

In Confidence: Not to be quoted without prior reference to the Laboratory

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WW
11MR77

FRV "Mara"

Cruise 11/77

REPORT

16 September - 13 October 1977

Objectives

1. To carry out a midwater trawling survey for 0- and 1-group herring in the Minch.
2. To carry out diving observations on the Gourock midwater trawl and to observe the reaction of clupeid fish.

Narrative

"Mara" left Buckie on 16 September and was joined by the scientific staff at Corpach during the weekend.

The survey was started in Loch Linnhe on 19 September and during that week 16 stations were completed in the Firth of Lorne, around Mull and in the south Skye area. "Mara" spent the weekend at Kyle and during that period crew changes took place and the TV personnel replaced other members of scientific staff.

"Mara" left Kyle on 26 September and reached Upper Loch Torridon by mid-morning. The underwater sledge was taken on board and used with the underwater TV system to monitor the performance of the Gourock Midwater Trawl during the rest of that day and the one following. On the evening of 27 September "Mara" made for Stornoway because of a bad forecast, docked there early the following morning and remained in port all that day because of bad weather. The following morning the crew and the chief scientist left the boat for the long weekend break and did not rejoin until the night of 4 October.

"Mara" recrossed the Minch on 5 October and completed 8 stations between Enard Bay and Applecross Bay in poor weather before docking at Kyle for the weekend on 7 October.

On 10 October "Mara" made directly for the Sound of Mull in continuing bad weather and completed one station at Ardmore before putting in for the night at Tobermory. One station west of Linmore was completed the next day and "Mara" reached Banavie in the Caledonian Canal that night and Buckie by the afternoon of 13 October.

Trawling Survey

Herring and sprats were taken in 12 and 18 hauls respectively out of a total of 30. The mean number of herring and sprats caught per haul in this survey for the period 1975 to 1977 is shown below:-

	<u>Herring</u>	<u>Sprats</u>
1975	94	514
1976	1	685
1977	27	515

Herring ranged in size from 6.5-17.5 cm with a distinct mode at 10.5 cms. Sprats ranged from 3.5-12 cm with a mode at 7.5 cms, although larval sprats were also found in the net on two occasions. Samples of herring were preserved for parasitological examination.

The main bycatch was of T. esmarkii and whiting, with size ranges of 6-15 cms and 6-20 cms respectively.

Underwater TV Observations

Video-tape recordings of the reaction of sprats to the midwater trawl fitted with an 11 mm codend were made on four successful dives in depths of 5-10 fathoms and at an estimated speed of approximately 2.5 knots.

Observations were made at the wingend, the headline and the footrope and back to the codend, particular attention being paid to the codend and the 80 mm and 60 mm netting immediately preceding it.

Two features were notable in the rather brief observations that were possible due to the limitations of diving time.

1. Sprats were seen escaping through the upper part of the 60 mm and 80 mm mesh that preceded the codend and many were wrapped round the meshes there.
2. Considerable turbulence was noted in the codend itself, and many sprats were pressed laterally against the meshes of the codend thus restricting even further the water flow through the small mesh of the codend. This apparently caused a pressure build up which resulted in a considerable outflow of water at the junction of the large and small mesh and must have been a major factor in fish escaping there.

J Morrison
12 January 1978

Seen in draft: W T Mair