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to the Laboratory.

CRUISE REPORT

FRS CLUPEA

18-30 NOVEMBER 1971

OBJECTIVES

1. To survey the distribution and abundance of 0-group herring in the Clyde.
2. To do environmental and fish sampling for pollution investigations.
3. To investigate the optimum combination of engine revs and propeller pitch for towing trawls.

NARRATIVE

The scientific personnel joined Clupea in Campbeltown on Thursday 18 November. During the remaining part of the week the 5 environmental stations between Irvine and Brodick bays and the additional station between Arran and Sanda Island were completed as well as 4 trawl/environmental stations to the south and east of Arran. The headline transducer did not function during these hauls.

Over the weekend a T.O. from Aberdeen repaired the transducer and a half hour trial haul to test this equipment was successfully carried out on Monday morning. An additional half hour trawl was carried out to demonstrate the use of Furuno equipment, should the netzonde again fail.

During the rest of the week, all but 2 of the remaining 25 trawl/environmental stations were completed. Some difficulty was experienced with the headline transducer in mid-week when the signal became weak but this was corrected and the transducer functioned satisfactorily until Friday morning when no signal was registered and a break was located in the cored cable. All remaining trawls were then carried out using the Furuno transducer.

On the weekend of 27/28 November, the Clupea was rigged for gear trials with a 1040 4-panel pelagic trawl. Two trawls were carried out on Monday using this larger trawl. The first of these was a test haul of half an hour's duration on one of the two remaining cruise stations. The second and final haul of the cruise was fully instrumented and the pitch and revs were varied in incremental steps over the 2½ hours in block duration of the haul.

Scientific personnel left the Clupea on Tuesday 30 November.

RESULTS

Herring was found in quantity in one area only, namely in Loch Striven where they had a range of 9.5-19.5 cm and a modal size of 16 cm. The largest number per hour's haul in any other area was 4.

A true scarcity of immature herring, rather than any artefact of the sampling technique, is suggested by the fact that sprats were taken on 19 out of 23 hauls, frequently in high numbers, and that only 3 characteristic plume shaped traces were observed on the echosounder during the entire duration of the cruise.

During the survey 38 $\frac{1}{2}$ baskets of mixed fish and invertebrates were taken in 22 hours of trawling. The most abundant species were sprat, T. esmarkii, whiting, saithe, herring and immature hake, in that order. Of the invertebrates, over 80% of the total bulk was made up of euphausiids (Meganyotiphanes norvegica), 14 baskets being taken in a one hour haul in Loch Tyne.

Samples of herring and sprat were brought back to the laboratory for weight/length analysis and a few additional herring for pollution studies. Sufficient numbers of herring for this purpose were only obtained in one of the 7 areas and no 0-group haddock were taken in any of these areas.

The hydrographic samples and results from the gear section trials are at present being analysed.

M. Malsh

17 December 1971