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R V ERNEST HOLT

Report of Cruise 7/1969

Staff:	D J Garrod	Duration:	1-24 July 1969
	J F K Harris		
	N Pearson		
	T Watson		
	D Peek		
	L Emerson		

Aims

1. To echo survey fishing grounds north of Iceland
2. To assess the possibility of carrying out surveys of 0-group fish in the pelagic scattering layer.
3. To collect cod blood samples for Dr Jamieson from East Greenland and for Hamilton Dock from Icelandic waters.
4. To collect live specimens of Anarhichas spp and Sebastes spp for Dr Purdom.

Narrative

R V ERNEST HOLT sailed from Grimsby at 0730 hours 1 July 1969. The Humber gear transducer for use on the survey was calibrated in calm conditions off the northeast coast that afternoon and the results relayed to the laboratory for computer processing before proceeding. Weather conditions deteriorated north of Pentland Firth and we sought temporary shelter in Fugle Fjord (Faroes) on 3 July to complete assembly of the electronic gear before commencing fishing off southeast Iceland at 0800 hrs on 5 July. We fished this area along with a number of other trawlers (including one Japanese) in order to calibrate echo sounder records against trawl catches before commencing the survey proper. This revealed problems with the echo integrator unit and on 6 July we sought shelter from heavy swell to attempt modification. This was later found to have been unsuccessful.

The survey was commenced on Glettiganes Bank on 8 July and continued with periodic trawling and selected bathythermograph sections, reaching Skagagrunn on 10 July. There we located a high concentration of cod and fished the locality continuously for 24 hours, carrying out further echo-level/catch calibration. The survey was then extended north and west along the edge of the continental shelf to 250 fathoms, until we encountered drift-ice at 67° 09'N, 24° 10'W. We nudged through and along this edge south westerly to deep water off Isafjord Gully and then turned in to Isafjord for bunkering.

R V ERNEST HOLT left Isafjord at 1800 hours on 14 July and sailed directly to Anton Dohrn Bank. The echo survey was ineffective here owing to the depth of water but we were able to collect blood samples before being forced off the bank by drift ice. In view of the ice conditions and the time available no attempt was made to reach Ost Bank further north. We then returned to resume the survey at Iceland and, apart from a short delay for adverse weather on

16/17 July the survey was completed uneventfully. We left the fishing grounds at 1200 hours on Monday 21, docking at Grimsby at 1245 hours on Thursday 24 July. Selected ship meteorological observations were made at synoptic hours during the cruise.

Results

1. This survey had two main purposes, first to investigate the distribution of cod on the continental shelf north of Iceland in areas and depths not normally fished by the English fleet, and second, to progress development of quantitative echo-sounding. In a sense this second aim was a failure because of shortcomings in the electronic apparatus: the integrator, ultra-violet oscilloscope and 100 kHz sounder did not function so the survey was confined to use of the cycle counters giving estimates of the number of targets in the bottom 4 fathoms. Despite the failure of some components the testing indicated future requirements which will be reported elsewhere. The survey itself therefore lacks precision but sufficient information was collected to establish the existence of cod in deep water (down to 250 fathoms).

2. The general features of the survey were as follows:

a. There were very few fish at any depth in an area north of 65° N and east of 17° 40' W (Grimsey). Bathythermograph sections indicated bottom water temperatures of approximately 2°C or less, covering the area.

b. There were scattered concentrations of fish both on and off the fishing banks from Grimsey westward, the largest concentrations being in 125 fathoms east of Skagagrunn, 60 fathoms in the vicinity of Horn Bank and 80 fathoms north of Vikurall.

c. None of these concentrations was extensive (c. 2-3 miles) and a much finer survey grid would be necessary to permit any overall assessment of stock abundance.

d. The concentrations of fish were not obviously more numerous within the Icelandic fishery limit.

e. In areas not normally fished by English trawlers:

i. cod were caught on Snella lines on Merinklint and were sufficiently dense for fish to be foul hooked as the lines dragged. A number of Faroe liners were working this and adjacent areas.

ii. the echo sounder and Engels trawl showed a concentration of codling in midwater over 200 fathom bottom well outside the 100 fathom line north of Skranda flak.

iii. an East German fleet (5 boats) was fishing for Greenland halibut and catching a small proportion of cod on the shelf edge some 70 miles north of Grimsey.

iv. very high counts were recorded in deep water just beyond the north-west banks along a north-eastward projection of the Hindenburg line. Trawl samples contained cod, coalfish and redfish.

v. cod caught at deep water stations off the banks had a mean length of c. 70 cm. Cod caught in the vicinity of the banks, and within the fishery limit contained a higher proportion of codling and had a mean length 50-60 cm.

These observations, together with the echo counts relative to the barren area to the northeast of Iceland indicate cod widely dispersed over the continental shelf, beyond the traditional grounds of the English fleet, though not in fishable concentrations comparable to those found on the banks.

Haddock were conspicuous by their absence everywhere: during the survey proper catches totalled $\frac{1}{2}$ basket caught within the fishery limit at Grimsey.

3. The cycle counter gave a clear indication of the presence of fish but the comparison of counts and trawl catches shows complications in interpretation. Taken as a whole for the entire survey there is no meaningful relation between the two but, during the period of intensive fishing at Skagagrunn, a series of consecutive hauls where catches ranged from 10-90 baskets/hour, gave a good correlation whilst the composition of the catch remained stable and before fishing fell off. The catch rates fell away at a time when the paper record showed cod lifting off the seabed. However, the level of counts remained unchanged. If the correlation observed earlier in the series is real then the discrepancy which developed as the cod lifted may reflect a change in the escapement of fish in the path of the trawl. Elsewhere relatively high counts were recorded when catches contained coalfish even though catches were low. This too could reflect escapement if coalfish is more mobile than cod. The impression is that count/catch correlation may vary with species composition and degree of activity of the fish: taken in isolation the count would not give a good indication of catch rate, except for a limited period.

4. A pelagic scattering layer was detected extending throughout the area of relatively warm water west of Grimsey. The Boothbay net caught 0-group redfish (very many), capelin, long rough dabs, a few cod and occasional lumpsuckers. This biological stratum appears to be analogous to that sampled in the Barents Sea 0-group surveys.

5. Samples of blood and fish were collected as required and additional samples of plaice catches from inshore grounds on the east coast were frozen for Mr Bannister.

D J Garrod

Seen in draft: E A B
G W A

Initialled: D H Cushing

Distribution:

list, plus the following:

Mr Garrod
Mr Harris
Mr Pearson
Mr Watson
Mr Peek
Mr Emerson