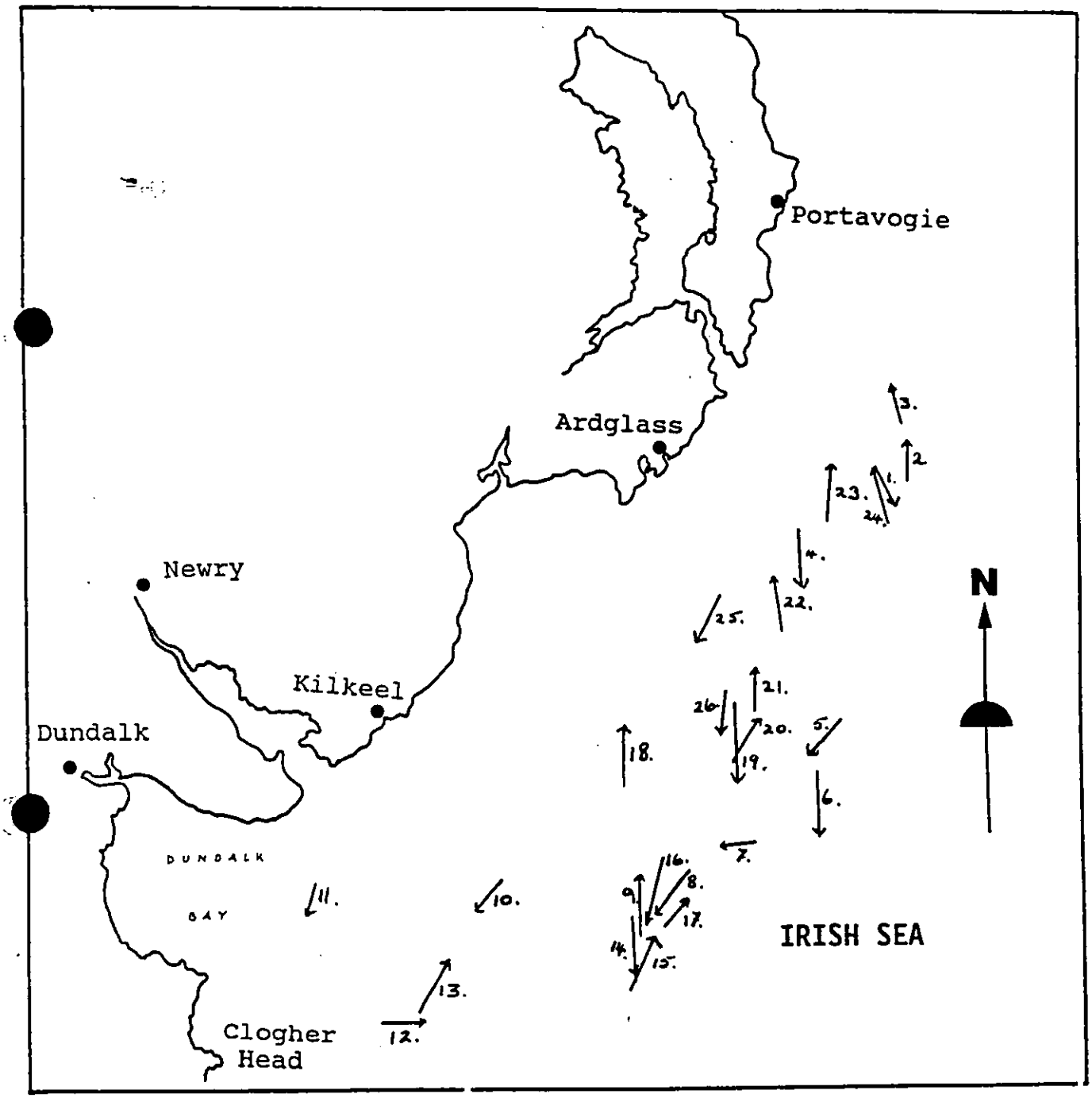

FIGURE 2

LENGTH FREQUENCY DISTRIBUTION OF WHITING FROM TOWS 8, 13, 15 AND 18 COMBINED AND RAISED TO CATCH FROM THESE TOWS