

CRUISE REPORT

F.R.S. "SCOTIA"

27th June - 16th July, 1968

Narrative

The scientific gear etc. was loaded on to 'Scotia' during Thursday 27th June and the ship sailed at 1400 hrs B.S.T. the following day. The ship proceeded directly to the hydrographic buoy moored off Peterhead and during the period 1830 to 1915 monitored the buoy for its characteristic signal. Everything appeared to be in order when 'Scotia' left to occupy the first station of the routine survey later that evening. During the next day, 29th June, all but one of the eight stations in the Moray Firth were completed before the ship proceeded overnight to the stations off the north coast. Apart from a slight delay, due to a request from Establishment for a transfer of a member of the 'Scotia' crew, work proceeded as planned until 2200 hrs on 2nd July when 'Scotia' was forced to dodge when in the area north-east of the Moray Firth.

By 0430 hrs on 3rd July the weather had improved enough for 'Scotia' to proceed to the next sampling position which was commenced at 0645 hrs. However by 1500 hrs weather conditions again forced the ship to dodge; 24 hours had passed and 'Scotia' had dodged northwards before being able to proceed to the Muckle Flugga area. There a grab sample was obtained at 60°57'N 01°00'W and environmental sampling carried out at 61°01'N 00°35'W. One further station south east of Lerwick was occupied before 'Scotia' docked at Lerwick at 1310 hrs on Friday 5th July to take on water. She sailed at 1115 hrs the following day.

Having recommenced the survey at 1520 hrs on the 6th, work proceeded as planned until 1245 on the 7th when a heavy head sea and swell again forced work to cease. It was 0330 hrs on the 9th before the weather improved enough for work to begin again and 13 stations were occupied before 1030 hrs on the 11th when the ship was on the western edge of the Norwegian Deep at about 59°15'N and work had again to stop. By 0645 hrs on the 12th, the weather had moderated enough for 'Scotia' to proceed at full speed to the next station. However after 63 hours the weather conditions again became adverse and variable weather conditions persisted for the following 48 hours, although a further four stations were completed.

Before 'Scotia' had sailed from Aberdeen it was decided that the personnel of the main part of the cruise should also complete the buoy work planned for the 16th - 17th July. 'Scotia' arrived in the vicinity of the buoy at 1030 hrs on the 16th, and although sea conditions were bad at the time they improved enough for the buoy to be lifted in the early afternoon.

'Scotia' then proceeded to Aberdeen where she docked at 1900 hrs.

Results:

Hydrography

Hydrographic observations during the cruise were restricted to surface temperature as recorded by the continuously recording thermograph. These records showed the highest temperatures - 14.3 to 14.5°C - to be in the region of 58°00'N 05°00'E. Extending northwards from this region (to about 60°N) was a tongue of water with temperatures exceeding 13°C, this in turn being surrounded with water of greater than 12°C as far northwards as the survey extended and west to about 3°30'E, north of 59°N, and 1°30'W, south of that latitude.

Water with temperatures greater than 12°C were also recorded north west of the north Scottish coast, north west of Shetland and over most of the area between 59°N and 61°N and 00°30'W and 02°30'E. West and south-west of this latter area temperatures ranged from 10.8° to 11.9°C.

Plankton and Productivity

Apart from a small area, about 60° 45'N 3°10'W, all chlorophyll a values greater than 1mg/m³ were confined to the western part of the area surveyed. East of Shetland values ranged from 1.8 to 2.0 while east of Orkney and north east of the Moray Firth values ranged from 2.5 to 4.3mg/m³. These results were in marked contrast to the conditions during July 1966 when all values greater than 1mg/m³ were confined to the Norwegian Deeps (where values reached 2.9mg/m³), the Moray Firth (where values reached 2.4mg/m³) and a small area near Fair Isle.

Zooplankton samples were obtained with the Gulf III high speed sampler, the W.P.2. net and 1m26 mesh nets. Rough estimations of the settled volumes per 100m³ for samples obtained with the Gulf III showed a fairly high standing crop to be present over a large part of the survey area apart from two areas (i) east of Orkney and Shetland and (ii) the Norwegian Deeps.

The two most remarkable features observed in the sampling with the 1m26 mesh nets were the presence of Pelagia noctiluca in the Fair Isle area and the large numbers of Cladocera in the south west of the survey area.

Special hauls were made with the W.P.3 and the 1m26 net for a comparison of their catches.

The multi-depth plankton indicator was used at all stations for the S.M.B.A. and at selected stations special samples for biomass determinations were obtained.

Trawling

A Vinge Trawl with a small mesh cod-end was used for sampling the fish stocks at 26 stations. Hauls were of 1 hour duration with one exception, and a fair coverage of the survey area was obtained.

The highest haddock catches - >3,000 fish per haul - were obtained mainly in the area from the outer Moray Firth to Shetland. The highest whiting catches (100-897 fish per haul) were from the same general area, and confined to the area west of 0° - as were the highest haddock catches with the exception of one haul.

Although high catches of Trisopterus esmarkii (>1,000 per haul) were obtained over a wide area between approximately 01°30'W and 1°00'E, the highest catches (>10,000 per haul) were in the area east of 0° and from 58° to 59°45'N. Small numbers of blue whiting (2 to 36) were caught at three stations north of 59°30'N while argentines were more widely distributed at numbers of 2 to 114 per haul.

Cod were caught in most hauls, but in low numbers, the average catch being just over 5 per 1 hour haul.

Nephrops were caught at eight stations, six of which were in the area from the inner Moray Firth to C15. The highest catch of 365 per haul was obtained from the latter statistical square.

The six highest herring catches of 30 to 108 per haul were obtained between 57°30'N and 59°15'N and 00°30'E and 02°30'W

Roundfish stomachs were collected and records of the incidence of cod worm in the flesh of cod kept. Samples of T. esmarkii and Raia radiata were obtained for various research projects and deep frozen samples of T. esmarkii, argentines and blue whiting were brought

back for Torry Research Station together with some deep frozen euphausiids.

General

A grab sample was obtained for Dr. Flinn of the University of Liverpool.

The echo-sounder records showed traces of pelagic fish over most of the area surveyed with the exception of the Norwegian Deep, the Fladen and off the North Coast.

J.A. ADAMS

11th October, 1968