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the Laboratory

CRUISE REPORT

FRV "GOLDSEEKER"

30 APRIL - 24 MAY 1973

OBJECTIVES

- 1) To test the relative efficiencies of various gears in catching queens.
- 2) To collect molluscs and crustaceans for trace metal analysis.
- 3) To take daily surface temperature readings.

NARRATIVE:

"Goldseeker" left Buckie on 30 April on passage for Stromness, where she arrived on 2 May. Equipment, crab creels and prawn trawls for use on the next cruise, was unloaded and stored at Stromness. Work started the following day, the entire programme was carried out in Scapa Flow.

On 23 May the dredging gear was unloaded and put in store, and the stored creels taken aboard. "Goldseeker" steamed to Kirkwall where she remained for the long weekend. The scientific staff and crew returned to Aberdeen on 24 May.

METHODS AND RESULTS:

1. The gears tested comprised a) Manx queen dredge b) 8ft beam trawl c) 4ft scallop dredge with 1 inch teeth d) 4ft scallop dredge with 2 inch teeth e) two 4ft scallop dredges towed from a bar and f) Queen otter trawl with 60ft groundrope (mesh size  $1\frac{1}{4}$  inch). The dredges had 18 teeth per bar, with a two inch spacing and a net of  $1\frac{1}{4}$  inch mesh.

A series of tests were performed using each of the various gears in turn, towing them over the same area of ground and in the same direction. With the exception of the queen trawl, all tows had a duration of fifteen minutes. The trawl was towed for thirty minutes. The speed of tow was also varied. The tests were carried out in two main series, one in an area north of Cava, and the second in an area north east of Flotta.

A total of 143 hauls were made, and 4108 Chlamys opercularis and 351 Pecten maximus caught.

The mean sizes of queens caught with the different gears are shown below:

Gear	Total no. hauls		Mean size of queens (mm)	
	N. Cava	NE Flotta	N. Cava	NE Flotta
Manx dredge	12	12	88.2	84.1
Beam trawl	9	12	88.5	86.1
Scallop dredge (1 in.)	6	16	88.1	86.5
" " (2 in.)	6	6	90.1	86.3
Dredges on bar (1 in. slow)	6	6	91.3	86.1
" " " (2 in. " )	6	6	90.2	88.3
Dredges on bar (1 in. fast)	6	8	89.3	86.6
" " " (2 in. " )	6	8	88.9	86.7
Otter trawl	2	-	89.5	-

The average number of queens caught per haul were:

Gear	N. Cava	NE Flotta
Manx dredge	15	36
Beam trawl	61	28
Scallop dredge (1 in.)	12	10
" " (2 in.)	12	16
Dredges on bar (1 in. slow)	32	7
" " " (2 in. " )	20	12
Dredges on bar (1 in. fast)	21	16
" " " (2 in. " )	21	12
Otter trawl	116	-

In the N. Cava area a series of hauls were made with the Manx dredge, and with the scallop dredges on a bar, in which the speed of tow was varied.

The results obtained are shown below:

Engine speed	Gear	Total no. of hauls	Mean size of queens (mm)	Av. no/haul
700 rpm	Manx dredge	4	90.2	41
750 "	" "	3	90.7	43
800 "	" "	3	90.9	30
700 "	Dredges on bar (1 in.)	2	90.0	18
700 "	" " " (2 in.)	2	90.5	18
750 "	" " " (1 in.)	2	92.2	8
750 "	" " " (2 in.)	2	89.8	12
800 "	" " " (1 in.)	2	88.4	14
800 "	" " " (2 in.)	2	88.7	17
Dredge position reversed				
700 rpm	Dredges on bar (2 in.)	2	93.5	7
700 "	" " " (1 in.)	2	89.3	15
750 "	" " " (2 in.)	2	89.5	13
750 "	" " " (1 in.)	2	92.2	24
800 "	" " " (2 in.)	2	89.0	21
800 "	" " " (1 in.)	2	88.7	41

The overall mean sizes of queens for the two areas were - N. Cava 90.0mm, NE Flotta 86.3mm.

A small number of hauls were carried out in two other areas. In Scapa Bay, using the beam trawl, one queen and 22 scallops were caught, and in an area south of Cava, using the 1" scallop dredge 21 queens and 5 scallops caught.

The by-catch consisted primarily of Modiolus, ascidians, echinoids and asteroids.

2. Different species of molluscs and echinoderms were collected from both shore and sea stations around Scapa Flow. They were deep frozen and brought back to the Laboratory for trace metal analysis.
3. The mean surface temperature during the cruise was 9.2°C (6 samples).

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28 August 1973