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## CRUISE REPORT

F.R.S. "Explorer"

Part I. October 29th - November 5th, 1968

### Objectives

Fish capture experiments and tagging experiments using detachable codends.

### Narrative

"Explorer" sailed at 0900 hours on October 30th and spent the following 24 hours experimenting with the flotation of the detachable codends and searching for a suitable fishing ground to carry out the experiment. A suitable ground was located on the morning of the 31st but by then the weather had deteriorated to a point at which fishing had to be discontinued. There was no improvement in weather during the day and in the evening "Explorer" went to the assistance of a fishing vessel, the "Coral Isle" that had broken down nearby and towed her into Aberdeen.

During the next few days there was no improvement in the weather, and this, added to the fact that a leak had developed in the boiler tubes, made further work during this part of the cruise impossible.

Part II. 6th - 23rd November, 1968.

### Objective

Trawling survey of the West Coast of Scotland.

The boiler tubes were repaired in time for "Explorer" to sail at 2.30 p.m. on the 6th November. No sooner had the vessel cleared the precincts of the harbour and commenced steaming at full speed when it became apparent that there was a defect in the main engine. "Explorer" reduced speed to allow the engineers to find out where the trouble lay, and it was at this slow speed that she began the search for the current meter buoys and drogues that the hydrographic section had previously set in position in a line S.E. of the Ythan. Two hours later a signal from "Scotia", which was also on the same exercise, told "Explorer" to call off her search. Thereupon a slow passage was made for Cromarty, where she anchored the following morning.

Here the engineers found and put right the fault which may have been a result of strain put on "Explorer" when she towed the "Coral Isle" into Aberdeen. Having checked that the trawl winch, which had also been used in the tow, had not sustained any damage, "Explorer" steamed through the Pentland Firth and resumed the trawling programme west of Orkney.

The weather from then till the end of the cruise on the 23rd November, was governed by one dominant feature, namely, a very stable area of high pressure centred over Scandinavia, and a series of "low's" that reached the continent at Cape Finisterre. This system maintained strong to gale force S.E. winds over the Minch and Outer Hebrides, and consequently many of the trawl positions west of Harris and on the edge of the shelf

could not be worked. The 24 trawls that were successfully completed covered positions round Rona and Sulisker in the north, in the Upper and Lower Minches, in the Clyde sea area, and in the Oceanic area over Stanton Bank and S.W. of Barra Head.

"Explorer" put into Campbeltown on the 20th November, to disburse fortnightly pay to the crew, and docked at Leith on the morning of the 23rd November, 1968.

### Hydrography

Most of the stations occupied were in coastal water where the salinity varied from 34.02 to 34.91‰; those stations in oceanic water had salinities ranging from 35.04 to 35.34‰. Temperatures showed nearly a 2° difference from 9.71°C in the north to 11.59°C in the lower Minch.

Fairly uniform nutrient values prevailed over the whole area with average values of 0.6 for phosphate, 5.0 for nitrate and 4.0 for silicate all expressed in µg - at P, N, Si, per litre. Only in the Clyde sea area were significantly higher values found - these being 1.0 for phosphate, 8.6 for nitrate and 8.9 for silicate.

### Zooplankton

With few exceptions Calanus and other copepods were poorly represented in the samples. The most abundant organisms taken were Sagitta elegans and Nyctiphanes couchii which occurred in fairly high numbers over most of the area surveyed, the latter in both furcilia and post-larval stages. Sagitta serratodentata was also widely distributed in small numbers and a few Sagitta setosa were sampled north of Ireland. Meganyctiphanes norvegica and Thysanoessa inermis occurred in small numbers at a few stations on the west coast.

Few coelenterates were taken with the exception of Muggiaea atlantica which was reasonably common at many of the stations. At the most southerly positions a few Pelagia noctiluca and Salpa fusiformis were sampled.

Multidepth indicator samples were taken at most stations for S.M.B.A., Edinburgh.

### Trawling

All the trawls of an hour's duration were made with a 48 ft Granton trawl of courlene, with rubber bobbins and a small mesh cover. Damage sustained by this gear was negligible. Catches varied from 1 to 60 baskets, the average being 12.

The sea area to the north of the Butt of Lewis and Cape Wrath, and the upper half of the North Minch, yielded the best catches of roundfish of all kinds. Haddock, whiting, cod, hake, ling, saith and T. esmarkii were the principal species recorded. One haul 15 miles north of Cape Wrath held 324 "jumbo" haddocks from 40-67 cm, while 5 other trawls averaged 900 recruit size haddock from 19-33 cm. Except in the Clyde, where no haddock were taken in the two trawls completed there, small numbers of this species occurred in all the trawls.

Although in general these northern grounds gave good catches of whiting in most of the trawls, the best catch of 1903 individuals (10-39 cm) came from one haul off the Ayrshire coast in the Clyde. From the northern grounds however, the majority of the whiting taken were of a larger size range from 23-55 cm. It proved quite impossible to obtain lively whiting from any of the trawls for tagging.

From one catch just inside the upper Minch 120 cod from 51-102 cm were taken. In smaller numbers (from 5 to 18) this species occurred in all other trawls from this area, and were represented sometimes by a single fish in most of the trawls from the remaining areas. Nine cod from the 120 were tagged.

This same trawl which held 120 cod also took 68 ling from 72-129 cm, the only occasion when ling in any quantity was recorded.

Two trawls in the upper half of the North Minch which yielded 39 saithe (58-85 cm) and two in Clyde Sea where 130 individuals of a smaller size range (39-59 cm) were taken, proved to be the only areas where this species occurred.

Of the industrial species T. esmarkii were taken in large numbers in trawls in northern waters, the best being one of 11,616 fish from 14-20 cm, while trawls made on Stanton Bank and S.W. of Barra Head yielded the only catches of M. poutassou worth noting the best being one of 254 fish from 16-30 cm.

Dog-fish were present in small numbers in hauls from all areas, but comprised the bulk of the catch of two trawls in the lower Minch just south of Skye. Here 1031 Squalus acanthus (33-84 cm) plus smaller numbers of Scyliorhinus caniculus and Pristiurus sp. were taken.

Among the flatfish taken in very small numbers in most of the trawls were plaice, lemon sole, common and long rough dabs, and skate (R. clavata, R. batis, R. naevus and R. brachyura). One catch of 25 megrim (22-50 cm) from a trawl in oceanic water south of Barra Head is worthy of note.

Two tope of 150 cm, a conger eel of 120 cm and one Solea variegata were among the less usual species taken in the trawls.

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