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IN CONFIDENCE: Not to be quoted without reference to the Laboratory

## CRUISE REPORT

## FRV "GOLDSEEKER"

9 March - 2 April 1971

19 April - 13 May 1971

## OBJECTIVES:

1. To study the state of scallop and queen stocks in the Firth of Clyde and Solway Firth.
2. To compare the efficiencies of scallop dredge, Manx queen dredge, beam trawl and otter trawl in catching scallops and queens.
3. To use diving techniques to study the operation of scallop and queen gear under varying conditions.
4. To take temperature readings and plankton hauls.
5. To undertake such trawling as is compatible with the other objectives.

## NARRATIVE:

"Goldseeker" was loaded at Troon on the 9 March. Thereafter weather was generally bad and winds between SW and NW restricted work during the first cruise to  $8\frac{1}{2}$  days on the Ayrshire coast. The scientific staff left "Goldseeker" at Ayr after work on the 27 March. "Goldseeker" left Ayr for Buckie on the 29 March in order to undergo decarbonisation, and arrived there on the 2 April.

On the second cruise dredging operations were resumed on 23 April in Lower Loch Fyne. Work continued until 4 May and covered the various grounds on the west side of the Clyde, and also some remaining on the east.

Diving operations started on 5 May, "Goldseeker" being based at Tarbert. Samples of scallops and queens were obtained for Torry Research Station staff who were carrying out microbiological investigations in their mobile laboratory also based at Tarbert. The cruise ended at Ardrishaig on 13 May.

## RESULTS

1. Dredging Survey

49 hauls were made in the first cruise, and 116 in the second, the latter including 33 made during the course of the diving operations. The total of 165 hauls was made up as follows: standard 4 ft dredge with 12 teeth - 122 hauls; dredge with 15 teeth and small mesh lining - 22 hauls; 8 ft beam trawl - 13 hauls; Manx dredge - 5; otter trawl for queens - 3 hauls.

Scallop results were generally better than in recent years, 10 to 20 scallops per 15 minute haul being frequently obtained.

Scallops with 7 and 8 growth rings predominated in most of the catches, especially at Inverneil, Clunaig, Inchmarnock and Lady Isle. Scallops with 3 and 4 rings, were the next most prominent groups, especially at Kilfinan, Pirnmill, Brown Head and the Ayrshire coast. When these younger scallops are fully recruited to the commercially catchable stock they should increase the landings materially.

Examples of age frequencies (%) are given below

Area	No. of rings										
	0	1	2	3	4	5	6	7	8	9 > 9	
Clunaig	-	3	4	6	2	2	14	<u>26</u>	<u>26</u>	7	9
Inverneil	-	-	-	-	2	2	1	<u>21</u>	<u>23</u>	17	34
Lady Isle	-	-	-	4	7	4	7	<u>41</u>	<u>23</u>	9	4
Pirnmill	-	-	-	<u>33</u>	<u>22</u>	7	4	4	-	7	22
Brown Head	-	-	-	<u>15</u>	<u>23</u>	4	11	16	1	1	28

Queens were nowhere caught in large numbers, but appreciable quantities were caught by the beam trawl and otter trawl modified for fishing on rough bottom, off Culzean and Pirnmill to Loch Ranza.

## 2. Fishing Comparisons

The comparative fishing experiments should have been undertaken on the first cruise, but the limited time available was spent largely on the stock survey. The few hauls carried out with gear other than the standard scallop dredge confirmed that this dredge is less efficient in catching queens than are the higher Manx queen dredge, beam and otter trawls owing to the avoiding action taken by queens on the gear's approach. The limited experience with the otter trawl with heavy ground rope and bobbins suggested that it is an efficient means of catching queens.

The Manx queen dredge caught very large boulders on rough ground and was difficult to haul.

## 3. Diving

Observations on the standard dredge confirmed earlier impressions that queens escaped over and round it. Little material passed through the bag other than sand and shell less than 1 cm. When fitted with a shrimp netting lining, the dredge filled completely within a few seconds on a gravel bottom.

The modified otter trawl, with a headline height of 20 ft, was effective in catching queens. Few passed under the footrope. With a codend mesh size of 75 mm, small unmarketable queens escaped through the meshes.

## 4. Hydrography and Plankton

Surface Temperature readings and oblique plankton hauls were taken in

each statistical area.

5. Trawling

Whilst trawling for queens, the by-catch consisted largely of small flatfish, chiefly flounders and dabs off Dunure and plaice off Inverneil.

J MASON  
J DRINKWATER  
21 July 1971