R. V. ERNEST HOLT

Report of Cruise 9/1967

Staff: A. R. Margetts
B. C. Mumford
A. Corrigall) D.A.F.S.
W. Leys) 6-10 Nov.
D. Cattanach)
T. Williams)
S. R. Jones) 10 Nov. -
M. Easey) 7 Dec.
J. Tipple)

Aims

By comparative fishing with R. V. EXPLORER:

1. to compare the catches of the most recent form of the Saro trawl with those of a Granton trawl when both are rigged with 60 fm bridles;

2. to investigate further an apparent gear/ship inter-action which has complicated previous comparative fishing results.

Narrative

ERNEST HOLT left Grimsby at 1930 hrs G.M.T., November 6th, made instrument measurements of the Granton and Saro trawls under just workable conditions at Fladen ground, and reached Aberdeen at 1300 hrs on November 10th. There staff were changed, adjustments to gears were made to achieve identical rigs on both EXPLORER and ERNEST HOLT, and final details of experimental procedure were agreed upon. Both ships left Aberdeen at 0930 hrs, November 12th, after a delay because of unfavourable weather.

Tromsø was reached at 2330 hrs, November 15th, and left 1300 hrs, November 16th. Fishing commenced next day on Helnes Bank and, catches being satisfactory, were continued there for the entire working part of the cruise until 29th November. ERNEST HOLT had to break off for four hours in nearby Honningsvaag on November 18th for repair of a steam pipe. Although conditions for the earlier fishing were mostly very good, bad weather stopped work on five occasions in all, the longest period being of about one and a half days near the end of the fishing period. In all each ship made thirty-six hauls out of which twenty-six pairs were considered valid; these covered Saro v. Granton (with each ship using each gear), Saro v. Saro and Granton v. Granton comparisons. All fishing was done in dark hours and none in the half-light period 0800-1230 hrs. The earlier tows were of 1½ hours duration, but as catches there reached as high as 75 baskets (mostly cod, haddock and redfish in percentages approximately 60, 30 and 10%), towing time was reduced to 1 hour until catches fell off in the later tows.

Both ships returned to Tromsø at 1800 hrs on November 30th, whence both ships made their separate ways home. What proved to be a sustained spell of very bad weather had set in during the last few days of fishing; fierce winds held ERNEST HOLT to the quayside for some hours at Tromsø before she was able to sail at 0930 hrs, December 1st. Passage was made to Grimsby via the southern fjords of Norway, and after 24 hours dodging in the northern North Sea the ship arrived at Grimsby at 0845 hours on December 7th, two tides later than the original ETA.

Results

1. Trawl Instrumentation. Both ERNEST HOLT trawls were fitted with a headline height meter, a net spread meter, 6 underwater load cells, 2 deck warp load meters and a warp divergence meter. All gave satisfactory readings on the Granton trawl, but the net spread meter failed on the Saro trawl. The most

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significant feature of the measurements was that the drag of the Saro trawl was so high as to seriously reduce the towing speed of ERNEST HOLT at maximum revs.; this was about 2½-3 knots as compared with 3½ knots at lower revs. with the Granton trawl. The low maximum towing speed of the Saro trawl had to be allowed for in the subsequent comparative fishing. At these speeds there was scarcely any difference between the otter board spreads of the two gears, but the Saro headline was higher than that of the Granton trawl.

2. Comparative fishing. Although the final number of valid pairs of hauls in each block of comparisons was disappointingly few in view of the excellent progress in the first few days, the consistency both of catches and of inter-ship comparisons for each pair of hauls within a block made for clear-cut results of good quality. On first inspection, the prominent features of the results were:-

(a) The original Saro v. Granton commercial ship experiment results were broadly confirmed in that there was not a very marked difference between catches of the two trawls, the Granton being perhaps marginally more effective. (The relative spreads of the two gears on this cruise were not the same as on the commercial comparison, but this difference and the fishing result must be considered together with drag and towing speed differences referred to below.)

(b) The catches of the two ships when fishing the same trawls were very similar; this is reassuring and important in the interpretation of some previous comparative fishing results because it indicates that anomalies that have been ascribed to ship/gear interaction were unlikely to have been so but were more likely to have been due to fault in experimentation.

(c) The Saro v. Granton trawl comparison, using the rather low-powered ERNEST HOLT, highlighted an important failure in the design of the Saro gear. The ship, at full revs, could not tow the gear at normal towing speed; in achieving a maximum speed of about 3 knots, as compared with the Granton at 3½ knots with less revs, the chief engineer estimated that fuel consumption was up by about 25%. The more powerful EXPLORER also could tow the Saro gear only relatively slowly. And the previously-experienced time losses due to Saro gear-handling difficulties and extra net repair and maintainance were still very significant.

3. Fish population samples. Routine otolith samples were taken of cod, haddock and coalfish.

4. Water samples. Surface water samples were taken and filtered at two positions in the northern North Sea on the outward passage for the Radiobiology Laboratory. Weather conditions and steaming course prevented similar samples being taken on the homeward passage.

A. R. Margetts
8.12.1967

Seen in draft: E. A. Binnington
G. W. Argumont

Initialled: A. J. L.

Distribution

Dr. Cole
Mr. Lee
Captain Aldiss
Dr. Cushing
Mr. Burd
Mr. Bolster
Mr. Hill
Mr. Cattley
Mr. Corlett
Mr. Garrod
Dr. Harden Jones
Mr. Iles
Dr. Jamieson
Mr. Margetts
Mr. Trout
Mr. Holden
Dr. Purdom
Mr. Bridger
Mr. Mitson
Mr. Tungate
Mr. Williams
Mr. Wood
Mr. Adams
Mr. Mills
Mr. Kay
General Lab.
Lab. Registry
Library (2)
Mr. Whiting
ERNEST HOLT file
Mr. Simpson
Dr. Reynolds
Chief Inspector
All D.I.s
Fisheries Registry
Captain Binnington
Skipper Argumont
Mr. Burgess
Mr. W. Baird, DAFS
Prin. Inf. Officer, DAFS
Mr. Glover
Dr. Grant
Hydrographic Dept.
Dr. Lovern
Dr. Lucas
Director, NIO
Dr. Peachey
Mr. Shelbourne
Mr. Steele
W.F.A.
Director, Bergen
Mr. Joensen
Director, Reykjavik
British Trawlers Federation Ltd.
Scientific Staff on Cruise