DEPARTMENT OF AGRICULTURE [NI]
AGRICULTURAL AND ENVIRONMENTAL SCIENCE DIVISION
(Aquatic Systems Group)

CRUISE REPORT - LF/08/98

NW IRISH SEA SCALLOP STOCKS 16-20 FEBRUARY 1998

PERSONNEL

Richard Briggs, PSO [SIC]
Willie McCurdy, SSO
John Peel, ASO
Gareth Greer, UUC
Phil Heath, C-Mar

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. Collect samples of scallop abductor muscle for future metal analysis

3. Identify and quantify macrofauna associated with scallops.

METHODS

The gear used during the cruise were two beams each with four 2-foot dredges. Catches were sorted and the associated fauna identified and quantified where possible. Scallops were weighed and measured (shell length and height). Meat yield was determined from abductor muscle and gonad weight. Shells were aged by examination of growth bands on the flat shell and by microscopic examination of hinge ligament scars. Abductor muscle tissue was retained from the scallops of selected stations for metal analysis. Samples were fast frozen in polythene bags.

NARRATIVE

Sunday 15 February

Scientific personnel boarded *RV Lough Foyle* on the evening of Sunday 15 February.

Monday 16 February

RV Lough Foyle sailed at 06.00 and arrived on station in Area V to the north of Belfast Lough at 08.37 where one set of dredges were deployed. Weather moderate with a NW breeze. Six stations were dredged in this area. The vessel returned to Area IV for a final haul for the day at station 15. The night was spent at anchor in Belfast Lough.

Tuesday 17 February

Dredges were shot in calm conditions at Station 4 in Area IV (outer Belfast Lough) at 08.18. This was followed by 7 hauls in Area II, south of Belfast Lough where reasonable catches were obtained. Day three concluded with two hauls in the Northern part of Area I. The night was spent at anchor in Ballyhalbert Bay.

Wednesday 18 February

Dredges were shot in Area 1 (tow 18) at 08.30 and hauled again at 08.57 upon news of the death of John Peel's father. *RV Lough Foyle* steamed to Bangor Bay where the calm conditions allowed the safe disembarkation of Mr Peel in the inflatable rescue boat. *RV Lough Foyle* then returned to Area I, continuing the survey at 14.58 (tow 19). A further 4 stations in ideal conditions completed the planned survey in this area so *RV Lough Foyle* returned to an anchorage in Bangor Bay for the night.

Thursday 19 February

Four Stations (tows 24-27) in Areas III were completed during the morning allowing *RV Lough Foyle* to return to Belfast where she docked at 13.35, one day earlier than scheduled.

RESULTS

During the cruise 27 stations were dredged and all, except tow 27 which was in the sludge dumping area at the mouth of Belfast Lough, yielded scallops. The unusually fine weather was a major contributory factor to the success of this cruise which completed all objectives a day earlier than planned. Station positions are provided in Table 1 and Figure 1. Scallop age composition varied between and within the main Areas as shown in Table 2. Strong younger (3-4) age classes were seen at some stations (Figure 2) while others were predominated by old (10+) scallops. Figure 3 shows the relationship between scallop abductor muscle weight and shell length. Flat shells were retained for future morphometric analysis. A range of benthic fauna associated with scallops were noted from all tows and these data are presented in Table 3. Echinoderms were the most predominant group with the common starfish *Asterias rubens*, an important

predator of juvenile scallops, being the most abundant species. Figure 4 shows the abundance of *Asterias* in catches by tow. The anglerfish *Lophius piscatorius* was the most common finfish with 1 or 2 specimens occurring at most stations.

The data collected during this cruise will contribute towards a time series data base for scallops and their associates, providing a means to monitor the affects of fishing and environmental pressures. Information from this data base could make a valuable contribution to site selection in a C-mar co-ordinated project on scallop enhancement off the County Down coast which is planned for the future.

ACKNOWLEDGEMENTS

I thank the Master, officers and crew of *RV Lough Foyle* for their enthusiastic co-operation throughout this cruise. In particular, the disembarkment of Mr Peel using the inflatable rescue boat was conducted in a safe and well co-ordinated operation. The scientific staff are once again to be congratulated for their effective team work.

Rochard Briggs
(Scientist in Charge)

Andrew Niblock (seen in draft)
(Master)

19 February 1998

Table 1

Position of stations dredged during cruise (LF0898)

TOW	lat in	long in	lat out	long out
1	54 47.40	5 39.93	54 48.23	5 40.52
2	54 48.73	5 40.89	54 46.86	5 40.51
3	54 46.73	5 40.31	54 48.36	5 40.63
4	54 48.62	5 40.94	54 46.98	5 40.42
5	54 47.21	5 40.82	54 48.33	5 40.67
6	54 48.20	5 40.84	54 46.96	5 40.67
7	54 46.55	5 40.12	54 44.96	5 40.60
8	54 45.06	5 40.37	54 46.41	5 39.73
9	54 43.34	5 41.15	54 43.23	5 39.14
10	54 37.98	5 26.01	54 36.22	5 25.89
11	54 36.34	5 25.58	54 34.92	5 25.00
12	54 34.16	5 23.89	54 32.88	5 23.17
13	54 34.37	5 25.97	54 35.73	5 26.42
14	54 36.38	5 26.98	54 37.71	5 27.94
15	54 37.53	5 29.19	54 36.45	5 28.41
16	54 29.80	5 22.55	54 28.50	5 22.20
17	54 28.10	5 22.29	54 26.99	5 22.16
18	54 23.24	5 22.56	54 22.35	5 23.38
19	54 23.40	5 22.60	54 21.75	5 24.00
20	54 20.90	5 25.35	54 20.60	5 26.80
21	54 20.60	5 26.56	54 21.00	5 24.06
22	54 20.98	5 24.05	54 20.09	5 25.52
23	54 20.51	5 24.00	54 22.07	5 22.99
24	54 42.12	5 36.48	54 41.66	5 34.88
25	54 41.43	5 33.78	54 42.42	5 34.94
26	54 43.47	5 34.02	54 44.57	5 35.55
27	54 44.75	5 33.00	54 43.91	5 31.34

Table 2

Number of scallops caught at age per nautical mile.
Shaded boxes highlight predominant age group in catch

AREA I

AGE\tow	16	17	18	19	20	21	22	23
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0
3	0.0	2.8	0.0	5.9	2.2	1.4	2.3	0.6
4	0.0	5.6	9.0	9.2	3.3	2.0	0.8	2.4
5	0.0	0.9	5.0	5.9	7.8	2.7	3.9	3.0
6	0.0	1.9	4.0	10.8	5.6	8.1	7.8	6.7
7	0.0	3.7	3.0	7.0	5.6	1.4	0.8	2.4
8	0.0	1.9	0.0	1.6	1.1	4.1	5.5	4.2
9	0.0	1.9	0.0	1.1	0.0	0.7	3.1	2.4
10	0.0	3.7	0.0	0.5	1.1	0.0	0.0	0.6
10+	3.3	3.7	1.0	0.0	0.0	0.0	1.6	7.3
TOTAL:	3.3	25.9	22.0	42.2	26.7	20.9	25.8	29.7

AREA II

AGE\tow	10	11s	11p	12	13	14	15
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.7	1.6	1.5	0.7	15.5
4	0.0	0.7	0.0	3.9	2.2	0.0	9.5
5	0.0	0.7	0.0	5.4	2.2	0.7	2.6
6	0.0	0.0	0.0	0.0	0.7	0.0	6.9
7	0.0	1.3	0.7	1.6	1.5	0.0	3.4
8	1.6	0.7	0.0	0.8	2.2	1.3	2.6
9	0.0	1.3	0.7	1.6	3.0	0.0	0.0
10	0.0	0.0	0.0	2.3	1.5	0.0	0.9
10+	4.3	5.2	7.8	9.3	14.2	2.0	4.3
TOTAL:	5.9	9.8	9.8	26.4	29.1	4.7	45.7

AREA III

AGE\tow	25	26	27
1	0.0	0.0	0.0
2	0.0	0.0	0.0
3	7.4	0.7	0.0
4	5.7	0.0	0.0
5	2.5	0.0	0.0
6	2.5	0.0	0.0
7	4.1	0.7	0.0
8	2.5	0.0	0.0
9	0.8	0.0	0.0
10	0.0	0.0	0.0
10+	0.0	0.7	0.0
TOTAL:	25.4	2.1	0.0

AREA IV

AGE	9	24
1	0.0	0.0
2	0.0	0.0
3	0.0	0.0
4	0.0	0.0
5	0.0	0.0
6	0.9	0.0
7	0.0	0.0
8	0.0	2.0
9	0.9	0.0
10	0.9	0.0
10+	0.9	1.0
TOTAL	3.5	3.0

AREA V

AGE\tow	1	2	3	4s	4p	5s	5p	6	7	8
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0
3	1.1	5.9	1.2	4.8	2.1	2.3	2.3	2.3	0.6	2.7
4	0.0	4.1	1.8	8.2	8.2	1.6	0.8	3.0	0.0	4.1
5	3.3	7.1	3.6	4.8	2.7	3.1	0.8	0.0	0.0	1.4
6	7.8	11.2	2.4	4.8	6.8	5.5	0.8	1.5	0.0	4.8
7	1.1	2.4	4.8	4.1	4.8	2.3	0.0	1.5	0.0	1.4
8	1.1	0.6	0.0	0.7	0.7	0.8	0.0	0.0	0.0	0.7
9	2.2	0.0	0.0	0.7	0.0	0.8	0.0	0.0	0.0	0.0
10	2.2	1.8	1.2	0.0	1.4	0.0	0.0	0.0	0.0	1.4
10+	8.9	1.2	1.2	1.4	2.1	0.0	0.0	0.0	1.3	8.2
TOTAL:	27.8	34.1	16.3	29.5	28.8	16.4	4.7	8.3	1.9	24.5

Table 3

Total catch from each tow

Species / Tow	1	2	3	4s	4p	5s	5p	6	7	8	9	10	11s	11p	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Echinodermata																														
Antedon bifida			1																											
Asterias rubens	1	37	3	26	25	15	3	4	6	67	31	91	90	117	40	132	46	93	2	10	5	11	37	28	13	16	54	89	6	
Luidia spp		1																			1	1	3	1				1	1	
Astropecten irregularis		1		1	1				1	1										4			2	3	3	6		1	8	
Anseropoda placenta					1	1		1					1	1						1	1								6	
Stichastrella rosea													1	1																
Henricia oculata												1				2														
Crossaster papposus	3	6	7	6	5	3	2	2		2		1	1	5	4	7	4	14		5	3	6	1	5		3	1	5	1	
Solaster endeca																	1													
Ophiothrix fragilis									1											2			2			7		5		
Echinus esculentus		1	4	3	1	4				1		9	3	10	3	26	8	25	1			3	1				2	11	2	
Psammechinus miliaris													2	2				1												
Crustacea																						1								
Macropipus depurator										3	2		1		1		1					1	1	3		1		3		
Cancer pagurus																											1			
Macropodium spp												1						1								1	1			
Eupagurus bernhardus				1																										
Munida																														
Mollusca																1												1		
Eledone spp											2																			
Arctica islandica																														
Pecten maximus	25	58	27	43	42	23	6	11	3	39	5	11	16	15	34	39	7	53	4	28	22	78	24	31	33	49	3	31	3	0
Aquipecten opercularis													1		1					2							1			
Neptunea antiqua													1					1									1	2	1	
Modiolus modiolus																												5		
Buccinum undatum																		1												
Pisces																														
Lophius piscatorius	1	2	1	1		2				1			1	2	2	2	2	2		2		1	2	1					2	
Scyliorhinus canicula																										1				
Microstomus kitt					1											1			1											
Raja clavata																	1												1	
Raja montagui		1																								1				
Merlangius merlangus		1																												
sand eel												1																		
Anthozoa																												2		
Tealia felina																														
Alcyonium digitatum		1					1			1	9	1		1	2							3	10	3		12	18	6		
Ascidiacea																		3												

Figure 1

Positions of stations showing historical grouping into Areas I-V

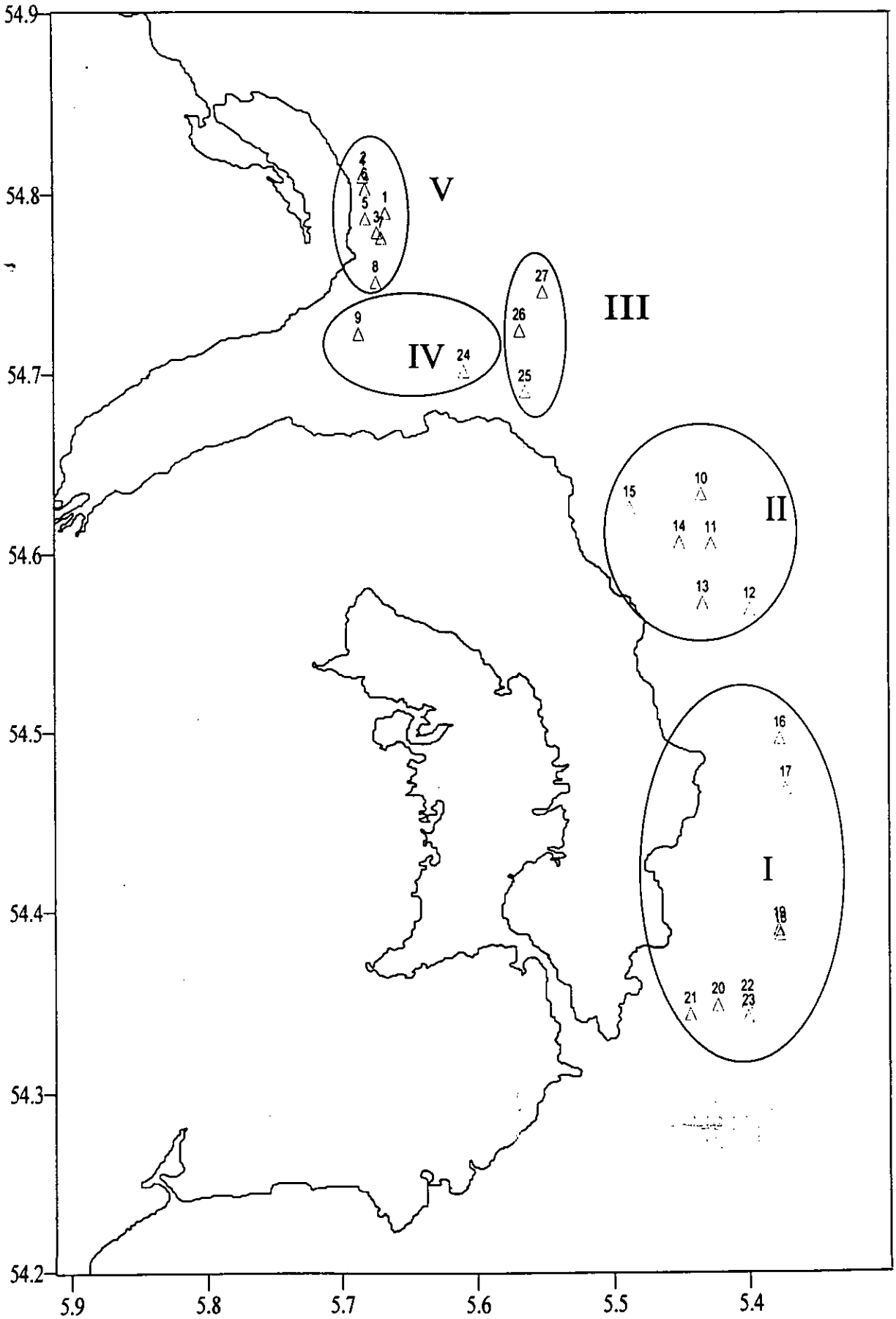
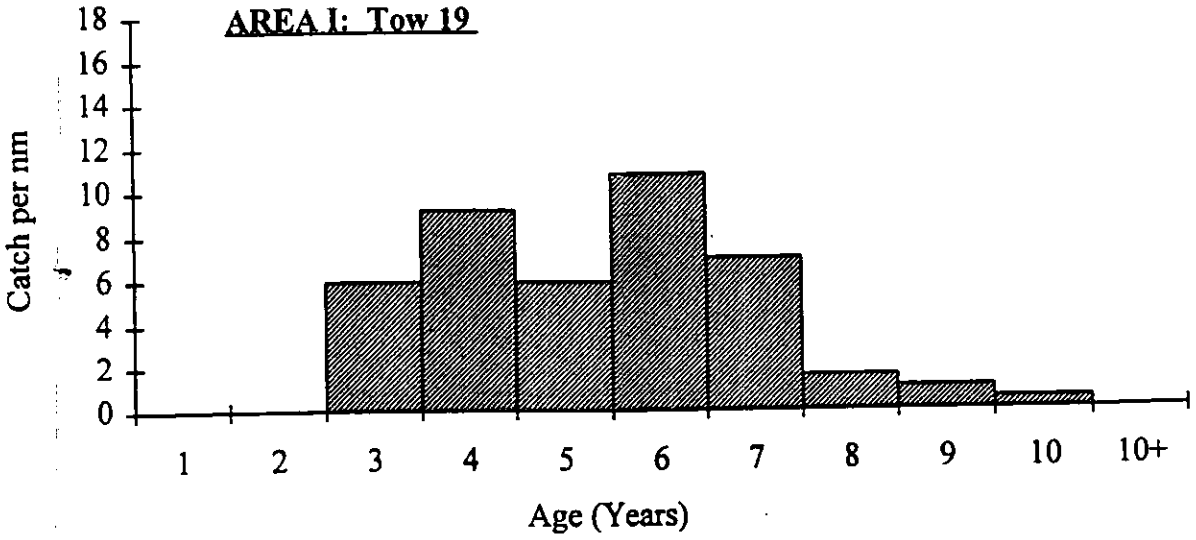
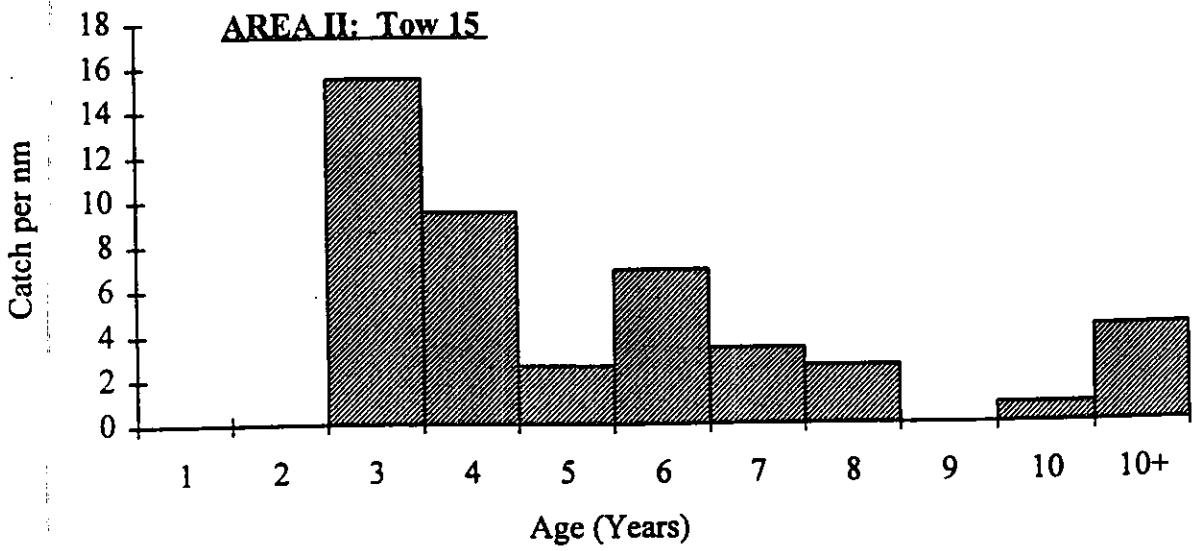


Figure 2

Age composition at stations with most catch in Areas I, II and V





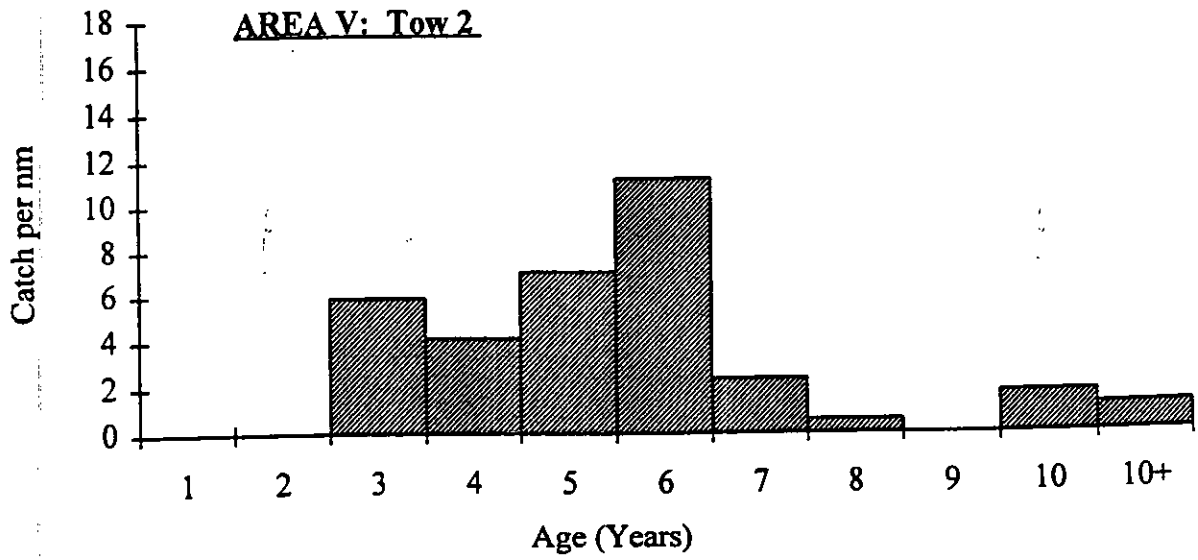


Figure 3

Relationship between abductor muscle weight (g) against shell length (mm)

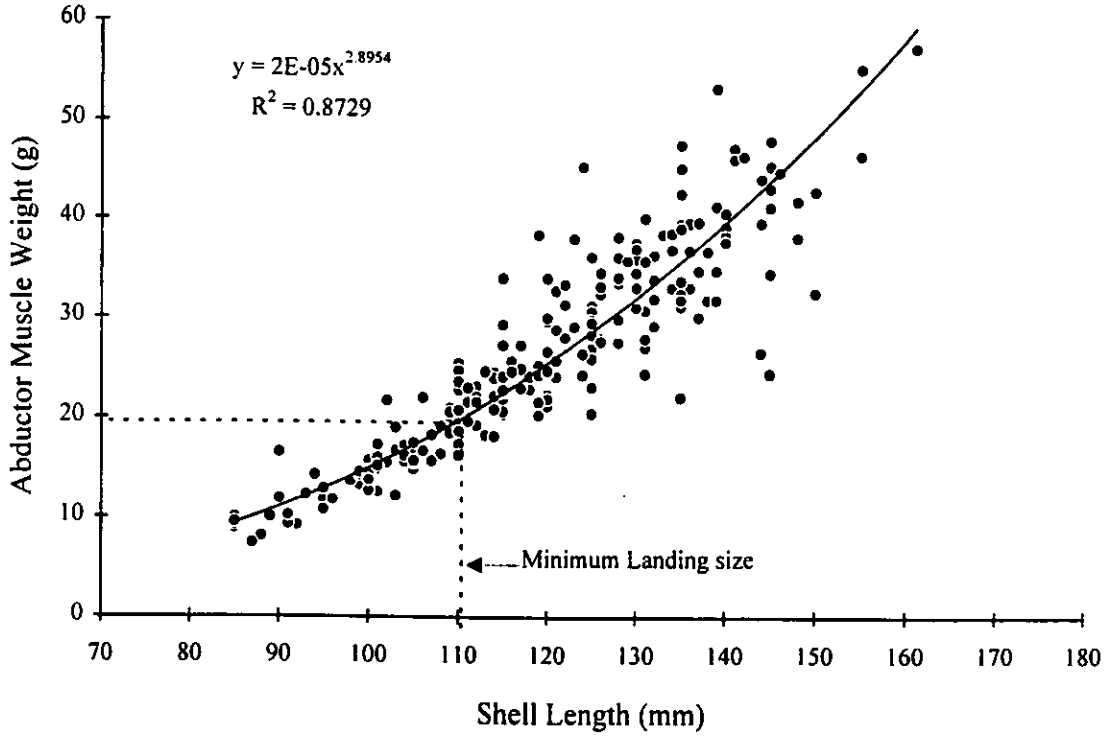
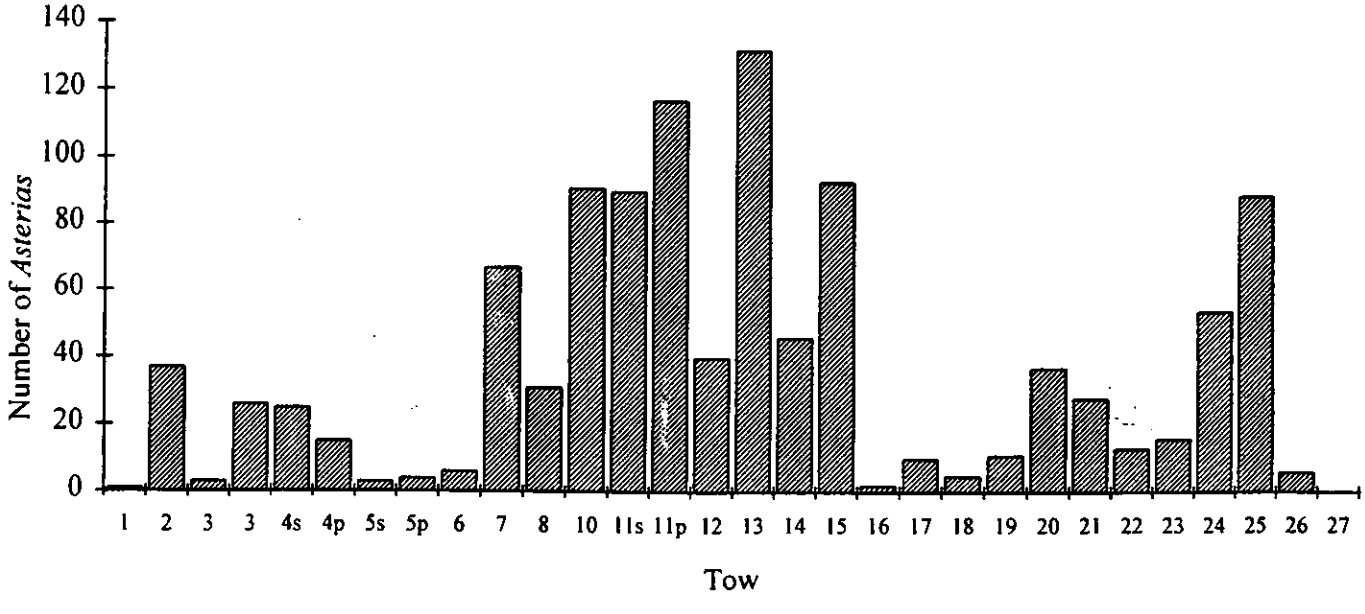


Figure 4

Number of common starfish (*Asterias rubens)* per tow.
Asterias is a major predator of *Pecten maximus*



(N.B s & p refer to port and starboard dredges from to same tow)