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

CRUISE REPORT

FRV "MARA"

27 July - 29 August 1970

OBJECTIVES

1. Observation and photography of the behaviour of round- and flatfish during the process of demersal seining.

2. Recording the change in shape of the seine net by means of instrument records of spread, headline height and photographs of warp divergence. Readings to be taken of the warp tensions developed during fishing, and further studies made of the sinking rates of ropes and the behaviour of ropes during fishing.

3. Underwater photometry to correlate underwater visibility with fish behaviour.

4. Tagging of flatfish to determine behaviour in relation to tide, and estimation of catching efficiency of the gears.

NARRATIVE

The first two weeks of the cruise were carried out from Buckie working mainly in Spey Bay, with occasional dives on the 'Bellings' ground. During the final three-week period of the cruise, FRV "Mara" worked jointly with the local fishing vessel "Boy Andrew" on the north side of the Moray Firth, especially in Sinclair Bay.

RESULTS

Observation and photographic recording on the first part of the cruise was restricted to flatfish due to the virtual absence of haddock in a convenient depth of water. A large number of still photographs and some cine film were taken for analysis of orientation and movement of flatfish. Instrument readings of headline height, spread and wing-end tension, were taken at the net; and on deck, recordings of warp speed and load were made. Photographs taken at one minute intervals of the ropes will allow calculation of warp divergence and declination aft of the roller during each haul.

Some measurements of speed were taken at the ship and at the net, but a Plessey current-meter lowered to the seabed at the start of the cruise proved to have been non-functional.

No instrument readings were taken aboard "Boy Andrew" during the second part of the cruise, when attention was concentrated on the observation of fish, particularly haddock. It proved to be difficult to find haddock in sufficiently shallow water, less than 20 fathoms, on this part of the cruise also, but on several hauls more haddock were seen than on any haul previously observed on FRV "Mara". Fishing with six coils a side and using a wing seine rather than a standard haddock seine showed a difference in the behaviour of haddock compared with previous observations from FRV "Mara". Instead of a build-up of numbers and a fall-back of fish on the commencement of fast haul, a much steadier fall-back of fish during slow stages was observed. This implies either a longer, slower period of swimming to near

exhaustion by fish in the mouth of the net or a different optomotor reaction in the much larger net.

Two forms of groundline rigged for rough ground operation were observed: firstly a 'dropper-groundline' with all the weight concentrated at the end of 4 ft long droppers; secondly a bobbin-groundline was observed fishing over very rocky ground. Short lengths of good quality cine film were obtained of both these in action.

Some measures were made of underwater 'black body visibility', and records of surface light intensity for estimates of underwater visible range. No tagging of flatfish was carried out.

Considerable problems were experienced with the underwater housings for tape-recorders which resulted in the drowning of two recorders.

CONCLUSIONS

The results of the work with the "Boy Andrew" demonstrated that co-operative working with a top-class commercial vessel is immensely rewarding for direct observation of the operation of the demersal seine net as a fishing technique under commercial fishing conditions. It would be more difficult to conduct a full instrumentation programme from a commercial vessel than a research vessel, but for observation of gear and fish under commercial fishing conditions its use is ideal.

C C HEMMINGS
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