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In confidence: Not to be quoted without reference to the Laboratory.

CRUISE REPORT

F.R.S. "CLUPEA"

9th-28th June, 1969

Objective: Calibration and sea trials of Fish Counter

This cruise had mainly technical objectives, the testing and development of acoustic equipment being blended with plankton and pelagic fish sampling.

During the first week the ship operated at Loch Torridon. The behaviour team collaborated by providing live pollack in good condition, and placing these in the special calibration rig to determine acoustic target strengths. The sizes and species available were unfortunately very restricted but within these limitations satisfactory results were obtained and the calibration rig proved effective. This work could not have been done without the collaboration of divers.

Before leaving Loch Torridon, opportunity was taken to make measurements of the noise levels generated by "Clupea" at various engine speeds and propeller pitch settings.

During the second week the fish survey was started, the two southerly lines and associated plankton sampling being completed. The acoustic equipment failed to work satisfactorily on account of electrical interference on the ship. As a heavy south-easterly swell prevented midwater trawling, the ship returned to Aberdeen on Wednesday to make her pre-arranged rendezvous on Thursday with the consultant (Mr. Wood of Belling and Lee) who was to investigate this interference. Mr. Wood's preliminary recommendations were carried out by Hall Russell Ltd. over the week-end, and resulted in a reduction of the general interference level by about 23 db. To achieve this, however, the automatic voltage regulators had to be left off, and manual voltage control used on the main alternators. Some further action is required in this respect.

During the final week there were initially some residual interference problems, which were overcome by reducing the sensitivity of certain trigger circuits in the equipment, which thereafter operated in a satisfactory manner.

The survey, including plankton stations, was completed as planned up to 58°N, indicating a rich crustaceous community and two midwater trawls produced a variety of young fish, mainly whiting and haddock. Since no heavy pelagic echo-traces were being observed, it was decided to break off the survey and run north on the prime meridian to 59°N. A south-easterly gale, however, prevented this, and "Clupea" ran before it to spend Thursday night in Kirkwall. The ship returned to Buckie on the following day.

A great deal of technical information was gained. The 400 Kc echosounder was an intermediate stage, using new control circuitry developed for the second model. While the towed body could be used at the full speed of 11 knots, it seems best to limit survey speed to 8 knots, both because of significant propeller noise and the lower stability of the towed body at the higher speed.

R. E. CRAIG  
14th July, 1969