

CRUISE REPORT

FRS "SCOTIA"

June 26 - July 22 1969

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OBJECTIVE

To locate and sample concentrations of 0-group cod, haddock and whiting during the stage in their development when they can no longer be taken by plankton sampling gear but are not yet caught by small-meshed demersal trawls.

GENERAL

"Scotia" left Aberdeen on the morning of June 27 and spent the first day working in the near vicinity, in order that Mr Corrigan could familiarise the crew with the method of rigging and handling the pelagic trawl. On the same evening Mr Corrigan was taken back into Aberdeen by the pilot cutter and "Scotia" steamed to position 59°30'N, 01°00'E. The next ten days were spent working in an area enclosed by Lats. 59°30'N and 58°30'N and Longs. 01°15'E and 02°25'W. July 8 and 9 were spent in Kirkwall, where water supplies were replenished and various crew members replaced. After leaving Kirkwall, "Scotia" worked along Lat. 60°00'N from Long. 00°36'W to 02°00'E. The ship then worked down towards 58°15'N, 02°30'E reaching this position on July 16. On July 17 she proceeded towards Kinnaird Head and extra stores were bought at Peterhead on the morning of July 18. The remainder of the work was carried out at a number of stations across the mouth of the Moray Firth. "Scotia" docked at Aberdeen at 1700 hrs on July 20.

GEAR USED

Initially a small number of hauls were made with the Gulf III but since no fish of the required sizes were caught it was not used subsequently during the survey. The Isaacs-Kidd trawl was used on thirteen occasions and caught small numbers of young gadoids, but serious clogging of the meshes (60 mesh plankton silk) by medusae and ctenophores was experienced at most stations. The bulk of the fishing was therefore done with a pelagic trawl fitted with a codend of $\frac{1}{2}$ " mesh size. This net worked satisfactorily and 89 hauls were made with it, the Netzonde being used on 62 occasions. In general pelagic trawl hauls were of one hours duration although at times tows of from 30 minutes to 2 hours were made. The Netzonde records indicate a tendency for the trawl to undergo slow vertical oscillations amounting to several fathoms during the course of a tow under constant towing conditions.

FISHING RESULTS

One of the intentions had been to seek out dense pelagic scattering layers and to fish them in order to determine whether they represented concentrations of young fish. Scattering layers tended to be rather weak over most of the area surveyed during the cruise and often, even when they were quite strong, catches of fish were poor. There were some exceptions to this, however. Productive scattering layers were found along Lat. 60°00'N, to the east of the Greenwich meridian. In this area two days were spent trawling within a circle of 5 miles diameter. It was found that fairly dense 'spotty' pelagic layer traces built up during the hours of darkness

and dispersed as daylight came in. It was in this area that the largest catches of 0+ haddock were made and there was a sufficiently marked diurnal variation in the catches of haddock to suggest that the 'spotty' trace was made up mainly of this species. Along longitude 02°30'E several very dense layer traces were also located, again at night, but here catches were small except in one haul when 12 baskets of Trisopterus esmarkii (4-7cm) were taken in one hour. This haul was the only occasion on which the Netzonde records showed a large continuous trace in the mouth of the trawl.

The fish caught fell into two groups: 0 group fish, which were the main objective of the cruise, and older fish:

a) 0 group fish (1969 year class)

Haddock were only caught in small numbers at stations to the south of latitude 60°00'N but larger catches were taken along this latitude. The largest catch, 1781 haddock, 6-13cm in length, was taken at 60°03'N, 00°05'E. The average size of the haddock decreased from west to east along latitude 60°00'N.

Cod of from 4 to 10cm were taken in small numbers at almost all stations in the area surveyed. The largest catch (102 individuals) was made at position 59°11'N, 02°30'E.

Whiting were only caught in very small numbers until the last few days of the cruise when up to 112 fish (2-6cm) were caught at stations in the outer reaches of the Moray Firth.

Trisopterus esmarkii were caught in quite large quantities at a number of localities, particularly near Fair Isle, along latitude 60°00'N and at position 58°18'N, 02°30'E, where the catch of 12 baskets was made on 16th July.

Small clupeoids, mostly sprats, were taken in appreciable numbers at some stations, particularly off the coast of Orkney and in the mouth of the Moray Firth. The largest haul was made on July 19th at position 57°51½'N, 01°48½'W, where 267 sprats (2.7-4.6cm) and 56 herring (4.2-4.9cm) were caught.

Young flatfish were caught in almost every haul. They were almost entirely of the three species witch, lemon sole and long rough dab.

b) Older fish

Only three species of older fish were taken in significant numbers. These were sandeels, haddock and Squalus acanthias. Sandeels were caught in all areas sampled in numbers up to 50,000 fish per hour. They were in general rather small specimens, most being between 6 and 12cm long.

Haddock were similarly rather widely distributed. The largest catch consisted of 385 fish (18-32cm) taken 40 fathoms above the sea bed at position 59°06'N, 00°56'E on July 3. Stomachs of haddock taken in midwater were found to contain chiefly sandeels and T. esmarkii.

Squalus acanthias were taken regularly in small numbers everywhere except in the Moray Firth.

Adult herring and sprats were not caught in large numbers in any region although a haul very close to the bottom in shallow water in the Moray Firth produced 744 herring and 162 sprats.

Plankton sampling: Plankton Indicator hauls were made during the cruise for the SMBA Laboratory, Edinburgh.

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10 September 1969