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CRUISE REPORT

FRV MARA

14 May - 8 June 1973

OBJECTIVES

1. Installation and testing of new instrument system and data-logging equipment.

2. Joint operation with FRV Clupea to determine noise output of demersal seine net, and use of acoustic pingers to determine change in shape of seine net ropes during fishing.

3. Observation, recording and photography by divers of the behaviour of flatfish during the process of demersal seining.

4. Sampling of fish in front of the seine net in order to assess physiological condition of fish at various stages of capture.

5. A vinge trawl fitted with diverters will be tried to assess correctness of design prior to further work on seine net cruise in September/October.

RESULTS

The new instrument data-logger was installed in the accommodation region to record port and starboard declination, rope divergence, speed and tension, and ship's speed. Both the logger system and the specially designed instrument for measuring declination and divergence worked well, although the latter had some problems of alignment at small divergence angles.

The largest remaining unknown in the programme of research on seine nets concerns the change in shape, and the herding efficiency of the ropes. The co-operative work with FRV Clupea was a trial of one way of remedying this situation. From FRV Clupea was laid a pattern of hydrophones around the area fished by the seine, and acoustic pingers were attached at various points along the rope. The tape recordings taken during each haul will be analysed to show the successive positions of the pingers as the rope moved, consequently the rope shape can be inferred. The recordings will also be analysed to show noise levels produced by the gear, although initial indications are that the seine net is very much quieter than a demersal trawl.

The programme of fish photography and tape recorded fish behaviour was carried out in the normal way, with particular emphasis on the very early stages of hauling. Existing records are deficient of information at low net speeds, when it might be expected that long swimming durations occur. This work was entirely restricted to flatfish due to the absence of roundfish on the grounds.

A further cruise in 1973 in conjunction with FRV Clione (MAFF) will allow assessment of the effectiveness of the sector scanner as a means of measuring rope shape change. After this cruise it should be possible to judge whether the hydrophone array or the sector scanner is the more promising method.

A new aspect of the work carried out was the sampling of flatfish as they swam in front of the groundline. This was carried out by fishing a "net" composed of wings only, connected by appropriate lengths of headline and groundline to which no bag was attached. Two divers hung onto this groundline and captured flatfish which were immediately killed to prevent struggling and consequent physiological changes. Muscle samples taken immediately on return to Mara were stored in dry ice and analysed for glycogen and lactate within 24 hours. The unfortunate shortage of suitably smooth ground at the right depth in which to work necessitated repeat hauls over the same ground. The physiological results were very variable, probably due to 'escapes' from a previous haul being mixed with 'fresh' fish in the one being sampled, both groups being caught after varying degrees of herding by the ropes. In future non-repetitive hauls will be conducted.

Due to a hold-up in the fitting of the hydraulic power arm to FRV Mara, no work with the vinge trawl and diverters was undertaken.

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16 August 1973