

In Confidence: Not to be quoted without reference to the laboratory 6NR80

FRV MARA

Cruise 6/80

REPORT

2 June - 27 June 1980

Objectives

- 1 To further develop the versatility of the Marine Laboratory semi pelagic trawl PT148 by towing it on rough ground and in midwater with a variety of bottom and midwater doors whilst observing it with underwater TV.
- 2 To perform engineering and net design studies on two commercially used midwater trawls.

Narrative

MARA was loaded in Buckie on Monday 2 June and some of the instrumentation assembled ready for trawling with the Marine Laboratory semi pelagic trawl for the remainder of the first week except for Thursday morning when the rest of the instrumentation and RCV arrived from an overlapping EXPLORER cruise and set up.

The second week consisted of instrumented and TV tows with a Jackson trawl with various rigs. Arthur Buchan, Managing Director of Jackson Trawls Ltd, of Peterhead was a guest on board for the week. Bad weather curtailed trawling on the Wednesday and Thursday. On Friday MARA was laid up in harbour with compressor mechanical problems.

On Monday of the third week some further work was done on the Jackson trawl. The Marine Laboratory semi pelagic trawl was tested for the remainder of the week except for Thursday afternoon and Friday when bad weather stopped work. A Cosalt midwater trawl was rigged on Friday ready for trawling on Monday of the last week.

The fourth week consisted of instrument and TV studies of the Cosalt trawl from Monday to Wednesday. The Marine Laboratory semi pelagic trawl with a hexagonal mesh codend was rigged on Wednesday evening ready for trawling on the Thursday but bad weather prevented further work. The gear was unloaded from MARA and returned to the Laboratory on Friday 27 June.

Due to TV section staff shortages use of the RCV was limited to Wednesday, Thursday and Friday of each week. MARA operated daily from Buckie harbour throughout the cruise and fished in the Bellings, South Deeps and Spey Bay areas of the Moray Firth.

Results

1 Marine Laboratory semi pelagic trawl. The trawl was towed with suberkrub, vee and japanese otterboards. The vee and japanese doors proved to extend the bottom fishing capability of the trawl although the size of japanese doors used overspread the net slightly but were nevertheless effective as a semi pelagic door being able to fish equally well on the bottom and in midwater. However, they lack the quick reaction time of suberkrubs when towed in midwater. Further engineering data were obtained for a nylon version of the trawl (to augment data obtained last year) and for a new couylene version. Film of both versions of the trawl and the three sets of otterboards are being analysed at the laboratory. Excerpt's from the film will be included in the existing industrial demonstration film of the semi pelagic trawl.

2 Jackson trawl. Some very useful design work was done on two versions of a 330-6 $\frac{1}{4}$ " (158 mm) trawl. A 3 bridle version gave a mouth opening of 48 feet (5.5 m) at 3 knots and the total gear drag inclusive of doors and net was 0.8 tons at 2 knots and 1.4 tons at 3 knots. A 2 bridle version which was a replica of the 3 bridle trawl except for much less netting in the wings gave 7% less net drag and a mouth opening of 20 feet (6.1 m) at 3 knots. The trawl was not able to be used in a semi pelagic mode as was intended due to lack of time. Arthur Buchan of Jackson Trawls was impressed by all he experienced on MARA. A Marine Laboratory Working Paper on the engineering performance and design of the Jackson trawl has been published, and a 20 minutes demonstration video tape of the trawl has been prepared and is used by Jackson Trawls for research and demonstration purposes.

3 Cosalt midwater trawl. Bert Downie, Manager of Cosalt Ltd, Fraserburgh loaned a trawl to the Laboratory for engineering and TV studies. A prepared video tape is now used by Cosalt for research and demonstration purposes. A Working Paper on the engineering performance of the trawl is in the process of publication. Preliminary engineering results are as follows:-

Warp Length (metres)	Net Speed (knots)	Total Gear Tension (Tons)	Door Spread (metres)	Door Depth (metres)	Headline Depth (metres)	Mouth Opening (metres)
183	2.5	1.92	21.3	-	30	11.5
228	2.5	2.04	23	27.4	25.6	

Seen in draft W B Reid
Officer in charge

J H B Robertson
18 November 1980