

not to be cited without prior reference to the Laboratory

DEPARTMENT OF AGRICULTURE [NI]
AQUATIC SCIENCES RESEARCH DIVISION

CRUISE REPORT - LF/05/93

NW IRISH SCALLOP STOCKS 15-18 FEBRUARY 1993

PERSONNEL

R. Briggs, [SIC]
A. Hayes,
J. Peel,
B. Magorrian
E. Gingles

OBJECTIVES

1. To survey the scallop, *Pecten maximus* grounds off the County Down coast and collect the following scallop data:
 - a. catch per unit effort.
 - b. age composition.
 - c. weight height and length of individual scallops.
 - d. meat yield.
2. To collect samples of scallop abductor muscle tissue for analysis of heavy metal and organic residue levels.
4. To collect samples of liver and muscle tissue of selected fish species for heavy metal and organic residue analysis.
5. Identify and quantify macrofauna associated with scallops.

METHODS

The gear used during the cruise were two beams, each of which were attached to four 2-foot scallop dredges of the design used in the commercial fishery. Two dredges were fitted with fine mesh (20mm) liner to increase retention of small fauna. Catches were sorted and the associated fauna identified and quantified. Samples of selected fauna were preserved in dilute formalin for future study. Scallops were aged from their shell rings, weighed and measured (shell height and breadth). Meat yield was determined from abductor muscle weight. Selected age classes of scallops had their abductor muscle removed and frozen for future analysis. Shell samples were retained for morphometric analysis.

NARRATIVE

Sunday 14 February

Scientific personnel boarded MRV Lough Foyle on the evening of Sunday 14 February.

Monday 15 February.

The vessel sailed at 06h.30 in fine weather with little wind. Stations to the north of Belfast Lough were completed (Tows 1-7 in Figure 1) and the Lough Foyle returned to Belfast Lough to anchor overnight.

Tuesday 16 February

Weather calm. The anchor was heaved at 07h.00 and the vessel proceeded to stations outside Belfast Lough and around the Copeland Isles. Eight tows were performed (Figure 1) with few or no scallops in catches. MRV Lough Foyle spent the night steaming slowly to the most southern stations in the survey.

Wednesday 17 February

Weather clear and calm. The dredges were deployed at 08h.05 off St. John's Point (station 100 from ground-fish survey); an area known to have hard substrate and possibly suitable for scallops. This first haul was invalid due to upside down dredges and the second over the same ground (tow 18) gave no catch at all, suggesting a 'clean bottom'. Good catches were obtained north of this at another new station (tow 19), which was selected because of activity in the vicinity by a commercial vessel. Lough Foyle then moved further north to station 8 off the mouth of Strangford Lough followed by other stations in this area, returning to Belfast Lough for overnight anchorage.

Thursday 18 February

Weather overcast with little wind. The anchor was lifted at 06h.45 and the vessel sailed to stations off the northern end of the Ards peninsula where tows 26-29 were dredged. This completed the stations visited during previous cruises. As catch rates were generally poor south of Belfast Lough the vessel returned to fish again in the areas north of the Lough, where good catches were made during the early part of the cruise. This was to check if the variation in catch rate was due to variation in gear performance and/or environmental factors or a difference in scallop stock density. Tow 4 (station 12) and Tow 7 (station 14) were repeated in this way. On completion of this exercise Tows (30-31) MRV Lough Foyle set course for home, docking at Belfast at 19h.25.

RESULTS

Figure 1 shows the approximate position of stations sampled and details are given in Appendix 1. Figure 2 shows total scallop catch expressed as catch per 8 X 2 foot dredges per mile of seabed and Table 1 gives the age composition of scallops from each station. Figure 3 shows the age composition of the pooled data from all valid tows (>10 scallops per mile) completed during the cruise. Higher catch rates at some of the more northern

stations were equally good when these stations were repeated at the end of the cruise. Stronger tides during the second fishing of stations 12 and 14 meant that although the same ground was covered faster catches were similar, reinforcing the view that catch data from surveys should be expressed as catch per mile rather than catch per hour. Data collected will be compared with those from previous surveys and also related to data from the commercial fishery, in order to understand more of the population biology of *Pecten maximus*.

Samples of scallop abductor muscle tissue, anglerfish (*Lophius piscatorius*) tail meat and the livers of lesser spotted dogfish (*Scyliorhinus caniculus*) were taken for heavy metal and organic residue analysis,

A wide range of benthic fauna associated with scallops were noted, quantified and identified where possible. Less familiar species were preserved in formalin for future examination. These data will contribute towards the compilation of a comprehensive list of scallop associates in the open sea which will contribute to a comparative data-base for work on the effect of trawling within Strangford Lough.

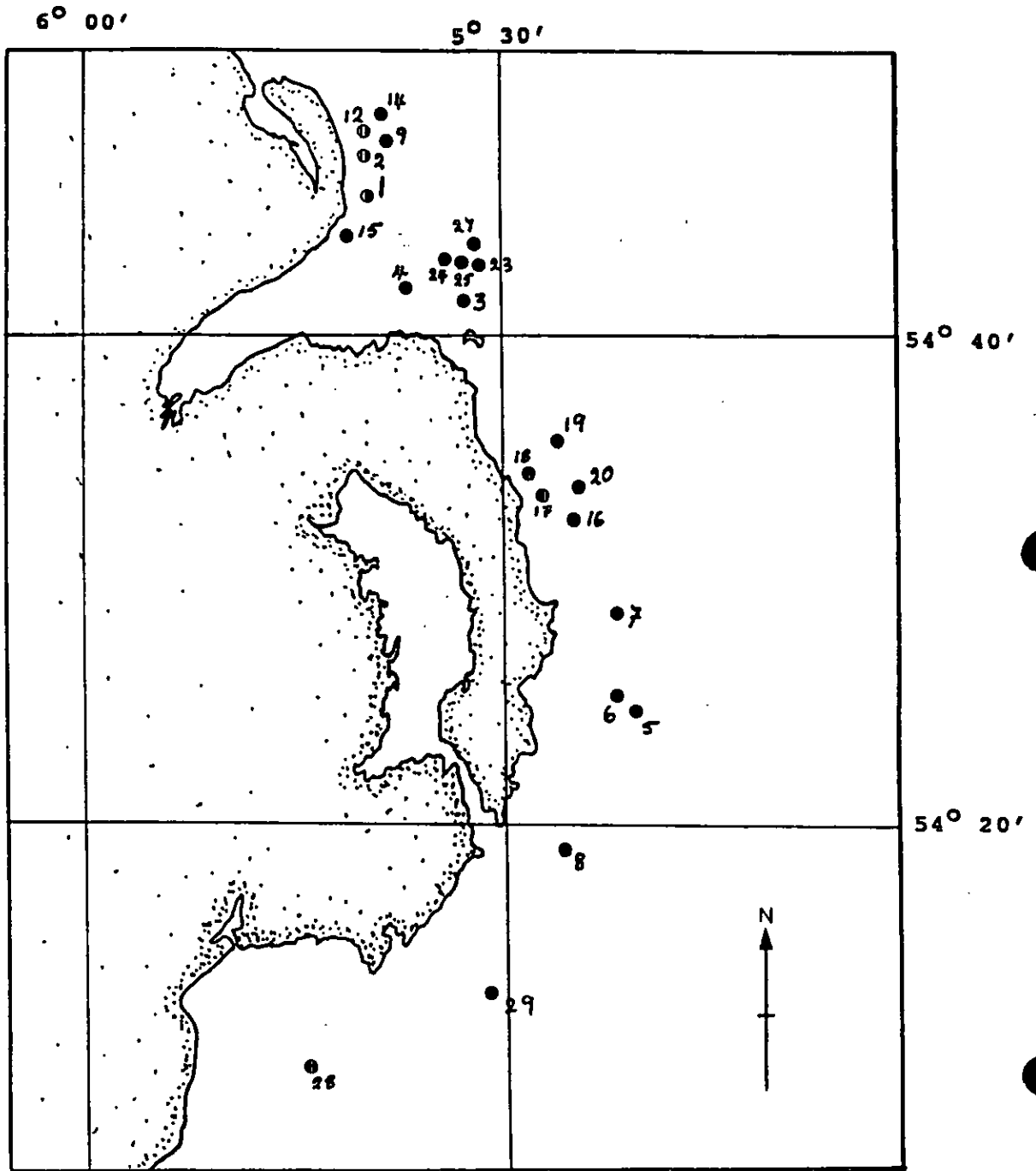
Richard Briggs
(Scientist in Charge)

Andrew Niblock
(Master)

18 February 1993

Figure 1

STATIONS DREDGED DURING CRUISE



Tow : Station Key

TOW	STATION	TOW	STATION	TOW	STATION
1	1	11	3	21	7
2	1	12	3	22	7
3	2	13	24	23	6
4	12	14	25	24	17
5	9	15	23	25	18
6	9	16	27	26	19
7	14	17	28	27	20
8	12/2'	18	28	28	20
9	15	19	29	29	16
10	4	20	8	30	12
				31	14

Figure 2

CATCH PER 8 x2' DREDGES PER MILE

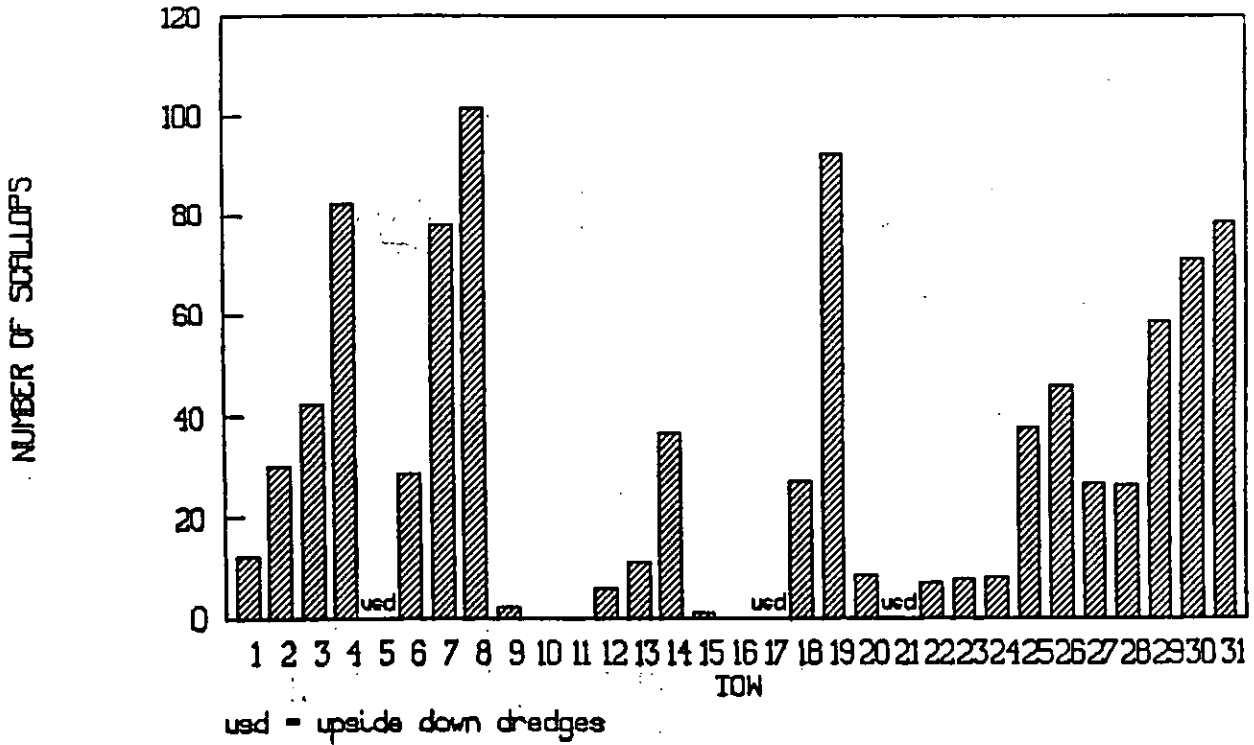


Figure 3

POOLED DATA FROM ALL VALID TOWS
(tows with catch rate exceeding 10 scallops per mile)

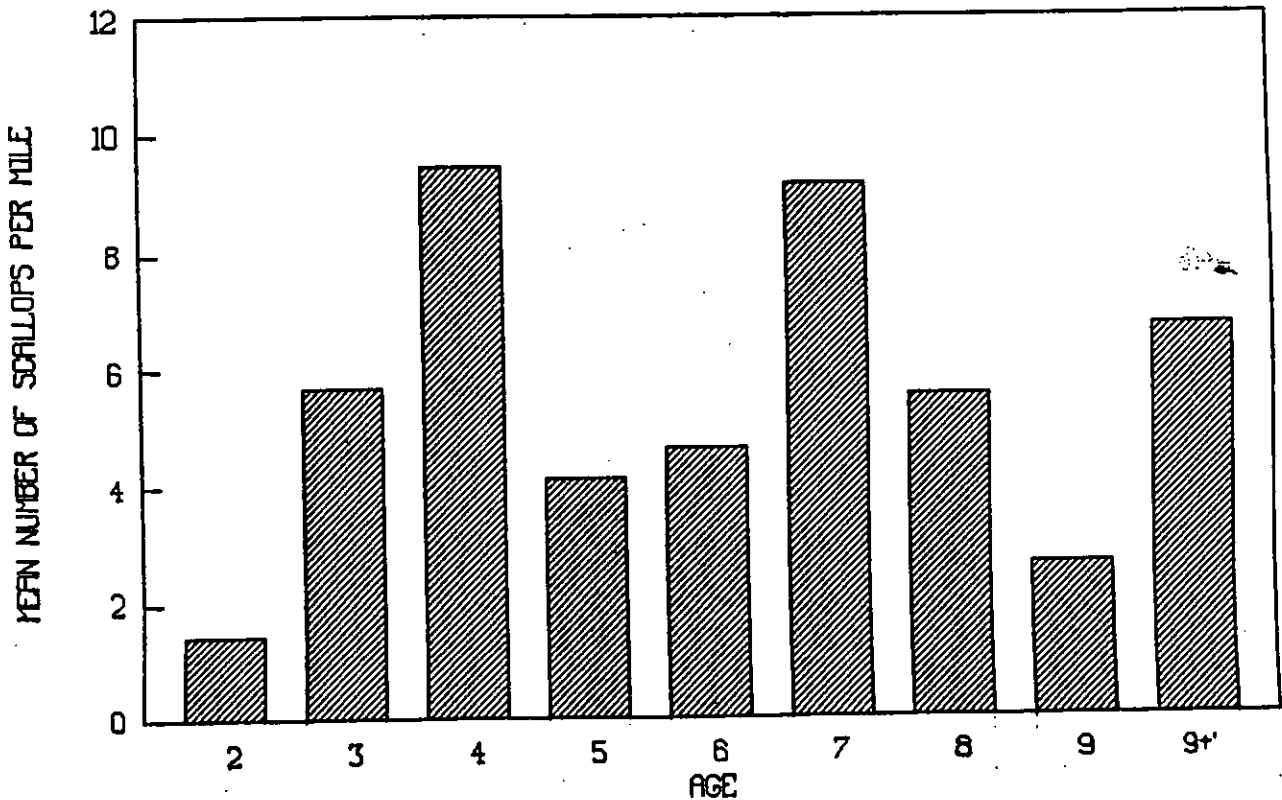


Table 1

0

SCALLOP CATCH PER MILE
(standardised to catch by 8 X 2' dredges)

TOW	STN	DREDGES	A G E					B A N D S				9+	TOTAL
			2	3	4	5	6	7	8				
1	1	8	0	0	1	1	2	3	2	2	3	13	
2	1	8	0	1	3	4	1	7	2	3	10	31	
3	2	8	0	10	11	1	3	8	6	1	2	43	
4	12	8	0	14	18	9	9	13	6	4	12	83	
5	9	8 <i>usd</i>	0	0	0	0	0	0	0	0	0	0	
6	9	8	0	2	3	1	1	8	5	3	7	29	
7	14	8	1	14	21	3	11	18	6	2	4	78	
8	12/2'	8	1	13	23	2	9	25	11	6	11	102	
9	15	4	0	0	1	0	0	0	0	0	1	2	
10	4	4	0	0	0	0	0	0	0	0	0	0	
11	3	4	0	0	0	0	0	0	0	0	0	0	
12	3	4	0	0	1	0	0	0	0	0	5	6	
13	24	8	0	1	1	0	0	3	1	1	5	11	
14	25	8	0	1	0	3	2	8	4	1	18	37	
15	23	8	0	0	0	0	0	1	0	0	0	1	
16	27	8	0	0	0	0	0	0	0	0	0	0	
17	28	8 <i>usd</i>	0	0	0	0	0	0	0	0	0	0	
18	28	4	0	1	10	4	1	10	0	0	0	27	
19	29	4	18	18	8	13	17	0	5	2	10	92	
20	8	8	0	0	0	0	2	1	1	3	3	8	
21	7	8 <i>usd</i>	0	0	0	0	0	0	0	0	0	0	
22	7	8	0	0	3	2	1	0	0	0	2	7	
23	6	8	0	0	0	1	0	1	0	0	6	8	
24	17	8	0	0	1	1	1	1	2	1	1	8	
25	18	4	0	2	13	6	2	13	2	0	0	38	
26	19	4	0	0	6	10	4	9	5	4	9	46	
27	20	8	0	1	3	5	2	7	5	4	2	27	
28	20	4	0	4	1	1	4	2	8	3	5	27	
29	16	4	0	4	15	6	6	7	11	4	7	59	
30	12	4	3	7	17	5	4	12	12	4	7	71	
31	14	4	3	13	16	3	8	13	10	5	10	79	

usd = upside down dredges

APPENDIX

San Llops 15 FEB - 19^E '93

T

BRIDGE DATA SHEET

CRUISE LF 0593

No. of Spec.
used

TOW	STATION	DATE	TIME SHOT	POSITION LONG-LAT	TIME HAULED	POSITION LONG-LAT	DISTANCE	DEPTH	No. of Spec. used
CC	1	15.2.93	08.12	54° 46.36 5° 37.89	08.39	54° 47.65 5° 37.49	1.2	30/40	9
DK. (50)	2	15.2.93	09.06	54° 48.00 5° 39.68	09.46	54° 46.22 5° 39.62	1.6	30/50	9
(54)	3	"	10.04	54° 46.72 5° 40.0	10.38	54° 48.06 5° 40.26	1.34	45/26	9
	4	"	11.34	54° 49.72 5° 41.10	12.34	54° 47.7 5° 40.2	2.0	38/41	(Gms) 9
(52+)	5	"	13.12	54° 49.0 5° 39.84	13.53	54° 49.35 5° 39.56	1.30	59-98	(USD) 9
Repeat of 5	6	"	14.15	54° 49.19 5° 39.59	15.03	54° 47.88 5° 39.6	1.29	90/66	9
	7	"	15.24	54° 48.14 5° 40.35	16.27	54° 49.72 5° 40.77	1.6	38/39	9
(50)	8	"	17.00	54° 49.85 5° 41.12	17.36	54° 48.82 5° 40.3	1.30	40/45	9
SS	9	16/2/93	08.09	54° 43.4 5° 40.85	09.09	54° 45.3 5° 39.5	2.16	15/30	- 4 -
	10	"	09.44	54° 43.3 5° 37.61	10.15	54° 42.4 5° 37.6	1.2	20/15	- 4 -
USA	11	"	10.55	54° 44.3 5° 38.38	11.30	54° 40.80 5° 33.50	1.33	35	- 4 -
	12	"	11.44	54° 42.9 5° 33.26	12.30	54° 44.6 5° 33.86	1.73	35	- 4 -
	13	24	12.55	54° 45.21 5° 34.16	13.29	54° 46.4 5° 34.6	1.10	60	- 8 -
(57)	14	25	14.20	54° 46.5 5° 34.09	15.05	54° 46.98 5° 30.31	1.60	70/82	- 8 -
	15	23	16.2.93	54° 44.33 5° 29.42	16.15	54° 45.31 5° 29.06	1.49	85	- 8 -
	16	27	"	54° 45.13 5° 30.6	17.20	54° 45.20 5° 32.15	1.2	80/13	- 8 -
100 New Sunday	17	450	17.2.92	54° 10.20 5° 48.90	08.43	54° 11.51 5° 39.76	1.35	25/29	4.
	18	"	08.50	54° 11.66 5° 39.77	09.20	54° 10.37 5° 40.9	1.40	"	4 No. 1.
New (60)	19	"	10.18	54° 16.7 5° 29.70	10.49	54° 15.7 5° 29.8	1.19	28	- 4 -
(64w)	20	8	11.30	54° 20.0 5° 25.13	12.13	54° 21.57 5° 23.17	1.8	30/35	- 8 -
(62w)	21	7	13.00	54° 27.62 5° 22.10	13.34	54° 28.94 5° 21.7	1.30	50/45	- 8 -
	22	7	13.46	54° 28.84 5° 21.47	14.15	54° 27.88 5° 22.2	1.25	45/1	- 8 -
	23	8	14.35	54° 28.25 5° 21.6	15.20	54° 29.8 5° 22.5	1.69	44	- 8 -
(64w)	24	17	16.04	54° 36.17 5° 26.31	16.50	54° 25.4 5° 27.30	1.52	30	- 8 -
(65w)	25	18	17.20	54° 35.1 5° 27.4	17.50	54° 36.2 5° 29.3	1.06	25/30	- 8 -
(66w)	26	19	18/2/93	54° 36.7 5° 27.8	09.00	54° 25.4 5° 25.1	1.6	32/42	- 4 -
(67w)	27	20	09.20	54° 35.4 5° 25.3	10.15	54° 33.7 5° 24.25	2.0	49/52	- 8 -
	28	20A	10.45	54° 36.3 5° 23.9	11.25	54° 36.5 5° 24.9	2.16	50	- 4 -
	29	16	18.2.92	54° 33.5 5° 25.0	13.15	54° 33.0 5° 25.4	1.09	40	
(70+)	30	4 Repeat	14.53	54° 47.06 5° 40.03	15.50	54° 49.06 5° 40.41	2.0	35/50	4
(71+)	31	7 Repeat	16.25	54° 49.0 5° 40.7	16.57	54° 47.4 5° 39.9	1.6	39/46	4