

not to be cited without prior reference to the Laboratory

DEPARTMENT OF AGRICULTURE [NI]
AGRICULTURAL AND ENVIRONMENTAL SCIENCES DIVISION

CRUISE REPORT - LF/03/95

NW IRISH SCALLOP STOCKS 13-16 FEBRUARY 1995

PERSONNEL

R. Briggs, PSO [SIC]
J. Peel, ASO
A. Windrum, Student (JMU Liverpool)
N. McDonough, Student (QUB)

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.
 - d. weight, height and length of individual scallops.
 - e. retain scallop shell samples for morphometric study.
 - e. abductor muscle weight.
 - f. gonad weight from selected samples
2. Identify and quantify macrofauna associated with scallops.
3. To retain selected scallop samples for future genetic studies at Menai Bridge Laboratory University College of North Wales.

METHODS

The gear used during the cruise was a beam to which was attached to four 2-foot scallop dredges of the design used in the commercial fishery. One dredge was fitted with a fine mesh (20mm) liner to increase retention of small fauna. Catches were sorted and the associated fauna identified and quantified where possible. Scallops were weighed and measured (shell height and breadth). Meat yield was determined from abductor muscle and gonad weight. Shells were aged by examination of growth bands on the flat shell.

NARRATIVE

Sunday 12 February

Scientific personnel boarded MRV Lough Foyle on the evening of Sunday 12 February. Safety instruction was provided by the Fishing Master before turning in for the night.

Monday 13 February

MRV Lough Foyle sailed at 06h.00 and proceeded to the scallop grounds to the NW of Belfast Lough (Region V in Figure 1) where 7 hauls were completed. The vessel was boarded from helicopter during the afternoon as part of an ARMY training exercise. The night was spent at anchor off Bangor, Co. Down.

Tuesday 14 February

The anchor was lifted and the vessel steamed to station 15 at the mouth of Belfast Lough where tow 8 was completed, this was followed by stations 24, 23 and 27. Catches were poor with station 27 yielding no scallops at all. Despite freshening weather conditions station 3 was attempted in the afternoon but the dredges proved to be up-side-down. In view of the poor weather conditions it was decided end fishing operations for the day and return to an anchorage in Bangor Bay for the night.

Wednesday 15 February

The day was spent dredging stations in Region II off the NW of the Ards peninsular. Catches were very poor and several tows had to be repeated due to up-side-down dredges. A cold westerly wind persisted throughout the day which hampered progress. The MAFF vessel RV Cirolana was sighted at around 17h.00 off the Northern Ireland coast. RV Lough Foyle spent the night at anchor in Ballyhalbert Bay.

Thursday 16 February

Continued wind coupled with strong tides made fishing difficult. Station 7 within Region I was fished, but the catch was poor (7 scallops). Attempts to fish further stations within region I were aborted due to poor weather. A repeat haul at station 17 in Region II yielded 25 scallops which were aged and frozen for genetic studies at the Menai Bridge Marine Laboratory. Radio contact was made with the MAFF vessel RV Cirolana who had aborted a plankton sampling exercise due to the poor weather conditions. The MAFF cruise was part of an EU funded egg production project being co-ordinated by DANI. A final haul was performed at Station 4 in Region IV within Belfast Lough, after which RV Lough Foyle set course for Belfast, docking at 14h.15. This cruise was terminated a day early in view of the poor prevailing weather and an unfavourable forecast,

RESULTS

During the cruise 20 valid tows were completed as indicated in Figure 1 (and Appendix 1) and over 350 scallops were aged and processed as described in the methods section. Table 1 gives the total scallop catch expressed as catch per 4 X 2 foot dredges per hour of fishing together with details of water depth. For the first time gonad weight was measured using the Marel analytical balance. Figure 2 is a preliminary analysis of gonad weight at age data and demonstrates a wide range in gonad size due to variation in maturity. These data also suggest that scallops from the south of Belfast Lough (Region II) are larger and therefore more mature than those from more northern stations. Figure 3 demonstrates a poor correlation between tow distance and tow time and supports the view that catch rate should be expressed as catch per unit distance of ground dredged as presented in Figure 4. It is considered likely that the poor catch rates achieved during this cruise are partly attributed to the poor prevailing weather conditions and strong tides. More reliable quantitative data on catch rates is expected to arise from new initiatives to introduce log sheets to the commercial fishery.

A wide range of benthic fauna associated with scallops were noted and quantified where possible (Table 2). These data will contribute towards a time series database on scallop biology and associates that will provide a base to describe the affects of fishing and environmental change.

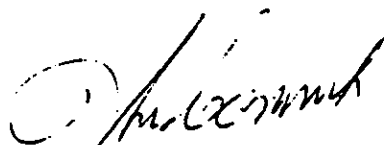
ACKNOWLEDGEMENTS

I thank the Master, officers and crew of MRV Lough Foyle for their enthusiastic co-operation throughout this cruise. The scientific staff are to be congratulated for their example of effective team work.



Richard Briggs
(Scientist in Charge)

16 February 1995



John McCormick
(Master)

Figure 1

Scallop Stations Grouped into areas I - V

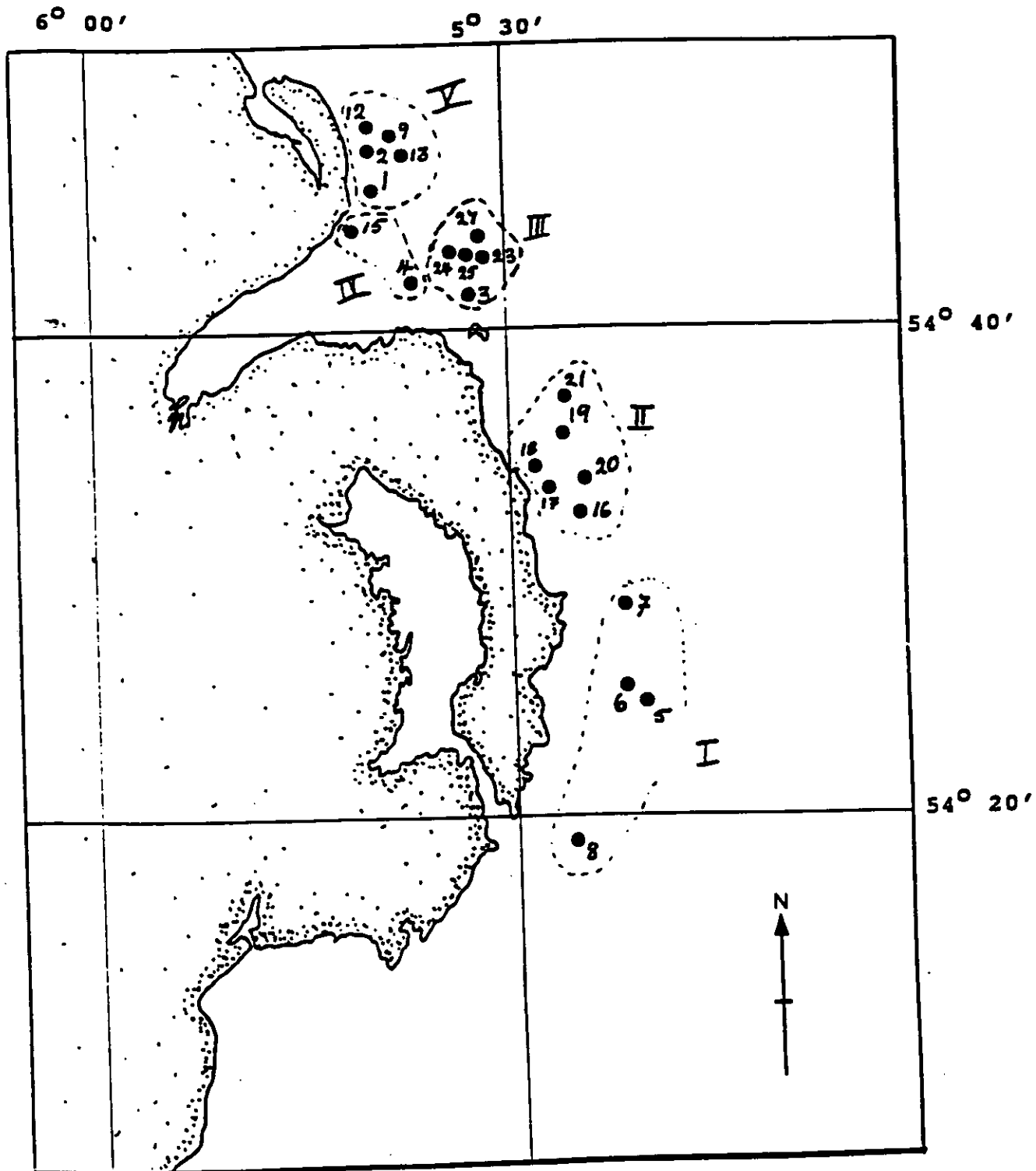


Figure 2

Preliminary analysis of gonad weight at age data in which mean gonad weight is plotted against scallop age. This shows a wide range (standard deviations) about each mean and also indicates that more northern scallops have less mature gonads at the time of the survey.

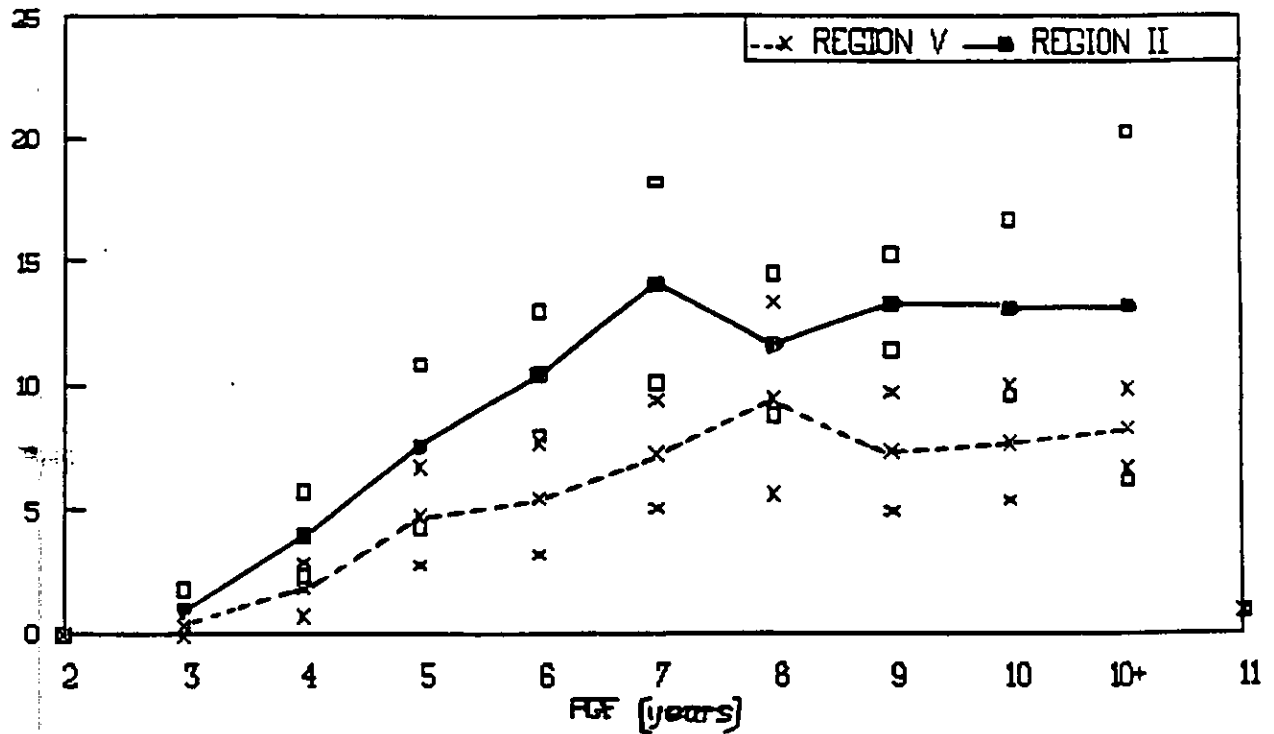


Figure 3

Plot of tow distance against tow time demonstrating a poor correlation brought about by strong tides at the time of the survey. Numbers above points refer to tow number.

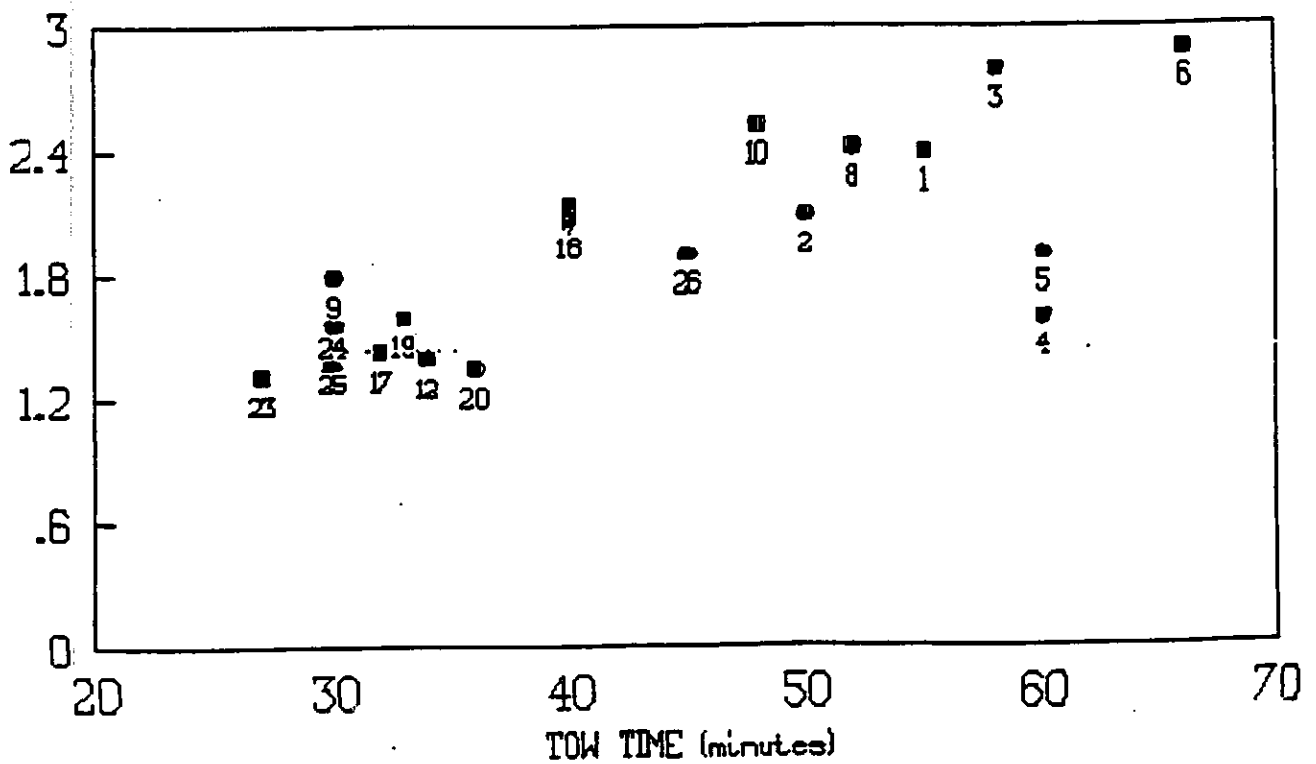


Figure 3
Scallop catch per 3m trawl at the five main regions covered during the survey.

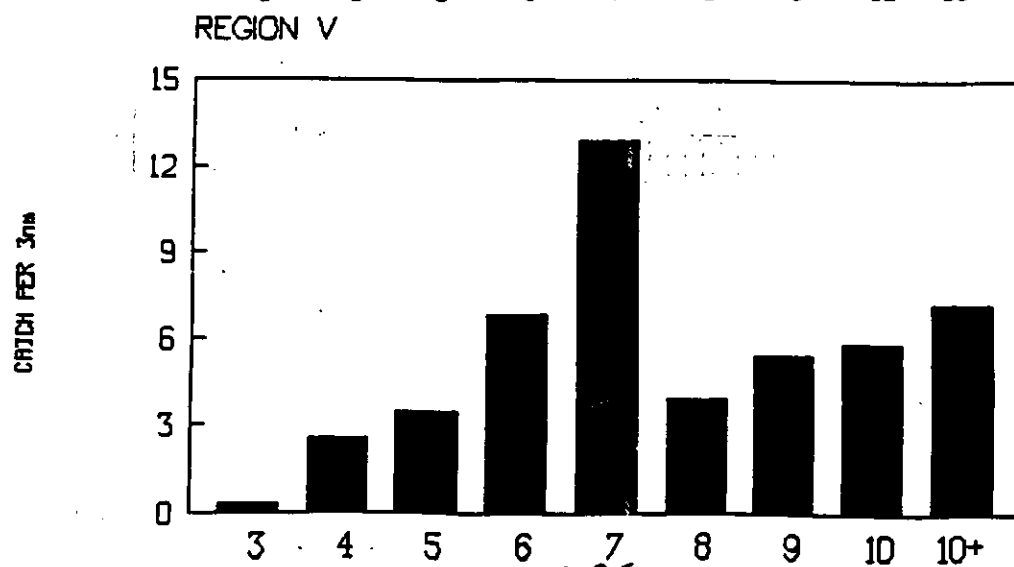
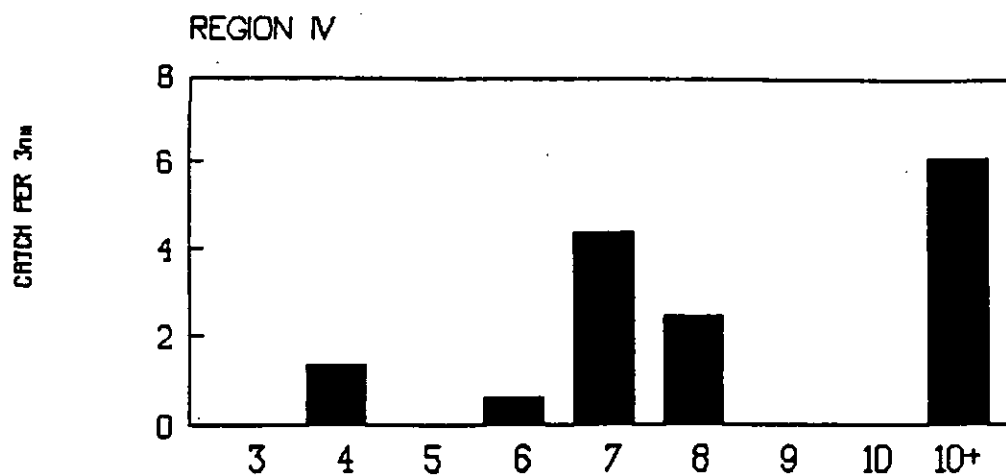
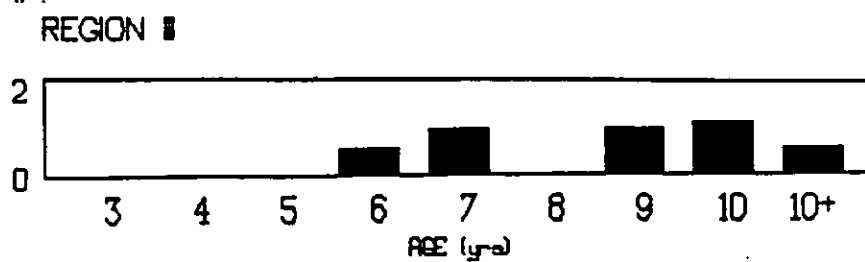
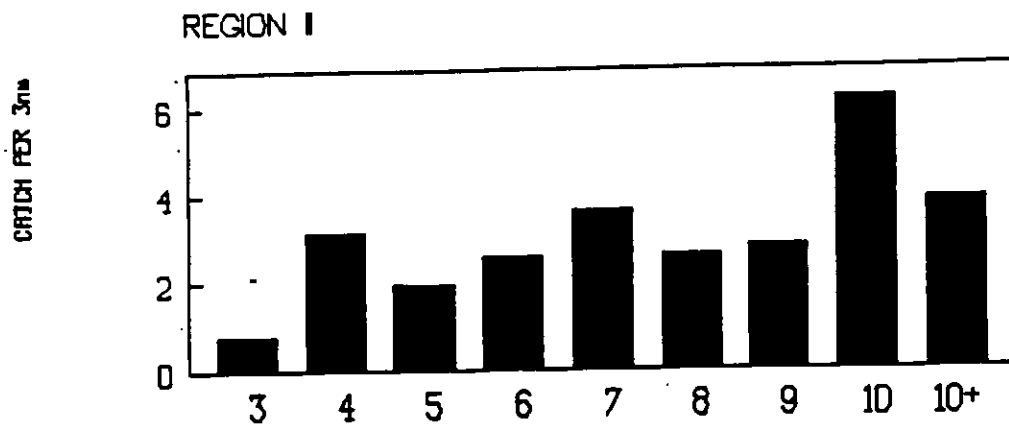
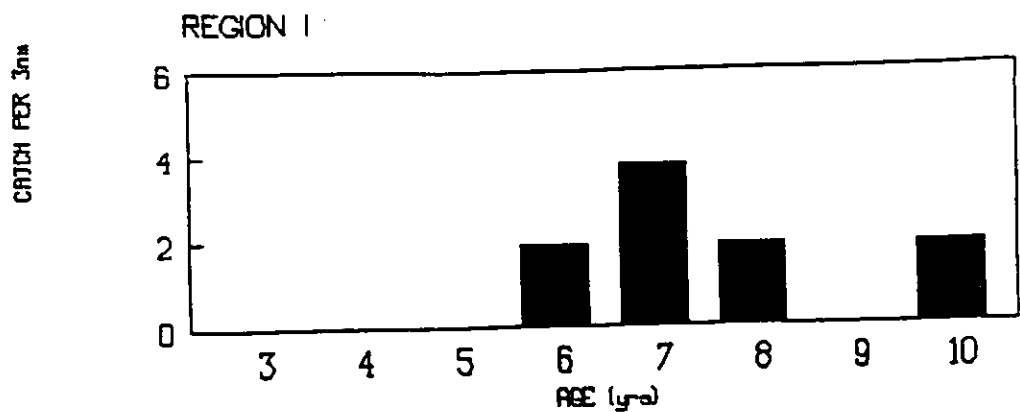


Table 1

Total scallop catch by station together with similar data from the 1994 survey and water depths of stations.

STN	CATCH		DEPTH (m)
	1995	1994	
15	22	9	17
15	38	8	27
1	9-33	70	44
2	33	28	45
12/2		64	46
2		36	39
2		80	26
2		27	40
12	70	76	43
9	9-49	40	44
13		13	50
4	5	14	17
3		17	48
24	20	8	62
25		12	77
23/27	5-4	3	82
21		26	40
20	11	68	48
17	25	60	37
8		62	36
5		30	46
7	14	14	51
6		15	42
16	19-6	41	33
18	13	10	33
17	21	6	31
19	5		

Table 2
Benthic fauna associated with scallops

REGION	I	II	III										IV		V						
TOW	24	15	16	17	19	20	23	25	9	10	12	13	8	26	1	2	3	4	5	6	7
STN	7	18	17	16	20	19	16	17	24	23	27	25	15	4	1	2	9	12	1	13	9
Echinodermata																					
Antedon bifida			20	10					10						2			1	50+		
Asterias rubens	8	++	20	30	20	6	7	8	6	20	1	1	20	18	8	35	2	1	1	2	10
Anseropoda placenta				1														1			3
Porania pulvillus				1								1					1			1	
Henricia oculata					3								4				1				3
Crossaster papposus		2	10		7	2	2	4	3	3					4	5		1	1	4	
Solaster endeca			5						2							1					
Ophiothrix fragilis			40	10					++	++			++		4	40		50+		50+	
Echinus esculentus			20	30	9			25								2					
Marthasterias																				1	1
Psammecrinus									3												
Crustacea																					
Macropipus depurator									1				1	1							
Cancer pagurus			1		2		1						3	3		1		3	1	1	2
Macropodium spp																3			1		
Eupagurus bernhardus				3						4	1		2			2		1			
Pandalus			5	1		1			1	1			1								
Pasiphaea																					
Munida								1													
Mollusca																					
Eledone spp				1																	
Arctica islandica													20	1							
Pecten maximus	7	10	21	19	11	5	6	25	10	4	2	0	13	4	30	30	29	64	8	35	45
Aquiptecten opercularis				1					1	1			1								
Neptunea antiqua									1												
Modiolus nodiolus				100+																	
Buccinum undatum	1		5																		
Littorina spp																					
Aporrhais pespellicani															1						
Venus spp				10											10	6				12	
Pisces																					
Trisopterus minutus																				1	2
Callionymus lyra													1								
Lophius piscatorius		1	6		1	1				1	1	1	4	1	1	2	1	2		1	1
Scyliorhinus canicula																1		1			
Pleuronectes platessa											1										
Raia naevus								1							1						
Liparis liparis																					
Raja montagui	1																				
Merlangius merlangus			1										2								
Enchelyopus cimbrius																1					
Trisopterus (smarkii										1										1	
Liparis liparis																				1	
Microstomus kitt		1				1			1												1
Gadus morhua		1		1																	
Gaidropsarus vulgaris				1																	
Polychaeta																					
Aphrodite																					
Porifera																					
Suberites						1			1												

BRIDGE DATA SHEET

CRUISE 03/95

TOW	STATION	DATE	TIME SHOT	POSITION LONG-LAT	TIME HAULED	POSITION LONG-LAT	DISTANCE	DEPTH
1		13 Feb 95	0736	54° 47.08 5° 37.63	08:29	54° 49.35 5° 40.41	2.40	56 / 60
2		"	08:53	54° 48.72 5° 40.27	09:43	54° 46.80 5° 40.33	2.10	52 / 33
3	9/12	"	10:06	54° 47.50 5° 40.00	11:04	54° 50.37 5° 41.06	2.8	57 / 42
4	12.	"	11:37	54° 50.35 5° 41.70	12:37	54° 48.98 5° 40.15	1.6	36 / 39
5	Rep 101.	"	13:05	54° 49.33 5° 40.40	14:05	54° 47.67 5° 37.75	1.91	46 / 60
6	13	"	14:26	54° 48.122 5° 37.973	15:32	54° 51.10 5° 40.70	2.9	60 / 113
7	9/1	"	16:05	54° 48.9 5° 40.31	16:45	54° 46.77 5° 39.35	2.15	49 / 50
8	15	14 FEB	07:32	54° 43.65 5° 59.72	08:24	54° 45.81 5° 59.62	2.42	15 / 28
9	24	"	09:00	54° 45.98 5° 34.10	09:30	54° 44.33 5° 32.90	1.8	58 / 56
10	23	"	10:12	54° 44.72 5° 29.60	11:00	54° 46.77 5° 31.62	2.53	81 / 89
11	27	"	11:30	54° 46.09 5° 30.94	12:30	54° 45.41 5° 35.04	2.6	81 / 60
12	27	"	13:00	54° 45.80 5° 33.61	13:34	54° 46.44 5° 31.21	1.40	65 / 82
13	25	"	14:04	54° 45.1 5° 34.91	14:34	54° 45.65 5° 37.43	1.62	55 / 48
14	3	"	15:12	54° 43.9 5° 34.16	15:32	54° 33.233 5° 34.31	.80	40 / 34

←
New SAE
Repeat
Discontin
No Sully
No Sully

Page 2

BRIDGE DATA SHEET

CRUISE LF0395

TOW	STATION	DATE	TIME SHOT	POSITION LONG-LAT	TIME HAULED	POSITION LONG-LAT	DISTANCE	DEPTH
15	18	15 Feb	07:57	54° 37.34 5° 25.62	08:27	54° 35.98 5° 27.86	1.45	41 / 33
16	17	"	08:45	54° 32.72 5° 28.09	09:25	54° 34.11 5° 26.23	2.08	33 / 34
17	16	"	09:48	54° 34.24 5° 25.94	10:20	54° 35.33 5° 27.15	1.43	34 / 39
18	20	"	11:20	54° 34.05 5° 25.07	11:55	54° 35.83 5° 26.00	1.76	44 / 50
19	20	"	12:48	54° 34.71 5° 25.56	13:13	54° 36.34 5° 26.07	1.6	45 / 47
20	19	"	13:39	54° 37.20 5° 26.58	14:15	54° 36.00 5° 26.4	1.35	33 / 45
21	21	"	14:52	54° 34.79 5° 25.15	15:42	54° 37.51 5° 26.26	2.88	50 / 42
22	21	"	16:12	54° 38.61 5° 26.88	16:44	54° 37.20 5° 27.52	1.62	40 / 34
23	2 (16)	"	16:58	54° 36.46 5° 27.28	17:25	54° 35.58 5° 25.74	1.32	43 / 46
24	7	16 FEB	07:36	54° 30.0 5° 32.72	08:06	54° 28.45 5° 21.25	1.60	43 / 50
25	17	"	10:12	54° 34.47 5° 26.17	10:43	54° 35.52 5° 27.06	1.42	36 / 34
26	4	"	12:10	54° 43.56 5° 37.96		54° 43.58 5° 40.99	1.91	20 / 14

Valid
✓
✓ Placed
✓ OK
4.50
✓
✓
1150
1150