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CRUISE REPORT

FRV EXPLORER

November 14 - December 5 1978

Objectives

To carry out a Moray Firth, north and west coast of Scotland pre-recruit demersal fish survey.

Narrative

EXPLORER sailed from Aberdeen at 1230 hours on the 14 November. Gale force winds delayed the passage for a short time, off Kinnaird Head, and prevented a passage through the Pentland Firth. The south westerly winds allowed three stations to be worked in the Moray Firth on the 15 November. Weather conditions restricted further work and EXPLORER sheltered off Helmsdale on the night of the 15. The following day one station was completed and with little sign of improvement in the weather, the opportunity was taken to survey and trawl in the area of the aluminium smelter dumping ground. A passage was finally made through the Pentland Firth on the 16/17 November and EXPLORER proceeded to the Inner Hebrides area. Gale force winds again interrupted operations and work did not commence until the morning of the 18 November. Stations were completed in the Inner Hebrides, South Minch, South of 56°N and Firth of Clyde areas before bad weather again brought work to a halt. On the night of the 20 November EXPLORER sheltered in Red Bay (Northern Ireland) and the following day a passage was made to the station off Tory Island in the hope that the weather conditions would improve. Weather conditions in fact worsened and with no possibility of work EXPLORER dodged to the South Minch area. Two stations were completed on the 23 November and with all stations now being completed in this area two additional hauls were made for dogfish off the Shiant Islands prior to the mid-cruise break at Stornoway on the 24/25 November. On leaving Stornoway EXPLORER made a passage, for the South of 56°N area, and work commenced on the 26 November. In good weather conditions work proceeded without interruption for three days. On the 28 November while working in the St Kilda area, the opportunity was taken to make two hauls in deep water for the crab Geryon affinis. Weather conditions deteriorated rapidly on the afternoon of the 28 and EXPLORER dodged towards Loch Rogue for shelter. On leaving Loch Rogue on the morning of the 30 November the remaining stations in the Outer Hebrides area were completed. The Butt of Lewis and Solan areas were worked on the 1 and 2 December before gales interrupted trawling. A break in the weather on the 3 December enabled the remaining stations in these areas to be worked. EXPLORER made a passage for the Moray Firth to complete the remaining station in that area. Weather conditions on the 4 December were atrocious and with no possibility of further work the programme was abandoned and EXPLORER steamed for Aberdeen docking at 0330 hours on the 5 December.

Trawling

42 trawl hauls were completed using a 48' Aberdeen trawl with a small mesh cover. The trawl hauls undertaken consisted of 37 survey stations, 2 hauls for spurdogs, 2 hauls for the crab Geryon affinis and 1 haul for pollution samples. The duration of each haul was one hour with the exception of the spurdog hauls and one survey position, which were of half-hour's duration.

The mean cod-end mesh size was 69.38.

2413 otoliths, taken from cod, haddock, saithe and whiting during the cruise, were read at sea. The age composition of haddock and whiting by sampling area is shown in tables 1a and 1b. The numbers of cod and saithe caught throughout the cruise were very small and all sampling areas were combined to give a north and west coast of Scotland age composition - see Table 2.

Throughout the survey, data on the biology of the spurdog, Squalus acanthias were collected. Large catches were taken in the North and South Minch areas but hauls in other areas contained few individuals. Length data were collected separately for males and females, the length range for males being 24 - 88 cm and for females 23 - 101 cm. Comprehensive samples of second dorsal spines were collected, by sex, for age determination. With weather restricting work outside the Minches the opportunity was taken to make additional hauls off the Shiant Islands. The hauls made in 100 fm and 30 - 40 fm were to study the general biology of spurdogs in relation to depth. A total of 803 spurdog stomachs were examined and the contents identified and recorded. 249 spurdogs were tagged and in addition 83 Scyliorhinus caniculus were tagged. All specimens were released within the Minches.

Herring were caught in three areas on the west coast of Scotland - Butt of Lewis 46E4 (23 fish), Outer Hebrides 42E1 (21 fish) and 43E1 (120 fish) and South of 56°N 40E1 (244 fish). In addition the Moray Firth stations which are a traditional part of this cruise produced catches of 184 herring from 44E7 and 308 from 44E6. The extra station on Guillam Bank (44E6) for pollution samples also contained 266 herring. Samples of herring from all the above areas were deep frozen for analysis at the Laboratory.

Of the industrial species Norway pout (T. esmarkii) were present in the majority of hauls. The largest numbers were taken at 44E1 (4507 fish), 42E2 (4483 fish) and 45E1 (2377 and 2078 fish). Blue Whiting (M. poutassou) were taken in very few hauls. However, three hauls produced catches of 3489 fish (45E0), 693 fish (44E0) and 567 fish (45E1). Silver smelt (Argentina silus) were also taken in very few hauls but catches of 1606 fish and 1314 fish were made in statistical rectangles 45E0 and 44E0 respectively.

Catches of all other species tended to be low but the occasional haul did produce large numbers eg gurnards (mainly grey) 2304 fish from 43E1 and 1081 fish from 45E2, Caranx 531 fish from 43E3 and Gadidulus 953 fish from 44E0.

Fish recorded occasionally on trawling surveys were the anchovy, the red band fish, the tope and the large spottish dogfish Scyliorhinus stellaris. The last species was a magnificent specimen about 3 ft in length and was kept for the aquarium.

Two hauls were made for the crab Geryon affinis. For these hauls the footrope was replaced with a ground rope. The hauls were made in depths of 130 - 165 fm. Unfortunately the recommended depth could not be achieved due to insufficient warp. No specimens of this crab were taken.

At the request of the Institute of Terrestrial Ecology, Banchory, specimens of different species encountered were preserved. In all 46 different species were deep frozen.

Pollution

Adverse weather conditions forced EXPLORER to shelter in the inner Moray Firth and the opportunity was taken to make a haul over the dumping ground for the British Aluminium smelter sludge. The net was shot in the position RED H22.7, GREEN A39.0 and PURPLE A63.5 and hauled in the position RED I5.1, GREEN A39.0 and PURPLE A70.6.

Specimens of the major fish species and of various benthic animals were preserved. 10 species of epibenthic animals were examined at the laboratory for the presence of sludge residues. Only the swimming crab (Macropipus depurator) showed obvious accumulations in the gill tissues. The gill colour varied from pink to very dark but all specimens were alive on capture and showed no abnormalities. Nearly all animals showed traces of the black deposit. Dead shells of Cyprena sp, Cardium sp, Pecten sp and others were taken but there was no indication that the sludge caused these mortalities. A wide variety of different fish species were examined and none showed visible accumulations of sludge particles and no dead fish were taken. However, a more detailed examination of selected tissue is being undertaken.

General

At station 27 (SW of Stanton Bank) four French trawlers with the port registration of CONCARNEAU were fishing close by. The catch composition for the one hour trawl at station 27 for the major species was cod 6 fish, haddock 100 fish, whiting 535 fish and herring 244 fish.

Only one siting of cetaceans was made throughout the cruise. Approximately 7 - 12 porpoises were sited 12 miles east of the Flannan Islands.

A S JERMYN
28 December 1978

Seen in draft J W Gillon

Table 1a)

Estimated numbers of haddock caught per 10 hours fishing by sampling area

*Area Age	Solan	Butt of Lewis	Inner Hebrides	South Minch	South of 56°N	Firth of Clyde	Outer Hebrides
0	6493	392	135	175	5	-	65
1	3880	580	70	78	585	-	800
2	180	80	-	2	-	-	47
3	13	-	-	2	-	-	46
4	1790	1150	30	20	5	-	674
5	30	56	2	-	-	-	46
6	20	2	-	-	-	-	10
7	33	2	-	-	-	-	3
8	3	2	-	-	-	-	14
9	-	-	-	-	5	-	-
10 & older	-	-	-	-	-	-	35
Total	12442	2264	237	277	600	-	1740

* See attached chart for areas

Table 1b)

Estimated numbers of whiting caught per 10 hours fishing by sampling area

Area Age	Solan	Butt of Lewis	Inner Hebrides	South Minch	South of 56°N	Firth of Clyde	Outer Hebrides
0	83	6	688	690	40	8885	6
1	4170	720	2655	2788	2785	855	233
2	157	572	505	1658	1115	95	761
3	30	82	145	128	145	10	89
4	33	124	68	520	150	-	576
5	-	12	8	88	5	-	66
6	-	12	8	52	-	-	58
7 & older	-	-	-	-	-	-	-
Total	4473	1528	4077	5924	4240	9845	1789

Table 2

Estimated numbers of cod and saithe caught per 10 hours fishing on the north and west coasts of Scotland

Species Age	Cod	Saithe
0	-	-
1	3	1
2	14	4
3	9	6
4	5	4
5	2	2
6	1	1
7	1	1
8	-	+
9	-	-
10 & older	1	-
Total	36	19



