

IN CONFIDENCE: NOT TO BE QUOTED WITHOUT REFERENCE TO THE LABORATORY

CRUISE REPORT

FRS "EXPLORER"

17th June - 4th July 1970

- OBJECTIVES
1. Faroe-Shetland hydrographic lines
 2. Faroe fish-environmental survey.

NARRATIVE

Explorer left Aberdeen on the 17th June and arrived off the Butt of Lewis in the early hours of the 18th and commenced the hydrographic section of 12 stations to Faroe Bank. This was completed on the 19th and the trawling programme begun immediately. With only a short break at Klaksvik, and no adverse weather to hinder operations, this part of the programme was completed in 10 days. After a two-day break in Thorshavn the Nolso-Flugga hydrographic line of 12 stations was commenced in worsening weather. This was completed in 30 hours and Explorer was able to dock in Aberdeen on the 4th July 1970.

RESULTS

Hydrography Surface temperatures on the hydrographic lines varied from 12.80°C in oceanic water on the Atlantic side of the Wyville-Thomson ridge to 10.90°C over the deep water just S.E. of Sando Bank; salinities at these two positions were 35.43‰ and 35.22‰ respectively.

On the Faroe shelf proper (including Faroe Bank) the range of surface temperatures and Salinity was 11.08°C and 35.27‰ over Faroe Bank and 8.54°C and 35.22‰ at a position 8 miles north of Vaago.

An annotated record of surface temperature and salinity was made using the Salinograph, on route from Aberdeen to Faroe Bank and again from Nolso to Flugga and back to Aberdeen. The record shows many micro-changes of T-S that are worthy of further study.

Samples for nutrient estimation taken on the hydrographic lines showed that below the euphotic zone in oceanic water, phosphate, nitrate and silicate values averaged 0.90, 12.00 and 6.50 ug-at P, N and Si per litre respectively, and that these values increased to 1.02, 14.00 and 11.50 in water of Arctic origin.

Plankton In the samples taken during the greater part of the cruise Salpa fusiformis was the dominant species. So great was the catch of this organism on the Butt of Lewis line, that on two occasions wp 3 nets were simply sheered away by the mere weight in the nets. Only in deep water was such density observed. Towards the Faroes and especially to the east of the islands, the density of this organism was greatly reduced.

Calanus finmarchicus was present in the greatest numbers along the northern edge of the Faroe-Shetland channel.

Euphausiid furcilia were taken in most collections south of latitude 62°N, the greatest density being found north of Shetland.

During the ten days devoted to trawling, a few shallow net hauls were made to catch Calanus for Mr Garcia Braun to undertake feeding experiments of this copepod, in which carbon 14 and chlorophyll were used as parameters of growth. The experiments were very successful.

Trawling With only slight hitches the entire programme of 41 one-hour hauls distributed over Faroe Bank and the shelf were fully accomplished. Catches varied from $\frac{1}{2}$ to 30 baskets, and species-wise there was also considerable variation. Round fish represented by haddock, saithe and cod were predominant in the catches while lemon sole was the most numerous of the "flats". Prominent in the small mesh catches were T. esmarkii small haddock and Sebastes. In general, hauls within the limits (12-mile) gave greater yields than those outside.

Haddock The best catches of large haddock were taken in trawls between the 12 and 6 mile limits, distributed over the north of the islands and in West Bay. From one group of 3 trawls just north of Stromo more than half the number (419 individuals) were in this size range. The best areas for recruit-size haddock (small mesh catches) were West Bay, Faroe Bank and Sando Bank. In West Bay two distinct year classes 14-20 cm and 21-32 cm were apparent in the catches. On Faroe Bank the smaller year class (13-19 cm) predominated while on Sando Bank nearly all fish in the small mesh were in the range 19-33 cm.

Whiting Only from two areas, West Bay and Fuglo Corner were whiting taken in any quantity, both areas being within the 12 mile limit. In West Bay 322 fish from 33-62 cm were recorded, while from Fuglo Corner 215 fish of a slightly larger size 35-69 cm were taken. Of small whiting the records show only 6 fish in the size range 19-23 cm captured in West Bay.

Saithe West Bay proved to be the only area in Faroe that had no saithe in the catches. This ubiquitous fish, all in the large size bracket 40-112 cm, was caught in small or large numbers in most trawls, the most prolific area being Sando Bank where 1249 fish from 40-95 cm were taken in the 5 trawls made there.

Cod Cod ranging in size from 30-115 cm was another species that occurred in most of the trawls. An aggregate of 433 fish (35-90 cm) were taken in two trawls off Fuglo Corner, and 129 (32-83 cm) in one trawl 8 miles north of Stromo. A proportion from each catch was examined for worm infestation in the flesh.

Lemon Sole proved to be the most common flat fish taken in the hauls. Except for Faroe Bank and Sando Bank it occurred in small numbers in most other trawls, but the area within the limits, north of the islands and between 7°W latitude and Fuglo Corner yielded the best catches. Two representative catches from here were 144 and 122 fish in the size range 22-45 cm.

Plaice was taken in one's and two's in a few positions in the north. In two neighbouring trawls off Fuglo Corner an aggregate of 86 fish (34-75 cm) were recorded.

Halibut The records show that 27 halibut (32-62 cm) were taken in West Bay, 22 (30-50 cm) off Fuglo and in one's and two's in a few other places.

Skate was represented in the trawls by 4 specimens of R. batis (70-89 cm) off Fuglo and 2 of R. olavata (26-33 cm) from the S.W. of Sydero.

T. esmarkii. Of the industrial species T. esmarkii occurred in most of the trawls, averaging 530 individuals per haul. The best areas were Sando Bank where 2015 fish (10-19 cm) were caught in one haul, off Nolso 2119 fish (11-19 cm) and West Bay 1410 (11-16 cm).

M. poutassou was poorly represented in the hauls, the two best catches being 141 (27-39 cm) from Fuglo Corner and 110 (24-33 cm) S.W. of Sydero.

Argentine were taken principally in trawls in West Bay, Fuglo Corner and Faroe Bank, the aggregate from 16 trawls being 1212 fish (21-28 cm). All specimens were frozen and brought back to the laboratory for further study.

Sebastes of a uniform size range 16-27 cm, often made up the bulk of the catch in the small mesh. The best hauls came from positions outside the 12 mile limit north of Enniberg (where 1464 were taken), West Bay and Sando Bank.

Other species, taken in very small numbers, were gurnard, ling, oat-fish, megrim, angler, torsk, common ^{and} long rough dabs.

R B BURNS.