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

CRUISE REPORT - LF/07/99

NW IRISH SEA SCALLOP STOCKS 15-18 FEBRUARY 1999

PERSONNEL

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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. scallop age composition
   d. weight, height and length of individual scallops.
   e. abductor muscle and gonad weights.
   f. scallop shell samples were retained for morphometric study.

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. Scallop abductor muscle was retained from the predominant age class at selected stations for future metal analysis. Samples were fast frozen in polythene bags.

NARRATIVE

Sunday 14 February

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

Monday 15 February

RV Lough Foyle sailed at 06.00 and arrived on station in Area V to the north of Belfast Lough at 08.15 where one set of dredges were deployed. Weather calm. Four stations (Fig. 1) were dredged and good scallop catches obtained. The vessel then returned to Area IV where another 5 hauls were completed. The night was spent at anchor off Ballyhalbert, Co Down.

Tuesday 16 February

Dredges were shot in moderate weather conditions off Ballyhalbert (Area I) 08.10. This was followed by 8 more stations within Area I. The vessel returned to Ballyhalbert Bay to anchor for the night.

Wednesday 17 February

The day was spent in Area II off the Ards peninsula where 10 tows were completed in calm weather conditions. The night was spent at anchor off Kilroot, Belfast Lough.

Thursday 1 8 February

Dredges were shot at 08.00 for haul 30 in Area III, near the sludge dumping site. This was followed by two more hauls (31 & 32). Catches were poor as is typical for this area. With all cruise objectives completed *RV Lough Foyle* set course for Belfast where she docked at 13.00.

RESULTS

During the cruise 32 stations were dredged and all yielded scallops, though in varying amounts. 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 presented 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 in areas III, IV & V and indicate good recruitment (Figure 2). Although of historical importance as scallop grounds Areas III and IV no longer have viable stocks. Scallop ages were determined from the flat shells and from the hinge scars and there was a reasonable level of agreement in the ages from the two methods. 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, the most abundant species. Figure 3 shows the abundance of echinoderms in catches by tow. The anglerfish *Lophius piscatorius* was the most common finfish.

The data collected during this cruise will contribute towards a time series data-base for scallops and their associates and will providing a basis to monitor the affects of fishing and environmental change. Information will be drawn from these data to contribution to an ongoing C-mar co-ordinated project on scallop enhancement.

ACKNOWLEDGEMENTS

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

Richard Briggs
(Scientist in Charge)

Andrew Niblock (seen in draft)
(Master)

18 February 1999

Table 1

Position of stations dredged during cruise

TOW	AREA	Shot		Hauled		Mean Depth(m)
		lat	long	lat	long	
1	V	54 45.2	5 40.6	54 46.6	5 40.2	25.0
2	V	54 47.2	5 40.5	54 48.5	5 40.7	35.5
3	V	54 45.2	5 40.3	54 46.5	5 39.7	31.5
4	V	54 48.6	5 40.7	54 47.2	5 40.3	39.0
5	IV	54 43.3	5 38.7	54 43.5	5 40.6	13.0
6	IV	54 42.8	5 38.8	54 43.2	5 40.8	10.5
7	IV	54 42.5	5 37.5	54 42.4	5 39.4	9.5
8	IV	54 41.7	5 34.4	54 42.2	5 36.4	17.0
9	IV	54 42.0	5 34.0	54 42.4	5 35.9	19.5
10	IV	54 42.5	5 34.4	54 43.1	5 36.2	21.5
11	I	54 28.2	5 22.0	54 29.4	5 22.7	45.5
12	I	54 27.4	5 22.6	54 28.7	5 22.6	42.0
13	I	54 27.4	5 23.2	54 28.5	5 23.6	33.0
14	I	54 20.8	5 24.6	54 20.7	5 26.5	28.5
15	I	54 21.6	5 24.6	54 20.9	5 26.2	24.5
16	I	54 20.9	5 25.8	54 20.6	5 26.8	25.0
17	I	54 23.6	5 22.5	54 23.4	5 23.6	36.0
18	I	54 23.3	5 22.5	54 22.1	5 22.3	39.0
19	I	54 21.9	5 23.2	54 20.5	5 23.8	35.0
20	II	54 32.3	5 22.4	54 33.3	5 23.0	58.0
21	II	54 31.8	5 23.5	54 33.1	5 24.0	47.0
22	II	54 33.3	5 23.3	54 34.6	5 24.1	51.0
23	II	54 33.0	5 25.4	54 34.4	5 25.9	39.5
24	II	54 35.1	5 24.7	54 36.8	5 25.7	43.0
25	II	54 36.4	5 27.4	54 35.2	5 26.8	34.0
26	II	54 36.8	5 26.7	54 35.8	5 26.1	41.5
27	II	54 38.0	5 26.4	54 36.9	5 26.5	40.0
28	II	54 37.5	5 29.0	54 36.1	5 28.2	35.0
29	II	54 37.5	5 28.0	54 36.3	5 27.5	37.0
30	III	54 43.7	5 33.7	54 44.5	5 35.2	35.5
31	III	54 44.3	5 33.2	54 45.3	5 34.2	57.0
32	III	54 43.8	5 31.8	54 44.9	5 32.8	58.0

able 2

Number of scallops caught at age per nautical mile.

AREA I

AGE	11	12	13	14	15	16	17	18	19	Mean
1	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.1
2	0.0	0.0	0.0	0.8	0.0	0.0	1.4	0.0	0.0	0.3
3	0.0	0.0	0.0	2.5	0.0	0.0	2.1	1.6	2.0	0.9
4	0.0	2.4	0.0	1.7	0.8	0.0	6.4	0.8	0.7	1.4
5	0.0	1.6	0.0	7.5	0.8	0.0	7.1	12.0	1.3	3.4
6	0.0	2.4	0.0	5.0	2.5	1.4	2.1	6.4	0.0	2.2
7	0.0	0.8	1.6	4.2	1.7	1.4	2.1	1.6	0.7	1.6
8	0.0	4.8	0.0	2.5	0.8	0.0	2.9	1.6	3.3	1.8
9	0.0	6.5	0.8	2.5	0.0	0.0	0.0	1.6	1.3	1.4
10	0.8	1.6	0.0	0.8	0.8	0.0	0.0	0.8	0.7	0.6
10+	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.8
Tot.	0.8	25.8	2.4	27.5	7.5	2.7	25.0	26.4	12.0	14.5

AREA II

AGE	20	21	22	23	24	25	26	27	28	29	Mean
1	0.0	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	0.8	0.0	0.0	0.7	0.0	0.2
3	1.7	3.0	2.2	0.7	0.0	5.0	0.8	0.0	1.4	2.3	1.7
4	9.4	12.0	7.3	10.9	0.7	20.0	0.8	0.8	14.3	11.5	8.8
5	12.8	3.8	3.6	4.1	0.0	8.3	0.0	0.0	1.4	0.8	3.5
6	3.4	3.8	1.5	0.7	0.0	1.7	0.0	0.0	1.4	0.0	1.2
7	0.9	3.8	0.7	0.7	0.0	3.3	0.0	0.0	0.7	0.8	1.1
8	0.0	0.8	0.0	0.7	1.4	2.5	0.0	0.0	1.4	3.8	1.1
9	2.6	2.3	0.0	0.7	0.0	1.7	0.0	0.0	1.4	1.5	1.0
10	1.7	0.8	0.7	0.7	0.7	2.5	0.0	0.0	0.0	2.3	0.9
10+	7.7	8.3	7.3	0.7	6.1	3.3	2.4	1.7	0.7	5.4	4.4
Tot.	40.2	38.3	23.4	19.7	8.8	49.2	4.1	2.5	23.6	28.5	23.8

AREA III

AGE	30	31	32	Mean
1	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0
4	0.0	3.5	0.8	1.4
5	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0
7	0.0	0.9	0.0	0.3
8	0.0	1.8	0.0	0.6
9	0.0	0.0	0.0	0.0
10	0.0	1.8	0.0	0.6
10+	0.8	0.0	0.0	0.3
Tot.	0.8	8.0	0.8	3.2

AREA IV

AGE	5	6	7	8	9	10	Mean
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	0.0	0.8	1.7	0.0	0.4
4	1.7	0.0	0.0	4.9	0.8	0.0	1.2
5	2.5	0.0	0.0	1.6	5.8	0.0	1.7
6	0.0	0.0	0.0	0.0	0.8	0.0	0.1
7	1.7	0.0	0.8	0.0	0.8	1.7	0.8
8	0.8	0.8	0.8	0.0	1.7	0.0	0.7
9	0.0	0.0	0.8	2.5	0.0	0.0	0.5
10	0.0	0.0	0.0	0.8	0.0	0.0	0.1
10+	2.5	0.8	0.0	0.0	0.0	0.0	0.6
Tot.	9.2	1.7	2.5	10.7	11.6	1.7	6.2

AREA V

AGE	1	2	3	4	Mean
1	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0
3	0.7	0.6	2.7	2.7	1.6
4	5.3	7.1	5.3	7.3	6.2
5	5.3	2.9	2.7	2.7	3.4
6	1.3	0.6	2.0	0.7	1.1
7	1.3	2.4	4.0	1.3	2.3
8	3.3	0.6	2.0	1.3	1.8
9	2.0	0.0	2.0	0.0	1.0
10	1.3	0.0	0.7	0.0	0.5
10+	3.3	0.6	4.0	2.0	2.5
Tot.	23.7	14.7	25.3	18.0	20.4

Table 3

Total catch from each tow

Species/Tow	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16*	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Echinodermata																																
Asterias rubens	18	11	65	8	20	11	24	22	38	13	27	11	8	12	14		6	13	1	7	9	7	26	36	8	3	23	11	11	2	1	12
Luidia spp																			1												1	
Astropecten irregularis			2								3	1						1	1											1	1	
Anseropoda placenta																														1		
Henricia oculata																																
Crossaster papposus		4	10					22	1			1		2			5	1	1	1	2	1	3	3	2				1			2
Solaster endeca		1																				1									1	1
Ophiothrix fragilis																			1													
Echinus esculentus	1	2	6	1					1		1							1		1	1	2	2	7	12	2	5	1	2			1
Crustacea																																
Macropipus depurator								2																								
Cancer pagurus	2		3				1	1	4	2	1		1		2		2					1		2				1		1	
Eupagurus bernhardus																					1		1									
Necora puber		1																		1												
Munida																			2													
Nehrops norvegicus																																
Mollusca																																
Pecten maximus	36	25	38	27	11	2	3	13	14	2	1	32	3	33	9	2	35	33	18	47	51	32	29	13	59	5	3	33	37	1	9	1
Aquipecten opercularis																						2										
Buccinum undatum	1							2	2	1	1	1														1	1					
Eledone									2									1														
Pisces																																
Lophius piscatorius		2	1	1								1								1		1		1	1					1		
Scyliorhinus canicula																							1			1						
Pleuronectes platessa										1	1															1						
Raja naevus										1																						
Raja montagui										1																						

* aborted to due to rough ground

Figure 1

Positions of stations showing catch rates and historical grouping into Areas I-V

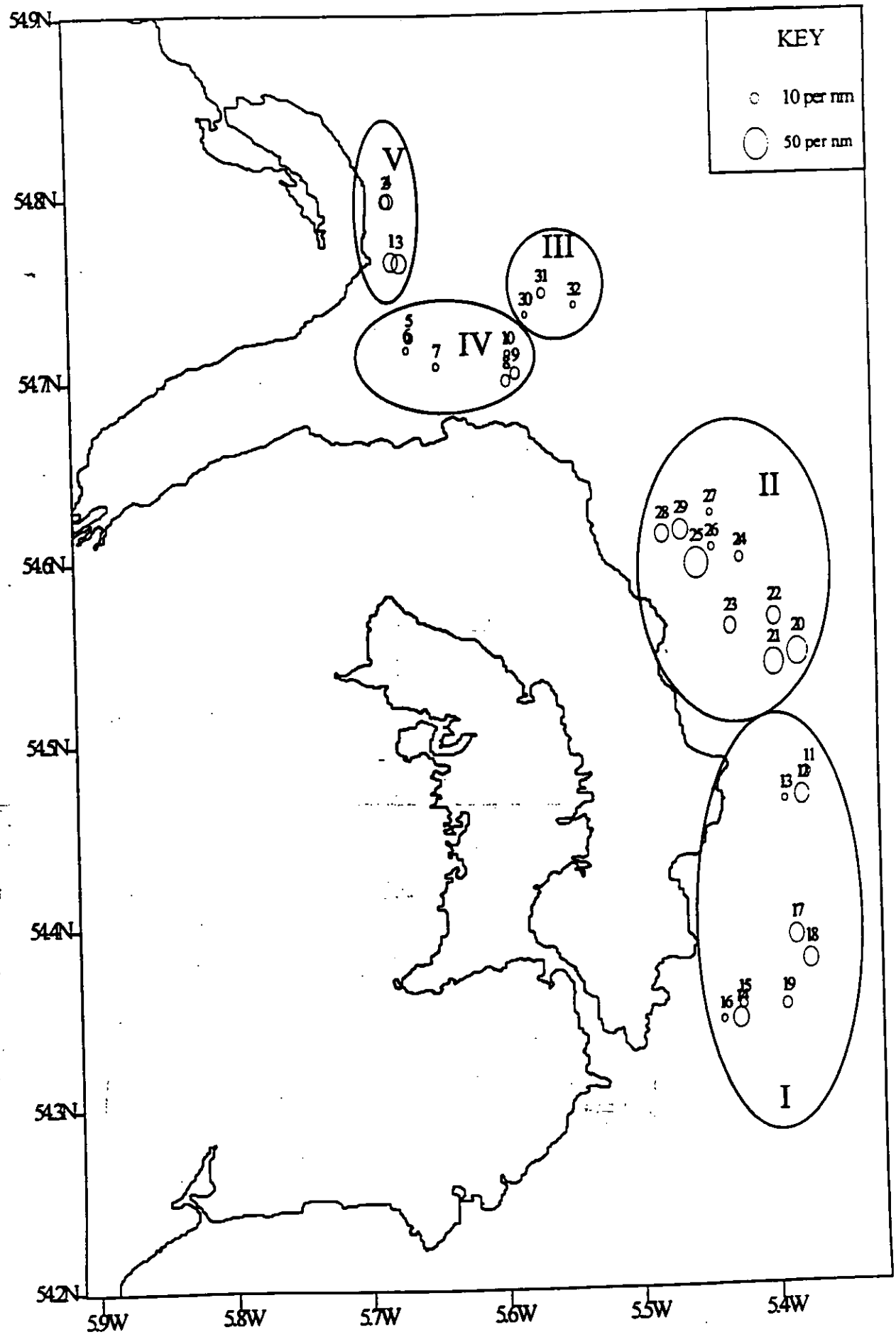

Figure 2

Mean scallop catch at age by Area

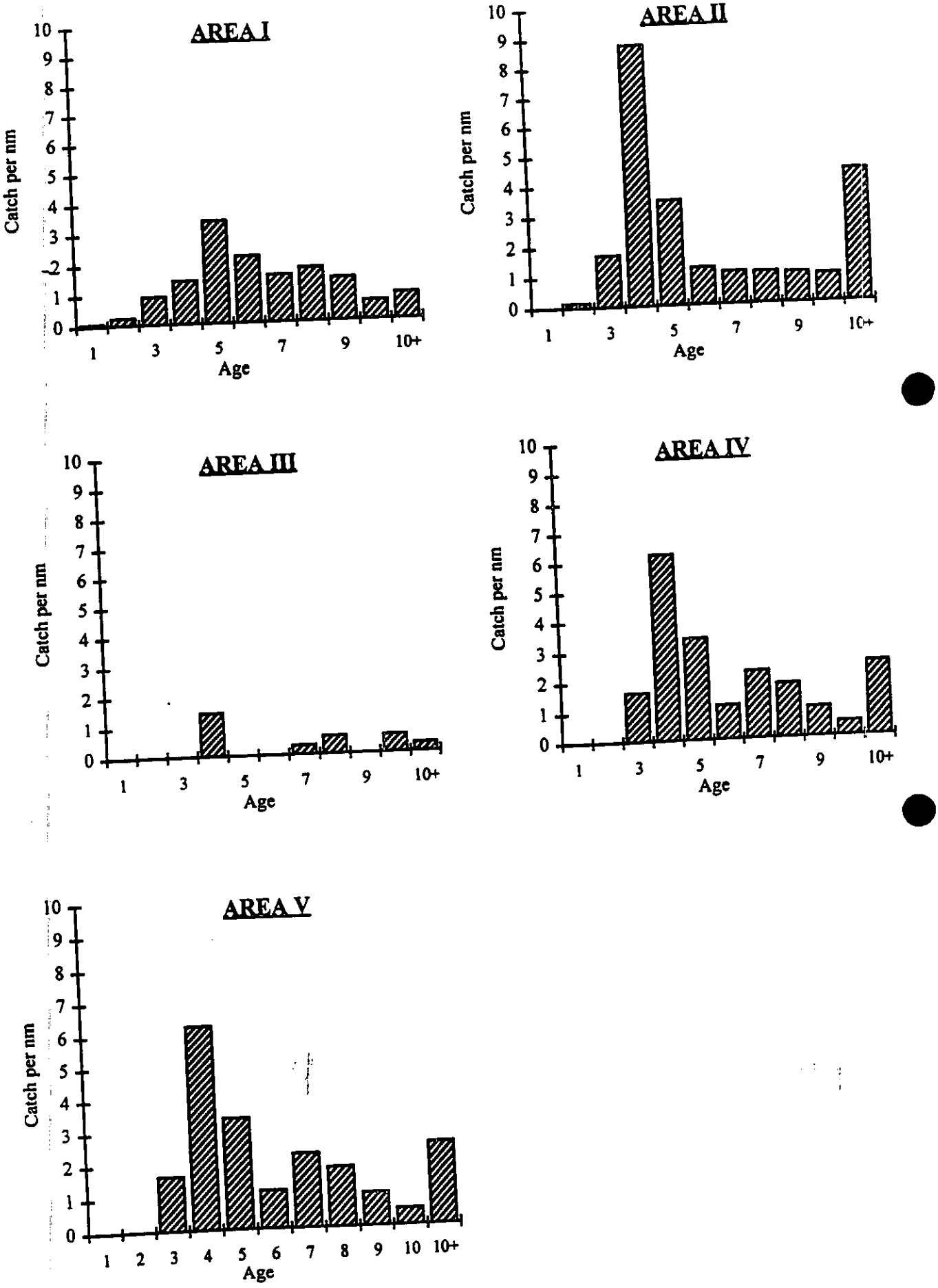

Figure 3

Common echinoderms occurring at each station standardised as numbers per nauticl mile dredged over seabed