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DEPARTMENT OF AGRICULTURE [NI]
AQUATIC SCIENCES RESEARCH DIVISION

CRUISE REPORT - LF/02/93

NW IRISH SEA NEPHROPS STOCKS 10-15 January 1993

PERSONNEL

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OBJECTIVES

1. To trawl selected stations sampled during earlier cruises and perform qualitative and quantitative analysis of catches.
2. To retain stomachs of selected fish species of future analysis.
3. To collect type specimens of selected marine organisms to aid identification of food species encountered in fish stomach analysis.
4. To sample benthic sediment for granulometry.
5. To test the new Marel marine balance.
6. To collect size composition and meat yield data on trawl caught crabs.
7. To retain samples of *Nephrops* for a FACRD project on food irradiation.
8. To retain samples of selected marine organisms for use in a postgraduate research project being carried out at the University of Limerick.

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 sorted to provide an assessment of species composition. The *Nephrops* in each subsample 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 analysis were taken using a Day grab at each station. This task was hindered by poor weather and the absence of the ship's Tico crane. The Day grab was deployed over the 'A' frame on a trawl warp. The stomachs of selected fish species were removed and frozen for future examination.

Details of station position, water depth, trawling speed and length of tow were obtained from the instrumentation on the bridge. The cruise track was recorded using Microplot with each tow marked as an event for future reference.

NARRATIVE

Sunday 10 January, Monday 11 January: Severe gales prevented MRV Lough Foyle sailing.

Tuesday 12 January: ASRD staff boarded MRV Lough Foyle and a slight improvement in the weather allowed the vessel to sail at 24h.00. The Fishing Master gave a comprehensive demonstration of safety procedures and a tour of the various exit points. Scientific staff were also given a chance to practice donning a life jacket and survival suit.

Wednesday 13 January: The net was shot at the first station off the Count Down coast at 07h.55 which was followed by tows 2,3,4 and 5. The poor early morning weather, with strong SW winds moderated as the day progressed allowing the work to be completed with minimum disruption. The night was spent off Clogher Head.

Thursday 14 January: Work continued with tow 6 being shot at 08h.18, in a moderate SW breeze. This was followed by tows 7,8 and 9. Sorting of the catch was impeded by large numbers of jellyfish and worsening weather conditions. Forecasts of an imminent force 10 gale from the south lead to a decision to terminate the cruise on completion of tow 9. Lough Foyle then steamed for her home port, docking in Belfast at 21h.00

RESULTS

During the cruise 9 trawl stations were performed and although shortened because of appalling weather conditions all cruise objectives were completed for the stations trawled. The position of these stations is shown in Figure 1 and the cruise track from Microplot is given in Figure 2. Table 1 is a summary of data on the stations fished. The mean size, catch rates and proportion of female *Nephrops* present is shown in table 2. *Nephrops* catch rates are expressed as kg per hour and kg per nautical mile towed. The poor *Nephrops* catch rates during this cruise were thought to be due to the windy weather and large tides which are known to have a depressing effect on catches.

The by-catches consisted of over 40 taxa which were identified weighed and measured, from sub-samples where necessary. Details of by-catch are given in table 3. The predominant by-catch species was whiting (*Merlangius merlangus*). Sediment samples were taken at each station for granulometry and the stomachs of selected gadoids (mainly whiting) were preserved for future feeding analysis.

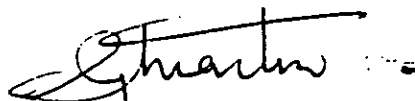
Cooked meat yields of brown crab (*Cancer pagurus*) performed during the cruise gave lower levels (average 20%) compared to those determined during October (30%). The mean carapace width of crabs was 116.7mm and 143.2mm for male and females crabs respectively. The overall crab catch was composed of 64.1% females.

The new Marel balance was tested and gave steady readings down to an accuracy of 0.1g despite rough sea conditions.

Samples of *Nephrops* for an AFCRD irradiation project were successfully collected, as were specimens of a range of vertebrate and invertebrate organisms to be used in a research project at the University of Limerick.



R.P. Briggs
(Scientist in Charge)



Captain G. Martin
(Master)

15 January 1993

TABLE 1

DETAILS OF TRAWL STATIONS SAMPLED

TOW	DURATION minutes	LENGTH n. miles	DEPTH metres
1	33	1.4	46
2	30	1.5	46
3	54	2.2	47
4	60	2.4	56
5	60	2.6	50
6	60	2.3	24
7	60	2.5	23
8	65	2.7	32
9	30	1.6	50

TABLE 2

MEAN CARAPACE LENGTH AND SEX RATIO OF NEPHROPS

Sample sizes are given in brackets and reflects the scarcity of females

TOW	MALES mm CL (n)	FEMALES mm CL (n)	PERCENT FEMALE	NEPHROPS CATCH kg/hr	kg/n.mile
1	30.3 (110)	24.5 (11)	9.1	4.38	1.7
2	30.0 (165)	24.2 (35)	17.5	7.48	2.5
3	28.9 (95)	24.5 (8)	7.8	1.96	0.8
4	31.0 (29)	22.8 (9)	23.7	0.72	0.3
5	29.2 (223)	22.3 (19)	7.9	4.23	1.6
6	28.2 (232)	23.8 (43)	15.6	7.85	3.4
7	26.4 (241)	23.3 (92)	27.6	17.31	7.1
8	28.0 (281)	24.0 (87)	23.6	22.02	8.9
9	30.9 (323)	25.5 (25)	7.2	21.54	6.9

TABLE 3

NEPHROPS AND BYCATCH (KG) PER NAUTICAL MILE

SPECIES	TOW 1	TOW 2	TOW 3	TOW 4	TOW 5	TOW 6	TOW 7	TOW 8	TOW 9
NEPHROPS	1.718	2.487	1.480	.665	11.260	3.415	7.067	8.899	6.902
WHITING	49.107	39.137	25.507	115.439	133.269	24.972	16.429	132.322	149.135
DABS	.729	.520	4.297	.237	.623	9.891	26.190	12.862	1.446
LS DOG	1.810	2.167	.000	11.063	7.490	1.879	.000	6.439	9.010
WITCH	5.679	6.690	9.057	3.994	4.308	.184	1.960	2.435	.240
PLAICE	.273	.233	2.059	.433	1.150	5.828	5.400	4.878	2.160
DRAGONET	2.214	2.393	1.901	.633	1.681	3.344	2.530	2.949	.600
COD	.614	.000	1.514	.558	.000	1.093	1.000	4.299	3.784
LR DABS	.759	.913	.380	.132	1.510	.429	1.669	1.840	1.546
HERRING	.726	.557	.000	.230	.098	3.218	3.272	.101	.096
G. GURNAR	.096	.005	.636	.189	.975	.254	1.103	3.590	.325
POOR COD	.411	.373	.649	.031	.221	1.297	2.097	.054	.142
N. POUT	2.171	1.173	1.515	.202	.896	.037	.000	.087	.096
ANGLER	.731	.963	1.931	.191	.875	.000	.000	.000	.262
SOLENETT	.000	.000	.000	.000	3.221	.035	.000	.000	.000
HAKE	.267	.000	1.068	.887	.323	.000	.000	.000	1.058
POGGE	.011	.000	.000	.009	.017	.697	1.213	.141	.000
HADDOCK	.000	.000	1.732	.450	.000	.000	.000	.000	.000
FLOUNDER	.000	.000	.000	.000	.000	.376	1.139	.000	.000
SPURDOG	.000	.000	.000	.000	.000	.000	.000	.000	2.129
CUCKOO R	.000	.000	.631	.000	.000	.000	.000	.000	.000
L. SOLE	.143	.000	.272	.134	.098	.000	.000	.000	.000
BIB	.030	.000	.094	.000	.000	.178	.000	.000	.142
SH. SP. SC	.000	.000	.000	.000	.000	.233	.072	.000	.000
THORNBAC	.000	.000	.000	.000	.000	.307	.000	.000	.000
ARGENTIN	.000	.000	.116	.039	.033	.000	.000	.000	.000
SPRAT	.024	.095	.000	.000	.000	.000	.063	.030	.000
SMTH HOU	.000	.000	.000	.000	.000	.000	.000	.141	.000
D. SOLE	.000	.000	.148	.000	.000	.000	.000	.000	.000
RED BAND	.000	.000	.091	.000	.000	.000	.040	.000	.000
4-B ROCK	.067	.000	.000	.000	.033	.000	.000	.000	.000
FRIES GO	.019	.020	.000	.000	.021	.000	.002	.013	.000
SCALDFIS	.000	.000	.029	.000	.013	.000	.001	.000	.000
TH B SOL	.000	.000	.012	.000	.000	.000	.000	.000	.000
LIPARIS	.000	.000	.000	.000	.000	.000	.008	.000	.000
SEPIOLA	.000	.000	.000	.000	.000	.000	.006	.000	.000
SAND EEL	.000	.000	.000	.000	.000	.003	.000	.000	.000
GOBY	.000	.000	.000	.002	.000	.000	.000	.000	.000
SWI CRAB	.000	.000	.000	.000	.000	9.130	2.438	.000	.000
CANCER	5.000	4.650	.000	.000	.000	.000	.000	1.951	1.019
SQUID	.000	.000	.336	.000	.506	.000	.000	.000	.000
ELEDONE	.030	.000	.177	.000	.000	.000	.000	.000	.000
PECTEN	.000	.213	.000	.000	.000	.000	.000	.000	.000
TOTAL BULK	72.6	62.6	55.6	135.5	168.6	66.8	73.7	183.0	180.1

FIGURE 1

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

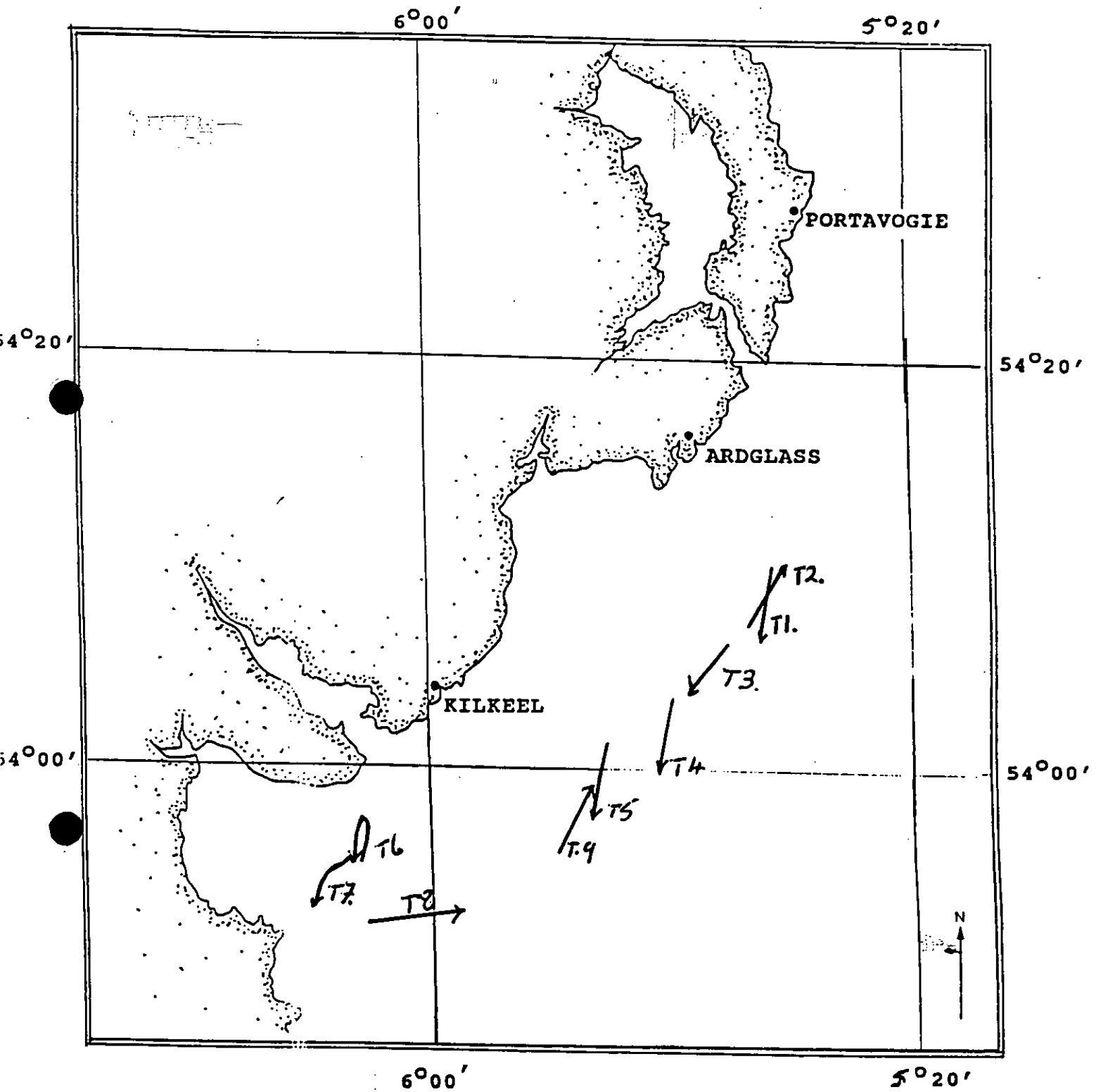
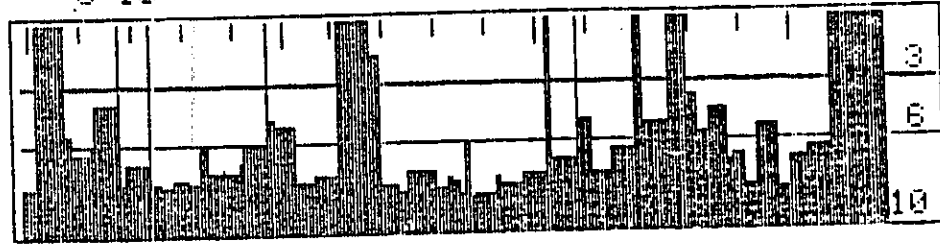
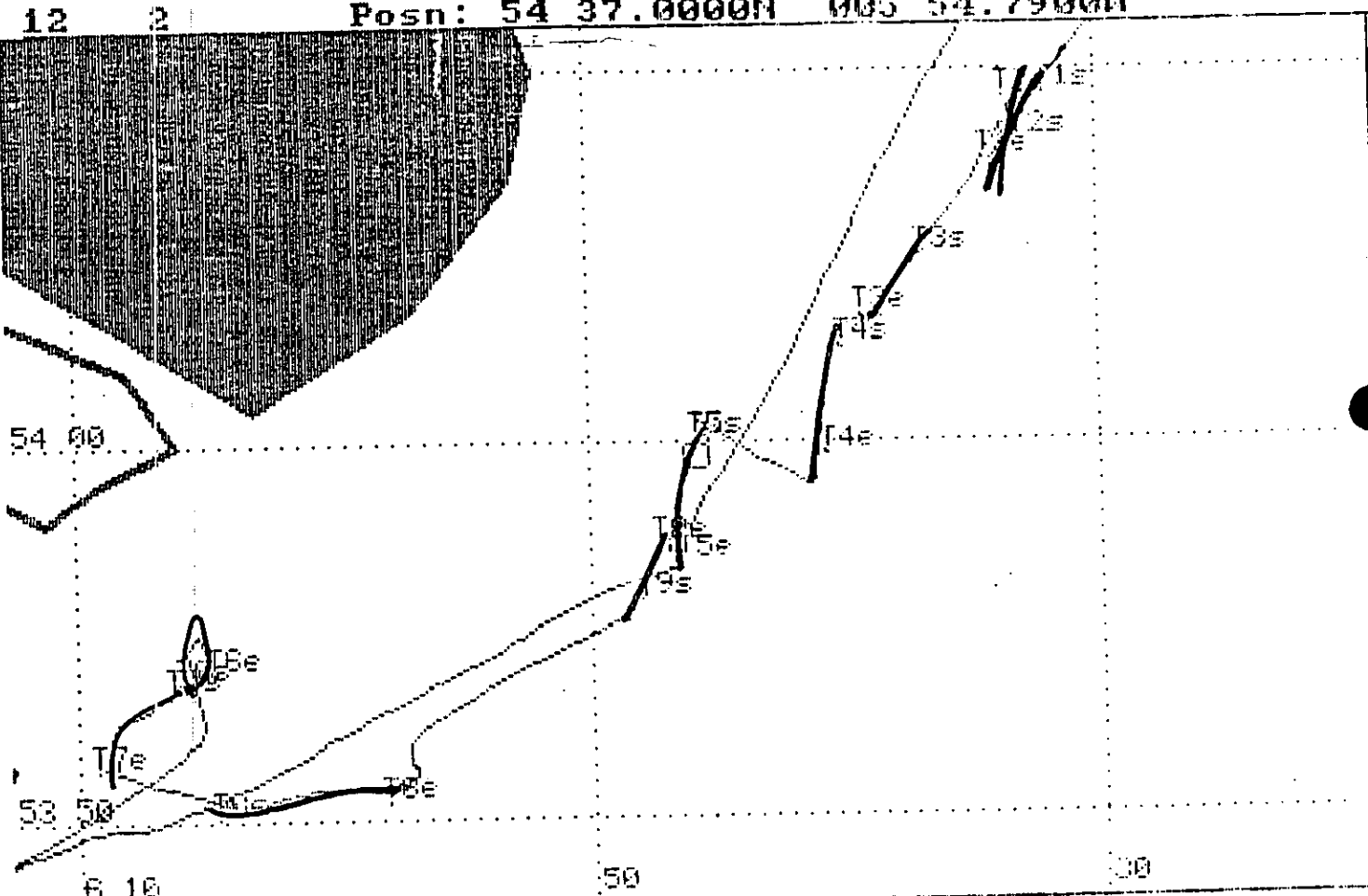


FIGURE 2

CRUISE TRACK FROM MICROPLOT

Posn: 54 37.0000N 005 54.7900W



INVALID READINGS